



INSTRUCTION MANUAL

Analog Signal Converter,
Duplicator, Adder/Subtractor DIN-Rail
Models D1052S, D1052D, D1052X, D1052Y

Characteristics

General Description: The single and dual channel DIN Rail Analog Signal Converter D1052S and D1052D accepts a voltage or current input from externally powered transmitters, located in Hazardous Area, and converts, 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, subtractor, low/high selector 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 (source mode) 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 GM Pocket Portable Configurator PPC1090, powered by the unit or configured by PC via RS-232 serial line with PPC1092 Adapter and SWC1090 Configurator software.

EMC: Fully compliant with CE marking applicable requirements.

Technical Data

Supply: 12-24 Vdc nom (10 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp.

Current consumption @ 24 V: 70 mA for 2 channels D1052D, 45 mA for 1 channel D1052S with 20 mA output typical.

Current consumption @ 12 V: 140 mA for 2 channels D1052D, 80 mA for 1 channel D1052S with 20 mA output typical.

Power dissipation: 1.5 W for 2 channels D1052D, 1.0 W for 1 channel D1052S with 24 V supply voltage and 20 mA output typical.

Max. power consumption: at 30 V supply voltage, overload condition and PPC1090 connected, 2.1 W for 2 channels D1052D, 1.4 W for 1 channel D1052S.

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 (-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) 1 M Ω impedance.

Integration time: 100 ms.

Resolution: 1 μ A on current input, 1 mV on voltage input.

Visualization: 1 μ A on current input, 1 mV 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 μ A current output or 1 mV voltage output.

Transfer characteristic: linear or reverse.

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

Output ripple: ≤ 20 mVrms on 250 Ω load.

Performance: Ref. Conditions 24 V supply, 250 Ω load, 23 \pm 1 $^{\circ}$ C ambient temperature.

Input:

Calibration and linearity accuracy: $\leq \pm 20$ μ A on current input or $\leq \pm 10$ mV on voltage input.

Temperature influence: $\leq \pm 2$ μ A, 1 mV of input for a 1 $^{\circ}$ C change.

Analog Output:

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 $^{\circ}$ C change.

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

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

Safety Description:



II (1) G [Ex ia Ga] IIC, II (1) D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I, II 3G Ex nA II T4, [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I associated electrical apparatus.

Uo/Voc = 10.8 V, Io/Isc = 4 mA, Po/Po = 11 mW at terminals 14-15-16, 10-11-12.

Ui/Vmax = 30 V, Ci = 4.5 nF, Li = 0 nH at terminals 14-15-16, 10-11-12.

Um = 250 Vrms, -20 $^{\circ}$ C \leq Ta \leq 60 $^{\circ}$ 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 ISM0137 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,

DNV and KR Type Approval Certificate for marine applications.

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 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.

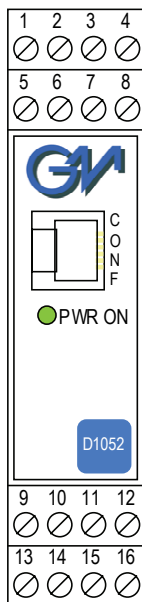
Dimensions: Width 22.5 mm, Depth 99 mm, Height 114.5 mm.

Ordering information

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

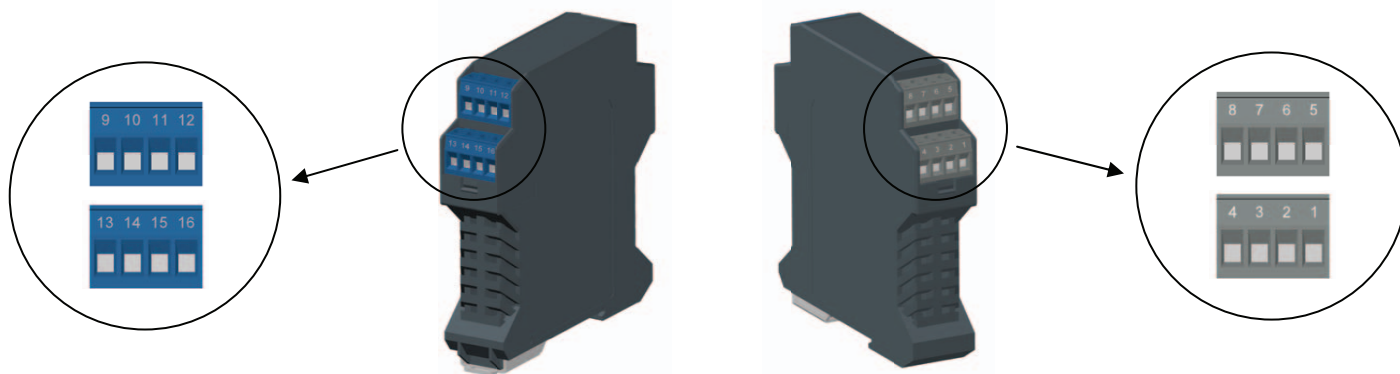
Operating parameters are programmable by the GM Pocket Portable Configurator PPC1090 or via RS-232 serial line with PPC1092 Adapter and SWC1090 Configurator software. If the parameters are provided with the purchasing order the unit will be configured accordingly, otherwise the unit will be supplied with default parameters.

Front Panel and Features



- Input from Zone 0 (Zone 20), Division 1, installation in Zone 2, Division 2.
- 0/4-20 mA, 0/1-5 V, 0/2-10 V Input-Output Signal linear or reverse.
- Duplicated output for single input (D1052X).
- Adder, Subtractor, low/high Selector (D1052Y).
- High Accuracy, μ P controlled A/D converter.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- Fully programmable operating parameters.
- 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.

Terminal block connections



HAZARDOUS AREA

9	Not used
10	+ Input Ch 2 for Signal Voltage
11	+ Input Ch 2 for Signal Current
12	- Input Ch 2 for Signal Voltage or - Input Ch 2 for Signal Current
13	Not used
14	+ Input Ch 1 for Signal Voltage
15	+ Input Ch 1 for Signal Current
16	- Input Ch 2 for Signal Voltage or - Input Ch 2 for Signal Current

SAFE AREA

1	+ Output Ch 1 (Ch 1-A for D1052X) for Current Source mode or Voltage Source mode
2	- Output Ch 1 (Ch 1-A for D1052X) for Current Source mode or Voltage Source mode
3	+ Power Supply 12 - 24 Vdc
4	- Power Supply 12 - 24 Vdc
5	+ Output Ch 2 (Ch 1-B for D1052X) for Current Source mode or Voltage Source mode
6	- Output Ch 2 (Ch 1-B for D1052X) for Current Source mode or Voltage Source mode
7	Not used
8	Not used

Parameters Table

In the system safety analysis, always check the Hazardous Area/Hazardous Locations devices to conform with the related system documentation, if the device is Intrinsically Safe check its suitability for the Hazardous Area/Hazardous Locations and gas group encountered and that its maximum allowable voltage, current, power (U_i/V_{max} , I_i/I_{max} , P_i/P_i) are not exceeded by the safety parameters (U_o/V_o , I_o/I_{sc} , P_o/P_o) of the D1052 Associated Apparatus connected to it. Also consider the maximum operating temperature of the field device, check that added connecting cable and field device capacitance and inductance do not exceed the limits (C_o/C_a , L_o/L_a , L_o/R_o) given in the Associated Apparatus parameters for the effective gas group. See parameters on enclosure side and the ones indicated in the table below:

D1052 Terminals		D1052 Associated Apparatus Parameters	Must be	Hazardous Area/ Hazardous Locations Device Parameters
Ch1	14 - 15 - 16	$U_o / V_o = 10.8 \text{ V}$	\leq	U_i / V_{max}
Ch2	10 - 11 - 12			
Ch1	14 - 15 - 16	$I_o / I_{sc} = 4 \text{ mA}$	\leq	I_i / I_{max}
Ch2	10 - 11 - 12			
Ch1	14 - 15 - 16	$P_o / P_o = 11 \text{ mW}$	\leq	P_i / P_i
Ch2	10 - 11 - 12			
D1052 Terminals		D1052 Associated Apparatus Parameters	Must be	Hazardous Area/ Hazardous Locations Device + Cable Parameters
Ch1	14 - 15 - 16	$C_o / C_a = 2.135 \mu\text{F}$ (IIC-A, B)	\geq	$C_i / C_i \text{ device} + C \text{ cable}$
Ch2	10 - 11 - 12	$C_o / C_a = 14.995 \mu\text{F}$ (IIB-C)		
		$C_o / C_a = 65.995 \mu\text{F}$ (IIA-D)		
Ch1	14 - 15 - 16	$L_o / L_a = 2541 \text{ mH}$ (IIC-A, B)	\geq	$L_i / L_i \text{ device} + L \text{ cable}$
Ch2	10 - 11 - 12	$L_o / L_a = 10167 \text{ mH}$ (IIB-C)		
		$L_o / L_a = 20335 \text{ mH}$ (IIA-D)		
Ch1	14 - 15 - 16	$L_o / R_o = 3520 \mu\text{H}/\Omega$ (IIC-A, B)	\geq	$L_i / R_i \text{ device and}$ $L \text{ cable} / R \text{ cable}$
Ch2	10 - 11 - 12	$L_o / R_o = 14090 \mu\text{H}/\Omega$ (IIB-C)		
		$L_o / R_o = 28180 \mu\text{H}/\Omega$ (IIA-D)		

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

When used with separate powered intrinsically safe devices, check that maximum allowable voltage (U_i/V_{max}) of the D1052 Associated Apparatus are not exceeded by the safety parameters (U_o/V_o) of the Intrinsically Safe device, indicated in the table below:

D1052 Terminals		D1052 Associated Apparatus Parameters	Must be	Hazardous Area/ Hazardous Locations Device Parameters
Ch1	14 - 15 - 16	$U_i / V_{max} = 30\text{V}$	\geq	U_o / V_o
Ch2	10 - 11 - 12			
Ch1	14 - 15 - 16	$C_i = 4.5 \text{ nF}, L_i = 0 \text{ nH}$		
Ch2	10 - 11 - 12			

For installations in which both the C_i and L_i of the Intrinsically Safe apparatus exceed 1 % of the C_o and L_o parameters of the Associated Apparatus (excluding the cable), then 50 % of C_o and L_o parameters are applicable and shall not be exceeded (50 % of the C_o and L_o become the limits which must include the cable such that $C_i \text{ device} + C \text{ cable} \leq 50 \% \text{ of } C_o$ and $L_i \text{ device} + L \text{ cable} \leq 50 \% \text{ of } L_o$).

If the cable parameters are unknown, the following value may be used: Capacitance 60pF per foot (180pF per meter), Inductance 0.20μH per foot (0.60μH per meter).

The Intrinsic Safety Entity Concept allows the interconnection of Intrinsically Safe devices approved with entity parameters not specifically examined in combination as a system when the above conditions are respected.

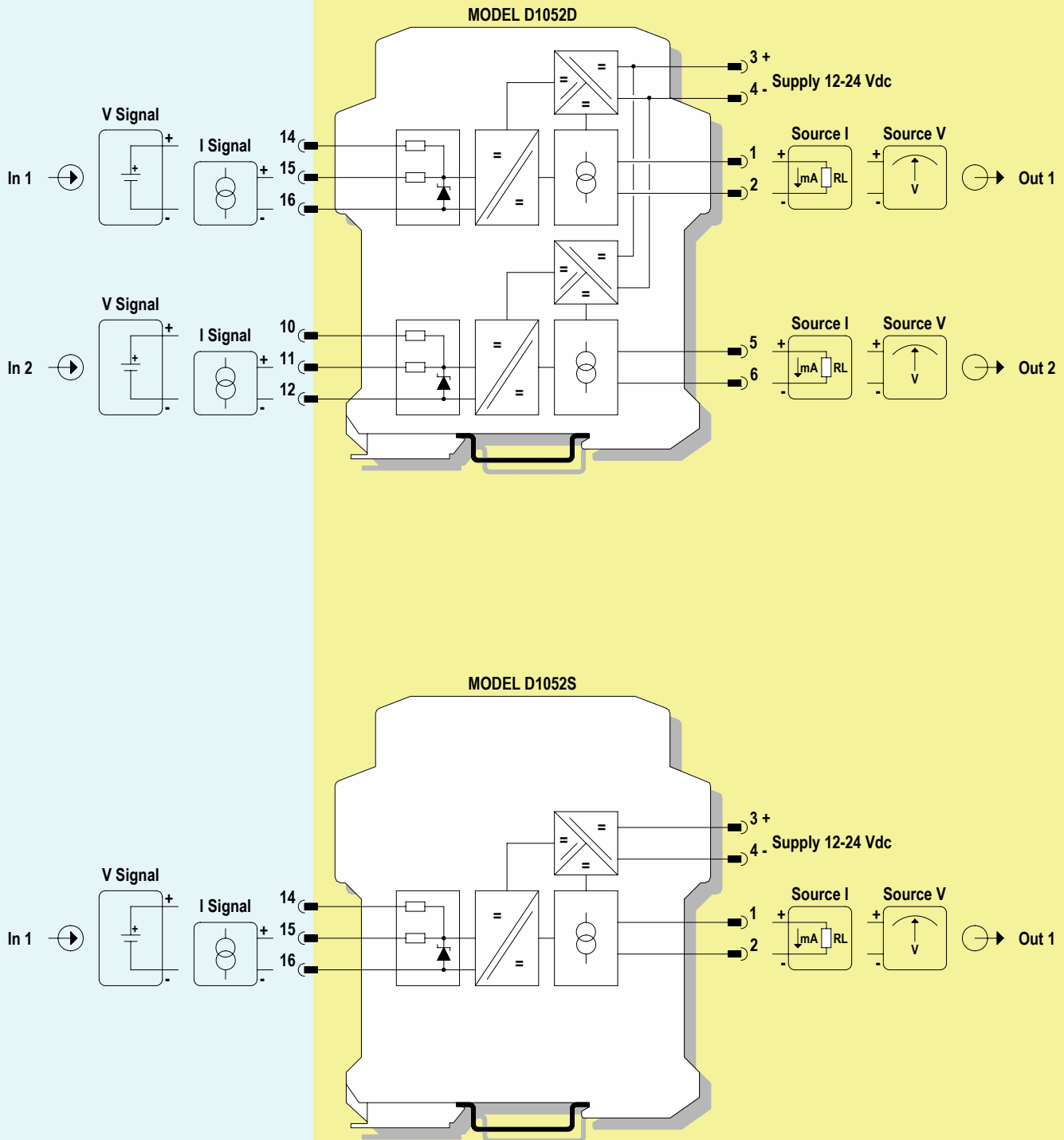
For Division 1 and Zone 0 installations, the configuration of Intrinsically Safe Equipment must be FM approved under Entity Concept (or third party approved);

for Division 2 installations, the configuration of Intrinsically Safe Equipment must be FM approved under non-incendive field wiring or Entity Concept (or third party approved).

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

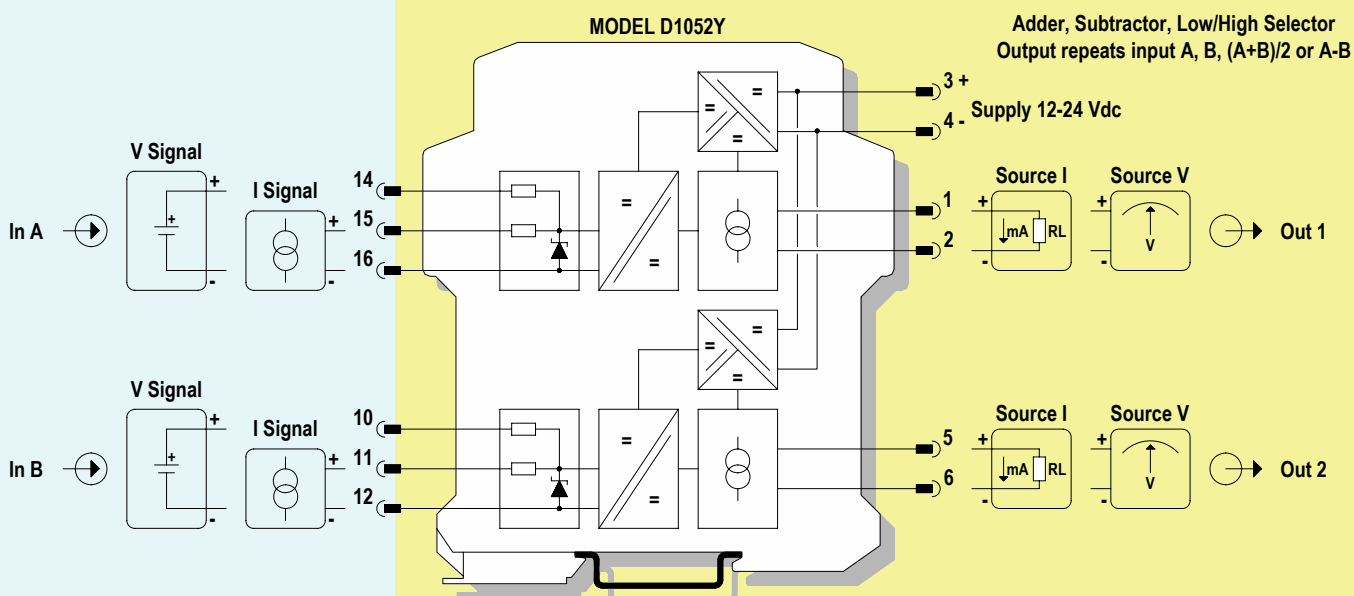
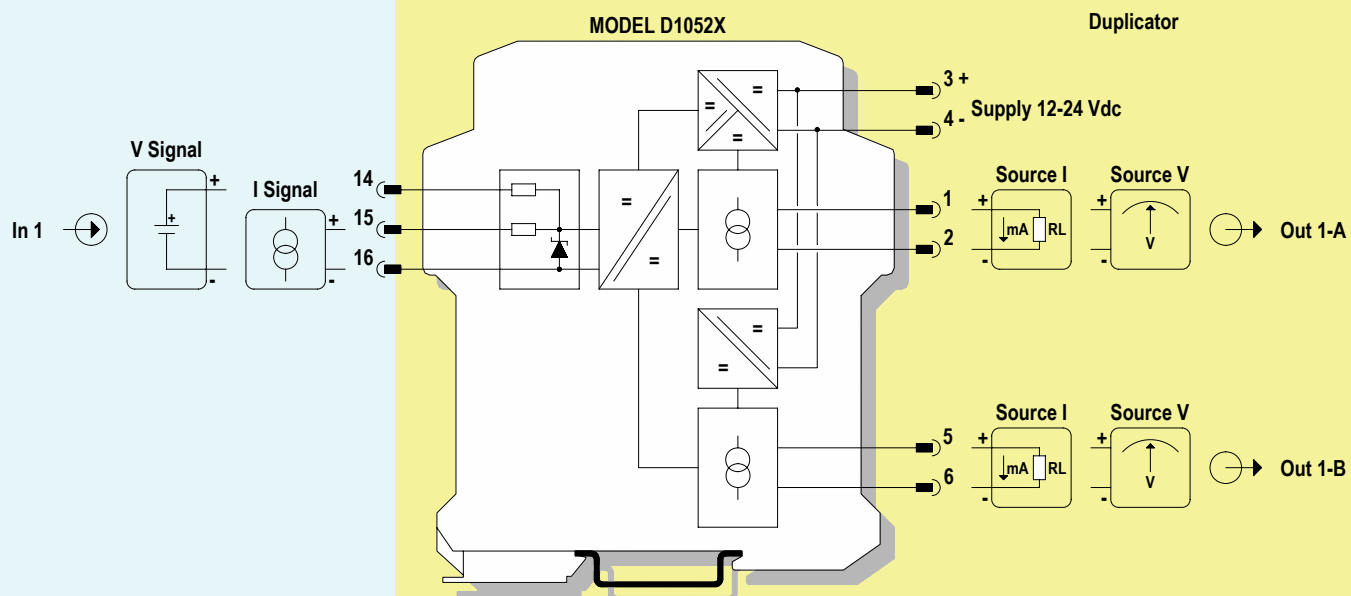
SAFE AREA, ZONE 2 GROUP IIC T4,
NON HAZARDOUS LOCATIONS, CLASS I, DIVISION 2,
GROUPS A, B, C, D T-Code T4, CLASS I, ZONE 2, GROUP IIC T4



Function Diagram

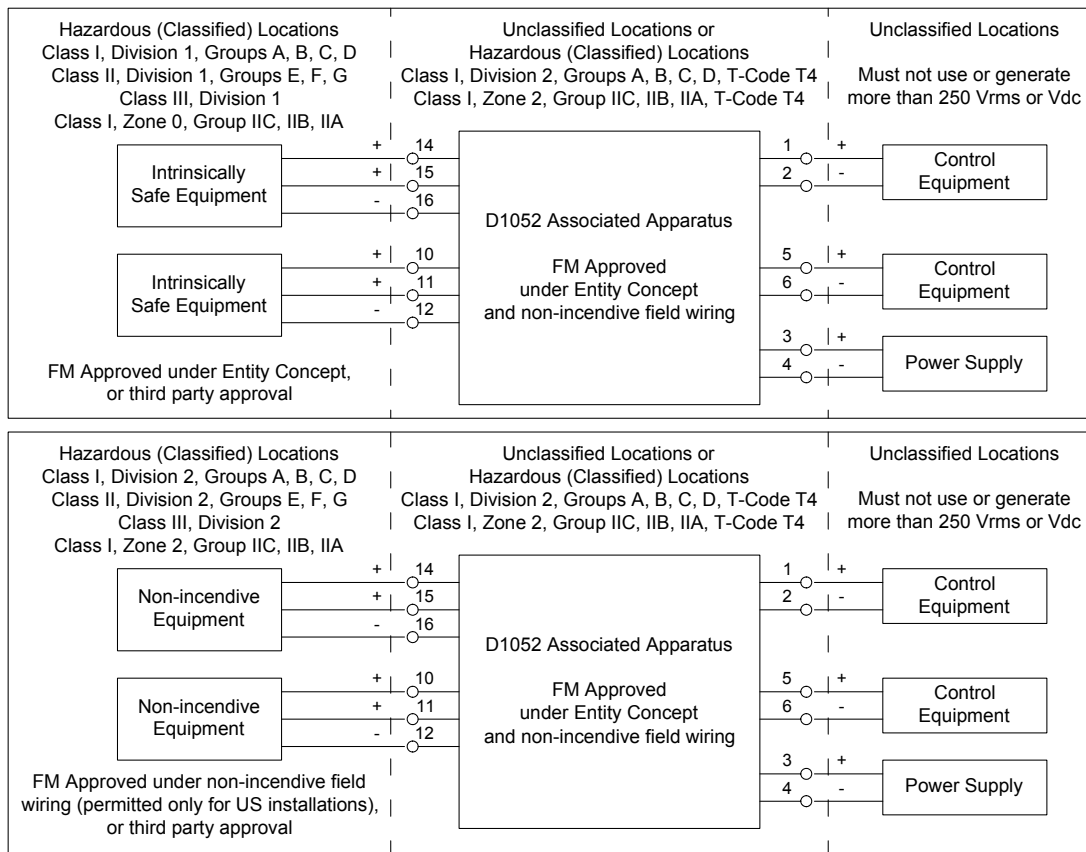
HAZARDOUS AREA ZONE 0 (ZONE 20) GROUP IIC,
HAZARDOUS LOCATIONS CLASS I, DIVISION 1, GROUPS A, B, C, D,
CLASS II, DIVISION 1, GROUPS E, F, G, CLASS III, DIVISION 1,
CLASS I, ZONE 0, GROUP IIC

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



Warning

D1052 series are isolated Intrinsically Safe Associated Apparatus installed into standard EN50022 T35 DIN Rail located in Safe Area/ Non Hazardous Locations or Zone 2, Group IIC, Temperature Classification T4, Class I, Division 2, Groups A, B, C, D, Temperature Code T4 and Class I, Zone 2, Group IIC, IIB, IIA Temperature Code T4 Hazardous Area/Hazardous Locations (according to EN/IEC60079-15, FM Class No. 3611, CSA-C22.2 No. 213-M1987, CSA-E60079-15) within the specified operating temperature limits Tamb -20 to +60 °C, and connected to equipment with a maximum limit for AC power supply Um of 250 Vrms.



Non-incendive field wiring is not recognized by the Canadian Electrical Code, installation is permitted in the US only.

For installation of the unit in a Class I, Division 2 or Class I, Zone 2 location, the wiring between the control equipment and the D1052 associated apparatus shall be accomplished via conduit connections or another acceptable Division 2, Zone 2 wiring method according to the NEC and the CEC.

Not to be connected to control equipment that uses or generates more than 250 Vrms or Vdc with respect to earth ground.

D1052 series must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards (e.g. IEC/EN60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines), BS 5345 Pt4, VDE 165, ANSI/ISA RP12.06.01 Installation of Intrinsically Safe System for Hazardous (Classified) Locations, National Electrical Code NEC ANSI/NFPA 70 Section 504 and 505, Canadian Electrical Code CEC) following the established installation rules, particular care shall be given to segregation and clear identification of I.S. conductors from non I.S. ones. De-energize power source (turn off power supply voltage) before plug or unplug the terminal blocks when installed in Hazardous Area/Hazardous Locations or unless area is known to be nonhazardous.

Warning: substitution of components may impair Intrinsic Safety and suitability for Division 2, Zone 2.

Explosion Hazard: to prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or unless area is known to be nonhazardous.

Failure to properly installation or use of the equipment may risk to damage the unit or severe personal injury.

The unit cannot be repaired by the end user and must be returned to the manufacturer or his authorized representative. Any unauthorized modification must be avoided.

Operation

Input channel of D1052 accepts a current or voltage signal from Hazardous Area/Hazardous Locations from separately powered 3, 4 wire transmitter, voltage or current source, and repeats or converts the current or voltage to a 0/4-20 mA or 0/1-5 V or 0/2-10 V floating output to drive a load in Safe Area/Non Hazardous Locations. Presence of supply power is displayed by a green signaling LED. Type D1052S has a single input and output channel, type D1052D has double input and output channel, type D1052X has a single input and dual output channel (duplicator), type D1052Y has a double input and double configurable output channel (outputs can repeat the corresponding inputs or be proportional to the sum or difference of the two input process variables or with low/high selector function).

Installation

D1052 series are analog signal converter housed in a plastic enclosure suitable for installation on T35 DIN Rail according to EN50022.

D1052 unit can be mounted with any orientation over the entire ambient temperature range, see section "Installation in Cabinet" and "Installation of Electronic Equipments in Cabinet" Instruction Manual D1000 series for detailed instructions.

Electrical connection of conductors up to 2.5 mm² are accommodated by polarized plug-in removable screw terminal blocks which can be plugged in/out into a powered unit without suffering or causing any damage (**for Zone 2 or Division 2 installations check the area to be nonhazardous before servicing**).

The wiring cables have to be proportionate in base to the current and the length of the cable.

On the section "Function Diagram" and enclosure side a block diagram identifies all connections.

Identify the number of channels of the specific card (e.g. D1052S is a single channel model and D1052D is a dual channel model), the function and location of each connection terminal using the wiring diagram on the corresponding section, as an example:

Connect 12-24 Vdc power supply positive at terminal "3" and negative at terminal "4".

For model D1052S connect positive output of channel 1 at terminal "1" and negative output at "2".

For model D1052D in addition to channel 1 connections above, connect positive output of channel 2 at terminal "5" and negative output at "6".

For model D1052S, in case of a current output transmitter, connect the wires at terminal "15" for positive and "16" for negative.

For voltage output transmitters connect signal at terminal "14" for positive and "16" for negative.

For model D1052D in addition to channel 1 connections above, connect terminal "11" for positive and "12" for negative on channel 2 when used with current output transmitter.

Connect voltage output transmitter at terminals "10" for positive and "11" for negative on channel 2.

Intrinsically Safe conductors must be identified and segregated from non I.S. and wired in accordance to the relevant national/international installation standards

(e.g. EN/IEC60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines), BS 5345 Pt4, VDE 165,

ANSI/ISA RP12.06.01 Installation of Intrinsically Safe System for Hazardous (Classified) Locations, National Electrical Code NEC ANSI/NFPA 70 Section 504 and 505,

Canadian Electrical Code (CEC), make sure that conductors are well isolated from each other and do not produce any unintentional connection.

The enclosure provides, according to EN60529, an IP20 minimum degree of mechanical protection (or similar to NEMA Standard 250 type 1) for indoor installation, outdoor installation requires an additional enclosure with higher degree of protection (i.e. IP54 to IP65 or NEMA type 12-13) consistent with the effective operating environment of the specific installation.

Units must be protected against dirt, dust, extreme mechanical (e.g. vibration, impact and shock) and thermal stress, and casual contacts.

If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.

Electrostatic Hazard: to avoid electrostatic hazard, the enclosure of D1052 must be cleaned only with a damp or antistatic cloth.

Any penetration of cleaning liquid must be avoided to prevent damage to the unit. Any unauthorized card modification must be avoided.

According to EN61010, D1052 series must be connected to SELV or SELV-E supplies.

Start-up

Before powering the unit check that all wires are properly connected, particularly supply conductors and their polarity, input and output wires, also check that Intrinsically Safe conductors and cable trays are segregated (no direct contacts with other non I.S. conductors) and identified either by color coding, preferably blue, or by marking. Check conductors for exposed wires that could touch each other causing dangerous unwanted shorts. Turn on power, the "power on" green led must be lit, output on each channel must be in accordance with the corresponding input signal value and input/output chosen transfer function. If possible change the transmitter output and check the corresponding Safe Area output.

Installation in Cabinet

Power Dissipation of D1052 Isolators

Section "Technical Data" of D1052 isolator specifies the current consumption (maximum current from the nominal power supply, typical 24 Vdc, in normal operation); this data serves to dimension the current rating of the power supply unit. Section "Technical Data" indicates also the maximum power consumption (maximum power required from the power supply in the worst (abnormal) operating conditions like for example supply voltage at 30 Vdc, short circuit on the outputs and on the inputs terminals).

The power dissipated **P_d** inside the enclosure for analog signal isolators is: **P_d = Current Consumption (A) * Supply Voltage (V) - Power Dissipated into the input/output loads**


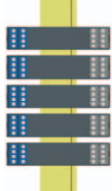


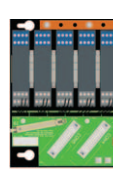
Analog signal isolators have higher dissipation than digital signal isolators, in addition 2 channels barriers (D1052D; D1052Y) have higher dissipation than single channel units

(D1052S; D1052X). In analog signal isolators each transmitter requires and dissipates 15 V * 0.02 A = 0.3 W. Usually the loads outside the isolator dissipate 1/3 of the total power used.

Isolators are not running at the maximum current all at the same time, the average power consumption of a multitude of isolators can be considered to be only 70 % of the value obtained from the section "Technical Data". Considering the 1/3 load power and the 70 % above discussed, the power effectively dissipated internally by the isolators can therefore become 1/2 of the actual power delivered by the power supply. Digital barriers dissipate all the supply power inside the enclosure consequently the total power dissipation into a cabinet, with mixed analog and digital barriers, is determined by the number of channels more than by the number of isolator enclosures. The following tables give advises for the DIN rail orientation (vertical or horizontal) of the barriers mounting, D1052D and D1052Y (double channel); D1052S and D1052X (single channel) isolators, installed on DIN rail, bus or custom board assembly.

A) Cabinet with Natural Ventilation


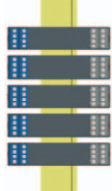


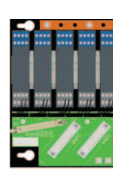
Maximum recommended ambient temperature in °C depending on barrier type and installation method:

Type of Isolator	Single unit Installation	Installation of Multiple units with DIN-rail Bus		Installation on Custom Boards	
	Any orientation	Vertical	Horizontal	Vertical	Horizontal
					
D1052S - D1052X	60°C	30°C	35°C	35°C	40°C
D1052D - D1052Y	60°C	Not recommended ⁽¹⁾	30°C	30°C	35°C

⁽¹⁾ Installation is not recommended since it would significantly shorten the units life and increase the probability of failures.

B) Cabinet with Forced Ventilation

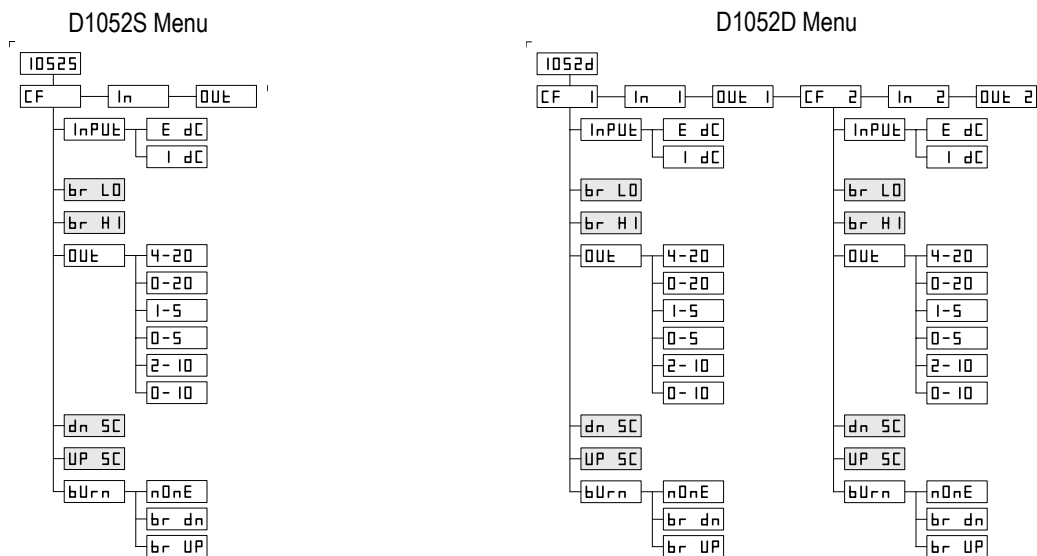
Maximum recommended ambient temperature in °C depending on barrier type and installation method:

Type of Isolator	Single unit Installation	Installation of Multiple units with DIN-rail Bus		Installation on Custom Boards	
	Any orientation	Vertical	Horizontal	Vertical	Horizontal
					
D1052S - D1052X	60°C	40°C	45°C	45°C	50°C
D1052D - D1052Y	60°C	40°C	45°C	45°C	50°C

The Pocket Portable Configurator type PPC1090 is suitable to configure the "smart" barrier of D1000 series. The PPC1090 unit is not ATEX, UL or FM approved and is only to be used in Safe Area/Non Hazardous Locations and prior to installation of the isolator and prior to connection of any I.S. wiring. Do not use PPC1090 configurator in Hazardous Area/Hazardous Locations. The PPC1090 configurator is powered by the unit (no battery power) when the telephone jack is plugged into the barrier (RJ12 6 poles connector type with 1:1 connection). It has a 5 digit display, 4 leds and four push buttons with a menu driven configuration software and can be used in Safe Area/Non Hazardous Locations without any certification because it plugs into the non intrinsically safe portion of circuit.

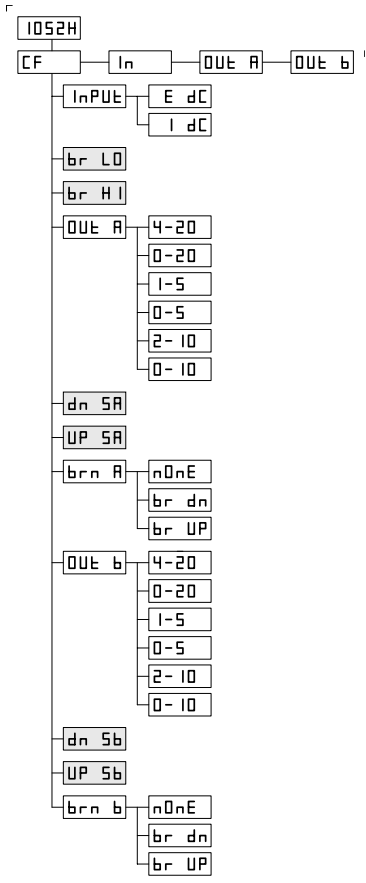
PPC1090 Configuration

The configuration procedure follows a unit specific menu. The display shows the actual menu item, the led shows the channel configured and the push button actuates as "Enter", "Select", "Down" and "Up" key. The "Enter" key is pressed to confirm the menu item, the "Select" key is pressed to scroll the menu item, the "Down" and "Up" keys are pressed to decrement or increment the numeric value of menu item. The "Up" key is also pressed to decrement the menu level. When the PPC1090 is plugged into the unit, the display shows the barrier model (first level menu). Then press the "Enter" key to the second level menu and the "Select" key to scroll the menu voice. When the selected menu item is displayed press the "Enter" key to confirm the choice. Follow this procedure for every voice of the menu. When a numeric menu item is to be changed, press the "Select" key to highlight the character and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key. To return to a higher level menu press the "Up" key.

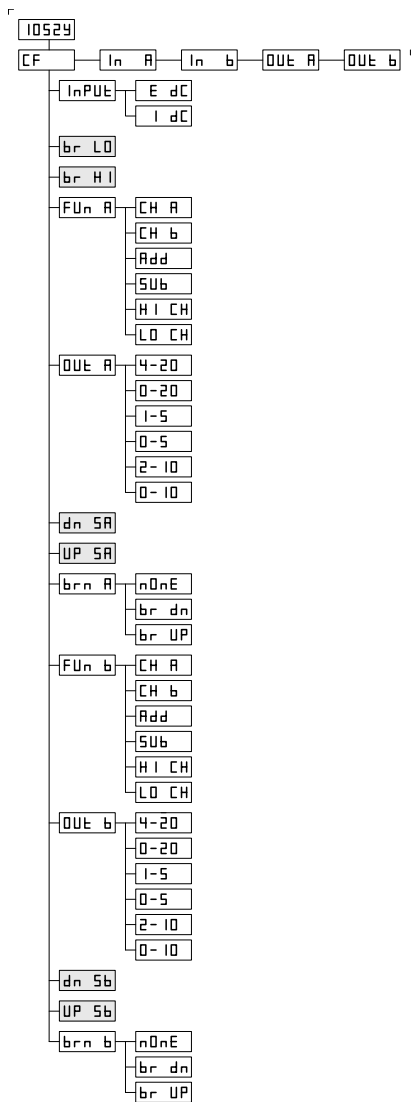


Menu item description D1052S or D1052D

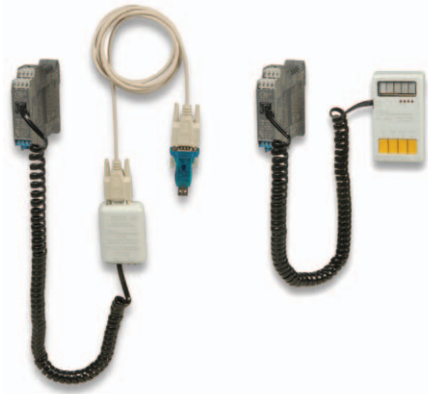
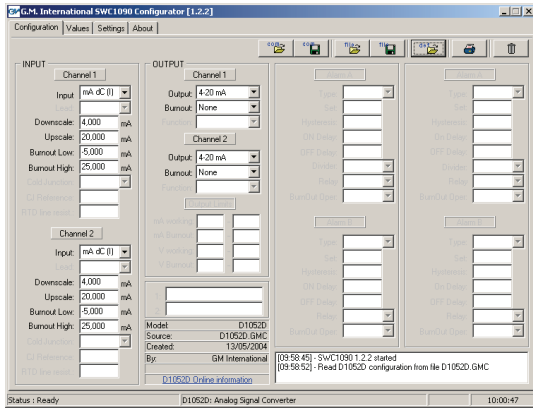
- 1) **D1052S or D1052D** [1 Level Menu]
Displays Model D1052S single channel type or D1052D dual channel type. Press "Enter" key to second level menu.
- 2) **CF/CF 1 or CF 2** [2 Level Menu]
Displays the parameters configuration menu. Press "Enter" key to configure the functional parameters, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 3) **In/In 1 or In 2** [2 Level Menu]
Displays the input variable monitoring. Press "Enter" to display the current input value reading, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 4) **Out/Out 1 or Out 2** [2 Level Menu]
Displays the analog output variable monitoring. Press "Enter" to display the current output value reading, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 5) **Input** [3 Level Menu]
Displays the input sensor type configuration. Press "Enter" to set the input sensor, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 2 different sensor; press "Select" key to change the input sensor and then the "Enter" key to confirm the choice.
The input sensor are:
E dc Volt dc input from externally powered transmitter (range from -2 to +12 V)
I dc mA dc input from externally powered transmitter (range from -4 to +24 mA)
- 6) **Br LO** [3 Level Menu]
Displays the burnout LOW trip point value configuration. Press "Enter" to set the burnout condition trip point value (below this value indicate a burnout fault condition, set -5.000 to disable), press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 7) **Br HI** [3 Level Menu]
Displays the burnout HIGH trip point value configuration. Press "Enter" to set the burnout condition trip point value (above this value indicate a burnout fault condition, set 25.000 to disable), press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 8) **Out** [3 Level Menu]
Displays the analog output type configuration. Press "Enter" to set the analog output type and range, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 6 different output types; press "Select" key to change the output type and range and then the "Enter" key to confirm the choice. The output types are:
4-20 4 to 20 mA current output 1-5 1 to 5 V voltage output 2-10 2 to 10 V voltage output
0-20 0 to 20 mA current output 0-5 0 to 5 V voltage output 0-10 0 to 10 V voltage output
- 9) **Dn Sc** [3 Level Menu]
Displays the input low scale configuration. Press "Enter" to set the low scale input value, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the low input value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 10) **Up Sc** [3 Level Menu]
Displays the input high scale configuration. Press "Enter" to set the high scale input value, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the high input value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 11) **Burn** [3 Level Menu]
Displays the burnout configuration. Press "Enter" to set the burnout condition, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 3 different burnout conditions; press "Select" key to change the burnout and then the "Enter" key to confirm the choice.
The condition types are:
none no burnout detection, the analog output follows the input value
br dn when in burnout condition, the analog output goes to down scale (0 mA or 0 V)
br up when in burnout condition, the analog output goes to high scale (22 mA or 11 V)



- 12) **D1052X** [1 Level Menu]
Displays Model D1052X single channel analog signal converter with dual output. Press "Enter" key to second level menu.
- 13) **CF** [2 Level Menu]
Displays the parameters configuration menu. Press "Enter" key to configure the functional parameters, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 14) **In** [2 Level Menu]
Displays the input variable monitoring. Press "Enter" to display the current input value reading, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 15) **Out A/Out B** [2 Level Menu]
Displays the first/second analog output variable monitoring. Press "Enter" to display the current output value reading, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 16) **Input** [3 Level Menu]
Displays the input sensor type configuration. Press "Enter" to set the input sensor, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 2 different sensors; press "Select" key to change the input sensor and then the "Enter" key to confirm the choice. The input sensors are:
E dc Volt dc input from externally powered transmitter (range from -2 to +12 V)
I dc mA dc input from externally powered transmitter (range from -4 to +24 mA)
- 17) **Br LO** [3 Level Menu]
Displays the burnout LOW trip point value configuration. Press "Enter" to set the burnout condition trip point value (below this value indicate a burnout fault condition, set -5.000 to disable), press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 18) **Br HI** [3 Level Menu]
Displays the burnout HIGH trip point value configuration. Press "Enter" to set the burnout condition trip point value (above this value indicate a burnout fault condition, set 25.000 to disable), press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 19) **Out A or Out B** [3 Level Menu]
Displays the analog output type configuration, for first or second output. Press "Enter" to set the analog output type and range, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 6 different output types; press "Select" key to change the output type and range and then the "Enter" key to confirm the choice. The output types are:
4-20 4 to 20 mA current output 1-5 1 to 5 V voltage output 2-10 2 to 10 V voltage output
0-20 0 to 20 mA current output 0-5 0 to 5 V voltage output 0-10 0 to 10 V voltage output
- 20) **Dn SA or Dn SB** [3 Level Menu]
Displays the input low scale configuration, for first or second output. Press "Enter" to set the low scale input value, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the low input value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 21) **Up SA or Up SB** [3 Level Menu]
Displays the input high scale configuration, for first or second output. Press "Enter" to set the high scale input value, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the high input value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 22) **Brn A or Brn B** [3 Level Menu]
Displays the burnout configuration. Press "Enter" to set the burnout condition, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 3 different burnout conditions; press "Select" key to change the burnout and then the "Enter" key to confirm the choice. The condition types are:
none no burnout detection, the analog output follows the input value
br dn when in burnout condition, the analog output goes to down scale (0 mA or 0 V)
br up when in burnout condition, the analog output goes to high scale (22 mA or 11 V)



- 23) **D1052Y** [1 Level Menu]
Displays Model D1052Y dual configurable channel analog signal converter with dual output. Press "Enter" key to second level menu.
- 24) **CF** [2 Level Menu]
Displays the parameters configuration menu. Press "Enter" key to configure the functional parameters, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 25) **In A/In B** [2 Level Menu]
Displays the first or second input variable monitoring. Press "Enter" to display the current input value reading, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 26) **Out A/Out B** [2 Level Menu]
Displays the first or second analog output monitoring. Press "Enter" to display the current output value reading, press the "Select" key to the next menu level item or "Up" key to return to first level.
- 27) **Input** [3 Level Menu]
Displays the input sensor type configuration. Press "Enter" to set the input sensor, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 2 different sensors; press "Select" key to change the input sensors and then the "Enter" key to confirm the choice.
The input sensors are:
E dc Volt dc input from externally powered transmitter (range from -2 to +12 V)
I dc mA dc input from externally powered transmitter (range from -4 to +24 mA)
- 28) **Br LO** [3 Level Menu]
Displays the burnout LOW trip point value configuration. Press "Enter" to set the burnout condition trip point value (below this value indicate a burnout fault condition, set -5.000 to disable), press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 29) **Br HI** [3 Level Menu]
Displays the burnout HIGH trip point value configuration. Press "Enter" to set the burnout condition trip point value (above this value indicate a burnout fault condition, set 25.000 to disable), press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 30) **Fun A or Fun B** [3 Level Menu]
Displays the analog output function type configuration, for first or second output. Press "Enter" to set the analog output function type, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 6 different output function types; press "Select" key to change the output type and then the "Enter" key to confirm the choice. The output function types are:
CH A output follows the first channel input
CH B output follows the second channel input
Add output follows the sum of the two input channels (A+B/2)
Sub output follows the difference of the two input channels
HI CH output follows the higher of the two input channels
LO CH output follows the lower of the two input channels
- 31) **Out A or Out B** [3 Level Menu]
Displays the analog output type configuration, for first or second output. Press "Enter" to set the analog output type and range, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 6 different output types; press "Select" key to change the output type and range and then the "Enter" key to confirm the choice. The output types are:
4-20 4 to 20 mA current output 1-5 1 to 5 V voltage output 2-10 2 to 10 V voltage output
0-20 0 to 20 mA current output 0-5 0 to 5 V voltage output 0-10 0 to 10 V voltage output
- 32) **Dn SA or Dn SB** [3 Level Menu]
Displays the input low scale configuration, for first or second output. Press "Enter" to set the low scale input value, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the low input value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 33) **Up SA or Up SB** [3 Level Menu]
Displays the input high scale configuration, for first or second output. Press "Enter" to set the high scale input value, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can set the high input value; press the "Select" key to highlight the character you want to change and then the "Up" and "Down" keys to select the number; confirm the modification with the "Enter" key
- 34) **Brn A or Brn B** [3 Level Menu]
Displays the burnout configuration. Press "Enter" to set the burnout condition, press the "Select" key to the next menu level item or "Up" key to return to second level. If you pressed "Enter" key, you can choose between 3 different burnout conditions; press "Select" key to change the burnout and then the "Enter" key to confirm the choice.
The condition types are:
none no burnout detection, the analog output follows the input value
br dn when in burnout condition, the analog output goes to down scale (0 mA or 0 V)
br up when in burnout condition, the analog output goes to high scale (22 mA or 11 V)



INPUT SECTION:

Input: input sensor type

- mA dc (I) current input, range from -4 to +24 mA
- V dc (E) voltage input, range from -2 to +12 V

Downscale: input value of measuring range corresponding to defined low output value.

Upscale: input value of measuring range corresponding to defined high output value.

Burnout Low: low burnout condition trip point value;

below this value a burnout fault condition is activated and the analog output is driven to the configured state (see Burnout in Output Section).

Setting this value outside the measuring range will disable this function.

Burnout High: high burnout condition trip point value;

above this value a burnout fault condition is activated and the analog output is driven to the configured state (see Burnout in Output Section).

Setting this value outside the measuring range will disable this function.

Each channel has independent configurations.

OUTPUT SECTION:

Output: analog output type

- 4-20 mA current output range from 4 to 20 mA
- 0-20 mA current output range from 0 to 20 mA
- 1-5 V voltage output range from 1 to 5 V
- 0-5 V voltage output range from 0 to 5 V
- 2-10 V voltage output range from 2 to 10 V
- 0-10 V voltage output range from 0 to 10 V

Burnout: analog output burnout state

- None burnout function is disabled; analog output represents the input measure as configured
- Downscale analog output is forced at zero
- Upscale analog output is forced to 22 mA for current output or 11 V for voltage output

Function: analog output function (D1052Y module only)

- Ch. A analog output represents input of first channel
- Ch. B analog output represents input of second channel
- Add analog output represents the sum of the two input channels: (A+B)/2
- Sub analog output represents the difference of the two input channels: A-B
- High Ch analog output represents the higher of the two input channels
- Low Ch analog output represents the lower of the two input channels

Each channel has independent configurations.