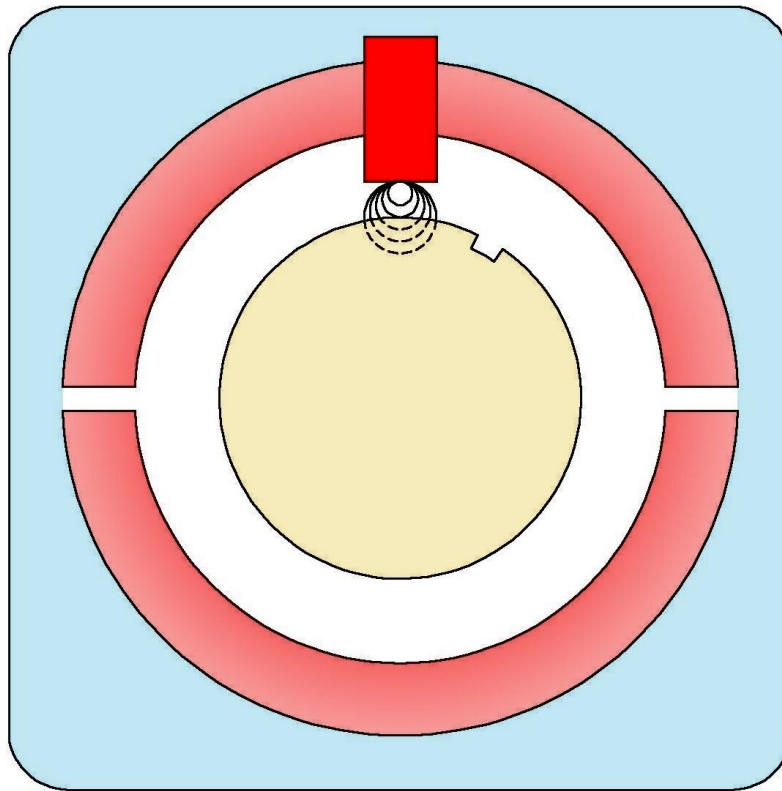


MMS 6310

Dual Channel Key-pulse Monitor



- Part of the MMS 6000 System
- Replaceable during operation; stand alone use possible, redundant supply inputs
- Extended self-checking facilities; built in sensor-self-test facilities;
- For use with eddy-current type transducer systems PR 6422/.. to PR 6425/.. with CON 0.. or with PR 9376/.. and PR 6453/.. pulse sensors
- RS 232 interface for local configuration and readout
- RS 485 interface for communication with epro's Analysis and Diagnostic System MMS 6850

Applications:

The **Dual Channel Key-pulse Modul MMS 6310** detects a key pulse from a rotating shaft using the output of a pulse sensor in combination with a key-mark on the shaft or a triggering wheel.

Both channels may be separately used to detect:

Each one key-pulse from 2 different shafts with each one key-mark running

at different speeds (with phase relation).

The modul can also be used as part of multichannel or redundant systems.

Key-pulse detection as described is recommended among and together with measurements of diverse parameters to build up Turbomachine Protection Systems and to provide the inputs requested by Analysis and Diagnostic Systems, Field Bus Systems, Distributed Control

Systems, plant/host computers and networks as e. g. WAN/LAN, Ethernet. Such systems are also suitable to build up systems to increase the performance and efficiency, the safety of operation and extend the lifetime of machines such as steam-gas-hydro turbines as well as compressors, fans, centrifuges and other turbomachines.

Technical data:

Sensor inputs:

Two independent differential inputs for pulse sensors such as **epro's** eddy-current type sensor systems PR 6422/.. to PR 6425/.. with CON 0.. or PR 9376/.. or PR 6453/.. or any other sensor system with matching specification.

Input resistance:

> 100 kOhm

Input voltage range:

0 ... + or -27.3 V dc

Max. permissible input voltage range:

0...30 V

Input frequency range:

0...20000 Hz

Automatic or manual trigger level adjustment:

Minimum input level for automatic tracing: 2 V

Available sensor supply:

For each of the two sensor input channels a separate buffered sensor supply voltage is available.

These outputs are galvanically separated from all system voltages as well as from the system supply voltage and are open – and short circuit proofed and may be operated in parallel with other modules without interference.

Nominal voltage:

+ or -26.75 Volts dc

Available current:

nom. 20 mA / max. 35 mA

Two independent key-pulse outputs:

One open-collector output for each channel; rectangular key-pulses inverted to the input, galvanically separated

Pulse duration :

1 ms

Frequency range:

0...20 kHz

Two independent key-pulse outputs:

One for each channel; rectangular key pulses inverted to the input

0...+5 V (TTL),

open and shortcircuit proof

Load resistance:

>10 kOhm

Frequency range:

0...20 kHz

Measuring modes:

Each channel can and must be individually configured with the relevant configuration software. Measuring modes can be configured via an externally connected laptop (RS 232 connector on the frontpanel of the module) or via the RS 485 communication bus. Measuring modes can be changed at any time during operation.

Available operating modes:

Key-pulse detection with each channel:

From one key mark on the shaft (with defined phase relation); output: standard negative or positive rectangular key puls of 1 ms duration.

Key-pulse detection with both channels in combined use:

Key-pulse detection with redundant transducers (1 out of two) with both channels for one key detection.

Module and sensor supervision:

The internal module supervision circuitry continuously supervises the following functions:

Input signal is within a preset window.

Cabling between sensor and module is ok (no shortcircuit, no break).

For PR 9376/... transducers only short circuits and cable breaks can be detected.

System supply voltages are within preset windows.

Configuration and parameter settings are correct.

Manual and automatic trigger level set-up System watch dog.

"Channel clear" is visualised on the front of the module by means of a green LED; this LED switches off during a "channel fault".

The channel status is also indicated via a

binary output, separately for each of the two channels.

$U_{\max} = 48 \text{ V dc}$

$I_{\max} = 100 \text{ mA}$

The reasons for a "channel fault" indication can be read out via the communication buses; which enables service personnel to take immediate corrective measures.

Signal outputs at the connecting strip:

Terminal strip on rear side:

acc. to DIN 41 612, version F 48 M

Two independent key-pulse outputs:

One open-collector output for each channel; rectangular key-pulses inverted to the input, galvanically separated

Pulse duration :

1 ms

Frequency range:

0...20 kHz

Two independent key-pulse outputs:

One for each channel; rectangular key pulses inverted to the input

0...+5 V (TTL),

open and shortcircuit proof

Load resistance:

>10 kOhm

Frequency range:

0...20 kHz

RS 485 communication interface.

Operating elements at the module front:

Two independent input key pulse sockets:

available via SMB sockets; one for each channel.

Range: 0...4.096 V (reduced by a factor of 0.15)

Load: >10 kOhm

Frequency range:

0...20 kHz

Two independent output key-pulse sockets:

Standard, rectangular TTL Pulse available via SMB sockets; one for each channel.

Range: 0...+5 V (TTL), open and shortcircuit proof

Load: >10 kOhm

Frequency range:

0...20 kHz

2 green LED`s:

Indicate "channel clear" separately for channel 1 and channel 2.

4 yellow LED`s:

the upper two indicate the presence of the input key-pulses, the two others indicate the presence of the output key-pulses.

1 Mini-DIN diode type socket:

as input for the configuration cable RS 232 communication interface.

Handle:

To pull out or insert module with identification labelling facility

Power supply:

Redundant supply input via two supply inputs, decoupled via diodes. At least one supply input is required for the supply of the module.

Supply voltage:

18...24...31.2 V DC

according to IEC 654-2, class DC4

Power consumption:

max. 4 W (max. 170 mA at 24 V)

Other supply voltages can be realized with additional system power supplies.

System design:

At standalone operation, unlimited number of modules.

Max. 31 modules / 62 channels may be operated at one RS 485 bus

If more modules / channels are necessary, e.g. with an MMS 6815, another RS 485 bus must be installed.

Environmental conditions:

Protection class:

Module: IP 00 according to DIN 40050
Front plate: IP21 according to DIN 40050

Climate conditions:

according to DIN 40040 class KTF
operating temperature range:
0...+65°C

Temperature range for storage and transport:

-30...+85°C

Permissible relative humidity:

5...95%, non condensing

Permissible vibration:

according to IEC 68-2, part 6

Vibration amplitude:

0.15 mm in range 10...55 Hz

Vibration acceleration:

16.6 m/s² in range 55...150Hz

Permissible shock:

according to IEC 68-2, part 29
peak value of acceleration:

98 m/s²

nominal shock duration:

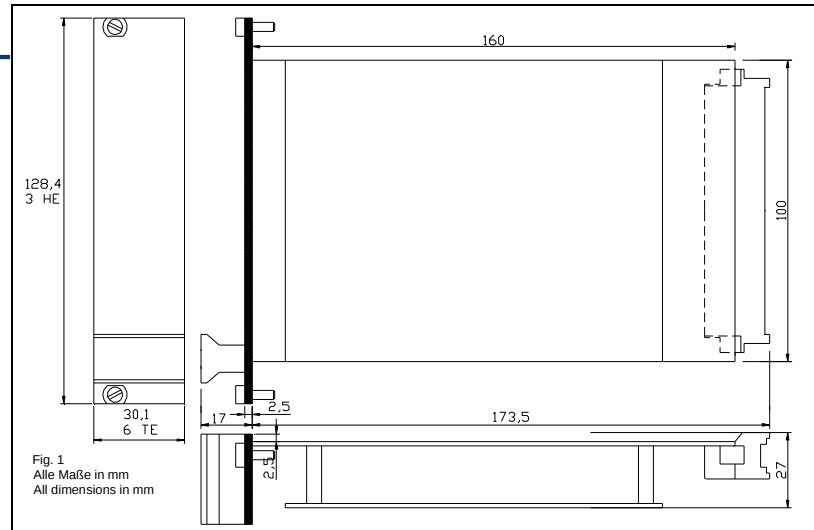
16 ms

EMC resistance:

according to EN50081-1 / EN50082-2

Dimensions:

PCB/EURO card format acc. to
DIN 41494 (100 x 160 mm)
Width: 30,0 mm (6 TE)
Height: 128,4 mm (3 HE)
Length: 160,0 mm
Net weight: app. 320 g
Gross weight: app. 450 g
incl. standard export packing
Packing volume: app. 2,5 dm³
Space requirements:
14 modules (28 channels) fit into each
19" rack



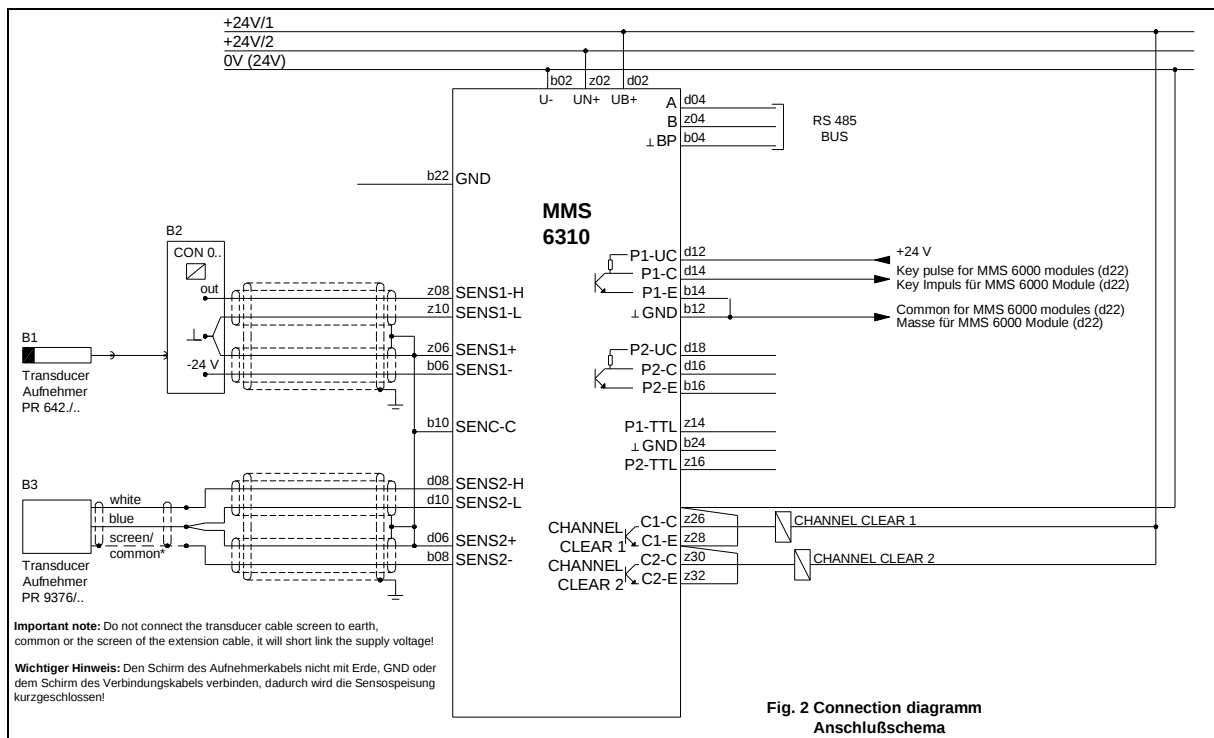
Requirements on configuration PC:

Configuration of modules is made via the RS 232 interface on the module front or via the RS 485 bus by means of a computer (laptop) with the following minimum specifications:

Processor:
486 DX, 33 MHz
Interfaces:
one free RS 232 interface (COM 1 or COM 2) with FIFO type 156550 UART

Capacity of fixed disk:
min. 5 MB
Required working memory:
min. 620 KB
Operating system:
MS DOS Version 6.22 or higher or
WIN® 95/98 or NT 4.0

Connection diagram:



Order number:

MMS 6310 Dual Channel Key- pulse Monitor.....**9100 – 00004**
MMS 6910 W Operating accessories**9510 – 00001**
consisting of: operating and installation manual, configuration software and various connection cables

The F48M mating connector has to be ordered separately depending on the intended wiring technology.

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