GM INTERNATIONAL
TECHNOLOGY FOR SAFETY

D2030

Intrinsically Safe Digital Multiplexer DIN-Rail Model D2030M

Characteristics:

General description:

D2000M series Intrinsically Safe Multiplexing System consists of one to four Analog-Temperature Multiplexer units model D2010M, up to twelve Expander units model D2011M, or up to four Digital Multiplexer units model D2030M, mounted in Hazardous Area/Hazardous Locations Zone 1-2, Gas Group IIC-IIB-IIA T4 or Class I, Division 1-2, Group A, B, C, D T4 and connected via a single/redundant 2 wires data communication/supply line to a Modbus Gateway unit model D2050M, mounted in Safe Area/Non Hazardous Locations and connected to a PLC, DCS or PC.
Multiplexer D2030M units can be installed in the field, close to input sensors, for data acquisition of signal from Hazardous Area/Hazardous Locations Zone 0-1-2 or Class I, Class II, Class III, Division 1-2.
The units are primarily intended for Hazardous Area/Hazardous Locations acquisition of voltage free contact or EN60947-5-6 proximity detectors.
D2030M scans all channels and stores all data in a memory buffer, where they can be rapidly accessed by the Modbus Gateway D2050M unit.
Each D2030M unit accepts directly up to 32 input channels.
Four D2030M units achieve 128 inputs with a single Modbus Gateway D2050M unit.
Redundant communication is obtained by dual data/supply interface line.
Safety parameters mantain compatibility with Gas Group IIC or Gas Group A and B, even in redundant mode.
All parameters are software configurable by serial commands via D2050M Gateway unit. Functions and serial commands for RS-232 and RS-485 protocols are provided in the instruction manual.

Features:

- Intrinsically Safe for installation in Zone 1, 2 Gas Group IIC, IIB, IIA T4 or Class I, Division 1, 2 Groups A, B, C, D, Temperature Code T4 and Class I, Zone 1, 2 Groups IIC, IIB, IIA, Temperature Code T4 Hazardous Area/Hazardous Location.
- Inputs from voltage free contacts or EN60947-5-6 proximity detectors from Zone 0, 1, 2 or Class I, II, III, Division 1, 2, Groups A, B, C, D, E, F, G, and Class I, Zone 0, 1, 2 Groups IIC, IIB, IIA Hazardous Location.
- Expandability up to 128 digital channels per system and 31 systems on a single Modbus serial link for up to 3968 channels.
- Redundant field lines for communication/supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- ATEX, FM & FM-C, Russian and Ukrainian Certifications.
- High reliability, SMD components.
- High density, 32 channels per unit, 128 channels per system.
- Configurable via D2050M Gateway using PC SWC2090 software (free of charge) or user software.
- Modbus output allows savings on PLC/DCS I/O cards cost.
- Lower cables, installation and maintenance costs.
- 1 terminal block per input, no external terminal block required.
- Simplified installation using standard DIN Rail mounting units.

Ordering Information:

Model:	D2030M

Technical Data:

Supply:
via D2050M gateway unit.
Max. power consumption: 200 mW.

Isolation (Test Voltage):
I.S. In/Supply-Communication line 500 V;
I.S. In/Ground 500 V;
I.S. In/I.S. In between units 500 V.
Communication line/Ground 500 V;

Input:
Switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA,
switch current ≈ 1.65 mA ± 0.2 mA hysteresis.
Fault current levels: open fault ≤ 0.2 mA, short fault ≥ 6.0 mA.
Fault detection: enabled or disabled, programmable indipendently for each channel.
Input equivalent source: 7.5 V 1 KΩ typical (7.5 V no load, 7.5 mA short circuit).
Input channels: 32.
Excitation time: programmable from 1 ms to 35 ms indipendently for each channel.
Scan cycle time: 50 ms for four D2030M units (128 channels) at minimum sensor excitation time or the sum of each channel scan time, whichever is greater.

Compatibility:
CE mark compliant, conforms to 94/9/EC Atex Directive and to 2004/108/CE EMC Directive.

Environmental conditions:
Operating: temperature limits – 40 to + 60 °C,
relative humidity max 90 % non condensing, up to 35 °C.
Storage: temperature limits – 45 to + 80 °C.

Safety description of measuring inputs:

II (1) 2G EEx ia IIC T4 intrinsically safe apparatus.
Uo/Voc = 10.7 V, Io/Isc = 14 mA, Po/Po = 38 mW at terminals 1-2, 3-4 of channel 1 to 32.
-40 °C ≤ Ta ≤ 60 °C.
Approvals:
BVS 06 ATEX E 101 X conforms to EN50014, EN50020, EN50284, EN60079-25, EN60079-27, 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.94, E60079-0, E60079-11,
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.

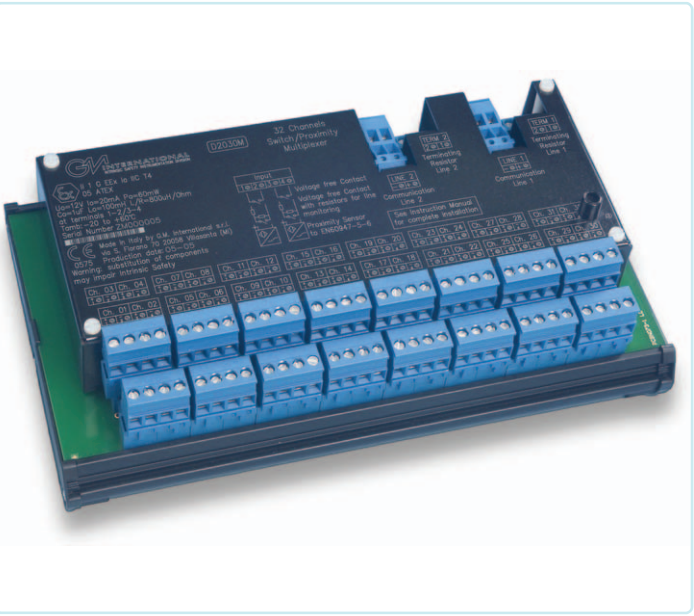
Mounting:
T35 DIN Rail according to EN50022.
Weight: about 680 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm².
Location: Safe Area/Non Hazardous Locations or Zone 1, 2, Group IIC, IIB, IIA T4, Class I, Division 1, Groups A, B, C, D Temperature Code T4 and Class I, Zone 1, 2, Group IIC, IIB, IIA T4 installation.
Protection class: IP 20.
Dimensions: Width 127 mm, Length 220 mm, Depth 78 mm.

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca (µF)	Lo/La (mH)	Lo/Ro (µH/Ω)
Terminals 1-2, 3-4 for channels 1 to 32				
Uo/Voc = 10.7 V	IIC	2.23	181	946
Io/Isc = 14 mA	IIB	15.60	725	3786
Po/Po = 38 mW	IIA	69.00	1451	7572

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:

INPUT FROM HAZARDOUS AREA ZONE 0 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

INSTALLATION IN HAZARDOUS AREA, ZONE 1 GROUP IIC T4, HAZARDOUS LOCATIONS, CLASS I, DIVISION 1, GROUPS A, B, C, D T4, CLASS I, ZONE 1, GROUP IIC T4