Millenium II

LOGIC CONTROLLER

INSTALLATION MANUAL

NTR 756 B /E

More
than a standard

Crouzet

Table of contents

1. Introduction

The MILLENIUM II series has been designed for use in the household goods, medical and industrial fields. Each module allows you to manage all the sensors and actuators in the installation. A display on the front panel allows you to check the status of your system at any time.

The MILLENIUM II series features:

- Simple programming and parameter setting
- WINDOWS-based programming software
- Compact size
- EEPROM module backup
- Real-time clock as standard
- Output with high switching capacity

The MILLENIUM II series is ideal for simple automation systems (examples: lighting, air conditioning, irrigation, doors, barriers, simple systems, greenhouses, ventilation). The real-time clock is used for time-based programming of the units.

2. Hardware description

2.1 Available part numbers

Type	Part numbers	Power supply	Inputs		Outputs		Dimensions	Weight
			Type	Nbr	Type	Nbr	mm	gr
EC 12 R	88 950 023	100...240 VAC	100...240 VAC	8	RELAY	4	72 x 90 x 60	250
SA 12 R	88 950 043							
EC 12 R	88 950 021	24 VDC	24 VDC	8	RELAY	4		
SA 12 R	88 950 041							
EC 12 S	88 950 022	24 VDC	24 VDC	8	TRANSISTOR	4		
SA 12 S	88 950 042							
EC 12 R	88 950 024	24 VAC	24 VAC	8	RELAY	4		
SA 12 R	88 950 044							
EC 20 R	88 950 033	100...240 VAC	100...240 VAC	12	RELAY	8	125 x 90 x 60	380
SA 20 R	88 950 053							
XT 20 R	88 950 063							
EC 20 R	88 950 031	24 VDC	24 VDC	12	RELAY	8		
SA 20 R	88 950 051							
XT 20 R	88 950 061							
EC 20 S	88 950 032	24 VDC	24 VDC	12	TRANSISTOR	8		
SA 20 S	88 950 052							
XT 20 S	88 950 062							
EC 20 R	88 950 034	24 VAC	24 VAC	12	RELAY	8		
SA 20 R	88 950 054							
XT 20 R	88 950 064							

2.2 Description of power supplies

Power supplies	Specifications	Max. inrush current	Max. consumption		Immunity from micro power cuts
			12 I/O	20 I/O	
100…240 VAC	-15% +10%, 50/60 Hz	5 A	7 VA	8 VA	10 ms
24 VAC	-15% +10%, 50/60 Hz	2.5 A	7.5 VA	12 VA	10 ms
24 VDC	-15% +20% (including ripple)	6 A	3.5 W	4 W	1 ms

2.3 Description of inputs

Description	Description of AC inputs	
Input voltage	**100…240 VAC**, -15% +10%	**24 VAC**, -15% +10%
Operating frequency	50/60 Hz	50/60 Hz
Current consumption	0.35 mA (typical) 0.4 mA max	6.2 mA (typical) 7.5 mA max
Input impedance	> 700 KΩ	4 KΩ
Level 0	< 40 VAC	< 5 VAC
Level 1	> 80 VAC	> 15 VAC
Response time	50 ms	50 ms
Galvanic isolation	No	No
Status indication	LCD display	LCD display

Description	Description of DC inputs
Input voltage	**24 VDC** -15% +20%
Current consumption	3.2 mA (typical) 5.5 mA max
Input impedance	6.8 KΩ
Level 0	< 5 VDC
Level 1	> 15 VDC
Response time	5 ms
Galvanic isolation	No
Status indication	LCD display

Description	Description of analogue inputs
12 I/O	I 04 – I 08
20 I/O	I 04 – I 12
Number of bits	8
Resolution	(10,000/250) mV
Conversion time	10 ms
Input voltage	0 - 10 VDC
Input impedance	> 22 KΩ
Precision	± 5%
Default Offset/ Gain	Offset = 0 Gain = 1 These values can be altered via the software
Temperature drift	± 3 LSB over the authorized range
Response time	10 ms
Galvanic isolation	No
Status indication	LCD display

2.4 Description of relay outputs

Description	Description of relay outputs
Max. operating voltage	250 VAC, 30 VDC
Max. operating current	8A/point
Minimum load	10 mA at 5 VDC
Response time	10 ms
Type of contact	AgNi (cadmium-free)
Status indication	LCD display

Utilization category	Max. operating voltage	Power consumption in steady state	Durability (number of operations)	Operations max./hour
AC15 (electromagnet)	250 VAC	750 VA	6,000	600
AC14 (electromagnet)	250 VAC	750 VA	6,000	600
DC13 (electromagnet) (L/R = 15 ms)	30 VDC	30 W	6,000	360
AC12 (resistive)	250 VAC	2000 VA	100,000	1800
DC12 (resistive)	30 VDC	192 W	100,000	1800

2.5 Description of transistor outputs

Description	Description of transistor outputs
Operating voltage	5-24 VDC (+ 20%)
Maximum current	0.7 A
Minimum load	1.0 mA
Maximum inductive and resistive loads	0.7 A 24 VDC (24 W)
Maximum ignition load	0.125 A/24 VDC (3 W)
Ton/Toff, Toff/Ton response time	≤ 1 ms
Leakage current	≤ 0.1 mA/24 VDC
Status indication	LCD display
Circuit isolation	No

2.6 General description

Description	Specification
Programming	Logic block or function block
Program capacity	128 blocks
Program backup	Via internal EEPROM or optional external EEPROM module Internal EEPROM → 10,000 write operations External EEPROM → 100,000 write operations
Data backup	10 years
Clock backup	10 years
LCD display	Display with 4 lines of 12 characters.

Climatic conditions:

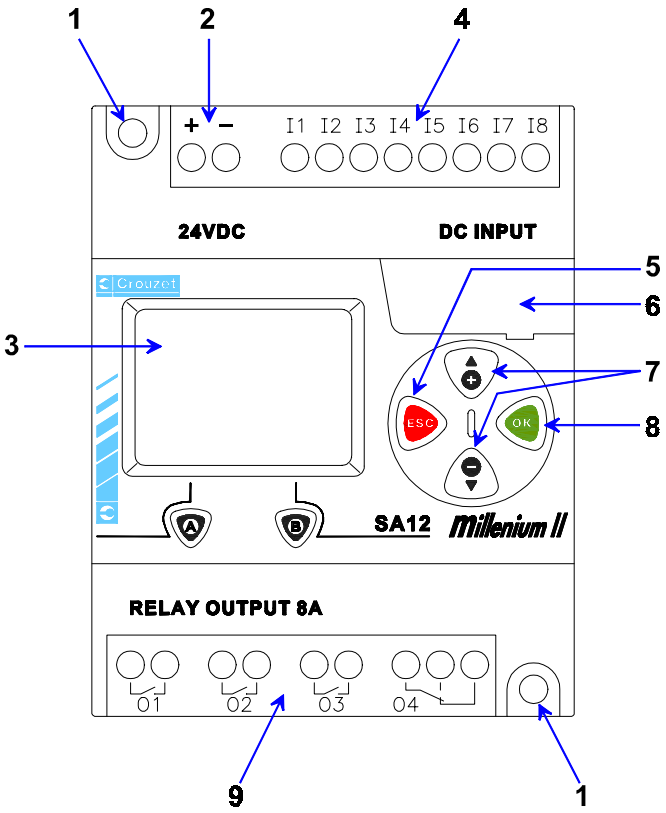
Type	Standard	Amplitude
Operating temperature	IEC 60068-2-14	-5 °C +55 °C
Storage temperature	IEC 60068-2-1/2	-40 °C +70 °C
Relative humidity	IEC 60068-2-30	Max. 95% RH, without condensation
Degree of protection	IEC 60529	IP 20
Atmosphere		Absence of corrosive gas. Minimum dust
Casing material		Self-extinguishing

Mechanical protection:

Type	Standard	Amplitude
Resistance to vibrations	IEC 60068-2-6	10-57 Hz: 0.075 mm peak 57-150 Hz acceleration: 9.8 m/s² Scrolling: 1 octave/Minute 80 minutes in each direction (X, Y, Z)
Shock resistance	IEC 60068-2-27	Acceleration: 147 m/s², duration: 11 ms 3 times in each direction (X, Y, Z)

Type	Standard	Amplitude
Breakdown voltage	IEC/EN 60730-1 IEC/EN 60601-1	1500 VAC/50 Hz/1 mA/1 min between the following points: Power supply terminals, I/O terminals, Between the relay outputs, Between the terminals and the DIN 43880 or equivalent control unit
Insulation resistance	IEC/EN 60730-1 IEC/EN 60601-1	>2 MΩ at 500 VDC between the following points: Power supply terminals, I/O terminals, Between the relay outputs Between the terminals and the DIN 43880 or equivalent control unit
Impulse voltage	IEC/EN 60947-1 IEC/EN 60730-1 IEC/EN 60664-1	230 VAC version: 4 KV 24 VDC version: 0.8 KV (Overvoltage category: 3, Degree of pollution: 3)
Safety class (protection against electric shocks)	IEC/EN 60730-1	0: industrial mounting II: mounting in casing for domestic use or flush-mounted in panel
Operating classification	IEC/EN 60730-1	Type 1C
Ball test	IEC/EN 60730-1	Casing: 75 °C; active part: 125 °C
Software class	IEC/EN 60730-1	Class A
Type of mounting	IEC/EN 60730-1	Independent mounting
Certification		- "CE" marked in relation to the Low Voltage Directive (73/23/EEC + 93/68/EEC) - Conforms with EMC Directive (89/336/EEC) - UL/(c)UL (UL 508)
Conformity	IEC/EN 60730-1 IEC/EN 60947-1 IEC/EN 60601-1 EN 50081-1/2 EN 50082-1/2 IEC/EN 61000-6-2 IEC/EN 60601-1-2	

3. Installation



Ref.	Description of front panel
1	Fixing holes
2	Power supply screw terminal
3	LCD display
4	Input screw terminal
5	Escape key
6	Slot for memory module or PC cable
7	Scroll buttons
8	Selection button
9	Output screw terminal

3.1 DIN rail mounting

The modules can be mounted on 35 mm DIN rails (EN 50022).
(Mounting at the back of the enclosure on a metal grid or mounting in a DIN 43 880 box).

3.2 Panel mounting

Recommended fixing screw diameter: M4.

3.3 Screw terminal connection

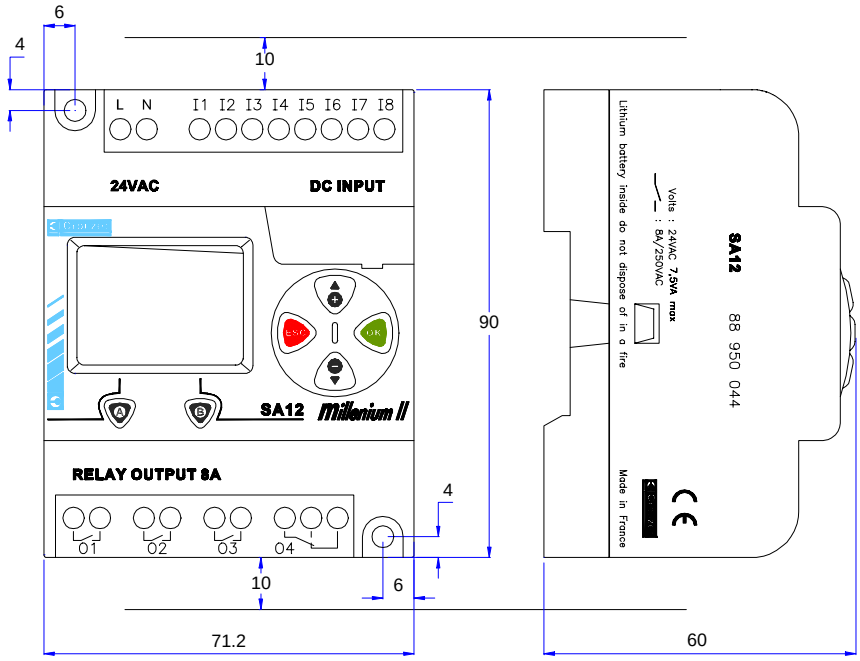
The end of the wire should be fitted with a ferrule.

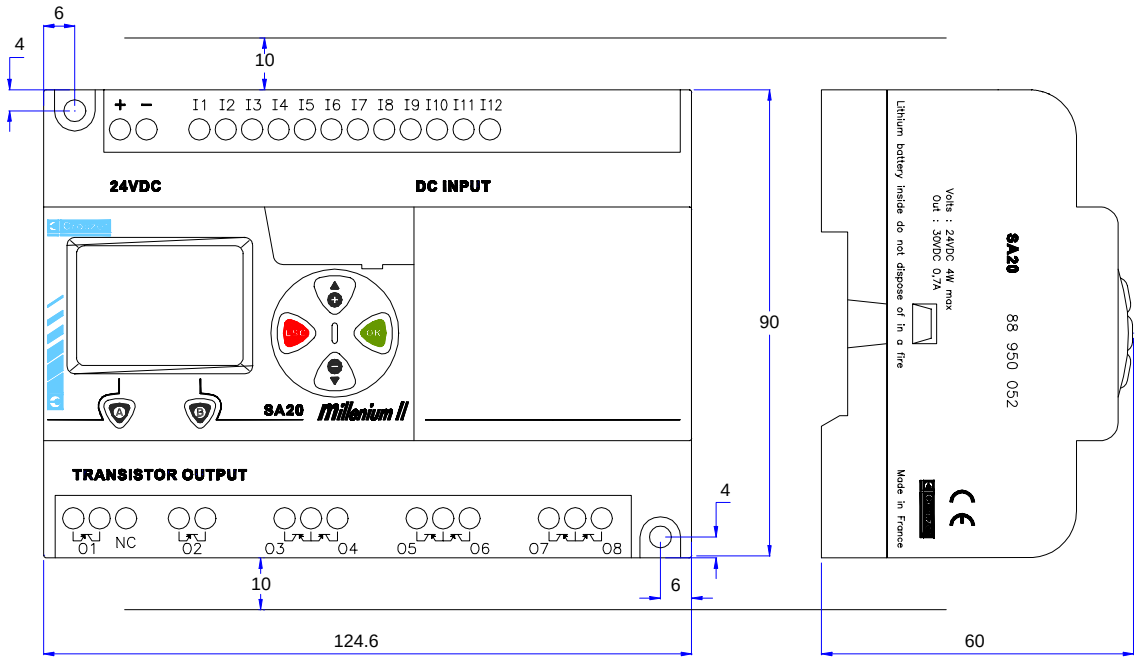
3.4 Mounting notes

The MILLENIUM II series can be installed in any location, but the following points should be taken into consideration:
- Do not install the unit in an environment that is excessively dusty, conductive, corrosive, gas-filled, damp, rainy or inflammable, or where there is excessive heat*, excessive shock or vibration.
- Do not install the module in water or near any possible leaks.
- Protect the module from external debris during installation.

Keep as far away as possible from power cables and equipment. The MILLENIUM II series module can be installed in enclosures complying with standard DIN 43880.

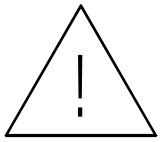
* To ensure adequate module ventilation, there should be a gap of 10 mm between the front panel and the enclosure door, and also between the back of the enclosure and the back of the module.





4. Connection

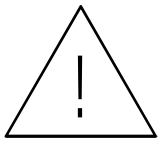
4.1 Connection notes



The MILLENIUM II series has been designed to be easy to connect. A technician or engineer trained in national and local electrical standards should be able to connect MILLENIUM II series modules to the sensors and actuators without problem.

- The input and output cables should be in separate sheaths.
- Keep the I/O cables away from the power cables.
- Use the appropriate cables.

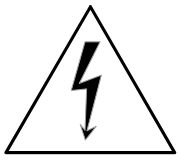
4.2 Conductor cross-section



For the I/O, use the following conductors: 0.14 mm² - 2.5 mm² (26 - 14 AWG).
Strip the conductor over a length of 7 ± 0.5 mm.
Unscrew the terminal screw to its maximum before inserting the conductor.
Insert the wire fully into the terminal and screw tight to ensure correct connection.

Maximum tightening 0.5 Nm (5kgfcm).
Do not coat the conductors with tin to prevent them breaking.

4.3 Power supply



For an AC power supply, the phase should be connected to the "L" terminal and the Neutral to the "N" terminal. Never connect the phase to the "N" terminal. The user could receive a dangerous electric shock.

For a DC power supply, the positive conductor should be connected to the '+' terminal and the negative conductor to the '-' terminal.
The power supply terminals should not be connected to the other module terminals.

4.4 Input wiring diagram

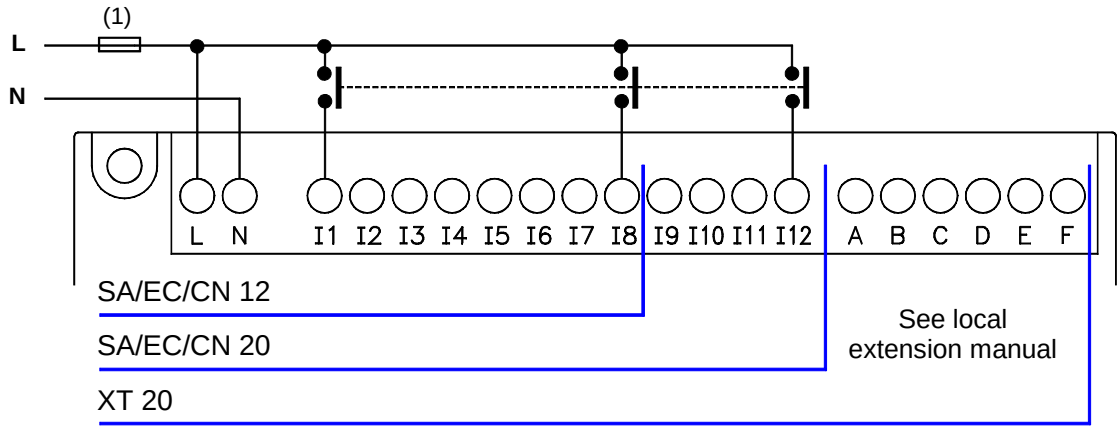
***POWER*: AC** ***INPUT*: AC**

100…240 VAC (-15%, +10%) 50/60 Hz
24 VAC (-15%, +10%)

Ambient temperature: -5 °C +55 °C

Terminals L and N cannot be reversed.

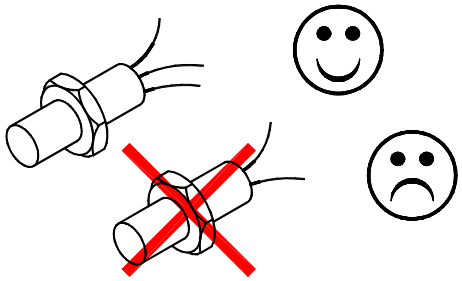
(1) fuse or cut-out

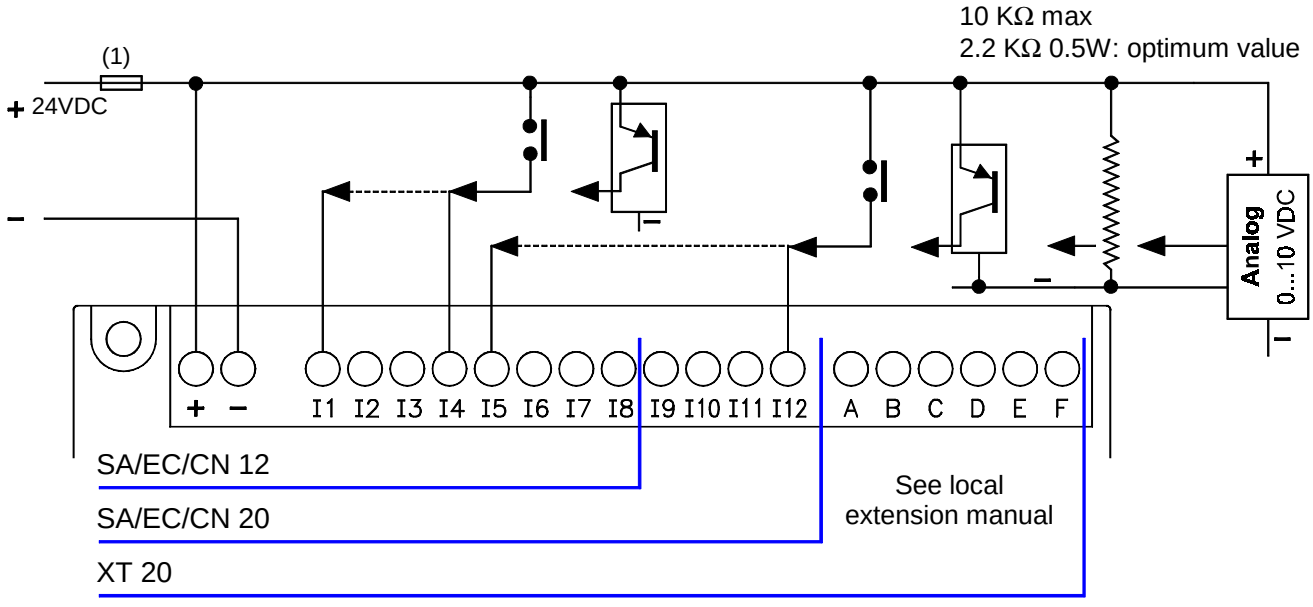


***POWER*: DC** ***INPUT*: DC**

24 VDC (-15%, +20%)

Ambient temperature: -5 °C +55 °C



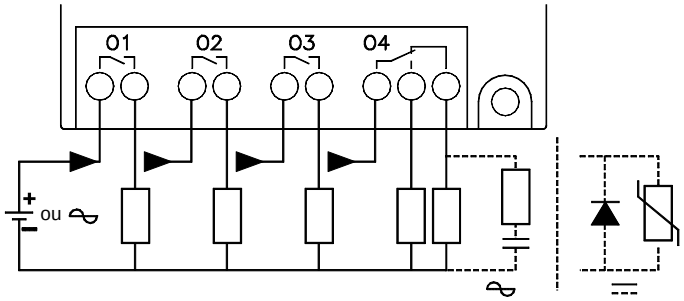


4.5 Output wiring diagram

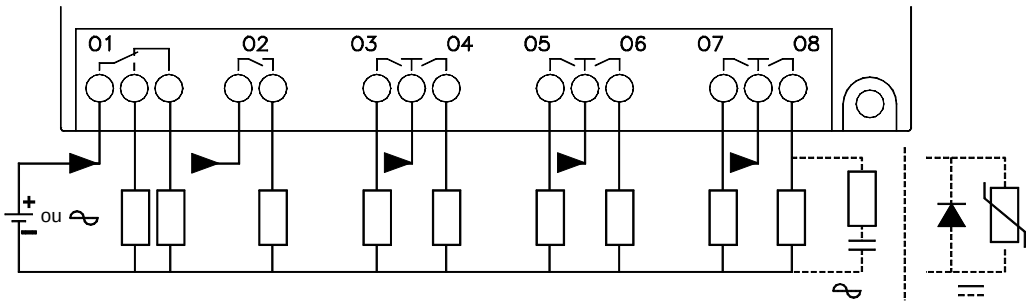
***OUTPUT*: RELAY**

Resistive load: 8A 250 VAC/30 VDC

SA/EC/CN 12R



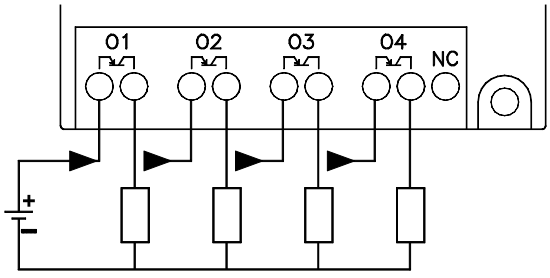
SA/EC/XT/CN 20R



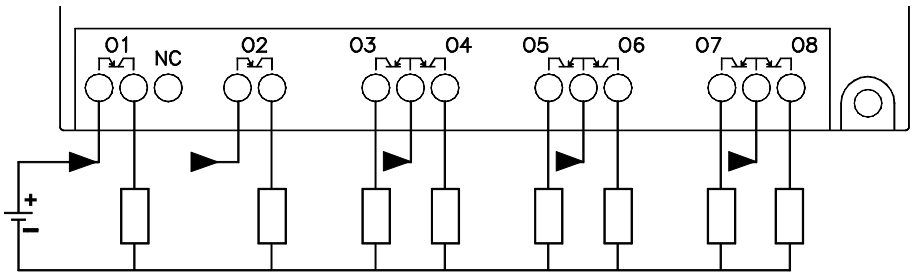
***OUTPUT*: TRANSISTOR**

5…28.8 VDC/0.7A max

SA/EC/CN 12S



SA/EC/XT/CN 20S



5. User safety and protection of the equipment

• This manual contains the diagrams and explanations which will guide the user through correct installation and use of MILLENIUM II products. This manual should be read and fully understood before use or installation.

• If you have any doubts during installation of MILLENIUM II products or require further information, please consult your Crouzet distributor.

• This manual may be modified without notice.

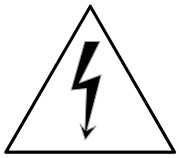
This manual is intended for skilled persons trained in installation of the equipment as defined in the following European Directives:

- Machine (98/37/EEC)
- Low Voltage (73/23/EEC)
- EMC (89/336/EEC)

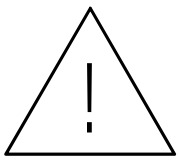
Installation and electrical connection should be performed by a qualified technician.

This manual uses the symbols below to emphasize information relating to the safety of persons and protection of equipment. When these symbols are encountered, the associated annotation should be read and fully understood.

The symbols are:



The danger identified will cause material damage.



The danger identified could cause material damage.

• Under no circumstances can Crouzet be held responsible for damage resulting from installation or use of this equipment.

• All examples and diagrams in this manual are intended to assist understanding. The user is responsible for applying them correctly. Crouzet will not accept any responsibility for the actual use of this product based on these examples.

• It is the user's responsibility to assess the suitability of this product for his applications.

• Should the device malfunction, the integral safety devices should prevent any dangerous situation arising.
• Never attempt to modify or repair MILLENIUM II products.
• Check that MILLENIUM II products comply with existing national and local standards.