

Characteristics:

General Description:

The single channel DIN Rail Load Cell/Strain Gauge Bridge Isolating Converter D1064S acts as a galvanically isolated interface installed between a PLC/DCS in Safe Area and a load cell (or group of load cells) in Hazardous Area. Up to four 350 Ω load cells, or five 450 Ω load cells, or ten 1000 Ω load cells can be connected in parallel. It provides a fully floating power supply voltage with remote sensing capabilities to load cells located in Hazardous Area and converts the mV signal from the load cell into a 0/4-20 mA or 0/1-5 V or 0/2-10 V signal according to user desired range. Output circuit provides both current source and sink capabilities. Modbus output is also provided to interface PLC/DCS using digital communication.

Automatic Calibration:

Automatic calibration can be accomplished in the field without disconnecting the unit.

Function:

1 channel I.S. input from strain gauge signals, provides 3 port isolation (input/output/supply) and current (source or sink mode) or voltage output signal. Modbus output is also provided to interface digital device.

Signalling LED:

Power supply indication (green).

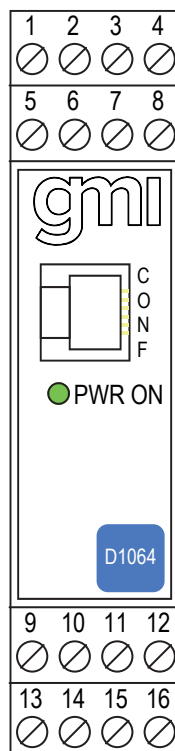
Configurability:

Totally software configurable, no jumpers or switches, input calibration, mA or V output signal 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. To operate PPC1090 or PPC1092 refer to instruction manual. A 16 characters tag can be inserted using the configuration software.

EMC:

Fully compliant with CE marking applicable requirements.

Front Panel and Features:



- SIL 2 according to IEC 61511, with 4-20 mA current source (or sink) output. Tproof= 2 / 10 years ($\leq 10\%$ / $>10\%$ of total SIF) PFDavg (1 year) 4.31 E-04, SFF 71.26 %;
- Input from Zone 0 (Zone 20), Division 1, installation in Zone 2, Division 2.
- Strain Gauge Bridge Isolated Converter.
- Up to four 350 Ω load cells in parallel or up to five 450 Ω load cells in parallel or up to ten 1000 Ω load cells in parallel.
- 0/4-20 mA, 0/1-5 V, 0/2-10 V Output Signal.
- Modbus Output.
- Field Automatic Calibration.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- Fully programmable operating parameters.
- ATEX, IECEx, FM & FM-C, INMETRO, EAC-EX, UKR TR n. 898, TUV Certifications.
- Type Approval Certificate DNV for maritime applications.
- High Reliability, SMD components.
- 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:	D1064S	
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.

Power Bus accessories:

Cover and fix MOR016

Terminal block male MOR017

Anchor for side MCHP065

Terminal block female MOR022

SIL 2 Load Cell/Strain Gauge Bridge Isolating Converter DIN-Rail Model D1064S

Technical Data:

Supply:

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

Current consumption @ 24 V: 70 mA with four 350 Ω load cells connected and with 20 mA output typical.

Power dissipation: 1.4 W with 24 V supply voltage, four 350 Ω load cells connected and 20 mA output typical.

Max. power consumption: at 30 V supply voltage, short circuit input, overload condition and PPC1090 connected, 2.2 W.

Isolation (Test Voltage):

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

Input:

up to four 350 Ω load cells (parallel connection).

up to five 450 Ω load cells (parallel connection).

up to ten 1000 Ω load cells (parallel connection).

A/D Conversion time: 100 ms.

Bridge supply voltage: 4.2 V nominal.

Bridge output signal: 1 to 4 mV/V.

Line resistance compensation: ≤ 10 Ω .

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 22 mA or

0/1 to 5 V or 0/2 to 10 V signal, limited at 11 V.

Resolution: 1 μ A current output or 1 mV voltage output.

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

Output ripple: ≤ 20 mVrms on 250 Ω load.

Modbus Output:

Modbus RTU protocol up to 115.200 baud.

Performance:

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

Input:

Accuracy after autocalibration: $\leq \pm 0.05$ % of full scale.

Linearity accuracy: $\leq \pm 0.02$ % of full scale of input range.

Temperature influence: $\leq \pm 0.002$ % of full scale of input range for a 1 $^{\circ}$ C change.

Supply voltage influence: $\leq \pm 0.002$ % of full scale of input range for a min to max supply voltage change.

Analog Output:

Calibration accuracy: $\leq \pm 0.05$ % of full scale.

Linearity error: $\leq \pm 0.05$ % of full scale.

Supply voltage influence: $\leq \pm 0.02$ % of full scale for a min to max supply change.

Load influence: $\leq \pm 0.02$ % 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 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 $^{\circ}$ C,

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

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

Safety Description:



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

IECEx / INMETRO: [Ex ia Ga] IIC, [Ex ia Da] IIC, [Ex ia Ma] I; Ex nA IIC T4 Gc

FM: NI / I / 2 / ABCD / T4, NI / I / 2 / IIC / T4, AIS / I, II, III / 1 / ABCDEFG, AEx [ia] IIC

FM-C: NI / I / 2 / ABCD / T4, NI / I / 2 / IIC / T4, AIS / I, II, III / 1 / ABCDEFG, Ex [ia] IIC

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

UKR TR n. 898: 2Ex nA IIC T4 X, Exial X

associated apparatus and non-sparking electrical equipment.

Uo/Voc = 5.9 V, Io/Isc = 196 mA, Po/Po = 576 mW at terminals 9-10-11-12-13-14.

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, EN50303

IECEx BVS 07.0027X conforms to IEC60079-0, IEC60079-11, IEC60079-26

IMQ 09 ATEX 013 X conforms to EN60079-0, EN60079-15

IECEx IMQ 13.0011X conforms to IEC60079-0, IEC60079-15

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

ABNT NBR IEC60079-15, ABNT NBR IEC60079-26, ABNT NBR IEC 61241-11.

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.

C-IT.MH04.B.00306 conforms to GOST R IEC 60079-0, GOST R IEC 60079-11,

GOST R IEC 60079-15.

CL 16.0034 X conforms to DCTY 7113, GOCT 22782.5-78, DCTY IEC 60079-15.

TUV Certificate No. C-IS-236198-02, SIL 2 according to IEC 61511.

DNV No.A-13778 Certificate for maritime applications.

Mounting:

T35 DIN Rail according to EN50022.

Weight: about 155 g.

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.

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca (μ F)	Lo/La (mH)	Lo/Ro (μ H/ Ω)
Terminals				
9-10-11-12-13-14				
Uo/Voc = 5.9 V	IIC	39	0.93	NA
Io/Isc = 196 mA	IIB	996	3.71	247.0
Po/Po = 576 mW	IIA	996	7.42	494.1
	I	996	12.76	810.6
	IIIC	996	3.71	247.0

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:

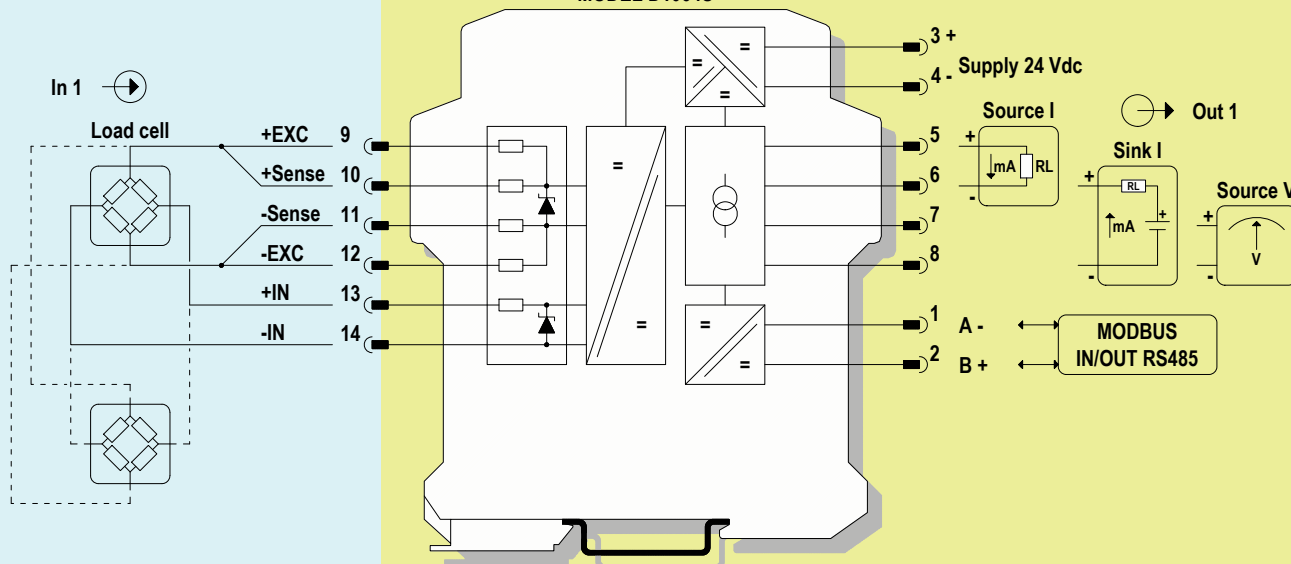


Function Diagram:

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

MODEL D1064S



Up to 4 load cells 350 Ω in parallel
Up to 5 load cells 450 Ω in parallel
Up to 10 load cells 1000 Ω in parallel