

# Industrial Ethernet Switch - FL SWITCH 1605 M12 - 2700200

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Ethernet switch, 5 Ethernet ports on the front in M12 format, automatic detection of 10 or 100 Mbps data transmission rate, coupling of network segments with different transmission speeds, auto crossing function, IP67 protection

## Product Description

### Ethernet interface:

The FL SWITCH 1605 M12 has five Ethernet ports on the front in M12 format, to which only CAT5/CAT6 Ethernet cables with D-coded M12 connectors can be connected. The data transmission speed is 10 Mbps or 100 Mbps. In addition, each port has an autocrossing function at 100 Mbps. It is not necessary to distinguish between 1:1 and crossover Ethernet cables.

### Switching properties of the FL SWITCH 1605 M12

#### - Store and forward:

The switch independently learns the addresses for terminal devices, which are connected via a port, by evaluating the source addresses in the data telegrams. Only packets with unknown addresses, with a source address of this port or with a multicast/broadcast address in the destination address field are forwarded via the corresponding port. The switch can store up to 4096 addresses in its address table with an aging time of 40 seconds. This is important if more than one terminal device is connected to one or more ports. In this way, several independent subnets can be connected to one switch.

#### - Multi-address function:

The switch independently learns the addresses for terminal devices, which are connected via a port, by evaluating the source addresses in the data telegrams. Only packets with unknown addresses, with a source address of this port or with a multicast/broadcast address in the destination address field are forwarded via the corresponding port. The switch can store up to 4096 addresses in its address table with an aging time of 40 seconds. This is important if more than one terminal device is connected to one or more ports. In this way, several independent subnets can be connected to one switch.

#### - Quality of Service (QoS)

With the aid of the Quality of Service function, the switch can process PROFINET traffic preferentially. To do this, the switch detects the QoS priority from the Ethernet packets and forwards the Ethernet packets with higher priority first.

## Your advantages

- Robust IP67 housing
- Easy panel mounting



## Key Commercial Data

|              |               |
|--------------|---------------|
| Packing unit | 1 pc          |
| GTIN         |               |
| GTIN         | 4046356499781 |

## Technical data

### Dimensions

# Industrial Ethernet Switch - FL SWITCH 1605 M12 - 2700200

## Technical data

### Dimensions

|         |                             |
|---------|-----------------------------|
| Caption | Top view (dimensions in mm) |
| Width   | 30 mm                       |
| Height  | 200 mm                      |
| Depth   | 41 mm                       |

### Ambient conditions

|  |   |
|--|---|
| Degree of protection                     | IP65  |
|  | IP66  |
|  | IP67  |
| Ambient temperature (operation)          | -40 °C ... 70 °C                            |
| Ambient temperature (storage/transport)  | -40 °C ... 70 °C                            |
| Permissible humidity (operation)         | 10 % ... 95 %                               |
| Permissible humidity (storage/transport) | 10 % ... 95 % (non-condensing)              |
| Air pressure (operation)                 | 86 kPa ... 108 kPa (2000 m above sea level) |
| Air pressure (storage/transport)         | 66 kPa ... 108 kPa (3500 m above sea level) |

### Function

|                                  |   |
|----------------------------------|---|
| Basic functions                  | Unmanaged switch/auto negotiation, complies with standard IEEE 802.3, store-and-forward switching mode, 2 priority classes according to IEEE802.1p, PTCP filter |
| Additional functions             | Autonegotiation   |
| PROFINET conformance class       | Conformance-Class A   |
| Status and diagnostic indicators | LEDs: US (power supply), 2 LEDs per Ethernet port (Link and Activity)   |

### Network expansion parameters

|   |  |
|---|--|
| Cascading depth                         | Network, linear, and star structure: any |
| Maximum conductor length (twisted pair) | 100 m                                    |

### Supply voltage

|                             |                                     |
|-----------------------------|-------------------------------------|
| Supply voltage              | 24 V DC (M12 connector)             |
| Residual ripple             | 3.6 V <sub>PP</sub>                 |
| Supply voltage range        | 9 V DC ... 32 V DC                  |
| Typical current consumption | 40 mA (at U <sub>S</sub> = 24 V DC) |
| Max. current consumption    | 40 mA (+ 10 mA per port)            |
| Current consumption         | 40 mA ... 80 mA (at 24 V DC)        |

### General

|                     |  |
|---------------------|--|
| Mounting type       | Wall mounting                          |
| Type AX             | Stand-alone                            |
| Net weight          | 220 g                                  |
| Housing material    | PBT                                    |
| Material base plate | High-grade steel (1.4301/1.4016)       |
| Note                | NOTE: Meet noise immunity requirements |

# Industrial Ethernet Switch - FL SWITCH 1605 M12 - 2700200

## Technical data

### General

|      |   |
|------|---|
|      | Connect FE using a mounting screw when mounting on a conductive surface. When mounting on a non-conductive surface, FE is connected using the mounting screw via a cable lug. |
| MTTF | 302.5 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)  |
|      | 156.52 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)  |
|      | 40.43 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)   |

### Standards and Regulations

|                                  |  |
|----------------------------------|--|
| Electromagnetic compatibility    | Conformance with EMC Directive 2014/30/EU                            |
| Type of test                     | Shock in acc. with EN 60068-2-27/IEC 60068-2-27                      |
| Test result                      | Operation: 30g, 6 ms continuous testing, 5g 30 ms continuous testing |
| Type of test                     | Shock in acc. with EN 60068-2-27/IEC 60068-2-27                      |
|                                  | Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6         |
| Test result                      | Operation/Storage/Transport: 5g, 150 Hz, Criterion 3                 |
| Type of test                     | Free fall in acc. with IEC 60068-2-32                                |
| Test result                      | 0.5 m  |
| Type of test                     | Vibration resistance according to IEC 61373, EN 61373                |
| Test result                      | Category 1, Class B  |
| Noise emission                   | EN 61000-6-4   |
| Noise immunity                   | EN 61000-6-2   |
| Connection in acc. with standard | CUL  |

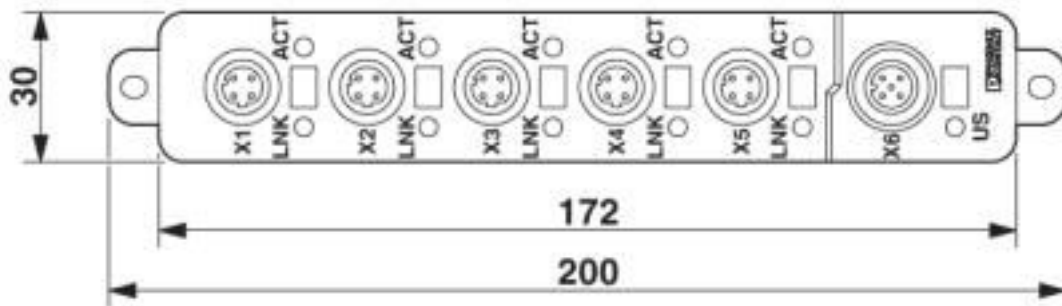
### Environmental Product Compliance

|            |   |
|------------|---|
| REACH SVHC | Lead 7439-92-1  |
| China RoHS | Environmentally Friendly Use Period = 50 years  |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

## Drawings

Product drawing

Dimensional drawing



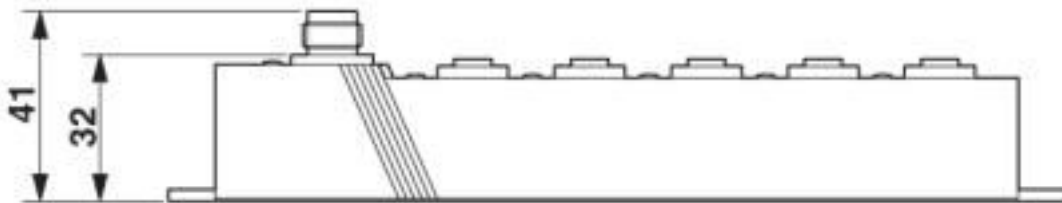
X1 - X5: Ethernet connection

Top view (dimensions in mm)

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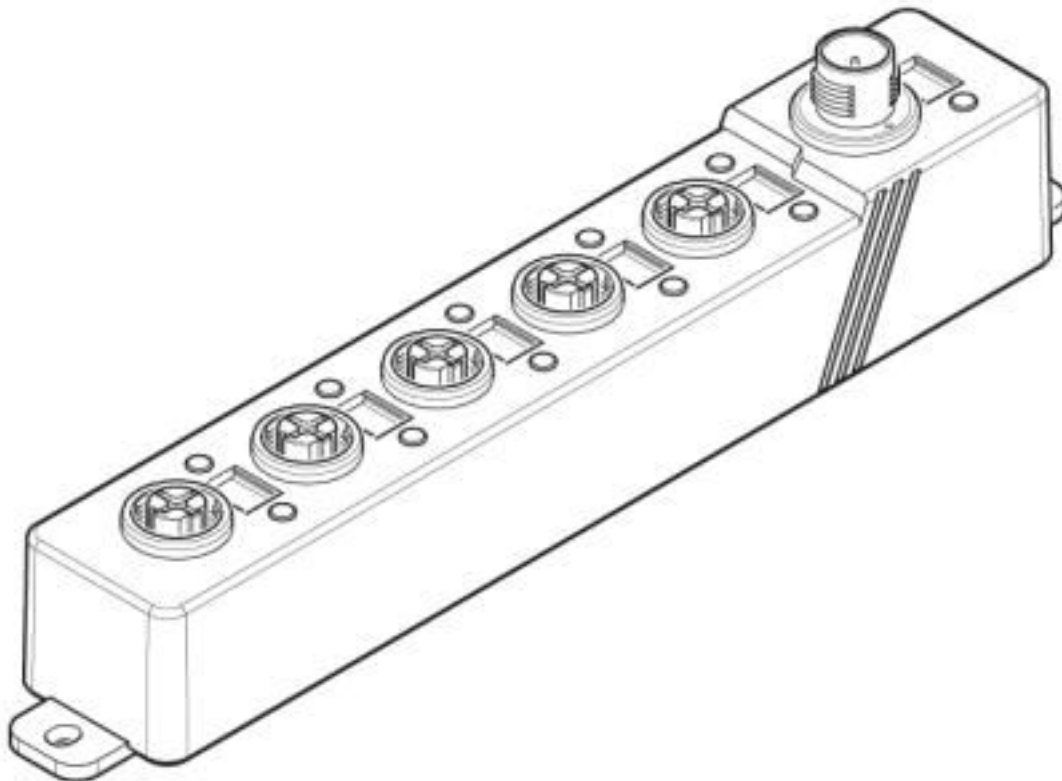
X6:  
Supply  
voltage  
ACT:  
ACT  
LEDs  
LNK:  
Link  
LED  
US:  
U<sub>S1</sub>  
LED

Dimensional drawing



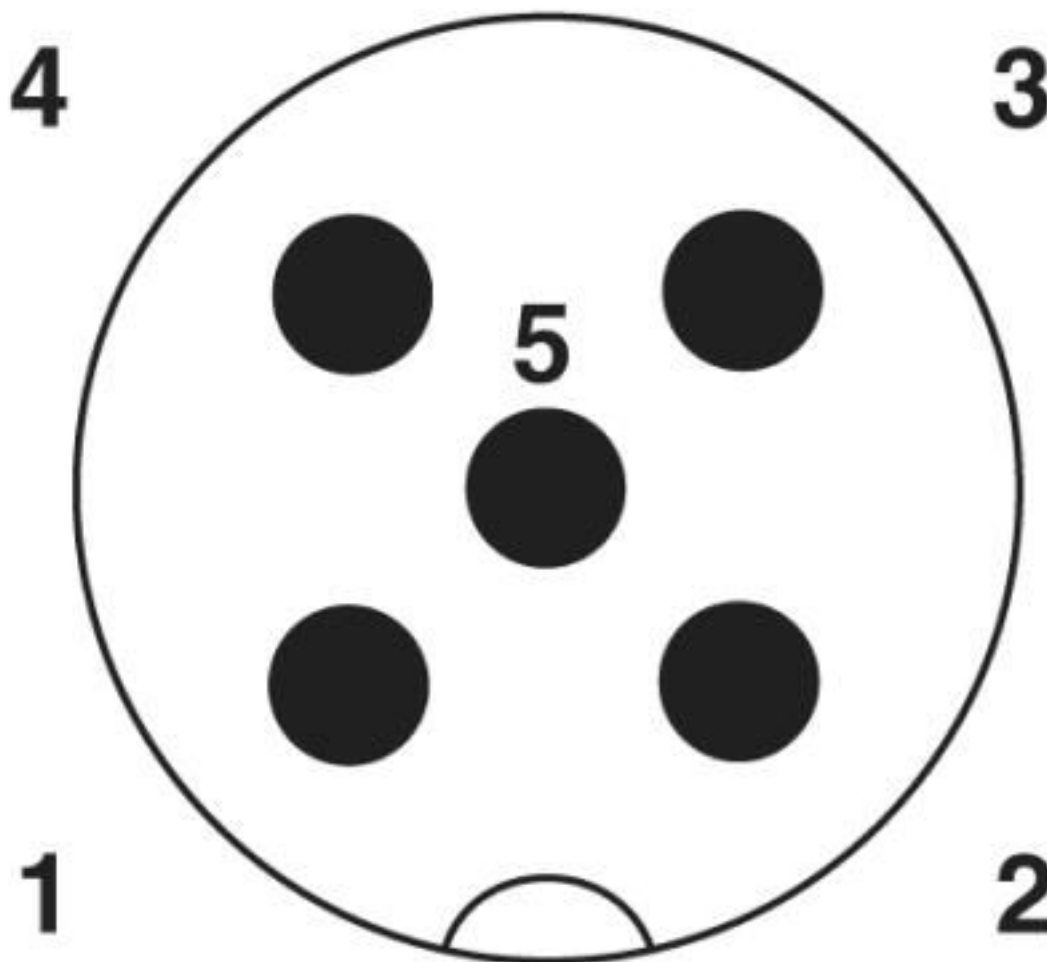
Side view (dimensions in mm)

Product drawing



## Industrial Ethernet Switch - FL SWITCH 1605 M12 - 2700200

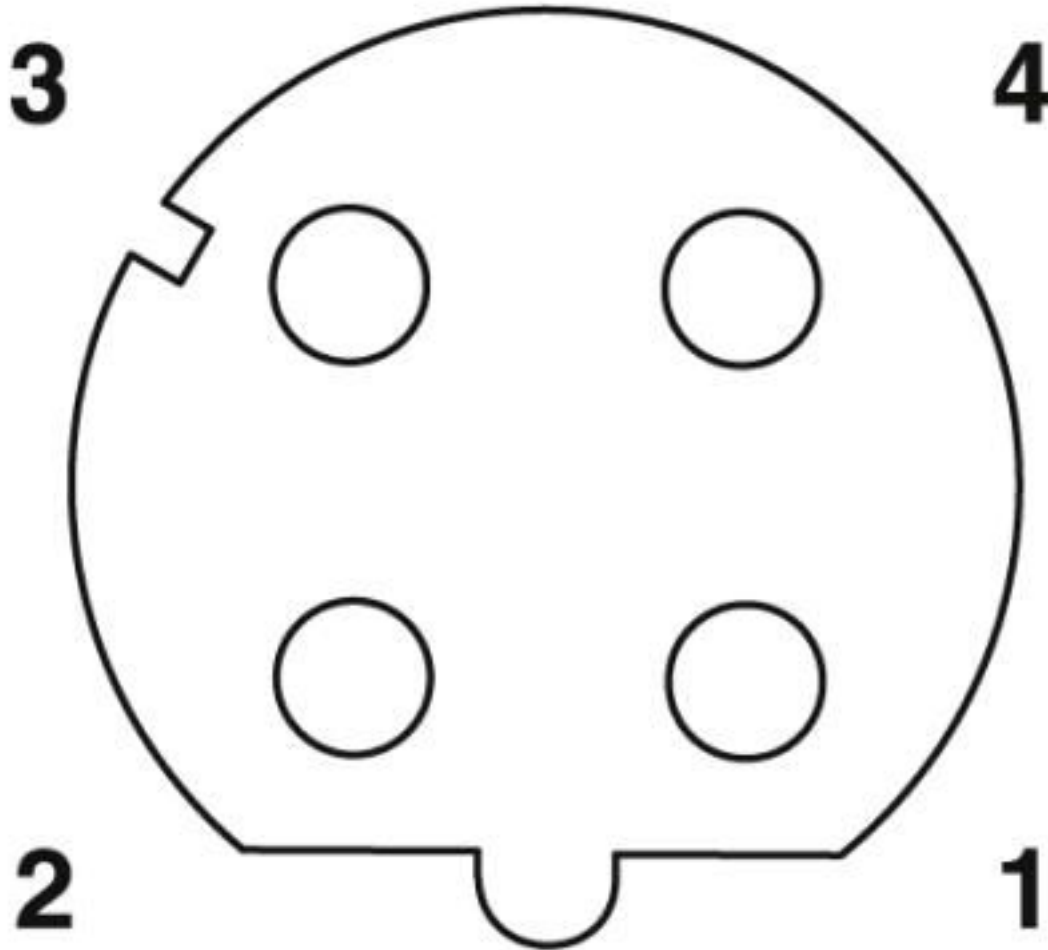
Schematic diagram



Connecting the supply voltage  
PIN 1 Us  
PIN 2 n.c.  
Pin 3 GND  
Pin 4 n.c.  
Pin 5 functional ground

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Schematic diagram



### Assignment of the LAN socket

- Pin 1 Transmit +
- Pin 2 Receive +
- Pin 3 Transmit -
- Pin 4 Receive -

### Classifications

eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 19170402 |
| eCl@ss 4.0    | 24010500 |
| eCl@ss 4.1    | 24010500 |
| eCl@ss 5.0    | 19030100 |
| eCl@ss 5.1    | 19030100 |
| eCl@ss 6.0    | 19170100 |
| eCl@ss 7.0    | 19170106 |
| eCl@ss 8.0    | 19170106 |

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## Classifications

### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 9.0 | 19170106 |
|------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC000734 |
| ETIM 5.0 | EC000734 |
| ETIM 6.0 | EC000734 |
| ETIM 7.0 | EC000734 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 43172015 |
| UNSPSC 7.0901 | 43201404 |
| UNSPSC 11     | 43172015 |
| UNSPSC 12.01  | 43201410 |
| UNSPSC 13.2   | 43222612 |
| UNSPSC 18.0   | 43222612 |
| UNSPSC 19.0   | 43222612 |
| UNSPSC 20.0   | 43222612 |
| UNSPSC 21.0   | 43222612 |

## Approvals

### Approvals

#### Approvals

UL Recognized / cUL Recognized / EAC / cULus Recognized

#### Ex Approvals

### Approval details

|               |  |   |               |
|---------------|--|---|---------------|
| UL Recognized |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 140324 |
|---------------|--|---|---------------|

|                |  |   |               |
|----------------|--|---|---------------|
| cUL Recognized |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 140324 |
|----------------|--|---|---------------|

# Industrial Ethernet Switch - FL SWITCH 1605 M12 - 2700200

## Approvals

|     |  |                        |
|-----|--|------------------------|
| EAC |  | RU*<br>DE.*.B.00741/19 |
|-----|--|------------------------|

|                  |  |
|------------------|--|
| cULus Recognized |  |
|------------------|--|

## Accessories

### Accessories

#### Circular connector (cable-side)

Data connector - SACC-MSD-4QO SH PN SCO - 1411068



Data connector, PROFINET CAT5 (100 Mbps), 4-position, halogen-free, shielded, Plug straight M12 SPEEDCON, Coding: D, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

Data connector - SACC-M12MRD-4Q SH - 1553624



Data connector, Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug angled M12, Coding: D, Insulation displacement connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

Connector - SACC-M12MS-5PL M - 1424649



Connector, Universal, 5-position, unshielded, Plug straight M12, Coding: A, Push-in connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

Connector - SACC-M12MR-5PL M - 1424651



Connector, Universal, 5-position, unshielded, Plug angled M12, Coding: A, Push-in connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm



## Industrial Ethernet Switch - FL SWITCH 1605 M12 - 2700200

### Accessories

#### Data cable preassembled

Network cable - NBC-MSD SCO/.../... - 1408713



Network cable, Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on free cable end, cable length: Free input (0.2 ... 40.0 m)

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Network cable - NBC-MSD-MSD SCO/.../... - 1408706



Network cable, Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on Plug straight M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

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Network cable - NBC-MSD-MRD SCO/.../... - 1408700



Network cable, Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on Plug angled M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

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Network cable - NBC-MSD-R4AC SCO/.../... - 1408712



Network cable, Ethernet CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on Plug straight RJ45 / IP20, cable length: Free input (0.2 ... 40.0 m)

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#### Data plug

Control cabinet feed-through - CUC-BH-M12D1PBK-A/R4BE - 1414397



Control cabinet feed-through, M12, 4-pos., D-coded to RJ45 socket, socket entry: 90°, IP65/IP67

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#### Plug for cable screw gland

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### Accessories

Screw plug - PROT-M12 - 1680539



An M12 screw plug for the unoccupied M12 sockets of the sensor/actuator cable, boxes and flush-type connectors

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### Sensor/actuator cable

Sensor/actuator cable - SAC-5P-FS SCO/.../... - 1536489



Sensor/actuator cable, 5-position, Variable cable type, free cable end, on Socket straight M12 SPEEDCON, coding: A, cable length: Free input (0.2 ... 40.0 m)

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Sensor/actuator cable - SAC-5P-M12FR/.../... - 1697124



Sensor/actuator cable, 5-position, Variable cable type, free cable end, on Socket angled M12, coding: A, cable length: Free input (0.2 ... 40.0 m)

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Sensor/actuator cable - SAC-5P-MS-FS SCO/.../... - 1523625



Sensor/actuator cable, 5-position, Variable cable type, Plug straight M12 SPEEDCON, coding: A, on Socket straight M12 SPEEDCON, coding: A, cable length: Free input (0.2 ... 40.0 m)

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Sensor/actuator cable - SAC-5P-MS-FR SCO/.../... - 1542415



Sensor/actuator cable, 5-position, Variable cable type, Plug straight M12 SPEEDCON, coding: A, on Socket angled M12 SPEEDCON, coding: A, cable length: Free input (0.2 ... 40.0 m)

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### Terminal marking

## Industrial Ethernet Switch - FL SWITCH 1605 M12 - 2700200

### Accessories

Zack Marker strip, flat - ZBF 8:UNBEDRUCKT - 0808781



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snap into flat marker groove, for terminal block width: 8 mm, lettering field size: 5.15 x 8.15 mm, Number of individual labels: 10

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### Y-distributor

Y distributor - SAC-5PY-F/M-F VP SH - 1419933



Y distributor, 5-position, shielded, Socket straight M12 SPEEDCON, coding: A, on Socket straight M12 SPEEDCON, coding: A and Plug straight M12 SPEEDCON, coding: A, Parallel distributor

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