- Building management

- Advertising hoardings
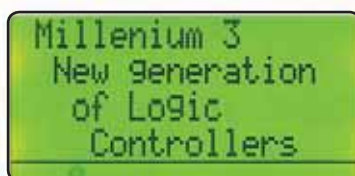
- Pump management

Millenium3

www.millenium3.crouzet.com

Millenium 3
New generation
of Logic
Controllers

Actual size

Logic for all!

3rd generation of logic controllers at the core of your industry

- **More** memory for your applications
- **More** comfort largest display on the market
- **More** modularity in the number of inputs/outputs up to 50
- **More** simplicity for programming

a company of
Schneider
Electric

Crouzet

Millenium 3

With Millenium 3...
Evolution is a logical process!

■ Software and products p. 4 to 17

■ General characteristics p. 18 to 23

■ Millenium 3 offer p. 24 to 37

■ Millenium 3 accessories p. 38 to 48

■ Millenium 3 Adapted Control p. 49 to 59

3rd generation of logic controllers at the core of your industry.

With the new Millenium 3, you can take advantage of all the most recent developments in the latest generation of logic controllers.

An innovative product, developed, industrialised and marketed by Crouzet, Millenium 3 is the successful synthesis of our expertise in automation systems acquired over a period of more than 30 years.

Crouzet, the adaptation specialist...

Crouzet develops automation components and products, both standard and customised, meeting the needs expressed by its customers in the fields of machine manufacture, system integration and equipment manufacture.

Throughout the world, Crouzet provides its customers with technical and industrial expertise to ensure seamless integration, regardless of the target device or application.

What is a logic controller used for?

The Millenium 3 logic controller can be used to automate small devices requiring between 10 and 50 I/O.

Millenium 3's logic functions can be used in numerous applications, including packing, access control, vending, irrigation, pump management and heating and air conditioning system control.

Millenium 3 is available in a compact version for simple control systems or an expandable version for enhanced performance.

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What is **a logic controller** used for?
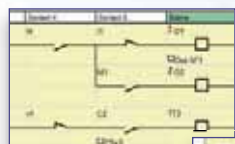
■ Ladder

■ FBD/Grafcet SFC

■ Programming software and languages:
No need to update your wiring - the program sequence can be updated in a few minutes!

■ Adaptation:
Various options for product and software adaptation...

■ Millenium 3:
Taking account of process data, processing input data and controlling equipment

■ Several communication solutions:
Wired (Modbus/Ethernet/ STN modem) and wireless (Bluetooth/GSM modem)

" In my view, a logic controller that offers **this much memory capacity and so many options in such a compact unit is ideal**. In addition, it is fully compliant with the latest RoHS directives!

Bernard, Design Office Manager

Crouzet

3

Millenium 3

More
possibilities

■ Supplying power

■ Sensing

■ Operator dialogue

■ Communicating

■ Actuating

Sensing
Millenium 3 logic controller inputs are compatible with most sensors on the market, including temperature sensors, pressure sensors, level detectors and flow sensors..

Supplying power
12 and 24 V DC voltages available.
Several power ranges from 22 to 60 W..
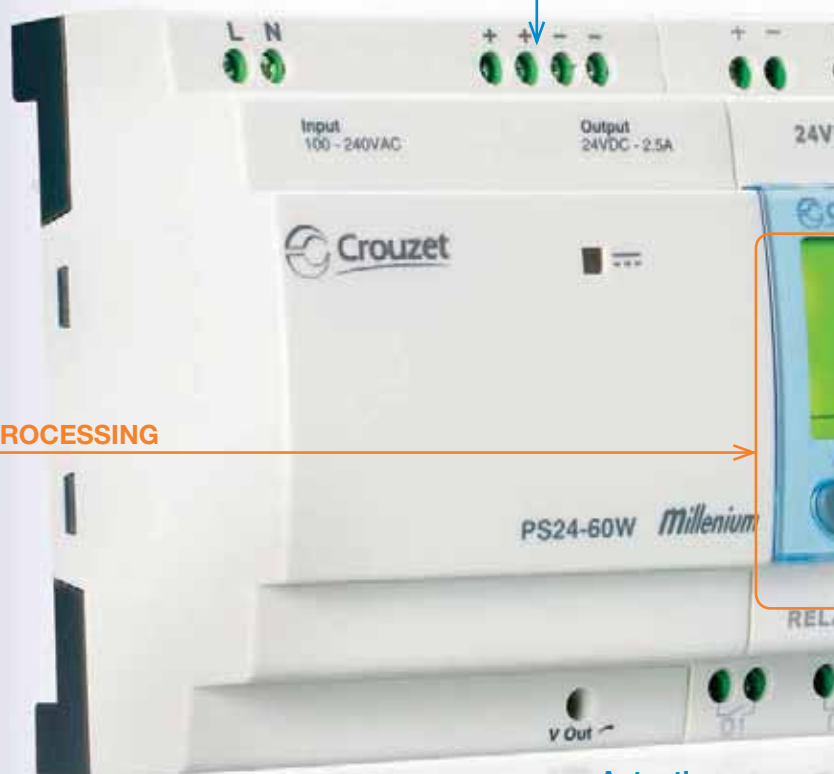
PROCESSING

Millenium 3 functions
■ **Timing:** Up to 5 types of timer

■ **Counting:** 3 types of counter

■ **Regulating:** Hysteresis cycle, PID, etc

■ **Archiving/Backup**

■ **Calculating:** Arithmetic functions

■ **Performing logic operations:** AND, OR, NAND, NOR, XOR, NOT, etc

■ **Creating sequential programs:** Cam timer, Grafcet, etc

■ **Triggering events:** Year, month, day, hour, minute, etc

Actuating
Millenium 3 can be used on devices located at the output, such as brushless motors, solenoid valves and pumps....

Operator dialogue
To make it easier for the operator during parameter setting or operation, Millenium 3 has a built-in, backlit screen.

It is equally possible to use the remote LED or LCD screen.

Crouzet

What is **a logic controller** used for?

Adjusting

There are several options for adjusting setpoints, including: an external control potentiometer on analogue inputs and internal setpoints modifiable via the display...

Converting

Analogue extensions are used to acquire current, voltage or temperature values and convert them to the digital signals needed by the logic controller.

Communicating

Millenium 3 offers the option of supervising and connecting your devices by linking the logic controllers to fieldbuses (Modbus, Ethernet) or via STN or GSM modem.

> Before, we were using specially designed cards for our machines, which meant we were limited in terms of updates. Also, the reliability really did leave something to be desired. **Now I can update the process really easily on existing installations, without redoing the wiring**. With Millenium 3, it's simply a question of changing one program!
>
> *John, Vending Machine Manufacturer*

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Millenium 3

6 steps to greater
simplicity

Example of programming in:

Ladder	FBD/Grafcet SFC

■ Creation

■ Simulation

■ Download and use

■ Supervision

■ Develop...

Two programming languages

With Millenium 3, programming mirrors how you work.

Whether you are an electrical engineer or a control systems engineer, you can select the programming language you prefer. With **Ladder** or **FBD/Grafcet** language, everything is intuitive, quick and safe.

Millenium 3 is capable of reading and converting programs created on the Millenium 2 logic controller.

For quick, simple programming, the Millenium 3 software prioritises dedicated application-specific functions such as pump switching, PID control, movement, pressure, level and flow...

All the basic functions, like counting, timing, comparison and display, are also available:

The M3 SOFT programming software incorporates foolproofing, so that when the slightest data entry error is made, it flags the incorrect item in red.

The M3 SOFT software is multilingual, offering English, French, Italian, German and Spanish.

■ Programming
You can choose between two different languages: Ladder and FBD/Grafcet.

■ Simulation
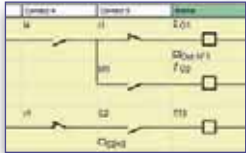You can test the result of your programming in real time.

■ Downloading
You can transfer your programs directly to the modules or remotely via local wired or wireless (Bluetooth) modem solutions.
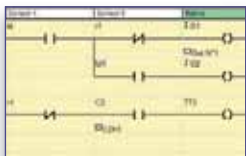
■ Supervision
You can view the status of your application, locally or remotely, thanks to the communication solutions.

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Programming **software** Overview

■ Electrical Symbols

■ Ladder Symbols

▶ **Ladder** language

The M3 SOFT CD-ROM contains all the symbols used in Ladder language. You can choose between two types of graphic representation: Ladder or electrical symbols.

■ **13 Ladder functions**

DIGITAL INPUTS
This contact represents the state of the controller input connected to a sensor (pushbutton, switch, detector, etc).

A/B BUTTONS
The A and B buttons behave exactly like physical inputs. They correspond to the grey A and B buttons on the front of the controller.

DIGITAL OUTPUTS
The digital outputs correspond to the controller output relay coils (connected to the actuators).

AUXILIARY RELAYS
The auxiliary relays, marked M, behave exactly like digital outputs, but do not have an output electrical contact. They can be used as internal variables.

TIMERS
The TIMERS function block provides access to the following functions: delaying or prolonging actions for a predefined time, management of flashing cycles, creating pulses, etc.

COUNTERS
The Counter function is used to upcount or downcount pulses.

HIGH-SPEED COUNTER
The High-speed Counter function is used to count pulses up to a frequency of 1 kHz.

COUNTER COMPARATORS
This function is used to compare the current counter value of two counters or of one counter and a constant value.

CLOCKS
The Clocks or Time Prog function is used to enable time slots during which it will be possible to execute actions.

TEXT BLOCKS
The Text automation function is used to display text and/or numerical values (current value, preset value, etc) on the LCD display rather than on the INPUTS-OUTPUTS screen.

LCD BACKLIGHTING
The screen Backlighting output is used to control the LCD display lighting via the program.

SUMMER WINTER
This function output is in the OFF state for the whole of wintertime and changes to the ON state for the whole of summertime.

MESSAGE
When activated, the Message function block can be used to:
• send alarm messages to mobile phones, to the M3 ALARM software or to e-mail addresses via the M3MOD communication interface
• provide remote access to a digital variable and/or a numerical variable, in order to read or modify them.

> " I wasn't really into programming at first. Here at least, **I can choose the language that suits me best**. As I am an electrical engineer by training, with Ladder language, it's what I understand! "
>
> *Olivier, Electrical Installer*

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Millenium3

Programming that is even more natural

FBD/Grafcet SFC language

With the M3 SOFT CD-ROM, you can take advantage of unrivalled programming flexibility and a huge processing capacity (up to 700 function blocks).

■ 27 pre-programmed FBD functions

TIMERS
A/C function: Delay on and off
BW function: Pulse on a rising or falling edge
B/H function: Adjustable pulsed signal
Li function: Pulse generator (ON/OFF setting)
Totalizer function
NEW >>> When these functions have preset parameters, they can be adjusted in real time from an external setpoint.

STANDARD MACRO
Used to obtain examples of pre-programmed macros for scrolling 4 or 15 "DISPLAYs". These examples can be modified and configured with different parameters.
NEW

BISTABLE
Impulse relay function.

SET – RESET
Bistable memory - Priority assigned to either SET or RESET.

BOOLEAN
Creation of logic equations between the connected inputs.

PRESET COUNT
Preset up/down counter.

UP/DOWN COUNT
External preset up/down counter.

PRESET H-METER
Preset hour counter (preselection of hour, minute).

TIME PROG
Daily, weekly and yearly time programmer.

GAIN
Used to convert an analogue value by changing the scale and offset.

COMPARE
Comparison of two analogue values using the =, >, <, ≥, ≤ operators.

SCHMITT TRIGGER
Used to monitor an analogue value in relation to two thresholds.

MUX
Multiplexing function on two analogue values.

COMPARE IN ZONE
Used to compare a value between two setpoints (the MIN and MAX values delimit the zone).

ADD-SUB
Simple operations on integers: Addition and/or Subtraction.

MUL-DIV
Simple operations on integers Multiplication and/or Division.

TEXT
Display of a page of text and/or numerical values (current value, preset value, etc) on the LCD display.
NEW

DISPLAY ON THE LCD SCREEN
Display of digital and analogue data, date, time, messages for man-machine interface (Bar chart function available).

SLIN (SERIAL LINK INPUT)
Reading/writing via serial link of data stored in the controller's fixed addresses.
NEW

SLOUT (SERIAL LINK OUTPUT)
Reading via serial link of data stored in the controller's fixed addresses.
NEW

ARCHIVE
Used to save two values simultaneously with the information relating to their time-stamping.

MIN MAX
Used to save the minimum and maximum values of a variable signal.
NEW

CAM TIMER
Controls a group of 8 integral cam wheels.

DEC/BIN
Breaks down an integer type input (16 bits) into 16-bit type outputs.

BIN/DEC
Makes up an integer type output (16 bits) from 16-bit type inputs.

STATUS
Allows the user to access the controller status and modify the behaviour of its FBD and/or SFC program depending on these states.
NEW

MESSAGE
When activated, the Message function block can be used to:
• send alarm messages to mobile phones, to the M3 ALARM software or to e-mail addresses via the M3MOD communication interface
• provide remote access to a digital variable and/or a numerical variable, in order to read or modify them.

■ 7 Grafcet SFC functions

For sequential automation systems (Sequential Function Chart).

■ 6 logic functions

AND, OR, NAND, NOR, XOR, NOT.

■ 5 output functions

Physical outputs (relay, solid state or PWM) and internal outputs (backlighting).

■ 17 input functions

Physical inputs (digital, potentiometric or 10-bit analogue) and internal inputs (buttons, constants).

Library of **specific functions**

To take advantage of optimised programming, take a look at the M3 SPECIFIC FUNCTIONS CD-ROM offering pre-programmed functions dedicated to your business.

■ M3 SPECIFIC FUNCTIONS CD-ROM

For more information, see page 51.

> " We constantly need to update the various automation configurations according to the environment in which our equipment is used. **Millenium 3's 700 function blocks** give us this flexibility. In addition, I needed a specific function for my machine. And Crouzet developed it for me!
>
> *Steve, Moulding Press Manufacturer* "

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Millenium3

The plus points
of the new range

- Modularity

- Optimised wiring time

- Easy-to-read display

- Memory capacity

- Networked offer

Millenium 3 "Compact" Range

- **Standard M3**

CD12

CD20

Millenium 3 "Expandable" Range

- **Expandable M3**

XD10

XD26

Millenium 3 communication solutions

- **"Plug and Play" modem communication solutions**

- **Communication extensions for 24 V DC expandable controller**

STN

GSM

M3MOD

XN05
Ethernet
Extension

XN03
Modbus
Extension

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10

■ Budget M3

CB12

CB20

■ Digital "Sandwich" Extension

■ Digital Extensions

■ Analogue Extension

XE10

XR06

XR10

XR14

XA04

❝ Millenium 3 is a very rational range, offering a high degree of consistency and true continuity over time. It's particularly useful when you have equipment life cycles lasting several years.
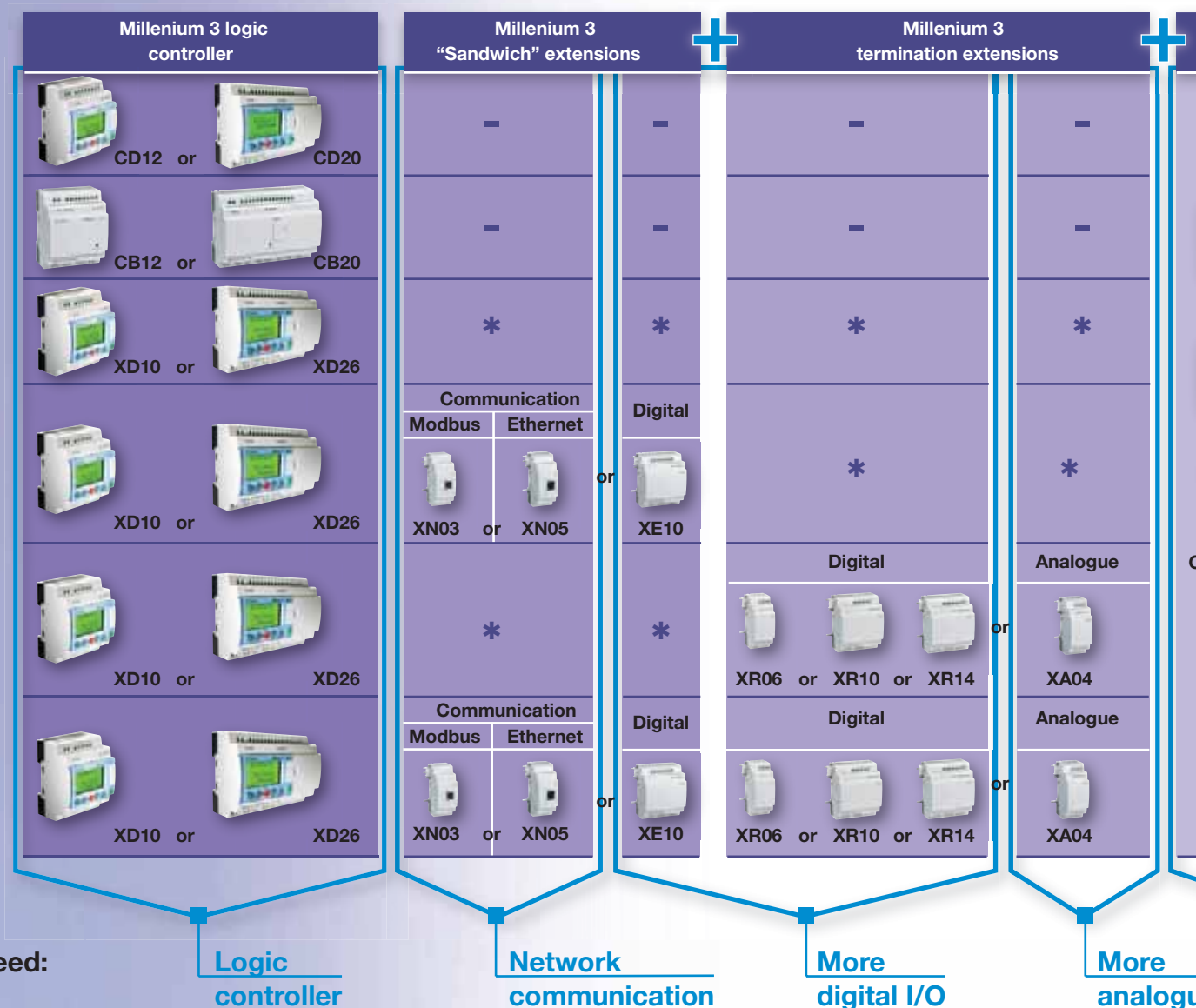
Mickael, Technical Director ❞

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Millenium3

More configuration options

Overview of **Combinations** Millenium 3

Millenium 3 logic controller	Millenium 3 "Sandwich" extensions		Millenium 3 termination extensions	
CD12 or CD20	–	–	–	–
CB12 or CB20	–	–	–	–
XD10 or XD26	*	*	*	*
XD10 or XD26	**Communication** Modbus / Ethernet — XN03 or XN05	**Digital** XE10	*	*
		or	**Digital** XR06 or XR10 or XR14	**Analogue** XA04
XD10 or XD26	*	*	**Digital** XR06 or XR10 or XR14	**Analogue** XA04
XD10 or XD26	**Communication** Modbus / Ethernet — XN03 or XN05	**Digital** XE10		

You need: → **Logic controller**   → **Network communication**   → **More digital I/O**   → **More analogu**

NB: For voltage selection, see page 28-29.

– : Extension not compatible

* : Not used

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thanks to the modularity of Millenium 3.

Plug and Play modem communication solutions	Number of I/O available					
	CD12 alone	or		CD20 alone		
	12			20		
	CB12 alone	or		CB20 alone		
	12			20		
	XD10 alone	or		XD26 alone		
	10			26		
	XD10 with			XD26 with		
	XE10	XN03	XN05	XE10	XN03	XN05
	20	10	10	36	26	26
compatible with M3MOD + GSM/STN modem	XD10 with			XD26 with		
	XR06 XR10 XR14 XA04			XR06 XR10 XR14 XA04		
	16 20 24 14			32 36 40 30		
	XD10 with			XD26 with		
	XN, XE, XR or XA			XN, XE, XR or XA		
	20 to 34			36 to 50		

e I/O   **Modem communication**

> " **With Millenium 3,
> I buy what I actually need!**
> No matter what specification the technical team draws up in terms of I/O or supply voltage for example, I can find the right product in the Millenium 3 range. As a result, thanks to this modularity, I always get the best cost-effectiveness ratio.
>
> *Catherine, Automation Component Purchasing Manager* "

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Millenium3

For greater efficiency

■ Automatic barrier

■ Drink vending machine

■ Conveyor

■ Sliding gate

Millenium 3 Communication Options

With the networked logic controller, you can control your installations remotely.

Using the M3MOD modem communication interface, you can monitor and control your installations remotely while reducing your maintenance costs:

■ Perform pre-diagnostics

■ Avoid pointless visits

■ Define priorities before responding.

On site with a mobile phone:

■ Receive SMS alerts: If one mobile phone is unavailable, the alarm is automatically redirected to another mobile phone.

■ Send commands to a remote logic module

■ Interrogate the status of application components.

In the office with the M3 ALARM software:

■ Take advantage of the same functions as on your mobile phone with all the comfort of a PC environment

■ Manage the composition of your maintenance teams

■ Organise your alarms easily so that you can file, archive, sort or export them.

■ **M3 ALARM CD-ROM**

Alarm management software

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Supervise your equipment!

■ Plug & Play solutions for Modem communication

The M3MOD interface can be used with two modems - the STN modem for wired networks and the GSM modem for wireless communication.

■ Communication extensions for 24 V DC expandable controller Using 24 V DC extensions

Using 24 V DC extensions, you can connect all your devices on a Modbus communication bus (XN03) or in accordance with the Ethernet standard (XN05).

" For unmanned equipment, the fact that we can access the Millenium 3 controller remotely means we can optimise our response times.

And the wireless link is a real bonus when it comes to controlling isolated irrigation stations!

Roberto, Operations Maintenance Manager

◯ Crouzet

Millenium 3

Whatever your activity

Millenium 3 offers the most suitable solution for your application.

■ Building Management Systems

■ Industry

■ Advertising hoardings

■ Water treatment

Building Management Systems

- ■ Lighting control systems
- ■ Air conditioning and heating systems
- ■ Lifts, hoists and escalators
- ■ Automatic doors and barriers

Industry

- ■ Packing machines
- ■ Woodworking machines
- ■ Conveyors
- ■ Moulding presses

Commercial equipment

- ■ Automatic washing equipment
- ■ Vending machines
- ■ Advertising hoardings
- ■ Toll barriers

Water treatment/Agriculture

- ■ Farm machinery
- ■ Irrigation/sprinkler systems
- ■ Pump management

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Applications

■ 2-part gate

■ HVAC

■ Programmed sprinkling

■ Application example: Industrial stretch wrapping machine

The Millenium 3 controller is used to:

- receive and process data from position sensors,
- control the motor that unwraps the packing film,
- control cutting of the film after heat sealing,
- determine the duration of the motor cycles.

" I use Millenium 3
to control a motor that unwinds a plastic wrapping film. During the operation several messages are displayed in large text on the Millenium LCD screen, so I can follow each stage as it happens and vary the parameter settings.

Claude, Wrapping Machine Operator "

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➜ To order

■ **Millenium 3 products normally in stock**

Code
88970043
88970044
88970045
88970051
88970052
88970053
88970054
88970055

Code
88970100
88970103
88970108

■ **Millenium 3 products made to order**

Code
88970100
88970103
88970108
88970102
88970109
88970104

■ **Millenium 3 products adapted to your application (On request)**

Code
88970001
88970003
88970005
88970011
88970013

requirements ●

Code

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Contents **technical pages**

General characteristics

■ CD12

Millenium 3

■ Millenium 3 range

Millenium 3 accessories

■ M3 SOFT
■ M3 ALARM
■ M3 SPECIFIC
   FUNCTIONS

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Millenium 3

➜ General Characteristics

- ■ **Millenium 3 Compact Range**
- ■ **Millenium 3 Expandable Range**
- ■ **Millenium 3 Communication Options**

Millenium 3 Range

General environment characteristics for CB, CD, XD, 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: pending)	
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 60068-2-2, 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 ($\sim$) 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: pending)	
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
Screw terminals connection capacity	**Flexible wire with ferrule =** 1 conductor: 0.25 to 2.5 mm² (AWG 24...AWG 14) 2 conductors 0.25 to 0.75 mm² (AWG 24...AWG 18) **Semi-rigid wire =** 1 conductor: 0.2 to 2.5 mm² (AWG 25...AWG 14) **Rigid wire =** 1 conductor: 0.2 to 2.5 mm² (AWG 25...AWG 14) 2 conductors 0.2 to 1.5 mm² (AWG 25...AWG 16) **Tightening torque =** 0.5 N.m (4.5 lb-in) (tighten using screwdriver diam. 3.5 mm)

● : For adapted products, see page 49

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Processing characteristics of CB, CD & XD product types

LCD display	CD, XD: Display with 4 lines of 18 characters
Programming method	Ladder or function blocks/SFC (Grafcet)
Program size	Ladder: 120 lines Function blocks: CB, CD: typically 350 blocks 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 → 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% ± 2 cycle times

Characteristics of products with AC power supplies

Supply	24 V ∼ (88970..4)	100 → 240 V ∼ (88970..3)
Nominal voltage ●	24 V ∼	100 → 240 V ∼
Operating limits ●	-15% / +20% or 20.4 V ∼ → 28.8 V ∼	-15% / +10% or 85 V ∼ → 264 V ∼
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: 4 VA CB20-CD20: 6 VA XD10 with extension - XD26: 7.5 VA XD26 with extension: 10 VA	CB12-CD12-XD10: 7 VA CB20-CD20: 11 VA XD10 with extension - XD26: 12 VA XD26 with extension: 17 VA
Isolation voltage	1780 V ∼	1780 V ∼

Inputs	24 V ∼ (88970..4)	100 → 240 V ∼ (88970..3)
Input voltage ●	24 V ∼ (-15% / +20%)	100 → 240 V ∼ (-15% / +10%)
Input current ●	4.4 mA	0.6 mA
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
Input impedance ●	4.6 kΩ	350 kΩ
Logic 1 voltage threshold ●	≥ 14 V ∼	≥ 79 V ∼
Making current at logic state 1 ●	>2 mA	>0.17 mA
Logic 0 voltage threshold ●	≤ 5 V ∼	≤ 40 V ∼
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)
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 ⎓ 24 → 250 V ∼	
Breaking current ●	CB-CD-XD10-XR06-XR10: 8 A XD26: 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	

● : For adapted products, see page 49

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Millenium 3

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

Characteristics of product with DC power supplies

Supply	12 V ⎓ (88970..5)	24 V ⎓ (88970..1 and 88970..2)
Nominal voltage ●	12 V ⎓	24 V ⎓
Operating limits ●	-13% / +20%	-20% / +25%
	or 10.4 V ⎓ → 14.4 V ⎓ (including ripple)	or 19.2 V ⎓ → 30 V ⎓ (including ripple)
Immunity from micro power cuts	≤ 1 ms (repetition 20 times)	≤ 1 ms (repetition 20 times)
Max. absorbed power	CD12: 1.5 W	CB12-CD12-CD20 with solid state outputs -
	CD20: 2.5 W	XD10 with solid state outputs: 3 W
	XD26: 3 W	XD10 with relay outputs: 4 W
	XD26 with extension: 5 W	XD26 with solid state outputs: 5 W
		CB20-CD20 with relay outputs - XD26 with
		relay outputs: 6 W
		XD10 with extension: 8 W
		XD26 with extension: 10 W
Protection against polarity inversions	Yes	Yes
Digital inputs (I1 to IA and IH to IY)	12 V ⎓ (88970..5)	24 V ⎓ (88970..1 and 88970..2)
Input voltage ●	12 V ⎓ (-13% / +20%)	24 V ⎓ (-20% / +25%)
Input current ●	4 mA	4 mA
Input impedance ●	2.7 kΩ	7.4 kΩ
Logic 1 voltage threshold ●	≥ 7 V ⎓	≥ 15 V ⎓
Making current at logic state 1 ●	≥ 2 mA	≥ 2.2 mA
Logic 0 voltage threshold ●	≤ 3 V ⎓	≤ 5 V ⎓
Release current at logic state 0 ●	<0.9 mA	<0.75 mA
Response time	1 → 2 cycle times	1 → 2 cycle times
Maximum counting frequency	Ladder: 1 kHz	Ladder: 1 kHz
	FBD: Up to 6 kHz	FBD: Up to 6 kHz
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
Analogue or digital inputs (IB to IG)	12 V ⎓ (88970..5)	24 V ⎓ (88970..1 and 88970..2)
CB12-CD12-XD10	4 inputs IB → IE	4 inputs IB → IE
CB20-CD20-XD26	6 inputs IB → IG	6 inputs IB → IG
Inputs used as analogue inputs		
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 ⎓ max.	30 V ⎓ max.
Value of LSB ●	14 mV, 4 mA	29 mV, 4 mA
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
Cabling distance	10 m maximum, with shielded cable (sensor not isolated)	10 m maximum, with shielded cable (sensor not isolated)
Protection against polarity inversions	Yes	Yes

● : For adapted products, see page 49

Crouzet

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 ⎓ (-13% / +20%)	24 V ⎓ (-20% / +25%)
Input current ●	4 mA	4 mA
Input impedance ●	14 kΩ	12 kΩ
Logic 1 voltage threshold ●	≥ 7 V ⎓	≥ 15 V ⎓
Making current at logic state 1 ●	≥ 0.5 mA	≥ 1.2 mA
Logic 0 voltage threshold ●	≤ 3 V ⎓	≤ 5 V ⎓
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	Ladder: 1 kHz FBD: Up to 6 kHz	Ladder: 1 kHz FBD: Up to 6 kHz
Sensor type	Contact or 3-wire PNP	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 ⎓ 24 → 250 V ∼
Breaking current ●	CB-CD-XD10-XR06-XR10: 8 A XD26: 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

	24 V ⎓ (88970..2)
PWM solid state output* * Only available with "FBD" programming language	CD12-XD10: O4 CD20-XD26: O4 → O7
Breaking voltage ●	19,2 → 30 V ⎓
Nominal voltage ●	24 V ⎓
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 (*) 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
Min. load	0.1 A
Maximum incandescent load	0.1 A / 24 V ⎓
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 CD and XD

● : For adapted products, see page 49

Crouzet

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Millenium 3

Millenium 3 "compact" range

Type	Power supply	Part number	Modem communication solutions			Millenium 3 software		
			Communication interface	STN	GSM	M3 SOFT	M3 ALARM	M3 SPECIFIC FUNCTIONS
			88970117	88970118	88970119	88970100	88970116	88970103
CD12 (8 Inputs/ 4 Outputs)	24 V DC	**88970041**	▪	✳	✳	▪	✳	▪
	24 V DC	**88970042**	▪	✳	✳	▪	✳	▪
	100 -> 240 V AC	**88970043**	▪	✳	✳	▪	✳	▪
	24 V AC	**88970044**	▪	✳	✳	▪	✳	▪
	12 V DC	**88970045**	▪	✳	✳	▪	✳	▪
CD20 (12 Inputs/ 8 Outputs)	24 V DC	**88970051**	▪	✳	✳	▪	✳	▪
	24 V DC	**88970052**	▪	✳	✳	▪	✳	▪
	100 -> 240 V AC	**88970053**	▪	✳	✳	▪	✳	▪
	24 V AC	**88970054**	▪	✳	✳	▪	✳	▪
	12 V DC	**88970055**	▪	✳	✳	▪	✳	▪
CB12 (8 Inputs/ 4 Outputs)	24 V DC	**88070021**	▪	✳	✳	▪	✳	▪
	100 -> 240 V AC	**88970023**	▪	✳	✳	▪	✳	▪
	24 V AC	**88970024**	▪	✳	✳	▪	✳	▪
CB20 (12 Inputs/ 8 Outputs)	24 V DC	**88970031**	▪	✳	✳	▪	✳	▪
	100 -> 240 V AC	**88970033**	▪	✳	✳	▪	✳	▪
	24 V AC	**88970034**	▪	✳	✳	▪	✳	▪

With display (CD12, CD20) — *Without display* (CB12, CB20)

- ■ Backlit screen
- ■ Universal terminal blocks
- ■ Ergonomic buttons
- ■ Modular format
- ■ Mounting on DIN rail or using screws

Crouzet

24

Programming accessories				Modular power supplies			Starter kits
Memory cartridge	Serial link cable	USB link cable	Bluetooth Interface	12V - 22W	24V - 30W	24V - 60W	standard
88970108	88970102	88970109	88970104	88950300	88950301	88950302	standard
■	■	■	■		■	■	88970080
■	■	■	■		■	■	
■	■	■	■				88970081
■	■	■	■				
■	■	■	■	■			
■	■	■	■		■	■	88970082
■	■	■	■		■	■	
■	■	■	■				88970083
■	■	■	■				
■	■	■	■	■			
■	■	■	■		■	■	
■	■	■	■				
■	■	■	■				
■	■	■	■		■	■	
■	■	■	■				
■	■	■	■				

■: Compatible

✳: Mounted with the M3MOD communication interface (88970117)

Millenium 3

➜ Standard version

- **Budget solution with display**
- **Memory: 120 lines in LADDER language and up to 350 "typical" blocks in FBD language**
- **LCD with 4 lines of 18 characters and configurable backlighting**
- **Selective parameter setting: You can choose the parameters that can be adjusted on the front panel**
- **Analogue inputs 0-10 V ⎓ or 0-20 mA/Pt 100 with converters see page 46**
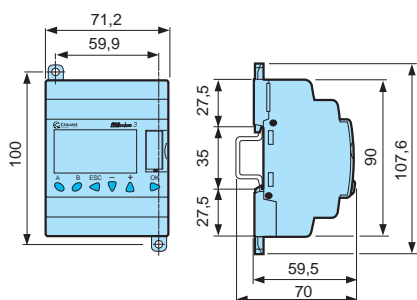
CD12   **CD20**

Part numbers

Type	Input	Output	Supply	Code
CD12	8 digital of which 4 are analogue	4 relay	24 V ⎓	**88970041**
	8 digital of which 4 are analogue	4 solid state of which 1 is PWM	24 V ⎓	**88970042**
	8 digital	4 relay	100 → 240 V ∿	**88970043**
	8 digital	4 relay	24 V ∿	**88970044**
	8 digital of which 4 are analogue	4 relay	12 V ⎓	**88970045**
CD20	12 digital of which 6 are analogue	8 relay	24 V ⎓	**88970051**
	12 digital of which 6 are analogue	8 solid state of which 4 is PWM	24 V ⎓	**88970052**
	12 digital	8 relay	100 → 240 V ∿	**88970053**
	12 digital	8 relay	24 V ∿	**88970054**
	12 digital of which 6 are analogue	8 relay	12 V ⎓	**88970055**

Accessories
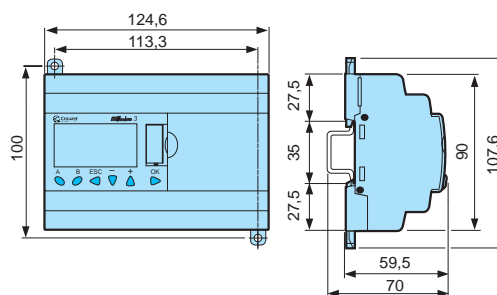
Type	Description	Code
M3 SOFT	Multilingual programming software (CD-ROM)	**88970100**
M3 SPECIFIC FUNCTIONS	Library of specific functions (CD-ROM)	**88970103**
PA	EEPROM memory cartridge	**88970108**
	3 m serial link cable: PC → Millenium 3	**88970102**
	3 m USB link cable: PC → Millenium 3	**88970109**
	Millenium 3 → Bluetooth interface (class A 10 m)	**88970104**

Dimensions (mm)

CD12

CD20

For adapted products, see page 49

Crouzet

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➜ Budget version

- ■ Simply a control system solution inside a modular casing
- ■ Memory: 120 lines in LADDER language and up to 350 "typical" blocks in FBD language
- ■ No display or parameter-setting buttons to avoid tampering by unauthorised users
- ■ Analogue inputs 0-10 V ⎓ or 0-20 mA/Pt 100 with converters see page 46

CB12

CB20

Part numbers

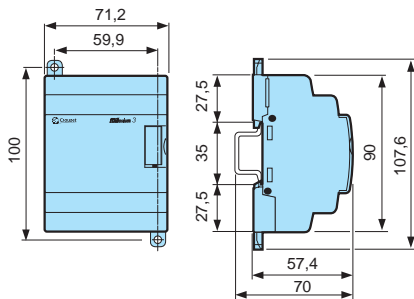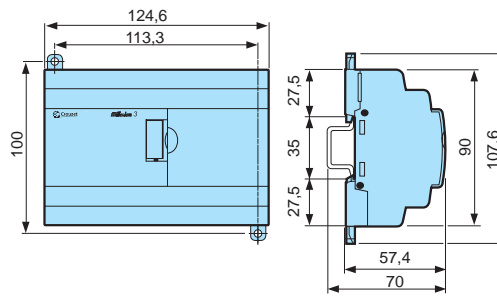| Type	Input	Output	Supply	Code
CB12	8 digital of which 4 are analogue	4 relay	24 V ⎓	88970021
	8 digital	4 relay	100 → 240 V ∿	88970023
	8 digital	4 relay	24 V ∿	88970024
CB20	12 digital of which 6 are analogue	8 relay	24 V ⎓	88970031
	12 digital	8 relay	100 → 240 V ∿	88970033
	12 digital	8 relay	24 V ∿	88970034

Accessories

Type	Description	Code
M3 SOFT	Multilingual programming software (CD-ROM)	88970100
M3 SPECIFIC FUNCTIONS	Library of specific functions (CD-ROM)	88970103
PA	EEPROM memory cartridge	88970108
	3 m serial link cable: PC → Millenium 3	88970102
	3 m USB link cable: PC → Millenium 3	88970109
	Millenium 3 → Bluetooth interface (class A 10 m)	88970104

Dimensions (mm)

CB12

CB20

➜ Standard starter kits

- ■ Each standard kit includes:
  - 1 standard Millenium 3 (CD12 or 20)
  - 1 USB link cable: PC → Millenium 3
  - 1 interactive CD ROM including the software workshop, application library and technical brochures
  - 1 CD-ROM including the library of specific functions
- ■ For alternative packages, see page 54

Kit 12

Part numbers

Type	Input	Output	Supply	Code
Kit 12	8 digital of which 4 are analogue	4 relay	24 V ⎓	88970080
	8 digital	4 relay	100 → 240 V ∿	88970081
Kit 20	12 digital of which 6 are analogue	8 relay	24 V ⎓	88970082
	12 digital	8 relay	100 → 240 V ∿	88970083

Crouzet

▶ "Expandable" **Millenium 3** range

			"Sandwich" extensions					Terminatio...					
			Communication		Digital			Digital					
			XN03	XNO5	XE10			XR06				XR10	
Type	**Power supply**	**Part number**	24 V DC	24 V DC	24 V DC	100 -> 240 V AC	24 V AC	24 V DC	100 -> 240 V AC	24 V AC	12 V DC	24 V DC	100 -> 240 V AC	24 V...
			88970250	88970270	88970321	88970323	88970324	88970211	88970213	88970214	88970215	88970221	88970223	8897...
XD10 (6 inputs / 4 outputs)	24 V DC	88970141	■	■	■			■				■		
	24 V DC	88970142	■	■	■			■				■		
	100 -> 240 V AC	88970143				■			■				■	
	24 V AC	88970144					■			■				
XD26 (16 inputs / 10 outputs)	24 V DC	88970161	■	■	■			■				■		
	24 V DC	88970162	■	■	■			■				■		
	100 -> 240 V AC	88970163				■			■				■	
	24 V AC	88970164					■			■				
	12 V DC	88970165									■			

■: Compatible

■ Millenium 3 combination: XD26 + XE10 + XR14

extensions						Analogue	Modem communication solution	Millenium 3 software	Programming accessories	Modular power supplies			Starter kits
				XR14		XA04	Communication interface 88970117 / STN 88970118 / GSM 88970119	M3 SOFT 88970100 / M3 ALARM 88970116 / M3 SPECIFIC FUNCTIONS 88970103	Memory cartridge 88970108 / Serial link cable 88970102 / USB link cable 88970109 / Bluetooth Interface 88970104	22W PS22-12	30W PS30-24	60W PS60-24	
...C	12 V DC	24 V DC	100 -> 240 V AC	24 V AC	12 V DC	24 V DC	12-24 V DC			12 V DC	24 V DC	24 V DC	
24	88970225	88970231	88970133	88970234	88970235	88970241				88950300	88950301	88950302	expandable
	■					■	■	■	■		■	■	
	■					■	■	■	■		■	■	
		■					■	■	■				
				■			■	■	■				
	■					■	■	■	■		■	■	
	■					■	■	■	■		■	■	88970084
		■					■	■	■				88970085
				■			■	■	■				
■					■		■	■	■	■			

■ Millenium 3 combination: XD10 + XN03 + XA04

Millenium 3

→ Expandable version

- ■ "High-performance" expandable solution with display
- ■ Extended memory: 120 lines in LADDER language and up to 700 "typical" blocks in FBD language
- ■ LCD with 4 lines of 18 characters and configurable backlighting
- ■ Selective parameter setting: You can choose the parameters that can be adjusted on the front panel
- ■ Analogue inputs 0-10 V $==$ or 0-20 mA/Pt 100 with converters see page 46
- ■ Open to XN network communication extensions and digital I/O or analogue extensions

XD10

XD26

Part numbers

Type	Input	Output	Supply	Code
XD10	6 digital of which 4 are analogue	4 relay	24 V $==$	88970141
	6 digital of which 4 are analogue	4 solid state of which 1 is PWM	24 V $==$	88970142
	6 digital	4 relay	100 → 240 V $\sim$	88970143
	6 digital	4 relay	24 V $\sim$	88970144
XD26	16 digital of which 6 are analogue	10 relay	24 V $==$	88970161
	16 digital of which 6 are analogue	10 solid state of which 4 is PWM	24 V $==$	88970162
	16 digital	10 relay	100 → 240 V $\sim$	88970163
	16 digital	10 relay	24 V $\sim$	88970164
	16 digital of which 6 are analogue	10 relay	12 V $==$	88970165

Accessories

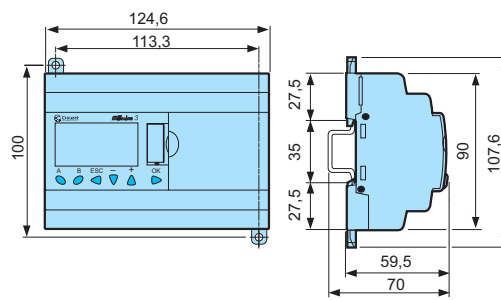| Type	Description	Code
M3 SOFT	Multilingual programming software (CD-ROM)	88970100
M3 SPECIFIC FUNCTIONS	Library of specific functions (CD-ROM)	88970103
PA	EEPROM memory cartridge	88970108
	3 m serial link cable: PC → Millenium 3	88970102
	3 m USB link cable: PC → Millenium 3	88970109
	Millenium 3 → Bluetooth interface (class A 10 m)	88970104

Dimensions (mm)

XD10

71,2
59,9
100
27,5
35
27,5
90
107,6
59,5
70

XD26

124,6
113,3
100
27,5
35
27,5
90
107,6
59,5
70

Crouzet

➜ Expandable starter kit

■ **Each kit includes:**
  - 1 expandable Millenium 3 (XD26)
  - 1 USB link cable: PC → Millenium 3
  - 1 interactive CD ROM including the software
  workshop, application library and technical brochures
  - 1 CD-ROM including the library of specific functions
■ **For alternative packages see page 54**

Kit 26

Part numbers

Type	Input	Output	Supply	Code
Kit 26	16 digital of which 6 are analogue	10 relay	24 V ⎓	**88970084**
	16 digital	10 relay	100 → 240 V ∿	**88970085**

For adapted products, see page 49

Crouzet

➜ Sandwich communication extensions for XD10 and XD26

- **Exchange of input/output state or of internal values via communication networks**
- **Power supply via the controller**

XN03

XN05

Part numbers

Type	Description	Supply	Code
XN03	Modbus RS-485 slave communication extension	Via the 24 V ⎓ controller	**88970250**
XN05	Ethernet slave communication extension	Via the 24 V ⎓ controller	**88970270**

Characteristics of communication extensions

General characteristics	88970250	88970270
See page 20, except:		
Certifications	UL, CSA, GL	UL, CSA GL pending
Earthing	Yes, refer to the quick reference guide supplied with the product	Yes, refer to the quick reference guide supplied with the product
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	0 → +55°C (+40°C in a non-ventilated enclosure) in accordance with IEC 60068-2-1 and IEC 60068-2-2

Communication parameters	88970250	88970270
Type of link	2 or 4-wire; RTU or ASCII	-
Transmission rate (Bauds)	1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600	-
Parity	None; even; odd	-
Addressing	1 → 247	Static or dynamic

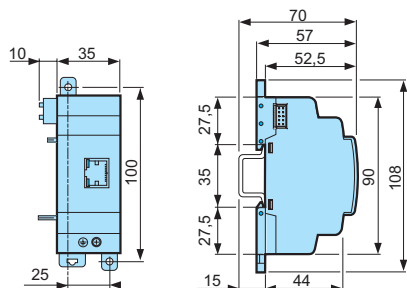| Characteristics of exchanges	88970250	88970270

Programming with Ladder language		
Image of smart relay I/O	4	-
Status	1	-

Programming with FBD language		
Read	4	8
Read/Write	4	8
Clock words	4	4
Status words	1	1

Dimensions (mm)

XN03 - XN05

For adapted products, see page 49

Crouzet

➜ Digital sandwich extension for XD10 and XD26

- ■ **Can be used to reach up to 50 inputs/outputs in conjunction with XR14 termination extensions**
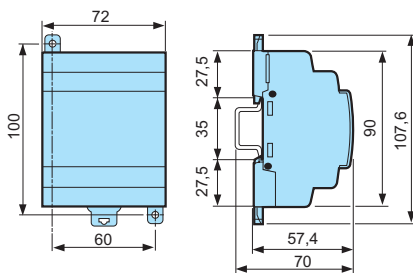- ■ **Relay outputs one of which is a changeover relay**

XE10

Part numbers

Type	Input	Output	Supply	Code
XE10	6 digital	4 relays 1 of which is a changeover relay	Via the 24 V ⎓ controller	**88970321**
	6 digital	4 relays 1 of which is a changeover relay	100 → 240 V ∼	**88970323**
	6 digital	4 relays 1 of which is a changeover relay	24 V ∼	**88970324**

Dimensions (mm)

XE10

Crouzet

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➜ Digital extensions for XD10 and XD26

- ■ Power supply via the controller at the same voltage as the inputs
- ■ Number of inputs/outputs can be configured in accordance with your requirements

XR06   XR10   XR14

Part numbers

Type	Input	Output	Supply	Code
XR06	4 digital	2 relay outputs	Via the 24 V ⎓ controller	**88970211**
	4 digital	2 relay outputs	Via the 100 → 240 V ∿ controller	**88970213**
	4 digital	2 relay outputs	Via the 24 V ∿ controller	**88970214**
	4 digital	2 relay outputs	Via the 12 V ⎓ controller	**88970215**
XR10	6 digital	4 relay outputs	Via the 24 V ⎓ controller	**88970221**
	6 digital	4 relay outputs	Via the 100 → 240 V ∿ controller	**88970223**
	6 digital	4 relay outputs	Via the 24 V ∿ controller	**88970224**
	6 digital	4 relay outputs	Via the 12 V ⎓ controller	**88970225**
XR14	8 digital	6 relay outputs	Via the 24 V ⎓ controller	**88970231**
	8 digital	6 relay outputs	Via the 100 → 240 V ∿ controller	**88970233**
	8 digital	6 relay outputs	Via the 24 V ∿ controller	**88970234**
	8 digital	6 relay outputs	Via the 12 V ⎓ controller	**88970235**

Dimensions (mm)

XR06
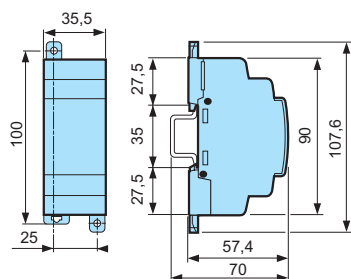
XR10 - XR14
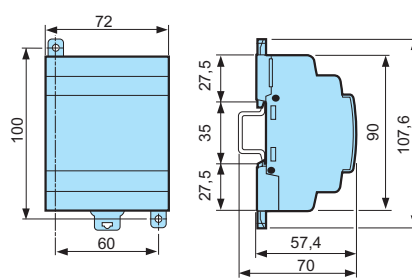
➜ Analogue extension for XD10 and XD26

- ■ Direct connection of analogue 0-10 V or 0-20 mA or Pt 100 inputs (10 bits) can be configured using the M3 SOFT software
- ■ 2 analogue 0-10 V or PWM outputs (10 bits) can be configured using the M3 SOFT software
- ■ Ramp can be parameterised for outputs used as 0-10 V outputs
- ■ Power supply via the controller

XA04

Part numbers

Type	Input	Output	Supply	Code
XA04	2 analogue	2 analogue/PWM	Via the 24 V ⎓ controller	**88970241**

Crouzet

Characteristics of analogue extension 88970241

General characteristics

See page 30, except:

Certifications	UL, CSA
	GL (pending)
Earthing	Yes, refer to the quick reference guide supplied with the product

Analogue inputs

Inputs used as analogue inputs	0-10 V	0-20 mA	Pt 100
Input	IP and IQ	IP and IQ	IQ
Input range	0 → 10 V DC	0 → 20 mA	-25 → 125°C
Input impedance	≥ 18 Ω	246 Ω	-
Maximum non destructive voltage	30 V	30 mA	-
Value of LSB	9.8 mV	20 µA	0.15°C
Input type	Common mode	Common mode	Pt 100 probe - IEC 751 - 3-wire
Resolution	10 bits	10 bits	10 bits
Conversion time	Module cycle time	Module cycle time	Module cycle time
Accuracy at 25°C	± 1%	± 1%	±1.5°C
Accuracy at 55°C	± 1%	± 1%	±1.5°C
Isolation between analogue channel and power supply	None	None	None
Cabling distance	10 m maximum, with shielded cable (sensor not isolated)	10 m maximum, with shielded cable (sensor not isolated)	10 m maximum, with shielded cable (sensor not isolated)
Protection against polarity inversions	Command ignored	Command ignored	Command ignored

Analogue outputs

Range output	0 → 10 V
Input type	Resistive
Max. load	10 mA
Value of LSB	10 mV
Resolution	10 bits
Conversion time	Controller cycle time
Accuracy at 25°C	±1% of full scale
Accuracy at 55°C	±1% of full scale
Repeat accuracy at 55 °C	± 1%
Isolation between analogue channel and power supply	None
Cabling distance	10 metres maximum, with shielded cable (sensor not isolated)
Protection against polarity inversions	Yes

PWM

Range output	0 → 10 V power supply
Max. load	≥ 1.2 Ω (I ≤ 20 mA)
PWM cyclic ratio	1024 steps
Frequency	78 Hz, 312.5 Hz, 666.6 Hz, 1000 Hz, 1250 Hz, 1428 Hz, 1666 Hz, 2000 Hz
Accuracy	1% across the entire temperature range for PWM ratios from 5% to 95%
Built-in protections	Against overvoltages: Yes

Dimensions (mm)

XA04
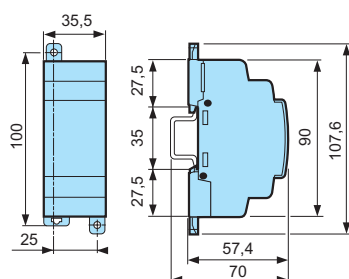
➜ Modem communication plug and play solutions

- For remote control of your application
- M3 Alarm software supports automatic notification of alarms via SMS / e-mail or on PC
- 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

M3MOD   STN   GSM

Part numbers

Type	Description	Supply	Code
M3MOD	Modem communication interface	12-24 V ⎓	88970117*
STN	STN modem	12-24 V ⎓	88970118*
GSM	GSM modem	12-24 V ⎓	88970119*

Accessories

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

Characteristics of the communication Modem system

General characteristics of the modem communication interface

See page 20, except:

Certifications	UL, CSA

Power supply	88970117	88970118	88970119
Nominal voltage (V)	12 → 24 V ⎓	12 → 24 V ⎓	12 → 24 V ⎓
Operating limits	-13% / + 20% or 10 → 28.8 V ⎓	-13% / + 5% or 10 → 30 V ⎓	-54% / + 33% or 5.5 → 32 V ⎓
Ripple	5% max.	-	-
Nominal current under 12 V DC	30 mA	140 mA	125 mA
Nominal current under 24 V DC	30 mA	70 mA	60 mA
Peak current on energisation	550 mA	9600 mA	2100 mA at 5.5 V
Max. absorbed power	1.1 W	1.7 W	1.5 W
Immunity from micro power cuts	1 ms, repetition 20 times	-	-
Protection against polarity inversions	Yes	No	No
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 ≥ V2.1
Isolation of "Com-M3" connector from the "Com-M" connector	Via optocoupler ∼ 1780 V
Isolation of "Com-M3" connector from the ± supply terminals	Via optocoupler ∼ 1780 V

Crouzet

Characteristics of the "COM-M3" 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 configuration CD-ROM and telephone cable
* 88970119 : supplied with DB9/DB15 connecting cable and power supply cable

Dimensions (mm)

Modem communication interface M3MOD

STN

GSM

Crouzet
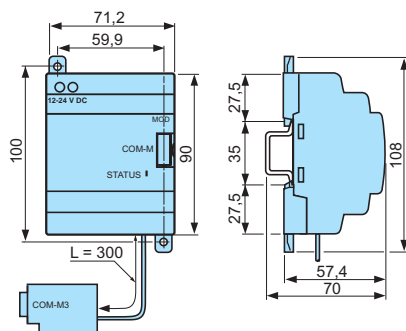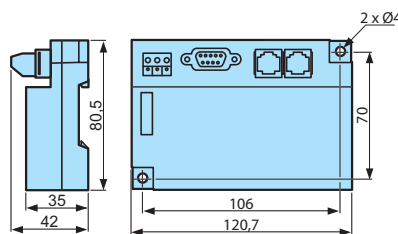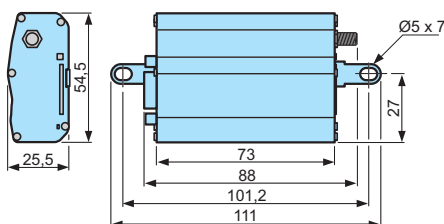
Millenium 3 accessories

➜ Programming tools and software

- **Millenium 3 software: multilingual software, intuitive operation**
- **Memory card for loading the application and updating the on-board software (firmware)**

Millenium 3 Software

Memory cartridge

Part numbers

Type	Description	Code
M3 SOFT	Multilingual programming software (CD-ROM)	88970100
M3 SPECIFIC FUNCTIONS	Library of specific functions (CD-ROM)	88970103
M3 ALARM	Alarm management software (CD-ROM)	88970116*
PA	EEPROM memory cartridge	88970108

Comments

* Used with the modem communication interface (M3MOD)

➜ Connection accessories

- **Direct connection to all types of PC: serial, USB**
- **Wireless "Bluetooth" connection for applications that are complex in terms of access**

Serial cable

USB cable

Bluetooth interface

Part numbers

Type	Description	Code
PA	3 m serial link cable: PC → Millenium 3	88970102
	3 m USB link cable: PC → Millenium 3	88970109
	Millenium 3 → Bluetooth interface (class A 10 m)	88970104
	Bluetooth → USB adaptor (class A 10 m)	88970110
	1.80 m serial link cable: DB9/DB9	88970123

Crouzet

➜ Millenium power supply

- **With a switch mode power supply, regulated and protected against overloads and short-circuits, these new power supply units are easily integrated in switchboards and enclosures.**
- **The potentiometer can be used to set the output voltage between 100 and 120% to compensate for any voltage drops on the line.**
- **The LED continuously signals the presence of voltage at the output and, when flashing, triggering of the self-protection.**

PS 24-60 W

Part numbers

Type	Nominal output voltage	Nominal power	Code
PS	12 V ===	22 W	88950300
	24 V ===	30 W	88950301
	24 V ===	60 W	88950302

General characteristics

Environmental characteristics	
Conformity to standards	EN 50081-1 EN50082-1 IEC 950
Certifications	UL-CSA, TüV
Electrical characteristics	
Input voltage	100 → 240 V ∿ single-phase
Supply frequency range	50/60 Hz (+4%/-6%), or 47→53 Hz/ 57→63Hz
Output voltage (V)	Adjustable from 100 → 120%
Technology	Primary switch mode electronic power supplies
Short-circuit protection	Yes
Overload protection	Yes
Primary protection	1 A gG fuse for 88950300 and 88950301 3 A gG fuse for 88950302
Reset after overload	Automatic
Mechanical characteristics	
Status indication	LED at the output
Mounting	DIN rail EN 50022

Dimensions (mm)

PS
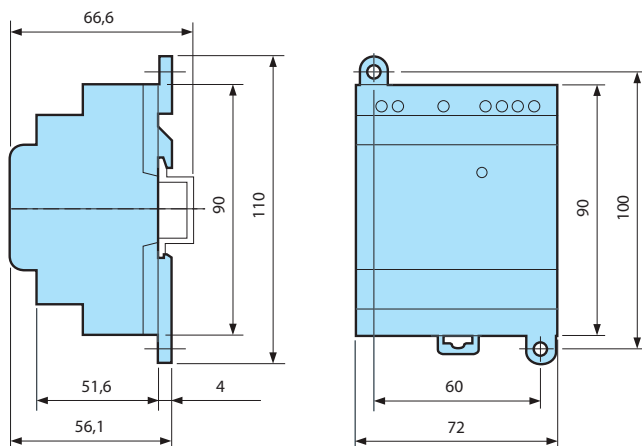
Millenium 3 accessories

➜ Temperature sensors

■ **Integrated converter: 0-10 V ⎓ output for direct connection to the Millenium 3 analogue outputs**

Space/Zone Sensor **Ventilation duct** **External Sensor**

Part numbers

Type	Description	Range	Accuracy	Supply	Protection casing	Protection probe	Code
AS	Zone/space	-10 → +40°C	-0.2 °C + 1.2°C	24 V ⎓	IP30		**89750150**
	Ventilation duct	-10 → +60°C	-0.2 °C +1.9°C	24 V ⎓	IP65	IP30	**89750151**
	External	-10 → +40°C	-0.2 °C +1.2°C	24 V ⎓	IP65		**89750152**
	Remote/ submersible probe	-10 → +150°C	-0.2 °C +1.2°C	24 V ⎓	IP65	IP67	**89750153**
	Remote/ submersible probe	-40 → +20°C	-0.2°C +1.9°C	24 V ⎓	IP65	IP67	**89750155**

Accessories

Accessories	Operating temperature	Operating pressure	Code
Copper protective sleeve	-20 → +100°C	10 bar	**89750146**
Stainless steel 316 protective sleeve	-20 → +400°C	16 bar	**89750147**
Heat transfer compound	-	-	**18373112**

General characteristics

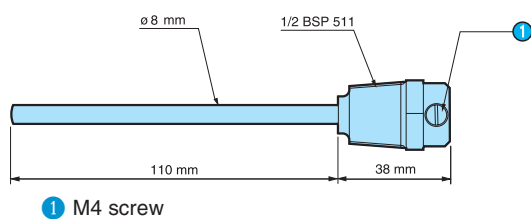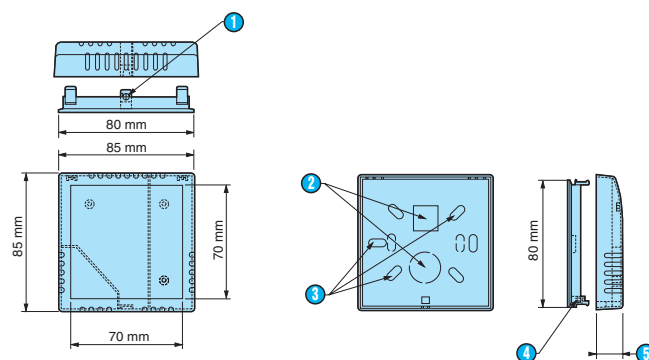| **Environmental characteristics**	
Ambient temperature	-10 → +60°C
Ambient humidity	5 → 95% RH
Housing material	Self-extinguishing
Electrical characteristics	
Supply voltage	24 V ⎓ (± 10%)
Output	0 → 10 V ⎓
Temperature coefficients Derating	0.01%/°C of full scale
Temperature coefficients Offset	1.5 mV / °C

Dimensions (mm)

89750153 and 89750155

93
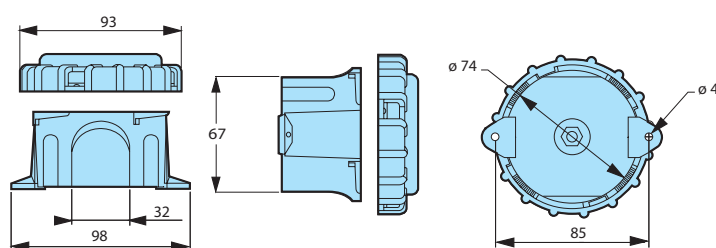ø74
67
ø4
32
98
85
1
150
ø6

89750150

80 mm
85 mm
85 mm
70 mm
70 mm
80 mm

1 Ø3 mm for M3 x 8 screw
2 Cut-outs made prior to delivery
3 Fixing holes
4 Indentation for M3 square nut
5 Total depth 26 mm

89750151

93
ø 74
ø 4
ø 6
67
32
150
98
85

89750152

93
ø 74
67
ø 4
32
98
85
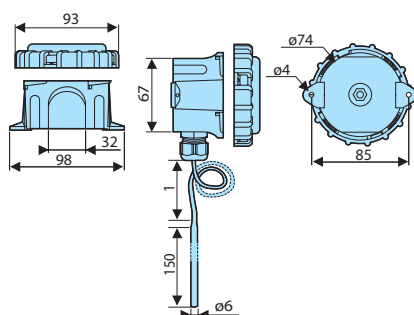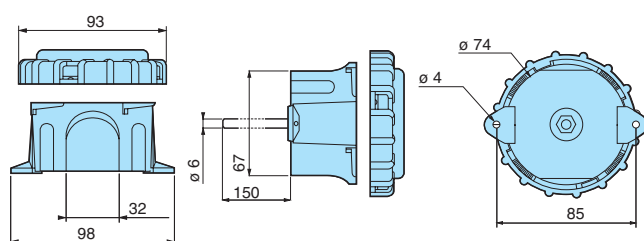
Accessory for 89750153 and 89750155

ø 8 mm
1/2 BSP 511
110 mm
38 mm

1 M4 screw

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Millenium 3 accessories

➜ Alphanumeric displays

- ■ **Set and parameterise your application data in advance**
- ■ **Backlit LCD screen (72 x 20 mm) with 4 lines of 20 characters and keypad with 8 keys, 4 of which can be renamed**
  - **- Three-colour screen: 3 colours green/orange/red**
  - **- Monochrome screen: Monochrome green**
- ■ **Size of characters can be configured to optimise readability**
- ■ **Communicates with the Millenium 3 via Modbus extension XN03**
- ■ **The Runtime kit includes:**
  - **- 1 three-colour or monochrome LCD screen**
  - **- 1 Modbus extension XN03**
  - **- 1 RS485 cable**
- ■ **The Programming kit includes:**
  - **- 1 three-colour or monochrome LCD screen**
  - **- 1 Modbus extension XN03**
  - **- 1 RS485 cable**
  - **- 1 programming software package for the display with a compatible RS232 cable**

Three-colour screen   **Monochrome screen**

Part numbers

Type	Designation	Code
RD	Runtime kit with three-colour screen	88970421*
	Runtime kit with monochrome screen	88970422*
	Programming kit with monochrome screen	88970844*
	Programming kit with three-colour screen	88970849*

General characteristics

Environmental characteristics	
Certifications	UL-CSA
Conformity to standards	IEC 61131-2, IEC 60068-2-6, IEC 60068-2-27, CSA n°14
Operating temperature	0 → +55°C
Storage temperature	-20 → +60°C
Relative humidity no condensation acc. to IEC 60068-2-3	95% max.
Protection rating	In accordance with IEC/EN60529 IP65 on front panel (UL type 4, 4X) IP20 on rear panel
Dimensions (l x h x p)	132 x 74 x 31 mm
Panel cut-out	119.4 x 63 mm
Electrical characteristics	
Supply voltage	24 V ⎓
Voltage limits	18 → 30 V ⎓
Ripple	5% max.
Consumption	200 mA max.
Mechanical characteristics	
Mounting	Flush-mounted, fixed with 2 spring clips supplied pressure-mounted for panel thicknesses from 1.5 to 6 mm
Display protection	Polyester
Keyboard material	Polyester autotex UV
Connection	Removable 3-pin screw terminal
Connection capacity	1.5 mm^2
Connection	Serial via 25-pin female SUB D connector
Display characteristics	
Description	Backlit LCD 4 lines of 20 characters to 1 line of 5 characters (configurable) Communication status indicated by LED (three-colour screen) Alarm indicators and function keys (three-colour screen)

Comments

* These kits are used in conjunction with expandable Millenium 3 products (XD10 and XD26) 24 V ⎓. To be ordered separately.

Dimensions (mm)
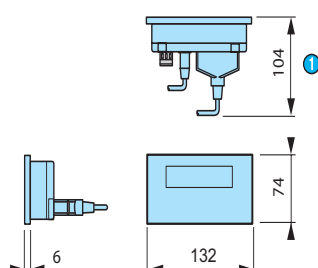
❶ Dimensions (mm) including spring clips

104 ❶

74

6   132

Crouzet

➜ Remote LED display

- **Set your application data in advance**
- **Display (36 x 72) with 4 x 14 mm red digits**
- **Configurable display range**
- **0-10 V input**
- **IP65 degree of protection on front panel**

Remote LED display

Part numbers

Type	Description	Supply	Code
RD	Display with 4 x 14 mm red digits	24 V ⎓	88950400*

General characteristics

Environmental characteristics	
Conformity with the EMC directive	EN 61000-6-4: 2001, EN 61010-1: 2001
Protection rating	In accordance with IEC/EN 60529: IP65 on front panel IP20 on rear
Operating temperature	-10 → +55°C
Dimensions (l x h x p)	36 x 72 x 61 mm
Panel cut-out	71 x 20 mm
Electrical characteristics	
Supply	24 V ⎓
Tolerance	± 10%
Consumption	<1 VA
Input voltage	0 → 10 V ⎓
Mechanical characteristics	
Mounting	Flush-mounted
Connection	Terminal block
Display characteristics	
Height of digits	14 mm
Number of digits	4
Colour	Red
Range	1999...9999 with selectable decimal point
Device accuracy (full scale)	≤ ± 0.3% of interval
Comments	
* Can be connected directly to an analogue output or via a PWM/0-10 V converter	

Dimensions (mm)

76,5 · 34,5 · 27 · 28 · 68 · 55 · 7 · 70
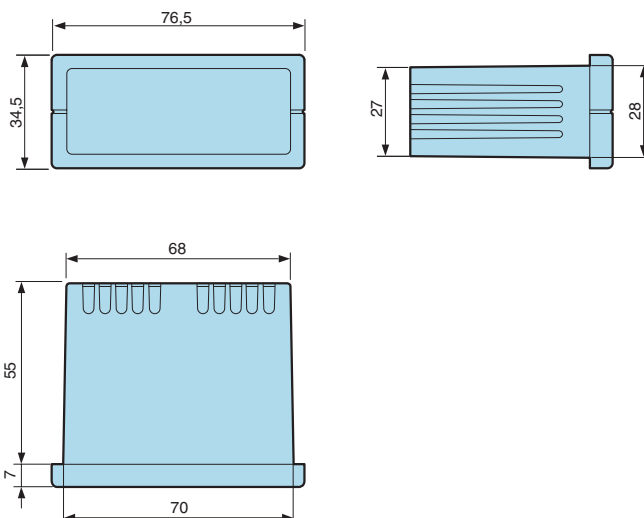
Millenium 3 accessories

➜ Potentiometer

- **Direct-read potentiometer (controlled externally) Ø 22 mm**
- **IP65 degree of protection on front panel**
- **Directly compatible with the "Potentiometer" parameter of an analogue input on the Millenium 3**

Potentiometer

Part numbers

Type	Description	Code
EP	External potentiometer for value adjustment	**88950109**

General characteristics

Environmental characteristics	
Protection rating	In accordance with IEC/EN 60529: IP65 on front panel IP10 on terminal block
Operating temperature	-20 → +60°C
Storage temperature	-20 → +70°C
Electrical characteristics	
Ohmic value	4700 Ω
Tolerance	± 20%
Power	150 mW
Mechanical characteristics	
Screw terminals connection capacity	1 x 4 mm² rigid 1 x 2.5 mm² flexible

Dimensions (mm)
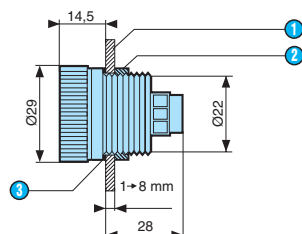
- ① Panel
- ② Nut
- ③ Seal
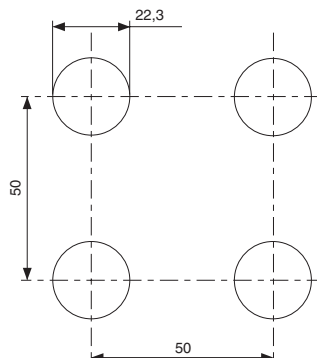
Connections
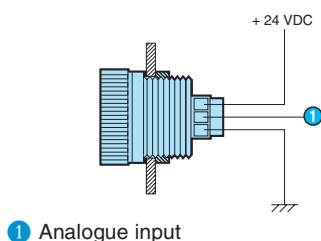
- ① Analogue input

➜ Removable connectors

- **Millenium 3 can be removed for speedy replacement of the controller**
- **Cable connection memory to exclude the risk of errors on reconnection**

Removable connector kit

Part numbers

Type	Description	Code
MA	Removable kit for CD12 or CB12	**88970310**
	Removable kit for CD20 or CB20	**88970311**

General characteristics

Screw terminals connection capacity	Cable diameter 0.14 → 2.5 mm² AWG 22 - 12
Max. current	12 A

➜ Faceplates

- **Panel-mounting of the Millenium 3**
- **IP67 sealing on front panel**

Faceplate 1   **Faceplate 2**   **Faceplate 3**

Part numbers

Type	Description	Code
MA	IP67 sealed faceplate for the following products: - XD10 or CD12	**89750160**
	IP67 sealed faceplate for the following products: - XD10 + XR06 or XN03 or XN05 or XA04 - CD20 or XD26 - XD10 + XN03 or XN05 + XR06 or XA04 - XD10 + XR10 or 14	**89750161**
	IP67 sealed faceplate for the following products: - XD26 + XR06 or XN03 or XN05 or XA04 - XD10 + XN03 or XA04 + XR10 or 14 - XD10 + XE10 + XR06 or XA04 - XD26 + XN03 or XN05 + XR06 or XA04 - XD26 + XR10 or 14 - XD10 + XE10 + XR10 or 14 - XD26 + XE10 + XR06 or XA04 - XD26 + XN03 or XN05 + XR10 or 14	**89750162**

Dimensions (mm)
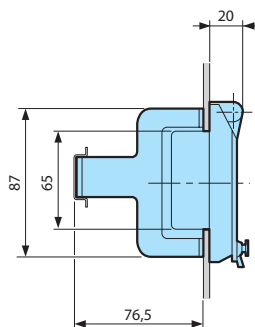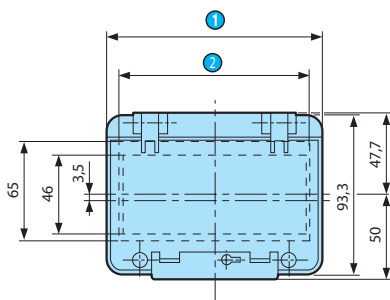
❶ 88750160 = 91
88750161 = 162
88750162 = 257.4
❷ 88750160 = 76.5
88750161 = 147.5
88750162 = 248.5

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→ Signal converters

- Current/voltage conversion of Millenium 3 input signals
- PWM/voltage conversion of Millenium 3 output signals

Current/voltage converter

Part numbers

Type	Description	Input	Output	Code
AC	0-20 mA/0-10 V input converter	4	4	88950108
	PWM/0-10 V output converter	1	1	88950112

General Characteristics	88950108	88950112
Environmental characteristics		
Protection rating	In accordance with IEC/EN 60529: IP20 terminal block IP50 casing	In accordance with IEC/EN 60529: IP20
Operating temperature	-20° → +85°C	-20° → +55°C
Storage temperature	-40° → +85°C	-25° → +70°C
Electrical characteristics		
Supply	-	24 V ⎓ (+10% / -15%)
Input current	0-20 mA	-
Output voltage	0-10 V ± 5%	-
Impedance	500 Ω (input)	250 Ω (maximum load)
Max. current	40 mA	40 mA (output)
Input PWM	-	24 V ⎓ (+20% / - 15%, 120 Hz)
Short-circuit protection	-	Yes
Protection against polarity inversions	-	Yes (>10 s)
Absorbed power	0.8 W	1.3 W
Conversion time	-	440 ms
Mechanical characteristics		
Length	-	< 10 m on shielded cable

Dimensions (mm)
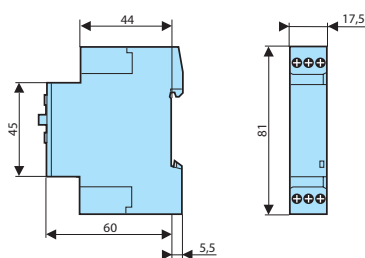
➜ Temperature converters

- **Compatible with Millenium 3 analogue inputs**
- **Can be used to diversify the type of sensors for analogue inputs**

Temperature converter

Part numbers

Type	Description	Input	Input range	Output	Code
AC	Converter	PT 1000 3-wire	-20 → +150°C	0-10 V	88950150
	Converter	PT 100 3-wire	-40 → +40°C	0-10 V	88950151
	Converter	PT 100 3-wire	0 → +100°C	0-10 V	88950152
	Converter	PT 100 3-wire	0 → +250°C	0-10 V	88950153
	Converter	Thermocouple J	0 → +300°C	0-10 V	88950154
	Converter	Thermocouple K	0 → +600°C	0-10 V	88950155

General characteristics

Environmental characteristics	
Protection rating	In accordance with IEC/EN 60529: IP40 on front panel IP20 on terminal block
Operating temperature	-10 → +55°C
Electrical characteristics	
Supply	24 V ⎓
Operating limits	± 10% or 21.6 ⎓ → 26.4 V ⎓
Max. Output power	< 1 W
Output voltage	0 → 10 V ⎓
Device accuracy (full scale)	± 1%

Dimensions (mm)

Temperature converter

89,2
64
46
58
42,9
53
17,5
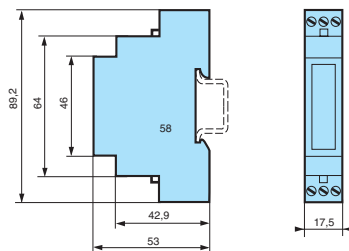
Millenium3

➔ **Find more information on our website**

www.millenium3.crouzet.com :

- ■ Presentation of the range
- ☐ Compact range
- ☐ Extendable range
- ☐ Communication options
- ☐ Software and accessories
- ■ Adaptations
- ■ Selection guide
- ■ FAQ
- ■ Applications

Also discover

- ■ Millenium 3 adapted control:
- ☐ Software Adaptations
- ☐ Hardware Adaptations
- ■ Electronic Catalogue:
  www.catalog.crouzet.com
- ■ Download documents and
  software.

■ Extendable range

■ Hardware Adaptations

■ Selection guide

■ Applications

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Contents **adaptation pages**

Millenium 3 Adapted Control

■ **Plug-in resin board Millenium 3**

■ **Millenium 3 expanded bare board with 16 relay outputs**

■ **Resin board Millenium 3 with wire outputs and prewired bundle**
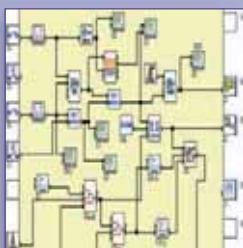
■ **Pump management in harsh environments with toughened Millenium 3**

Millenium3

For even greater customisation

Whether for software adaptations, custom functions, adaptations of Millenium 3's operating or physical characteristics, Crouzet has developed extensive expertise in making specific adaptations for each project.

Specific products

All our design and industrialisation expertise in control and automation systems at your service, to design and create specific products dedicated to your application.

■ Software development

■ Design office

■ Hardware development

■ Certification and testing

Standard components

A complete range of logic controllers available immediately to create your automation application.

Adapted products

Defined jointly with our technical sales teams, these adapted products have performance and functions corresponding precisely to your application.

Components with added value

Standard products complemented by factory-mounted auxiliaries or accessories (connectors, wire outputs, cables, etc.) in order to assist integration into your equipment, simplify your logistics and maximise the reliability of your installation.

Crouzet

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Adaptation, **the practical solution!**

Softaware **development**

In addition to the basic function blocks contained in the M3 SOFT CD-ROM, Crouzet offers you an additional M3 SPECIFIC FUNCTIONS CD-ROM containing a library of specific functions adapted to your requirements and to your application (water management, HVAC, etc).

PUMP MANAGEMENT
Pump rotation function

HIGH SPEED COUNT (COMPTAGE RAPIDE)
Used to count the pulses arriving at the inputs of a controller powered by a DC supply, at rates in excess of one pulse every 6 ms.

STORE
Storage of data values with an average value.

DEM (DEMULTIPLEXER)
Demultiplexing on integers. Used to direct the value of the input to one of the 4 OUTPUTS.

MUX (MULTIPLEXER)
Multiplexing on MOT inputs. Used to direct the value of one of the selected inputs to a predefined output.

BOOLEEN (SIX INPUTS/ TWO OUTPUTS)
Management of two Boolean equations

ANALOG PID
Temperature control with analogue output.

PID PWM
Temperature control with digital output.

WAIT SFC STEP
Used to set up a wait phase or step for a PLC or a device.

MOVE SFC STEP
Used to set up a move step for a motor controlled by the PLC to a position specified on the TARGET input.

MOTOR MULTIPLEXER
Combines the motor control signals produced by two linked MOVE SFC steps.

ARCHIVE
Used to save a value between -32768 and 32767.

FAST COUNT
Used to count the pulses arriving at the input at rates in excess of one pulse every 10 ms.

On request, Crouzet can also develop advanced application-specific functions, dedicated to your process, including a motor wear calculation, special functions for compressor/booster compressor, or a math function for solar panels. These custom functions will simplify your application, protect your expertise and therefore guarantee you total protection.

" To help me design my solar panels,
Crouzet were able to offer me an application-specific function. Millenium 3 turns the panels towards the sun and checks its actual position by means of encoders. If the difference is more than a few degrees, motors move them horizontally and vertically. In addition, a wind sensor measures its speed and the panel adopts a "park" position in the event of a storm.

Juan Alberto, Solar Panel Manufacturer **"**

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Millenium3

For greater adaptation

■ Harsh environment

■ Sealing

■ Vibration resistance

■ Excellent endurance

Hardware development

Familiarity with the operating environment for your installations enables Crouzet in particular to optimise the materials and components used to manufacture its products and ensure your devices work to the best of their ability. With its Millenium 3 "Adapted Control" offer Crouzet offers you several types of possible adaptation at the hardware level.

Toughening

■ Increased mechanical resistance:
  shock, vibration, sealing
■ Adaptation to climatic conditions:
  temperature, humidity, etc
■ Compliance with electrical and standards-related
  constraints voltage, EMC, etc

Customisation

■ Dedicated connections and fixings to provide you
  with a complete electrical function that can easily be
  installed in your environment
■ Connection of your sensors, even the most specific
■ Customised laser marking

Specific configuration

■ Changing the number of I/O
■ Updating the I/O characteristics (input voltage, etc)
■ Development of specific extensions
■ Changing the polarity type (PNP/NPN)
■ Fixed parameter settings

Customised cases and fixings

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Adaption, the practical solution!

Adapted electronics

Encasing components

Hardened electronics

Absorption of voltage variations

Fits any type of connection

Dedicated laser marking

Connection of your sensors

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Millenium 3 Adapted Control

➜ "Application-specific" and grouping adapted kits

■ **Discover just what Millenium 3 can do for you - its complete kits provide everything you need for your application**

■ **Each kit can comprise, for example:**
  - **1 Millenium 3 with application-specific functions**
  - **1 programming software CD ROM**
  - **1 programming cable**
  - **Temperature sensors**
  - **Level sensors**
  - **1 PS24 type power supply**

■ **Product groups**
  In order to facilitate logistics, we can supply groups of products, for example: Millenium, cable, sensor, converter

Adapted kit example

Part numbers

Type	Description	Code
Kit	Comprising XD26, USB link cable, M3 SOFT, M3 SPECIFIC FUNCTIONS, PS 24-30 W power supply	**88970094**

➜ **Bare board version**

- **For easy and discreet integration into your applications**
- **For mass-production applications**
- **Memory: 120 lines in LADDER language and up to 350 "typical" blocks in FBD language**
- **Compact Dimensions (mm)**

NB 12   **NB 20**

Part numbers

Type	Input	Output	Supply	Code
NB12	8 digital of which 4 are analogue	4 relay	24 V ⎓	**88970001**
	8 digital	4 relay	100 → 240 V ∼	**88970003**
	8 digital of which 4 are analogue	4 relay	12 V ⎓	**88970005**
NB20	12 digital of which 6 are analogue	8 relay	24 V ⎓	**88970011**
	12 digital	8 relay	100 → 240 V ∼	**88970013**
NBxx	In accordance with your requirements	In accordance with your requirements	In accordance with your requirements	●

Accessories

Type	Description	Code
M3 AC SOFT	Multilingual programming software (CD-ROM) for adapted boards	**88970111**
M3 SPECIFIC FUNCTIONS	Library of specific functions (CD-ROM)	**88970103**
PA	EEPROM memory cartridge	**88970108**
	3 m serial link cable: PC → Millenium 3	**88970102**
	3 m USB link cable: PC → Millenium 3	**88970109**
	Millenium 3 → Bluetooth interface (class A 10 m)	**88970104**

General characteristics

Voir page 20, sauf:

Protection rating	IP00
Certifications	UL, CSA, GL (pending)

Dimensions (mm)

NB12

72 / 90 / 82 / 59,2 / 42

NB20

125 / 90 / 82 / 112,6 / 42
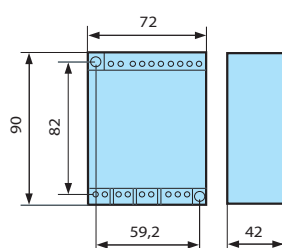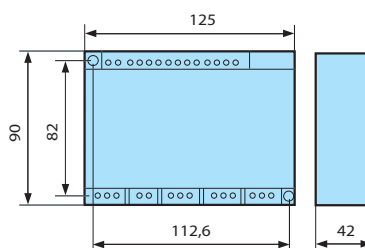
Product adaptations

- **Tropicalisation**
- **Spring connectors or removable connectors**

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Millenium 3 Adapted Control

➜ Resin board version

- ■ **Vibration resistance**
- ■ **Extended temperature range**
- ■ **Outputs via removable connectors or 40 cm wire**
- ■ **IP50 seal (connectors) or IP67 (wire)**
- ■ **DB 9-pin programming port via standard RS 232 cable**

**NBR 26 Relay outputs
with connectors**

**NBR 26 Relay outputs
with wires**

Part numbers

Type	Designation	Input	Output	Supply	Code
NBR12	Relay outputs with connectors	8 digital of which 4 are analogue	4 relay	24 V ⎓	**88973001**
	Relay outputs with wires	8 digital	4 relay	100 → 240 V ∿	**88973503**
NBR26	Relay outputs with connectors	16 digital	10 relay	100 → 240 V ∿	**88973063**
NBR32	Relay outputs with connectors	20 digital of which 6 are analogue	12 relay	24 V ⎓	**88973211**
NBR40	Relay outputs with connectors	24 digital of which 6 are analogue	16 relay	24 V ⎓	**88973231**
NBRxx	Relay or solid state outputs, connectors or wires	In accordance with your requirements	In accordance with your requirements	In accordance with your requirements	●

Accessories

Type	Description	Code
M3 AC SOFT	Multilingual programming software (CD-ROM) for adapted boards	**88970111**
M3 SPECIFIC FUNCTIONS	Library of specific functions (CD-ROM)	**88970103**
PA	1.80 m serial link cable: DB9/DB9	**88970123**

General characteristics

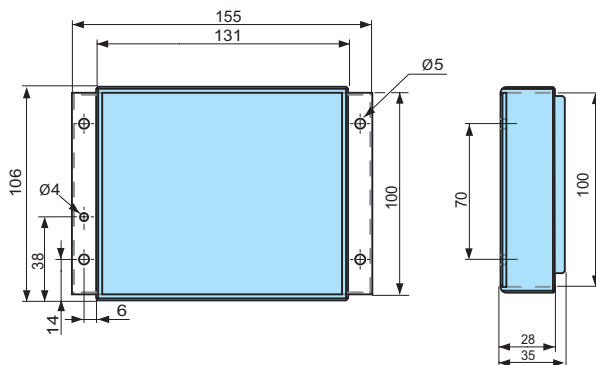**See page 20, except:**

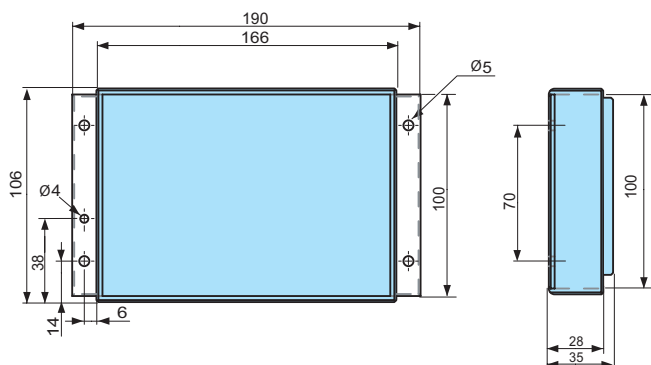|	
Protection index	IP50 connectors IP67 wire
Mechanical resistance IEC 61373	Railway applications - Rolling stock Category 1 class B stock mounted on car Vibration resistance: 5-150 Hz Random sampling: 10 minutes in each direction (X, Y, Z) Sinusoidal sampling: 5 hours in each direction (X, Y, Z) Shock resistance: 3 shocks 3 g/30 ms per direction Dropping: Total of 26 drops on all sides from a height of 1 metre
Mechanical resistance GAM EG 13	Terrestrial military vehicles Vibration resistance 5-500 Hz 50 m/s² Sinusoidal sampling 5 hours in each direction (X, Y, Z) Shock resistance: Acceleration: 150 m/s², duration: 11 ms, 3 shocks per shaft Acceleration: 300 m/s², duration: 11 ms, 3 shocks per shaft Bumps: 1000 half wave sine mechanical bumps 25 g/6 ms per shaft
Operating temperature	-30 → +70°C
Storage temperature	-40 → +80°C
Housing	Self-extinguishing UL94V2
Resin	UL approved Self-extinguishing UL94V0 Semi-rigid polyurethane resin Solid black appearance Breakdown voltage: 25 kV/mm Water absorption: 0.2% (24 hours at 23°C) Shore D hardness: 50 ±5 Smoke category: F0
Outputs	40 cm wire or removable connectors
Breaking current	6 A relay output

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Dimensions (mm)

NBR12
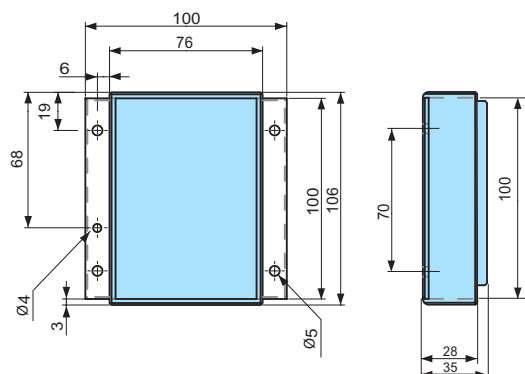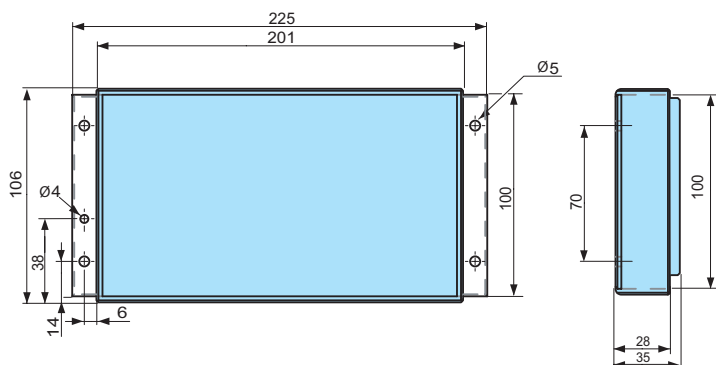

NBR26

NBR32

NBR40

Product adaptations

- ■ Extended power supply range (9 → 18 V ⎓), (16 → 36 V ⎓), (85 → 264 V ∼)
- ■ Remote polyester keyboard
- ■ UL, CSA, GL certification
- ■ Integration of all available electrical functions in the catalogue (e.g.: Bluetooth module, Pt 100 input, 0-20 mA input, 0-10 V power output, etc.

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Millenium 3 Adapted Control

➜ "Application-specific" analogue extensions for XD10 and XD26

- Mixing of inputs and/or outputs in the same casing in accordance with your performance specification (Pt 100, Pt 1000, pH, thermocouple, Redox, outputs 0-10 V, PWM, etc.)
- "Application-specific" examples:
  - Regulation and measurement of temperature (XA03)
  - pH and Redox sensors for processing water in swimming pools and fountains (XTA09)

XA03

XTA09

Part numbers

Type	Input	Output	Supply	Code
XA03	3 Pt 100	-	With 24 V ⎓ power base	**88970800***
XTA09	1 pH, 1 redox, 1 0-20 mA, 2 digital	4 relay	With 24 V ⎓ power base	**88972800***

General characteristics | 88970800 | 88972800

For general characteristics see Analogue extension XA04 on page 35, except for:

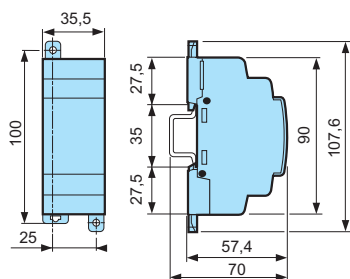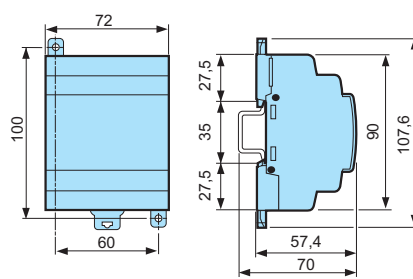|	88970800	88972800
Certifications	UL, CSA, GL (pending)	UL, CSA, GL (pending)
Inputs	3 Pt 100 3-wire conforming to IEC 751 (inputs IP, IQ, IR)	1 pH measurement input $0 \to 14$ pH on 12 bits (input IS) 1 Redox ORP measurement input (input IR) $0 \to 1000$ mV on 12 bits 1 input 0-20 mA (example: conductivity measurement) on 12 bits (input IT) 2 digital inputs (inputs IP, IQ) (example: product level)
Outputs	-	4 x 5 A relay outputs (outputs OF to OI)
Resolution	10 bits	-
Accuracy at 25°C	± 1°C	-
Accuracy at 55°C	± 1°C	-
Cable length (m)	10 m max. cable link	-
Input range	-25°C → +125°C	-

Comments

* If you connect this extension module to expandable logic controllers you will need to use the programming software 88970111 for adapted boards.

Dimensions (mm)

XA03

35,5 · 100 · 25 · 27,5 · 35 · 27,5 · 90 · 107,6 · 57,4 · 70

XTA09

72 · 100 · 60 · 27,5 · 35 · 27,5 · 90 · 107,6 · 57,4 · 70

Product adaptations

- Inputs Pt 100, CTN, CTP
- Inputs 0 to 20 mA
- Tropicalisation
- Relay or solid state power outputs

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➜ DC/DC converters

- **Power supplies for extended power ranges**
- **Provide your devices with a constant supply voltage**
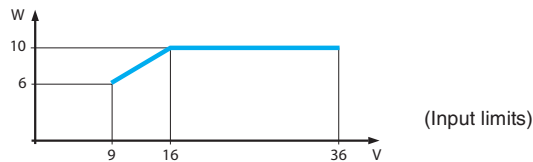- **Primary/secondary isolation**

DC/DC converter

Part numbers

Type	Input	Output	Nominal power	Code
PS	9-18 V ⎓	12 V ⎓	10 W	88950320
	16-36 V ⎓	24 V ⎓	10 W	88950321

General characteristics

	88950320	88950321
See page 20, except:		
Output voltage	12 V ⎓ ± 2%	24 V ⎓ ± 2%
Overvoltage	20 V ⎓ max.	40 V ⎓ max.
Input limits	9 → 18 V ⎓ (10 W available)	16 → 36 V ⎓ (10 W available)
		9 → 16 V ⎓ (see graph)
Immunity from micro power cuts		A 10 W: > 1 ms for 16 V < U < 18 V
		5 ms for U ≥ 18 V
		A 6 W: > 1 ms for U < 12 V
		> 5 ms for 12 V ≤ U < 18 V
		> 10 ms for U ≥ 18 V

Curves

W

10

6

9   16   36   V

(Input limits)

Dimensions (mm)

35,5

100

27,5

35

27,5

90

107,6

25

57,4

70
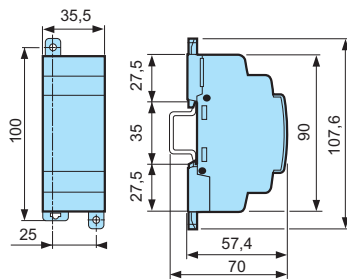
Product adaptations

- **Tropicalisation**
- **Integration in a resin board version**

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