ENERGY SECTOR

celduc® relais

www.celduc-relais.com

DESIGNER & MANUFACTURER OF SOLID STATE RELAYS AND MAGNETIC SENSORS

SWITCHING AND CONTROL SOLUTIONS FOR ENERGY PRODUCTION, DISTRIBUTION, AND MANAGEMENT

celduc® relais

• Interface
& PCB relays

• Single phase
SSR
• Modules for
diag. function
• Temperature
controller PID

• Two phase
Solid State Relays

• Three phase
Solid State Relays

celduc® relais

PRODUCTS MADE IN FRANCE FOR MORE THAN 60 YEARS !

• Solid State Relays for
motor control

• Phase angle
controllers

• DC Solid State
Relays

• Magnetic
Proximity sensors

CONTENTS

celduc® is a key player and an expert consulted by the world's largest industrial companies.

OUR **STRENGTHS**

More than 60 years of high quality production in France

In-depth analysis of customer requirements
celduc® relais is the leading global expert and preferred choice for companies all over the world.

Constant product development
Our experienced R&D engineers at celduc® relais are constantly working on developing new products; these represent 10 to 15% of our total production output.

Control of the complete process
Design, development, production, testing and marketing.

A global presence in over 60 countries,
We have a local presence for our customers. We can therefore better understand their needs and provide them with the best solutions.

We comply with international standards
Our products are designed, tested and manufactured in accordance with the strictest international standards.

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

afaq ISO 9001 Qualité AFNOR CERTIFICATION · CE · c UL us · VDE · Ex · S · EAC · CSA · UL 508A 100kA · RoHS COMPLIANT

celduc relais

SOLID STATE RELAYS AND SENSORS:

As the world rapidly moves toward cleaner, smarter, and more efficient energy systems, the demand for robust, accurate, and maintenance-free components has never been greater. In this context, solid-state relays (SSR) and magnetic sensors have emerged as key technologies, supporting innovation across the entire energy sector—from traditional oil and gas applications to next-generation systems such as solar, wind, and batteries.

celduc® is the expert consulted by major international players and provides solutions for those involved in energy production, transmission, distribution, and renewable energies.

POWERING THE FUTURE OF THE ENERGY SECTOR

We offer:

- Reliability and robustness
- Safety and compliance with standards
- Energy efficiency and loss reduction (optimization of switching, limitation of heating)
- Supervision and digitalization (remote monitoring, data reporting, integration into energy management systems)

ENERGY PRODUCTION AND CONVERSION

OIL & GAS

The extraction, processing, and distribution of these energies require highly sophisticated technologies and processes. Given the high potential risks to people and the environment, the oil and gas industry must use reliable components.

Valve Control: SSRs control electrically actuated valves with high precision and safety in hazardous zones.

• Control of the regulating actuators

KEY PRODUCTS

AC INVERTERS

SG9 Series
Pages 20-21

SGR Series
Pages 20-21

SMR Series
Pages 20-21

ADVANTAGES:

> Sustain high inrush current,
> Built-in overvoltage protection,
> Interlocking function preventing simultaneous activation of both directions of rotation,
> Ranges suitable for power ratings up to 7.5 kW.

ENERGY PRODUCTION AND CONVERSION

OIL & GAS

Pump stations: SSRs ensure proper operation of pump and compressor motors.

• Control of the electric motors driving the pump or compressor

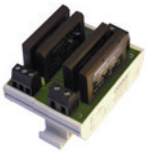
KEY PRODUCTS

SOLID STATE RELAYS

AC
Single phase
SO9 Series
Pages 24-25

AC
Three-phase
SGT Series
Pages 26-27

INVERTERS



DC
XKRD Series
Pages 20-21

ADVANTAGES:

> Reliable, safe and efficient control,

> Ideal solutions for demanding industrial environments.

ENERGY PRODUCTION AND CONVERSION

SOLAR

Solar trackers: SSRs control motorized actuators that orient solar panels, increasing energy yield.

CELDUC® RELAIS OFFERS SOLUTIONS TO MONITOR AND CONTROL THE EFFICIENCY OF SOLAR POWER STATIONS.

• DC motors control

KEY PRODUCTS

DC MOTOR REVERSERS

XKRD Series
Pages 20-21

SGRD Series
Pages 20-21

ADVANTAGES:

> Built-in short-circuit protection,

> Interlocking system is in place to prevent simultaneous control of both directions of rotation.

ENERGY PRODUCTION AND CONVERSION

SOLAR

Photovoltaic installations: celduc® SSRs are used to improve the efficiency of installations by adjusting the power consumed.

• Dynamic load control for adjusting power consumption

KEY PRODUCTS

PHASE ANGLE CONTROLLERS

SINGLE PHASE	THREE-PHASE
	
SIL4 Series Pages 22-23	SVTA Series Pages 22-23

ADVANTAGES:

> Responsiveness (reply time),

> Optimizing plant yields.

ENERGY PRODUCTION AND CONVERSION

WIND TURBINES

Blade Manufacturing: Precise temperature control via SSRs ensures quality in composite curing processes.

CELDUC® RELAIS OFFERS SOLUTIONS TO MONITOR AND CONTROL THE EFFICIENCY OF THESE INSTALLATIONS.

• Heaters control

KEY PRODUCTS

« PUSH-IN » SOLID STATE RELAYS

SINGLE PHASE	THREE-PHASE
	
SOR Series Pages 24-25	SGTR Series Pages 26-27

ADVANTAGES:

> Easy to use and requiring no special tools,

> 100% secure cabling, 70% faster: saving time,

> Precise temperature control via SSRs ensures quality in composite curing processes.

ENERGY PRODUCTION AND CONVERSION

WIND TURBINES

Defrosting Systems: SSRs control resistive heating elements to prevent ice buildup.

Wind turbine blade maintenance : The blade hardening process helps to speed up the repair process.

KEY PRODUCTS

SOLID STATE RELAYS
SINGLE PHASE

SUL9 Series
Pages 24-25

KEY PRODUCTS

SOLID STATE RELAYS
SINGLE PHASE

SO9 Series
Pages 24-25

• Heaters control

ADVANTAGES:

> SSRs optimized for resistive loads,
> The 22.5mm wide SSR solution,
> «Ready to use» version mounted on heatsink,
> Very high switching frequency.

ADVANTAGES:

> Solid-state relays are a good choice for precise temperature control,
> Long service life.

ENERGY PRODUCTION AND CONVERSION

NUCLEAR POWER PLANTS

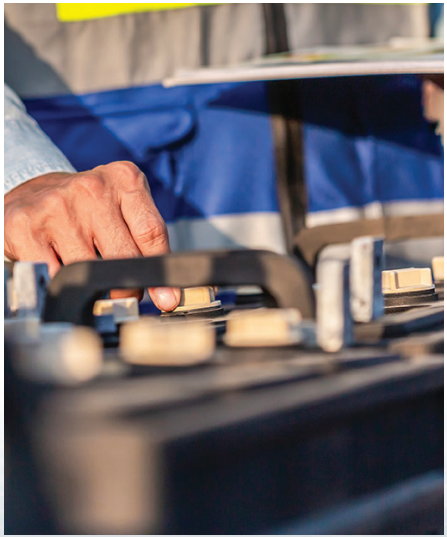
celduc® relais has designed and manufactured sensors for controlling nuclear reactors.These sensors are used in a system with extremely high safety levels. Our sensors have therefore undergone rigorous performance testing in very difficult conditions.
Developing sensors for nuclear reactors once again demonstrates the ability of celduc® relais to create customised solutions in industries where reliability is critical.

ENERGY PRODUCTION AND CONVERSION

ENERGY STORAGE

Most photovoltaic systems include batteries that store the energy generated by the photovoltaic panels in anticipation of periods when there is no sun.

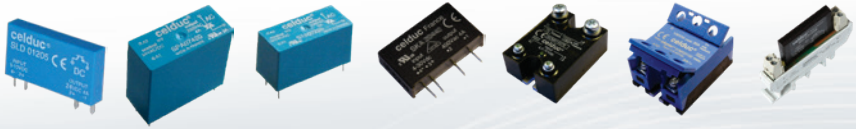
- **DC SSRs are used to switch charge and discharge.**



KEY PRODUCTS

DC Solid State Relays : celduc® range is available up to 1700Vdc and 150A, in different package formats.

- DC Solid State Relays - MOSFET Technology: For applications requiring transient overcurrent withstand (motors)



- DC Solid State Relays - IGBT Technology: For high voltage applications

Pages 28-29

Advantages:

> High switching capacities,

> Compact solutions.

ENERGY MANAGEMENT SYSTEMS

HEAT PUMPS & SMART HVAC SYSTEMS

Temperature control is essential in HVAC applications to maintain a consistent temperature in a dynamic environment. SSRs are used for temperature regulation.

- Control of heating elements

Temperature regulation can be achieved through several methods:

> On-off control

Single phase SSRs for resisitve loads AC-1– SO9 Series

> PID control (closed loop)

SUL relay combined with ECOM0010 module provides a communication interface, a current monitoring and a PID temperature controller.

> Pulse width modulation (PWM control)

SO465620 single phase Phase angle controller

KEY PRODUCTS

celduc® relais offers SSRs adapted to each of these methods, such as the SO465620 for PWM control or the ECOM0010 module which combines communication, current monitoring and PID regulation.

ADVANTAGES:

> Reliable, quiet and durable switching solutions

ENERGY MANAGEMENT SYSTEMS

ENERGY MANAGEMENT

SSRs are used for compressor motor control and fan speed variation, which helps improve energy efficiency.

• Motor control

KEY PRODUCTS

SOLID STATE RELAYS
THREE-PHASE

SGT8 Series
Pages 26-27

AVANTAGES:

> Compact 45mm version,

> Robust and high-performance solution.

ENERGY MANAGEMENT SYSTEMS

ELECTRIC VEHICLE (EV) CHARGING INFRASTRUCTURE

SSRs switch charging circuits dynamically to manage peak loads and demand response.

- ON/OFF switching of charging circuits

KEY PRODUCTS

DC Solid State Relays
SCM Series

Pages 28-29

AVANTAGES:

> Suitable for high-frequency DC load switching,

> System reliability.

Safety and reliability of charging systems for electric vehicles: The SSRs control the cooling fans.

- Control the cooling fans

KEY PRODUCTS

Three-phase
Solid State Relays
SGT8 Series

Pages 27-28

AVANTAGES:

> Long service life,

> Very high switching frequency.

ENERGY MANAGEMENT SYSTEMS

ELECTRIC VEHICLE (EV) CHARGING INFRASTRUCTURE

Reed sensors are an essential component for ensuring a safe and efficient charging cycle.

• Detects presence of charging connector

KEY PRODUCTS

Magnetic sensors to install on PCB
PHA / PHC Series

Pages 30-31

AVANTAGES:

> For mounting on PCBs in complete safety (no switch embrittlement),

> No power supply required.

Securing charging systems for electric vehicles: To avoid accidents and electric arcs, the current flow between the plug and the socket must be constantly monitored.

• Safety sensors are used to confirm the safety lock

KEY PRODUCTS

Safety magnetic sensors with coded magnets
PSS Series

Pages 32

AVANTAGES:

> Securing your systems,

> Can operate in harsh environments (humidity, dust, …).

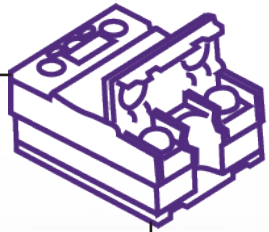
SOLID STATE RELAYS

Solid state relays are particularly well suited to the energy sector, where the equipment often operates under extreme conditions of temperature, vibration, and isolation.

celduc® solid state relays, equipped with back-to-back thyristors and using TMS² technology, therefore offer extremely robust and reliable solutions for companies working in the energy sector.

AC OR DC SOLID STATE RELAYS FOR LOAD CONTROL IN THE ENERGY SECTOR.

- AC switching up to 130A / 690VAC
- DC switching up to 50A / 1700Vp or 150A / 100Vp
- Diagnostics and protection available



Why use solid state relays:

- Long service life
- High switching speeds
- Silent operation
- Increased reliability in harsh environments
- Reduced maintenance requirements
- Numerous diagnostic solutions for monitoring installations
- Low control activation current.

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

s' SOLUTIONS

MAGNETIC PROXIMITY SENSORS

Sensors provide the real-time data and feedback necessary for automation, safety, and efficiency. Whether it's temperature monitoring in a wind turbine nacelle or flow sensing in a biomass boiler, accurate sensing is the backbone of modern energy infrastructure.

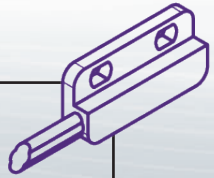
Level sensors

Screw-mounted position sensors

Tubular position sensors

ATEX Sensors

Safety sensors



Why use Magnetic proximity sensors :

- No polarity for easy installation
- No power supply required: therefore no interruption of default position due to power source failure
- Good resistance to shock and vibration
- Wide operating temperature range: from -40°C to +100°C, IP67 protection
- Product completely immune to its environment (temperature, dust, mold, humidity, etc.)
- Accurate detection distances, eliminating the need for adjustment
- Economic solution

MOTOR CONTROL

TAKE BENEFITS OF USING SOLID STATE SOLUTIONS

NEW

Motor control has always been something difficult to tackle 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.

AC Reversing switches

for reversing the direction of AC motors

Several models of reversers are available in our product range up to 7.5kW. They have the interlocking function and over-voltage protections integrated.

Référence	Switching current AC-53	Switching voltage	Control voltage	I²t	Protection	Specifications	Fig nr
SMR8621520	3 x 5A	24-520VAC	12-30VDC	380A²s	Reversing + time delay + RC + VDR	2 phase switching	1
SG969100	3 x 6,6A	24-500VAC	10-30VDC	612A²s		2 phase switching	2
SG969300E	3 x 8,5A	24-500VAC	12-30VDC	1500A²s		2 phase switching	2
SGR8671510	3 x 16A	24-520VAC	12-30VDC	7200A²s		2 phase switching	3
SV969500E	3 x 16A	24-550VAC	12-30VDC	5000A²s		2 phase switching	4

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DC Reversing switches

for controlling (reverse) small DC motors

Reference	Switching current	Switching voltage	Control voltage	Peak voltage	Protection	Fig nr
SGRD01006	10A	8-36VDC	Contact/switch	60V	Voltage and current	5
XKRD30506	5A	7-36VDC	7-30VDC	60V	-	6

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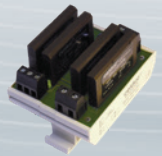


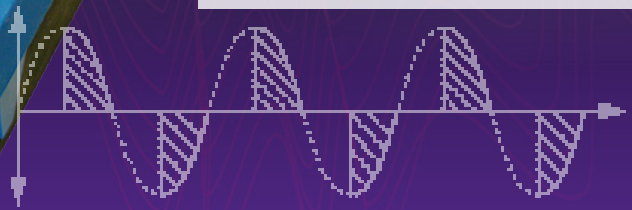
celduc®

OUR RANGE OF CONTROLLERS FOR ACCURATE TEMPERATURE CONTROL

CELDUC® RELAIS OFFERS A WIDE RANGE OF CONTROLLERS WITH VARIOUS CONTROL MODES AND INPUT TYPES.

Types of input control:

0-10VDC, 4-20mA , potentiometer or PWM (Pulse Width Modulation).



Single Phase angle controllers

Reference	Max. switching current	Switching voltage	Control voltage	Fig. nr
SO465020	50A	200-480VAC	0-10V	1
SO465320	50A	200-480VAC	Potentiometer	1
SO467501	75A	160-450VAC	1-5V	3
SO468420	95A	200-480VAC	4-20mA	2
SO465620	50A	200-480VAC	PWM	1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« Ready to use » Single Phase angle controllers

Reference	Max. switching current (40°C)	Switching voltage	Control voltage	Fig. nr
SIL465000	28A	160-450VAC	0-10V	4
SIL465400	28A	160-450VAC	4-20mA	4
SIM465000	35A	160-450VAC	0-10V	5


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Three-Phase angle controllers

Reference	Max. switching current AC-1 (40°C)	Max. switching current AC-3a (40°C)	Control
SVTA4650E	3 x 50A	3 x 12A	0-10V
SVTA4651E	3 x 50A	3 x 12A	Potentiometer
SVTA4684E	3 x 95A	3 x 22,5A	4-20mA
SVTA4690E	3 x 125A (*)	3 x 30A	0-10V
SVTA4691E	3 x 125A (*)	3 x 30A	Potentiometer
SVTA4694E	3 x 125A (*)	3 x 30A	4-20mA

* Maximum current, max. cross sectional area = 10 mm², use double wires or special adaptors for currents > 50A. Please refer to the heatsink installation instructions.

celpac® 2G
okpac®

SINGLE PHASE SOLID STATE RELAYS & CONTACTORS

OUR 3 MOST POPULAR RANGES **SO9, SUL, SOR**

Standard single phase Solid State Relays

- Thyristor rating up to 130A
- Output voltage from 24 to 690VAC (600V – 1200V – 1600V peak)

SO8 – Zero-cross - designed for most types of loads

SO9 – Zero-cross - designed for resistive loads AC-1

Reference	Max. switching Current	Switching voltage	Peak voltage	Control voltage	I²t	Protec.
SO945460	60A	12-280VAC	600V	3-32VDC	2800A²s	-
SO963440	40A	24-600VAC	1200V	3,5-32VDC	1250A²s	TVS
SO965460	60A	24-600VAC	1200V	3,5-32VDC	2800A²s	-
SO967460	90A	24-600VAC	1200V	3,5-32VDC	7200A²s	-
SO842974	25A	12-275VAC	600V	20-265VAC/DC	600A²s	VDR
SO867070	75A	24-510VAC	1200V	3,5-32VDC	7200A²s	VDR
SO869970	130A	24-510VAC	1200V	20-265VAC/DC	7200A²s	VDR

Solid State Relays with push-in spring terminals

Reference	Thyristor rating	Max. switching Current AC-1 at 40°C	Switching voltage	Peak voltage	Control voltage	I²t	Protec.
SOR965440-HE	50A	41A	24-660VAC	1200V	3,5-32VDC	1680A²s	TVS
SOR967440	90A	41A	24-660VAC	1200V	3,5-32VDC	7200A²s	TVS

«Ready to use» Solid State Relays

Reference	Thyristor rating	Max. switching Current AC-1 at 40°C	Switching voltage	Peak voltage	Control voltage	I²t	Protec.
SUL942460	25A	20A	12-280VAC	600V	3-32VDC	600A²s	-
SUL967440	75A	29A	24-600VAC	1200V	3,5-32VDC	7200A²s	TVS

cel3pac
sightpac

THREE-PHASE SOLID STATE RELAYS & CONTACTORS

SGT AND « READY TO USE » **SGT** SERIES
SMT AND « READY TO USE » **SMT** SERIES

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

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.


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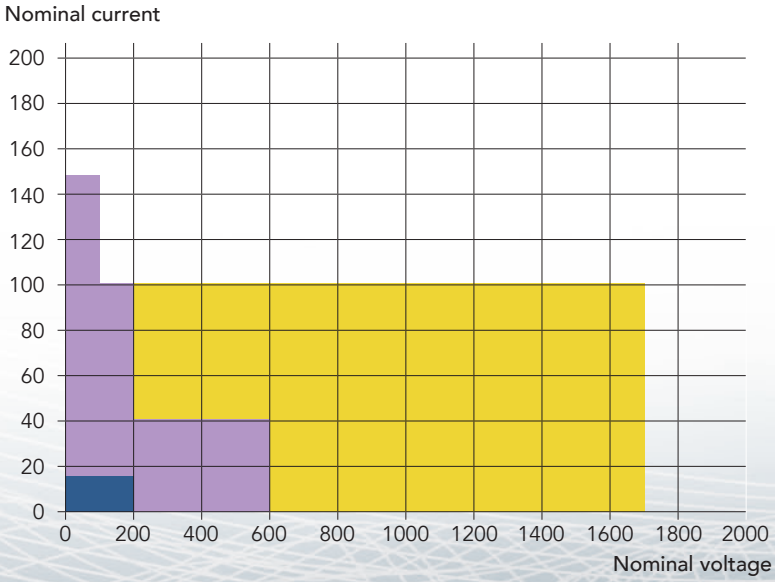
SGT8 / SGTR8 / SMT8 – Zero Cross For Heavy Duty Loads.
SGT9 / SGTR9 – Zero cross for AC-1 (AC-51) resistive loads.

Reference	Thyristor rating	Switching current AC-1 (40°C)	Switching current AC-3 (40°C)	Switching voltage	V peak	Control voltage	I²t	Protec.	Fig. nr
cel3pac Series									
SGT8678500	3x75A	3x75A	3x16A	24-520VAC	1600V	24-255VAC/DC	7 200A²s	RC – VDR	1
SGT8690500	3x125A	3x125A	3x32A	24-520VAC	1600V	4-30VDC	22 000A²s	RC – VDR	1
SGT8850200	3x50A	3x50A	3x12A	24-640VAC	1600V	4-30VDC	2800A²s	VDR	1
SGT8858200	3x50A	3x50A	3x12A	24-640VAC	1600V	24-255VAC/DC	2 800A²s	VDR	1
SGT9834300	3x35A	3x35A	-	24-640VAC	1600V	4-30VDC	1250A²s	TVS	1
SGT9854300	3x50A	3x50A	-	24-640VAC	1600V	4-30VDC	2800A²s	TVS	1
SGT9874300	3x75A	3x75A	-	24-640VAC	1600V	4-30VDC	7200A²s	TVS	1
SGTR9854310	3x50A	3x41A	-	24-660VAC	1600V	4-30VDC	2800A²s	TVS	2
SGTR8690510	3x125A	3x41A	3x32A	24-520VAC	1600V	4-30VDC	22000A²s	RC – VDR	2
sightpac Series									
SMT8620520	3x25A	3x20A	3x5A	24-520VAC	1200V	4-30VDC	380A²s	RC – VDR	3
SMT8628520	3x25A	3x20A	3x5A	24-520VAC	1200V	24-255VAC/DC	380A²s	RC - VDR	3

DC SOLID STATE RELAYS

celduc® relais offers a complete range of DC solid state relays up to 1700vdc, 0 to 150a for DC applications. All technologies are available : BIPOLAR, MOSFET and IGBT

A TECHNOLOGY FOR EVERY APPLICATION!



BIPOLAR

For applications where a low control current is required.

MOSFET

For applications requiring transient overcurrent withstand (motors).

IGBT

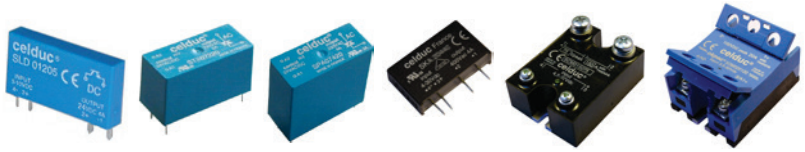
For high voltage applications (> 600VDC).

Currently up to 1700Vdc and 150A.

DC Solid State Relays

Bipolar for applications where a low control current is required.

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



Reference	Switching current	Switching voltage	Peak voltage	Control voltage	Protec.	Fig. nr
SCI0100600	100A	0-350VDC	600V	4,5-32VDC	Backward diode	1
SCI0251700	25A	0-820VDC	1700V	4,5-32VDC	Backward diode	1
SCI0501200	50A	0-750VDC	1200V	4,5-32VDC	Backward diode	1
SMI00201600	20A	500-940VDC	1600V	16,8-36VDC	-Short-circuit protection with fault feedback -Undervoltage lock-out protection for primary side and secondary side (UVLO) -Overvoltage and rapid transient protection	2
SDI0501700	50A	12-940VDC	1700V	24-48VDC	Depending on models : -Overvoltage and rapid transient protection -Load overvoltage and short circuit protection -Temperature protection	3
SDI0501710	50A	12-940VDC	1700V	72-110VDC		3
SDI1001700	100A	12-940VDC	1700V	24-48VDC		3

IGBT for high voltage applications (>600VDC)

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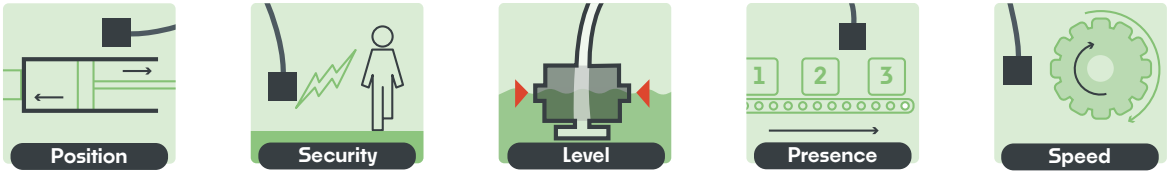
MAGNETIC PROXIMITY SENSORS



WANT TO DETECT A POSITION, DOOR OPENING,
OR THE PRESENCE OF PROTECTIVE COVERS? …
CHECK OUT OUR RANGE OF MAGNETIC PROXIMITY SENSORS.

celduc®relais has over 50 years of experience in this product category and we look forward to working with you to optimize your application with the right sensor.

There are different contact types:

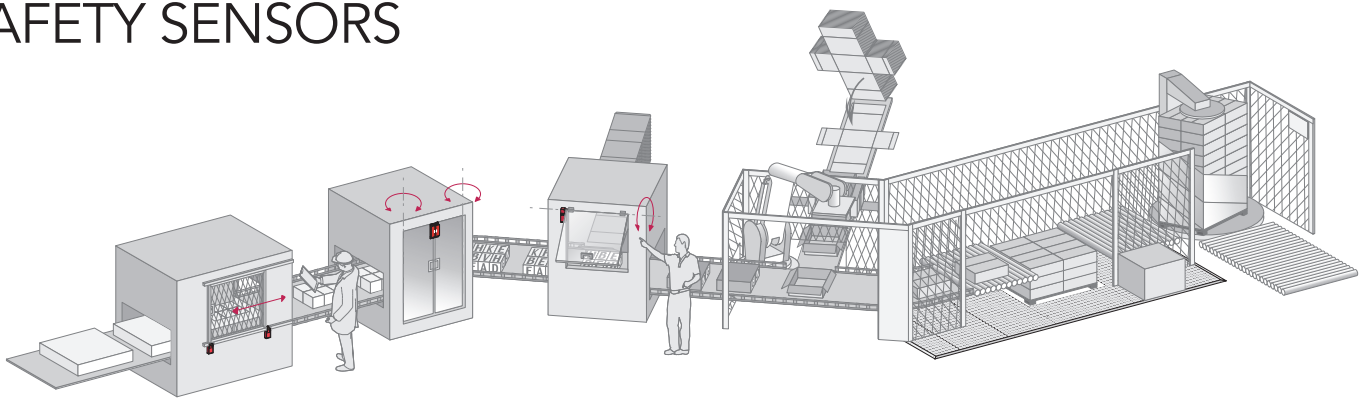
- NO / Form A > Normaly Open
- NC / Form B > Normaly Closed
- BISTABLE / Form L
- CHANGE-OVER / Form C

POSITION SENSORS

Series	PHA	PHC	PLA	PLB	PLC	PB367	PB390	PBA
Contact status	NO	Change-over	NO	NC	Change-over	NC	NO	NO
Max. switching power	12VA	NC : 3VA NO : 8VA	12VA	12VA	NC : 3VA NO : 8VA	NC	NO	NO
Max. switching voltage	100VDC	100VDC	100/250 VDC depending on models	250VDC	100VDC	250VDC	250VDC	250VDC
Max. switching current	0.4A	0.25A	0.4A	0.4A	0.25A	0.5A	0.5A	0.4A
Activation distance	See technical data-sheet	See technical data-sheet	between 10 and 19mm with P6250000 depending on models	4 ≤ D ≤ 12 mm (magnet provided)	between 10 and 14mm with P6250000 depending on models	6mm with P4159000	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	-40 to +100°C	-40 to +100°C
Dimensions (mm)	23x4,2x3,6	23x4,2x3,6	32x15x6,8	32x15x6,8	32x15x6,8	51x8,5x11,5	51x8,5x11,5	51x8,5x11,5
Fixing screws distance	-	-	17.5mm	17.5mm	17.5mm	40mm	40mm	40mm

Other sensitivities, cable lengths or connection types are possible. Consult us !

SAFETY SENSORS



ENSURE THE SAFETY OF MACHINE OPERATORS AND MACHINE RELIABILITY !

2 safety levels compliant with standards EN ISO 13849-1 and EN ISO62061:

The latest safety standards are based on concepts such as the security level (SIL) or the performance level (PL).

SAFETY SENSORS
PSA Series

SIL 1
PL = c

+ ADAPTED SAFETY MODULE

Coded safety sensor in combination with a safety module

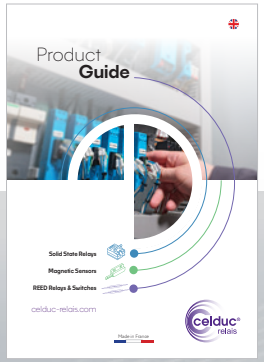
PSS or PXS Series

SIL 1 / 2 / 3
PL = c / d / e

MORE INFORMATION NEEDED ?

www.celduc-relais.com

Catalogues and flyers available on request



Product Guide

Single Phase SSRs &
Contactors celpac range

Three-Phase SSRs
& Contactors cel3pac
& sightpac ranges

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