

# FLM BK ETH M12 DI 8 M12-2TX


Order No.: 2736916



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The Ethernet bus coupler opens a local bus for up to 16 devices. Additional functions: 10 Mbps and 100 Mbps, auto negotiation, auto crossover, 8 digital inputs, channel-specific diagnostics, short-circuit and overload protection, M12 fast connection technology.

## Ethernet

| Commercial data          |   |
|--------------------------|---|
| GTIN (EAN)               |  |
| sales group              | L040  |
| Pack                     | 1 pcs.  |
| Customs tariff           | 85389091  |
| Catalog page information | Page 369 (AX-2009)  |

## Product notes

WEEE/RoHS-compliant since: 12/08/2009



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## Product description

The Fieldline Modular FLM BK ETH M12 DI8 M12 bus coupler with 8 digital inputs couples a Fieldline Modular local bus station to an Ethernet network and is also used for measuring digital signals. The bus coupler consists of two Ethernet connections that are designed as D-encoded M12 sockets. Additional Ethernet devices can be connected due to the integrated, manageable 3-port switch to implement a line structure. The transmission speeds are 10 Mbps and 100 Mbps and are automatically selected by the device (autonegotiation). The interfaces can automatically interchange the receive and transmit cables (autocrossover). Following network protocols are supported by the FLM BK ETH M12 DI8 M12 bus coupler:

- Modbus/TCP
- Modbus/UDP
- DDI (Device Driver Interface)

The Ethernet bus coupler provides a powerful local bus as lower-level bus. The total length of the local bus is 20 m and it can connect up to 16 I/O units. Selectable transmission speeds in the range 500 kBaud to 2 Mbaud allow for flexible adaptation to the application and also permit savings on warehousing costs. The local bus connection is provided by 5-pos. B-encoded M12 connectors. The four double-occupied sensor slots can be assigned through 5-pos. A-encoded M12 connectors with sensors in 2, 3 or 4 conductor technology respectively.

The sensor supply is short-circuit and overload-protected and thus guarantees a high plant availability. The diagnosis and status indicators for voltage supply, network and local bus operation with the corresponding monitoring functions reduce bus downtime and provide support if service becomes necessary.

The high-performance SPEEDCON technology used allows connection times to be reduced by up to 90%. The classic M12 connections can continued to be used with full compatibility.

## Technical data

### General data

|  |   |
|--|---|
| Width                                    | 70 mm   |
| Height                                   | 178 mm  |
| Depth                                    | 50 mm   |
| Drill hole spacing                       | 178 mm  |
| Weight                                   | 280 g   |
| Mounting type                            | Wall mounting                                     |
| Ambient temperature (operation)          | -25 °C ... 60 °C                                  |
| Ambient temperature (storage/transport)  | -25 °C ... 85 °C                                  |
| Permissible humidity (storage/transport) | 95 %  |
| Air pressure (operation)                 | 80 kPa ... 106 kPa (up to 2000 m above sea level) |
| Air pressure (storage/transport)         | 70 kPa ... 106 kPa (up to 3000 m above sea level) |
| Degree of protection                     | IP65/67   |
| Protection class                         | III, IEC 61140, EN 61140, VDE 0140-1              |
| Test section                             | To I/O 500 V DC                                   |

### Interface

|                              |                                       |
|------------------------------|---------------------------------------|
| Fieldbus system              | Ethernet                              |
| Name                         | Ethernet                              |
| Type of connection           | M12 plug connectors, D-coded          |
| Designation connection point | Copper cable                          |
| Transmission speed           | 10/100 Mbps, autonegotiation          |
|                              | 10/100 MBit/s ( mit Autonegotiation ) |

|                     |   |
|---------------------|---|
| Number of positions | 4 |
|---------------------|---|

**Local bus gateway**

|                                  |                                     |
|----------------------------------|-------------------------------------|
| Name                             | Local bus gateway                   |
| Type of connection               | M12 connector, B-coded              |
| Transmission speed               | 500 kBaud/ 2 MBaud, can be selected |
| Max. number of local bus devices | 16                                  |
| Max. length of local bus         | 20 m                                |

**Power supply for module electronics**

|                      |  |
|----------------------|--|
| Type of connection   | M12 male connector                                 |
| Name                 | $U_L$  |
| Supply voltage       | 24 V DC  |
| Supply voltage range | 18 V DC ... 30 V DC IEC 61131-2 (including ripple) |
| Supply current       | < 100 mA   |

**Fieldline potential routing**

|                                |   |
|--------------------------------|---|
| Voltage supply $U_L$           | 24 V DC                                   |
| Power supply at $U_L$          | max. 4 A                                  |
| Current consumption from $U_L$ | max. 118 mA (At 2 Mbaud)                  |
|                                | Typ. 118 mA (At 2 Mbaud)                  |
|                                | max. 60 mA (At 500 kBaud)                 |
|                                | Typ. 60 mA (At 500 kBaud)                 |
| Voltage supply $U_s$           | 24 V DC                                   |
| Power supply at $U_s$          | max. 4 A                                  |
| Current consumption from $U_s$ | Typ. 5 mA (plus power supply for sensors) |
|                                | max. 600 mA                               |

**Digital inputs**

|                          |  |
|--------------------------|--|
| Input name               | Digital inputs   |
| Description of the input | EN 61131-20 type 1   |
| Type of connection       | M12 male connector   |
| Connection method        | 2, 3, 4-wire   |
| Number of inputs         | 8  |
| Protective circuit       | Short-circuit protection, overload protection of the sensor supply<br>Protection against polarity reversal |
| Filter time              | 3 ms   |

|                                |                     |
|--------------------------------|---------------------|
| Input characteristic curve     | IEC 61131-2 type 1  |
| Input voltage                  | 24 V DC             |
| Input voltage range "0" signal | -30 V DC ... 5 V DC |
| Input voltage range "1" signal | 13 V DC ... 30 V DC |

### Certificates / Approvals



|                   |               |
|-------------------|---------------|
| Certification     | CUL, UL       |
| Certification Ex: | CUL-EX, UL-EX |

### Accessories

| Item                   | Designation               | Description   |
|------------------------|---------------------------|---|
| <b>Cable/conductor</b> |                           |   |
| 1518368                | SAC-5P- 2,0-186/FS SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Free conductor end, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 2 m                     |
| 1518371                | SAC-5P- 5,0-186/FS SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Free conductor end, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 5 m                     |
| 1518384                | SAC-5P-10,0-186/FS SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Free conductor end, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 10 m                    |
| 1518397                | SAC-5P-15,0-186/FS SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Free conductor end, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 15 m                    |
| 1518407                | SAC-5P-MS/ 0,3-186/FS SCO | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 0.3 m |
| 1518410                | SAC-5P-MS/ 0,5-186/FS SCO | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 0.5 m |
| 1518423                | SAC-5P-MS/ 1,0-186/FS SCO | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 1 m   |
| 1518326                | SAC-5P-MS/ 2,0-186 SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Free conductor end, Cable length: 2 m                       |

|         |                           |  |
|---------|---------------------------|--|
| 1518436 | SAC-5P-MS/ 2,0-186/FS SCO | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 2 m  |
| 1518339 | SAC-5P-MS/ 5,0-186 SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Free conductor end, Cable length: 5 m                      |
| 1518449 | SAC-5P-MS/ 5,0-186/FS SCO | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 5 m  |
| 1518342 | SAC-5P-MS/10,0-186 SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Free conductor end, Cable length: 10 m                     |
| 1518452 | SAC-5P-MS/10,0-186/FS SCO | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 10 m |
| 1518355 | SAC-5P-MS/15,0-186 SCO    | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Free conductor end, Cable length: 15 m                     |
| 1518465 | SAC-5P-MS/15,0-186/FS SCO | Sensor/Actuator cable, 5-position, PUR, Black-gray RAL 7021, Plug, straight M12-SPEEDCON, A-coded, on Socket, straight M12-SPEEDCON, A-coded, Cable length: 15 m |
| 1657575 | VS-M12MSD-RJ45-931/ 1,0   | Assembled Ethernet cable, CAT5e, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), M12 4-pos. D-coded on RJ45 connector, length: 1 m            |
| 1657588 | VS-M12MSD-RJ45-931/ 2,0   | Assembled Ethernet cable, CAT5e, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), M12 4-pos. D-coded on RJ45 connector, length: 2 m            |
| 1657591 | VS-M12MSD-RJ45-931/ 5,0   | Assembled Ethernet cable, CAT5e, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), M12 4-pos. D-coded on RJ45 connector, length: 5 m            |

**General**

|         |                                |  |
|---------|--------------------------------|--|
| 1524006 | SAC-4P-M12MSD/ 2,0-930         | Bus system cable, 4-position, PUR, halogen-free, water blue RAL 5021, shielded, Plug, straight M12, D-coded, on Free conductor end, Cable length: 2 m          |
| 1521533 | SAC-4P-M12MSD/ 2,0-930/ M12MSD | Bus system cable, 4-position, PUR, halogen-free, water blue RAL 5021, shielded, Plug, straight M12, D-coded, on Plug, straight M12, D-coded, Cable length: 2 m |
| 1524051 | SAC-4P-M12MSD/ 5,0-930/ M12MSD | Bus system cable, 4-position, PUR, halogen-free, water blue RAL 5021, shielded, Plug, straight M12, D-coded, on Plug, straight M12, D-coded, Cable length: 5 m |
| 1524022 | SAC-4P-M12MSD/10,0-930         | Bus system cable, 4-position, PUR, halogen-free, water blue RAL 5021, shielded, Plug, straight M12, D-coded, on Free conductor end, Cable length: 10 m         |
| 1524035 | SAC-4P-M12MSD/15,0-930         | Bus system cable, 4-position, PUR, halogen-free, water blue RAL 5021, shielded, Plug, straight M12, D-coded, on Free conductor end, Cable length: 15 m         |

|         |                          |   |
|---------|--------------------------|---|
| 1521258 | SACC-M12MSD-4CON-PG 7-SH | Bus system plug connector, male, straight, 4-pos., M12, shielded, D-coded, screw connection, metal knurl, cable screw connection Pg7                    |
| 1521261 | SACC-M12MSD-4CON-PG 9-SH | Bus system plug connector, male, straight, 4-pos., M12, shielded, D-coded, screw connection, metal knurl, cable screw connection Pg9                    |
| 1657562 | VS-M12MSD-RJ45-931/ 0,5  | Assembled Ethernet cable, CAT5e, shielded, 2-pair, AWG 26 stranded (7-wire), RAL 5021 (water blue), M12 4-pos. D-coded on RJ45 connector, length: 0.5 m |

**Marking**

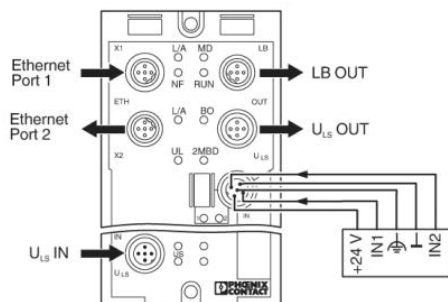
|         |                   |   |
|---------|-------------------|---|
| 0809735 | ZBF 12:UNBEDRUCKT | Zack strip, flat, unprinted, 5-section, divisible, for labeling by the customer   |
| 2809128 | ZBN 18:UNBEDRUCKT | Unprinted marker labels, strips with 5 labels for individual labeling with M-PEN or CMS system, for terminal block width: 17.5 mm, color: White |

**Plug/Adapter**

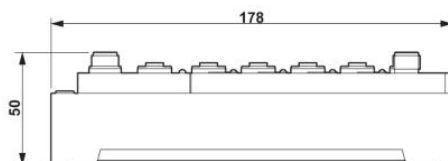
|         |                  |   |
|---------|------------------|---|
| 1508200 | SACC-M12FS-5SC M | Sensor/actuator connector, female, straight, 5-pos., M12, A-coded, spring-cage connection, metal knurl, cable cross section max. 8 mm |
| 1508187 | SACC-M12MS-5SC M | Sensor/actuator connector, male, straight, 5-pos., M12, A-coded, spring-cage connection, metal knurl, cable cross section max. 8 mm   |

**Diagrams/Drawings**

Connection diagram



Dimensioned drawing



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