

## Dear customers, dear readers,

At **celduc**® we are very proud to be celebrating our 50th anniversary in 2014!

Thanks to our expertise acquired over many years, **celduc**® is now considered a specialist in its field, and we collaborate with the biggest industrial groups worldwide.

We are constantly improving at **celduc® relais** and would like to take advantage of this special occasion to introduce our new corporate visual identity and new logo.

This new version of our product catalogue also gives us an opportunity to reconfirm our goals:

#### Manufacturing innovative products of the highest quality, adapted to customer needs worldwide.

We export 70% of our production at **celduc**® **relais**, and our success is driven by the innovations developed by our R&D teams in our strategic business units – Solid State Relays and Magnetic proximity sensors. Our product ranges **okpac**®, **dual okpac**® and **celpac**® **2G**, which are constantly evolving, are ample proof of that. These product lines have great success with our most demanding customers.

In this new catalogue you will discover our latest technological advances, such as our ECOM temperature controller, current monitor and communication interface in one unit; our micro-processor based products designed for motor control; a high voltage DC Solid State Relay with built-in protection against overload and short-circuiting, as well as built-in protection from overheating; sensors for windows frames with detachable connectors, to name but a few.

If you cannot find the product you need in this catalogue, or on our website - www.celduc-relais.com - which is updated monthly, please do not hesitate to contact us! Our team will be pleased to answer any questions you may have.

We hope you enjoy discovering our latest range in this catalogue, which we know is always highly anticipated and appreciated.

A bientôt!

Charles PERROT Chief Executive Officer



celduc® group specializes in electrical engineering and electronics.

With many years of experience **celduc**® is fully focused on serving its market and customers all over the world. The company was founded in 1964 by Michel Guichard. Today it is split into two separate companies, **celduc**® **transfo & celduc**® **relais**, to channel and focus its expertise into two distinct market sectors.

Set up near Saint-Etienne, the **celduc® group** has played a great part in rising in prosperity of the Rhône-Alpes area and is the only French company producing and selling solid state relays.

Today celduc® group has: - 200 employees

- Two production centers totaling 10 000 square meters
- A worldwide presence

## A strong innovation to challenge the future

**celduc® relais** constant product development and commitment to work with customers to develop bespoke solutions increases our production capacity by around 10 to 15 % per year. Innovation is the challenge that **celduc® relais** has to take up every day by anticipating the market trends and implementing specific knowledge and skills in partnership with industry and research.





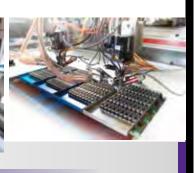


## From design to manufacturing

celduc® relais controls the complete chain: design, development, production, testing and marketing. celduc® relais manufactures the most comprehensive range of Solid State Relays but has also developed its own production equipment to ensure the most efficient manufacturing methods. Thanks to this high-capacity and unique tooling, celduc® products can be found all over the world and have been recognized by the most renowned industrial companies.







## High quality products

Quality is of paramount importance and maintained at all times, aided by our own specially developed in house testing equipment.

**celduc® relais** solid state relays and magnetic sensors are manufactured in accordance with the major international standards (UL, CSA, EN, VDE, CE, ATEX, ...)...







## **Products**



## Solid State Relays











Commonly known as SSR, it represents 70% of the production of celduc® relais.

These innovative and highly efficient components are used to control all types of loads in many industries.

The three major application areas are industrial heating and temperature control, lighting control, and motor control.

Every day new applications calling for reliability, silent switching and long life time utilize our highly innovative solid state relays which provide the small but vital «extras» when compared to our competitor's products.

#### $\rightarrow$ pages 2 to 28.



### Magnetic proximity sensors



Used for monitoring or controlling level, clearance, movement, position and rpm recording, the sky is the limit for these versatile sensors. These sensors are used everywhere in consumer goods or industrial sectors like automotive, aircraft or telecommunications.

They are also extensively used in many automation applications in the manufacturing sector.

#### → pages 29 to 42.



## "Reed" relays & switches



Our Reed switches are used in our own magnetic proximity sensors & reed relays. They have proved to last for more than 50 years. The range meets the demands of an increasing number of new applications thanks to their ease of operation, compact size and reliability.

## Solid State Relays

The advantages Solid State Relays (SSR) have compared to Electro Mechanical Relays (EMR) are well-known. Fully electronics, there is no moving parts inside SSR; they have no audible noise, withstand significant vibration without operating problems, have fast response time, but most of all they have higher life-time expectancy.

Used in appropriate operating conditions, SSRs have nearly unlimited life vs 100K cycles for EMRs. Thanks to their unlimited life-time SSRs don't require any maintenance and prevent manufacturers from unforeseen machines/ production stop, which is a great advantage nowadays with 24h/24 industrial activity.

celduc® relay the sole solid state relay technology made in France for more than 40 years!

## MAIN APPLICATIONS

#### **MISCELLANEOUS HEATING** LIGHTING CONTROL MOTOR **STARTING** Plastic injection molding Public lighting PLC interface Transformer starting **Furnaces** Pumps Cinema Heating element control Power factor corrector Power supply distribution Theatre lamps Solenoid valves Uninterrupted power supplies Compressors systems Airport runway **Contactor Coils** Energy source switching Plastic injection Air conditioning lamps molding Optocoupling of sensors Capacitors control Textile Road lighting Conveyors Home heating Etc. Fans Infrared heating Etc. Drying



Thermoforming

Ftc.









## **S**TANDARDS

The solid state relays and contactors made by celduc® relais are manufactured in compliance with major international standards:

- IEC/EN60947-4-2 for motor control
- IEC/EN60947-4-3 for the other loads
- American and Canadian (UL, cUL, CSA)
- IEC/EN 60950 VDE0805
- IEC60335-1 VDE0700-1
- IEC 62314

Our products also meet the major European directive regarding the CE marking.

- Some of our products fulfil the requirements according to EN 60601-1 (VDE 0750) for medical applications and also the requirements for KOSHA (S-MARK) or for explosive atmospheres ATEX "EX".
- All of our relays okpac® SO (as well as SC relays), celpac® 2G SU/ SA (including the current sense module ESUC) but also the 2-phase SOB and 3-phase SGT comply with the European standard EN61373 for railways: shocks and vibrations tests on relay. Regarding the standards about Fire behavior and fumes NF F16-101, NF F16-102 and EN 45545 calling for the EN 60695-2-10/11/12 (Glow Wire tests (GWFI - GWIT), blue and black plastic covers and encapsulating resin of SO and SU/SA relays are classified (for more detailed information - please contact us).
- The manufacturing process of our relays complies with the ISO9001 requirements version 2008. We incorporate highly reliable components with a very high electromagnetic interference level which give to our products the highest life-time one can find one the market.













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100% compatible with electromechanical relays

#### → Miniature

The SLA / SLD solid state relays are 100% compatible with 5 mm pitch electromechanical relays. They can be soldered direct to PCBs or plugged into all din rail mountable bases. Every type of loads can be switched and those relays can withstand high current peaks that can be produced by loads such as electro valves, engines, coils, indicator, etc. The switching power is 2A/280VAC for SLA and 2.5A/60VDC or 4A/24VDC for SLD relays.

	Product reference	Switching current	Switching voltage	Control voltage	Protec.	Dimensions L x I x h in mm
	SLA01220	2A	12-280VAC	3-10VDC		
AC	SLA02220	2A	12-280VAC	7-20VDC	RC	
	SLA03220	2A	12-280VAC	18-32VDC		
	SLD01205	4A	0-32VDC	3-10VDC		28x5x15
	SLD01210	2,5A	0-60VDC	3-10VDC		
20	SLD02205	4A	0-32VDC	7-20VDC	Transil	
	SLD03205	4A	0-32VDC	18-32VDC		
	SLD03210	2,5A	0-60VDC	18-32VDC		



Other miniature solid state relay options are available on request.



**Product** reference

**Specifications** 

ESD01000 | SLA/SLD base for PCB for one relay



#### → Standard

AC and DC from 1 to 5A, protection by VDR or built in Transil, available in 15,7 mm (ST Series) and 25,4 mm (SP Series).

	Product reference	Switching current	Switching voltage	Control voltage	Protec.	Dimensions LxIxhinmm
	SPA01420	4A	12-275VAC	4-16VDC	_	29x12,7x25,4
S	SPA07420	4A	12-275VAC	12-30VDC / 15-30VAC	VDR _	29,77,725,4
	STA07220	2A	12-275VAC	12-30VDC / 15-30VAC		29x12,7x15,7
	SPD03505	5A	0-30VDC	12-30VDC	_	29x12,7x25,4
	SPD07505	5A	0-30VDC	12-30VDC / 15-30VAC	_	29x12,7x25,4
O	STD03205	2,5A	0-30VDC	12-30VDC	Transil	
Ď	STD03505	5A	0-30VDC	12-30VDC	Iransii	00v10 7v15 7
	STD03510	5A	0-68VDC	12-30VDC		29x12,7x15,7
	STD07205	2,5A	0-30VDC	12-30VDC / 15-30VAC	_	



Our STD and SPD modules can be modified, on request, with an output voltage of 100VDC. Other control voltages are available on request.



Product reference

**Specifications** 

**ESD05000** SP/ST base for DIN rail for one relay





# Interface relays

## XK

Interface relays to control loads such as resistors, indicators, solenoids, transformers, motors, power contactor coils. These DIN-rail mounted products are available with AC and DC output options. They can also be supplied as dedicated motor control variants such as 2 and 3 phase switching and motor rotation reversal. All are fitted with LED indicators.

	Product reference	Switching current	Switching voltage	Control voltage	Protec.	Specifications	Dimensions mm
	XKA20420	5A	12-275VAC	6-30VDC	VDR_	_	
	XKA20420D	5A	12-275VAC	6-30VDC	VDR		12,2x76,4x53
	XKA20420R	5A	12-275VAC	6-30VDC	VDR		
ပ	XKA70420	5A	12-275VAC	15-30VAC/DC	VDR	1 pole AC zero-cross output	
Ø	XKA70440	5A	12-440VAC	15-30VAC/DC	VDR		17,2x76,4x53
	XKA90440	5A	12-440VAC	150-240VAC/DC	VDR		
	XKH20120	10A	12-280VAC	10-32VDC	_		25x76,4x65
	XKA20421	5A	12-275VAC	5-30VDC	VDR	1 pole AC random output	12,2x76,4x53
	XKD10120	1A	2-220VDC	5-30VDC	diode		
	XKD10306	3A	2-60VDC	5-30VDC	diode		12,2x76,4x53
O	XKD11306D	3A	2-60VDC	5-30VDC	diode	1 pole DC output	
Ω	XKD70306	ЗА	2-60VDC	10-30VAC/DC	diode		12,2x76,4x53
	XKD90306	ЗА	2-60VDC	90-240VAC	diode_		12,2110,4100
	XKLD31006	10A	12-36VDC	10-30VDC	diode	DC output - MOSFET technology	12,2x76,4x53





Suffix D: removable terminals.
Suffix R: removable spring terminals.
XKH - with integrated heatsink

## XKLD0020 has all protections included and is designed for inductive loads with high switching frequency

- Diagnostic status output (potential free)
- Control visualization by green LED
- → Output DC visualization by red LED
- → Built-in clamping voltage
- → Built-in free wheel diode
- → This product also includes a fuse on board to protect the installation

·	Product reference	Switching current	Switching voltage	Control voltage	Protec.	Specifications	Dimensions mm
DC	XKLD0020	4A	10-100VDC	18-32VDC	VDR+diode	1 pole DC output	36x78x61





XKM22440         5AC-51/2,5AC-53         24-460VAC         15-40VDC         VDR         2 poles motor switching control         25,2x76,4x53           XKM23440         5AC-51/2,5AC-53         24-460VAC         12-35VDC         VDR         3 poles motor switching control         47,5x76,4x53           XKR24440         5AC-51/2,5AC-53         24-460VAC         15-40VDC         VDR         AC motor change-over control	Product reference	Switching current		Control voltage	Protec.	Specifications	Dimensions mm
XKR24440 5AC-51/2 5AC-53 24-460VAC 15-40VDC VDR AC motor change-over control	XKM22440	5AC-51/2,5AC-53	24-460VAC	15-40VDC	VDR	2 poles motor switching control	25,2x76,4x53
<b>XKR24440</b> 5AC-51/2.5AC-53 24-460VAC 15-40VDC VDB AC motor change-over control	XKM23440	5AC-51/2,5AC-53	24-460VAC	12-35VDC	VDR	3 poles motor switching control	47,5x76,4x53
74.1.2.1.1.0   0.1.0 0.1.2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	XKR24440	5AC-51/2,5AC-53	24-460VAC	15-40VDC	VDR	AC motor change-over control	58,2x76,4x53
XKRD30506 5A-DC 12-24VDC 7-30VDC diode DC motor change-over control	XKRD30506	5A-DC	12-24VDC	7-30VDC	diode	DC motor change-over control	30,2x10,4x33



The ready to use module XKRD30506 for Din-Rail mounting comprises 4 Solid State relays wired as a reverser to be used to change the direction of a DC motor (100W @ 24Vdc).





The SK range for PCB mounting is available in different models :

SKA/SKB (AC output) or SKD/SKLD (DC output - see pages 25-26)

- $\rightarrow$  SKA up to 5A 230 or 400VAC with built-in voltage protection, ideal for solenoid or motor control.
- $\rightarrow$  SKB up to 5A 230 or 400VAC for resistive loads.

	roduct ference	Current	Switching voltage	Control voltage	LED	l²t	Protec.	Specifications	Dimensions mm	
SK	541101	2,5A	24-280VAC	3-30VDC	no	50A2s	-	AC zero-cross output / normaly closed	40x11x21	
SK	A10420	5A	12-275VAC	2,5-10VDC	no	50A2s	VDR		1	
SK	A20420	5A	12-275VAC	4-30VDC	no	50A2s	VDR			
SK	A10440	5A	12-460VAC	2,5-10VDC	no	50A2s	VDR	AC zero-cross output /		
SK	A11440	5A	12-460VAC	3-10VDC	yes	50A2s	VDR	most types of loads		
SK	A20440	5A	12-460VAC	4-30VDC	no	50A2s	VDR			
SK	A20460	5A	24-600VAC	5-30VDC	no	72A2s				
									40.040.005.4	
SK	A20421	5A	12-275VAC	4-30VDC	no	50A2s	VDR	100000000000000000000000000000000000000	43,2x10,2x25,4	
SK	A20441	5A	12-460VAC	4-30VDC	no	50A2s	VDR	AC random output /		
SK	A21441	5A	12-460VAC	7-30VDC	yes	50A2s	VDR_	most types of loads		
					-					
SKI	B10420	5A	12-280VAC	3-10VDC	no	50A2s		AC /		
SKI	B10440	5A	24-600VAC	3,7-10VDC	no	72A2s	_	AC zero-cross output /		
SKI	B20420	5A	12-280VAC	8-30VDC	no	50A2s		resistive loads		



SKL for AC output with a ceramic substrate that can be mounted on a heatsink. The SKL is available with current ratings from 16A

For the power element, our SKL use TMS2 technology reducing thermal stress and considerably improving life expectancy. Ideal for motor or lamps control (I²t up to 5000 A²s) with high inrush current as well as heating applications. Easy to protect against short circuit with micro circuit breakers.

Product reference	Max. current with WF032000	Thyristor rating	Switching voltage	Control voltage	l²t	Specifications	Dimensions mm
SKL10120	16A	16A	12-280VAC	4-14VDC	128A <sup>2</sup> s		
SKL10220	21A	25A	12-280VAC	4-14VDC	312A <sup>2</sup> s		
SKL10240	22A	25A	24-600VAC	4-14VDC	450A2s		
SKL10260	22A	25A	24-690VAC	4-14VDC	1150A <sup>2</sup> s		
SKL10540	27A	50A	24-600VAC	4-14VDC	1800A <sup>2</sup> s	AO	
SKL10560	27A	50A	24-690VAC	4-14VDC	1800A2s	AC zero-cross	
SKL20120	16A	16A	12-280VAC	8-32VDC	128A2s	output	40.40004.5
SKL20220	21A	25A	12-280VAC	8-32VDC	312A2s		43,4x6,3x24,5
SKL20240	22A	25A	24-600VAC	8-32VDC	450A2s		
SKL20520	27A	50A	12-280VAC	8-32VDC	1800A2s		
SKL20740	30A	75A	24-600VAC	8-32VDC	5000A2s		
SKL10521	27A	50A	12-280VAC	3-14VDC	2450A2s	A O	
SKL20241	22A	25A	24-600VAC	8-32VDC	450A <sup>2</sup> s	AC random output	
See DC outnut i	models nages 2	25-26					



DC output models pages 25-26.



WF032000	Heatsink for SKL L=150mm 2,6-3 K/W
WF042000	Heatsink for SKL L=100mm 3,6-3 K/W
1L941000	Clip for SKL on WF03/04
1L942000	Clip for SKL with screw for other heatsinks







### SKH

The SKH range is a "ready to use" range with integrated heatsink.

Product reference	Output current	Output current with ventilation	Switching voltage	Control voltage	l²t	Dimensions mm
SKH10120	10A @ 20°C	16A	12-280VAC	4-14VDC	128A <sup>2</sup> s	
SKH10240	10A @ 25°C	25A	24-600VAC	4-14VDC	450A2s	40.6 v 00 v 05.7
SKH20120	10A @ 20°C	16A	12-280VAC	8-32VDC	128A2s	43,6 x 22 x 35,7
SKH20240	10A @ 25°C	25A	24-600VAC	8-32VDC	450A <sup>2</sup> s	



Other references available - please contact us.

### SN8

This relay is designed for PCB applications and when fitted with suitable heatsink, can control heavy loads in an ultra-miniature, physically compact package.

Product reference	Current	Switching voltage	Control voltage	l²t	Dimensions mm
SN842100	25A	24-280VAC	3,5-15VDC	260A <sup>2</sup> s	35,05 x 12,70 x 28,32

Other references available: please contact us.



### SHI

Three-phase solid state relay in a single low profile package.

This relay is designed for PCB applications in order to provide control of medium power in three-phase environments.

Product reference	Current	Switching voltage	Control voltage	l²t	Dimensions mm
SHT842300	3x25A	24-280VAC	10-30VDC	260A2s	81,28 x 8,26 x 27,69









Electromagnets , Lamps, Contactors Starting current Id =1,4xIn

SKA





Infrared lamps or lighting lamps Id =10xIn

SKL / SKH



All our solid state relays fitted with back to back thyristors (power products: single phase, two phase, three phase) now use TMS<sup>2</sup> technology with a very high life expectancy compared to the majority of products on the market (application note on request).



## **OKPAC®** Innovation Performances and Design!

- Versatile, easy and quick connections
- Removable IP20
- Same screwdriver for outputs and inputs
- → Tightening on metal baseplate not on plastic
- > Removable control terminals
- SSR, mains and load status.

- Output voltage from 24 to 690 VAC (600V-1200V-1600V peak)
- Very low zero-crossing level
- Large and regulated AC and DC input voltage
- > Control status LED
- > EMC compatible for industrial environment
- UL/cUL, VDE (EN60950), IEC/EN60947-4-3, CE marking
- Itsm up to 2 000A and I2t>20 000A2s
- Protection against circuit breaker.

#### Versatile, easy and quick connections

**POWER WIRING** 



Direct connection by wire or tip

2 x 6 mm2 (AWG10) fine strand i.e. 32A 2 x 10 mm2 (AWG8) solid i.e. 50A



Up to 25mm2 (AWG4) i.e. 85A Up to 50mm2 (AWG1) with or without special adaptations i.e. 150A



CONTROL WIRING



Screws connection (S07 / S08 / S09 / S0L)



Removable spring terminals

Typical applications: Motors (AC-53), inductive loads and phase angle control applications.

- Random or instant switching
- Voltage protection on input (transil) and output (RC and VDR).

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SO745090	50A	12-275VAC	600V	3-32VDC	2 800A2s	
SO763090 SO765090 SO767090 SO768090 SO769090	35A 50A 75A 95A 125A	24-510VAC 24-510VAC 24-510VAC 24-510VAC 24-510VAC	1200V 1200V 1200V 1200V 1200V	3,5-32VDC 3,5-32VDC 3,5-32VDC 3,5-32VDC 3,5-32VDC	1 250A <sup>2</sup> s 2 800A <sup>2</sup> s 7 200A <sup>2</sup> s 16 200A <sup>2</sup> s 24000A <sup>2</sup> s	45 x 58,5 x 30
SO789060	125A	24-690VAC	1600V	3,5-32VDC	22 000A²s_	



These products should be mounted on heatsinks in order to reach nominal current.



## **S**08

Designed for most types of loads

- $\rightarrow$  Zero cross with low zero-crossing level (<12V)
- → Voltage protection on input (transil) with very high immunity according to IEC/EN61000-4-4
- → IP20 protection
- → Control current < 13mA for all the voltage range at any operating temperature
- → Control status LED

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SO842074	25A	12-275VAC	600V	3-32VDC	600A2s	
SO842974	25A	12-275VAC	600V	20-265VAC/DC	600A2s	
SO843070	35A	12-275VAC	600V	3-32VDC	1 250A <sup>2</sup> s	
SO843970	35A	12-275VAC	600V	20-265VAC/DC	1 250A <sup>2</sup> s	
SO845070	50A	12-275VAC	600V	3-32VDC	2 800A <sup>2</sup> s	
SO845970	50A	12-275VAC	600V	20-265VAC/DC	2 800A2s	
SO848070	95A	12-275VAC	600V	3-32VDC	16 200A2s	
SO849070	125A	12-275VAC	600V	3-32VDC	22 000A2s	
SO863070	35A	24-510VAC	1200V	3,5-32VDC	1 250A <sup>2</sup> s	
SO863970	35A	24-510VAC	1200V	20-265VAC/DC	1 250A <sup>2</sup> s	
SO865070	50A	24-510VAC	1200V	3,5-32VDC	2 800A <sup>2</sup> s	
SO865970	50A	24-510VAC	1200V	20-265VAC/DC	2 800A <sup>2</sup> s	45 y 50 5 y 00
SO867070	75A	24-510VAC	1200V	3,5-32VDC	7 200A <sup>2</sup> s	45 x 58,5 x 30
SO867970	75A	24-510VAC	1200V	20-265VAC/DC	7 200A <sup>2</sup> s	
SO868070	95A	24-510VAC	1200V	3,5-32VDC	16 200A <sup>2</sup> s	
SO868970	95A	24-510VAC	1200V	20-265VAC/DC	16 200A2s	
SO869070	125A	24-510VAC	1200V	3,5-32VDC	22 000A2s	
SO869970	125A	24-510VAC	1200V	20-265VAC/DC	22 000A <sup>2</sup> s	
SO885060	50A	24-690VAC	1600V	3,5-32VDC	2 800A <sup>2</sup> s	
SO885960	50A	24-690VAC	1600V	20-265VAC/DC	2 800A <sup>2</sup> s	
SO887060	75A	24-690VAC	1600V	3,5-32VDC	7 200A <sup>2</sup> s	
SO888060	95A	24-690VAC	1600V	3,5-32VDC	16 200A <sup>2</sup> s	
SO889060	125A	24-690VAC	1600V	3,5-32VDC	22 000A <sup>2</sup> s	



HIGH VOL

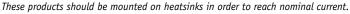
These products should be mounted on heatsinks in order to reach nominal current.

### SNg

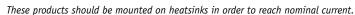
Typical applications: Resistive loads (AC-51)

- → Zero cross
- → Control status LED
- $\rightarrow$  IP20 protection

SO9 range with regulated control current - control current <13mA							
Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm	
SO941460	12A	12-280VAC	600V	3-32VDC	128A2s		
SO942460	25A	12-280VAC	600V	3-32VDC	600A <sup>2</sup> s		
SO943460	40A	12-280VAC	600V	3-32VDC	1 250A <sup>2</sup> s		
SO945460	50A	12-280VAC	600V	3-32VDC	2 800A <sup>2</sup> s	45 x 58.5 x 30	
SO963460	40A	24-600VAC	1200V	3,5-32VDC	1 250A <sup>2</sup> s	45 X 56,5 X 30	
SO965460	60A	24-600VAC	1200V	3,5-32VDC	2 800A2s		
SO967460	90A	24-600VAC	1200V	3,5-32VDC	7 200A <sup>2</sup> s		
SO96846T	95A	24-600VAC	1200V	3,5-32VDC	11 250A <sup>2</sup> s_		
Those products s	hauld ha maun	أوالمناهم المراجع المراجع المراجع		ach nominal current			



SO9 range wit	SO9 range with simplified input								
Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm			
SO942860	25A	12-280VAC	600V	15-32VAC/10-30VDC	600A <sup>2</sup> s	15 y 50 5 y 20			
SO942960	25A	12-280VAC	600V	185-265VAC/DC	600A2s	45 x 58,5 x 30			



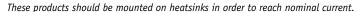


## SOL flatpac®

#### → low profile (h=16,3mm)

Flatpac® SSRs are mainly designed for applications where a PCB is used on the input, possibly on the output side. In fact the small size of this relay makes it easy to use when room is restricted. Wiring will be facilitated as this relay also allows input or output cables to go any direction.

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SOL942460	25A	12-280VAC	600V	3-32VDC	600A <sup>2</sup> s	
SOL942960	25A	12-280VAC	600V	185-265VAC/DC	600A <sup>2</sup> s	56 x 58,5 x 16,3
SOL965460	50A	24-600VAC	1200V	3,5-32VDC	2 800A <sup>2</sup> s	





### SOR

With removable input connector - Spring terminals. Designed for most types of loads.

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions   mm
SOR842074	25A	12-275VAC	600V	3-32VDC	600A <sup>2</sup> s	
SOR865070	50A	24-510VAC	1200V	3,5-32VDC	2 800A <sup>2</sup> s	45 x 58,5 x 30
SOR867070	75A	24-510VAC	1200V	3,5-32VDC	7 200A <sup>2</sup> s	

These products should be mounted on heatsinks in order to reach nominal current.



### SC

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm
SC741110	12A	12-280VAC	600V	3-30VDC	72A <sup>2</sup> s		
SC744110	40A	12-280VAC	600V	3-30VDC	612A <sup>2</sup> s		
SC762110	25A	24-520VAC	1200V	4-30VDC	265A <sup>2</sup> s	Random	
SC764110	50A	24-520VAC	1200V	4-30VDC	1500A <sup>2</sup> s	Handom	
SC764910	50A	24-520VAC	1200V	90-240VAC/DC	1500A2s		
SC769110	125A	24-520VAC	1200V	4-30VDC	20000A2s_		
SC841110	12A	12-280VAC	600V	4-30VDC	72A2s		
SC841910	12A	12-280VAC	600V	90-240VAC/DC	72A2s		
SC842110	25A	12-280VAC	600V	4-30VDC	312A <sup>2</sup> s		
SC844110	40A	12-280VAC	600V	4-30VDC	612A <sup>2</sup> s	Zero-cross /	
SC862110	25A	24-520VAC	1200V	5-30VDC	265A <sup>2</sup> s	most types of	44,5 x 58,2 x 27
SC864110	50A	24-520VAC	1200V	5-30VDC	1500A <sup>2</sup> s	loads	
SC864810	50A	24-520VAC	1200V	17-80VAC/DC	1500A <sup>2</sup> s	loudo	
SC864910	50A	24-520VAC	1200V	90-240VAC/DC	1500A <sup>2</sup> s		
SC867110	75A	24-520VAC	1200V	5-30VDC	5000A <sup>2</sup> s		
SC869110	125A	24-520VAC	1200V	5-30VDC	20000A <sup>2</sup> s		
					_		
SC942110	25A	12-280VAC	600V	4-30VDC	312A <sup>2</sup> s	_	
SC942160	25A	12-280VAC	600V	4-30VDC	312A <sup>2</sup> s	Zero-cross /	
SC947160	75A	12-280VAC	600V	4-30VDC	5000A <sup>2</sup> s	resistive loads	
SC965160	50A	24-600VAC	1200V	5-30VDC	1500A <sup>2</sup> s	AC-51	
SC967100	75A	24-600VAC	1200V	5-30VDC	5000A <sup>2</sup> s		



 See also our okpac® range (pages 8 and 9)

These products should be mounted on heatsinks in order to reach nominal current.

## SCO

#### → Four-Leg Solid State Relays

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm	Led	
SCQ842060	4x25A	12-280VAC	600V	3-32VDC	288A <sup>2</sup> s	44,5 x 58,2 x 274	yes	ı

These products should be mounted on heatsinks in order to reach nominal current.





## o celpac® The 22,5mm pitch SSR solution

#### **Performances & reliability**

#### **Price-effective and compact solution**

- Fixing screws compatible with all hockey puck style relays (celduc SO and SC range),
- Maximum voltage up to 1600V (690VRMS), 600VAC and 1200VAC as standard,
- Thyristor rating up to 75A,
- → Large input range: 3-32VDC with regulated current models,
- AC input control available,
- → Input status yellow LED,
- Over-voltage protection on input,
- New generation of TMS<sup>2</sup> technology for thyristors for a longer life expectancy,
- Quick and easy connections,
- Designed according to European standards EN60947-4-3 (IEC947-4-3) and EN60950 (VDE0805 reinforced insulation) -IEC62314-UL-cUL,
- → IP20 protection with removable flaps (SU range) or cover (SA range),
- → Other protection devices available as an option: RC snubber, VDR, self turn-on.

- → The 22,5 mm pitch of our Solid State contactors reduces space to the minimum,
- Reduced assembling time, easy cabling,
- Reduced maintenance thanks to a very long life expectancy,
- One single screw driver for input and output.



**SA range** with screw connection on inputs.

## SA

- → Transparent protective cover
- → For mounting on your heatsink or panel mount
- ightarrow SA8 : designed for most types of loads / integrated VDR protection
- → SA9 : designed for resistive loads AC-51

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SA842070	25A	12-275VAC	600V	3-32VDC	600A2s	
SA941460	12A	12-280VAC	600V	3-32VDC	128A2s	
SA942460	25A	12-280VAC	600V	3-32VDC	450A2s	22,5 x 90 x 42
SA945460	50A	12-280VAC	600V	3-32VDC	1 680A <sup>2</sup> s	
SA963460	35A	24-600VAC	1200V	3,5-32VDC	882A <sup>2</sup> s	
SA965460	50A	24-600VAC	1200V	3,5-32VDC	1 680A <sup>2</sup> s	

These products should be mounted on heatsinks in order to reach nominal current.

#### → SAx9: designed for resistive loads AC-51. → Transparent protective cover $\rightarrow$ "Ready to use" on 22,5 and 45mm heatsinks Max.switching **Product Thyristor** Switching **Dimensions** Control voltage $I^2t$ current at rating voltage reference voltage mm 25°C SAL941460 12A 12A 12-280VAC 600V 3-32VDC 128A2s SAI 942460 25A 23A 12-280VAC 600V 3-32VDC 450A2s 22,5 x 90 x 112 SAL963460 35A 30A 24-600VAC 1200V 3,5-32VDC 882A2s SAL965460 50A 32A 24-600VAC 1200V 3,5-32VDC 1 680A2s SAM943460 35A 32A 12-280VAC 6001/ 3-32VDC 882A2s 45 x 90 x 112 SAL/SAM with low input current - control current <10mA SAL961360 24-600VAC 15A 15A 1200V 6-32VDC 882A2s 22.5 x 90 x 112 SAL962360 25A 23A 24-600VAC 1200V 6-32VDC 882A2s SAM963360 32A 24-600VAC 6-32VDC 35A 1200V 882A2s 45 x 90 x 112 SAM965360 50A 24-600VAC 1 680A2s 45A 1200V 6-32VDC

## o celpac<sup>®</sup>26

The 22,5mm pitch SSR solution!
Smart Solid State Relays with optional modules



**SU range** with pluggable connector on inputs.

### SU

- → Removable flaps for protection
- → For mounting on your heatsink or panel mount.
- → SU7 : designed for motors AC-53 and inductive loads. Also use in phase angle control systems.
- → SU8 : designed for most types of loads / integrated VDR protection
- $\rightarrow$  SU9 : designed for resistive loads AC-51.

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SU765070	50A	24-510VAC	1200V	3,5-32VDC	1 680A <sup>2</sup> s	
SU842070	25A	12-275VAC	600V	3-32VDC	600A2s	
SU842770	25A	12-275VAC	600V	18-30VAC/DC	600A <sup>2</sup> s	
SU842970	25A	12-275VAC	600V	180-240VAC	600A2s	
SU865070	50A	24-510VAC	1200V	3,5-32VDC	1 680A <sup>2</sup> s	
SU865970	50A	24-510VAC	1200V	180-240VAC	1 680A <sup>2</sup> s	22,5 x 90 x 42
SU867070	75A	24-510VAC	1200V	3,5-32VDC	7 200A <sup>2</sup> s	
SU942460	25A	12-280VAC	600V	3-32VDC	600A2s	
SU963460	35A	24-600VAC	1200V	3,5-32VDC	882A <sup>2</sup> s	
SU965460	50A	24-600VAC	1200V	3,5-32VDC	1 680A <sup>2</sup> s	
SU967460	75A	24-600VAC	1200V	3,5-32VDC	7 200A <sup>2</sup> s	



These products should be mounted on heatsinks in order to reach nominal current.

## SUL/SUM

- → Removable flaps for protection
- $\rightarrow$  "Ready to use" on 22,5 and 45mm heatsinks
- → SUx7 : designed for motors AC-53 and inductive loads. Also use in phase angle control systems.
- → SUx8 : designed for most types of loads / integrated VDR protection
- → SUx9 : designed for resistive loads AC-51

Product reference	Thyristor rating	Max.switching current at 25°C	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm	
SUL765070	50A	32A	24-510VAC	1200V	3,5-32VDC	1 680A2s		
SUL842070 SUL842770	25A 25A	23A 23A	12-275VAC 12-275VAC	600V 600V	3-32VDC 18-30VAC/DC	600A <sup>2</sup> s		
SUL842970 SUL865070 SUL865770	25A 50A 50A	23A 32A 32A	12-275VAC 24-510VAC 24-510VAC	600V 1200V 1200V	160-240VAC 3,5-32VDC 18-30VAC/DC	600A <sup>2</sup> s 1 680A <sup>2</sup> s 1 680A <sup>2</sup> s		
SUL865970 SUL867070	50A 50A 75A	32A 35A	24-510VAC 24-510VAC 24-510VAC	1200V 1200V 1200V	160-240VAC 3,5-32VDC	1 680A <sup>2</sup> s 7 200A <sup>2</sup> s	22,5 x 90 x 112	9
SUL942460 SUL963460 SUL965460 SUL967460	25A 35A 50A 75A	23A 30A 32A 35A	12-280VAC 24-600VAC 24-600VAC 24-600VAC	600V 1200V 1200V 1200V	3-32VDC 3,5-32VDC 3,5-32VDC 3,5-32VDC	600A <sup>2</sup> s 882A <sup>2</sup> s 1 680A <sup>2</sup> s 7 200A <sup>2</sup> s		
SUM865070 SUM867070	50A 75A	45A 45A	24-510VAC 24-510VAC	1200V 1200V	3,5-32VDC 3,5-32VDC	1 680A <sup>2</sup> s 7 200A <sup>2</sup> s	45 x 90 x 112	







Two modules are available directly pluggable on our SSR type SU and SUL



#### Save room / Save costs / Add more functions

### **Current monitoring module**

## **ESUC**

(Combined with our SU/SUL)

#### ADD to your SSR

Diagnostic information for up to 5 heaters in parallel with:

- Permanent load current monitoring,
- Current teaching function,
- 2 alarm thresholds (+/-16%)
- Partial load break detection,
- Open load detection,
- Detection of short-circuited SSR.

Product reference	Current range	Control
ESUC0450	2-40A	8-30VDC
ESUC0480	2-40A	24-45VDC

#### Why choosing this function?

- Quick fault detections (instantaneous alarm).
- Maintenance.
- To detect when a heater is broken which brings problems and is difficult to locate.
- > To maintain good quality production for plastic/rubber machines (specially thermosetting machines).
- 22.5mm wide with integrated heatsink and DIN rail adaptor.

### Temperature controller PID, current monitor and communication interface in one unit

## **ECO**M0010

(Combined with our SU/SUL)

#### ADD to your SSR

- Temperature controller with:
  - PID with automatic or manual settings,
  - Insulated inputs for J, K, T, E thermocouples, PT100 to come
  - Auxiliary output for heating, cooling, alarm or to control a 3 phase Solid State Relay,
  - Loop and heater break alarms.
- Current monitoring and alarms up to 50A.
- RS485 communication interface / Modbus RTU (others on request)
- Power supply: 24Vdc +/- 10%

#### Why choosing this function?

- The ECOM is the most compact solution available on the market that incorporates the latest measuring and control technology.
- This solution can answer the needs of cost reduction of electrical cabinets (smaller), PLC (less analogue and digital I/O's) and wiring (bus communication).



## Power SSRs with diagnostics

Status of the SSR and the load (resistive load) without external power supply. This range is patented. Status output can be chained. Fault condition alarms:

- Line or load open
- Short circuit output

## celpac®

Product reference	Thyristor rating	Max. swit- ching current at 25°C	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SILD845160	50A	32A	70-280VAC	600V	3-32VDC	1500A2s	
SILD865170	50A	32A	150-510VAC	1200V	3,5-32VDC	1500A2s	22,5 x 80 x 116
SILD867170	75A	35A	150-510VAC	1200V	3,5-32VDC	5000A2s_	



## okpac®

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SOD843180	35A	50-265VAC	600V	7-30VDC	1 250A <sup>2</sup> s	
SOD845180	50A	50-265VAC	600V	7-30VDC	2 800A <sup>2</sup> s	45 x 58.5 x 33.6
SOD865180	50A	150-510VAC	1200V	7-30VDC	2 800A <sup>2</sup> s	45 X 56,5 X 55,6
SOD867180	75A	150-510VAC	1200V	7-30VDC	7 200A <sup>2</sup> s_	



The SOD products should be mounted on heatsinks in order to reach nominal current.

The SOD range is now available with a thermal switch for over-temperature protection. Please consult us.



## Flashing relays

The ST6 blinking relays are 12A 12-50VAC or 25A 180-280VAC solid state flashing devices with 6,3mm quick release type connectors. As soon as the unit is powered, it switches loads at a frequency of 1hz or 2hz. An external switch selects the required frequency (1 or 2hz).

### ST6

Product reference	Switching current	Switching voltage	Peak voltage	Flashing frequency	Dimensions mm
ST600700	12A	12-50VAC	100V	1/2Hz	
ST645000	10A	180-280VAC	600V	1/2Hz	67 x 38 x 37,5
ST647000	25A	180-280VAC	600V	1/2Hz	



These products should be mounted on heatsinks in order to reach nominal current.



#### Solid State Relays with "FASTON" terminals - For a quick connection!

Solid State Relays with "FASTON" terminals are appropriate mainly for the food industry and for switching current < 20A.

celduc® relais offers a wide range of "FASTON" solutions.

## SF

Miniature relays available with "FASTON" or PCB terminals.

Product reference	Thyristor rating	Switching voltage	Control voltage	Specifications	Dimensions mm
SF541310	10A	12-280VAC	4-30VDC	Zero-cross, "FASTON" terminals	
SF542310	10A	12-280VAC	4-30VDC	Zero-cross, PCB terminals	21 x 35,5 x 15
SF546310	25A	12-280VAC	4-30VDC	Zero-cross, "FASTON" terminals_	



These products should be mounted on heatsinks in order to reach nominal current.

## SCF

To control resistive loads. "FASTON" terminals.

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	LED	l²t	Protec.	Dimensions mm
SCF42160	25A	12-280VAC	600V	4-30VDC	yes	312A <sup>2</sup> s		
SCF42324	25A	12-280VAC	600V	12-30VDC	no	312A <sup>2</sup> s	VDR	44,5 x 58 x 33
SCF62160	25A	24-600VAC	1200V	5-30VDC	yes	265A2s		



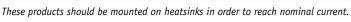
Other references (corresponding to the SC9 range) are available: please contact us. These products should be mounted on heatsinks in order to reach nominal current. E option "large Entraxe" and L option "Faston" 4,8mm on request.

## SCFL/SON

#### → EMC optimised (low electromagnetic emission – low RFI)

These relays are designed for use in applications where low electromagnetic emission is essential: household and electrical appliances, information technology and medical equipments. In compliance with EN 50081-1 Generic Emission Standards for Residential and meets CISPR 22 requirements.

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Dimensions mm
SCFL42100	25A	12-280VAC	600V	4-30VDC	312A2s	44 E v E0 0 v 00
SCFL62100	25A	24-440VAC	1200V	5-30VDC	312A2s	44,5 x 58,2 x 32
SON865040	50A	50-500VAC	800V	5-32VDC	2500A2s	45 x 58.5 x 30



## SP7/SP8

This new range extends the products available with FASTON terminals.

In a full plastic case, these relays can nevertheless switch up to 12 A AC51.

These relays are appropriate for any type of loads (such as heating or single-phase random motor) thanks to high immunity components and an integrated overvoltage protection combined with 800 Upeak power components. This range is well adapted to the food industry.

Product reference	Thyristor rating	Switching current AC-51	Switching current AC-51	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm
SP752120	25A	12A	12-280VAC	800V	3-32VDC	340A <sup>2</sup> s	Random	38 x 66.8 x 22
SP852120	25A	12A	12-280VAC	800V	4-32VDC	340A2s	Zero-cross	30 X 00,6 X 22



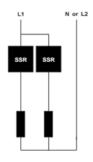
These products should be mounted on heatsinks in order to reach nominal current.

## Two-phase Solid State Relays

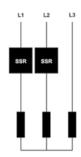
Our two-phase range provides two solid state relays in a compact standard 45 mm enclosure. They are perfectly adapted to three phase applications with breaking of two phases only.



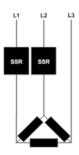
## wiring examples



2 load control wiring Single phase



Two-phase SSR SOB to control heaters connected in star (for balanced low voltage loads without neutral connection)



Two-phase SSR SOB to control heaters connected in delta (for high voltage, balanced or unbalanced loads)

## **SCB5 / SOB5**

#### → with "FASTON" terminals

We offer various kinds of two-phase SSRs with Faston terminals.

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm	Fig n°
SCB564310	2x40A	24-510VAC	1200V	5-30VDC	610A <sup>2</sup> s	zero-cross / 2 controls	44,8 x 58,5 x 27	1
SOB542460	2x25A	12-280VAC	600V	3-32VDC	265A2s	zero-cross / 2 controls	15 v 50 5 v 07	2
SOB562460	2x25A	24-600VAC	1200V	3,5-32VDC	265A2s	zero-cross / 2 controls	45 x 58,5 x 27	2
SOB544330	2x40A	12-275VAC	600V	8-30VDC	882A <sup>2</sup> s	zero-cross / 2 controls	15 v 50 5 v 07	3
SOB564330	2x40A	24-510VAC	1200V	8-30VDC	882A <sup>2</sup> s	zero-cross / 2 controls	45 x 58,5 x 27	3

These products should be mounted on heatsinks in order to reach nominal current.



- Power connection by FASTON terminals
  - Control connection by connector.





 Power and control connections by FASTON terminals



- 3
- Double input with connector CE100F ITWPANCON type or similar.
- Power connection by FASTON 6,3mm terminals with IP20 protection.



## Two-phase Solid State Relays

### SOB

Two-phase relays in okpac® IP20 housing. Removable connector for control allowing many wiring possibilities eg. springs, screw and so on (please consult us).

→ SOB6 : zero-cross - double input with connector CE100F ITWPANCON type or similar

 $\rightarrow$  SOB7 : random

ightarrow SOB8 : zero-cross – designed for most types of loads

→ SOB9 : zero-cross - resistive loads AC-51

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm
SOB665300	2x50A	24-600VAC	1200V	10-30VDC	1680A <sup>2</sup> s	2 controls	
SOB763670	2x35A	24-510VAC	1200V	8-30VDC	1250A2s	2 controls	
SOB765670	2x50A	24-510VAC	1200V	8-30VDC	2500A2s	2 controls	
SOB767670	2x75A	24-510VAC	1200V	8-30VDC	7200A2s	2 controls	
SOB863860	2x35A	24-600VAC	1200V	17-30VAC/DC	882A <sup>2</sup> s	2 controls	
SOB865660	2x50A	24-600VAC	1200V	8-30VDC	2500A2s	2 controls	
SOB867640	2x75A	24-510VAC	1200V	8-30VDC	7200A <sup>2</sup> s	2 controls / transil	45 x 58,5 x 27
							45 X 56,5 X 21
SOB942360	2x25A	12-280VAC	600V	10-30VDC	600A2s	1 control	
SOB942660	2x25A	12-280VAC	600V	10-30VDC	600A2s	2 controls	
SOB943360	2x35A	12-280VAC	600V	10-30VDC	1 250A2s	1 control	
SOB945360	2x50A	12-280VAC	600V	10-30VDC	2 800A2s	1 control	
SOB963660	2x35A	24-600VAC	1200V	10-30VDC	1250A2s	2 controls	
SOB965160	2x50A	24-600VAC	1200V	6-16VDC	1 680A2s	1 control	
SOB965660	2x50A	24-600VAC	1200V	10-30VDC	2500A2s	2 controls	
SOB967660	2x75A	24-600VAC	1200V	10-30VDC	7200A2s	2 controls	





 Connectors to be ordered separately.

On request: 1600V peak version, 75A version, overvoltage protection option available. For SOB6 range: other rating on request, TVS (Transient Voltage Suppression) protection possible.

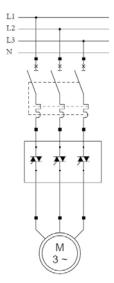
These products should be mounted on heatsinks in order to reach nominal current.

SCB				-	→ SCB8 : ze	ero-cross – control connec ero-cross – designed for m ero-cross – resistive loads	ost types of loads	
Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm	
SCB865300	2x50A	24-600VAC	1200V	10-30VDC	1500A <sup>2</sup> s	1 control		
SCB865600	2x50A	24-600VAC	1200V	10-30VDC	1500A <sup>2</sup> s	2 controls		
							44,8 x 58,5 x 27	
SCB942600	2x25A	12-280VAC	600V	8-30VDC	288A2s	2 controls	44,0 × 30,3 × 21	STATE OF THE STATE
SCB962600	2x25A	24-600VAC	1200V	8-30VDC	265A2s	2 controls		
SCB965600	2x50A	24-600VAC	1200V	8-30VDC	1500A2s	2 controls		
Protection cover : s These products sho			in order to	o reach nominal cu	ırrent.			

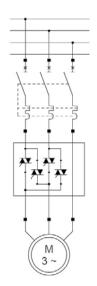
## Three-phase Solid State Relays

celduc® relais offers further ranges of solid-state relays for controlling three-phase loads. Various models are available, with ratings up to 125 amps per phase, with either AC or DC input, random or zero-cross output.

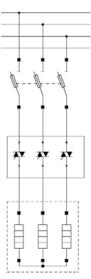
## wiring examples



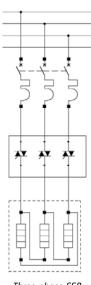
Three-phase SSR SVT8/SGT8 controlling a three-phase motor with a thermal - magnetic protection.



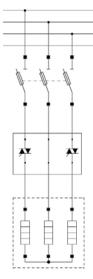
Motor reverser SV9 for three-phase asynchronous motor



Three-phase SSR SCT/SVT/SGT to control heaters connected in star with fuses protection.



Three-phase SSR SCT/SVT/SGT to control heaters connected in delta with circuit-breaker.



2 legs three-phase SSR SGB to control heaters connected in star with fuses protection.

### SCI

→ Three-phase solid state relays in a single phase relay enclosure (width 45mm).

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm
SCT32110	3x12A	12-440VAC	800V	4-30VDC	72A2s	random	44.8 x 58 x 27
SCT62110	3x12A	12-440VAC	800V	4-30VDC	72A2s	zero-cross	44,0 X 30 X 21

These products also come with PCB terminals.

These product should be mounted with heatsink in order to reach nominal current.

### SGB

#### → 2 legs three-phase solid state relays

Our SGB range is designed for controlling three phase loads connected in delta or, if balanced, connected in star without the neutral connection. Two of the three phases are switched by the SSR, the third being directly connected. This reliable solution can be easily integrated into a control system because of simplicity of wiring.

Product reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm
SGB963360E	3x35A	24-600VAC	1200V	10-30VDC	882A <sup>2</sup> s		
SGB965360E	3x50A	24-600VAC	1200V	10-30VDC	1 680A <sup>2</sup> s	zero-cross	100 x 75,15 x 46
SGB967360E	3x75A	24-600VAC	1200V	10-30VDC	7 250A <sup>2</sup> s		



These product should be mounted with heatsink in order to reach nominal current.



## Three-phase Solid State Relays

→ SGT7 / SVT7 - Random

SGT8 / SVT8 - Zero-cross for most types of loads

SGT9 / SVT9 - Zero-cross for resistive loads AC-51

Standard three-phase range available in 40 or 47,6mm housing.

Product reference	Thyristor rating	Switching current AC-51	Switching current AC-53	Switching voltage	Control voltage	l²t	Protec.	Dimensions mm		
SGT range with	SGT range with 40mm housing									
SGT867350	75A	3x75A	3x24A	24-600VAC	8-30VDC	7200A <sup>2</sup> s	RC-VDR			
SGT962360	25A	3x25A	-	24-600VAC	8,5-30VDC	265A2s	-	100 x 73,5 x 39,5		
SGT965360	50A	3x50A	-	24-600VAC	8,5-30VDC	2800A2s	-	100 X 73,5 X 39,5		
SGT965960	50A	3x50A	-	24-600VAC	90-240VAC	2800A2s	-			
SGT967360	75A	3x75A	-	24-600VAC	8,5-30VDC	7200A <sup>2</sup> s	- <u> </u>			
SGT range with 47,6mm housing and square terminals										
SGT767470E	75A	3x75A	3x24A	24-520VAC	4-32VDC	7200A <sup>2</sup> s	VDR _			
SGT769390E	125A	3x125A	3x32A	24-520VAC	8.5-30VDC	22000A2s	RC-VDR			



SGT range with 47,6mm housing and square terminals								
SGT767470E	75A	3x75A	3x24A	24-520VAC	4-32VDC	7200A <sup>2</sup> s	VDR	
SGT769390E	125A	3x125A	3x32A	24-520VAC	8,5-30VDC	22000A <sup>2</sup> s	RC-VDR	
SGT865470E	50A	3x50A	3x12A	24-520VAC	4-32VDC	1680A <sup>2</sup> s	VDR	
SGT962360E	25A	3x25A	-	24-600VAC	10-30VDC	882A <sup>2</sup> s	-	100 x 75,15 x 46
SGT965360E	50A	3x50A	-	24-600VAC	10-30VDC	2800A <sup>2</sup> s	-	
SGT967360E	75A	3x75A	-	24-600VAC	10-30VDC	7200A <sup>2</sup> s	-	
SGT967760E	75A	3x75A	-	24-600VAC	10-24VAC	7200A <sup>2</sup> s	-	
SGT967960E	75A	3x75A	-	24-600VAC	90-240VAC	7200A <sup>2</sup> s	-	
SGT968360E	95A	3x95A	-	24-600VAC	10-30VDC	16200A <sup>2</sup> s	- <u> </u>	
Protection cover .	coo accorco	rioc (1 V 1 0 0 0 0 0	1					



prefered

Protection cover: see accessories (1K199000).

These products should be mounted with heatsink in order to reach nominal current.

On request: 230Vac version.

Three-phase range with IP20 protection housing to control resistive loads (AC-51) or for motor control (AC-53). These relays have LED as well as RC and VDR network protection. Available in 40 or 47,6mm housing.

Max.wire size = 10mm² terminals, which limits the switching current to 50A (see technical data-sheet).

Product reference	Thyristor rating	Switching current AC-51	Switching current AC-53	Switching voltage	Control voltage	l²t	Protec.	Dimensions mm
SVT range with	40mm housi	ng						
VT764394	50A	3x50A	3x12A	24-520VAC	8,5-30VDC	2800A <sup>2</sup> s	RC-VDR	
SVT864374	50A	3x50A	3x12A	24-520VAC	10-32VDC	2800A <sup>2</sup> s	VDR	
VT867394	75A	3x75A	3x24A	24-520VAC	8,5-30VDC	7200A <sup>2</sup> s	RC-VDR	
SVT867994	75A	3x75A	3x24A	24-520VAC	90-240VAC	7200A2s	RC-VDR	
VT869394	125A	3x125A	3x32A	24-520VAC	8,5-30VDC	22000A2s	RC-VDR	100 y 76 y 66 6
SVT869994	125A	3x125A	3x32A	24-520VAC	90-240VAC	22000A <sup>2</sup> s	RC-VDR	100 x 76 x 56,5
SVT965360	50A	3x50A	_	24-600VAC	8,5-30VDC	2800A <sup>2</sup> s	_	
VT965760	50A	3x50A	_	24-600VAC	10-30VAC/DC	2800A2s	_	
SVT967360	75A	3x75A	_	24-600VAC	8,5-30VDC	7200A <sup>2</sup> s	_	
SVT967960	75A	3x75A	_	24-600VAC	90-240VAC	7200A <sup>2</sup> s		
SVT range with	47,6mm hou	sing						
VT864394E	50A	3x50A	3x12A	24-520VAC	8,5-30VDC	2800A <sup>2</sup> s	RC-VDR	
VT868394E	95A	3x95A	3x24A	24-520VAC	8.5-30VDC	16200A2s	RC-VDR	
					.,			100 70 505
VT965460E	50A	3x50A	_	24-600VAC	4-32VDC	2800A <sup>2</sup> s	_	100 x 76 x 56,5
VT965960E	50A	3x50A	_	24-600VAC	90-240VAC	2800A <sup>2</sup> s	_	
VT967360E	75A	3x75A		24-600VAC	8,5-30VDC	7200A <sup>2</sup> s		



 To be prefered

These products should be mounted with heatsink in order to reach nominal current.

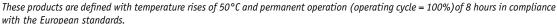
# Three-phase Solid State Relays / Motor control

## SWT / SIT

#### → Three-phase solid state contactors

Three-phase contactors with heatsink and DIN rail mounting. Fitted with a LED indicators, and RC and VDR network protection this range is designed to control resistive loads (AC-51) or for motor control (AC-53).

Product reference	Switching current AC-51	Switching current AC-53	Switching voltage	Peak voltage	Control voltage	l²t	Specifications	Dimensions mm
SIT865390	3x22A	3x12A	24-510VAC	1200V	10-30VAC/DC	2500A <sup>2</sup> s		
SIT865570	3x22A	_	24-510VAC	1200V	10-30VDC	2500A <sup>2</sup> s	Zero-cross	90 x 98 x 122
SIT865990	3x22A	3x12A	24-510VAC	1200V	90-240VAC	2500A <sup>2</sup> s	Zeio-cioss	
SIT867570	3x22A	-	24-510VAC	1200V	10-30VDC	7 200A <sup>2</sup> s		
SWT860330	3x5A	3x5A	24-520VAC	1200V	10-30VAC/DC	265A <sup>2</sup> s		83 x 76 x 72
SWT861730	3x28A	3x16A	24-520VAC	1200V	10-30VAC/DC	5000A2s		
SWT861790	3x28A	3x16A	24-520VAC	1200V	90-240VAC	5000A2s	Zero-cross	110 x 100 x 172
SWT862030	3x32A	3x24A	24-520VAC	1200V	10-30VAC/DC	11000A2s	Zeio-cioss	110 X 100 X 172
SWT862090	3x32A	3x24A	24-520VAC	1200V	90-240VAC	11000A <sup>2</sup> s		
SWT865080	3x50A	_	24-520VAC	1200V	10-30VAC/DC	5000A <sup>2</sup> s_		110 x 145 x 172





## SG9, SV9 AND SW9

#### → AC Reversing switches

These relays are used to reverse the rotational direction of a motor.

The SV9 range is with IP20 housing.

The SW9 range is ready to use with heatsink and DIN rail mounting integrated.

They are all supplied with LED indicators and protection against simultaneous controls (interlocking). Available in 40 or 47,6mm housing.

Product reference	Switching current AC-53	Switching voltage	Control voltage	l²t	Protec.	Specifications	Dimensions mm
SG969100	3x6,6A	24-520VAC	10-30VDC	612A <sup>2</sup> s		3 phase switching	
SG969300E	3x8,5A	24-550VAC	12-30VDC	1500A2s		2 phase switching	100 x 73,5 x 39,5
SG969500E	3x16A	24-550VAC	12-30VDC	5000A2s		2 phase switching	
					roversing		
SV969300E	3x8,5A	24-520VAC	12-30VDC	1500A2s	reversing + time delay	2 phase switching	100 x 76 x 56,5
SV969500E	3x16A	24-550VAC	12-30VDC	5000A <sup>2</sup> s	ume delay	2 phase switching	100 x 76 x 56,5
SW960330	3x4,5A	24-550VAC	12-30VDC	1500A <sup>2</sup> s		2 phase switching	100 x 76 x 72
SW961230	3x8,5A	24-520VAC	12-30VDC	1500A <sup>2</sup> s_		2 phase switching	83 x 90 x 155





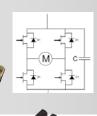
## XKRD AND SGRD

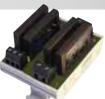
#### → DC Reversing switches

Our SGRD reversing unit for DC motor control offers all the necessary built-in control protections including protection against wiring errors or short circuit on the input. This version includes the interlocking function to avoid control of the two directions at the same time.

The ready to use module XKRD30506 for Din-Rail mounting comprises 4 Solid State relays wired as a reverser to be used to change the direction of a DC motor (100W @ 24Vdc).

Product reference	Switching current	Switching voltage	Peak voltage	Control voltage	Protec.	Dimensions mm
SGRD01006	10A	8-36VDC	60V	8-36VDC	Voltage and current	100 x 73,5 x 50,9
XKRD30506	5A	7-36VDC	60V	7-30VDC	VDR	58,2 x 76,4 x 53









## SYMC

#### → To limit peak energy demand!

This new AC single phase softstarter is engineered to the highest quality and is designed especially for single phase motors 32A/230Vac with starting capacitor (e.g. compressor for heat pumps or refrigerating chambers). This device is designed in compliance with EN60947-4-2.

- → Starting current limited to 45A (NFC15-100)
- Over-load motor protection

→ Diagnostic information

-> Starting and running capacitor: External and not supplied



Product reference

SYMC0001

Pmax motors 230VAC 5500W

Max. Current

Specifications
Internal ByPass

Ready to use

mm 100 x 76 x 58,5

**Dimensions** 

## **S04**

#### → Single phase softstarters

This range of single-phase softstarters is designed for universal motors or lamps.

Product reference	Switching voltage	Switching current	Control voltage	Dimensions mm	Fig n°
SO400200	200-260VAC	35A Coff starter		45 y 50 0 y 07	1
SO400300	200-260VAC	40A*	Soft-starter	45 x 58,2 x 27	2

<sup>\*</sup>Value given at 25°C ambient

For the softstart of other loads (transformers, single-phase motors,  $\ldots$ ) please consult us.





## **SMCV** AND **SMCW**

### → Three-phase AC softstarters

#### Motor control:

Efficient reduction of torque and starting current.

#### Incandescent or infrared lamp starting:

- > Reduction of in rush current
- → Increase in life expectancy.

#### Transformer control (loaded):

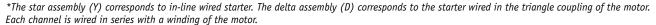
- → Elimination of saturation current
- Improved control and protection.

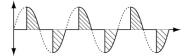
### Whatever your application:

- Diagnostic monitoring of line, load & supply as well as normal operational status
- Better balance of and less interference on starters (full control of the 3 phases!)
- → Simple use easing implementation and adjustments
- → As compact as an electronic contactor.

Product reference	Pmax motor 400VAC Y*   D*		Pmax motor 230VAC  Y*   D*		Max. Current AC53a  Max.   EN60947-4-2		Specifications	Dimensions mm	
SMCV6080	7,5kW	13kW	4,3kW	7,5kW	16A	11,5A	_		
SMCV6110	11kW	19kW	6,4kW	11kW	25A	15,5A	Heatsink not provided	100 x 76 x 58,5	
SMCV6150	15kW	26kW	8,6kW	15kW	30A	22,5A			
SMCW6020	2,5kW	4,3kW	1,4kW	2,5kW	5,6A	4A		83 x 110 x 74	
SMCW6080	7,5kW	13kW	4,3kW	7,5kW	16A	11,5A	Supplied with built-in	83 x 110 x 155	
SMCW6110	11kW	19kW	6,4kW	11kW	25A	15,5A	heatsink	110 x 110 x 180	
SMCW6150	15kW	26kW	8,6kW	15kW	30A	22,5A		110 x 141 x 180	
SMCW6151	15kW	26kW	8,6kW	15kW	30A (AC53b)	22,5A (AC53b)	Ext. Bypass required	83 x 110 x 74	

Common characteristics	Range of voltage and network frequency	Control	Diagnostic output	Operating temperature	Insulation
alues given at 40°C ambient	200-480VAC 40-65Hz	10-24VDC or contact	0-24V 1A AC/DC	-40°C +100°C	4kV





## SIx4 /S04

#### → Single phase angle controllers

This range comes in celpac® housing (ready to use) and okpac® housing (to be mounted on a heatsink). This range is designed for resistive loads.

SO465620 is a SSR based phase angle controller with PWM control input (linear power law response).

Product reference	Switching current at 25°C	t Switching voltage	Control voltage	External power supply required?	Dimensions mm
SIL465000	22A	160-450VAC	0-10V	no	22,5x80x116
SIM465000	32A	160-450VAC	0-10V	no	45 x 80 x 116
Product reference	Thyristor rating	Switching voltage	Control voltage	External power supply required ?	Dimensions mm
SO445020	50A	100-280VAC	0-10V	yes	
SO465020	50A	200-480VAC	0-10V	yes	
SO468020	95A	200-480VAC	0-10V	yes	
SO469020	125A	200-480VAC	0-10V	yes	
SO468120	95A	200-480VAC	0-5V	yes	
SO467501	75A	160-450VAC	1-5V	no	
		100 1001/10			
SO445320	50A	100-280VAC	Potentiometer	yes	45 x 58,2 x 27
SO465320	50A	200-480VAC	Potentiometer	yes	
SO445420	50A	90-265VAC	4-20mA	no	
SO465420	50A	200-480VAC	4-20mA	no	
SO467420	75A	200-480VAC	4-20mA	no	
SO468420	95A	200-480VAC	4-20mA	no	
SO469420	125A	200-480VAC	4-20mA	no	
SO465620	50A	200-480VAC	PWM	yes	



 S04 housing with different control connections.

Other functions possible: phase angle control, full wave pulse control, fast burst control Soft-Starter, timers and flashing relay, ... - please consult us.

### SG4

#### → Single phase angle controllers

This relay is designed to proportionally vary the switching point on a sinusoidal mains supply via an isolated analogue control signal thereby varying the RMS voltage at the terminals of the load. Applications: light dimmer, heating regulation, single phase variable speed control (vibrating feeders, etc).

Model with LED and RC and VDR network.

Product reference	Thyristor rating	Switching voltage	Control voltage	l²t	Dimensions mm
SG441020	10A	115-265VAC	0-10VDC	72A <sup>2</sup> s	
SG444020	40A	115-265VAC	0-10VDC	1500A <sup>2</sup> s	
SG464020	40A	200-460VAC	0-10VDC	1500A <sup>2</sup> s	
SG468020	70A	200-460VAC	0-10VDC	5000A2s	
SG469020	110A	200-460VAC	0-10VDC	20000A2s	
SG444120	40A	115-265VAC	Potentiometer	1500A <sup>2</sup> s	100 70 5 00 5
SG464120	40A	200-460VAC	Potentiometer	1500A <sup>2</sup> s	100 x 73,5 x 39,5
SG469120	110A	200-460VAC	Potentiometer	20000A2s	
SG444420	40A	115-265VAC	4-20mA	1500A <sup>2</sup> s	
SG464420	40A	200-460VAC	4-20mA	1500A <sup>2</sup> s	
SG468420	70A	200-460VAC	4-20mA	5000A2s	
SG469420	110A	200-460VAC	4-20mA	20000A2s	



 No external power supply required.

These products should be mounted on heatsink in order to reach nominal current.



## Analogue control relays

## **SO3**

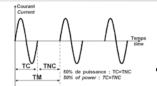
#### → Burst control mode (µP based unit)

This control mode is particularly suitable for resistive loads having a low thermal inertia like short wave Infra Red sources (IR lamps). It allows a very fine control of power according to the analogue input signal while reducing noise emission level (EMC conducted emissions).

This control mode consists in switching streams of full sine waves equally distributed along a fixed modulation period (TM) function of the analogue input signal. The  $\mu$ P constantly computes the number of full sine waves to be switched along the TM period.

Product reference	Thyristor rating	Switching voltage	Control voltage	Dimensions mm
SO367001	75A	400VAC	0-10VDC	45 x 58,2 x 27

Other power rating and / or control on request.



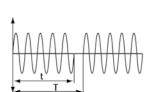
No external power supply required.

## SG5

#### → Full wave pulse controllers

This relay has an analog input isolated from the mains to proportionally vary the cyclic operating ratio of a load (t/T). Control and mains are synchronous and output only has full periods. Models supplied with LED indicators together with RC & VDR network protection.

Product reference	Thyristor rating	Switching voltage	Control voltage	l²t	Dimensions mm
SG541020	10A	230VAC	0-10VDC	72A2s	
SG544020	40A	230VAC	0-10VDC	610A <sup>2</sup> s	
SG564020	40A	400VAC	0-10VDC	610A <sup>2</sup> s	
SG541120	10A	230VAC	Potentiometer	72A <sup>2</sup> s	100 x 73,5 x 39,5
SG564120	40A	400VAC	Potentiometer	610A <sup>2</sup> s	
SG541420	10A	230VAC	4-20mA	72A <sup>2</sup> s	
SG564420	40A	400VAC	4-20mA	610A <sup>2</sup> s	





 No external power supply required.

For higher power ratings and three phase applications, ask for our application notes. These products should be mounted on heatsink in order to reach nominal current.

### SWG5

#### → Single phase power controllers

This range is based on the SG5 controllers. The SWG5 are fitted with heatsinks and DIN rail adapters. Application: single phase heaters.

Product reference	Switching power	Switching voltage	Control voltage	Dimensions mm
SWG50210	2kW	230VAC	0-10VDC	100 x 74 x 56
SWG50810	8kW	230VAC	0-10VDC	100 x 110 x 96

Control voltage 0-5V or potentiometer on request.



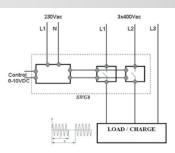
 No external power supply required.

## SWG8

#### → Three-phase power controllers

The SWG8 controllers consist of a control unit (0 to 10 VDC input) and a power unit adapted to three phase load. The control unit has got an analogue input, isolated from the mains, that can proportionally alter the power to the load. Application: three-phase heaters

Product reference	Switching power	Switching voltage	Control voltage	Dimensions
SWG81510	20kW			
SWG82710	27kW			
SWG83610	36kW		0-10VDC	(see technical
SWG84210	42kW	400VAC		()-1()V()(;   `
SWG84810	48kW			data-sneet)
SWG86010	60kW			
SWG88010	80kW			



## SVTA

- Allows control of any type of loads (except capacitive) 3 or 4 wires (neutral), delta or star wiring:
  - Resistive loads for temperature control (infrared lamps, kilns, resistors, ...)
  - Resistive loads for light control (bulbs, halogen, UV, scenes, ...)
  - Loads including a transformer, a coil or a rectifier for voltage control (power supplies, high voltage generators, ...)
  - Motors for voltage speed control (Possibility to reduce the speed depending on the type of motor and machine, motor fans, ...)
- → Six thyristor proportional phase angle controller (Three phase positive and negative cycle control): Balanced currents, less harmonics, ...
- → Softstart and softstop ramps (increases the lifetime expectancy of the assembly)
- Diagnostic functions
- Compact housing.

Product reference	Max. current AC-51	Max. current AC-53a	Control	Dimensions mm
SVTA4650	50A	16A	0-10V	
SVTA4651	50A	16A	Potentiometer	
SVTA4684	95A (*)	25A	4-20mA	100x76x58.5
SVTA4690	125A (*)	30A	0-10V	100070000,0
SVTA4691	125A (*)	30A	Potentiometer	
SVTA4694	125A (*)	30A	4-20mA	

<sup>\*</sup> Max. wire size = 10mm²: double wires or use special adaptors for current > 50A. Please refer to the mounting instructions.



 No external power supply required.

### SGTA

Our SGTA range is a complementary range to the three-phase proportional controllers SVTA.

- → Small housing
- → Wide mains frequency variation (40-65Hz)
- → Built-in overvoltage protection
- → High I²t power elements
- → Fully optoisolated full cycle three phase phase angle controller (balanced currents, less harmonics, ...)
- The minimum voltage applied on the load is the lowest in the market (3% RMS on the nominal voltage against 40% RMS offered by our competitors!)
- → Lots of possible options on request
- → Manufactured in compliance with major international standards EMC, LVD, UL, VDE.

#### Typical applications:

- → Resistive loads for temperature control (infrared lamps, kilns, resistors, ...)
- Resistive loads for light control (bulbs, halogen, scenes, ...)

Product reference	Control		Dimensions mm	
SGTA4650	50A	300-510VAC	0-10V	
SGTA4651	50A	300-510VAC	0-5V	75 45 40040
SGTA4653	50A	300-510VAC	Potentiometer	75,15 x 100 x46
SGTA4654	50A	300-510VAC	4-20mA	

Other rating on request.



• 8-32V external power supply required.



## DC Solid State Relays

These relays are designed to switch DC loads e.g solenoid valves, brakes, indicators, motors (possibly on AC mains under specific conditions). All possible technologies can be available:

MOSFET

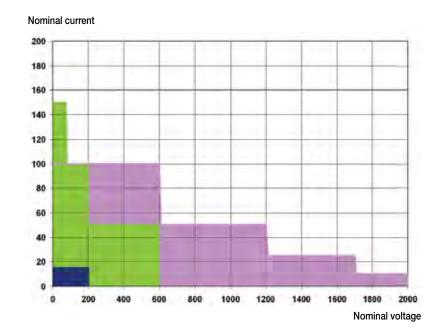
for applications where overcurrent capability and low dissipated power are needed.

Bipolaire

for applications where low control current is needed.

for high voltage applications (> 600 VDC)

For each application the corresponding technology!
Standard range up to 1200VDC, 150A.



MOS	SFE	TEC	HNO	LOGY			celdue: Strotzos C∈ (**)
Product reference	Switching current	Switching voltage	Peak voltage	Control voltage	Integrated protection	Dimensions mm	-
SLD01210 SLD03210 SLD01205	2,5A 2,5A 4A	0-60VDC 0-60VDC 0-32VDC	60V 60V 60V	3-10VDC 18-32VDC 3-10VDC	Transil	28 x 5 x 15	The state of the s
SLD02205 SLD03205	4A 4A	0-32VDC 0-32VDC	60V 60V	7-20VDC 18-32VDC	_		
STD03205 STD03505 STD03510 STD07205	2,5A 5A 5A 2,5A	0-30VDC 0-30VDC 0-68VDC 0-30VDC	60V 60V 60V 60V	12-30VDC 12-30VDC 12-30VDC 12-30VDC 15-30VAC	Transil	29 x 12,7 x 15,7	
SPD03505 SPD07505	5A 5A	0-30VDC 0-30VDC	60V 60V	12-30VDC 12-30VDC 15-30VAC	_	29 x 12,7 x 25,4	
SKLD11006 SKLD31006	12A 12A	7-36VDC 7-36VDC	60V 60V	3-10VDC 7-30VDC	Transil	43,6 x 6,3 x 24,5	
SCM030200 SCM040600 SCM0100200 SCM0150100	30A 40A 100A 150A	0-200VDC 0-600VDC 0-200VDC 0-100VDC	200V 600V 200V 100V	4,5-32VDC 4,5-32VDC 4,5-32VDC 4,5-32VDC	-	44,5 x 58,2 x 27	
SOM02060 SOM020100 SOM020200 SOM04060 SOM040100 SOM040200 SOM06075	20A 20A 20A 40A 40A 40A 60A	5-40VDC 5-60VDC 5-110VDC 5-40VDC 5-60VDC 5-110VDC 5-40VDC	60V 100V 200V 50V 100V 200V 75V	3,5-32VDC 3,5-32VDC 3,5-32VDC 3,5-32VDC 3,5-32VDC 3,5-32VDC 3,5-32VDC	Transil	45x58,5x30	
ESO01000	0-80A	0-130VDC	200V	Protection against line inductance (C1, D2): option for SOM range	Diode + capacitor	45 x 58,5 x 30	



#### BIPOLAR TECHNOLOGY **Switching Switching** Product Integrated **Dimensions** Control voltage reference current voltage voltage protection mm 3-30VDC SKD10306 3A 2-60VDC 60V Diode 43,2 x 10,2 x 25,4 XKD10120 1A 2-220VDC 220V 5-30VDC XKD10306 ЗА 2-60VDC 60V 5-30VDC ЗА XKD11306D 2-60VDC 60V 3-30VDC Diode 12,2 x 76,4 x 53 XKD70306 ЗА 2-60VDC 60V 10-30VAC/DC 60V 90-240VAC/DC XKD90306 ЗА 2-60VDC SCC10506 5A 2-60VDC 60V 3-16VDC SCC20506 Diode 44,5 x 58,2 x 27 5A 2-60VDC 60V 10-32VDC 15A SCC21506 2-60VDC 60V 10-32VDC

#### **ECHNOLOGY** Switching Switching Control Product Peak **Dimensions** Integrated protection reference current voltage voltage voltage SCI0251700 25A 0-1700VDC 1700V 4,5-32VDC Reverse diode 44,5 x 58,2 x 27 SCI0501200 50A 0-1200VDC 1200V 4,5-32VDC Reverse diode SCI0100600 100A 0-600VDC 600V 4,5-32VDC Reverse diode SDI0501700 24-48VDC → over-voltage protection 1700V 24-940VDC 50A 157 x 68 x 83 → load short circuit protection → over-load temperature protection SDI0501710 72-110VDC Products without integrated over-voltage protection (transil or VDR) or having only a Freewheel diode, must be fitted with an external overvoltage protection. The maximum operating voltage is then often reduced to the half of the specified maximum operating voltage.



DC power supplies (converters like choppers, inverters, ...)
Signal switching (testing equipment, ...)
Electro-magnets (induction motor braking, ...)
Heaters (air conditioning in trains, tramways, ...)
Batteries (ships, solar systems, ...)

**DC Motors** (travelling cranes, cranes, vehicles, ...)













On request: « ready to use » products i.e. products including integrated voltage protection, proportional controllers, DC motor reversers ...
Please consult us!







#### Shunting relays: SAS Relays

Airport beacon relay. If a lamp fails, the relais short circuit this lamp. Different configurations available.



#### Softlife range: SVX963350 Get rid of your heatsinks!

Relays combining the assets of dual technology: solid state and electromechanical.

These relays are designed to switch current up to 30A without the need of heatsink.

These relays have LED indicators, RC and VDR protection.

## SPECIAL CUSTOMER PRODUCTS→ Please do not hesitate to consult us.

celduc® relais is a specialist in adapting designs to specific customer applications.

In addition to the very large range of solid state relays, celduc® design specific products according to the customers specifications or adapt products to the customers needs if prices and volumes can justify such developments.



4 SKL SSRs on PCB



#### This device using SSRs controls AC motors in hazardous area.

Control by pushbutton with embedded magnet actuating Reed switches.



#### Solid state contactor for 3 phase motor.

Dry contact control Spring terminals.



**PCB** for single-phase motor softstart



Special development composed of SU SSRs and ESUC modules to control 9 heating elements with partial load

break detection. This system includes all protections.



Motor reverser with 2 electronic cards included 5 SSRs.



## applications notes

#### Application notes on request: a certain number of application notes are available for celduc® customers:

- Principle of solid state relays.
- → Life expectancy of solid state relays: TMS<sup>2</sup> technology.
- Short circuit protection of solid state relays : fuses and circuit breakers.
- > Solid state relays on resistive loads (heating application).
- → Three phase motor.
- Transformer control.
- Incandescent lamp control.
- Discharge lamp control / Application of three phase diagnostic.
- Our products in equipment for the food industry.
- Our products in equipment for the packing industry.
- Our products in equipment for the textile industry.

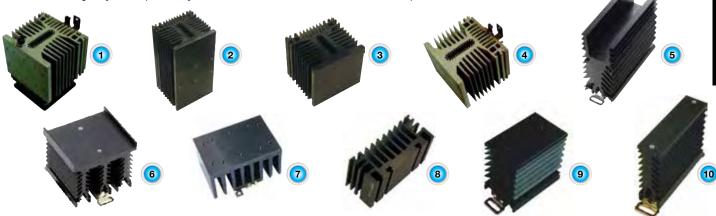
- > Solid state relays in emergency power supplies (UPS).
- → Solid state relays on capacitive loads: power factor corrector (PFC) application.
- > Application of SKL et SKH relays.
- Softstart and reversing relays.
- Softstart relays in transformer control.
- > Softstart relays in incandescent and infrared lamp control.
- Our products in equipment for the electronic industry.
- Our products in equipment for the train industry.
- > Our products in equipment for the renewable energy.

# eatsinks & Accessories

## **HEATSINKS**

Product reference	Thermal characteristics	Specifications	Dimensions mm	Relay type	Fig n°
WF031100	0,3K/W	ventiled for DIN rail or screw - fan supply 230Vac	110 x 120 x 145	SO, SC, SG, SGT, SVT	1
WF031200	0,3K/W	ventiled for DIN rail or screw - fan supply 24Vdc	110 x 120 x 145	SO, SC, SG, SGT, SVT	1
WF050000	0,55K/W	DIN rail adaptor as option	110 x 100 x 200	SO, SC, SG, SGT, SVT	2
WF070000	0,75K/W	DIN rail adaptor as option	110 x 100 x 100	SO, SC, SG, SGT, SVT	3
WF115100	0,9K/W	for DIN rail or screw	110 x 100 x 90	SO, SC, SG, SGT, SVT	4
WF112100	1K/W	for DIN rail or screw	49,5 x 117,5 x 120	SA, SU	5
WF108110	1,1K/W	for DIN rail or screw	89,8 x 81 x 98,02	SO, SC	6
WF121000	1,2K/W	for DIN rail or screw	100 x 40 x 100	SO, SC, SG, SGT, SVT	7
WF210000	2,1K/W	DIN rail adaptor as option	96 x 41 x 55	SO, SC	8
WF151200	2,2K/W	for DIN rail or screw	45 x 73 x 80	SO, SC, SA, SU	9
WF311100	3K/W	for DIN rail or screw	22,5 x 73 x 80	SA, SU	10

The Rth values are given for a temperature of 50°C in calm air. Other dimensions available on request.



## Accessories



#### **PROTECTION COVERS / FLAPS**

1K199000 Protection cover for SGT/SG9 1K460000 Protection cover for SC range (except SCB and 125A rating SC) Protection cover for all SC/SCB range 1K470000 1K522000 Protection cover for SA-SAL

Removable protection flaps for SU-SUL

#### **MARKING LABELS**

marking labels to be mounted on protection flaps 1MZ09000 or covers for SA SU

#### **MOUNTING KITS**

1K523000

1LWP2400

1LK00100 mounting SC-SO-SF on heatsink or SC-SO on 1LD12020 mounting SG-SVT-SV9 on heatsink or 1LD00500 11 K00200 1LK00300 mounting heatsinks on 1LD00400 1LK00700 special kit for high current (okpac range)

#### DIN RAIL ADAPTERS

1LD00400 DIN rail adapter for WF21/07/05 1LD00500 DIN rail adapter for SG/SVT/SV969300 DIN rail adapter for SC/SV8/SO vertical 1LD12020 mounting

THERMAL SEALS RELAY/HEATSINK 5TH15000 thermal grease for 30 relays SG/SVT ou 60 relays SC/SO 5TH21000 thermal precut film for SC/SO 5TH23000 adhesive thermal pads for SC/SO 5TH24000 adhesive thermal pads for SA/SU 1LWP2300 Assembling costs 5TH23000 on SC/SO + 5TH23000

Assembling costs 5TH24000 on SA/SU + 5TH24000

#### **MOUNTING + HEATSINK + DIN ADAPTOR OPTION**

1LWD1202 mounting of SC/SV/SO sur 1LD12020 + 1LD12020

#### **MOUNTING OPTION** (screw kit included) **ONLY IF QUANTITY > 10**

**1LW00000** mounting of relays on heatsink **1LWD0000** mounting of heatsink on DIN rail adaptator

## Magnetic sensors

## MAGNETIC PROXIMITY SENSORS We are the experts !!!

If you are looking for position, presence, level or speed detection, then we will be able to offer a solution from our range of magnetic sensors.

We can even design a specific product for your applications!

At **celduc® relais**, we are eager to offer the best products for your application, thanks to our 45-year experience in the key technologies that we use in our products:

- Reed switch, a dry contact in a sealed glass bulb providing insulation at the same time: a simple, reliable and low cost solution.
- Electronic cell, based on either magneto-resistance or Hall effect, necessary for higher performance, particularly in high frequency operation.

#### Please consult us to have our expertise

## Contents

REED MAGNETIC SENSORS 30 t	o 38
- Level & flow sensors - Sensors for window frames - Safety sensors - Screw position sensors - Tubular position sensors - Sensors for layout on PCB	32 33 34-35 36-37
ELECTRONICAL / HALL EFFECT SENSORS	38
ATEX SENSORS	39
SENSORS FOR LIFTS	40
CONTROL MAGNETS	41
CONTROL WAGNETS	71

REMINDER: Reed switches and magnetic sensors using reed switches can switch AC or DC current. In our technical datasheets the values given for current and voltage are the maximum values. It means that in DC applications it corresponds to the max. switching current and voltage. In AC applications these values are the peak values, to obtain the nominal value you should divide by 1,414.

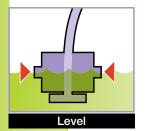
**SPECIFIC** 

ATEX (explosive atmospheres).

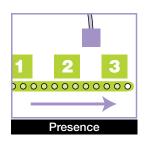
**APPLICATIONS** 

## SCOPE

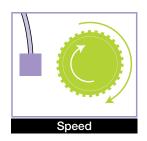
#### **HOME** AIRCRAFT, INDUSTRY SPACE AND ARMY Counting Burglar alarm Cylinder positions Camera shutter control window Fuel/oil level. Machine safety position (blinds) Camera shutter control Advertising panel Lifts Sensors and actuators for Airbus. Actuator position **Alarms** Big and small household goods

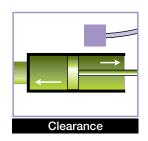


Liquide level Speed control.



Swimming-pools.









- NO / A Form  $\rightarrow$  Normaly Open
- NF / B Form  $\rightarrow$  Normaly Closed
- BISTABLE NO / L Form
- CHANGE-OVER / C Form

Other lengths of cable or wire possible for signifiant quantities.

VERTICAL LEVEL SENSORS

## Reed magnetic sensors



## Level & flow sensors

celduc relais® offers a large range of standard or specific level and flow sensors using Reed switches. Our sensors are available in plastic, brass or stainless steel housing, making it possible to use them with various chemical substances and/or operating temperatures.

With some sensors, it is possible to invert function by reversing the float or using the sensor upside down.

Please see the data sheets for more details.

For specific applications (e.g. potentiometric scale, special level sensors) do not hesitate

to contact us: products can be developed on request.

		1				7	
Product r	eference	PTF01070	PTFA1015	PTFA1103 (1) PTFA1104 (1)	PTFA5001 (1)	PTFA1210	PTFA2115 (1)(2)
Mour	nting	Vertically	Vertically	Vertically	Vertically	Vertically High and low level	Vertically
Contact (float o		1NO	1NO	1NC (PTFA1103) 1NO (PTFA1104)	1NC	1NO+NC	1NO
Connect	ion type	2 wires 70mm	2 wires 1,5m	2 wires 300mm	Cable 2m	Cable (3 wires) 300mm	2 wires 1,5m
	Housing	Polyamide 6/6 resin with glass	Polyamide 6/6 resin with glass	Polypropylene	Polypropylene	Polyamide	Stainless steel
Waterial	Float	fiber content Polypropylene	fiber content Polypropylene	Тотургорують	Гогургорують	Polyurethane	Otali liess steel
Liquid cor		Water	Water	1	1	2	3
Float	travel	10mm	17mm	9mm	10mm	48,5mm	8mm
Max. sw		10VA	10VA	10VA	50VA	Top : 10VA Bottom : 3VA	50VA
Max. sw volt		100Vdc	100Vdc	230Vac	230Vac 350Vdc	Top: 200Vdc Bottom: 100Vdc	230Vac 350Vdc
Max. sw curr		0,5A	0,5A	0,5A	0,5A	Top : 0,5A Bottom : 0,25A	0,5A
Densit	y mini	0,8	0,75	0,7	0,9	0,6	0,75
Worl tempe		0 / 70°C	0 / 70°C	-10 / 80°C	-10 / 80°C	-10 / 85°C	0 / 100°C
Thread		M8 x 1,25	3/8" threading UNC 1,588mm (16 per inch)	1/8" GAS (28 per inch)	M8 x 1,25	3/8" threading UNC 1,588mm (16 per inch	M10 x 1

- (1) Possible to invert the functions by reversing the float
- (2) Available in ATEX version (see page 39)

## liquids compatibility

- Compatible with acid: acetic, citric, formic, lactic, nitric diluted, phosphoric, sulphuric diluted; soda; alcohols: ethanol, methanol, propanol; glycol; mineral oil; water
  - → Not compatible with the following solvents : chloroforme, methylene chloride, trichloroethylene, toluene ; hard acids
- $(2) \rightarrow$  Compatible with fuels, engine oil, kerosene, lubricaring oil, mineral oil, vegetal oil,
  - → Not compatible with almost all acids, methylene chloride
  - → Acceptable resistance to water
- (3) → Compatible with almost all the liquids except hard acids



## Reed magnetic sensors

## working principle

A float fitted with one or more magnets moves with the liquid and actuates, due to its magnetic field, a hermetically sealed reed contact located in the body of the float.



## advantages

- → One moving part.
- → The Reed contact is actuated by a magnetic field only : no contact so no wear.
- → The Reed contact is completely isolated from the liquid so perfectly waterproof.

The above advantages allow a safety use, repetitiveness, precision and minimum maintenance.

			M					
	Product reference	PTFA0100	PTFA3115	PTFA3315 (2)	PTFA3415			
	Mounting	Horizontally External mounting	Horizontally	Horizontally	Horizontally External mounting			
ŝ	Contact status	1NO	1NO	1NO	1NO			
SENSORS	Connection type	2 wires 175mm + Molex connector	2 wires 1,5m	2 wires 1,5m	Cable 1,5m			
	Material	Polyamide 30% glass fiber	Polyamide 30% glass fiber	Polypropylene	Polypropylene			
LEVEL	Liquid compatibility (2)		2	1	1			
	Float travel	50°	50°	50°	50°			
HORIZONTAL	Max. switching power	10VA	50VA	50VA	50VA			
ORIZO	Max. switching voltage	200Vdc	230Vac 350Vdc	230Vac 350Vdc	230Vac 350Vdc			
Ĭ	Max. switching current	0,5A	0,5A	0,5A	0,5A			
	Density mini	0,6	0,6	0,6	0,6			
	Working temperature	0 / 85°C	0 / 85°C	-10 / 100°C (wires/85°C)	-10 / 100°C (wires/85°C)			
	Thread	Specific	Specific	M16 x 2	M16 x 2			
	(2) Available in ATEX version (see nage 39)							

	The second lines			
	Section 1			
	PTA10534 PTA10535	PTA10595		
	Horizontally Short paddle (Lg2= 57mm)	Horizontally Long paddle (Lg2= 77mm)		
	1NO	1NO		
	Cable 0,5m or 2m	Cable 2m		
SENSORS	PPO (NORYL)	PPO (NORYL)		
Ä	Water	Water		
S	-			
FLOW	100VA	100VA		
	230Vac 350Vdc	230Vac 350Vdc		
	1A	1A		
	-	_		
	0 / 80°C	0 / 80°C		
	Specific	Specific		

(2) Available in ATEX version (see page 39).



## applications

HEATING (air-conditioning, heaters, humidifiers)

→ To detect the water level in the tank.

DOMESTIC EQUIPMENT (electronic flush, solar systems)

→ To detect the water level.

FOOD INDUSTRY (coffee machines, vending machines)

→ Check the level of water left in the tank.

MEDICAL EQUIPMENT (sterilising equipment for medical instruments)

→ Check level of water for steam or liquid detergent level.

WATER TREATMENT (water purifying, desalinating)

→ The sensors enable the reserve water level to be established.

SWIMMING POOLS (water treatment, water heating)

Water level and flow.

AUTOMOBILE (radiator liquids level, windscreen washer, engine oil level, brake oil level)

→ Detection of liquids levels.

VARIOUS INDUSTRIES (photo lab equipment, scrubber machines, fuel dispensing systems).





## Reed magnetic sensors

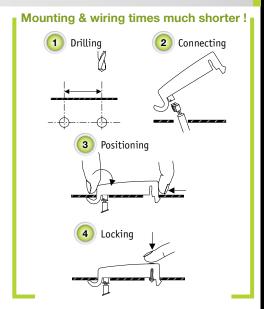
## **SENSORS FOR WINDOW FRAMES**

This new range has been developed to detect position of the window: open or closed (supervising of openings). Typical applications are alarm, heating, air-conditioning systems

#### Main advantages are:

- → Save time for mounting and wiring : pluggable connector, product to be clipped (no fixing screws)
- → Normally open (NO), normally closed (NC), change-over contact, safety current loop
- → Water-proof contact.

			<b>Q</b>	Enlave-			
Prod refere		PWA01500	PWB01500	PWA11500	PWB11500	PWC01500	
Type of o	contact	NO	NC	NO + safety loop	NC + safety loop	Change- over	
Contact	Window open	00	· · ·	0 0	0 0	00	
status	Window closed	·	00	0 0	0-0	°	
Connecti	on type	Cable + PHR2 connector (not included)		Cable + PHR4 connector (not included)			
Cable l	ength	Ref. 2YB20030 : 3m Ref. 2YB20050 : 5m Ref. 2YB20100 : 10m Ref. 2YB20130 : 13m		Ref. 2YB40080 : 8m			
Max. sw pow				10VA			
Max. sw volta				100VDC			
Max. switching current				0,4A			
Activation distance		Depend on the magnet - see technical data-sheet					
Work temper		-40 to +70°C					
Dimen	sions			47,7 x 9,7 x 9,1			







to be screwed



## Magnetic sensor for windows and doors alarms

#### → in compliance with NF324-H58 and EN 50131 (security level : shield 3)

This anti intrusion magnetic sensor is used in doors and windows access control systems for buildings. PNA2P020 is built in two parts: "contact" and "magnet". Contact is open if no magnet (window or door open).

This sensor is built in plastic housing with 2 mounting options:

- Direct mounting embedded version
- Mounting in additional housing: "contact" and "magnet" are fitted into another plastic housing for screw mount top version.

The cable is made with 4 wires: 2 for the switch and 2 for auto-protection circuit.

Product reference	PNA2P020	
Max. switching power	10W	OB .
Max. switching voltage	48Vac 67Vdc	
Max. switching current	1A	



## Reed magnetic sensors









## **SAFETY SENSORS**

The PXS or PSS type products are designed to control the opening of protective devices, machine casings and access doors.

These products, in their basic design and construction, are conform to the applicable European Directive for machinery safety 2006/42/CEE.

Correctly installed with their associated coded magnets and connected to adapted safety modules, they can reach the following safety

level: PLd and PLe according to EN 13849-1 SIL3 according to EN 62061

	colduc pasterio				1	C. C.	N WORLD COLLIE			
Product reference	PXS79150	PXS59150	PXS10350	PXS70150	PSS79050	PSS79150	PSS59050	PSS59150	PSA60010	PSA60020
Contact status	20	O+C	2O + 1C	2O + 1C	20	20	O+C	O+C	10 solid state	10 solid state
Current limiting resistor	10Ω	10Ω	-	10Ω	10Ω	10Ω	10Ω	10Ω	-	-
Max. switching power	3VA	3VA	3VA	3VA	3VA	3VA	3VA	3VA	500VA	500VA
Max. switching voltage	100VDC	100VDC	100VDC	100VDC	100VDC	100VDC	100VDC	100VDC	24- 440VAC	6-440VAC
Max. switching current	100mA	100mA	100mA	100mA	100mA	100mA	100mA	100mA	3A	ЗА
Cable length	Cable 5m	Cable 5m	Cable 5m	Cable 5m	Cable 5m	Cable 5m	Cable 5m	Cable 5m	2 wires 350mm	2 wires 3m
Activation distance	8mm	8mm	8mm	8mm	5mm	5mm	5mm	5mm	12mm	12mm
Associated coded magnet	P2000100	P2000100	P2000100	P2000100	P3000100	P3000100	P3000100	P3000100	P6250000	P6250000
LED option	yes	yes	no	yes	no	yes	no	yes	no	no
Working temperature	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C	-40 to +85°C	-40 to +85°C

## associated coded magnets



Terminals version on request M8 or M12 depends on the model: see data sheet

## **S**CREW POSITION SENSORS

General use screw sensors for industry and household use:

- $\rightarrow$  Rabbet sensors
- $\rightarrow$  Doors opening
- $\rightarrow$  Protection cover presence
- → Household applicances

		Caldical 1/200			14		4	Ca Car
		44,150g.	*					
Product reference	PAA10060	PAA11202	PAB10020	PLA10100	PLA10160	PLA11208	PLA12430	PSL40010
Contact status	NO	NO	NC	NO	NO	NO	NO	NO
Connection type	2 wires / FASTON	2 wires	2 wires + HE14 connector	cable	2 wires	cable	cable	2 wires
Cable length	680mm	275mm	160mm	10m	360mm	800mm	3m	550mm
Max. switching power	12VA	12VA	3VA	12VA	12VA	12VA	12VA	10VA
Max. switching voltage	100VDC	100VDC	100VDC	100VDC	100VDC	250VDC	250VDC	350VDC
Max. switching current	0,4A	0,4A	0,25A	0,5A	0,4A	0,4A	0,4A	0,5A
Activation distance	16mm with P6250000	15mm with P6250000	18mm with P6250000	10mm with P6250000	19mm with P6250000	16mm with P6250000	12mm with P6250000	12mm with P6250000
Working temperature	-40 to +85°C	-40 to +100°C	-40 to +100°C	-40 to +85°C	-40 to +100°C	-40 to +100°C	-40 to +100°C	-40 to +85°C
Dimensions in mm	23x14x6	23x14x6	23x14x6	32x15x6,8	32x15x6,8	32x15x6,8	32x15x6,8	51 x16 x 7
Fixing screws distance	14mm	14mm	14mm	17,5mm	17,5mm	17,5mm	17,5mm	16mm

	September 2								A September 1
Product reference	PLA13701	PLA13730	PLA13750	PLA43403	PLB10060	PLB16701	PLC10040	PLC13701	PSC41000
Contact status	NO	NO	NO	NO	NC	NC	Change- over	Change- over	Change- over
Connection type	cable	cable	cable	cable	cable	cable	cable	3 wires	cable
Cable length	100mm	3m	5m	300mm	3m	100mm	1,5m	100mm	400mm
Max. switching power	12VA	12VA	12VA	100VA	12VA	12VA	NC : 3VA NO : 8VA	NC : 3VA NO : 8VA	100VA
Max. switching voltage	250VDC	250VDC	250VDC	350VDC	250VDC	250VDC	100VDC	100VDC	230VAC 350VDC
Max. switching current	0,4A	0,4A	0,4A	1A	0,4A	0,4A	0,25A	0,25A	3A
Activation distance	10mm with P6250000	10mm with P6250000	10mm with P6250000	12mm with P6250000	4 <d<12mm (magnet provided)</d<12mm 	4mm (magnet provided)	14mm with P6250000	10mm with P6250000	8mm with UR608000
Working temperature	-40 to +100°C	-40 to +100°C	-40 to +100°C	-40 to +100°C	-25 to +85°C				
Dimensions in mm	32x15x6,8	32x15x6,8	32x15x6,8	32x15x6,8	32x15x6,8	32x15x6,8	32x15x6,8	32x15x6,8	51 x 16 x 7
Fixing screws distance	17,5mm	17,5mm	17,5mm	17,5mm	17,5mm	17,5mm	17,5mm	17,5mm	16mm



# Reed magnetic sensors







		1					
				Celduc PBA137ag 3			
Product reference	PB195T00	PB285T00	PB367G00	PB390G00	PBA13725	PBA13780	
Contact status	NO	NC	NC	NO	NO	NO	
Connection type	2 wires	2 wires	2 wires	2 wires	cable	cable	
Cable length	80mm	80mm	80mm	80mm	2,5m	8m	
Max. switching power	50VA	50VA	16VA	16VA	12VA	12VA	
Max. switching voltage	250VAC	250VAC	250VDC	250VDC	250VDC	250VDC	
Max. switching current	1A	1A	0,5A	0,5A	0,4A	0,4A	
Activation distance	7mm with P4160000	6mm with P4160000	6mm with P4159000	13mm with P4160000	13mm with P4160000	13mm with P4160000	
Working temperature	-40 to +100°C	-40 to +100°C	-40 to +100°C	-40 to +100°C	-40 to +100°C	-40 to +100°C	
Dimensions in mm	86x8,5x12,5	86x8,5x12,5	51x8,5x11,5	51x8,5x11,5	51x8,5x11,5	51x8,5x11,5	
Fixing screws distance	75mm	75mm	40mm	40mm	40mm	40mm	

Sensor with metal housing

Product reference	PLMA0100
Contact status	NO
Connection type	1 shielded cable
Cable length	2m
Max. switching power	10W
Max. switching voltage	200VDC
Max. switching current	0,5A
Activation distance	25mm (provided magnet)
Working temperature	-40 to +85°C
Dimensions in mm	88x38x12
Fixing screws distance	69mm

Screw sensors with safety loop (Alarms)

	Man : D	
Product reference	PBA10010	PMG12482
Contact status	NO	NO
Connection type	cable + safety loop	cable + safety loop
Cable length	8m	8m
Max. switching power	12VA	12VA
Max. switching voltage	250VDC	250VDC
Max. switching current	0,4A	0,5A
Activation distance	16mm with P4160000	14mm with P6250000
Working temperature	-40 to +100°C	-25 to +85°C
Dimensions in mm	51x8,5x11,5	33x15x6,8
Fixing screws	40mm	17,5mm

See also our new anti intrusion magnetic sensor with safety loop and designed in compliance with NF324-H58 & EN 50131.

Security level: shield 3 (page 32).

#### High power switching sensors

These sensors allow controlling loads up to 3A.

	TO SECURE			
Product reference	PSA60010	PSA60020		
Contact status	NO	NO		
Max. switching power	500VA	500VA		
Max. switching voltage	24-440VAC	6-440VAC		
Max. switching current	3A	3A		
Cable length	2 wires 350mm	2 wires 3m		
Activation distance	12mm with P6250000	12mm with P6250000		
Working temperature	-40 to +85°C	-40 to +85°C		
Dimensions in mm	51x16x7			
Fixing screws distance	16mm			

### Safety sensors manufactured in compliance with the European Directive 2006/42/CE:

PLc according to ISO13849-1 SIL1 according to IEC62061 Category 1 High MTTFd

For other safety applications see page 33.

### Reed magnetic sensors







### **TUBULAR POSITION SENSORS**

General use tubular sensors for industry and household use:

- → Rabbet sensors
- → Doors opening
- → Protection cover presence
- → Household appliances.

	CHIQU PTATONS S								
Product reference	PTA10440	PTA11235	PTA12401	PTA13730	PTA50010	PTB13702	PTC13730		
Contact status	NO	NO	NO	NO	NO	NC	Change-over		
Max. switching power	12VA	12VA	12VA	12VA	12VA	3VA	NC : 3VA NO : 8VA		
Max. switching voltage	100VDC	100VDC	100VDC	100VDC	100VDC	100VDC	100VDC		
Max. switching current	0,4A	0,4A	0,4A	0,4A	0,4A	0,25A	0,25A		
Connection type	2 wires 500mm	Cable 3,5m	2 wires 100mm	2 wires 3m	2 wires 100mm	2 wires 200mm	Cable 3m		
Activation distance with P6250000	7mm	15mm	14mm	10mm	18mm	14mm	7mm		
Working temperature	-40 to +85°C	-40 to +85°C	-40 to +85°C						
Dimensions in mm	Ø6x30 Plastic	Ø6x30 Plastic	Ø6x30 Plastic	Ø6x30 Plastic	Ø6x25,2 Plastic	Ø6x30 Plastic	Ø6x30 Plastic		

					som la 1		
					13		
Product reference	PTA10490	PTPA0030	PTPA0100	PTPA0110	PTPA0230	PTPB0010	
Contact status	NO	1NO	1NO	1NO	1NO	1NC	
Max. switching power	10VA	12VA	12VA	12VA	12VA	12VA	
Max. switching voltage	100VDC	100VDC	100VDC	100VDC	100VDC	100VDC	
Max. switching current	0,4A	0,5A	0,5A	0,5A	0,5A	0,5A	
Connection type	2 wires 800mm	2 wires 3m	Connectors	Connectors	2 wires 3m	2 wires 80mm + FASTON	
Activation distance	16mm with P6250000	12mm (magnet provided)	12mm (magnet provided)	consult us	30mm (magnet provided)	10mm (magnet provided	
Working temperature	-40 to +120°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	
Dimensions (mm)	Ø6x41 Raw brass	Ø11x28 Plastic	Ø11x28 Plastic	Ø11x28 Plastic	Ø23x27 Plastic	Ø23x28 Plastic	



### Reed magnetic sensors

Typical applications:

- $\rightarrow$  Speed sensors,
- → Presence, position, clearance sensors.









Product reference	PTI40003	PTI40020	PTI50003	PTI50020	PTI60020	PTI70020
Contact status	1NO / A form	1NO / A form	1NC / B form	1NC / B form	1NO / A form	1NC / B form
Max. switching power	12VA	12VA	5W	5W	12VA	5W
Max. switching voltage	200VDC	200VDC	175VDC	175VDC	200VDC	175VDC
Max. switching current	0,5A	0,5A	0,25A	0,25A	0,5A	0,25A
Connection type	Cable 30cm	Cable 2m	Cable 30cm	Cable 2m	Cable 2m	Cable 30cm
Activation distance	12mm with magnet PT505000	12mm with magnet PT505000	7mm with magnet PT505000	7mm with magnet PT505000	12mm with magnet PT505100	7mm with magnet PT505100
Working temperature	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C
Dimensions in mm	M8x1 - Lg 31 Plastic	M8x1 - Lg 31 Plastic	M8x1 - Lg 31 Plastic	M8x1 - Lg 31 Plastic	M8x1 - Lg 40 Stainless Steel	M8x1 - Lg 40 Stainless Steel

### PTA/PDC ranges - M10 housing

#### → Sensors with M12 housing on request

	1		
Product reference	PTA80020	PTA90160	PDC20030
Contact status	1NO / A form	1NO	Change-over / C form
Max. switching power	12VA	12VA	60VA
Max. switching voltage	200VDC	100VDC	250VAC
Max. switching current	0,5A	0,4A	1A
Connection type	Cable 2m	Cable 1,5m	Cable 3m
Activation distance	25mm with magnet PT810000	12mm with magnet P6250000	20mm with magnet UR144360
Working temperature	-25 to +70°C	-40 to +125°C	-40 to +75°C
Dimensions in mm	M10x1,5 – Lg 44,5 Stainless Steel	M10x1 - Lg 40 Raw brass	M10x1,5 - Lg 85,5 Plastic

New	-
PTC10091	
Change-over / C form	
NC : 3W, NO : 8W	
100VDC	
0,25A	
Cable 100mm	
20mm with magnet UR124540	
-25 to +85°C	
M8x1,25 - Lg 41	

# Reed magnetic sensors / Hall effect

### SENSORS FOR LAYOUT ON PCB

Reed switch proximity sensors in plastic housing, for PCB mounting with no risk of damage.

Product reference	PHA01200	PHA11200	PHC13700
Contact status	NO	NO	Change-over
Max. switching power	12VA	12VA	NC: 3VA / NO: 8VA
Max. switching voltage	100VDC	100VDC	100VDC
Max. switching current	0,4A	0,4A	0,4A
Activation distance with U6250000	18mm	17mm	11mm
Working temperature	-40 to +100°C	-40 to +100°C	-40 to +100°C
Dimensions in mm	23x4,2x3,6	23x4,2x3,6	23x4,2x3,6





#### HALL EFFECT SENSORS

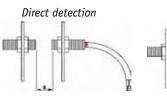
celduc® relais offers two ranges of electronical sensors :

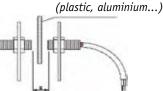
- → Hall effect sensors
- ightarrow Gear tooth sensors.

					File			
Product reference	PTE11320	PTE11321	PTE21320	PTE21321	PTE31320	PTE31321	PTE41320	PTE41321
Contact status	Hall effect PNP	Hall effect NPN	Gear tooth PNP	Gear tooth NPN	Hall effect PNP	Hall effect NPN	Gear tooth PNP	Gear tooth NPN
Cable length	cable 2m	cable 2m	cable 2m	cable 2m	cable 2m	cable 2m	cable 2m	cable 2m
Activation distance	19mm	19mm	1,5mm	1,5mm	17mm	17mm	1,5mm	1,5mm
Max. switching voltage	6-48VAC	6-48VAC	6-48VAC	6-48VAC	6-48VAC	6-48VAC	6-48VAC	6-48VAC
Max. switching current	0,4A	0,4A	0,4A	0,4A	0,4A	0,4A	0,4A	0,4A
Working temperature	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Dimensions in mm	Plastic housing M12x33				Raw brass housing M12x33			3
Associated coded magnet	PT810000	PT810000			PT810000	PT810000		



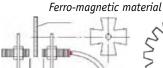
- → Counting
- → Industry
- → Lift
- → Speed sensors
- Household electronical appliances
- → Tractors ...





non-magnétic matérial

Detection through non-magnetic material



Detection of ferro-magnetic (counting,...)



Gear tooth sensor



### **ATEX Sensors**

celduc® relais is notified as manufacturer of ATEX products: INERIS 04ATEXQ406 and offers a wide range of ATEX sensors. celduc® relais has EC-type examination certificate Nr. INERIS 04ATEX0105.

Groupe II: Open-air industry (other than mines) with possible inflammable dust.

Marking example: for part number PL.1...Ex (for other part numbers, please refer to our technical data-sheet)

CE0080 (Ex) I

II 2 GD Ex mb IIC T6 Gb

Ex tb IIIC IP67 T85°C Db

II 1 GD Ex ia IIB T6 Ga Ex ia IIIB T85°C Da

Type of devices: 1 for zone 0 (continuous risk)
2 for zone 1 (intermittent risk)

Gaz: G or Dust: D

Protection "m" for zone 1 and "i" for zone 0

Temperature class: T6 (85°C) T4 (135°C) or T3 (200°C)

Cables length 5m or 10m.

		Salabati a S		be PTA13715 ;	
Product reference	PLA1125Ex	PLB1179Ex	PLC1125Ex	PTA1125Ex	PTC1125Ex
Contact status	1NO	1NC	Change-over	1NO	Change-over
Temperature group	Т6	Т6	Т6	Т6	Т6
Max. switching power	10W 12VA	10W 12VA	3VA	10W 12VA	3VA
Max. switching voltage	60VDC	60VDC	60VDC	60VDC	60VDC
Max. switching current	0,4A	0,4A	0,25A	0,4A	0,25A
Cable length	cable 5m	cable 10m	cable 5m	cable 5m	cable 5m
Working temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
Housing material	Plastic	Plastic	Plastic	Plastic	Plastic
Dimensions in mm	32x15x6,8	32x15x6,8	32x15x6,8	Ø6x30	Ø6x30

			71			
Product reference	PFA2125Ex	PFA3125Ex	PSS5905Ex	PSS7905Ex	PTA6125Ex	PTA9125Ex
Contact status	1NO	1NO	1NO + 1NC	2NO	1NO	1NO
Temperature group	Т6	Т6	T4	T4	T4/T6 or T3/T6*	T4/T6 or T3/T6*
Max. switching power	10W 12VA	10W 12VA	3VA	3VA	10W 12VA	10W 12VA
Max. switching voltage	60VDC	60VDC	60VDC 60VDC		60VDC	60VDC
Max. switching current	0,4A	0,4A	0,1A	0,1A	0,4A	0,4A
Cable length	cable 5m	cable 5m				
Working	-40 to +80°C	-40 to +80°C	-25 to +85°C	-25 to +85°C	-40 to +200°C	-20 to +200°C

Plastic

51x16

Plastic

51x16

Brass

Ø6x41

**Brass** 

M10

Coded magnet P3000100 to be ordered separately

Stainless steel

Ø28x60

Polypropylene

Ø28x90

<sup>\*</sup>See technical data-sheets

### Sensors for lifts

#### (and other industrial applications)

Sensors for: - Detection of the lift position

- Doors opening control

**celduc® relais** offers a wide range of magnetic sensors for elevators with reed switches or "Electronic" magnetic sensors using an Hall effect cell or magneto resistance.

The magnetic field created by the permanent magnet, activates the sensitive part (the reed switch or the Hall effect cell or the magneto resistance). It is important to combine the magnet and sensor with consideration to the correct operating conditions (switching distance, presence of ferro-magnetic parts or non ferro-magnetic parts...).

celduc® relais is at your disposal to help you define the right products.

Advantages: - insensitive to the ambient working conditions (heat or cold air, humidity, dust...)

- high reliability
- large detection distance
- good reliability to shocks and vibrations
- IP67

	-	-	A STATE OF THE PARTY OF THE PAR		CS their
Product reference	PMG12802	PMG12924	PMG12930	PMG13051	PMG13110
Contact status	NO bistable	NO	NO bistable	NC	NO
Max. switching power	60VA	100VA	60VA	30VA	30VA
Max. switching voltage	230VDC	230VDC	230VDC	230VDC	230VDC
Max. switching current	0,3A	3A	1A	0,5A	1A
Cable length	2m	7m	7,3m	6,5m	7m
Activation distance	7 <d<25mm with<br="">UF252060</d<25mm>	17 <d<27mm with<br="">UP302010</d<27mm>	7 <d<40mm with<br="">UP302010</d<40mm>	17 <d<27mm td="" up302010<="" with=""><td>9,5mm with UF221105</td></d<27mm>	9,5mm with UF221105
Working temperature	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C
Dimensions in mm	65x15x16	M14x75	80x30x30	M14x75	80x20x15



### PC range - M12 housing



- → Lifts: sensors with 2 or 3 normally open contacts are used to detect the position of the cabin as well as automatic level reset according to the weight.
- $\rightarrow$  Position / clearance sensors.

Product reference	PCA22330	PCA36720	PCC12320	PCC26720	PCLA3030	PC2A2330	PC3A2330	
Contact status	1xNO / A form	1xNO / A form	Change-over / C form	Change-over / C form	Bistable / L form	2xNO / A form	3xNO / A form	
Max. switching power	70VA	100VA	3VA	60VA	100VA	70VA	70VA	
Max. switching power	300VAC	250VAC	100VAC	400VAC	250VAC	300VAC	300VAC	
Max. switching current	0,5A	3A	0,25A	1A	3A	0,5A	0,5A	
Cable length	Cable 3m	Cable 2m	Cable 2m	Cable 2m	Cable 3m	Cable 3m	Cable 3m	
Activation distance	20mm with UR144361	15mm with UR144361	25mm with UR144361	18mm with UR144361	30mm with UP081508	20mm with UR144361	20mm with UR144361	
Working temperature	-25 to +75°C	-25 to +75°C	-25 to +75°C	-25 to +75°C	-25 to +75°C	-40 to +75°C	-40 to +75°C	
Dimensions								

M12x1 L 80 Plastic housing



### Control magnets

Range of standard permanent magnets used as actuators for our magnetic sensors.

Our range of magnetic sensors with reed switches or "Electronic" magnetic sensors using a Hall effect cell should be actuated with the correct magnet.

**celduc** ® **relais** offers 3 families of magnets to be chosen according to the application (working temperature, geometry, resistance to corrosion).

Material		Max. operating temperature	Derating according to temperature (recoverable)	Resistance to corrosion	
Alnico		500°C	very low (-0,025% per °C)	Good resistance	generally supplied in bars which should have a length of minimum x4 the diameter
Ferrite		250°C	high (-0,20% per °C)	Very good resistance	generally supplied in parallelepiped block, disc or ring
	Samarium Cobalt (SmCo)	250°C	low (– 0,04% per °C)	Very good resistance	generally supplied in blocks or granulates
Rare earth	Neodymium Iron Bore (NdFeBo)  80 to 160°C   low (-0.10% per		low (– 0.10% per °C)	Bad resistance (must have tin or nickel coating)	generally supplied in blocks or granulates

**celduc**® **relais** is at your disposal to help you define the correct magnet/sensor arrangement according to your needs / operating conditions.



### coated magnets

Product reference	For sensors	Bare magnet dimensions in mm	Dimensions in mm	Fig n°			
PA320000	PA	Ø 3x20	23x15x6	1			
P3150000	PA, PH, PL, PT	Ø 3x15	32x15x6,8	2			
P4200000	PA, PH, PL, PT	Ø 4x20	32x15x6,8	2			
P6250000	PA, PH, PL, PT	Ø 6x25	32x15x6,8	2			
P4159000	PB or PLA	Ø 3x15	51,8x8,5x11,5	3			
P4160000	PB or PLA	Ø 5x25	51,8x8,5x11,5	3			
PT505000	PTI5 plastic	D5x5	M8x1 Lg 31	4			
PT508000	7508000 PTI5 plastic		M8x1 Lg 31,2	4			
PT810000	PTE	D8x10	M12x1 Lg 31,2	6			
PW520000	PWA, PWB, PWC	D5x20	47,7x9,7x9,1	7			
1 2 3 4							
7	5 6		7	ر			



Product reference	Material	Dimensions in mm	Fig n°
U315P003	Alnico5	Ø 3x15	1
U4200000	Alnico5	Ø 4x20	1
U6250000	Alnico5	Ø 6x25	1
U8300000	Alnico5	Ø 8x30	1
UB105000	Alnico5	Ø 10x50	1
UF207760	Ferrite	20,5x7,7x6	2
UF221105	Ferrite	Ø 22x11x5	3
UF341605	Ferrite	Ø 34x16x5	3
UZ189538	Ferrite	18x9.5x3.8	2
UP051508	Plastoferrite	50x15x8	4
UP071508	Plastoferrite	70x15x8	4
UP081508	Plastoferrite	80x15x8	4
UP102008	Plastoferrite	100x20x8	4
UP301508	Plastoferrite	300x15x8	4
UP302008	Plastoferrite	300x20x8	4
UR101000	NdFeBo	Ø 10x10	6
UR102540	NdFeBo	Ø 10x4x2,5	5
UR124540	NdFeBo	Ø 12x4x4,5	5
UR144361	NdFeBo	Ø 14x6x4,3	5
UR120500	NdFeBo	Ø 12x5	6
UR122000	NdFeBo	Ø 12x20	6
UR304000	NdFeBo	Ø 3x4	6
UR315000	NdFeBo	Ø 3x15	6
UR502000	NdFeBo	Ø 5x2	6
UR508000	NdFeBo	Ø 5x8	6
UR801000	NdFeBo	Ø 8x10	6













### Special customers products

celduc® relais: the expert in specific sensors

There are numerous special customer applications in all sectors of activity. Please consult us to have our expertise.

### o automobile

In the automotive industry there are numerous applications for our magnetic proximity sensors: detection of liquid levels (radiator liquid, windscreen washer, engine oil level, brake oil level, ...) but also closing/locking detection of the fuel tank knob, detection of water in the oil filter, potentiometric scales to be used in lorry tank for level measurement, ...





Serving this industry is a proof of reliability. celduc ® relais has developed special sensors to detect the opening/closing of the doors as for example push-buttons used to detect open/closed doors in Airbus A380; sensors to detect tank refueling in Mirage Rafale and Saab Jas 39 fighters; level sensors for AIRBUS humidifiers, ...



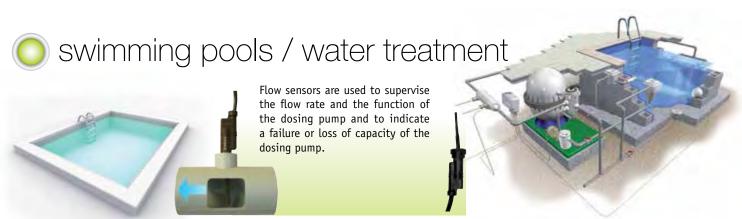




In the medical field magnetic proximity sensors can be used in automatic analysis systems to control liquids level, presence of a tank, right-working of the arms, open /closed doors of sterilizers ...









### Reed relays & switches

Detection: Clearance, position, level, presence Switching: Telecom, tester, measurement

### REED SWITCHES AND MERCURY TILT SWITCHES

Detecting a clearance, a position, a level in extrem environnements without mechanical link between the moving parts and without maintenance, such is the daily challenge of the Reed contact submitted to a magnetic field in industrial sectors as various as money, space, control, telecom...

Product reference	Contact status	Max. switching voltage	Max. switching current	Max. switching power	Standard sensivity range	Glass length
AB21		350VDC	1A	100VA	20-35ATf	21mm
AC01		30VDC	0,01A	0,25VA	5-20ATf	6mm
AC03		100VDC	0,5A	12VA	10-35ATf	10mm
AC05		100VDC	0,5A	12VA	10-35ATf	14mm
AJ21		100VDC	0,4A	10VA	10-35ATf	14mm
AV10	1NO	7500VDC	0,2A	50VA	80-130ATf	53,4mm
AD22	TINO	250VAC	1,3A	80VA	40-105ATf	52mm
AD28		250VAC	3A	120W	70-100ATf	50mm
Al02		200VDC	0,5A	10W	15-30ATf	10mm
AI43		200VDC	0,5A	10W	15-30ATf	15mm
Al44		200VDC	0,75A	30W	15-35ATf	20,5mm
CD30	Chango	500VAC	3A	100VA	60-100ATf	34,3mm
CG21	Change-	100VDC	0,25A	NC 3W / NO 8W	15-35ATf	14,5mm
CG21V	over switch	100VDC	0,25A	NC 3W / NO 8W	15-35ATf	14,5mm "bent"
CS26	SWILCH	400VAC	1A	60W	55-100ATf	34,3mm



 Sensitivity to be specified in the order.

#### REED RELAYS IN DIP ENCLOSURE

The most popular and the most industrial of the range. It offers all contact combinations. It is designed to switch inputs of telephony levels or PLC, signals from sensors or safety components.



#### REED RELAYS IN SIP ENCLOSURE

Relays for high density component circuits: alarms, testers, industrial control.

Interna	scheme (top view)	
1	(0.530)	

reference status	D41A3100L D41A3110L	1NO
Product   Contact	reference	status
Destruit Locatest	Product	Contact

	Characteristics of the s					
act us	Max. switching voltage	Max. switching current				
0	100VDC	0,5A				
	100VDC	0,5A				

ics of the sw	itch	Characteristics of the coil			
switching urrent	Max. switching power	Nominal voltage	R. coil at 20°C		
),5A	10VA	5VDC	500 Ω		
),5A	10VA	5VDC	500 Ω		



\_ diode 19x(5 ou 6)x7,5

## Reed relays & switches

#### HIGH VOLTAGE RELAY

Dielectric strength between contacts > 10KVDC and 14VDC between coil and contact.

	_								
Product reference	Contact   status	Max. swit- ching voltage	Max. swit- ching current	Max. switching power	Nominal voltage	R. coil at 20°C	Specifications	Dimensions in mm	
R1380L00		7500VDC	0,2A	50VA	6VDC	75 Ω			
R1329L00		7500VDC	0,2A	50VA	12VDC	300 Ω			
R1329L87	1110	7500VDC	0,2A	50VA	12VDC	300 Ω	without fixing screw		
R1343L00	1NO	7500VDC	0,2A	50VA	24VDC	1200 Ω		65v15 0v16 0	3-8
R1343L13		5000VDC	0,2A	50VA	24VDC	1200 Ω		65x15,2x16,9	12, A24 134
R1343L85_		5000VDC	0,2A	50VA	24VDC	1200 Ω	without fixing screw		
R1402L13	1NC	5000VDC	0,2A	50VA	12VDC	300 Ω			
R1446L13_	INC	5000VDC	0,2A	50VA	24VDC	1200 Ω			

### REED D AND R RELAY RANGE

Relays with ferro-magnetic shield in for telecom type applications.

Internal scheme (top view)			Characteristics of the switch			Characteristics of the coil			
	Product reference	Contact status	Max. swit- ching voltage	Max. swit- ching current	Max. swit- ching power	Nominal voltage	R. coil at 20°C	Specifications	Dimensions in mm
~-E-	F51A5100	1NO	250VDC	0,4A	14VA	5VDC	2145 Ω	comes in coa- ted version réf. F81Ax100	30x9,5x10
5	F81A5500	1NO	500VDC	1A	50VA	12VDC	1000 kΩ	Position	30x9.5x10
1 4 6	F81A7500_	mercury	500VDC	1A	50VA	24VDC	2300 Ω	vertically	3000,50010
	F61A2100	1NO	250VDC	0,4A	14VA	5VDC	345 Ω	Coil/contact	20v0 5v11
	F61A7100		250VDC	0,4A	14VA	24VDC	7845 Ω_	insulation 4KV_	30x9,5x11
Secret 1 mark	F72C2500	2 mercury	500VDC	1A	50VA	5VDC	75 Ω	Docition	
<b>₹ 30</b> €	F72C5500	wetted change-	500VDC	1A	50VA	12VDC	350 Ω	Position	30x16,5x11
- x -	F72C7500_	over switch	500VDC	1A	50VA	24VDC	1350 Ω_	vertically	

			Characteristics of the switch			Characteristics of the coil			
	Product reference	Contact status	Max. swit- ching voltage	Max. swit- ching current	Max. swit- ching power	Nominal voltage	R. coil at 20°C	Specifications	Dimensions in mm
14. 3	R0292B00 R0293B08 R0294B08	1NO	100VDC 100VDC 100VDC	0,4A 0,4A 0,4A	12VA 12VA 12VA	4VDC 5VDC 12VDC	250 Ω 450 Ω 1600 Ω	-	23x7,5x6,7
10000	R0550B08	1NO	100VDC	0,4A	12VA	4VDC	500 Ω	DIL layout	20,2x10,1x7,2
10000	R0251W00 R0252W00 R0253W00	change-over	100VDC 100VDC 100VDC	0,25A 0,25A 0,25A	3VA 3VA 3VA	6VDC 12VDC 24VDC	150 Ω 500 Ω 1800 Ω		23x7,5x6,7
7000	R0115S06 R0116S06 R0117S06	1NO	250Veff 250Veff 250Veff	3A 3A 3A	100VA 100VA 100VA	6VDC 12VDC 24VDC	250 Ω 1000 kΩ 4 kΩ	step 5,08	65x15,5x16
	R0542B08 R0543B08	1NC	100VDC 100VDC	0,4A 0,4A	12VA 12VA	4VDC 5VDC	200 Ω 200 Ω	DIL layout	20,2x10,1x7,2
5 - 4 - 8 -	R0861P12 R0761P00	mercury wetted change-over switch	500VDC 500VDC	2A 2A	100VA 100VA	5VDC 24VDC	335 Ω 2650 Ω	position vertically	40,8x14,2x10,4
HA THE	R0866P00	2 mercury wetted change-over switch	500VDC	2A	100VA	5VDC	125 Ω	position vertically possible C.O.T	40,8x19,8x10,4

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