Configurability:

Signalling LED:

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.
- Configurator software. To operate PPC1090 or PPC1092 refer to instruction manual.

Operating parameters are programmable by the 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. 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, μP 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 A-10169, KR ITA20769-EL001 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.

Ordering Information:

Model: D1052

- 1 channel
- 2 channels
- 1 input-2 outputs (duplicator)
- 2 inputs-2 outputs (A, B, [A+B]/2, A-B)

Power Bus enclosure /B

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

Technical Data:

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

Current consumption:
- @ 24 V: 70 mA for 2 channels D1052D, 45 mA for 1 channel D1052D with 20 mA output typical.
- @ 12 V: 140 mA for 2 channels D1052D, 80 mA for 1 channel D1052D with 20 mA output typical.

Power dissipation:
- 1.5 W for 2 channels D1052D, 1.0 W for 1 channel D1052D 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. Output 1.5 kV; I.S. Input 1.5 kV; I.S. Input 1 kV; 500 V; Out/Supply 500 V; Out/Output 50 V.

Input:
- 0/4 to 20 mA (±24 mA reading) separately powered input, voltage drop ≤ 0.5 V or 0/1 to 5 V or 0 to 10 V (2x+12 V reading) 1 MΩ impedance.

Integration time: 100 ms.

Resolution:
- 1 μA on current input, 1 mV on voltage input.

Visualization:
- 1 μA 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 -5 to +13 V on voltage input.

Output:
- 0/4 to 20 mA, on max. 600 Ω load source mode, current limited at 22 mA at 24 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: ≤ 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 ± 1 °C ambient temperature.

Input:
- Calibration and linearity accuracy: ≤ ± 0.2 μA on current input or ≤ ± 10 mV on voltage input.
- Temperature influence: ± 2 ± 2 μA, 1 μV 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 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.


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] IC, II (1) D [Ex ia] d I (M2) [Ex ia] c I II 3G Ex e N A IEC T4, [Zone 0] [Ex ia] IC, [Ex ia] c, [Ex ia] d associated electrical apparatus.
- Uo/Voc = 10.8 V, I0/Isc = 4 mA, Po/Po = 11 mW at terminals 14-15-16, 10-11-12.
- U/Vmax = 30 V, CI = 4.5 nF, Li = 0 nH 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.
- Uo/Vmax = 30 V, CI = 4.5 nF, Li = 0 nH at terminals 14-15-16, 10-11-12.
- Uo/Voc = 10.8 V, I0/Isc = 4 mA, Po/Po = 11 mW at terminals 14-15-16, 10-11-12.
- Uo/Vmax = 30 V, CI = 4.5 nF, Li = 0 nH at terminals 14-15-16, 10-11-12.
- Uo/Voc = 10.8 V, I0/Isc = 4 mA, Po/Po = 11 mW at terminals 14-15-16, 10-11-12.
- Uo/Vmax = 30 V, CI = 4.5 nF, Li = 0 nH at terminals 14-15-16, 10-11-12.

Approvals:

- DMT 01 ATEX E 042 X conforms to EN60079-0, EN60079-11, EN60079-26, EN61241-0, EN61241-11, IECEx BVS 07/0072X conforms to IEC60079-0, IEC60079-9, IEC60079-11, IEC61241-0, IEC61241-11, GM International CRRG28 conforms to EN60079-15, UL & C-UL E222308 conforms to EN913 (Div. 1), UL 60079-0 (General, All Zones), UL60079-11 (Intrinsic Safety “y” Zones 0 & 1), UL60079-15 (“n” Zone 2), UL 1604 (Div.2) for UL and CSA-C22.2 No.157-92 (Div.1), CSA-ES60079-0 (General, All Zones), CSA-ES60079-11 (Intrinsic Safety “y” Zones 0 & 1), CSA-C22.2 No.213-M1857 (Div.3) and CSA-ES60079-9 (3” Zone 2) for C-UL, FM & CC No. 3024843, 3020921C, conforms to Class 3600, 3610, 3611, 3810 and C22.2 No.142, C22.2 No.157, C22.2 No.213, ES60079-0, ES60079-11, ES60079-15, Russia according to GOST 12.2.007.0-75, R 51330.0-99, R 51330.10-99 [Ex ia] IIC X, Ukraine according to GOST 12.2.007.0-75, R 51330.0-99, R 51330.10-99 [Ex ia] IIC X, CE mark compliant, conforms to 94/9/EC ATEX Directive and to 89/386/CEE EMC Directive.

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

- Weight: about 170 g D1052, 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 CSA-E60079-0 (General, All Zones), Safety Description.

Protection class: IP 20.

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

<table>
<thead>
<tr>
<th>Safety Description</th>
<th>Maximum External Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group Cenelec</td>
</tr>
<tr>
<td>Terminals</td>
<td></td>
</tr>
<tr>
<td>14-15-16, 10-11-12</td>
<td>IIC</td>
</tr>
<tr>
<td>Uo/Voc = 10.8 V</td>
<td>IIIB</td>
</tr>
<tr>
<td>Io/Isc = 4 mA</td>
<td>IIA</td>
</tr>
<tr>
<td>Po/Po = 11 mW</td>
<td></td>
</tr>
</tbody>
</table>

NOTE for USA and Canada:
IIC equal to Gas Groups A, B, C, D, E, F and G
IIIB equal to Gas Groups C, D, E, F and G
IIA equal to Gas Groups D, E, F and G

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
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

MODEL D1052X
Duplicator

MODEL D1052Y
Adder, Subtractor, Low/High Selector
Output repeats input A, B, (A+B)/2 or A-B
## Configuration Parameters:

### 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).
- **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 these values outside the measuring range will disable this function.

### 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.