

# Inductive coupler - NEARFI PD 2A ETH R



1234225

<https://www.phoenixcontact.com/pc/products/1234225>

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NearFi, remote coupler for contactless power and real-time Ethernet transmission in the centimeter range, 24 V DC, 2 A, 100 Mbps, full duplex, M12 connection technology, IP65 type of protection. A base coupler is required for operation.

## 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
- High power in a compact housing
- Protocol-independent, latency-free Ethernet real-time communication with 100 Mbps (full duplex)
- 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	1234225
Packing unit	1 pc
Minimum order quantity	1 pc
Product Key	DNC691
GTIN	4063151337278
Weight per Piece (including packing)	574 g
Weight per Piece (excluding packing)	535 g
Customs tariff number	85176200
Country of origin	DE

## Technical Data

### Product properties

Product type	Inductive coupler
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	1

### Electrical properties

#### Supply

Protective circuit	Short-circuit/overload protection
Connection method	M12 female (A-coded)

### Connection data

#### Supply

Connection method	M12 female (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)
No. of channels	1
Transmission length	100 m (shielded twisted pair)
Transmission medium	Copper

#### Inductive: Power transmission

Switch-on time	< 450 ms (ETH Full Duplex operating mode)
Range	min. 0 mm
	typ. 10 mm (at 55°C)
	typ. 12 mm (at 25 °C)
Wireless modules that can be connected	1 (Base coupler)
Frequency range	100 kHz ... 148.5 kHz (Power transmission)

#### Wireless

Wireless modules that can be connected	1 (Base coupler)
Frequency range	57 GHz ... 64 GHz (Data transmission)

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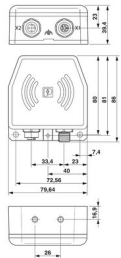


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Transmission power	< 10 mW (EIRP)
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## Dimensions

Dimensional drawing	
Width	80 mm
Height	86 mm
Depth	39 mm

## Material specifications

Material	PBT (Housing) Zinc die-cast (Housing)
Flammability rating according to UL 94	V0
Impact strength	IK06

## Cable / line

Ambient conditions	
Other resistance	Resistant to welding splashes

## Environmental and real-life conditions

Ambient conditions	
Degree of protection	IP65
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 hPa ... 108 kPa (up to 2000 m above sea level)
Air pressure (storage/transport)	66 hPa ... 108 kPa (up to 3500 m above sea level)

## Approval data

CE	
Certificate	CE-compliant
CE	
Note	RED 2014/53/EU

## EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 55032 Class A, industrial applications

### Electrostatic discharge

Standards/regulations	EN 61000-4-2
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### Electrostatic discharge

Contact discharge	$\pm 4$ kV (Test Level 2)
Discharge in air	$\pm 8$ 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	$\pm 2$ kV (Test Level 3 - asymmetrical)
Output	$\pm 2$ kV (Test Level 3 - asymmetrical)
Signal	$\pm 2$ kV (Test Level 3 - asymmetrical)
Comments	Criterion B

### Surge current load (surge)

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

Input	$\pm 0.5$ kV (Test Level 1 - symmetrical)
	$\pm 1$ kV (Test Level 2 - asymmetrical)
Output	$\pm 1$ kV (Test Level 2 - asymmetrical)
Signal	$\pm 1$ 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

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Standards/regulations	EN 55016-2-3
Comments	Class A, industrial applications
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	Yes
Other resistance	Resistant to welding splashes
Standards/regulations	EN 60204-1 (PELV)
Standard designation	Protective extra-low voltage

## Mounting

Mounting type	Wall mounting
Assembly instructions	Observe derating
Mounting position	any

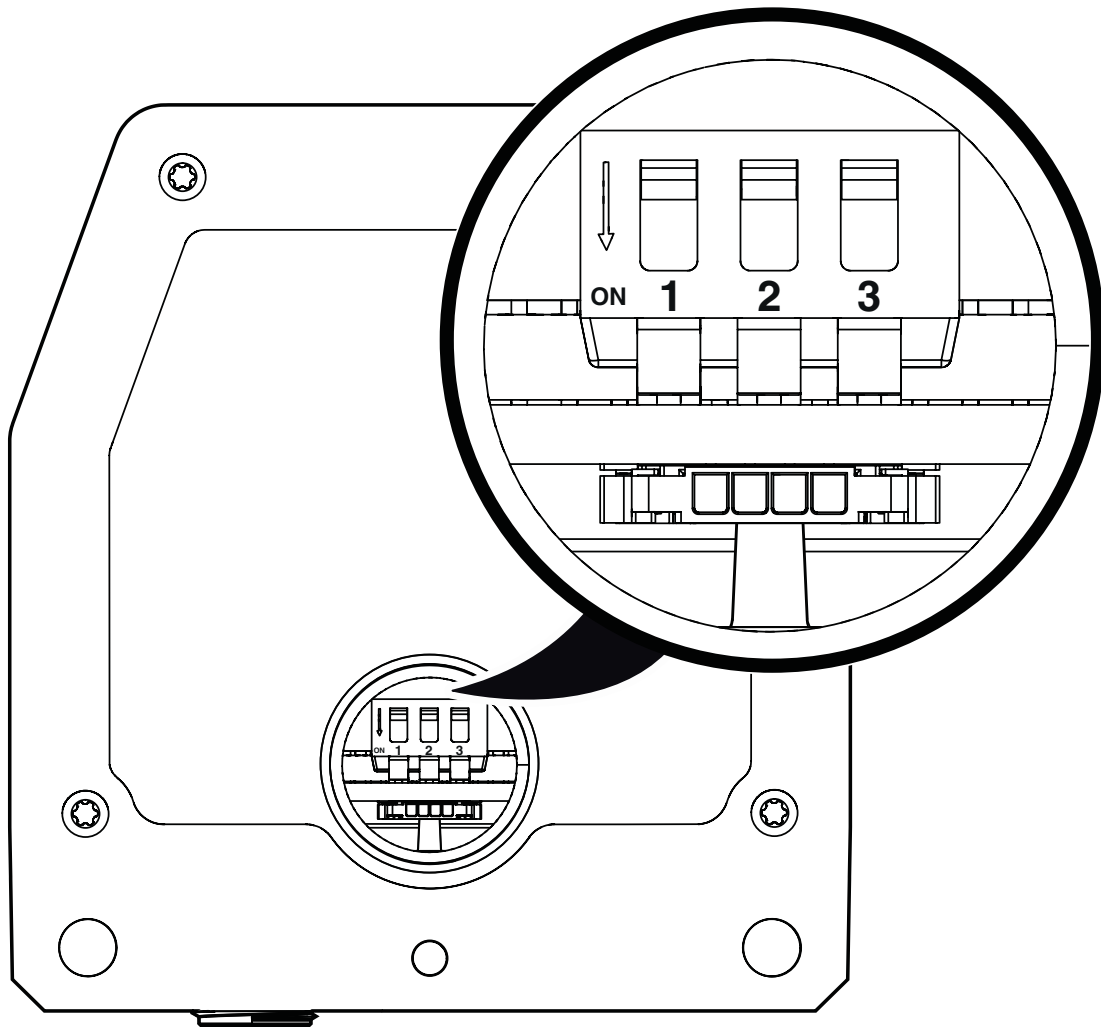
# Inductive coupler - NEARFI PD 2A ETH R

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## Drawings

Schematic diagram



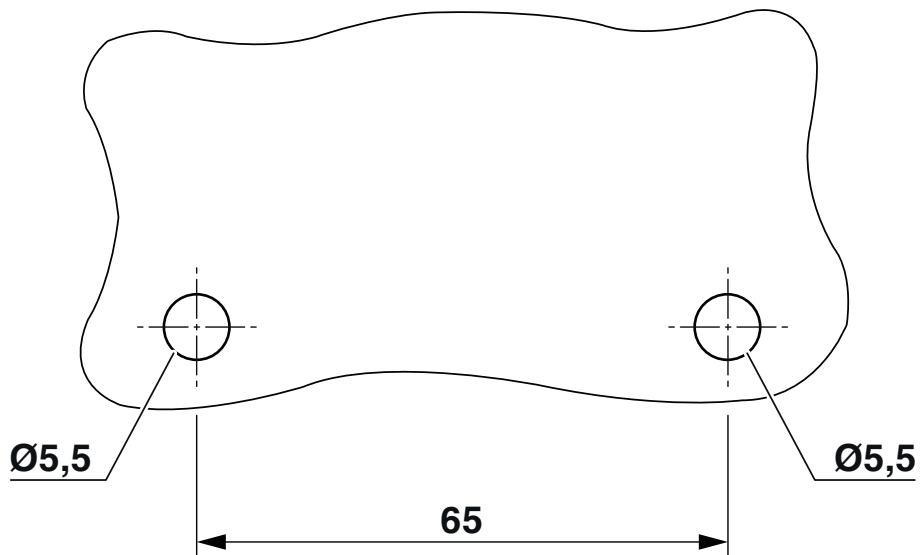
DIP switches

# Inductive coupler - NEARFI PD 2A ETH R

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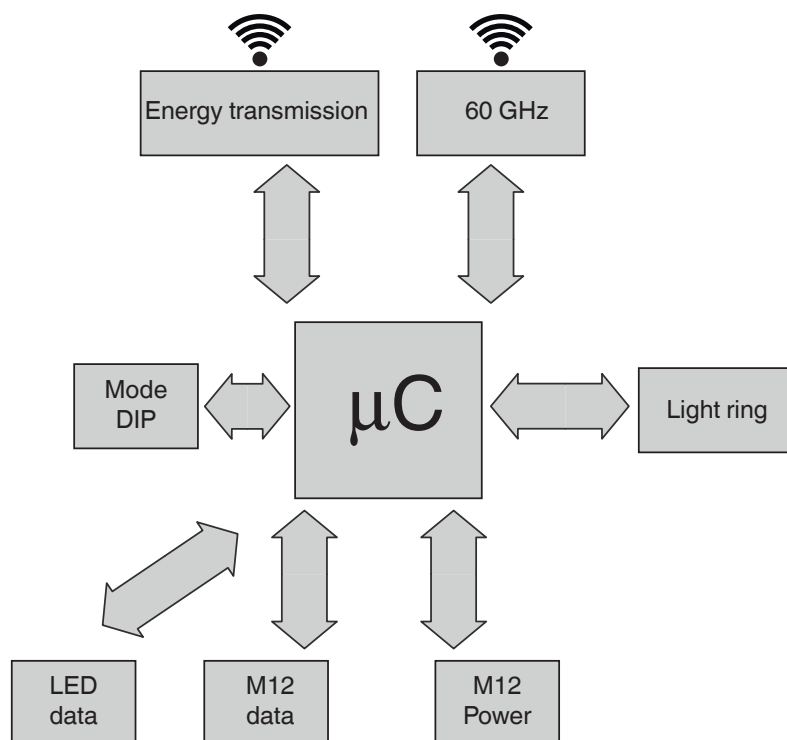
<https://www.phoenixcontact.com/pc/products/1234225>

Drilling plan/solder pad geometry



Drilling diagram

Block diagram



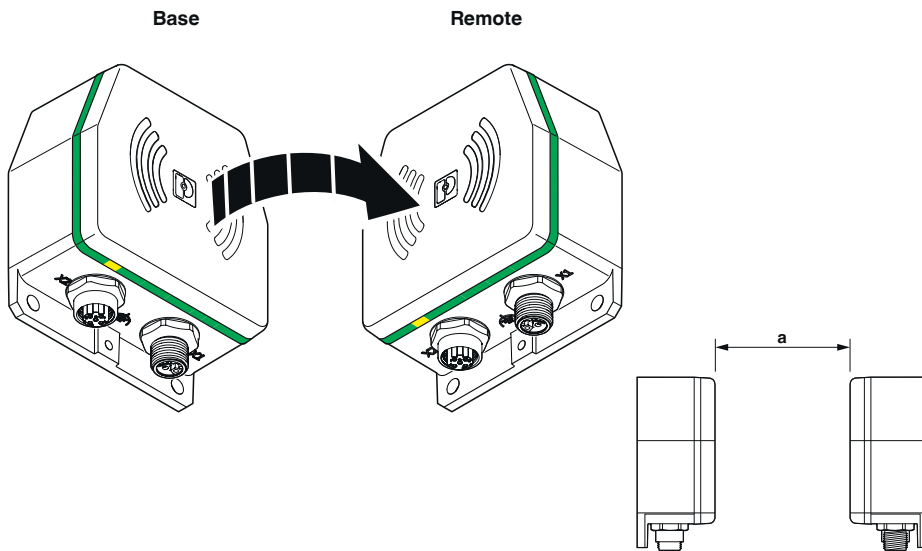
Basic circuit diagram

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## Schematic diagram



## Method of operation

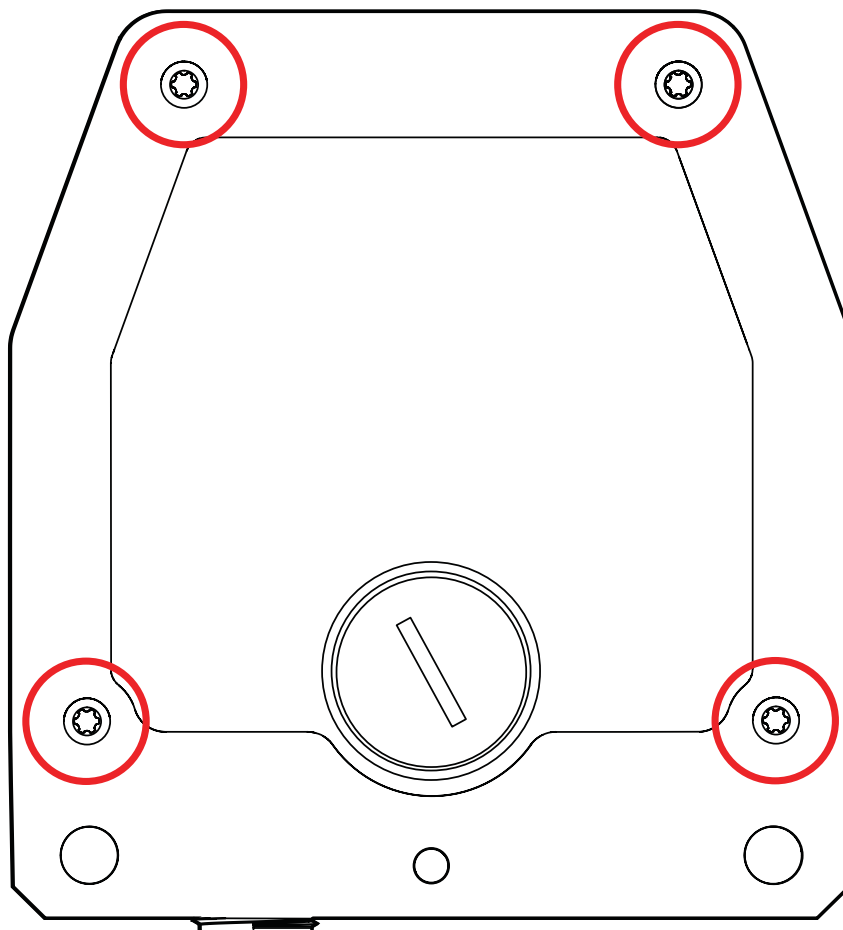


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Schematic diagram



Mounting with four screws

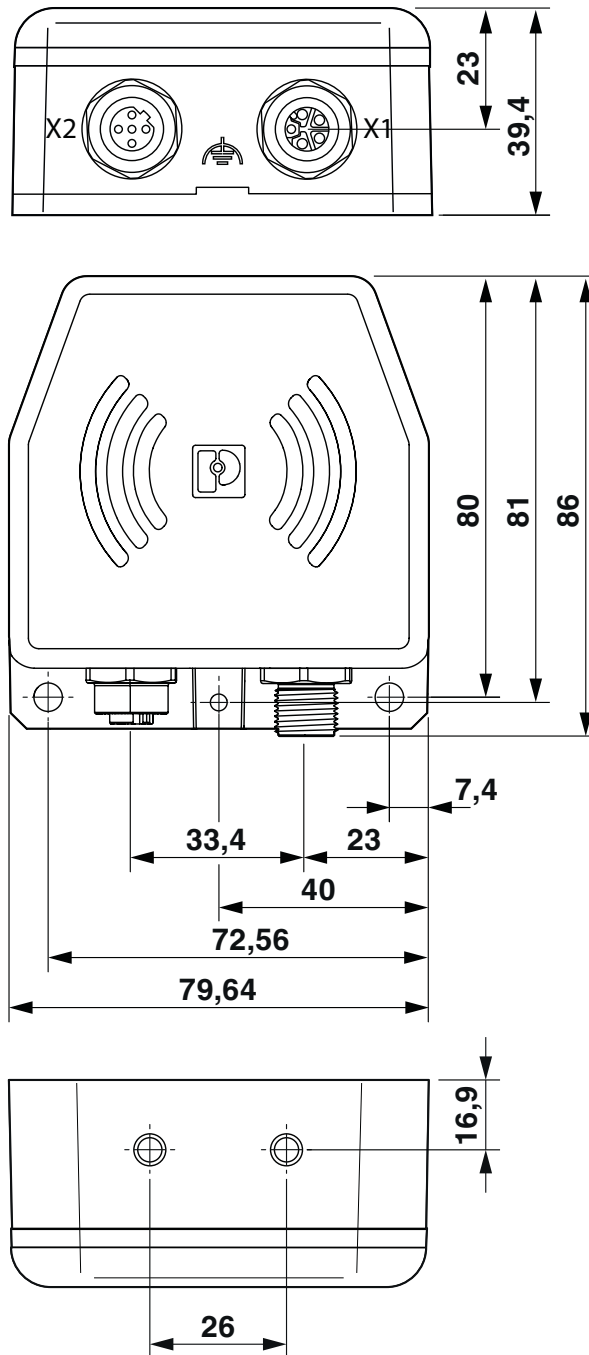
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Dimensional drawing



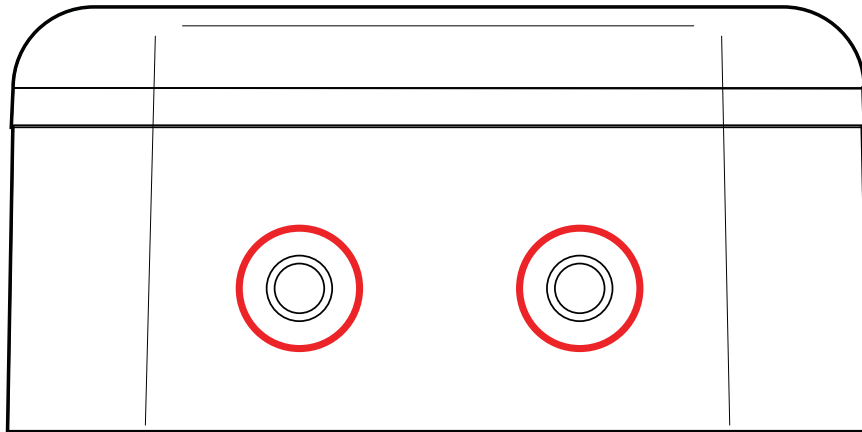
Dimensional drawing

# Inductive coupler - NEARFI PD 2A ETH R

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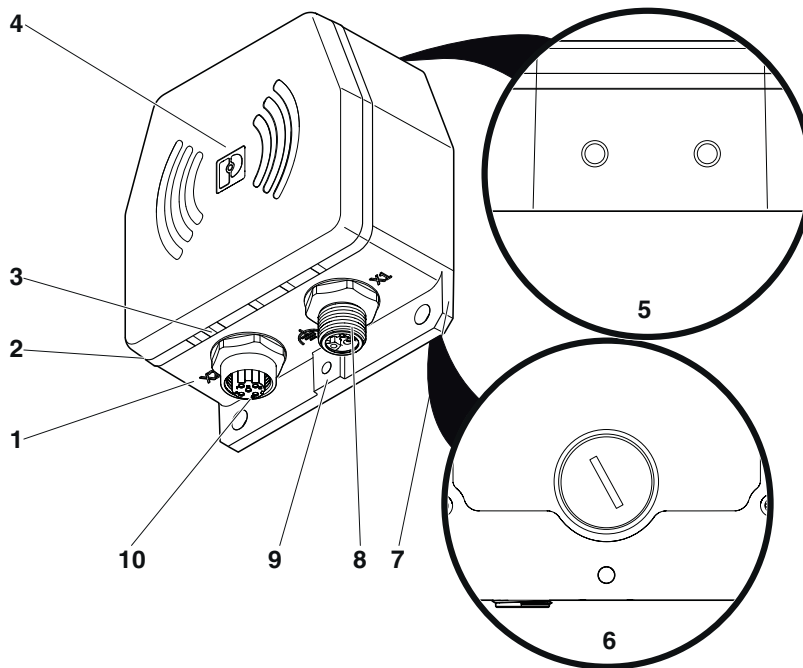
<https://www.phoenixcontact.com/pc/products/1234225>

Schematic diagram



Mounting option

Schematic diagram



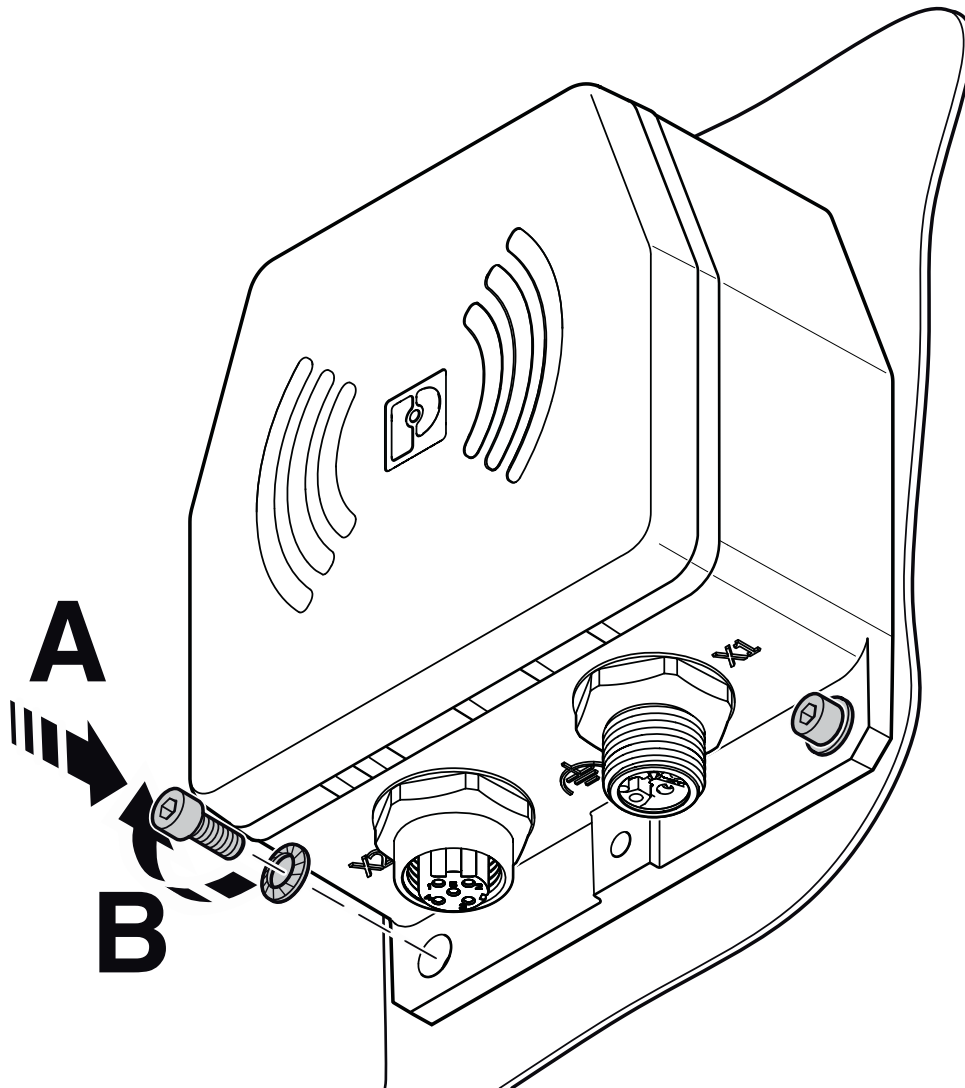
Function elements

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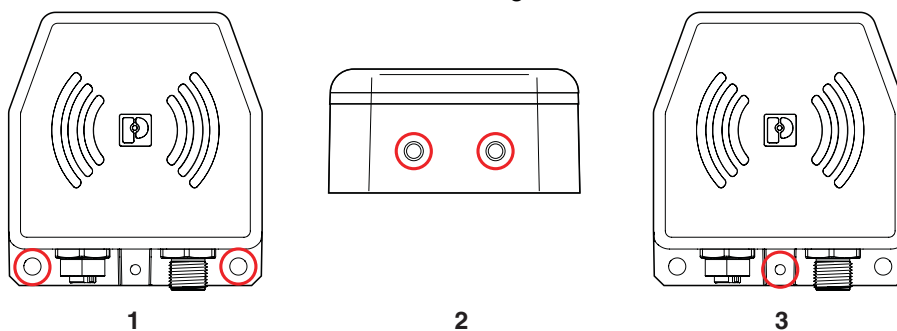
<https://www.phoenixcontact.com/pc/products/1234225>

Schematic diagram



Mounting with two screws

Schematic diagram



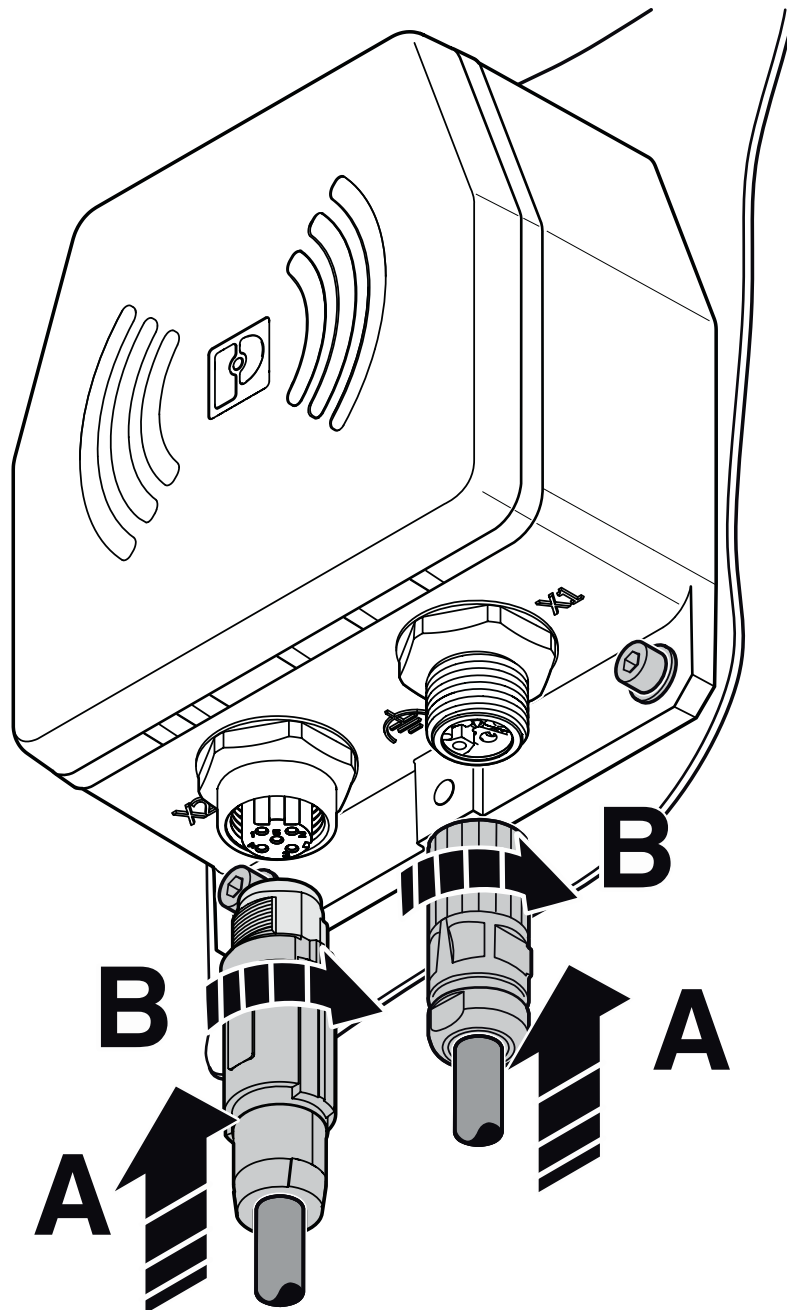
Options for functional grounding

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Schematic diagram



Connecting the cables

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## Approvals



**cUL Recognized**  
Approval ID: FILE E 238705



**UL Recognized**  
Approval ID: FILE E 238705



**MIC**  
Approval ID: 006-001059

**cULus Recognized**

# Inductive coupler - NEARFI PD 2A ETH R



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## Classifications

### ECLASS

ECLASS-9.0	27040701
ECLASS-10.0.1	27040701
ECLASS-11.0	27040701

### ETIM

ETIM 8.0	EC002540
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### UNSPSC

UNSPSC 21.0	39121000
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## Environmental Product Compliance

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



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## Mandatory Accessories

### Inductive coupler

Inductive coupler - NEARFI PD 2A ETH B - 1234224

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



NearFi, base coupler for contactless power and real-time Ethernet transmission in the centimeter range, 24 V DC, 2 A, 100 Mbps, full duplex, M12 connection technology, IP65 type of protection. A remote coupler is required for operation.

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## Accessories

### Sensor/actuator cable

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

<https://www.phoenixcontact.com/pc/products/1518326>



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

# Inductive coupler - NEARFI PD 2A ETH R

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<https://www.phoenixcontact.com/pc/products/1234225>

## Sensor/actuator cable

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

<https://www.phoenixcontact.com/pc/products/1518339>



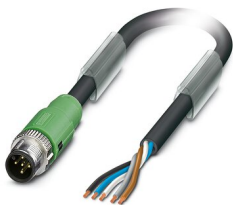
Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, Plug straight M12 SPEEDCON, coding: A, on free cable end, cable length: 5 m

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## Sensor/actuator cable

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

<https://www.phoenixcontact.com/pc/products/1518342>



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

# Inductive coupler - NEARFI PD 2A ETH R

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<https://www.phoenixcontact.com/pc/products/1234225>

## Sensor/actuator cable

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

<https://www.phoenixcontact.com/pc/products/1518355>



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

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## Sensor/actuator cable

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

<https://www.phoenixcontact.com/pc/products/1518423>



Sensor/actuator cable, 5-position, PUR, black-gray RAL 7021, Plug straight M12 SPEEDCON, coding: A, on Socket straight M12 SPEEDCON, coding: A, cable length: 1 m

# Inductive coupler - NEARFI PD 2A ETH R

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## Sensor/actuator cable

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

<https://www.phoenixcontact.com/pc/products/1518436>



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

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## Power connector

Power connector - SACC-M12MR-5CON-PG11-M PWR - 1408992

<https://www.phoenixcontact.com/pc/products/1408992>



Power connector, 5-position, Plug angled M12, Coding: A, Screw connection, knurl material: Zinc die-cast, nickel-plated, cable gland Pg11, external cable diameter 8 mm ... 10 mm

# Inductive coupler - NEARFI PD 2A ETH R

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<https://www.phoenixcontact.com/pc/products/1234225>

## Power connector

Power connector - SACC-M12MS-5CON-PG11-M PWR - 1404417

<https://www.phoenixcontact.com/pc/products/1404417>



Power connector, 5-position, Plug straight M12, Coding: A, Screw connection, knurl material: Zinc die-cast, nickel-plated, cable gland Pg11, external cable diameter 8 mm ... 10 mm

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## Connector

Connector - SACC-M12MS-5CON-PG 9-M - 1681460

<https://www.phoenixcontact.com/pc/products/1681460>



Connector, Universal, 5-position, Plug straight M12, Coding: A, Screw connection, knurl material: Zinc die-cast, nickel-plated, cable gland Pg9, external cable diameter 6 mm ... 8 mm

# Inductive coupler - NEARFI PD 2A ETH R

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<https://www.phoenixcontact.com/pc/products/1234225>

## Connector

Connector - SACC-M12MR-5CON-PG9-M - 1681473

<https://www.phoenixcontact.com/pc/products/1681473>



Connector, Universal, 5-position, Plug angled M12, Coding: A, Screw connection, knurl material: Zinc die-cast, nickel-plated, cable gland Pg9, external cable diameter 6 mm ... 8 mm

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## Network cable

Network cable - NBC-MSD SCO/.../... - 1408713

<https://www.phoenixcontact.com/pc/products/1408713>



Network cable, Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on free cable end, cable length: Free input (0.2 ... 40.0 m)

# Inductive coupler - NEARFI PD 2A ETH R

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## Network cable

Network cable - NBC-MSD-MSD SCO/.../... - 1408706

<https://www.phoenixcontact.com/pc/products/1408706>



Network cable, Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on Plug straight M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

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## Network cable

Network cable - NBC-MSD-R4AC SCO/.../... - 1408712

<https://www.phoenixcontact.com/pc/products/1408712>



Network cable, Ethernet CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on Plug straight RJ45 / IP20, cable length: Free input (0.2 ... 40.0 m)

# Inductive coupler - NEARFI PD 2A ETH R

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## Network cable

Network cable - NBC-M12MSD/ 1,0-93B - 1407495

<https://www.phoenixcontact.com/pc/products/1407495>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on free cable end, cable length: 1 m

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## Network cable

Network cable - NBC-M12MSD/ 2,0-93B - 1407496

<https://www.phoenixcontact.com/pc/products/1407496>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on free cable end, cable length: 2 m



# Inductive coupler - NEARFI PD 2A ETH R

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## Network cable

Network cable - NBC-M12MSD/ 5,0-93B - 1407497

<https://www.phoenixcontact.com/pc/products/1407497>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on free cable end, cable length: 5 m

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## Network cable

Network cable - NBC-M12MSD/10,0-93B - 1407498

<https://www.phoenixcontact.com/pc/products/1407498>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on free cable end, cable length: 10 m

# Inductive coupler - NEARFI PD 2A ETH R

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## Network cable

Network cable - NBC-M12MSD/ 1,0-93B/R4AC - 1407499

<https://www.phoenixcontact.com/pc/products/1407499>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight RJ45 / IP20, cable length: 1 m

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## Network cable

Network cable - NBC-M12MSD/ 2,0-93B/R4AC - 1407500

<https://www.phoenixcontact.com/pc/products/1407500>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight RJ45 / IP20, cable length: 2 m

# Inductive coupler - NEARFI PD 2A ETH R

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<https://www.phoenixcontact.com/pc/products/1234225>

## Network cable

Network cable - NBC-M12MSD/ 5,0-93B/R4AC - 1407501

<https://www.phoenixcontact.com/pc/products/1407501>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight RJ45 / IP20, cable length: 5 m

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## Network cable

Network cable - NBC-M12MSD/10,0-93B/R4AC - 1407502

<https://www.phoenixcontact.com/pc/products/1407502>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight RJ45 / IP20, cable length: 10 m

# Inductive coupler - NEARFI PD 2A ETH R

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## Network cable

Network cable - NBC-M12MSD/ 1,0-93B/M12MSD - 1407524

<https://www.phoenixcontact.com/pc/products/1407524>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight M12 / IP67, coding: D, cable length: 1 m

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## Network cable

Network cable - NBC-M12MSD/ 2,0-93B/M12MSD - 1407525

<https://www.phoenixcontact.com/pc/products/1407525>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight M12 / IP67, coding: D, cable length: 2 m

# Inductive coupler - NEARFI PD 2A ETH R

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## Network cable

Network cable - NBC-M12MSD/ 5,0-93B/M12MSD - 1407526

<https://www.phoenixcontact.com/pc/products/1407526>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight M12 / IP67, coding: D, cable length: 5 m

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## Network cable

Network cable - NBC-M12MSD/10,0-93B/M12MSD - 1407527

<https://www.phoenixcontact.com/pc/products/1407527>



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT<sup>®</sup> CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight M12 / IP67, coding: D, cable length: 10 m

# Inductive coupler - NEARFI PD 2A ETH R

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## Data connector

Data connector - SACC-M12MRD-4Q SH - 1553624

<https://www.phoenixcontact.com/pc/products/1553624>



Data connector, Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug angled M12, Coding: D, Insulation displacement connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

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## Data connector

Data connector - SACC-M12MSD-4QO SH ETH - 1411066

<https://www.phoenixcontact.com/pc/products/1411066>



Data connector, Ethernet CAT5 (100 Mbps), 4-position, halogen-free, shielded, Plug straight M12 SPEEDCON, Coding: D, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

# Inductive coupler - NEARFI PD 2A ETH R

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<https://www.phoenixcontact.com/pc/products/1234225>

## Data connector

Data connector - SACC-M12MSD-4QO SH PN - 1411068

<https://www.phoenixcontact.com/pc/products/1411068>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, halogen-free, shielded, Plug straight M12 SPEEDCON, Coding: D, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

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## Data connector

Data connector - SACC-M12MRD-4Q SH PN - 1554539

<https://www.phoenixcontact.com/pc/products/1554539>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug angled M12, Coding: D, Insulation displacement connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

# Inductive coupler - NEARFI PD 2A ETH R

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## Data connector

Data connector - SACC-M12MRD-4PL SH PN - 1424684

<https://www.phoenixcontact.com/pc/products/1424684>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug angled M12, Coding: D, Push-lock spring connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

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## RJ45 connector

RJ45 connector - VS-08-RJ45-5-Q/IP20 - 1656725

<https://www.phoenixcontact.com/pc/products/1656725>



RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: PA, connection method: IDC fast connection, connection cross section: AWG 26- 23, cable outlet: straight, color: traffic grey A RAL 7042, Ethernet



# Inductive coupler - NEARFI PD 2A ETH R

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## Screw plug

Screw plug - PROT-M12 - 1680539

<https://www.phoenixcontact.com/pc/products/1680539>



An M12 screw plug for the unoccupied M12 sockets of the sensor/actuator cable, boxes and flush-type connectors

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