

# 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 $\mu$ s
Delay at signal change from 1 to 0	700 $\mu$ 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)

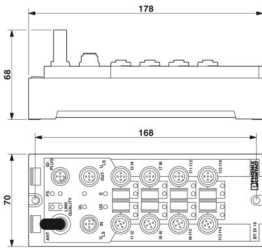
# FLM BT DI 16 M12 - Wireless module

2693208

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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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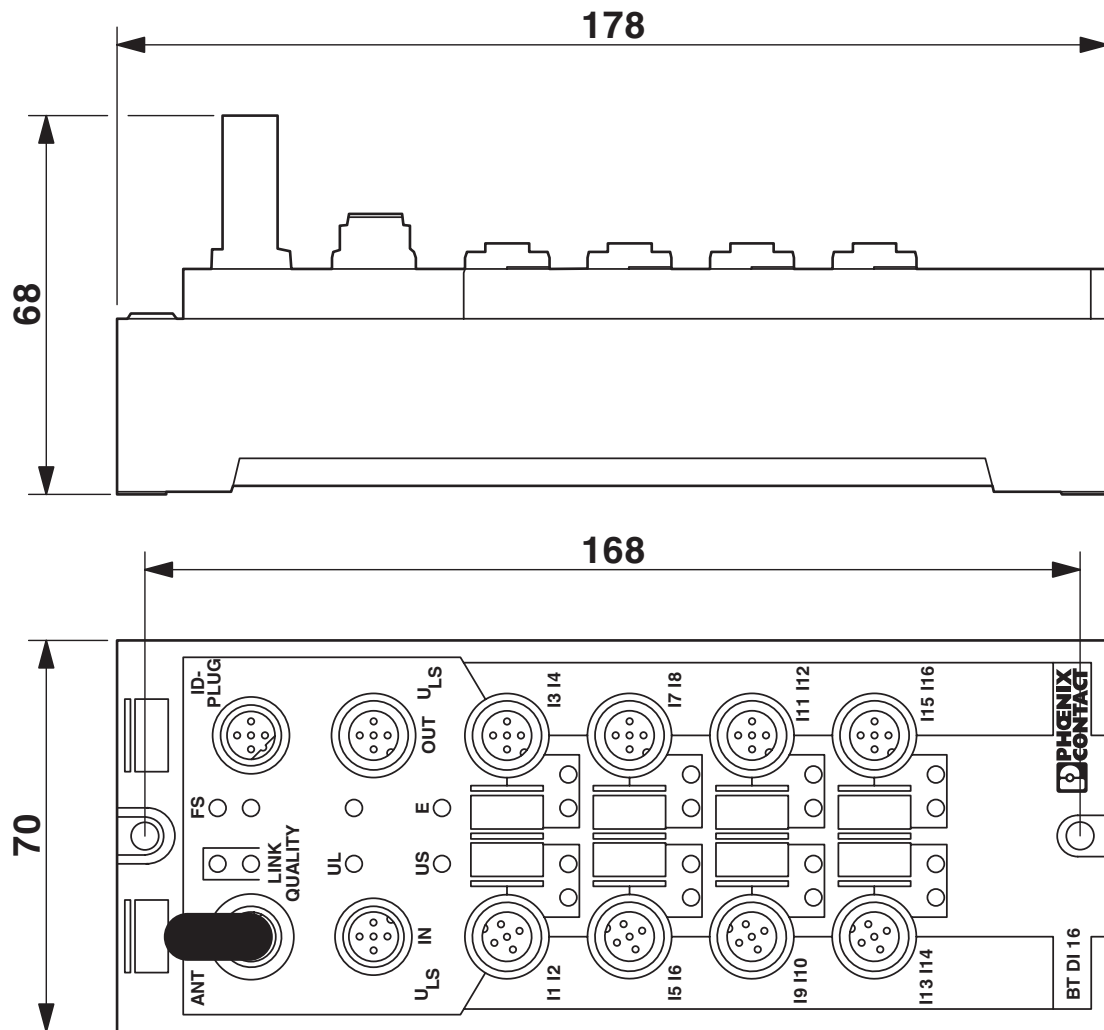


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## Drawings

Dimensional drawing

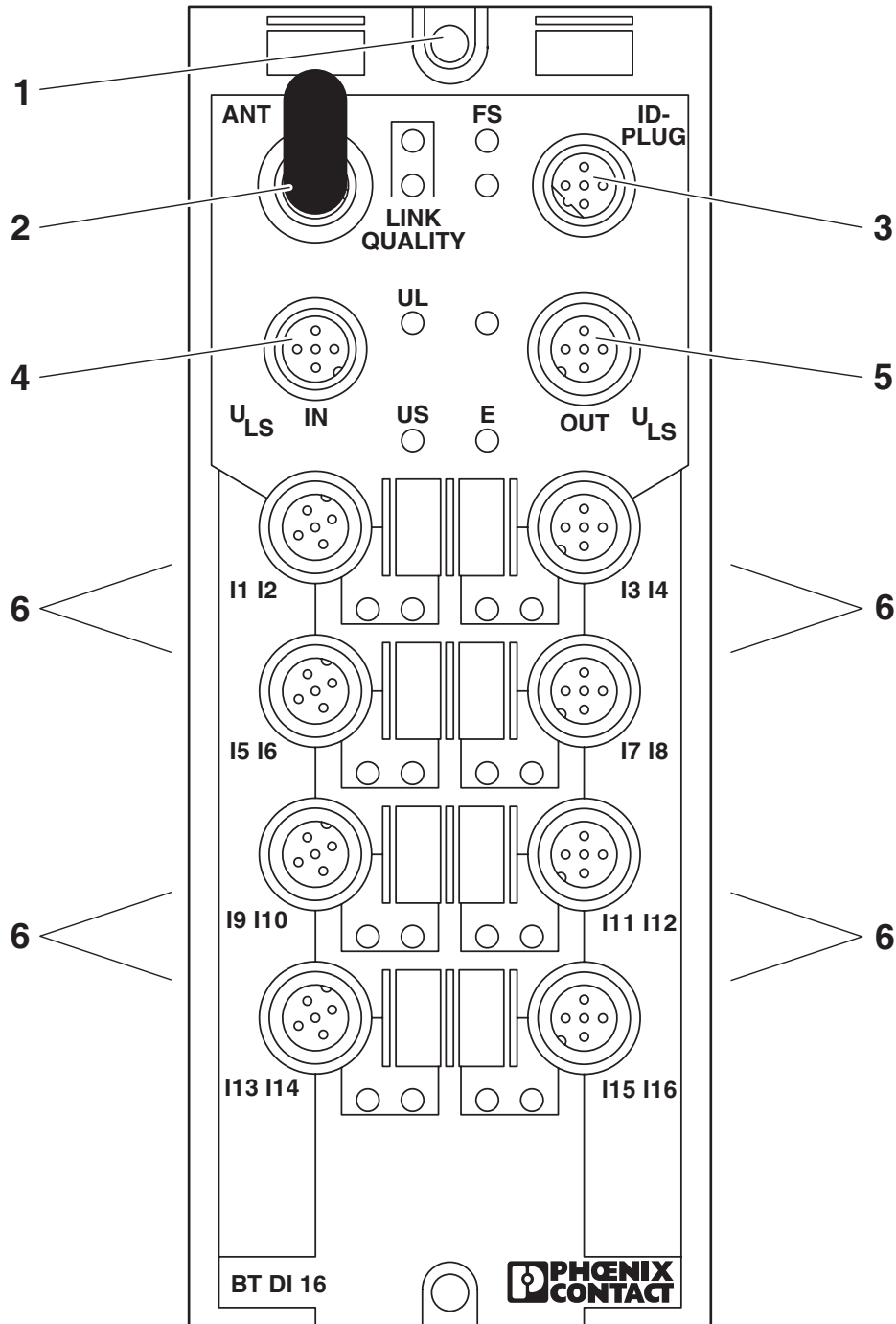


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Product drawing



- 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)

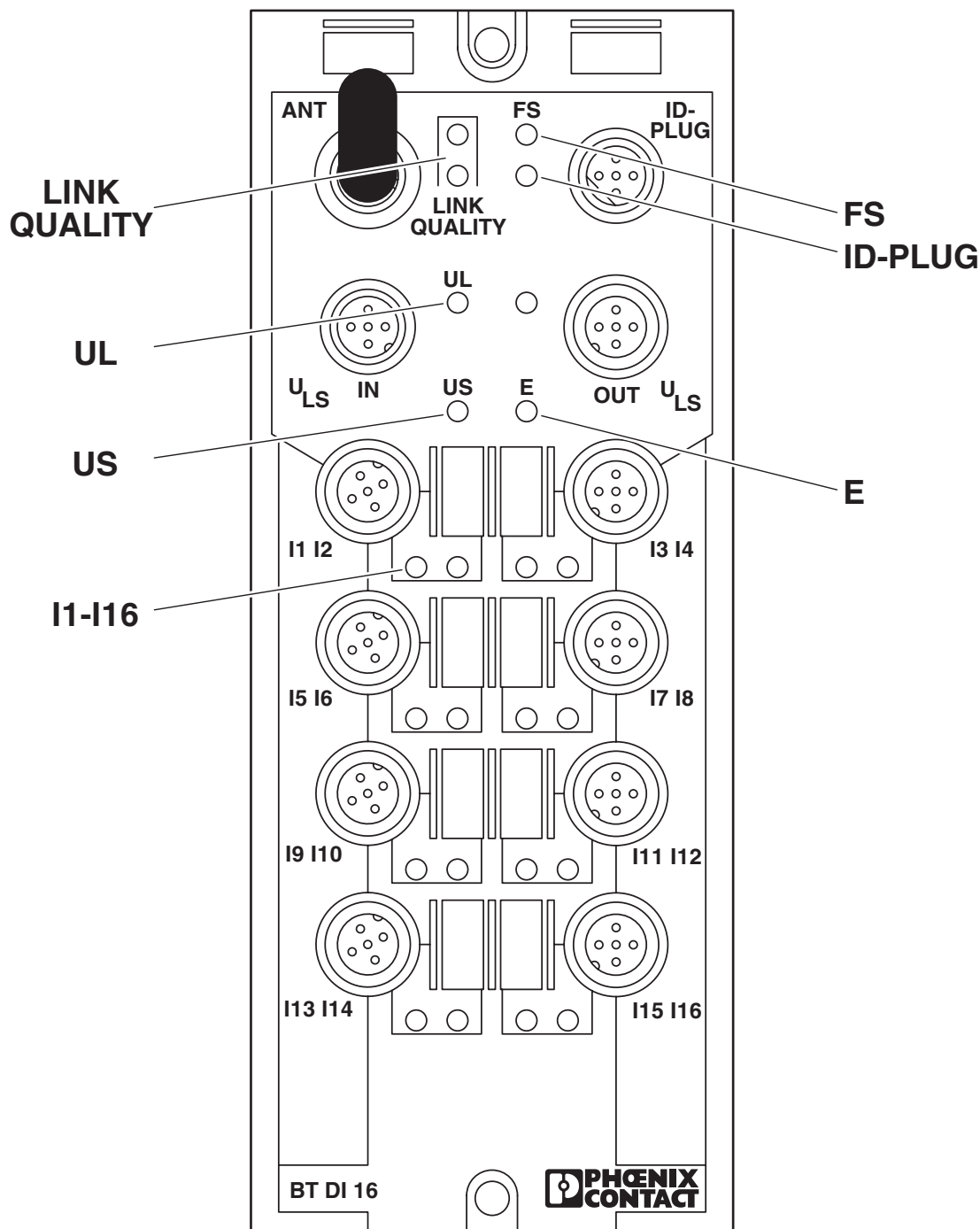
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Product drawing



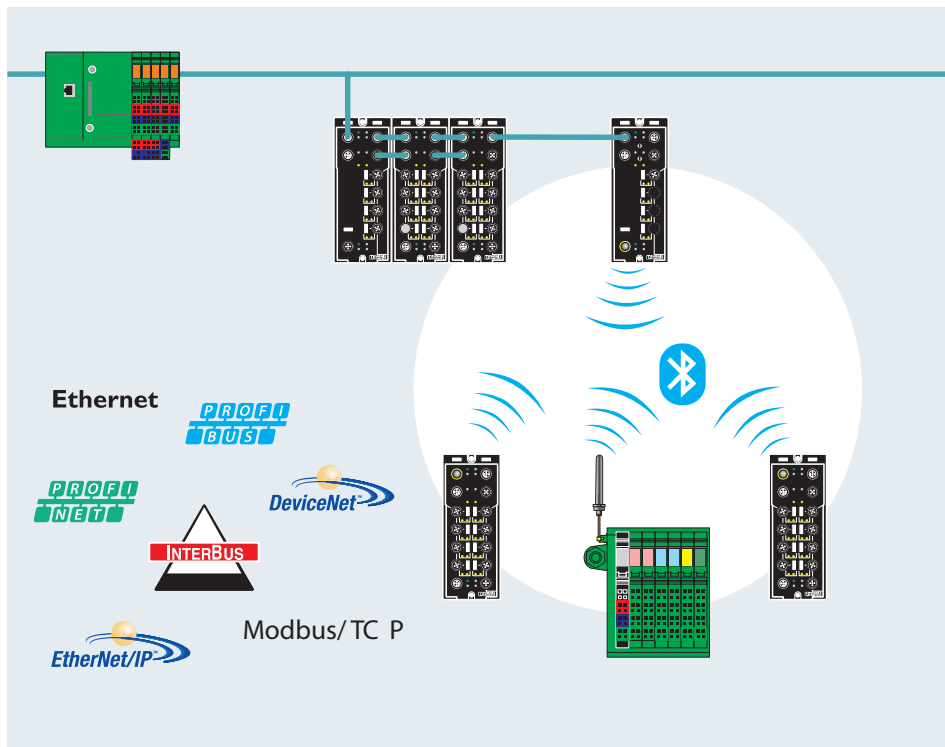
- LINK QUALITY: Green/yellow
- Quality of Bluetooth
- FS connection: Red
- Failure state ID-PLUG: Green/yellow/red
- ID-PLUG UL status: Green
- US communications power: Green
- E sensor supply: Red
- Short-circuit/overload of sensor supply I1-I16: Yellow
- Status of the inputs

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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.

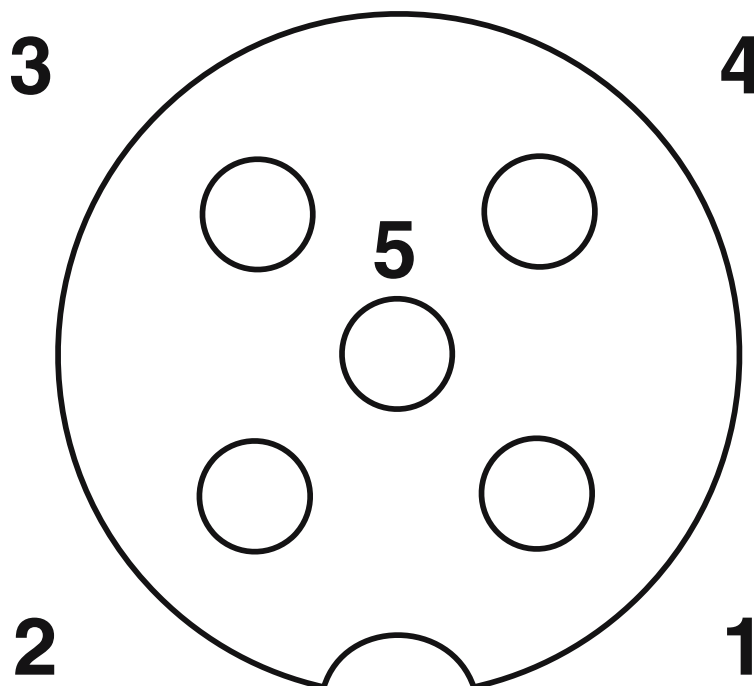
- Fast data transmission in typ. 10 ms per module
- Short range\* of 20 to 50 m in industrial halls and more than 100 m outdoors.

\* 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

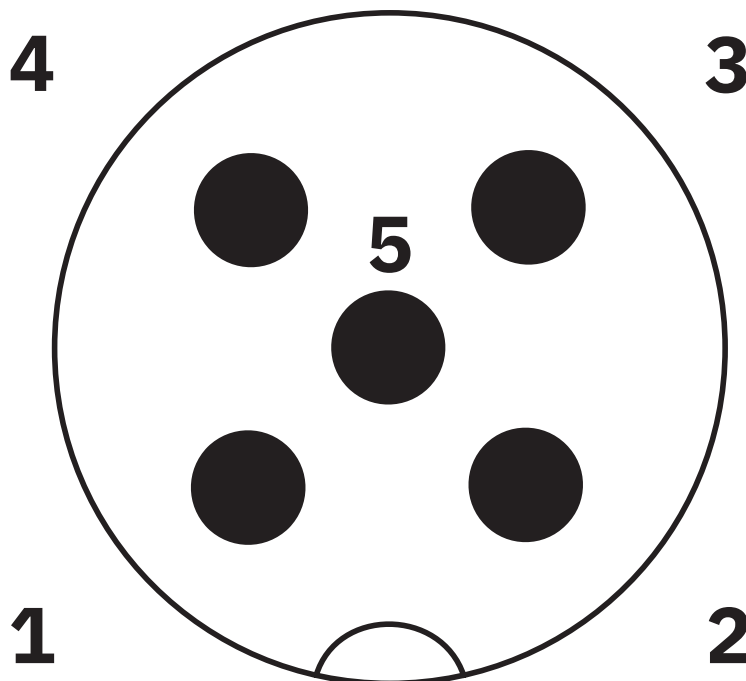
Pin 4 input x

Pin 5 FE

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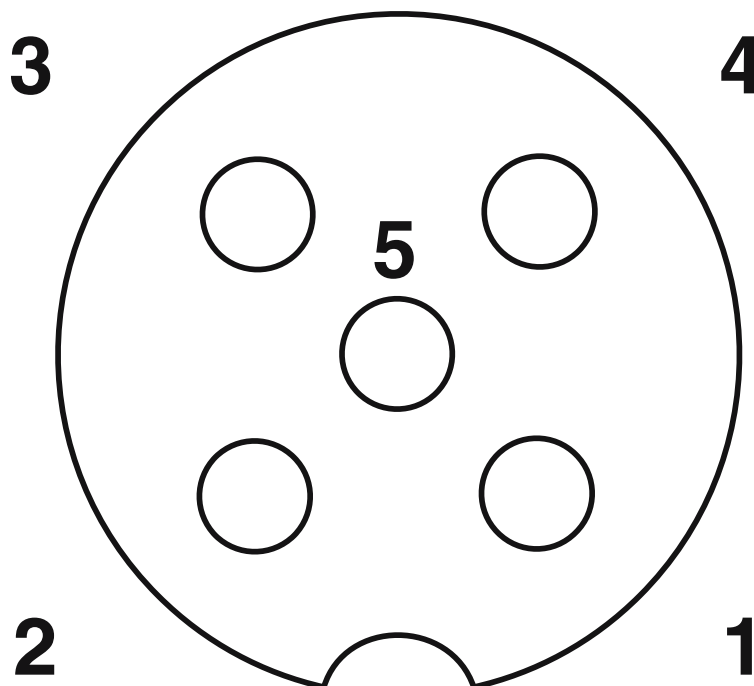
Schematic diagram



## 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)

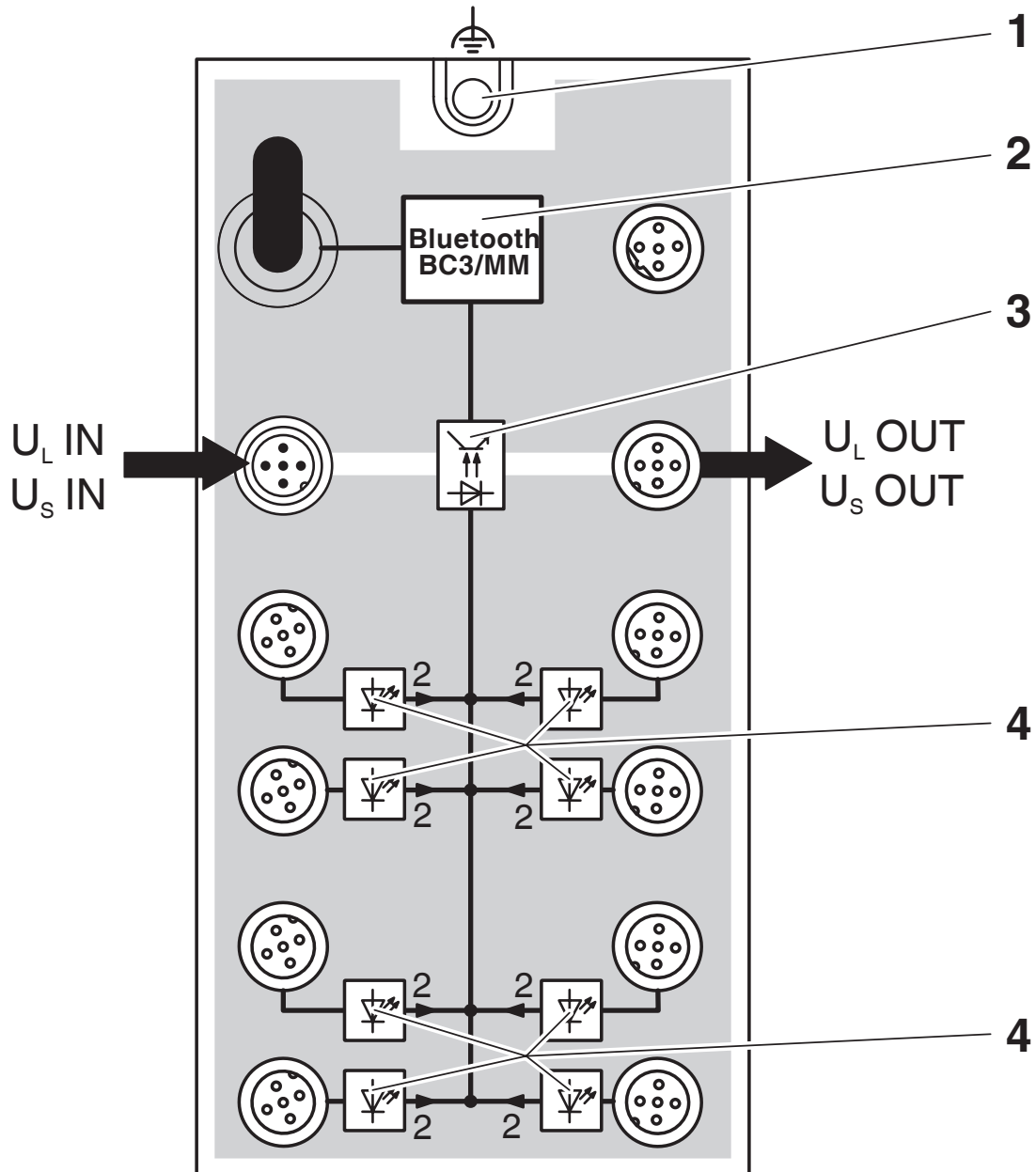
- Pin 1  $U_L$  +24 V
- Pin 2  $U_S$  GND
- Pin 3  $U_L$  GND
- Pin 4  $U_S$  +24 V
- Pin 5 not used

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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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