PROFSI3-*B…-ISH

Intrinsic safety analog interfaces

- **for use in ATEX explosive areas Gas or Dust [Ex ia] I/IIC**
- **1 or 2 inputs – transmitter power supply or loop receiver**
- **1 or 2 active or passive 4-20mA recopies**
- **digital signal transfer – HART® compatible**
- **all removable screw terminals**
- **pull-out power distribution by flat cable**
- **35 mm hat profile DIN rail mount (NFC 63015 EN 50022)**

PROFSI3-*B...-ISH intrinsic safety family of interfaces offers a lot of various models connected in input or output to supply analog measurement or control loops providing safety between hazardous explosive area and safe area by galvanic isolation.
PROFSI3-*B...-ISH provide the power supply of a 2-wire transmitter and the digital signal transfer HART. The galvanic isolated recopy can be active or passive depending on the wiring.
Several models are available:

- 1 input (1 transmitter power supply) / 1 output
- 2 independent inputs (2 transmitters power supply) / 2 independent and isolated outputs
- 1 input(1 transmitter power supply) / 2 independent and isolated outputs

Jacks on front panel can be used either for the 4-20mA recopy test or for the connection of a HHC programming unit in order to configure or to use the digital signal HART.
PROFSI3-*B...-ISH housing is an independent symmetric DIN rail mount unit. Connections are done by mean of pullout screw terminals. Power supply can be AC (from 48VAC to 240VAC) or DC (from 20VDC to 48VDC). Power distribution by plug-in flat cable saves space and time during wiring.

Specifications

2-wire transmitter power supply
Input: -current : 4-20mA
Input impedance : 50Ω
Output : Ratio 1/1
Optoelectronically isolated
4-20mA recopy : load available 550Ω
Load effect : 1.10^{-4} / 100Ω
Accuracy of the recopy 0.1%
Residual ripple ± 50mA
Iout = Iin for Iin ≤ 35mA
Transfer time < 5ms
Thermal drift : zero : 75ppm/°C
gain : 50ppm/°C
Front panel LED : for power supply
2mm test jacks on front panel for:

- 4-20mA on safe side without opening the loop
- connection of a HHC program hand held unit

PROFSI3-ISH (excepted in reception function) allows transmission in both sides of FSK (HART) signals (added on 4-20mA loop signal). A suitable HHC programming unit can be connected up or downstream from the interface.
A switch located behind the front panel gives access to an extra communication load (HART) on the recopy or a 10Ω load for measuring the current loop (standard delivery Hart communication position)

Power supply

According to models : from 48VAC (80VAC for a 2 inputs model) to 240V-50Hz or 60Hz 4VA (8VA for a 2 inputs model) - from 20 to 48VDC 3VA (6VA for a 2 inputs model)

Environmental

Operating temperature : from -20 to +60°C
Storage temperature : from -40 to +80°C

This documentation acts as the ATEX instruction manual

Special conditions for a safe use

PROFSI3-*B...-ISH is an apparatus complying with ATEX Directive : 2014/34/UE n° LCIE 03 ATEX 6078X
General marking Ⓔx I (M1) ou II (1)G ou II (1)D [Ex ia] I/IIC
T° ambiante : -20°C ≤ Ta ≤ 60°C

- Category (M1) or (1)G or (1)D

This apparatus is an intrinsically safe associated material, it is strictly forbidden to install it in an explosive area.

- Category 2(1)D-IP6X

This apparatus can be installed in presence of combustible dust when it is mounted inside an IP6X enclosure that also comply with the requisitions of the EN61241-1 standard.
Enclosure marking : 2(1)D-IP6X
The intrinsically safe terminal blocks can be only connected to intrinsically safe certified equipments or in accordance with clause 5.7 of EN60079-11 standard. These combinations must be compatible as regard intrinsic safety.

Mechanical

DIN enclosure for hat-profile symmetric 35mm DIN rail as per NFC 63015 and EN50022
All connections by pull-out screw terminals max size 2.5 mm²
Power distribution by plug-in flat cable
Dimensions : width on rail : 29mm - depth : 120mm -height : 90mm (145mm overall including cables)-Minimal distance between rails : 180mm
Weight : 200g

Conditions of installation

- Mounting PROFSI3 series on DIN rail must take in account thermal dissipation and risk of overheating generated by enclosures installed side by side. In case of a high concentration of enclosures, we recommend to leave a free space of 10mm between each group of 8 units (horizontal rail) and between each group of 4 units (vertical rail).
- Mounting in a cabinet : in this case, it is recommended to close the electrical cabinet and to provide a circulation of fresh air even by mean of an air conditioner to keep the inside temperature at a level compatible with the recommended operating temperature among the units.

EXPLOSIVE ATMOSPHERES
EXPLOSIONSGEFÄHRDETE BEREICHE

ATMOSPHERES EXPLOSIBLES

Reference guide	Safety electrical data						
	Uo	Io	Po	Co IIC	Lo IIC	Co IIB	Lo IIB
models **PROFSI3**	V	mA	mW	nF	mH	nF	mH
PROFSI3-B25083-…	25,2	83	523	97	5	810	13
PROFSI3-2B25083-…	25,2	83	523	97	5	810	13
PROFSI3-B28093-…	28,4	93	660	69	4	622	13
PROFSI3-*B25083-…/REC	Loop reception mode use Ui ≤ 30V and Ii ≤ 115mA Ci ≈ 0 Li ≈ 0						

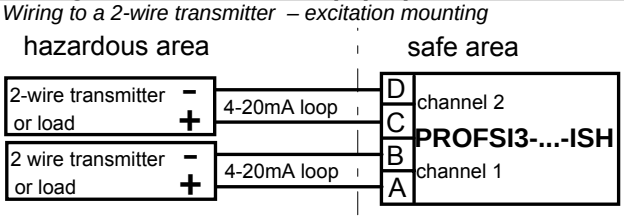
For other safety parameters and other functions (receiver mounting, 3-wire transmitter power supply…) refer to data sheet PROFSI n°751

	Channel	Models	Supply	Recopies	Option	Remarks
PROFSI3-						No digit at this place = 1 channel
	2					Digit 2 at this place = 2 independent channels (only for 25083)
		B25083-				Model 25083 refer to safety parameters above Vout=14,8V
		B28093-				Model 28093 refer to safety parameters above Vout=17,8V
			CO24-			Primary power supply 21 to 48VDC
			AUP-			Primary power supply 90 to 253VAC 50Hz/60Hz
				ISH		1 isolated output recopy
				2ISH		2 isolated output recopies
				0		Without recopy
						No digit at this place = none option
					/REC	/REC at this place = loop receiver mode hazardous area side

Grey references are the most common.

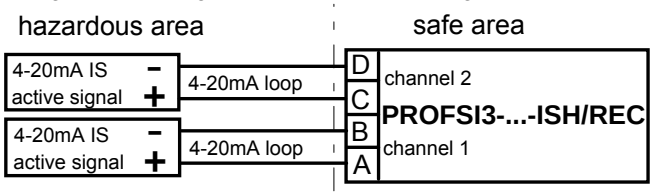
Wiring to hazardous area (input) - CN1

Wiring to a 2-wire transmitter – excitation mounting



On the models with 1 input only terminals A and B are connected

Wiring to a 4-20mA generator– receiver mounting

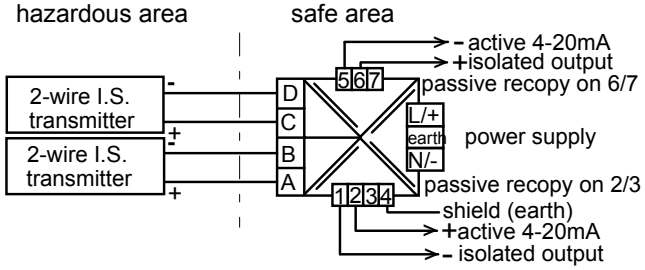


Power supply wiring– CN3/CN4

Power distribution by mean of plug-in jumpers from one unit to its neighbour.
All terminals are removable (AC : orange terminals ; DC : black ones)

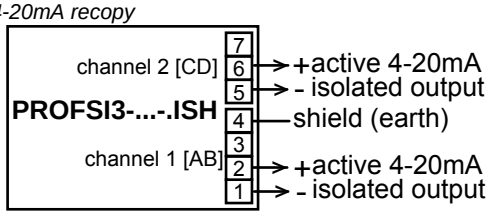
Caution ⚠ All models are designed with 2 pull-out 3-point (LGN) terminals for power supply wiring: one for input and one for connection to another unit via the 3-wire supplied terminal. To prevent electrical shocks it is **compulsory** to wire these 2 terminalss. If only one is used, the other one must be filled by the blind 3-point standard delivered plastic cap

Wiring synoptic

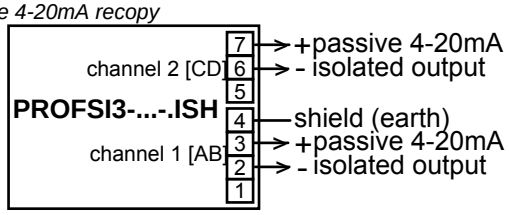


Wiring to safe area (output) - CN2

Active 4-20mA recopy



Passive 4-20mA recopy



The passive output must be connected to a circuit with max voltage = 26V. U = RI ≤ Vin – 13V

On the models with 2 recopies there are a 4 point terminal (1 2 3 for channel 1 [AB] and 4 to connect the earth) and a 3 points terminal (5 6 7 fot channel 2 [CD]).
For model PROFSI3-A25083-...-2ISH(1 input / 2 isolated recopies) only channel 1 [AB] enable transmission of digital signal HART.

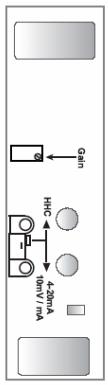
We also propose ready-made wiring solutions to ensure connections to PLC or DCS or for special assemblies in enclosures or electrical cabinets.
Should you need more information, please call us!

Access on front panel for the control of the 4-20mA loop or HART programming.

2mm test jacks on front panel for:

- 4-20mA on safe side without opening the loop
- connection of a HHC program hand held unit

A switch located behind the front panel gives access to an extra communication load (HART) on the recopy or a 10Ω load for measuring the current loop (standard delivery Hart communication position).
It's recommended not to commutate the switch while the device is undervoltage.
Without Hart digital signal be careful to be setted on « 4-20mA » to avoid an important voltage drop..



CE The apparatus bears CE mark as per 2014/30/UE and meets EN 61326-1 requirements. Complementary tests have been carried out as per other standards. Please call our technical team for further information
This equipment has a 1-year warranty including parts and labour for apparatuses returned in our factory. Even after this warranty period has expired, only A puissance 3 has the authority to modify and repair a certified electrical component or apparatus for hazardous atmospheres. Should this clause is not adhered to, A puissance 3 can no longer be held liable. PROFSI3BISHeng-1909

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