


## FL SWITCH 1605 M12

Order No.: 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

### Ethernet

Commercial data	
GTIN (EAN)	 4 046356 499781
sales group	K000
Pack	1 pcs.
Catalog page information	Page 104 (AX-2011)

### Product notes

WEEE/RoHS-compliant since:  
01/20/2010



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### Product description

#### Ethernet interface

The FL SWITCH 1605 M12 has five front Ethernet ports in M12 format. Only CAT5 / CAT6 Ethernet cables with D-coded M12 connectors can be connected to these. The data transmission speed is 10Mbps or 100Mbps. In addition, each port has an auto crossing function at 100Mbps: It is not necessary to make a distinction between 1:1 or crossover Ethernet cables.

#### Switching properties of FL SWITCH 1605 M12

##### –Store-and-forward:

All data telegrams that are received by the switch are saved and their validity is checked. Invalid or faulty data packets (>1522 bytes or CRC errors) and fragments (<64 bytes) are rejected. Valid data telegrams are forwarded by the switch. The switch always forwards the data using the data transmission speed that is used in the destination network segment.

##### –Multi-address function:

The switch independently learns the addresses for termination 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 when more than one termination device is connected to one or more ports. In this way, several independent subnetworks can be connected to one switch.

### Technical data

#### Interfaces

Interface 1	Ethernet
No. of ports	5
Connection method	M12 D-coded
Transmission physics	Twisted pair connection
Transmission speed	10/100 MBit/s
Transmission length	100 m (per segment)
Signal LEDs	Data receive, link status

#### Function

Basic functions	Unmanaged switch / autonegotiation, complies with IEEE 802.3, store and forward switching mode
Status and diagnostic indicators	LEDs: U <sub>S</sub> (voltage supply), link and activity per port

#### 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> (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	40 mA (24 V DC)
Max. current consumption	40 mA (+ 10 mA per port)
Current consumption	40 mA ... 80 mA (at 24 V DC)

**General data**

Width	30 mm
Height	200 mm
Depth	41 mm
Mounting type	Wall mounting
Type AX	Stand-alone
Weight	220 g
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 % (no condensation)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	66 kPa ... 108 kPa (3500 m above sea level)
Housing material	PBT
Material base plate	High-grade steel (1.4301/1.4016)
Note	NOTE: Meet noise immunity requirementsConnect 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.

**Mechanical tests**

Type of test	Shock test in acc. with IEC 60068-2-27
Test result	Operation: 30 g, 6 ms continuous testing, 5 g 30 ms continuous testing
Type of test	Shock in acc. with IEC 60068-2-27:1997
	Vibration resistance in acc. with IEC 60068-2-6
Test result	Operation/Storage/Transport: 5 g, 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

**Conformity with EMC directives**

Developed in acc. with standard	Noise emission test according to EN 61000-6-3
Test standard	EN 61000-6-3 (noise emission)
Test result	Class B
Test standard	EN 55011 (emitted interference)

Test result	Class B
Test standard	EN 55022 (emitted interference)
Test result	Class B
Test standard	EN 61000-4-2 (ESD)
Test result	Criterion B
Test standard	EN 61000-4-3 (electromagnetic fields)
Test result	Criterion A, 20 V/m
Test standard	EN 61000-4-5 (surge)
Test result	Criterion A; interfaces 1 kV
Test standard	EN 61000-4-4
Test result	Criterion A, 2.2 kV
	Criterion A; Field intensity: 10 V/m

### Accessories

Item	Designation	Description
<b>General</b>		
1536515	SAC-5P-FR SCO/.../...	Sensor/Actuator cable, 5-position, Free conductor end, on Socket, angled M12-SPEEDCON, A-coded, Cable length: Free input (0.2 ... 40.0 m)
1536489	SAC-5P-FS SCO/.../...	Sensor/Actuator cable, 5-position, Free conductor end, on Socket, straight M12-SPEEDCON, A-coded, Cable length: Free input (0.2 ... 40.0 m)
1542415	SAC-5P-MS-FR SCO/.../...	Sensor/Actuator cable, 5-position, Plug, straight M12-SPEEDCON, A-coded, on Socket, angled M12-SPEEDCON, A-coded, Cable length: Free input (0.2 ... 40.0 m)
1523625	SAC-5P-MS-FS SCO/.../...	Sensor/Actuator cable, 5-position, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: Free input (0.2 ... 40.0 m)
1553624	SACC-M12MRD-4Q SH	Bus system connector, connector, angled, 4-pos., M12 shielded, D-coded, QUICKON connection block, cable diameter max. 8 mm
1543223	SACC-M12MSD-4Q SH	Bus system connector, plug, straight, 4-pos., M12 shielded, D-coded, QUICKON connection block, cable diameter max. 8 mm
1416402	VS-93E/...	CAT5e, Ethernet cable, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), length variable
1657494	VS-BH-M12FSD-RJ45/180	Control cabinet feed-through, M12, 4-pos., D-coded on RJ45 socket, socket input 180°, IP65/67
1406056	VS-M12MS-IP20-93E-LI/2,0	Assembled Ethernet cable, CAT5e, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), M12 plug on RJ45 plug/IP20, line, length 2 m

1406632	VS-M12MS-M12MS-93E-LI/2,0	Assembled Ethernet cable, CAT5e, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), M12 plug on M12 plug, line, length 2 m
1405798	VS-M12MS-OE-93E-LI/2,0	Assembled Ethernet cable, CAT5e, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), M12 plug on free conductor end, line, length 2 m

### Marking

0808781	ZBF 8:UNBEDRUCKT	Zack strip, flat, unprinted: 10-section, for individual labeling with M-PEN or ZBF-T, sufficient for 100 terminal blocks, color: white
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### Plug/Adapter

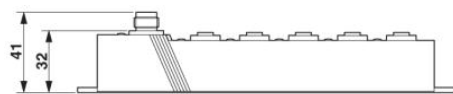
1419933	SAC-5PY-F/M-F VP SH	Y distributor, 5-position, shielded, Socket, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded and Plug, straight M12-SPEEDCON, A-coded
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### Protection and sealing elements

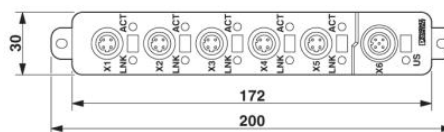
1680539	PROT-M12	An M12 screw plug for the unoccupied M12 sockets of the sensor/ actuator cable, boxes and flush-type connectors
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## Diagrams/Drawings

### Dimensioned drawing

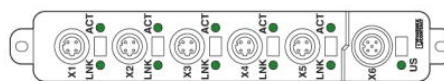
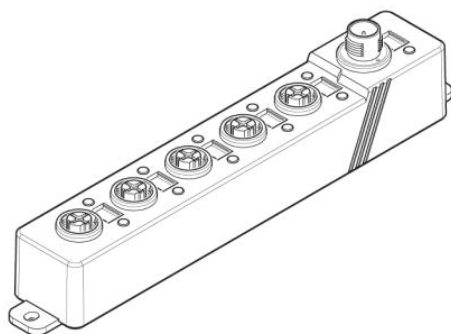


Side view (dimensions in mm)



Top view (dimensions in mm)

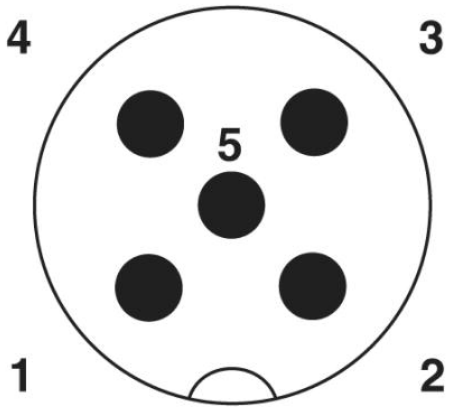
### Product drawing



- X1 - X5: Ethernet connection
- X6: Supply voltage
- ACT: ACT LEDs
- LNK: Link LED
- US: U<sub>S1</sub> LED

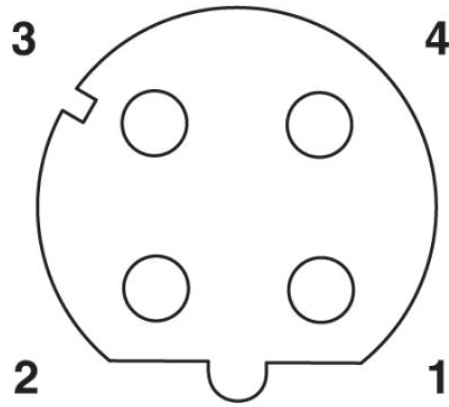
Schematic diagram

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**Connecting the supply voltage**

- PIN 1 Us
- PIN 2 n.c.
- Pin 3 GND
- Pin 4 n.c.
- Pin 5 Functional earth ground



**Assignment of the LAN socket**

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