

Intrinsically Safe Analog - Temperature Multiplexer Units - Model D2010M-D2011M for DIN rail Mounting in Zone 0, 1, 2

Characteristics:

General description:

D2000M Series Intrinsically Safe Multiplexing System consists of 1 to 4 Analog-Temperature Multiplexer Units model D2010M, up to 12 Expander Units model D2011, and up to 4 D2030M Digital Multiplexer Units, mounted in Zone 0, 1, 2 Hazardous Area, Gas Group IIC T4, connected via a single/redundant 2 wire data communication / Supply line to a Modbus Gateway Unit model D2050M, mounted in Safe Area and connected to a PLC, DCS or PC.

The Multiplexer Units D2010, and the Expander Units D2011M can be installed in the field, close to input sensors, for data acquisition from Hazardous Area and connected to a Safe Area PLC/DCS or other devices, via 2 wire communication link and Interface Unit D2050, saving wiring, cables and costs. The Units are primarily intended for Hazardous Area acquisition of low level signal from Thermocouples, RTDs, mV or mA sources.

The Expander Units D2011M are controlled by D2010M Units.

D2010M scans all enabled channels using state of the art solid state isolated relays, and stores all data in a memory buffer, where they can be rapidly accessed by the Modbus Gateway Unit D2050M. Each Mux Units accepts directly up to 16 inputs channels and, by adding 1 to 3 Expander Units D2011M, is expandable to 64 channels in blocks of 16 each.

Four D2010M Units, connected to twelve D2011M Expanders reach 256 inputs with a single Modbus Gateway Unit D2050M.

Redundant communication is obtained by dual data/supply interface line. Safety Parameters maintain compatibility with Gas Group II C even in redundant mode.

An Integrating type, High Rejection, High Accuracy (18 bits) A/D Converter, automatically calibrates Zero and Span providing accurate and stable measurements. All parameters are software configurable by serial commands via D2050M Gateway Unit.

Feature:

Intrinsically Safe for installation in Zone 0, 1, 2, 20, 21, 22 Gas Group IIC T4.

Universal Inputs (mV, TC, RTD and mA).

200 V input-to-input, and 500 V input to ground, isolation accepts multiple grounded sensors.

High Accuracy A/D Converter, 18 bits.

16 input channels.

Expandability up to 256 channels per System and 31 Systems on a single serial link for up to 7936 Channels.

Field Redundant communication.

EMC according to EN50081-2, EN50082-2.

ATEX approval.

High Reliability, SMD components.

High Density, 16 channels per unit, 256 channels per System.

Software configuration.

Lower PLC/DCS I/O cards cost.

Lower Cables and installation costs.

Lower cost, included wiring, 1 Terminal Block per input connection, no external Terminal Block required.

Simplified installation using standard DIN Rail mounting Units.

Technical Data:

Supply:

Via D2050M Interface Unit.

Max. Power Consumption: D2010M: 200 mW; D2011M: 10 mW.

Isolation:

I.S. In/Out, Communication line, 0,5 KV; I.S. In/ I.S. In 200 V for mV/TC, 60 V for RTD; I.S. In/Ground 500 V; Communication line/Ground 500V; I.S. In/I.S. In between Units 500 V.

Inputs:

millivolt or thermocouple type A1, A2, A3, B, E, J, K, L, N, R, S, T, U, Lr or 3, 4 wire RTD Pt 100, Pt 200, Pt 300 to DIN43760, Pt100 (0.3916), Ni 100 or Pt100, Pt50, Cu100, Cu53, Cu50 (Gost standard) or mA signals with external shunt.

Input Channels: 16 on D2010M Unit and D2011M Expanders.

Ranges: Within the rated limits range of sensors.

Resolution: 2 μ V on mV or thermocouple, 10 m Ω on RTD.

Input Ranges: within rated limits of sensor (-20 to + 80 mV or -20 to + 20 mV).

RTD Measuring Current: \leq 0,2 mA.

RTD Line Resistance Compensation: \leq 10 Ω .

TC Ref. Junction Compensation: Automatic with external Sensor on channel nr. 16 (option 91 separately ordered or RTD user selected) or fixed programmable from -60 to + 100 $^{\circ}$ C.

Burnout: up-down or none.

Scan cycle Time:

for four D2010M unit + twelve D2011M (256 channels): 1600 ms.

Performance:

Field Units powered by D2050M Gateway at 23 ± 1 $^{\circ}$ C ambient temperature.

Calibration and Linearity Accuracy: $\leq \pm 20$ μ V on mV or Thermocouple, 200 m Ω on RTD, $\pm 0,05$ % of input value, whichever is greater.

TC Ref. Junction Comp. influence: $\leq \pm 2$ μ V, 10 m Ω , 0,02 % or $\pm 0,01$ % of input value for a 1 $^{\circ}$ C change.

Ref. Junction Compensation Influence: $\leq \pm 1$ $^{\circ}$ C (thermocouple sensor).

Compatibility:



CE mark compliant, conforms to 94/9/EC Atex Directive and to 89/336/CEE EMC Directive, EN60010-1.

Environmental Condition:

Operating: - 20 to + 60 $^{\circ}$ C, Relative Humidity max 90 % non condensing, up to 35 $^{\circ}$ C.

Storage: 40 to + 80 $^{\circ}$ C.

Safety description of measuring inputs:



Uo/Voc = 12 V, Io/Isc = 12 mA, Po/Po = 36 mW, at terminals 1-2-3-4.

II 1 G D EEx ia IIC T4 or I M2 EEx ia IS Apparatus.

Approvals:

DNV-2005-OSL-ATEX-nnmn conforms to EN 60079-0, EN 60079-11, EN 60079-25, IEC 60079-27, EN 50281-1-1, EN 50284.

Mounting:

DIN Rail T35 according EN50022.

Weight: About 300 g.

Connections: By screw terminals for up to 2,5 mm².

Installation Area: Zone 0, 1, 2, Gas Group IIC, IIB, IIA, T4.

Protection Class: IP 20.

Dimensions: 127W x 220L x 78D mm.

Note: for field mounting see GM 2300 Series enclosures.

Parameters Table:

Safety Description	Maximum External Parameters	
	Group Cenelec	Co/Ca (μF)

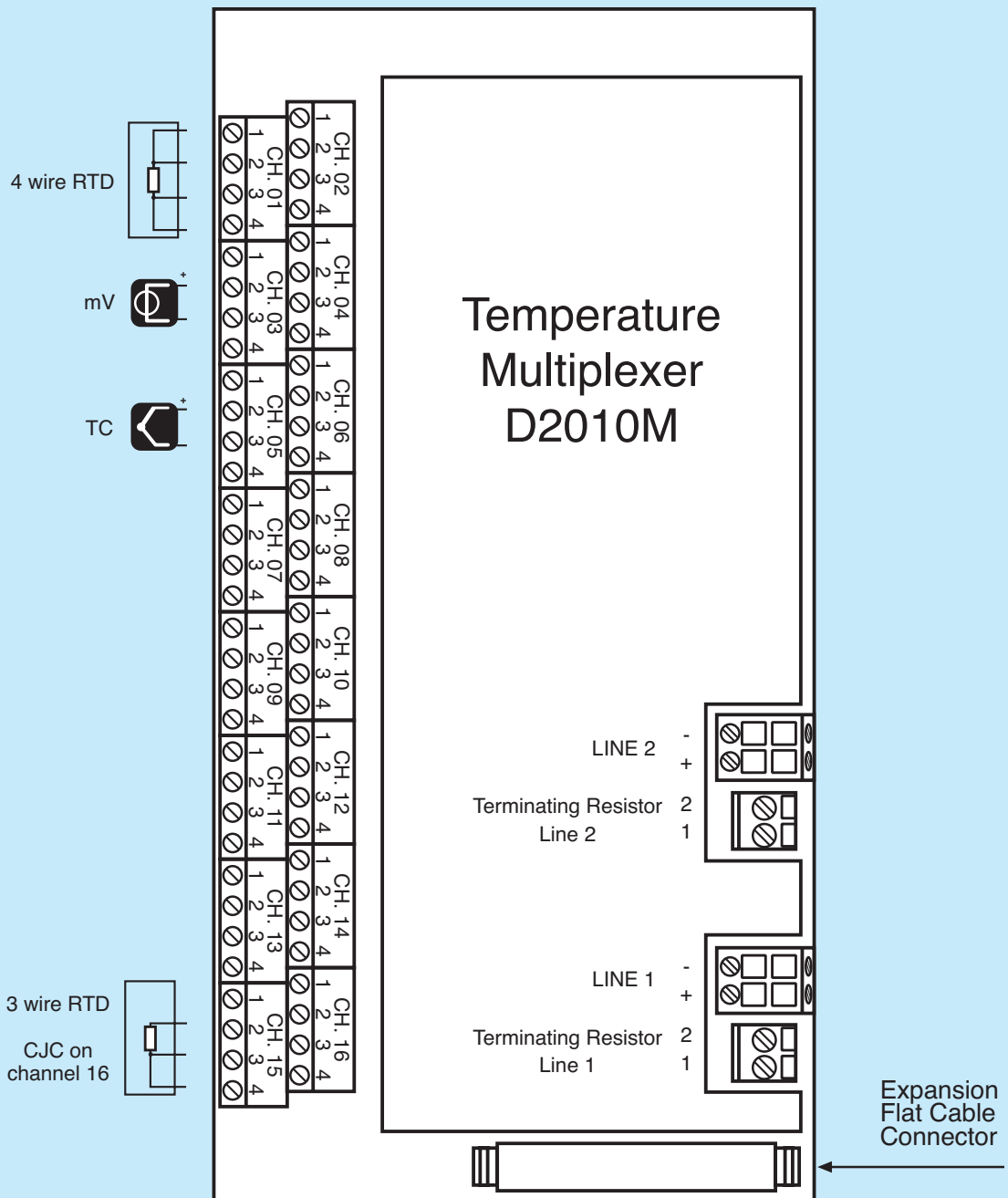
$U_0/V_{oc} = 12\text{ V}$ IIC
 $I_0/I_{sc} = 12\text{ mA}$ II B
 $P_0/P_o = 36\text{ mW}$ II A

Ordering Information:

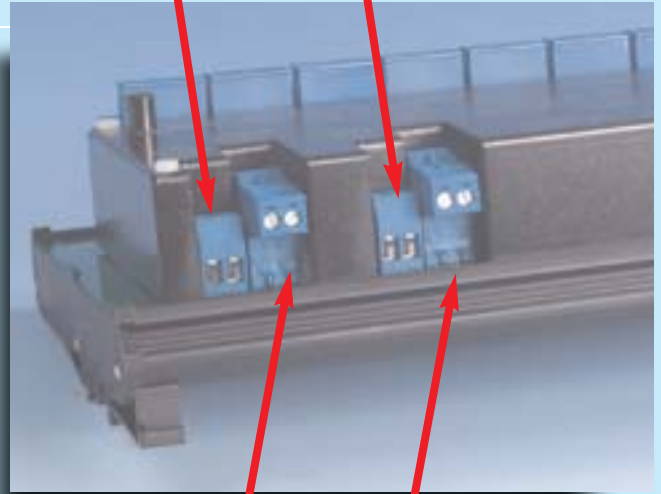
Model:	D2010M
16 channel	

NOTE for USA and Canada:

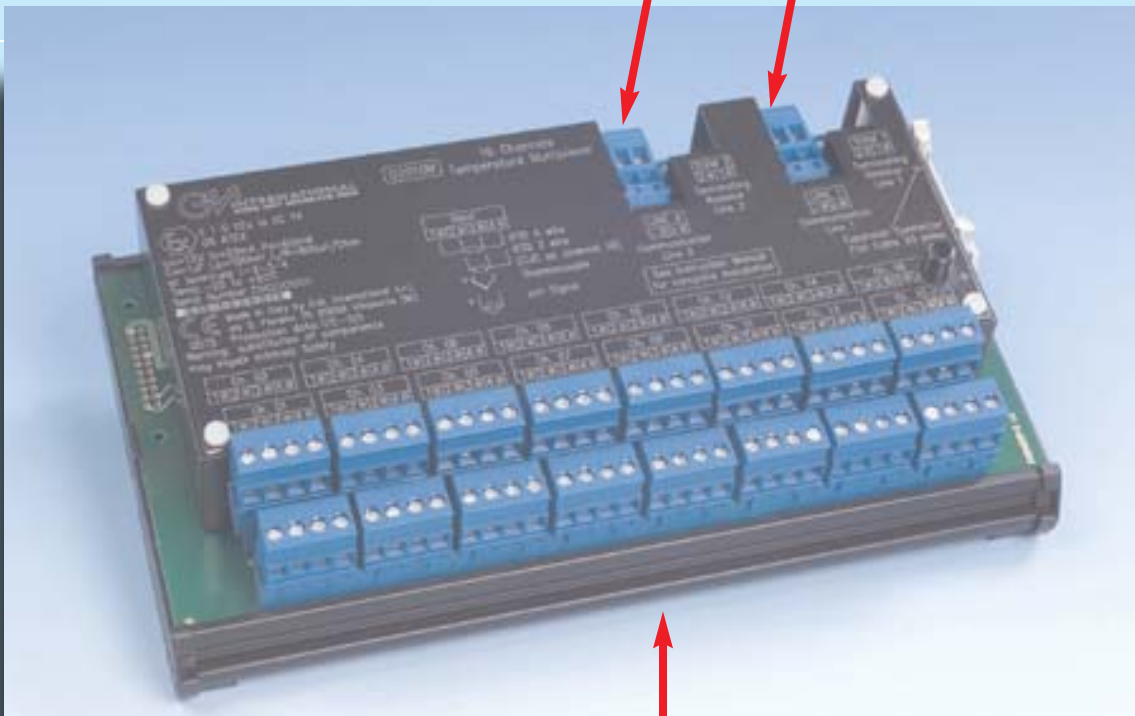
II C equal to Gas Groups A and B
 II B equal to Gas Groups C, D, E, F and G.
 II A equal to Gas Groups D, E, F and G.



Terminating Resistor Lines 1 and 2.



Communication Lines are connected to a double insertion Terminal Blocks, Plug-in type, to avoid disconnection of downstream Multiplexer units.



16 channels Input Terminal Blocks plug-in type

Parameters Table:

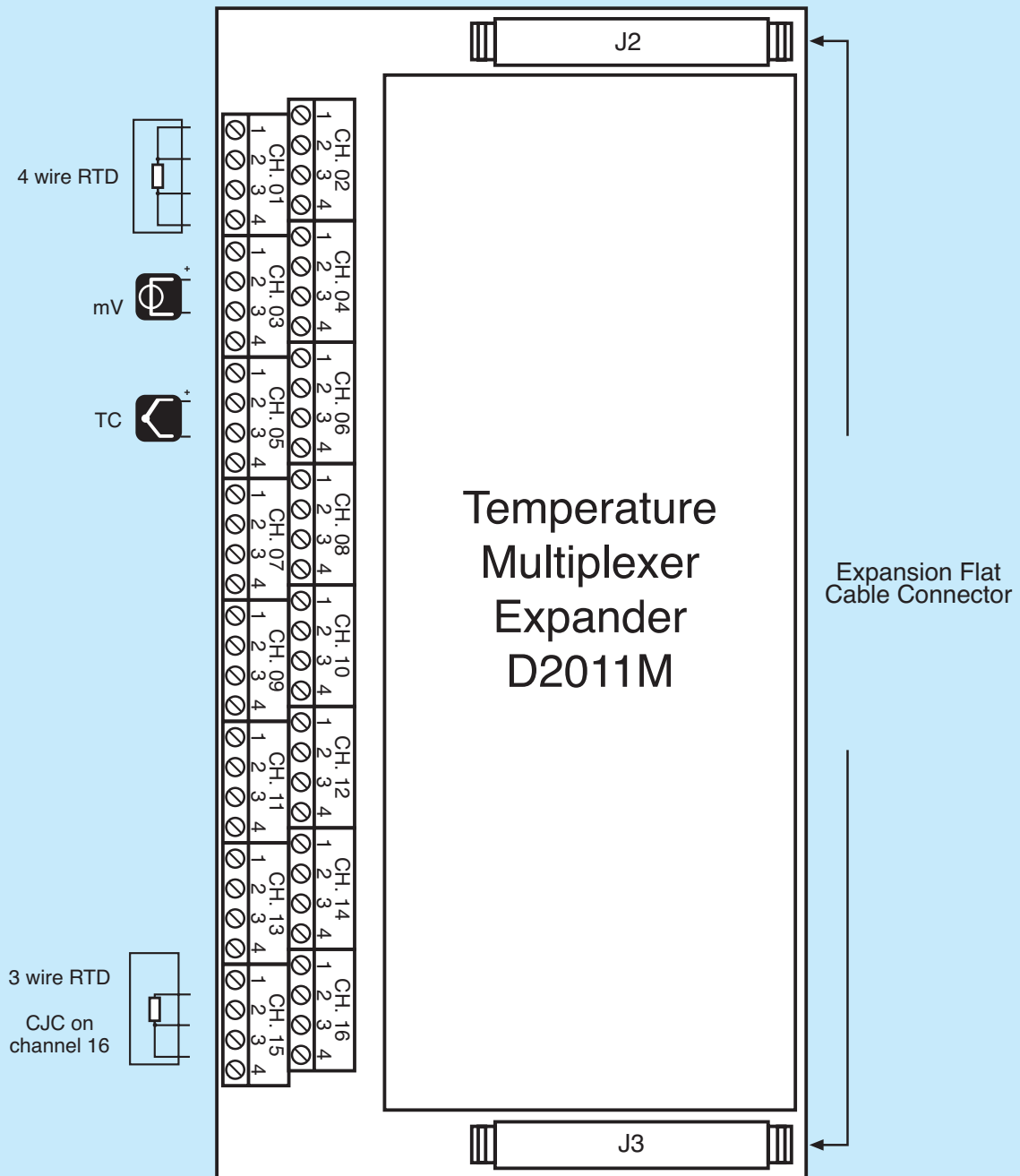
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Uo/Voc = 12 V	IIC	
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Po/Po = 36 mW	II A	

Ordering Information:

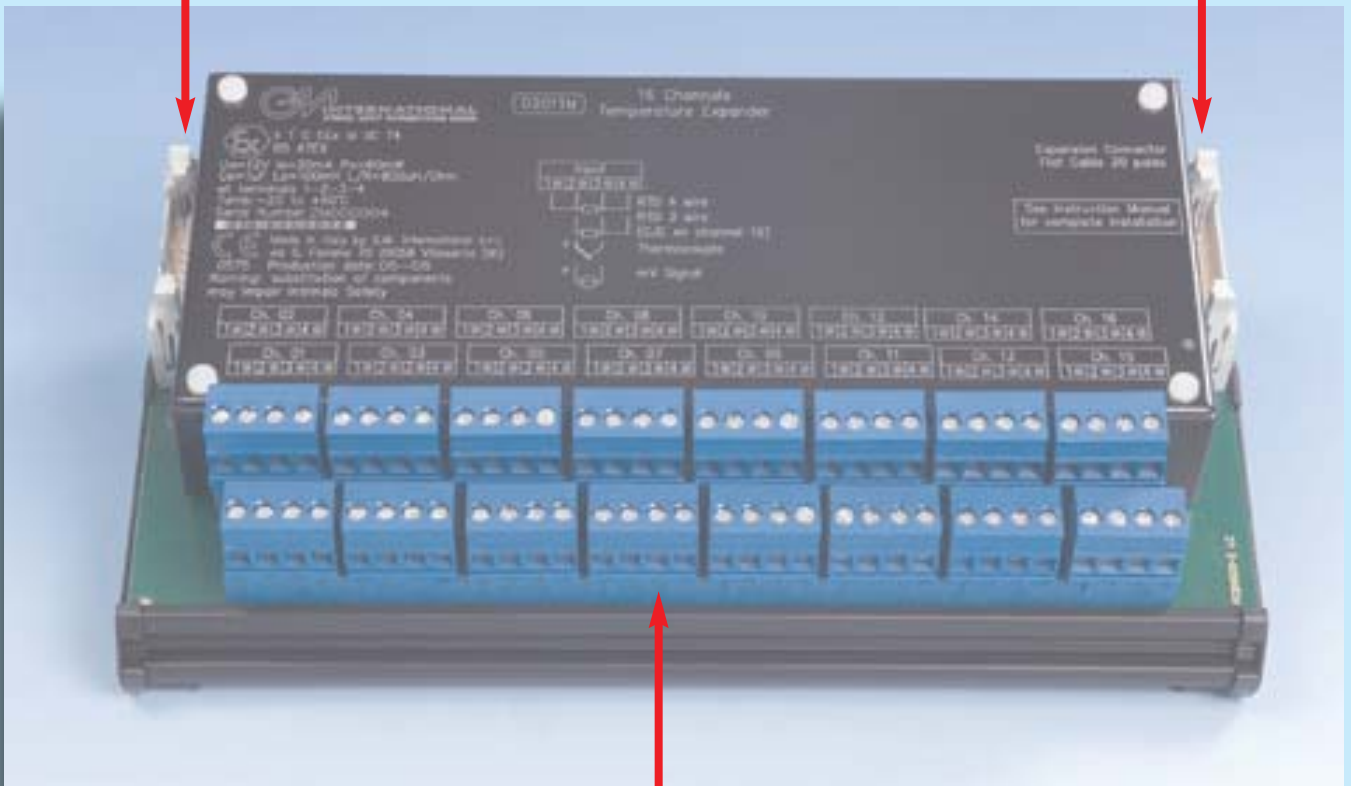
Model:	D2011M
16 channel	

NOTE for USA and Canada:

- II C equal to Gas Groups A and B
- II B equal to Gas Groups C, D, E, F and G.
- II A equal to Gas Groups D, E, F and G.



Flat Cable Connectors for Expansion



16 channels Input Terminal Blocks plug-in type