

## Characteristics:

### General Description:

The D1022S or D1022D is a loop-powered single or dual channel isolated current repeater. It can be used to interface transmitter, to drive I/P converter, fire and smoke detectors or similar switched resistor systems, located in Hazardous Area, requiring a wide output current range (from 1 to 40 mA) to operate properly.

When drive I/P converter, positioner, display a current source is connected to the input terminals, while interfacing transmitter or fire and smoke detector a voltage source with current readback can be connected. The transmitter current is sunk from the input terminals operating as a transparent interface.

For fire and smoke detector, the triggering of a detector causes a corresponding change in the Safe Area circuit current.

A field open circuit reflects a high impedance to the control device circuit.

The unit has reverse input polarity protection and  $\leq 1\%$  accuracy.

### Function:

1 or 2 channels I.S. analog current repeater for transmitters, I/P converter or fire-smoke detectors providing input-output isolation.

### EMC:

Fully compliant with CE marking applicable requirements.

## Technical Data:

### Supply:

No supply voltage required because loop-powered.

**Power dissipation:**  $\leq 1.1$  W per channel at 40 mA, 30 V loop supply.

### Isolation (Test Voltage):

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

### Output Signal to Hazardous Area:

**Output:** 1 to 40 mA.

### Output characteristic (typical):

$V_{out} = (V_{in} - 1.5) - (0.4 \times I_{out})$  for  $6\text{ V} < V_{in} < 23\text{ V}$ .

$V_{out} = 22 - (0.4 \times I_{out})$  for  $23\text{ V} < V_{in} < 30\text{ V}$ .

4-20 mA output on load of 100 to 600  $\Omega$ ; Accuracy  $\leq 1\%$ .

**Response time:** 50 ms (10 to 90 % step change).

### Input Signal to Safe Area:

**Operating voltage range:** 6 to 30 V (loop powered).

**Input current:** 1 to 40 mA (loop powered).

**Voltage drop-out:** 9.5 V at 20 mA and with 500  $\Omega$  load.

**Open circuit consumption:**  $\leq 0.4$  mA at 20 V.

### Performance:

**Reference ambient temperature conditions:**  $23 \pm 1\text{ }^\circ\text{C}$ .

**Current transfer error:**  $\leq 400\text{ }\mu\text{A}$  ( $6\text{ V} < V_{in} < 23\text{ V}$ ;  $1\text{ mA} < I_{out} < 40\text{ mA}$ ).

**Temperature influence:**  $\leq \pm 0.01\%$  for a  $1\text{ }^\circ\text{C}$  change.

### Compatibility:

**CE** CE mark compliant, conforms to Directive:

2014/34/EU ATEX, 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

### Environmental conditions:

**Operating:** temperature limits  $-20$  to  $+60\text{ }^\circ\text{C}$ ,

relative humidity max 90 % non condensing, up to  $35\text{ }^\circ\text{C}$ .

**Storage:** temperature limits  $-45$  to  $+80\text{ }^\circ\text{C}$ .

### Safety Description:



**ATEX:** II (1)G [Ex ia Ga] IIC, II (1)D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I; II 3G Ex ec IIC T4 Gc

**IECEx:** [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I; Ex ec IIC T4 Gc

**INMETRO:** [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I

$U_o/V_{oc} = 25.2\text{ V}$ ,  $I_o/I_{sc} = 93\text{ mA}$ ,  $P_o/P_{sc} = 581\text{ mW}$  at terminals 13-14, 15-16.

$U_m = 250\text{ Vrms}$ ,  $-20\text{ }^\circ\text{C} \leq T_a \leq 60\text{ }^\circ\text{C}$ .

### Approvals:

DMT 01 ATEX E 042 X conforms to EN60079-0, EN60079-11.

IECEx BVS 07.0027X conforms to IEC60079-0, IEC60079-11.

IMQ 09 ATEX 013 X conforms to EN60079-0, EN60079-7.

IECEx IMQ 13.0011X conforms to IEC60079-0, IEC60079-7.

INMETRO DNV 13.0108 X conforms to ABNT NBR IEC60079-0, ABNT NBR IEC60079-11.

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,

EA9C RU C-IT.HA67.B.00113/20 conforms to GOST 31610.0, GOST 31610.11,

GOST 31610.15.

CL 16.0034 X conforms to  $\Delta$ CTY 7113,  $\Gamma$ OCT 22782.5-78,  $\Delta$ CTY IEC 60079-15.

DNV No. TAA00002BM and KR No.MIL20769-EL001 Cert. for maritime applications.

### Mounting:

EN/IEC60715 TH 35 DIN-Rail.

**Weight:** about 125 g D1022D, 110 g D1022S.

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

**Location:** Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4,

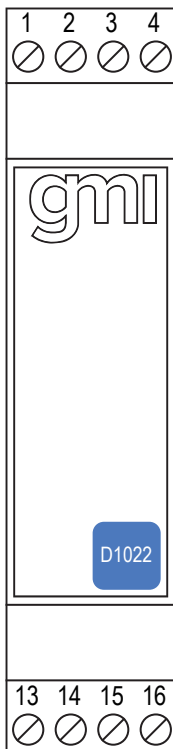
Class I, Division 2, Groups A, B, C, D Temperature Code T4 and

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.

## Front Panel and Features:



- Output to Zone 0 (Zone 20), Division 1, installation in Zone 2, Division 2.
- Wide operating current range from 1 to 40 mA.
- Field open circuit detection.
- Input/Output isolation.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- ATEX, IECEx, FM & FM-C, INMETRO, EAC-EX, UKR TR n. 898 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 ( $U_m$ ) max. voltage allowed to the instruments associated with the barrier.

## Ordering Information:

Model:	D1022	
1 channel		S
2 channels		D

**Parameters Table:**

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca ( $\mu$ F)	Lo/La (mH)	Lo/Ro ( $\mu$ H/ $\Omega$ )
Terminals 13-14, 15-16				
Uo/Voc = 25.2 V	IIC	0.107	4.1	61.2
Io/Isc = 93 mA	IIB	0.820	16.4	244.9
Po/Po = 581 mW	IIA	2.900	32.8	489.8

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

