GM INTERNATIONAL
TECHNOLOGY FOR SAFETY

D1020

SIL 2 Powered Isolating Driver Smart-Hart Compatible DIN-Rail Models D1020S, D1020D

Characteristics:

General Description:
The single and dual Isolating Driver, D1020S and D1020D, isolates and transfers a 4-20, 0-20 mA signal from a Controller located in Safe Area to a load of up to 750 Ohm in Hazardous Area.
It has a high output capacity of 15 V at 20 mA combined with a low (2.0 V) drop across its input terminals. The circuit allows bi-directional communication signals, for Smart I/P.
In the 4-20 mA input range, a field open circuit reflects a high impedance to the control device output circuit.

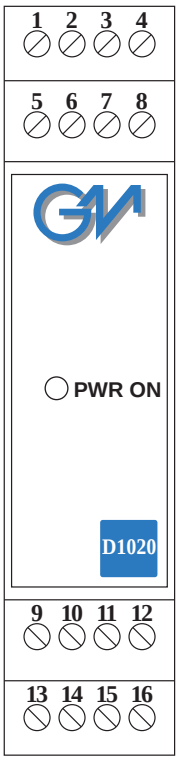
Function:
1 or 2 channels I.S. mA analog output for 2 wire I/P Smart converters or valve positioners, provides 3 port isolation (input/output/supply).

Signalling LED:
Power supply indication (green).

Smart Communication Frequency Band:
0.5 to 40 KHz within 3 dB (Hart and higher frequency protocols).

EMC:
Fully compliant with CE marking applicable requirements.

Front Panel and Features:



- SIL 2 according to IEC 61508, IEC 61511.
- 4-20 or 0-20 mA Input, Output Signal.
- Installation in Zone 2, Div. 2.
- Wide Band Smart Communication, Hart compatible.
- Field open circuit detection.
- High Accuracy.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- ATEX, UL & C-UL, Russia and Ukraine Certifications.
- High Reliability, SMD components.
- High Density, two channels per unit.
- Simplified installation using standard DIN Rail plug-in terminal blocks.
- 250 Vrms (Um) max. voltage applied to the instruments associated with barrier.

Ordering Information:

Model:	**D1020**		
1 channel		S	
2 channels		D	
Power Bus enclosure			/B

Technical Data:

Supply:
24 V nom (20 to 30 V) reverse polarity protected
ripple within voltage limits ≤ 5 Vpp.
Current consumption @ 24 V: 85 mA for 2 channels D1020D, 45 mA for 1 channel D1020S with 20 mA output typical.
Max. power consumption: 2.70 W for 2 channels, 1.50 W for 1 channel with 30 V supply voltage and overload condition.

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

Input:
0/4 to 20 mA with ≤ 2.0 V voltage drop, reverse polarity protected.

Output:
0/4 to 20 mA, on max. 750 Ω load, current limited at ≈ 23 mA.
Response time: 50 ms (10 to 90 % step change).
Output ripple: ≤ 20 mVrms on 250 Ω communication load on 0.5 to 40 KHz band.
Frequency response: 0.5 to 40 KHz bidirectional within 3 dB (Hart and higher frequency protocols).

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

Calibration accuracy:	≤ ± 0.1 % of full scale.
Linearity error:	≤ ± 0.05 % of full scale.
Supply voltage influence:	≤ ± 0.05 % of full scale for a min to max supply voltage change.
Load influence:	≤ ± 0.05 % of full scale for a 0 to 100 % load resistance change.
Temperature influence:	≤ ± 0.01 % on zero and span for a 1 °C change.

Compatibility:
CE mark compliant, conforms to 94/9/EC Atex Directive and to 89/336/CEE EMC Directive.

Environmental conditions:
Operating: Temperature limits -20 to + 60 °C, relative humidity max 90 % non condensing, up to 35 °C.
Storage: Temperature limits – 40 to + 80 °C.

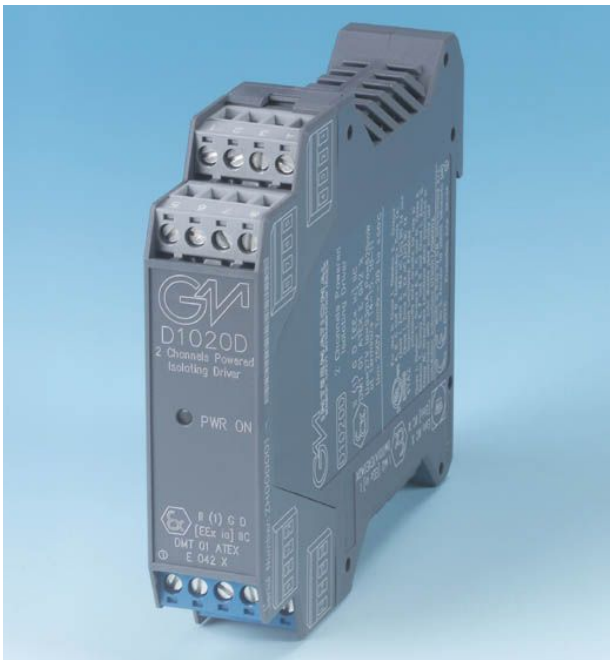
Safety Description:
II (1) G D [EEx ia] IIC or I M2 [EEx ia] I, II 3 G EEx nA IIC T4 associated electrical apparatus.
Uo/Voc = 25.9 V, Io/Isc = 90 mA, Po/Po = 576 mW at terminals 14-15, 10-11.
Um = 250 Vrms, -20 °C ≤ Ta ≤ 60°C.
Approvals: DMT 01 ATEX E 042 X conforms to EN50014, EN50020, UL & C-UL E222308 conforms to UL913 (Div.1), UL 60079-0 (General, All Zones), UL60079-11 (Intrinsic Safety "i" Zones 0 & 1), UL60079-15 ("n" Zone 2), UL 1604 (Div.2) for UL and CSA-C22.2 No.157-92 (Div.1), CSA-E60079-0 (General, All Zones), CSA-E60079-11 (Intrinsic Safety "i" Zones 0 & 1), CSA-C22.2 No. 213-M1987 (Div. 2) and CSA-E60079-15 ("n" Zone 2) for C-UL, TCCExEE (Russia) Nr.665 according to GOST R 51330.0-99, 51330.10-99 [Exia]IIC X, TCCExEE (Ukraine) Nr.665 according to GOST 12.2.007.0, 22782.0, 22782.5 ExiaIIC X, Gosgortekhnadzor of Russia Permit Nr. PPC 04-11284.
EXIDA Report No. GM03/07-24 R001, SIL 2 according to IEC 61508, IEC 61511. Please refer to Functional Safety Manual for SIL applications.

Mounting:
T35 DIN Rail according to EN50022.
Weight: about 175 g D1020D, 120 g D1020S.
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)	L/R / La/Ra (µH/Ω)
Terminals 14-15, 10-11				
Uo/Voc = 25.9 V	II C	0.099	4.4	61.7
Io/Isc = 90 mA	II B	0.769	17.8	246.9
Po/Po = 576 mW	II A	2.630	35.7	493.8

NOTE for USA and Canada:
II C equal to Gas Groups A, B, C, D, E, F and G.
II B equal to Gas Groups C, D, E, F and G.
II A equal to Gas Groups D, E, F and G.



Function Diagram:

HAZARDOUS AREA / HAZARDOUS LOCATIONS
CLASS I, DIVISION 1, GROUPS A, B, C, D and
CLASS II, DIVISION 1, GROUPS E, F, G or CLASS I, Zone 0, GROUP IIC

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