

Characteristics:

General Description:
The single and dual channel DIN Rail 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 Ω in Hazardous Area. It has a high output capacity of 15 V at 20 mA combined with a low 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.

Technical Data:

Supply:
24 Vdc nom (20 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp.
Current consumption @ 24 V: 95 mA for 2 channels D1020D, 50 mA for 1 channel D1020S with 20 mA output typical.
Power dissipation: 1.9 W for 2 channels D1020D, 1.0 W for 1 channel D1020S with 24 V supply voltage and 20 mA output typical.
Max. power consumption: at 30 V supply voltage and overload condition, 2.7 W for 2 channels D1020D, 1.4 W for 1 channel D1020S.

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/Supply 500 V; In/In 500 V.

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/Supply 500 V; In/In 500 V.

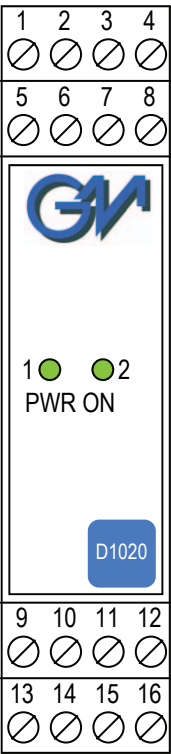
Input:
0/4 to 20 mA with ≤ 2.0 V voltage drop, reverse polarity protected.

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 temperature.
Calibration accuracy: $\leq \pm 0.1$ % of full scale.
Linearity error: $\leq \pm 0.05$ % of full scale.
Supply voltage influence: $\leq \pm 0.05$ % of full scale for a min to max supply change.
Load influence: $\leq \pm 0.05$ % of full scale for a 0 to 100 % load resistance change.
Temperature influence: $\leq \pm 0.01$ % 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.

Front Panel and Features:



- SIL 2 according to IEC 61508 for Tproof = 3 / 6 years (10 / 20 % of total SIF).
- PFDavg (1 year) 3.08 E-04, SFF 82.12 %.
- 2 fully independent channels.
- Output to Zone 0 (Zone 20), Division 1, installation in Zone 2, Division 2.
- 4-20 or 0-20 mA Input, Output Signal.
- 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, IECEx, UL & C-UL, FM & FM-C, Russian and Ukrainian Certifications.
- Type Approval Certificate DNV and KR for marine applications.
- High Reliability, SMD components.
- High Density, two channels per unit.
- Simplified installation using standard DIN Rail and plug-in terminal blocks.
- 250 Vrms (Um) max. voltage allowed to the instruments associated with the barrier.

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] IIC, I (M1) [Ex ia Ma] I, II 3G Ex nA II T4, [Ex ia Ga] IIC, [Ex ia Da] IIC, [Ex ia Ma] I associated electrical apparatus.
Uo/Voc = 25.2 V, Io/Isc = 87 mA, Po/Po = 548 mW at terminals 14-15, 10-11.
Um = 250 Vrms, -20 °C \leq Ta \leq 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, 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, refer to control drawing ISM0127 for complete UL and C-UL safety and installation instructions, 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, Russia according to GOST 12.2.007.0-75, R 51330.0-99, R 51330.10-99 [Exia] IIC X, Ukraine according to GOST 12.2.007.0,22782.0,22782.5 Exia IIC X, TUV Certificate No. C-IS-183645-01, SIL 2 according to IEC 61508. Please refer to Functional Safety Manual for SIL applications. DNV and KR Type Approval Certificate for marine applications.

Mounting:
T35 DIN Rail according to EN50022.
Weight: about 180 g D1020D, 120 g D1020S.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².
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.

Ordering Information:

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

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Genelec	Co/Ca (μ F)	Lo/La (mH)	Lo/Ro (μ H/ Ω)
Terminals 14-15, 10-11				
Uo/Voc = 25.2 V	IIC	0.106	4.6	64.9
Io/Isc = 87 mA	IIB	0.819	18.7	259.6
Po/Po = 548 mW	IIA	2.899	37.5	519.3

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

