



## 88970119-GSM



- ✓ For remote control of your application
- ✓ Automatic notification of alarms via SMS (GSM Modem) / email or on a PC with M3 ALARM software.
- ✓ Millenium 3 program can be downloaded, modified and sent
- ✓ Input and output states, as well as all program values, can be polled and controlled remotely
- ✓ 2 types of pre-configured ready-to-use modem:
  - STN modem for wired transmission networks
  - GSM modem for wireless communication

### General environment characteristics for CB, CD, XD, XB, XR and XE product types

Certifications	UL, CSA GL: except for 88 970 32x (pending)
Conformity with the low voltage directive	In accordance with 73/23/EEC: EN (IEC) 61131-2 (Open equipment)
Conformity with the EMC directive	In accordance with 89/336/EEC: EN (IEC) 61131-2 (Zone B) EN (IEC) 61000-6-2, EN (IEC) 61000-6-3 (*) EN (IEC) 61000-6-4 (*) Except configuration (88 970 1.1 or 88 970 1.2) + (88 970 250 or 88 970 270) + 88 970 241 class A (class B: using in metallic cabinet)
Earthing	None
Protection rating	In accordance with IEC/EN 60529: IP40 on front panel IP20 on terminal block
Overvoltage category	3 in accordance with IEC/EN 60664-1
Pollution	Degree: 2 in accordance with IEC/EN 61131-2
Maximum utilisation altitude	Operation: 2000 m Transport: 3,048 m
Mechanical resistance	Immunity to vibrations IEC/EN 60068-2-6, Fc test Immunity to shock IEC/EN 60068-2-27, Fa test
Resistance to electrostatic discharge	Immunity to ESD IEC/EN 61000-4-2, level 3
Resistance to HF interference	Immunity to radiated electrostatic fields IEC/EN 61000-4-3, Immunity to fast transients (burst immunity) IEC/EN 61000-4-4, level 3 Immunity to shock waves IEC/EN 61000-4-5 Radio frequency in common mode IEC/EN 61000-4-6, level 3 Voltage dips and breaks (AC) IEC/EN 61000-4-11 Immunity to damped oscillatory waves IEC/EN 61000-4-12
Conducted and radiated emissions	Class B (*) in accordance with EN 55022/11 group 1 (*) Except configuration (88 970 1.1 or 88 970 1.2) + (88 970 250 or 88 970 270) + 88 970 241 class A (class B in metallic cabinet)
Operating temperature	-20 → +55°C (+40°C in a non-ventilated enclosure) in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2
Storage temperature	-40 → +70°C in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2
Relative humidity	95% max. (no condensation or dripping water) in accordance with IEC/EN 60068-2-30
Mounting	On symmetrical DIN profile, 35 x 7.5 mm and 35 mm x 15 or panel (2 x 4 mm Ø)
Screw terminals connection capacity	Flexible wire with ferrule = 1 conductor: 0.25 to 2.5 mm <sup>2</sup> (AWG 24...AWG 14) 2 conductors 0.25 to 0.75 mm <sup>2</sup> (AWG 24...AWG 18) Semi-rigid wire = 1 conductor: 0.2 to 2.5 mm <sup>2</sup> (AWG 25...AWG 14) Rigid wire = 1 conductor: 0.2 to 2.5 mm <sup>2</sup> (AWG 25...AWG 14) 2 conductors 0.2 to 1.5 mm <sup>2</sup> (AWG 25...AWG 16) Tightening torque = 0.5 N.m (4.5 lb-in) (tighten using screwdriver diam. 3.5 mm)

### Characteristics of the communication Modem system

<b>General characteristics</b>	
	See page 22, except:
Certifications	UL, CSA
<b>Supply</b>	
Nominal voltage (V)	12 → 24 V DC
Operating limits	-13% / + 20% or 10 → 28,8 V DC
Ripple	5% max.
Nominal current under 12 V DC	30 mA

Nominal current under 24 V DC	30 mA
Peak current on energisation	550 mA
Max. absorbed power	1,1 W
Immunity from micro power cuts	1 ms, repetition 20 times
Protection against polarity inversions	Yes
Fuse protection	1 A fuse

#### Characteristics of the "COM-M3" link with the controller

Type of connector	Specific Millenium
Type of link	Specific Millenium communication protocol
Compatibility	Only with Millenium controllers version $\geq$ V2.1
Isolation of "Com-M3" connector from the "Com-M" connector	Via optocoupler AC 1780 V
Isolation of "Com-M3" connector from the $\pm$ supply terminals	Via optocoupler AC 1780 V

#### Characteristics of "Com-M" link with the Modem

Type of connector	Specific Millenium
Type of link with Modem connector cable	RS 232 serial (supplied with the communication interface)
Compatibility	Only with Millenium controllers version $\geq$ V2.1
Analogue RTC modem compatibility	AT commands
GSM modem compatibility	AT commands
Isolation of "Com-M" connector from the Modem	Via link cable to Modem (supplied)
Isolation of "Com-M" connector from the $\pm$ supply terminals	Via link cable to Modem (supplied)

#### Data characteristics

Data saved by the interface	Up to 28 messages 1 to 10 recipients (telephone numbers and/or e-mail addresses) per message Time-stamping of messages to be sent (date and time) Saving of values on triggering of the message activation condition (digital and numerical values)
Backup of data to be sent	Flash memory

#### Comments

	88970117: supplied with connecting cable between M3MOD and Modem (Millenium 3 connector to sub DB9) 88970118: supplied with configuration CD-ROM and telephone cable 88970119: supplied with an antenna, a power cable, and DIN Rail mounting kit
--	---

#### Processing characteristics of CB, CD, XD & XB product types

LCD display	CD, XD: Display with 4 lines of 18 characters
Programming method	Ladder or function blocks/SFC (Grafset)
Program size	Ladder: 120 lines Function blocks: CB, CD: typically 350 blocks XB, XD: typically 700 blocks
Program memory	Flash EEPROM
Removable memory	EEPROM
Data memory	368 bits/200 words
Back-up time in the event of power failure	Program and settings in the controller: 10 years Program and settings in the plug-in memory: 10 years Data memory: 10 years
Cycle time	Ladder: typically 20 ms Function blocks: 6 $\rightarrow$ 90 ms
Response time	Input acquisition time + 1 to 2 cycle times
Clock data retention	10 years (lithium battery) at 25°C
Clock drift	Drift < 12 min/year (at 25°C) 6 s/month (at 25°C with user-definable correction of drift)
Timer block accuracy	1% $\pm$ 2 cycle times
Start up time on power up	< 1,2 s

#### Characteristics of products with AC power supplied

<b>Supply</b>	
Nominal voltage	24 V AC
Operating limits	-15% / +20% or 20.4 VAC $\rightarrow$ 28.8 VAC
Supply frequency range	50/60 Hz (+4% / -6%) or 47 $\rightarrow$ 53 Hz / 57 < 63 Hz
Immunity from micro power cuts	10 ms (repetition 20 times)
Max. absorbed power	CB12-CD12-XD10-XB10: 4 VA CB20-CD20: 6 VA XD10 with extension - XD26-XB26: 7.5 VA XD26-XB26 with extension: 10 VA
Isolation voltage	1780 V AC
<b>Inputs</b>	
Input voltage	24 V AC (-15% / +20%)
Input current	4,4 mA @ 20,4 V AC 5,2 mA @ 24,0 V AC 6,3 mA @ 28,8 V AC
Input impedance	4.6 k $\Omega$
Logic 1 voltage threshold	$\geq$ 14 V AC
Making current at logic state 1	>2 mA
Logic 0 voltage threshold	$\leq$ 5 V AC
Release current at logic state 0	<0,5 mA
Response time with LADDER programming	50 ms State 0 $\rightarrow$ 1 (50/60 Hz)

Response time with function blocks programming	Configurable in increments of 10 ms 50 ms min. up to 255 ms State 0 →1 (50/60 Hz)
Maximum counting frequency	In accordance with cycle time (Tc) and input response time (Tr) : $1 / ((2 \times Tc) + Tr)$
Sensor type	Contact or 3-wire PNP
Input type	Resistive
Isolation between power supply and inputs	None
Isolation between inputs	None
Protection against polarity inversions	Yes
Status indicator	On LCD screen for CD and XD

#### Characteristics of relay outputs common to the entire range

Max. breaking voltage	5 →30 V DC 24 →250 V AC
Breaking current	CB-CD-XB10-XD10-XR06-XR10: 8 A XD26-XB26: 8 x 8 A relays, 2 x 5 A relays XE10: 4 x 5 A relays XR14: 4 x 8 A relays, 2 x 5 A relays
Electrical durability for 500 000 operating cycles	Usage category DC-12: 24 V, 1.5 A Usage category DC-13: 24 V (L/R = 10 ms), 0.6 A Usage category AC-12: 230 V, 1.5 A Usage category AC-15: 230 V, 0.9 A
Max. Output Common Current	12A for O8,O9,OA
Minimum switching capacity	10 mA (at minimum voltage of 12 V)
Minimum load	12 V, 10 mA
Maximum rate	Off load: 10 Hz At operating current: 0.1 Hz
Mechanical life	10,000,000 operations (cycles)
Voltage for withstanding shocks	In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV
Response time	Make 10 ms Release 5 ms
Built-in protections	Against short-circuits: None Against overvoltages and overloads: None
Status indicator	On LCD screen for CD and XD

#### Characteristics of product with DC power supplied

##### Supply

Nominal voltage	12 V DC
Operating limits	-13% / +20% or 10.4 V DC < 14.4 V DC (including ripple)
Immunity from micro power cuts	≤ 1 ms (repetition 20 times)
Max. absorbed power	CB12 with solid state outputs: 1.5 W CD12: 1.5 W CD20: 2.5 W XD26-XB26: 3 W XD26-XB26 with extension: 5 W XD26 with solid state outputs: 2.5 W
Protection against polarity inversions	Yes

##### Digital inputs (I1 to IA and IH to IY)

Input voltage	12 V DC (-13% / +20%)
Input current	3,9 mA @ 10,44 V DC 4,4 mA @ 12,0 V DC 5,3 mA @ 14,4 VDC
Input impedance	2.7 kΩ
Logic 1 voltage threshold	≥ 7 V DC
Making current at logic state 1	≥2 mA
Logic 0 voltage threshold	≤ 3 V DC
Release current at logic state 0	<0.9 mA
Response time	1 →2 cycle times
Maximum counting frequency	I1 & I2: Ladder (1 kHz) & FBD (Up to 6 kHz) I3 to IA & IH to IY: in accordance with cycle time (Tc) and input response time (Tr) : $1 / ((2 \times Tc) + Tr)$
Sensor type	Contact or 3-wire PNP
Conforming to IEC/EN 61131-2	Type 1
Input type	Resistive
Isolation between power supply and inputs	None
Isolation between inputs	None
Protection against polarity inversions	Yes
Status indicator	On LCD screen for CD and XD

##### Analogue or digital inputs (IB to IG)

CB12-CD12-XD10-XB10	4 inputs IB →IE
CB20-CD20-XB26-XD26	6 inputs IB →IG

##### Inputs used as analogue inputs

Measurement range	(0 →10 V) or (0 →V power supply)
Input impedance	14 kΩ
Input voltage	14.4 V DC max
Value of LSB	14 mV, 4 mA
Input type	Common mode
Resolution	10 bit at maximum input voltage
Conversion time	Controller cycle time
Accuracy at 25°C	± 5%

Accuracy at 55°C	± 6.2%
Repeat accuracy at 55 °C	± 2%
Isolation between analogue channel and power supply	None
Cable length	10 m maximum, with shielded cable (sensor not isolated)
Protection against polarity inversions	Yes
Potentiometer control	2.2 kΩ/0.5 W (recommended) 10 kΩ max.

#### Inputs used as digital inputs

Input voltage	12 V DC (-13% / +20%)
Input current	0,7 mA @ 10,44 VDC 0,9 mA @ 12,0 VDC 1,0 mA @ 14,4VDC
Input impedance	14 kΩ
Logic 1 voltage threshold	≥ 7 V DC
Making current at logic state 1	≥0,5 mA
Logic 0 voltage threshold	≤ 3 V DC
Release current at logic state 0	≤0,2 mA
Response time	1 →2 cycle times
Maximum counting frequency	In accordance with cycle time (Tc) and input response time (Tr) : 1/ ( (2 x Tc) + Tr)
Sensor type	Contact or 3-wire PNP
Conforming to IEC/EN 61131-2	Type 1
Input type	Resistive
Isolation between power supply and inputs	None
Isolation between inputs	None
Protection against polarity inversions	Yes
Status indicator	On LCD screen for CD and XD

#### Characteristics of relay outputs common to the entire range

Max. breaking voltage	5 →30 V DC 24 →250 V AC
Max. Output Common Current	12A for O8,O9,OA
Breaking current	CB-CD-XD10-XB10-XR06-XR10: 8 A XD26-XB26: 8 x 8 A relays, 2 x 5 A relays XE10: 4 x 5 A relays XR14: 4 x 8 A relays, 2 x 5 A relays
Electrical durability for 500 000 operating cycles	Usage category DC-12: 24 V, 1.5 A Usage category DC-13: 24 V (L/R = 10 ms), 0.6 A Usage category AC-12: 230 V, 1.5 A Usage category AC-15: 230 V, 0.9 A
Minimum switching capacity	10 mA (at minimum voltage of 12 V)
Minimum load	12 V, 10 mA
Maximum rate	Off load: 10 Hz At operating current: 0.1 Hz
Mechanical life	10,000,000 operations (cycles)
Voltage for withstanding shocks	In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV
Response time	Make 10 ms Release 5 ms
Built-in protections	Against short-circuits: None Against overvoltages and overloads: None
Status indicator	On LCD screen for CD and XD

#### Digital / PWM solid state output

PWM solid state output*	CB12: O4 XD26: O4 →O7 * Only available with "FBD" programming language
Breaking voltage	10.4 →30 VDC
Nominal voltage	12-24 V DC
Nominal current	0.5 A
Max. breaking current	0,625 A
Voltage drop	≤ 2 V for I = 0.5 A (at state 1)
Response time	Make ≤ 1 ms Release ≤ 1 ms
Built-in protections	Against overloads and short-circuits: Yes Against overvoltages (*) : Yes Against inversions of power supply: Yes (*) In the absence of a volt-free contact between the output of the logic controller and the load
Min. load	1 mA
Maximum incandescent load	0,2 A / 12 V DC 0,1 A / 24 V DC
Galvanic isolation	No
PWM frequency	14.11 Hz 56.45 Hz 112.90 Hz 225.80 Hz 451.59 Hz 1806.37 Hz
PWM cyclic ratio	0 →100% (256 steps for CD, XD and 1024 for XA)
PWM accuracy at 120 Hz	< 5% (20% →80%) load at 10 mA
PWM accuracy at 500 Hz	< 10% (20% →80%) load at 10 mA
Status indicator	On LCD screen for XD

Type	Description	Code
------	-------------	------

PA  
M3 ALARM

1,80 m serial link cable: DB9/DB9  
Alarm management software (CD-ROM)

88970123  
88970116

:

:

:

:

:

:
