



# Modicon Networking

Connecting Ethernet Devices



# Modicon

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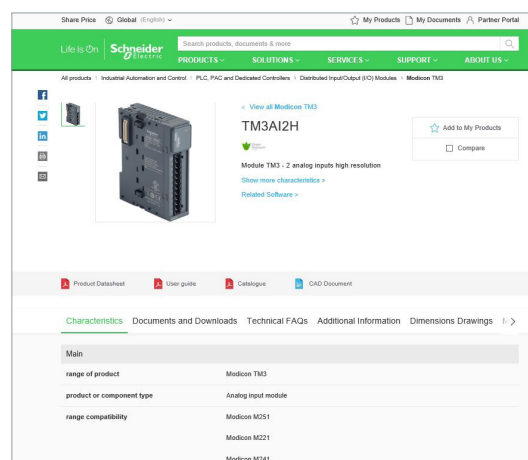
**References**

**Modicon TM3**  
I/O expansion modules for Modicon controllers  
Analog I/O modules

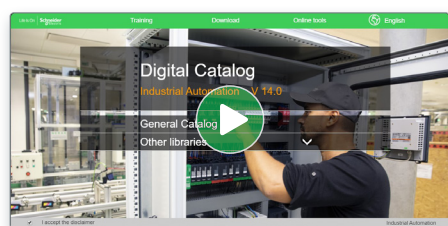
| References                                  | Input range                                                                                                                            | Output range                        | Resolution                    | Input terminal block (T)         | Reference                     | Weight                  |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------|----------------------------------|-------------------------------|-------------------------|
| 2 voltage/current inputs                    | -15...+15 VDC<br>0...+10 VDC<br>0...20 mA A...20 mA                                                                                    | 15 000 mV<br>15 000 mV<br>15 000 mV | 12 bits<br>12 bits<br>12 bits | 0 580 02<br>0 580 02<br>0 580 02 | TM3AI2H<br>TM3AI2H<br>TM3AI2H | 0.150<br>0.150<br>0.150 |
| 4 voltage/current inputs                    | -15...+15 VDC<br>0...+10 VDC<br>0...20 mA A...20 mA                                                                                    | 15 000 mV<br>15 000 mV<br>15 000 mV | 12 bits<br>12 bits<br>12 bits | 0 580 02<br>0 580 02<br>0 580 02 | TM3AI4H<br>TM3AI4H<br>TM3AI4H | 0.200<br>0.200<br>0.200 |
| 4 voltage/current or temperature inputs (2) | Thermocouples (2)<br>J, K, R, S, E, T, N, B, C<br>Temperature inputs (2)<br>PT100, PT500, PT1000<br>0...+10 VDC<br>0...20 mA A...20 mA | 15 000 mV<br>15 000 mV<br>15 000 mV | 12 bits<br>12 bits<br>12 bits | 0 580 02<br>0 580 02<br>0 580 02 | TM3AI4H<br>TM3AI4H<br>TM3AI4H | 0.200<br>0.200<br>0.200 |
| 4 differential temperature inputs           | Thermocouples (4)<br>J, K, R, S, E, T, N, B, C<br>0...+10 VDC<br>0...20 mA A...20 mA                                                   | 15 000 mV<br>15 000 mV<br>15 000 mV | 12 bits<br>12 bits<br>12 bits | 0 580 02<br>0 580 02<br>0 580 02 | TM3AI4H<br>TM3AI4H<br>TM3AI4H | 0.200<br>0.200<br>0.200 |
| 4 voltage/current inputs                    | -15...+15 VDC<br>0...+10 VDC<br>0...20 mA A...20 mA                                                                                    | 15 000 mV<br>15 000 mV<br>15 000 mV | 12 bits<br>12 bits<br>12 bits | 0 580 02<br>0 580 02<br>0 580 02 | TM3AI4H<br>TM3AI4H<br>TM3AI4H | 0.200<br>0.200<br>0.200 |

Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

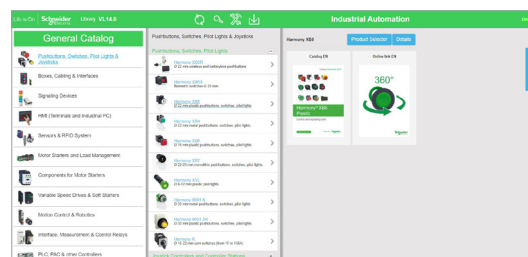
- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual



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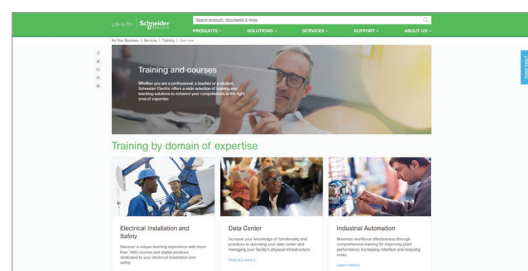


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# General contents

## Modicon Networking - Connecting Ethernet devices

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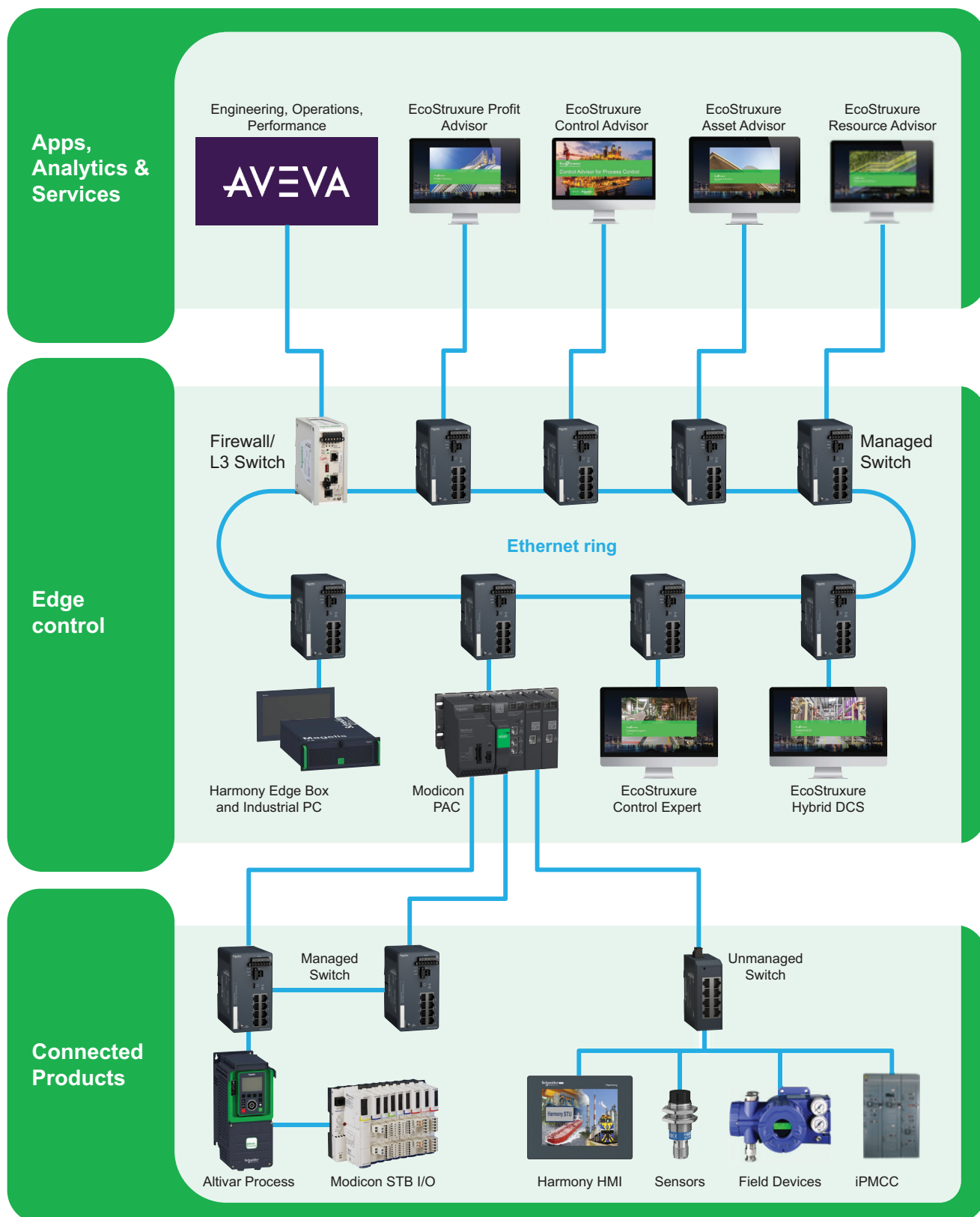
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# Industrial Ethernet Architecture

## Ethernet Architecture

**Modicon Networking** is a complete offer portfolio of Ethernet connectivity products. It connects all the EcoStruxure stacks together in an efficient and secure manner.



## Ethernet Networking offers

Based on the complexity and application, we provide networking products in different categories and levels, covering unmanaged switches, managed switches and firewalls.



Industrial Ethernet Switch  
Standard Unmanaged Switch,  
IP67 Unmanaged Switch

| Device type             |                          |                                                    | Standard Unmanaged Switch, 5TX                                                                       | Standard Unmanaged Switch, 4TX/1FX-MM                                              | Standard Unmanaged Switch, 8TX                                                      | Standard Unmanaged Switch, 6TX/2FX-MM                                               | Standard Unmanaged Switch, 6TX/2FX-SM                                               | IP67 Unmanaged Switch, 5TX                                                          |  |
|-------------------------|--------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                         |                          |                                                    |                     |  |  |  |  |  |  |
| Interfaces              | Copper cable ports       | Number and type                                    | 5 x 10/100BASE-TX ports                                                                              | 4 x 10/100BASE-TX ports                                                            | 8 x 10/100BASE-TX ports                                                             | 6 x 10/100BASE-TX ports                                                             |                                                                                     | 5 x 10/100BASE-TX ports                                                             |  |
|                         |                          | Shielded connectors                                | RJ45                                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         |                          | Medium                                             | Shielded twisted pair, category CAT 5E                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         |                          | Total length of pair                               | 100 m/328 ft                                                                                         |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         | Fiber optic ports        | Number and type                                    | –                                                                                                    | 1 x 100BASE-FX port                                                                | –                                                                                   | 2 x 100BASE-FX port                                                                 |                                                                                     | –                                                                                   |  |
|                         |                          | Connectors                                         | –                                                                                                    | Duplex SC                                                                          | –                                                                                   | Duplex SC                                                                           |                                                                                     | –                                                                                   |  |
|                         |                          | Medium                                             | –                                                                                                    | Multimode fiber                                                                    | –                                                                                   | Multimode fiber                                                                     |                                                                                     | Singlemode fiber                                                                    |  |
|                         | Length of fiber          | 50/125 µm                                          | –                                                                                                    | 5,000 m/16,404 ft (1)                                                              | –                                                                                   | 5,000 m/16,404 ft (1)                                                               |                                                                                     | –                                                                                   |  |
|                         |                          | 62.2/125 µm                                        | –                                                                                                    | 4,000 m/13,123 ft (1)                                                              | –                                                                                   | 4,000 m/13,123 ft (1)                                                               |                                                                                     | –                                                                                   |  |
|                         |                          | 9/125 µm                                           | –                                                                                                    |                                                                                    |                                                                                     |                                                                                     | 30,000 m/98,425 ft (2)                                                              | –                                                                                   |  |
|                         | Attenuation analysis     | 50/125 µm fiber                                    | –                                                                                                    | 8 dB                                                                               | –                                                                                   | 8 dB                                                                                |                                                                                     | –                                                                                   |  |
|                         |                          | 62.2/125 µm fiber                                  | –                                                                                                    | 11 dB                                                                              | –                                                                                   | 11 dB                                                                               |                                                                                     | –                                                                                   |  |
|                         |                          | 9/125 µm fiber                                     | –                                                                                                    |                                                                                    |                                                                                     |                                                                                     | 16 dB                                                                               | –                                                                                   |  |
| Ethernet services       | –                        |                                                    |                                                                                                      |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Configuration           | –                        |                                                    |                                                                                                      |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Redundancy              |                          |                                                    | –                                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Power supply            | Voltage                  | 12...24 V $\overline{\text{DC}}$ (9.6...32 V) SELV |                                                                                                      |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         | Consumption              | 1.3 W                                              | 2.4 W                                                                                                | 1.5 W                                                                              | 3.8 W                                                                               |                                                                                     | 24 V $\overline{\text{DC}}$ (18...32 V) SELV                                        |                                                                                     |  |
|                         | Removable terminal block | 3 - pin                                            |                                                                                                      |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 5 - pin, with M12 (type A, male)                                                    |  |
| Operating temperature   |                          |                                                    | 0...+ 60°C/+ 32...+ 140°F                                                                            |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Relative humidity       |                          |                                                    | 10...95% non-condensing                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Degree of protection    |                          |                                                    | IP 30                                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Dimensions              |                          | W x H x D                                          | 26 x 102 x 79 mm/1.02 x 4.01 x 3.11 in.                                                              |                                                                                    | 38 x 102 x 79 mm/1.50 x 4.02 x 3.11 in.                                             | 45 x 110 x 88 mm/1.77 x 4.33 x 3.46 in.                                             |                                                                                     | 60 x 126 x 31 mm/2.36 x 4.96 x 1.22 in.                                             |  |
| Mounting                |                          |                                                    | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                         |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Weight                  |                          |                                                    | 0.125 kg/0.275 lb                                                                                    | 0.130 kg/0.285 lb                                                                  | 0.150 kg/0.331 lb                                                                   | 0.235 kg/0.518 lb                                                                   |                                                                                     | 0.210 kg/0.463 lb                                                                   |  |
| Conforming to standards |                          |                                                    | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| LED indicators          |                          |                                                    | Power supply, link status, data status                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Alarm relay             |                          |                                                    | –                                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Reference               |                          |                                                    | MCSESU053FN0                                                                                         | MCSESU053F1CU0                                                                     | MCSESU083FN0                                                                        | MCSESU083F2CU0                                                                      | MCSESU083F2CS0                                                                      | TCSESU051F0                                                                         |  |
| Page                    |                          |                                                    | 25                                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |

(1) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 2,000 m/6,561 ft).  
(2) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 15,000 m/49,212 ft).



Industrial Ethernet Switch  
Premium Unmanaged Switch

| Device type             |                          |                                                                                                                                            | Premium Unmanaged Switch, 4TX/1FX-MM                                                                                                                             |                       | Premium Unmanaged Switch, 4TX/1FX-SM                                                |                        | Premium Unmanaged Switch, 8TX                                                       |                                          | Premium Unmanaged Switch, 7TX/2FX-MM                                                |                                          | Premium Unmanaged Switch, 7TX/2FX-SM                                                |                   |                |
|-------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|-------------------|----------------|
|                         |                          |                                                                                                                                            |                                                                                 |                       |  |                        |  |                                          |  |                                          |  |                   |                |
| Interfaces              | Copper cable ports       | Number and type                                                                                                                            | 4 x 10/100BASE-TX ports                                                                                                                                          |                       |                                                                                     |                        |                                                                                     | 8 x 10/100BASE-TX ports                  |                                                                                     | 7 x 10/100BASE-TX ports                  |                                                                                     |                   |                |
|                         |                          | Shielded connectors                                                                                                                        | RJ45                                                                                                                                                             |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
|                         |                          | Medium                                                                                                                                     | Shielded twisted pair, category CAT 5E                                                                                                                           |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
|                         |                          | Total length of pair                                                                                                                       | 100 m/328 ft                                                                                                                                                     |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
|                         | Fiber optic ports        | Number and type                                                                                                                            | 1 x 100BASE-FX port                                                                                                                                              |                       |                                                                                     |                        |                                                                                     | —                                        |                                                                                     | 2 x 100BASE-FX port                      |                                                                                     |                   |                |
|                         |                          | Connectors                                                                                                                                 | Duplex SC                                                                                                                                                        |                       |                                                                                     |                        |                                                                                     | —                                        |                                                                                     | Duplex SC                                |                                                                                     |                   |                |
|                         |                          | Medium                                                                                                                                     | Multimode fiber                                                                                                                                                  |                       | Single-mode fiber                                                                   |                        |                                                                                     | —                                        |                                                                                     | Multimode fiber                          |                                                                                     | Single-mode fiber |                |
|                         |                          | Length of fiber                                                                                                                            | 50/125 µm                                                                                                                                                        | 5,000 m/16,404 ft (1) |                                                                                     |                        | —                                                                                   |                                          |                                                                                     | 5,000 m/16,404 ft (1)                    |                                                                                     | —                 |                |
|                         | 62.2/125 µm              |                                                                                                                                            | 4,000 m/13,123 ft (1)                                                                                                                                            |                       |                                                                                     | —                      |                                                                                     |                                          | 4,000 m/13,123 ft (1)                                                               |                                          | —                                                                                   |                   |                |
|                         | 9/125 µm                 |                                                                                                                                            | —                                                                                                                                                                |                       |                                                                                     | 30,000 m/98,425 ft (2) |                                                                                     |                                          | —                                                                                   |                                          | 30,000 m/98,425 ft (2)                                                              |                   |                |
|                         | Attenuation analysis     |                                                                                                                                            | 50/125 µm fiber                                                                                                                                                  | 8 dB                  |                                                                                     |                        | —                                                                                   |                                          |                                                                                     | 8 dB                                     |                                                                                     | —                 |                |
|                         |                          | 62.2/125 µm fiber                                                                                                                          | 11 dB                                                                                                                                                            |                       |                                                                                     | —                      |                                                                                     |                                          | 11 dB                                                                               |                                          | —                                                                                   |                   |                |
| 9/125 µm fiber          |                          | —                                                                                                                                          |                                                                                                                                                                  |                       | 16 dB                                                                               |                        |                                                                                     | —                                        |                                                                                     | 16 dB                                    |                                                                                     |                   |                |
| Ethernet services       |                          | QoS, aging time, flow control, broadcast storm protection/threshold, multicast storm protection/threshold, port based priority, link alarm |                                                                                                                                                                  |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Configuration           |                          | USB Master mode, USB 2.0 type A                                                                                                            |                                                                                                                                                                  |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Redundancy              |                          |                                                                                                                                            | —                                                                                                                                                                |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Power supply            | Voltage                  |                                                                                                                                            | 12 ... 24 V $\overline{\text{DC}}$ (9.6...32 V) SELV                                                                                                             |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
|                         | Consumption              |                                                                                                                                            | 4.3 W                                                                                                                                                            |                       |                                                                                     |                        |                                                                                     | 2.6 W                                    |                                                                                     | 6.9 W                                    |                                                                                     |                   |                |
|                         | Removable terminal block |                                                                                                                                            | 6 - pin (redundant power supplies)                                                                                                                               |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Operating temperature   |                          |                                                                                                                                            | - 40...+ 70°C/- 40...+ 158°F                                                                                                                                     |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Relative humidity       |                          |                                                                                                                                            | 10...95% non-condensing                                                                                                                                          |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Degree of protection    |                          |                                                                                                                                            | IP 40                                                                                                                                                            |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Dimensions              |                          | W x H x D                                                                                                                                  | 39 x 135 x 117 mm/1.53 x 5.31 x 4.61 in.                                                                                                                         |                       |                                                                                     |                        |                                                                                     | 50 x 135 x 117 mm/1.97 x 5.31 x 4.50 in. |                                                                                     | 56 x 135 x 117 mm/2.20 x 5.31 x 4.61 in. |                                                                                     |                   |                |
| Mounting                |                          |                                                                                                                                            | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                     |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Weight                  |                          |                                                                                                                                            | 0.430 kg/0.948 lb                                                                                                                                                |                       |                                                                                     |                        |                                                                                     | 0.440 kg/0.970 lb                        |                                                                                     | 0.510 kg/1.124 lb                        |                                                                                     |                   |                |
| Conforming to standards |                          |                                                                                                                                            | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201, IACS E10, UL 121201 / CSA C22.2 No. 213 Class I Division 2 |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| LED indicators          |                          |                                                                                                                                            | P1 and P2 power supplies, link status, data status                                                                                                               |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Alarm relay             |                          |                                                                                                                                            | Activity, detected fault (power supply, Ethernet network, or communication port)<br>(volt-free contact 1 A max. at 24 V $\overline{\text{DC}}$ )                 |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |
| Reference               |                          |                                                                                                                                            | TCSEPU053F1CU0                                                                                                                                                   |                       |                                                                                     | TCSEPU053F1CS0         |                                                                                     |                                          | TCSEPU083FN0                                                                        |                                          | TCSEPU093F2CU0                                                                      |                   | TCSEPU093F2CS0 |
| Page                    |                          |                                                                                                                                            | 25                                                                                                                                                               |                       |                                                                                     |                        |                                                                                     |                                          |                                                                                     |                                          |                                                                                     |                   |                |

(1) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 2,000 m/6,561 ft).  
(2) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 15,000 m/49,212 ft).



Industrial Ethernet Switch  
Lite Managed Switch, Basic Managed Switch

| Device type             |                                                                                                      |                                 | Lite Managed Switch, 4TX                                                                                                                                                       | Basic Managed Switch, 8TX                                                                       | Basic Managed Switch, 6TX/2FX-MM                                                                              | Basic Managed Switch, 6TX/3FX-MM                                                    |
|-------------------------|------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         |                                                                                                      |                                 |                                                                                               |              |                            |  |
| Interfaces              | Copper cable ports                                                                                   | Number and type                 | 4 x 10/100BASE-TX ports                                                                                                                                                        |                                                                                                 | 8 x 10/100BASE-TX ports                                                                                       |                                                                                     |
|                         |                                                                                                      | Shielded connectors             | RJ45                                                                                                                                                                           |                                                                                                 |                                                                                                               |                                                                                     |
|                         |                                                                                                      | Medium                          | Shielded twisted pair, category CAT 5E                                                                                                                                         |                                                                                                 |                                                                                                               |                                                                                     |
|                         |                                                                                                      | Total length of pair            | 100 m/328 ft                                                                                                                                                                   |                                                                                                 |                                                                                                               |                                                                                     |
|                         | Fiber optic ports                                                                                    | Number and type                 | –                                                                                                                                                                              |                                                                                                 | 2 x 100BASE-FX ports                                                                                          | 3 x 100BASE-FX ports                                                                |
|                         |                                                                                                      | Connectors                      | –                                                                                                                                                                              |                                                                                                 | Duplex SC                                                                                                     |                                                                                     |
|                         |                                                                                                      | Medium                          | –                                                                                                                                                                              |                                                                                                 | Multimode fiber                                                                                               |                                                                                     |
|                         | Length of fiber                                                                                      | 50/125 µm                       | –                                                                                                                                                                              |                                                                                                 | 5,000 m/16,404 ft (1)                                                                                         |                                                                                     |
|                         |                                                                                                      | 62.2/125 µm                     | –                                                                                                                                                                              |                                                                                                 | 4,000 m/13,123 ft (1)                                                                                         |                                                                                     |
|                         |                                                                                                      | 9/125 µm                        | –                                                                                                                                                                              |                                                                                                 |                                                                                                               |                                                                                     |
|                         | Attenuation analysis                                                                                 | 50/125 µm fiber                 | –                                                                                                                                                                              |                                                                                                 | 8 dB                                                                                                          |                                                                                     |
|                         |                                                                                                      | 62.2/125 µm fiber               | –                                                                                                                                                                              |                                                                                                 | 11 dB                                                                                                         |                                                                                     |
| 9/125 µm fiber          |                                                                                                      | –                               |                                                                                                                                                                                |                                                                                                 |                                                                                                               |                                                                                     |
| Ethernet services       | Web Management, HTTPS, SNMP V1/V2/V3, BOOTP server, DHCP server, Log files, remote monitoring (RMON) |                                 | SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access, IGMP Snooping, RSTP (Rapid Scanning Tree Protocol), priority port |                                                                                                 |                                                                                                               |                                                                                     |
| Configuration           | –                                                                                                    |                                 | RJ11 V.24 (RS232)                                                                                                                                                              |                                                                                                 |                                                                                                               |                                                                                     |
| Redundancy              |                                                                                                      |                                 | RSTP                                                                                                                                                                           | HIPER-ring, RSTP, MRP                                                                           |                                                                                                               |                                                                                     |
| Power supply            | Voltage                                                                                              | 12...24 V ~ (9.6...32 V ~) SELV |                                                                                                                                                                                |                                                                                                 |                                                                                                               |                                                                                     |
|                         | Consumption                                                                                          | 2.35 W                          | 6 W                                                                                                                                                                            | 8 W                                                                                             | 9 W                                                                                                           |                                                                                     |
|                         | Removable terminal block                                                                             | 3 - pin                         | 6 - pin (redundant power supplies)                                                                                                                                             |                                                                                                 |                                                                                                               |                                                                                     |
| Operating temperature   |                                                                                                      |                                 | 0...+ 50 °C/+ 32...122 °F                                                                                                                                                      | 0...+ 60 °C/+ 32...+ 140 °F                                                                     |                                                                                                               |                                                                                     |
| Relative humidity       |                                                                                                      |                                 | 5...95% non-condensing                                                                                                                                                         | 10...95% non-condensing                                                                         |                                                                                                               |                                                                                     |
| Degree of protection    |                                                                                                      |                                 | IP 30                                                                                                                                                                          | IP 20                                                                                           |                                                                                                               |                                                                                     |
| Dimensions              |                                                                                                      |                                 | W x H x D                                                                                                                                                                      | 25 x 114 x 79 mm/0.98 x 4.49 x 3.11 in.                                                         | 47 x 131 x 111 mm/1.85 x 5.15 x 4.37 in.                                                                      | 74 x 131 x 111 mm/2.91 x 5.15 x 4.37 in.                                            |
| Mounting                |                                                                                                      |                                 | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                                   |                                                                                                 |                                                                                                               |                                                                                     |
| Weight                  |                                                                                                      |                                 | 0.103 kg/0.227 lb                                                                                                                                                              | 0.400 kg/0.882 lb                                                                               | 0.410 kg/0.904 lb                                                                                             |                                                                                     |
| Conforming to standards |                                                                                                      |                                 | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201                                                                           | IEC/EN 61131-2, UL 508, CAN/CSA C22.2 No. 142, UL 121201 / CSA C22.2 No. 213 Class I Division 2 |                                                                                                               |                                                                                     |
| LED indicators          |                                                                                                      |                                 | Power supply status, link status, data rate                                                                                                                                    |                                                                                                 | Power supply status, alarm relay status, active redundancy, redundancy management, port status                |                                                                                     |
| Alarm relay             |                                                                                                      |                                 | –                                                                                                                                                                              |                                                                                                 | Detected fault (power supply, Ethernet network, or communication port) (volt-free contact 1 A max. at 24 V ~) |                                                                                     |
| Reference               |                                                                                                      |                                 | TCSESL043F23F0                                                                                                                                                                 | TCSESB083F23F0                                                                                  | TCSESB083F2CU0                                                                                                | TCSESB093F2CU0                                                                      |
| Page                    |                                                                                                      |                                 | 26                                                                                                                                                                             |                                                                                                 |                                                                                                               |                                                                                     |

(1) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 2,000 m/6,561 ft).



Industrial Ethernet Switch  
Standard Managed Switch

| Device type             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Standard Managed Switch, 4TX                                                                                                                                                                                                | Standard Managed Switch, 4TX/1FX-MM                                                | Standard Managed Switch, 4TX/1FX-SM                                                 | Standard Managed Switch, 4TX/2FX-MM                                                 | Standard Managed Switch, 4TX/2FX-SM                                                 | Standard Managed Switch, 8TX                                                        | Standard Managed Switch, 8TX, Harsh                                                 |  |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                         |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                            |  |  |  |  |  |  |  |
| Interfaces              | Copper cable ports       | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4 x 10/100BASE-TX ports                                                                                                                                                                                                     |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 8 x 10/100BASE-TX ports                                                             |  |
|                         |                          | Shielded connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RJ45                                                                                                                                                                                                                        |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Shielded twisted pair, category CAT 5E                                                                                                                                                                                      |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         | Total length of pair     | 100 m/328 ft                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         | Fiber optic ports        | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | –                                                                                                                                                                                                                           |                                                                                    |                                                                                     | 1 x 100BASE-FX port                                                                 |                                                                                     | 2 x 100BASE-FX ports                                                                |                                                                                     |  |
|                         |                          | Connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                           |                                                                                    |                                                                                     | Duplex SC                                                                           |                                                                                     | –                                                                                   |                                                                                     |  |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | –                                                                                                                                                                                                                           |                                                                                    |                                                                                     | Multimode fiber                                                                     |                                                                                     | Single-mode fiber                                                                   |                                                                                     |  |
|                         | Length of fiber          | 50/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                           |                                                                                    | 5,000 m/16,404 ft (1)                                                               |                                                                                     | –                                                                                   |                                                                                     |                                                                                     |  |
|                         |                          | 62.2/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                                           |                                                                                    | 4,000 m/13,123 ft (1)                                                               |                                                                                     | –                                                                                   |                                                                                     |                                                                                     |  |
|                         |                          | 9/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                           |                                                                                    | 30,000 m/98,425 ft (2)                                                              |                                                                                     | –                                                                                   |                                                                                     |                                                                                     |  |
| Attenuation analysis    | 50/125 µm fiber          | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                             | 8 dB                                                                               |                                                                                     | –                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |
|                         | 62.2/125 µm fiber        | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                             | 11 dB                                                                              |                                                                                     | –                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |
|                         | 9/125 µm fiber           | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                             | 16 dB                                                                              |                                                                                     | –                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |
| Ethernet services       |                          | Web Management, SNMP V1/V2/V3, BOOTP server, DHCP server, Ethernet TCP/IP, SSH, HTTP, HTTPS, SFTP, LLDP, SNMP-Traps and SYSLOG, IGMP Snooping, VLAN, Telnet, TFTP, address conflict detection, port monitoring, port mirroring, bandwidth management, MAC notification, TCP dump, link flap detection, RMON (remote network monitoring), self test, signal contact, port hardening, password protection, RADIUS assignment, DoS prevention, role-based access control, audit trail, PTP, TSN, IPv6 |                                                                                                                                                                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Configuration           |                          | USB Type- C (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Redundancy              |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | HIPER-ring, RSTP, MRP, link aggregation, link backup, redundant coupling                                                                                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Power supply            | Voltage                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 12...24 V ~ (9.6...32 V ~) SELV                                                                                                                                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                         | Consumption              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5 W                                                                                                                                                                                                                         | 6 W                                                                                |                                                                                     | 7 W                                                                                 |                                                                                     | 6 W                                                                                 |                                                                                     |  |
|                         | Removable terminal block |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6-pin (redundant power supplies)                                                                                                                                                                                            |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Operating temperature   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0...+ 60°C/+ 32...+ 140°F                                                                                                                                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | -40...+ 70°C/ -40...+ 158°F                                                         |  |
| Relative humidity       |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1...95% non-condensing                                                                                                                                                                                                      |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Degree of protection    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IP 30                                                                                                                                                                                                                       |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Dimensions              |                          | W x H x D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 57 x 142.8 x 117.6 mm/2.24 x 5.62 x 4.57 in.                                                                                                                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 73 x 142.8 x 117.6 mm/2.87 x 5.62 x 4.57 in.                                        |  |
| Mounting                |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Weight                  |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.380 kg/0.837 lb                                                                                                                                                                                                           | 0.420 kg/0.925 lb                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.500 kg/1.102 lb                                                                   |  |
| Conforming to standards |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201, UL 121201 / CSA C22.2 No. 213 Class I Division 2, IEC/EN 60079-0, IEC/EN 60079-15, IACS E10, IEC 50121-4, IEC 61850-3 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| LED indicators          |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Power supply status, device status, storage medium status, port status                                                                                                                                                      |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Alarm relay             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Detected fault (temperature, ring redundancy, connection errors, external memory, power supply), (volt-free contact 1 A max. at 24 V ~)                                                                                     |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Reference               |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MCSESM043F23F0                                                                                                                                                                                                              | MCSESM053F1CU0                                                                     | MCSESM053F1CS0                                                                      | MCSESM063F2CU0                                                                      | MCSESM063F2CS0                                                                      | MCSESM083F23F0                                                                      | MCSESM083F23F0H                                                                     |  |
| Page                    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 26                                                                                                                                                                                                                          |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 27                                                                                  |                                                                                     |  |

(1) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 2,000 m/6,561 ft).  
(2) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 15,000 m/49,212 ft).  
(3) The optional reference Memory Backup adapter is available in Separate parts and accessories for switches in [page 32](#).

Industrial Ethernet Switch  
Standard Managed Switch

| Device type             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Standard Managed Switch, 8TX/1FX-MM                                                                                                                                                                                         |       | Standard Managed Switch, 8TX/1FX-SM                                                |       | Standard Managed Switch, 8TX/2FX-MM                                                 |  | Standard Managed Switch, 8TX/2FX-MM, Harsh                                          |       | Standard Managed Switch, 8TX/2FX-SM                                                 |  | Standard Managed Switch, 8TX/2FX-SM, Harsh                                          |  |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|
|                         |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                            |       |  |       |  |  |  |       |  |  |  |  |
| Interfaces              | Copper cable ports       | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 8 x 10/100BASE-TX ports                                                                                                                                                                                                     |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         |                          | Shielded connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RJ45                                                                                                                                                                                                                        |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Shielded twisted pair, category CAT 5E                                                                                                                                                                                      |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         |                          | Total length of pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100 m/328 ft                                                                                                                                                                                                                |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         | Fiber optic ports        | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 x 100BASE-FX port                                                                                                                                                                                                         |       |                                                                                    |       | 2 x 100BASE-FX ports                                                                |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         |                          | Connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duplex SC                                                                                                                                                                                                                   |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         | Length of fiber          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Multimode fiber                                                                                                                                                                                                             |       | Single-mode fiber                                                                  |       | Multimode fiber                                                                     |  |                                                                                     |       | Single-mode fiber                                                                   |  |                                                                                     |  |
|                         |                          | 50/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5,000 m/16,404 ft (1)                                                                                                                                                                                                       |       | —                                                                                  |       | 5,000 m/16,404 ft (1)                                                               |  |                                                                                     |       | —                                                                                   |  |                                                                                     |  |
|                         |                          | 62.2/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4,000 m/13,123 ft (1)                                                                                                                                                                                                       |       | —                                                                                  |       | 4,000 m/13,123 ft (1)                                                               |  |                                                                                     |       | —                                                                                   |  |                                                                                     |  |
|                         |                          | 9/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | —                                                                                                                                                                                                                           |       | 30,000 m/98,425 ft (2)                                                             |       | —                                                                                   |  |                                                                                     |       | 30,000 m/98,425 ft (2)                                                              |  |                                                                                     |  |
| Attenuation analysis    | 50/125 µm fiber          | 8 dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                             | —     |                                                                                    | 8 dB  |                                                                                     |  |                                                                                     | —     |                                                                                     |  |                                                                                     |  |
|                         | 62.2/125 µm fiber        | 11 dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                             | —     |                                                                                    | 11 dB |                                                                                     |  |                                                                                     | —     |                                                                                     |  |                                                                                     |  |
|                         | 9/125 µm fiber           | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                             | 16 dB |                                                                                    | —     |                                                                                     |  |                                                                                     | 16 dB |                                                                                     |  |                                                                                     |  |
| Ethernet services       |                          | Web Management, SNMP V1/V2/V3, BOOTP server, DHCP server, Ethernet TCP/IP, SSH, HTTP, HTTPS, SFTP, LLDP, SNMP-Traps and SYSLOG, IGMP Snooping, VLAN, Telnet, TFTP, address conflict detection, port monitoring, port mirroring, bandwidth management, MAC notification, TCP dump, link flap detection, RMON (remote network monitoring), self test, signal contact, port hardening, password protection, RADIUS assignment, DoS prevention, role-based access control, audit trail, PTP, TSN, IPv6 |                                                                                                                                                                                                                             |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Configuration           |                          | USB Type-C (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                             |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Redundancy              |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | HIPER-ring, RSTP, MRP, link aggregation, link backup, redundant coupling                                                                                                                                                    |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Power supply            | Voltage                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 12...24 V $\overline{\text{---}}$ (9.6...32 V $\overline{\text{---}}$ ) SELV                                                                                                                                                |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         | Consumption              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7 W                                                                                                                                                                                                                         |       |                                                                                    |       | 8 W                                                                                 |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
|                         | Removable terminal block |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6-pin (redundant power supplies)                                                                                                                                                                                            |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Operating temperature   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0...+ 60°C/+ 32...+ 140°F                                                                                                                                                                                                   |       |                                                                                    |       |                                                                                     |  | -40...+ 70°C/ -40...+ 158°F                                                         |       | 0...+ 60°C/+ 32...+ 140°F                                                           |  | -40...+ 70°C/ -40...+ 158°F                                                         |  |
| Relative humidity       |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1...95% non-condensing                                                                                                                                                                                                      |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Degree of protection    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IP 30                                                                                                                                                                                                                       |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Dimensions              |                          | W x H x D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 73 x 142.8 x 117.6 mm/2.87 x 5.62 x 4.57 in.                                                                                                                                                                                |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Mounting                |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                                                                                |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Weight                  |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.500 kg/1.102 lb                                                                                                                                                                                                           |       |                                                                                    |       |                                                                                     |  | 0.570 kg/1.256 lb                                                                   |       | 0.500 kg/1.102 lb                                                                   |  | 0.570 kg/1.256 lb                                                                   |  |
| Conforming to standards |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201, UL 121201 / CSA C22.2 No. 213 Class I Division 2, IEC/EN 60079-0, IEC/EN 60079-15, IACS E10, IEC 50121-4, IEC 61850-3 |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| LED indicators          |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Power supply status, device status, storage medium status, port status                                                                                                                                                      |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Alarm relay             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Detected fault (temperature, ring redundancy, connection errors, external memory, power supply), (volt-free contact 1 A max. at 24 V $\overline{\text{---}}$ )                                                              |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |
| Reference               |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MCSESM093F1CU0                                                                                                                                                                                                              |       | MCSESM093F1CS0                                                                     |       | MCSESM103F2CU0                                                                      |  | MCSESM103F2CU0H                                                                     |       | MCSESM103F2CS0                                                                      |  | MCSESM103F2CS0H                                                                     |  |
| Page                    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 27                                                                                                                                                                                                                          |       |                                                                                    |       |                                                                                     |  |                                                                                     |       |                                                                                     |  |                                                                                     |  |

(1) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 2,000 m/6,561 ft).  
(2) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 15,000 m/49,212 ft).  
(3) The optional reference Memory Backup adapter is available in Separate parts and accessories for switches in [page 32](#).



Industrial Ethernet Switch  
Standard Managed Switch

| Device type             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Standard Managed Switch, 8TX/4GE-TX                                                                                                                                                                                             | Standard Managed Switch, 8TX/4GE-SFP                                                | Standard Managed Switch, 16TX                                                       |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                |  |  |
| Interfaces              | Copper cable ports       | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 8 x 10/100BASE-TX + 4 x 10/100/1000BASE-TX ports                                                                                                                                                                                |                                                                                     |                                                                                     |
|                         |                          | Shielded connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RJ45                                                                                                                                                                                                                            |                                                                                     |                                                                                     |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Shielded twisted pair, category CAT 5E                                                                                                                                                                                          |                                                                                     |                                                                                     |
|                         |                          | Total length of pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100 m/328 ft                                                                                                                                                                                                                    |                                                                                     |                                                                                     |
|                         | Fiber optic ports        | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | –                                                                                                                                                                                                                               |                                                                                     |                                                                                     |
|                         |                          | Connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4 x 100/1000BASE-SFP ports                                                                                                                                                                                                      |                                                                                     |                                                                                     |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SFP (1)                                                                                                                                                                                                                         |                                                                                     |                                                                                     |
|                         | Length of fiber          | 50/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                               |                                                                                     |                                                                                     |
|                         |                          | 62.2/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                                               |                                                                                     |                                                                                     |
|                         |                          | 9/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                               |                                                                                     |                                                                                     |
| Attenuation analysis    | 50/125 µm fiber          | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                 |                                                                                     |                                                                                     |
|                         | 62.2/125 µm fiber        | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                 |                                                                                     |                                                                                     |
|                         | 9/125 µm fiber           | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                 |                                                                                     |                                                                                     |
| Ethernet services       |                          | Web Management, SNMP V1/V2/V3, BOOTP server, DHCP server, Ethernet TCP/IP, SSH, HTTP, HTTPS, SFTP, LLDP, SNMP-Traps and SYSLOG, IGMP Snooping, VLAN, Telnet, TFTP, address conflict detection, port monitoring, port mirroring, bandwidth management, MAC notification, TCP dump, link flap detection, RMON (remote network monitoring), self test, signal contact, port hardening, password protection, RADIUS assignment, DoS prevention, role-based access control, audit trail, PTP, TSN, IPv6 |                                                                                                                                                                                                                                 |                                                                                     |                                                                                     |
| Configuration           |                          | USB Type-C (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                 |                                                                                     |                                                                                     |
| Redundancy              |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | HIPER-ring, RSTP, MRP, link aggregation, link backup, redundant coupling                                                                                                                                                        |                                                                                     |                                                                                     |
| Power supply            | Voltage                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 12...24 V ~ (9.6...32 V ~-) SELV                                                                                                                                                                                                |                                                                                     |                                                                                     |
|                         | Consumption              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9 W                                                                                                                                                                                                                             | 9 W + 1 W per SFP fiber optic module                                                | 10 W                                                                                |
|                         | Removable terminal block |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6-pin (redundant power supplies)                                                                                                                                                                                                |                                                                                     |                                                                                     |
| Operating temperature   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0...+ 60°C/+ 32...+ 140°F                                                                                                                                                                                                       |                                                                                     |                                                                                     |
| Relative humidity       |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1...95% non-condensing                                                                                                                                                                                                          |                                                                                     |                                                                                     |
| Degree of protection    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IP 30                                                                                                                                                                                                                           |                                                                                     |                                                                                     |
| Dimensions              | W x H x D                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 73 x 142.8 x 117.6 mm/2.87 x 5.62 x 4.57 in.                                                                                                                                                                                    |                                                                                     | 108.8 x 142.8 x 117.6 mm/4.28 x 5.62 x 4.57 in.                                     |
| Mounting                |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                                                                                    |                                                                                     |                                                                                     |
| Weight                  |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.700 kg/1.543 lb                                                                                                                                                                                                               | 0.570 kg/1.256 lb                                                                   | 0.880 kg/1.940 lb                                                                   |
| Conforming to standards |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201, UL 121201 / CSA C22.2 No. 213 Class I Division 2, IEC/EN 60079-0, IEC/EN 60079-15, IACS E10, IEC 50121-4 (3), IEC 61850-3 |                                                                                     |                                                                                     |
| LED indicators          |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Power supply status, device status, storage medium status, port status                                                                                                                                                          |                                                                                     |                                                                                     |
| Alarm relay             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Detected fault (temperature, ring redundancy, connection errors, external memory, power supply), (volt-free contact 1 A max. at 24 V ~-)                                                                                        |                                                                                     |                                                                                     |
| Reference               |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MCSESM123F23G0                                                                                                                                                                                                                  | MCSESM123F2LG0                                                                      | MCSESM163F23F0                                                                      |
| Page                    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 27                                                                                                                                                                                                                              |                                                                                     | 28                                                                                  |

(1) These optional references of SFP transceivers are available in Separate parts and accessories for switches in [page 32](#).  
(2) The optional reference Memory Backup adapter is available in Separate parts and accessories for switches in [page 32](#).  
(3) Not applicable to Standard Managed Switch, 16TX - MCSESM163F23F0.

Industrial Ethernet Switch  
Standard Managed Switch,  
PoE Managed Switch

| Device type             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Standard Managed Switch,<br>16TX/4GE-SFP                                                                                                                                                                       | Standard Managed Switch,<br>20TX/4GE-SFP                                            | PoE Managed Switch,<br>8GE-TX                                                       | PoE Managed Switch,<br>8GE-TX, Extended temperature                                 |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                               |  |  |  |
| Interfaces              | Copper cable ports       | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 16 x 10/100BASE-TX ports                                                                                                                                                                                       |                                                                                     | 8 x 10/100/1000BASE-TX ports with PoE                                               |                                                                                     |
|                         |                          | Shielded connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RJ45                                                                                                                                                                                                           |                                                                                     |                                                                                     |                                                                                     |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Shielded twisted pair, category CAT 5E                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                     |
|                         | Fiber optic ports        | Total length of pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100 m/328 ft                                                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|                         |                          | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4 x 100/1000BASE-SFP ports                                                                                                                                                                                     |                                                                                     | –                                                                                   |                                                                                     |
|                         |                          | Connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                              |                                                                                     |                                                                                     |                                                                                     |
|                         | Length of fiber          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SFP (1)                                                                                                                                                                                                        |                                                                                     | –                                                                                   |                                                                                     |
|                         |                          | 50/125 μm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                              |                                                                                     |                                                                                     |                                                                                     |
|                         |                          | 62.2/125 μm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                              |                                                                                     |                                                                                     |                                                                                     |
|                         |                          | 9/125 μm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                              |                                                                                     |                                                                                     |                                                                                     |
| Attenuation analysis    | 50/125 μm fiber          | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |                                                                                     |                                                                                     |                                                                                     |
|                         | 62.2/125 μm fiber        | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |                                                                                     |                                                                                     |                                                                                     |
|                         | 9/125 μm fiber           | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Ethernet services       |                          | Web Management, SNMP V1/V2/V3, BOOTP server, DHCP server, Ethernet TCP/IP, SSH, HTTP, HTTPS, SFTP, LLDP, SNMP-Traps and SYSLOG, IGMP Snooping, VLAN, Telnet, TFTP, address conflict detection, port monitoring, port mirroring, bandwidth management, MAC notification, TCP dump, link flap detection, RMON (remote network monitoring), self test, signal contact, port hardening, password protection, RADIUS assignment, DoS prevention, role-based access control, audit trail, PTP, TSN, IPv6 |                                                                                                                                                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Configuration           |                          | USB Type-C (2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Redundancy              |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | HIPER-ring, RSTP, MRP, link aggregation, link backup, redundant coupling                                                                                                                                       |                                                                                     |                                                                                     |                                                                                     |
| Power supply            | Voltage                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 12...24 V $\overline{\text{---}}$ (9.6...32 V $\overline{\text{---}}$ ) SELV                                                                                                                                   |                                                                                     | 24 V $\overline{\text{---}}$ (18...30 V $\overline{\text{---}}$ ) SELV              |                                                                                     |
|                         | Consumption              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 15 W + 1 W per SFP fiber optic module                                                                                                                                                                          | 16 W + 1 W per SFP fiber optic module                                               | 106 W (90W for PoE Power Output)                                                    |                                                                                     |
|                         | Removable terminal block |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6 - pin (redundant power supplies)                                                                                                                                                                             |                                                                                     |                                                                                     |                                                                                     |
| Operating temperature   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0...+ 60°C/+ 32...+ 140°F                                                                                                                                                                                      |                                                                                     | –40...+ 70°C/ –40...+ 158°F                                                         |                                                                                     |
| Relative humidity       |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1...95% non-condensing                                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                     |
| Degree of protection    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IP 30                                                                                                                                                                                                          |                                                                                     |                                                                                     |                                                                                     |
| Dimensions              |                          | W x H x D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 108.8 x 142.8 x 117.6 mm/4.28 x 5.62 x 4.57 in.                                                                                                                                                                |                                                                                     | 122.4 x 144.2 x 117.15 mm/4.82 x 5.68 x 4.61 in.                                    |                                                                                     |
| Mounting                |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Weight                  |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.95 kg/2.0943 lb                                                                                                                                                                                              | 1.05 kg/2.315 lb                                                                    | 1.4 kg/3.086 lb                                                                     |                                                                                     |
| Conforming to standards |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201, UL 121201 / CSA C22.2 No. 213 Class I Division 2, IEC/EN 60079-0, IEC/EN 60079-15, IACS E10, IEC 61850-3 |                                                                                     |                                                                                     |                                                                                     |
| LED indicators          |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Power supply status, device status, storage medium status, port status                                                                                                                                         |                                                                                     |                                                                                     |                                                                                     |
| Alarm relay             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Detected fault (temperature, ring redundancy, connection errors, external memory, power supply), (volt-free contact 1 A max. at 24 V $\overline{\text{---}}$ )                                                 |                                                                                     |                                                                                     |                                                                                     |
| Reference               |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MCSESM203F4LG0                                                                                                                                                                                                 | MCSESM243F4LG0                                                                      | MCSESP083F23G0                                                                      | MCSESP083F23G0T                                                                     |
| Page                    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 28                                                                                                                                                                                                             |                                                                                     |                                                                                     |                                                                                     |

(1) These optional references of SFP transceivers are available in Separate parts and accessories for switches in [page 32](#).  
(2) The optional reference Memory Backup adapter is available in Separate parts and accessories for switches in [page 32](#).

Industrial Ethernet Switch  
Extended Managed Switch

| Device type             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Extended Managed Switch, 8TX                                                                                                                                                                                   |   | Extended Managed Switch, 8TX, Harsh                                                |                            | Extended Managed Switch, 8TX/2FX-MM                                                 |                           | Extended Managed Switch, 8TX/2FX-MM, Harsh                                          |                            | Extended Managed Switch, 8TX/2FX-SM                                                 |                           | Extended Managed Switch, 8TX/2FX-SM, Harsh                                          |                            |                   |  |  |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------------|----------------------------|-------------------|--|--|
|                         |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                               |   |  |                            |  |                           |  |                            |  |                           |  |                            |                   |  |  |
| Interfaces              | Copper cable ports       | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 8 x 10/100BASE-TX ports                                                                                                                                                                                        |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | Shielded connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RJ45                                                                                                                                                                                                           |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Shielded twisted pair, category CAT 5E                                                                                                                                                                         |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | Total length of pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100 m/328 ft                                                                                                                                                                                                   |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         | Fiber optic ports        | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | –                                                                                                                                                                                                              |   |                                                                                    |                            |                                                                                     | 2 x 100BASE-FX ports      |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | Connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                              |   |                                                                                    |                            |                                                                                     | Duplex SC                 |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | –                                                                                                                                                                                                              |   |                                                                                    |                            |                                                                                     | Multimode fiber           |                                                                                     | Single-mode fiber          |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | Length of fiber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 50/125 µm                                                                                                                                                                                                      | – |                                                                                    |                            |                                                                                     |                           | 5,000 m/16,404 ft (1)                                                               |                            | –                                                                                   |                           |                                                                                     |                            |                   |  |  |
|                         | Attenuation analysis     | 62.2/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                              |   |                                                                                    |                            |                                                                                     | 4,000 m/13,123 ft (1)     |                                                                                     | –                          |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | 9/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                              |   |                                                                                    |                            |                                                                                     |                           |                                                                                     | 30,000 m/98,425 ft (2)     |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | 50/125 µm fiber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | –                                                                                                                                                                                                              |   |                                                                                    |                            |                                                                                     | 8 dB                      |                                                                                     | –                          |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         |                          | 62.2/125 µm fiber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | –                                                                                                                                                                                                              |   |                                                                                    |                            |                                                                                     | 11 dB                     |                                                                                     | –                          |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         | 9/125 µm fiber           | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |   |                                                                                    |                            |                                                                                     |                           | 16 dB                                                                               |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         | Ethernet services        | Web Management, SNMP V1/V2/V3, BOOTP server, DHCP server, Ethernet TCP/IP, SSH, HTTP, HTTPS, SFTP, LLDP, SNMP-Traps and SYSLOG, IGMP Snooping, VLAN, Telnet, TFTP, address conflict detection, port monitoring, port mirroring, bandwidth management, MAC notification, TCP dump, link flap detection, RMON (remote network monitoring), self test, signal contact, port hardening, password protection, RADIUS assignment, DoS prevention, role-based access control, audit trail, PTP, TSN, IPv6 |                                                                                                                                                                                                                |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Configuration           | USB Type-C (3)           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Redundancy              |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | HIPER-ring, RSTP, MRP, link aggregation, link backup, redundant coupling, dual-RSTP ring coupling                                                                                                              |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Power supply            | Voltage                  | 12...24 V $\overline{\text{---}}$ (9.6...32 V $\overline{\text{---}}$ ) SELV                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         | Consumption              | 6 W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                |   |                                                                                    |                            | 8 W                                                                                 |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
|                         | Removable terminal block | 6 - pin (redundant power supplies)                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Operating temperature   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0...+ 60°C/+ 32...+ 140°F                                                                                                                                                                                      |   |                                                                                    | –40...+ 70°C/–40...+ 158°F |                                                                                     | 0...+ 60°C/+ 32...+ 140°F |                                                                                     | –40...+ 70°C/–40...+ 158°F |                                                                                     | 0...+ 60°C/+ 32...+ 140°F |                                                                                     | –40...+ 70°C/–40...+ 158°F |                   |  |  |
| Relative humidity       |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1...95% non-condensing                                                                                                                                                                                         |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Degree of protection    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IP 30                                                                                                                                                                                                          |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Dimensions              |                          | W x H x D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 73 x 142.8 x 117.6 mm/2.87 x 5.62 x 4.57 in.                                                                                                                                                                   |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Mounting                |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                                                                   |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Weight                  |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.420 kg/0.925 lb                                                                                                                                                                                              |   |                                                                                    | 0.500 kg/1.102 lb          |                                                                                     |                           | 0.570 kg/1.256 lb                                                                   |                            |                                                                                     | 0.500 kg/1.102 lb         |                                                                                     |                            | 0.570 kg/1.256 lb |  |  |
| Conforming to standards |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IEC/EN 61131-2, UL 61010-1, UL 61010-2-201, CAN/CSA C22.2 No. 61010-1, CAN/CSA C22.2 No. 61010-2-201, UL 121201 / CSA C22.2 No. 213 Class I Division 2, IEC/EN 60079-0, IEC/EN 60079-15, IACS E10, IEC 61850-3 |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| LED indicators          |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Power supply status, device status, storage medium status, port status                                                                                                                                         |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Alarm relay             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Detected fault (temperature, ring redundancy, connection errors, external memory, power supply) (volt-free contact 1 A max. at 24 V $\overline{\text{---}}$ )                                                  |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |
| Reference               |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MCSESM083F23F1                                                                                                                                                                                                 |   | MCSESM083F23F1H                                                                    |                            | MCSESM103F2CU1                                                                      |                           | MCSESM103F2CU1H                                                                     |                            | MCSESM103F2CS1                                                                      |                           | MCSESM103F2CS1H                                                                     |                            |                   |  |  |
| Page                    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 28                                                                                                                                                                                                             |   |                                                                                    |                            |                                                                                     |                           |                                                                                     |                            |                                                                                     |                           |                                                                                     |                            |                   |  |  |

(1) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 2,000 m/6,561 ft).  
(2) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 15,000 m/49,212 ft).  
(3) The optional reference Memory Backup adapter is available in Separate parts and accessories for switches in [page 32](#).

Industrial Ethernet Switch  
Redundancy Switch

| Device type             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | Redundancy Switch, 4TX                                                                                                                                            | Redundancy Switch, 4TX, Coated                                                      | Redundancy Switch, 2TX/2SFP                                                         | Redundancy Switch, 2TX/2SFP, Coated                                                 |                            |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------|
|                         |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                  |  |  |  |                            |
| Interfaces              | Copper cable ports       | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                              | 4 x 10/100BASE-TX ports                                                                                                                                           |                                                                                     |                                                                                     | 2 x 10/100BASE-TX ports                                                             |                            |
|                         |                          | Shielded connectors                                                                                                                                                                                                                                                                                                                                                                                                                          | RJ45                                                                                                                                                              |                                                                                     |                                                                                     |                                                                                     |                            |
|                         |                          | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                       | Shielded twisted pair, category CAT 5E                                                                                                                            |                                                                                     |                                                                                     |                                                                                     |                            |
|                         |                          | Total length of pair                                                                                                                                                                                                                                                                                                                                                                                                                         | 100 m/328 <i>ft</i>                                                                                                                                               |                                                                                     |                                                                                     |                                                                                     |                            |
|                         | Fiber optic ports        | Number and type                                                                                                                                                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                 |                                                                                     |                                                                                     | 2 x 100BASE-SFP ports                                                               |                            |
|                         |                          | Connectors                                                                                                                                                                                                                                                                                                                                                                                                                                   | –                                                                                                                                                                 |                                                                                     |                                                                                     | SFP (1)                                                                             |                            |
|                         | Medium                   | –                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |                            |
|                         | Length of fiber          | 50/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                    | –                                                                                                                                                                 |                                                                                     |                                                                                     |                                                                                     |                            |
|                         |                          | 62.2/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                  | –                                                                                                                                                                 |                                                                                     |                                                                                     |                                                                                     |                            |
|                         |                          | 9/125 µm                                                                                                                                                                                                                                                                                                                                                                                                                                     | –                                                                                                                                                                 |                                                                                     |                                                                                     |                                                                                     |                            |
| Attenuation analysis    | 50/125 µm fiber          | –                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |                            |
|                         | 62.2/125 µm fiber        | –                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |                            |
|                         | 9/125 µm fiber           | –                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |                            |
| Ethernet services       |                          | Web Management, SNMP V1/V2/V3, BOOTP server, DHCP server, Ethernet TCP/IP, SSH, HTTP, HTTPS, SFTP, LLDP, SNMP-Traps and SYSLOG, IGMP Snooping, VLAN, Telnet, TFTP, address conflict detection, port monitoring, port mirroring, bandwidth management, MAC notification, TCP dump, link flap detection, RMON (remote network monitoring), self test, signal contact, password protection, RADIUS assignment, DoS prevention, audit trail, PTP |                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |                            |
| Configuration           |                          | USB Type-A (2), V.24                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                     |                            |
| Redundancy              |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | RSTP, MRP, link aggregation, link backup, PRP                                                                                                                     |                                                                                     |                                                                                     |                                                                                     |                            |
| Power supply            | Voltage                  |                                                                                                                                                                                                                                                                                                                                                                                                                                              | 12...48 V $\overline{\text{---}}$ (9.6...60 V $\overline{\text{---}}$ ) / 24 V~(18...30 V~) SELV                                                                  |                                                                                     |                                                                                     |                                                                                     |                            |
|                         | Consumption              |                                                                                                                                                                                                                                                                                                                                                                                                                                              | 7 W                                                                                                                                                               |                                                                                     | 9 W                                                                                 |                                                                                     |                            |
|                         | Removable terminal block |                                                                                                                                                                                                                                                                                                                                                                                                                                              | 6 - pin (redundant power supplies)                                                                                                                                |                                                                                     |                                                                                     |                                                                                     |                            |
| Operating temperature   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0...+ 60°C/+ 32...+ 140°F                                                                                                                                         | -40...+ 60°C/-40...+ 140°F                                                          |                                                                                     | 0...+ 60°C/+ 32...+ 140°F                                                           | -40...+ 60°C/-40...+ 140°F |
| Relative humidity       |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | 10...95% non-condensing                                                                                                                                           |                                                                                     |                                                                                     |                                                                                     |                            |
| Degree of protection    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | IP 20                                                                                                                                                             |                                                                                     |                                                                                     |                                                                                     |                            |
| Dimensions              |                          | W x H x D                                                                                                                                                                                                                                                                                                                                                                                                                                    | 46 x 130 x 105 mm/1.81 x 5.11 x 4.13in.                                                                                                                           |                                                                                     |                                                                                     |                                                                                     |                            |
| Mounting                |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                      |                                                                                     |                                                                                     |                                                                                     |                            |
| Weight                  |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.290 kg/0.639 lb                                                                                                                                                 |                                                                                     | 0.291 kg/0.641 lb                                                                   |                                                                                     |                            |
| Conforming to standards |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | IEC/EN 61131-2, UL 61010-2-201 / CSA C22.2 No 61010-2-201                                                                                                         |                                                                                     |                                                                                     |                                                                                     |                            |
| LED indicators          |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | Power supply status, device status, storage medium status, redundancy status, port status                                                                         |                                                                                     |                                                                                     |                                                                                     |                            |
| Alarm relay             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | Detected fault (temperature, ring redundancy, connection errors, external memory, power supply) (volt-free contact 1000 mA max. at 24 V $\overline{\text{---}}$ ) |                                                                                     |                                                                                     |                                                                                     |                            |
| Reference               |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | MCSESR043F23F0                                                                                                                                                    | MCSESR043F23F0C                                                                     | MCSESR043F2LM0                                                                      | MCSESR043F2LM0C                                                                     |                            |
| Page                    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              | 29                                                                                                                                                                |                                                                                     |                                                                                     |                                                                                     |                            |

(1) These optional references of SFPtransceivers are available in Separate parts and accessories for switches on page 32. Only 100BASE SFPtransceivers are applicable for redundancy managed switches.  
(2) The optional reference Memory Backup adapter is available in Separate parts and accessories for switches on page 32.

| Device type             |                          |                                                                                                                 | Tofino Industrial Firewall TX/TX                                                                                                                                                                                                                                                                                                                    | Industrial Firewall/Router TX/TX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Industrial Firewall/Router TX/MM                                                                                                                                             |
|-------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |                          |                                                                                                                 |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                           |
| Interfaces              | Copper cable ports       | Number and type                                                                                                 | 2 x 10/100 BASE-TX ports for internal and external networks                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | Shielded connectors                                                                                             | RJ45 type                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | Medium                                                                                                          | Shielded twisted pair, category CAT 5E                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | Total length of pair                                                                                            | 100 m/328 ft                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         | Fiber optic ports        | Number and type                                                                                                 | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | Connectors                                                                                                      | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | Medium                                                                                                          | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         | Length of fiber          | 50/125 µm                                                                                                       | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | 62.2/125 µm                                                                                                     | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | 9/125 µm                                                                                                        | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         | Attenuation analysis     | 50/125 µm fiber                                                                                                 | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | 62.2/125 µm fiber                                                                                               | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         |                          | 9/125 µm                                                                                                        | –                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
| Configuration tools     |                          | PC-based software tool (Tofino Configurator) that is used to create configuration files for Tofino Firewall     |                                                                                                                                                                                                                                                                                                                                                     | V.24 connection; Ethernet Switch Configurator protocol via the application Ethernet Switch Configurator; Memory Backup Adapter; Graphical User Interface                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| Security capabilities   |                          |                                                                                                                 | Built-in security modules (Firewall, Event Logger, Modbus/TCP Enforcer, NetConnect), optional field upgradeable modules for adding the new LSM modules for other protocols ( OPC, EIP, DNP3, IEC104 and GOOSE), Tofino Configurator for creating secure zones, DoS prevention and MAC address filtering for encryption protocol.                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Built-in security modules (Firewall, Event Logger, NetConnect), role-based access control, syslog protocol support, IPSec and MAC address filtering for encryption protocol. |
| Power supply            | Voltage                  | 12...24 V  (9.6...32 V) SELV |                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         | Consumption              | 6.9 W                                                                                                           |                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
|                         | Removable terminal block | 6-pin (Redundant power supplies)                                                                                |                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 8.3 W                                                                                                                                                                        |
| Operating temperature   |                          |                                                                                                                 | 0° to 60° C/ 32° to 140° F                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
| Relative humidity       |                          |                                                                                                                 | 10 to 95% non-condensing                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
| Degree of protection    |                          |                                                                                                                 | IP 20                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
| Dimensions              |                          | W x H x D                                                                                                       | 60 x 145 x 125 mm /2.36 x 5.71 x 4.92 in.                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
| Mounting                |                          |                                                                                                                 | On symmetrical DIN rail, 35 mm/1.38 in. wide                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |
| Weight                  |                          |                                                                                                                 | 0.660 kg/1.455 lb                                                                                                                                                                                                                                                                                                                                   | 0.610 kg/1.345 lb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                              |
| Conforming to standards |                          |                                                                                                                 | IEC 60068-2-6, IEC 60068-2-27, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-9, EN 55022 class A/FCC 47 CFR Part 15 class A cUL 508:1988, C€ (1), German Lloyd VI-7-3 Part 1 Ed. 2003, RoHS Directive, CSA C22.2 No 213 Class I Division 2, UL 1604 Class 1 Division 2, CSA C22.2 No 214, UL 508, EN/IEC 61131-2 | EN 50121-4, EN 55022 (Class A), EN 60079-15, EN 60950-1, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-9, EN 61000-4-12, EN 61000-6-2, EN 61000-6-4, GL Guidelines VI-7-3 Part 1 Ed.2003 (EMC 1), FCC 47 CFR Part 15 (Class A), IEC 60068-2-6, IEC 60068-2-27, IEC 60825-1, IEC 61131-2, IEC/EN 61850-3, IEEE 802.1AB, IEEE 802.3-2002, IEEE 802.3ac, IEEE 1613, IEEE C37.90.1, IEEE C37.90.3, UL 508, 2011/65/EU (RoHS), 2004/108/EC (EMC), UL 508, CSA C22.2 No 213 Class I Division 2, CSA C22.2 No 214, UL 1604 Class 1 Division 2, EN/IEC 61131-2 |                                                                                                                                                                              |
| LED indicators          |                          |                                                                                                                 | Power supply, link activity, detected fault, mode, save/load, reset                                                                                                                                                                                                                                                                                 | Device state: Power Supply 1, Power Supply 2, Detected Fault, Device Status, Router redundancy mode, EAM storage medium status; VPN status; Port state: Link status, Data status, External Port Status, Internal Port Status, Serial Port Status                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                              |
| References              |                          |                                                                                                                 | TCSEFEA23F3F22                                                                                                                                                                                                                                                                                                                                      | TCSEFEC23F3F21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TCSEFEC23FCF21                                                                                                                                                               |
| Page                    |                          |                                                                                                                 | 30                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                              |

(1) The Tofino Industrial Ethernet Firewalls TCSEFEA23F3F20 and TCSEFEA23F3F21 are also compliant with Germanischer Lloyd VI-7-3 Part 1 Ed. 2003 certification.  
(2) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 2,000 m/6,561 ft).  
(3) Length dependent on the attenuation analysis and attenuation of the fiber (typical value: 15,000 m/49,212 ft).

| Features                                   |                                 | Unmanaged Switches |           |            | Managed Switches |           |                            |                            |                            |
|--------------------------------------------|---------------------------------|--------------------|-----------|------------|------------------|-----------|----------------------------|----------------------------|----------------------------|
|                                            |                                 | Standard           | Premium   | IP67       | Lite             | Basic     | Standard                   | Extended                   | PoE                        |
|                                            |                                 | MCSESU●            | MCSEPU●   | TCSESU051● | TCSESL●          | TCSESB●   | MCSESM●0(H)                | MCSESM●1(H)                | MCSESP●                    |
| Number of Ports (Copper, Fiber Optic, SFP) |                                 | 5..8               | 5..9      | 5          | 4                | 8..9      | 4..24                      | 8..10                      | 8                          |
| Max. Number of Copper Ports                |                                 | 8                  | 7         | 5          | 4                | 8 (6 (1)) | 20                         | 8                          | 8                          |
| Max. Number of Fiber Optic or SFP Ports    |                                 | 2                  | 2         |            |                  | 3         | 4                          | 2                          |                            |
| Max. Transition rate                       |                                 | 100Mbps            | 100Mbps   | 100Mbps    | 100Mbps          | 100Mbps   | 1000Mbps                   | 100Mbps                    | 1000Mbps                   |
| Operating Temperature                      |                                 | 0..60°C            | -40..70°C | 0..60°C    | 0..60°C          | 0..60°C   | 0..60°C<br>(-40..70°C (2)) | 0..60°C<br>(-40..70°C (2)) | 0..60°C<br>(-40..70°C (2)) |
| IP Degree of Protection                    |                                 | IP30               | IP40      | IP67       | IP30             | IP20      | IP30                       | IP30                       | IP30                       |
| Availability Hazardous Location            |                                 | –                  | ✓         | –          | –                |           | ✓                          | ✓                          | ✓                          |
| Redundant Power Supply Input               |                                 | –                  | ✓         | –          | –                | ✓         | ✓                          | ✓                          | ✓                          |
| Signal Contact                             |                                 | –                  | ✓         | –          | –                | ✓         | ✓                          | ✓                          | ✓                          |
| Web interface                              | HTTP                            | –                  | –         | –          | –                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | HTTPS                           | –                  | –         | –          | ✓                | ✓         | ✓                          | ✓                          | ✓                          |
| Diagnostics                                | SNMP                            | –                  | –         | –          | ✓                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | Alarms                          | –                  | ✓         | –          | ✓                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | LLDP                            | –                  | –         | –          | ✓                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | Port Mirroring                  | –                  | –         | –          |                  | ✓         | ✓                          | ✓                          | ✓                          |
| Cyber Security                             | Password                        | –                  | –         | –          | ✓                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | Access Control List (IP or MAC) | –                  | –         | –          | –                | –         | ✓                          | ✓                          | –                          |
|                                            | Denial-of-Service               | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
|                                            | Local Role-based Access Control | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
| Redundancy                                 | RSTP                            | –                  | –         | –          | ✓                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | MRP                             | –                  | –         | –          | –                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | HIPER-ring                      | –                  | –         | –          | –                | ✓         | ✓                          | ✓                          | –                          |
|                                            | Link aggregation                | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
|                                            | Link backup                     | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
|                                            | Redundant network/ring coupling | –                  | –         | –          | –                | –         | ✓                          | ✓                          | –                          |
|                                            | Dual RSTP ring coupling         | –                  | –         | –          | –                | –         | –                          | ✓                          | –                          |
|                                            | PRP                             | –                  | –         | –          | –                | –         | –                          | –                          | ✓                          |
|                                            | HSR                             | –                  | –         | –          | –                | –         | –                          | –                          | –                          |
|                                            | DLR                             | –                  | –         | –          | –                | –         | –                          | –                          | –                          |
| Switching/ Performance                     | QoS                             | –                  | ✓         |            | ✓                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | Multicast IGMP/GMRP             | –                  | –         | –          | –                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | Flow Control                    | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
| Filtering                                  | VLAN                            | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
|                                            | Broadcast Limiting              | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
| Time                                       | SNTP                            | –                  | –         | –          | –                | ✓         | ✓                          | ✓                          | ✓                          |
|                                            | PTP                             | –                  | –         | –          | –                | –         | ✓                          | ✓                          | ✓                          |
| Advanced Function                          | IPv6                            | –                  | –         | –          | –                | –         | ✓                          | ✓                          | –                          |
|                                            | TSN                             | –                  | –         | –          | –                | –         | ✓                          | ✓                          | –                          |
|                                            | OPC UA                          | –                  | –         | –          | –                | –         | ✓ (3)                      | ✓ (3)                      | ✓ (3)                      |

(1) Max. 6 copper ports for fiber optic variants.

(2) Only for harsh, extended temperature or coated variants.

(3) To be supported with the future software upgrade.



MCSESU053FN0



MCSESU053F1CU0



MCSESU083FN0

MCSESU083F2CU0  
MCSESU083F2CS0TCSESPU053F1CU0  
TCSESPU053F1CS0

TCSESPU083FN0

TCSESPU093F2CU0  
TCSESPU093F2CS0

TCSESU051F0

### Standard unmanaged switches, 5~8 ports, twisted pair and fiber optic

#### References

| Description                          | Interfaces                                                                                                                            | Reference                      | Weight<br>kg/<br>lb |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|
| Standard Unmanaged Switch 5TX        | ■ 5 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                    | <a href="#">MCSESU053FN0</a>   | 0.125/<br>0.275     |
| Standard Unmanaged Switch 4TX/1FX-MM | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 1 x 100BASE-FX port (multimode fiber), duplex SC connector    | <a href="#">MCSESU053F1CU0</a> | 0.130/<br>0.285     |
| Standard Unmanaged Switch 8TX        | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                    | <a href="#">MCSESU083FN0</a>   | 0.150/<br>0.331     |
| Standard Unmanaged Switch 6TX/2FX-MM | ■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX port (multimode fiber), duplex SC connector    | <a href="#">MCSESU083F2CU0</a> | 0.235/<br>0.518     |
| Standard Unmanaged Switch 6TX/2FX-SM | ■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX port (single mode fiber), duplex SC connectors | <a href="#">MCSESU083F2CS0</a> | 0.235/<br>0.518     |

### Premium unmanaged switches, 5~9 ports, twisted pair and fiber optic

#### References

| Description                         | Interfaces                                                                                                                           | Reference                       | Weight<br>kg/<br>lb |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------|
| Premium Unmanaged Switch 4TX/1FX-MM | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 1 x 100BASE-FX port (multimode fiber), duplex SC connector   | <a href="#">TCSESPU053F1CU0</a> | 0.430/<br>0.948     |
| Premium Unmanaged Switch 4TX/1FX-SM | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 1 x 100BASE-FX port (singlemode fiber), duplex SC connectors | <a href="#">TCSESPU053F1CS0</a> | 0.430/<br>0.948     |
| Premium Unmanaged Switch 8TX        | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                   | <a href="#">TCSESPU083FN0</a>   | 0.440/<br>0.970     |
| Premium Unmanaged Switch 7TX/2FX-MM | ■ 7 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (multimode fiber), duplex SC connector  | <a href="#">TCSESPU093F2CU0</a> | 0.510/<br>1.124     |
| Premium Unmanaged Switch 7TX/2FX-SM | ■ 7 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (singlemode fiber), duplex SC connector | <a href="#">TCSESPU093F2CS0</a> | 0.510/<br>1.124     |

### IP67 unmanaged switch, 5 ports, twisted pair

#### References

| Description               | Interfaces                                                                     | Reference                   | Weight<br>kg/<br>lb |
|---------------------------|--------------------------------------------------------------------------------|-----------------------------|---------------------|
| IP67 Unmanaged Switch 5TX | ■ 5 x 10/100BASE-TX ports (copper cable), shielded M12 type D connectors, IP67 | <a href="#">TCSESU051F0</a> | 0.210/<br>0.463     |



TCSESL043F23F0



TCSESB083F23F0



TCSESB083F2CU0



TCSESB093F2CU0



MCSESM043F23F0

MCSESM053F1CU0  
MCSESM053F1CS0MCSESM063F2CU0  
MCSESM063F2CS0

### Lite managed switch, 4 ports, twisted pair

#### References

| Description                    | Interfaces                                                         | Reference                      | Weight<br>kg/<br>lb |
|--------------------------------|--------------------------------------------------------------------|--------------------------------|---------------------|
| <b>Lite Managed Switch 4TX</b> | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors | <a href="#">TCSESL043F23F0</a> | 0.103/<br>0.227     |

### Basic managed switches, 8 and 9 ports, twisted pair and fiber optic

#### References

| Description                            | Interfaces                                                                                                                          | Reference                      | Weight<br>kg/<br>lb |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|
| <b>Basic Managed Switch 8TX</b>        | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                  | <a href="#">TCSESB083F23F0</a> | 0.400/<br>0.882     |
| <b>Basic Managed Switch 6TX/2FX-MM</b> | ■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (multimode fiber), duplex SC connector | <a href="#">TCSESB083F2CU0</a> | 0.410/<br>0.904     |
| <b>Basic Managed Switch 6TX/3FX-MM</b> | ■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 3 x 100BASE-FX ports (multimode fiber), duplex SC connector | <a href="#">TCSESB093F2CU0</a> | 0.410/<br>0.904     |

### Standard managed switches, 4~6 ports, twisted pair and fiber optic

#### References

| Description                               | Interfaces                                                                                                                            | Reference                      | Weight<br>kg/<br>lb |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|
| <b>Standard Managed Switch 4TX</b>        | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                    | <a href="#">MCSESM043F23F0</a> | 0.380/<br>0.837     |
| <b>Standard Managed Switch 4TX/1FX-MM</b> | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 1 x 100BASE-FX ports (multimode fiber), duplex SC connector   | <a href="#">MCSESM053F1CU0</a> | 0.420/<br>0.925     |
| <b>Standard Managed Switch 4TX/1FX-SM</b> | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 1 x 100BASE-FX ports single mode fiber, duplex SC connector   | <a href="#">MCSESM053F1CS0</a> | 0.420/<br>0.925     |
| <b>Standard Managed Switch 4TX/2FX-MM</b> | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (multimode fiber), duplex SC connector   | <a href="#">MCSESM063F2CU0</a> | 0.420/<br>0.925     |
| <b>Standard Managed Switch 4TX/2FX-SM</b> | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (single mode fiber), duplex SC connector | <a href="#">MCSESM063F2CS0</a> | 0.420/<br>0.925     |



MCSESM083F23F0  
MCSESM083F23F0H



MCSESM093F1CU0  
MCSESM093F1CS0



MCSESM103F2CU0  
MCSESM103F2CU0H  
MCSESM103F2CS0  
MCSESM103F2CS0H



MCSESM123F2LG0



MCSESM123F23G0

### Standard managed switches, 8~10 ports, twisted pair and fiber optic

#### References

| Description                                       | Interfaces                                                                                                                                | Reference                       | Weight<br>kg/<br>lb |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------|
| <b>Standard Managed Switch 8TX</b>                | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                        | <a href="#">MCSESM083F23F0</a>  | 0.420/<br>0.925     |
| <b>Standard Managed Switch 8TX - Harsh</b>        | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                        | <a href="#">MCSESM083F23F0H</a> | 0.500/<br>1.102     |
| <b>Standard Managed Switch 8TX/1FX-MM</b>         | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 1 x 100BASE-FX ports (multimode fiber), duplex SC connector       | <a href="#">MCSESM093F1CU0</a>  | 0.500/<br>1.102     |
| <b>Standard Managed Switch 8TX/1FX-SM</b>         | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 1 x 100BASE-FX ports (single mode fiber), duplex SC connector     | <a href="#">MCSESM093F1CS0</a>  | 0.500/<br>1.102     |
| <b>Standard Managed Switch 8TX/2FX-MM</b>         | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, 1 Gb<br>■ 2 x 100BASE-FX ports (multimode fiber), duplex SC connector | <a href="#">MCSESM103F2CU0</a>  | 0.500/<br>1.102     |
| <b>Standard Managed Switch 8TX/2FX-MM - Harsh</b> | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (multimode fiber), duplex SC connector       | <a href="#">MCSESM103F2CU0H</a> | 0.570/<br>1.256     |
| <b>Standard Managed Switch 8TX/2FX-SM</b>         | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (single mode fiber), duplex SC connectors    | <a href="#">MCSESM103F2CS0</a>  | 0.500/<br>1.102     |
| <b>Standard Managed Switch 8TX/2FX-SM - Harsh</b> | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (single mode fiber), duplex SC connector     | <a href="#">MCSESM103F2CS0H</a> | 0.570/<br>1.256     |

### Standard managed switches, 12 ports (including up to 4 Gigabit ports), twisted pair and SFP

#### References

| Description                                | Interfaces                                                                                                                                    | Reference                      | Weight<br>kg/<br>lb |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|
| <b>Standard Managed Switch 8TX/4GE-SFP</b> | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 4 x 100/1000BASE-SFP (fiber optic or copper cable)                    | <a href="#">MCSESM123F2LG0</a> | 0.570/<br>1.256     |
| <b>Standard Managed Switch 8TX/4GE-TX</b>  | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 4 x 10/100/1000BASE-TX ports (copper cable), RJ45 shielded connectors | <a href="#">MCSESM123F23G0</a> | 0.700/<br>1.543     |



MCSESM163F23F0



MCSESM203F4LG0



MCSESM243F4LG0

MCSESP083F23G0  
MCSESP083F23G0TMCSESM083F23F1  
MCSESM083F23F1HMCSESM103F2CU1  
MCSESM103F2CU1H  
MCSESM103F2CS1  
MCSESM103F2CS1H

### Standard managed switches, 16~24 ports (including up to 4 Gigabit ports), twisted pair and SFP

#### References

| Description                          | Interfaces                                                                                                                  | Reference                      | Weight<br>kg/<br>lb |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|
| Standard Managed Switch 16TX         | ■ 16 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                         | <a href="#">MCSESM163F23F0</a> | 0.880/<br>1.940     |
| Standard Managed Switch 16TX/4GE-SFP | ■ 16 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 4 x 100/1000BASE-SFP (fiber optic or copper cable) | <a href="#">MCSESM203F4LG0</a> | 0.95/<br>2.0943     |
| Standard Managed Switch 20TX/4GE-SFP | ■ 20 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 4 x 100/1000BASE-SFP (fiber optic or copper cable) | <a href="#">MCSESM243F4LG0</a> | 1.05/<br>2.315      |

### PoE managed switches, 8 Gigabit ports, twisted pair with PoE

#### References

| Description                       | Interfaces                                                              | Reference                       | Weight<br>kg/<br>lb |
|-----------------------------------|-------------------------------------------------------------------------|---------------------------------|---------------------|
| PoE Managed Switch 8GE-TX         | ■ 8 x 10/100/1000BASE-TX ports (copper cable), RJ45 shielded connectors | <a href="#">MCSESP083F23G0</a>  | 1.400/<br>3.086     |
| PoE Managed Switch 8GE-TX - Harsh | ■ 8 x 10/100/1000BASE-TX ports (copper cable), RJ45 shielded connectors | <a href="#">MCSESP083F23G0T</a> | 1.400/<br>3.086     |

### Extended managed switches, 8~10 ports, twisted pair and fiber optic

#### References

| Description                                | Interfaces                                                                                                                            | Reference                       | Weight<br>kg/<br>lb |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------|
| Extended Managed Switch 8TX                | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                    | <a href="#">MCSESM083F23F1</a>  | 0.420/<br>0.925     |
| Extended Managed Switch 8TX - Harsh        | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                                    | <a href="#">MCSESM083F23F1H</a> | 0.500/<br>1.102     |
| Extended Managed Switch 8TX/2FX-MM         | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (multimode fiber), duplex SC connector   | <a href="#">MCSESM103F2CU1</a>  | 0.500/<br>1.102     |
| Extended Managed Switch 8TX/2FX-MM - Harsh | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (multimode fiber), duplex SC connector   | <a href="#">MCSESM103F2CU1H</a> | 0.570/<br>1.256     |
| Extended Managed Switch 8TX/2FX-SM         | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (single-mode fiber), duplex SC connector | <a href="#">MCSESM103F2CS1</a>  | 0.500/<br>1.102     |
| Extended Managed Switch 8TX/2FX-SM - Harsh | ■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-FX ports (single-mode fiber), duplex SC connector | <a href="#">MCSESM103F2CS1H</a> | 0.570/<br>1.256     |



MCSESR043F23F0  
MCSESR043F23F0C



MCSESR043F2LM0  
MCSESR043F2LM0C

### Redundancy Switch, 4 ports, twisted pair and SFP

#### References

| Description                         | Interfaces                                                                                                            | Reference                       | Weight<br>kg/<br>lb |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------|
| Redundancy Switch 4TX               | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                    | <a href="#">MCSESR043F23F0</a>  | 0.290/<br>0.639     |
| Redundancy Switch 4TX - Coated      | ■ 4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors                                                    | <a href="#">MCSESR043F23F0C</a> | 0.290/<br>0.639     |
| Redundancy Switch 2TX/2SFP          | ■ 2 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-SFP (fiber optic or copper cable) | <a href="#">MCSESR043F2LM0</a>  | 0.291/<br>0.641     |
| Redundancy Switch 2TX/2SFP - Coated | ■ 2 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors<br>■ 2 x 100BASE-SFP (fiber optic or copper cable) | <a href="#">MCSESR043F2LM0C</a> | 0.291/<br>0.641     |



TCSEFEA23F3F22  
TCSEFEC23F3F21  
TCSEFEC23FCF21

| Industrial firewalls                 |                                                                                                |                |                     |
|--------------------------------------|------------------------------------------------------------------------------------------------|----------------|---------------------|
| References                           |                                                                                                |                |                     |
| Description                          | Interfaces                                                                                     | Reference      | Weight<br>kg/<br>lb |
| Tofino Industrial Firewall TX/TX (1) | ■ 2 x 10/100BASE-TX ports (copper cable) for internal and external network connections         | TCSEFEA23F3F22 | 0.660/<br>1.455     |
| Industrial Firewall/Router TX/TX     | ■ 2 x 10/100BASE-TX ports (copper cable) for internal and external network connections         | TCSEFEC23F3F21 | 0.610/<br>1.345     |
| Industrial Firewall/Router TX/MM     | ■ 1 x 10/100BASE-TX port for internal network<br>■ 1 x 10/100BASE-TX port for external network | TCSEFEC23FCF21 | 0.610/<br>1.345     |

(1) Modbus/TCP Enforcer is natively integrated in the Tofino firewall software.

### Shielded copper connection cables

Ethernet shielded connection cables are available in two versions to meet the various current standards and approvals:

#### ■ EIA/TIA 568 shielded twisted pair cables for C€ market

These cables conform to:

- EIA/TIA-568 standard, category CAT 5E
- IEC 11801/EN 50173-1 standard, class D

Their fire resistance conforms to:

- NF C32-070 standard, class C2
- IEC 322/1 standards
- Low Smoke Zero Halogen (LSZH)

#### ■ EIA/TIA 568 shielded twisted pair cables for UL market

These cables are:

- CEC type FT-1
- NEC type CM

A range of fully shielded preassembled cables has been specially designed for use in harsh industrial environments. These cables combine a category 5E shielded cable and RJ45 connectors reinforced with a metal profile.



#### EIA/TIA 568 shielded twisted pair cables for C€ market

| Description                                            | Connectors                                                                     | Type     | Length<br>m/ft | Reference                      | Weight<br>kg/<br>lb |
|--------------------------------------------------------|--------------------------------------------------------------------------------|----------|----------------|--------------------------------|---------------------|
| <b>Straight-through copper cables</b><br>C€ compatible | 2 x RJ45 connectors<br>For connection to terminal equipment (DTE)              | Standard | 2/6.56         | <a href="#">490NTW00002</a>    | —                   |
|                                                        |                                                                                |          | 5/16.40        | <a href="#">490NTW00005</a>    | —                   |
|                                                        |                                                                                |          | 12/39.37       | <a href="#">490NTW00012</a>    | —                   |
|                                                        |                                                                                |          | 40/131         | <a href="#">490NTW00040</a>    | —                   |
|                                                        |                                                                                |          | 80/262         | <a href="#">490NTW00080</a>    | —                   |
|                                                        |                                                                                | Rugged   | 1/3.28         | <a href="#">TCSECE3M3M1S4</a>  | —                   |
|                                                        |                                                                                |          | 2/6.56         | <a href="#">TCSECE3M3M2S4</a>  | —                   |
|                                                        |                                                                                |          | 3/9.84         | <a href="#">TCSECE3M3M3S4</a>  | —                   |
|                                                        |                                                                                |          | 5/16.40        | <a href="#">TCSECE3M3M5S4</a>  | —                   |
|                                                        |                                                                                |          | 10/32.81       | <a href="#">TCSECE3M3M10S4</a> | —                   |
| <b>Crossover copper cables</b><br>C€ compatible        | 2 x RJ45 connectors<br>For connection between hubs, switches, and transceivers | Standard | 5/16.40        | <a href="#">490NTC00005</a>    | —                   |

#### EIA/TIA 568 shielded twisted pair cables for UL market

| Description                                            | Connectors                                                        | Type     | Length<br>m/ft | Reference                     | Weight<br>kg/<br>lb |
|--------------------------------------------------------|-------------------------------------------------------------------|----------|----------------|-------------------------------|---------------------|
| <b>Straight-through copper cables</b><br>UL compatible | 2 x RJ45 connectors<br>For connection to terminal equipment (DTE) | Standard | 2/6.56         | <a href="#">490NTW00002U</a>  | —                   |
|                                                        |                                                                   |          | 5/16.40        | <a href="#">490NTW00005U</a>  | —                   |
|                                                        |                                                                   |          | 12/39.37       | <a href="#">490NTW00012U</a>  | —                   |
|                                                        |                                                                   | Rugged   | 1/3.28         | <a href="#">TCSECU3M3M1S4</a> | —                   |
|                                                        |                                                                   |          | 2/6.56         | <a href="#">TCSECU3M3M2S4</a> | —                   |
|                                                        |                                                                   |          | 3/9.84         | <a href="#">TCSECU3M3M3S4</a> | —                   |
|                                                        |                                                                   |          | 5/16.40        | <a href="#">TCSECU3M3M5S4</a> | —                   |

#### Do it Yourself copper cable and connectors

The Do it Yourself offer consists of references for connectors (RJ45) and cable references (300 m/984 ft coil), enabling Ethernet 10/100 Mbps networks to be cabled in the field.

The maximum length of cables created in this way is 80 m/262 ft.

They are quick to assemble using a knife and simple wire cutters (no special tools are required).

| Description                                                        | Characteristics              | Length<br>m/ft | Reference                   | Weight<br>kg/<br>lb |
|--------------------------------------------------------------------|------------------------------|----------------|-----------------------------|---------------------|
| <b>Ethernet copper cable</b><br>4 shielded twisted pairs<br>AWG 24 | Conforms to the CE standards | 300/984        | <a href="#">TCSECE300R2</a> | —                   |
|                                                                    | Conforms to the UL standards | 300/984        | <a href="#">TCSECU300R2</a> | —                   |
| <b>RJ45 connector</b>                                              | Conforms to EIA/TIA-568-D    | —              | <a href="#">TCSEK3MDS</a>   | —                   |
| <b>RJ45 rugged connectors</b>                                      | Set of 2 connectors          | —              | <a href="#">TCSEK3MR2</a>   | —                   |
|                                                                    | Set of 10 connectors         | —              | <a href="#">TCSEK3MR10</a>  | —                   |

# Connection Components

## SFP transceivers, memory backup adapters and cables



MCSEAAF1LFU00

| SFP transceivers and memory backup adapters for switches     |                                                                |                    |                                                      |                   |               |                 |
|--------------------------------------------------------------|----------------------------------------------------------------|--------------------|------------------------------------------------------|-------------------|---------------|-----------------|
| Description                                                  | Fiber/TX                                                       | Certification Type | Example for max. distance                            | Temperature range | Reference     | Weight kg/lb    |
| Fiber optic module SFP 1000BASE-SX/LC, Multimode             | Multimode 50/125 µm Multimode 62.5/125 µm                      | Standard Level     | 0.55 km/0.34 mi<br>0.275 km/0.17 mi                  | 0°C - 60°C        | TCSEAAF1LFU00 | 0.040/<br>0.088 |
| Fiber optic module SFP 1000BASE-LX/LC, Single-mode/Multimode | Single-mode 9/125 µm Multimode 50/125 µm Multimode 62.5/125 µm | Standard Level     | 20 km/12.43 mi<br>0.55 km/0.34 mi<br>0.55 km/0.34 mi | 0°C - 60°C        | TCSEAAF1LFS00 | 0.040/<br>0.088 |
| Fiber optic module SFP 1000BASE-LH/LC, Single-mode           | Single-mode 9/125 µm                                           | Standard Level     | 80 km/49.71 mi                                       | 0°C - 60°C        | TCSEAAF1LFH00 | 0.040/<br>0.088 |
| Fiber optic module SFP 1000BASE-SX/LC, Multimode             | Multimode 50/125 µm Multimode 62.5/125 µm                      | Entry Level        | 5 km/3.11 mi<br>4 km/2.49 mi                         | 0°C - 60°C        | MCSEAAF1LFU00 | 0.040/<br>0.088 |
| Fiber optic module SFP 1000BASE-LX/LC, Single-mode           | Single mode 9/125 µm                                           | Entry Level        | 25 km/15.53 mi                                       | 0°C - 60°C        | MCSEAAF1LFS00 | 0.040/<br>0.088 |

| Name                                             | Use                                                                                            | Port       | Reference  | Weight kg/lb    |
|--------------------------------------------------|------------------------------------------------------------------------------------------------|------------|------------|-----------------|
| Memory Backup Adapter for MCSESM/MCSESP switches | Connected on the front of the switch; used to:<br>- Save and retrieve the switch configuration | USB Type-C | MCSEAM0100 | 0.050/<br>0.110 |
| Memory Backup Adapter for MCSESR switches        | - Update the internal software                                                                 | USB Type-A | TCSEAM0100 | 0.22/<br>0.485  |

### Cables for IP 67 switch

| Description                    | Connectors                                           | Length m/ft | Reference      | Weight kg/lb |
|--------------------------------|------------------------------------------------------|-------------|----------------|--------------|
| Straight-through copper cables | 1 x IP 67 4-way M12 connector and 1 x RJ45 connector | 1/3.28      | TCSECL1M3M1S2  | —            |
|                                |                                                      | 3/9.84      | TCSECL1M3M3S2  | —            |
|                                |                                                      | 10/32.81    | TCSECL1M3M10S2 | —            |
| Power supply cables            | female M12 straight connectors                       | 2/6.56      | XZCP1164L2     | —            |
|                                |                                                      | 5/16.40     | XZCP1164L5     | —            |
|                                | female M12 elbowed connectors                        | 2.5/8.20    | XZCP1264L2     | —            |
|                                |                                                      | 5/16.40     | XZCP1264L5     | —            |
|                                | female M12 straight connectors                       | —           | XZCC12FDM50B   | —            |
|                                | female M12 elbowed connectors                        | —           | XZCC12FCM50B   | —            |



TCSECL1M3M10S2

| Approvals and<br>Self-declarations                                                                                  | Unmanaged Switch |         |            | Managed Switch |         |                  |             |         |         | Firewall |
|---------------------------------------------------------------------------------------------------------------------|------------------|---------|------------|----------------|---------|------------------|-------------|---------|---------|----------|
|                                                                                                                     | Standard         | Premium | IP67       | Lite           | Basic   | Standard         | Extended    | PoE     | Red.    |          |
|                                                                                                                     | MCSESU●          | MCSEPU● | TCSESU051● | TCSESL●        | TCSESB● | MCSESM●0(H)      | MCSESM●1(H) | MCSESP● | MCSESR● |          |
|  CE                                | ✓                | ✓       | ✓          | ✓              | ✓       | ✓                | ✓           | ✓       | ✓       | ✓        |
|  UL (cULus)                        | ✓                | ✓       | ✓          | ✓              | ✓       | ✓                | ✓           | ✓       | ✓       | ✓        |
|  RCM                               | ✓                | ✓       | ✓          | ✓              | ✓       | ✓                | ✓           | ✓       | ✓       | ✓        |
|  EAC                               | ✓                | ✓       | ✓          | ✓              | ✓       | ✓                | ✓           | ✓       | ✓       | -        |
|  UKCA                              | ✓                | ✓       | ✓          | ✓              | ✓       | ✓                | ✓           | ✓       | ✓       | ✓        |
|  UL121201 /<br>CSA C22.2<br>No.213 | -                | ✓       | -          | -              | -       | ✓                | ✓           | ✓       | -       | -        |
|  ATEX                             | -                | -       | -          | -              | -       | ✓                | ✓           | ✓       | -       | -        |
|  UKEX                            | -                | -       | -          | -              | -       | ✓                | ✓           | ✓       | -       | -        |
|  DNV                             | -                | ✓       | -          | -              | -       | ✓                | ✓           | ✓       | -       | ✓        |
|  LR                              | -                | -       | -          | -              | -       | -                | ✓           | -       | -       | -        |
|  BV                              | -                | -       | -          | -              | -       | -                | ✓           | -       | -       | -        |
| EtherNet/IP                                                                                                         | -                | -       | -          | -              | -       | ✓                | ✓           | ✓       | -       | -        |
|  IEC 61850-3                     | -                | -       | -          | -              | -       | ✓                | ✓           | -       | -       | -        |
|  IEC 62443-4-2<br>SL1            | -                | -       | -          | -              | -       | ✓                | ✓           | ✓       | -       | -        |
|  CENELEC EN 50121-4              | -                | -       | -          | -              | -       | ✓ <sup>(1)</sup> | ✓           | ✓       | -       | -        |

(1) Only applicable for the variants less than or equal to 12 ports.

|                 |    |                 |    |
|-----------------|----|-----------------|----|
| #               |    | TCSECU300R2     | 31 |
| 490NTC00005     | 31 | TCSECU3M3M1S4   | 31 |
| 490NTW00002     | 31 | TCSECU3M3M2S4   | 31 |
| 490NTW00002U    | 31 | TCSECU3M3M3S4   | 31 |
| 490NTW00005     | 31 | TCSECU3M3M5S4   | 31 |
| 490NTW00005U    | 31 | TCSEFEA23F3F22  | 30 |
| 490NTW00012     | 31 | TCSEFEC23F3F21  | 30 |
| 490NTW00012U    | 31 | TCSEFEC23FCF21  | 30 |
| 490NTW00040     | 31 | TCSEK3MDS       | 31 |
| 490NTW00080     | 31 | TCSEK3MR10      | 31 |
| M               |    | TCSEK3MR2       | 31 |
| MCSEAAF1LFS00   | 32 | TCSESB083F23F0  | 26 |
| MCSEAAF1LFU00   | 32 | TCSESB083F2CU0  | 26 |
| MCSEAM0100      | 32 | TCSESB093F2CU0  | 26 |
| MCSESM043F23F0  | 26 | TCSESL043F23F0  | 26 |
| MCSESM053F1CS0  | 26 | TCSESPU053F1CS0 | 25 |
| MCSESM053F1CU0  | 26 | TCSESPU053F1CU0 | 25 |
| MCSESM063F2CS0  | 26 | TCSESPU083FN0   | 25 |
| MCSESM063F2CU0  | 26 | TCSESPU093F2CS0 | 25 |
| MCSESM083F23F0  | 27 | TCSESPU093F2CU0 | 25 |
| MCSESM083F23F0H | 27 | TCSESU051F0     | 25 |
| MCSESM083F23F1  | 28 | X               |    |
| MCSESM083F23F1H | 28 | XZCC12FCM50B    | 32 |
| MCSESM093F1CS0  | 27 | XZCC12FDM50B    | 32 |
| MCSESM093F1CU0  | 27 | XZCP1164L2      | 32 |
| MCSESM103F2CS0  | 27 | XZCP1164L5      | 32 |
| MCSESM103F2CS0H | 27 | XZCP1264L2      | 32 |
| MCSESM103F2CS1  | 28 | XZCP1264L5      | 32 |
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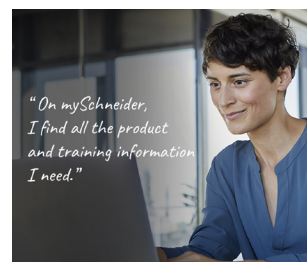
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