

FLM BT DI 16 M12 - Wireless module



2693208

<https://www.phoenixcontact.com/us/products/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.

Your advantages

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

Commercial data

Item number	2693208
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	NULL
Product key	DNC663
GTIN	4046356459068
Weight per piece (including packing)	421.5 g
Weight per piece (excluding packing)	300 g
Customs tariff number	85176200
Country of origin	DE

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Technical data

Notes

Utilization restriction

EMC note	EMC: class A product, see manufacturer's declaration in the download area
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Product properties

Product type	Wireless module
Product family	Fieldline
Type	modular
Set comprises	2736783 FLM BT ID-PLUG M12
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)

Wireless card

Number	1
Type	Bluetooth, 2.4 GHz ... 1 Mbps
Assembly note	Permanently installed

System properties

Programming data

Process data channel	8 bit
Input address area	8 bit
Output address area	0 Byte
Parameter channel (PCP)	0 Byte
Register length (bus)	8 bit

Electrical properties

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
Protective circuit	Overload protection, short-circuit protection of sensor supply

Supply: 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)

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Power dissipation	typ. (with 24 V supply voltage)
Power dissipation formula	$P_{TOT} = 0.75 \text{ W} + I_s^2 \times 0.68 \text{ } \Omega + n \times 0.07 \text{ W}$, (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)

Electrical isolation/isolation of the voltage ranges

Test voltage: To I/O	500 V AC
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Input data

Digital:

Input name	Digital inputs
Number of inputs	16 (double-occupancy)
Connection method	M12 connector
Connection technology	2-, 3-conductor (4-conductor as an option)
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)
Total sensor current	max. 600 mA
Delay at signal change from 0 to 1	20 μ s
Delay at signal change from 1 to 0	700 μ s
Protective circuit	Reverse polarity protection

Interfaces

Antenna

Number	1
Connection method	SMA (male)
Gain	0 dBi (Antenna gain)

Functions

Security	128-bit data encryption
	Authentication
	PIN
	Non-discoverable
Wireless licenses	Europe, additional countries in the e-shop
Country support	Canada
	Russia (Special rule: Please contact the Product Manager)
	Switzerland
	Singapore
	Turkey
	USA

Wireless

Designation	Bluetooth
Antenna connection method	SMA (female)

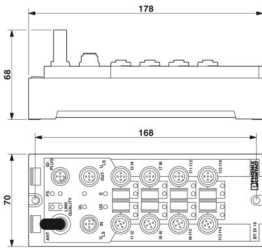
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Frequency range	2.402 GHz ... 2.48 GHz (ISM bandwidth)
Frequency band	2.4 GHz
Wireless standard	Bluetooth 1.2
Transmission power	8 dBm (with automatic control)
Receiver sensitivity	-88.00 dBm
Number of wireless interfaces	1
Wireless modules that can be connected	1 (FLM BT BS 3, FL BT MOD IO AP)
Profiles supported	HID

Dimensions

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

Material specifications

Color	anthracite gray (RAL 7016)
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Mechanical properties

Technical data

Drill hole spacing	168 mm
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Environmental and real-life conditions

Ambient conditions

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

Mechanical test

Shock in accordance with EN 60068-2-27/IEC 60068-2-27	30g
Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6	5g

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Standards and regulations

Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
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Mounting

Mounting type	Panel mounting, optionally on mounting panel
	Panel mounting
Assembly note	OMNI antenna is included

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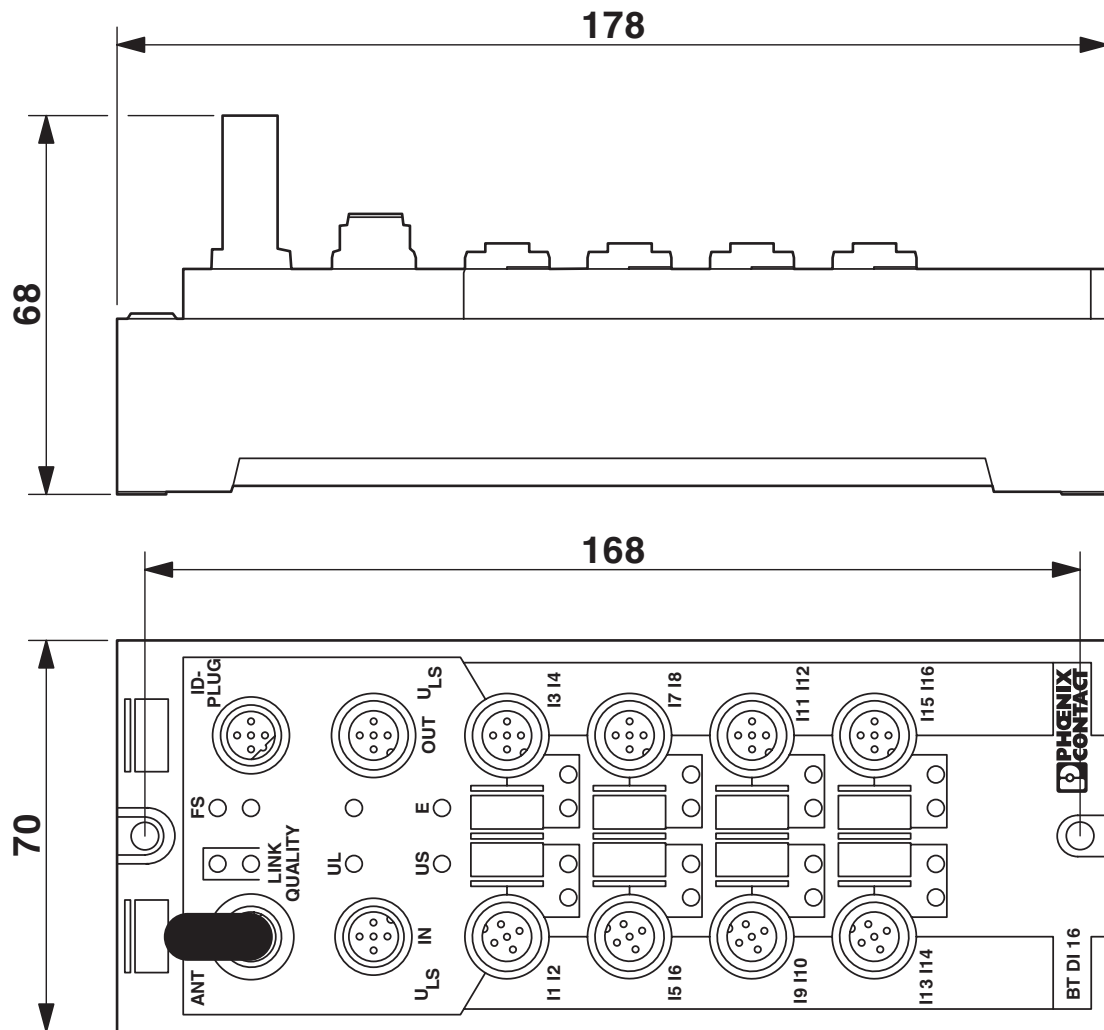


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Drawings

Dimensional drawing

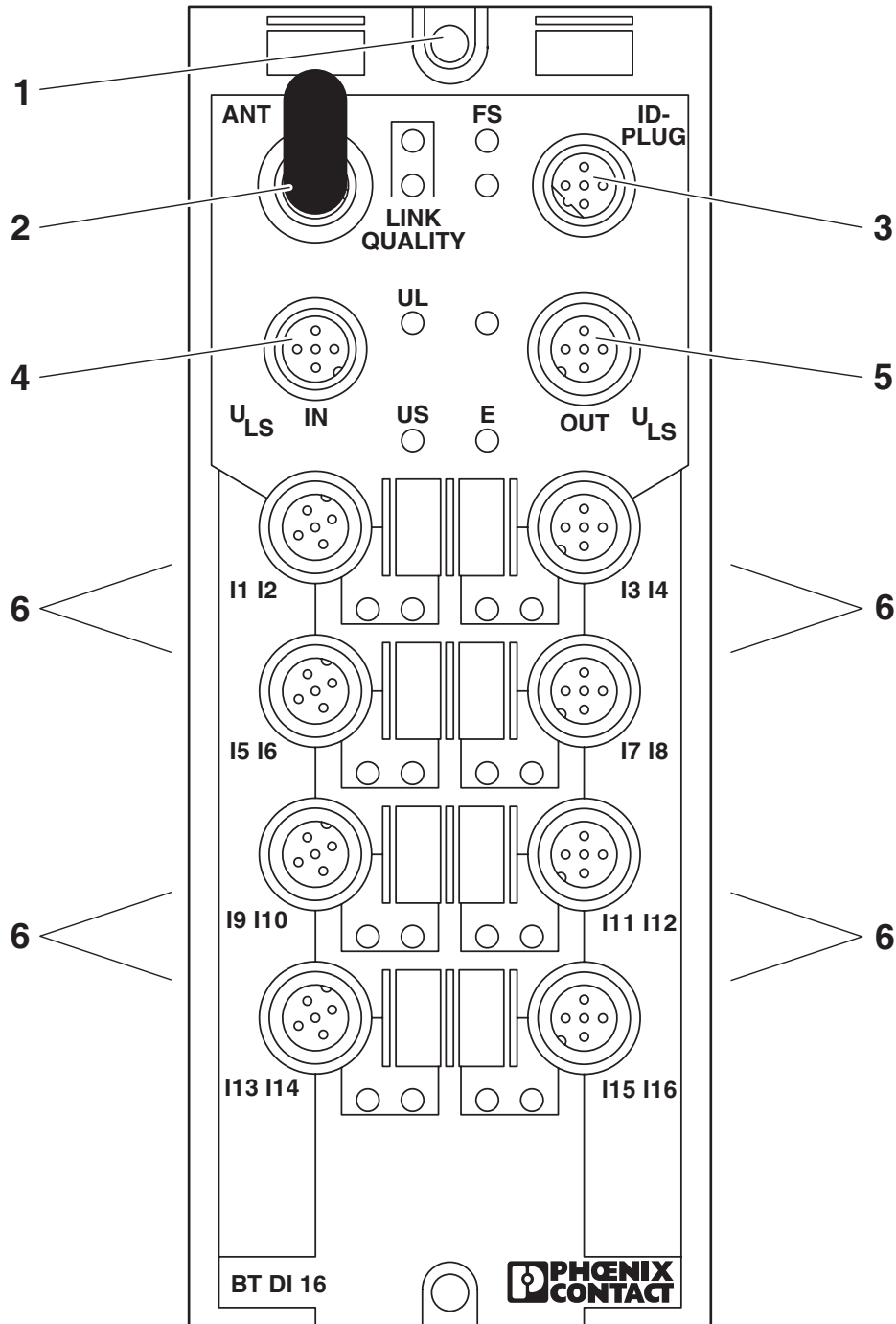


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Product drawing



- 1 FG: Functional 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)

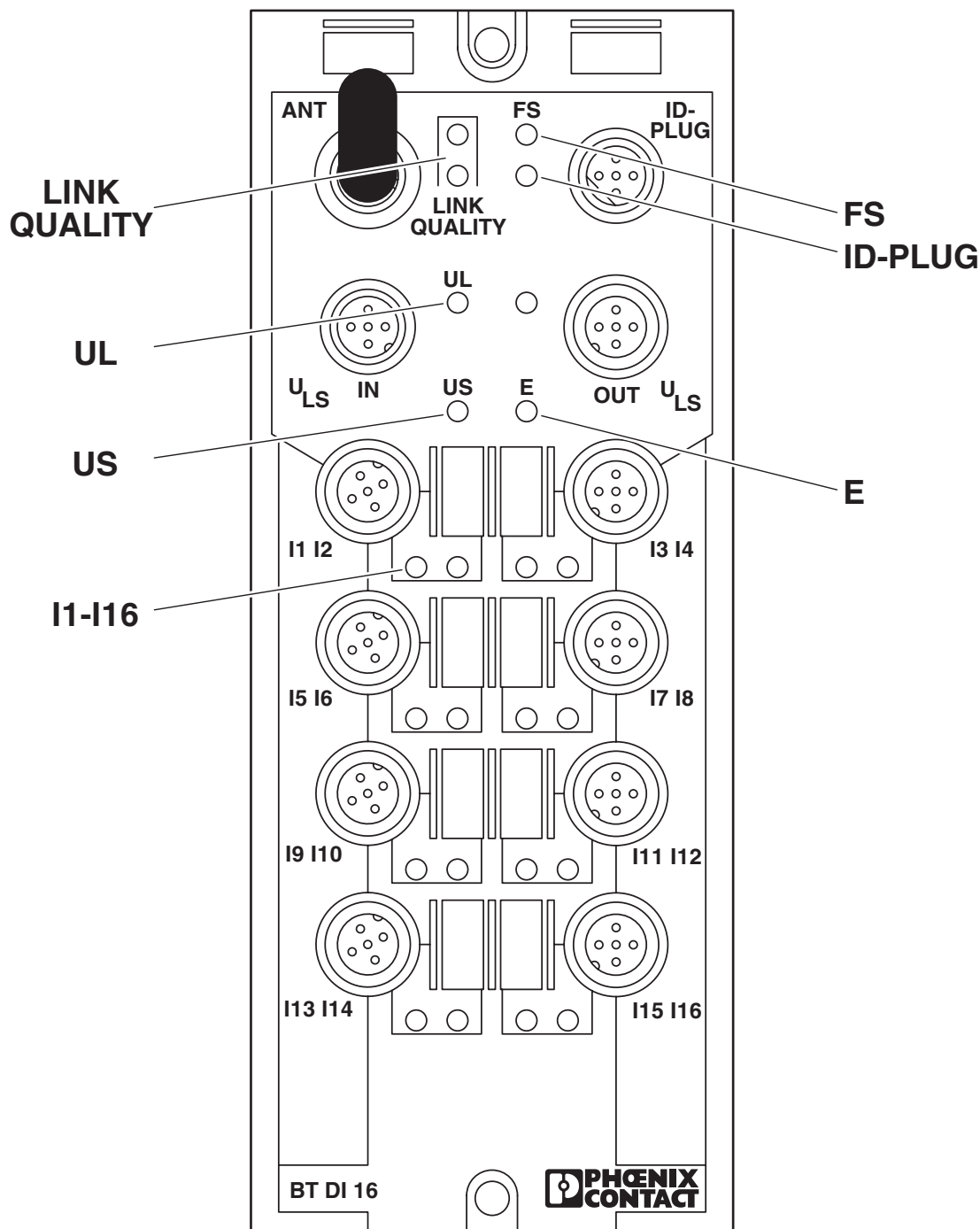
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Product drawing



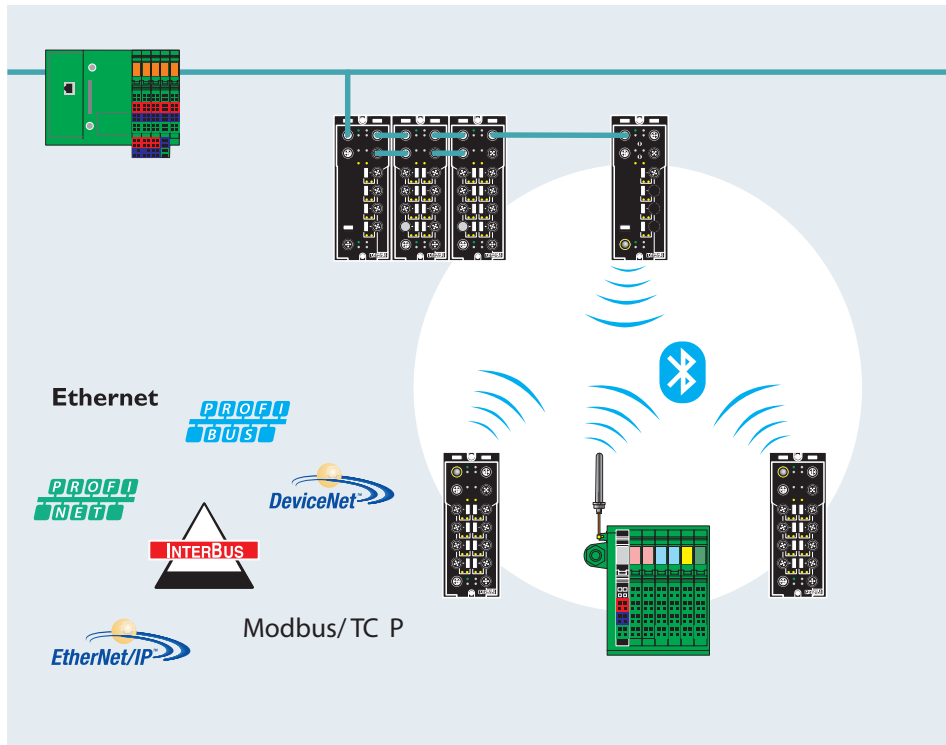
- LINK QUALITY: Green/yellow
Quality of Bluetooth
- FS connection: Red
- Failure state ID-PLUG: Green/yellow/red
- ID-PLUG UL status: Green
- US communications power: Green
- E sensor supply: Red
- Short-circuit/overload of sensor supply I1-I16: Yellow
- Status of the inputs

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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.

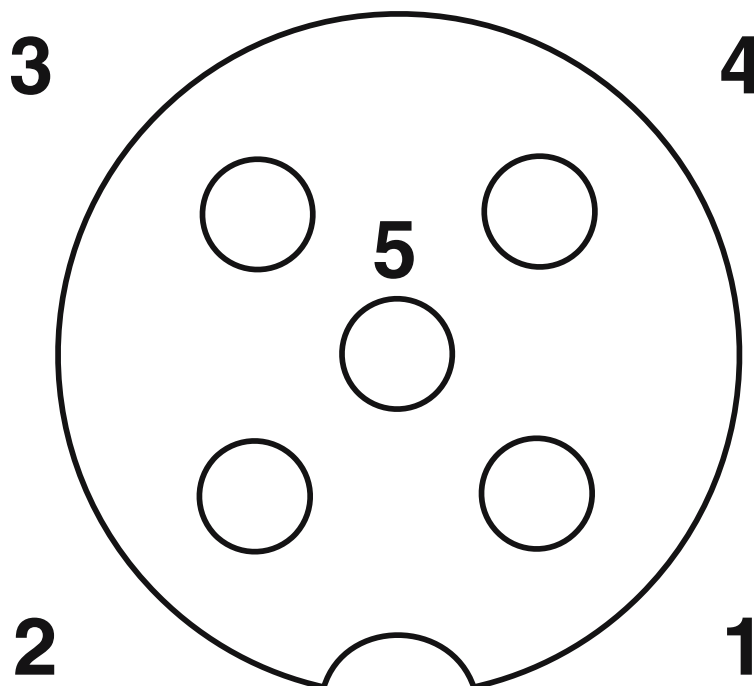
- Fast data transmission in typ. 10 ms per module
- Short range* of 20 to 50 m in industrial halls and more than 100 m outdoors.

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

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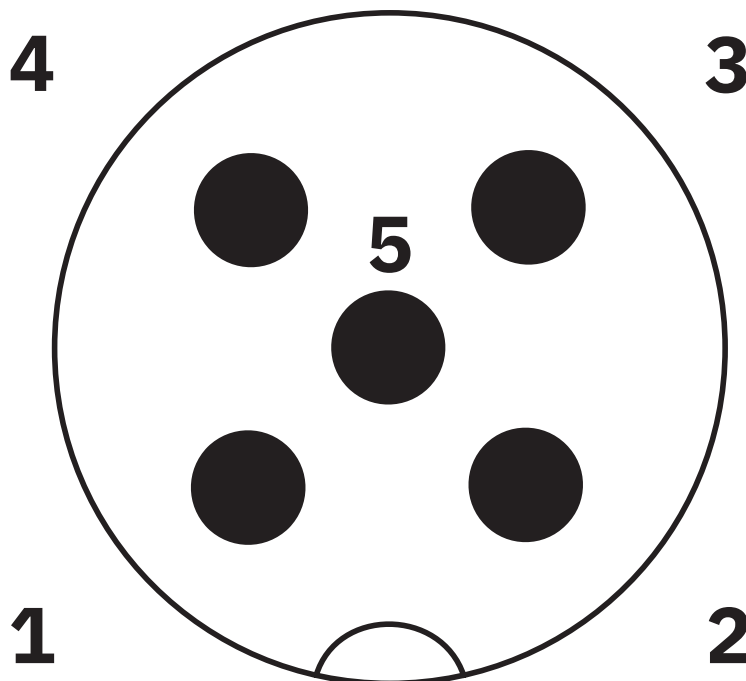
Schematic diagram



Assignment of inputs

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

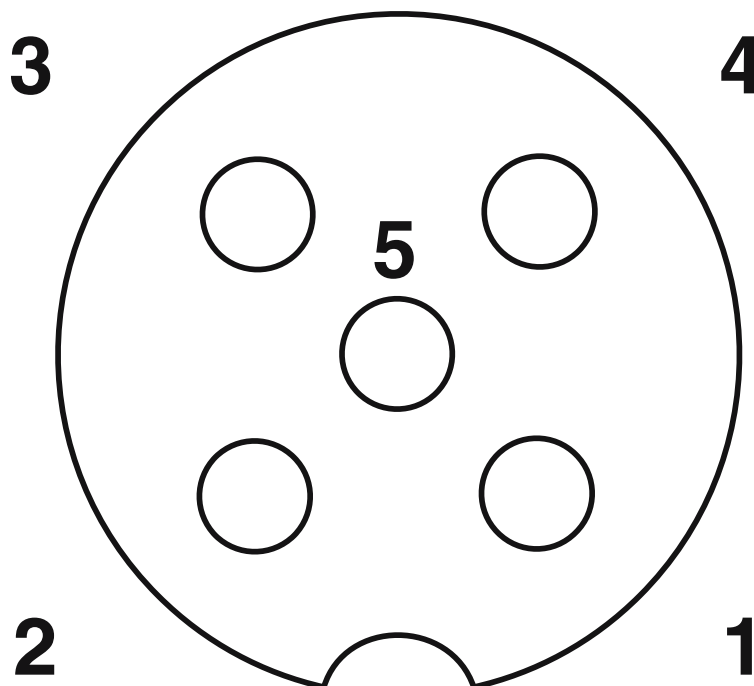
Schematic diagram



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

Schematic diagram



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

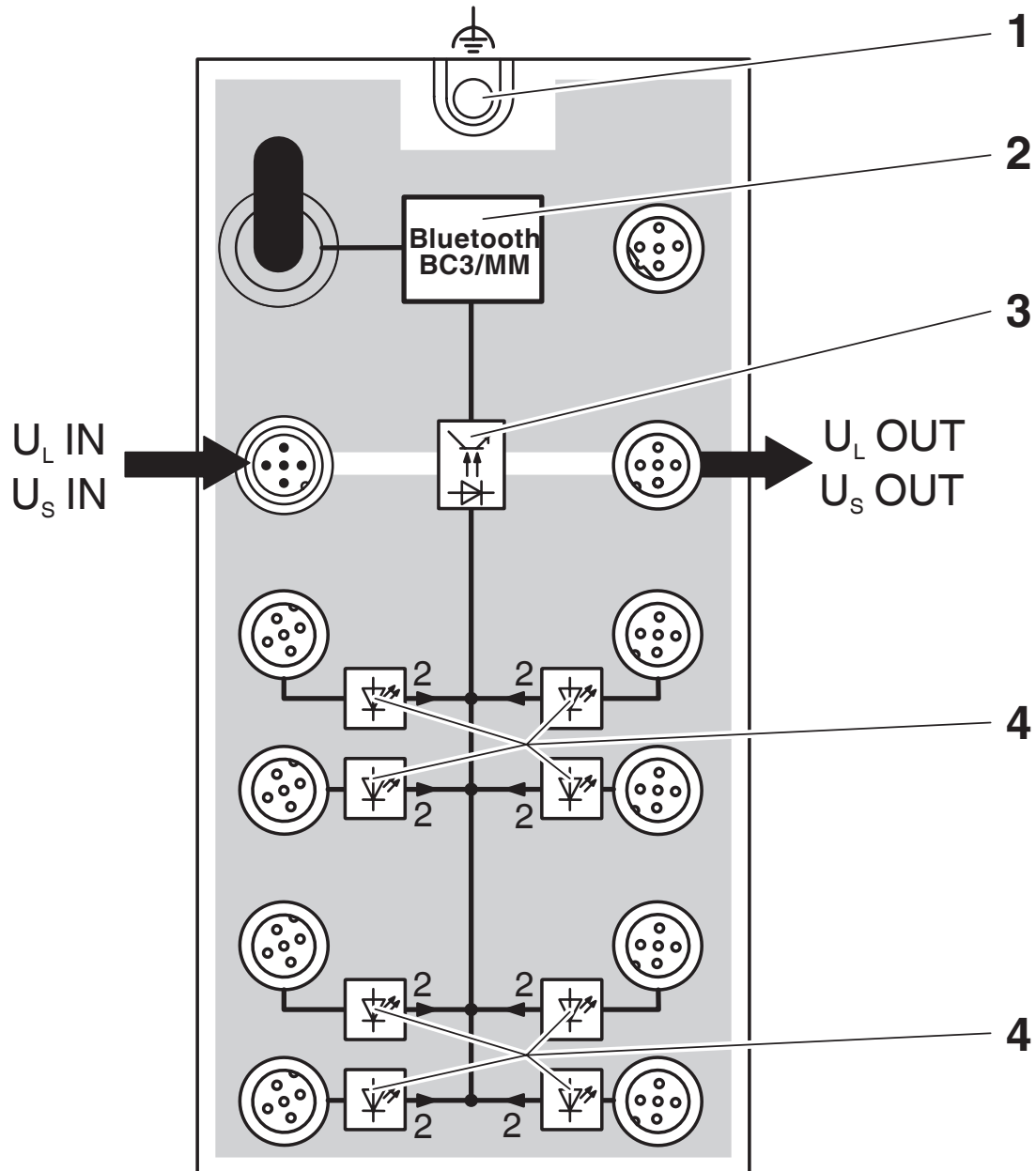
Pin 5 not used

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Circuit diagram



Basic circuit diagram:

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

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Environmental product compliance

China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%
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