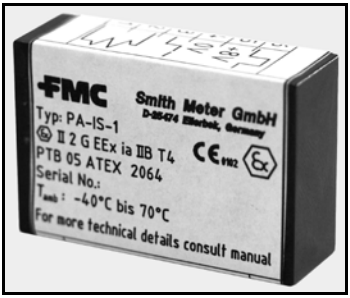
The electronic module PA-IS-1 is a preamplifier for signals from an inductive sensor, which is mainly used for turbine meter pick-ups to detect the presence of the turbine blade.

The signal is amplified and is converted in a voltage output signal (3-wire connection) or in a current signal according to NAMUR (2-wire connection) to connect to the further processing electronics.



PA-IS-1

1 Functional description

The electronic is a passive load in an “ia” intrinsically safe electrical circuit and is approved by PTB under the number PTB 05 ATEX 2064. The Ex safety characteristics of transmitter power supply has to be fitted to safety characteristics of the pre-amplifier. Safety characteristics data see chapter 2.2 of this description.

Switch S1 damping ON/OFF

At some applications, a phenomenon that at medium speed some pulse errors occur because of transient oscillation can be observed. A damping of the sensor signal can be activated by switch S1 to prevent these erroneous pulses.

The damping of the signal depends on the rotational speed of the turbine blades and is active at higher speed rates. At slow speed of the turbine full sensitivity is given. Put switch S2 in position “ON” to activate the damping.

Switch S2 NAMUR ON/OFF

With the Switch S2 in position „ON“ the preamplifier is set to deliver a NAMUR output signal. In this position, a 2-wire cable is used to transmit the sensor signal. A transmitter power supply according NAMUR standard can be used as pulse isolator.

The position „OFF“ is for the use as a replacement of the preamplifier type V180S-17609 from the company Braun. In this position the amplified digital signal is available on pin 6. A shielded 3-wire cable is necessary for this application. t.

2 General Installation Instructions

2.1 Explosion Protection Notes

All components labelled with the ⟨Ex⟩ sign are explosion-proof electrical devices. They have been safety checked and certified.

No intervention, either mechanical or electrical, is permitted

RISK OF EXPLOSION

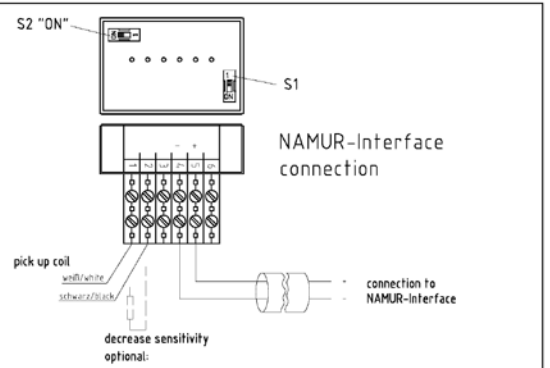
A specialist company may only install the equipment. In case of a fault, the complete module must be replaced.

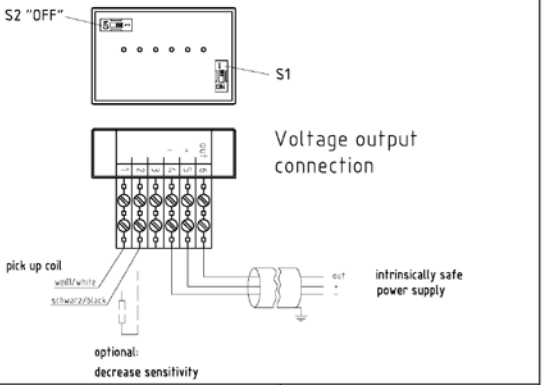
- The electrical installation must be carried out in accordance with EN 60079-14 or equivalent local regulations. All components are explosion-proof electrical devices that have been safety checked and certified.
- The PA-IS-1 is a zone 1 device. For installation, it is imperative to meet the following requirements.
- The Power Supply for the PA-IS-1 must be a intrinsically safe voltage source not exceeding the maximum values of the safety specifications.
- The PA-IS-1 must be installed in a housing that have at least a protection class of IP20.
- B For assembling in a enclosed housing the arrangement of the wiring must be signed, in a useful way as in intrinsically safe voltage source electrical circuits.
- The wiring must be carried out according to the wiring diagrams supplied.
- The manufacturer's EMC declaration of conformity is only valid if the system has been installed exactly according to the information provided by the manufacturer (operating and installation instructions).
- If possible, the cable entries should always be installed facing sideways or downwards.
- If wires have to be shortened, no cable residues must be allowed to fall into the open unit. This could lead to short circuits on the electronic board.
- When connecting the cables to the individual electronics, it should be noted that electrostatic discharge is avoided. Electrostatic discharge could destroy the electronic components. The relevant guidelines for handling electronic products must therefore be observed.

2.2 Safety characteristics - PA-IS-1

The following maximum values must not be exceeded.

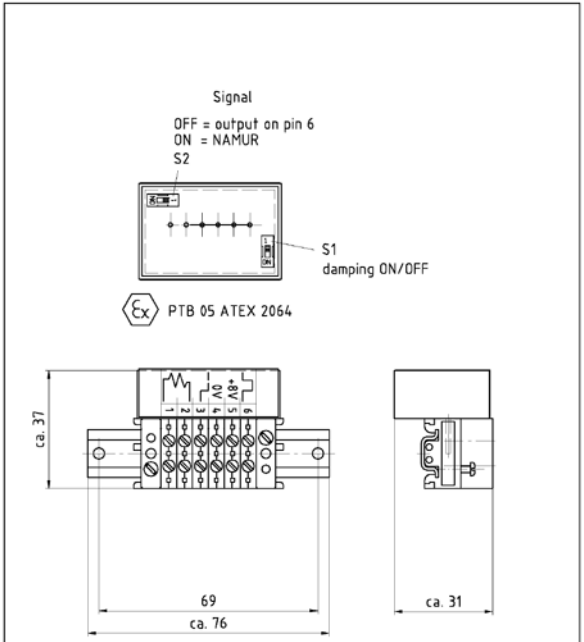
	II 2 G Ex ia IIB T4
PTB 05 ATEX 2064	
T_{amb} -40 °C bis +70 °C	
Ex-electrical data: U_i = 15V, I_i = 176 mA, P_i = 0,66 W, L_i = 15 µH ; C_i = 0,5 µF	
Sensor conncetion Termial 1 and 2 :	U_0 = 7,5V; I_0 = 5,5 mA; P_0 = 21 mW, L_0 = 2 H; C_0 = 173 µF
Technical Data	
U_{max}:	12V
U_{min}:	3V
U_{iH}:	~20 mV_s
NAMAUR-Characteristics	
U_{Enom}:	8,2V
I_{ELow}:	< 800µA
I_{EHigh}:	> 2,1 mA





"Schutzvermerk nach DIN 34 beachten"

PA-IS-1	FMC EnergySystems FMC Measurement Solutions — F.A. Sening GmbH D-25474 Ellerbek, Germany	
Wiring Diagram	Geänd. am :	Datum : 07.07.2005 — Name : Larsen
		Zeichnungs-Nr. 51.351905 — Rev.



"Schutzvermerk nach DIN 34 beachten"

Vorverstärker	FMC EnergySystems FMC Measurement Solutions — F.A. Sening GmbH D-25474 Ellerbek, Germany	
	Gewicht :	Datum : 23.08.2005 — Name : Larsen
Teile-Nr. PA-IS-1	Geänd. am :	Zeichnungs-Nr. 51.351904 — Rev.