

Millenium II +: general characteristics

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- Power supply**
- Level detection**
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| | |
|-------------------------------------|---|
| Insulation | 7 MΩ |
| Safety class | 0 industrial / II domestic casing |
| Earthing | None |
| Protection | IP20 / Terminal block IP40 IP00 for CN12 and CN20 |
| Certifications | CE, UL, cUL |
| Conformity to standards | EN 60947-1 EN 60730-1 EN 60601-1 |
| Programming method | Function blocks/SFC |
| Program size | 128 blocks |
| Program memory | Flash EEPROM |
| Removable memory | EEPROM |
| Data memory | 256 bits / 64 words backed up for 10 years |
| LCD display | Display with 4 lines of 12 characters |
| Real-time clock | Drift < 1 min/month at 25 °C with user-definable correction of drift Data retention : 10 years (lithium battery) |
| Storage temperature (°C) | -40 → +70 |
| Operating temperature (°C) | -5 → +55 |
| Relative humidity (no condensation) | 90 → 95 % |
| Dimensions (l x h x w) | SA12-EC12 : 72 x 90 x 60 mm SA20-XT20 : 125 x 90 x 60 mm EC20-EX20 CN12 : 72 x 90 x 42 mm CN20 : 125 x 90 x 42 mm |

| | |
|------------------------------------|--|
| Electrical characteristics | |
| Power supply 100 - 240 V AC | |
| Operating voltage | 100 V AC → 240 V AC +10 % -15 % 50/60 Hz |
| Operating limits | 85 V AC → 264 V AC |
| Immunity from micro power cuts | 10 ms |
| Maximum inrush current | 5 A |
| Max. absorbed power | SA12-EC12-CN12 : 6 VA SA20-EC20-CN20 : 6.5 VA XT20-EX20 : 8 VA |

| | |
|--------------------------------|--|
| Power supply 24 V AC | |
| Operating voltage | 24 V AC +10 % -15 % 50/60 Hz |
| Operating limits | 20.4 V AC → 28.8 V AC |
| Immunity from micro power cuts | 10 ms |
| Maximum inrush current | 2.5 A |
| Max. absorbed power | SA12-EC12-CN12 : 6 VA SA20-EC20-CN20 : 6.5 VA XT20-EX20 : 8 VA |

| | |
|--------------------------------|---|
| Power supply 24 V DC | |
| Operating voltage | 24 V DC +20 % -15 % |
| Operating limits | 20.4 V DC → 28.8 V DC |
| Immunity from micro power cuts | 1 ms |
| Maximum inrush current | 6 A |
| Max. absorbed power | SA12-EC12-CN12 : 3.5 W SA20-EC20-CN20 : 4 W XT20-EX20 : 5 W |

| | |
|--------------------------------|---|
| Power supply 12 V DC | |
| Operating voltage | 12 V DC +30% -15% +30% -11% for XT20 relay 88 950 065 |
| Operating limits | 10.2 V DC → 15.6 V DC 10.68 VDC → 15.6 V DC for XT 20 relay 88 950 065 |
| Immunity from micro power cuts | 1 ms |
| Maximum inrush current | 6 A |
| Max. absorbed power | SA12-EC12-CN12 : 2.2 W SA20-EC20-CN20 : 4.5 W XT20-EX20 : 5.5 W |

| | |
|--|---------------------------------------|
| 100 - 240 V AC input | |
| Input voltage (V AC) | 100 - 240 (+10 % / -15 %) |
| Supply frequency range (Hz) | 50/60 Hz |
| Input impedance (kΩ) | 700 |
| Pull-in voltage at logic state 1 (V AC) | ≥ 80 |
| Drop-out voltage at logic state 0 (V AC) | ≤ 40 |
| Response time | 50 |
| Status indicator | On LCD screen for SA12, SA20 and XT20 |

| | |
|--|---------------------------------------|
| 24 V AC input | |
| Input voltage (V AC) | 24 (+10 % / -15 %) |
| Supply frequency range | 50/60 Hz |
| Input impedance (kΩ) | 4 |
| Pull-in voltage at logic state 1 (V AC) | ≥ 15 |
| Drop-out voltage at logic state 0 (V AC) | ≤ 5 |
| Response time | 50 ms |
| Status indicator | On LCD screen for SA12, SA20 and XT20 |

| | |
|--|------------------------------------|
| Analogue input (24 V DC model only) | |
| CN12-SA12-EC12 | 4 inputs from I5 to I8 |
| CN20-SA20-EC20-XT20 | 8 inputs from I5 to I12 |
| Measurement range | (0 → 10 V) or (0 → V power supply) |
| Resolution | 8 bits |
| Conversion time | 10 ms |
| Max input voltage | 28.8 V DC |
| Input impedance (kΩ) | > 22 |
| Accuracy | +/- 5 % |
| Drift Temperature | +/- 3 LSB |
| Potentiometer control | 2.2 kΩ / 0.5 W |

| | |
|-----------------------------------|---------------------------------------|
| 24 V DC input | |
| Current drain | 24 (+20 % -15 %) V DC |
| Input current | 3.2 mA / 5.5 mA max. |
| Input impedance | 6.8 kΩ |
| Pull-in voltage at logic state 1 | ≥ 15 V DC |
| Drop-out voltage at logic state 0 | ≤ 5 V DC |
| Response time | 10 ms |
| Galvanic isolation | No |
| Sensor type | Contact or 3-wire PNP or 3-wire NPN |
| Status indicator | On LCD screen for SA12, SA20 and XT20 |

| 12 V DC input | |
|--|---|
| Input voltage | 12 (+30 % -15 %) V DC (except XT20R +30 % -11 %) |
| Input current | 1.9 mA / 2.3 mA max. |
| Input impedance | 6.45 k Ω |
| Pull-in voltage at logic state 1 | \geq 8 V DC |
| Drop-out voltage at logic state 0 | \leq 3 V DC |
| Response time | 10 ms |
| Sensor type | Contact or PNP or 3-wire NPN |
| Galvanic isolation | No |
| Status indicator | On LCD screen for SA12, SA20 and XT20 |
| Analogue input (12 V DC model only) | |
| CN12 - SA12 - EC12 | 4 inputs I5 to I8 |
| CN20-SA20-EC20-XT20 | 8 inputs I5 to I8 |
| Measurement range | 0 \rightarrow 10 V |
| Resolution | 8 bits |
| Conversion time (ms) | 10 |
| Max input voltage | 15.6 V DC |
| Input impedance (k Ω) | > 10 (14 typically) |
| Precision | \pm 5 % |
| Temp. dependent derating | \pm 3 LSB |
| Potentiometer control | 2.2 k Ω / 0.5 W |
| Relay output | |
| Max. breaking voltage | 250 V AC / 30 V DC |
| Breaking current | 8 A |
| Service life | 8 A / 250 V AC resistive (100 000 operations) |
| Minimum load | 10 mA to 5 V DC |
| Response time | 10 ms |
| Status indicator | On LCD screen for SA12, SA20 and XT20 |
| TOR / PWM solid state output | |
| PWM solid state output | SA12-EC12-CN12 : O1 to O4 SA20-XT20-EC20-CN20 : O1 to O6 |
| Breaking current | 5-28.8 V DC |
| Breaking voltage | 0.7 A / 5-28.8 V DC |
| Min. load | 1 mA |
| Maximum inductive load | 0.7 A |
| Maximum incandescent load | 0.1 A |
| Leakage | 0.1 mA / 24 V DC |
| Response time | 1 ms |
| Insulation | No |
| PWM frequency | 120 Hz to 1920 Hz (user-definable) |
| PWM cyclic ratio | 0 to 100 % (256 steps) |
| PWM precision at 120 Hz | < 5 % (from 15 % to 85 %) load at 10 mA |
| PWM precision at 500 Hz | < 10 % (from 20 % to 80 %) load at 10 mA |
| Status indicator | On LCD screen for SA12, SA20 and XT20 |

→ Starter kit

- Discover the benefits of Millenium II+
- Each kit includes :
 - a standard or expandable Millenium II+
 - a PC/Millenium programming cable
 - an interactive CD-Rom including the software workshop, tutorial, application library and technical brochures.



Specifications

| Type | Input | Output | Supply | Code |
|-----------|-------|----------|----------------|------------|
| KIT SA 12 | 8 | 4 relays | 24 VDC | 88 950 070 |
| | 8 | 4 relays | 100 - 240 V AC | 88 950 071 |
| Kit SA 20 | 12 | 8 relays | 24 V DC | 88 950 072 |
| | 12 | 8 relays | 100 - 240 VAC | 88 950 073 |
| Kit XT 20 | 12 | 8 relays | 24 V DC | 88 950 074 |
| | 12 | 8 relays | 100 - 240 V AC | 88 950 075 |

→ Special starter kits

- Special Millenium II kits with all the extras needed for your application
- Each kit includes :
 - a standard or expandable Millenium II+
 - a PC/Millenium programming cable
 - an interactive CD-ROM including the software workshop, tutorial, application library and technical brochures.



Specifications

| Type | Designation | Supply | Code |
|-------------------------|---------------------------------------|---------|------------|
| Level control KIT | Level control | 24 V AC | 88 950 076 |
| Temperature control KIT | Heating, cooling and air conditioning | 24 V DC | 88 950 077 |

→ Standard

- Intuitive programming via function block (FBD) or grafcet (SFC)
- Function : timing, counting, etc
- Application-specific functions : rotation, cam timers, calculation, etc
- Discrete, analogue or potentiometer inputs
- Relay, solid state or PWM outputs
- Backlit LCD display
- Program password protection
- Integral calendar and clock
- User-definable from the front panel
- Non-expandable

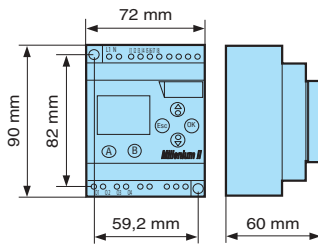


Specifications

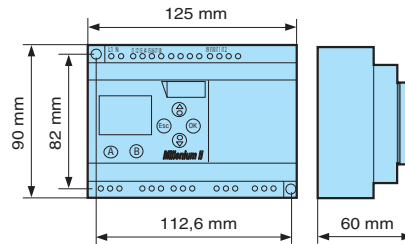
| Type | Input | Output | Supply | Code |
|--------|-------|---------------|---------------|------------|
| SA 12 | 8 PNP | 4 relays | 24 VDC | 88 950 041 |
| | 8 | 4 relays | 100 - 240 VAC | 88 950 043 |
| | 8 | 4 relays | 24 VAC | 88 950 044 |
| | 8 PNP | 4 solid state | 24 VDC | 88 950 042 |
| | 8 PNP | 4 relays | 12 V DC | 88 950 045 |
| | 8 PNP | 4 solid state | 12 V DC | 88 950 046 |
| | 8 NPN | 4 relays | 24 VDC | 88 950 049 |
| | SA 20 | 12 PNP | 8 relays | 24 VDC |
| 12 | | 8 relays | 100 - 240 VAC | 88 950 053 |
| 12 | | 8 relays | 24 VAC | 88 950 054 |
| 12 PNP | | 8 solid state | 24 VDC | 88 950 052 |
| 12 PNP | | 8 relays | 12 V DC | 88 950 055 |
| 12 PNP | | 8 solid state | 12 V DC | 88 950 056 |
| 12 NPN | | 8 relays | 24 VDC | 88 950 059 |

Dimensions

SA 12



SA 20



General characteristics

see page 25

→ Level detection

- Intuitive programming via function block (FBD) or grafcet (SFC)
- Function : timing, counting, etc
- Application-specific functions : rotation, cam timers, calculation, etc
- Discrete, analogue or potentiometer inputs
- Relay, solid state or PWM outputs
- Backlit LCD display
- Program password protection
- Integral calendar and clock
- User-definable from the front panel
- Non-expandable

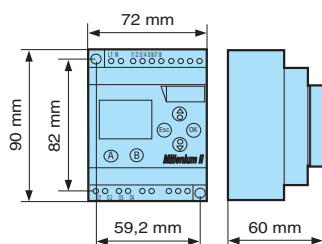


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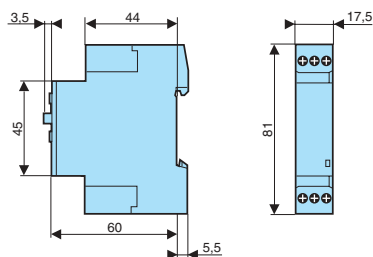
| Type | Input | Output | Supply | Code |
|------------------------------|-------|----------|---------|------------|
| SA 12 + level sensor adaptor | 8 | 4 relays | 24 V AC | 88 950 813 |

Dimensions

SA 12



Level sensor adaptor



→ Expandable

- Expandable : communication, inputs/outputs, etc
- Intuitive programming via function block (FBD) or grafset (SFC)
- Function : timing, counting, etc
- Application-specific functions : rotation, cam timers, calculation, etc
- Discrete, analogue or potentiometer inputs
- Relay, solid state or PWM outputs
- Backlit LCD display
- Program password protection
- Integral calendar and clock
- User-definable from the front panel
- Can take an XC adjacent extension and an XL local extension

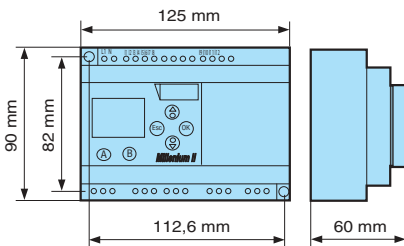


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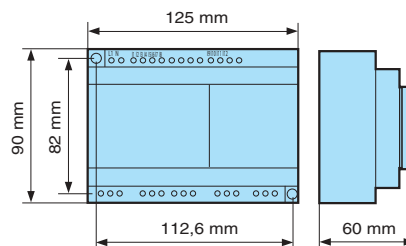
| Type | Input | Output | Supply | Code |
|-------|--------|---------------|----------------|------------|
| XT 20 | 12 PNP | 8 relays | 24 VDC | 88 950 061 |
| | 12 PNP | 8 relays | 100 - 240 VAC | 88 950 063 |
| | 12 PNP | 8 relays | 24 VAC | 88 950 064 |
| | 12 PNP | 8 solid state | 24 VDC | 88 950 062 |
| | 12 PNP | 8 relays | 12 V DC | 88 950 065 |
| | 12 PNP | 8 solid state | 12 V DC | 88 950 066 |
| | 12 NPN | 8 relays | 24 VDC | 88 950 069 |
| EX 20 | 12 PNP | 8 relays | 24 V DC | 88 950 831 |
| | 12 | 8 relays | 100 - 240 V AC | 88 950 833 |
| | 12 | 8 relays | 24 V AC | 88 950 834 |
| | 12 PNP | 8 solid state | 24 V DC | 88 950 832 |
| | 12 NPN | 8 relays | 24 V DC | 88 950 839 |

Dimensions

XT 20



EX 20



General characteristics

see page 25

→ Blind

- No display or parameter-setting buttons
- Intuitive programming via function block (FBD) or grafset (SFC)
- Function : timing, counting, etc
- Application-specific functions : rotation, cam timers, calculation, etc
- Discrete, analogue or potentiometer inputs
- Relay, solid state or PWM outputs
- Program protected by a password
- Integral calendar and clock

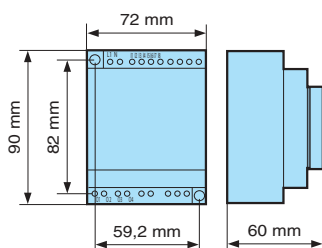


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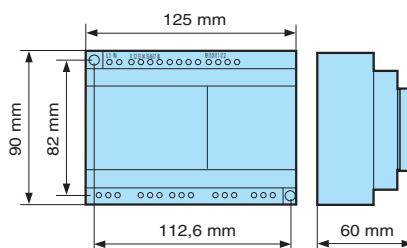
| Type | Input | Output | Supply | Code |
|-------|--------|---------------|---------------|------------|
| EC12 | 8 PNP | 4 relays | 24 VDC | 88 950 021 |
| | 8 | 4 relays | 100 - 240 VAC | 88 950 023 |
| | 8 | 4 relays | 24 VAC | 88 950 024 |
| | 8 PNP | 4 solid state | 24 VDC | 88 950 022 |
| | 8 PNP | 4 relays | 12 V DC | 88 950 025 |
| | 8 PNP | 4 solid state | 12 V DC | 88 950 026 |
| | 8 NPN | 4 relays | 24 VDC | 88 950 029 |
| EC 20 | 12 PNP | 8 relays | 24 VDC | 88 950 031 |
| | 12 | 8 relays | 100 - 240 VAC | 88 950 033 |
| | 12 | 8 relays | 24 VAC | 88 950 034 |
| | 12 PNP | 8 solid state | 24 VDC | 88 950 032 |
| | 12 PNP | 8 relays | 12 V DC | 88 950 035 |
| | 12 PNP | 8 solid state | 12 V DC | 88 950 036 |
| | 12 NPN | 8 relays | 24 VDC | 88 950 039 |

Dimensions

EC 12



EC 20

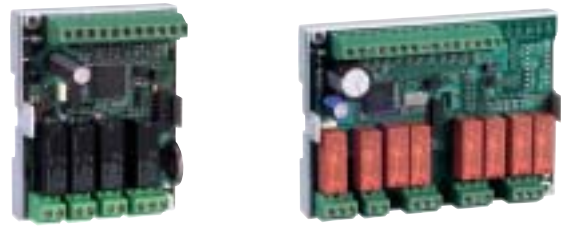


General characteristics

see page 25

→ Bare board

- For mass-production applications
- Intuitive programming via function block (FBD) or grafset (SFC)
- Function : timing, counting, etc
- Application-specific functions : rotation, cam timers, calculation, etc
- Discrete, analogue or potentiometer inputs
- Relay, solid state or PWM outputs
- Program protected by password
- Integral calendar and clock

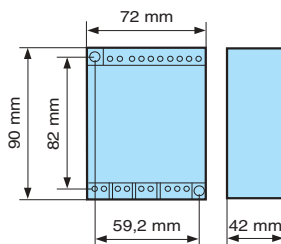


Specifications

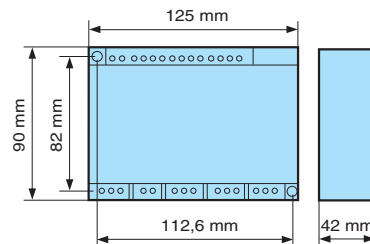
| Type | Input | Output | Supply | Code |
|-------|--------|---------------|----------------|------------|
| CN 12 | 8 PNP | 4 relays | 24 V DC | 88 950 001 |
| | 8 | 4 relays | 100 - 240 V AC | 88 950 003 |
| | 8 | 4 relays | 24 V AC | 88 950 004 |
| | 8 PNP | 4 solid state | 24 V DC | 88 950 002 |
| | 8 PNP | 4 relays | 12 V DC | 88 950 005 |
| | 8 PNP | 4 solid state | 12 V DC | 88 950 006 |
| | 8 NPN | 4 relays | 24 V DC | 88 950 009 |
| CN 20 | 12 PNP | 8 relays | 24 V DC | 88 950 011 |
| | 12 | 8 relays | 100 - 240 V AC | 88 950 013 |
| | 12 | 8 relays | 24 V AC | 88 950 014 |
| | 12 PNP | 8 solid state | 24 V DC | 88 950 012 |
| | 12 PNP | 8 relays | 12 V DC | 88 950 015 |
| | 12 PNP | 8 solid state | 12 V DC | 88 950 016 |
| | 12 NPN | 8 relays | 24 V DC | 88 950 019 |

Dimensions

CN 12



CN 20



General characteristics

see page 25

→ Local extensions

- For XT 20 only (1 local extension per module)
- Millenium - Millenium local link
- Doubles the hardware and software capacities
- Transparent communication between two XT 20 units
- Max. distance between two XT 20 units : 10 metres
- Cable type : screened twisted pair



Specifications

| Type | Designation | Supply | Code |
|-------|---------------------------------|----------------|------------|
| XL 01 | M2 - M2 local link (2 modules) | universal | 88 950 200 |
| XL 05 | 4 solid state outputs | universal | 88 950 204 |
| XL 06 | 2 Relay outputs (250mA Maximum) | 100 → 240 V AC | 88 950 810 |

→ Adjacent extensions

- For XT 20 only (one adjacent extension per module)
- 4 or 6 additional inputs/outputs

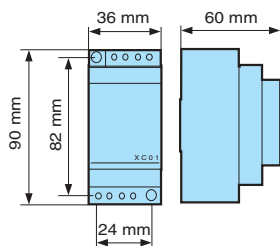


Specifications

| Type | Designation | Supply | Code |
|-------|------------------------------|----------------|------------|
| XC 01 | 4 inputs PNP 2 relay outputs | 24 V DC | 88 950 210 |
| | 4 inputs relay outputs | 24 V AC | 88 950 211 |
| | 4 inputs 2 relay outputs | 100 - 240 V AC | 88 950 212 |
| | 4 inputs 2 relay outputs | 12 V DC | 88 950 215 |
| | 4 inputs NPN 2 relay outputs | 24 V DC | 88 950 219 |

Dimensions

XC 01



→ Communication modules

- For XT 20 only (one adjacent extension per module)
- Communication using MODBUS or AS-i protocol (Slave module)

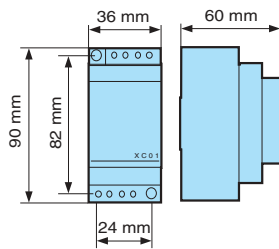


Specifications

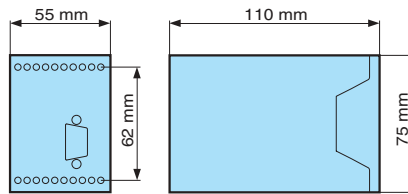
| Type | Designation | Supply | Code |
|--------|-------------------------------------|---------|------------|
| XC 02 | AS-i communication module 24 V DC | 24 V DC | 88 950 213 |
| XC 03 | MODBUS communication module 24 V DC | 24 V DC | 88 950 214 |
| Modems | STN | | 88 950 106 |
| | GSM | | 88 950 107 |

Dimensions

xc02/xc03



modem



→ Temperature sensors

- Built-in converter : 0-10 V DC output
- Applications : Industrial and domestic



Specifications

| Type | Range | Accuracy | Protection casing | Protection probe | Code |
|--------------------------|---------------|-----------------|-------------------|------------------|------------|
| Zone | -10 → +40 °C | -0.2 °C +1.2 °C | IP30 | | 89 750 150 |
| Ventilation duct | -10 → +40 °C | -0.2 °C +1.9 °C | IP65 | IP30 | 89 750 151 |
| Outdoor | -10 → +40 °C | -0.2 °C +1.2 °C | IP65 | | 89 750 152 |
| Remote/submersible probe | -10 → +150 °C | -0.2 °C +1.2 °C | IP65 | IP67 | 89 750 153 |
| Outdoor | -40 → +20 °C | -0.2 °C +1.9 °C | IP65 | IP67 | 89 750 155 |

Accessories

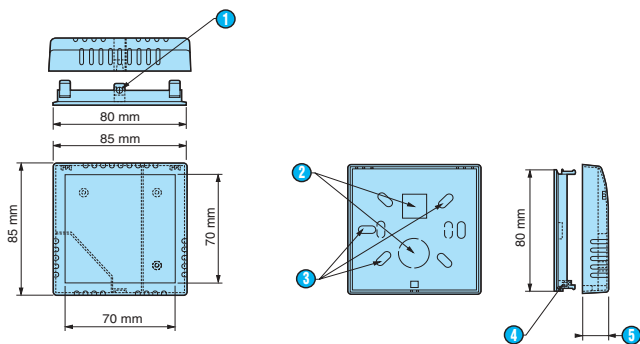
| Type | Operating temperature (°C) | Operating pressure (bar) | Code |
|--|----------------------------|--------------------------|------------|
| Copper protective sleeve for 89 750 153 | -20 → +100 | 10 | 89 750 146 |
| Stainless steel (316) protective sleeve for 89 750 153 | -20 → +400 | 16 | 89 750 147 |
| Heat transfer compound | - | - | 18 372 112 |

General characteristics

| | |
|-----------------------------------|---------------------------|
| Supply voltage | 24 V DC (±10 %) |
| Output | 0 → 10 V DC |
| Temperature coefficients Derating | 0.01 % / °C of full scale |
| Temperature coefficients Offset | 1.5 mV / °C |
| Ambient temperature (°C) | -10 → +60 |
| Ambient humidity | 5 → 95 % RH |
| Material housing | Self-extinguishing |

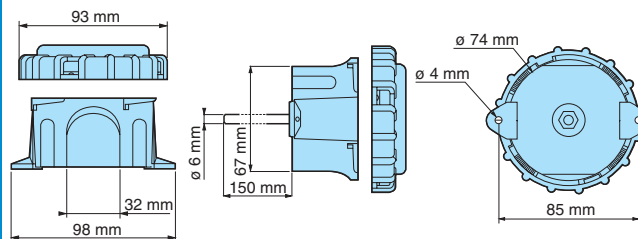
Dimensions

89 750 150

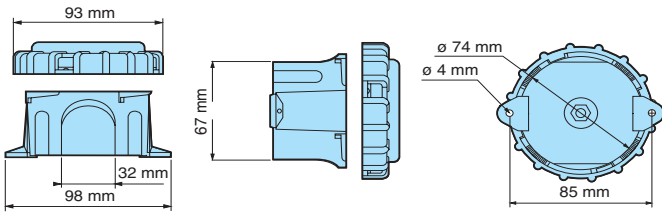


- ① Ø3 mm for screw M3 x 8
- ② Cut-outs
- ③ Fixing holes
- ④ Bolt hole M3
- ⑤ Maximum thickness 26 mm

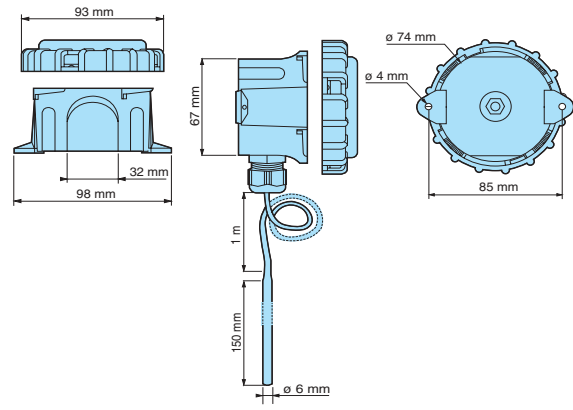
89 750 151



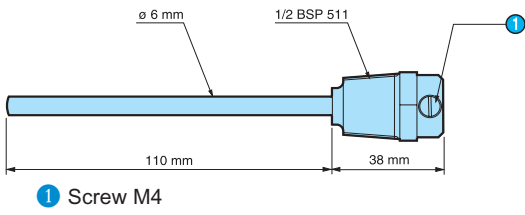
89 750 152



89 750 153 and 89 750 155



Accessories for 89 750 153 and 89 750 155



1 Screw M4

→ Modular power supply

- The output voltage can be adjusted from 100 to 120 % with a potentiometer in order to compensate for possible voltage drops.
- Output voltage existence is indicated by a continuously lit LED. A flashing LED indicates an autoprotection mode.
- Regulated, power surge and short circuit safe, the new switching power supplies easily fit into control panels.



Specifications

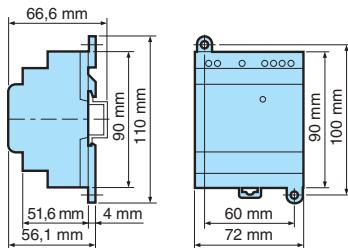
| Type | Voltage | Nominal power | Code |
|------|---------|---------------|------------|
| PS | 12 V DC | 22 W | 88 950 300 |
| | 24 V DC | 30 W | 88 950 301 |

General characteristics

| | |
|--------------------------|---|
| Input voltage | 100 → 240 V AC single phase |
| Output voltage | 88 950 300 : 12 V DC 88 950 301 : 24 V DC ajustable de 100 à 120 % |
| Nominal power | 88 950 300 : 22W 88 950 301 : 30W |
| Technology | Electronic with primary decoupling |
| Short-circuit protection | • |
| Overload protection | • |
| Reset after overload | automatic |
| Status indication | Output LED |
| Mounting | DIN rail EN 50022 |
| Conformity to standards | EN 50081-1 EN 50082-1 CEI 61000-8-2 CEI 950 |
| Certifications | CE, UL-CSA, TÜV, CTick |

Dimensions

PS



Accessories

→ Front panel adaptors



Specifications

| Type | Designation | Code |
|---------------------|--|------------|
| Front panel adaptor | Front panel adaptor for EC12-SA12 | 89 750 103 |
| | Front panel adaptor for EC20-SA20-XT20-EX20 | 89 750 109 |
| Waterproof panel | Waterproof panel adaptor for SA12-EC12 | 89 750 160 |
| | Waterproof panel adaptor for SA20-XT20-EC20-EX20 | 89 750 161 |
| | Waterproof panel adaptor for SA20-XT20-EC20-EX20 + 1 extension | 89 750 162 |

→ Interconnection cables



Specifications

| Type | Designation | Code |
|--------------------|-------------------------------------|------------|
| Programming cables | Programming cable 9-pin D connector | 88 950 102 |
| | Programming cable USB | 88 950 105 |
| Modem cable | | 88 950 111 |

→ Programming tools



Specifications

| Type | Designation | Code |
|----------|--------------------------------|------------|
| Software | Programming software on CD ROM | 88 950 100 |
| | Modem installation software | 88 950 113 |
| Module | EEPROM memory module | 88 950 101 |

→ Convertors



Specifications

| Type | Designation | Input | Output | Code |
|----------------------------|-------------------------------|-------|--------|------------|
| Convertor 0-20 mA / 0-10 V | Input module 0-20 mA / 0-10 V | 4 | 4 | 88 950 108 |
| Convertor PWM / 0-10V | Output module PWM 0-10V | 1 | 1 | 88 950 112 |