

# D5020

## I.S. SIL2 HART® Isolating Driver

The Isolating Driver D5020 module is a high integrity analog output interface suitable for applications requiring SIL 2 level in safety related systems for high risk industries. It isolates and transfers a 4-20 mA signal from a controller located in Safe Area to a load in Hazardous Area. It has a high output capacity combined with a low drop across its input terminals. The circuit allows bi-directional communication signals, for HART® smart positioners. Line and load open/short circuit detection is provided: the fault in the field is directly mirrored to the PLC AO and it is also reported by opening the fault output.

### FEATURES

- SIL 2 / SC 3
- Output to Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- 4-20 mA Input, Output Signal
- HART® compatible
- Line & Load short/open circuit detection
- Field fault mirroring to the PLC AO
- In-field programmability by DIP Switch
- High Accuracy
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

### ORDERING INFORMATION

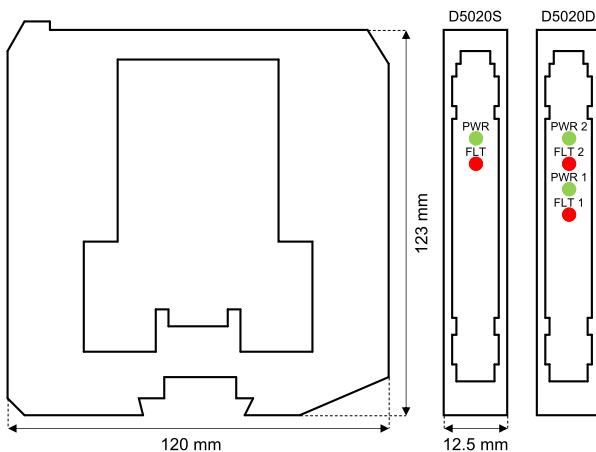
#### Ordering codes

D5020S: 1 channel  
D5020D: 2 channels

#### Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

### OVERALL DIMENSIONS



### TECHNICAL DATA

#### Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.

**Current consumption:** 70 mA (D5020D), 35 mA (D5020S), @ 24 Vdc with 20 mA output on 500 Ω load, typical.

**Power dissipation:** 1.3 W (D5020D), 0.65 W (D5020S), @ 24 Vdc with 20 mA output on 500 Ω load, typical.

#### Input

4 to 20 mA with ≤ 2.5 V voltage drop, reverse polarity protected in normal operation, ≥ 5 kΩ impedance (≈ 2 mA sinking from 10 to 30 Vdc) when fault condition detected.

#### Output

4 to 20 mA, on max. 700 Ω load.

**Response time:** 25 ms (0 to 100 % step change).

#### Fault

Field device and wiring open circuit or short circuit detection; short circuit detection can be disabled via dip-switch.

**Short output:** load resistance < 50 Ω or < 100 Ω dip-switch selectable (≈ 2 mA forcing to detect fault).

**Open output:** load resistance > (21 V / Loop current) -300 Ω (for example, if Loop current = 20 mA: load resistance > (21 V / 20 mA) -300 Ω = 750 Ω).

**Fault signaling:** voltage free NE SPST optocoupled open-collector transistor (output de-energized in fault condition).

**Open-collector/drain rating:** 100 mA @ 35 Vdc (≤ 1.5 V voltage drop).

**Leakage current:** ≤ 50 μA @ 35 Vdc.

**Response time:** ≤ 30 ms.

#### Performance

**Ref. Conditions:** 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature.

**Calibration accuracy:** ≤ ± 0.1 % FSR.

**Linearity accuracy:** ≤ ± 0.1 % FSR.

**Temp. influence:** ≤ ± 0.01 % FSR on zero/span for a 1 °C change.

#### Isolation

I.S. Out/In 2.5 kV; I.S. Out/Supply 2.5 kV; I.S. Out/Fault 2.5 kV; I.S. Out/I.S. Out 500 V; In/Supply 500 V; In/In 500 V; Fault/In 500 V; Fault/Supply 500 V; Fault/Fault 500 V.

#### Environmental conditions

**Operating temperature:** temperature limits -40 to +70 °C.

**Storage temperature:** temperature limits -45 to +80 °C.

#### Safety description

Associated apparatus and non-sparking electrical equipment.

U<sub>o</sub> = 25.9 V, I<sub>o</sub> = 93 mA, P<sub>o</sub> = 595 mW at terminals 7-8, 9-10.

U<sub>m</sub> = 250 Vrms or Vdc, -40 °C ≤ T<sub>a</sub> ≤ 70 °C.

#### Mounting

DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.

**Weight:** about 145 g (D5020D), 130 g (D5020S).

**Connection:** by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm<sup>2</sup> (13 AWG).

**Dimensions:** Width 12.5 mm, Depth 123 mm, Height 120 mm.



Functional Safety Management Certification:

GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

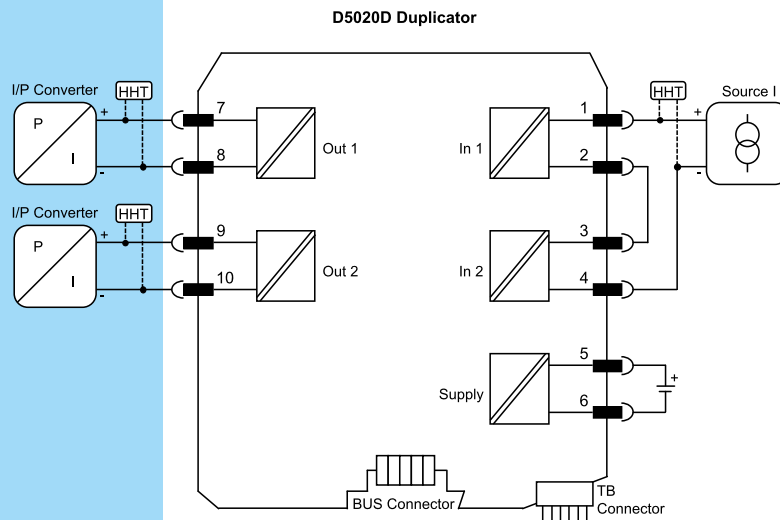
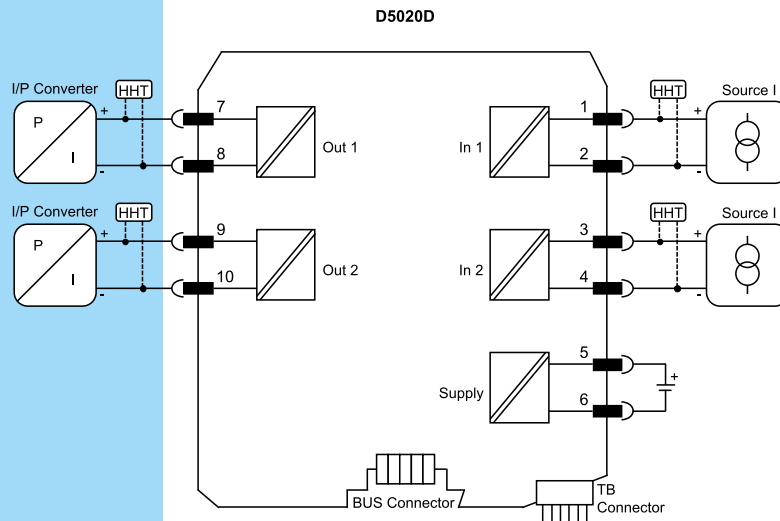
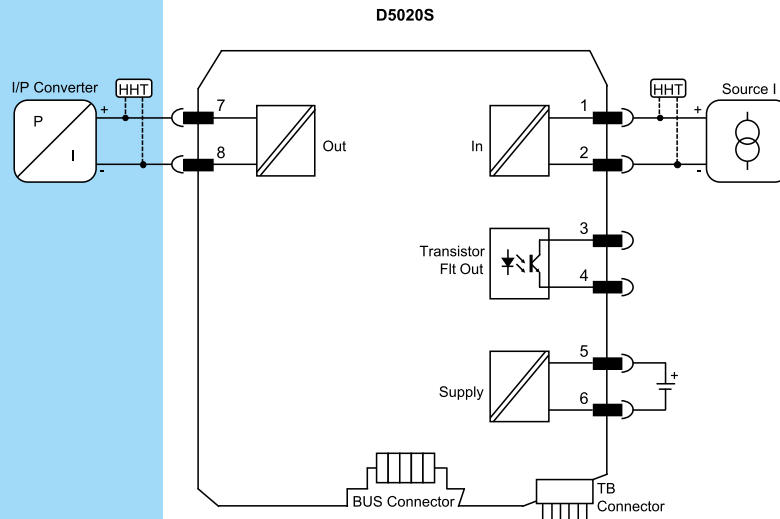
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# FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.

**Hazardous Area**

**Safe Area/Zone 2/Div. 2**



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