GM INTERNATIONAL
TECHNOLOGY FOR SAFETY

D1052

Analog Signal Converter DIN-Rail Duplicator, Adder and Subtractor

Models D1052S, D1052D, D1052X, D1052Y

Characteristics:

General Description:

The single and dual channel DIN-Rail Analog Signal Converter D1052S and D1052D converts a voltage or current input from externally powered transmitters, located in Hazardous Area, and repeats, with isolation, the signal to drive a Safe Area load. Output signal can be direct or reverse .
Duplicator type D1052X provides two independent outputs for the single input.
Adder and Subtractor type D1052Y provides two independent outputs representing Input A, Input B, Input A plus Input B, Input A minus Input B, low/high selector.

Function:

1 or 2 channels I.S. input from separately powered transmitters, provides 3 port isolation (input/output/supply) and current or voltage output signal.
Duplicator type D1052X and adder, subtractor, low/high selector type D1052Y.

Signalling LED:

Power supply indication (green).

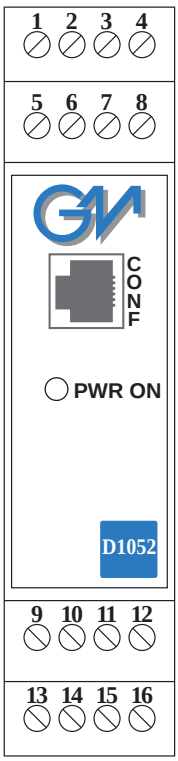
Configurability:

Totally Software configurable, no jumpers or switches, mA or V input/output signal, linear or reverse by a GM Pocket Portable Configurator PPC1090, powered by the unit or via RS-232 Serial line with PPC1092 Adapter and SWC1090 Configurator.
To operate PPC1090 refer to instruction manual.

EMC:

Fully compliant with CE marking applicable requirements.

Front Panel and Features:



- Duplicated output for single channel input (D1052X).
- Adder, Subtractor, low/high Selector (D1052Y).
- 0/4-20 mA, 0/1-5 V, 0/2-10 V Input-Output Signal Linear or Reverse.
- Software programmability.
- High Accuracy, µP controlled A/D converter.
- 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.

Technical Data:

Supply: 12-24 V nom (10 to 30 V) reverse polarity protected ripple within voltage limits ≤ 5 Vpp.
Current consumption @ 24 V: 75 mA for 2 channels D1052D, 50 mA for 1 channel D1052S with 20 mA output typical.
Current consumption @ 12 V: 130 mA for 2 channels D1052D, 85 mA for 1 channel D1052S with 20 mA output typical.
Max. power consumption: 2.30 W for 2 channels, 1.50 W for 1 channel with 30 V supply voltage, overload condition and PPC1090 connected.

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/Out 500 V; Out/Supply 500 V.

Input: 0/4 to 20 mA (-4 to +24 mA reading) separately powered input, voltage drop ≤ 0.5 V or 0/1 to 5 V or 0/2 to 10 V (-2 to +12 V reading).
Integration Time: 100 ms.
Resolution: 1 µA on current input, 1 µV on voltage input.
Visualization: 1 µA on current input, 1 µV on voltage input.
Input range: -4 to +24 mA on current input, -2 to +12 V on voltage input.

Burnout: enabled or disabled. Analog output can be programmed to detect burnout condition with downscale or highscale forcing.
Burnout range: low and high separated trip point value programmable between -5 to +25 mA on current input and -3 to +13 V on voltage input.

Output: 0/4 to 20 mA, on max. 600 Ω load source mode, current limited at 22 mA or 0/1 to 5 V or 0/2 to 10 V signal, limited at 11 V.
Resolution: 2 µA current output or 1 mV voltage output.
Transfer characteristic: linear or reverse.
Response time: 100 ms (10 to 90 % step change).
Output ripple: ≤ 20 mV rms on 250 Ω load.

Performance:
Ref. Conditions 24 V supply, 250 Ω load, 23 ± 1 °C ambient temp.
Input:
Calibration and linearity accuracy: ≤ ± 20 µA on current input or ≤ ± 10 mV on voltage input.
Temperature influence: ≤ ± 2 µA, 1 mV of input for a 1 °C change.
Analog Output:
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 = 10.8 V, Io/Isc = 9 mA, Po/Po = 24 mW at terminals 14-15-16 and 10-11-12.
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.

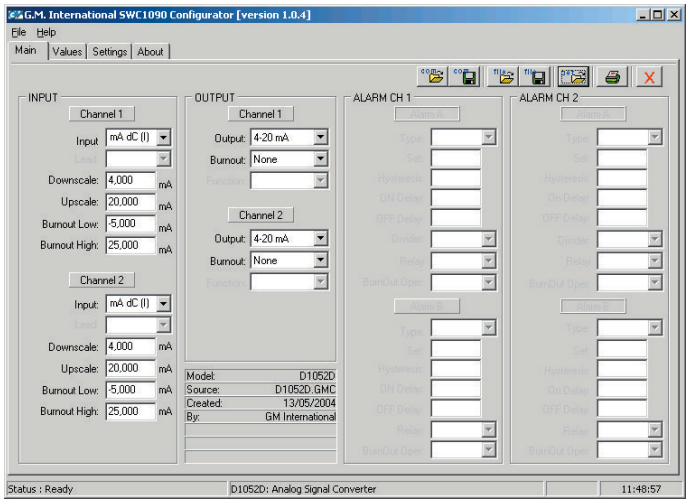
Mounting: T35 DIN Rail according to EN50022.
Weight: about 170 g D1052D, 140 g D1052S.
Connection: By polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm^2.
Location: Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4, Class I, Division 2, Groups A, B, C, 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)	Lo/Ro (µH/Ω)
Terminals 14-15-16, 10-11-12				
Uo/Voc = 10.8 V	II C	2.14	477	1530
Io/Isc = 9 mA	II B	15.00	1909	6130
Po/Po = 24 mW	II A	66.00	3819	12260

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.

Friendly Configuration with PC and PPC1092 Adapter



SWC1090 Software Configurator is downloadable for free on our web site www.gminternationalsrl.com.

Ordering Information:

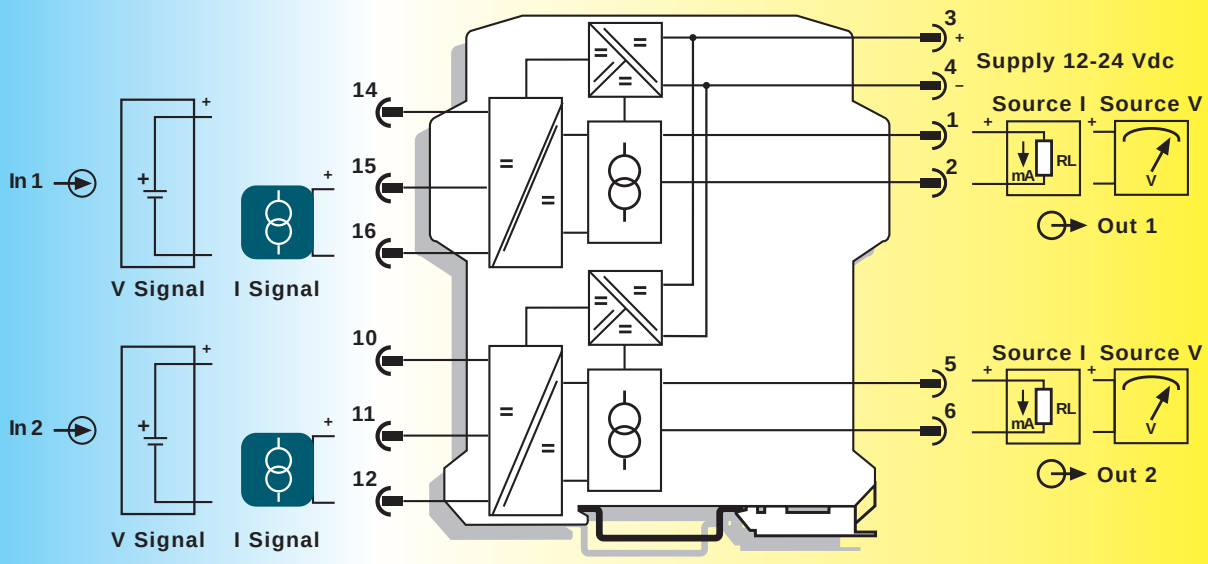
Model:	**D1052**	
1 channel	S	
2 channels	D	
1 input - 2 outputs (duplicator)	X	
2 inputs - 2 outputs (A, B, A+B, A-B)	Y	
Power Bus enclosure		/B

Input types, output types, output range are programmable by the GM Pocket Portable Configurator type PPC1090 or via RS-232 Serial line with PPC1092 and SWC1090 Configurator. If the above information are provided with the Purchasing Order, the unit will be configured accordingly, otherwise the unit will be supplied, by default, with the following parameters:
Input Type: 4-20 mA - Output Type: 4-20 mA.
The plate will record the unit type, serial number, function diagram and terminal block layout for connections.

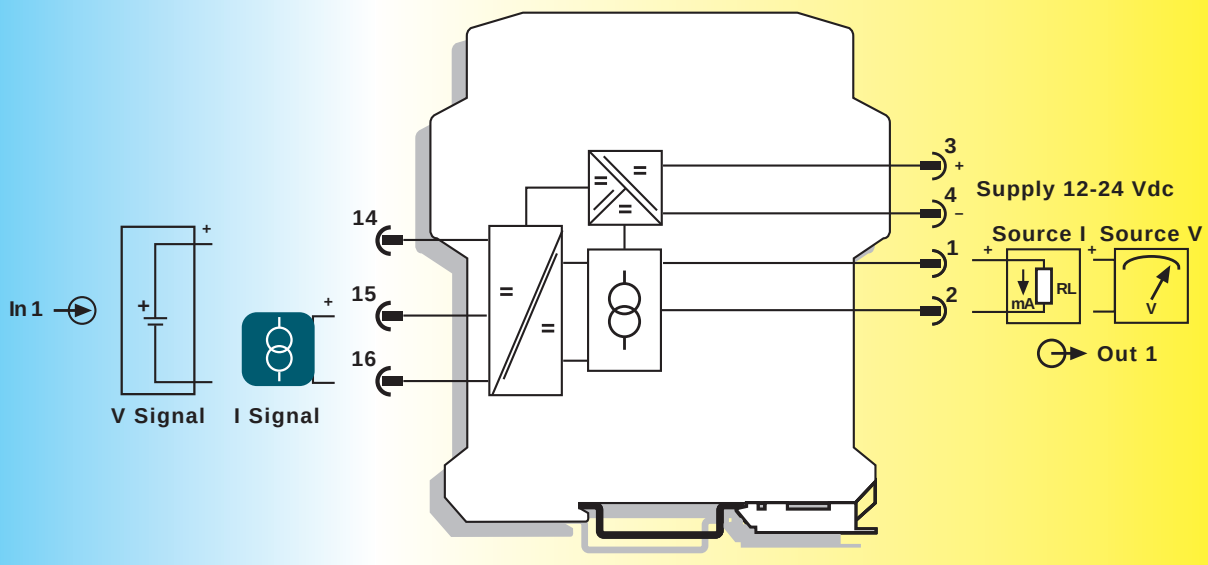
Function Diagram:

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

MODEL D1052D

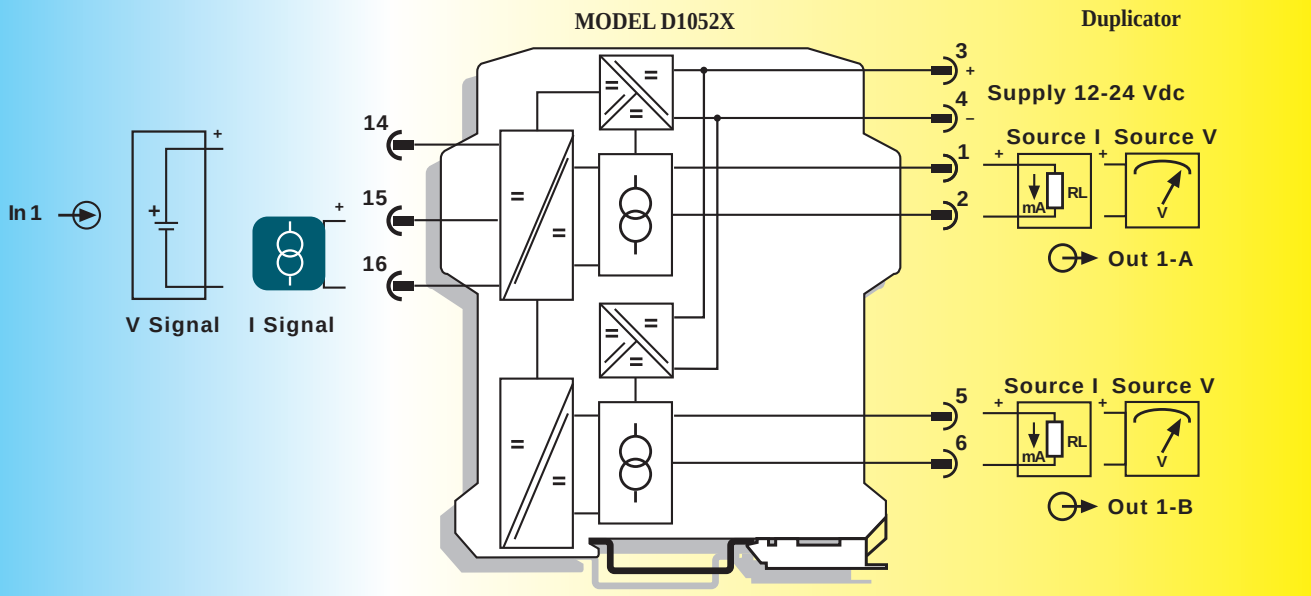


MODEL D1052S



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



Adder, Subtractor, Low/High Selector
Output repeats input A, B, A+B or A-B