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Wireless module - FLM BT DI 16 M12 - 2693208

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Wireless IO device, 16 digital inputs, M12, Bluetooth V1.2; frequency band 2.4 GHz; 1 wireless interface; WLAN-BlackChannelList; LEM; transmission power max. 8 dBm

Product Description


The products are offered exclusively for export outside the EU and the European Economic Area.

Why buy this product

- ✓ Parallel operation of numerous Bluetooth systems
- ✓ Extremely rugged and reliable
- ✓ Quick and easy startup
- ✓ WLAN coexistence functions AFH, LEM, black channel listing



Key Commercial Data

Packing unit	1 STK
GTIN	 4 046356 459068
GTIN	4046356459068
Weight per Piece (excluding packing)	420.000 g
Custom tariff number	85176200
Country of origin	Germany

Technical data

Note

Trade restriction	The products are offered exclusively for export outside the EU and the European Economic Area.
Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area

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Technical data

Dimensions

Width	70.5 mm
Height	178.5 mm
Depth	68 mm
Drill hole spacing	168 mm

Ambient conditions

Ambient temperature (operation)	-25 °C ... 60 °C
Ambient temperature (storage/transport)	-25 °C ... 85 °C
Permissible humidity (operation)	95 %
Permissible humidity (storage/transport)	95 %
Air pressure (operation)	795 hPa ... 1080 hPa (up to 2000 m above mean sea level)
Air pressure (storage/transport)	70 kPa ... 106 kPa (up to 3000 m above sea level)
Degree of protection	IP65

Wireless interface

Designation	Bluetooth
Wireless standard	Bluetooth 1.2
Antenna connection method	SMA (female)
Frequency range	2.402 GHz ... 2.48 GHz (ISM bandwidth)
Frequency band	ISM 2.4 GHz
Transmission power	8 dBm (with automatic control)
Receiver sensitivity	-88 dBm
Number of wireless interfaces	1
Wireless modules that can be connected	1 (FLM BT BS 3, FL BT MOD IO AP)
Profiles supported	HID

Functions

Security	128-bit data encryption
	Authentication
	PIN
	Non-discoverable

Wireless card

Number	1
Type	Bluetooth 2.4 GHz up to 1 Mbps
Assembly instructions	Permanently installed

Antenna

Assembly instructions	OMNI antenna is included
Number	1

Wireless module - FLM BT DI 16 M12 - 2693208

Technical data

Antenna

Connection method	SMA (male)
Gain	0 dBi (Antenna gain)

Power supply for module electronics

Connection method	M12 connector
Designation	U_L
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 32 V DC
Current consumption	30 mA (with U_L)
Power dissipation	typ. (with 24 V supply voltage)
Power dissipation formula	$P_{TOT} = 0.75 \text{ W} + I_s^2 \times 0.68 \Omega + n \times 0.07 \text{ W}$, (n = 0 to 16)
Note about power dissipation	P_{EL} ... Total power dissipation in module, I_s ..current from sensor supply, n.. Index relating to the number of inputs used (n=0 to 16)

Fieldline potentials

Voltage supply U_S	24 V DC (19.2 V DC ... 32 V DC)
Current consumption from U_S	10 mA (plus sensor current)
Nominal current per channel	typ. 60 mA
Nominal current per device	max. 500 mA
Type of protection	Overload protection, short-circuit protection of sensor supply

Digital inputs

Input name	Digital inputs
Connection method	M12 connector
Connection technology	2 or 3-wire (optionally 4-wire)
Number of inputs	16 (double-occupancy)
Input voltage	24 V DC
Input voltage range "0" signal	-30 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Nominal input current	2.8 mA (at 24 V)
Delay at signal change from 0 to 1	20 μ s
Delay at signal change from 1 to 0	700 μ s

General

Mounting type	Wall mounting
Net weight	300 g
MTBF	Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day)
	Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day)

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Technical data

General

Wireless licences	Canada
	Russia (Special rule: Please contact the Product Manager)
	Switzerland
	Singapore
	Turkey
	USA
Mounting type	Wall mounting, optionally on mounting plate

Standards and Regulations

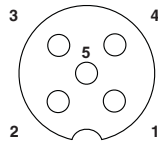
Mechanical tests	Shock in acc. with EN 60068-2-27/IEC 60068-2-27 30g
	Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6 5g
Protection class	III, IEC 61140, EN 61140, VDE 0140-1

Environmental Product Compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

Drawings

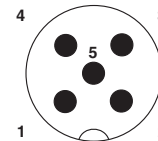
Schematic diagram



Assignment of inputs

- Pin 1 U_S +24 V
- Pin 2 input x+1
- Pin 3 GND
- Pin 4 input x
- Pin 5 FE

Schematic diagram

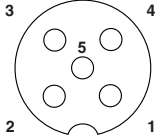


Assignment of the power supply U_{LS} IN (male connector)

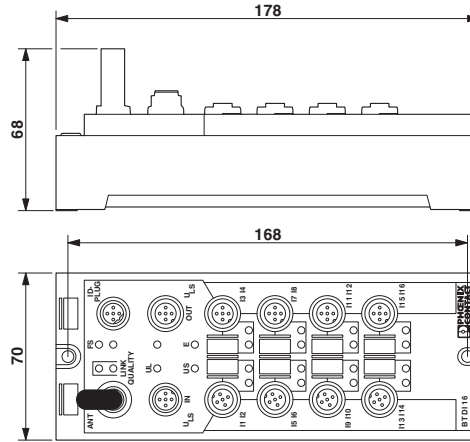
- Pin 1 U_L +24 V
- Pin 2 U_S GND
- Pin 3 U_L GND

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Schematic diagram



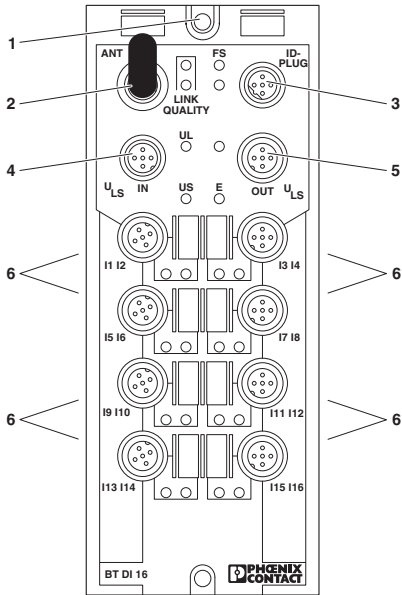
Dimensional drawing



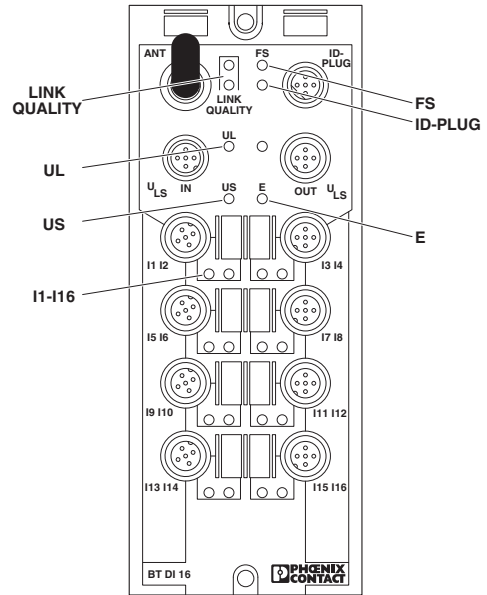
Assignment of the power supply U_{LS} OUT (female connector)

- Pin 1 U_L +24 V
- Pin 2 U_S GND
- Pin 3 U_L GND
- Pin 4 U_S +24 V
- Pin 5 not used

Product drawing



Product drawing

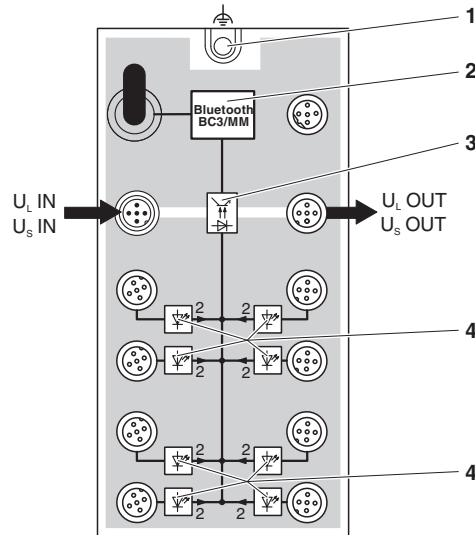


- 1 FE: Functional earth ground
- 2 ANT: Antenna
- 3 ID PLUG: ID PLUG connection
- 4 ULS IN: Voltage supply ULS IN
- 5 ULS OUT: Voltage supply ULS OUT
- 6 IN: Inputs (1 - 16)

- LINK QUALITY: Green/yellow
- Quality of Bluetooth
- FS connection: Red
- Failure state ID-PLUG: Green/yellow/red
- ID-PLUG UL status: Green
- US communications power: Green
- E sensor supply: Red
- Short-circuit/overload of sensor supply I1-I16: Yellow
- Status of the inputs

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Circuit diagram

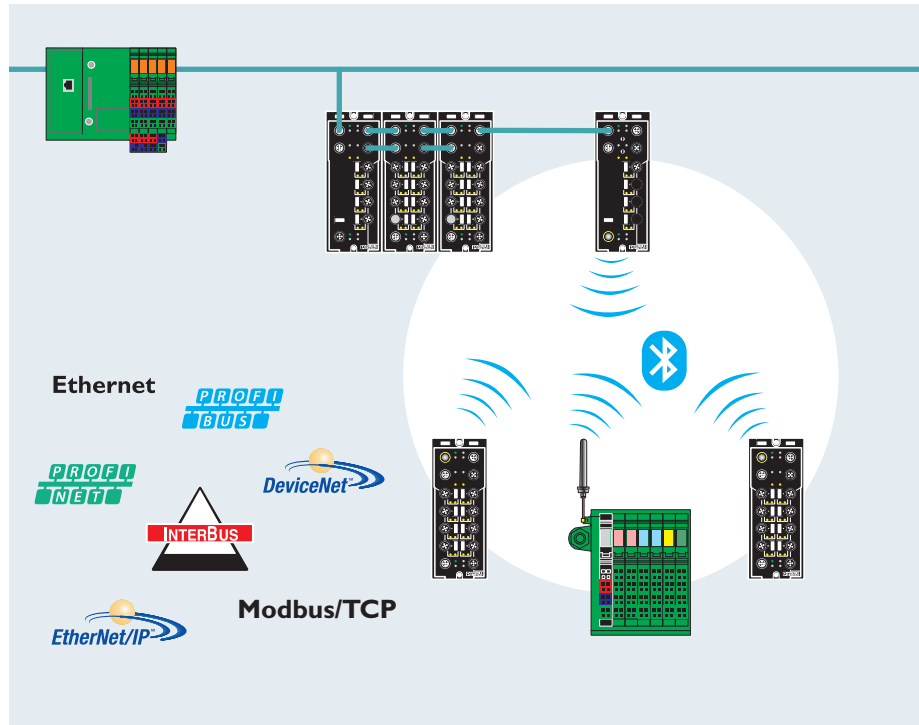


Basic circuit diagram:

- 1 Functional earth ground
- 2 Wireless unit
- 3 Optocoupler
- 4 LED

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Application drawing



Possible areas of application

The Fieldline Modular wireless IO system is particularly suitable for use in moving, temporarily installed or inaccessible machine units in all industrial areas, when time-critical process signals are to be transmitted.

- Fast data transmission in typ. 10 ms per module
- Short range* of 20 to 50 m in industrial halls and more than 100 m outdoors.

* The range may be considerably above or below that stated, and depends on the environment, antenna technology and the product used.

Classifications

eCl@ss

eCl@ss 4.0	27240490
eCl@ss 4.1	27240490
eCl@ss 5.0	27242208
eCl@ss 5.1	27242608
eCl@ss 6.0	27242604
eCl@ss 7.0	27242604
eCl@ss 8.0	27242604
eCl@ss 9.0	27242604

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Classifications

ETIM

ETIM 3.0	EC001604
ETIM 4.0	EC001604
ETIM 5.0	EC001604
ETIM 6.0	EC001599

UNSPSC

UNSPSC 6.01	20142601
UNSPSC 7.0901	20142601
UNSPSC 11	20142601
UNSPSC 12.01	20142601
UNSPSC 13.2	32151602

Accessories

Accessories

Circular connector (cable-side)

Bus system connector - SACC-M12MSB-5CON-PG9 SH AU - 1507764



Bus system connector, PROFIBUS, INTERBUS, 5-position, shielded, Plug straight M12, B-coded, Screw connection, knurl material: Zinc die-cast, nickel-plated, cable gland Pg9, external cable diameter 6.5 mm ... 8.5 mm

Bus system connector - SACC-M12FSB-5CON-PG9 SH AU - 1507777



Bus system connector, PROFIBUS, INTERBUS, 5-position, shielded, Socket straight M12, B-coded, Screw connection, knurl material: Zinc die-cast, nickel-plated, cable gland Pg9, external cable diameter 6.5 mm ... 8.5 mm

Connector - SACC-M12MSB-5SC SH - 1513570



Connector, 5-position, shielded, Plug straight M12, B-coded, Spring-cage connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Connector - SACC-M12FSB-5SC SH - 1513596



Connector, 5-position, shielded, Socket straight M12, B-coded, Spring-cage connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

Connector - SACC-M12MRB-5SC SH - 1513583



Connector, 5-position, shielded, Plug angled M12, B-coded, Spring-cage connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

Connector - SACC-M12FRB-5SC SH - 1513606



Connector, 5-position, shielded, Socket angled M12, B-coded, Spring-cage connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

Connector - SACC-M12MS-5SC M - 1508187



Connector, 5-position, Plug straight M12, A-coded, Spring-cage connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

Connector - SACC-M12FS-5SC M - 1508200



Connector, 5-position, Socket straight M12, A-coded, Spring-cage connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

Data cable preassembled

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Bus system cable - SAC-5P-M12MSB/ 2,0-900 - 1507065



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on free cable end, cable length: 2 m

Bus system cable - SAC-5P-M12MSB/ 5,0-900 - 1507078



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on free cable end, cable length: 5 m

Bus system cable - SAC-5P-M12MSB/10,0-900 - 1507081



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on free cable end, cable length: 10 m

Bus system cable - SAC-5P-M12MSB/15,0-900 - 1507094



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on free cable end, cable length: 15 m

Bus system cable - SAC-5P- 2,0-900/M12FSB - 1507117



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, free cable end, on Socket straight M12, B-coded, cable length: 2 m

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Bus system cable - SAC-5P- 5,0-900/M12FSB - 1507120



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, free cable end, on Socket straight M12, B-coded, cable length: 5 m

Bus system cable - SAC-5P-10,0-900/M12FSB - 1507133



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, free cable end, on Socket straight M12, B-coded, cable length: 10 m

Bus system cable - SAC-5P-15,0-900/M12FSB - 1507146



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, free cable end, on Socket straight M12, B-coded, cable length: 15 m

Bus system cable - SAC-5P-M12MSB/ 0,3-900/M12FSB - 1507162



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on Socket straight M12, B-coded, cable length: 0.3 m

Bus system cable - SAC-5P-M12MSB/ 0,5-900/M12FSB - 1507175



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on Socket straight M12, B-coded, cable length: 0.5 m

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Bus system cable - SAC-5P-M12MSB/ 1,0-900/M12FSB - 1507188



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on Socket straight M12, B-coded, cable length: 1 m

Bus system cable - SAC-5P-M12MSB/ 2,0-900/M12FSB - 1507191



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on Socket straight M12, B-coded, cable length: 2 m

Bus system cable - SAC-5P-M12MSB/ 5,0-900/M12FSB - 1507201



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on Socket straight M12, B-coded, cable length: 5 m

Bus system cable - SAC-5P-M12MSB/10,0-900/M12FSB - 1507214



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on Socket straight M12, B-coded, cable length: 10 m

Bus system cable - SAC-5P-M12MSB/15,0-900/M12FSB - 1507227



Bus system cable, INTERBUS (16 Mbps), 5-position, PUR halogen-free, green RAL 6017, shielded, Plug straight M12, B-coded, on Socket straight M12, B-coded, cable length: 15 m

Sensor/actuator cable

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Sensor/actuator cable - SAC-5P-MS/ 2,0-186 SCO - 1518326



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, Plug straight M12 SPEEDCON, A-coded, on free cable end, cable length: 2 m

Sensor/actuator cable - SAC-5P-MS/ 5,0-186 SCO - 1518339



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, Plug straight M12 SPEEDCON, A-coded, on free cable end, cable length: 5 m

Sensor/actuator cable - SAC-5P-MS/10,0-186 SCO - 1518342



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, Plug straight M12 SPEEDCON, A-coded, on free cable end, cable length: 10 m

Sensor/actuator cable - SAC-5P-MS/15,0-186 SCO - 1518355



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, Plug straight M12 SPEEDCON, A-coded, on free cable end, cable length: 15 m

Sensor/actuator cable - SAC-5P- 2,0-186/FS SCO - 1518368



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, free cable end, on Socket straight M12 SPEEDCON, A-coded, cable length: 2 m

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Sensor/actuator cable - SAC-5P- 5,0-186/FS SCO - 1518371



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, free cable end, on Socket straight M12 SPEEDCON, A-coded, cable length: 5 m

Sensor/actuator cable - SAC-5P-10,0-186/FS SCO - 1518384



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, free cable end, on Socket straight M12 SPEEDCON, A-coded, cable length: 10 m

Sensor/actuator cable - SAC-5P-15,0-186/FS SCO - 1518397



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, free cable end, on Socket straight M12 SPEEDCON, A-coded, cable length: 15 m

Sensor/actuator cable - SAC-5P-MS/ 0,3-186/FS SCO - 1518407



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

Sensor/actuator cable - SAC-5P-MS/ 0,5-186/FS SCO - 1518410



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

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Sensor/actuator cable - SAC-5P-MS/ 1,0-186/FS SCO - 1518423



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

Sensor/actuator cable - SAC-5P-MS/ 2,0-186/FS SCO - 1518436



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

Sensor/actuator cable - SAC-5P-MS/ 5,0-186/FS SCO - 1518449



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

Sensor/actuator cable - SAC-5P-MS/10,0-186/FS SCO - 1518452



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

Sensor/actuator cable - SAC-5P-MS/15,0-186/FS SCO - 1518465



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

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Sensor/actuator cable - SAC-5P-MS/ 0,13-186/FS SCO - 1518481



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: 0.13 m

Sensor/actuator cable - SAC-5P-MSB/0,13-PUR/FSB SCO SH - 1518478



Sensor/actuator cable, 5-position, PUR halogen-free, black-gray RAL 7021, shielded, Plug straight M12 SPEEDCON, B-coded, on Socket straight M12 SPEEDCON, B-coded, cable length: 0.13 m

Simulation software

Software - FL WST BASIC DEMO - 2692377



Simulation software for supporting the planning of wireless systems in industrial environments. Their functionality is limited with regard to the memory options as compared with the full version FL WST BASIC.

Software - FL WST BASIC - 2692254



Simulation software for supporting the planning of wireless systems in industrial environments. Thus, the later number and position of wireless components can be estimated and the quality of the radio coverage simulated.

Terminal marking

Zack Marker strip, flat - ZBF 12:UNBEDRUCKT - 0809735



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: CMS-P1-PLOTTER, PLOTMARK, mounting type: snap into flat marker groove, for terminal block width: 12 mm, lettering field size: 5.15 x 12.15 mm

Wireless module - FLM BT DI 16 M12 - 2693208

Accessories

Wireless IO component

Wireless module - FLM BT BS 3 - 2736770



Wireless IO base station for up to three Wireless IO devices, Bluetooth V1.2, 2.4 GHz frequency band; 1 wireless interface; WLAN-BlackChannelList; LEM; Fieldline Modular M12 local bus connection

Wireless module - FL BT MOD IO AP - 2884758



Wireless Bluetooth Modbus I/O access point, Modbus TCP; RJ45 connection for LAN; D-SUB9 - RS-232; antenna connection: SMA (female)

Y-distributor

Y distributor - SAC-3P-M12Y/2XM12FS PE - 1683455



Y distributor, 4-position, Plug straight M12, A-coded, on Socket straight M12, A-coded and Socket straight M12, A-coded

Spare parts

Configuration connector - FLM BT ID-PLUG M12 - 2736783



Configuration plug ID-PLUG, necessary to configure the Wireless-IO modules
