

# Micro-control

Control system solutions  
adapted to your applications

## 09 Overview



■ Logic controllers



■ Control relays



■ Timers

[www.crouzet.com](http://www.crouzet.com)





# Micro-control expertise

## Expertise - for all your applications

■ **Crouzet's Micro-control offer** encapsulates all the vital steps in creating standard control system solutions and ensuring equipment reliability:

- **Analysis** of customer requirements
- **Multidisciplinary expertise** in the fields of sensors, motors and pneumatic components
- **Advanced prototyping** and on-site testing for adapted products
- Electrical, mechanical and climatic endurance **tests**
- **Standardisation and approval** of components (e.g., EMC)
- Electronics, electrical, mechanical and cable connections **expertise**
- Software & Firmware **engineering**
- **Customisable** product marking and labelling
- **International logistics**, after sales service.

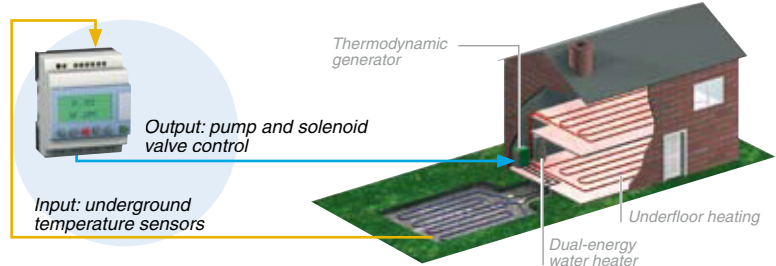
■ **Crouzet has developed extensive** "Adapted Control" expertise to meet the specific needs of each customer. Standard offers can therefore be tailored to provide dedicated products and solutions at any time.

■ **Crouzet's Micro-control products** are used in a variety of commercial applications, such as Building Management Systems, access management and vending machines, as well as in industrial applications, such as plastic forming tools, conveyors and woodworking machines. They can also control agricultural equipment, water treatments (pump control, filtration...) and manage installation dedicated to new energies (wind, solar, biomass...).

For more application examples, click on the "Applications" heading in the Micro-control section on our website: [www.crouzet.com](http://www.crouzet.com)

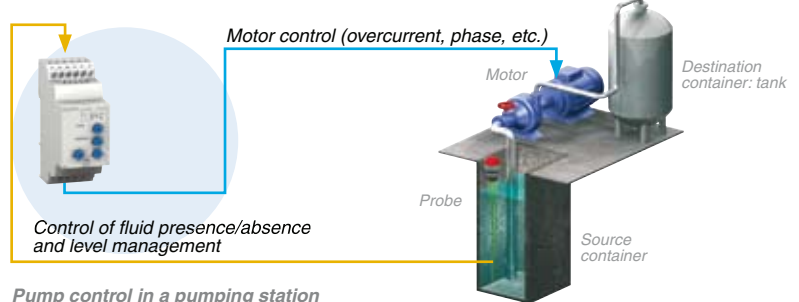
## Examples of Micro-control applications:

### Logic controller



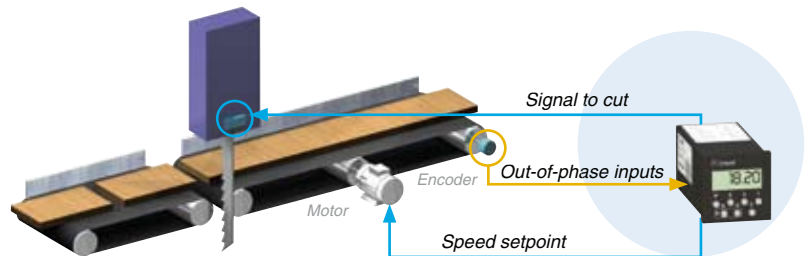
Heat control and domestic hot water system management: heat pump

### Control relay



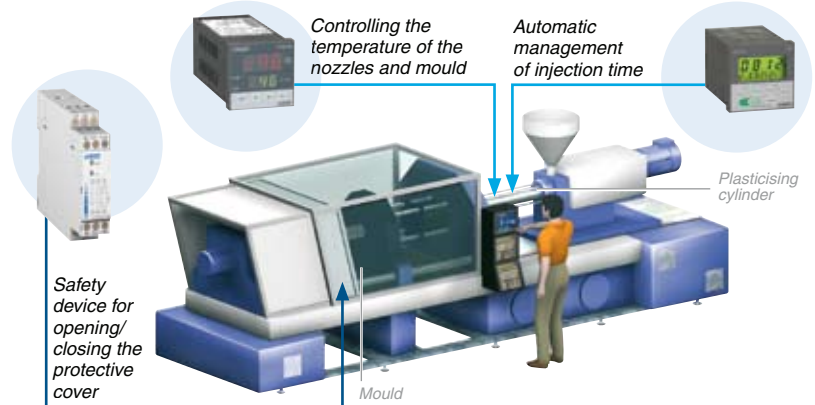
Pump control in a pumping station

### Counter / Ratemeter



Cutting to length on woodworking machine

### Temperature controller / Timer / Safety relay



Control and safety devices for injection/moulding press



▶ Adapted Micro-control offer



Whatever the type of machine, Crouzet can adapt standard components or create specific products to work in complete harmony with your equipment. Just take a look at the adaptation wheel below to discover the different levels of customisation offered by Crouzet's Customer Adaptation Technical Service.

■ Dedicated Adapted Control Team



# Presentation of the offer

## Micro-control offer



Taking a specialist approach to offer complete solutions, Crouzet harnesses electronic and electromechanical technologies to meet all your time management, management of physical and electrical values and counting requirements. The entire range is sold through a global distribution network working hand in hand with local sales forces dedicated to Micro-control applications.

■ Global distribution network

Product	Technology	Functions					
		Sensing	Operator dialogue	Processing	Actuating	Communicating	Supplying power
	<b>Electronic</b> <b>Range</b>	<b>Electromechanical</b>					
		<b>Range</b>					
Logic controller P. 6-11	<ul style="list-style-type: none"> <li>■ Millenium 3 "compact" version</li> <li>■ Millenium 3 "expandable" version</li> <li>■ Millenium 3 digital or analogue extensions</li> <li>■ Accessories (faceplates, converters, display units, etc.)</li> </ul>	-	■	■	■	■	■
	<ul style="list-style-type: none"> <li>■ Millenium 3 network communication extensions</li> </ul>	-				■	
	<ul style="list-style-type: none"> <li>■ Millenium 3 modem communication interface</li> </ul>	-				■	
Serveur Web for supervision P. 11	<ul style="list-style-type: none"> <li>■ Millenium Web Server</li> </ul>	-		■	■	■	
Regulated switch mode power supply P. 12-13	<ul style="list-style-type: none"> <li>■ Modular power supply</li> <li>■ Equipment power supply for integrated control system</li> <li>■ DC/DC converter</li> </ul>	-					■
Control relay P. 14-19	<ul style="list-style-type: none"> <li>■ C-Lynx</li> <li>■ E, L &amp; F series</li> <li>■ Defrost relay</li> </ul>	-	■		■	■	
Timer P. 20-31	<i>DIN rail mounted</i> <ul style="list-style-type: none"> <li>■ Chronos</li> <li>■ RTM miniature</li> <li>■ S serie</li> </ul>	■ TOP 2000	■	■	■	■	
	<i>Panel-mounted</i> <ul style="list-style-type: none"> <li>■ TMR 48 (Analogue)</li> <li>■ MBA (Analogue)</li> <li>■ TIMER 8xx (Digital)</li> </ul>	<ul style="list-style-type: none"> <li>■ TOP 2000</li> <li>■ Manual reset</li> </ul>	■	■	■	■	
Counter / Ratemeter P. 32-35	<ul style="list-style-type: none"> <li>■ CPT4 (with preselection)</li> <li>■ CP2 (without preselection)</li> </ul>	<ul style="list-style-type: none"> <li>■ CH48G</li> <li>■ 36 x 37 mm</li> <li>■ 36 x 48 mm</li> </ul>	■	■	■	■	
Temperature controller P. 36-37	<ul style="list-style-type: none"> <li>■ CT48A (Analogue)</li> <li>■ CTD24 (Digital)</li> <li>■ MIC48 (Digital)</li> <li>■ CTD43 (Digital)</li> <li>■ CTD46 (Digital)</li> <li>■ CTH46 (Digital)</li> <li>■ Pt100 &amp; Thermocouple probes</li> </ul>	-	■	■	■	■	
Safety relay P. 38-39	<ul style="list-style-type: none"> <li>■ Emergency stops and/or mobile safety guards</li> <li>■ Relevelling check</li> <li>■ Timed contacts</li> <li>■ Extension relays</li> <li>■ Zero speed monitoring</li> <li>■ Two-hand control</li> </ul>	-	■		■	■	

Logic controllers

Power supplies

Control relays

Timers

Counters /  
Ratemeters

Temperature  
controllers

Safety products







▶ Millenium 3 "Expandable" range

Millenium 3 logic controllers



Type	Part number		Power supply	Inputs	Outputs
	With display XD10 / XD26	Without display XB10 / XB26			
	<b>88970141</b>	<b>88970131</b>	24 V ---	6 digital (including 4 analogue)	4 relays 8 A
	<b>88970142</b>	<b>88970132</b>	24 V ---	6 digital (including 4 analogue)	4 solid state 0.5 A (including 1 PWM)
	<b>88970143</b>	<b>88970133</b>	100 → 240 V ~	6 digital	4 relays 8 A
	<b>88970144</b>	<b>88970134</b>	24 V ~	6 digital	4 relays 8 A
	<b>88970161</b>	<b>88970151</b>	24 V ---	16 digital (including 6 analogue)	10 relays (8 x 8 A relay and 2 x 5 A relay)
	<b>88970162</b>	<b>88970152</b>	24 V ---	16 digital (including 6 analogue)	10 solid state 0.5 A (including 4 PWM)
	<b>88970163</b>	<b>88970153</b>	100 → 240 V ~	16 digital	10 relays (8 x 8 A relay and 2 x 5 A relay)
	<b>88970164</b>	<b>88970154</b>	24 V ~	16 digital	10 relays (8 x 8 A relay and 2 x 5 A relay)
	<b>88970165</b>	<b>88970155</b>	12 V ---	16 digital (including 6 analogue)	10 relays (8 x 8 A relay and 2 x 5 A relay)
	<b>88970814*</b>	-	12 V ---	16 digital (including 6 analogue)	10 solid state 0.5 A (including 4 PWM)

\* Available first quarter of 2008

"Sandwich" extensions

Type	Part number	Power supply	Inputs	Outputs
<b>Digital</b>				
	<b>XE10</b> <b>88970321</b>	Via the controller 24 V ---	6 digital	4 relays 5 A (1 of which is a changeover relay)
	<b>88970323</b>	100 → 240 V ~	6 digital	4 relays 5 A (1 of which is a changeover relay)
	<b>88970324</b>	24 V ~	6 digital	4 relays 5 A (1 of which is a changeover relay)
<b>Communication</b>				
	<b>XN05</b> <b>88970270</b>	Via the controller 24 V ---	Ethernet protocol TCP Modbus (Server)	Read: 8 - Read/Write: 8 Clock: 4 - Status: 1
	<b>XN03</b> <b>88970250</b>	Via the controller 24 V ---	Modbus RS-485 (Slave)	Read: 4 - Read/Write: 4 Clock: 4 - Status: 1
	<b>XN06</b> <b>88972250</b>	Via the controller 24 V ---	Modbus RS-485 (Slave)	Read: 8 - Read/Write: 8 Clock: 12 - Status: 1

Termination extensions

Type	Part number	Power supply	Inputs	Outputs
<b>Digital</b>				
	<b>XR06</b> <b>88970211</b>	Via the controller 24 V ---	4 digital	2 relays 8 A
	<b>88970213</b>	Via the controller 100 → 240 V ~	4 digital	2 relays 8 A
	<b>88970214</b>	Via the controller 24 V ~	4 digital	2 relays 8 A
	<b>88970215</b>	Via the controller 12 V ---	4 digital	2 relays 8 A
	<b>XR10</b> <b>88970221</b>	Via the controller 24 V ---	6 digital	4 relays 8 A
	<b>88970223</b>	Via the controller 100 → 240 V ~	6 digital	4 relays 8 A
	<b>88970224</b>	Via the controller 24 V ~	6 digital	4 relays 8 A
	<b>88970225</b>	Via the controller 12 V ---	6 digital	4 relays 8 A
	<b>XR14</b> <b>88970231</b>	Via the controller 24 V ---	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)
	<b>88970233</b>	Par le contrôleur 100 → 240 V ~	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)
	<b>88970234</b>	Via the controller 24 V ~	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)
	<b>88970235</b>	Via the controller 12 V ---	8 digital	6 relays (4 x 8 A relay and 2 x 5 A relay)
<b>Analogue</b>				
	<b>XA04</b> <b>88970241</b>	Via the controller 24 V ---	1 analogue (0-10V / 0-20mA), 1 analogue (0-10V / 0-20mA / Pt100)	2 analogue (0-10V) / PWM

For adapted products ("Application-specific" extensions, Bare board versions, Resin board versions...) see page 9

# Logic controllers

Modem communication solutions			Modular power supplies <sup>(1)</sup>					Starter kits
M3 MOD	RTC	GSM	12 V DC - 24 W	24 V DC - 7.5 W	24 V DC - 15 W	24 V DC - 30 W	24 V DC - 60 W	
88970117	88970118	88970119	88950306	88950303	88950304	88950307	88950302	Expandable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	88970084 / 88970094
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	88970085
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					

Compatible  
 Mounted with M3MOD:  
 - GSM modem  
 - or STN modem

<sup>(1)</sup> Find the whole "Power Supplies" offer on pages 12-13

## ▶ Millenium 3 logic controllers operate with the following software:



### ■ M3 SOFT

Multilingual programming software (CD-ROM) containing specific library functions

**Part no.: 88970111**

### ■ M3 ALARM

Alarm management software (CD-ROM)

**Part no.: 88970116**

This software is used alongside communication interface M3MOD (Part no.: 88970117)

## ▶ The 3 starter kits each contain:



■ 1 XD26 logic controller + 1 USB link cable + 1 M3 SOFT programming software CD-ROM containing specific library functions

**Part no: 88970084 / 88970085 / 88970094**

■ The **88970094** starter kit also contains a 24 V DC - 30 W power supply.

## ▶ Millenium 3 Custom:



■ Crouzet offers a range of "hardened or specific" products:


- Custom range of controllers for use with application specific functions and extensions (88974xxx)
- Bare board versions (12 or 20 I/O)
- Resin board versions (88973xxx) for harsh environments (vibration resistance and extended temperature range)
- "Application-specific" analogue extensions: Temperature control (3 Pt100), Water treatment (pH, ORP/Redox).

■ Crouzet can also provide **Millenium 3 solutions adapted**, as required to meet any specification, offering, for example, a greater number of I/O, specific extensions, dedicated connections, customised laser marking, and "customer" software functions, kitting of products (ie.: Millenium 3 + temperature sensors)...

*For any special applications, please contact our Micro-control sales and technical experts.*


## ▶ Millennium 3 "Accessories" range

### Programming


Type	Part number	Description
<b>Connection accessories</b>		
	<b>PA</b>	<b>88970102</b> 3 m serial link cable: PC => Millennium 3
		<b>88970104</b> Millennium 3 => Bluetooth interface (class A 10 m)
		<b>88970108</b> EEPROM memory cartridge for transferring/saving programs
		<b>88970109</b> 3 m USB link cable: PC => Millennium 3
		<b>88970110</b> Bluetooth => USB adaptor (class A 10 m)
		<b>88970123</b> 1.80 m serial link cable: DB9/DB9

(PA): Programming accessories

### Sensing

Type	Part number	Description	Power supply	Main characteristic
<b>Analogue temperature sensors</b>				
	<b>AS</b>	<b>89750146</b> Copper protective sleeve	-	-20 → +100°C
		<b>89750147</b> Stainless steel 316 protective sleeve	-	-20 → +400°C
		<b>89750150</b> Zone/space sensor (0-10 V)	24 V $\overline{\text{---}}$	-10 → +40°C
		<b>89750151</b> Ventilation duct (0-10 V)	24 V $\overline{\text{---}}$	-10 → +60°C
		<b>89750152</b> Outdoor sensor (0-10 V)	24 V $\overline{\text{---}}$	-10 → +40°C
		<b>89750153</b> Remote/submersible probe (0-10 V)	24 V $\overline{\text{---}}$	-10 → +150°C
		<b>89750155</b> Remote/submersible probe (0-10 V)	24 V $\overline{\text{---}}$	-40 → +20°C
		<b>89750180</b> Sensor CTN for Millennium 3 - 24 V $\overline{\text{---}}$ (pack of 10)	-	-25 → +85°C
		<b>89750181</b> Sensor CTN for Millennium 3 - 24 V $\overline{\text{---}}$ (pack of 100)	-	-25 → +85°C
		<b>18373112</b> Heat transfer compound	-	-
		<b>79696035</b> Pt100 probe Class B with stainless steel 316 sheath	-	max.: 200°C
		<b>79696036</b> Pt100 probe Class B with stainless steel 316 sheath	-	max.: 400°C
	<b>79696037</b> Pt100 probe Class B with aluminium V6 sheath	-	max.: 200°C	



#### Analogue pressure transmitters 4-20 mA <sup>(1)</sup>

Type	Part number	Description	Power supply	Inputs	Outputs
	<b>AS</b>	<b>89210001</b> Capacitive pressure transmitter: Relative <sup>(2)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 0.25 bar	
		<b>89210002</b> Capacitive pressure transmitter: Relative <sup>(2)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 1 bar	
		<b>89210003</b> Capacitive pressure transmitter: Relative <sup>(2)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 2.5 bar	
		<b>89210004</b> Capacitive pressure transmitter: Relative <sup>(2)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 10 bar	
		<b>89210005</b> Capacitive pressure transmitter: Relative <sup>(2)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 25 bar	
		<b>89210006</b> Capacitive pressure transmitter: Relative <sup>(2)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 60 bar	
		<b>89210007</b> Capacitive pressure transmitter: Absolute <sup>(3)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 1 bar	
		<b>89210008</b> Capacitive pressure transmitter: Absolute <sup>(3)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 2.5 bar	
		<b>89210009</b> Capacitive pressure transmitter: Absolute <sup>(3)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 10 bar	
		<b>89210010</b> Capacitive pressure transmitter: Absolute <sup>(3)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 25 bar	
		<b>89210011</b> Capacitive pressure transmitter: Absolute <sup>(3)</sup>	12 → 32 V $\overline{\text{---}}$	0 → 100 bar	

(AS): Analogue sensors





<sup>(1)</sup> Connection: G 1/4 male DIN 16288<sup>(2)</sup> In relation to the atmospheric pressure<sup>(3)</sup> In relation to vacuum

### Converting



Type	Part number	Description	Power supply	Inputs	Outputs
<b>Signal converters</b>					
	<b>AC</b>	<b>88950108</b> 0-20 mA / 0-10 V input converter	-	4	4
		<b>88950112</b> PWM / 0-10 V output converter	24 V $\overline{\text{---}}$	1	1
<b>Temperature converters</b>					
	<b>AC</b>	<b>88950150</b> Input converter -20 → + 150°C	24 V $\overline{\text{---}}$	Pt1000 3-wire	0-10 V
		<b>88950151</b> Input converter -40 → + 40°C	24 V $\overline{\text{---}}$	Pt100 3-wire	0-10 V
		<b>88950152</b> Input converter 0 → + 100°C	24 V $\overline{\text{---}}$	Pt100 3-wire	0-10 V
		<b>88950153</b> Input converter 0 → + 250°C	24 V $\overline{\text{---}}$	Pt100 3-wire	0-10 V
		<b>88950154</b> Input converter 0 → + 300°C	24 V $\overline{\text{---}}$	Thermocouple J	0-10 V
	<b>88950155</b> Input converter 0 → + 600°C	24 V $\overline{\text{---}}$	Thermocouple K	0-10 V	

(AC): Analog Converter

# Logic controllers


Displaying				
Type	Part number	Description	Power supply	
<b>Remote LCD alphanumeric displays (Modbus communication)</b>				
	RD	<b>88970421</b>	Runtime kit: Three-colour screen + XN06 Modbus extension	24 V $\overline{\text{DC}}$
		<b>88970422</b>	Runtime kit: Monochrome screen + XN06 Modbus extension	24 V $\overline{\text{DC}}$
		<b>88970844</b>	Programming kit: Monocolour screen + XN06 Modbus extension + CD + cables	24 V $\overline{\text{DC}}$
		<b>88970849</b>	Programming kit: Three-colour screen + XN06 Modbus extension + CD + cables	24 V $\overline{\text{DC}}$
<b>Remote LCD displays/keypads (direct link with Millenium 3 via cable)</b>				
	RD	<b>88970410</b>	Remote LCD screen/keypad	24 V $\overline{\text{DC}}$
		<b>88970411</b>	Remote LCD screen/keypad + 4 function buttons + 4 LEDs	24 V $\overline{\text{DC}}$
		<b>88970412</b>	Kit with remote LCD screen/keypad + cable	24 V $\overline{\text{DC}}$
		<b>88970413</b>	Kit with remote LCD screen/keypad + 4 function buttons + 4 LEDs + cable	24 V $\overline{\text{DC}}$
		<b>88970414</b>	IP65 protection accessory for display/keypad	
<b>Remote LED display - Input 0-10 V</b>				
	RD	<b>88950400</b>	Display with 4 x 14 mm red digits	24 V $\overline{\text{DC}}$
<b>Potentiometer Ø 22 mm</b>				
	EP	<b>88950109</b>	External potentiometer for value adjustment (4700 $\Omega$ )	30 V $\overline{\text{DC}}$ max

(RD): Remote Display - (EP): External potentiometer

Mounting				
Type	Part number	Description	List of products	
<b>Removable connectors</b>				
	MA	<b>88970310</b>	Removable kit 12 I/O	CD12 or CB12
		<b>88970311</b>	Removable kit 20 I/O	CD20 or CB20
<b>Faceplates</b>				
	MA	<b>89750160</b>	IP67 sealed faceplate (76.5 mm)	CD12
		<b>89750161</b>	IP67 sealed faceplate (147.5 mm)	<ul style="list-style-type: none"> <li>■ XD10 + XR06 or XN03 or XN05 or XA04</li> <li>■ CD20</li> <li>■ XD10 + XN03 or XN05 + XR06 or XA04</li> <li>■ XD10 + XR10 or XR14</li> </ul>
		<b>89750162</b>	IP67 sealed faceplate (248.5 mm)	<ul style="list-style-type: none"> <li>■ XD26 + XR06 or XN03 or XN05 or XA04</li> <li>■ XD10 + XN03 or XA04 + XR10 or XR14</li> <li>■ XD10 + XE10 + XR06 or XA04</li> <li>■ XD26 + XN03 or XN05 + XR06 or XA04</li> <li>■ XD26 + XR10 or XR14</li> <li>■ XD10 + XE10 + XR10 or XR14</li> <li>■ XD26 + XE10 + XR06 or XA04</li> <li>■ XD26 + XN03 or XN05 + XR10 or XR14</li> </ul>
	<b>88970809</b>	IP40 faceplate	CD12 or CB12	
	<b>88970810</b>	IP40 faceplate	CD20 or CB20	

(MA): Mounting Accessories

## Millenium Web Server Solution

Supervising / Archiving / Remote diagnostics / Managing Modbus networks				
Type	Part number	Description	Power supply	
	XC10	<b>88950124</b>	The Millenium Web Server solution comprises: the Web Server module + 1 supervision page configuration software package (any Internet browser can be used)	24 V $\overline{\text{DC}}$



# Power supplies

Nominal power	Nominal output current	Casing width	Connection
7.5 W	0.3 A	36 mm	Screw terminals
15 W	0.6 A	36 mm	
20 W	4 A	54 mm	
24 W	2 A	54 mm	
30 W	1.2 A	54 mm	
60 W	2.5 A	72 mm	
10 W	0.8 A	36 mm	Screw terminals
10 W (6 → 10 W / Input voltage: 9 → 16 V)	0.4 A	36 mm	
60 W	5 A	-	Screw terminals
60 W	2.5 A	-	
100 W	4.2 A	-	
150 W	6.2 A	-	
240 W	10 A	-	
100 W	8.3 A	-	
100 W	4.2 A	-	
150 W	6.2 A	-	
240 W	10 A	-	

Logic controllers

Power supplies

Control relays

Timers

Counters /  
Rate meters

Temperature  
controllers

Safety products



# Control relays

Control functions	Control values	Output relay	Casing width
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz	1 single pole changeover relay 5 A	17.5 mm
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz	2 single pole changeover relays 5 A	17.5 mm
Phase failure and phase sequence (with regeneration)	208 → 480 V ~ - 50/60 Hz	1 single pole changeover relay 5 A	17.5 mm
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz	1 single pole changeover relay 5 A	17.5 mm
Undervoltage	-20% → -2%		
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz	1 single pole changeover relay 5 A	17.5 mm
Asymmetry	5% → 15 %		
Undervoltage and overvoltage	-20% → -2% / +2% → +20%	1 single pole changeover relay 5 A	17.5 mm
Asymmetry	5% → 15 %		
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz		
Overvoltage	+2% → +20%	1 double changeover relay 2 x 5 A	35 mm
Asymmetry	5% → 15 %		
Undervoltage	-20% → -2%		
Phase failure and phase sequence	220 → 480 V ~ - 50/60 Hz		
Phase failure	220 → 480 V ~ - 50/60 Hz	2 single pole changeover relays 5 A	35 mm
Undervoltage	-20% → -2%		
Overvoltage	+2% → +20%		
Phase failure and loss of neutral	120-277 V ~ - 50/60 Hz	2 single pole changeover relays 5 A	35 mm
Undervoltage	-20% → -2%		
Overvoltage	+2% → +20%		
Phase failure	208 → 480 V ~ - 50/60 Hz	1 single pole changeover relay 5 A	17.5 mm
Undervoltage	-20% → -2%		
Overvoltage	+2% → +20%		
Phase failure and phase sequence	200 - 500 V ~	1 single pole changeover relay 8 A	22.5 mm
Phase failure and phase sequence	200 - 460 V ~	2 single pole changeover relays 8 A	22.5 mm
Overcurrent (or undercurrent) with built-in current transformer	2 A → 20 A	1 single pole changeover relay 5 A	17.5 mm
Undercurrent or overcurrent	2 mA → 20 mA / 10 mA → 100 mA / 50 mA → 500 mA	1 double changeover relay 2 x 5 A	35 mm
Undercurrent or overcurrent	0,1 A → 1 A / 0.5 A → 5 A / 1 A → 10 A	1 double changeover relay 2 x 5 A	35 mm
Undercurrent or overcurrent	10 A → 100 A with current transformer (Part no: 26852304)	1 single pole changeover relay 8 A	22.5 mm
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Current transformer	10 → 100 A	-	-
Undercurrent or overcurrent	2 mA → 20 mA / 10 mA → 100 mA / 50 mA → 500 mA	1 single pole changeover relay 8 A	22.5 mm
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Undercurrent or overcurrent	0.1 A → 1 A / 0.5 A → 5 A / 1 A → 10 A	1 single pole changeover relay 8 A	22.5 mm
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Undercurrent or overcurrent			
Underfrequency or overfrequency (window)	40 → 60 Hz and 50 → 70 Hz	2 single pole changeover relays 5 A	35 mm

Logic controllers

Power supplies

Control relays

Timers

Counters / Ratemeters

Temperature controllers

Safety products



Description	Type	Part number	Power supply	Control functions
<b>C-Lynx voltage control</b>				
	<b>MUS12DC</b>	<b>84872140</b>	Self-powered 12 V $\overline{\sim}$ - 50/60 Hz	Overvoltage or undervoltage
	<b>MUS80ACDC</b>	<b>84872141</b>	Self-powered 24 $\rightarrow$ 48 V $\overline{\sim}$ - 50/60 Hz	Overvoltage or undervoltage
	<b>MUS260ACDC</b>	<b>84872142</b>	Self-powered 110 $\rightarrow$ 240 V $\overline{\sim}$ - 50/60 Hz	Overvoltage or undervoltage
	<b>MUSF80ACDC</b>	<b>84872151</b>	Self-powered 24 $\rightarrow$ 48 V $\overline{\sim}$ - 50/60 Hz	Overvoltage and undervoltage (window)
	<b>MUSF260ACDC</b>	<b>84872152</b>	Self-powered 110 $\rightarrow$ 240 V $\overline{\sim}$ - 50/60 Hz	Overvoltage and undervoltage (window)
	<b>HUL</b>	<b>84872120</b>	24 $\rightarrow$ 240 V $\overline{\sim}$ - 50/60 Hz - 50/60 Hz	Overvoltage or undervoltage
	<b>HUH</b>	<b>84872130</b>	24 $\rightarrow$ 240 V $\overline{\sim}$ - 50/60 Hz - 50/60 Hz	Overvoltage or undervoltage

<b>E-series voltage control</b>				
	<b>EUL</b>	<b>84872020</b>	24 V $\overline{\sim}$ - 50/60 Hz	Overvoltage or undervoltage
		<b>84872021</b>	24 V $\sim$ - 50/60 Hz	Overvoltage or undervoltage
		<b>84872023</b>	120 V $\sim$ - 50/60 Hz	Overvoltage or undervoltage
		<b>84872024</b>	230 V $\sim$ - 50/60 Hz	Overvoltage or undervoltage
	<b>EUH</b>	<b>84872030</b>	24 V $\overline{\sim}$ - 50/60 Hz	Overvoltage or undervoltage
		<b>84872031</b>	24 $\sim$ - 50/60 Hz	Overvoltage or undervoltage
		<b>84872033</b>	120 V $\sim$ - 50/60 Hz	Overvoltage or undervoltage
		<b>84872034</b>	230 V $\sim$ - 50/60 Hz	Overvoltage or undervoltage



<b>C-Lynx level control</b>				
	<b>HNM</b>	<b>84870700</b>	24 $\rightarrow$ 240 V $\overline{\sim}$ - 50/60 Hz	Filling or emptying with conductive liquids (1 or 2 levels)
	<b>MNS</b>	<b>84870720</b>	24 $\rightarrow$ 240 V $\overline{\sim}$ - 50/60 Hz	Filling (1 level)
	<b>HNE</b>	<b>84870710</b>	24 $\rightarrow$ 240 V $\overline{\sim}$ - 50/60 Hz	Filling or emptying with all types of material (1 or 2 levels)

<b>E, F and L series level control</b>				
	<b>ENR</b>	<b>84870201</b>	24 V $\sim$ - 50/60 Hz	Filling or emptying with conductive liquids (1 or 2 levels)
		<b>84870203</b>	120 V $\sim$ - 50/60 Hz	
		<b>84870204</b>	230 V $\sim$ - 50/60 Hz	
	<b>ENRM</b>	<b>84870211</b>	24 V $\sim$ - 50/60 Hz	Filling or emptying with conductive liquids (2 levels)
		<b>84870213</b>	120 V $\sim$ - 50/60 Hz	
		<b>84870214</b>	230 V $\sim$ - 50/60 Hz	
	<b>FNLS</b>	<b>84870803</b>	230 V $\sim$ - 50/60 Hz	Filling or emptying with conductive liquids (2 levels: high/low)
	<b>FN</b>	<b>84870501</b>	24 V $\sim$ - 50/60 Hz	Filling or emptying with conductive liquids (2 levels: high/low)
		<b>84870502</b>	48 V $\sim$ - 50/60 Hz	
		<b>84870503</b>	120 V $\sim$ - 50/60 Hz	
		<b>84870504</b>	230 V $\sim$ - 50/60 Hz	
	<b>LN</b>	<b>84870301</b>	24 V $\sim$ - 50/60 Hz	Emptying with conductive liquids (1 or 2 levels))
		<b>84870303</b>	120 V $\sim$ - 50/60 Hz	
		<b>84870304</b>	230 V $\sim$ - 50/60 Hz	
		<b>84870306</b>	24 V $\sim$ - 50/60 Hz	
		<b>84870308</b>	120 V $\sim$ - 50/60 Hz	
<b>84870309</b>		230 V $\sim$ - 50/60 Hz		
<b>L2N</b>	<b>84870401</b>	24 V $\sim$ - 50/60 Hz	Filling and monitoring of wells (2 levels)	
	<b>84870403</b>	120 V $\sim$ - 50/60 Hz		
	<b>84870404</b>	230 V $\sim$ - 50/60 Hz		

<b>Level control accessories</b>				
	<b>S5</b>	<b>79696006</b>	High-pressure and high-temperature probe $\leq$ 350°C (connection: G 3/8)	
	<b>S3</b>	<b>79696014</b>	Electrode holder with a single 1000 mm probe $\leq$ 200°C (connection: G 1/2)	
	<b>S7</b>	<b>79696043</b>	Protected electrode for level > 1 metre, for mounting by suspension and connected using cable C1 (part no.: 79696001: length as per request)	
	<b>S8</b>	<b>79696044</b>	A light, compact 3-probe electrode holder (probes measuring 1000 mm) $\leq$ 80°C (connection: G 1/2)	

# Control relays

Control values	Output relay	Casing width
9 → 15 V $\overline{\text{---}}$	1 single pole changeover relay 5 A	17.5 mm
20 → 80 V $\overline{\text{~}}$	1 single pole changeover relay 5 A	17.5 mm
65 → 260 V $\overline{\text{~}}$	1 single pole changeover relay 5 A	17.5 mm
20 → 80 V $\overline{\text{~}}$	1 single pole changeover relay 5 A	17.5 mm
65 → 260 V $\overline{\text{~}}$	1 single pole changeover relay 5 A	17.5 mm
0,2 V → 2 V / 1 V → 10V / 6V → 60 V	1 double changeover relay 2 x 5 A	35 mm
15 V → 150 V / 30 V → 300 V / 60 V → 600 V	1 double changeover relay 2 x 5 A	35 mm
0,2 V → 2 V / 1 V → 10V / 6 V → 60 V	1 single pole changeover relay 8 A	22.5 mm
15 V → 150 V / 30 V → 300 V / 60 V → 600 V	1 single pole changeover relay 8 A	22.5 mm
Sensitivity: 250 $\Omega$ → 5 k $\Omega$ / 5 k $\Omega$ → 100 k $\Omega$ / 50 k $\Omega$ → 1 M $\Omega$	1 double changeover relay 2 x 5 A	35 mm
Contact input for discrete sensor	1 single pole changeover relay 5 A	17.5 mm
Contact input for discrete sensor: PNP or NPN sensor/contact	1 single pole changeover relay 5 A	35 mm
Sensitivity: 5 k $\Omega$ - 100 k $\Omega$	1 single pole changeover relay 8 A	22.5 mm
Sensitivity: 250 $\Omega$ - 5 k $\Omega$ / 5 k $\Omega$ - 100 k $\Omega$ / 50 k $\Omega$ - 1 M $\Omega$	1 single pole changeover relay 8 A	22.5 mm
Sensitivity: 250 $\Omega$ - 5 k $\Omega$	2 single pole changeover relays 8 A	45 mm
Sensitivity: 5 k $\Omega$ - 100 k $\Omega$ with alarm (overflow or running dry)	2 single pole changeover relays 8 A	45 mm
Sensitivity: 5 k $\Omega$ - 100 k $\Omega$	1 single pole changeover relay 8 A	45 mm plug-in 8-pin <sup>(1)</sup> 45 mm plug-in 8-pin <sup>(1)</sup> 45 mm plug-in 8-pin <sup>(1)</sup> 45 mm plug-in 11-pin <sup>(2)</sup> 45 mm plug-in 11-pin <sup>(2)</sup> 45 mm plug-in 11-pin <sup>(2)</sup>
Sensitivity: 5 k $\Omega$ - 100 k $\Omega$	1 single pole changeover relay 8 A	45 mm plug-in 11-pin <sup>(2)</sup> 45 mm plug-in 11-pin <sup>(2)</sup> 45 mm plug-in 11-pin <sup>(2)</sup>

<sup>(1)</sup> 8-pin connector base - Part no.: 25622130  
<sup>(2)</sup> 11-pin connector base - Part no.: 25622080




## ► C-Lynx Adapted Control:

- Based on your specifications, Crouzet can also offer a range of C-Lynx control relays adapted to your requirements:
  - Adaptation of the level of regeneration for phase failure checks,
  - Conversion of adjustable products into products with a fixed threshold,
  - Adaptation of input voltage ranges and measurement ranges,
  - Option of customising markings.

*For any special applications, please contact our Micro-control sales and technical experts.*




Description	Type	Part number	Power supply
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<b>C-Lynx speed control</b> 	HSV	84874320	24 → 240 V ~ - 50/60 Hz
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C-Lynx temperature control in lifts according to EN 81			
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	HT81	84874110	24 → 240 V ~ - 50/60 Hz
	HT81-2	84874120	24 → 240 V ~ - 50/60 Hz
	HWT81	84874130	24 → 240 V ~ - 50/60 Hz




C-Lynx pump control			
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	HPC	84874200	1-phase: 230 V ~ - 50/60 Hz 3-phases (self-powered): 3 x 208 → 3 x 480 V ~ - 50/60 Hz
--	-----	----------	--



C-Lynx motor temperature and phase control			
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	HWTM	84873027	24 → 240 V ~ - 50/60 Hz
	HWTM2	84873028	24 → 240 V ~ - 50/60 Hz

Series E motor temperature control			
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	ETM	84874015	24 V ~ - 50/60 Hz
		84874013	120 V ~ - 50/60 Hz
		84874014	230 V ~ - 50/60 Hz
	ETM2	84874025	24 V ~ - 50/60 Hz
		84874023	120 V ~ - 50/60 Hz
		84874024	230 V ~ - 50/60 Hz
	ETM22	84874035	24 V ~ - 50/60 Hz
		84874033	120 V ~ - 50/60 Hz
		84874034	230 V ~ - 50/60 Hz

Heat exchanger defrost relay for air conditioning system			
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	NFR	88899204	90 → 260 V ~ - 50/60 Hz
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► C-Lynx accessories

Description	Type	Part number
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Removable sealable covers to protect settings		
	For 17.5 mm casing	84800000
	For 35 mm casing	84800001

# Control relays

Control functions	Control values	Output relay	Casing width
Underspeed or overspeed	Time between controlled pulses: 0.05 → 0.5 s / 0.1 → 1 s / 0.5 → 5 s / 1 → 10 s / 0.1 → 1 mn / 0.5 → 5 mn / 1 → 10 mn	1 single pole changeover relay 5 A	35 mm
Undertemperature and overtemperature (window)	Input Pt100 3-wire Low threshold: -1°C → +11°C High threshold: +34°C → +46°C	1 single pole changeover relay 5 A	35 mm
Undertemperature and overtemperature (window)	Input Pt100 3-wire Low threshold: -1°C → +11°C High threshold: +34°C → +46°C	2 N/O relays 5 A	35 mm
Undertemperature and overtemperature (window)	Input Pt100 3-wire Low threshold: -1°C → +11°C High threshold: +34°C → +46°C	2 N/O relays 5 A	35 mm
Phase failure and phase sequence	3 x 208 → 3 x 480 V ~ - 50/60Hz		
3-phase network monitoring	-	1 single pole changeover relay 5 A	35 mm
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz		
Undercurrent or overcurrent (window)	1 A → 10 A ~		
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz	2 N/O relays 5 A	35 mm
Thermal protection	PTC		
Phase failure and phase sequence	208 → 480 V ~ - 50/60 Hz	2 N/O relays 5 A	35 mm
Thermal protection	PTC		
Test	-		
Latching	-		
Thermal protection	PTC	1 N/O relay 8 A	22.5 mm
Thermal protection	PTC	1 single pole changeover relay 8 A	22.5 mm
Thermal protection	PTC	1 single pole changeover relay 8 A	22.5 mm
Frost formation monitored by temperature probe (length: 1.60 m)	Temperature of the exchanger < -3°C	1 single pole changeover relay 8 A	22.5 mm 6.35 mm Faston connectors

## Description of product types

Example:

<b>M</b>	<b>W</b>	<b>S</b>	<input type="checkbox"/> Casing width	<b>M</b> 17.5 mm	<b>H</b> 35 mm	<b>E</b> 22,5 mm	<b>F</b> 45 mm	<b>L</b> Plug-in 45 mm
			<input type="checkbox"/> Control functions	<b>W</b> Phase	<b>I</b> Current	<b>HZ</b> Frequency	<b>U</b> Voltage	<b>3U</b> 3-phase voltage
				<b>N</b> Level	<b>SV</b> Underspeed	<b>P</b> Pump control	<b>T81</b> Temperature of lift machine room	<b>WT</b> Phase + Temperature of lift machine room
			<input type="checkbox"/> Function details	<b>T</b> Temperature				



# Timers

Timing	Outputs	Rated current	Casing width	Connection
0 → 1 s / 1 → 10 s / 0.1 → 1 min / 1 → 10 min / 0.1 → 1 h / 1 → 10 h / 10 → 100 h /	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Screw terminals
	1 timed changeover relay	8 A	17.5 mm	Spring terminals
	Solid state	0.7 A	17.5 mm	Screw terminals
	Solid state	0.7 A	17.5 mm	Screw terminals
	Solid state	0.7 A	17.5 mm	Screw terminals
Solid state	0.7 A	17.5 mm	Screw terminals	
0 → 1 s / 1 → 10 s / 0.1 → 1 min / 1 → 10 min / 0.1 → 1 h / 1 → 10 h / 10 → 100 h /	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Screw terminals
	1 timed changeover relay	8 A	22.5 mm	Spring terminals
	2 timed changeover relay	8 A	22.5 mm	Screw terminals
	2 timed changeover relays <sup>(1)</sup>	8 A	22.5 mm	Screw terminals
	2 timed changeover relays <sup>(1)</sup>	8 A	22.5 mm	Screw terminals
2 timed changeover relays <sup>(1)</sup>	8 A	22.5 mm	Screw terminals	
2 timed changeover relays <sup>(1)</sup>	8 A	22.5 mm	Screw terminals	
0.06 → 0.6 s / 0.25 → 2.5 s / 2 → 20 s / 16 → 160 s	2 timed changeover relays <sup>(1)</sup>	8 A	22.5 mm	Screw terminals
1 s / 10 s / 1 min / 10 min / 1 h / 10 h / 100 h	1 timed changeover relay	8 A	35 mm	Plug-in 8-pin <sup>(2)</sup>
	1 timed changeover relay	8 A	35 mm	Plug-in 8-pin <sup>(2)</sup>
	1 timed changeover relay	8 A	35 mm	Plug-in 8-pin <sup>(2)</sup>
	1 timed changeover relay	8 A	35 mm	Plug-in 8-pin <sup>(2)</sup>
	1 timed changeover relay	8 A	35 mm	Plug-in 8-pin <sup>(2)</sup>
	1 timed changeover relay	8 A	35 mm	Plug-in 8-pin <sup>(2)</sup>
	2 timed changeover relay	8 A	35 mm	Plug-in 8-pin <sup>(2)</sup>
	2 timed changeover relay	8 A	35 mm	Plug-in 11-pin <sup>(3)</sup>
	2 timed changeover relay	8 A	35 mm	Plug-in 11-pin <sup>(3)</sup>
	2 timed changeover relays	8 A	35 mm	Plug-in 11-pin <sup>(3)</sup>
	2 timed changeover relays <sup>(1)</sup>	8 A	35 mm	Plug-in 11-pin <sup>(3)</sup>
	2 timed changeover relays <sup>(1)</sup>	8 A	35 mm	Plug-in 11-pin <sup>(3)</sup>
	2 timed changeover relays <sup>(1)</sup>	8 A	35 mm	Plug-in 11-pin <sup>(3)</sup>

<sup>(1)</sup> or 1 timed & 1 instantaneous

<sup>(2)</sup> 8-pin connector base - Part no.: 25622130

<sup>(3)</sup> 11-pin connector base - Part no.: 25622080



Description	Type	Part number	Power supply	Functions (see pages 28-31)
<b>Miniatures range - 21 x 27 mm</b>				
	RTMA2	88895201	12 V $\overline{\text{---}}$	A
		88895202	24 V $\overline{\text{---}}$	
		88895203	24 V $\sim$	
		88895206	110 V $\sim$	
		88895207	230 V $\sim$	
	RTMA4	88896201	12 V $\overline{\text{---}}$	A
		88896202	24 V $\overline{\text{---}}$	
		88896203	24 V $\sim$	
		88896206	110 V $\sim$	
		88896207	230 V $\sim$	
RTM Accessories	26532702	Spring clips for DIN rail mounting base		
	26532706	Base for DIN rail mounting RTMA4		
	26532707	Base for DIN rail mounting RTMA2		
	26532708	PCB base RTMA4		
	26532709	PCB base RTMA2		
<b>Electromechanical timers</b>				
<b>TOP 2000 range</b>				
	6 s - 12 min	88225011	220 $\rightarrow$ 240 V $\sim$	2-3-4
		88225012	110 $\rightarrow$ 127 V $\sim$	
		88225013	24 V $\sim$	
		88225019	42 $\rightarrow$ 48 V $\sim$	
	6 min - 12 h	88225014	220 $\rightarrow$ 240 V $\sim$	2-3-4
		88225015	110 $\rightarrow$ 127 V $\sim$	
		88225016	24 V $\sim$	
		88225017	42 $\rightarrow$ 48 V $\sim$	



### ► Adapted Control timer:

■ To satisfy the requirements of equipment manufacturers, Crouzet offers an adapted range of DIN rail mounted timers with solid state output: the **S series**

- Mono-function
- Single-range
- Mono-voltage
- Timing fixed or adjustable by external or built-in potentiometer.

On request, Crouzet can modify output contacts, remove the mounting brackets and even reduce the dimensions.

■ Based on your specifications, Crouzet can also adapt any other DIN rail- or panel-mounted timer:

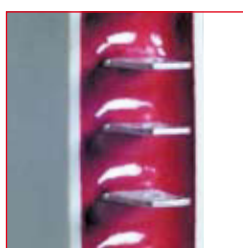
- Conversion of adjustable timing products into products with fixed timing
- Other timing ranges
- Adaptation of the output power
- Customer labelling.

*For any special applications, please contact our Micro-control sales and technical experts.*

Timing	Outputs	Rated current	Casing width	Connection
<ul style="list-style-type: none"> <li>■ 0 → 1 s</li> <li>■ 1 → 10 s</li> <li>■ 0.1 → 1 min</li> <li>■ 1 → 10 min</li> <li>■ 0.1 → 1 h</li> <li>■ 1 → 10 h</li> <li>■ 10 → 100 h</li> </ul>	2 timed changeover relays	5 A	21 mm	Plug-in 8-pin
<ul style="list-style-type: none"> <li>■ 0 → 1 s</li> <li>■ 1 → 10 s</li> <li>■ 0.1 → 1 min</li> <li>■ 1 → 10 min</li> <li>■ 0.1 → 1 h</li> <li>■ 1 → 10 h</li> <li>■ 10 → 100 h</li> </ul>	4 timed changeover relays	5 A	21 mm	Plug-in 14-pin
6 s → 12 min	1 time changeover relay & 1 instantaneous	5 A	48 mm	Screw terminals
6 min → 12 h	1 time changeover relay & 1 instantaneous	5 A	48 mm	Screw terminals



■ Resin-coated for sealed protection.



■ Connection by 6.35 mm Faston connectors.



■ Dedicated version for compressors and heat pumps (prevention of compressor short-cycling, percentage timer).



Description	Type	Part number	Power supply	Functions (see pages 28-31)	
<b>Electronic timers - ANALOGUE</b>					
<b>TMR 48 range</b>					
	<b>TMR48 A</b>	88886106	12 → 240 V $\overline{\sim}$ / 24 → 240 V $\sim$	A	
	<b>TMR48 X</b>	88886116	12 → 240 V $\overline{\sim}$ / 24 → 240 V $\sim$	A1, A2, H1, H2, Q1, Q2, D-Di	
	<b>TMR48 U</b>	88886016	12 → 240 V $\overline{\sim}$ / 24 → 240 V $\sim$	A, B, C, W, G, Ac, Bw	
	<b>TMR48 L</b>	88886516	12 → 240 V $\overline{\sim}$ / 24 → 240 V $\sim$	L/Li, G/Gi	
	<b>TMR Accessories</b>	25622080		11-pin connector base	
		25622130		8-pin connector base	
		79237739		Spring clips	
		79694002		11-pole rear base	
		25622203		8-pole rear base	
		79237783		Black front face (RAL 9011)	
79237785			IP64 protective cover		
79267709		IP54 protective cover			
<b>MBA range</b>					
	<b>MBA2F</b>	88901308	100 → 240 V $\overline{\sim}$	A	
		88901328			
		88901348			
		88901378			
		88901398			
	<b>MBA3F</b>	88901302	24 V $\overline{\sim}$	A	
		88901322			
		88901342			
		88901372			
		88901392			
<b>Electronic timers - DIGITAL</b>					
<b>TIMER 8xx range with LCD display</b>					
	<b>812</b>	88857400	220 → 240 V $\sim$	A	
		88857406	110 V $\sim$		
		88857409	24 V $\sim$		
	<b>814</b>	88857003	12 V $\overline{\sim}$ / 24 → 48 V $\overline{\sim}$	A, B, C, D, Di, H	
		88857005	24 V $\overline{\sim}$ / 110 → 240 V $\sim$		
		88857103	12 V $\overline{\sim}$ / 24 → 48 V $\overline{\sim}$		
	<b>815</b>	88857105	24 V $\overline{\sim}$ / 110 → 240 V $\sim$	A, B, C, D, Di, H	
		88857301	24 V $\overline{\sim}$ / 220 → 240 V $\sim$		
		88857302	12 V $\overline{\sim}$ / 42 → 48 V $\overline{\sim}$		
	<b>816</b>	88857307	24 V $\overline{\sim}$ / 110 V $\sim$	A, B, C, D, Di, H	
		88857601	24 V $\overline{\sim}$ / 220 → 240 V $\sim$		
		88857604	24 V $\overline{\sim}$ / 48 $\overline{\sim}$		
		88857607	24 V $\overline{\sim}$ / 110 V $\sim$		
		88857701	24 V $\overline{\sim}$ / 220 → 240 V $\sim$		
	88857704	24 V $\overline{\sim}$ / 110 V $\sim$			
<b>TIMER 8xx Accessories</b>	25622301		8-pin solder tag connector		
	25622076		11-pin solder tag connector		
	79237739		Spring clips		
	25622080		11-pin connector base		
	25622130		8-pin connector base		
	79694002		11-pole rear base		
25622203		8-pole rear base			

Timing	Outputs	Rated current	Casing width	Connection
0.02 → 1.2 s / 0.05 → 3 s / 0.2 → 12 s / 0.5 → 30 s / 2 → 120 s / 5 → 300 s / 0.2 → 12min / 0.5 → 30min / 2 → 120min / 5 → 300min / 0.2 → 12 h / 0.5 → 30 h / 2 → 120 h / 5 → 300 h	2 timed changeover relays	5 A	48 mm	Plug-in 8-pin
	2 timed changeover relays (or 1 timed & 1 instantaneous)	5 A	48 mm	Plug-in 8-pin
	2 timed changeover relays	5 A	48 mm	Plug-in 11-pin
	2 timed changeover relays	5 A	48 mm	Plug-in 11-pin
0.1 s → 1 s 0.5 s → 10 s 3 s → 60 s 0.5 min → 10 min 3 min → 60 min	Solid state	400 mA	Ø 22 mm	Screw terminals
0.1 s → 1 s 0.5 s → 10 s 3 s → 60 s 0.5 min → 10 min 3 min → 60 min	Solid state	200 mA	Ø 22 mm	Screw terminals
99,99 s / 999,9 s / 9999 s / 99 min 59 s / 99,99 min / 999,9 min / 9999 min / 99h59 min / 99,99 h / 999,9 h / 9999 h	2 timed double changeover relays	2 x 5 A	48 mm	Plug-in 8-pin
	1 timed changeover relay	8 A	48 mm	Plug-in 8-pin
	1 changeover relay (timed or instantaneous)	8 A	48 mm	Plug-in 8-pin
	1 changeover relay (timed or instantaneous)	8 A	48 mm	Plug-in 11-pin
	1 timed changeover relay	8 A	48 mm	Plug-in 11-pin
	1 changeover relay (timed or instantaneous)	2 x 8 A	48 mm	Plug-in 11-pin
	1 timed changeover relay	8 A	48 mm	Plug-in 8-pin
	1 timed changeover relay	8 A	48 mm	Plug-in 11-pin

Logic controllers

Power supplies

Control relays

**Timers**

Counters /  
Ratemeters

Temperature  
controllers

Safety products



Description	Type	Part number	Power supply	Functions (see pages 28-31)
<b>Electromechanical timers</b>				
<b>TOP 2000 range</b>				
	6 s - 12 min	88226011	220 → 240 V ~	2-3-4
		88226012	110 → 127 V ~	
		88226013	24 V ~	
		88226019	42 → 48 V ~	
		88226501	24 V ~	
		88226502	42 → 48 V ~	
		88226503	110 → 127 V ~	
		88226504	220 → 240 V ~	
6 min - 12 h	88226014	220 → 240 V ~	2-3-4	
	88226015	110 → 127 V ~		
	88226016	24 V ~		
	88226017	42 → 48 V ~		
	88226505	24 V ~		
	88226506	42 → 48 V ~		
	88226507	110 → 127 V ~		
	88226508	220 → 240 V ~		
<b>TOP 2000 Accessories</b>		25622301	8-pin solder tag connector	
		25622130	8-pin connector base	
<b>Manual reset range</b>				
	882564 Single-pole	88256401	127 V ~ / 230 V ~	A
		88256402		
		88256403		
		88256404		
		88256405		
		88256406		
		88256407		
		88256408		
	882565 2-pole	88256506	127 V ~ / 230 V ~	A
		88256507		
		88256508		
		88256509		
		88256510		
		88256511		
		88256512		
		88256513		
	882569 3-pole	88256906	127 V ~ / 230 V ~	A
		88256907		
		88256908		
		88256909		
		88256910		
		88256911		
		88256912		
		88256913		

# Timers

Timing	Outputs	Rated current	Casing width	Connection
6 s → 12 min	1 timed changeover relay & 1 instantaneous	5 A	48 mm	Screw terminals
6 s → 12 min	1 timed changeover relay & 1 instantaneous	5 A	48 mm	Plug-in 8-pin
6 min → 12 h	1 timed changeover relay & 1 instantaneous	5 A	48 mm	Screw terminals
6 min → 12 h	1 timed changeover relay & 1 instantaneous	5 A	48 mm	Plug-in 8-pin
5 min (max. display time: 4 min 40 s) 15 min (max. display time: 14 min) 30 min (max. display time: 28 min) 60 min (max. display time: 56 min) 120 min (max. display time: 1 h 53 min) 5 h (max. display time: 4 h 43 min) 15 h (max. display time: 14 h 10 min) 30 h (max. display time: 28 h 20 min)	1 timed changeover	16 A	55 mm	6.35 mm Faston connectors
5 min (max. display time: 4 min 40 s) 15 min (max. display time: 14 min) 30 min (max. display time: 28 min) 60 min (max. display time: 56 min) 120 min (max. display time: 1 h 53 min) 5 h (max. display time: 4 h 43 min) 15 h (max. display time: 14 h 10 min) 30 h (max. display time: 28 h 20 min)	2 timed changeovers	16 A	55 mm	6.35 mm Faston connectors
5 min (max. display time: 4 min 40 s) 15 min (max. display time: 14 min) 30 min (max. display time: 28 min) 60 min (max. display time: 56 min) 120 min (max. display time: 1 h 53 min) 5 h (max. display time: 4 h 43 min) 15 h (max. display time: 14 h 10 min) 30 h (max. display time: 28 h 20 min)	3 timed changeovers	16 A	55 mm	6.35 mm Faston connectors

Logic controllers

Power supplies

Control relays

**Timers**

Counters /  
Rate meters

Temperature  
controllers

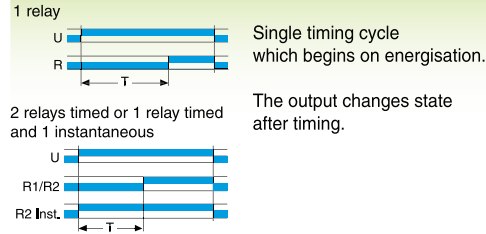
Safety products

Generic functions

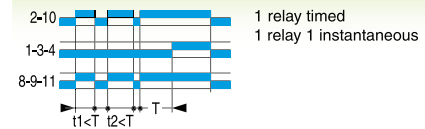
This section contains all the function diagrams for Crouzet timers.

U : Supply  
 R : Output or load relay  
 T : Timing  
 C (Y1) : Control contact  
 ∞ : indefinite

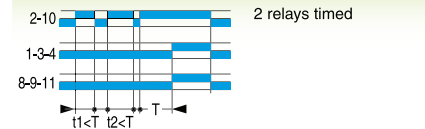
→ Function A: Delay on energisation



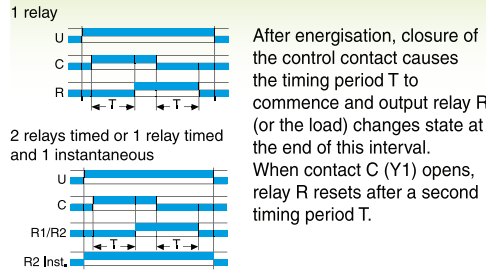
→ Function A1: Delay on energisation



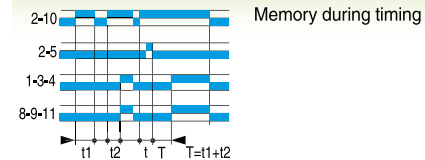
→ Function A2: Delay on energisation



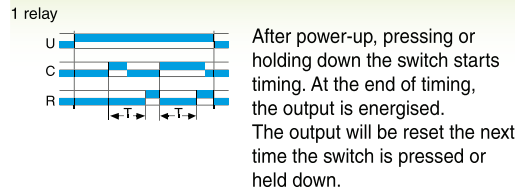
→ Function Ac: Timing after closing and opening of control contact



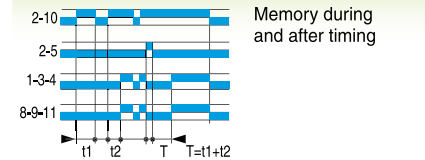
→ Function AM: Delay on energisation



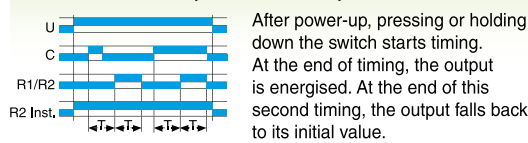
→ Function Ad: Delay on energisation by switch (not resettable)



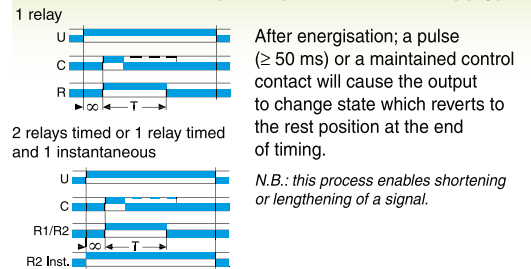
→ Function AMt: Delay on energisation



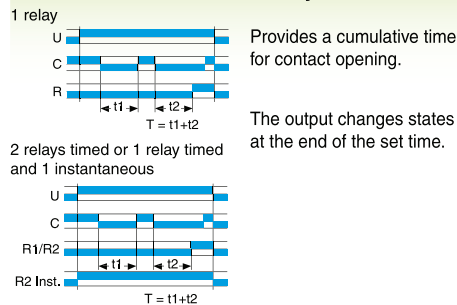
→ Function Ah: Flashing single cycle by switch (not resettable)



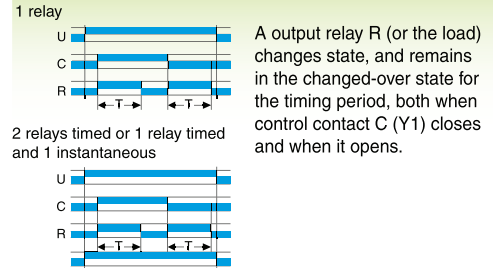
→ Function B: Timing on impulse one shot On pulse (with constant supply)



→ Function At: Timing on energisation with memory

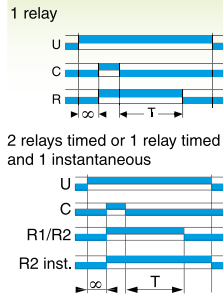


→ Function Bw: Pulse output (adjustable)



**U** : Supply  
**R** : Output or load relay  
**T** : Timing  
**C (Y1)** : Control contact  
 $\infty$  : indefinite

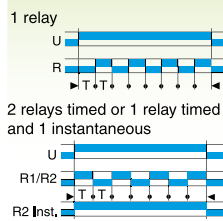
## → Function C: Timing after impulse Delay OFF (with constant supply)



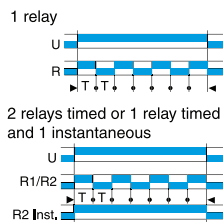
After energisation, once the control contact is closed the output state changes. Timing will only begin on the re-opening of this control contact (one shot). Relay R returns to its initial position at the end of the timing period.

## → Function D or Di: Symmetric recycler

Repetitive cycle which switches the output alternately between the rest and operating position for equal time bases.  $T1 + T2 = T$  total

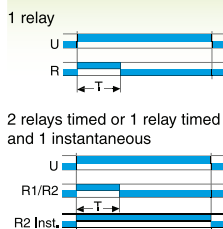


**Function D:**  
 the cycle begins with the output in rest position. Pause start.



**Function Di:**  
 the cycle begins with the output in the operating position. Pulse start.

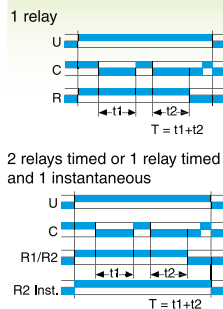
## → Function H: Timing on energisation Interval timer - one shot



On energisation, the output changes state, remains in that state for the duration of timing and resets at the end of the single cycle.

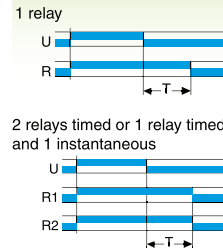
*N.B. This is complementary to function A.*

## → Function Ht: Delay on energisation with memory



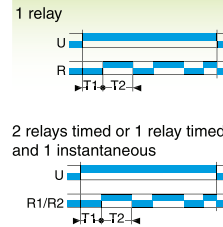
Provides a cumulative time for contact opening. On energisation, the output changes state, remains in that state for the duration of timing and resets at the end of the single cycle.

## → Function K: Delay on de-energisation - True delay OFF



On energisation, the output changes state. On de-energisation timing commences and the output only returns to the reset condition after timing.

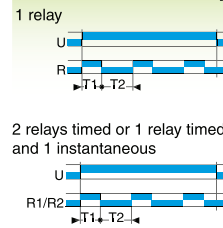
## → Function L: Asymmetric recycler



Repetitive cycle comprising 2 independent adjustable time bases. Each time base corresponds alternately to a different output state.

*N.B.: The cycle starts with the output in the rest position.*

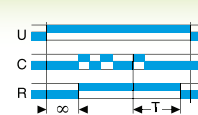
## → Function Li: Asymmetric recycler



Repetitive cycle comprising 2 independent adjustable time bases. Each time base corresponds alternately to a different output state.

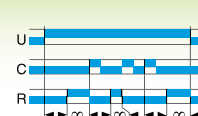
*N.B.: The cycle starts with the output in the operating position.*

## → Function N: "Safe-guard"



At the first control pulse the output is energised. To complete the timing the interval between the two control pulses must be greater than the timing set.

## → Function O: "Delayed safe-guard"



On energisation, a first timing sequence occurs and the output changes state. With the closing of the control contact, the output resets and the timing starts, with the output being activated after timing. For the timing to be completed, the interval between the closing of two control contacts must be greater than the timing set.



**U** : Supply  
**R** : Output or load relay  
**T** : Timing  
**C (Y1)** : Control contact  
 $\infty$  : indefinite

**→ Function P: Delayed fixed-length pulse**

Timing begins on energisation. At the end of the timing period output relay R (or the load) changes state for a period of approximately 500 ms.

**→ Function TL: Impulse relay**

After power-up, pressing or holding down the switch closes the relay. Pressing the switch a second time opens the relay.

**→ Function Pt: Impulse counter (delay on)**

Calculates the total opening time of a contact. At the end of timing, the output is energised for approximately 500 ms.

**→ Function Tt: Timed impulse relay**

After power-up, pressing or holding down the switch closes the relay and starts timing. The relay opens at the end of timing or when the switch is pressed a second time.

**→ Function Q: "Star-delta"**

At the end of timing, the output is not energised. It remains "open" (not conducting) and will only change state after the fixed time of  $T_i$  has elapsed. Dwell time selectable.

**→ Function W: Timing after pulse on control contact**

After energisation, if the control contact opens it causes output relay R (or the load) to change state and timing to start. At the end of the timing period, relay R resets to its original state.

**▶ Dedicated functions TOP2000**

**▶ Dedicated functions Manual reset**

**→ Function 2:**

**→ 1 pole:**

**→ Function 3:**

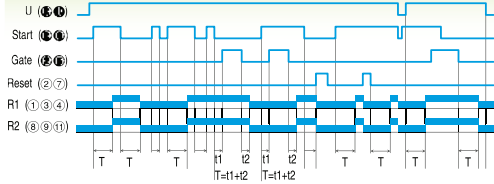
**→ 2 poles:**

**→ Function 4:**

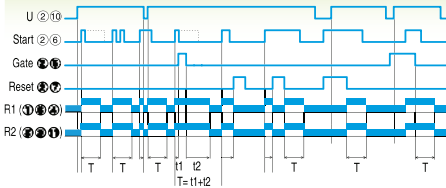
**→ 3 poles:**

## TMR48 dedicated functions

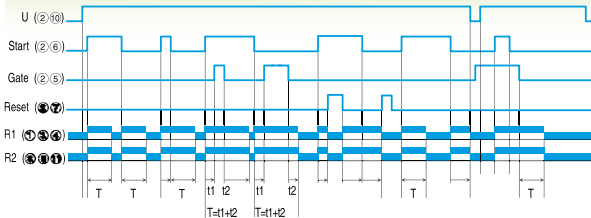
### → Function Ac: Timing after closing and opening of control contact



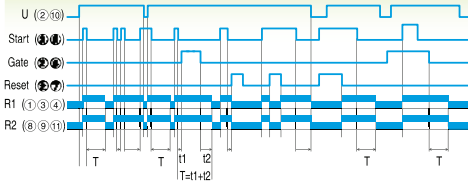
### → Function B: Timing on impulse



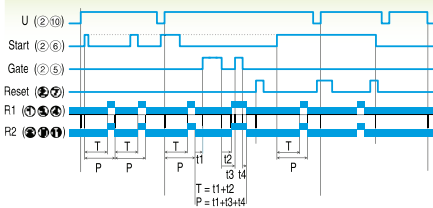
### → Function Bw: Pulse output (adjustable)



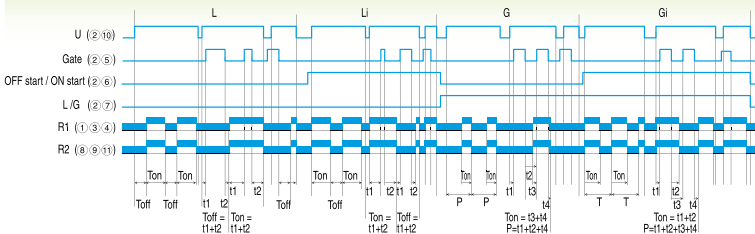
### → Function C: Timing after impulse - Delay off with constant supply



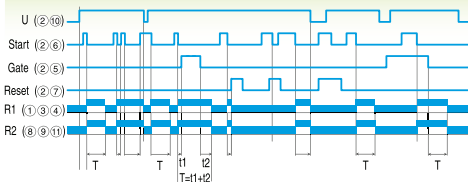
### → Function G: Cyclic function



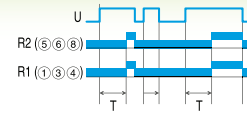
### → Function L/LiG/Gi: Asymmetric recycler



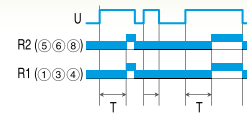
### → Function W: Timing after impulse on control contact



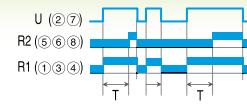
### → Function A TMR48 A: Delay on energisation



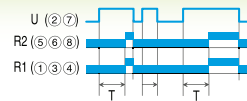
### → Function A TMR48 U: Delay on energisation



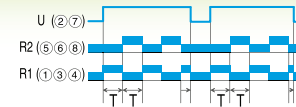
### → Function A1: Delay on energisation



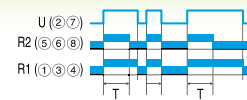
### → Function A2: Delay on energisation



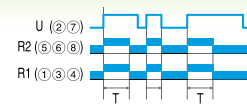
### → Function D-Di: Symmetric recycler



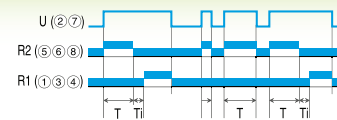
### → Function H1: Timing on energisation



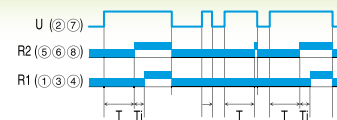
### → Function H2: Timing on energisation





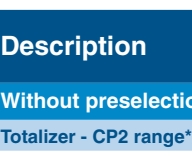
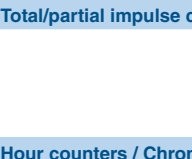
### → Function Q1: Star-delta





### → Function Q2: Star-delta 2




  
 ▶ Electronic counters

Description	Type	Part number	Power supply	Functions
<b>With preselection</b>				
<b>Multifunction up/down counters - CPT4 range</b>				
	CPT4 - LCD 1 preset	87620111	12 → 24 V $\overline{\text{---}}$	<ul style="list-style-type: none"> <li>■ Preselection counter</li> <li>■ Ratemeter</li> <li>■ Timer</li> <li>■ Multi-totaliser</li> </ul>
		87620112	24 V $\sim$	
		87620113	115 V $\sim$	
		87620114	230 V $\sim$	
	CPT4 - LCD 2 presets	87620121	12 → 24 V $\overline{\text{---}}$	<ul style="list-style-type: none"> <li>■ Preselection counter</li> <li>■ Ratemeter</li> <li>■ Timer</li> <li>■ Multi-totaliser</li> <li>■ Batch counters</li> </ul>
		87620122	24 V $\sim$	
		87620123	115 V $\sim$	
		87620124	230 V $\sim$	
	CPT4 - LED 1 preset	87620211	12 → 24 V $\overline{\text{---}}$	<ul style="list-style-type: none"> <li>■ Preselection counter</li> <li>■ Ratemeter</li> <li>■ Timer</li> <li>■ Multi-totaliser</li> </ul>
		87620212	24 V $\sim$	
		87620213	115 V $\sim$	
		87620214	230 V $\sim$	
	CPT4 - LED 2 presets	87620221	12 → 24 V $\overline{\text{---}}$	<ul style="list-style-type: none"> <li>■ Preselection counter</li> <li>■ Ratemeter</li> <li>■ Timer</li> <li>■ Multi-totaliser</li> <li>■ Batch counters</li> </ul>
		87620222	24 V $\sim$	
		87620223	115 V $\sim$	
		87620224	230 V $\sim$	
<b>CPT4 - Accessories</b>		87620300	Panel cut-out adaptor plate 72 x 72 mm	

Description	Type	Part number	Power supply	Functions
<b>Without preselection</b>				
<b>Totalizer - CP2 range*</b>				
	CP2 - 2108	87610340	Lithium battery	Totalizer
	CP2 - 2231	87610040	Lithium battery	Totalizer
	CP2 - 2232	87610050	Lithium battery	Totalizer
<b>Total/partial impulse counter - CP2 range*</b>				
	CP2 - 2293	87610240	Lithium battery	Total / partial impulse counter
	CP2 - 2294	87610250	Lithium battery	Total / partial impulse counter
<b>Hour counters / Chronometer - CP2 range*</b>				
	CP2 - 2108 H	87610440	Lithium battery	Hour counter / chronometer (second, minute, hour)
<b>Hour counters - CP2 range*</b>				
	CP2 - 2213	87610140	Lithium battery	Hour counter (second, minute, hour)
	CP2 - 2214	87610150	Lithium battery	Hour counter (second, minute, hour)
	<b>CP2 - Accessories</b>	26546829	Panel cut-out adaptor plate 25 x 50 mm	
	26546830	Panel cut-out adaptor plate 45 x 45 mm		
	26546831	Panel cut-out adaptor plate $\varnothing$ 50 mm		

\* with manual or remote reset

# Counters / Ratemeters





Max. counting speed	Type of counter inputs*	Output relay	Display	Dimension
5 kHz	Voltage or solid state	1 changeover relay & 1 solid state	LCD screen with 6 digits (height 9 mm) Display: -99999 to 999999	48 x 48 mm
5 kHz	Voltage or solid state	2 changeover relays & 2 solid state	LCD screen with 6 digits (height 9 mm) Display: -99999 to 999999	48 x 48 mm
5 kHz	Voltage or solid state	1 changeover relay & 1 solid state	LCD screen with 6 digits (height 7.6 mm) Display: -99999 to 999999	48 x 48 mm
5 kHz	Voltage or solid state	2 changeover relays & 2 solid states	LCD screen with 6 digits (height 7.6 mm) Display: -99999 to 999999	48 x 48 mm

\* Input counting modes: Upcounting, Downcounting, Cumulative counting, Directional up-down counting, Independent up-down counting, Phase.

Max. counting speed	Type of counter inputs	Output relay	Display	Dimension
7 kHz	Volt-free contact, solid state or voltage	-	LCD screen with 6 digits (height 7 mm)	24 x 48 mm
7.5 kHz	Solid state	-	LCD screen with 8 digits (height 7 mm)	24 x 48 mm
40 Hz	Voltage	-	LCD screen with 8 digits (height 7 mm)	24 x 48 mm
100 Hz	Volt-free contact or solid state	-	LCD screen with 8 digits (height 7 mm)	24 x 48 mm
100 Hz	Voltage	-	LCD screen with 8 digits (height 7 mm)	24 x 48 mm
7 kHz	Volt-free contact	-	LCD screen with 8 digits (height 7 mm)	24 x 48 mm
-	Volt-free contact or solid state	-	LCD screen with 6 digits (height 7 mm)	24 x 48 mm
-	Voltage	-	LCD screen with 6 digits (height 7 mm)	24 x 48 mm



▶ Electromechanical counters

Description	Type	Part number	Power supply	Functions
<b>Without preselection</b>				
<b>Hour counters - CH48G range</b>				
	<b>CH48G Without reset</b>	99761710	18 → 26 V ~ - 50 Hz	Hour counter (hour)
		99761711	36 → 48 V ~ - 50 Hz	
		99761712	110 → 127 V ~ - 50 Hz	
		99761714	220 → 240 V ~ - 50 Hz	
		99761715	110 → 127 V ~ - 60 Hz	
		99761716	220 → 240 V ~ - 60 Hz	
		99761718	24 → 30 V ~ - 60 Hz	
	<b>CH48G Accessories</b>	26546803	Connector base for DIN rail mounting	
26546805		Bezel (grey) 55 x 55 mm		
<b>Totalizers - 24 x 28 mm range</b>				
	<b>Without reset</b>	99766901	230 V ~ - 50/60 Hz	Totalizer
		99766902	115 V ~ - 50/60 Hz	
		99766904	24 V ~ - 50/60 Hz	
		99766907	24 V ~ - 50/60 Hz	
	<b>With manual reset</b>	99766921	230 V ~ - 50/60 Hz	Totalizer
		99766922	115 V ~ - 50/60 Hz	
		99766924	24 V ~ - 50/60 Hz	
		99766927	24 V ~ - 50/60 Hz	
<b>Totalizers - 36 x 37 mm range</b>				
	<b>Without reset</b>	99766601	230 V ~ - 50/60 Hz	Totalizer
		99766602	115 V ~ - 50/60 Hz	
		99766604	24 V ~ - 50/60 Hz	
		99766607	24 V ~ - 50/60 Hz	
	<b>With manual reset</b>	99766610	230 V ~ - 50/60 Hz	Totalizer
		99766611	115 V ~ - 50/60 Hz	
		99766613	24 V ~ - 50/60 Hz	
		99766616	24 V ~ - 50/60 Hz	
<b>Totalizers - 36 x 48 mm range</b>				
	<b>Without reset</b>	99766701	230 V ~ - 50/60 Hz	Totalizer
		99766702	115 V ~ - 50/60 Hz	
		99766704	24 V ~ - 50/60 Hz	
		99766707	24 V ~ - 50/60 Hz	
	<b>With manual reset</b>	99766710	230 V ~ - 50/60 Hz	Totalizer
		99766711	115 V ~ - 50/60 Hz	
		99766713	24 V ~ - 50/60 Hz	
		99766716	24 V ~ - 50/60 Hz	

# Counters / Ratemeters

Max. count rate	Type of counter inputs	Output relay	Display	Dimensions
- - - - - - -	Voltage	-	7 digits, including 2 decimals (height 3.8 mm)	48 x 48 mm
18 imp/s 18 imp/s 18 imp/s 25 imp/s	-	-	6 digits (height 4 mm)	24 x 48 mm
18 imp/s 18 imp/s 18 imp/s 25 imp/s	-	-	5 digits (height 4 mm)	24 x 48 mm
18 imp/s 18 imp/s 18 imp/s 25 imp/s	-	-	6 digits (height 4 mm)	36 x 37 mm
18 imp/s 18 imp/s 18 imp/s 25 imp/s	-	-	5 digits (height 4 mm)	36 x 37 mm
18 imp/s 18 imp/s 18 imp/s 25 imp/s	-	-	6 digits (height 4 mm)	36 x 48 mm
18 imp/s 18 imp/s 18 imp/s 25 imp/s	-	-	5 digits (height 4 mm)	36 x 48 mm

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## Electronic temperature controllers

Description	Type	Part number	Voltage	Functions	Output relay 1	Output relay 2
<b>Analogue</b>						
<b>CT48A range</b>						
	<b>CT48A</b>	<b>89420047</b>	230 V ~	Heating	Relay 5 A	-
		<b>89420067</b>				
		<b>89420097</b>				
		<b>89420077</b>	230 V ~	Heating	Relay 5 A	-
		<b>89420087</b>				
		<b>89420207</b>	230 V ~	Heating	Relay 5 A	-
		<b>89420217</b>				
		<b>89420227</b>				
		<b>89420237</b>				
	<b>89420257</b>					
<b>CT48A Accessories</b>		<b>25622301</b>	8-pin solder tag connector			
		<b>25622303</b>	8-pin connector base for DIN rail and panel mounting			
		<b>79237709</b>	IP54 protective cover			
<b>Digital</b>						
<b>CTD24 range</b>						
	<b>CTD24 1 alarm</b>	<b>89422702</b>	24 V ~	Heating <b>or</b> cooling	Relay 3 A	Relay 3 A
		<b>89422708</b>	100 → 240 V ~			
		<b>89422712</b>	24 V ~	Heating <b>or</b> cooling	Relay 3 A	Voltage logic
		<b>89422718</b>	100 → 240 V ~			
		<b>89422722</b>	24 V ~	Heating <b>or</b> cooling	Voltage logic	Voltage logic
		<b>89422728</b>	100 → 240 V ~			
<b>MIC48 range</b>						
	<b>MIC48 2 alarms</b>	<b>89422002</b>	24 V ~	Heating <b>and/or</b> cooling	Relay 3 A	Relay 1 A
		<b>89422008</b>	100 → 240 V ~			
		<b>89422012</b>	24 V ~	Heating <b>and/or</b> cooling	Voltage logic	
		<b>89422018</b>	100 → 240 V ~			
		<b>89422402 *</b>	24 V ~	Heating <b>and/or</b> cooling	Relay 3 A	
		<b>89422408 *</b>	100 → 240 V ~			
		<b>89422412 *</b>	24 V ~	Heating <b>and/or</b> cooling	Voltage logic	
		<b>89422418 *</b>	100 → 240 V ~			
<b>CTD43 range</b>						
	<b>CTD43 1 alarm</b>	<b>89421102</b>	24 V ~	Heating <b>or</b> cooling	Relay 3 A	Relay 1 A
		<b>89421108</b>	100 → 240 V ~			
		<b>89421112</b>	24 V ~	Heating <b>or</b> cooling	Voltage logic	Relay 1 A
		<b>89421118</b>	100 → 240 V ~			
<b>CTD46 range</b>						
	<b>CTD46 1 alarm</b>	<b>89422102</b>	24 V ~	Heating <b>or</b> cooling	Relay 3 A	Relay 1 A
		<b>89422108</b>	100 → 240 V ~			
		<b>89422112</b>	24 V ~	Heating <b>or</b> cooling	Voltage logic	Relay 1 A
		<b>89422118</b>	100 → 240 V ~			
<b>CTH46 range</b>						
	<b>CTH46</b>	<b>89422502</b>	24 V ~	Heating <b>or</b> cooling	Relay 3 A	Relay 1 A
		<b>89422508</b>	100 → 240 V ~			
		<b>89422512</b>	24 V ~	Heating <b>or</b> cooling	Voltage logic	Relay 1 A
		<b>89422518</b>	100 → 240 V ~			
<b>Temperature probes</b>						
	<b>Thermocouple</b>	<b>79696030</b>		Thermocouple probe J with nickel-plated brass eyelet - max.: 400°C		
		<b>79696031</b>		Thermocouple probe J with stainless steel 304 casing - max.: 600°C		
		<b>79696032</b>		Thermocouple probe J with stainless steel 316 sheath Ø 6 mm - max.: 400°C		
		<b>79696033</b>		Thermocouple probe J with stainless steel 316 sheath Ø 5 mm - max.: 400°C		
		<b>79696034</b>		Thermocouple probe K with stainless steel 304 casing - max.: 1100°C		
	<b>Pt100</b>	<b>79696035</b>		Pt100 probe Class B with stainless steel 316 sheath - max.: 200°C		
		<b>79696036</b>		Pt100 probe Class B with stainless steel 316 sheath - max.: 400°C		
		<b>79696037</b>		Pt100 probe Class B with aluminium V6 sheath - max.: 200°C		

\* Optional Modbus-Jbus RS 485 link on request for MIC 48 controllers

# Temperature controllers

Temperature	Input type	Control type	Number of displays	Dimensions	Connection
(0 → + 250° C) (0 → + 450° C) (0 → + 600° C)	Thermocouple J	Digital or Proportional derivative selected by wiring	-	56 mm x 48 mm	Plug-in 8-pin
(0 → + 800° C) (0 → + 1200° C)	Thermocouple K				
(-50 → +30° C) (0 → + 40° C) (0 → + 120° C) (0 → + 200° C) (0 → + 400° C)	Resistance temperature detector Pt100 (2-wire)				
-	<b>Universal configurable:</b> Resistance temperature detector Pt100 (2-3 wire) / Thermocouples J-K-R-S-L-N / Voltage	PID with auto-tune & adaptive tune	1 (4 digits)	24 mm x 48 mm	Screw terminals
-	Resistance temperature detector PT100 (3-wire) / Thermocouples J-K-R-S-T-L-N / Voltage / Current	PID with auto-tune & adaptive tune  <i>Option: load break monitoring with current transformer:</i> <b>Part no.: 26852301 (10 A / 50 mA)</b> <b>Part no.: 26852302 (25 A / 50 mA)</b> <b>Part no.: 26852303 (50 A / 50 mA)</b> <b>Part no.: 26852304 (100 A / 50 mA)</b>	2 (4 digits)	56 mm x 48 mm	Screw terminals
-	Resistance temperature detector PT100 (3-wire) / Thermocouples J-K-L-N	PID with auto-tune & adaptive tune	1 (3 digits)	56 mm x 48 mm	Screw terminals
-	Resistance temperature detector PT100 (3-wire) / Thermocouples J-K-L-N	PID with auto-tune & adaptive tune	2 (3 digits)	56 mm x 48 mm	Screw terminals
-	Resistance temperature detector PT100 (3-wire) / Thermocouples J-K-L-N	PID with auto-tune & adaptive tune	2 (3 digits)	56 mm x 48 mm	Screw terminals

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▶ Safety relays

Description	Type	Part number	Power supply	Functions	Levels of safety according to EN 954-1
<b>Emergency stop and/or mobile guards</b>					
	KNA3-XS	85100036	24 V ~	<ul style="list-style-type: none"> <li>■ Emergency stops</li> <li>■ Mobile guard monitoring</li> </ul>	3
		85100037	40 → 260 V ~		
	KNA3-RS	85100434	115 V ~	<ul style="list-style-type: none"> <li>■ Emergency stops</li> <li>■ Mobile guard monitoring</li> </ul>	4
		85100435	230 V ~		
		85100436	24 V ~		
	KZP3-RS	85100536	24 V ~		
<b>Relevelling zone check</b>					
	KZHNV-XS	85100526	24 V ~	Relevelling zone check for lifts according to EN81 (Synchronisation difference <500ms)	4
		85100821	24 V ~	Relevelling zone check for lifts according to EN81 (Synchronisation difference <2s)	4
<b>Timed contacts</b>					
	KZR3-RS	85100736	24 V ~	<ul style="list-style-type: none"> <li>■ Emergency stops</li> <li>■ Mobile guard monitoring</li> <li>■ Safety timer function from 0.5 s to 30 s</li> </ul>	4
<b>Extension relay</b>					
	KZE3-XS	85100936	24 V ~	Extending the number of contacts in a safety relay	Depending on main relay
	KZEC3-XS	85101936	24 V ~	Extending the number of contacts in a safety relay	Depending on main relay
<b>Zero speed monitoring</b>					
	KSW2-RS	85100326	24 V ~	Zero speed monitoring for a single or 3-phase motor	4
<b>2-hand control</b>					
	KZH2-XS	85100626	24 V ~	Type III C "2-hand control" functions according to EN 574/97	4
		85100634	115 V ~		
		85100635	230 V ~		
		85100636	24 V ~		
	KZH3-RS				

# Safety products

Safety contacts	Data contacts	Casing width	Connection
3 N/O safety contacts	1 N/C signalling contact	22.5 mm	Screw terminals
3 N/O safety contacts	1 N/C signalling contact	45 mm	Screw terminals
2 N/O safety contacts	1 N/C signalling contact	22.5 mm	Screw terminals
2 N/O safety contacts	1 N/C signalling contact	22.5 mm	Screw terminals
1 N/O instantaneous safety contacts 1 N/O timed safety contact 1 N/C timed safety contact	1 N/C timed signalling contact	45 mm	Screw terminals
3 N/O safety contacts	1 N/C return loop	22.5 mm	Screw terminals
3 N/O safety contacts	1 N/C return loop	22.5 mm	Spring terminals
1 N/O safety contacts 1 N/C safety contact	Separate return loop	45 mm	Screw terminals
2 N/O safety contacts	-	22.5 mm	Screw terminals
3 N/O safety contacts	1 N/C signalling contact	45 mm	Screw terminals

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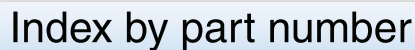


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Part number	Description	Range name	Type	Pages
<b>18000000</b>				
18373112	Heat transfer compound for temperature sensor	Millenium 3	AS	10
<b>25000000</b>				
25622076	11-pin solder tag connector	-	Accessory	24
25622080	11-pin connector base	-	Accessory	17 / 21 / 24
25622130	8-pin connector base	-	Accessory	17 / 21 / 24 / 26
25622203	8-pole rear base	-	Accessory	24-25
25622301	8-pin solder tag connector	-	Accessory	24 / 26 / 36
25622303	8-pin connector base for DIN rail and panel mountings	CT48A	CT48 A accessory	36
<b>26000000</b>				
26450100	Snap-on plate for 35 mm DIN rail	-	89450 accessory	12
26450101	Mounting bracket	-	89450 accessory	12
26532702	Spring clips for DIN rail mounting base	Miniatures	RTM accessory	22
26532706	Base for DIN rail mounting	Miniatures	RTMA4 accessory	22
26532707	Base for DIN rail mounting	Miniatures	RTMA2 accessory	22
26532708	PCB base	Miniatures	RTMA4 accessory	22
26532709	PCB base	Miniatures	RTMA2 accessory	22
26546803	DIN rail socket connector	CH48G	CH48G accessory	34
26546805	Bezel (grey) 55 x 55 mm	CH48G	CH48G accessory	34
26546829	Panel cut-out adaptor plate 25 x 50 mm	CP2	CP2 accessory	32
26546830	Panel cut-out adaptor plate 45 x 45 mm	CP2	CP2 accessory	32
26546831	Panel cut-out adaptor plate Ø 50 mm	CP2	CP2 accessory	32
26852301	Current transformer 10 A / 50 m A	MIC48	MIC48 accessory	37
26852302	Current transformer 25 A / 50 m A	MIC48	MIC48 accessory	37
26852303	Current transformer 50 A / 50 m A	MIC48	MIC48 accessory	37
26852304	Current transformer 100 A / 50 m A	-	MIC48/EIT accessory	14 / 37
<b>79000000</b>				
79237709	IP54 protective cover	CT48A / TMR48	CT48A / TMR48 accessory	24 / 36
79237739	Spring clips	-	Accessory	24
79237783	Black front face (RAL 9011)	TMR48	TMR48 accessory	24
79237785	IP64 protective cover	TMR48	TMR48 accessory	24
79694002	11-pin rear base	-	Accessory	24
79696006	High-pressure and high-temperature probe for level control relay	-	S5	16-17
79696014	Electrode holder with a single probe for level control relay	-	S3	16-17
79696030	Thermocouple probe J with nickel-plated brass eyelet	-		35-36
79696031	Thermocouple probe J with stainless steel casing	-		36-37
79696032	Thermocouple probe J with stainless steel sheath Ø 6 mm	-		36-37
79696033	Thermocouple probe J with stainless steel sheath Ø 5 mm	-		36-37
79696034	Thermocouple probe K with stainless steel casing	-		36-37
79696035	Pt100 probe Class B with stainless steel sheath	-		10 / 36-37
79696036	Pt100 probe Class B with stainless steel sheath	-		10 / 36-37
79696037	Pt100 probe Class B with aluminium V6 sheath	-		10 / 36-37
79696043	Protected electrode for mounting by suspension for level control relay	-	S7	16-17
79696044	Electrode holder with 3 probes for level control relay	-	S8	16-17
<b>84000000</b>				
84800000	Removable sealable covers for control relay 17.5 mm	C-Lynx	-	18-19
84800001	Removable sealable covers for control relay 35 mm	C-Lynx	-	18-19
84870201	Level control relay	E	ENR	16-17
84870203	Level control relay	E	ENR	16-17
84870204	Level control relay	E	ENR	16-17
84870211	Level control relay	E	ENRM	16-17
84870213	Level control relay	E	ENRM	16-17
84870214	Level control relay	E	ENRM	16-17
84870301	Level control relay	L	LN	16-17
84870303	Level control relay	L	LN	16-17
84870304	Level control relay	L	LN	16-17
84870306	Level control relay	L	LN	16-17
84870308	Level control relay	L	LN	16-17
84870309	Level control relay	L	LN	16-17
84870401	Level control relay	L	L2N	16-17
84870403	Level control relay	L	L2N	16-17
84870404	Level control relay	L	L2N	16-17
84870501	Level control relay	F	FN	16-17
84870502	Level control relay	F	FN	16-17

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Part number	Description	Range name	Type	Pages
84870503	Level control relay	F	FN	16-17
84870504	Level control relay	F	FN	16-17
84870700	Level control relay	C-Lynx	HNM	16-17
84870710	Level control relay	C-Lynx	HNE	16-17
84870720	Level control relay	C-Lynx	MNS	16-17
84870803	Level control relay	F	FN LS	16-17
84870807	Level control relay	L	LN	16-17
84870808	Level control relay	L	L2N	16-17
84871020	Current control relay	E	EIL	14-15
84871021	Current control relay	E	EIL	14-15
84871022	Current control relay	E	EIL	14-15
84871023	Current control relay	E	EIL	14-15
84871024	Current control relay	E	EIL	14-15
84871030	Current control relay	E	EIH	14-15
84871031	Current control relay	E	EIH	14-15
84871032	Current control relay	E	EIH	14-15
84871033	Current control relay	E	EIH	14-15
84871034	Current control relay	E	EIH	14-15
84871040	Current control relay	E	EIT	14-15
84871041	Current control relay	E	EIT	14-15
84871042	Current control relay	E	EIT	14-15
84871043	Current control relay	E	EIT	14-15
84871044	Current control relay	E	EIT	14-15
84871120	Current control relay	C-Lynx	HIL	14-15
84871122	Current control relay	C-Lynx	MIC	14-15
84871130	Current control relay	C-Lynx	HIH	14-15
84872020	Voltage control relay	E	EUL	16-17
84872021	Voltage control relay	E	EUL	16-17
84872023	Voltage control relay	E	EUL	16-17
84872024	Voltage control relay	E	EUL	16-17
84872030	Voltage control relay	E	EUH	16-17
84872031	Voltage control relay	E	EUH	16-17
84872033	Voltage control relay	E	EUH	16-17
84872034	Voltage control relay	E	EUH	16-17
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84872151	Voltage control relay	C-Lynx	MUSF80ACDC	16-17
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84872501	Frequency control relay	C-Lynx	HHZ	14-15
84873004	Phase control relay	E	EWS2	14-15
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84873027	Motor temperature and phase control relay	C-Lynx	HWTM	18-19
84873028	Motor temperature and phase control relay	C-Lynx	HWTM2	18-19
84873220	Phase control relay	C-Lynx	H3US	14-15
84873221	Phase control relay	C-Lynx	H3USN	14-15
84873222	Phase control relay	C-Lynx	M3US	14-15
84874013	Motor temperature control relay	E	ETM	18-19
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84874034	Motor temperature control relay	E	ETM22	18-19
84874035	Motor temperature control relay	E	ETM22	18-19
84874110	Lift temperature control relay, according to EN81	C-Lynx	HT81	18-19
84874120	Lift temperature control relay, according to EN81	C-Lynx	HT81-2	18-19
84874130	Lift temperature control relay, according to EN81	C-Lynx	HWT81	18-19



Part number	Description	Range name	Type	Pages
84874200	Pump control relay	C-Lynx	HPC	18-19
84874320	Speed control relay	C-Lynx	HSV	18-19
84892299	Phase control relay	E	EWS	14-15
<b>85000000</b>				
85100036	Safety relay - Emergency stop and/or mobile guards	KN	KNA3-XS	38-39
85100037	Safety relay - Emergency stop and/or mobile guards	KN	KNA3-XS	38-39
85100326	Safety relay - Zero speed monitoring	KS	KSW2-RS	38-39
85100434	Safety relay - Emergency stop and/or mobile guards	KN	KNA3-RS	38-39
85100435	Safety relay - Emergency stop and/or mobile guards	KN	KNA3-RS	38-39
85100436	Safety relay - Emergency stop and/or mobile guards	KN	KNA3-RS	38-39
85100526	Safety relay - Releveling zone check	KZ	KZHNV-XS	38-39
85100536	Safety relay - Emergency stop and/or mobile guards	KZ	KZP3-RS	38-39
85100626	Safety relay - Two-hand control	KZ	KZH2-XS	38-39
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85100736	Safety relay - Timed contacts	KZ	KZR3-RS	38-39
85100821	Safety relay - Releveling zone check	KZ	KZHNV-XS	38-39
85100936	Safety relay - Extension relay	KZ	KZE3-XS	38-39
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<b>87000000</b>				
87610040	Electronic counter without preselection - Totalizer	CP2	CP2 - 2231	32-33
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87610140	Electronic counter without preselection - Hour	CP2	CP2 - 2213	32-33
87610150	Electronic counter without preselection - Hour	CP2	CP2 - 2214	32-33
87610240	Electronic counter without preselection - Total/Partial impulse	CP2	CP2 - 2293	32-33
87610250	Electronic counter without preselection - Total/Partial impulse	CP2	CP2 - 2294	32-33
87610340	Electronic counter without preselection - Totalizer	CP2	CP2 - 2108	32-33
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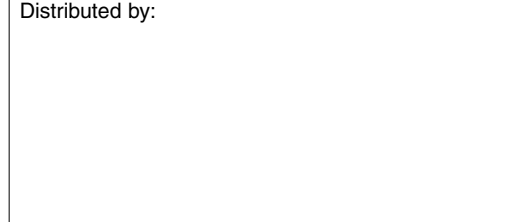
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89750160	IP67 sealed faceplate adaptor (76.5 mm)	Millenium 3	MA	11
89750161	IP67 sealed faceplate adaptor (147.5 mm)	Millenium 3	MA	11
89750162	IP67 sealed faceplate adaptor (248.5 mm)	Millenium 3	MA	11
89750180	Sensor CTN for Millenium 3 - 24 V $\overline{\text{---}}$ (pack of 10)	Millenium 3	AS	10
89750181	Sensor CTN for Millenium 3 - 24 V $\overline{\text{---}}$ (pack of 100)	Millenium 3	AS	10
<b>99000000</b>				
99761710	Electromechanical counter without preselection - Hour	CH48G	CH48G without zero reset	34-35
99761711	Electromechanical counter without preselection - Hour	CH48G	CH48G without zero reset	34-35
99761712	Electromechanical counter without preselection - Hour	CH48G	CH48G without zero reset	34-35
99761714	Electromechanical counter without preselection - Hour	CH48G	CH48G without zero reset	34-35
99761715	Electromechanical counter without preselection - Hour	CH48G	CH48G without zero reset	34-35
99761716	Electromechanical counter without preselection - Hour	CH48G	CH48G without zero reset	34-35
99761718	Electromechanical counter without preselection - Hour	CH48G	CH48G without zero reset	34-35
99766601	Electromechanical counter without preselection - Totalizer	36 x 37 mm	Without reset	34-35
99766602	Electromechanical counter without preselection - Totalizer	36 x 37 mm	Without reset	34-35
99766604	Electromechanical counter without preselection - Totalizer	36 x 37 mm	Without reset	34-35
99766607	Electromechanical counter without preselection - Totalizer	36 x 37 mm	Without reset	34-35
99766610	Electromechanical counter without preselection - Totalizer	36 x 37 mm	With manual reset	34-35
99766611	Electromechanical counter without preselection - Totalizer	36 x 37 mm	With manual reset	34-35
99766613	Electromechanical counter without preselection - Totalizer	36 x 37 mm	With manual reset	34-35
99766616	Electromechanical counter without preselection - Totalizer	36 x 37 mm	With manual reset	34-35
99766701	Electromechanical counter without preselection - Totalizer	36 x 48 mm	Without reset	34-35
99766702	Electromechanical counter without preselection - Totalizer	36 x 48 mm	Without reset	34-35
99766704	Electromechanical counter without preselection - Totalizer	36 x 48 mm	Without reset	34-35
99766707	Electromechanical counter without preselection - Totalizer	36 x 48 mm	Without reset	34-35
99766710	Electromechanical counter without preselection - Totalizer	36 x 48 mm	With manual reset	34-35
99766711	Electromechanical counter without preselection - Totalizer	36 x 48 mm	With manual reset	34-35
99766713	Electromechanical counter without preselection - Totalizer	36 x 48 mm	With manual reset	34-35
99766716	Electromechanical counter without preselection - Totalizer	36 x 48 mm	With manual reset	34-35
99766901	Electromechanical counter without preselection - Totalizer	24 x 48 mm	Without reset	34-35
99766902	Electromechanical counter without preselection - Totalizer	24 x 48 mm	Without reset	34-35
99766904	Electromechanical counter without preselection - Totalizer	24 x 48 mm	Without reset	34-35
99766907	Electromechanical counter without preselection - Totalizer	24 x 48 mm	Without reset	34-35
99766921	Electromechanical counter without preselection - Totalizer	24 x 48 mm	With manual reset	34-35
99766922	Electromechanical counter without preselection - Totalizer	24 x 48 mm	With manual reset	34-35
99766924	Electromechanical counter without preselection - Totalizer	24 x 48 mm	With manual reset	34-35
99766927	Electromechanical counter without preselection - Totalizer	24 x 48 mm	With manual reset	34-35



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