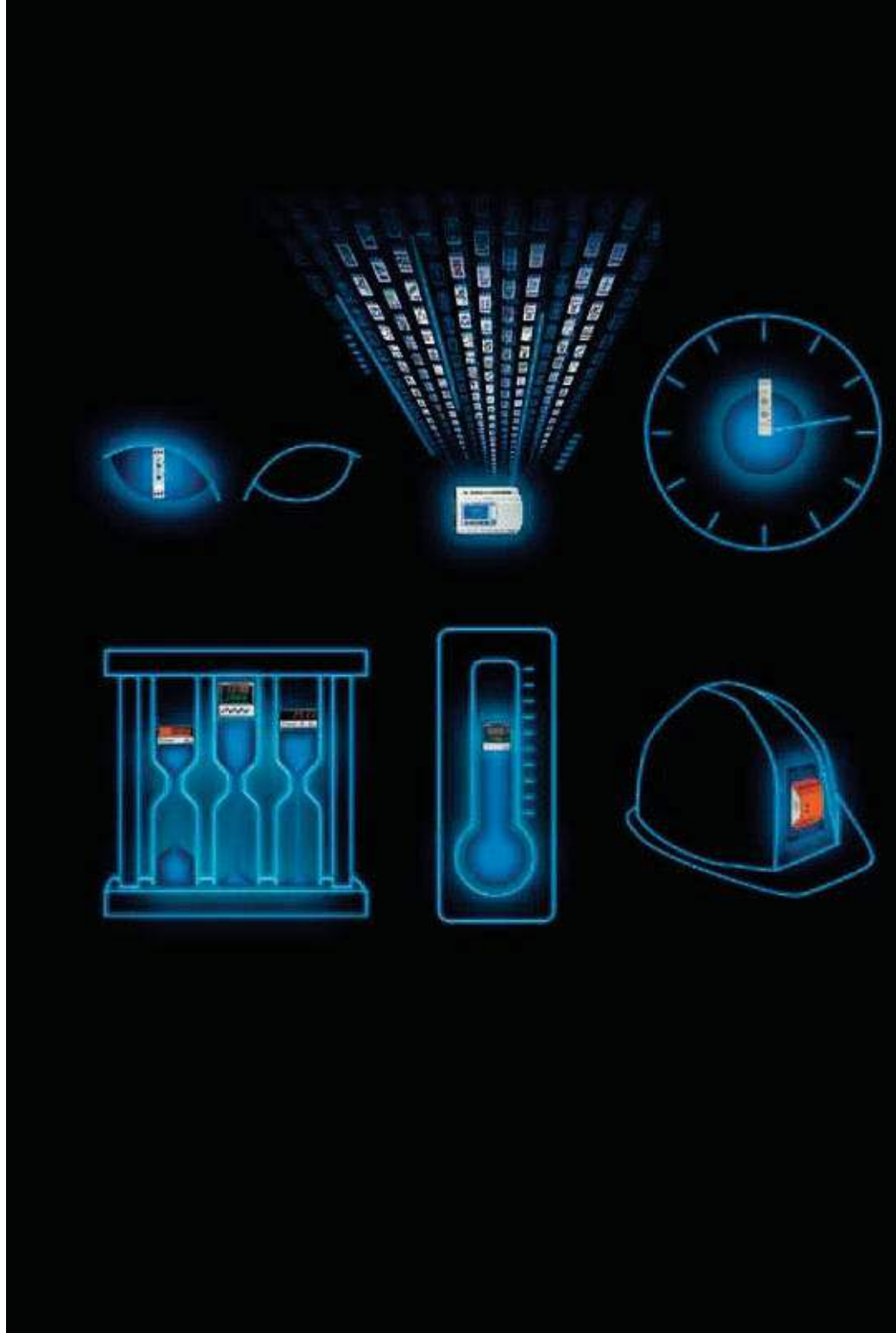


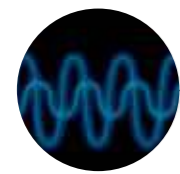
- Timers
- Control relays
- Counters and
Ratemeters
- Temperature
controllers
- Safety relays
- Logic controllers



Control & Automation Overview

Behind every project,
technologies and expertise

Contents



Crouzet Control

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DIN rail mounted



Panel mounted

Timers



Control relays

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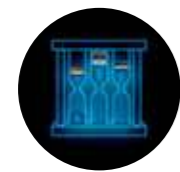
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Modular casing



Industrial casing

Control relays



Counters and Ratemeters

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Electronic



Electromechanical

Counters and Ratemeters



Temperature controllers

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Digital



Accessories

Temperature controllers



Safety relays

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Relevelling control



Machine safety

Safety relays



Logic controllers

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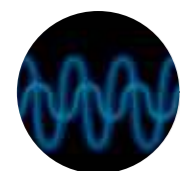
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Millenium 3



Accessories

Logic controllers



Part numbers index

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Presentation



Widely recognised for over 50 years as the specialist in electromechanical, electronic technology and software engineering, Crouzet Control experience in time management, physical and mechanical values has resulted in an extensive automation components offer that includes logic controllers, timers, control relays, counters, ratemeters, machine safety equipment, and temperature controllers.

Simple to use, Crouzet Control products are easy to program and install.

With operations around the globe, Crouzet Control is constantly monitoring its customers' needs. Its sales teams, technicians and designers combine all their skills to adapt products to customer specifications, both in terms of the application and cost.

Crouzet Control also ensures that its products are manufactured in compliance with quality and environmental standards (factories certified ISO 9001, 14001 and OHSAS 18001, eco-design).

With its industrial and logistic flexibility Crouzet Control is able to deliver products, whether small-scale or mass production items, in the best possible timescale.

In this new Panorama, Crouzet Control presents:

A new range of redesigned Safety Relays for machine safety applications with new functions and easy installation.

New Chronos 2 timers (17.5 mm) substituting the existing range with an improved electronic and mechanical design allowing added robustness and reliability.



Crouzet Automation, supported by an **experienced sales and technical team** and an **easy-to-use software**, is the adaptable alternative for any automation solution. Crouzet Automation is the perfect solution for any specialized or demanding need.

These products are specifically suited for integration in a **wide range of applications** such as waste and water treatment, access control, renewable energies, building equipment, industrial machines and transportation.

InnoVista Sensors™

your trusted partner of choice to face industrial challenges of today and tomorrow

InnoVista Sensors™ is a worldwide industrial specialist of sensors, controllers and actuators for automated systems.

Through its brands, Crouzet Aerospace, Crouzet Automation, Crouzet Control, Crouzet Motors, Crouzet Switches and Systron Donner Inertial, InnoVista Sensors™ offers a wide range of reliable, efficient and customizable components dedicated to the Aerospace & Defence, Transportation and Industrial market and segments.

Thanks to the recognized expertise of its teams and a strong innovation policy, InnoVista Sensors™ brings performance enhancing solutions to its customers worldwide.

Crouzet Control / Crouzet Automation team worldwide.



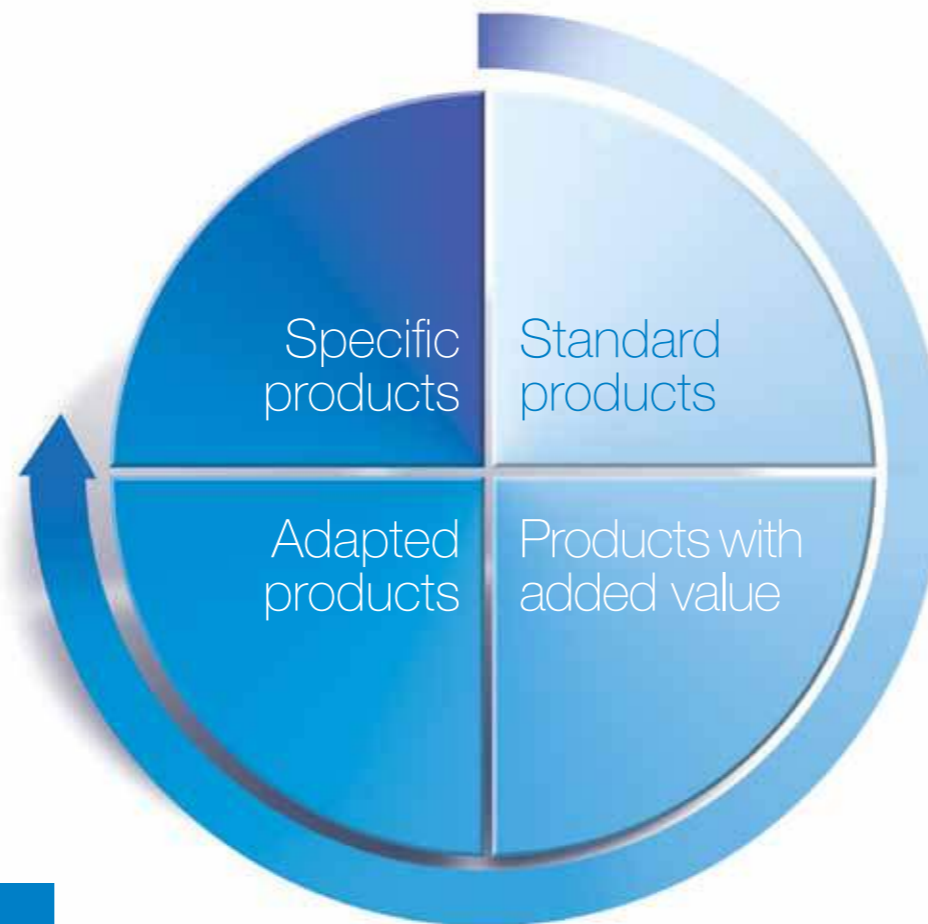
The Crouzet Control process

In addition to high-performance products, advice and support, Crouzet Control offers tailor-made solutions for any application.

Analysis of customer requirements

Expertise:

- **UNDERSTANDING** how applications work.
- **INTEGRATING** environmental constraints and quality requirements.
- **PROPOSING** technical and economic solutions which fully meet the needs of customers.



A multi-skilled team

- Application-based marketing
- Electronic and software design
- Prototyping
- Mechanical engineering
- Production
- EMC tests and approvals
- Sales and logistics follow-up

Production

Expertise:

- **MEETING** all needs, standard or specific, small-scale or mass production, thanks to the industrial flexibility of Crouzet's factories.
- **GUARANTEEING** the quality and reliability of products: all Crouzet's production sites are certified ISO 9001 and ISO 14001 and use quality tools such as 6 SIGMA.
- **INTEGRATING** eco-design into manufacturing processes to **MINIMIZE** the environmental impact of products throughout their life cycle.

Customer Adaptation Centre and Design Office

Expertise:

- **CAPITALISING** on the expertise of Crouzet engineers in mechanical, electrical and electronic engineering, software engineering and networks.
- **ADAPTING** products to ensure innovation and differentiation.
- **DEVELOPING AND INDUSTRIALIZING** custom products.

Logistics and After-Sales Service

Expertise:

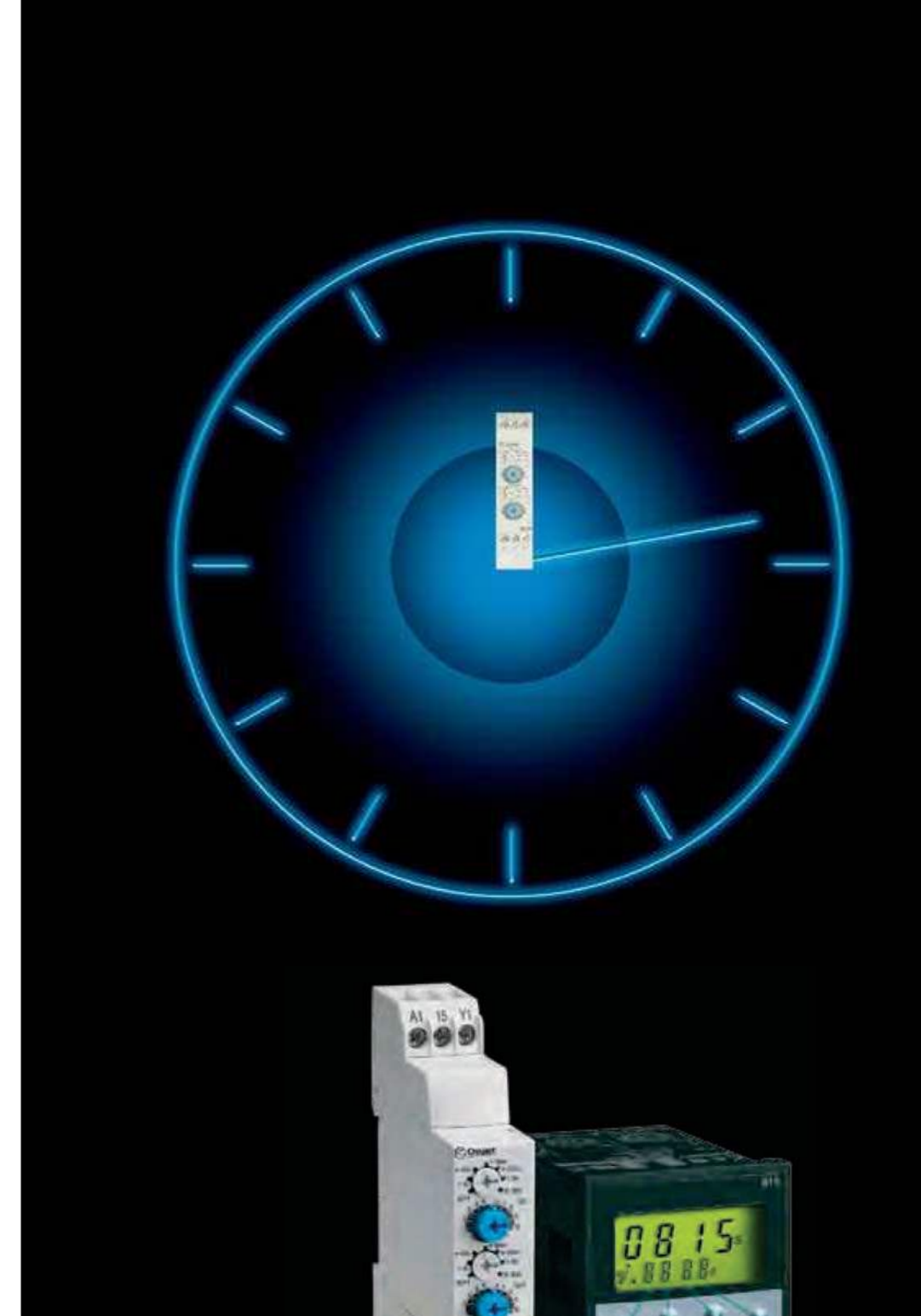
- **PROVIDING** an optimum level of service and **GUARANTEEING** a prompt delivery schedule, whatever the type of order: small-scale or mass production, standard or adapted products.
- **TRACKING** all orders in real time on www.crouzet.com

Crouzet Control

Behind every project, technologies and expertise

- **Local** support for all industrial projects.
- A **multi-skilled team**.
- A sales presence in over **40 countries**.
- A Premium offer designed to ensure **the excellence** of products and services.
- **Eco-design integrated** in Crouzet's "Offer Creation Process".
- Certifications: **ISO 9001, ISO 14001, OHSAS 18001**.
- Products which **comply with international standards** (UL, CSA, EC).
- A **dynamic R&D department**.

In addition to this catalogue, the **www.crouzet.com** website offers the latest tools, available as free downloads, including, technical data sheets and installation manuals for each product.



Timers
Time management



A timer

How can it be defined in simple terms

A **timer** is a simple automation component which is used to manage actions over a period of time or control how long actions last. The timer is a control device which triggers an action according to a time and a function. After a predefined time has elapsed, the timer closes or opens one or more contacts. Timing cycles, whether single shot or repetitive, are started by latching inputs or pulsed inputs, allowing a wide variety of functions to be created.

A timer

To execute which actions?

Triggering, Actuating

A timer can be used to **trigger** an action according to a predefined time. It can also be used to stagger **actions** over a period of time.

Delaying, Flashing

In any time-related application, the timer can play a role and can be used to:

- Run installations according to times that can be adjusted by the user.
- Calibrate a machine running time.
- Allow or prevent an action.
- **Delay** an action.
- Manage stopping/starting of a motor, pump, etc. (star delta).
- Make an LED **flashes**.

Triggering

Actuating

Delaying

Flashing

In addition to this catalogue, the www.crouzet.com website offers technical data sheets and installation manuals for each product, available as free downloads.

Crouzet Control, timers

A panel mounted range and a DIN rail mounted range



815 timer

MLR1

Crouzet Control, timers

Their features:

- Available in **mono** or **multifunction** versions (analogue or digital, with or without memory), to meet the specific needs of each application.
- A **range of supply voltages** from 12 to 240 V in one unit for optimised stocks.
- Recognised **quality** and **reliability** ensures the correct operation of equipment.
- A **timing range** of up to 9,999 hrs to cope with prolonged processing operations.

Applications

Crouzet Control, timers

Where are they found?

In electrical cabinets associated with other automation functions for the following markets:

- Food industry
- Industrial automation systems
- Lighting
- Building equipment
- HVAC
- Small or large industrial machines

Packaging

Controlling heat sealing times on blister packs, packaging bags, etc.




TIMER
MUR1, MXR1, MAR1

Illuminated signs



Managing flashing on illuminated signs.




TIMER
MLR

Fan

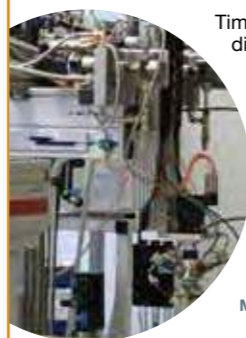

Time management for delayed fan start-up.

TIMER
(TMR48, TIMER 81X)

Dosage

Time management for distribution of glue, varnish ...

TIMER
MBR1

Ice maker



Managing the duration of refrigeration.




TIMER
TUR1, MUR1, MAR

Drink vending machine

Timed management of delivery of drinks.

TIMER
TMR48, TIMER 81X

Lighting for mobile homes



Managing the duration of outdoor lighting of a mobile home if the light switch is left switched on.




TIMED IMPULSE RELAY
MXR

Machine tools



Control of maintenance periods.

TIMER
TMR48, TIMER 81X

Sensing on assembly line



Managing the operation of a conveyor belt based on the time interval between products on the belt.

TIMER
MCR1

Remote machinery

Managing maintenance of the power supply in the event of a mains power failure, switching on an external backup power source for a given time.

TIMER
TK2R1

Timers

Selection guide



Chronos 2 DIN rail mounted, Timers

DIN rail modular casings

Casing width (mm)	Connections	Functions	Type of output	Output(s)	Timing	Supply	Part number	Type	
17.5	Screw terminals	A / At / B / C / H / Ht	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 827 105	MUR1	
		Di / D / Ac / Bw					88 827 115	MAR1	
		A / At					88 827 125	MBR1	
		B					88 827 135	MCR1	
		C					88 827 145	MHR1	
		H / Ht					88 827 150	MLR4	
17.5	Screw terminals	A / At / B / C / H / Ht	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 827 155	MLR1	
							Di / D / Ac / Bw	88 827 100	MUR4
							Ad / Ah / N / O / P	88 827 103	MUR3
17.5	Screw terminals	A / At / B / C / H / Ht	Solid state	0.7 A	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 827 503	MURc3	
							Di / D / Ac / Bw	88 827 185	MXR1
							A	88 827 004	MUS2
17.5	Screw terminals	A	Relay	1 x 5A changeover	0.1 s ⇒ 20 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 827 014	MAS5	
							H / Ht	88 827 044	MHS2
							L / Li	88 827 054	MLS2
							A / At / B / C / H / Ht	88 829 117	EMAR7
17.5	Screw terminals	A / At / B / C / H / Ht	Relay	1 x 5A changeover	0.1 s ⇒ 20 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 829 112	EMAR2	
							Di / D / W / Pe	88 829 119	EMAR9
							Ac / Ad / Bw / Cx / N / O / Tt	88 829 198	EMER8
17.5	Screw terminals	Ac / Ad / Bw / Cx / N / O / Tt	Relay	1 x 5 A changeover	0.1 s ⇒ 20 h	12 ⇒ 240 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 829 108	EMYR8	

DIN rail industrial casings

Casing width (mm)	Connections	Functions	Type of output	Output(s)	Timing	Supply	Part number	Type	
22.5	Screw terminals	A / At / B / C / H / Ht	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 865 105	TUR1	
		Di / D / Ac / Bw					88 865 115	TAR1	
		A / At					88 865 125	TBR1	
		B					88 865 135	TCR1	
		C					88 865 145	THR1	
		H / Ht					88 865 155	TLR1	
		L / Li					88 865 175	TQR1	
		Q					88 866 175*	RQR1*	
22.5	Screw terminals	A / At / B / C / H / Ht	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 865 265	TK2R1	
							Di / D / Ac / Bw	88 865 300	TU2R4
							A / At	88 866 300*	RU2R4*
							A / At / B / C / H / Ht	88 865 100	TUR4
							Di / D / Ac / Bw	88 865 215	TA2R1
							Ad / Ah / N / O / P	88 866 215*	RA2R1*
22.5	Screw terminals	A / At / B / C / H / Ht	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 865 103	TUR3	
							Di / D / Ac / Bw	88 865 503	TURc3
							Ad / Ah / N / O / P	88 865 385	TX2R1
							Pt / TL / Tt / W	88 866 385*	RX2R1*
							Q	88 865 185	TXR1
							A / At / B / C / H / Ht	88 865 176	TQR6
22.5	Screw terminals	A / At / B / C / H / Ht	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 866 176*	RQR6*	
							Di / D / Ac / Bw	88 865 303	TU2R3
							Ad / Ah / N / O / P	88 866 303*	RU2R3*
							Pt / TL / Tt / W	88 865 305	TU2R1
							Q	88 866 305*	RU2R1*

* Available in 2014. The casing of the new range will be different from the ones presented here. Further information can be found on the data sheets available at www.crouzet.com

Selection guide



Plug-in industrial casings

Casing width (mm)	Connections	Functions (detail on pages 20 to 23)	Type of output	Output(s)	Timing	Supply	Part number	Type
35	Plug-in 8-pin base	A / At / B / C / H / Ht Di / D / Ac / Bw	Relay	1 x 8 A changeover	0.1s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 867 105	OUR1
		A		2 x 8 A changeover			88 867 215	OA2R1
		C		1 x 8 A changeover			88 867 135	OCR1
		L / Li					88 867 155	OLR1
		A / At / B / C / H / Ht Di / D / Ac / Bw					12 V $\overline{\sim}$	88 867 100
12 ⇒ 240 V $\overline{\sim}$	88 867 103	OUR3						
35	Plug-in 11-pin base	A / At / B / C / H / Ht Di / D / Ac / Bw	Relay	1 x 8 A changeover 1 inst. or timed 8 A	0.1s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 867 305	PU2R1
		A		2 x 8 A changeover			88 867 415	PA2R1
		C		1 x 8 A changeover 1 inst. or timed 8 A			88 867 435	PC2R1
		L / Li					88 867 455	PL2R1
		A / At / B / C / H / Ht Di / D / Ac / Bw					12 V $\overline{\sim}$	88 867 300
12 ⇒ 240 V $\overline{\sim}$	88 867 303	PU2R3						
21	Plug-in 8-pin base	A	Relay	2 x 5 A changeover	0.1s ⇒ 100 h	12 V $\overline{\sim}$ 24 V $\overline{\sim}$ 24 V \sim 110 V \sim 230 V \sim	88 895 201	RTMA2
							88 895 202	RTMA2
							88 895 203	RTMA2
							88 895 206	RTMA2
							88 895 207	RTMA2
	Plug-in 14-pin base			12 V $\overline{\sim}$			88 896 201	RTMA4
				24 V $\overline{\sim}$			88 896 202	RTMA4
				24 V \sim			88 896 203	RTMA4
				110 V \sim			88 896 206	RTMA4
				230 V \sim			88 896 207	RTMA4



"Panel mounted", Timers

Analogue - TMR48 series

Dimensions (mm)	Connections	Functions (Detail on pages 20 to 23)	Type of output	Output(s)	Supply	Part number	Type
48 x 48	Plug-in 11-pin base	L / Li - G / Gi	Relay	2 timed changeover 2 x 5 A	12 ⇒ 240 V $\overline{\sim}$ 24 ⇒ 240 V \sim	88 886 516	TMR 48 L
		A, B, C, W, G, Ac, Bw				88 886 016	TMR 48 U
	A	2 timed changeover or 1 timed and 1 instantaneous (2 x 5 A)		88 886 106		TMR 48 A	
	A1, A2, H1, H2, Q1, Q2, D-Di			88 886 116		TMR 48 X	

Digital

Dimensions (mm)	Connections	Functions (Detail on pages 20 to 23)	Type of output	Output(s)	Supply	Part number	Type
48 x 48	Plug-in 8-pin base	A	Relay	2 timed changeover 2 x 5 A	24 V $\overline{\sim}$	88 857 409	Timer 812
		A, B, C, D, Di, H			110 V \sim	88 857 406	Timer 812
				A, B, C, D, Di, H	220 ⇒ 240 V \sim	88 857 400	Timer 812
		48 x 48			Plug-in 11-pin base	A, B, C, D, Di, H	Relay
24 V $\overline{\sim}$ / 110 ⇒ 240 V \sim	88 857 005		Timer 814				
12 V $\overline{\sim}$ / 24 ⇒ 48 V $\overline{\sim}$	88 857 103		Timer 814				
24 V $\overline{\sim}$ / 110 ⇒ 240 V \sim	88 857 105		Timer 814				
A1, A2, AM, AMt	Relay		2 timed changeover or 1 timed and 1 instantaneous (2 x 8 A)	12 V $\overline{\sim}$ / 42 ⇒ 48 V $\overline{\sim}$		88 857 302	Timer 815
				24 V $\overline{\sim}$ / 110 V \sim		88 857 307	Timer 815
				24 V $\overline{\sim}$ / 220 ⇒ 240 V \sim		88 857 301	Timer 815
				12-24 V $\overline{\sim}$ / 100 ⇒ 240 V \sim		88 857 311	Timer 815E
48 x 48	Plug-in 8-pin base	A, B, C, D, Di, H	Relay	1 x 8 A timed changeover	24 V $\overline{\sim}$ / 48 V $\overline{\sim}$	88 857 604	Timer 816
					24 V $\overline{\sim}$ / 110 V \sim	88 857 607	Timer 816
					24 V $\overline{\sim}$ / 220 ⇒ 240 V \sim	88 857 601	Timer 816
					24 V $\overline{\sim}$ / 48 V $\overline{\sim}$	88 857 704	Timer 816
					24 V $\overline{\sim}$ / 110 V \sim	88 857 707	Timer 816
					24 V $\overline{\sim}$ / 220 ⇒ 240 V \sim	88 857 701	Timer 816



Accessories available: base socket 8-pin for DIN Rail mount 25 622 130, base socket 11-pin for DIN Rail mount 25 622 080.

The timer accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com



Selection guide






MBA series

Casing width (mm)	Connections	Functions (Detail on pages 20 to 23)	Type of output	Output(s)	Timing	Supply	Part number	Type
 22 (diameter)	Screw terminals	A	Solid state	400 mA	0.1 s ⇒ 1 s	100 ⇒ 240 V ~	88 901 308	MBA2F
					0.5 s ⇒ 10 s		88 901 328	MBA2F
					3 s ⇒ 60 s		88 901 348	MBA2F
					0.5 min ⇒ 10 min		88 901 378	MBA2F
					3 min ⇒ 60 min		88 901 398	MBA2F
 22 (diameter)	Screw terminals	A	Solid state	200 mA	0.1 s ⇒ 1 s	24 V ---	88 901 302	MBA3F
					0.5 s ⇒ 10 s		88 901 322	MBA3F
					3 s ⇒ 60 s		88 901 342	MBA3F
					0.5 min ⇒ 10 min		88 901 372	MBA3F
					3 min ⇒ 60 min		88 901 392	MBA3F

Electromechanical - Top 2000 range

Casing width (mm)	Connections	Functions (Detail on pages 20 to 23)	Type of output	Output(s)	Timing	Supply	Part number	Type					
 48 x 48	Screw terminals	2-3-4	Relay	1 timed changeover and 1 timed instantaneous (2 x 5 A)	6 s ⇒ 12 mn	24 V ~	88 226 013	Top 2000					
	Plug-in 8-pin base					42 ⇒ 48 V ~	88 226 019	Top 2000					
						110 ⇒ 127 V ~	88 226 012	Top 2000					
						220 ⇒ 240 V ~	88 226 011	Top 2000					
						24 V ~	88 226 501	Top 2000					
	 48 x 48					Screw terminals	2-3-4	Relay	1 timed changeover and 1 timed instantaneous (2 x 5 A)	6 mn ⇒ 12 h	42 ⇒ 48 V ~	88 226 502	Top 2000
Plug-in 8-pin base		110 ⇒ 127 V ~	88 226 503	Top 2000									
		220 ⇒ 240 V ~	88 226 504	Top 2000									
		24 V ~	88 226 016	Top 2000									
		24 V ~	88 226 505	Top 2000									
											42 ⇒ 48 V ~	88 226 017	Top 2000
											42 ⇒ 48 V ~	88 226 506	Top 2000
											110 ⇒ 127 V ~	88 226 015	Top 2000
	110 ⇒ 127 V ~						88 226 507	Top 2000					
	220 ⇒ 240 V ~						88 226 014	Top 2000					
	220 ⇒ 240 V ~						88 226 508	Top 2000					

Manual reset

Casing width (mm)	Connections	Functions (Detail on pages 20 to 23)	Type of output	Output(s)	Timing	Supply	Part number	Type
 55	Faston connectors 6.35 mm	A	Relay	1 x 16 A timed changeover	5 min (Max.display time: 4 min 40s)	127 / 230 V ~ 50 Hz	88 256 401	88 256 4
					15 min (Max.display time: 14 min)		88 256 402	88 256 4
					30 min (Max.display time: 28 min)		88 256 403	88 256 4
					60 min (Max.display time: 56 min)		88 256 404	88 256 4
					120 min (Max.display time: 1 h 53 min)		88 256 405	88 256 4
					5 h (Max.display time: 4 h 43 min)		88 256 406	88 256 4
					15 h (Max.display time: 14 h 10 min)		88 256 407	88 256 4
					30 h (Max.display time: 28 h 20 min)		88 256 408	88 256 4
 55	Faston connectors 6.35 mm	A	Relay	2 x 16 A timed changeover	5 min (Max.display time: 4 min 40s)	127 / 230 V ~ 50 Hz	88 256 506	88 256 5
					15 min (Max.display time: 14 min)		88 256 507	88 256 5
					30 min (Max.display time: 28 min)		88 256 508	88 256 5
					60 min (Max.display time: 56 min)		88 256 509	88 256 5
					120 min (Max.display time: 1 h 53 min)		88 256 510	88 256 5
					5 h (Max.display time: 4 h 43 min)		88 256 511	88 256 5
					15 h (Max.display time: 14 h 10 min)		88 256 512	88 256 5
					30 h (Max.display time: 28 h 20 min)		88 256 513	88 256 5
 55	Faston connectors 6.35 mm	A	Relay	3 x 16 A timed changeover	5 min (Max.display time: 4 min 40s)	127 / 230 V ~ 50 Hz	88 256 906	88 256 9
					15 min (Max.display time: 14 min)		88 256 907	88 256 9
					30 min (Max.display time: 28 min)		88 256 908	88 256 9
					60 min (Max.display time: 56 min)		88 256 909	88 256 9
					120 min (Max.display time: 1 h 53 min)		88 256 910	88 256 9
					5 h (Max.display time: 4 h 43 min)		88 256 911	88 256 9
					15 h (Max.display time: 14 h 10 min)		88 256 912	88 256 9
					30 h (Max.display time: 28 h 20 min)		88 256 913	88 256 9

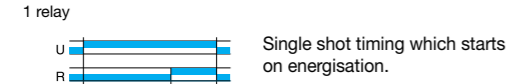
The timer accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Function diagrams

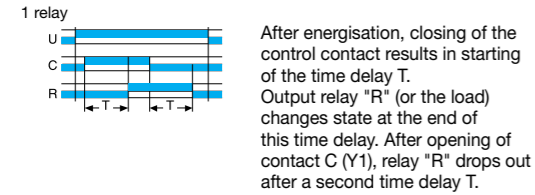
Generic functions

U : Supply
R : Output relay or load
T : Timing
∞ : Infnit
C (y1) : Command

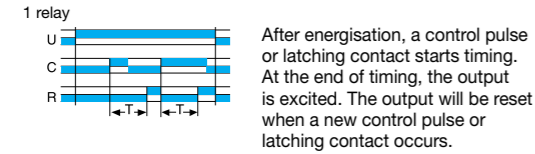
• A function: Delay on energisation



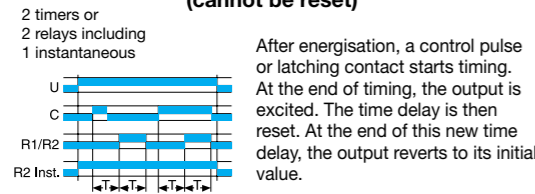
• Ac function: Timing after closing and opening of control contact



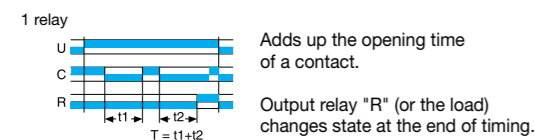
• Ad function: Delay on energisation (cannot be reset)



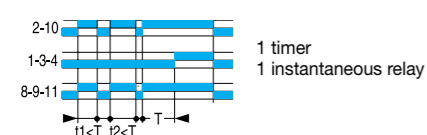
• Ah function: Single shot flip-flo (cannot be reset)



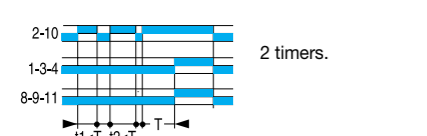
• At function: Timing on energisation with memory



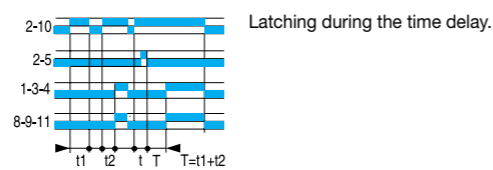
• A1 function: Delay on energisation



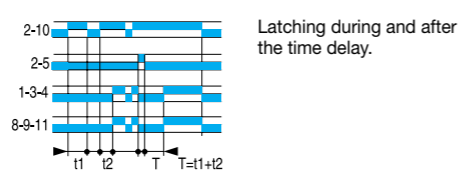
• A2 function: Delay on energisation



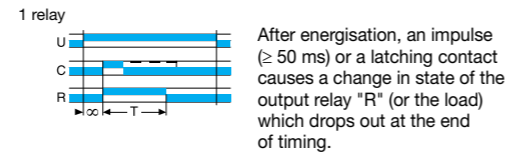
• AM function: Delay on energisation



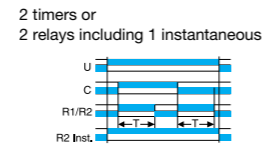
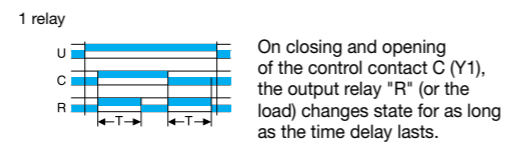
• AMt function: Delay on energisation



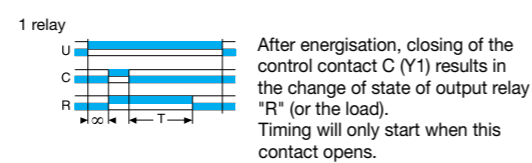
• B function: Timing on impulse (one shot) - Shaping (cannot be reset)



• Bw function: Pulse output (adjustable)

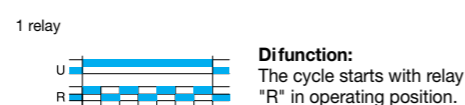


• C function: Timing after impulse True delay off (without auxiliary power supply)

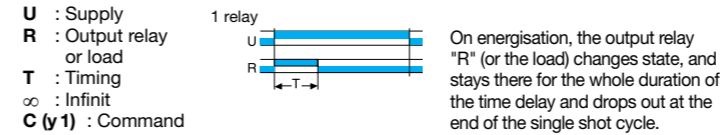


• D or Di functions: Symmetrical flashin

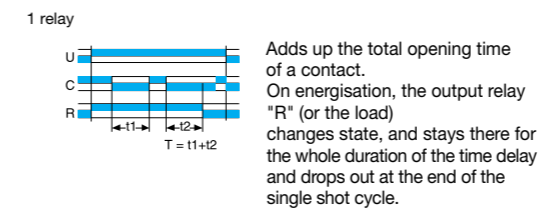
Repetitive cycle which alternately sets the output relay "R" (or the load) to operating and rest position for equal periods of time.



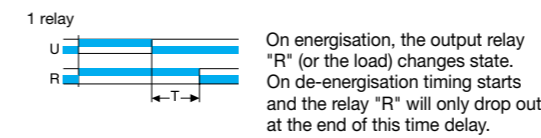
• H function: Timing on energisation - Pulse output (adjustable)



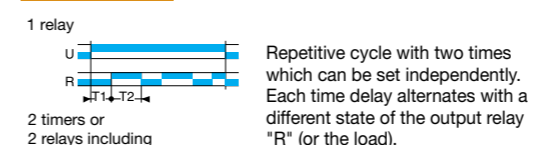
• Ht function: Delay on energisation with memory



• K function: Delay on de-energisation True delay off (without auxiliary power supply)



• L function: Asymmetrical flashin

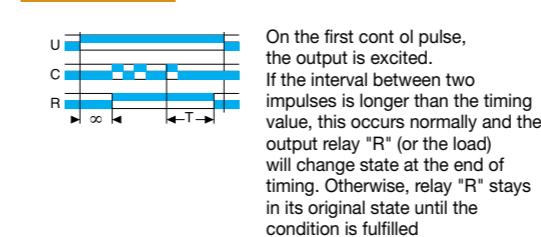


Note: The cycle starts with the relay "R" in the rest position.

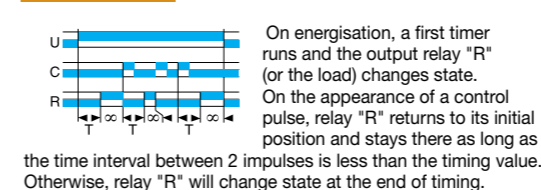
• Li function: Asymmetrical flashin



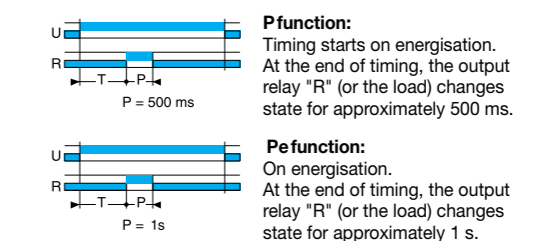
• N function: "Safe-guard"



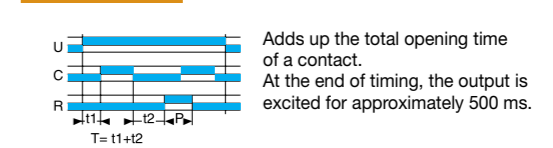
• O function: "Delayed safe-guard"



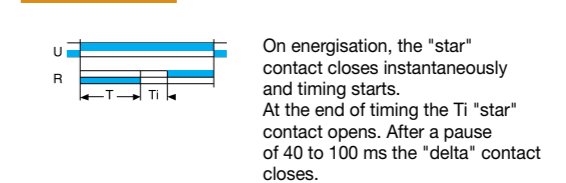
• P and Pe functions: Impulse counter (delay on)



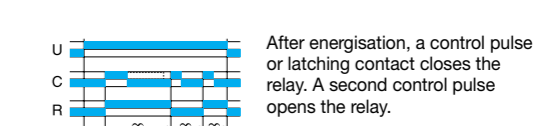
• Pt function: Impulse counter (delay on)



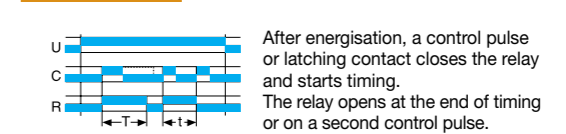
• Q function: "Star-delta" starting



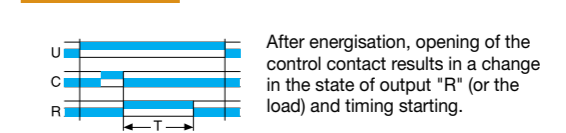
• TL function: Impulse relay



• Tt function: Timed impulse relay



• W function: Timing after pulse on control contact

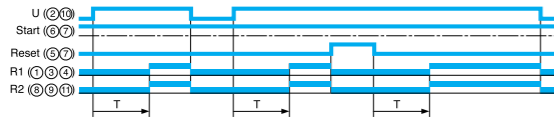


Function diagrams

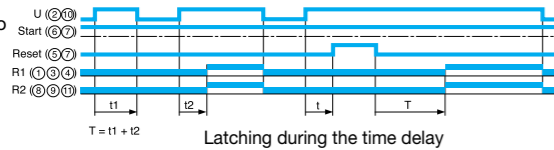
815E dedicated functions

U : Supply
R : Output relay or load
T : Timing
∞ : Infinit
C (y1) : Command
Start : Start timing
Reset : Reset to zero

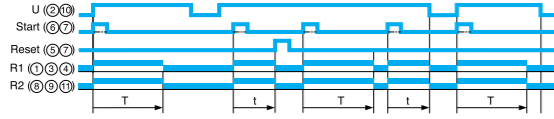
A2 function: Delay on energisation



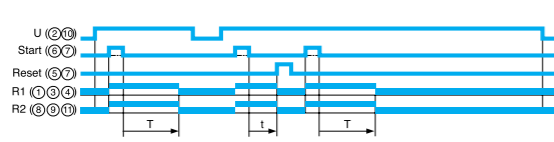
AM function: Delay on energisation



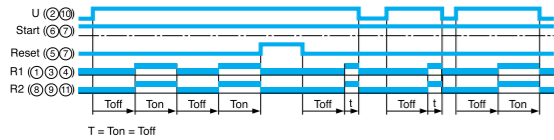
B function: Timing on impulse (one shot)



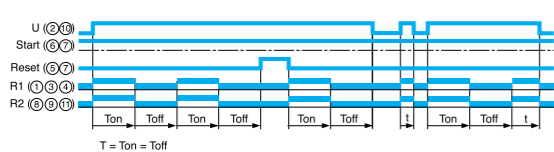
C function: Timing after impulse



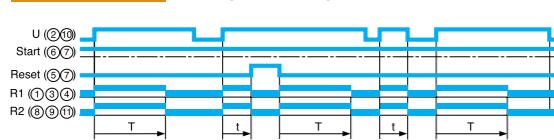
D function: Flip-flo



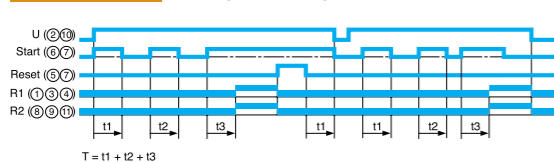
Di function with latching: Flip-flo



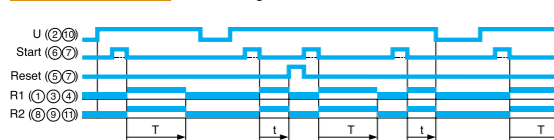
H function: Timing on energisation



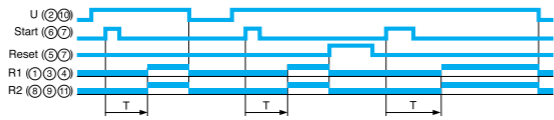
T function: Timing on energisation



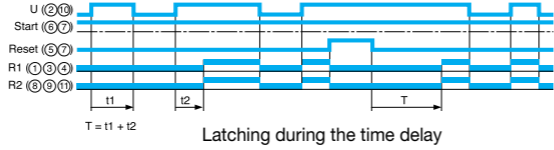
W function: Off-delay



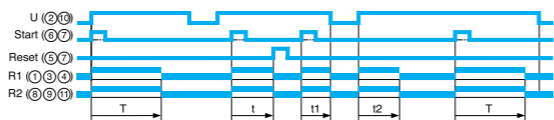
A2c function: Delay on energisation



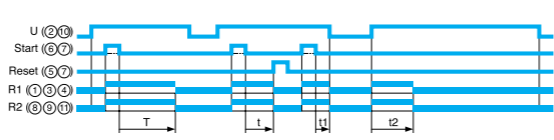
AMt function: Delay on energisation



B function with latching: Timing on impulse (one shot)



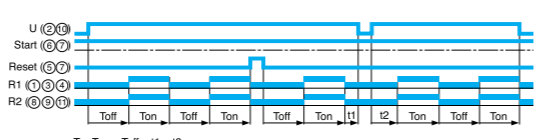
C function with latching: Timing after impulse



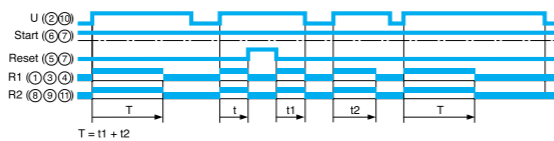
Di function: Flip-flo



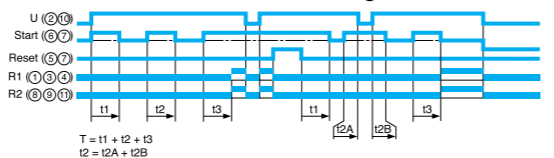
D pause function: Flip-flo



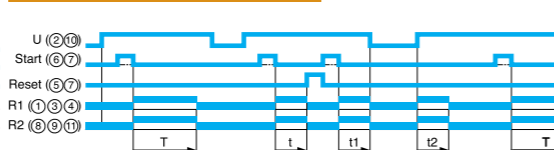
H function with latching: Timing on energisation



T function with latching: Timing on energisation



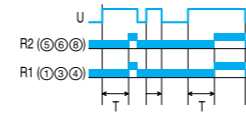
W function with latching: Off-delay timer



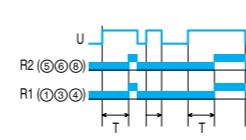
TMR48 dedicated functions

U : Supply
R : Output relay or load
T : Timing
∞ : Infinit
C (y1) : Command

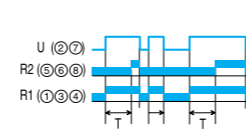
TMR48 A A function: Delay on energisation



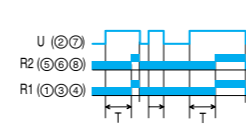
TMR48 U A function: On-delay



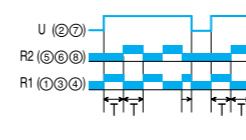
A1 function: Delay on energisation



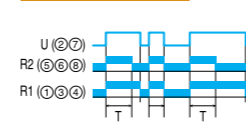
A2 function: Delay on energisation



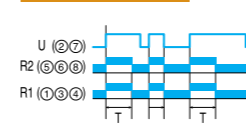
D-Di function: Symmetrical flashin



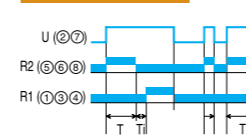
H1 function: Timing on energisation



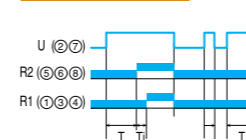
H2 function: Timing on energisation



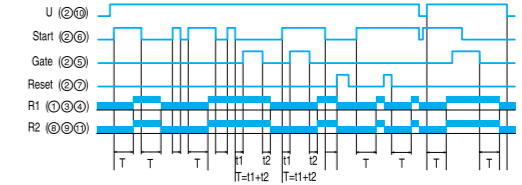
Q1 function: Star-delta "starting"



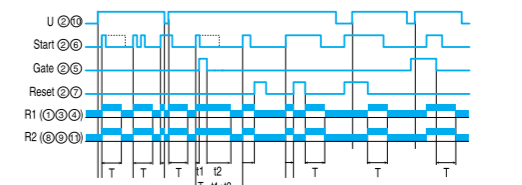
Q2 function: "Star-delta 2" starting



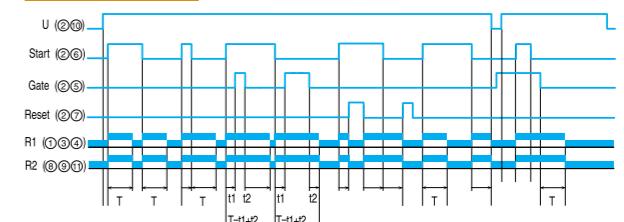
Ac function: Timing after closing and opening of control contact



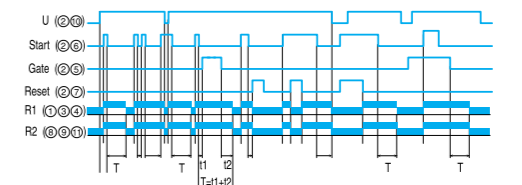
B function: Timing on impulse (one shot)



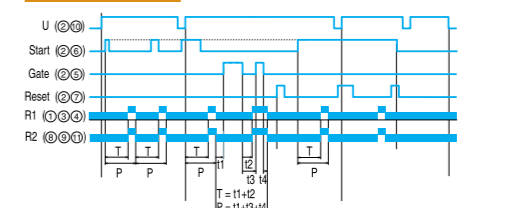
Bw function: Pulse output (adjustable)



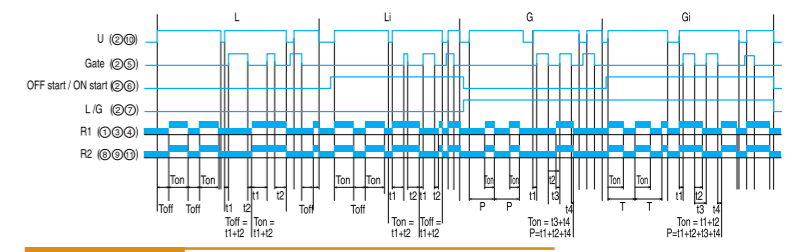
C function: Off-delay



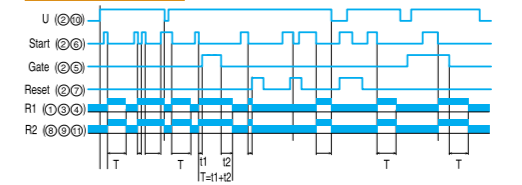
G function: Cyclical function



L/LiG/Gi function: Cyclical flashing timer



W function: Off-delay

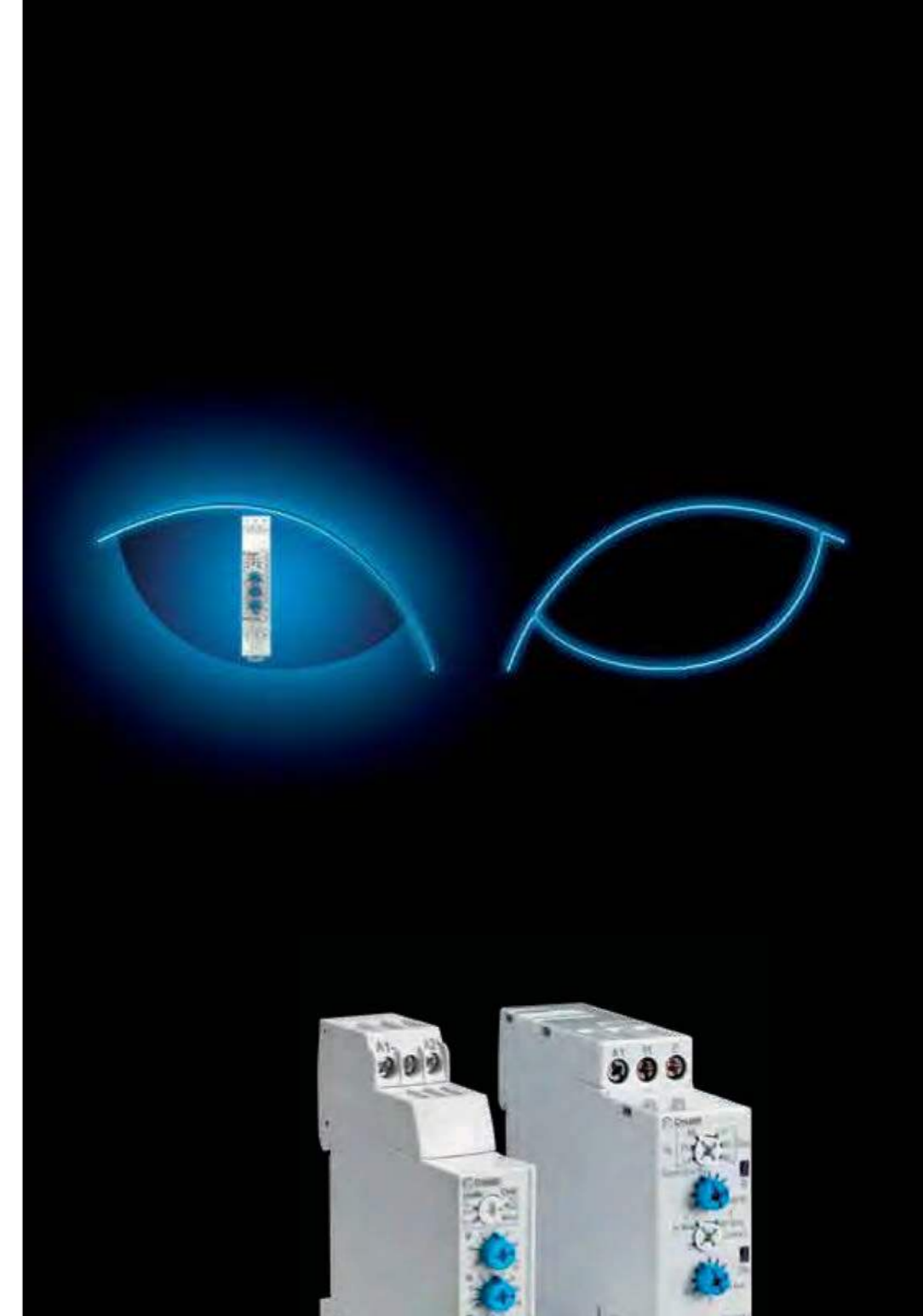


Crouzet Control

Behind every project, technologies and expertise

- **Local** support for all industrial projects.
- A **multi-skilled team**.
- A sales presence in over **40 countries**.
- A Premium offer designed to ensure **the excellence** of products and services.
- **Eco-design integrated** in Crouzet's "Offer Creation Process".
- Certifications: **ISO 9001, ISO 14001, OHSAS 18001**.
- Products which **comply with international standards** (UL, CSA, EC).
- A **dynamic R&D department**.

In addition to this catalogue, the **www.crouzet.com** website offers the latest tools, available as free downloads, including technical data sheets and installation manuals for each product.



Control relays
Instinctive control



A control relay

How can it be defined in simple terms

The **control relay** is an electronic device which can be used to detect and monitor physical values or electrical values.

If a device is found to be operating abnormally, the control relay trips to halt its operation.

A control relay

To execute which actions?

Protecting, Monitoring

The control relay is used to **protect** machines by monitoring values such as current, voltage, phase presence and sequence, levels, etc.

The control relay ensures total availability of equipment, a major challenge for industries keen to improve their productivity and operating profits

It is one of the indispensable **monitoring** components for ensuring continuity of service of each installation.

Sensing, Alerting

If a fault is **detected**, the machine is not allowed to run and the user is informed of the anomaly by a visual signal.

Thus **alerted**, the user can then correct any malfunctions. This avoids expensive breakdowns, synonymous with production delays and loss of profitability .

Controlling, Triggering

In level **control**, the control relay takes on a different role: it controls the pump in order to manage the level of water in a container (tank, swimming pool, sink, etc). Directly interfacing with probes, it **triggers** a signal and thus safeguards against machine breakdowns due to threshold adjustment.

Protection

Monitoring

Sensing

Alerting

Controlling

Triggering

Crouzet Control, control relays

C-Lynx modular housing and E, F, L industrial housing



Control relays

Crouzet Control, control relays

Their features:

- **Positive logic output** to protect installations in the event of a power failure.
- **True RMS** guaranteed regardless of interference on the electrical supply.
- Better integration in industrial and commercial cabinets thanks to **modular casings and industrial casings**.
- Simplified installation thanks to a **power supply** for single-phase products and a **self-powered** version for three-phase products.
- The **combination of a number of control functions** in one unit **optimises** wiring time and simplifies installation.
- A range of power supplies from 24 to 240 V in one unit **for optimised stocks**.

In addition to this catalog, the www.crouzet.com website offers technical data sheets and installation manuals for each product, available as free downloads.


Crouzet Control, control relays

Where are they found?


In electrical cabinets associated with other automation functions for the following markets:

- Food industry
- Industrial automation systems
- Quarries
- Building equipment
- Water treatment
- Transport

Lift



Monitoring the internal temperature of the PTC probe. For lift machine rooms, monitoring the temperature between 4° and 40°C according to standard EN81.



C-Ly NX THERMOCONTROL RELAY S FOR LIFTS HWT81

Ice maker




Fluid management: cold management compressor current control.




CURRENT CONTROL RELAY MUS

Cranes




Monitoring overcurrent in the event of motor overload. When too high an overload occurs, the current exceeds the fixed threshold and the relay contact closes.




CURRENT CONTROL RELAY MIC

Pump management




Protecting the pump: detection of no-load operation by undercurrent control, detection of jamming by overcurrent control.




CURRENT CONTROL RELAY HIH

Generating set



Frequency control in generating sets or detection of backup units.



C-Ly NX CONTROL RELAY (UNDeRf ReQUeNCy/OveRf ReQUeNCy) HHZ

Fountains




Maintaining an adequate water level for the pumps or water jet to work properly, preventing no-load operation (which often irreparably damages the pumps, and always stops the water jet effect).




CONTROL RELAY HNM

Motors




Control of mains voltage (prevents overheating, destruction of insulation and change of direction). Motor protection, detection of anomalies (temperature too high, motor stopping).




MOTOR TEMPERATURE CONTROL RELAY HWTM

Crushers



Detection of obstruction or jamming.




CURRENT CONTROL RELAY HIH

Escalators




Control/detection of phase sequence and failure on motors.




PHASE CONTROL RELAY HWUA

Steam systems



Level control (maintaining a constant level).






LEVEL CONTROL RELAY ENRM

Control relays

Selection guide

C-Lynx modular housing, Control relays

Phase control (3-phase supply)



Phase failure										
Regeneration	Sequence / Asymmetry	Overvoltage / Undervoltage	Timing		Output(s)	Casing width (mm)	Meas. range (Self-powered)	Part number	Type	
	Yes / No	No / No	No	1 x 5 A changeover	17.5	208 ⇨ 480 V ~ - 50 / 60 Hz	84 873 022	MWG		
		No / -20 % ⇨ -2 %	0.1 ⇨ 10 s							
	Yes / 5 ⇨ 15 %	No / No								
		Window +2 ⇨ +20 % -20 ⇨ -2 %								
	Yes / No	No / No	No	2 x 5 A changeover	17.5	208 ⇨ 480 V ~ - 50 / 60 Hz	84 873 020	MWS		
		No / No	0.3 ⇨ 30 s							
	Yes / 5 ⇨ 15 %		+2 ⇨ +20 % / -20 ⇨ -2 %						0.1 ⇨ 10 s	
		No / No	0.3 ⇨ 30 s							
	2 x 5 A changeover	35	220 ⇨ 480 V ~ - 50 / 60 Hz						84 873 026	HWUA
Loss of phase and neutral										
Regeneration	Sequence / Asymmetry	Overvoltage / Undervoltage	Timing		Output relay	Casing width (mm)	Meas. range (Self-powered)	Part number	Type	
	No / No	+2 ⇨ +20 % / -20 ⇨ -2 %	0.3 ⇨ 30 s		2 x 5 A changeover	35	120 ⇨ 277 V ~ - 50 / 60 Hz	84 873 221	H3USN	

Control relays

Motor temperature control and phase sequence and failure

Sensor	Test	Latching	Supply voltage		Output relay	Casing width (mm)	Supply	Part number	Type
	No	No	24 ⇨ 240 V ~	2 x 5 A NO	35	208 ⇨ 480 V ~	84 873 027	HWTM	
	Reset on front panel	Yes							

Single-phase DC voltage control with selectable latching

Measurement range	Functions	Hysteresis	Timing		Output relay	Casing width (mm)	Supply	Part number	Type
	Over / Undervoltage	5 % ⇨ 20 %	0.1 ⇨ 10 s	1 x 5 A changeover	17.5	Monitors its own supply voltage	84 872 140	MUS	
									20 ⇨ 80 V ~
									65 ⇨ 260 V ~
	Over or Undervoltage	5 % ⇨ 50 %	0.1 ⇨ 3 s	2 x 5 A changeover	35	24 ⇨ 240 V ~	84 872 120	HUL	
									0.2 ⇨ 60 V ~
									15 ⇨ 600 V ~
65 ⇨ 260 V ~	Window	3% fixe	0.1 ⇨ 10 s	1 x 5 A changeover	17.5	Monitors its own supply voltage	84 872 151	MUSF	
									84 872 152

Current control (over or undercurrent)

Measurement range	Built-in CT	Hysteresis	Latching / Timing		Output relay	Casing width (mm)	Supply	Part number	Type
	Yes	15% fixe	No / No	1 x 5 A changeover	17.5	24 ⇨ 240 V ~	84 871 122	MIC	
									2 ⇨ 20 A ~
	2 ⇨ 500 mA ~								
0.1 ⇨ 10 A ~	No	5 % ⇨ 50 %	Yes / 0.1 ⇨ 3 s	2 x 5 A changeover	35	84 871 120	HIL		
								84 871 130	HIH

The control relay accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Selection guide

Frequency control with window

Measurement range	Selectable latching	Hysteresis	Timing	Output relay	Casing width (mm)	Supply	Part number	Type
40 ⇒ 70 Hz	Yes	0.3 Hz fixe	0.1 ⇒ 10 s	2 x 5 A changeover	35	120 ⇒ 277 V ~	84 872 501	HHZ

Level control

Probe	Emptying / Filling	Level / Measurement range	Timing	Output relay	Casing width (mm)	Supply	Part number	Type
Resistive	Yes / Yes	1 or 2 / 250 ⇒ 1 MΩ	0.1 ⇒ 5 s	2 x 5 A changeover	35	24 ⇒ 240 V ~	84 870 700	HNM
Digital or PNP / NPN		1 or 2 / None		1 x 5 A changeover			84 870 710	HNE
Digital	No / Yes	1 / None			17.5		84 870 720	MNS

Over/underspeed control

Sensor	Measurement range	Hysteresis	Timing	Output relay	Casing width (mm)	Supply	Part number	Type
3-wire NPN/PNP sensor, 0 ⇒ 30 V, NAMUR Volt-free contact	0.05 s ⇒ 10 min	5 % fixe	0.6 ⇒ 60 s	1 x 5 A changeover	35	24 ⇒ 240 V ~	84 874 320	HSV

Temperature control with window (lifts) according to EN81

Sensor	Built-in phase control	Measurement range	Timing	Output relay	Casing width (mm)	Supply	Part number	Type
3-wire Pt100	No	Low threshold -1 ⇒ +11°C High threshold +34 ⇒ +46°C	0.1 ⇒ 10 s	1 x 5 A changeover	35	24 ⇒ 240 V ~	84 874 110	HT81
3-wire Pt100				2 x 5 A NO			84 874 120	HT81-2
3-wire Pt100	Yes 480 V			2 x 5 A NO			84 874 130	HWT81

Industrial housing E, F, L, Control relays

Phase sequence or phase failure control

Regeneration	Sequence / Asymmetry	Overvoltage / Undervoltage	Timing	Output relay	Casing width (mm)	Meas. range (Self-powered)	Part number	Type
None	Yes / No	No / No	No	1 x 8 A changeover	22.5	200 ⇒ 500 V ~	84 892 299	EWS
				2 x 8 A changeover		200 ⇒ 460 V ~	84 873 004	EWS2




voltage control with selectable latching

Measurement range	Functions	Hysteresis	Timing	Output relay	Casing width (mm)	Supply	Part number	Type
0.2 ⇒ 60 V ~	Over / Undervoltage	5 % ⇒ 50 %	0.1 ⇒ 3 s	1 x 8 A changeover	22.5	24 V =	84 872 020	EUL
						24 V ~	84 872 021	EUL
						120 V ~	84 872 023	EUL
						230 V ~	84 872 024	EUL
15 ⇒ 600 V ~	Over / Undervoltage	5 % ⇒ 50 %	0.1 ⇒ 3 s	1 x 8 A changeover	22.5	24 V =	84 872 030	EUH
						24 V ~	84 872 031	EUH
						120 V ~	84 872 033	EUH
						230 V ~	84 872 034	EUH






The control relay accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Selection guide



Current control (over / undercurrent)

Measurement range	With CT	Hysteresis	Latching / Timing	Output relay	Casing width (mm)	Supply	Part number	Type
 2 ⇒ 500 mA	No	5 % ⇒ 50 %	Yes / 0.1 ⇒ 3 s	1 x 8 A changeover	22.5	24 V \equiv	84 871 020	EIL
						24 V \sim	84 871 021	EIL
						48 V \sim	84 871 022	EIL
						120 V \sim	84 871 023	EIL
						230 V \sim	84 871 024	EIL
 0.1 ⇒ 10 A	No	5 % ⇒ 50 %	Yes / 0.1 ⇒ 3 s	1 x 8 A changeover	22.5	24 V \equiv	84 871 030	EIH
						24 V \sim	84 871 031	EIH
						48 V \sim	84 871 032	EIH
						120 V \sim	84 871 033	EIH
						230 V \sim	84 871 034	EIH
 10 ⇒ 100 A	26 852 304	5 % ⇒ 50 %	Yes / 0.1 ⇒ 3 s	1 x 8 A changeover	22.5	24 V \equiv	84 871 040	EIT
						24 V \sim	84 871 041	EIT
						48 V \sim	84 871 042	EIT
						120 V \sim	84 871 043	EIT
						230 V \sim	84 871 044	EIT

Level control

Probe	Emptying / Filling	Level / Measurement range	Timing	Output relay	Casing width (mm)	Supply	Part number	Type
 Resistive	Yes / Yes	1 or 2 / 5 ⇒ 100 K Ω	No	1 x 8 A changeover	22.5	24 V \sim	84 870 201	ENR
						48 V \sim	84 870 202	ENR
						120 V \sim	84 870 203	ENR
						230 V \sim	84 870 204	ENR
						24 ⇒ 240 V \sim	84 870 200*	ENR*
 Resistive	Yes / Yes	2 / 250 Ω ⇒ 1 M Ω	0.1 ⇒ 5 s	1 x 8 A changeover	22.5	24 V \sim	84 870 211	ENRM
						48 V \sim	84 870 212	ENRM
						120 V \sim	84 870 213	ENRM
						230 V \sim	84 870 214	ENRM
						24 ⇒ 240 V \sim	84 870 210*	ENRM*
 Resistive	Yes / Yes	1 or 2 / 5 ⇒ 100 K Ω	No	1 x 8 A changeover	39 Plug-in 8-pin base	24 V \sim	84 870 301	LN
						120 V \sim	84 870 303	LN
						230 V \sim	84 870 304	LN
						24 V \sim	84 870 306	LN
						120 V \sim	84 870 308	LN
 Resistive	Combined with monitoring of wells	2 / 5 ⇒ 100 K Ω	No	1 x 8 A changeover	39 Plug-in 11-pin base	230 V \sim	84 870 309	LN
						24 V \sim	84 870 401	L2N
						120 V \sim	84 870 403	L2N
 Resistive	Yes / Yes + Alarm	2 / 5 ⇒ 100 K Ω	No	2 changeover	45	230 V \sim	84 870 404	L2N
						24 V \sim	84 870 501	FN
						48 V \sim	84 870 502	FN
						120 V \sim	84 870 503	FN
						230 V \sim	84 870 504	FN
		2 / 250 Ω ⇒ 5 K Ω					84 870 803	FN LS

Motor temperature control

Sensor	Test	Latching	Manual reset	Output relay	Casing width (mm)	Supply	Part number	Type
 PTC	No	Yes	No	1 x 8 A NO	22.5	24 V \sim	84 874 015	ETM
						120 V \sim	84 874 013	ETM
						230 V \sim	84 874 014	ETM
		Yes	Yes	1 x 8 A changeover		24 V \sim	84 874 025	ETM 2
						120 V \sim	84 874 023	ETM 2
 PTC	No	Yes	Yes	2 x 8 A changeover	22.5	230 V \sim	84 874 024	ETM 2
						24 V \sim	84 874 035	ETM 22
						120 V \sim	84 874 033	ETM 22
						230 V \sim	84 874 034	ETM 22

* Available in 2014. The casing of the new range will be different from the ones presented here. Further information can be found on the data sheets available at www.crouzet.com

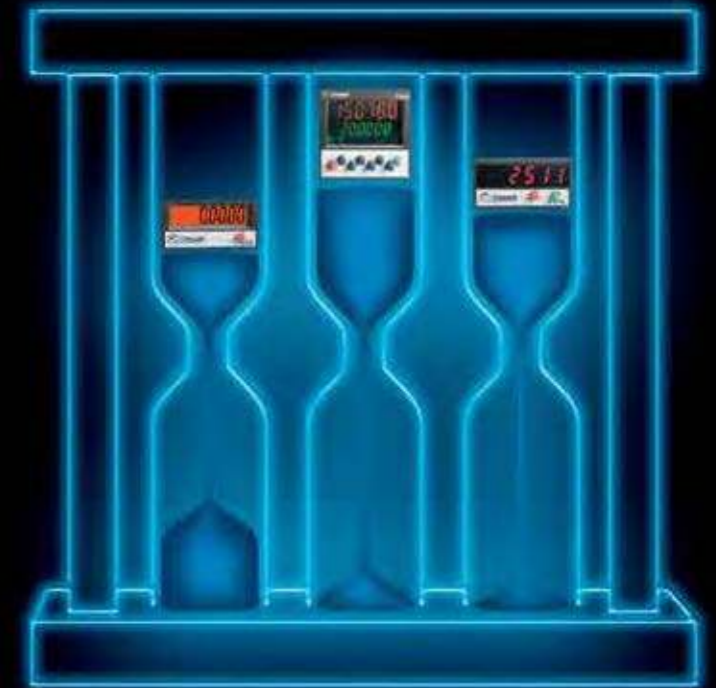
The control relay accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Crouzet Control

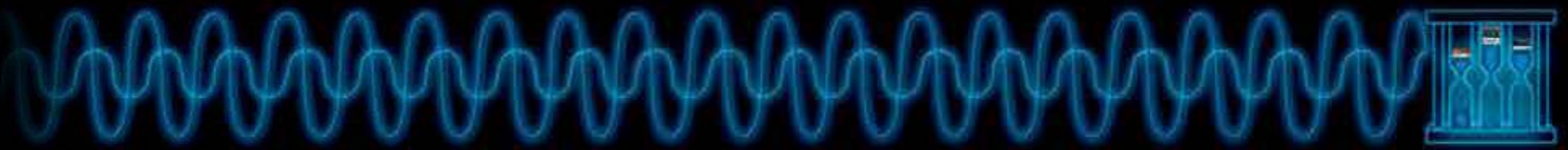
Behind every project,
technologies and expertise

- **Local** support for all industrial projects.
- A **multi-skilled team**.
- A sales presence in over **40 countries**.
- A Premium offer designed to ensure **the excellence** of products and services.
- **Eco-design integrated** in Crouzet's "Offer Creation Process".
- Certifications: **ISO 9001, ISO 14001, OHSAS 18001**.
- Products which **comply with international standards** (UL, CSA, EC).
- A **dynamic R&D department**.

In addition to this catalogue, the **www.crouzet.com** website offers the latest tools, available as free downloads, including technical data sheets and installation manuals for each product.



Counters and Ratemeters
Counting accuracy



A counter, a ratemeter

How can they be defined in simple terms

A **counter** can be used to count a number of actions or events. It thus participates in production management and preventive maintenance.
 A **ratemeter** can be used to display the speed of rotation of a motor in real time.

A counter, a ratemeter

To execute which actions?

Up counting, Down counting
For up counting or down counting a number of parts, events, a running time, the counter is the ideal solution. There are different types of counter with the following functions: up/down counter, batch counter, ratemeter, chronometer, multi-totalizer, elapsed time counter, impulse counter.
Informing, Displaying
A counter can allow a user to be informed and to display data and quantities easily. The data displayed can be read directly on the front panel.
Triggering, Actuating
A counter can be used to trigger an action or an intervention on a machine. The outputs actuate directly and/or transmit data to the control system.
Measuring, Chronometer timing
A counter can be used to schedule preventive maintenance. The machine running time is measured and the duration of an action timed with a chronometer .

- Up counting
- Down counting
- Informing
- Displaying
- Triggering
- Actuating
- Measuring
- Chronometer timing

In addition to this catalogue, the www.crouzet.com website offers technical data sheets and installation manuals for each product, available as free downloads.

Crouzet Control, counters and ratemeters

A digital range and an electromechanical range



Counters and Ratemeters

Crouzet Control, counters and ratemeters

Their features:

- For fast count applications, a high-speed counting frequency: up to **50 kHz**.
- A **two-colour or backlit LCD dual display** for ease of reading.
- Considerable space saving due to **dual-function** electromechanical and electronic ranges.
- A **complete** output operating **logic** to cover complex applications.
- **Easier maintenance** thanks to removable connectors (CTR48).
- An enhanced **multifunction** electronic range **for optimised stocks**.

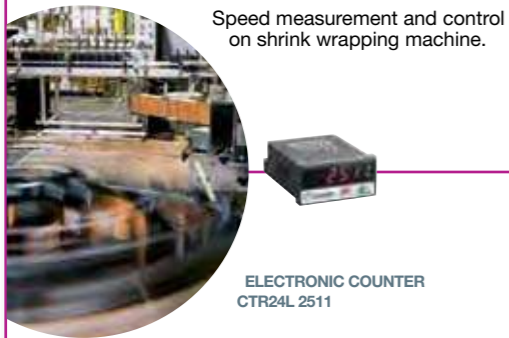
Crouzet Control, counters and ratemeters Where are they found?

In electrical cabinets associated with other automation functions for the following markets:

- Industrial automation systems
- Building equipment
- Industrial machines
- Medical

Tachometer systems

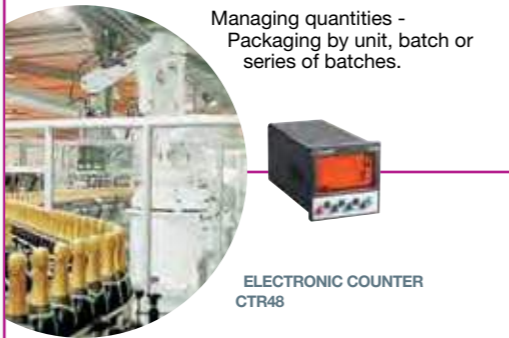
Speed measurement and control on shrink wrapping machine.



ELECTRONIC COUNTER
CTR24L 2511

Counting quantities

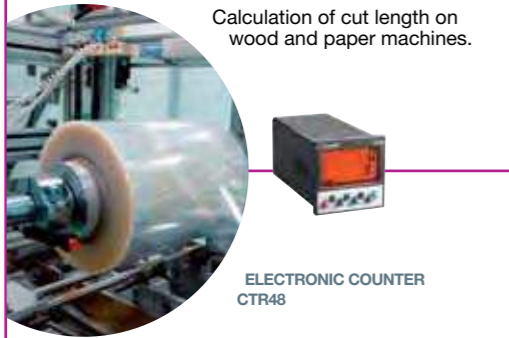
Managing quantities - Packaging by unit, batch or series of batches.



ELECTRONIC COUNTER
CTR48

Length measurement

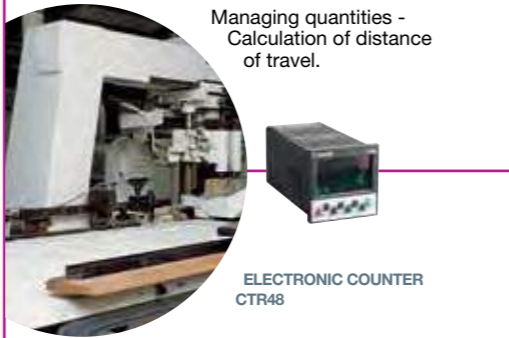
Calculation of cut length on wood and paper machines.



ELECTRONIC COUNTER
CTR48

Position control

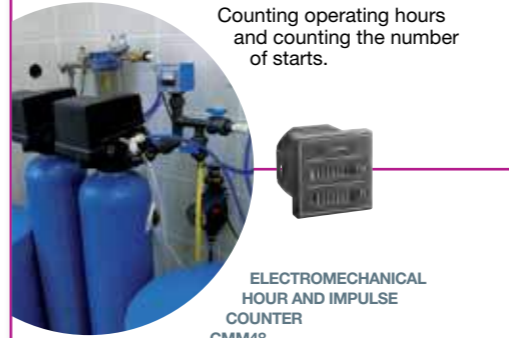
Managing quantities - Calculation of distance of travel.



ELECTRONIC COUNTER
CTR48

Compressors

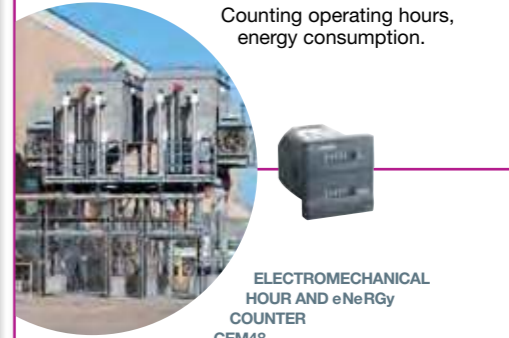
Counting operating hours and counting the number of starts.



ELECTROMECHANICAL HOUR AND IMPULSE COUNTER
CMM48

Dehumidifier

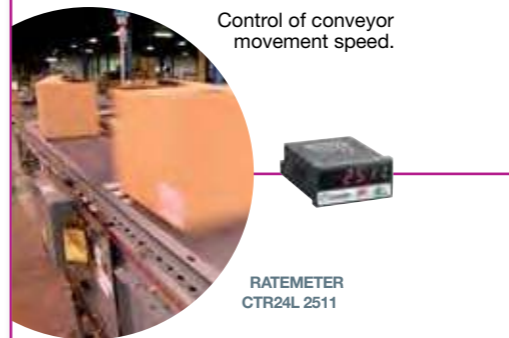
Counting operating hours, energy consumption.



ELECTROMECHANICAL HOUR AND eNeRGy COUNTER
CEM48

Assembly line speed

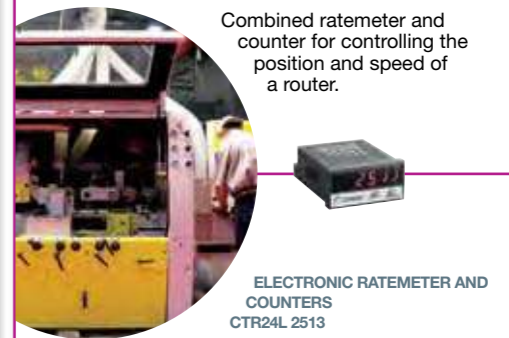
Control of conveyer movement speed.



RATEMETER
CTR24L 2511

Milling machine

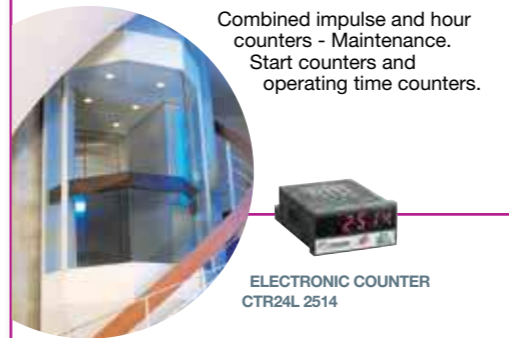
Combined ratemeter and counter for controlling the position and speed of a router.



ELECTRONIC RATEMETER AND COUNTERS
CTR24L 2513

Lifts


Combined impulse and hour counters - Maintenance. Start counters and operating time counters.



ELECTRONIC COUNTER
CTR24L 2514

Uv lamp

Counting and display of operating times. Event management, wear control.



HOUR COUNTER
CTR24 2323


Counters and Ratemeters

Selection guide







Electronic counters

24 x 48 multifunction counters without preselection

Functions	Modes	Multiplication coefficient	Decimal point	Max. counting speed	Display	Counting capacity	Supply	Part number	Type
 Totalizer or Hour counter or Ratemeter	Dir / up.dn / up.up Ph / 2-ph / 4-ph	Yes	Yes	50 kHz (DIR mode)	LED	999,999	10 ⇒ 30 V ---	87 623 570	CTR24L - 2511
	Start / Stop	No	Yes	999,999 hrs		0.001 s ⇒ 999,999 hrs			
	sec ⁻¹ / min ⁻¹	Yes	Yes	50 kHz		999,999			
 Double totalizer Independent inputs (A and B)	Counting A / B / A-B / A+B AdivB / %AB	Yes	Yes	25 kHz	LED	999,999	10 ⇒ 30 V ---	87 623 571	CTR24L - 2512
 Totalizer and Ratemeter Independent inputs	Dir / up.dn / up.up Ph / 2-ph / 4-ph	Yes	Yes	30 kHz	LED	999,999	10 ⇒ 30 V ---	87 623 572	CTR24L - 2513
	sec ⁻¹ / min ⁻¹								
 Double totalizer Common input	Counting (total / partial)	Yes	Yes	50 kHz	LED	999,999	10 ⇒ 30 V ---	87 623 573	CTR24L - 2514
 Totalizer + Ratemeter or Totalizer + Totalizer or Totalizer + Hour or Hour + Hour	Counting + sec ⁻¹ / min ⁻¹	Yes	Yes	35 kHz	LED	999,999	10 ⇒ 30 V ---	87 623 574	CTR24L - 2515
	Counting			50 kHz		999,999			
	Counting + Start / Stop			40 kHz		0.001 s ⇒ 999,999 hrs			
	Start / Stop	No	Yes	999,999 hrs		0.001 s ⇒ 999,999 hrs			

Counters and Ratemeters

24 x 48 counters without preselection




Functions	Inputs / Reset	Max. counting speed	Display	Counting capacity	Supply	Part number	Type
 Hour	PNP / Contact	99,999.99 hrs	LCD	0.1 s ⇒ 99,999.99 hrs	Lithium battery	87 622 161	CTR24 - 2223
	NPN or contact / Contact					87 622 162	CTR24 - 2233
	Voltage / Contact					87 622 170	CTR24 - 2224
 Hour	PNP / Contact	99,999.99 hrs	Orange (backlit)	0.1 s ⇒ 99,999.99 hrs	Lithium battery	87 622 181	CTR24 - 2323
	NPN or contact / Contact					87 622 182	CTR24 - 2333
	Voltage / Contact					87 622 190	CTR24 - 2324
 Totalizer	PNP / Contact	99,999,999	LCD	99,999,999	Lithium battery	87 622 061	CTR24 - 2241
	NPN or contact / Contact					87 622 062	CTR24 - 2251
	Voltage / Contact					87 622 070	CTR24 - 2242
 Totalizer	PNP / Contact	99,999,999	Orange (backlit)	99,999,999	Lithium battery	87 622 081	CTR24 - 2341
	NPN or contact / Contact					87 622 082	CTR24 - 2351
	Voltage / Contact					87 622 090	CTR24 - 2342

The counters and ratemeters accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Selection guide







48 x 48 multifunction counters with preselection

Functions	Number of preset(s)	Max. counting speed	Display	Counting capacity	Outputs	Supply	Part number	Type
 Preselection counter Ratemeter Chronometer Multi-totalizer	1	40 KHz	Backlit LCD (orange) extra-bright 2 lines	-999,999 ⇒ 999,999	1 x 5 A changeover 1 solid state	10 ⇒ 30 V $\overline{\text{---}}$	87 621 111	CTR48
						24 V \sim	87 621 112	CTR48
						90 ⇒ 260 V \sim	87 621 115	CTR48
Preselection counter Ratemeter Chronometer Multi-totalizer Batch counter	2				1 x 5 A changeover 1 x 5 A NO 2 solid state	10 ⇒ 30 V $\overline{\text{---}}$	87 621 121	CTR48
						24 V \sim	87 621 122	CTR48
						90 ⇒ 260 V \sim	87 621 125	CTR48
 Preselection counter Ratemeter Chronometer Multi-totalizer	1	40 KHz	Two-colour LCD (red and green) 2 lines	-999,999 ⇒ 999,999	1 x 5 A changeover 1 solid state	10 ⇒ 30 V $\overline{\text{---}}$	87 621 211	CTR48
						24 V \sim	87 621 212	CTR48
						90 ⇒ 260 V \sim	87 621 215	CTR48
Preselection counter Ratemeter Chronometer Multi-totalizer Batch counter	2				1 x 5 A changeover 1 x 5 A NO 2 solid state	10 ⇒ 30 V $\overline{\text{---}}$	87 621 221	CTR48
						24 V \sim	87 621 222	CTR48
						90 ⇒ 260 V \sim	87 621 225	CTR48
 Preselection counter Chronomètre	1	5 KHz	Backlit LCD (green) 2 lines	-999,999 ⇒ 999,999	1 x 3 A changeover	11 ⇒ 30 V $\overline{\text{---}}$	87 629 111	CTR48E
						115 V \sim	87 629 113	CTR48E
						230 V \sim	87 629 114	CTR48E
						11 ⇒ 30 V $\overline{\text{---}}$	87 629 121	CTR48E
	2				1 x 3 A changeover 1 x 3 A NO	115 V \sim	87 629 123	CTR48E
						230 V \sim	87 629 124	CTR48E

Counters and Ratemeters

Electromechanical counters

Hour counters

Dimensions (mm)	Counting capacity	Frequency	Supply	Part number	Type
 48 x 48	99,999.99	50 Hz \sim	20 ⇒ 30 V \sim	99 772 710	CHM48
			42 ⇒ 48 V \sim	99 772 711	CHM48
			100 ⇒ 130 V \sim	99 772 712	CHM48
			360 ⇒ 440 V \sim	99 772 713	CHM48
			187 ⇒ 264 V \sim	99 772 714	CHM48
48 x 48	999,999.99	60 Hz \sim	20 ⇒ 30 V \sim	99 772 718	CHM48
			42 ⇒ 48 V \sim	99 772 719	CHM48
			100 ⇒ 130 V \sim	99 772 715	CHM48
			187 ⇒ 264 V \sim	99 772 716	CHM48
			360 ⇒ 440 V \sim	99 772 717	CHM48
 24 x 48	99,999.99	50 Hz \sim	10 ⇒ 30 V $\overline{\text{---}}$	99 772 810	CHM48
			36 ⇒ 80 V $\overline{\text{---}}$	99 772 811	CHM48
			100 ⇒ 130 V $\overline{\text{---}}$	99 772 812	CHM48
			20 ⇒ 30 V \sim	99 782 710	CHM24
			100 ⇒ 130 V \sim	99 782 712	CHM24
 15 x 32	99,999.99	60 Hz \sim	187 ⇒ 264 V \sim	99 782 714	CHM24
			20 ⇒ 30 V \sim	99 782 718	CHM24
			100 ⇒ 130 V \sim	99 782 715	CHM24
			187 ⇒ 264 V \sim	99 782 716	CHM24
			10 ⇒ 30 V $\overline{\text{---}}$	99 782 810	CHM24
 Modular Rail Din 35 mm	99,999.99	50 Hz \sim	4.5 ⇒ 35 V $\overline{\text{---}}$	99 792 810	CHM15
			24 V \sim	99 793 710	CHMDR
			115 V \sim	99 793 712	CHMDR
			230 V \sim	99 793 714	CHMDR
			10 ⇒ 27 V $\overline{\text{---}}$	99 793 810	CHMDR

The counters and ratemeters accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Selection guide





Impulse counters

Dimensions (mm)	Reset to zero	Counting capacity	Supply	Part number	Type
 15 x 32 Clip-fixin	No	9,999,999	24 V ~ - 50 / 60 Hz	99 778 710	CIM15
			115 V ~ - 50 / 60 Hz	99 778 712	CIM15
			230 V ~ - 50 / 60 Hz	99 778 714	CIM15
			5 V =	99 778 805	CIM15
			12 V =	99 778 806	CIM15
 24 x 48 Clip-fixin	No	999,999	24 V ~ - 50/60Hz	99 777 710	CIM 24
			230 V ~ - 50/60Hz	99 777 714	CIM 24
			12 V =	99 777 815	CIM 24
			24 V =	99 777 810	CIM 24
 24 x 48 Clip-fixin	Yes	99,999	24 V ~ - 50/60Hz	99 777 720	CIM 24
			230 V ~ - 50/60Hz	99 777 724	CIM 24
			12 V =	99 777 825	CIM 24
			24 V =	99 777 820	CIM 24
 24 x 48 Screw-fixin	No	999,999	24 V ~ - 50/60Hz	99 776 904	CIM 24 x 48
			115 V ~ - 50/60Hz	99 776 902	CIM 24 x 48
			230 V ~ - 50/60Hz	99 776 901	CIM 24 x 48
			24 V =	99 776 907	CIM 24 x 48
			110 V =	99 776 905	CIM 24 x 48
 24 x 48 Screw-fixin	Yes	999,999	24 V ~ - 50/60Hz	99 776 924	CIM 24 x 48
			115 V ~ - 50/60Hz	99 776 922	CIM 24 x 48
			230 V ~ - 50/60Hz	99 776 921	CIM 24 x 48
			24 V =	99 776 927	CIM 24 x 48
			24 V ~ - 50/60Hz	99 776 604	CIM 36 x 37
 36 x 37 Screw-fixin	No	999,999	115 V ~ - 50/60Hz	99 776 602	CIM 36 x 37
			230 V ~ - 50/60Hz	99 776 601	CIM 36 x 37
			24 V =	99 776 607	CIM 36 x 37
			110 V =	99 776 605	CIM 36 x 37
			24 V ~ - 50/60Hz	99 776 613	CIM 36 x 37
 36 x 37 Screw-fixin	Yes	999,999	115 V ~ - 50/60Hz	99 776 611	CIM 36 x 37
			230 V ~ - 50/60Hz	99 776 610	CIM 36 x 37
			24 V =	99 776 616	CIM 36 x 37
			24 V ~ - 50/60Hz	99 776 704	CIM 36 x 48
			115 V ~ - 50/60Hz	99 776 702	CIM 36 x 48
 36 x 48 Screw-fixin	No	999,999	230 V ~ - 50/60Hz	99 776 701	CIM 36 x 48
			24 V =	99 776 707	CIM 36 x 48
			48 V =	99 776 736	CIM 36 x 48
			110 V =	99 776 705	CIM 36 x 48
			24 V ~ - 50/60Hz	99 776 713	CIM 36 x 48
 36 x 48 Screw-fixin	Yes	999,999	115 V ~ - 50/60Hz	99 776 711	CIM 36 x 48
			230 V ~ - 50/60Hz	99 776 710	CIM 36 x 48
			24 V =	99 776 716	CIM 36 x 48

Counters and Ratemeters

Dual function 48 x 48 counters

Functions	Reset to zero	Counting capacity	Frequency	Supply	Part number	Type
 Impulse Hour	No	9,999,999 99,999.99 hrs	50 Hz ~	20 ⇨ 30 V ~	99 779 710	CMM48
				100 ⇨ 130 V ~	99 779 712	CMM48
				187 ⇨ 264 V ~	99 779 714	CMM48
		9,999,999 / 999,999.99 hrs	60 Hz ~	20 ⇨ 30 V ~	99 779 718	CMM48
				100 ⇨ 130 V ~	99 779 715	CMM48
				187 ⇨ 264 V ~	99 779 716	CMM48
 Power Hour	No	9,999,999 99,999.99 kw/hrs	50/60 Hz ~	10 ⇨ 30 V =	99 779 810	CMM48
				115 V ~	99 780 712	CEM48
				230 V ~	99 780 714	CEM48

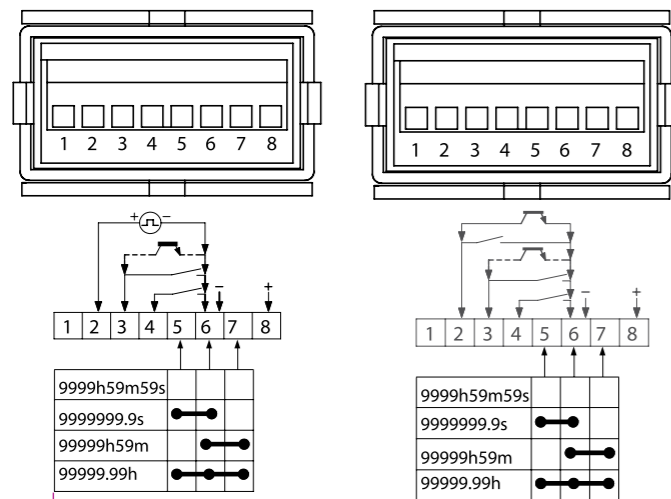
The counters and ratemeters accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com



CTR24 counters

Connections

Hour counters



Types 2223 and 2323:

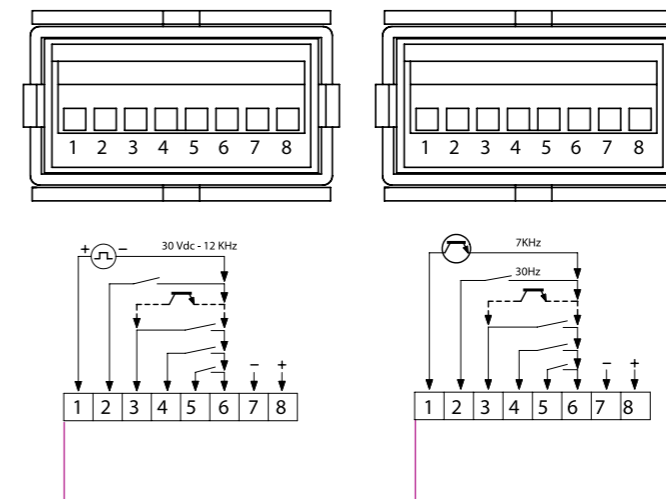
Part numbers:
 • 87 622 161
 • 87 622 181

Types 2233 and 2333:

Part numbers:
 • 87 622 162
 • 87 622 182

1. NC
2. Start / Stop input
3. Reset input
4. Enable front panel Reset
5. Mode 1 (Time selection)
6. GND / Optional backlighting - (only 23xx)
7. Mode 2 (Time selection)
8. Optional backlighting + (only 23xx)

Impulse counters



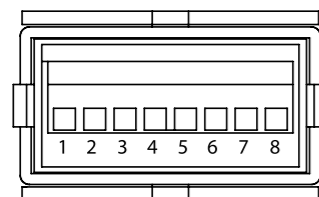
Types 2241 and 2341:

Part numbers:
 • 87 622 061
 • 87 622 081

Types 2251 and 2351:

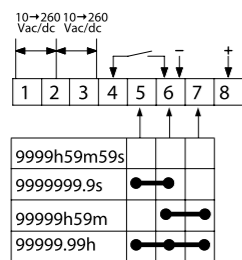
Part numbers:
 • 87 622 062
 • 87 622 082

1. Fast count
2. Slow count
3. Reset input
4. Enable front panel Reset
5. Counting (counting direction)
6. GND
7. Optional backlighting - (only 23xx)
8. Optional backlighting + (only 23xx)

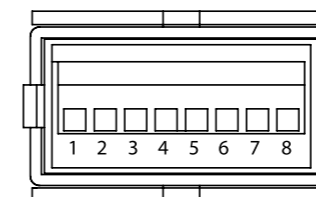


Types 2224 and 2324:

Part numbers:
 • 87 622 170
 • 87 622 190

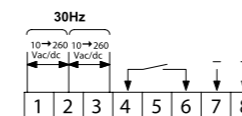


1. Common \approx
2. Start / Stop input
3. Reset input
4. Enable front panel Reset
5. Mode 1 (Time selection)
6. GND / Optional backlighting - (only 23xx)
7. Mode 2 (Time selection)
8. Optional backlighting + (only 23xx)



Types 2242 and 2342:

Part numbers:
 • 87 622 070
 • 87 622 090



1. Fast count
2. Common \approx
3. Reset input
4. Enable front panel Reset
5. NC
6. GND
7. Optional backlighting - (only 23xx)
8. Optional backlighting + (only 23xx)



Crouzet Control

Behind every project, technologies and expertise

- **Local** support for all industrial projects.
- A **multi-skilled team**.
- A sales presence in over **40 countries**.
- A Premium offer designed to ensure **the excellence** of products and services.
- **Eco-design integrated** in Crouzet's "Offer Creation Process".
- Certifications: **ISO 9001, ISO 14001, OHSAS 18001**.
- Products which **comply with international standards** (UL, CSA, EC).
- A **dynamic R&D department**.

In addition to this catalogue, the **www.crouzet.com** website offers the latest tools, available as free downloads, including technical data sheets and installation manuals for each product.



Temperature controllers
A degree of constancy

A temperature controller

How can it be defined in simple terms

A **temperature controller** is an electronic device which is used to monitor and ensure a constant temperature according to a setpoint.

A temperature controller

To execute which actions?

<p>Measuring</p> <p>The temperature controller is used to measure and maintain the temperature of a room, an enclosure, a liquid.</p> <p>It guarantees a constant temperature and ensures optimum use of the systems in which it is found: ovens, baths, cold rooms, machines.</p>	<p>Measuring</p>
<p>Controlling, Displaying, Alerting</p> <p>Directly interfacing with probes, the temperature controller controls and displays the temperature of the enclosure.</p> <p>It can be used to set an alert in the event of an anomaly (low and/or high temperature).</p>	<p>Controlling</p> <p>Displaying</p> <p>Alerting</p>
<p>Monitoring</p> <p>The temperature controller action is not limited to monitoring. It senses and controls the temperature, acting on the system heating or cooling.</p> <p>If the controlled temperature does not conform to the setpoint, the controller implements a heating or cooling action.</p>	<p>Monitoring</p>

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Crouzet Control, temperature controllers

A complete range



Temperature controllers

Crouzet Control, temperature controllers

Their features:

- **Adaptive tuning products** which manage their parameters independently: **PID**, temperature rise and inertia curve to simplify the installation.
- A **sophisticated control algorithm** to obtain a temperature as close as possible to the setpoint.
- A **dual display** makes it user-friendly and easy to use.
- Compatibility with all types of probe thanks to a "**Multi-technology probe input**".
- **Multiple outputs** (logic and/or relay) for optimum integration in **any** system.

Applications


Crouzet Control, temperature controllers Where are they found?

In electrical cabinets associated with other automation functions for the following markets:

- Industrial automation systems
- Building equipment
- Food industry

Packaging


Monitoring the heating temperature of the various packages.



TEMPERATURE CONTROLLER
MIC48

Fluid management


Maintaining the temperature of a ceramic oven.



TEMPERATURE CONTROLLER
CTD43

Brewing

Managing cooling of fermentation tanks.



TEMPERATURE CONTROLLER
MIC48

Cooking


Control of industrial ovens.



TEMPERATURE CONTROLLER
CTD46

Chocolate factory


Managing the temperature of the liquid chocolate before it is poured into a mould.



TEMPERATURE CONTROLLER
CTD43

Bain-Marie


Maintaining the temperature of a bain-marie during cooking.



TEMPERATURE CONTROLLER
CTD46

Oven


Managing the temperature of an oven with change of setpoint possible via MODBUS.



TEMPERATURE CONTROLLER
MIC48

Cold room


Maintaining a storage room at freezing temperature.



TEMPERATURE CONTROLLER
CTD46

Air treatment plant


Maintaining forced air at the correct temperature.



TEMPERATURE CONTROLLER
MIC48

Spray booth

Temperature control for "paint curing" in the motor vehicle industry.







TEMPERATURE CONTROLLER
CTD46

Temperature controllers

Selection guide

Temperature controllers

48 x 48 digital

Functions	Type of control	Alarm	Input	Output	Display	Supply	Part number	Type
 Heating or Cooling	PID with auto-tune and adaptive tune	1 alarm	3-wire Pt100 or Thermocouple J, K, L, N	1 x 3 A output 1 x 1 A output 1 voltage logic 1 x 1 A relay	1 line (3 digits)	24 V \approx	89 421 102	CTD43
						100 \Rightarrow 240 V \sim	89 421 108	CTD43
						24 V \approx	89 421 112	CTD43
						100 \Rightarrow 240 V \sim	89 421 118	CTD43
 Heating or Cooling	PID with auto-tune and adaptive tune	1 alarm	3-wire Pt100 or Thermocouple J, K, L, N	1 x 3 A output 1 x 1 A output 1 voltage logic 1 x 1 A relay	2 lines (3 digits)	24 V \approx	89 422 102	CTD46
						100 \Rightarrow 240 V \sim	89 422 108	CTD46
						24 V \approx	89 422 112	CTD46
						100 \Rightarrow 240 V \sim	89 422 118	CTD46
 Heating and Cooling	PID with auto-tune and adaptive tune	No	3-wire Pt100 or Thermocouple J, K, L, N	1 x 3 A output 1 x 1 A output 1 voltage logic 1 x 1 A relay	2 lines (3 digits)	24 V \approx	89 422 502	CTH46
						100 \Rightarrow 240 V \sim	89 422 508	CTH46
						24 V \approx	89 422 512	CTH46
						100 \Rightarrow 240 V \sim	89 422 518	CTH46
 Heating and / or Cooling	PID with auto-tune and adaptive tune Load break monitoring	2 alarms	3-wire Pt100 or Thermocouple J, K, R, S,T, L, N or voltage or current	1 x 3 A output 1 x 1 A output 1 voltage logic 1 x 1 A relay	2 lines (4 digits)	24 V \approx	89 422 002	MIC48
						100 \Rightarrow 240 V \sim	89 422 008	MIC48
						24 V \approx	89 422 012	MIC48
						100 \Rightarrow 240 V \sim	89 422 018	MIC48

Accessories

Description	Part number
Current transformer for MIC 48 (10 A / 50 mA)	26 852 301
Current transformer for MIC 48 (25 A / 50 mA)	26 852 302
Current transformer for MIC 48 (50 A / 50 mA)	26 852 303
Current transformer for MIC 48 (100 A / 50 mA)	26 852 304
Thermocouple probe J with nickel-plated brass eyelet - max: 400°C	79 696 030
Thermocouple probe J with 304 stainless steel casing - max: 600°C	79 696 031

Accessories (continued)

Description	Part number
Thermocouple probe J with 316 stainless steel sheath - diameter 6 mm - max: 400°C	79 696 032
Thermocouple probe J with 316 stainless steel sheath - diameter 5 mm - max: 400°C	79 696 033
Thermocouple probe K with 304 stainless steel casing - max: 1100°C	79 696 034
Pt100 probe Class B with 316 stainless steel sheath - max: 200°C	79 696 035
Pt100 probe Class B with 316 stainless steel sheath - max: 400°C	79 696 036
Pt100 probe Class B with aluminium V6 sheath - max: 200°C	79 696 037

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Safety relays
User protection



A safety relay

How can it be defined in simple terms?

A **safety relay** is an automation component which is part of a machine's safety system, thus contributing to the safety of people around it.

It is essential for compliance with machine safety standards (EN ISO 13849-1 and IEC/EN 62061).

A safety relay

To execute which actions?

Protecting, Controlling
The safety relay protects people. It controls a user's action to ensure that this does not lead to anything that may damage his health, either voluntarily or accidentally.
Monitoring, Sensing
When a machine may be dangerous for the user, it is necessary to monitor all hazardous operations, and detect the slightest anomaly.
Actuating
It is then necessary to actuate safety contacts to stop cutting, rotating, burning items, etc which could be hazardous for the user.

Protecting

Controlling

Monitoring

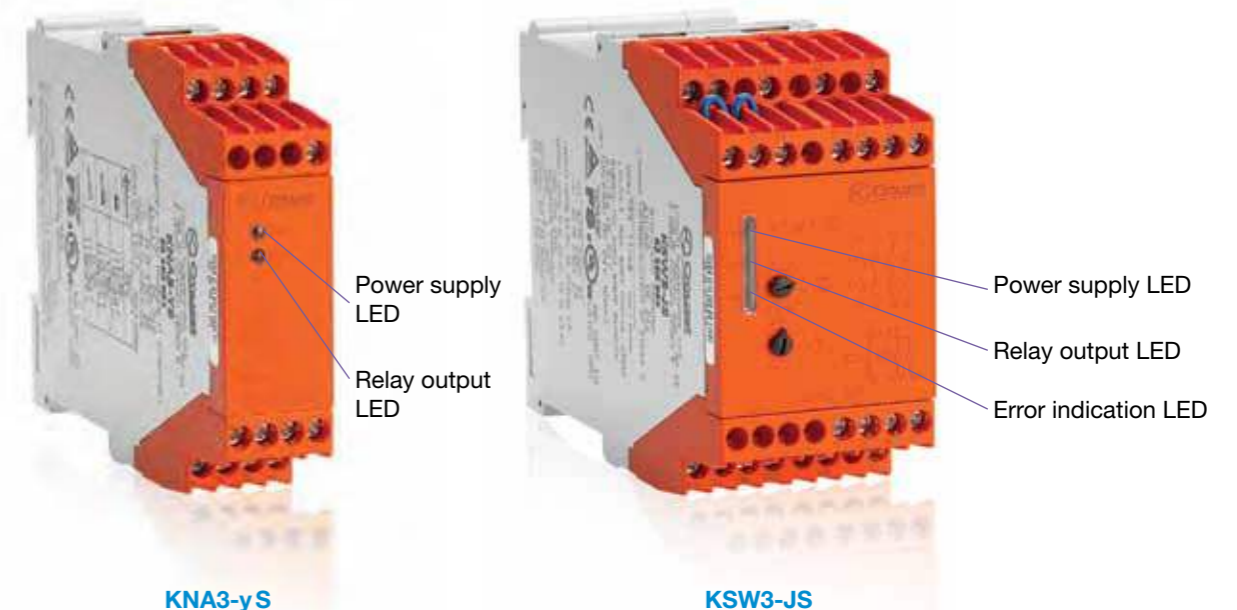
Sensing

Actuating

In addition to this catalogue, technical data sheets for each product are available as free downloads on the www.crouzet.com website.

Crouzet Control, safety relays

A releveling range and a machine safety range



Crouzet Control, safety relays








Their features:

- A range covering **machine applications**: emergency stop and mobile guard monitoring, emergency stop with timed contact, two-hand control, zero speed monitoring, expansion module and power supply accessory. A releveling **control relay** for the lift market.
- A safety component with **one or two channels**.
- Prohibition of machine starting if a problem becomes apparent through **self-checking of the integrity of the control devices**.
- A range conforming to:
 - **Performance Level (PL) e** and **category 4** according to EN ISO 13849-1
 - **Limit value SIL 3 (SIL CL)** according to IEC/EN 62061


Selection guide

Crouzet Control, safety relays, How to choose?

Machine safety

Function(s)	Safety category	Safety contacts	Data contact	Connection	Casing width (mm)	Supply	Part number	Type
 Emergency stop & Safety guard monitoring with 1 channel	3	3 x NO	1 x NC	Screw terminals	22.5	24 V $\overline{\text{---}}$	85 102 031	KNA3-YS
						110 V \sim	85 102 034	
						230 V \sim	85 102 035	
				Removable spring terminals		24 V $\overline{\text{---}}$	85 103 031	KNAC3-YS
						110 V \sim	85 103 034	
						230 V \sim	85 103 035	
 Emergency stop & Safety guard monitoring with 2 channels	4	3 x NO	1 x NC	Screw terminals	22.5	24 V \sim	85 102 436	KNE3-YS
						110 - 115 V \sim	85 102 434	
				Removable spring terminals		230 V \sim	85 102 435	KNEC3-YS
						24 V \sim	85 103 436	
 Timed contacts 1 \Rightarrow 10 s	4	2 x NO (instantaneous) 1 x NO (timed)	-	Screw terminals	22.5	24 V \sim	85 102 736	KZR3-YS
 Expansion module for safety relays	4 (combined with a level 4 safety relay)	5 x NO	1 x NC (feedback loop)	Screw terminals	22.5	24 V \sim	85 102 956	KZE5-YS
						110 - 115 V \sim	85 102 954	
						230 - 240 V \sim	85 102 955	
 Zero speed monitoring	4	3 x NO 1 x NC	1 x NO 2 x solid state outputs	Screw terminals	45	24 V $\overline{\text{---}}$	85 102 331	KSW3-JS
 Two-hand control	4	2 x NO	-	Screw terminals	22.5	24 V $\overline{\text{---}}$	85 102 621	KZH2-Y2
						3 x NO	1 x NC	24 V $\overline{\text{---}}$
		24 V \sim	85 102 632					
 Power supply for 24 V $\overline{\text{---}}$ safety relays	-	-	-	Screw terminals	22.5	85 \Rightarrow 265 V \sim	85 102 208	KPS0-YS

Relevelling control according to EN 81-1, -2 (lift standard)


Function(s)	Safety category	Safety contacts	Data contact	Connection	Casing width (mm)	Supply	Part number	Type
 Relevelling zone control for lifts	4	2 x NO	-	Removable screw terminals	22.5	24 V \sim	85 102 826	KZHNU-YS
			1 x NC			24 V \sim	85 102 526	KZHNV-YS

Crouzet Control, safety relays

Where are they found?

Emergency stop and guard monitoring


Emergency stop modules with 1 or 2 channels



KNA3-yS and KNE3-yS,
KNAC3-yS and KNEC3-yS
SAFETY RELAYs

Relevelling lift cars

Levelling the landing and the lift car



KZHNU-yS and KZHNv-yS
SAFETY RELAYs

They can be found in electrical cabinets, associated with other automation functions in the following markets:

- Building equipment
- Industrial automation systems

Zero speed monitoring

Sensorless control for stopping electric motors



SINGLE OR THRee-PHAsE
KSW3-JS
SAFETY RELAYs

Two-hand control

Control of two-hand control console



KZH2-yS and KZH3-yS
SAFETY RELAYs

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Notes



Logic controllers
 Concentrated performance

Millenium³ Smart & Essential

A logic controller

How can it be defined in simple terms?

A **logic controller** is a programmable module which is used to control small automation systems or small installations. It is an electronic device which combines all of Crouzet's historic expertise.

The logic controller is a **plural solution** in a control system since it contains solutions that can replace a number of products: timers, counters, control relays, temperature controllers, impulse relays, etc.

The logic controller operates as the **brain of applications**. It is capable of retrieving information and triggering actions; it can be adapted to suit the needs of customer applications.

A logic controller

To execute which actions?

Controlling
The logic controller controls and automates a set of actuators according to the state of the sensors, the passing of time and the program created using the M3 Soft software.
Measuring, Operator dialogue
The logic controller integrates a local screen, a true operator interface, where the user can view the measured values. The buttons on the front panel are configurable and can be used in programs. The M3 Soft software can be used to design an installation easily, test it using simulation mode and communicate with the application with monitoring mode.
Managing
The logic controller easily performs and manages complex control system sequences, by means of integrated functions.
Communicating, Triggering
The logic controller can be used to communicate remotely with PCs or mobile phones via SMS across a network. It also incorporates a calendar to ensure the setting and triggering of actions.

Controlling

Measuring

Operator dialogue

Managing

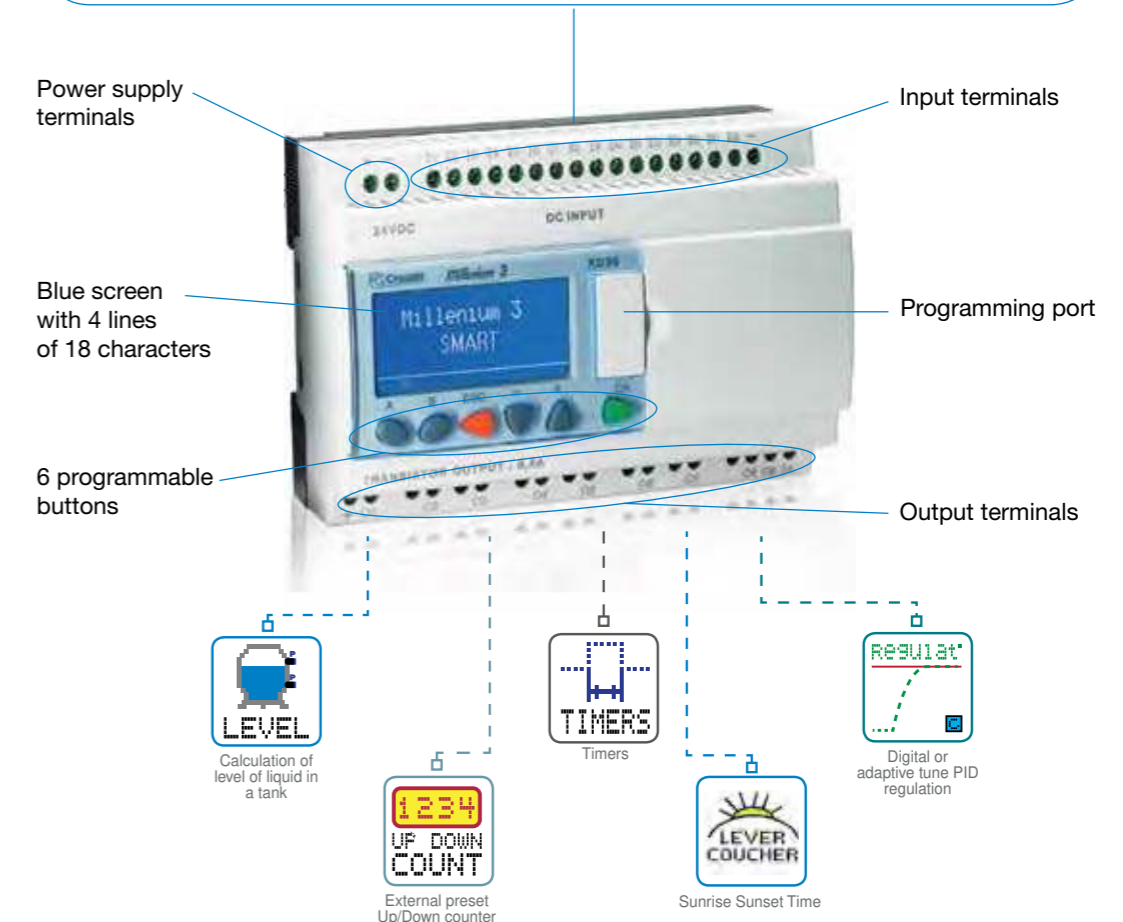
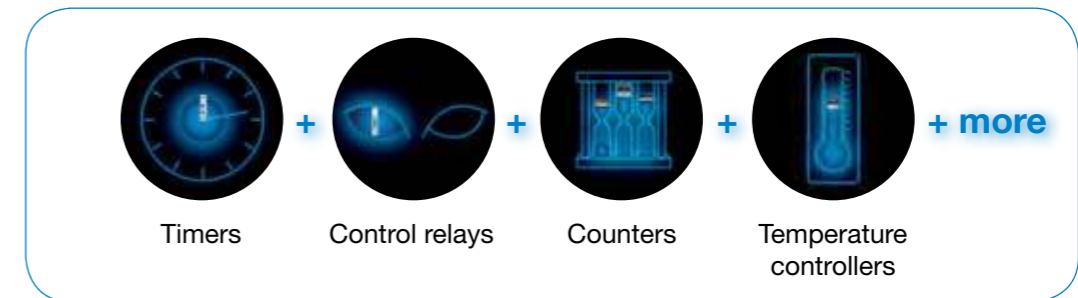
Communicating

Triggering

Crouzet Automation Logic Controllers

Millenium 3, concentrated performance

The **Millenium 3 Smart** logic controller is a programmable logic controller which enables the control and monitoring of machines or automation installations with up to 50 I/O.



To tackle simpler applications that still require a powerful logic controller, Crouzet Automation offers the Millenium 3 **"Essential"** range. The 12 VDC or 24 VDC Millenium 3 Essential range includes a variety of versions and is compatible with a large range of accessories. It is the right solution for simple needs.

Logic controllers

Crouzet Automation Logic Controllers The Millenium 3 Smart range

- **Multiple configuration option** derived from an extensive product range with numerous accessories
- **Simplified connectivity** making integration of communication systems easy
- **Easy implementation** supported by free, user-friendly programming software (M3 Soft)
- **Application-specific solutions** thanks to dedicated and easy to use specific function blocks
- **Enhanced visibility** on the display with high contrast, blue back lit LCD screen

Expandable versions

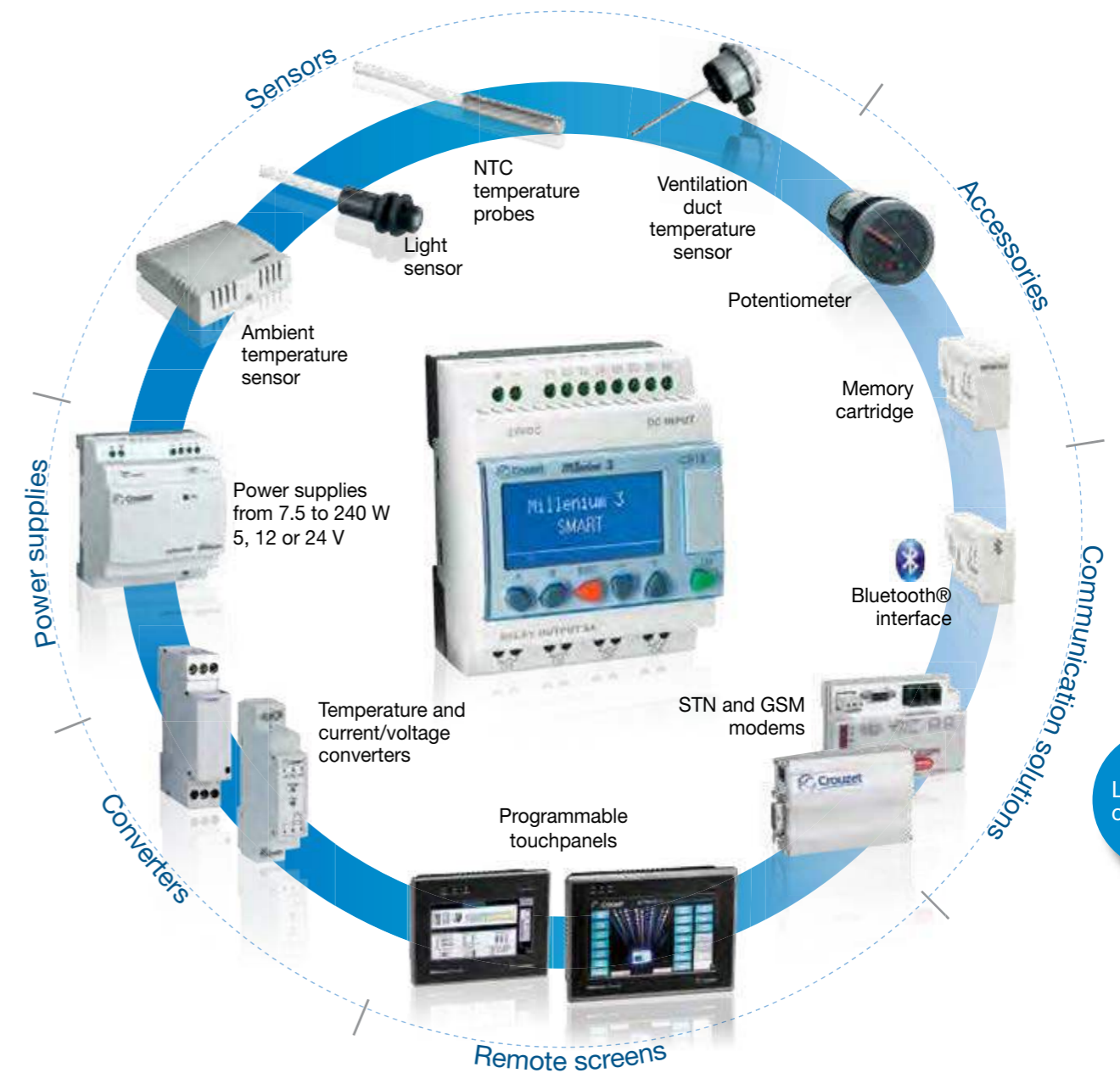


Compact versions



Crouzet Automation Logic Controllers Accessories

Sensors, power supplies, converters, remote screens and communication accessories offer solutions to control your automation systems with the greatest ease of use.



Communication solutions

Crouzet Automation Logic Controllers Extensive Connectivity Options

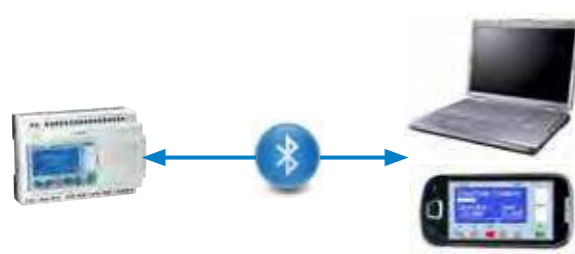
Solutions with close proximity to your installation

Millenium 3 Virtual Display - Bluetooth® or USB

Your requirements

- **viewing** setpoints on a panel less than 10 m away
- **Changing and modifying** setpoints
- **Locating the** Millenium 3 display unit remotely
- **Reading** counters in the vicinity

Our solution



Main functions

- **Remote viewing** of the Millenium 3 display unit
 - on an Android smartphone via Bluetooth®
 - on a PC via Bluetooth® or USB
- **Display/modificatio**n of program setpoints
- Access to a **virtual panel** (Millenium 3 without display unit)

In summary

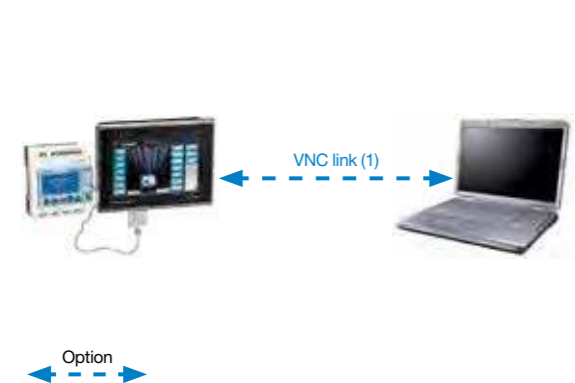
- **Bluetooth® interface** (10 m): Millenium 3 accessory
- Two versions: **Lite** (ESC/ENTER buttons disabled) & **Standard**

MTP programmable touch panels - RS232 cable

Your requirements

- **Displaying** data on a graphic panel
- **Modifying setpoints** from the touch panel
- **Taking control of the** remote panel from a distance

Our solution



Main functions

- **Supervision** of your installation
- **Use** of Millenium 3 internal data, processing alarms and recipes
- **Display** of text, data, graphics, animations
- **Archiving** of data
- **Customization** of interfaces (picture library)
- **Remote control** of panel

In summary

- **Storage**: 128 MB flash memory, SD card and USB key
- **Direct communication** using the Millenium 3 programming port
- **Programmable** with EB software (compatible with Windows 2000/XP/Vista/7)
- **Extensive connectivity**

(1) VNC: Virtual Network Computing. Allows a device to be controlled remotely.

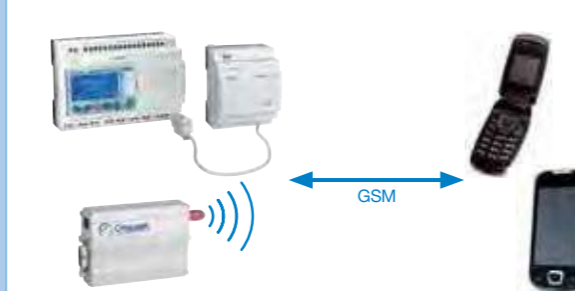
Wide Area Network (WAN) solutions

M3MOD - GSM modem communication interface

Your requirements

- Receiving **remote early warning** of an event
- **Consulting a value** or an internal state
- **Occasionally modifying** setpoints

Our solution



Main functions

- **Automatic notificatio**n of alarms via SMS
- Input and output states, as well as all program values, **can be polled and controlled remotely**
- **Reports** can be produced using the available variables
- Management of **telephone contacts**

In summary

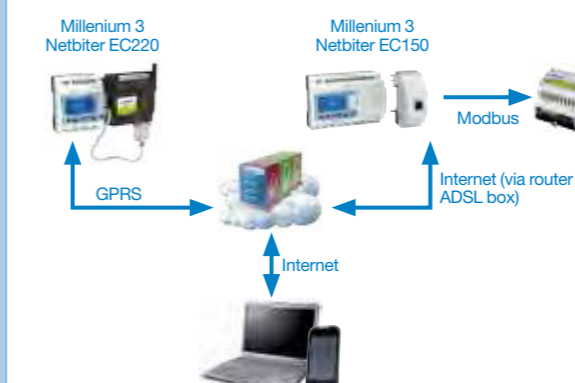
- Reliable **plug & play** solution that is simple to install
- Solution managed using **M3 Soft** software
- Option **to send SMS messages** via a telecom operator service

Remote management solutions with HMS⁽²⁾ - Cloud

Your requirements

- **Supervising and monitoring** installations with up to 50 remote I/O
- Managing **an installed base of machines**
- Accessing your data remotely, **24/7**
- Optimizing your **maintenance operations**

Our solution



Main functions

- **Remote control** of an automated application
- **Display** of Millenium 3 program parameters and values **via the internet**
- **Remote setpoint modificatio**n
- **Data logging**
- Management of **events** sent **via emails or SMS**

In summary

- **Direct communication** between Netbiter and Millenium 3 via the SLin/SLout protocol or via Modbus
- **GPRS**: SIM card procured via HMS
- **Cloud solution**: secure remote server
- **Easy** to set up and use
- **Several Millenium 3** can be connected via Modbus

(2) Partnership solutions with the HMS company, validated by Crouzet Automation and HMS. Information relating to the products has been provided by the supplier of each product respectively, and they are wholly responsible for its accuracy in addition to supplying and providing backup for their products.

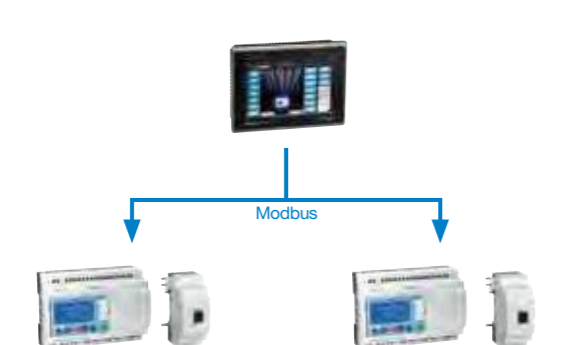
Local Area Network (LAN) solutions

Programmable touch panels and communication extensions – Modbus networks

Your requirements

- **Managing a group of machines** or an installation on a local area network
- **Centralizing** data
- **Displaying** data on a graphic panel
- **Modifying setpoints** from the panel
- Accessing the system locally **in real time**

Our solution



Main functions

- See MTP programmable touch panels solution
- **Management** and **centralizing** of data in a single place
- **Display** of Millenium 3 program values
- **Remote setpoint modificatio**n

In summary

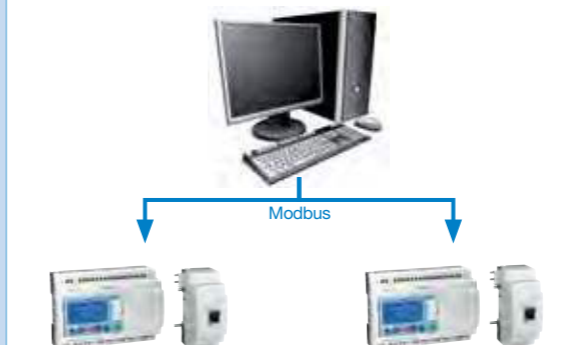
- MTP panel **Modbus master**
- XN05 extension: **Modbus ethernet TCP/IP**
- XN06 extension: **Modbus RS485 RTU**

Communication extensions - Modbus RS485 or Modbus Ethernet TCP/IP

Your requirements

- **Managing a group of machines** or an installation on a local area network
- **Centralizing** data
- Accessing the system locally **in real time**

Our solution



Main functions

- Can be **combined with distributed automation**
- Management and **centralizing of data** in a single place
- **Display** of Millenium 3 program values
- **Remote setpoint modificatio**n

In summary

- Uses **Modbus protocol**
- XN05 extension: **Modbus ethernet TCP/IP**
- XN06 extension: **Modbus RS485 RTU**
- **Compatible** with standard supervisors

Crouzet Automation Logic Controllers

Millenium 3 and M3 Soft

The M3 Soft is a **high-performance** software platform used to program the Millenium 3 logic controller and **optimize** design times.

Free

The Millenium 3 programming software (M3 Soft) can be **downloaded free of charge** from the Crouzet website at www.crouzet.com



Blocks can be wired in wiring mode or text mode

Move one or more blocks without disconnecting the wires

Choice of programming language

Clear work area

Customized password protection

M3 Soft software

Its features

Simple

- **Quick, simple and intuitive programming** requires no specialist knowledge
- Self-teaching made easier thanks to a **user-friendly online help guide** and programming examples
- A **simulation mode** that **consistently represents** controller operation

Powerful

- A complete range of **basic functions**: counting, timing, comparison, display, logic, gain, sin/cos, etc are also available
- A wide range of **dedicated functions**: pump rotation, PID regulation, movement, pressure, level, water ratio, solar tracking, and flo

User-friendly and ergonomic

- Software available in **5 languages**: English, French, Italian, German and Spanish
- Function block **programming is fun and very visual**
- **Blocks simply organized** by function for quick access
- **Help** associated with each function block accessible **at the click of a button**
- Programming languages: **FBD** (Function Bloc Diagram) and **SFC** (Sequential Function Chart/ Grafcet) or **LD** (Ladder Diagram)

User-definable and effective

- Possibility of creating and saving **custom macros** in the macro tab allowing the user to simplify programs and utilize their expertise
- Possibility of protecting macros by locking them with a password for **greater security**

Function blocks

APPLICATION		
	Cam Bloc	Control of a group of 8 integral cam wheels.
	Angular Cam Timer	Cam timer with the angle made by the cams as the command input.
	Pumps management	Pumps Management (Tank Management with circular pump changeover).
	Sunrise Sunset Time	Calculation of the sunrise and sunset time in relation to the latitude and longitude.
	Solar Tracking one Axis	Calculation of the sun's position so that a sun dial can be placed.
	Analog PID Regulation (8 bits)	Temperature control (pressure or other) with 8 bits analog output.
	PWM PID Regulation (8 bits)	Temperature control (pressure or other) with 8 bits digital output.
	Pressure Gain	Interface between a Pressure Sensor and the Millenium 3 logic controller.
	Flow	Calculation of the flow of a liquid in a pipe using a differential pressure element or by measuring the dynamic pressure.
	Level	Calculation of the level of a liquid with or without constant density, in an open or closed tank, using pressure sensors.
	CTN 1	Temperature measurement. It is dedicated to CTN1 (-25 to +85 °C).
	CTN 2	Temperature measurement. It is designed for CTN2 type CTNs (-35°C to +120°C).
	CTN 3	Temperature measurement. It is designed for CTN3 type CTNs (0°C to +200°C).
	LUX-I	Light measurement. It is designed for photoresistors and internal light meters.
	Twilight	Calculation of the sunrise and sunset times and also the twilight times in relation to the latitude and longitude read on the function block inputs.
	Solar Tracking Dual Axis	Calculation of the sun's position so that a sun dial can be placed. This positioning depends on the two angles calculated by the function: the elevation angle and the azimuth angle.
	Swimming Pool Filtration	Filtration time information in relation to the water temperature.
	Defrost	Defrost cycle management
	Heat Curve	Modulation of the heating water temperature according to the atmospheric conditions. The function uses automatic regulation depending on the temperature outdoors called the temperature curve or "water ratio".
	Analog PID Regulator (Auto-tuning)	Auto-tuning proportional-integral-derivative (PID) controller.
PROG		
	Constant On	Constant On
	Constant Off	Constant Off
	Yes Bit	Copy of the input to the output. (very helpful when macros are being used)
	Numerical Constant	Integer with a value between -32768 and +32767.
	Yes Num	Copy of the input to the output. (very helpful when macros are being used)
	Memory	Saving of a value between -32768 and 32767.
	Storage	Storage of data values with an average value.
	Archive	Saving of two values simultaneously with the information relating to their time-stamping.
	Random	Generation of a pseudo-random value between the min and max values set by the user.

CALCUL		
	Gain	Conversion of an analog value by changing the scale and offset.
	Add/Subb	Simple operations on integers: Addition and/or Subtraction.
	Mul/Div	Simple operations on integers: Multiplication and/or Division.
	ADD/SUB 2 Inputs	The ADD-SUB (Addition or Subtraction) function is used to perform simple operations on integers.
	Sin/Cos	Calculation of the cos and sin of an angle between 0° and 90°.
	Square Root	Calculation of the square root of the number present as an input with accuracy to two decimal points.
	Bit Multiplexer	Copy of the selected A or B input to the outputs Q and Q.
	Multiplexer A B	Multiplexing function on 2 analog values.
	Demultiplexer	Demultiplexing of integers. Used to direct the value of the input to one of the 4 outputs.
	Multiplexer	Multiplexing word inputs. Used to direct the value of one of the selected inputs to a predefined output.
	Dec/Bin	Break down of an integer type input (16 bits) into 16 bit type outputs.
	Bin/Dec	Make up of an integer type output (16 bits) from 16 bit type inputs.
	SPLIT 16 bits to 4	Split of a 16-bit word into four 16-bit words with values between 0 and 15.
	SPLIT 16 bits to 2	Split of a 16-bit word into two 16-bit words with values between 0 and 255.
	Word Shift Register	Shifting of the 16-bit words on each rising edge of the clock.
	Shift Register	Shifting of information by saving it to the memory (shifting of bits in a 16-bit word on each rising edge of the clock).
	Transfer Function	Table of correspondence between the X input and the Y output. The table of correspondence is created from a csv file
	Transfer Function 50 values	Table of correspondence between the X input and the Y output. The table of correspondence (50 rows max) is created from a sv file
	Timer Transfer Function	Correspondence table for the Minutes operating time and the Y output.
	Timer Transfer Function 50 values	Correspondence table for the Minutes operating time and the Y output. (50 Values)

PROG		
	Hour Minute	Indication of the time from the controller (hour and minutes).
	Hr Mn Converter	Conversion of a time period in the "hour : minute" format to minutes and vice versa.
	Controller Status	Access to the controller states and modify the behaviour of its FBD and/or SFC program depending on these states.
	Summertime	Active function throughout summer time, and inactive throughout winter time.

MACROS		
	Display 15 texts	Display of 15 texts one after each other with 15 Displays Function Blocs
	Scroll 4 lines	Scroll down of a text of four lines on the screen of the Controller
	My Macro	Possibility to create a personal macro library and to store them in the Macro tab.

INPUTS/OUTPUTS			
	Discrete Input		Integer Input
	Filtered Digital Input		Discrete Output
	Analog Input 0..10V		PWM Output
	Filtered Analog Input		Analog Output Expansions 10 bits
	Analog Input Expansion 10 bits		Integer Output
	Analog Input Expansion 12 bits		

HMI			
	Display		B Button
	Text		ESC Button
	Menu Scroll		Minus Button
	LCD Backlight Output		Plus Button
	A Button		OK Button

COMMUNICATION		
	SL In	Writing via serial link of data stored in the controller's fixed addresses
	SL In S (saved)	Data transmission via a programming port to memory space in the controller's fixed addresses. Data is protected in the event of disconnection of the controller
	SL Out	Reading via programming port of data stored in the controller's fixed addresses.
	Alarm	Control of 10 alarm levels and distribution of a serial data to a digital output, connected to a modem digital input. For example to send a SMS.
	Message	distribution of alarm messages to mobile phones, to the Millenium 3 Alarm tool or to e-mail addresses via the M3MOD

GRAFSET SFC		
	Resettable Initial Step	When RESET function is activated, activation of the STEP OUTPUT for the function, which is the initial step, and reinitialization of all of the other active steps.
	Initial Step	Initial step of an SFC chart
	Step	A step of an SFC chart.
	Or Divergence Step	Transition of one step to be simultaneously made toward one or two steps.
	Or Convergence	Transition of one to four step(s) to be simultaneously made toward one step.
	And Divergence	Transition of one or two steps to be simultaneously made toward two steps.
	And Convergence Step	Transition of two steps to be simultaneously made toward one step.
	Wait SFC Step	Set up of a wait phase or step for a PLC or a device.
	Move SFC Step	Set up of a move step for a motor controlled by the PLC to a position specified on the TARGET input.
	Motor Multiplexer	Combination of the motor control signals produced by two linked MOVE SFC steps.

CONTROL		
	Timer	Large set of timer functions (A/C, BW, B/H, Li/L, Totalizer)
	Schmitt Trigger	Monitoring of an analog value in relation to two thresholds.
	Timer A	Delay of actions for a predefined time.
	Bistable	Impulse relay function.
	Set Reset	Bistable memory - Priority assigned to either SET or RESET.
	Timer Set Reset	Trigger of operation of a particular device at a fixed time for a period set by the user.
	One Second Clock	The blinking input function is active every second.
	Compare in Zone	Comparison of a value between two setpoints (the MIN and MAX values determine the zone).
	Compare	Comparison of two analog values using the =, >, <, >=, <=, != operators.
	MULTI COMPARE	Activation of the output corresponding to the value present on the "Value" input.
	HL Switch	Comparison of a value against 5 thresholds.
	Min Max	Saving of the minimum and maximum values of a variable signal.
	Reduced Average	Update of the configured average of a number of values by deleting the minimum and maximum values.
	Time Prog	Daily, weekly, monthly and yearly time programmer.
	Weekly Time Prog	Daily, weekly, monthly and yearly time programmer.
	Preset Counter	Preset up/down counter
	Up Down Counter	External preset up/down counter.
	Preset H Meter	Preset hour counter (preselection of hour, minute).
	High speed count	Counting of the pulses arriving at the inputs of a controller powered by a DC supply at rates in excess of one pulse every 6 ms.
	Fast count	Counting of the pulses arriving at the input at rates in excess of one pulse every 10 ms.

LOGIC			
	Not		Or 6 Inputs
	And 2 Inputs		Nand 4 Inputs
	And 4 Inputs		Nor 4 Inputs
	And 6 Inputs		Xor 2 Inputs
	Or 2 Inputs		Boolean 6 Inputs/2 Outputs
	Or 4 Inputs		Boolean

Function block marked in red: **CTN 1** Available only for the Millenium 3 Smart Range

Applications

Crouzet Automation Logic Controllers

Where are they found?

Building Equipment

Access Control

Opening control for doors




Opening control for doors and other associated security devices for restricting access; synchronization between the various doors




BOOLEAN OR LOGIC
Create logic equations between the connected inputs

Automatic barriers




Control barriers with automatic detection of vehicles. Function for selecting opening times / days.




UP/DOWN COUNTER
Up/Down counter with external preset

HVAC

Heat pump




Management of various parameters such as heating, cooling, fluid temperatures, operation, calendar-based function, frost protection mode, alarm management, etc



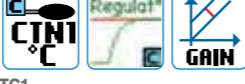
WATER RATIO
Water temperature control

CLOCK
Weekly and yearly time programmer

Air treatment plant



Maintaining forced air at the correct temperature




NTC1
Temperature measurement

REGULATION
Analog PID regulation


GAIN
Conversion of an analog value by changing the scale and datum point

Building Automation

Solar water heating




Automation of operation and heating regulation, remote management of the installation




TEMPERATURE CONTROL
(pressure or other)

Illuminated signs



Managing flashing on illuminated signs



WEEKLY TIME PROGRAMMER
Programming of time slots during which it will be possible to execute actions

LUX-I
Measurement of the light level

TWILIGHT
Calculation of the sunrise and sunset times

Infrastructure and Energy

Fluid management

Swimming pools, fountains, spas



Managing circulation pumps, monitoring levels, temperature and conductivity of the water



FILTRATION
Filtration duration settings depending on the water temperature

Irrigation/Sprinklers




Irrigation control based on temperature, humidity, and day/night cycle




PUMP MANAGEMENT
Pump rotation function

Water treatment

Reverse osmosis




Circulation pumps management, supervision of flow pressure and temperature of osmosis processed water




FLOW
Calculation of the flow of a liquid in a pipe

CTN
Temperature measurement (-35 to +120 °C)

Pump management



Circulation pumps management, supervision of levels and pressure




GAIN
Conversion of an analog value by changing the scale and datum point

LEVEL
Calculation of the level of liquid in a tank


Industrial OEMs

Packing machines

Stretch wrapping machines



Controlling the motor that unrolls the packing film. Controls cutting of the film after heat sealing and monitors the duration of the motor cycles



GRAFSET SFC FUNCTIONS
For sequential automation systems (Sequential Function Chart)

TIMERS (TEMPORISATEURS)
A/C function - BW function - B/H function - L/L function

Packaging



Controlling heat sealing times on blister packs, packaging bags, etc



HIGH SPEED COUNT
Counting of pulses


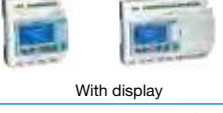

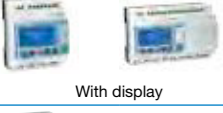






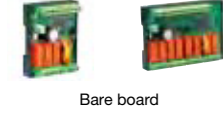

AND
Logical AND with 2 inputs

Other typical applications:

Medical, Solar, Agricultural Equipment, Transportation, Hoisting, Handling...

Selection guide


Millenium 3 range

Type	Part number	Supply	Inputs	Outputs	Available in		Available with Solid State Output 0.5 A/PWM	Available in / compatible with the Essential version **
					12 V ---	24 V ~		
M3 Smart kits								
	Kit 12 Smart*	88 974 080	24 V ---	8 (4 configurable as analog)	4 relays 8 A			
	Kit 12 Smart*	88 974 081	100 ⇨ 240 V ~	8	4 relays 8 A			
	Kit 20 Smart*	88 974 082	24 V ---	12 (6 configurable as analog)	8 relays 8 A			
	Kit 20 Smart*	88 974 083	100 ⇨ 240 V ~	12	8 relays 8 A			
	Kit 26 Smart*	88 974 084	24 V ---	16 (6 configurable as analog)	8 relays 8 A and 2 relays 5 A			
Kit 26 Smart*	88 974 085	100 ⇨ 240 V ~	16	8 relays 8 A and 2 relays 5 A				
Compact versions								
	CD12 Smart*	88 974 041	24 V ---	8 (4 configurable as analog)	4 relays 8 A	•		•
	CD12 Smart*	88 974 043	100 ⇨ 240 V ~	8	4 relays 8 A		•	
	CD20 Smart*	88 974 051	24 V ---	12 (6 configurable as analog)	8 relays 8 A	•		•
	CD20 Smart*	88 974 053	100 ⇨ 240 V ~	12	8 relays 8 A		•	
	CB12 Smart*	88 974 021	24 V ---	8 (4 configurable as analog)	4 relays 8 A	•		•
	CB12 Smart*	88 974 023	100 ⇨ 240 V ~	8	4 relays 8 A		•	
	CB20 Smart*	88 974 031	24 V ---	12 (6 configurable as analog)	8 relays 8 A	•		•
	CB20 Smart*	88 974 033	100 ⇨ 240 V ~	12	8 relays 8 A		•	
Expandable versions								
	XD10 Smart*	88 974 141	24 V ---	6 (4 configurable as analog)	4 relays 8 A	•		•
	XD10 Smart*	88 974 143	100 ⇨ 240 V ~	6	4 relays 8 A		•	
	XD26 Smart*	88 974 161	24 V ---	16 (6 configurable as analog)	8 relays 8 A and 2 relays 5 A	•		•
	XD26 Smart*	88 974 163	100 ⇨ 240 V ~	16	8 relays 8 A and 2 relays 5 A		•	
	XB10 Smart*	88 974 131	24 V ---	6 (4 configurable as analog)	4 relays 8 A	•		•
	XB10 Smart*	88 974 133	100 ⇨ 240 V ~	6	4 relays 8 A		•	
	XB26 Smart*	88 974 151	24 V ---	16 (6 configurable as analog)	8 relays 8 A and 2 relays 5 A	•		•
	XB26 Smart*	88 974 153	100 ⇨ 240 V ~	16	8 relays 8 A and 2 relays 5 A		•	
With Removable Terminal Blocks								
	CD12 RBT Smart*	88 974 441	24 V ---	8 (4 configurable as analog)	4 relays 8 A			
	XD26 RBT Smart*	88 974 561	24 V ---	16 (6 configurable as analog)	8 relays 8 A and 2 relays 5 A			
Sandwich extensions								
	Communication	XN05 Modbus TCP/IP	88 970 270	24 V ---				•
		XN06 Modbus RS485	88 972 250	24 V ---				•
		XN07 Master RS485	88 974 250	24 V ---				•
	Digital	XE10	88 970 321	24 V ---	6	4 relays 5 A		•
		XE10	88 970 323	100 ⇨ 240 V ~	6	4 relays 5 A		•
Termination Extensions								
	Digital	XR06	88 970 211	24 V ---	4	2 relays 8 A	•	•
		XR06	88 970 213	100 ⇨ 240 V ~	4	2 relays 8 A		•
		XR10	88 970 221	24 V ---	6	4 relays 8 A	•	•
		XR10	88 970 223	100 ⇨ 240 V ~	6	4 relays 8 A		•
		XR14	88 970 231	24 V ---	8	4 relays 8 A and 2 relays 5 A	•	•
	XR14	88 970 233	100 ⇨ 240 V ~	8	4 relays 8 A and 2 relays 5 A		•	
	Analog	XA03 3xPt100	88 970 800	24 V ---	3 analog (Pt100)			•
		XA04 2AI/2AO	88 970 241	24 V ---	2 analog 0-10V/0-20mA (1 Pt100)	2 analog 0-10V/PWM		•
Bare board and resin board versions								
	Bare board	NB12	88 970 001	24 V ---	8 (4 configurable as analog)	4 relays 8 A	•	
		NB12	88 970 003	100 ⇨ 240 V ~	8	4 relays 8 A		
		NB20	88 970 011	24 V ---	12 (6 configurable as analog)	8 relays 8 A		
		NB20	88 970 013	100 ⇨ 240 V ~	12	8 relays 8 A		
	Resin board	NBR12	88 973 001	24 V ---	8 (4 configurable as analog)	4 relays 8 A	•	•
		NBR26	88 973 061	24 V ---	16 (6 configurable as analog)	10 relays 8 A	•	•
		NBR32	88 973 211	24 V ---	20 (6 configurable as analog)	12 relays 8 A	•	
		NBR40	88 973 231	24 V ---	24 (6 configurable as analog)	16 relays 8 A	•	




* Millenium 3 Smart: backlit blue LCD display. Extended operating temperature range and function block library
 ** Millenium 3 Essential: Logic Controller with green screen and industrial temperature range


Millenium 3 accessories


Power supplies and DC/DC converters in modular casings


	Part number	Tension d'entrée	Input voltage	Nominal power	Output current
	88 950 303	100 ⇨ 240 V ~	24 V ---	7.5 W	0.3 A
	88 950 304	100 ⇨ 240 V ~	24 V ---	15 W	0.6 A
	88 950 307	100 ⇨ 240 V ~	24 V ---	30 W	1.2 A
	88 950 302	100 ⇨ 240 V ~	24 V ---	60 W	2.5 A
	88 950 305	100 ⇨ 240 V ~	5 V ---	20 W	4 A
	88 950 306	100 ⇨ 240 V ~	12 V ---	24 W	2 A
	88 950 320	9.2 ⇨ 18 V ---	12 V ---	10 W	0.8 A
	88 950 321	9.2 ⇨ 36 V ---	24 V ---	6 ⇨ 10 W	0.4 A


Connection accessories, tools and programming software


	Part number	Name
	88 970 111	M3 Soft: Millenium 3 programming software (CD-ROM)
	88 970 108	Memory cartridge for transfer and saving of programmes
	88 970 102	3 m serial link cable: PC DB9 F ⇨ Millenium 3
	88 974 104	Millenium 3 ⇨ Bluetooth® interface (class A 10 m)
	88 970 109	3 m USB link cable: PC ⇨ Millenium 3
	88 970 110	Bluetooth® adaptor ⇨ USB (class A 10 m)
	88 970 123	1.80 m serial link cable: DB9 M/DB9 F
	88 970 510	0.5 m serial link cable: Millenium 3 ⇨ DB9 M
	88 974 106	Ready to use Millenium 3 Smart democase including: - a CD12 Smart, a CTN probe, a LDR probe, an I/O simulator - a 3 m USB link cable: PC ⇨ Millenium 3, a M3 Soft CD - a power supply 110 V-230 V ~


	Name
	Millenium 3 virtual Display Android smartphone and tablet as well as Windows XP/7 PC application

	Name
	Man/Machine interface TFT-LCD compact 4.3" and 7" resistive touch panels - MTP6/50 (Réf 88 970 492), MTP8/50 (Réf 88 970 494) & MTP8/70 (Réf 88 970 496)* Plug & Play remote LCD displays/keypads (Réf 88 970 410)* Remote LED display - Input 0-10 V (Réf 88 950 400)*

	Name
	Remote control communication solutions Modem communication solutions M3MOD (Réf 88 970 117), GSM Modem (Réf 88 970 119) and STN Modem (Réf 88 970 118)*

	Name
	Temperature probes and light sensors NTC Temperature probes CTN2 PVC (Réf 89 750 174) / CTN2 Inox (Réf 89 750 182) / CTN3 Silicone (Réf 89 750 186)* LDR Light sensors (Réf 89 750 183)* 0-10 V Temperature sensors (Réf 89 750 150 / 89 750 151 / 89 750 152 / 89 750 153)* Temperature probes Pt100 & Thermocouple (Réf 79 696 030 / 79 696 031 / 79 696 032 / 79 696 033 / 79 696 034 / 79 696 035 / 79 696 036)

	Name
	Temperature and signal converters Thermocouple Pt100/Pt1000 ⇨ 0-10 V (Réf 88 950 150 / 88 950 151 / 88 950 152 / 88 950 153 / 88 950 154 / 88 950 155)* PWM to 0-10 V/4-20 mA (Réf 88 950 112) to 0-10 V (Réf 88 950 108)*

	Name
	Other accessories and kits Standard Smart and Essential product kits Removable connectors Potentiometer ø 22 mm Faceplates

* Data sheets can be downloaded from the website www.crouzet.com

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99 776 610	36 x 37 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 37	46-47
99 776 611	36 x 37 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 37	46-47
99 776 613	36 x 37 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 37	46-47
99 776 616	36 x 37 electromechanical impulse counter - DC version	CIM 36 x 37	46-47
99 776 701	36 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 48	46-47
99 776 702	36 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 48	46-47
99 776 704	36 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 48	46-47
99 776 705	36 x 48 electromechanical impulse counter - DC version	CIM 36 x 48	46-47
99 776 707	36 x 48 electromechanical impulse counter - DC version	CIM 36 x 48	46-47
99 776 710	36 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 48	46-47
99 776 711	36 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 48	46-47
99 776 713	36 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM 36 x 48	46-47
99 776 716	36 x 48 electromechanical impulse counter - DC version	CIM 36 x 48	46-47
99 776 736	36 x 48 electromechanical impulse counter - DC version	CIM 36 x 48	46-47
99 776 901	24 x 48 electromechanical impulse counter - Screw fixing - Frequency between 50 and 60 Hz	CIM 24 x 48	46-47
99 776 902	24 x 48 electromechanical impulse counter - Screw fixing - Frequency between 50 and 60 Hz	CIM 24 x 48	46-47
99 776 904	24 x 48 electromechanical impulse counter - Screw fixing - Frequency between 50 and 60 Hz	CIM 24 x 48	46-47
99 776 905	24 x 48 electromechanical impulse counter - Screw fixing - DC version	CIM 24 x 48	46-47
99 776 907	24 x 48 electromechanical impulse counter - Screw fixing - DC version	CIM 24 x 48	46-47
99 776 921	24 x 48 electromechanical impulse counter - Screw fixing - Frequency between 50 and 60 Hz	CIM 24 x 48	46-47
99 776 922	24 x 48 electromechanical impulse counter - Screw fixing - Frequency between 50 and 60 Hz	CIM 24 x 48	46-47
99 776 924	24 x 48 electromechanical impulse counter - Screw fixing - Frequency between 50 and 60 Hz	CIM 24 x 48	46-47
99 776 927	24 x 48 electromechanical impulse counter - Screw fixing - DC version	CIM 24 x 48	46-47
99 777 710	24 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM24	46-47

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99 777 714	24 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM24	46-47
99 777 720	24 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM24	46-47
99 777 724	24 x 48 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM24	46-47
99 777 810	24 x 48 electromechanical impulse counter - DC version	CIM24	46-47
99 777 815	24 x 48 electromechanical impulse counter - DC version	CIM24	46-47
99 777 820	24 x 48 electromechanical impulse counter - DC version	CIM24	46-47
99 777 825	24 x 48 electromechanical impulse counter - DC version	CIM24	46-47
99 778 710	15 x 32 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM15	46-47
99 778 712	15 x 32 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM15	46-47
99 778 714	15 x 32 electromechanical impulse counter - Frequency between 50 and 60 Hz	CIM15	46-47
99 778 805	Electromechanical impulse counter 15 x 32 - DC version	CIM15	46-47
99 778 806	Electromechanical impulse counter 15 x 32 - DC version	CIM15	46-47
99 778 810	Electromechanical impulse counter 15 x 32 - DC version	CIM15	46-47
99 779 710	Dual function 48 x 48 electromechanical counter - Hour and impulse	CMM48	46-47
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99 779 714	Dual function 48 x 48 electromechanical counter - Hour and impulse	CMM48	46-47
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99 779 718	Dual function 48 x 48 electromechanical counter - Hour and impulse	CMM48	46-47
99 779 810	Dual function 48 x 48 electromechanical counter - Hour and impulse	CMM48	46-47
99 780 712	Dual function 48 x 48 electromechanical counter - Hour and energy	CEM48	46-47
99 780 714	Dual function 48 x 48 electromechanical counter - Hour and energy	CEM48	46-47
99 782 710	24 x 48 electromechanical hour counter - 50 Hz	CHM24	44-45
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99 782 714	24 x 48 electromechanical hour counter - 50 Hz	CHM24	44-45
99 782 715	24 x 48 electromechanical hour counter - 60 Hz	CHM24	44-45
99 782 716	24 x 48 electromechanical hour counter - 60 Hz	CHM24	44-45
99 782 718	24 x 48 electromechanical hour counter - 60 Hz	CHM24	44-45
99 782 810	24 x 48 electromechanical hour counter - DC version	CHM24	44-45
99 792 810	24 x 48 electromechanical hour counter - DC version	CHM15	44-45
99 793 710	Electromechanical hour counter rail DIN - 50 Hz	CHMDR	44-45
99 793 712	Electromechanical hour counter rail DIN - 50 Hz	CHMDR	44-45
99 793 714	Electromechanical hour counter rail DIN - 50 Hz	CHMDR	44-45
99 793 810	Electromechanical hour counter rail DIN - DC version	CHMDR	44-45

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