



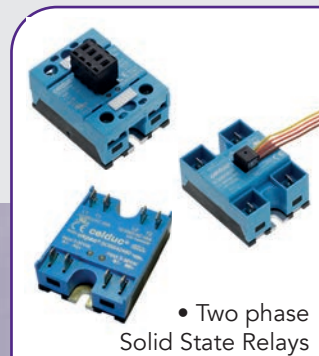
PACKING INDUSTRY by **celduc**[®] relais

www.celduc-relais.com

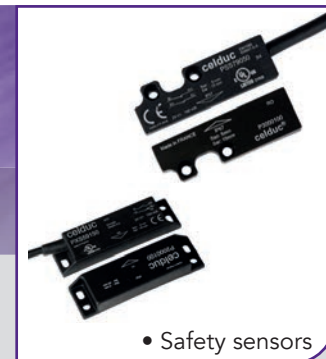
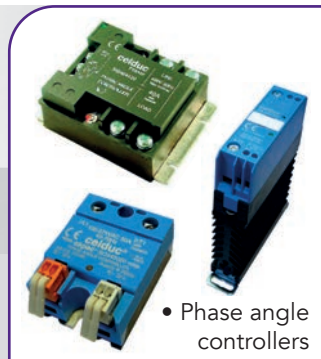
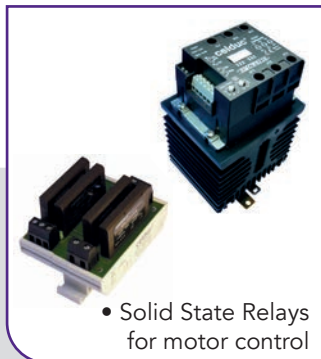
DESIGNER &
MANUFACTURER OF
SOLID STATE RELAYS AND
MAGNETIC SENSORS

APPLICATIONS :
MOTION CONTROL,
HEATING CONTROL,
POWER CONTROL &
MACHINE SAFETY.





PRODUCTS MADE IN FRANCE
FOR MORE THAN 60 YEARS !



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WHO ARE WE?

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celduc® relais' SOLUTIONS – SOLID STATE RELAYS & CONTACTORS

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WHO ARE WE ?

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. Set up near Saint-Etienne, the **celduc® group** 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 has increased our production capacity production capacity by around 10 to 15 % per year.

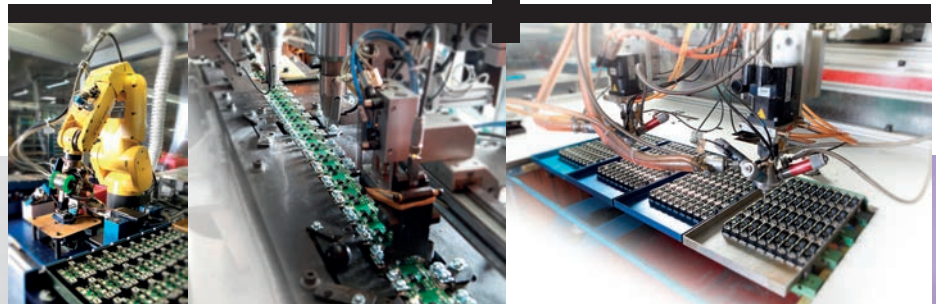
Innovation is the challenge that **celduc® relais** has to take up every day by anticipating the market trends and implementing specific knowledge and skills in partnership with industry and research.

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.

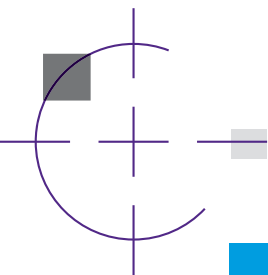
Thanks to this high-capacity and unique tooling, **celduc®** products can be found all over the world and have been recognized by the most renowned industrial companies.



HIGH QUALITY PRODUCTS

Quality is of paramount importance and is 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, ...)...



All products are designed, tested and manufactured in compliance with the strictest international standards and always with reliability and safety in front of our mind

The solutions displayed in this brochure should be considered as non-exhaustive examples.

celduc® is now considered a specialist
in its field, and we collaborate with the
biggest industrial groups worldwide



4

5



OUR STRENGTHS



**MORE THAN 60 YEARS OF
EXPERIENCE ON THE MARKET
AND A HIGH QUALITY LEVEL OF
PRODUCTION IN FRANCE.**



**CONTROL OF THE COMPLETE
CHAIN**

design, development, production, testing
and marketing.



**ANALYSIS OF CUSTOMERS'
REQUIREMENTS**

celduc® relais is the indisputable global
expert and preferred choice of companies all
over the world.



**A WORLDWIDE PRESENCE IN
MORE THAN 60 COUNTRIES**

for a better understanding of customer's
needs and offering of solutions which fully
meet their requirements.



**CONSTANT PRODUCT
DEVELOPMENT**

our experienced R & D engineers constantly
work on developing 10 to 15% of new
products each year.



**IN COMPLIANCE WITH THE
MAJOR INTERNATIONAL
STANDARDS**

our products are designed, tested and
manufactured in accordance with the
strictest international standards.

FILLING MACHINES

- Conveyor motor control
- Power vibrator motor control
- Switching of electro-valves used in liquid filling process
- Heating resistance control of hot air unit for an aseptic filling process.

YOU CAN RELY ON OUR SOLUTIONS FOR IMPLEMENTING
INNOVATIVE, FAST AND RELIABLE PACKAGING SYSTEMS

KEY PRODUCTS

SINGLE PHASE SOLID STATE RELAYS



DC SSRs
pages 28-29

THREE-PHASE SOLID STATE RELAYS



Phase angle
controllers
pages 22-23



cel3pac and
sightpac
pages 24-25

MOTOR CONTROL



AC and DC
reversers
pages 26-27



CLOSING / SEALING MACHINES

- Closing heating resistance control
(under constant heat for rapid throughputs, or under impulsion for slow throughputs)
- Temperature control when upper and lower films are sealed together
- Electro-magnets control : electromagnets are used for the locking of sealing machines
(it allows to keep the arm locked during the sealing and cooling process)

USE CELDUC RELAIS' SSRs FOR ACCURATE AND LONG LIFE TIME TEMPERATURE CONTROL

KEY PRODUCTS

SINGLE PHASE SOLID STATE RELAYS



With Diagnostic
pages 20-21



celpac® and
okpac®
pages 16-17



Phase angle
controllers
page 23



THERMOFORMING MACHINES

- Pre-heating time process control
- Mold heating system control
- Machines safety during manual change process of thermoplastics foils

CHOOSING THE RIGHT SSRs HELPS MAXIMIZE PLANT
UP-TIME AND MINIMIZE MAINTENANCE COSTS
AND LOSS OF PRODUCTION

8

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KEY PRODUCTS

SINGLE PHASE SOLID STATE RELAYS



With Diagnostic
pages 20-21



DC SSRs
pages 28-29



Safety sensors
pages 30-31



SHRINK TUNNELS

CELDUC® RELAIS CONTROLS THE COMPLETE CHAIN: DESIGN, DEVELOPMENT, PRODUCTION, TESTING AND MARKETING

This high temperature process employs radiant heat or steam. Process equipment utilises heating elements, burners or hot air nozzles and may feature electronic regulation.

- Infra red heating lamps control
- Heating resistance control

KEY PRODUCTS

SINGLE PHASE SOLID STATE RELAYS



celpac® and okpac®
pages 16-17



Phase angle
controllers
page 23



WRAPPING / BUNDLING MACHINES

- Conveyor motor control
- Up/down film roller motor control
- Cutting station motor control
- Sealing heating resistance control

**CELDUC® IS THE PREFERRED
GLOBAL EXPERT OF WORLD'S
LARGEST MANUFACTURERS**



Image courtesy of
Beck packautomaten GmbH & Co. KG

KEY PRODUCTS

SINGLE PHASE SOLID STATE RELAYS



celpac® and okpac®
pages 16-17



With Diagnostic
pages 20-21



DC reversers
pages 26-27

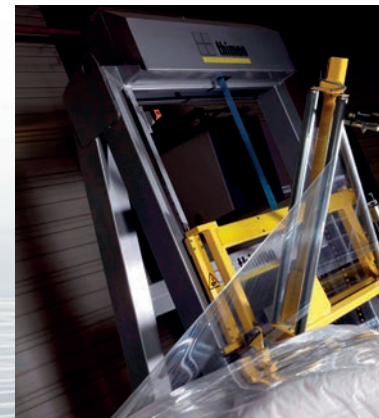


Image courtesy of Thimon

BLOW MOLDING

1



Preform injection

2



Cooling and preform temperature stabilization

3



Re-heat station by infra red heating lamps

4



Preform temperature stabilization

5



Stretch Blow Molding with hot air

6



Container Eject

KEY PRODUCTS

SINGLE PHASE SSRs

1
5



okpac® & celpac®
pages 16-17

3



Phase angle
controllers
pages 22-23

3



Heating
control unit
pages 22-23



Image courtesy of Nissei ASB Machine Co., Ltd

SIDE CUTTING MACHINES

- To ensure safety of machine operators during side cutting process of excess films



Image courtesy of FARBAL SAS

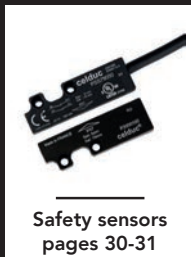
LABELING MACHINES

- Temperature control for ink drying process
- Infra red heating lamps control



KEY PRODUCTS

SAFETY SENSORS



SINGLE PHASE SOLID STATE RELAYS



VACCUM PACKING

- Sealing heating resistance control



Image courtesy of Orved S.p.A.

celduc® relais' SOLUTIONS

Manufacturers in all industries such as food & beverage, pharmaceutical, cosmetics, chemicals, ... wish to optimize their packaging processes for improving efficiency and reducing costs. These goals are achievable through the implementation of packaging systems that are innovative, fast and reliable.

Packaging industry is known for its advanced technology, due to the high level of automation of packaging lines. In every case, each component has to meet very strict requirements specific to each industry. celduc's Solid State Relays and Contactors meet these requirements and you can rely on our solutions.

Energy saving & reliability

■ AC AND DC SOLID STATE RELAYS FOR LOAD SWITCHING IN THE PACKAGING INDUSTRY

- AC switching up to 125A / 690VAC
- DC switching up to 50A / 1700Vp
or 150A / 100Vp
- Diagnostic and protections available

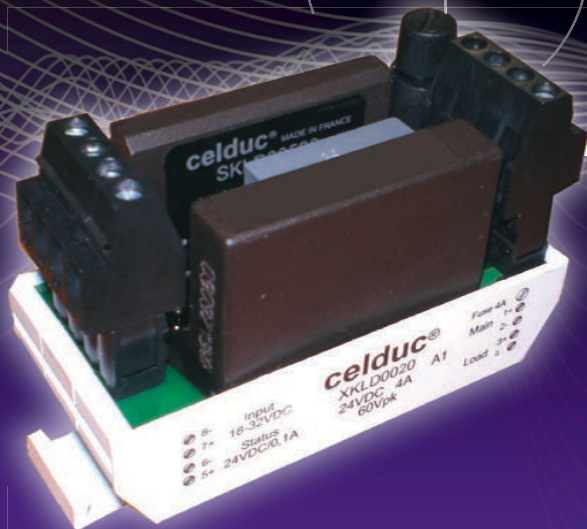
The solutions displayed in this brochure should be considered as non-exhaustive examples,
please visit www.celduc-relais.com

INTERFACE RELAYS

CELDUC®RELAIS OFFERS A WIDE RANGE OF INTERFACE RELAYS TO CONTROL LOADS SUCH AS RESISTORS, INDICATORS, SOLENOIDS, TRANSFORMERS, MOTORS, POWER CONTACTOR COILS,

NEW

XXKLD0020 HAS ALL PROTECTIONS INCLUDED
AND IS DESIGNED FOR 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
 - > 18-32VDC control
 - > 4A / 24-96VDC output
 - > 100mA / 1-32VDC Diagnostic output

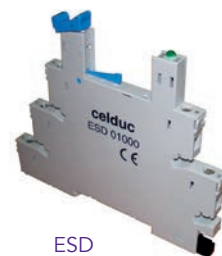
Miniature Format - 100% compatible with electromechanical relays with 5mm pitch

They can be soldered direct to PCBs or plugged into all din rail mountable bases.

Reference	Switching current	Switching voltage	Control voltage	Protec.
SLA03220	2A	12-280VAC	18-32VDC	RC
SLD02205	4A	0-32VDC	7-20VDC	Transil
SLD03210	2.5A	0-60VDC	18-32VDC	Transil
ESD01000	SLA/SLD base for PCB for one relay			



SLA/SLD



ESD

Input/Output Interface – for DINRail mounting

For rack assembly, you can use the XK type module for Din Rail assembly, making it possible to provide quickly and economically an output interface.

Reference	Switching current	Switching voltage	Control voltage	Protec.	Specifications
XKA20420	4A	12-275VAC	6-30VDC	VDR	1 pole AC zero-cross output
XKA70440	4A	12-440VAC	15-30VAC/DC	VDR	
XKA20421	4A	12-275VAC	5-30VDC	VDR	1 pole AC random output
XKD10306	3A	2-60VDC	5-30VDC	diode	1 pole DC output



XKA/XKD

Other models available please visit our website www.celduc-relais.com

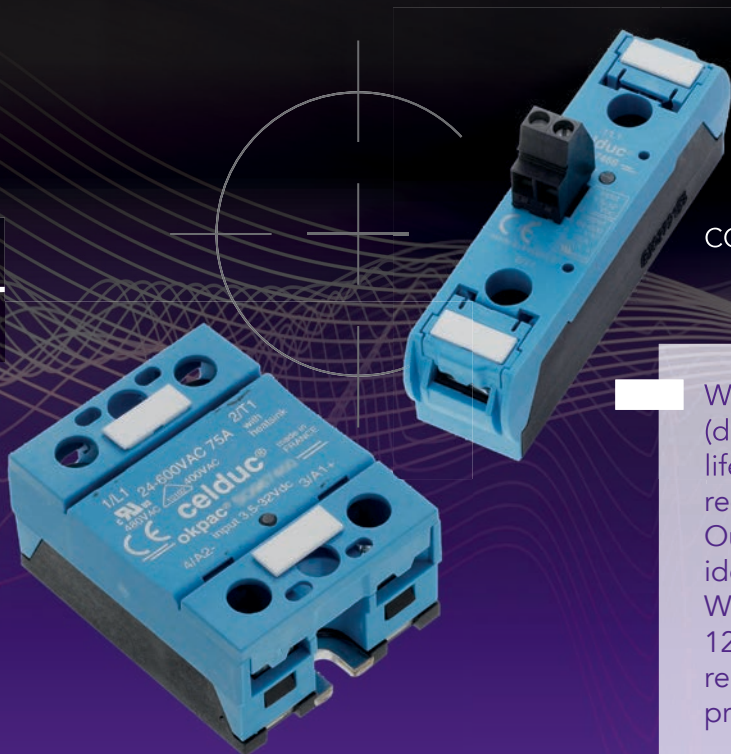
celpac[®] 2G
okpac[®]

TWO RANGES OF SINGLE PHASE SOLID STATE RELAYS TO COVER ALL YOUR NEEDS

OUR OKPAC[®] AND CELPAC[®] RANGES
COMBINE INNOVATION, PERFORMANCES AND DESIGN.

With our integrated back to back thyristors technology (direct copper bonded ceramic) offering a very high life expectancy, our SSRs are perfectly adapted to the requirements of packaging machines manufacturers. Our single phase range okpac[®] SO9 or celpac[®] SU9 are ideal solutions for heating resistance control.

We offer a wide range with thyristor rating up to 125A / 660V as well as a large input range AC-DC with regulated current models. Removable flaps for IP20 protection.



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17

Zero-cross single phase Solid State Relays designed for resistive loads AC-51

celpac[®] 2G

Reference	Thyristor rating	Max. switching current at 25°C	Switching voltage	Peak voltage	Control voltage	I ² t	Specifications
SU942460	25A	depends on heatsink	12-280VAC	600V	3-32VDC	600A ² s	For mounting on heatsink
SUL963460	35A	30A	24-600VAC	1200V	3.5-32VDC	882A ²	22.5mm heatsink
SUL967460	75A	35A	24-600VAC	1200V	3.5-32VDC	7200A ² s	22.5mm heatsink

okpac[®]

Reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	I ² t
SO945460	50A	12-280VAC	600V	3-32VDC	2800A ² s
SO963460	35A	24-600VAC	1200V	3.5-32VDC	1250A ² s
SO965460	50A	24-600VAC	1200V	3.5-32VDC	2800A ² s
SO967460	75A	24-600VAC	1200V	3.5-32VDC	7200A ² s



SO9



SU9



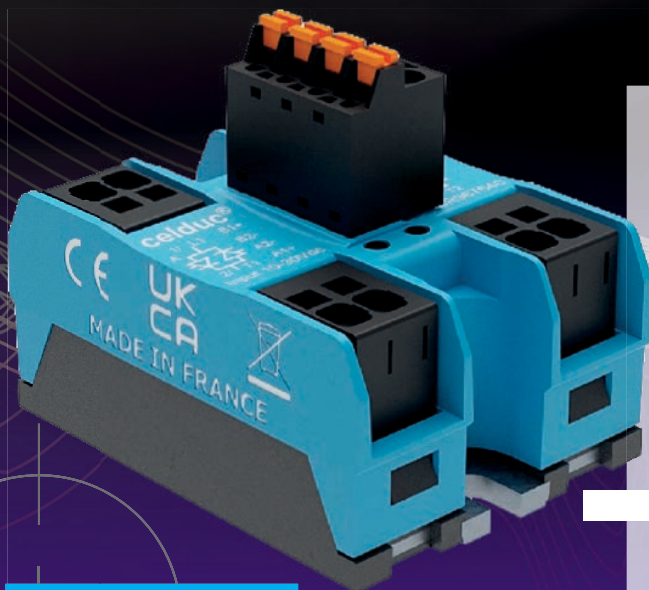
SUL9

Other models available please visit our website www.celduc-relais.com

okpac[®]

SINGLE-PHASE SOLID STATE RELAYS WITH PUSH-IN SPRING TERMINALS

FAST WIRING, EVEN IN TIGHT SPACES !



Easy to use and requiring no special tools, this connection technology is perfect for compact installations where you need fast and safe wiring.



STRONG : Push-in connections are strong and reliable.



FLEXIBLE : Push-in connections are suitable for various types of conductors.



FAST : Quick and tool-free conductor connection using direct plug-in technology.



SAFE : Push-in connections avoid downtime, reduce maintenance, and lower installation costs.

NEW

okpac[®]

Single-phase Solid State Relays with push-in spring terminals

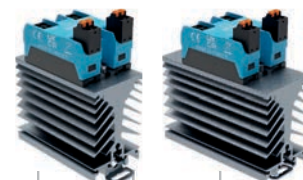
The SOR range of single-phase solid state relays with spring terminal connection is available in several versions dedicated to AC-1 resistive loads.

- Current limiter
- Green control status LED
- Voltage protection on input (transil)
- Connection on the power side : 2 x doubled 6mm² or AWG10
- Connection on the control side : 2 x doubled 2.5mm² or AWG14



Product reference	Thyristor rating	Max. switching current at 40°C	Switching voltage	Peak voltage	Control voltage	I ² t	Protec.
SOR943440-HE	35A	35A	12-280VAC	600V	3-32VDC	882A ² s	TVS
SOR965440-HE	50A	41A	24-660VAC	1200V	3,5-32VDC	1680A ² s	TVS
SOR967440	90A	41A	24-660VAC	1200V	3,5-32VDC	7200A ² s	TVS

"Ready to use" models with integrated heatsink



Product reference	Thyristor rating	Max. switching current at 40°C	Switching voltage	Peak voltage	Control voltage	I ² t	Protec.
SOR943440-HE-WF151	35A	28A	12-280VAC	600V	3-32VDC	882A ² s	TVS
SOR965440-HE-WF114	50A	34A	24-660VAC	1200V	3,5-32VDC	1680A ² s	TVS

Solid State Relays SU/SUL combined with ESUC module



"Ready to use" Solid State Contactor : SILD



20
21
➤ Diagnostic information for up to 5 heaters in parallel with:

- Permanent load current monitoring,
- Current teaching function,
- Two alarm thresholds : +/-16% of I_{teach},
- Partial load break detection,
- Open load detection,
- Detection of short-circuited SSR.

➤ For a compact solution, easy to use , with quick detection time <100ms :

- Status of the SSR and the load,
- Normally closed status output,
- Without external power supply,
- Status visualization by yellow LED,
- Status output can be chained,
- This zero cross model switch ON in case of overvoltage.

ESUC0450	2-40A	8-30VDC
ESUC0480	2-40A	24-45VDC

See our SU/SUL range page 15

SILD865170	32A @ 25°C	150-510VAC	Ctrl 3.5-32VDC
SILD867170	35A @ 25°C	150-510VAC	Ctrl 3.5-32VDC

USE OUR POWER SSRS WITH DIAGNOSTICS

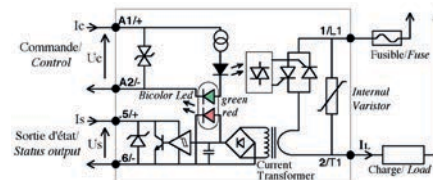
TO SIGNAL SSR AND LOAD STATUS

SOI RANGE

Whereas standard diagnostic relays or systems using external CTs would display an error with zone disconnections, the SOI range simply gives users and systems an on/off indication of current output, allowing them to determine the status of individual zones.

Advantages:

- Less wiring : saving cost and time
- Elimination of pass through CT wires
- Elimination of costly analog PLC



Reference	Thyristor rating	Switching voltage	Peak voltage	Control voltage	I ² t
SOI885070	50A	24-625VAC	1600V	3.5-32VDC	2800A ² s

celduc®

OUR RANGE OF CONTROLLERS FOR ACCURATE TEMPERATURE CONTROL



Control box for temperature control
of infrared lamps

NEW

Anticipating market trends and needs, celduc® relais has developed a control box for fine temperature control of infrared lamps. These control boxes are equipped with 12 solid state relays and a built-in microcontroller based regulation card.

This gives very accurate regulation and also includes a communication interface that can be directly connected to a supervisory system to give load status and other parameters.

22

23

Single Phase angle controllers

Suitable for infra Red lamps control

Processes such as blow moulding require very accurate temperature control in the re-heat station in order to reduce the thickness of the product and in turn a reduction of the cost of the packaging material used. Infra red heating by halogen lamps allows precise control and consistency of the product wall thickness. The lamps on each side of the process preform track are driven by phase angle controllers such as celduc's SO4. Our range of phase angle controllers allow very accurate temperature control.

Reference	Thyristor rating	Switching voltage	Control voltage	Specifications
SO465020	50A	200-480VAC	0-10V	Phase angle controller
SO465320	50A	200-480VAC	Potentiometer	
SO467501	75A	160-450VAC	1-5V	
SO468420	95A	200-480VAC	4-20mA	
SO367001	75A	400VAC	0-10V	Burst control mode



Power controllers

Key features:

- > Controls a maximum of 12 IR channels (4kW max. per channel and 36kW max. per box)
- > U² type mains variations compensation (syncopated)

- > Fault Detections:
 - broken lamp < 250 ms
 - over/undervoltage
 - overheating
 - fuse failure
 - thyristor short-circuit
 - fan issues

- > Built-in Protections : short circuit, dv/dt transients and overvoltage
- > Control and Diagnostics using Profibus DP

cel3pac sightpac

THREE-PHASE SOLID STATE RELAYS & CONTACTORS : NEW VISIONARY RANGES



SMT RANGE (45MM VERSION)
SGT RANGE (100MM VERSION)

NEW

Superior design, easy installation, optimum lifespan and price effectiveness are delivered with the new generation of three-phase Solid State Relays.

24

25

cel3pac sightpac

Three-phase Solid State Relays & Contactors

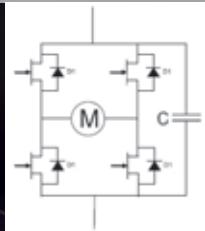
- Maximum peak voltage up to 1600V,
- Thyristor rating up to 125A,
- AC or DC Input control available,
- Using TMS² technology thyristors and RVF process (RoHs Void Free Process) for a longer lifespan (+40%),
- IP20 protection on terminals with removable flaps,
- Protections available : RC snubber, VDR, TVS.

Reference	Thyristor rating	Switching current AC-51 (40°C)	Switching current AC-53 (40°C)	Switching voltage	V peak	Control voltage	I ² t	Protections
cel3pac range								
SGT8678500	3x75A	3x54A	3x16A	24-520VAC	1600V	24-255VAC/DC	7 200A ² s	RC – VDR
SGT8690500	3x125A	3x64A	3x32A	24-520VAC	1600V	4-30VDC	22 000A ² s	RC – VDR
SGT8850200	3x50A	3x42A	3x12A	24-640VAC	1600V	4-30VDC	2800A ² s	VDR
SGT8858200	3x50A	3x42A	3x12A	24-640VAC	1600V	24-255VAC/DC	2 800A ² s	VDR
SGT9834300	3x35A	3x30A	-	24-660VAC	1600V	4-30VDC	1250A ² s	TVS
SGT9854300	3x50A	3x42A	-	24-660VAC	1600V	4-30VDC	2800A ² s	TVS
SGT9874300	3x75A	3x54A	-	24-660VAC	1600V	4-30VDC	7200A ² s	TVS
sightpac range								
SMT8620520	3x25A	3x20A	3x5A	24-520VAC	1200V	4-30VDC	380A ² s	RC – VDR
SMT8628520	3x25A	3x20A	3x5A	24-520VAC	1200V	24-255VAC/DC	380A ² s	RC - VDR

Other models available please visit our website www.celduc-relais.com

MOTOR CONTROL

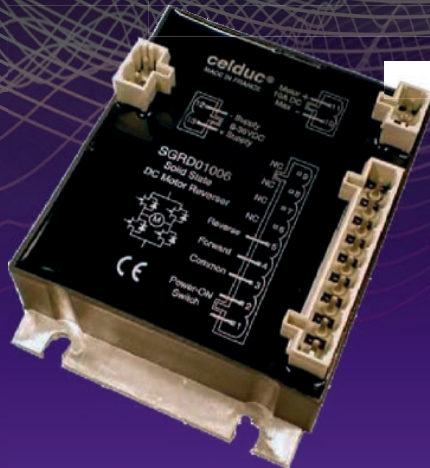
TAKE BENEFITS OF USING SOLID STATE SOLUTIONS



Motor control has always been something difficult to tackle with as a motor is first of all an inductive type of load with high starting currents (which doesn't help reduce size and costs of protection devices like fuses) and over voltages generated at turn-off. This is why Solid State solutions are more and more popular to control motor loads.

26

27



SGRD

This new generation of 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.

Control voltage ranges from 8 to 36VDC and this SSR can switch up to 10A/60Vpk.

TYPICAL APPLICATIONS: to control (reverse) small DC motors, electric valves, Peltier modules (TEC, thermo electric coolers / heaters)...

AC Reversing switches

for reversing the direction of the conveyor

Several models of reversers are available in our product range up to 4 kW. They have the interlocking function and over-voltage protections integrated.

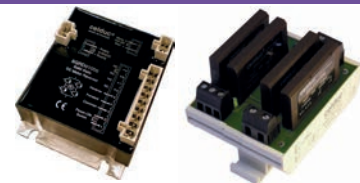


Reference	Switching current AC-53	Switching voltage	Control voltage	I ² t	Protec.	Specifications
SG969100	3x6.6A	24-520VAC	10-30VDC	612A ² s	Reversing + time delay	3 phase switching
SG969300E	3x8.5A	24-550VAC	12-30VDC	1500A ² s		2 phase switching

DC Reversing switches

for controlling (reverse) small DC motors:
mainly for roller conveyors

Reference	Switching current	Switching voltage	Control voltage	Peak voltage	Protec.
SGRD01006	10A	8-36VDC	8-36VDC	60V	Voltage and current
XKRD30506	5A	7-36VDC	7-30VDC	60V	VDR



Three-phase AC Softstarters

for reducing shock and jolting starts on conveyors

celduc® relais has designed a range of soft starters for AC motors up to 26 kW (wired in Delta). For more information you can download the

technical data sheets of our SMCV/SMCW ranges available in our website: www.celduc-relais.com



Other models available please visit our website www.celduc-relais.com

DC SOLID STATE RELAYS

CELDUC® RELAIS OFFERS A COMPLETE RANGE OF DC SOLID STATE RELAYS UP TO 1700VDC, 0 TO 150A FOR DC APPLICATIONS.

MOSFET

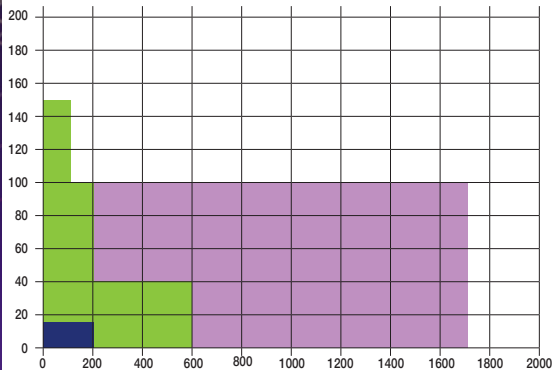
For applications requiring transient overcurrent withstand (motors).

Bipolar

For applications where a low control current is required.

IGBT

For high voltage applications (> 600VDC).



All technologies are available : BIPOLAR, MOSFET and IGBT

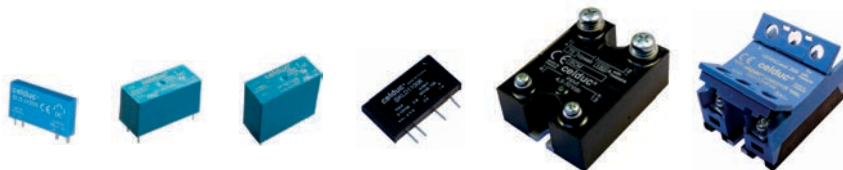
In packaging processing equipment, DC Solid State Relays are used in the following applications:

- > To switch electro-magnets : electro-magnets are used for sorting process in packing lines as well as for locking of sealing machines (it allows to keep the arm locked during the sealing and cooling process)
- > To switch electro-valves for filling containers with a liquid.

For each application the corresponding technology !

BIPOLAR for applications where low control current is needed

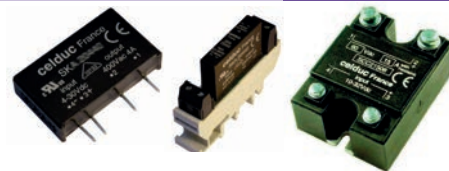
- 0-3A, 0-200Vdc for PCB SSRs
- 0-15A, 0-200Vdc for screw connection.



MOSFET for applications where over current capability and low dissipated power are needed

MOSFET based solid-state relays combine high switching performance (switching time less than 50 μ s) and competitive prices.

- 0-10A, 0-200Vdc for PCB SSRs
- 0-150A, 0-1200Vdc with screw terminals.



IGBT for high voltage applications (>600VDC)

These SSRs with the latest IGBT technology offer the following advantages:

- New innovative isolated driver ensuring fast power transistor turn on and off therefore low power transient
- Ultra low output leakage current and low control current consumption
- Low conducted and radiated disturbances.



D'autres modèles sont disponibles – visitez notre site internet www.celduc-relais.com

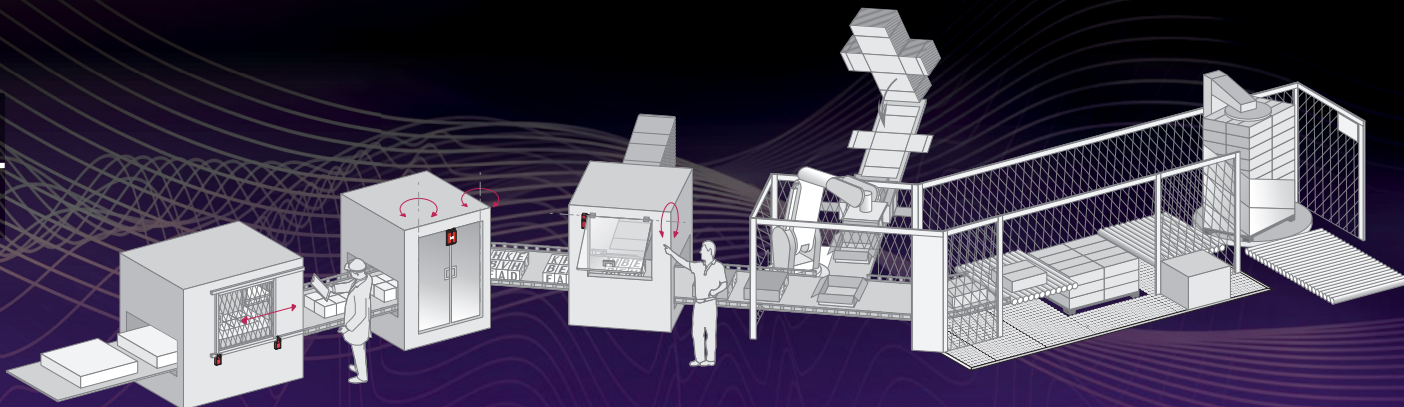


SAFETY SENSORS

ENSURE THE SAFETY OF MACHINE OPERATORS AND
MACHINE OPERATING RELIABILITY !

30

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PSS / PXS range

Reed coded safety Sensors

with associated coded magnets

These products are designed for monitoring the doors, covers and guards of industrial machines with gates having imprecise guidance and or subject to frequent washing. They protect the operator by immediately stopping any dangerous movement as soon as the distance between the switch and its magnet is greater than 5 or 8mm.

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

SIL 2/category 3/ PL=d or SIL 3/category 4/ PL=e

PXS model with associated magnet P2000100

- Compact rectangular plastic body
- Pre-cabled, length 5m
- Contact status 2O ; O+C or 2O + 1C depending of the safety level required.

Contacts change state as soon as the magnet is at a distance from the sensor of approximately 8 mm

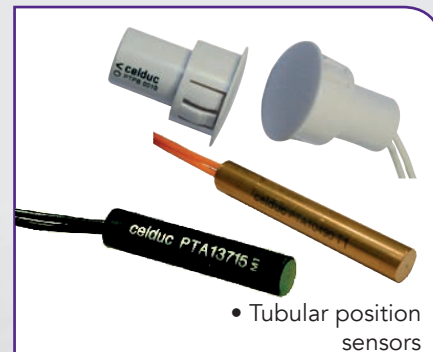
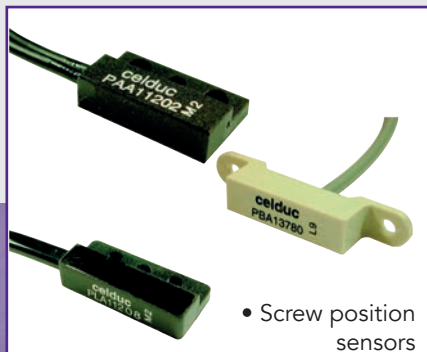
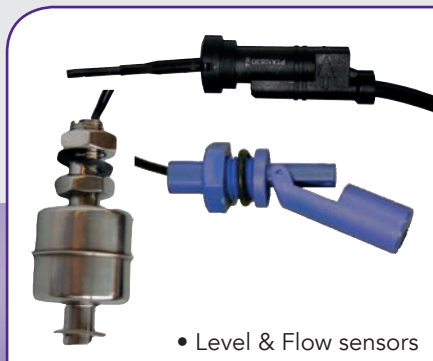
PSS model with associated magnet P3000100

- Standard rectangular plastic body
- Pre-cabled, length 5m
- Contact status 2O ; O+C or 2O + 1C depending of the safety level required

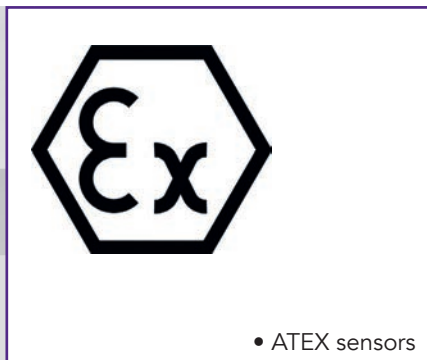
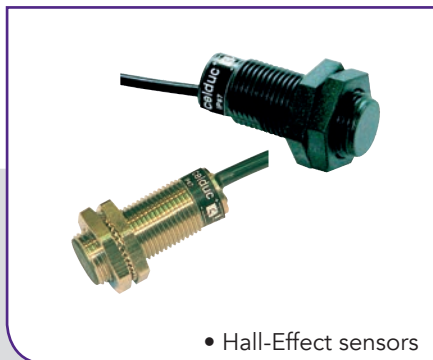
Contacts change state as soon as the magnet is at a distance from the sensor of approximately 5 mm



Other models available please visit our website www.celduc-relais.com



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



Catalogues and leaflets available on request



Single Phase SSRs & Contactors celpac range



Three-Phase SSRs & Contactors cel3pac & sightpac ranges



celduc® relais'

worldwide presence in more than
60 countries

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AUSTRALIA
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BELGIUM
BRAZIL
BULGARIA
CANADA
CHILE
CHINA
COLOMBIA
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DENMARK
EGYPT
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HUNGARY
INDIA
INDONESIA
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