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Владимир (4935) 49-43-18	Краснодар (861)203-40-90	Орел (4262)44-53-42	Сочи (862)242-72-31	Череповец (8202)49-02-142
Волгоград (844)278-03-42	Красноярск (391)204-63-61	Оренбург (4232)37-68-04	Ставрополь (8652)20-65-13	Читка (3035)38-34-83
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Екатеринбург (343)384-55-142	Липецк (4742)52-20-81	Псков (8112)59-10-37	Тамбов (4752)50-40-97	
Киргизия (996)312-96-26-47		Россия (495)268-04-70	Казахстан (772)734-952-31	

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Источники питания повторителя SIL 2 совместимые с Smart-Hart на DIN-рейке D1010S-046, D1010D-046. Технические характеристики

Characteristics:

General Description:

The single and dual channel DIN Rail Repeater Power Supply, D1010S-046 and D1010D-046, provides a fully floating dc supply for energizing conventional 2 wires 4-20 mA transmitters, or separately powered 3, 4 wires 4-20, 0-20 mA transmitters located in Hazardous Area, and repeats the current in floating circuit to drive a Safe Area load.

The circuit allows bi-directional communication signals, for Hart-Smart transmitters.

Function:

1 or 2 channels I.S. analog input for 2 wires loop powered or separately powered Smart transmitters, provides 3 port isolation (input/output/supply) and current (source or sink) or voltage output signal.

Signalling LED:

Power supply indication (green).

Field Configurability:

mA (source or sink) or V output signal.

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.

Functional Safety Management Certification:

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

Front Panel and Features:

1234

5678

PWR ON

D1010-046

9101112

13141516

- SIL 2 according to IEC 61508:2010 Ed. 2 for Tproof = 7 / 10 years (≤10% / >10 % of total SIF) with active input.
- SIL 2 according to IEC 61508:2010 Ed. 2 for Tproof = 6 / 10 years (≤10% / >10 % of total SIF) with passive input.
- PFDavg (1 year) 1.30 E-04, SFF 80.51 % with active input.
- PFDavg (1 year) 1.47 E-04, SFF 80.81 % with passive input.
- SIL 3 Systematic capability.
- Input from Zone 0 (Zone 20), installation in Zone 2.
- 4-20 or 0-20 mA Input, Output Signal.
- Wide Band Smart Communication, 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
- In-field programmability by DIP Switch.
- ATEX, IECEx, INMETRO, EAC-EX, UKR TR n. 898, TÜV Certifications.
- TÜV Functional Safety Certification.
- Type Approval Certificate DNV and KR for maritime 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.

Ordering Information:

Model:	D1010		
1 channel	S-046		
2 channels	D-046		
Power Bus enclosure		/B	
Power Bus and DIN-Rail accessories:			
DIN rail anchor MCHP065	DIN rail stopper MOR016		
Terminal block male MOR017	Terminal block female MOR022		

Technical Data:

Supply:

24 Vdc nom (20 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp.

Current consumption @ 24 V: 115 mA for 2 channels D1010D-046, 60 mA for 1 channel D1010S-046 with 20 mA output typical.

Power dissipation: 1.9 W for 2 channels D1010D-046, 1.0 W for 1 channel D1010S-046 with 24 V supply voltage and 20 mA output typical.

Max. power consumption: at 30 V supply voltage and short circuit condition, 3.7 W for 2 channels D1010D-046, 2.0 W for 1 channel D1010S-046.

Isolation (Test Voltage):

I.S. In/Out 1.5 KV; I.S. In/Supply 1.5 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 ≤ 1.1 V) or 4 to 20 mA (2 wire Tx current limited at ≈ 25 mA).

Transmitter line voltage:

≥ 14.0 V at 20 mA with max. 20 mVrms ripple on 0.5 to 40 KHz frequency band.

Output:

0/4 to 20 mA, on max. 600 Ω load in source mode; V min. 5 V at 0 Ω load V max. 30 V in sink mode, current limited at ≈ 23 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: 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: ≤ ± 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 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.

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

EAC-EX: 2Ex nA [ia Ga] IIC T4 Gc X, [Ex ia Da] IIIC X, [Ex ia Ma] I X

UKR TR n. 898: 2ExnAiaIICT4 X, ExiaI X

associated apparatus and non-sparking electrical equipment.

Uo/Voc = 26.3 V, Io/Isc = 79 mA, Po/Po = 514 mW at terminals 14-15, 10-11.

Uo/Voc = 1.1 V, Io/Isc = 28 mA, Po/Po = 8 mW at terminals 15-16, 11-12.

Ui/Vmax = 30 V, Ii/Imax = 104 mA, Ci = 1.05 nF, Li = 0 nH at terminals 15-16, 11-12.

Um = 250 Vrms, -20 °C ≤ Ta ≤ 60 °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.

EA3C RU C-IT-HA67.B.00113/20 conforms to GOST 31610.0, GOST 31610.11, GOST 31610.15.

CLJ 16.0034 X conforms to ДСТУ 7113, ГОСТ 22782.5-78, ДСТУ IEC 60079-15.

TÜV Certificate No. C-IS-236198-03, SIL 2 conforms to IEC61508:2010 Ed.2.

SIL 3 Functional Safety TÜV Certificate conforms to IEC61508:2010 Ed.2, for Management of Functional Safety.

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

Mounting:

EN/IEC60715 TH 35 DIN-Rail.

Weight: about 175 g D1010D-046, 125 g D1010S-046.

Connection: by polarized plug-in disconnect screw terminal blocks to accomodate 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.

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca (μF)	Lo/La (mH)	Lo/Ro (μH/Ω)
Terminals 14-15, 10-11				
Uo/Voc = 26.3 V	IIC	0.095	5.8	69.2
Io/Isc = 79 mA	IIB	0.738	23.2	276.8
Po/Po = 514 mW	IIA	2.51	46.5	553.6
	I	3.95	76.3	908.3
	IIIC	0.738	23.2	276.8
Terminals 15-16, 11-12				
Uo/Voc = 1.1 V	IIC	100	45	4654
Io/Isc = 28 mA	IIB	1000	181.4	18618
Po/Po = 8 mW	IIA	1000	362.8	37236
Ui/Vmax=30 V, Ii/Imax=104 mA	I	1000	595.2	61090
Ci = 1.05 nF, Li = 0 nH	IIIC	1000	181.4	18618

Image:

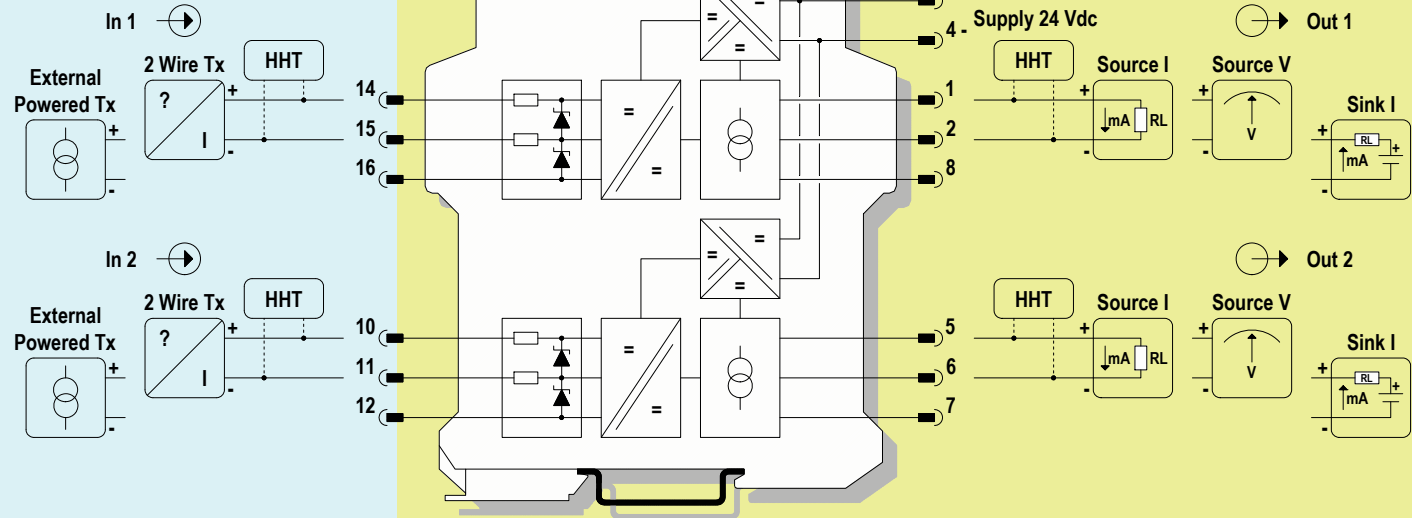


Function Diagram:

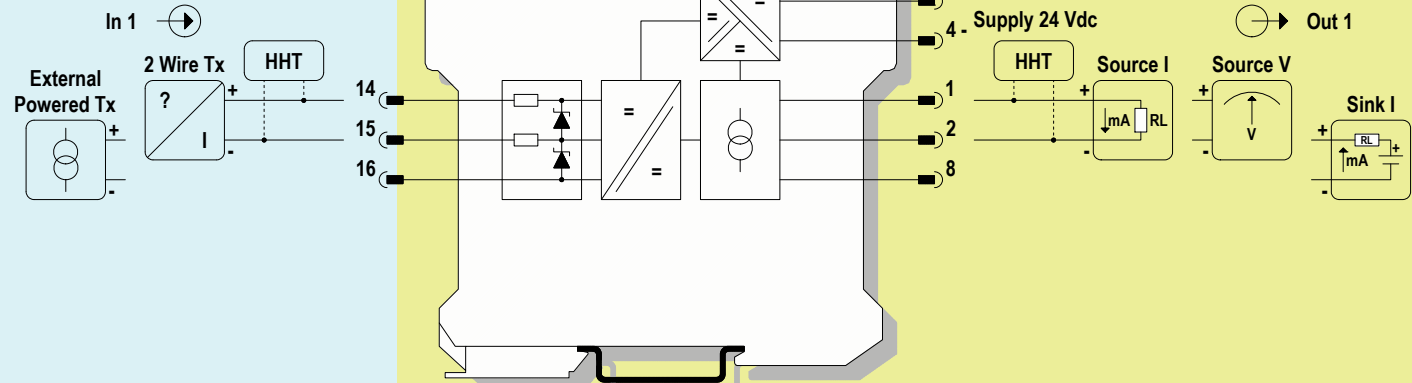
HAZARDOUS AREA ZONE 0 (ZONE 20), GROUP IIC

SAFE AREA, ZONE 2, GROUP IIC T4

MODEL D1010D-046



MODEL D1010S-046



Function Diagram:

HAZARDOUS AREA ZONE 0 (ZONE 20), GROUP IIC

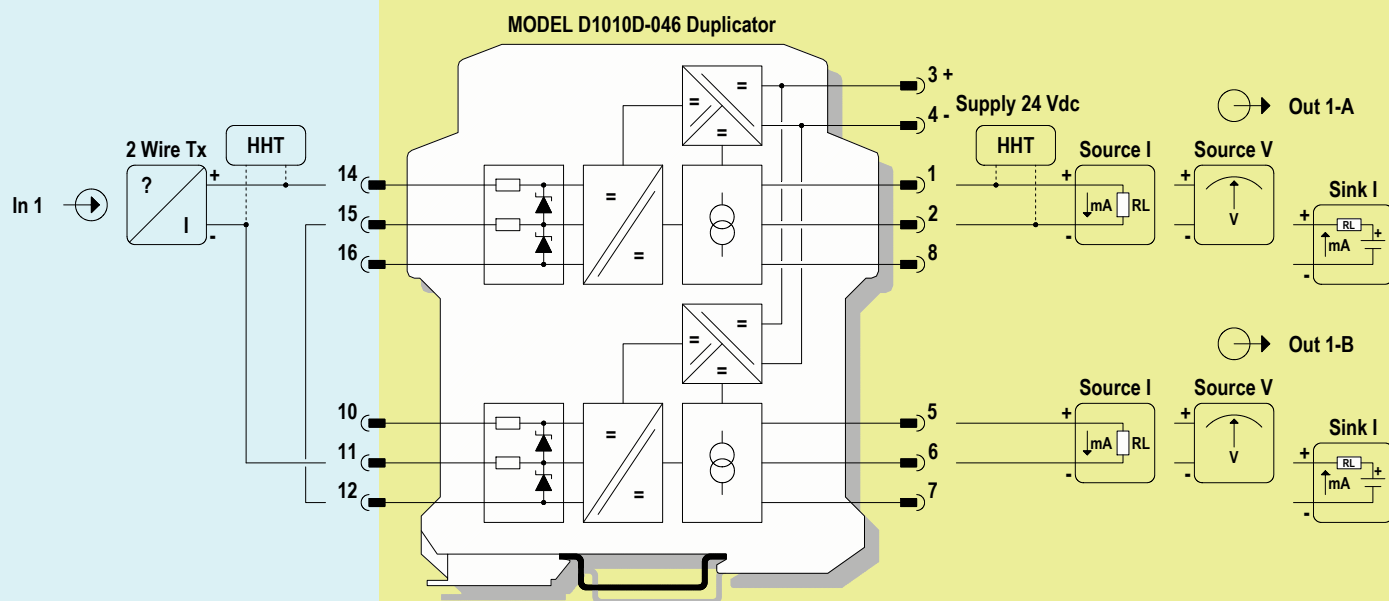
SAFE AREA, ZONE 2, GROUP IIC T4

Safety Description

$$U_o/V_{oc} = 27.4 \text{ V}$$
$$P_o/P_o = 542 \text{ mW}$$

0 0/0 1/1 1/1

Group Cenelec	Co/Ca (μ F)	Lo/La (mH)	Lo/Ro (μ H/ Ω)
IIC	0.085	5.8	63.0
IIB	0.675	23.2	252.2
IIA	2.258	46.5	504.5



Connections for Duplication of 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 12.9 V at 20 mA input

The safety parameters must be changed in: $U_o/V_{oc} = 27.4 \text{ V}$, $I_o/I_{sc} = 79 \text{ mA}$, $P_o/P_o = 542 \text{ mW}$

Function Diagram:

HAZARDOUS AREA ZONE 0 (ZONE 20), GROUP IIC

SAFE AREA, ZONE 2, GROUP IIC T4

Safety Description

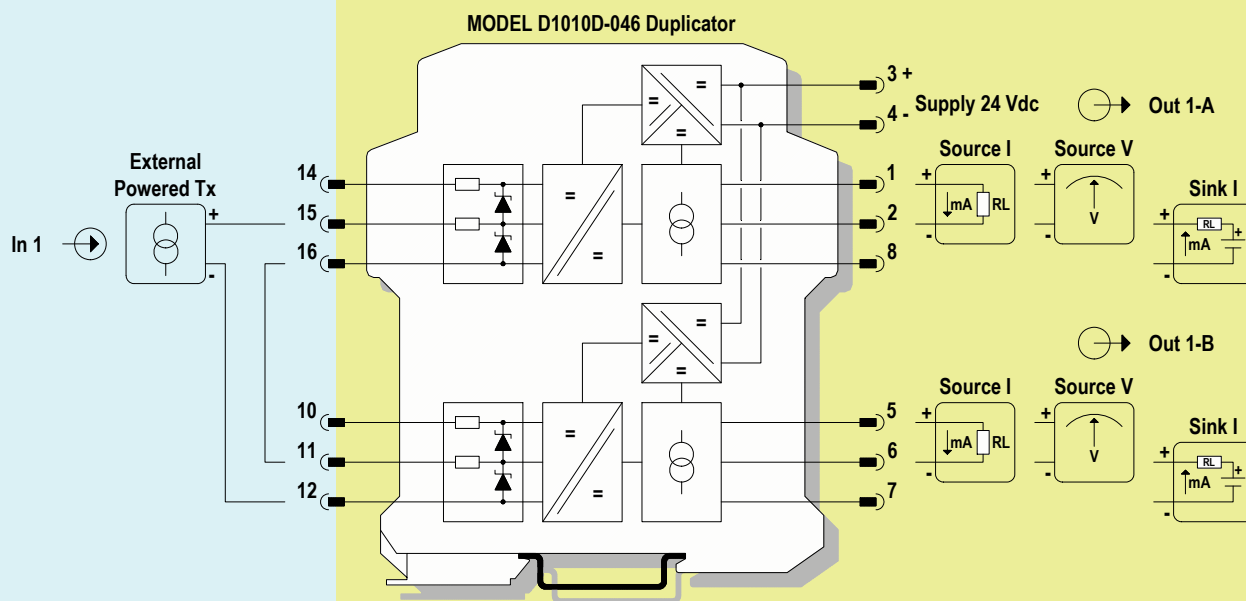
Terminals 15-12

$U_0/V_{oc} = 2.2 \text{ V}$

$I_0/I_{sc} = 28 \text{ mA}$

$P_0/P_o = 16 \text{ mW}$

Group Cenelec	Co/Ca (μF)	Lo/La (mH)	Lo/Ro ($\mu\text{H}/\Omega$)
IIC	100	45.3	1151
IIB	1000	181.4	4607
IIA	1000	362.8	9215



Connections for Duplication of Active Input Signals

Restriction on specifications for external powered Transmitter:

The voltage drop must be changed in 2.2 V maximum

The safety parameters must be changed in: $U_0/V_{oc} = 2.2 \text{ V}$, $I_0/I_{sc} = 28 \text{ mA}$, $P_0/P_o = 16 \text{ mW}$

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