

NEARFI PD 2A ETH B - Inductive coupler



1234224

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NearFi base, contactless power and real-time Ethernet coupler, 50 W (US), 100 Mbps, range ≤ 10 mm, M12 screw connection, IP65, can be combined with NEARFI PD 2A ETH R. Incompatible with NEARFI 2200 (new)

Product description

With the robust NEARFI-PD... NearFi couplers, you can transmit power (24 V DC / 2 A) and real-time Ethernet data (100 Mbps, full duplex) without contact across a distance in the centimeter range. Furthermore, the specially developed NearFi technology enables latency-free and protocol-independent Ethernet communication. At the same time, the limited wireless range of just a few centimeters also ensures security and permits parallel applications in the tightest of spaces. You can therefore replace wear-sensitive and maintenance-intensive connections and reduce downtimes in your systems.

Your advantages

- Contactless - and therefore no wear and no maintenance
- Protocol-independent, latency-free Ethernet real-time communication with 100 Mbps (full duplex)
- High power in a compact housing
- All-round visible diagnostics with light ring on the housing
- High degree of mounting freedom with flexible proximity options
- Plug and Play - as easy as a plug
- Degree of protection IP65

Commercial data

Item number	1234224
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN26
Product key	DNC691
GTIN	4063151337919
Weight per piece (including packing)	598.2 g
Weight per piece (excluding packing)	550 g
Customs tariff number	85176200
Country of origin	DE

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Technical data

Product properties

Product type	Inductive coupler
Product family	NearFi
Application	Ethernet
	Power
MTTF	115 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	60 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	27 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)

Insulation characteristics

Overvoltage category	II
Pollution degree	2

Electrical properties

Maximum power dissipation for nominal condition	4.08 W
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Supply

Supply voltage range	19 V DC ... 30 V DC
Typical current consumption	170 mA (without remote coupler, at 24 V DC, at 25°C)
	480 mA (with remote coupler, without load, at 24 V DC, at 25°C)
Max. current consumption	≤ 3.6 A (with remote coupler, 2 A load, input voltage of 19 V DC)
Inrush current	≤ 0.8 A (8 ms at 24 V DC, without remote coupler)
	≤ 4.5 A (6 ms at 24 V DC, with remote coupler, without load)
Protective circuit	Transient protection, polarity protection

Input data

Digital

Description of the input	Digital input
Number of inputs	1
Voltage input signal	19 V DC ... 30 V DC
Switching level "1" signal	19 V DC ... 30 V DC

Output data

Signal

Output name	Digital output
Number of outputs	1
Voltage output signal	≤ 24 V DC

Connection data

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Supply

Connection method	M12 male, A-coded
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Interfaces

Data: Ethernet interface, 100Base-T(X) in accordance with IEEE 802.3

Transmission speed	100 Mbps
Connection method	M12 female, D-coded
Note on the connection method	Auto negotiation and autocrossing, fast startup (FSU, <500 ms) Typical bit error rate $\leq 10^{-12}$
No. of channels	1
Transmission length	100 m (shielded twisted pair)
Transmission medium	Copper
Protocols supported	Protocol transparent: PROFINET, PROFINET IRT, PROFIsafe, EtherCAT®, Modbus/TCP, Powerlink, TSN, etc.

Inductive: Power transmission

Switch-on time	< 450 ms (ETH Full Duplex operating mode)
Range	min. 0 mm ≤ 10 mm (at 55°C) ≤ 12 mm (at 25 °C)
Center offset	± 5 mm
Wireless modules that can be connected	1 (Remote coupler)
Frequency range	100 kHz ... 148.5 kHz (Power transmission)
Test field strength	$\sim 1.95 \mu\text{A/m}$ (within 10 m distance)

Wireless

Wireless modules that can be connected	1 (Remote coupler)
Frequency	60 GHz
Frequency range	57 GHz ... 64 GHz (Data transmission)
Transmission power	< 10 mW (EIRP)
Delay time	$\leq 1 \mu\text{s}$ (typical)

Dimensions

Dimensional drawing	
Width	80 mm
Height	86 mm
Depth	39 mm

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Material specifications

Color (Housing)	black (RAL 9005)
Material (Enclosure)	PBT
	Die-cast zinc
Flammability rating according to UL 94	V0

Cable/line

Other resistance	Resistant to welding splashes
	Resistant to salt spray in accordance with IEC 60068-2-11 (96 h in 5% salt spray)

Mechanical tests

Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6	Vibration (operation): 5 g per spatial direction, 10 Hz ... 150 Hz, amplitude ± 0.34 mm
Shock in accordance with EN 60068-2-27/IEC 60068-2-27	Shock (operation): 30 g, 11 ms duration, half-sine shock pulse, three shocks per spatial direction
Continuous shock in accordance with EN 60068-2-27/IEC 60068-2-27	Continuous shock (operation): 10 g, 16 ms duration, half-sine shock pulse, 1,000 shocks per spatial direction

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP65 (Manufacturer's declaration)
Impact strength	IK06
Ambient temperature (operation)	-20 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	2000 m
Permissible humidity (operation)	10 % ... 95 %
Permissible humidity (storage/transport)	10 % ... 95 %
Air pressure (operation)	80 kPa ... 108 kPa (up to 2000 m above sea level)
Air pressure (storage/transport)	66 kPa ... 108 kPa (up to 3500 m above sea level)

Test (Salt spray)

Test standard	IEC 60068-2-11
Test duration (Total)	96 h

Approvals

CE

Certificate	CE-compliant
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Wireless approval, Europe

Note	RED 2014/53/EU
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UL, USA

Identification	UL 61010 Recognized
	UL 61010-2-201, 2nd Edition

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	UL 61010-1, 3rd Edition
Certificate	E238705

UL, Canada

Identification	cUL 61010 Recognized
	CSA C22.2 NO. 61010-2-201:18, 2nd Edition
	CSA C22.2 NO. 61010-1, 3rd Edition
Certificate	E238705

Wireless approval USA, FCC

Certificate	YG3PD2AETHB
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Wireless approval Japan, MIC

Identification	006-001058
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KC approval for South Korea

Certificate	R-R-PCK-1234232
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CC-Link IE TSN

Identification	Class A
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EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
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Electrostatic discharge

Standards/regulations	EN 61000-4-2
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Electrostatic discharge

Contact discharge	± 4 kV (Test Level 2)
Discharge in air	± 8 kV (Test Level 3)
Comments	Criterion B

Electromagnetic HF field

Standards/regulations	EN 61000-4-3
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Electromagnetic HF field

Frequency range	80 MHz ... 1 GHz (Test Level 3)
Field intensity	10 V/m
Comments	Criterion A

Fast transients (burst)

Standards/regulations	EN 61000-4-4
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Fast transients (burst)

Input	± 2 kV (Test Level 3 - asymmetrical)
Output	± 2 kV (Test Level 3 - asymmetrical)
Signal	± 2 kV (Test Level 3 - asymmetrical)
Comments	Criterion B

Surge current load (surge)

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Standards/regulations	EN 61000-4-5
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Surge current load (surge)

Input	± 0.5 kV (Test Level 1 - symmetrical)
	± 1 kV (Test Level 2 - asymmetrical)
Output	± 1 kV (Test Level 2 - asymmetrical)
Signal	± 1 kV (Test Level 2 - asymmetrical)
Comments	Criterion B

Conducted interference

Standards/regulations	EN 61000-4-6
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Conducted interference

Frequency range	0.15 MHz ... 80 MHz (Test Level 3 - asymmetrical)
Comments	Criterion A
Voltage	10 V (80% amplitude modulation with 1 kHz)

Emitted interference

Standards/regulations	EN 55016-2-3
Comments	Class A, industrial applications

Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

Standards and regulations

Free from substances that could impair the application of coating	VDMA 24364:2018-05
Other resistance	Resistant to welding splashes
	Resistant to salt spray in accordance with IEC 60068-2-11 (96 h in 5% salt spray)
Standards/regulations	EN 60204-1 (PELV)
Standard designation	Protective extra-low voltage

Mounting

Mounting type	Panel mounting
Assembly note	Observe derating
Mounting position	any

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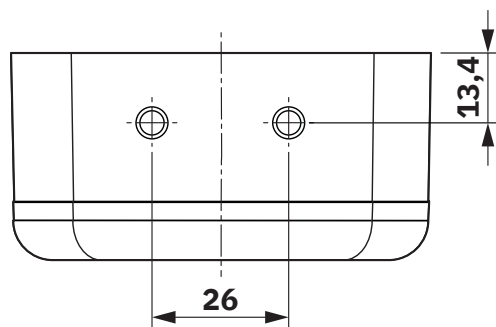
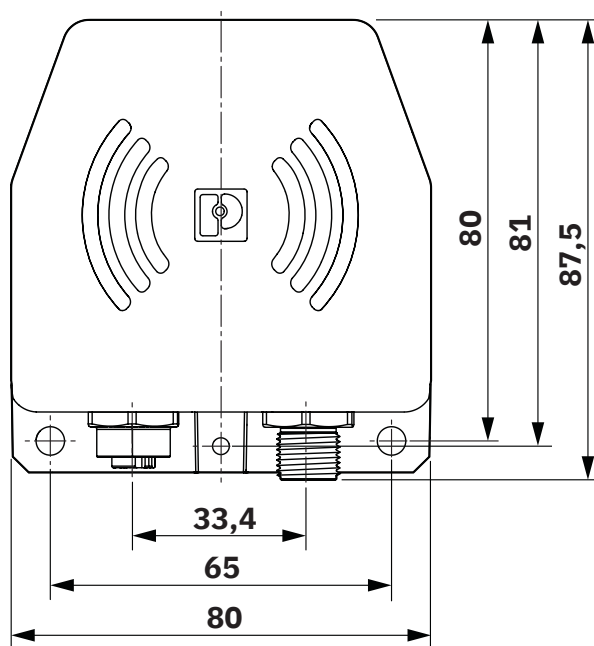
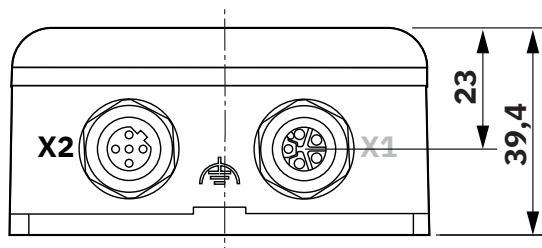
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Drawings

Dimensional drawing



Dimensional drawing

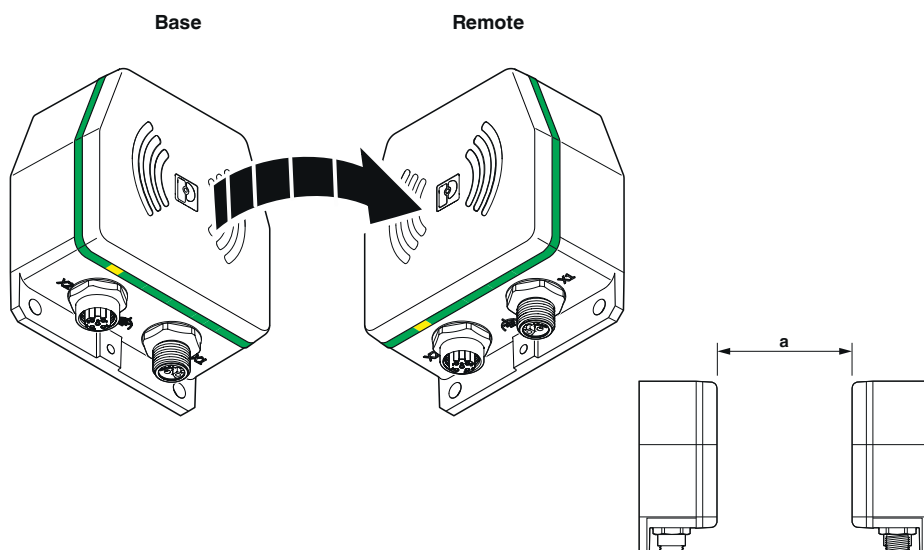
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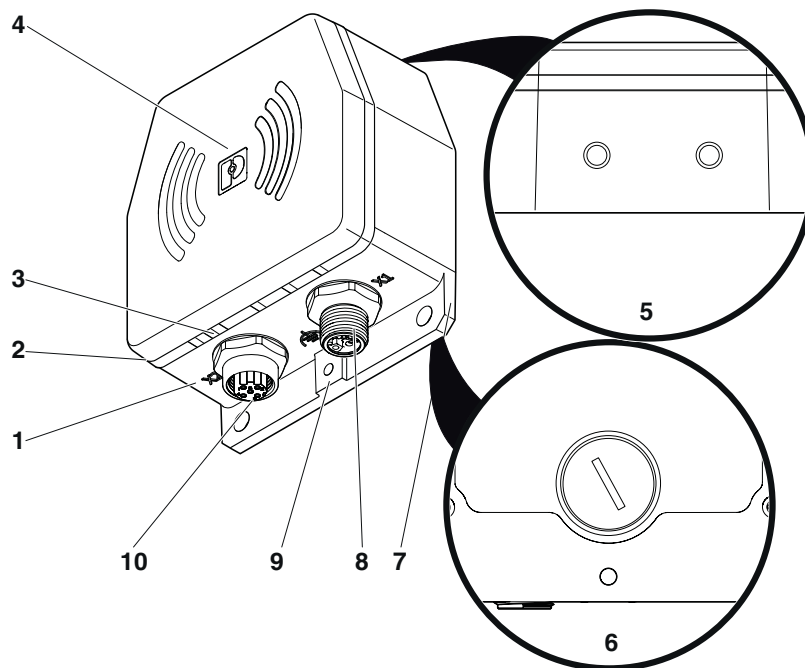


Schematic diagram



Method of operation

Schematic diagram



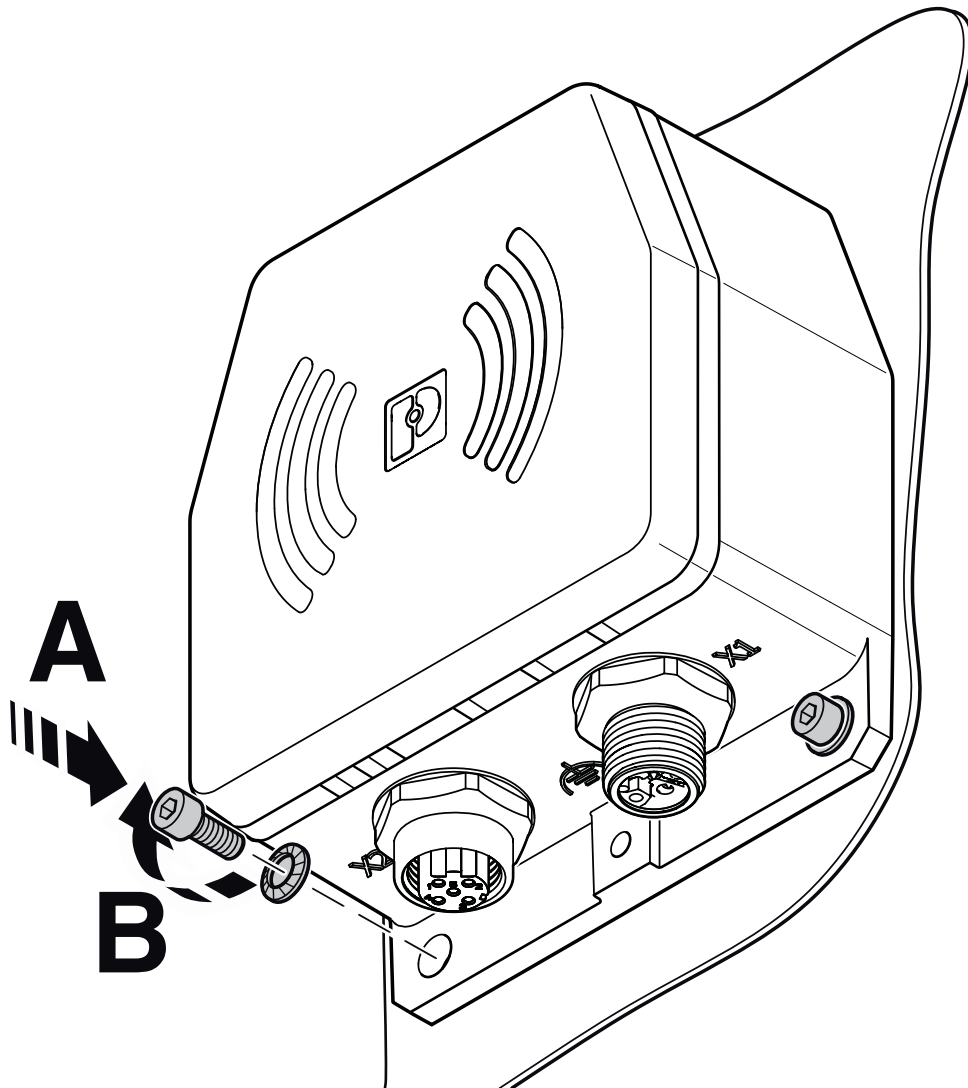
Function elements

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Schematic diagram



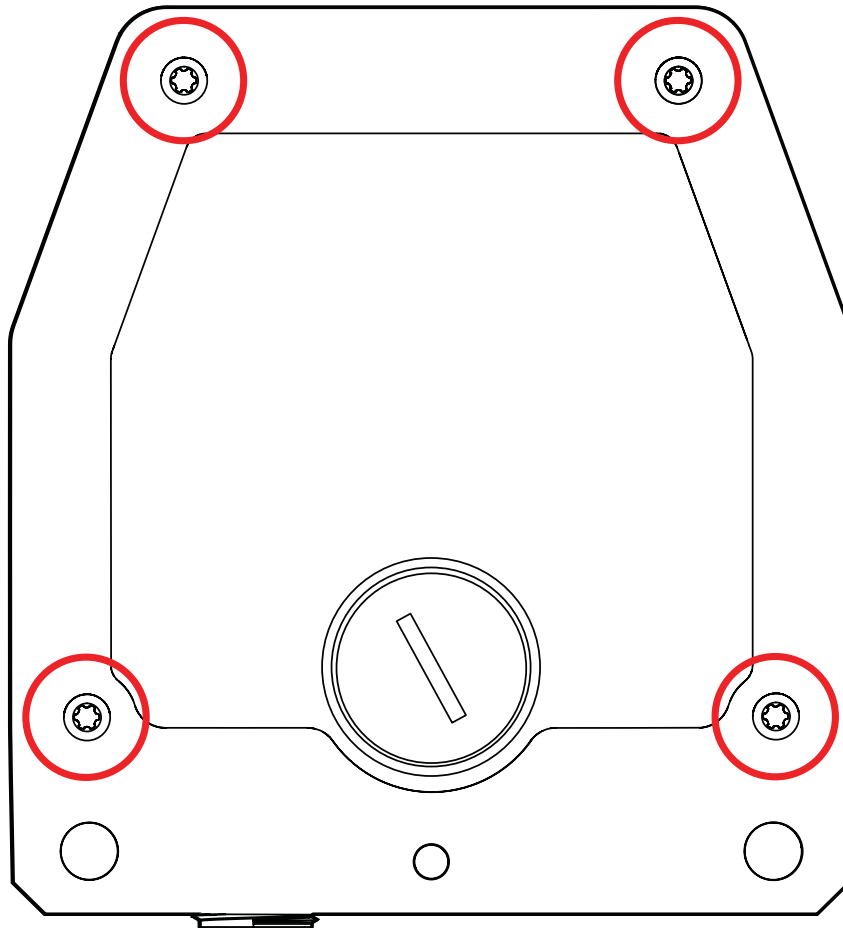
Mounting with two screws

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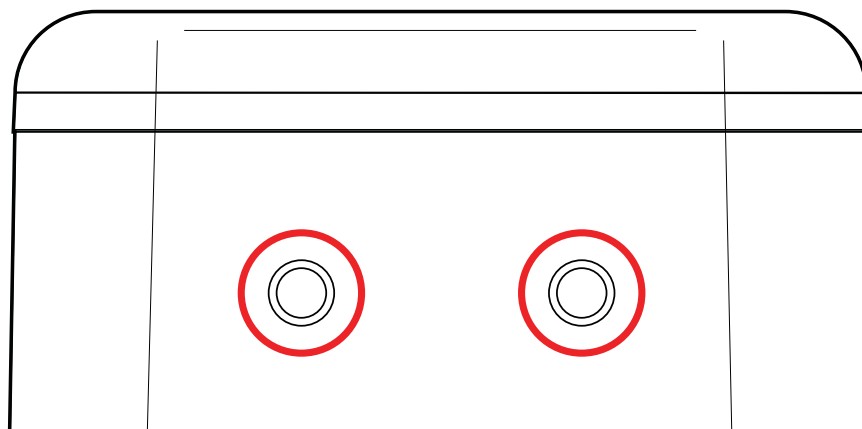
<https://www.phoenixcontact.com/us/products/1234224>

Schematic diagram



Mounting with four screws

Schematic diagram



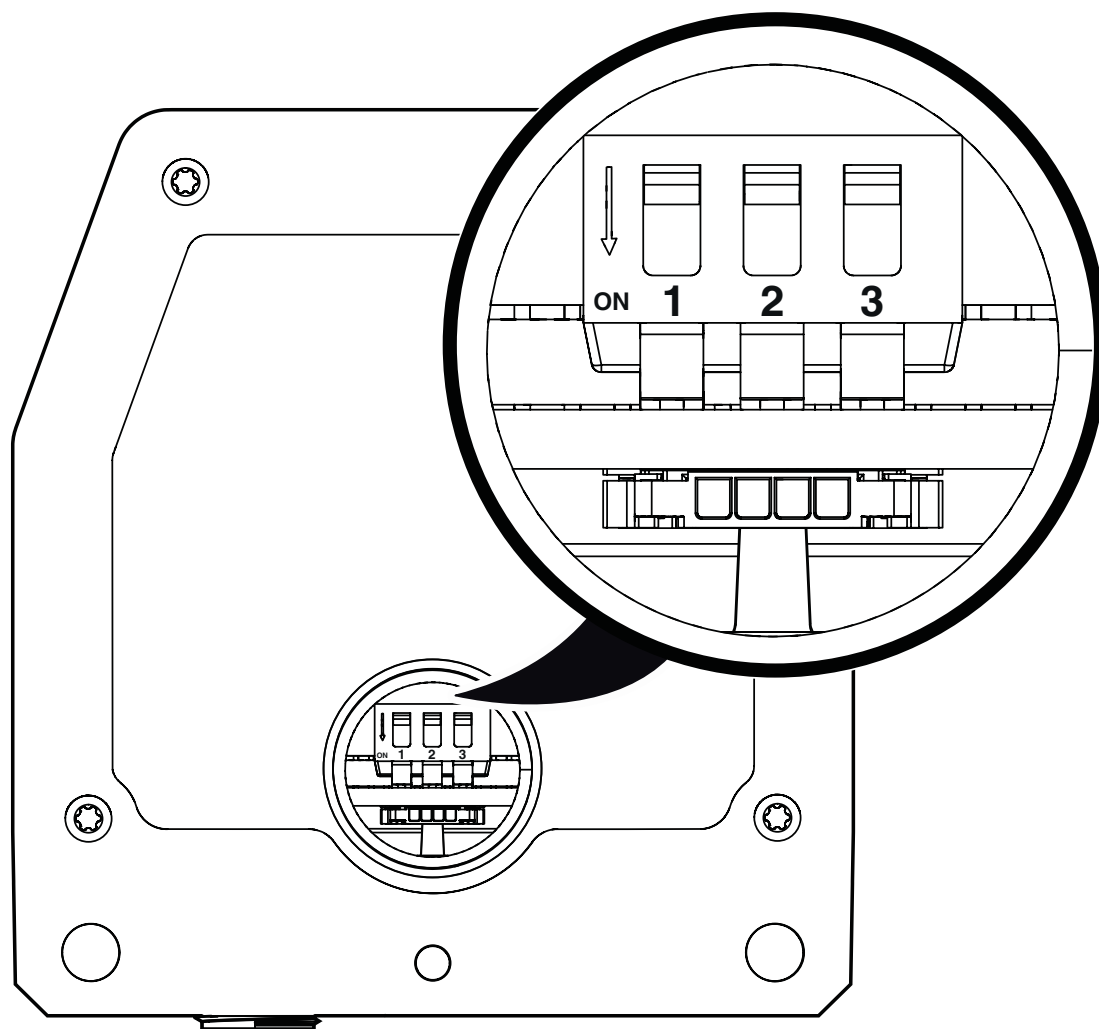
Mounting option

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Schematic diagram



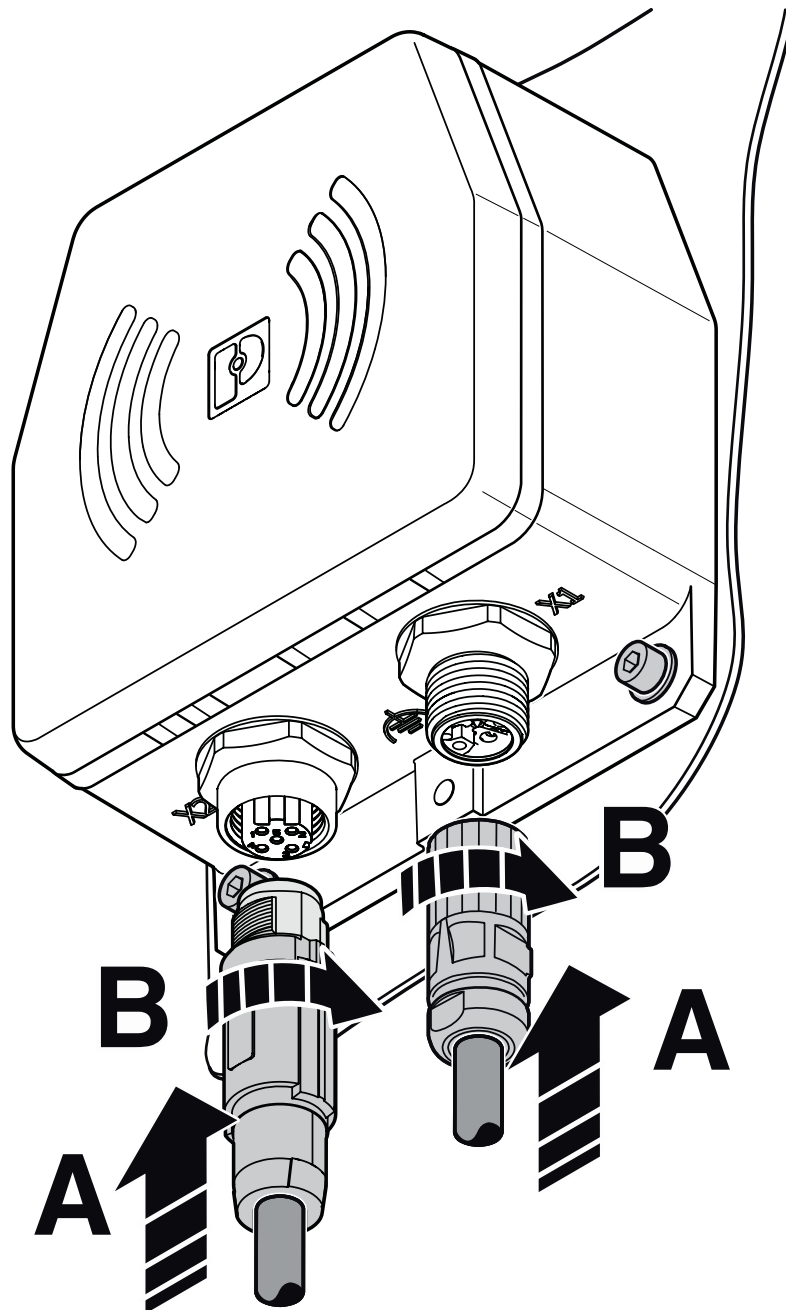
DIP switches

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Schematic diagram



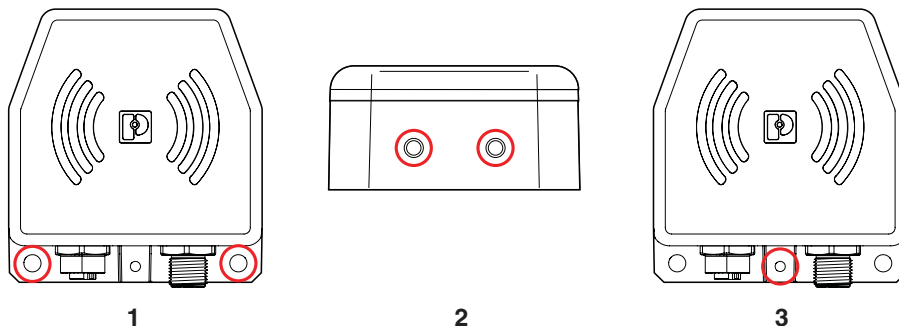
Connecting the cables

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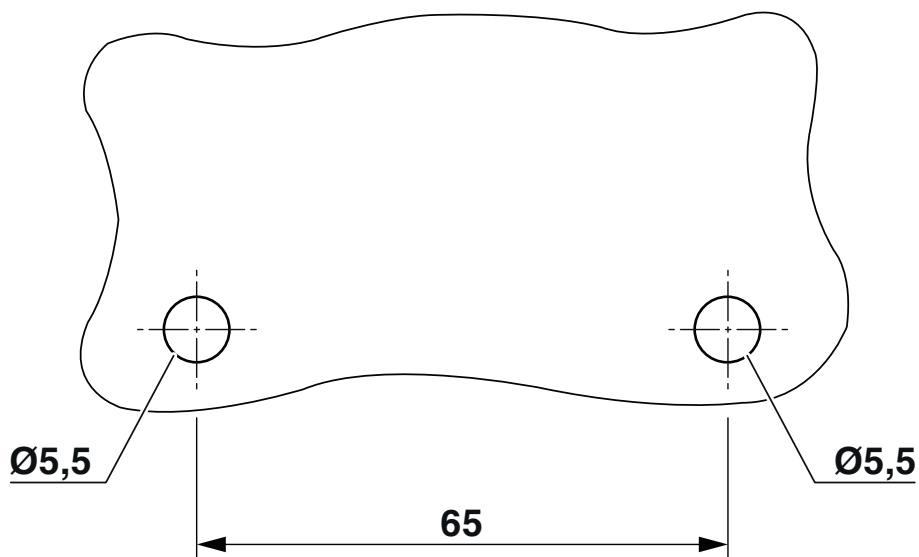
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Schematic diagram



Options for functional grounding

Drilling plan/solder pad geometry



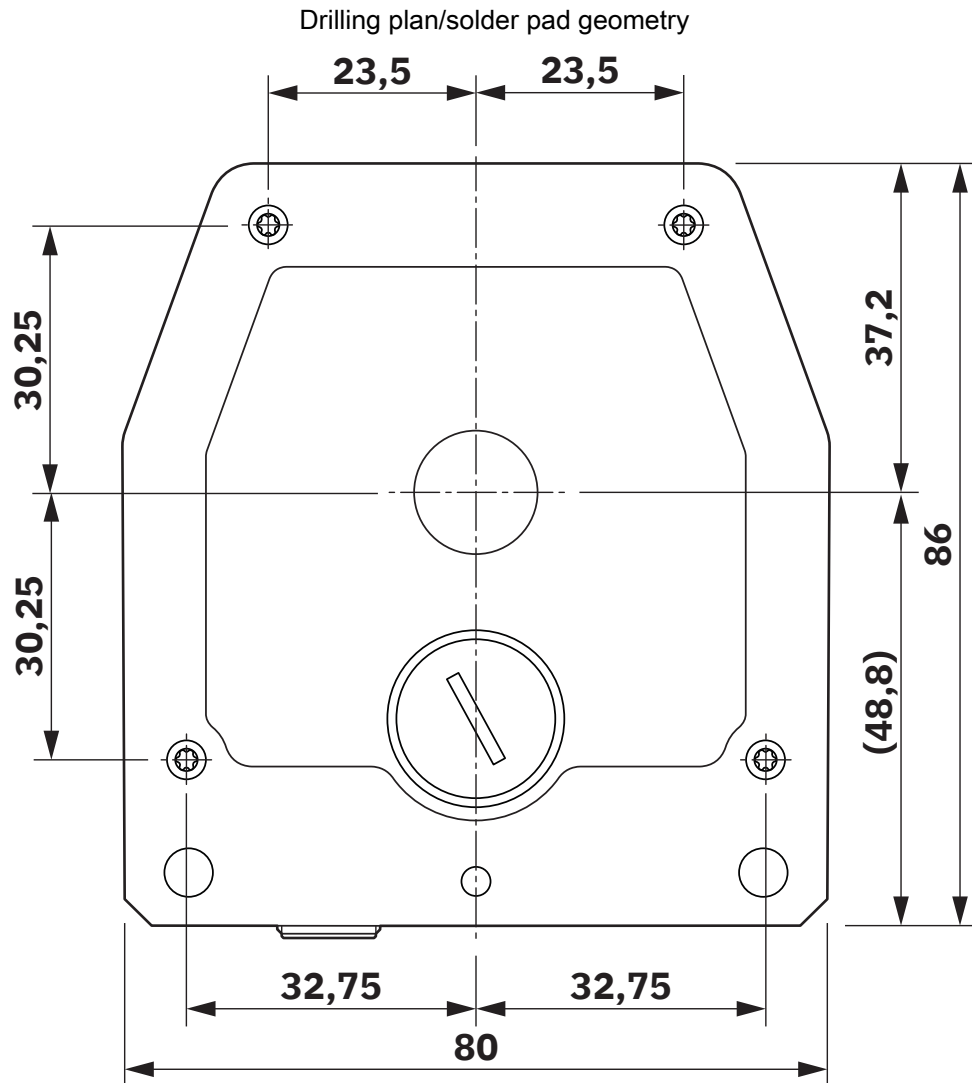
Drilling diagram

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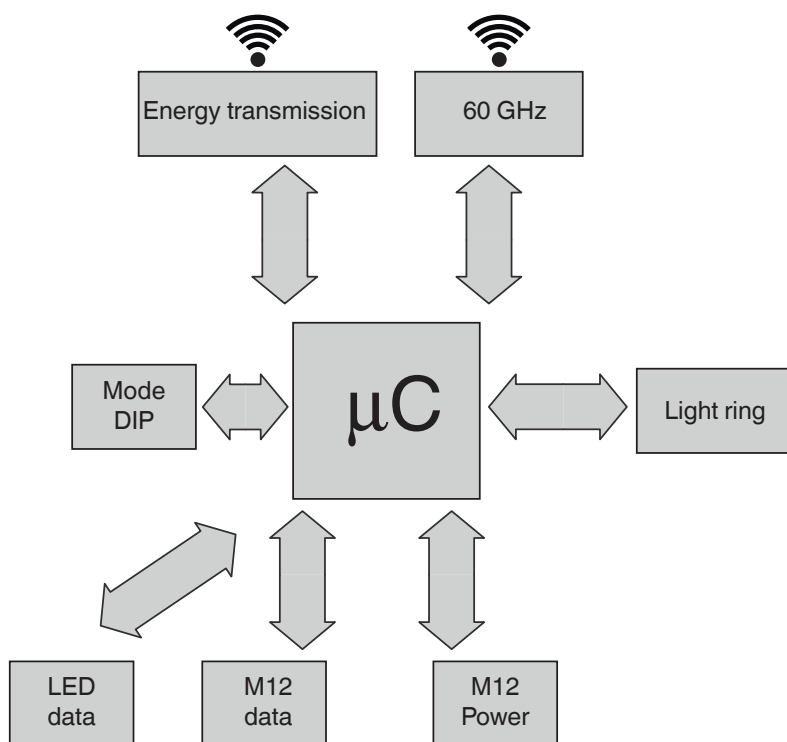
Centering template

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Block diagram



Basic circuit diagram

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Approvals

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MIC

Approval ID: 006-001058



cULus Recognized

Approval ID: E238705



KC

Approval ID: R-R-PCK-1234232

FCC

Approval ID: YG3PD2AETHB

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Classifications

ECLASS

ECLASS-13.0	27040701
ECLASS-15.0	19170417

ETIM

ETIM 9.0	EC002540
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UNSPSC

UNSPSC 21.0	39121000
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