CROUZET AUTOMATION

Modem communication plug and play solutions STN Part number 88970118

- 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

Part numbers

	Type	Description	Supply
88970118	STN	STN modem	12-24 V DC

Specifications

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

Certifications	CE, UL, CSA, GL
Conformity to standards (with the low voltage directive and EMC directive)	IEC/EN 61131-2 (Open equipment) IEC/EN 61131-2 (Zone B) IEC/EN 61000-6-2, IEC/EN 61000-6-3 (*) IEC/EN 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 in a metal enclosure)
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
Max operating 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, EN 55011 (CISPR22, CISPR11) 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^2 (AWG 24...AWG 14) 2 conductors 0.25 to 0.75 mm^2 (AWG 24...AWG 18) Semi-rigid wire = 1 conductor : 0.2 to 2.5 mm^2 (AWG 25...AWG 14) Rigid wire = 1 conductor : 0.2 to 2.5 mm^2 (AWG 25...AWG 14) 2 conductors 0.2 to 1.5 mm^2 (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

General characteristics	88970117	88970118	88970119
Certifications	CE, UL, CSA	CE, UL, CSA	CE, R&TTE, UL, CSA, FCC, IC
Supply			
Nominal voltage (V)	12 →24 V DC	12 →24 V DC	12 →24 V DC

Unless otherwise specified, the characteristics given are applicable to all or part of the product range selected

Operating limits	-13 % / +20 % or 10 →28,8 V DC	-13 % / +5 % or 10 →30 V DC	-54 % / +33 % or 5,5 →32 V DC
Ripple	5 % max.	-	-
Nominal current under 12 V DC	30 mA	140 mA	165 mA
Nominal current under 24 V DC	30 mA	70 mA	87 mA
Peak current on energisation	550 mA	9600 mA	2100 mA at 5.5 V
Max. absorbed power	1,1 W	1,7 W	2,1 W
Immunity from micro power cuts	1 ms, repetition 20 times	-	-
Protection against polarity inversions	Yes	No	No
Fuse protection	1 A fuse	-	Supplied with fuse 2.5 A
Temperature Use (°C)	-20 →+55 °C	-30 →+70 °C	-20 →+55 °C
Storage temperature (°C)	-40 →+70 °C	-40 →+85 °C	-25 →+70 °C
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 ≥ V2.1		
Isolation of "Com-M3" connector from the "Com-M" connector	Via optocoupler AC 1780 V		
Isolation of "Com-M3" connector from the ± 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 ≥ 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 ± 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 configuaration 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	Function blocks / SCF (Grafcet) or Ladder		
Program size	For CB, CD : 4 Ko : 64 macros max. 256 blocks max. per macro 180 typical blocks For XB, XD : 8 Ko : 64 macro max. 256 blocks max. per macro 350 typical blocks Or for CB, CD, XB, XD : 120 lines in Ladder		
Program memory	Flash EEPROM		
Removable memory	EEPROM		
Data memory	368 bit/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	Function blocks : 6 →90 ms (typically 20 ms) Ladder : typically 20 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 % ± 2 cycle times		
Start up time on power up	< 1,2 s		

Characteristics of products with AC power supplied

Supply	24 V AC (88970..4)	100 →240 V AC (88970..3)
Nominal voltage	24 V AC	100 →240 V AC
Operating limits	-15 % / +20 % or 20.4 VAC→28.8 VAC	-15 % / +10 % or 85 VAC→264 VAC
Supply frequency range	50/60 Hz (+4 % / -6 %) or 47→53 Hz/57 < 63 Hz	50/60 Hz (+4 % / -6 %) or 47 →53 Hz/57 < 63 Hz
Immunity from micro power cuts	10 ms (repetition 20 times)	10 ms (repetition 20 times)
Max. absorbed power	CB12-CD12-XD10-XB10 : 4 VA CB20-CD20 : 6 VA XD10-XB10 with extension : 7,5 VA XD26-XB26 : 7.5 VA	CB12-CD12-XD10-XB10 : 7 VA CB20-CD20 : 11 VA XD10-XB10 with extension : 12 VA XD26-XB26 : 12 VA

Unless otherwise specified, the characteristics given are applicable to all or part of the product range selected

	XD26-XB26 with extension : 10 VA	XD26-XB26 with extension : 17 VA
Isolation voltage	1780 V AC	1780 V AC
Inputs	24 V AC (88970..4)	100 →240 V AC (88970..3)
Input voltage	24 V AC (-15 % / +20 %)	100 →240 V AC (-15 % / +10 %)
Input current	4,4 mA @ 20,4 V AC 5,2 mA @ 24,0 V AC 6,3 mA @ 28,8 V AC	0,24 mA @ 85 V AC 0,75 mA @ 264 V AC
Input impedance	4.6 kΩ	350 kΩ
Logic 1 voltage threshold	≥ 14 V AC	≥ 79 V AC
Making current at logic state 1	>2 mA	>0.17 mA
Logic 0 voltage threshold	≤ 5 V AC	≤ 20 V AC (≤ 28 V AC : XE10, XR06, XR10, XR14)
Release current at logic state 0	<0.5 mA	<0.5 mA
Response time with LADDER programming	50 ms State 0 →1 (50/60 Hz)	50 ms State 0 < 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)	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 x Tc) + Tr)	In accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)
Sensor type	Contact or 3-wire PNP	Contact or 3-wire PNP
Input type	Resistive	Resistive
Isolation between power supply and inputs	None	None
Isolation between inputs	None	None
Protection against polarity inversions	Yes	Yes
Status indicator	On LCD screen for CD and XD	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
Off-cycle 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	12 V DC (88970..5 & 8970814 & 88970840)	24 V DC (88970..1 et 88970..2)
Nominal voltage	12 V DC	24 V DC
Operating limits	-13 % / +20 % or 10.4 V DC < 14.4 V DC (including ripple)	-20 % / +25 % or 19.2 V DC < 30 V DC (including ripple)
Immunity from micro power cuts	≤ 1 ms (repetition 20 times)	≤ 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	CB12-CD12-CD20 with solid state outputs - XD10-XB10 with solid state outputs : 3 W XD10-XB10 with relay outputs : 4 W XD26-XB26 with solid state outputs : 5 W CB20-CD20 with relay outputs : 6 W XD26 with relay outputs : 6 W XD10-XB10 with extension : 8 W XD26-XB26 with extension : 10 W
Protection against polarity inversions	Yes	Yes

Digital inputs (I1 to IA and IH to IY)	12 V DC (88970..5 & 88970814 & 88970840)	24 V DC (88970..1 and 88970..2)
Input voltage	12 V DC (-13 % / +20 %)	24 V DC (-20 % / +25 %)
Input current	3,9 mA @ 10,44 V DC 4,4 mA @ 12,0 V DC 5,3 mA @ 14,4 VDC	2,6 mA @ 19,2 V DC 3,2 mA @ 24 V DC 4,0 mA @ 30,0 VDC
Input impedance	2.7 kΩ	7.4 kΩ
Logic 1 voltage threshold	≥ 7 V DC	≥ 15 V DC
Making current at logic state 1	≥2 mA	≥2.2 mA
Logic 0 voltage threshold	≤ 3 V DC	≤ 5 V DC
Release current at logic state 0	<0.9 mA	<0.75 mA
Response time	1 →2 cycle times + 6 ms	1 →2 cycle times + 6 ms
Maximum counting frequency	I1 & I2 : FBD (Up to 6 k Hz) & Ladder (1 k Hz) I3 to IA & IH to IY : in accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)	I1 & I2 : FBD (Up to 6 k Hz) & Ladder (1 k Hz) I3 to IA & IH to IY : in accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)
Sensor type	Contact or 3-wire PNP	Contact or 3-wire PNP
Conforming to IEC/EN 61131-2	Type 1	Type 1

Unless otherwise specified, the characteristics given are applicable to all or part of the product range selected

Input type	Resistive	Resistive
Isolation between power supply and inputs	None	None
Isolation between inputs	None	None
Protection against polarity inversions	Yes	Yes
Status indicator	On LCD screen for CD and XD	On LCD screen for CD and XD
Analogue or digital inputs (IB to IG)	12 V DC (88970..5 & 88970814 & 88970840)	24 V DC (88970..1 and 88970..2)
CB12-CD12-XD10-XB10	4 inputs IB →IE	4 inputs IB →IE
CB20-CD20-XB26-XD26	6 inputs IB →IG	6 inputs IB →IG
Inputs used as analogue inputsonly in FBD		
Measurement range	(0 →10 V) or (0 →V power supply)	(0 →10 V) or (0 →V power supply)
Input impedance	14 kΩ	12 kΩ
Input voltage	14.4 V DC max	30 V DC max
Value of LSB	14 mV	29 mV
Input type	Common mode	Common mode
Resolution	10 bit at maximum input voltage	10 bit at maximum input voltage
Conversion time	Controller cycle time	Controller cycle time
Accuracy at 25 °C	± 5 %	± 5 %
Accuracy at 55 °C	± 6.2 %	± 6.2 %
Repeat accuracy at 55 °C	± 2 %	± 2 %
Isolation between analogue channel and power supply	None	None
Cable length	10 m maximum, with shielded cable (sensor not isolated)	10 m maximum, with shielded cable (sensor not isolated)
Protection against polarity inversions	Yes	Yes
Potentiometer control	2.2 kΩ/0.5 W (recommended) 10 kΩ max.	2.2 kΩ/0.5 W (recommended) 10 kΩ max.
Inputs used as digital inputs		
Input voltage	12 V DC (-13 % / +20 %)	24 V DC (-20 % / +25 %)
Input current	0,7 mA @ 10,44 VDC 0,9 mA @ 12,0 VDC 1,0 mA @ 14,4VDC	1,6 mA @ 19,2 VDC 2,0 mA @ 24,0 V DC 2,5 mA @ 30,0 VDC
Input impedance	14 kΩ	12 kΩ
Logic 1 voltage threshold	≥ 7 V DC	≥ 15 VDC
Making current at logic state 1	≥0.5 mA	≥1.2 mA
Logic 0 voltage threshold	≤ 3 V DC	≤ 5 V DC
Release current at logic state 0	≤0.2 mA	≤0.5 mA
Response time	1 →2 cycle times	1 →2 cycle times
Maximum counting frequency in FBD	In accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)	In accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)
Sensor type	Contact or 3-wire PNP	Contact or 3-wire PNP
Conforming to IEC/EN 61131-2	Type 1	Type 1
Input type	Resistive	Resistive
Isolation between power supply and inputs	None	None
Isolation between inputs	None	None
Protection against polarity inversions	Yes	Yes
Status indicator	On LCD screen for CD and XD	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 (10A UL) 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	
Off-cycle 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	12 V DC (88970814 & 88970840)	24 V DC (88970..2)
PWM solid state output*	CB12 : O4 XD26 : O4 →O7	CD12-XD10-XB10 : O4 CD20-XD26-XB26 : O4 →O7
* Only available with "FBD" programming language	* Only available with "FBD" programming language	
Breaking voltage	10.4 →30 VDC	19.2 →30 VDC
Nominal voltage	12-24 V DC	24 V DC
Nominal current	0.5 A	0.5 A
Max. breaking current	0,625 A	0,625 A
Voltage drop	≤ 2 V for I = 0.5 A (at state 1)	≤ 2 V for I = 0.5 A (at state 1)
Response time	Make ≤ 1 ms Release ≤ 1 ms	Make ≤ 1 ms Release ≤ 1 ms

Unless otherwise specified, the characteristics given are applicable to all or part of the product range selected

Operating frequency	1 Maximum on inductive load	1 Maximum on inductive load
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	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	1 mA
Maximum incandescent load	0,2 A / 12 V DC 0,1 A / 24 V DC	0,1 A / 24 V DC
Galvanic isolation	No	No
PWM frequency	14.11 Hz 56.45 Hz 112.90 Hz 225.80 Hz 451.59 Hz 1806.37 Hz	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)	0 →100 % (256 steps for CD, XD and 1024 for XA)
PWM accuracy at 120 Hz	< 5 % (20 % →80 %) load at 10 mA	< 5 % (20 % →80 %) load at 10 mA
Max. Breaking current PWM	50 mA	50 mA
Max. cable length PWM	20 m	20 m
PWM accuracy at 500 Hz	< 10 % (20 % →80 %) load at 10 mA	< 10 % (20 % →80 %) load at 10 mA
Status indicator	On LCD screen for CD and XD	On LCD screen for CD and XD

Accessories

Type	Description	Code
PA	1.80 m serial link cable : DB9 M / DB9 F	88970123
M3 ALARM	Alarm management software (CD-ROM)	88970116

Principles

Functions available depending on the hardware architecture and/or type of SIM card

Functions	Remote station device				
	Analogue PSTN modem	GSM modem			
		Type of SIM card			
		Data	Data voice		Voice
			Data n°	Voice n°	
Send alarm/receive instructions with GSM telephone					
Send alarm/receive instructions with PC running "M3 Alarm" software (1)					
Transfer program Update firmware Monitoring (1)					
Send alarm to e-mail address					

Functions available Functions not available

Nota: *Instructions cannot be translitted by e-mail*

(1) When using a GSM Modem on the PC side, the SIM card must have a DATA number.

Dimensions (mm)

STN