

# PRODUCT LINES

## Overview

**100**  
YEARS



# ABOUT CROUZET

Crouzet is an independent company **manufacturing mechatronic components for demanding applications in Aerospace & Transportation, Energy, Building and Machinery Industry.**

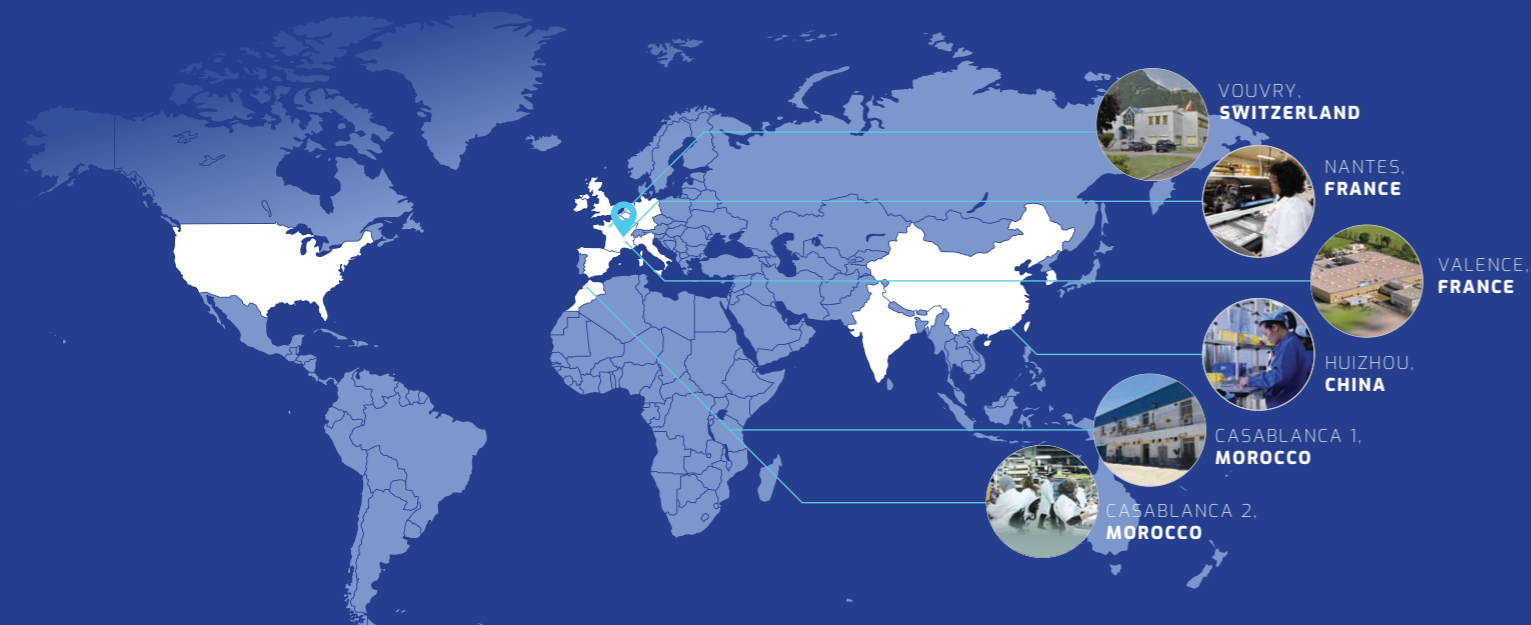
Crouzet provides **Switches and Sensors, Electromechanical Actuators, Electrical Protection Equipment, Cockpit Controls, Automation Controllers and Relays, and Instrumentation Services.**

Since 1921, Crouzet has a heritage of close collaboration with customers in the development of products, from standard components to fully customized solutions.

Crouzet's customers and partners can rely on our teams worldwide to always meet and often exceed their expectations. Driven by innovation, our experts are focused on designing and delivering the right product for the right application.

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

## WORLDWIDE PRESENCE



📍 HEADQUARTERS

■ SALES OFFICES

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# 100 YEARS DESIGNING & MANUFACTURING MECHATRONIC COMPONENTS

## For demanding applications



### Aerospace & Defense

- › Aircraft
- › Helicopter
- › Defense
- › Urban Air Mobility



### Transportation

- › Railway
- › Automotive
- › Specialty Vehicles



### Energy

- › Nuclear
- › Distribution
- › Renewable



### Building

- › Gates & Doors
- › Building
- › Efficiency



### Machinery

- › Industrial
- › Automation
- › Food & Beverage

## We work with the global leaders of our markets

AIRBUS



SAFRAN



faurecia



Mercedes-Benz

ALSTOM

SIEMENS

VELAN



Schneider Electric

ABB

AUTOMATIC SYSTEMS

THALES

somfy.

ASSA ABLOY

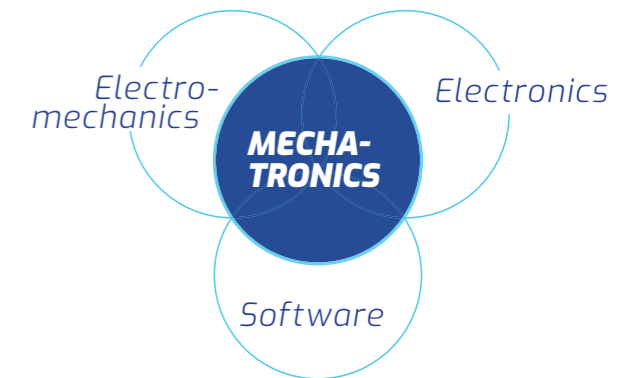
WORLD CLASS DISTRIBUTION NETWORK

## In compliance with highest standards

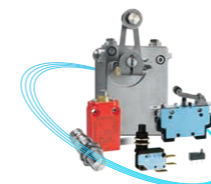


# OUR OFFER: MECHATRONIC COMPONENTS

When combining our long-standing expertise on mechanical, electronics and software engineering, we are able to design and manufacture top-notch mechatronic components for your most demanding applications.



## Get to know our product lines



### Switches & Sensors



### Cockpit Controls



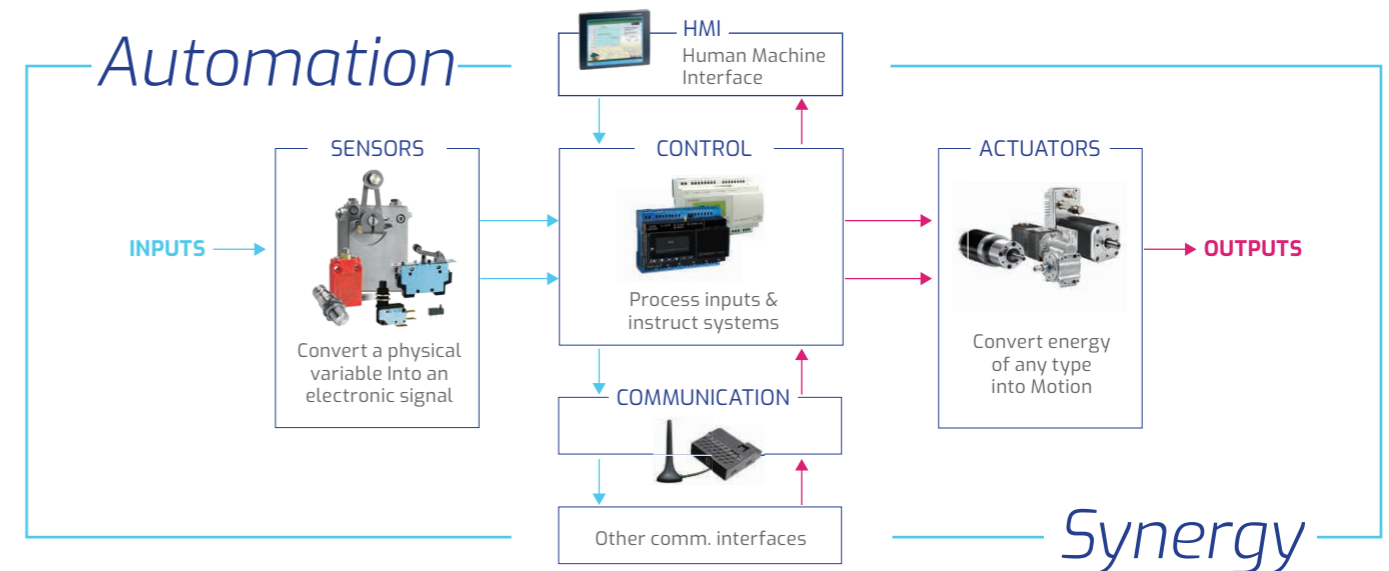
### Electrical Protection



### Motion Control



### Automation & Control



## DESIGN LAB

### Customization, adaptation & co-design expertise at your service

When your innovation process needs more than high-quality standard products, we will answer your specific needs by offering you the best customized solution, a long-term partnership commitment and a multidisciplinary team dedicated to your project.

# SWITCHES & POSITION SENSORS

## MICROSWITCHES

	SUB-SUBMINIATURE			SUBMINIATURE			MINIATURE & SPECIAL		
SERIES	V5S 8320	83228 83229	V5D 83194 83141	V4/V4D 83170 8327	V4S 8318	83132 83133 83134	V3/V3D 83161/160 8326	V3S/V3DS 83169 8329	PBX 8324
Max Rating @250 V~	4 A	5 A	5 A	12 A	10 A	6 A	25 A	10 A	10 A
Low level version	I (mA)	I (mA)	I (mA)	I (mA)	I (mA)	I (mA)	I (mA)	I (mA)	I (mA)
Sealing level	IP67 IP69				IP67 IP69			IP67 IP69	IP65 IP67
Double break						Za*			Zb*
Max. temperature (°C)	+90	+140	+150	+150	+125	+150	+200	+105	+85
Min. temperature (°C)	-40	-55	-55	-40	-40	-40	-60	-40	-50
Specific environment			**			**			
Approvals	NF/ENEC/CE	CE	CE	CE	CE	CE	CE	CE	CE
	UL								
	CCC		**						
	EAC	EAC	EAC	EAC	EAC	EAC	EAC	EAC	EAC

\* Za: NO and NC circuits must be used at same polarity. Zb: NO and NC circuits are electrically separated, and can be used at opposite polarities. \*\* Consult us

## LIMIT SWITCHES

	STANDARD		HARSH ENVIRONMENT		
SERIES	8387 8388	83589	83777 83778	8399Nuc	8399Ex
Max Rating @ 250 V~	10 A	8 A	4A	1 A	1 A
Sealing level	IP66 IP67 IP69	IP66 IP67 IP69	IP66 IP68(4m) IP69	IP66 IP68(18m) IP69	IP66 IP67 IP69
Max. temperature (°C)	+70	+85	+125	+200	+200
Min. temperature (°C)	-40	-40	-55	-55	-40
Specific environment			**		
Approvals	CE	CE	CE	CE	CE
	UL				
	CCC			**	
	EAC	EAC	EAC	EAC	

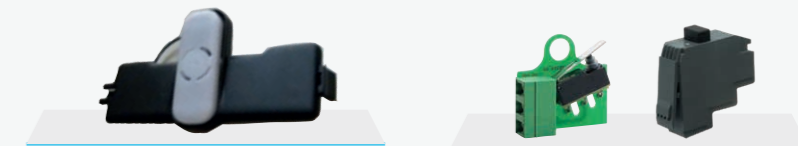
Irradiated Environment High pressure up to 6 bar Explosive atmospheres

## SENSORS AEROSPACE

	LIMIT SWITCH	PROXIMITY SWITCH	PROXIMITY SENSOR
Key features	<ul style="list-style-type: none"> <li>Hermetically sealed</li> <li>Customizable</li> <li>Multi-pole functions</li> </ul>	<ul style="list-style-type: none"> <li>Contactless detection with integrated electronics</li> <li>Customizable</li> </ul>	<ul style="list-style-type: none"> <li>Contactless detection with external electronics</li> <li>Customizable</li> </ul>
Operating force (N)	2.5 → 50	NA	NA
Mechanical life (cycles)	100 000	NA	NA
Water proofness	Watertight or hermetic version - DO 160 sect10		
Weight (g)	15 → 300	< 60	< 50
Operating temperature (°C)	-55 → +250	-55 → +125	-55 → +125

## CUSTOMIZED SOLUTIONS

- › Dedicated application
- › Customer specific product
- › Innovation & industrialization



## MANUALLY OPERATED SWITCHES

- › Pushbuttons, Momentary and/or Maintained, up to 4 poles
- › Toggles, Maintained and/or Momentary, up to 4 poles
- › Multiway, Momentary
- › Rockers, Momentary and Maintained
- › Triggers, Momentary



### NUCLEAR



### RAILWAYS



### ELECTRICAL EQUIPMENT



### TRANSPORTATION

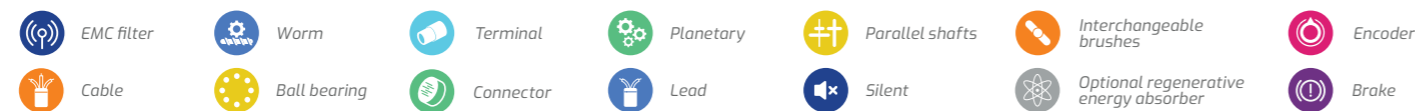


# MOTION

## MOTORS

	INDUSTRIAL BRUSH			DCmind BRUSH		DCmind BRUSHLESS		SYNCHRONOUS		STEPPER
SERIES	82840 82860	82800 10 50	82830 82890	89800 10 50	89830 89890	80140 180 280	80350 60 70	82510 20 30 40	82330 82340	82910 20 30 40
Nominal power (W)	0.9 / 3	9 → 33	27 → 95	15 → 35	54 → 104	66 → 150	310 → 600	0.3 → 3	0.2 / 0.4	0.5 → 5
Voltage	12 → 24 V <sub>DC</sub>	12 → 48 V <sub>DC</sub>	12 → 48 V <sub>DC</sub>	12 → 48 V <sub>DC</sub>	12 → 120 V <sub>DC</sub>	9 → 75 V <sub>DC</sub>	9 → 75 V <sub>DC</sub>	24 → 240 V <sub>AC</sub> 50 → 60 Hz	24 → 240 V <sub>AC</sub> 50 → 60 Hz	3 → 64 V <sub>DC</sub>
Front side (mm)	∅ 32	∅ 42	∅ 63	∅ 42	∅ 63	SQ57	SQ75	∅ 35 / 51 ∅ 57 / 65	∅ 47	∅ 35 / 51 ∅ 57 / 65
Nominal speed (rpm)	3700	3000	3000	3000	3000	3000	3000	250 → 600	600 → 720	0 → 1500
Nominal torque (mN.m)	2.2 / 7.7	41 → 100	170 / 270	50 → 110	180 / 290	125 → 550	830 → 1900	10 → 110	2.5 → 8	15 → 300
Noise level (dBA)	55	55	55	35	35	45	50	30	45	35
Service life (hrs)	2000	3000	5000	4000	5000	20000	20000	20000	10 M on / off	20000
Certification	CE RoHS	C RU US CE RoHS	CE RoHS	C RU US CE RoHS	CE RoHS	CE RoHS	C RU US CE RoHS	CE RoHS	C RU US CE RoHS	CE RoHS
Gearboxes	+	+	+	+	+	+	+	+	+	+
Connection	+	+	+	+	+	+	+	+	+	+
Standard		+		+	+	+	+			
Options	+	+	+	+	+	+	+			
IP		IP20		IP65*		IP54	IP65*, IP67* IP69*	IP40	IP30	IP40

\* Except front face & shaft



## CONTROL ELECTRONICS

	INTEGRATED			EXTERNAL	
SERIES	TNi21	SMi21	SMi22	BDE 30	BDE 40
Compatible models	SQ57		SQ75	SQ57	
Speed-torque	•	•	•	•	•
Position (P/R)		4096	4096		
Programming		DCmind Soft & DCmind Soft + CANopen	DCmind Soft + CANopen	PWM or 0 → 10 V <sub>DC</sub>	
Communication bus		Optional <b>CANopen</b>	Standard <b>CANopen</b>		
Voltage	10 → 36 V <sub>DC</sub>	9 → 75 V <sub>DC</sub>	9 → 75 V <sub>DC</sub>	18 → 36 V <sub>DC</sub>	10 → 36 V <sub>DC</sub>
Maximum current (A)	17	17	75	10	14
Adaptations	Programs: Custom firmware as per customer specifications				

## GEARBOXES

	PARALLEL SHAFTS	PLANETARY	WORM
CHARACTERISTICS	11 models	7 models	2 models
Torque (N.m)	0.5 → 6	0.8 → 120	10 → 20
Power (W)	0.2 → 50	8 → 600	25 → 600
Service life (Mr*)	1 → 10	50	50
Ratios	4 → 1036800	4 → 308	5 → 100
Options	Stainless steel shafts, pulleys, pinions, special bearings, etc...		
	* Million revolutions		

### RAILWAYS



### ACCES CONTROL



### EQUIPMENT



### MEDICAL



## SIMPLIFIED PROGRAMMING\*

DCmind Soft (SMi21) & DCmind Soft+CANopen (SMi21 CANopen & SMi22) for DCmind BRUSHLESS

- ▶ Precise configuration of the position, speed and torque
- ▶ The most user-friendly software on the market
- ▶ Two programming modes: application & expert
- ▶ Application programs: dosing, valves, machinery, conveyor belt, access control



\* Free software on our website ([www.crouzet.com](http://www.crouzet.com)) or can be supplied on a USB stick in the «starter kit».

# ELECTRICAL PROTECTION

## ELECTROMECHANICAL CIRCUIT BREAKERS

Thousands of Configurations Available

REGULAR					HIGH-POWER				
SINGLE POLE		THREE POLE			SINGLE POLE		THREE POLE		



STANDARD	MIL SPEC	M53320 (AS33201)	M55692 (AS5692)	M526574 (AS26574)	M55692 (AS5692)	M514154 (AS141544)						
	ASD-STAN	EN2495	EN2995	EN3773	EN2592	EN2996	EN3774	EN2794	EN3661	EN2665	EN3662	
	DIN-Bundeswehr	VG95345-TEIL6 VG95345-TEIL11										
	BACC Alternate	BACC1BAD			BACC1BAC		BACC18X	BACC18R	BACC18AE		10-60806-10	
CONFIGURATIONS	Rating	0.5 A - 30 A		0.5 A - 30 A			15 A - 60 A		15 A - 60 A			
	Auxiliary Contact	✓ With polarized AC	✓ With non polarized AC	✓ Without AC								
	Power Terminal	✓ Standard	✓ 45° or 60° Bus bar application	✓ Push-Fit (0.25inch TAB)		✓ Flying leads						
	Button Length	✓ Normal Length		✓ Extra Length								
	Actuation Type	✓ Push Pull		✓ Push Push								
	Threaded Barrel	✓ M12 - 0.75	✓ M12 - 100			✓ 7/16		✓ Cononical Barrel				
	Terminal Screw	✓ 8 - 32 UNC		✓ 6 - 32 UNC			✓ M4		✓ No Terminal Screws			
Vibration Level	✓ Commercial Aircraft		✓ Fighter - Artillery Gun									

## COMPLEMENTARY OFFER

60+ years of aerospace qualification expertise

SMART	REMOTE CONTROL	POWER DISTRIBUTION
CIRCUIT BREAKERS	CIRCUIT BREAKERS	BOXES



### Arc Fault & Ground Fault Protection

Avoid drilling into the fuel tank by drastically reducing the amount of energy released by a fault as requested by AC25981



### A circuit breaker and a contactor in one single case

Allowing you to open and close the contactor at a distance just by applying a 28 V command input.



### Standard Pre-qualified Equipment + Customized Versions as:

- Illuminated & non-illuminated Boxes
- Push/Pull & Push/Push Versions
- Wired & PCB-Faston Versions

# COCKPIT CONTROLS

FLIGHT CONTROLS			
Pushbuttons	Multiway	Pilot Grips	Control Wheels



Key features	<ul style="list-style-type: none"> <li>› 1, 2, 3, 4 pole</li> <li>› Sealed versions</li> <li>› More than 200 electrical combinations</li> </ul>	<ul style="list-style-type: none"> <li>› Tactile effect</li> <li>› Silver &amp; gold terminals</li> <li>› Different hat shape and color</li> </ul>	<ul style="list-style-type: none"> <li>› Ergonomy and functions access</li> <li>› Aluminium castings or injected in advanced plastic composite</li> <li>› Highest level of finishing</li> </ul>	<ul style="list-style-type: none"> <li>› Comfort and aesthetics</li> <li>› Best in class quality</li> <li>› Aluminium castings or injected in advanced plastic composite</li> </ul>
Operating force	8 N → 16 N	3 N → 6 N	90 daN	150 daN
Mechanical life	300 000 cycles	500 000 cycles	35 000 FH	35 000 FH
Water proofness	DO 260 cat W	DO 260 cat W	DO 260 cat W	DO 260 cat W
Weight (g)	3.6 → 7.7	7.3 → 15.7	420 → 780	960 → 1 250
Operating temperature (°C)	-55 → +85	-55 → +85	-55 → +85	-55 → +85

DEFENSE



AIRCRAFT



HELICOPTER



URBAN AIR MOBILITY



# AUTOMATION & CONTROL

## AUTOMATION CONTROLLERS

THE MILLENIUM LOGIC CONTROLLERS

SPECIALIZED CONTROLLERS



NEW

### THE SMALLEST LOGIC CONTROLLER EVER!

Perfect for small-scale applications:

- › The only highly configurable and multipurpose industrial logic controller with a 17.5 mm (0.69") body
- › Fits in any control panel or machine and supports DIN rail and panel mounting
- › 8 highly configurable I/Os (analog, digital, high-speed, PWM). It can replace dozens of control panel products
- › Built-in Bluetooth communication to give wireless capabilities to your applications.
- › Easy program transfer at a distance

Millenium Slim



### THE CLASSIC LOGIC CONTROLLER

For everyone and for any simple application:

- › Many functions in a single product
- › Smart Design: Adapted for modular panels, can be DIN-rail mount or panel mount
- › Different input power versions (available)
- › Easy to use & free software
- › Expand up to 50 I/Os

Millenium 3



### THE COMMUNICATING LOGIC CONTROLLER

For all your simple applications with connectivity needs:

- › Control at a distance: Access to the front face from your PC, laptop, or mobile devices
- › Monitor your applications (Datalog, Events and FTP server connection)
- › Interact with other devices and program anywhere on your local network (via Ethernet or Modbus RTU)

Millenium Exo



### THE PLC MADE SIMPLE

PLC performance with logic controller simplicity, for your high-end applications:

- › 26 I/Os: Configurable inputs to digital, analog & high-speed. Relay, static and PWM outputs available
- › Network communication: Ethernet (Modbus TCP/IP), Modbus RTU and Bluetooth
- › The ease of use of a simple logic controller

em4 NANO PLC



### THE 5-IN-1 TELECONTROLLER

Control and monitor any application remotely with a cellular network:

- › Cellular Modem: Give cellular capabilities to your application
- › Alert system: Event alerts, status feedback and alarms wherever you are
- › Data logger: Measure and record key parameters
- › Nano-PLC: A PLC in a logic controller body
- › Display: Visualize and change parameters

em4 ALERT



## AUTOMATION CONTROLLERS SOFTWARE



### CROUZET SOFT

- › Easiest and most intuitive visual programming software
- › Pre-programmed application blocks like pump management, flow control, liquid level and many more

M3 Millenium3 Soft Crouzet Soft



### VIRTUAL DISPLAY

Visualize and manage your controller at a distance:

- › View and change parameters
- › Read & write programs
- › Download Datalog
- › Firmware update

CROUZET Virtual Display

Download it for FREE! <https://www.crouzet.com/software/download>

## HMIS



### HMIs

- › 4.3", 7" and 9.7" sizes available
- › Several ways of communication: Ethernet, Modbus RTU, SLin/SLout
- › 2 versions available: High-Performance & Cost-Effective Essential

### HMI SOFTWARE

- › Easy-to-use graphic software & pre-configured communication drivers
- › Wide range of tools to develop the perfect project

Crouzet Touch Soft

## POWER SUPPLIES



### POWER SUPPLIES

- › Compact offer of 24 VDC DIN-Rail Power Supplies
- › 10 W, 30 W, 60 W, 100 W
- › Up to 90 % efficiency

## SENSORS & CONVERTERS



### TEMPERATURE & SIGNAL CONVERTER

- › Convert temperature (Pt 100, 1000, Thermocouple J & K), current and PWM signals to voltage for use with Crouzet's Controllers

### TEMPERATURE SENSORS

- › Air, duct, submersible and NTC Probes designed for simple & direct connection to Crouzet's Automation Controllers

## SOLID STATE RELAYS



NEW

### AC, DC, PANEL MOUNT

- GN, GN+, GNA, GND GNAD
- › Standard Panel Mount (Hockey-Puck)
- › From 10 Amps to 125 Amps
- › Overvoltage protection and IP20 covers included
- › Multipurpose to switch different types of DC & AC loads (Heating, Lighting, Motion and others)



NEW

### AC, DIN-RAIL MOUNT

- GNR, GNR+
- › 22.5 and 45 mm DIN-Rail Mount (Ready-to-use)
- › From 20 Amps to 45 Amps
- › Overvoltage protection and IP20 covers included
- › Multipurpose to switch different types of AC loads (Heating, Lighting, Motion and others)



NEW

### 3-PHASE, DIN-RAIL & PANEL MOUNT

- GN3, GNR3, GNO
- › For frequent start/stop operation of 3-Phase motors or heaters
- › GNO for start, stop & reverse, all-in-one product
- › 25A and 50A versions available
- › Built-in overvoltage protection
- › IP20 touch-safe housing



NEW

### SMART, DIN-RAIL & PANEL MOUNT

GN SMART, GNR SMART Module

- › Standard Panel Mount (Hockey-Puck) and DIN-rail module
- › From 35 Amps to 75 Amps
- › Overvoltage protection and IP20
- › Load and current detection, and SSR faults



NEW

### SPECIALIZED, PANEL MOUNT

GN2, GN4, GNF, GNZ, GNmini

- › GN2 & GN4 multichannel versions with 2 and 4 independent outputs
- › GNZ & GNmini, the low-profile and miniature versions
- › Fast-on terminals for easy installation
- › Ideal for limited-space applications

# AUTOMATION & CONTROL

## TIMERS



### UNIVERSAL DIGITAL Syr-line

- › Super Multifunction with up to 138 operating functions
- › Universal connection
- › High-contrast LED screen
- › Precise time configuration
- › Limits and password settings
- › Program without power supply



### PLUG-IN Syr-line

- › Compact body with 8 or 11 pin connections
- › Easy and quick plug & play
- › Very large dial for an easy set up
- › Single or double output in the same package
- › Protective cover



### HIGH-POWER Syr-line

- › High-Power up to 16 Amps
- › Control more or bigger loads
- › Multi-function or Mono-function
- › Protective cover



### DIGITAL 48X48 Syr-line TMR48-D

- › Big digits in a large digital screen
- › Wide and long visibility
- › Large buttons for an easy and quick programming
- › Water & Dust proof IP66



### DOUBLE OUTPUT Syr-line

- › Double 8 Amps Output in the same 17.5 mm package
- › Second Relay can work instantaneously or delayed
- › **Special functions:** Alternator and Delayed Alternator



### ANALOG 48X48 TMR48

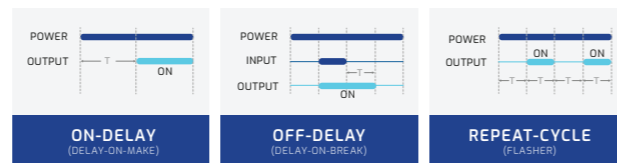
- › Large dial for an easy and quick programming
- › Multi-function or Mono-function
- › 8 or 11 pin connections
- › Multi-range from 0.02 s to 300 h



### CLASSIC Chronos 2

- › Multi-function or Mono-function
- › Multi-range
- › Multi-voltage
- › Screw or spring terminals

## LARGE CHOICE OF TIMING FUNCTIONS



+ All timing functions on the market available

## COUNTERS



### ELECTRONIC

- › Hour counting, Totalizing (impulse), Ratemeter, Chronometer, Batch counting and Preset functions
- › LED, LCD and backlight LCD
- › 24x48 and 48x48 mm sizes available



### ELECTROMECHANICAL

- › Hour counting and Totalizing (impulse) functions
- › Mechanical Dial visualization
- › 15x32, 24x48, 36x37, 36x48 and 48x48 sizes

## MONITORING RELAYS



### ELECTRICAL MONITORING Three-Phase

- › Protect AC motors, HVAC Systems, Pumps, Conveyors, Packaging Machines and other loads
- › **Monitor in 3-phase networks (120 to 480 VAC):** phase sequence, phase failure, imbalance (asymmetry), over and undervoltage



### CURRENT Single-Phase

- › Detect over and under current in a single-phase network
- › **Detection of 3 ranges:** 2-500 mA, 0,1-10 A and 2-20 A
- › **2 packages available:** 17.5 and 35 mm



### VOLTAGE Single-Phase

- › Detect over and undervoltage in a single-phase network
- › **Detection of range:** 0,2 to 600 VAC/DC
- › **2 packages available:** 17.5 and 35 mm



### LEVEL CONTROL Pump up or down

- › Pump-up (filling), Pump-down (emptying)
- › Control one or two levels
- › **Measuring ranges:** 5-100 kΩ, 250-1 MΩ



### PROBES Accessories

- › For use with level control relays
- › Electrode holder and protected suspension sensor

## PNEUMATICS



### LOGIC GATES

- › On Sub-base & Plug-in
- › **Functions:** OR, AND, YES (Buffer), NOT (Inverter)
- › **Operating pressure:** 2 to 8 bar
- › Blue, green, yellow, orange, light grey, dark grey product colors



### TIMERS

- › On Sub-base
- › **Functions:** positive, negative, impulse and frequency generator
- › **Timing range:** 0.1 to 60 s
- › **Frequency range:** 0.02 to 8 Hz
- › **Operating pressure:** 2 to 8 bar



### COUNTERS

- › Totalizing, Preset functions
- › 4, 5, 6 digits with or without reset
- › With or without pre-selection



### POSITION DETECTORS

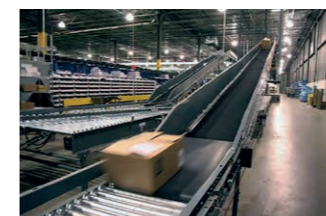
- › Pressure decay sensor, low force position, microvalve, miniature, compact, adjustable stop versions
- › **Permissive Fluids:** Air, inert gas
- › Different plunger, lever, roller and rotary head options



### PRESSURE & VACUUM SWITCHES

- › Vacuum pressure switches with electrical output
- › Adjustable pressure switches with positive or negative output
- › Adjustable vacuum switches with pneumatics positive, negative or electrical output available

INDUSTRIAL



BUILDING



POWER GENERATION



AGRICULTURE





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