technology for safety

D1062

Vibration Transducer Interface DIN-Rail Model D1062S

Characteristics:

General Description:
The single channel DIN Rail Vibration Transducer Interface D1062S provides a fully floating dc supply for energizing vibration transducers, accelerometers or 2-3 wires sensors located in Hazardous Area, and repeats the sensor input voltage in a totally isolated circuit located in Safe Area to drive vibration monitors or analyzers for rotating machinery control and supervision purposes.

Function:
1 channel I.S. analog voltage input for 2-3 wires sensors, provides 3 port isolation (input/output/supply) and voltage output signal.

Signalling LED:
Power supply indication (green).

Analog Signal Frequency Band:
DC to 10 KHz within 0.1 dB, 10 KHz to 20 KHz within 3 dB.

EMC:
Fully compliant with CE marking applicable requirements.

Front Panel and Features:

- Input from Zone 0 (Zone 20), Division 1, installation in Zone 2, Division 2.
- 0 to –20 V Input/Output Signal.
- Wide band signal transfer.
- Input and Output short circuit proof.
- High Accuracy.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- ATEX, IECEx, FM & FM-C Certifications.
- High Reliability, SMD components.
- Simplified installation using standard DIN Rail and plug-in terminal blocks.
- 250 Vrms (Um) max. voltage allowed to the instruments associated with the barrier.

Ordering Information:

Model:	D1062S	
Power Bus enclosure		/B

Technical Data:

Supply:
24 Vdc nom (20 to 30 Vdc).
Reverse polarity protected, ripple within voltage limits ≤ 5 Vpp.
Current consumption @ 24 V: 60 mA with 20 mA transducer consumption and 2 mA output load, typical.
Power dissipation: 1.1 W with 24 V supply voltage, 20 mA transducer consumption and 2 mA output load typical.
Max. power consumption: at 30 V supply voltage and short circuit condition, 1.9 W.

Isolation (Test Voltage):
I.S. In/Out 1.5 KV; I.S. In/Supply 1.5 KV; Out/Supply 500 V.

Input:
0 V to -20 V (10 KΩ impedance at terminals 15-16).
3 wires sensor supply voltage:
more than -21.0 V at 0 mA supply, more than -15.0 V at 20 mA supply (current limited at ≈ 25 mA) at terminals 14-16.
2 wires sensor supply voltage:
more than -15.0 V with constant current supply mode at terminals 15-16.
Supply current selectable at 4 mA, 6 mA or 10 mA (current supply mode enabled connecting terminals 13-14, 4 mA with terminal 10 not connected, 6 mA connecting terminals 10-11 or 10 mA connecting terminals 10-12).

Output:
0 to -20 V on 10 KΩ load, with 10 Ω output resistance.
Response time: 10 µs (10 to 90 % step change).
Output ripple: ≤ 20 mVrms on 0.5 to 20 KHz band.
Frequency response: DC to 10 KHz within 0.1 dB, 10 KHz to 20 KHz within 3 dB.

Performance:
Ref. Conditions 24 V supply, 10 KΩ load, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 0.05 % of full scale.
Linearity error: ≤ ± 0.05 % of full scale.
Supply voltage influence: ≤ ± 0.005 % of full scale for a min to max supply change.
Temperature influence: ≤ ± 0.005 % on zero and span for a 1 °C change.

Compatibility:
CE mark compliant, conforms to 94/9/EC Atex Directive and to 2004/108/CE EMC Directive.

Environmental conditions:
Operating: temperature limits -20 to + 60 °C, relative humidity max 90 % non condensing, up to 35 °C.
Storage: temperature limits – 45 to + 80 °C.

Safety Description:
II (1) G [Ex ia Ga] IIC, II (1) D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I, II 3G Ex nA II T4, [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I associated electrical apparatus.
Uo/Voc = 25.9 V, Io/Isc = 90 mA, Po/Po = 576 mW at terminals 14-16.
Uo/Voc = 1.1 V, Io/Isc = 12 µA, Po/Po = 4 µW at terminals 15-16;
Ui/Vmax = 30 V, Ci = 0 nF, Li = 1.5 µH at terminals 15-16
(when used with 3 wires transducer or 2 wires AC sensor connecting terminals 9-14).
Uo/Voc = 27 V, Io/Isc = 90 mA, Po/Po = 576 mW at terminals 15-16
(when used with 2 wire constant current supply mode connecting terminals 13-14).
Um = 250 Vrms, -20 °C ≤ Ta ≤ 60 °C.
Approvals:
DMT 01 ATEX E 042 X conforms to EN60079-0, EN60079-11, EN60079-26, EN61241-0, EN61241-11, IECEx BVS 07.0027X conforms to IEC60079-0, IEC60079-11, IEC60079-26, IEC61241-0, IEC61241-11, IMQ 09 ATEX 013 X conforms to EN60079-0, EN60079-15, FM & FM-C No. 3024643, 3029921C, conforms to Class 3600, 3610, 3611, 3810 and C22.2 No.142, C22.2 No.157, C22.2 No.213, E60079-0, E60079-11, E60079-15. DNV No.A-13778 Certificates for maritime applications.

Mounting:
T35 DIN Rail according to EN50022.
Weight: about 150 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm^2.
Location: Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4, Class I, Division 2, Groups A, B, C, D Temperature Code T4 and Class I, Zone 2, Group IIC, IIB, IIA T4 installation.
Protection class: IP 20.
Dimensions: Width 22.5 mm, Depth 99 mm, Height 114.5 mm.

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca (µF)	Lo/La (mH)	Lo/Ro (µH/Ω)
Terminals 14-16				
Uo/Voc = 25.9 V	IIC	0.100	4.4	61.7
Io/Isc = 90 mA	IIB	0.770	17.9	247.1
Po/Po = 576 mW	IIA	2.630	35.8	494.3
Terminals 15-16	(terminals 13-14 connected)			
Uo/Voc = 27 V	IIC	0.090	4.4	56.8
Io/Isc = 90 mA	IIB	0.705	17.9	227.3
Po/Po = 576 mW	IIA	2.330	35.8	454.7
Terminals 15-16	(3 wires sensor or terminals 9-14 connected)			
Uo/Voc = 1.1 V	IIC	100	1000	$11 * 10^6$
Io/Isc = 12 µA	IIB	1000	1000	$46 * 10^6$
Po/Po = 4 µW	IIA	1000	1000	$93 * 10^6$

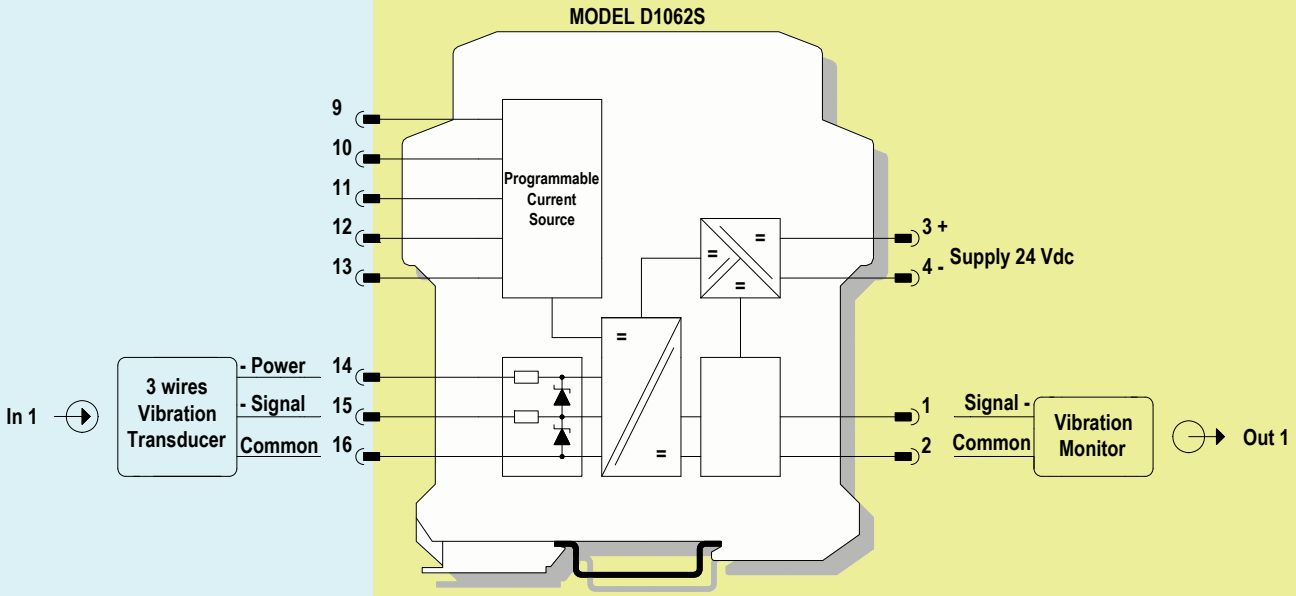
NOTE for USA and Canada:
IIC equal to Gas Groups A, B, C, D, E, F and G
IIB equal to Gas Groups C, D, E, F and G
IIA equal to Gas Groups D, E, F and G

Image:

Function Diagram:

HAZARDOUS AREA ZONE 0 (ZONE 20) GROUP IIC,
HAZARDOUS LOCATIONS CLASS I, DIVISION 1, GROUPS A, B, C, D,
CLASS II, DIVISION 1, GROUPS E, F, G, CLASS III, DIVISION 1,
CLASS I, ZONE 0, GROUP IIC

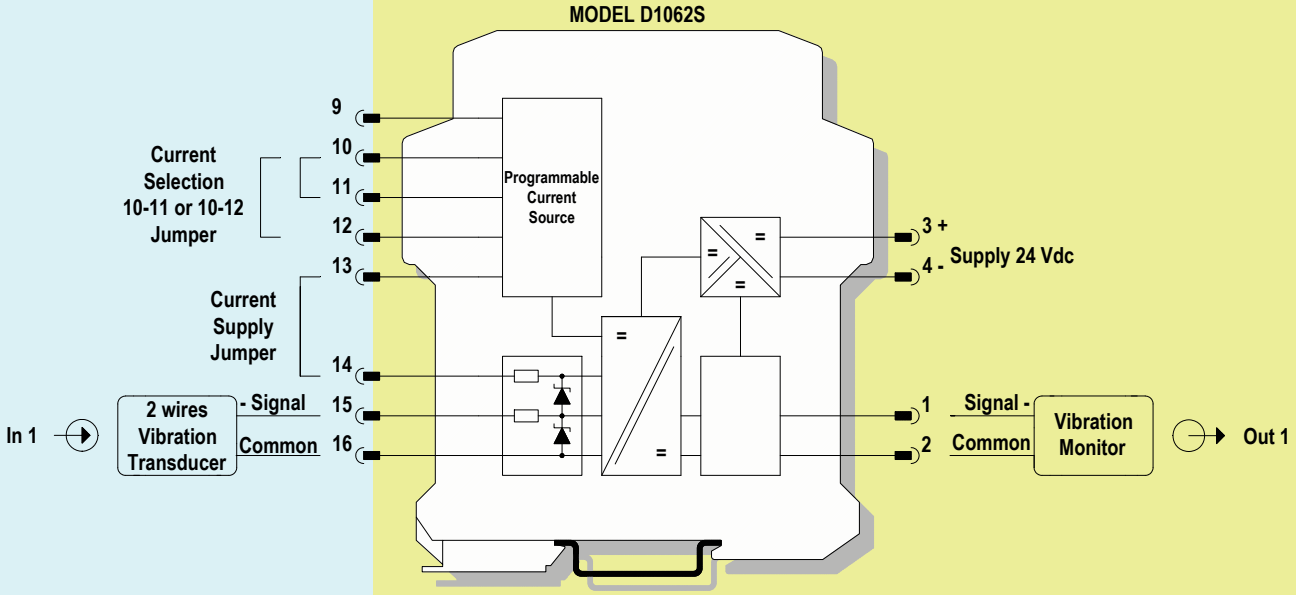
SAFE AREA, ZONE 2 GROUP IIC T4,
NON HAZARDOUS LOCATIONS, CLASS I, DIVISION 2,
GROUPS A, B, C, D T-Code T4, CLASS I, ZONE 2, GROUP IIC T4



Function Diagram:

HAZARDOUS AREA ZONE 0 (ZONE 20) GROUP IIC,
HAZARDOUS LOCATIONS CLASS I, DIVISION 1, GROUPS A, B, C, D,
CLASS II, DIVISION 1, GROUPS E, F, G, CLASS III, DIVISION 1,
CLASS I, ZONE 0, GROUP IIC

SAFE AREA, ZONE 2 GROUP IIC T4,
NON HAZARDOUS LOCATIONS, CLASS I, DIVISION 2,
GROUPS A, B, C, D T-Code T4, CLASS I, ZONE 2, GROUP IIC T4

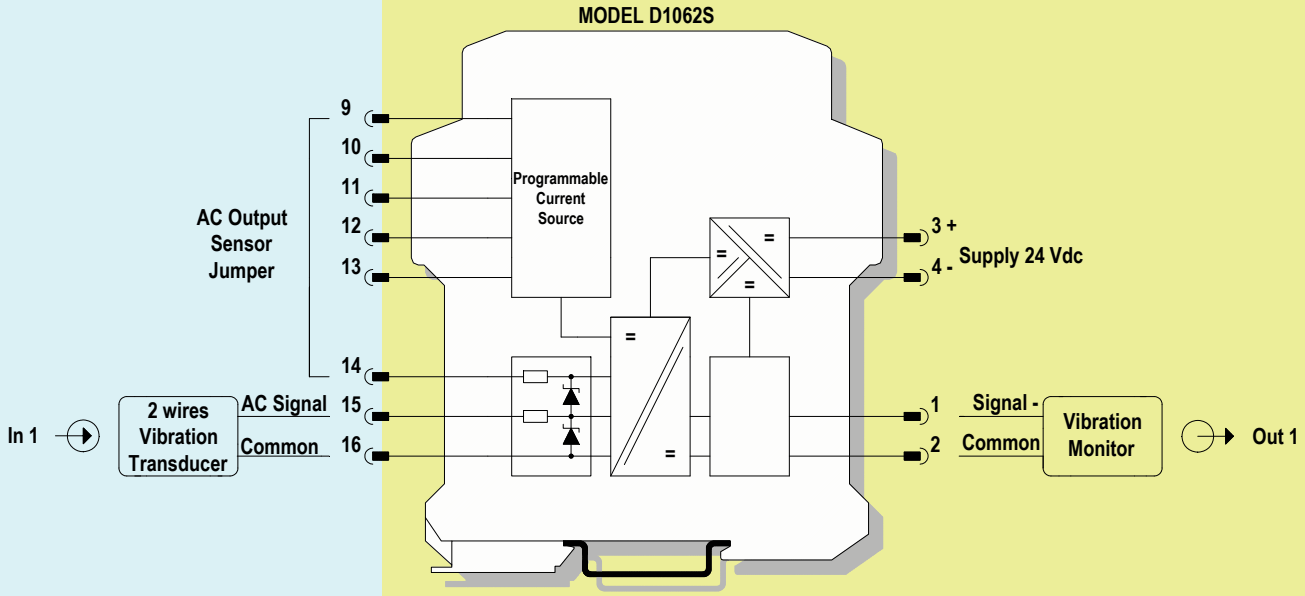


Sensor operating in constant current mode	Jumpers between Input terminals
4 mA	13 - 14
6 mA	13 - 14 10 - 11
10 mA	13 - 14 10 - 12

Function Diagram:

HAZARDOUS AREA ZONE 0 (ZONE 20) GROUP IIC,
HAZARDOUS LOCATIONS CLASS I, DIVISION 1, GROUPS A, B, C, D,
CLASS II, DIVISION 1, GROUPS E, F, G, CLASS III, DIVISION 1,
CLASS I, ZONE 0, GROUP IIC

SAFE AREA, ZONE 2 GROUP IIC T4,
NON HAZARDOUS LOCATIONS, CLASS I, DIVISION 2,
GROUPS A, B, C, D T-Code T4, CLASS I, ZONE 2, GROUP IIC T4



Sensor operating in AC signal mode	Jumpers between Input terminals
Half scale output value with 0 Volt input	9 - 14