

Characteristics:

General Description:

The single channel DIN Rail mV to mA converters, D1010S-054, D1010S-056, D1010S-057, convert a mV signal from sensors located in Hazardous Area, and repeat the current in floating circuit to drive a Safe Area load.

Function:

1 channel I.S. analog input, provides 3 port isolation (input/output/supply) and current (source) output signal.

Signalling LED:

Power supply indication (green).

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: 40 mA with 20 mA output typical.

Power dissipation: 0.9 W with 24 V supply voltage and 20 mA output typical.

Max. power consumption: at 30 V supply voltage and overload condition 1.2 W.

Isolation (Test Voltage):

I.S. In/Out 1.5 KV; I.S. In/Supply 1.5 KV; Out/Supply 500 V.

Input:

-5 to +55 mV for D1010S-054;

-5 to +35 mV for D1010S-056;

-5 to +10 mV for D1010S-057;

Output:

4 to 20 mA, on 250 Ω load in source mode.

Response time: 25 ms (10 to 90 % step change) with 8.6 dB of NMRR.

Common mode rejection: better than 80 dB.

Output ripple: ≤ 20 mVrms on 250 Ω load.

Burnout: Upscale in 25 ms.

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: $\leq \pm 0.1$ % 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.

Stability: estimated degradation in 3 years $\leq \pm 0.47$ % least sensitive range.

Compatibility:

CE CE mark compliant, conforms to 94/9/EC Atex Directive and to 2004/108/CE EMC Directive.

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] IIC, II (1) D [Ex iaD], I (M2) [Ex ia] I, II 3G Ex nA II T4, [Zone 0] [Ex ia] IIC, [Ex ia] I, [Ex iaD] associated electrical apparatus.

Uo/Voc = 1.1 V, Io/Isc = 38 mA, Po/Po = 11 mW at terminals 15-16.

Ui/Vmax = 30 V, Ii/Imax = 104 mA, Ci = 1.05 nF, Li = 0 nH at terminals 15-16.

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,

TUV Certificate No. C-IS-183645-01, SIL 2 / SIL 3 according to IEC 61508.

Please refer to Functional Safety Manual for SIL applications.

Mounting:

T35 DIN Rail according to EN50022.

Weight: about 110 g.

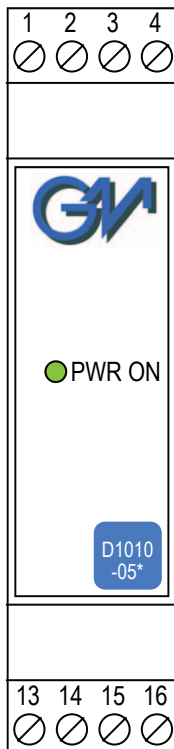
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².

Location: Safe Area or Zone 2, Group IIC T4 installation.

Protection class: IP 20.

Dimensions: Width 22.5 mm, Depth 99 mm, Height 114.5 mm.

Front Panel and Features:



- SIL 3 according to IEC 61508 for Tproof = 1 year (20 % of total SIF).
- SIL 2 according to IEC 61508 for Tproof = 5 / 10 years (10 / 20 % of total SIF).
- PFDavg (1 year) 1.58 E-04, SFF 90.07 %.
- Input from Zone 0 (Zone 20), installation in Zone 2.
- -5 to +55 mV Input / 4 to 20 mA Output.
- Input and Output short circuit proof.
- High Accuracy.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- ATEX, IECEx Certifications.
- High Reliability, SMD components.
- Simplified installation using standard DIN Rail and plug-in terminal blocks.
- 250 Vrms (Um) max. voltage allowed to the instruments associated with the barrier.

Ordering Information:

Model:	D1010S		
1 ch. range -5 to +55 mV		-054	
1 ch. range -5 to +35 mV		-056	
1 ch. range -5 to +10 mV		-057	
Power Bus enclosure			/B

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca (μF)	Lo/La (mH)	Lo/Ro ($\mu\text{H}/\Omega$)
Terminals 15-16				
$U_o/V_{oc} = 1.1 \text{ V}$	IIC	100	11.3	3490
$I_o/I_{sc} = 38 \text{ mA}$	IIB	1000	45.3	13963
$P_o/P_o = 11 \text{ mW}$	IIA	1000	90.7	27927

Image:



Function Diagram:

HAZARDOUS AREA ZONE 0 (ZONE 20), GROUP IIC

SAFE AREA, ZONE 2, GROUP IIC T4

