gmi technology for safety

D2050

Gateway - Power Supply Unit for Multiplexer D2000M Series DIN-Rail Model D2050M

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.
The Gateway D2050M unit, mounted in Safe Area/Non Hazardous Locations, provides intrinsically safe protection to the 2 wires communication link, and supplies power to Analog-Temperature Multiplexer D2010M and Digital Multiplexer D2030M units, installed in Hazardous Area/Hazardous Locations, close to input sensors, for data acquisition and connects the field multiplexers to a Safe Area/Non Hazardous Locations PLC, DCS or other devices, saving wiring cables and costs.
The unit is primarily intended to interface field multiplexer with the PLC, DCS systems via Modbus serial lines with redundant communication.
Units D2010M, D2011M and D2030M scan all channels and store all data in a memory buffer, where they can be rapidly accessed by the Modbus Gateway unit D2050M.
Each multiplexer unit D2010M accepts directly up to 16 input channels and, by adding from one to three D2011M, is expandable to 64 channels. Four D2010M units, connected to twelve D2011M expanders, achieve 256 inputs via one Modbus Gateway D2050M. D2030M unit accepts up to 32 digital input channels and up to four D2030M units (128 channels) can be connected to the D2050M Gateway.
One D2050M unit can support up to 256 analog input channels from D2010M, D2011M or 128 digital channels from D2030M 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. Functions and serial commands for RS-232 and RS-485 protocols are provided in the instruction manual.

Features:

- Intrinsically Safe Associated Apparatus for installation in Safe Area/Non Hazardous Locations to supply Multiplexer D2010M, D2011M, D2030M installed 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.
- Universal inputs (mV, TC, RTD, contact or proximity detector) via D2010M, D2011M, D2030M unit 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 256 analog/128 digital channels per system and 31 systems on a single Modbus serial link for up to 7936/3968 channels.
- Redundant field lines for communication/supply.
- Modbus interface RTU protocol on redundant RS-485.
- RS-232 port for system configuration.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- ATEX, FM & FM-C, Russian and Ukrainian Certifications.
- High reliability, SMD components.
- Configurable by 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.
- Simplified installation using standard DIN Rail mounting units.
- Repeat Hazardous Area/Hazardous Locations input contact or proximity detector in Safe Area/Non Hazardous Locations via D2052M unit (relay output) or via D2053M unit (transistor output).

Ordering Information:

Model:	D2050M

Technical Data:

Supply:

24 Vdc nom (20 to 30 Vdc) reverse polarity protected,
ripple within voltage limits ≤ 5 Vpp.
Current consumption @ 24 V: 260 mA with four multiplexer unit connected typical.
Power dissipation: 5.0 W with 24 V supply voltage and four multiplexer unit connected.
Max. power consumption: at 30 V supply and output short circuit condition 8.5 W.

Isolation (Test Voltage):

I.S. Out/RS-232 Configuration Line 1.5 KV; I.S. Out/RS-485 Modbus Line 1.5 KV;
I.S. Out/Supply 1.5 KV;
RS-232 Configuration Line/Supply 500 V; RS-485 Modbus Line/Supply 500 V.
RS-232 Configuration Line/RS-485 Modbus Line 500 V.

Input/Output I.S. Hazardous Area:

dual serial communication line, proprietary protocol and power to supply field multiplexer unit D2010M or D2030M (up to four).
Scan cycle time: 50 ms for a system with 4 D2030M unit (128 digital channel),
1700 ms for a system with 4 D2010M and 12 D2011M (256 analog channel).

Output/Input Safe Area:

Modbus RTU protocol up to 115.2 Kbit/s with RS-485 redundant connection.
Terminating impedance: 250 Ω DIP-switch selectable.
Transmission speed: 4.8, 9.6, 19.2, 38.4, 57.6, 115.2 Kbit/s.
Transmission cable length: ≤ 1200 m up to 93.75 Kbit/s, ≤ 1000 m up to 115.2 Kbit/s.

Configuration Line:

RS232 connection (EIA RS232-C applicable standard).
Transmission speed: 19.2 Kbit/s.
Transmission cable length: ≤ 15 m.
Connection: SUB D 9 poles male connector (requires female mating connector).

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.

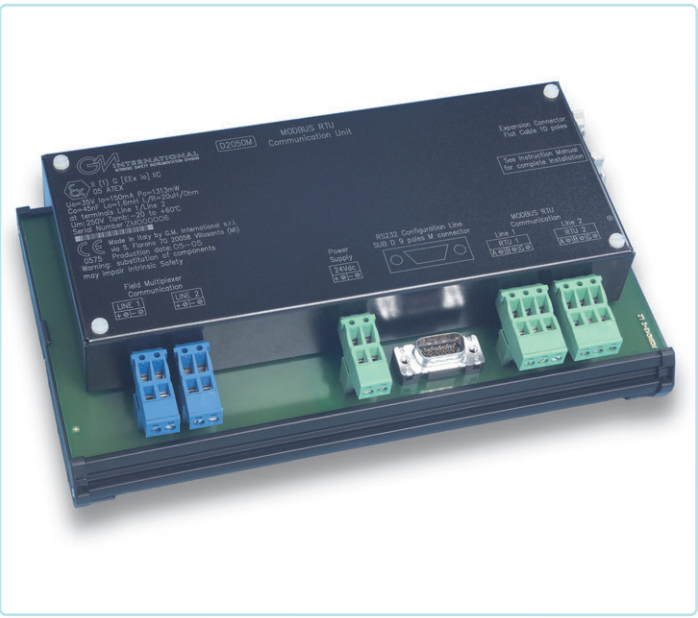
Safety description:

II (1) G [EEx ia] IIC associated electrical apparatus.
Um = 250 Vrms, -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 570 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm².
Location: Safe Area/Non Hazardous Locations installation.
Protection class: IP 20.
Dimensions: Width 127 mm, Length 220 mm, Depth 78 mm.

Image:



Function Diagram:

HAZARDOUS AREA ZONE 0 GROUP IIC,
HAZARDOUS LOCATIONS
CLASS I, DIVISION 1, GROUPS A, B, C, D,
CLASS I, ZONE 0, GROUP IIC

SAFE AREA/NON HAZARDOUS LOCATIONS