




Translation

**EC-Type Examination Certificate**

- (1)
- (2) **- Directive 94/9/EC -**  
**Equipment and protective systems intended for use**  
**in potentially explosive atmospheres**
- (3) **BVS 06 ATEX E 101 X**
- (4) **Equipment: Multiplexer System type D2000M**
- (5) **Manufacturer: GM International S.R.L.**
- (6) **Address: 20058 Villasanta (MI), Italy**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.
- (8) The certification body of EXAM BBG Prüf- und Zertifizier GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.  
The examination and test results are recorded in the test and assessment report BVS PP 06.2133 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:  
EN 50014:1997+A1-A2 General requirements EN 50284:1999 Equipment Group II Category 1G  
EN 50020:2002 Intrinsic safety 'i'  
DIN EN 60079-25:2004 IS-systems EN 60079-27:2006 Fieldbus systems  
(IEC 60079-25:2003) (IEC 60079-27:2005) (FISCO / FNICO)
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.  
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate
- (12) The marking of the equipment shall include the following:

 **II (1)G [EEx ia] IIC (power supply D2050M-\*\*\*)**  
**II (1) 2G EEx ia IIC T4 (field devices D2030M-\*\*\* / D2010M-\*\*\* / D2011M-\*\*\*)**

**EXAM BBG Prüf- und Zertifizier GmbH**

Bochum, dated 22. November 2006

Signed: Dr. Jockers

Certification body

Signed: Dr. Eickhoff

Special services unit

(13) Appendix to

(14) **EC-Type Examination Certificate**

**BVS 06 ATEX E 101 X**

(15) 15.1 Subject and type

Multiplexer System type D2000M

The multiplexer system comprises a power supply and several field devices as listed below:

Power Supply:

Number	designation / function	type
1	Power Supply - Gateway	D2050M-***

Field Devices: (total number of devices 4)

Number	designation / function	type
up to 4	32 channel Digital Input Front End	D2030M-***
up to 4	16 channel Analogue Input Front End	D2010M-***
	each optionally combined with up to 3	
	16 channel Analogue Input Expander	D2011M-***

In the full designation the "\*\*\*" are replaced by numbers / letters indicating details of function not relevant to Ex.

15.2 Description

Power Supply - Gateway type D2050M-\*\*\* provide dual channel two wire intrinsically safe power supply for fieldbus apparatus according to FISCO Model and bi-directional transmission of fieldbus data signals between non intrinsically safe and intrinsically safe fieldbus circuits.

Electronic components of the power supply are arranged on a printed-circuit-board (PCB) packaged in the bottom part of a plastic enclosure suitable for installation on T35 DIN Rails. The PCBs are protected by means of a metallic cover.

Terminals for the intrinsically safe fieldbus supply and signal circuits and for the non intrinsically safe circuits are arranged on the front side of the enclosure.

Power Supply - Gateway type D2050M-\*\*\* provide safe galvanic separation between intrinsically safe fieldbus supply and signal circuits and non intrinsically safe fieldbus signal circuits and power supply on the PCB up to a sum of peak values of rated voltages of 375 V.

The Power Supply - Gateway type D2050M-\*\*\* is designated for installation in the safe area or optionally in the hazardous area (apparatus category 2G), mounted in an enclosure providing a suitable type of explosion protection.

The 32 Channel Digital Input type D2030M-\*\*\*, the 16 Channel Analogue Input type D2010M-\*\*\* or the 16 Channel Analogue Input Expander type D2011M-\*\*\* consist of a plastic enclosure suitable for installation on DIN Rails providing electronic components mounted on printed-circuit-boards (PCB).

Terminals for the intrinsically safe circuits (supply + communication and measuring circuits) are arranged on the front side of the enclosure.

Control- and display facilities (LEDs and configuration jumpers) are arranged on the front panel.

Different IS circuits are galvanically separated from each other or interconnected according to the following table.

Apparatus	galvanic separation between		
	supply + communication line 1 and line 2	measuring circuits and supply + communication	measuring circuits from each other
D2030M-***	yes	yes	no
D2010M-***	yes	yes	no
D2011M-***	yes)*	yes	no

)\* interconnected to D2010M-\*\*\*; D2011M-\*\*\* supplied by D2010M-\*\*\*

### 15.3 Parameters

#### 15.3.1 Power Supply-Gateway Type D2050M-\*\*\*

##### 15.3.1.1 Non intrinsically safe circuits

Parameters		Power supply	input / output signal circuits
Voltage	$U_n$	DC 24 V (20 - 30 V)	
	$U_m$	AC 250 V	AC 250 V
Power consumption	$P_n$	8.5 W	
Terminals		M4	M2, M3, J3, J4

##### 15.3.1.2 Intrinsically safe supply- and fieldbus circuits type of protection EEx ia IIC

Parameters	Line 1	Line 2
Voltage $U_o$	DC 15 V	DC 15 V
Current $I_o$	210 mA	210 mA
Supply current at 15 V	116 mA	116 mA
Power $P_o$	1736 mW	1736 mW
Current limiting resistor	163 $\Omega$	163 $\Omega$
Characteristics	trapezoidal	
maximum cable length	see 15.3.3	see 15.3.3
Terminals	M1A	M1B

##### 15.3.1.3 Ambient temperature range $-40\text{ }^{\circ}\text{C} \leq T_a \leq 60\text{ }^{\circ}\text{C}$

#### 15.3.2 Intrinsically safe field devices

##### 15.3.2.1 Power supply

Parameters	D2010M-***, D2010M-*** + D2011M-***, D2030M-***	
	Line 1	Line 2
Voltage $U_i$	DC 15 V	DC 15 V
Current $I_i$	215 mA	215 mA
Power $P_i$	1755 mW	1755 mW
Terminals	M10A	M10B
Terminator	1.2 $\mu\text{F}$ + 100 $\Omega$	1.2 $\mu\text{F}$ + 100 $\Omega$
Terminals	M9A	M9B

## 15.3.2.2 Measuring circuits

Parameters	D2010M-*** + D2011M-***		D2030M-***	
	Channel 1 - 64 ) <sup>1</sup>		Channel 1- 32	
Voltage $U_o$	DC 10,7 V		DC 10,7 V	
Current $I_o$	7 mA		14 mA	
Power $P_o$	19 mW		38 mW	
max. external capacitance $C_o$	IIC	2.23 $\mu$ F	IIC	2.23 $\mu$ F
	IIB	15.6 $\mu$ F	IIB	15.6 $\mu$ F
	IIA	69 $\mu$ F	IIA	69 $\mu$ F
max. external inductance $L_o$	IIC	725 mH	IIC	181 mH
	IIB	2902 mH	IIB	725 mH
	IIA	5804 mH	IIA	1451 mH
max. inductance / resistance ratio $L_o/R_o$	IIC	1.888 mH/ $\Omega$	IIC	946.5 $\mu$ H/ $\Omega$
	IIB	7.552 mH/ $\Omega$	IIB	3.786 mH/ $\Omega$
	IIA	15.105 mH/ $\Omega$	IIA	7.572 mH/ $\Omega$
Characteristics	linear			
Terminals	M1 to M8		M1 to M8	
) <sup>1</sup> channel 1 - 16 D2010M-*** stand alone; channel 17 - 32 first D2011M-*** expander; channel 33 - 48 second D2011M-*** expander; channel 49 - 64 third D2011M-*** expander				

 15.3.2.3 Ambient temperature range  $-40\text{ }^{\circ}\text{C} \leq T_a \leq 60\text{ }^{\circ}\text{C}$ 

## 15.3.3 Maximum cable length

for interconnection cable between Power Supply - Gateway type D2050M-\*\*\* and Field Devices type D2030M-\*\*\* and/or type D2010M-\*\*\* the following parameters apply:

- resistance per unit length  $15\text{ }\Omega/\text{km} \leq R' \leq 150\text{ }\Omega/\text{km}$
- inductance per unit length  $0.4\text{ mH}/\text{km} \leq L' \leq 1\text{ mH}/\text{km}$
- capacitance per unit length (including screen)  $45\text{ nF}/\text{km} \leq C' \leq 200\text{ nF}/\text{km}$
- $C' = C'_{\text{wire/wire}} + 0,5 \times C'_{\text{wire/screen}}$  fieldbus-circuit insulated
- $C' = C'_{\text{wire/wire}} + C'_{\text{wire/screen}}$  screen connected to the output of the fieldbus power supply
- maximum length of each spur cable 60 m (Group IIC / IIB)
- maximum permissible cable length including length of all spur cables is 1000 m (Group IIC) or 5000 m (Group IIB) respectively.

(16) Test and assessment report  
 BVS PP 06.2133 EG as of 22.11.2006

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(17) Special conditions for safe use

- 17.1 Power Supply - Gateway type D2050M-\*\*\*
- 17.1.1 Installation in the safe area.
- 17.1.1.1 Wiring shall satisfy the conditions of clause 6.4.11 and clause 7.6.e of EN 50020:2002.
- 17.1.1.2 Clearances of uninsulated conductors of intrinsically safe circuits to grounded metal parts of the enclosure shall be at least 3 mm, and to uninsulated conductors of non-intrinsically safe circuits of other apparatus shall comply with the values given in table 4 EN 50020:2002 as a minimum.
- 17.1.1.3 Terminals or connectors for the intrinsically safe fieldbus supply and signal circuits shall be arranged according to clause 6.3.1 or 6.3.2 of EN 50020:2002 respectively.
- 17.1.2 Installation in the hazardous area requiring apparatus category 2G.
- 17.1.2.1 The Power Supply - Gateway type D2050M-\*\*\* shall be mounted in an enclosure providing a suitable type of explosion protection.
- 17.1.2.2 Mounting in an enclosure providing a suitable type of explosion protection, shall be submitted to separate assessment and/or certification procedure.
- 17.1.3 For interconnection cable between Power Supply - Gateway type D2050M-\*\*\* and Field Devices type D2030M-\*\*\* and/or type D2010M-\*\*\* the parameters in 15.3.3 apply.
- 17.2 Intrinsically safe apparatus type D2030M-\*\*\* / D2010M-\*\*\* / D2011M-\*\*\*;  
The backplane of the field devices type D2030M-\*\*\* / D2010M-\*\*\* / D2011M-\*\*\* shall be protected against electrostatic charge by means of suitable installation on DIN rails.

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We confirm the correctness of the translation from the German original.  
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 22.11.2006  
BVS-Scha/Mi A 20060182

**EXAM BBG Prüf- und Zertifizier GmbH**



\_\_\_\_\_  
Certification body



\_\_\_\_\_  
Special services unit