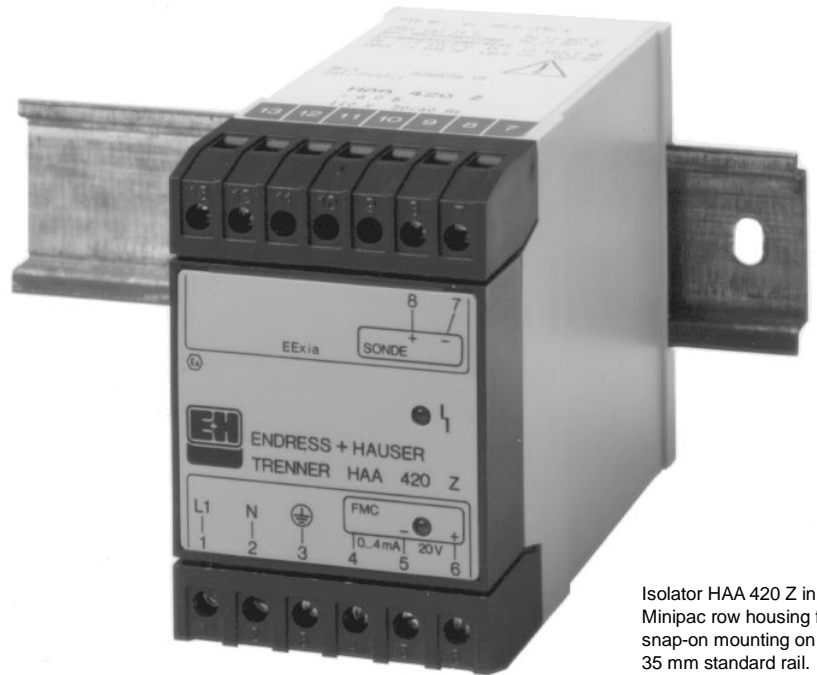


System Components

Isolator HAA 420 Z

Electrical isolation between intrinsically safe electronic inserts with PFM output and transmitters with analogue signal input



Isolator HAA 420 Z in Minipac row housing for snap-on mounting on a 35 mm standard rail.

Applications

The HAA 420 Z isolator allows sensors to be mounted in explosion hazardous areas, Zone 0, if a transmitter

- Silometer FMC 420,
- Silometer FMC 423 or
- Silometer FMC 425

is used to evaluate the signal.

The input is electrically isolated from all other circuits.

Sensors and transmitters for connecting are:

- Capacitive probes with the electronic insert EC 37 Z or EC 47 Z
- Deltapilot DB pressure transmitters with the electronic insert EB 17 Z or EB 27 Z.

Features and Benefits

- In compact Minipac housing ideal for mounting in the control cabinet
- Transmitters can be row-mounted on a 35 mm standard rail
- Removable terminal blocks make wiring easy
- For mounting in the open with protective housing IP 55
- Adjusters behind the fold-down front panel. Easily accessible but protected against unauthorised use.
- Symbols showing calibration steps on the rear of the front panel allow set-up without operating manual.

Endress + Hauser

Nothing beats know-how



Operating Principle

Operating Principle

The HAA 420 Z supplies DC power to the EC ... Z or EB ... Z electronic insert, which returns a pulse frequency modulated (PFM) signal proportional to level along the same line.

The pulses are converted by a current generator into a level proportional DC current which is available at the input of the FMC ... transmitter.

The HAA 420 Z provides greater safety

- Pulse width detection to eliminate interference pulses in the PFM signal,
- Error message to indicate fault in the PFM signal
- Standby signal

Electrical Isolation

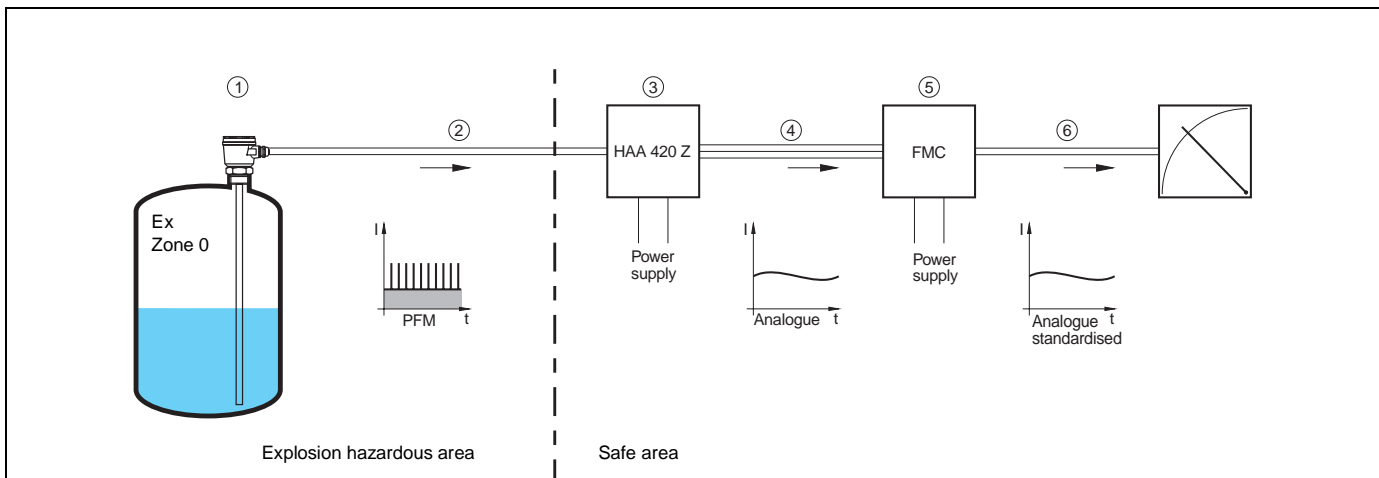
The input is electrically isolated from all other circuits:

- Power via the isolation transformer
- Pulse signal via the optocoupler

Its EEx ia IIC intrinsic safety enables the connected sensor to be used in explosion hazardous area Zone 0.

Measuring system

- ① Capacitive probe with electronic insert EC 37 Z or EC 47 Z or the Deltapilot DB pressure sensor with electronic insert EB 17 Z or EB 27 Z
- ② Interference-immune PFM signal transmission along two-wire cabling, intrinsically safe, EEx ia IIC
- ③ Isolator HAA 420 Z
- ④ Analogue signal transmission approx. 0 ... 4 mA to transmitter
- ⑤ Level measurement transmitter FMC 420, FMC 423 or FMC 425
- ⑥ Standard analogue 0/4 ... 20 mA, 0 ... 10 V output signals



Electrical Connection

Sensor/electronic insert: electronic insert EB 17 Z, EB 27 Z in a Deltapilot pressure transmitter



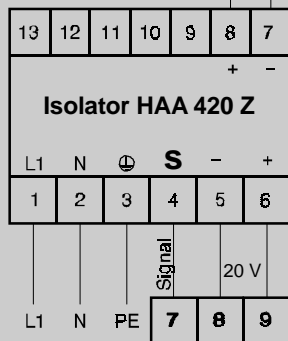
or

electronic insert EC 37 Z or EC 47 Z in a capacitive probe



Explosion hazardous area

Safe area



Electrical connection to sensors/electronic inserts, transmitters and power supply

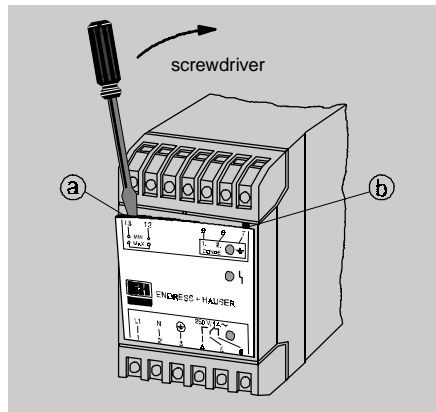
Power supply Silometer transmitters FMC 420, FMC 423 FMC 425

Isolation of Circuits

The terminal block for the power supply and Silometer FMC connection is situated in the lower section of the front panel.

The terminal block for connecting intrinsically safe cables to the sensor/transmitter is situated in the upper section of the front panel. This maintains the minimum distance required between intrinsically and non-intrinsically safe circuits.

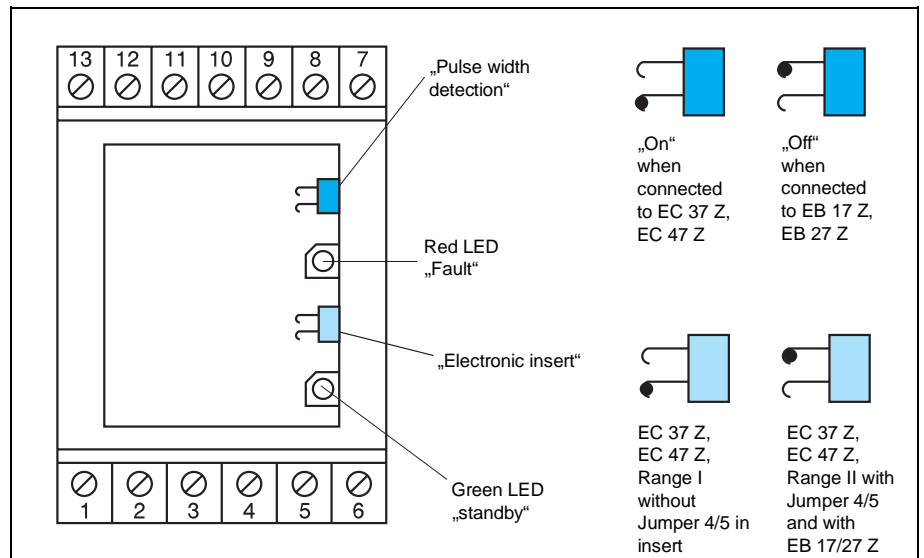
Adjustments



Open front panel

Indication

- The green „standby“ LED lights up when a power supply is present.
- The red „fault“ LED lights up if no PFM signal is received. The „fault“ mode can be simulated by short-circuiting Terminals 7 and 8.



Select hook switch position

Technical Data

Construction

Housing: Row housing (Minipac format) in light grey plastic, front panel blue
 Mounting: on standard rail to EN 50022-35 x 7.5 or EN 50022-35 x 15
 Weight: approx. 0.3 kg
 Protection to DIN 40050:
 Housing IP 40, Terminals IP 20

Permissible Ambient Temperatures

Single mounting:
 – 20°C ... +60°C (0...140°F)
 Row mounting (no gap):
 – 20°C ... +40°C (0...100°F)
 Storage temperature: – 25°C...+85°C

Electrical Connection

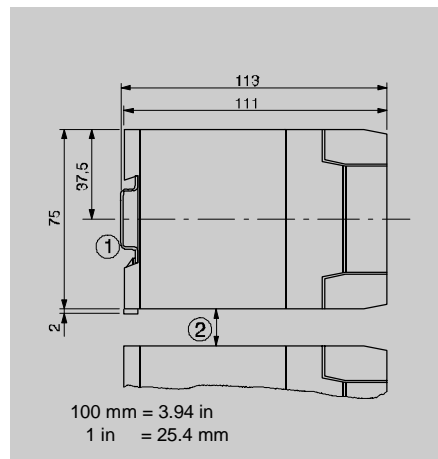
Terminals: removable terminal blocks, non-interchangeable, black, 6-pole, 7-pole
 Max. terminal diameter: (fine-wire)
 1 x 0.5 mm² to 1 x 2.5 mm² or
 2 x 0.5 mm² to 2 x 1.5 mm²
 Power supply, AC:
 220 V, – 10% ... 230 V + 10%,
 240 V, 127 V, 115 V, 110 V, 48 V, 42 V,
 24 V, each +15%, – 10%, 50/60 Hz
 100 V, ±10%, 50/60 Hz
 Power consumption max. 3.5 W (4.4 VA)
 Connecting cable to sensor:
 2-wire, max. 25 Ω per wire
 Connecting cable transmitter:
 3-wire, max. 25 Ω per wire

Input signals: PFM

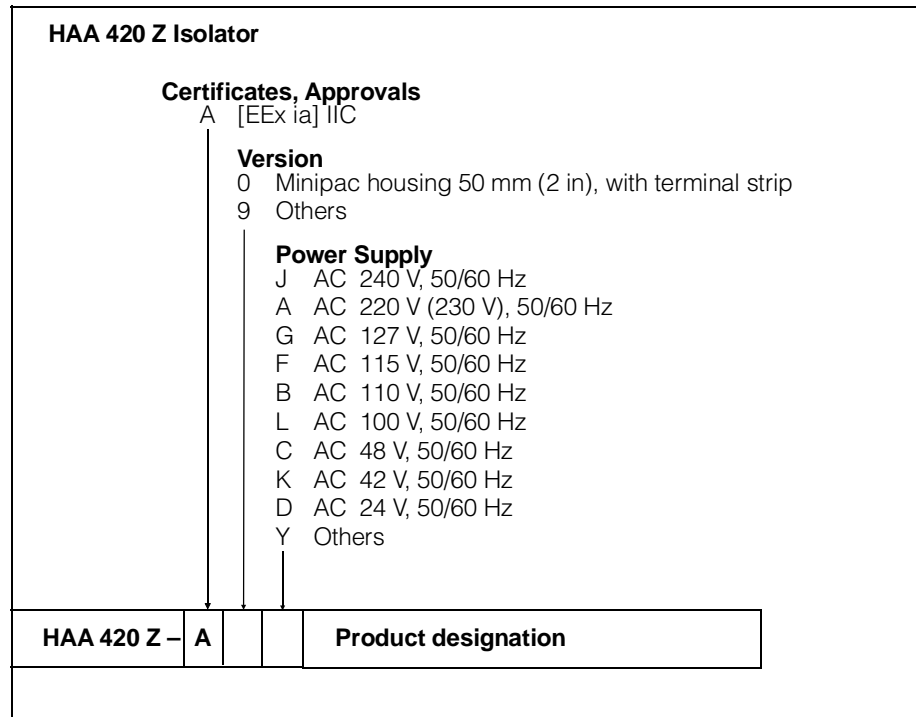
Pulse width: approx. 100 μs
 Frequency:
 approx. 550 Hz to 2.8 kHz in Range I,
 approx. 55 Hz ... 2.8 kHz in Range II
 Current: approx. 5 mA, superimposed on base current
 Output signals: analogue
 Current approx. 0.04 ... 1.5 mA
 (= approx. 30 pF... 350 pF) in Range I;
 approx. 0.04 ... 4.0 mA
 (= approx. 30 pF ... 4350 pF) in Range II

Subject to modification

Dimensions in mm of the HAA 420 Z isolator in Minipac format
 Width of housing: 50 mm
 ① Rail mounting 35 x 7.5 or 35 x 15
 ② Maintain minimum distance from above and below to next row of instruments:
 min. 50 mm distance when using probes in explosion hazardous areas
 min. 25 mm distance when using probes in safe areas.



Product Structure



Supplementary Documentation

- Mounting accessory for Minipac transmitters, Technical Information TI 009F/00/e



Accessories:
protective housing in plastic for Minipac transmitters.
Protection IP 55.

Details When Ordering

- Product designation for HAA 420 Z
- Accessories, e.g. standard rail or protective housing

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