

# Millenium 3 Smart and Essential



## → Sandwich communication extensions

- Standard Modbus RS485 or TCP/IP protocol
- Connects one or several Millenium 3 to a touch screen, a supervision PC or a network gateway
- Exchange of the input/output state and/or of internal values
- Updating date and time of a group of Millenium 3
- Power supply via the controller



XN06



XN05

### Part numbers

Type	Description	Supply	Code
XN06	Modbus RS-485 (slave) communication extension	Via the 24 V $\overline{\text{---}}$ controller	88972250
XN05	Ethernet protocol TCP/IP Modbus extension (Server)	Via the 24 V $\overline{\text{---}}$ controller	88970270

### Specific characteristics\*

	88972250	88970270
Certifications	UL, CSA	UL, CSA
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/EN 60068-2-1 and IEC/EN 60068-2-2
Cable length	Maximum length of the network: 1000 m (9600 Baud maxi, AWG 26)	Maximum length between 2 controllers: 100 m

### Communication parameters

	88972250	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 (BootP server)

### Characteristics of exchanges

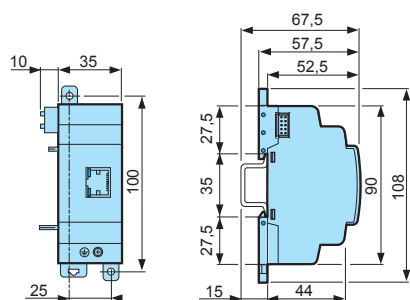
	88972250	88970270
Image of smart relay I/O	4	-
Status	1	-

### Function blocks programming

	88972250	88970270
Read-words	8	8
Read/Write	8	8
Clock words	12	4
"Status" words	1	1

### Dimensions (mm)

XN05 - XN06



\*Also see Millenium 3 Smart and Essential General characteristics

# Millenium 3 Smart

## → Sandwich communication extension

- Allows the ability to create a Millenium 3 network
- Ability to exchange 6 to 1 words with FBD programming
- Only compatible with Millenium 3 Smart controllers
- Periodic exchanges with max. 6 XN06 extensions
- Automatic recognition of number of slaves



XN07

### Part numbers

Type	Description	Supply	Code
XN07	Master exchange unit for XN06	Via the 24 V $\overline{\text{DC}}$ controller	88974250

### Accessories

Designation	Code
RJ45 tee-joint with 20 cm cable	88970125
EOL ferrules, RC 120 $\Omega$ 1 nF (pack of 2)	88970126
RJ45 wiring kit (2 tees, 2 ferrules, 1 x 4-pair FTP cable, 3 m)	88970127

### Specific characteristics\*

Earthing	Internal link between electronic mass and equipment mass Refer to the quick reference guide supplied with the product
Operating temperature	-20 $\rightarrow$ +55 $^{\circ}\text{C}$ (+40 $^{\circ}\text{C}$ in a non-ventilated enclosure) in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2
Cable length	Maximum network length: 1000 m (max. 9600 bauds, AWG 26)
Pull-up and Pull-down resistance	Polarised line with 470 $\Omega$ resistance (included in product)

### Communication parameters

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	XN07: 7 $\rightarrow$ 247 XN06: 1 $\rightarrow$ 6

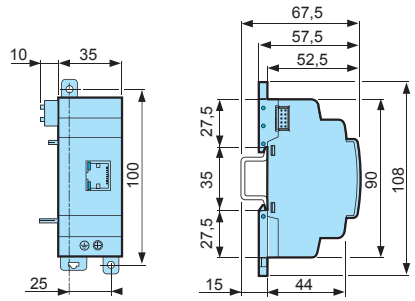
### Characteristics of exchanges

Function blocks programming	
Read-words	1 to 6, depending on the number of XN06 (1 XN06: 6 words, 2 XN06: 3 words, 3 XN06: 2 words, 4, 5 or 6 XN06: 1 word)
Write-words	1 to 6, depending on the number of XN06 (1 XN06: 6 words, 2 XN06: 3 words, 3 XN06: 2 words, 4, 5 or 6 XN06: 1 word)
"Status" words	1 (state of XN06, connected - non-connected)
Clock synchronise bit	Date and time update bit XN07 $\rightarrow$ XN06
Initialisation bit	Initialization bit (update of number of slaves connected)
Watch dog bit	1 per XN06 (0/1 if connected)
Cycle time	RTU at 1200 bauds: with 6 XN06: < 3.7 s at 1200 bauds: with 1 XN06: < 1 s at 57600 bauds: with 6 XN06: < 0.2 s  ASCII at 1200 bauds: with 6 XN06: < 5.7 s at 1200 bauds: with 1 XN06: < 1.5 s at 57600 bauds: with 6 XN06: < 0.2 s

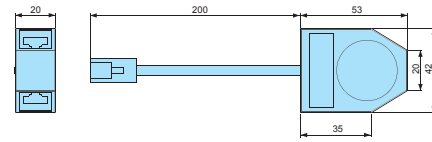
\*Also see Millenium 3 Smart and Essential General characteristics

## Dimensions (mm)

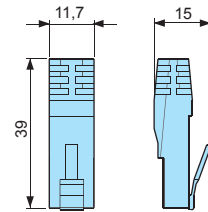
### XN07



### 88970125

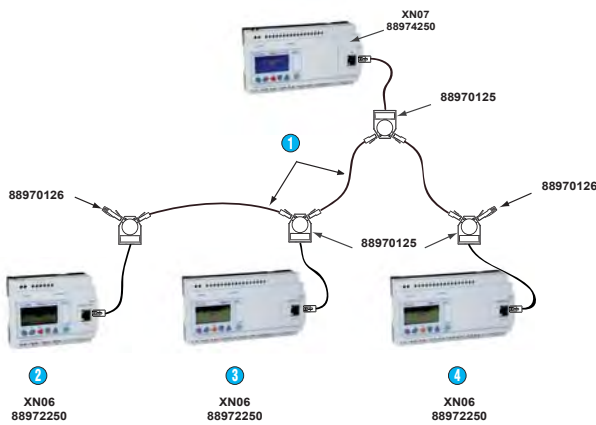


### 88970126



## Connections

### Example with three slaves and accessories (two-wire)



- ① RJ45/RJ45 "Cat 5E" - 100 Ω FTP, 4 pairs  
(available in RJ45 wiring kit - part no.: 88970127)
- ② XN06 Modbus slave 1
- ③ XN06 Modbus slave 2
- ④ XN06 Modbus slave 3

Concerning connection precautions, please refer to the installation sheet IS 0876  
(M3 Application note - Modbus extension XN06 and XN07: Implementation of simplified networks)

## Applications



#### Increase the number of inputs/outputs

- More inputs/outputs while retaining the user-friendly program interface of the Millenium 3
- Easier wiring over long distances (up to 1000 m)
- Flexible, modular solution

#### Repartition of an application to several Millenium 3

- Each Millenium 3 manages a part of the application, the Master synchronizes the lot



#### Double the processing capacity with data exchange

- Local and/or remote data processing

# Millenium 3 Smart and Essential

## → Digital sandwich extension\*



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

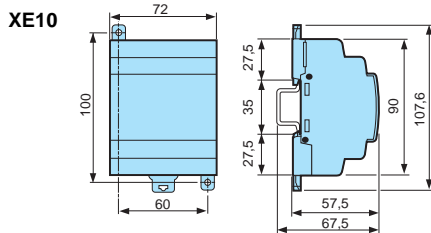
XE10



### Part numbers

Type	Input	Output	Supply	Code
XE10	6 digital	4 relays 5 A (1 of which is a changeover relay)	Via the 24 V $\overline{\text{DC}}$ controller	<b>88970321</b>
	6 digital	4 relays 5 A (1 of which is a changeover relay)	100 → 240 V $\sim$	<b>88970323</b>
	6 digital	4 relays 5 A (1 of which is a changeover relay)	24 V $\sim$	<b>88970324</b>

### Dimensions (mm)



## → Digital extensions\*

- 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



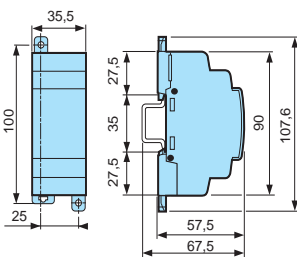
XR14

### Part numbers

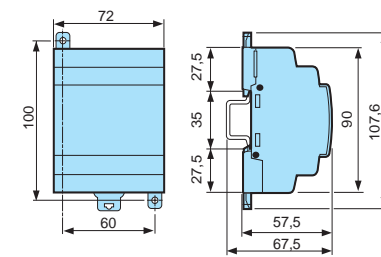
Type	Input	Output	Supply	Code
XR06	4 digital	2 relays 8 A	Via the 24 V $\overline{\text{DC}}$ controller	<b>88970211</b>
	4 digital	2 relays 8 A	Via the 100 → 240 V $\sim$ controller	<b>88970213</b>
	4 digital	2 relays 8 A	Via the 24 V $\sim$ controller	<b>88970214</b>
	4 digital	2 relays 8 A	Via the 12 V $\overline{\text{DC}}$ controller	<b>88970215</b>
XR10	6 digital	4 relays 8 A	Via the 24 V $\overline{\text{DC}}$ controller	<b>88970221</b>
	6 digital	4 relays 8 A	Via the 100 → 240 V $\sim$ controller	<b>88970223</b>
	6 digital	4 relays 8 A	Via the 24 V $\sim$ controller	<b>88970224</b>
	6 digital	4 relays 8 A	Via the 12 V $\overline{\text{DC}}$ controller	<b>88970225</b>
XR14	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)	Via the 24 V $\overline{\text{DC}}$ controller	<b>88970231</b>
	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)	Via the 100 → 240 V $\sim$ controller	<b>88970233</b>
	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)	Via the 24 V $\sim$ controller	<b>88970234</b>
	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)	Via the 12 V $\overline{\text{DC}}$ controller	<b>88970235</b>

### Dimensions (mm)

XR06



XR10 - XR14



\*Also see Millenium 3 Smart and Essential General characteristics

# Millenium 3 Smart

## → "Application-specific" analog termination extension

- 3 Pt100 temperature inputs in the same casing
- "Application-specific" example: temperature regulation and measurement
- Extension compatible with any Millenium 3 Smart expandable logic controller
- Also see Pt100 probes



XA03

### Part numbers

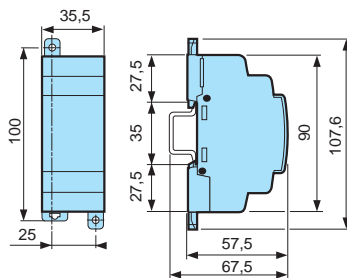
Type	Input	Supply	Code
XA03	3 Pt100 (-25 → +125 °C)	Via the 24 V $\overline{\text{---}}$ controller	<b>88970800</b>

### Specific characteristics\*

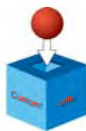
Inputs	Pt100 (IP, IQ, IR)
Certifications	CE, UL, CSA
Conformity to standards	IEC/EN 61131-2 (Zone B), IEC/EN 61000-6-2, IEC/EN 61000-6-3, IEC/EN 61000-6-4
Measurement range	-25 → + 125 °C
Resolution	10 bit
Value of LSB	0.15 °C
Input type	Pt100 probe IEC/EN 60751 3-wire
Conversion time	Module cycle time
Sampling time	< 1 s
Accuracy at 25 °C ambient temperature	± 1 °C
Accuracy at 55 °C ambient temperature	± 1 °C
Cable length	10 m max. with shielded cable

### Dimensions (mm)

#### XA03



### Product adaptations



- 2 or 3-wire Pt1000 inputs,
- Adjustable temperature range,
- Bare board version,
- Resin casing version,
- Customer labelling.

\*Also see Millenium 3 Smart and Essential General characteristics

# Millenium 3 Smart and Essential



## → Analog extension

- Direct connection of analog 0-10 V or 0-20 mA or Pt100 inputs (10 bit) can be configured using the M3 Soft software
- 2 analog 0-10 V or PWM outputs (10 bit) 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	1 analog (0-10 V/0-20 mA) 1 analog (0-10 V/0-20 mA/Pt100)	2 analog (0-10 V/PWM)	Via the 24 V $\overline{\text{---}}$ controller	88970241

### Specific characteristics\*

Certifications	IEC/EN 60751
Earthing	Yes, refer to the quick reference guide supplied with the product

### Analog inputs

Inputs used as analog inputs	0-10 V	0-20 mA	Pt100
Inputs	IP and IQ	IP and IQ	IQ
Input range	0 → 10 V $\overline{\text{---}}$	0 → 20 mA	-25 → 125 °C
Input impedance	≥ 18 k $\Omega$	246 $\Omega$	-
Maximum non destructive current/voltage	30 V	30 mA	-
Value of LSB	9.8 mV	20 $\mu$ A	0.15 °C
Input type	Common mode	Common mode	Pt100 probe - IEC 751 - 3-wire
Resolution	10 bit	10 bit	10 bit
Conversion time	Module cycle time	Module cycle time	Module cycle time
Accuracy at 25 °C	± 2 %	± 2 %	± 1.5 °C
Accuracy at 55 °C	± 2 %	± 2 %	± 1.5 °C
Isolation between analog channel and power supply	None	None	None
Cable length	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

### Analog outputs

Range output	0 → 10 V
Input type	Resistive
Max. load	10 mA
Value of LSB	10 mV
Resolution	10 bit
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 analog channel and power supply	None
Cable length	10 metres maximum, with shielded cable (sensor not isolated)
Protection against polarity inversions	Yes

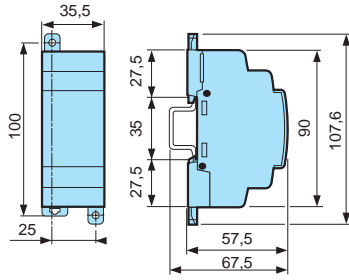
### PWM

Range output	V power supply
Max. load	≥ 1.2 k $\Omega$ (I ≤ 20 mA)
PWM cyclic ratio	1024 steps (0 - 100 %)
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

\*Also see Millenium 3 Smart and Essential General characteristics

## Dimensions (mm)

XA04



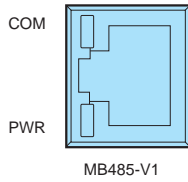
# Millenium 3 Smart and Essential

## → Input/output installations: Extensions

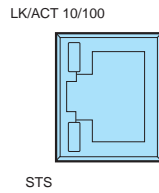


### "Sandwich" communication extensions: XN05, XN06, XN07

XN06, XN07

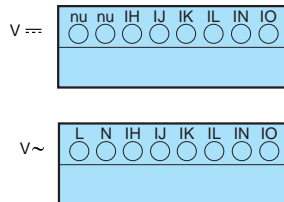


XN05

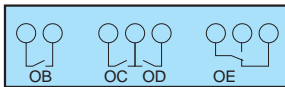


### Digital "Sandwich" extensions: XE10

#### Inputs



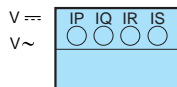
#### Relay outputs



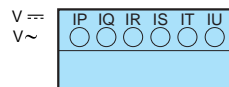
### Digital termination extensions: XR06, XR10, XR14

#### Inputs

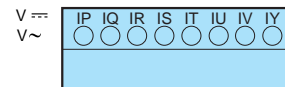
XR06



XR10

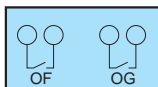


XR14

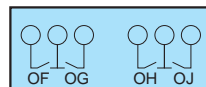


#### Relay outputs

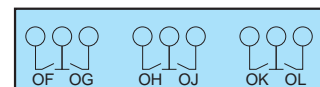
XR06



XR10



XR14

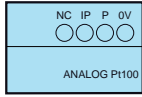




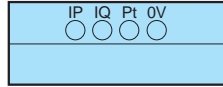
# Analog termination extensions: XA03, XA04

## Inputs

XA03

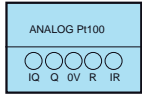


XA04



## Outputs

XA03



XA04

