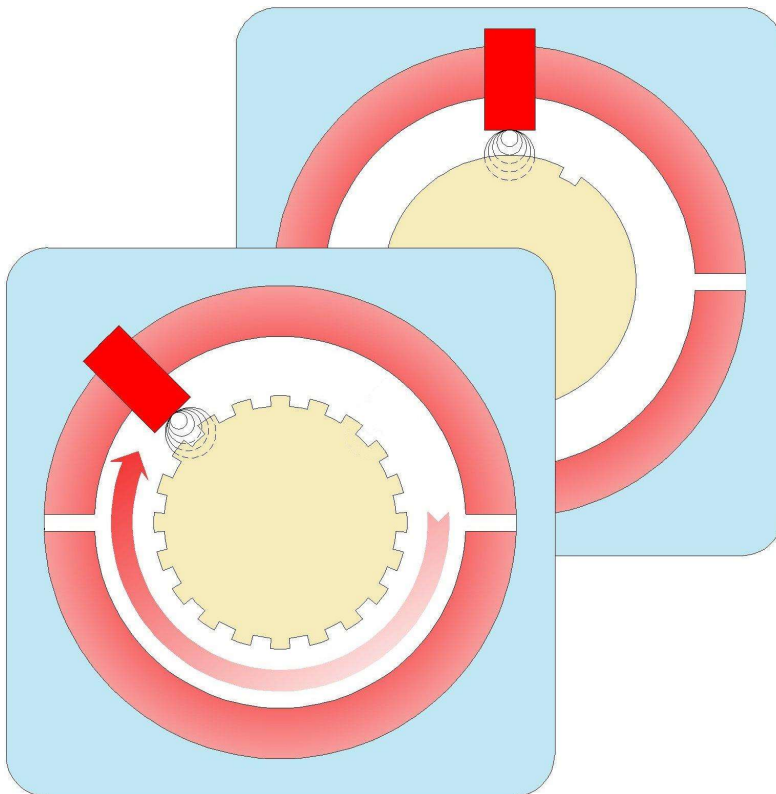


MMS 3311

Speed and Keypulse- Transmitter



- Integrated signal converters for each channel
- For measurement of speed and key pulses
- Signal inputs for eddy current transducers
- Two redundant 24 V DC supply inputs
- Comprehensive self test facilities for electronic circuits and sensors
- Integrated Microcontroller
- One 0/4...20 mA (life zero) output for speed, one pulse output for the key
- To be mounted directly at the machine
- Two limit values for speed measurement
- Limit values adjustable within the speed range 1...65535 rpm

Application:

The **MMS 3311 speed / key pulse Transmitter** serves the measurement of shaft speeds and the generation of key pulses. Generation of key pulses is realised by using a toothed wheel or a trigger mark on the machine-shaft.

Both channels may be operated independently from each other.

Application areas for the **MMS 3311** transmitter are all kinds of rotating

machines where speeds resp. key pulses shall be measured e.g. at turbines, fans, compressors, gear boxes, pumps, coal mills and similar machines.

MMS 3000 transmitters are used as well in big systems with PLCs and host computers as used in power plants, refineries and chemical plants as also in smaller systems with only few measuring points and

decentral data processing.

The inputs of the **MMS 3311** transmitter may be operated with standard **epro** eddy-current sensors PR 6422/..., PR 6423/..., PR 6424/..., PR 6425/..

The transmitter must not be used for applications in hazardous areas.

Module and sensor supervision:

The internal module supervision continuously checks the following functions:

- the input signal must be within a predefined range
- the cable between sensor and transmitter must be ok (no short-circuit, no broken cable)
- the supply voltage must be within permissible limits

The state of the module supervision is indicated with a potential-free opto-coupler output at the terminal strip.

Technical data:

Sensor inputs:

two independent inputs for signal pulses from sensors PR 6422/.. to PR 6425/..

Frequency range:

0...20 kHz
manual triggerlevel adjustment

Measuring range:

programmable, up to 65535 rpm, limited by the max. input frequency

Measuring signal outputs:

one key pulse output
one current output, proportional to the measured speed
0...20 mA or 4...20 mA (life zero)
burden: < 500 Ohm
open-circuit and short-circuit proof
cable connection with cage-clamp terminals

Power supply:

18...24...31,2 Vdc galvanically isolated with dc/dc converter
current consumption:
approx. 100 mA

Power consumption:

approx. 2,5 W

Environmental conditions:

(according to IEC 359, DIN 43745)

Housing:

aluminium, non-corroding

Protection class:

IP 65 according to DIN 40050, IEC 144

CE certified

EMV tested according to:

EN 55011 and EN 50082-2

Operating temperature range:

-20...+65 °C

Temperature range for storage and transport:

-30...+90 °C

Relative humidity:

0...95 % non-condensing

Shock and vibration:

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

Mounting direction:

Preferably with cable glands showing to the bottom.

Dimensions:

refer to drawing

Net weight:

approx. 1300 g

Gross weight:

approx. 1500 g

Accessories:

Operating manual

Programmable measuring parameters:

- | | |
|--------------------------|-------------------------------|
| - Measuring range | - Warning- and alarm limits |
| - Number of teeth | - Limit watching modes |
| - Transducer sensitivity | - Hysteresis values of limits |
| - Offset tracking | - Measuring function |
| - Trigger thresholds | - Slope of input signal |
| - Gap limits | - Key-pulse form |

Depending on number and type of the selected additional functions, the number of programmable parameters will increase.

Limit watching:

One alert alarm and one danger alarm are available for channel 1.

Both alarms may be used in the following different modes:

Up- or downscale characteristic without latching function.

In case of errors, the alarm outputs can be blocked by the channel supervision function.

Adjustable range:

1...65535 rpm

Outputs:

The alarm outputs are at disposal via potential-free opto-coupler outputs at the internal terminal strip.

Maximum electric load of the opto-coupler:

U: 48 V DC
I: 100 mA

Operating elements:

The transmitter can be operated and configured via three keys.

1 **MODE key:**

This key serves the selection of the parameters to be modified. By actuating this key, the program jumps to the next parameter. At the end of the parameter list, the program returns to position 00.

2 **Key ROW/STORE:**

This key moves the cursor for the value to be set by one position from right to left. Having reached the leftmost position, the cursor moves to the invisible zero position. After another actuation of the key, the cursor returns to the rightmost display position.

If this key is kept pressed for approx. 3 seconds, the LED indication starts flashing and the adjusted parameter value will be stored in the EEPROM.

3 **Key COL:**

With each key actuation the value of the relevant digit position will be increased by one. Having reached 9, the next key actuation shows again digit 0.

Additional functions (optional):

Additionally to the basic version, the **MMS 3311** transmitter may be supplemented with several options. These options have to be ordered additionally. The following options are presently at disposal:

Detection of standstill and rotational direction:

If the transmitter does not receive pulses within a certain time period, the transmitter recognises this as machine-standstill and indicates it via an open collector transistor output.

When using two speed sensors, it is possible to detect the rotational direction of the machine. The detected direction is indicated via an open collector output.

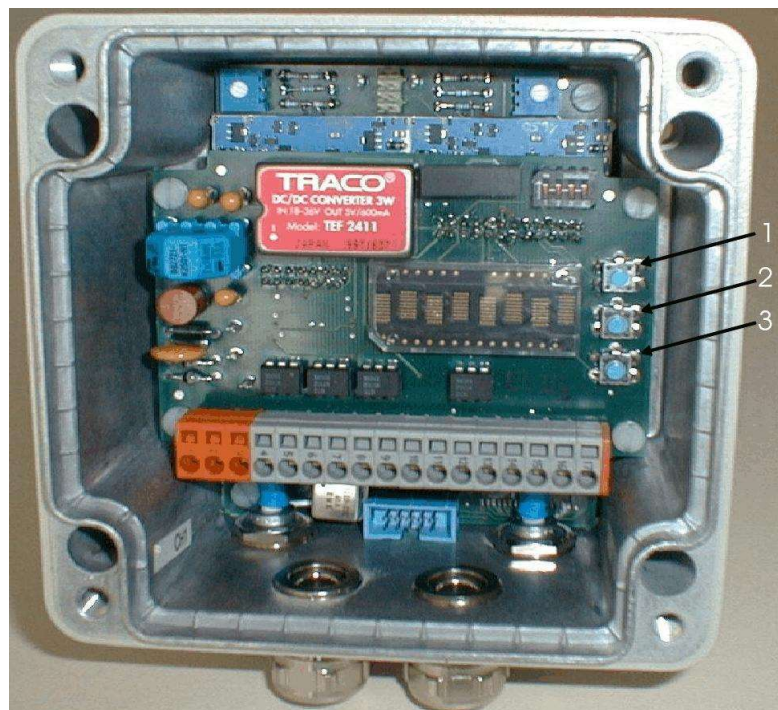
Latch – function of alarm outputs:

Alarm outputs after speed limit exceedings can be programmed with a latch function. If this function has been activated, the alarm output will remain active until the measuring value has fallen below the limit and an external reset pulse has been given (ground potential to the reset input).

Redundant mode (speed):

This mode requires two speed sensors. Both sensors provide their signal to the transmitter inputs. In case of an error, the program switches automatically to the second, redundant sensor.

Internal view of the transmitter:



Dual current mode:

This function splits the output current into two ranges.

Example:

Measuring range 0...3000 rpm.

One part of this range, e.g. 0...300 rpm, is scaled to 0/4...20mA.

Having exceeded the limit of 300rpm, the total measuring range of the transmitter will be scaled to 0/4...20mA. Switching into the higher range will be indicated via an open collector transistor output.

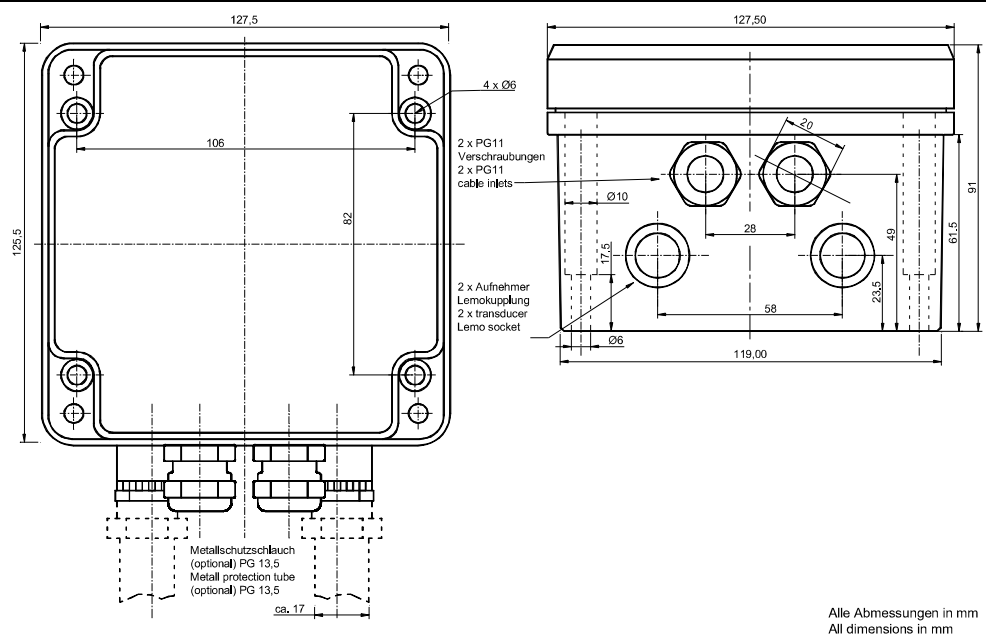
Speed zoom:

By means of this function, a certain speed range may be expanded. For this, start and end value of the speed range must be programmed. The resulting speed range is then scaled to 0/4...20mA and passed to the analogue output.

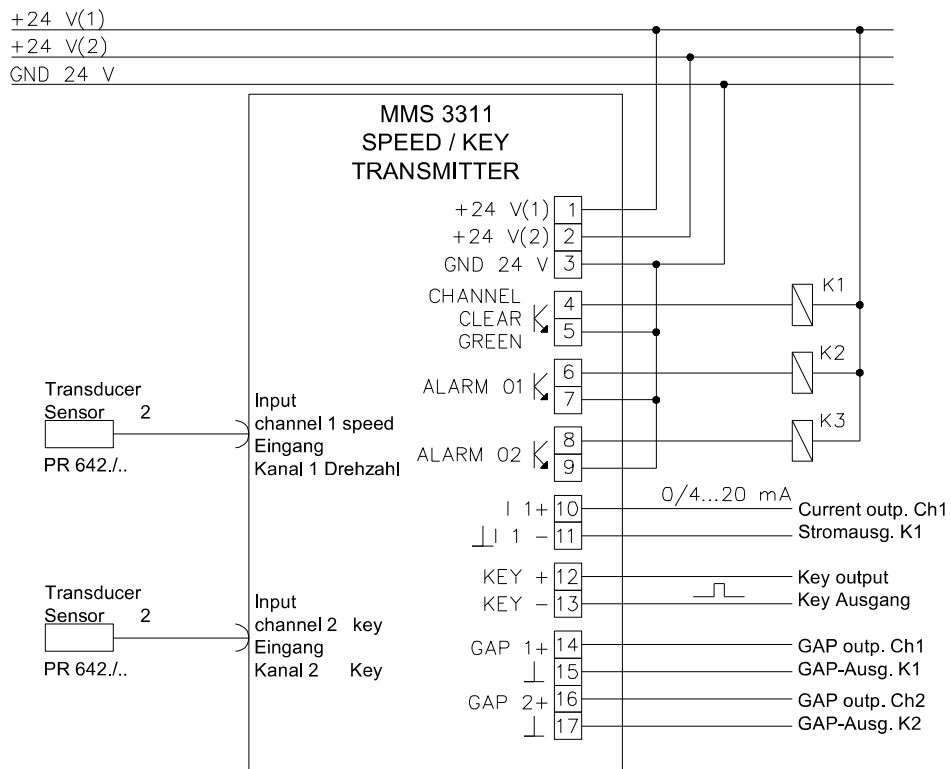
Output current calibration:

This function permits calibrating the output current. This could possibly be necessary if digital speed indicators, connected to the output, uses the current output as input signal. At conversion from digital to analog values, conversion errors at the current output can be corrected by means of the calibration function.

Dimensions:



Connections:



Order numbers:

MMS 3311	Speed / Key Transmitter.....	9100 – 00034
Additional software functions:		
MMS 3910/311-01	Detection of standstill and rotational direction.....	9400 – 00007
MMS 3910/311-02	Latch – function of limit values.....	9400 – 00008
MMS 3910/311-04	Redundant mode (speed).....	9400 – 00009
MMS 3910/311-08	Dual current mode.....	9400 – 00010
MMS 3910/311-16	Speed zoom function.....	9400 – 00011
MMS 3910/311-32	Output current calibration.....	9400 – 00019