# SIL 2 Vibration Transducer Interface DIN-Rail and Termination Board Model D5062S

D5062

## Characteristics:

**General Description:**

The single channel DIN Rail Vibration Transducer Interface D5062S is a high integrity analog input interface suitable for applications requiring SIL 2 level (according to IEC 61508:2010 Ed. 2) in safety related systems for high risk industries. It 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.

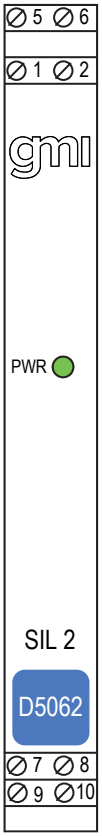
Mounting on standard DIN-Rail, with or without Power Bus, or on customized Termination Boards, in Safe Area / Non Hazardous Location or in Zone 2 / Class I, Division 2 or Class I, Zone 2.

**Functional Safety Management Certification:**

G.M. International is certified by TUV to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3.

FSM SIL 3

## Front Panel and Features:




- SIL 2 according to IEC 61508:2010 Ed. 2 for Tproof = 3 / 20 yrs (≤10% / >10 % of total SIF)
- PFDavg (1 year) 3.35 E -04, SFF 68.08%
- Systematic capability SIL 3
- Input from Zone 0 (Zone 20), installation in Zone 2.
- 0 to –20 V Input/Output Signal.
- Input selection via DIP-Switch.
- 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, EN61326-1, EN61326-3-1 for safety system.
- ATEX, IECEx, UKR TR n. 898, TÜV Certifications.
- TÜV Functional Safety Certification.
- Type Approval Certificate DNV and KR for maritime applications.
- Simplified installation using standard DIN-Rail and plug-in terminal blocks, with or without Power Bus, or customized Termination Boards.
- 250 Vrms (Um) max. voltage allowed to the instruments associated with the barrier.

## Ordering Information:

| Model: | D5062S |
|---|---|

Power Bus and DIN-Rail accessories:

| | |
|---|---|
| Connector JDFT049 | Cover and fix MCHP196 |
| Terminal block male MOR017 | Terminal block female MOR022 |

## Technical Data:

**Supply:**

24 Vdc nom (18 to 30 Vdc) reverse polarity protected,
ripple within voltage limits ≤ 5 Vpp, 2 A time lag fuse internally protected.
***Current consumption @ 24 V:*** 75 mA with 20 mA transducer consumption and 2 mA output load, typical.
***Power dissipation:*** 1.3 W with 24 V supply voltage, 20 mA transducer consumption and 2 mA output load typical.

**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 7-8 or 8-9).
***3 wires sensor supply voltage:***
more than -22 V at 0 mA supply, more than -17 V at 15 mA supply (current limited at ≈ 23 mA) at terminals 7-10 or 9-10.
***2 wires sensor supply voltage:***
more than -17 V with constant current supply mode at terminals 7-8 or 8-9.
Supply current selectable at 4 mA, 6 mA or 10 mA via internal DIP– Switch.

**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 20 KHz within 1 dB maximum.

**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 Directive:
2014/34/EU ATEX, 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

**Environmental conditions:**

***Operating:*** temperature limits – 40 to + 70 °C, relative humidity 95 %, up to 55 ° C.
***Storage:*** temperature limits – 45 to + 80 °C.

**Safety Description:**

***ATEX:*** II 3(1)G Ex nA [ia Ga] IIC T4 Gc, II (1)D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I
***IECEx:*** Ex nA [ia Ga] IIC T4 Gc, [Ex ia Da] IIIC, [Ex ia Ma] I,
***UKR TR n. 898:*** 2ExnAiaIICT4 X, Exial X
associated apparatus and non-sparking electrical equipment.
Uo/Voc = 25.9 V, Io/Isc = 90 mA, Po/Po = 576 mW at terminals 7-10 or 9-10 (when used with 3 wires transducer).
Uo/Voc = 27 V, Io/Isc = 90 mA, Po/Po = 576 mW at terminals 7-8 or 8-9 (when used with 2 wire constant current supply mode).
Uo/Voc = 27 V, Io/Isc = 90 mA, Po/Po = 576 mW at terminals 7-8 or 8-9;
Ui/Vmax = 30 V, Ci = 0 nF, Li = 0 nH at terminals 7-8 or 8-9 (when used with 2 wires AC sensor).
Um = 250 Vrms, -40 °C ≤ Ta ≤ 70 °C.
***Approvals :***
BVS 14 ATEX E 073 X conforms to EN60079-0, EN60079-11, EN60079-15.
IECEx BVS 14.0044 X conforms to IEC60079-0, IEC60079-11, IEC60079-15.
СЦ 16.0036 X conforms to ДСТУ 7113, ГОСТ 22782.5-78, ДСТУ IEC 60079-15.
TÜV Certificate No. C-IS-224248-01, SIL 2 conforms to IEC61508:2010 Ed. 2.
TÜV Certificate No. C-IS-236198-09, SIL 3 Functional Safety Certificate conforms to IEC61508:2010 Ed.2, for Management of Functional Safety.
DNV No.A-13625 and KR No.MIL20769-EL002 for maritime applications .

**Mounting:**

T35 DIN-Rail according to EN50022, with or without Power Bus or on customized Termination Board.
***Weight:*** about 150 g.
***Connection:*** by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm².
***Location:*** installation in Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4 or Class I, Division 2, Group A,B,C,D, T4 or Class I, Zone 2, Group IIC, T4.
***Protection class:*** IP 20.
***Dimensions:*** Width 12.5 mm, Depth 123 mm, Height 120 mm.

## Parameters Table:

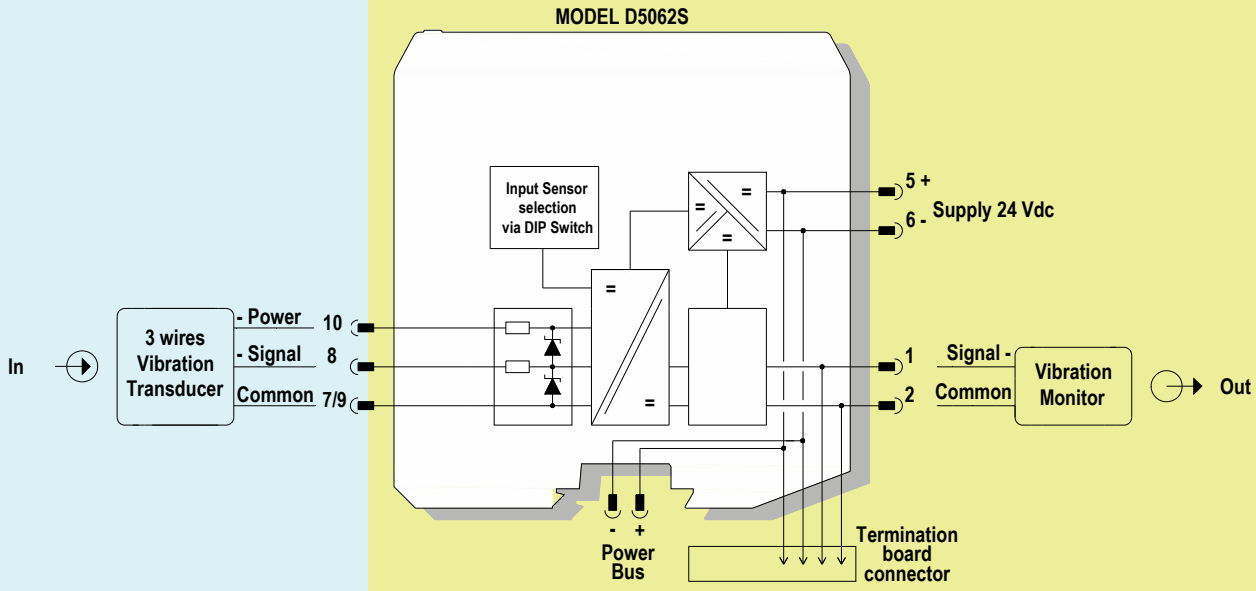
| Safety Description | Maximum External Parameters | | | |
|---|---|---|---|---|
| | Group Cenelec | Co/Ca (µF) | Lo/La (mH) | Lo/Ro (µH/Ω) |
| Terminals 7-10 or 9-10 | (3 wires sensor) | | | |
| Uo/Voc = 25.9 V | IIC | 0.1 | 4.4 | 61.7 |
| Io/Isc = 90 mA | IIB | 0.77 | 17.9 | 247.1 |
| Po/Po = 576 mW | IIA | 2.63 | 35.8 | 494.3 |
| | I | 4.02 | 58.7 | 811 |
| | IIIC | 0.77 | 17.9 | 247.1 |
| Terminals 7-8 or 8-9 | (2 wires constant current supply) | | | |
| Uo/Voc = 27 V | IIC | 0.09 | 4.1 | 56.8 |
| Io/Isc = 90 mA | IIB | 0.705 | 16.4 | 227.3 |
| Po/Po = 576 mW | IIA | 2.3 | 33.9 | 459.7 |
| | I | 3.75 | 54 | 746.1 |
| | IIIC | 0.705 | 16.4 | 227.3 |
| Terminals 7-8 or 8-9 | (2 wires AC sensors) | | | |
| Uo/Voc = 27 V | IIC | 0.09 | 4.1 | 56.8 |
| Io/Isc = 90 mA | IIB | 0.705 | 16.4 | 227.3 |
| Po/Po = 576 mW | IIA | 2.3 | 33.9 | 459.7 |
| Ui/Vmax = 30 V | I | 3.75 | 54 | 746.1 |
| Ci = 0 nF, Li = 0 nH | IIIC | 0.705 | 16.4 | 227.3 |

## Image:

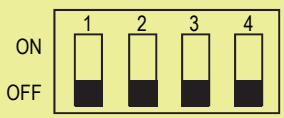
## Function Diagram:

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




### Input configuration selection via internal Dip-Switch



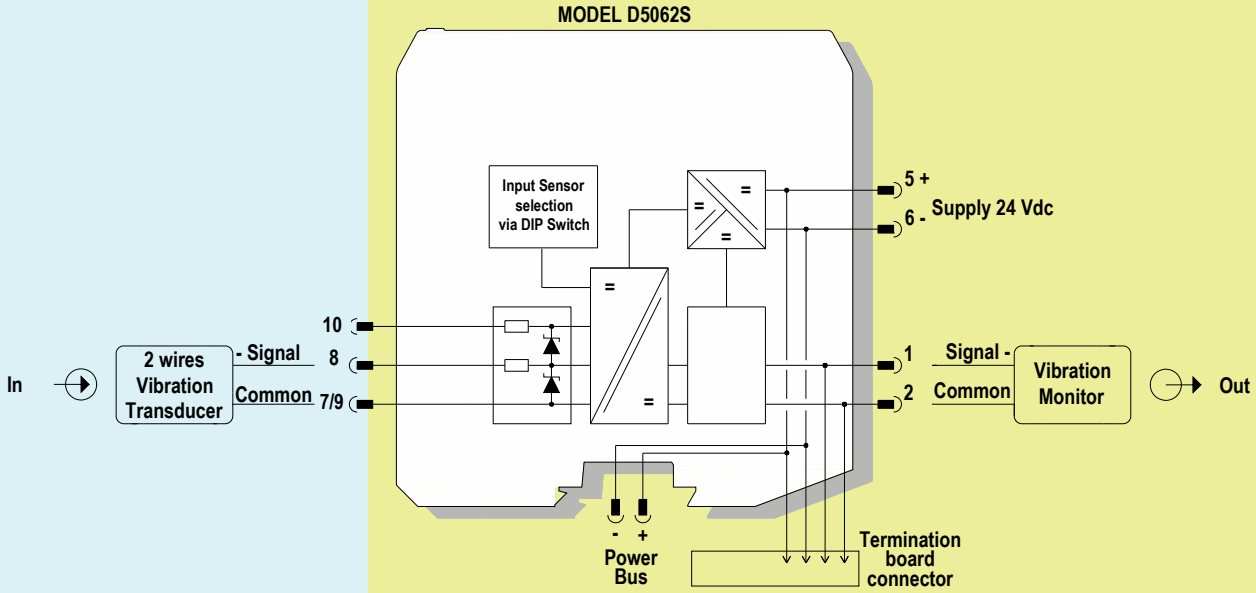

**3 wires transducers**

**1 = OFF, 2 = OFF, 3 = OFF, 4 = OFF.**

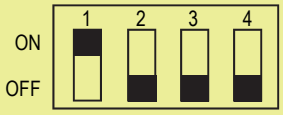
## Function Diagram:

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

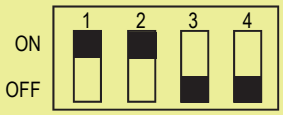



### Input configuration selection via internal Dip-Switch



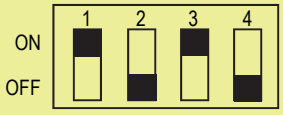

**2 wires transducers (4 mA)**

**1 = ON, 2 = OFF, 3 = OFF, 4 = OFF.**




**2 wires transducers (6 mA)**

**1 = ON, 2 = ON, 3 = OFF, 4 = OFF.**



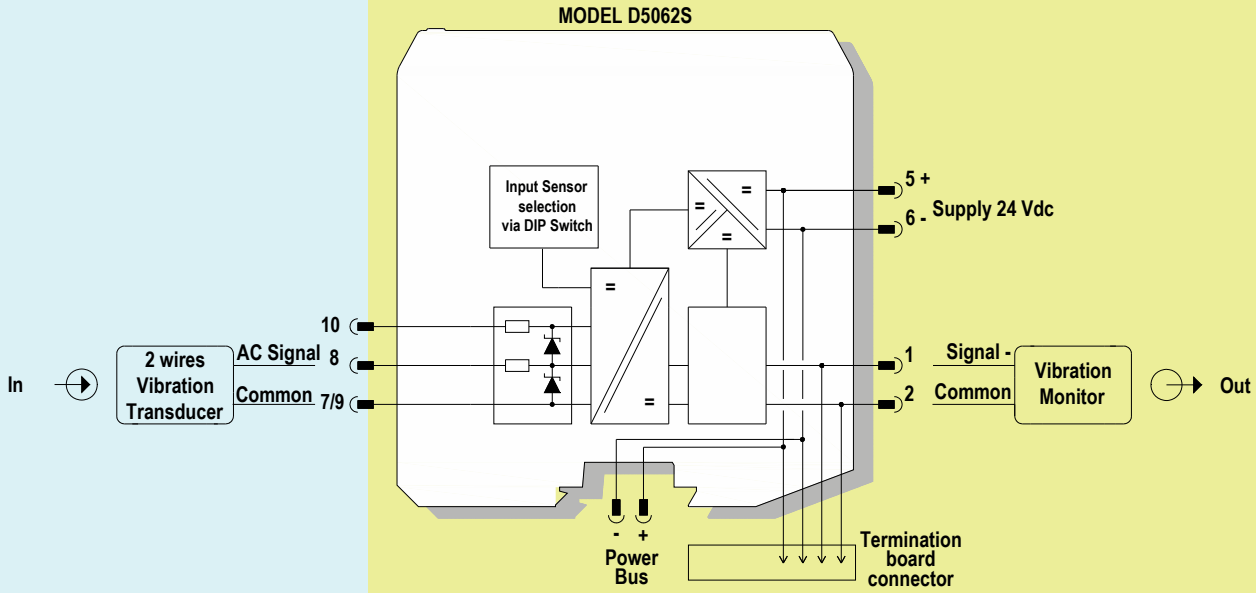

**2 wires transducers (10 mA)**

**1 = ON, 2 = OFF, 3 = ON, 4 = OFF.**

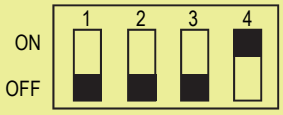
## Function Diagram:

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




### Input configuration selection via internal Dip-Switch




**2 wires AC transducers**

**1 = OFF, 2 = OFF, 3 = OFF, 4 = ON.**