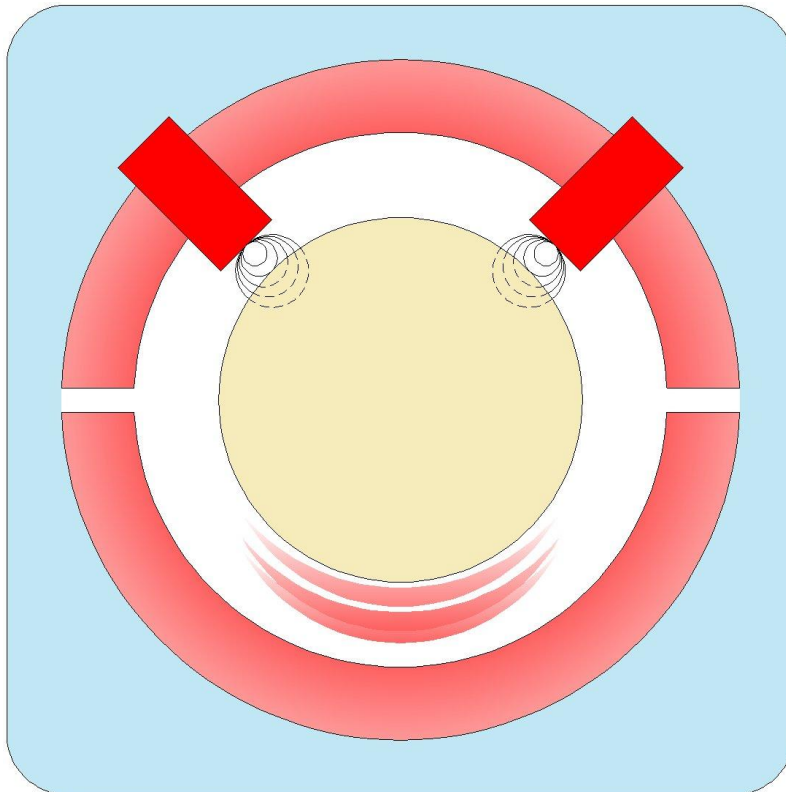


MMS 3110

Dual Channel Shaft Vibration Transmitter



- Integrated signal converters for both channels
- For measuring and processing relative shaft vibration signals
- Inputs for eddy current transducers
- Integrated micro controller
- Corresponds to the most common standards, such as VDI 2059/.. and API 670
- Two redundant 24 Vdc supply inputs
- Self-test functions for electronic circuits and transducers
- To be mounted directly at the machine
- Current outputs 0/4...20 mA
- Limit supervision

Applications:

The Dual Channel Shaft Vibration Transmitter **MMS 3110** is part of the **MMS 3000** Transmitter System for monitoring and protecting any kind of turbo machinery. It permits economic measurement and supervision of relative shaft vibrations, measured with eddy current sensors.

Application fields of the system are

all types of turbo machinery, fans, compressors, gear boxes, pumps, and similar machines.

MMS 3000 Transmitters are suitable for great systems with programmable controls and host computers in power stations, refineries and chemical plants, as well as in smaller plants with few measuring

points and decentralized data processing.

The inputs of **MMS 3000** transmitters may be used for connecting all epro standard - eddy current sensors **PR 6422/..**, **PR 6423/..**, **PR 6424/..** and **PR 6425/..**

The transmitter is not designed for applications in hazardous areas.

Function and Design:

The **MMS 3110** Dual Channel Shaft Vibration Transmitter converts the input signals of eddy current sensors to two independent output signals proportional to the shaft vibration or to one output signal proportional to the maximum value of both channels according to API 670:

max. (S_{ppx} , S_{ppy}) or – according to VDI 2059: S_{max} μm .

The integrated module and sensor supervision detects fault functions of both - sensor and module. In this case the status of the "ok output" (Channel Clear) changes and the 4...20 mA current output switches to 0 mA.

All settings are made with jumpers and DIP switches.

The transmitters are delivered with a configuration suitable for most applications - if desired any other configuration can be prepared in the factory.

Technical data:

Sensor inputs:

Two independent inputs for eddy current sensors with "Lemo" connectors; e.g. **epro** types PR 6422/..., PR 6423/..., PR 6424/.. and PR 6425/..

Measuring ranges:

Selectable by means of DIP switches::
PR 6422/..: 0..25/50/62,5/125/250 μm_{Op}
PR 6423/..: 0..50/62,5/100/125/250/500 μm_{Op}
PR 6424/.. and PR 6425/..: 0..100/125/200/250/500/1000 μm_{Op}

Frequency range:

1 / 5 Hz...250/1500 Hz

Linearity error:

0,25 % at 25°C

Stability of output signal over temperature:

Zero point:
< 0,05 %/K
Gain:
< 0.01%/K

Stability of output signal over the time:

Zero point:
< 0,05 %/24 h
Gain:
< 0,01 %/24 h

Analog outputs:

Current outputs:
Two, one for each channel,

proportional to the measuring signal, or one output proportional to the maximum value of the two inputs:

0/4...20 mA or 4...20 mA

Permissible burden :
≤ 500 Ohm

open-circuit and short-circuit proof
Cable connection via cage clamp terminals

Additional outputs:

Two test outputs, one for each channel, proportional to the dynamic input signal; also to be used for analysis and diagnosis purposes; cable connection via cage clamp terminals.

Buffered voltage output:

0...+10 V

There is one output for the "OK" status and one limit value per channel; at combining the channel values, there are two limit values for the measuring result.

Peak hold time:

adjustable from
5.5 ms (200 Hz) to 2222 ms
(0.5 Hz) in 15 steps.

Power supply:

18...24...36 Vdc galvanically isolated by means of dc/dc converters

Current consumption:
approx. 100 mA at 24 V

Power consumption:
approx. 2.5 W

Environmental conditions:

(according to IEC 359, DIN 43745)

Housing:

Aluminium, corrosion-resistant

Protection class:

IP 65 according to DIN 40050, IEC 144
CE certified

EMC tested:

according to EN 55011 and EN 50082-2

Operating temperature range:

-20..... max. +65 °C

Temperature range for storage and transport:

-30.....+90 °C

Permissible relative humidity:

0.....95 % non-condensing

Permissible vibration and shock:

Shock: 20 g for 2 ms
Vibration: 5 g at 60 Hz

Mounting direction:

preferably with cable glands showing to the bottom.

Dimensions:

B x H x T
127,5 x 125,75 x 80 mm

Net weight:

approx. 1300 g

Gross weight:

approx. 1500 g

Accessories:

Operating manual

Module and sensor supervision:

The internal module supervision continuously checks the following functions:

- the input signal is within the predefined range

- the cable between transmitter and sensor must be ok (no short-circuit, no broken cable)
- the supply voltage is within the ok-range

The state of module and sensor supervision is indicated via potential-free optocoupler outputs at the terminal strip.

Maximum electric load of the optocoupler output:

U: 48 V DC
I: 100 mA

Programmable measuring parameters:

- operating mode
- characteristic variables
- measuring modes
- measuring range
- warning and alarm limits
- centre of measuring range
- output current

Limit supervision:

In the dual channel mode the characteristic value of channel 1 is supervised on alarm limit exceedings by alarm channel yellow and the characteristic value of channel 2 by alarm channel red.

In the single channel mode and in the operating mode with combined channels (e.g. S_{max}) the limit values are assigned to the common characteristic value, but may be adjusted independently from each other, e.g. yellow for Alert and red for Danger.

Maximum electric load of the opto-coupler output:

U: 48 V DC
I: 100 mA

Operating modes:

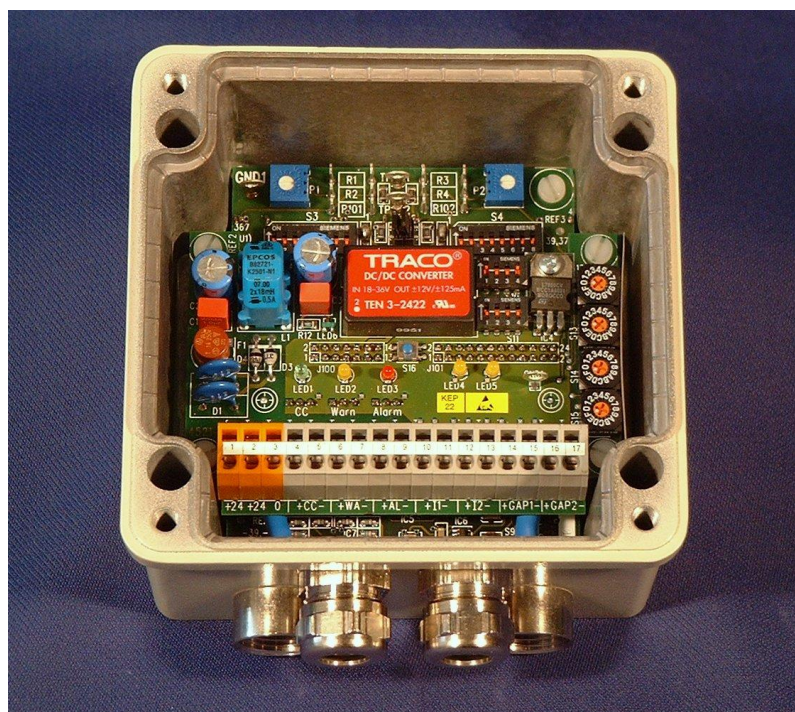
The **MMS 3110** Transmitter provides different measuring modes.

- Single channel mode
 - S_{o-p}
 - S_{p-p}
- Dual channel mode
 - S_{o-p}
 - S_{p-p}

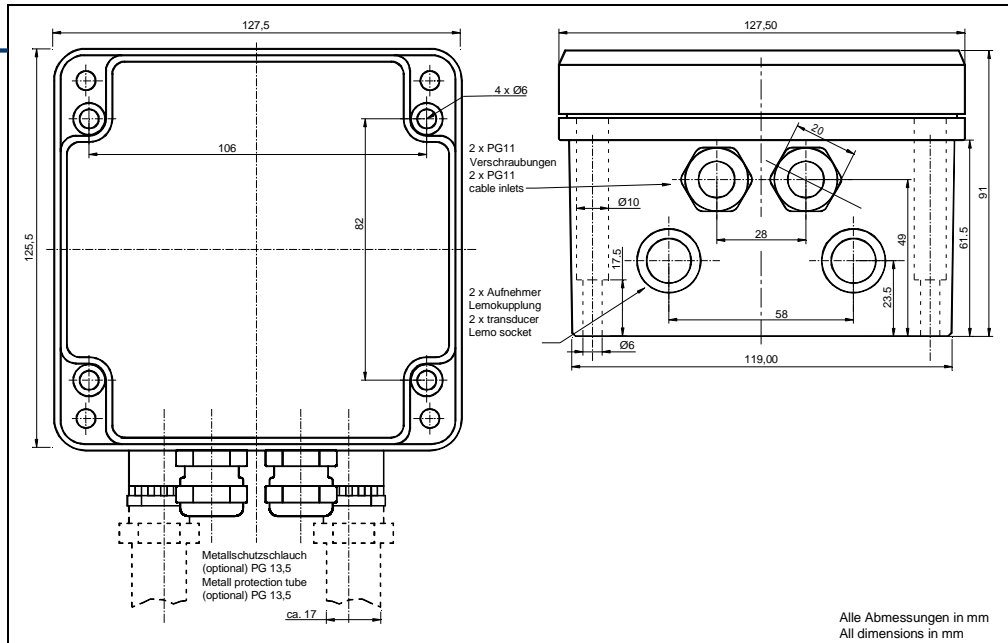
Moreover, the two channels may be combined with each other. In this mode, the following measurements can be carried out:

- $\text{Max}_{(S_{pp1}/S_{pp2})}$ according to API 670
- S_{max} according to DIN 45670, characteristic value A

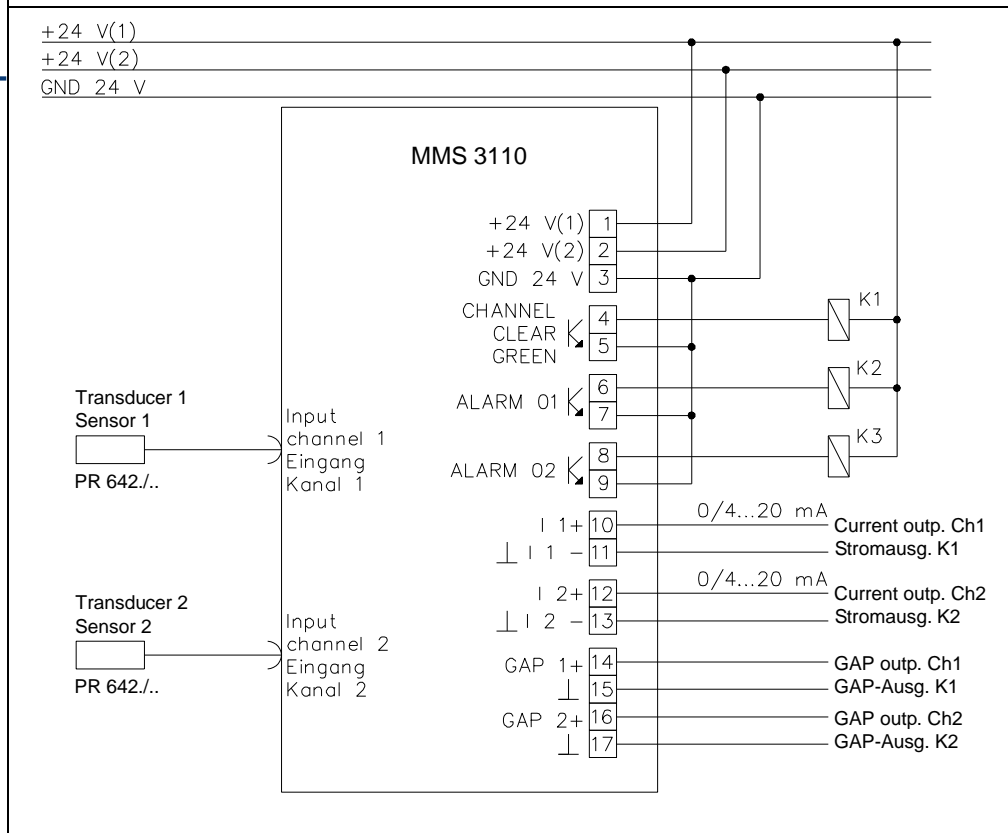
Internal view of the transmitter:



Dimensions:



Connection diagram:



Order number:

MMS 3110 Dual Channel Shaft Vibration Transmitter :..... **9100 – 00016**