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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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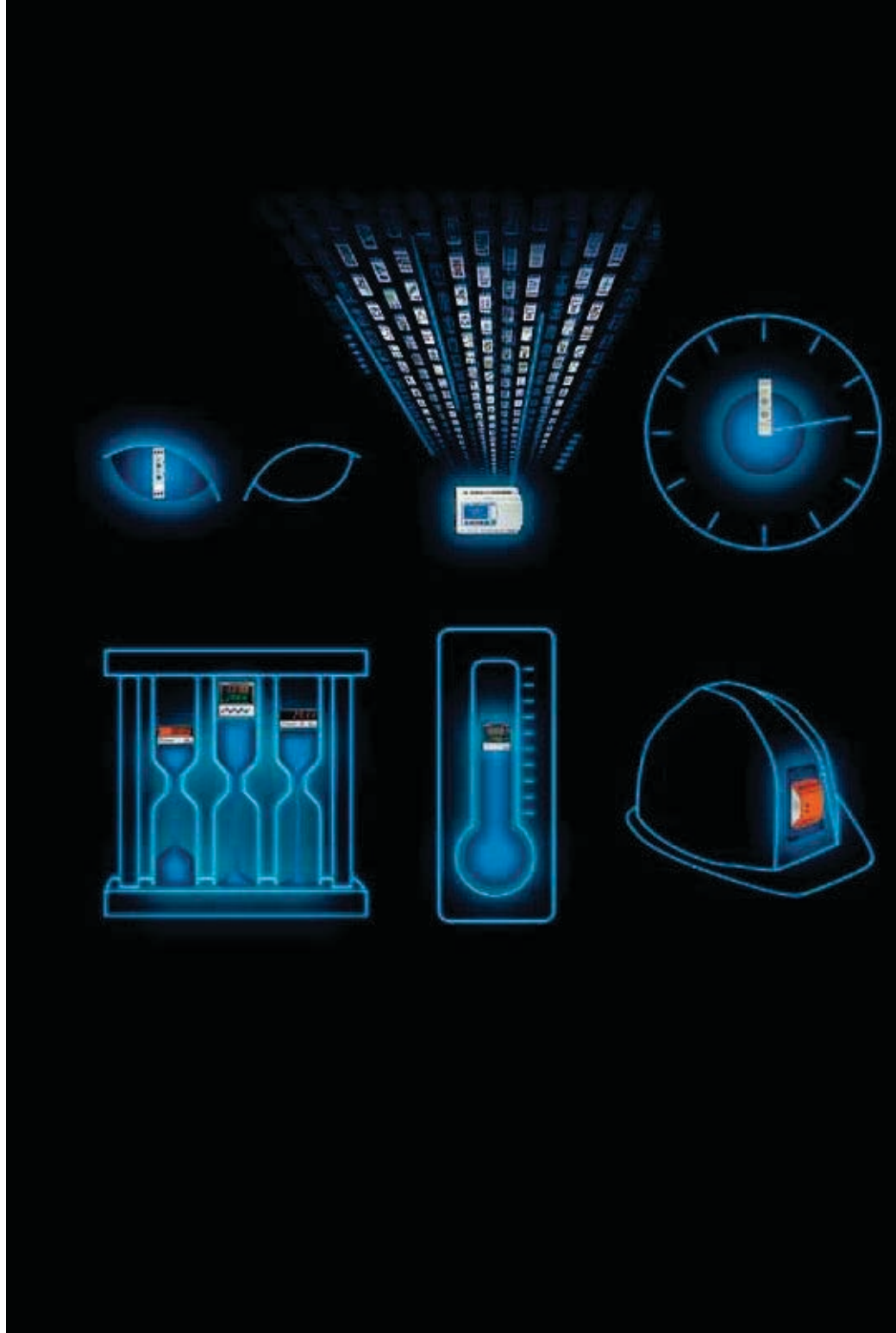
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- Timers
- Control relays
- Counters and Ratemeters
- Temperature controllers
- Safety relays
- Logic controllers



Control & Automation Overview

Behind every project,
technologies and expertise

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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.



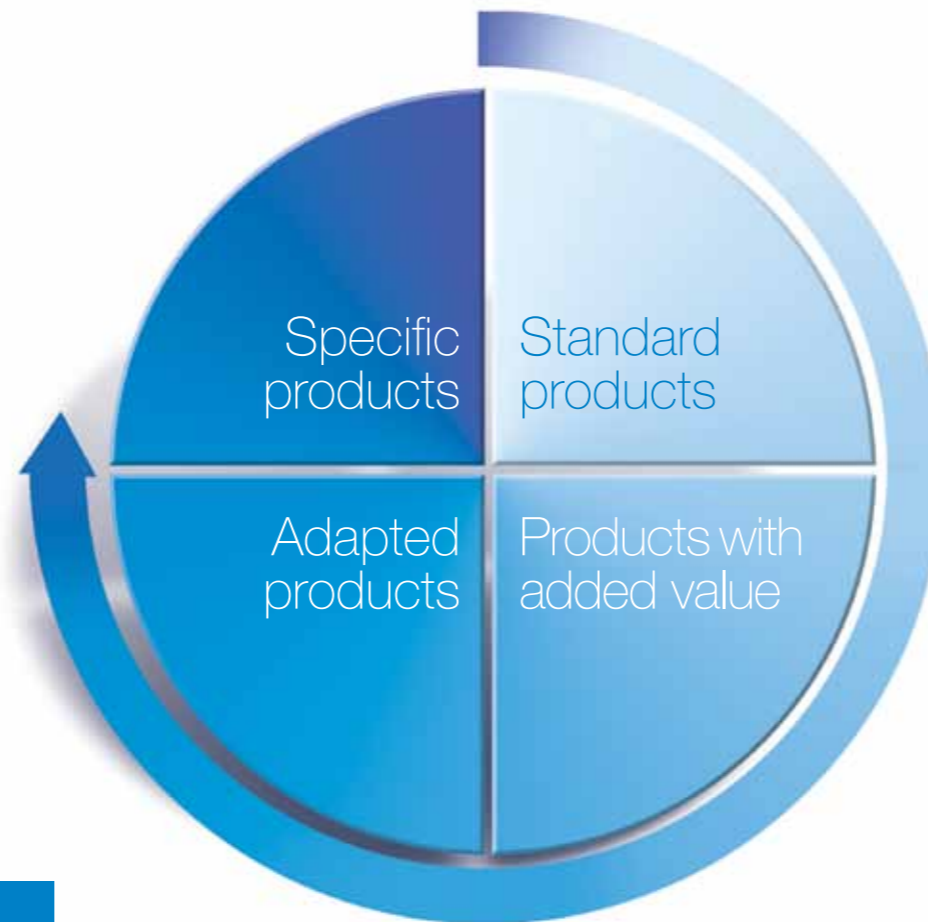
The Crouzet Control process

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:

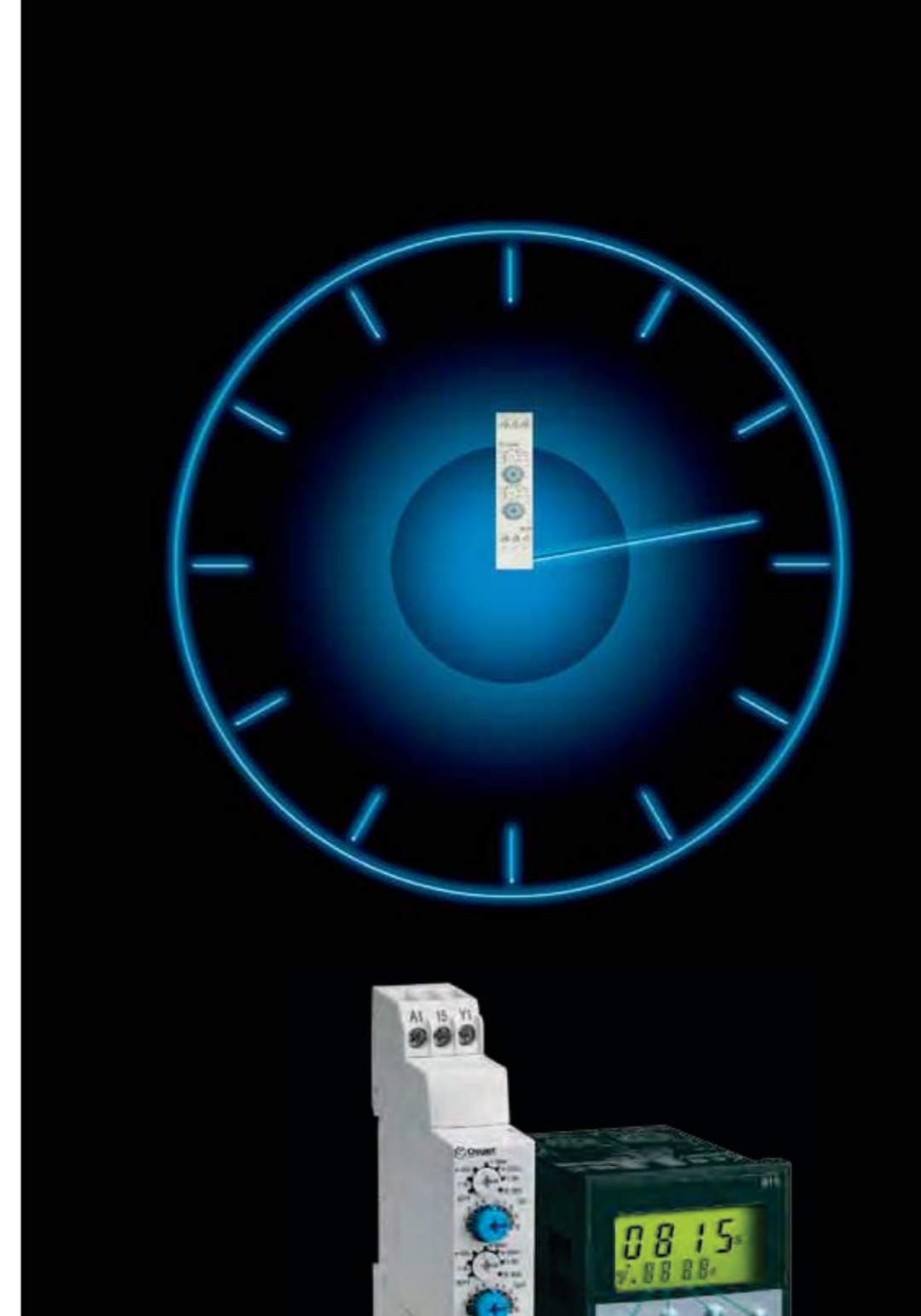
- **PROVIDING** an optimum level of service and **GUARANTEEING** a prompt delivery schedule, whatever the type of order: small-scale or mass production, standard or adapted products.
- **TRACKING** all orders in real time on www.crouzet.com

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: <ul style="list-style-type: none"> • 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

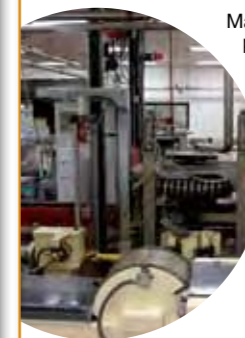

Managing the operation of a conveyor belt based on the time interval between products on the belt.

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	
17.5	Screw terminals	H / Ht	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 827 150	MLR4	
		L / Li					88 827 155	MLR1	
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	88 827 100	MUR4	
	Spring terminals	Di / D / Ac / Bw					88 827 103	MUR3	
	Screw terminals	Ad / Ah / N / O / P					88 827 503	MURc3	
17.5	Screw terminals	Pt / TL / Tt / W	Solid state	0.7 A	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 827 185	MXR1	
		A / At / B / C / H / Ht					24 ⇒ 240 V \sim	88 827 004	MUS2
		Di / D / Ac / Bw					24 ⇒ 240 V $\overline{\sim}$	88 827 014	MAS5
		A					24 ⇒ 240 V \sim	88 827 044	MHS2
17.5	Screw terminals	H / Ht	Relay	1 x 5A changeover	0.1 s ⇒ 20 h	24 V $\overline{\sim}$	88 827 054	MLS2	
		L / Li					240 V \sim	88 829 117	EMAR7
		A					110 V \sim	88 829 112	EMAR2
		A / At / B / C / H / Ht					24 V $\overline{\sim}$	88 829 119	EMAR9
17.5	Screw terminals	Di / D / W / Pe	Relay	1 x 5 A changeover	0.1 s ⇒ 20 h	12 ⇒ 240 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 829 198	EMER8	
		Ac / Ad / Bw / Cx / N / O / Tt					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	K	Relay	2 x 8 A changeover	0.1 s ⇒ 160 s	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 865 265	TK2R1		
		A / At / B / C / H / Ht		1 x 8 A changeover			0.1 s ⇒ 100 h	12 V $\overline{\sim}$	88 865 300	TU2R4
		Di / D / Ac / Bw		1 inst. or timed 8 A					88 866 300*	RU2R4*
		A / At		1 x 8 A changeover					88 865 100	TUR4
		A / At / B / C / H / Ht		2 x 8 A changeover					88 865 215	TA2R1
		Di / D / Ac / Bw		1 x 8 A changeover					88 866 215*	RA2R1*
		Spring terminals		1 x 8 A changeover					88 865 103	TUR3
		88 865 503	TURc3							
22.5	Screw terminals	Ad / Ah / N / O / P	Relay	1 x 8 A changeover	0.1 s ⇒ 100 h	24 V $\overline{\sim}$ / 24 ⇒ 240 V \sim	88 865 385	TX2R1		
		Pt / TL / Tt / W		1 inst. or timed 8 A			88 866 385*	RX2R1*		
		Q		1 x 8 A changeover			88 865 185	TXR1		
		A / At / B / C / H / Ht		1 x 8 A changeover			88 865 176	TQR6		
		Di / D / Ac / Bw		1 inst. or timed 8 A			88 866 176*	RQR6*		
				1 x 8 A changeover			88 865 303	TU2R3		
				1 inst. or timed 8 A			88 866 303*	RU2R3*		
		88 865 305	TU2R1							
		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
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	88 867 100	OUR4
		A		2 x 8 A changeover			88 867 103	OUR3
		C		1 x 8 A changeover 1 inst. or timed 8 A			88 867 305	PU2R1
		L / Li					88 867 415	PA2R1
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	88 867 300	PU2R4
							88 867 303	PU2R3
							88 895 201	RTMA2
							88 895 202	RTMA2
							88 895 203	RTMA2
	Plug-in 14-pin base	A	Relay	4 x 3 A changeover	0.1s ⇒ 100 h	12 V $\overline{\sim}$ 24 V $\overline{\sim}$ 24 V \sim 110 V \sim 230 V \sim	88 895 206	RTMA2
							88 895 207	RTMA2
							88 896 201	RTMA4
							88 896 202	RTMA4
							88 896 203	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	88 886 106				TMR 48 A	
	Plug-in 8-pin base	A1, A2, H1, H2, Q1, Q2, D-Di		2 timed changeover or 1 timed and 1 instantaneous (2 x 5 A)		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	
					220 ⇒ 240 V \sim	88 857 400	Timer 812	
		A, B, C, D, Di, H			1 x 8 A timed changeover	12 V $\overline{\sim}$ / 24 ⇒ 48 V $\overline{\sim}$	88 857 003	Timer 814
24 V $\overline{\sim}$ / 110 ⇒ 240 V \sim	88 857 005		Timer 814					
48 x 48	Plug-in 11-pin base	A, B, C, D, Di, H	Relay	1 x 8 A timed changeover	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	
					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	
48 x 48	Plug-in 11-pin base	A1, A2, AM, AMt	Relay	2 timed changeover or 1 timed and 1 instantaneous (2 x 8 A)	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	
	Plug-in 11-pin base				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
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

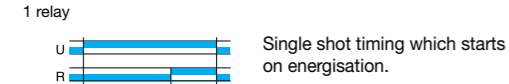
The timer accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Function diagrams

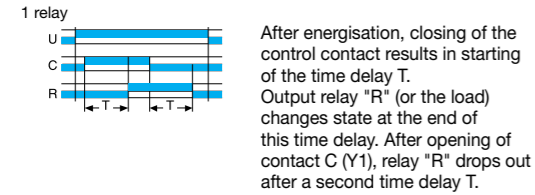
Generic functions

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

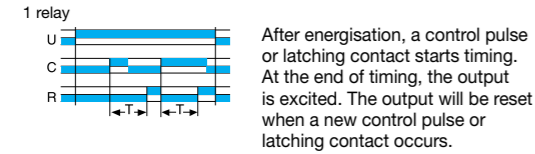
• A function: Delay on energisation



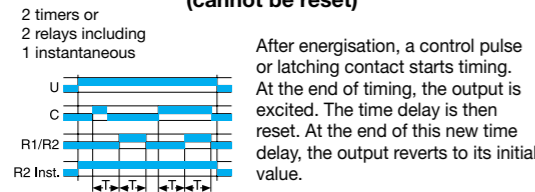
• Ac function: Timing after closing and opening of control contact



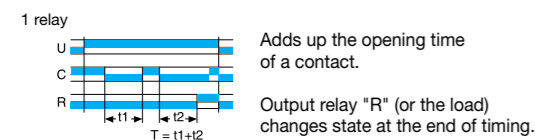
• Ad function: Delay on energisation (cannot be reset)



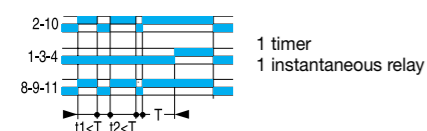
• Ah function: Single shot flip-flo (cannot be reset)



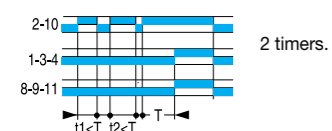
• At function: Timing on energisation with memory



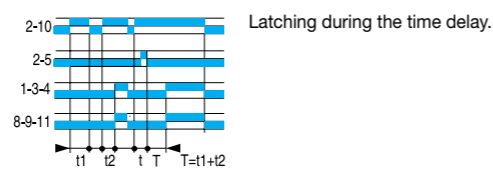
• A1 function: Delay on energisation



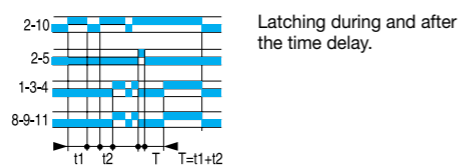
• A2 function: Delay on energisation



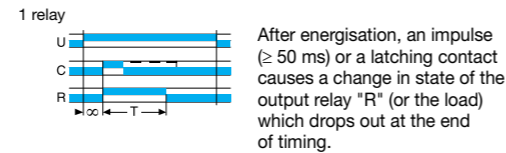
• AM function: Delay on energisation



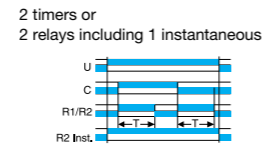
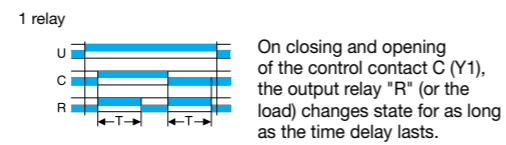
• AMt function: Delay on energisation



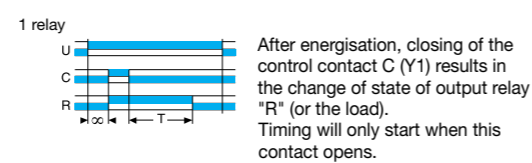
• B function: Timing on impulse (one shot) - Shaping (cannot be reset)



• Bw function: Pulse output (adjustable)

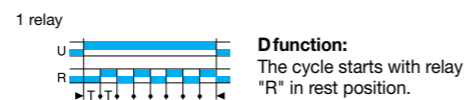


• C function: Timing after impulse True delay off (without auxiliary power supply)

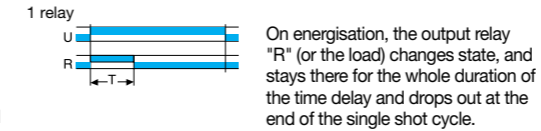


• D or Di functions: Symmetrical flashin

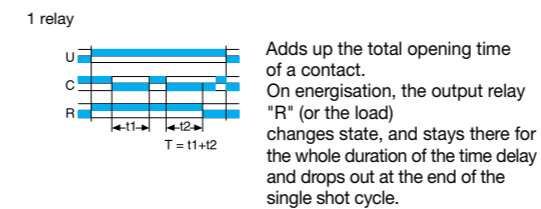
Repetitive cycle which alternately sets the output relay "R" (or the load) to operating and rest position for equal periods of time.



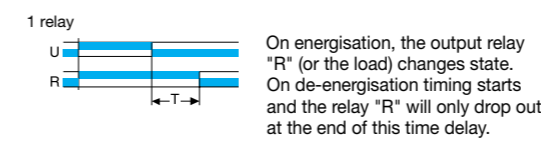
• H function: Timing on energisation - Pulse output (adjustable)



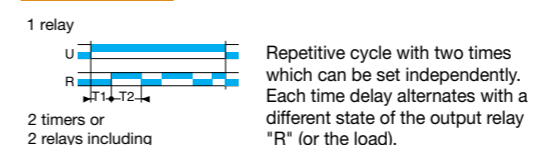
• Ht function: Delay on energisation with memory



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



• L function: Asymmetrical flashin

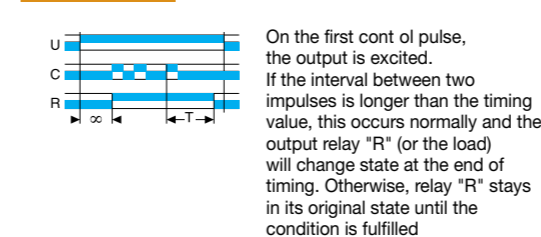


Note: The cycle starts with the relay "R" in the rest position.

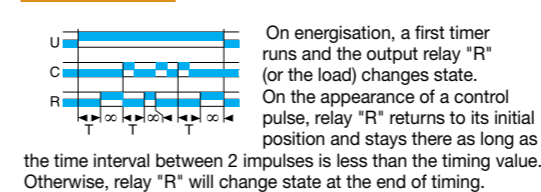
• Li function: Asymmetrical flashin



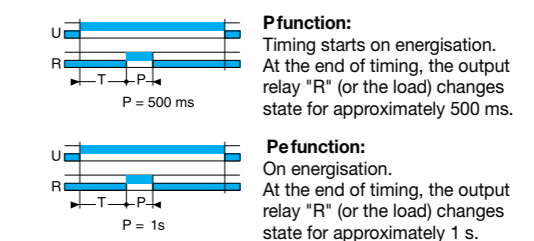
• N function: "Safe-guard"



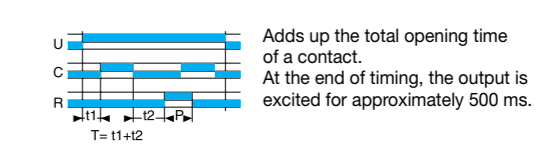
• O function: "Delayed safe-guard"



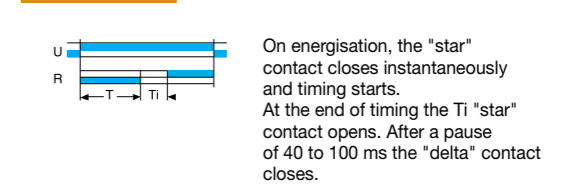
• P and Pe functions: Impulse counter (delay on)



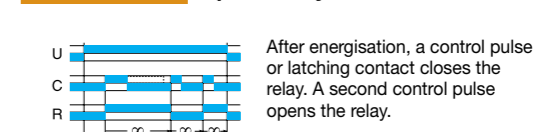
• Pt function: Impulse counter (delay on)



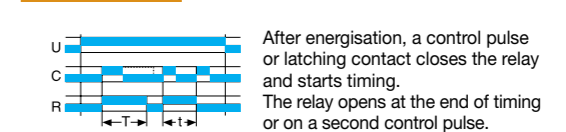
• Q function: "Star-delta" starting



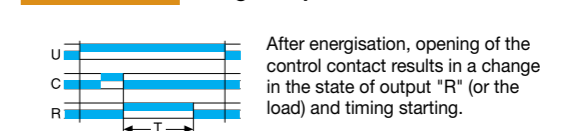
• TL function: Impulse relay



• Tt function: Timed impulse relay



• W function: Timing after pulse on control contact

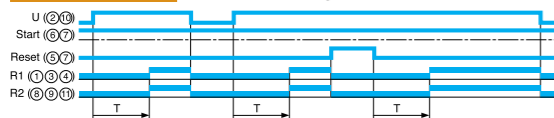


Function diagrams

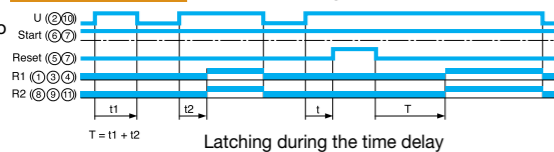
815E dedicated functions

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

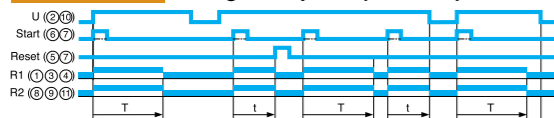
• A2 function: Delay on energisation



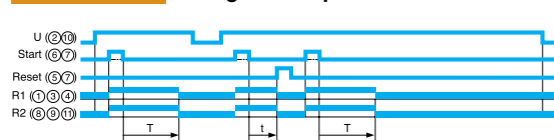
• AM function: Delay on energisation



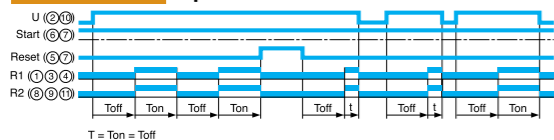
• B function: Timing on impulse (one shot)



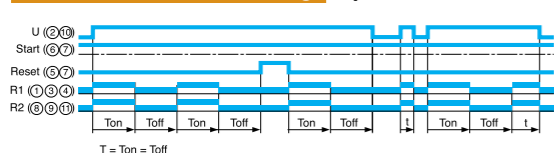
• C function: Timing after impulse



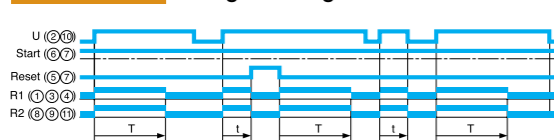
• D function: Flip-flo



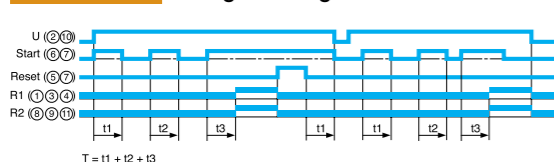
• Di function with latching: Flip-flo



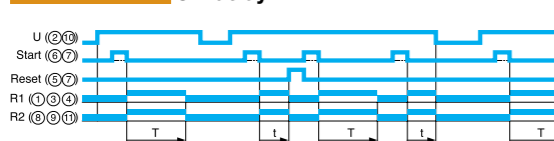
• H function: Timing on energisation



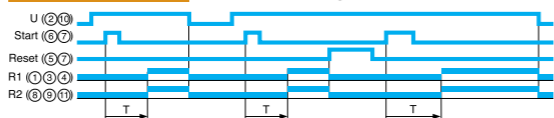
• T function: Timing on energisation



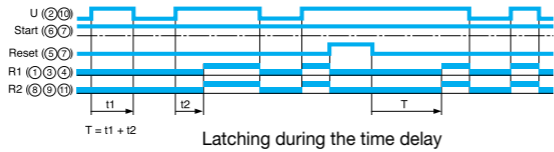
• W function: Off-delay



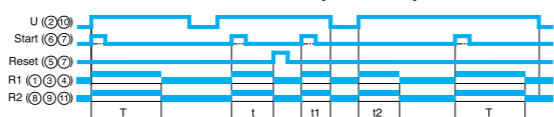
• A2c function: Delay on energisation



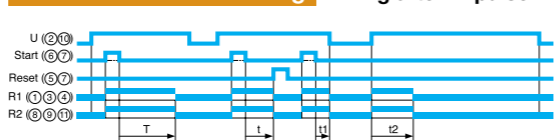
• AMt function: Delay on energisation



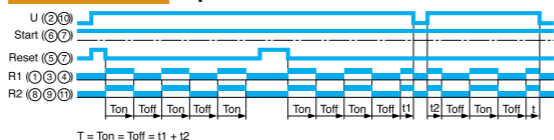
• B function with latching: Timing on impulse (one shot)



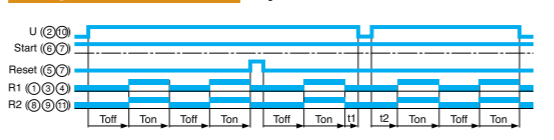
• C function with latching: Timing after impulse



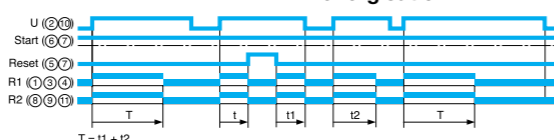
• Di function: Flip-flo



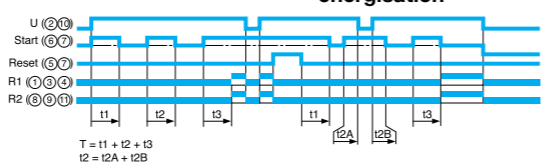
• D pause function: Flip-flo



• H function with latching: Timing on energisation



• T function with latching: Timing on energisation



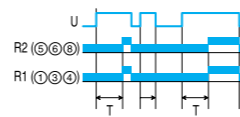
• W function with latching: Off-delay timer



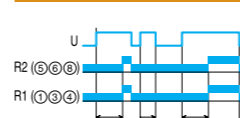
TMR48 dedicated functions

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

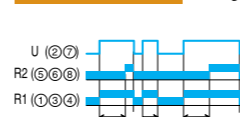
• TMR48 A A function: Delay on energisation



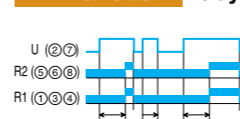
• TMR48 U A function: On-delay



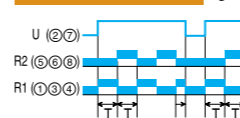
• A1 function: Delay on energisation



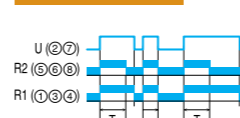
• A2 function: Delay on energisation



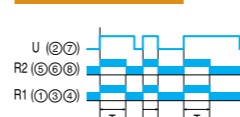
• D-Di function: Symmetrical flashin



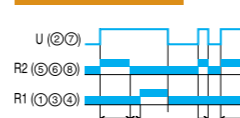
• H1 function: Timing on energisation



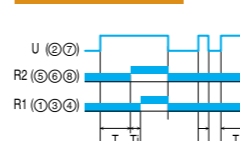
• H2 function: Timing on energisation



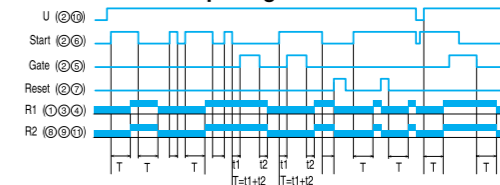
• Q1 function: Star-delta "starting"



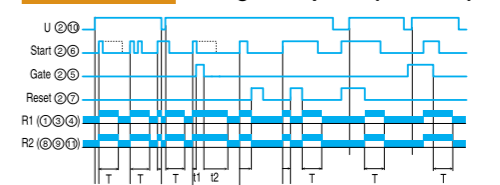
• Q2 function: "Star-delta 2" starting



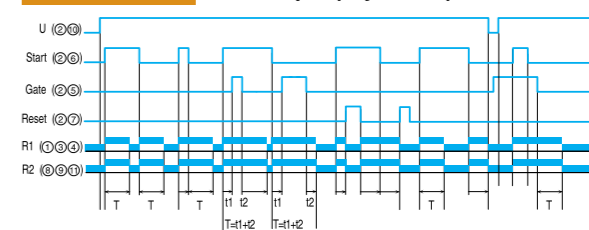
• Ac function: Timing after closing and opening of control contact



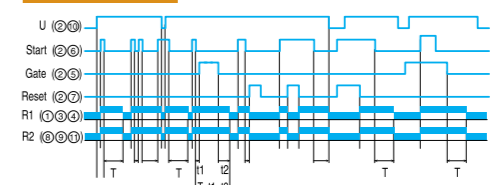
• B function: Timing on impulse (one shot)



• Bw function: Pulse output (adjustable)



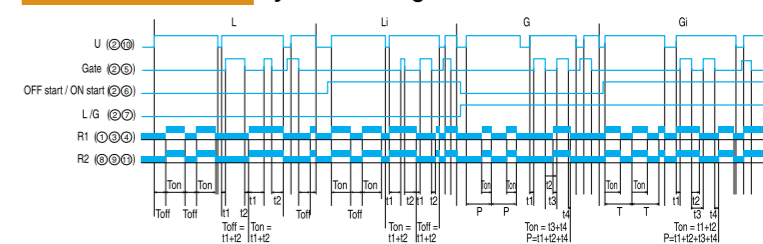
• C function: Off-delay



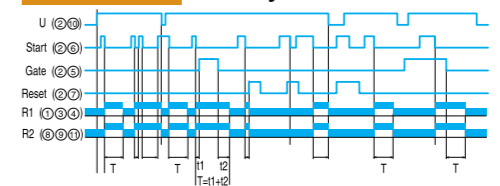
• G function: Cyclical function



• L/LiG/Gi function: Cyclical flashing timer



• W function: Off-delay



Crouzet Control

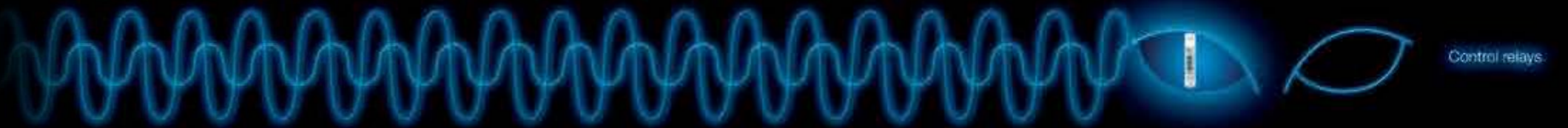
Behind every project, technologies and expertise

- **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

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

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**.


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 %						84 873 023	MWU	
	Yes / 5 ⇨ 15 %	No / No	0.1 ⇨ 10 s					84 873 024	MWA	
		Window +2 ⇨ +20 % -20 ⇨ -2 %						84 873 025	MWUA	
	Yes / No	No / No	No		1 x 5 A changeover	17.5	208 ⇨ 480 V ~ - 50 / 60 Hz	84 873 020	MWS	
					1 x 5 A changeover			84 903 020	EMWS	
	No / No	+2 ⇨ +20 % / -20 ⇨ -2 %	0.3 ⇨ 30 s		2 x 5 A changeover			208 ⇨ 440 V ~ - 50 / 60 Hz	84 873 021	MWS2
			0.1 ⇨ 10 s		1 x 5 A changeover			208 ⇨ 480 V ~ - 50 / 60 Hz	84 873 222	M3US
	Yes / 5 ⇨ 15 %				2 x 5 A changeover			220 ⇨ 480 V ~ - 50 / 60 Hz	84 873 026	HWUA
	No / No		0.3 ⇨ 30 s						84 873 220	H3US
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						84 873 028	HWTM2

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
								84 872 141	MUS
								84 872 142	MUS
	Over or Undervoltage	5 % ⇨ 50 %	0.1 ⇨ 3 s		2 x 5 A changeover	35	24 ⇨ 240 V ~	84 872 120	HUL
								84 872 130	HUH
								84 872 151	MUSF
65 ⇨ 260 V ~	Window	3% fixe	0.1 ⇨ 10 s		1 x 5 A changeover	17.5	Monitors its own supply voltage	84 872 152	MUSF

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
	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

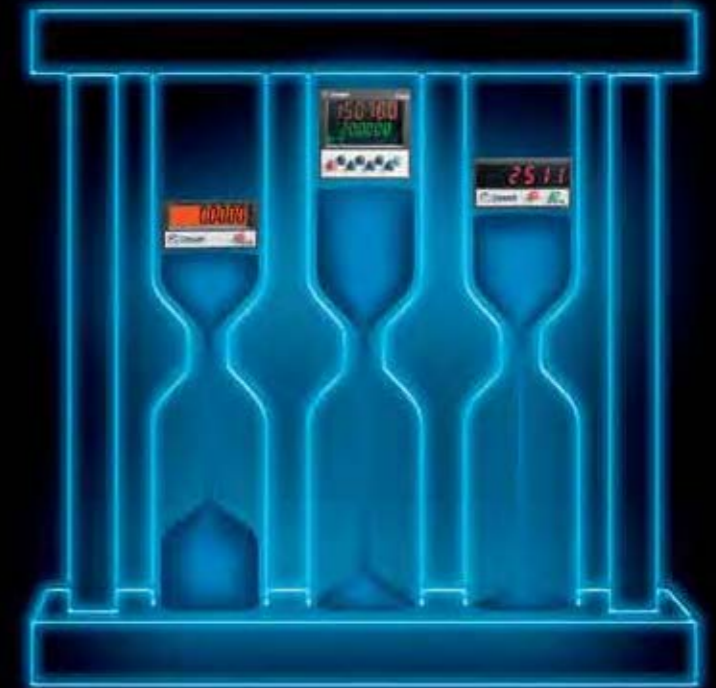
The control relay accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com

Crouzet Control

Behind every project, technologies and expertise

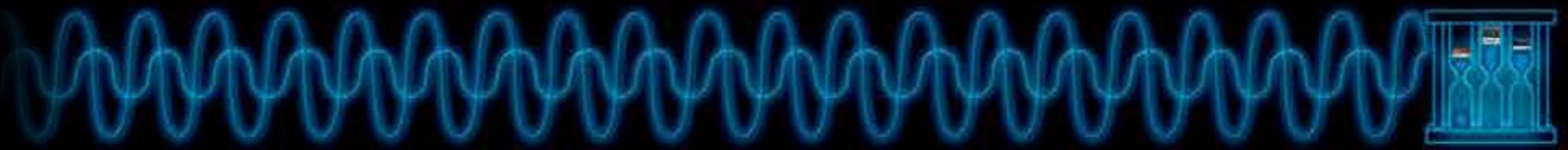
- **Local** support for all industrial projects.
- A **multi-skilled team**.
- A sales presence in over **40 countries**.
- A Premium offer designed to ensure **the excellence** of products and services.
- **Eco-design integrated** in Crouzet's "Offer Creation Process".
- Certifications: **ISO 9001, 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**.

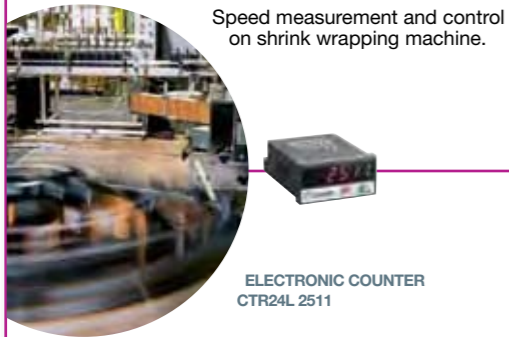
Crouzet Control, counters and ratemeters Where are they found?

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

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

Tachometer systems

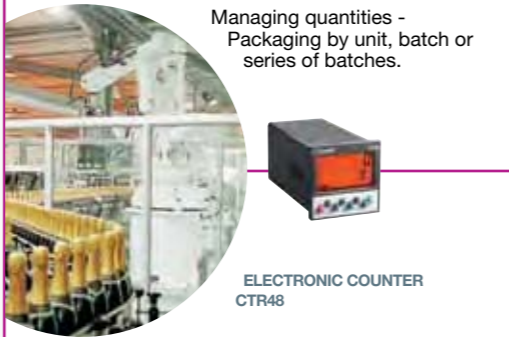
Speed measurement and control on shrink wrapping machine.



ELECTRONIC COUNTER
CTR24L 2511

Counting quantities

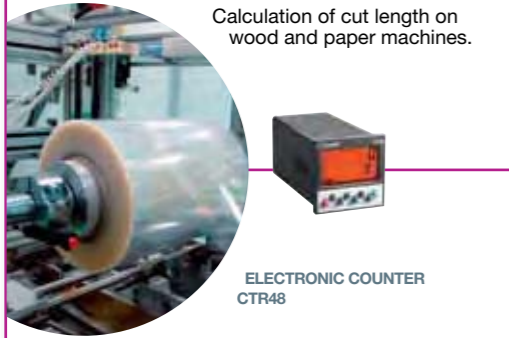
Managing quantities - Packaging by unit, batch or series of batches.



ELECTRONIC COUNTER
CTR48

Length measurement

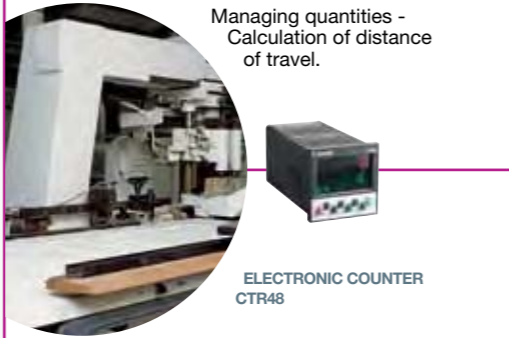
Calculation of cut length on wood and paper machines.



ELECTRONIC COUNTER
CTR48

Position control

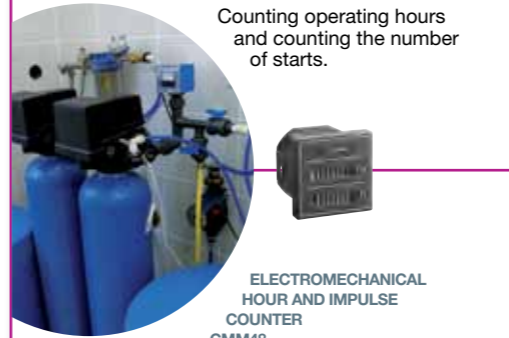
Managing quantities - Calculation of distance of travel.



ELECTRONIC COUNTER
CTR48

Compressors

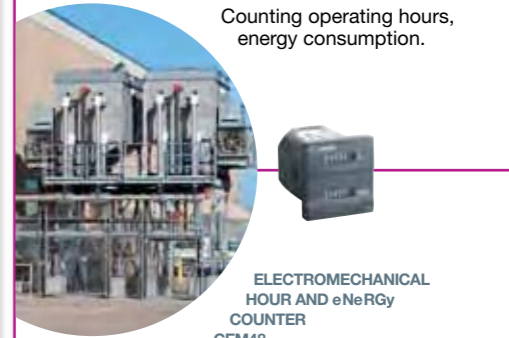
Counting operating hours and counting the number of starts.



ELECTROMECHANICAL HOUR AND IMPULSE COUNTER
CMM48

Dehumidifier

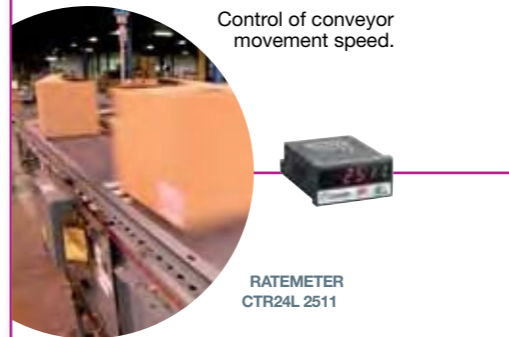
Counting operating hours, energy consumption.



ELECTROMECHANICAL HOUR AND eNeRGy COUNTER
CEM48

Assembly line speed

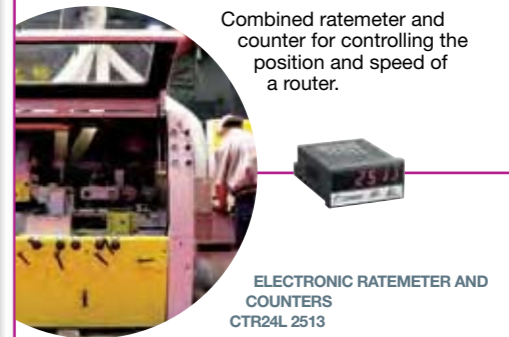
Control of conveyer movement speed.



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
 24 x 48	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
 15 x 32	999,999.99	$\overline{\text{---}}$	10 ⇒ 30 V $\overline{\text{---}}$	99 782 810	CHM24
	99,999.99	$\overline{\text{---}}$	4.5 ⇒ 35 V $\overline{\text{---}}$	99 792 810	CHM15
 Modular Rail Din 35 mm	99,999.99	50 Hz \sim	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

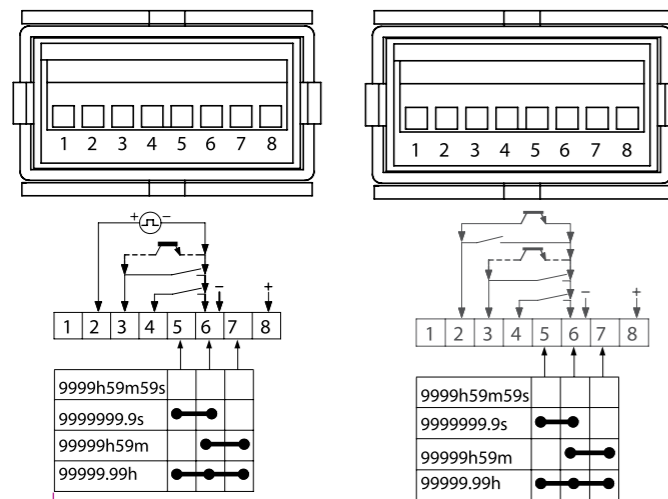
The counters and ratemeters accessories guide is available on the product data sheets which can be downloaded from the website www.crouzet.com



CTR24 counters

Connections

Hour counters



Types 2223 and 2323:

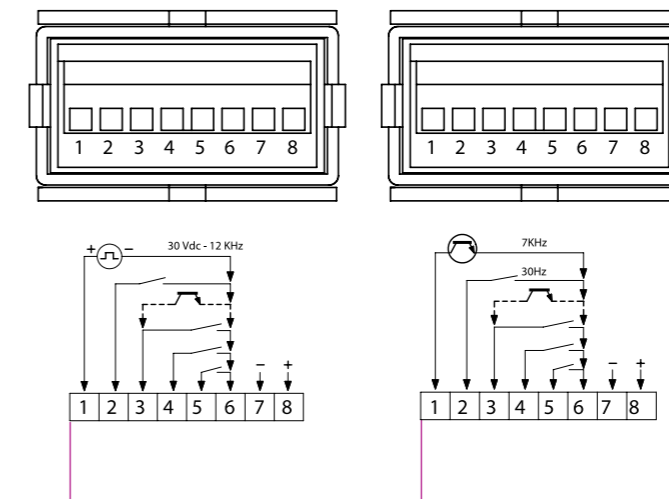
- Part numbers:**
- 87 622 161
 - 87 622 181

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



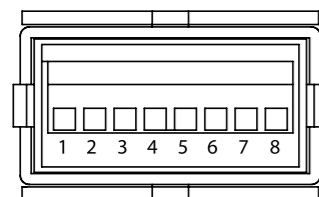
Types 2241 and 2341:

- Part numbers:**
- 87 622 061
 - 87 622 081

Types 2251 and 2351:

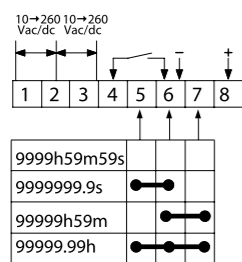
- Part numbers:**
- 87 622 062
 - 87 622 082

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)

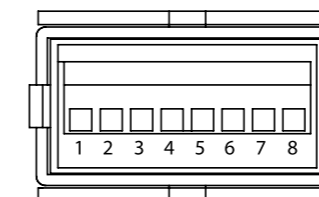


Types 2224 and 2324:

- Part numbers:**
- 87 622 170
 - 87 622 190

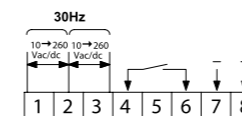


1. Common \approx
2. Start / Stop input
3. Reset input
4. Enable front panel Reset
5. Mode 1 (Time selection)
6. GND / Optional backlighting - (only 23xx)
7. Mode 2 (Time selection)
8. Optional backlighting + (only 23xx)



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)

Counters and Ratemeters