



# Operating Manual

## ARC-1 Box SB

The remote transmission unit ARC-1 Box SB enables pressure measurements in areas exposed to gas explosion hazards when used in conjunction with an intrinsically safe pressure transmitter.

### System description

The system description document pursuant to EN 60079-25 comprises:

- Block diagram 81902.31 „ARC-1 Box SB Systembeschreibung”
- ARC-1 standard operating instructions ([www.keller-druck.com](http://www.keller-druck.com))
- Product information on INTRINSPAK safety barriers
- Intrinsically safe pressure transmitter manual
- This ARC-1 Box SB operating manual

### Components

The ARC-1 Box SB has a solid metal housing and comprises a battery-powered ARC-1 with additional integrated safety barriers. It can be connected to one of the following intrinsically safe KELLER products with a purely digital RS485 interface:

- Intrinsically safe pressure transmitters series 33 X Ei, 35 X Ei, 36 XW Ei, PD-33 X Ei or PD-39 X Ei compliant with EC type examination certificate KEMA 04 ATEX 1081 X for use in zones 0, 1 or 2, or
- Intrinsically safe pressure transmitter series 41 X Ei or 46 X Ei compliant with EC type examination certificate PTB 06 ATEX 2011 for use as a partition wall device between zones 0 and 1, or for zone 1 or 2



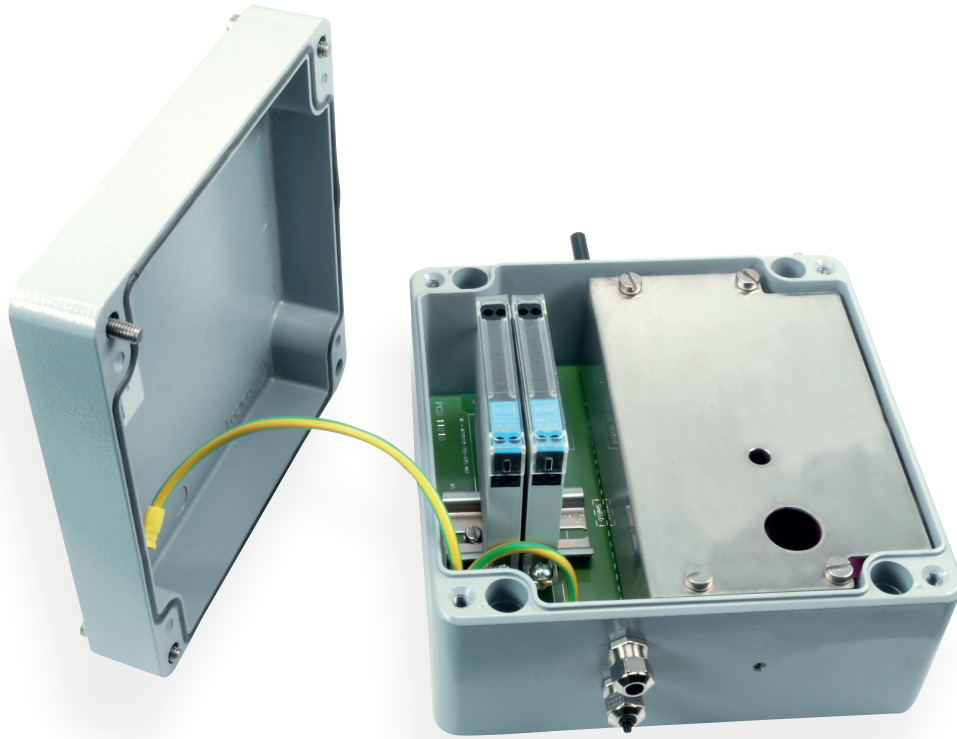
Unlike to a standard ARC-1, only one transmitter can be connected.

The ARC-1 Box SB has 2 integrated INTRINSPAK safety barriers manufactured by R. Stahl:

- 9001/01-168-075-101 for supplying the transmitter and
- 9002/11-120-024-001 for the RS485 interface

### Installation location

To be connected intrinsically safe pressure transmitters can be installed in the explosive atmosphere in accordance with their marking. The ARC-1 Box SB must be installed outside of the explosive area.



### Block diagram

See diagram 81902.31 „ARC-1 Box SB Systembeschreibung“.

### Assembly ARC-1 Box SB and transmitter connection

The installation must be installed by authorized personnel only. When mounting, please pay attention to the operating manual of the pressure transmitter to be connected. Screw the ARC-1 Box SB to a flat surface using the holes provided so that an unobstructed reception of mobile communications signals is possible. Insert the SIM card and replace the cover over the battery and internal mobile communications module. Then connect the pressure

transmitter to the safety barriers as shown in the block diagram. The analogue transmitter output +OUT is not used and must be connected to the unoccupied parking terminal adjacent to the two safety barriers.

### Earthing

If the pressure transmitter is earthed through the transmitter housing, do not connect the cable shielding on the box side to earth; otherwise the cable shielding must be connected to earth inside the ARC-1 Box SB.

The ARC-1 Box SB must be earthed. This is achieved either via the metal housing (housing screws) or via a separate equipotential lead of at least 4 mm<sup>2</sup>. The lead



must be connected from the earth connection on one of the two safety barriers to earth. To do so, remove the blind plug from the cable screw connection, feed the cable through the opening and screw tight.

### Power supply

An integrated Tadiran TL-6937 battery with an operating voltage of 3,9 V supplies power to the ARC-1 Box SB. An internal step-up switch boosts the battery voltage to 12 V. This is then supplied to the pressure transmitter. The battery's lifetime depends on the measurement rate and the scope of data transfer. The battery will last up to 10 years at a measurement rate of 1 measurement per hour and 1 data transmission per day. We recommend replacing the battery every 5 years.

### Overvoltage and lightning protection

The ARC-1 Box SB does not have integrated lightning protection. The user must protect the ARC-1 Box SB and pressure transmitter cable in accordance with national overvoltage directives (e.g. lightning strike). If the pressure transmitter is installed in zone 0, an overvoltage protection must be installed at a maximum distance of 1 m from the starting point of zone 0.

### Replacing the battery

Remove the cover from the metal box, loosen the 4 screws and remove the cover plate. The Tadiran TL-6937 battery is connected to the mobile communications module's PCB via a wire and a plug. Pull the plug out of the PCB and plug in the new battery. Pay attention to correct plug polarity! Replace the cover plate over the battery and mobile communications module. Replace the cover on the metal box. Pay attention to the correct orientation of the cover. The seal in the housing cover must match up with its counterpart.

19.06.2018

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