

Characteristics:

General Description:

The single and dual channel Repeater Power Supply, D6014S and D6014D module 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.

Provides a fully floating dc supply for energizing conventional 2/3 wires 0/4-20 mA, active or passive, and repeats the current in floating circuit to drive a load. The circuit allows bi-directional communication signals, for Hart transmitters.

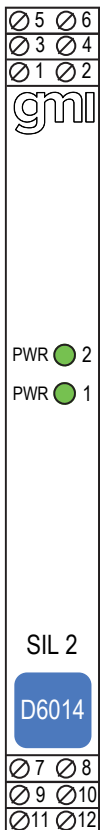
Mounting on standard DIN-Rail, with or without Power Bus, or on customized Termination Boards, in Safe Area.

Functional Safety Management Certification:

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



Front Panel and Features:



- SIL 2 according to IEC 61508:2010 Ed.2 for Tproof = 14 / 20 yrs (10 / 20 % of total SIF).
- 2 fully independent channels.
- 0/4-20 mA Input / Output Signal Active-Passive / Source-Sink
- Hart compatible.
- 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 systems.
- In-field programmability by DIP Switch.
- TÜV Functional Safety Certification.
- High Density, two channels per unit.
- Simplified installation using standard DIN-Rail and plug-in terminal blocks, with or without Power Bus, or customized Termination Boards.

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: 85 mA for 2 channels D6014D, 42.5 mA for 1 channel D6014S with 20 mA output typical.

Power dissipation: 1.25 W for 2 channels D6014D, 0.62 W for 1 channel D6014S with 24 V supply voltage and 20 mA output typical.

Isolation (Test Voltage):

I.S. In/Out 2.5 KV; I.S. In/Supply 2.5 KV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Input:

0/4 to 20 mA (separately powered input, voltage drop ≤ 0.5 V) or 4 to 20 mA (2 wires Tx current limited at ≈ 25 mA), reading range 0 to 24 mA.

Transmitter line voltage:

15.0 V typical at 20 mA with max.
20 mVrms ripple on 0.5 to 2.5 KHz frequency band, 14.5 V minimum.

Output:

0/4 to 20 mA, on max. 550 Ω load in source mode (typical 12 V compliance); V min. 8 V at 0 Ω load V max. 30 V in sink mode, current limited at ≈ 25 mA or 0/1 to 5 V on internal 250 Ω shunt (or 0/2 to 10 V on internal 500 Ω shunt on request).

Response time: 5 ms (0 to 100 % step change).

Output ripple: ≤ 20 mVrms on 250 Ω communication load on 0.5 to 2.5 KHz band.

Frequency response: 0.5 to 2.5 KHz bidirectional within 3 dB (Hart protocol).

Performance:

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

Calibration accuracy: $\leq \pm 0.1$ % of full scale.

Linearity error: $\leq \pm 0.05$ % of full scale.

Supply voltage influence: $\leq \pm 0.02$ % of full scale for a min to max supply change.

Load influence: $\leq \pm 0.02$ % of full scale for a 0 to 100 % load resistance change.

Temperature influence: $\leq \pm 0.01$ % of full scale on zero and span for a 1 °C change.

Compatibility:

CE mark compliant, conforms to Directives:
2004/108/CE EMC, 2006/95/EC 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.

Approvals:



TUV Certificate conforms to IEC61508:2010 Ed. 2 (Pending).
TUV Certificate No. C-IS-236198-09, SIL 3 Functional Safety Certificate conforms to IEC61508:2010 Ed.2, for Management of Functional Safety.

Mounting:

T35 DIN-Rail according to EN50022, with or without Power Bus or on customized Termination Board.

Weight: about 145 g D6014D, 120 g D6014S.

Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².

Protection class: IP 20.

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

Ordering Information:

Model:	D6014	
1 channel		S
2 channels		D

Power Bus and DIN-Rail accessories:

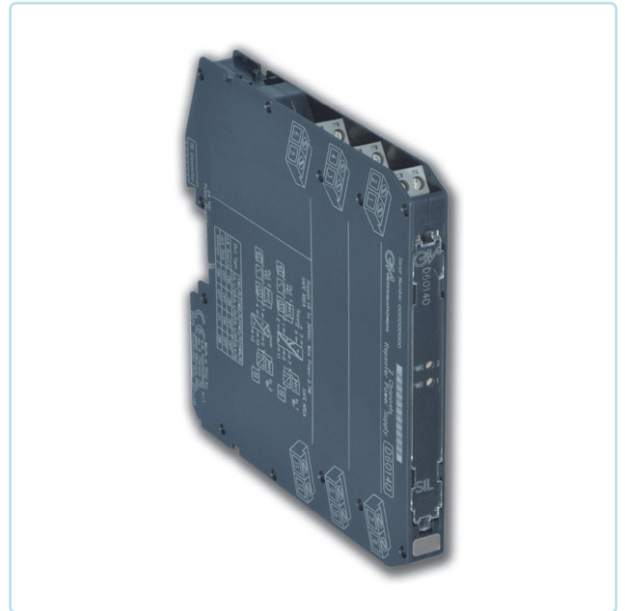
Connector JDFT049

Cover and fix MCHP196

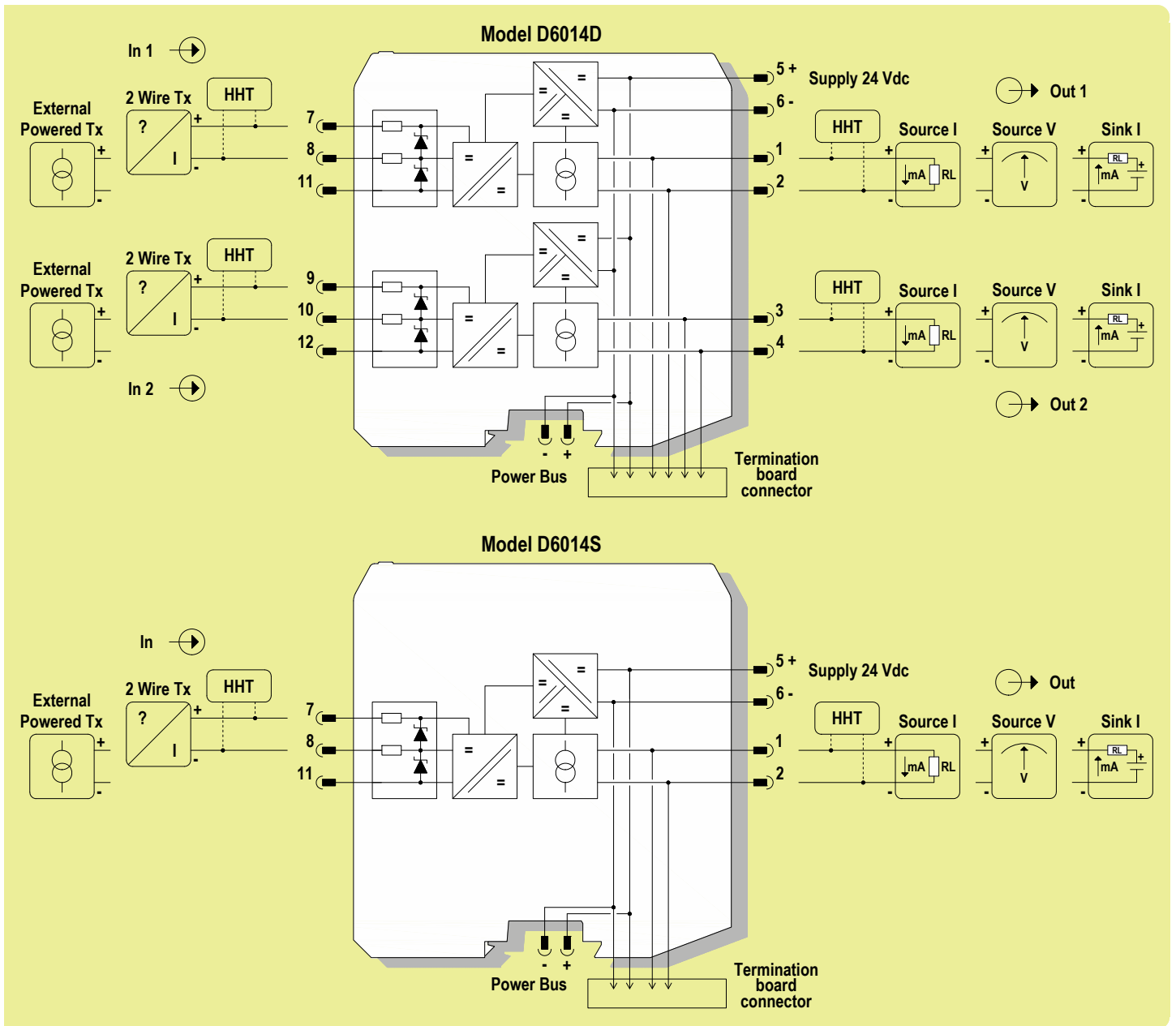
Terminal block male MOR017

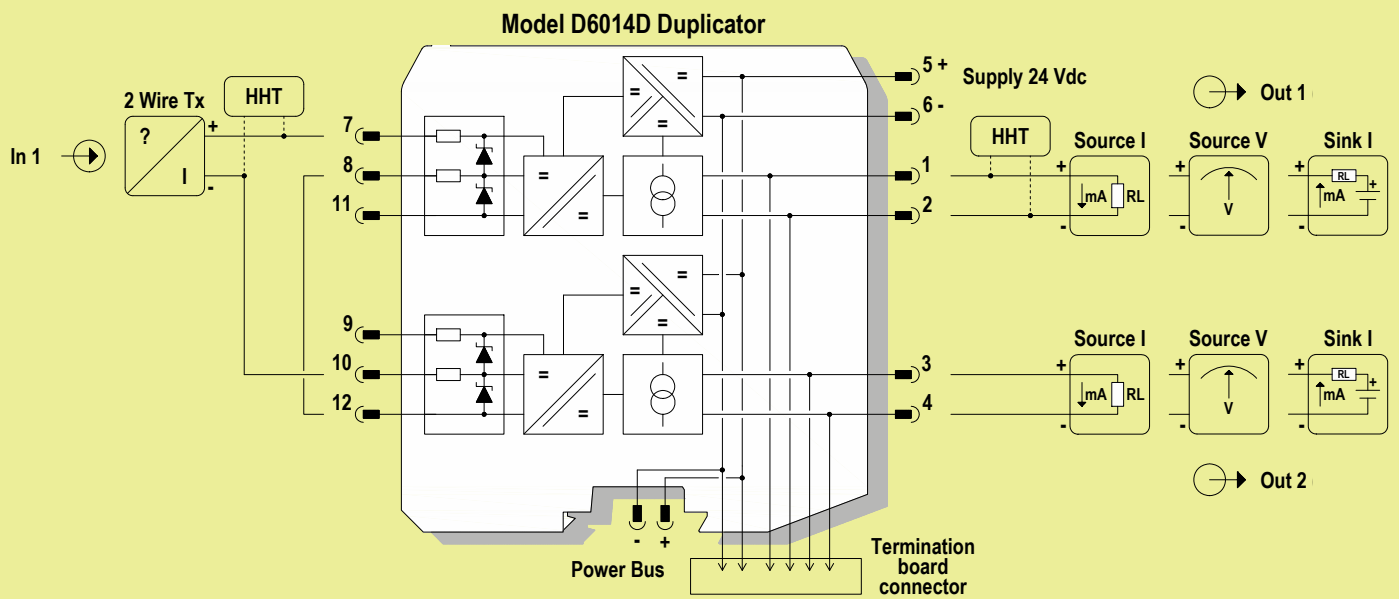
Terminal block female MOR022

Image:



Function Diagram:



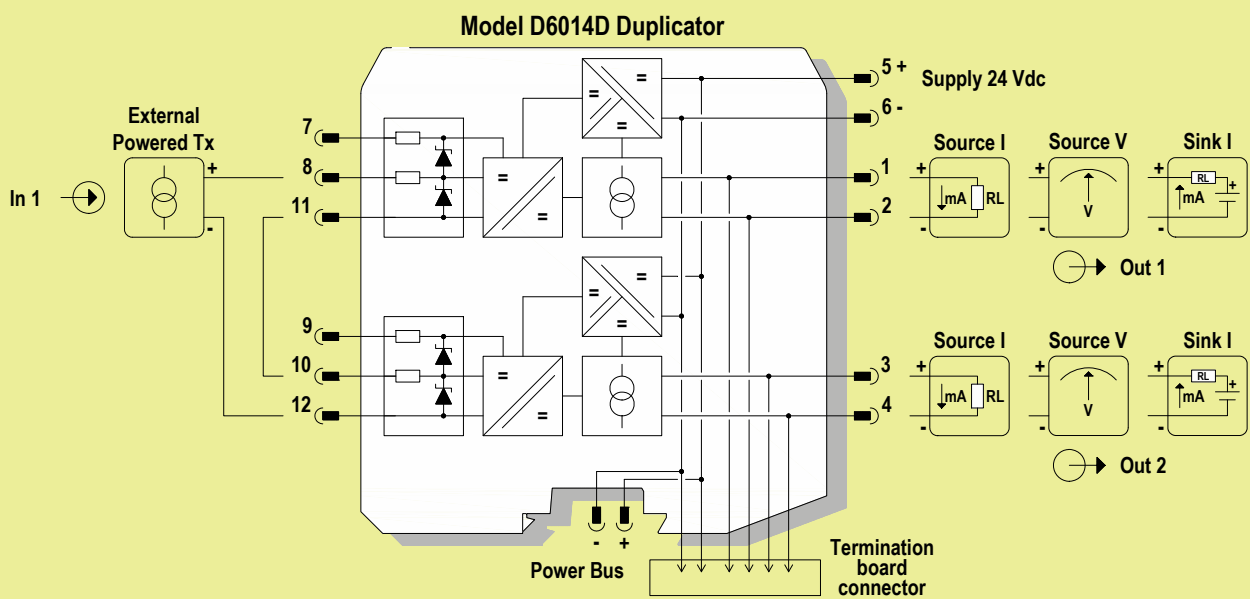


Connections for Duplication of 2 wires Transmitter Input

Restriction on specifications for 2 wires Transmitter Input:

Bidirectional communication for Smart Transmitter is provided only on channel 1

The minimum supply voltage available for Transmitter (V_{tx}) is 14 V at 20 mA input



Connections for Duplication of Active Input Signals
 Restriction on specifications for external powered Transmitter:
 Voltage drop ≤ 1.0 V