MTL4531 – MTL5531 VIBRATION TRANSDUCER INTERFACE

The MTLx531 repeats a signal from a vibration sensor in a hazardous area, providing an output for a monitoring system in the safe area. The interface is compatible with 3-wire eddy-current probes and accelerometers or 2-wire current sensors; the selection is made by a switch on the side of the module.

SPECIFICATION

See also common specification

FSM FUNCTIONAL SAFETY MANAGEMENT IEC 61508:2010

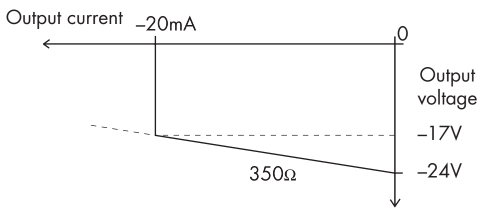
Number of channels
One

Sensor type
2- or 3-wire vibration transducer

Location of signal source
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Hazardous-area input
Input impedance
(terminals 2 & 3): 10kΩ

Transducer supply voltage, 3-wire (terminals 3 & 1)



Transducer supply current, 2-wire
3.3mA (nom.) for 2-wire sensors, user selectable by switch

Signal range
Minimum –20V, maximum –0.5V

DC transfer accuracy at 20°C
<±50mV

AC transfer accuracy at 20°C
0Hz to 1kHz: ±1%
1kHz to 10kHz: –5% to +1%
10kHz to 20kHz: –10% to +1%

Temperature coefficient
±50ppm/°C (10 to 65°C)
±100ppm/°C (–20 to 10°C)

Voltage bandwidth
–3dB at 47kHz (typical)

Phase response
<14μs, equivalent to:
–1° at 200Hz
–3° at 600Hz
–5° at 1kHz
–50° at 10kHz
–100° at 20kHz

Safe-area output impedance
<20Ω

LED indicator
Green: power indication

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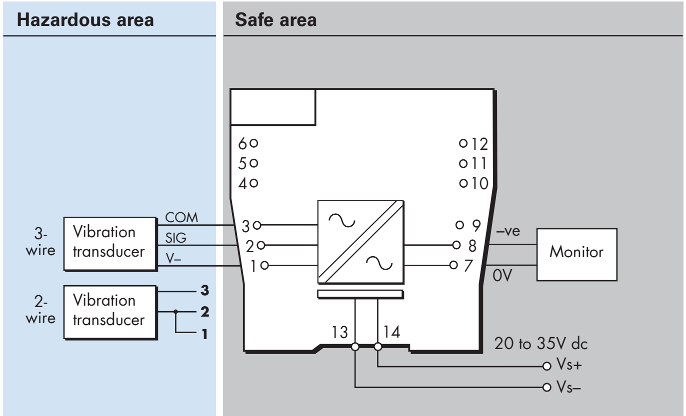

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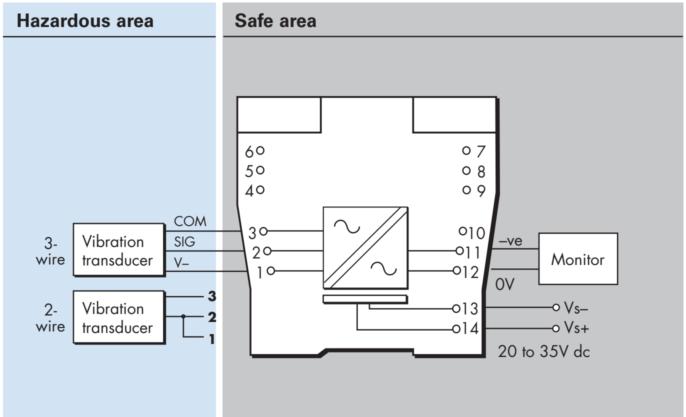

Supply voltage
20 to 35V dc

Maximum current consumption (10mA transducer load)
96mA at 24V

Maximum power dissipation within unit
2W

Safety description
Terminals 3 to 1
U_o=26.6V I_o=94mA P_o=0.66W U_m = 253V rms or dc
Terminals 3 to 2
Non-energy-storing apparatus ≤1.5V, ≤0.1A and ≤25mW

Note -
Refer to the Instruction Manual for recommendations on mounting of these modules.

Due to the high power dissipation the maximum ambient temperature for these modules when mounted in horizontal orientation is:

- close packed 45°C
- minimum of 10mm spacing 55°C

SIL 1 IEC 61508:2010
SIL 2 IEC 61508:2010

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL1 capable for a single device (HFT=0)
SIL2 capable for multiple devices in safety redundant configuration (HFT=1)
See data on MTL web site and refer to the safety manual.

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Publication No.
EPSx531 Rev6 010916

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