

RAD-PIG-RSMA-N-EX/ATEX

Antenna barrier for hazardous locations

Data sheet
3404_en_A

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1 Description

The antenna barrier is required in order to use antennas in potentially explosive areas and is itself intrinsically safe. With M25 threads, the antenna barrier can be used as a housing feed-through. No special seals are required.

Features

- Antenna barrier for HF electrical isolation
- Approved for Ex zone 1 and 2
- Allows the use of standard antennas in hazardous locations
- For feed-through of Ex d housing



WARNING: Explosion hazard when used in potentially explosive areas

Follow the instructions provided here during installation and observe the safety notes.



Make sure you always use the latest documentation.
It can be downloaded at phoenixcontact.net/products.



This data sheet is valid for all products listed on the following page:

2 Table of contents

1	Description.....	1
2	Table of contents	2
3	Ordering data.....	3
4	Technical data	4
5	Dimensions.....	4
6	Applications	5
6.1	Example: installing the antenna barrier in zone 1	5
6.2	Example: installing the antenna barrier in zone 2	6
7	Mounting antennas in potentially explosive areas.....	7
7.1	Safety notes for antenna mounting.....	7
7.2	Mounting examples	8

3 Ordering data

Antenna barrier

Description	Type	Order No.	Pcs. / Pkt.
Barrier for antenna installation in Ex zones 1 and 2; 76 cm; type N (socket) to RSMA (plug); ATEX approval	RAD-PIG-RSMA-N-EX/ATEX	2904788	1

Accessories - antennas

Description	Type	Order No.	Pcs. / Pkt.
Omnidirectional antenna, 868 MHz, 4 dBi, linear vertical, N (female), h/v 360°/30° opening angle, IP67, saltwater resistant	ANT-OMNI-868-01	2702136	1
Omnidirectional antenna, 2.4 GHz, 6 dBi, linear vertical, N (female), IP55, 50 Ω impedance	RAD-ISM-2400-ANT-OMNI-6-0	2885919	1
Panel antenna, 868 MHz, 3.5 dBi, circular polarized, N (female), IP67, h/v 135°/90° opening angle	ANT-DIR-868-01	2702137	1
Panel antenna, 2.4/5 GHz, 9 dBi, linear vertical, N (female), IP67, including mounting bracket and mast clips for 25 to 85 mm diameter, stainless steel	ANT-DIR-2459-01	2701186	1

Accessories - antenna cables

Description	Type	Order No.	Pcs. / Pkt.
Antenna cable, 3 m in length, N (male) -> N (male), 50 Ω impedance	RAD-CAB-EF393- 3M	2867649	1
Antenna cable, 5 m in length, N (male) -> N (male), 50 Ω impedance	RAD-CAB-EF393- 5M	2867652	1
Antenna cable, 10 m in length, N (male) -> N (male), 50 Ω impedance	RAD-CAB-EF393-10M	2867665	1
Antenna extension cable, 15 m in length, N (male) -> N (male), 50 Ω impedance	RAD-CAB-EF393-15M	2885634	1

Accessories - wireless modules

Description	Type	Order No.	Pcs. / Pkt.
2.4 GHz wireless transceiver with RS-232, RS-485 2-wire interface, expandable with I/O extension modules, with screw connection, antenna connection: RSMA (female), including DIN rail connector, without antenna	RAD-2400-IFS	2901541	1
868 MHz wireless transceiver with RS-232, RS-485 2-wire interface, expandable with I/O extension modules, with screw connection, antenna connection: RSMA (female), including DIN rail connector, without antenna	RAD-868-IFS	2904909	1

Accessories - MACX... signal conditioners

Description	Type	Order No.	Pcs. / Pkt.
Ex-i repeater power supply and input signal conditioner, HART. Transmits supplied or active 0/4 - 20 mA signals from the hazardous area to a load (active or passive) in the safe area. 3-way electrical isolation; SIL 2 according to IEC 61508.	MACX MCR-EX-SL-RPSSI-I	2865340	1
Ex-i NAMUR signal conditioner, 2-channel. For operating proximity sensors and switches in the hazardous area. The signals are transmitted via transistor outputs (passive) to the safe area. Line fault detection (LFD), 3-way isolation, SIL 2.	MACX MCR-EX-SL-2NAM-T	2865489	1

Additional accessories

Description	Type	Order No.	Pcs. / Pkt.
Vulcanizing sealing tape for external protection of adapters, cable connections, etc., against the effects of weather, roll length: 3 m	RAD-TAPE-SV-19-3	2903182	1
Primary-switched MINI POWER power supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A, for potentially explosive areas	MINI-PS-100-240AC/24DC/1.5/EX	2866653	1

4 Technical data

General data

Degree of protection	IP66
Fixed cable length	0.76 m
Frequency range	25 MHz ... 6000 MHz
Attenuation	
868 MHz / 900 MHz	0.6 dB
2.4 GHz	1.3 dB
5.8 GHz	4.8 dB
Impedance	50 Ω
Maximum HF output power P_i	2 W
Maximum error voltage U_m	250 V DC
Maximum capacity	5.64 nF

Connection data

Connection method	Type N (female) RSMA (male)
Mounting method	Bulkhead, M25 thread

Ambient conditions

Ambient temperature (operation)	-40°C ... 75°C
Ambient temperature (storage/transport)	-40°C ... 85°C

Approvals

ATEX	Ⓜ II 2(1)G, Ex d mb [ia] IIC
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5 Dimensions

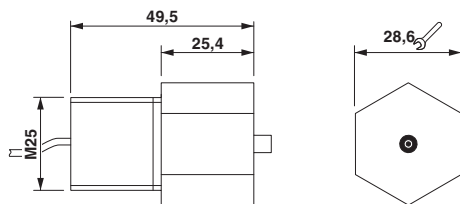


Figure 1 Dimensions

6 Applications

6.1 Example: Installing the antenna barrier in zone 1



WARNING: Explosion hazard when used in potentially explosive areas

- Observe the specified conditions for use in potentially explosive areas.
- When installing and connecting the supply and signal circuits, observe the requirements of EN 60079-14.
- Access to circuits within the device is not permitted.
- Do not repair the device yourself; replace it with an equivalent device. Repairs may only be carried out by the manufacturer.
- The device must be stopped if it is damaged, was subjected to an impermissible load, stored incorrectly, or if it malfunctions.

Installation in “flameproof” housing (EN 60079-1)

1. Feed the adapter cable of the antenna barrier through the opening provided in the Ex housing.
2. Screw the antenna barrier (7) to the housing. The antenna barrier has an M25 thread.
3. Connect the adapter cable directly to the wireless module (4).
4. Connect the antenna barrier to the antenna (9) using an antenna cable (8). Install the antenna cable so that it is fixed in place, and screw it in securely at both ends to prevent accidental disconnection of the antenna cable.

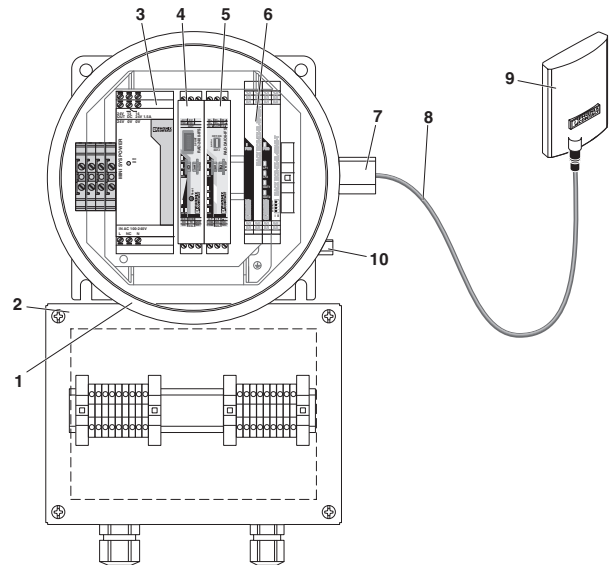


Figure 2 Installation in “flameproof” housing

Key

- 1 Ex d flameproof housing
- 2 Ex e wiring space
- 3 230 V AC/24 V DC power supply, MINI-PS-100-240AC/24DC/1.5/EX, Order No. 2866653
- 4 Wireless module
- 5 I/O extension module
- 6 Repeater power supply for 4 mA to 20 mA analog input, MACX-MCR-EX-SL-RPSSI-I or NAMUR signal conditioner
- 7 Antenna barrier
- 8 Antenna cable
- 9 Antenna
- 10 Connection for equipotential bonding system

6.2 Example: Installing the antenna barrier in zone 2



WARNING: Explosion hazard when used in potentially explosive areas

- Observe the specified conditions for use in potentially explosive areas.
- Install the device in suitable approved housing (with at least IP54 protection) that meets the requirements of EN 60079-15. Observe the requirements of EN 60079-14.
- Only devices that are designed for operation in zone 2 potentially explosive areas and are suitable for the conditions at the installation location may be connected to the supply and signal circuits in zone 2.
- Access to circuits within the device is not permitted.
- Do not repair the device yourself; replace it with an equivalent device. Repairs may only be carried out by the manufacturer.
- The device must be stopped if it is damaged, was subjected to an impermissible load, stored incorrectly, or if it malfunctions.

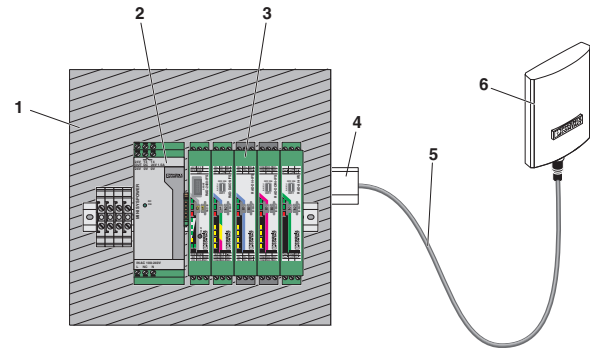


Figure 3 Installation in housing approved for zone 2

- 1 Housing that meets the requirements of EN 60079-0 and EN 60079-15 and has at least IP54 protection (EN 60529)
- 2 Power supply
- 3 Wireless module and I/O extension modules
- 4 Antenna barrier
- 5 Antenna cable
- 6 Antenna

Installation in housing approved for zone 2

1. Feed the adapter cable of the antenna barrier through the opening provided in the housing.
2. Screw the antenna barrier (4) to the housing. The antenna barrier has an M25 thread.
3. Connect the adapter cable directly to the wireless module (3).
4. Connect the antenna barrier to the antenna (6) using an antenna cable (5). Install the antenna cable so that it is fixed in place, and screw it in securely at both ends to prevent accidental disconnection of the antenna cable.

7 Mounting antennas in potentially explosive areas

7.1 Safety notes for antenna mounting



WARNING: Explosion hazard when used in potentially explosive areas

Make sure that the following notes and instructions are observed.

Installation notes

- The category 1 equipment is designed for installation in zone 0 potentially explosive areas. It meets the requirements of EN 60079-0:2012 and EN 60079-11:2012.
- Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions as described. When installing and operating the device, the applicable regulations and safety directives (including national safety directives), as well as general technical regulations, must be observed. For the safety data, please refer to the package slip and certificates (EC-type examination certificate and additional approvals where applicable).
- Do not open or modify the antenna. Do not repair the antenna yourself, but replace it with an equivalent antenna. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from noncompliance.
- Do not subject the antenna to mechanical and/or thermal loads that exceed the specified limits.
- The antenna is not designed for use in areas with a danger of dust explosions.
- When using the antenna in a non-intrinsically-safe circuit, the Ex markings should be obscured. The antenna can then no longer be operated in intrinsically safe circuits.

Installation in potentially explosive areas

- The equipment may only be operated when the specified atmospheric conditions are met. The equipment may only be used in environments to which the materials in contact with the process are sufficiently resistant.
- Check the safety data of the power supply device and the antenna, and ensure intrinsic safety. For the technical data, refer to the package slip and the approval documents and certificates. Only use devices approved for intrinsically safe circuits.
- Observe the requirements of IEC/EN 60079-14 during installation.
- Avoid electrostatic discharge.
- Mount the antenna outside the reach of people.
- Only clean the antenna housing using a suitable damp cloth.
- Ground metallic parts or attachments on the antenna.
- The maximum available power at the antenna must not exceed 2 W.
- The antenna must be stopped and immediately removed from the hazardous area if it is damaged, was subjected to an impermissible load, stored incorrectly, or malfunctions.

7.2 Mounting examples

Installation in zone 2

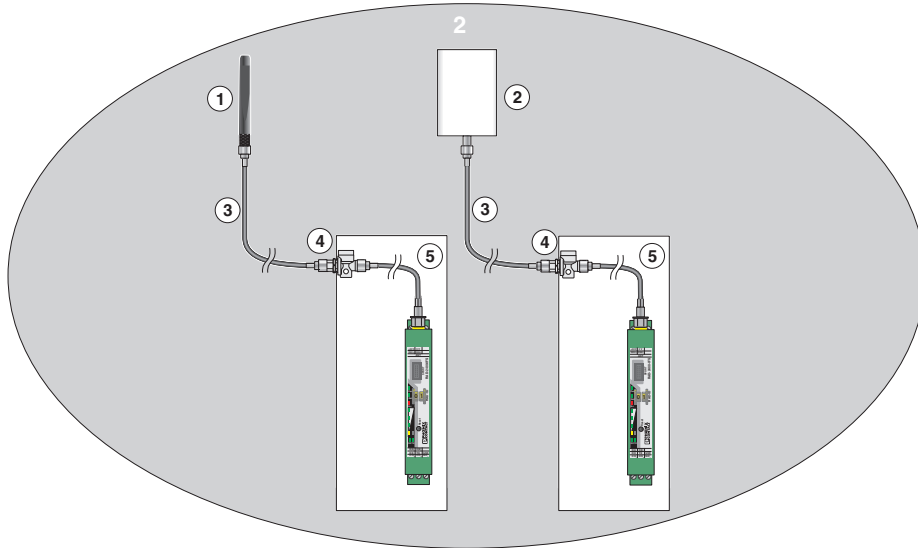


Figure 4 Installing the devices and antennas in zone 2

Key

- 1 Omnidirectional antenna
- 2 Panel antenna
- 3 Antenna cable
- 4 Attachment plug as surge protection
- 5 Wireless module

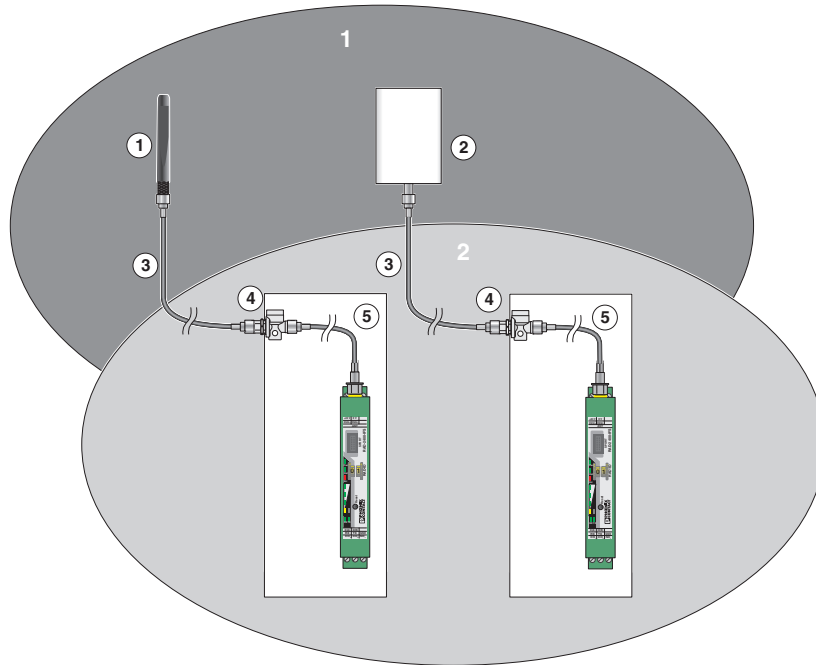
Installing the devices in zone 2 and the antennas in zone 1

Figure 5 Installing the devices in zone 2 and the antennas in zone 1

Key

- 1 Omnidirectional antenna
- 2 Panel antenna
- 3 Antenna cable
- 4 Attachment plug as surge protection
- 5 Wireless module

Installation in zone 1

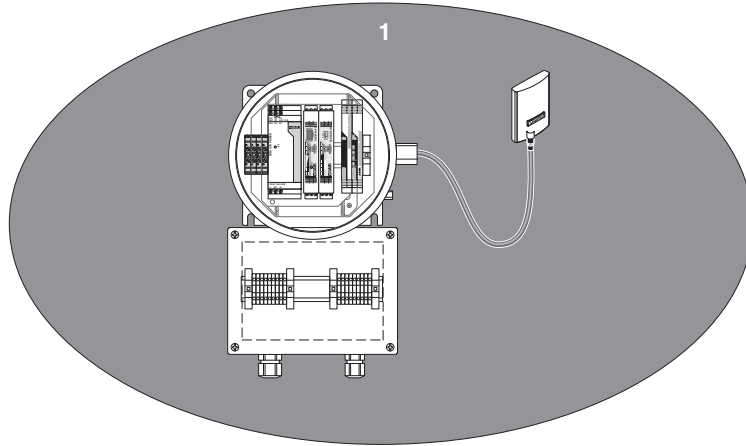


Figure 6 Installing the devices and antennas in zone 1

Installing the devices in zone 1 and the antennas in zone 0

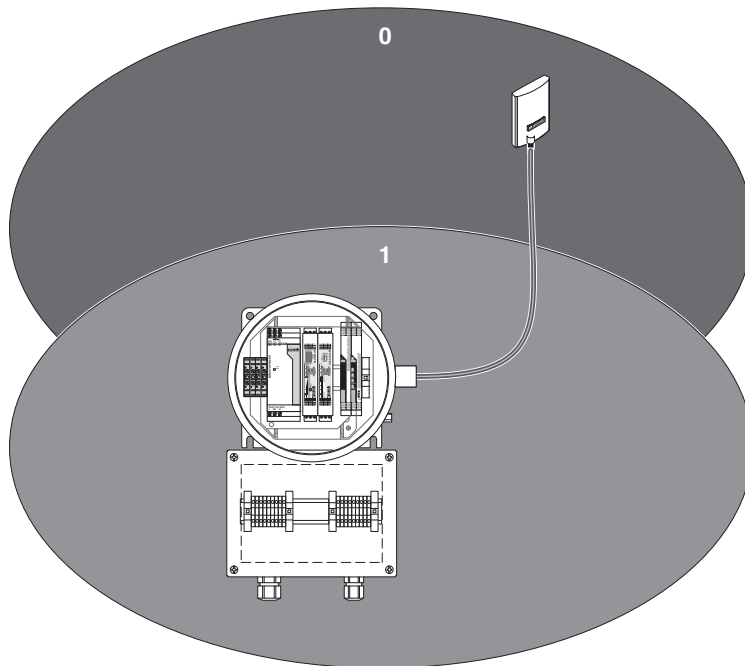


Figure 7 Installing the devices in zone 1 and the antennas in zone 0