Температурные контроллеры

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

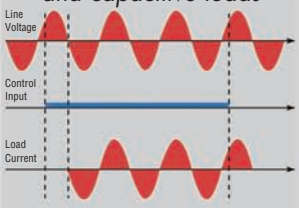
Россия (495)268-04-70
Киргизия (996)312-96-26-47
Казахстан (7172)727-132

cgo@nt-rt.ru || https://gavazzi.nt-rt.ru/

Switching Principles Designed for *Your* Application Requirements

Zero Switching

For resistive, inductive and capacitive loads

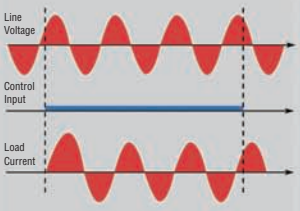


Upon application of the control voltage, the SSR's output is activated at the first zero crossing of the line voltage. The response time is less than a half period, i.e. typically less than 8.33 ms. Also offered with an optional system monitoring function and current sensing function, as shown in the lower right.

Due to the high surge current and blocking voltage capabilities, SSRs of this switching type will also perform successfully with most inductive and capacitive loads. They are the most commonly used SSRs in plastics molding machinery, packaging machines, soldering equipment and machinery for the food processing industry.

Instant-on Switching

For inductive loads

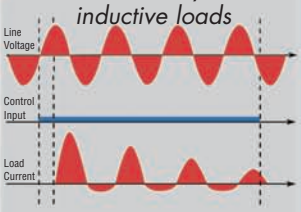


The SSR output is activated immediately after applying control voltage. Consequently, this relay can turn on anywhere along the AC sinusoidal voltage curve. Response times can typically be as low as 1 ms.

The SSR is particularly suitable in applications where a fast response time is desired, such as solenoids or coils.

Peak Switching

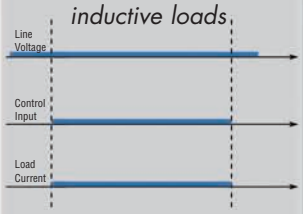
For heavy inductive loads



The peak switching SSR is designed in a way that the power output is activated at the first peak of the line voltage upon application of the control voltage. After the first half period, the Peak Switching SSR operates as an ordinary Zero Switching SSR. The peak of the inrush current could hereafter be reduced during the first half period for inductive loads. Ideally suited for inductive loads with a remnant iron core (i.e. transformers).

DC Switching

For resistive and inductive loads

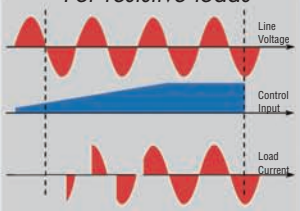


The power semiconductor in the DC switching relay operates in accordance with the control input. The response time is less than 100 ms. DC Switching SSRs are used with resistive and inductive loads for the control of DC motors and valves.

When switching inductive loads it will be necessary to interconnect a free wheeling diode surplus voltage parallel to the load as protection.

Analog Switching

For resistive loads

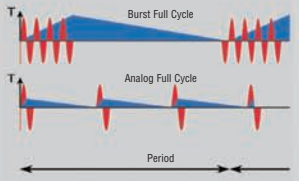


Since the 4-20mA or 0-10VDC control input of the analog relay can be varied, the output operates in accordance with the phase control principle. The relay is equipped with a built-in synchronization circuit in order to achieve phase angle control. The output is proportional to the input signal. The transfer function is linearized and reproducible.

These SSRs are highly advantageous in closed loop applications or where soft starting can limit high inrush currents. Ideal for use in switching quartz heaters or in applications which demand precise temperature control.

Analog Full Cycle Switching

For resistive loads

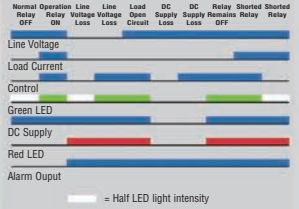


With this particular switching principle, the SSR provides a number of full cycles, evenly distributed over a fixed time period, depending on the control input (either 4-20mA or 0-10VDC) — with the low value of the input corresponding to zero and the high value of the input to a full output with a period of 1.28 seconds.

Typical applications include: Analog control of heating elements with manual or automatic controllers with 4-20mA or 0-10VDC control signal. Control of heating zones, controlled individually by a number of temperature controllers with analog output. Analog control of fragile heating elements which are used for cutting, welding etc., which can have their lifetime extended due to the reduced thermal load stress.

Zero Switching with System Monitoring

For resistive and inductive loads



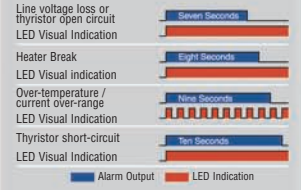
The system monitoring (sense) SSR provides an alarm output in the event of a circuit failure. Internal circuitry monitors:

- Line Voltage
- Load Current
- Correct Functioning of the SSR
- SSR Input Status

The relay is designed for applications where immediate fault detection is required. An alarm output signal is available to determine fault status.

Zero Switching with Current Sensing

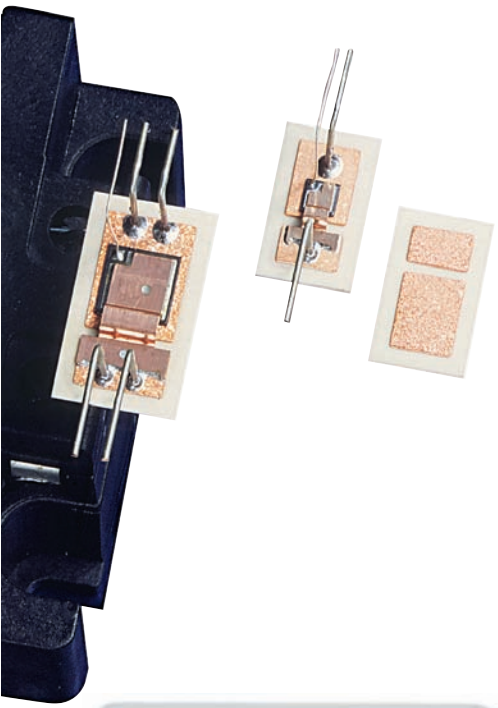
For resistive and inductive loads



The Solitron MIDI current sensing SSR is a zero switching type which also provides an alarm output when it senses variations in the load. Typical conditions that can be detected include: heater break, open circuit, partial heater short circuit, blown fuse, semiconductor short circuit and faulty power connection. Integral current sensing eliminates the need for additional external equipment. "TEACH-IN" set point is achieved by pushbutton or remotely where an HMI is preferred.

As shown above, the PNP alarm output provides a series of pulses which identify the specific type of fault detected. Interfacing to a PLC can provide a clear indication of fault. An NPN alarm output is also available.

The RJ1P Modbus combines the functionality of Zero Switching, Analog Switching, Analog Full Cycle Switching, System Monitoring and Current Sensing, with the addition of voltage, current, power and frequency measurements.

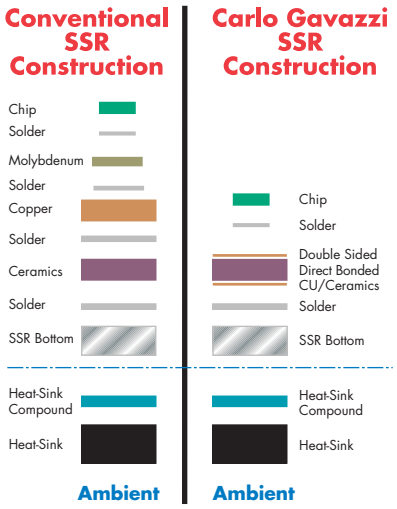


Prolonged life expectancy – Utilizing direct copper bonding

Cutting edge manufacturers of solid state devices have started to change from their previous production technology - the soldering of power semiconductors on copper conductors which, in turn, are soldered on a metallized ceramic disc and finally, to a copper or aluminum base - to state-of-the-art substrate technology. By looking at the comparison in the lower corner of this page, you will see - previously, at least four solder joints between the output chip and the heat sink were required, whereas the new production means has cut the number of solder joints in half. This technology makes use of what is called a DCB (direct copper bonding) substrate which, in terms of load change strength, is superior to all previous techniques. The reduction in the number of required components with the DCB substrate simplifies the production process and improves the quality of the product.

The DCB Substrate

With the DCB substrate, the copper is bonded directly to the ceramic substrate. In the production process, copper conductors with a thickness of 0.3 to 0.5 mm are bonded to ceramic, at temperatures in excess of 1900°F. The temperature is chosen such that a joint layer is generated between the ceramic surface and the copper, the expansion coefficient of which is slightly higher than that of the ceramic substrate. This also assures the material expansion coefficient against silicon (the output chip) is negligible. Hence, thermal stress or fatigue will not cause premature failure of power output semiconductors.

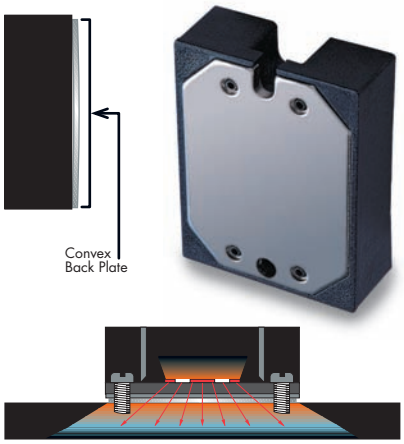


Reliability determines the standard of power semiconductors

The major benefits to the customer result from improved heat transfer from the chip to the external heat sink and from a reduction of the mechanical stress in connection with major load changes. Due to the direct makeup of the DCB substrate, an optimum solder joint is accomplished. Materials such as beryllium oxide and molybdenum, that have been used up until now, are no longer required. With the conventional soldering technique, they were used to compensate for negative thermal and electrical characteristics.

Solid state relays make use of new technologies

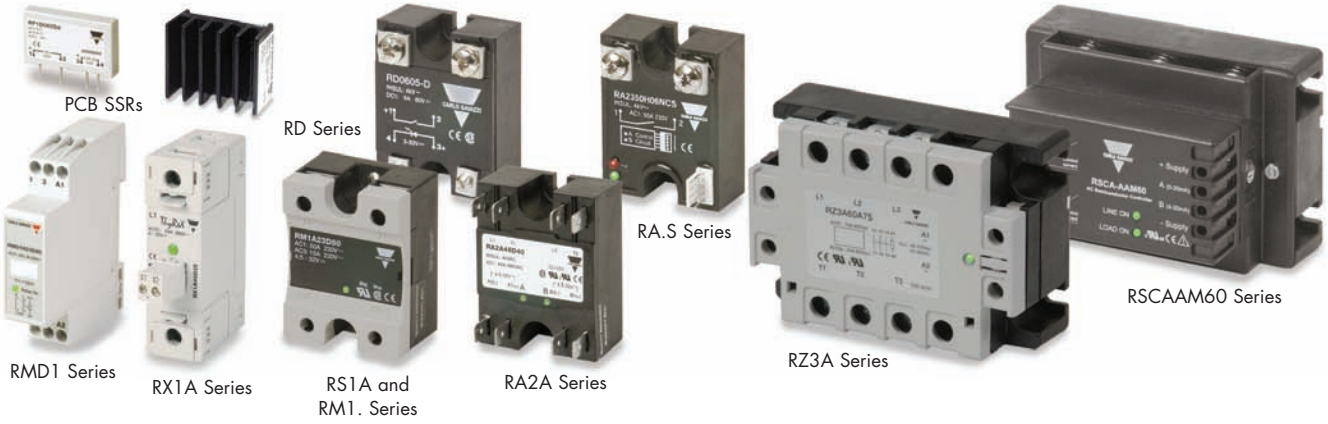
Semiconductor relays combine the advantages of power modules with the function of separate control. Primarily, they are used as interface modules between controller (logic) and load. As a result of their outstanding advantages over electromechanical components, they are gaining more and more market share. They take advantage of the fact that new applications demand faster and more accurate processes, defined switching sequences and more reliability. It is therefore obvious that when designing and producing solid state relays, no compromises can be made. Carlo Gavazzi produces single and three phase solid state relays. Only DCB substrates with high quality thyristors and alternistors are used in their manufacture. The design of their casing and heat sink excels in functionality and efficiency. The casing carries a slightly protruding or convex back plate, assuring ideal thermal contact to the external heat sink. Therefore, any excess heat conducting paste will not increase the thermal resistance - optimum heat conductance is a guarantee!



Carlo Gavazzi - the supplier of choice!

With solid state relays for currents in excess of 100 amps and for voltages up to 690 VAC, Carlo Gavazzi offers a variety of solid state switching controls. For the customer, it is of importance to have knowledge of the manufacturer's production techniques and internal relay design. Only production at a high quality level and advanced market-oriented product design guarantees successful use in the field. This brochure will give you a glimpse of our solid state switching relays and contactors. Also, as you can see from the back cover of this brochure, in addition to our solid state switching controls, Carlo Gavazzi offers you a multitude of automation con- trol components.

PCB, Chassis and DIN Rail Mount SSRs



PCB Mount SSRs

RP1A Series: Zero switching, up to 10A @ 480VAC

RP1B Series: Instant-on switching, up to 10A @ 480VAC

RP1D Series: DC switching, up to 8A @ 60VDC or 1A @ 350VDC

RMD1 Series Hybrid Relays

- Thyristors initially switch the current, and then after a short delay, they transfer to an internal electromechanical relay
- Zero switching, up to 20A @ 253VAC
- Over 5 million operations
- 4-32VDC or 24-275VAC control voltage
- Green LED status indicator
- 81 x 17.5 x 67.2mm (H x W x D) DIN rail mount housing

RX1A Series Fast-Connect Thyrex SSRs

- Quick efficient wiring via fast-connect terminals:
  - » Screw terminals or
  - » Spring terminals or
  - » Fast-on (power) terminals
- Two 22.5mm wide Thyrex-specific heat sinks
- M4 mounting holes are interchangeable with standard 'hockey puck' SSRs, but half the width
- Zero switching thyristor, up to 50A @ 552VAC
- 4-32VDC or 36-265VAC control voltage
- Up to 1200Vp non-repetitive peak voltage
- Green LED status indicator and built-in snubber protection
- 76 x 22.5 x 56mm (H x W x D) chassis mount housing

RS1A Series Zero Switching SSRs

- Economically priced triac (10A) or alternistor (25 and 40A)
- Zero switching, up to 40A @ 530VAC
- 3-32VDC, 18-35VAC/DC, 110, 230 or 400VAC control voltage
- Up to 1200Vp non-repetitive peak voltage
- Green LED status indicator
- 58.2 x 44.8 x 28.8mm (H x W x D) chassis mount housing

RM1A Series Zero Switching SSRs

- Zero switching thyristor, up to 100A @ 660VAC
- 3-32VDC, 5-24VAC/DC or 22-48VDC / 20-280VAC control voltage
- Instant on switching (RM1B), 3-32VDC control voltage only
- Up to 1400Vp non-repetitive peak voltage
- Green LED status indicator and built-in MOV protection
- 58.2 x 44.8 x 28.8mm (H x W x D) chassis mount housing

RM1C Series Peak Switching SSRs

- Peak switching thyristor, for inductive loads up to 30A @ 660VAC
- 4.25-32VDC control voltage
- Up to 1400Vp non-repetitive peak voltage
- Green LED status indicator
- 58.2 x 44.8 x 28.8mm (H x W x D) chassis mount housing

RM1E Series Analog Switching SSRs

- Analog switching thyristor, up to 100A @ 660VAC
- 4-20mA or 0-10VDC control signal
- Up to 1400Vp non-repetitive peak voltage
- Green LED status indicator
- 58.2 x 44.8 x 28.8mm (H x W x D) chassis mount housing

RD Series DC Switching SSRs

- DC switching transistor, up to 5A @ 60VDC or 1A @ 350VDC
- 3-32VDC control voltage
- 58.2 x 45.5 x 30mm (H x W x D) chassis mount housing

RA2A Series Dual Output SSRs

- Dual output, zero switching alternistor, up to 40A @ 660VAC
- Dual input, 4.5-32VDC control voltage
- Up to 1200Vp non-repetitive peak voltage
- Fast-on spade terminals
- Two green LED status indicators
- 57.8 x 44.5 x 31.7mm (H x W x D) chassis mount housing

RA...S Series System Monitoring (Sense) SSRs

- Provides a transistor alarm output upon failure of supply, function or load
- Zero switching alternistor, up to 110A @ 530VAC
- 20-32VDC supply voltage with a 4.5-32VDC control voltage
- Up to 1200Vp non-repetitive peak voltage
- Diagnostic green and red LED status indicators
- 57.8 x 44.5 x 31.7mm (H x W x D) chassis mount housing

RZ3A 3-Phase Zero Switching SSRs

- Three zero switching alternistors, up to 75A @ 660VAC
- 5VDC, 4-32VDC or 24-50VDC / 24-275VAC control voltage
- Up to 1200Vp non-repetitive peak voltage
- Green LED status indicator, built-in snubber networks, IP20 protective cover, captive wire clamps and
- Optional over-temperature protection, transistor alarm output and red LED alarm status indicator
- 73.5 x 103 x 41mm (H x W x D) chassis mount housing

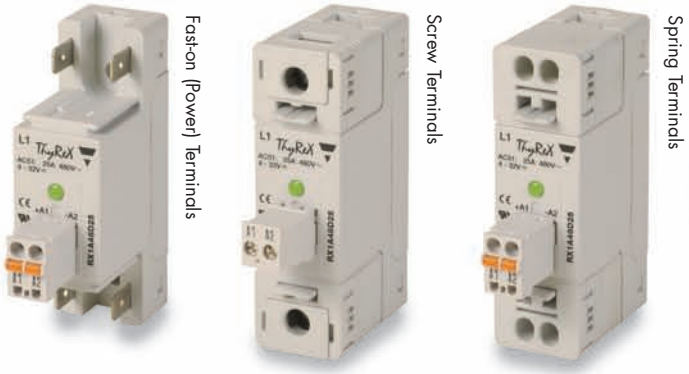
RSCAA 3-Phase Analog Switching SSR

- Phase angle controller for inductive/resistive loads (pumps, fans, heaters, lights, etc.)
- Three zero switching alternistors, up to 110A @ 625VAC
- 10-32VDC supply voltage with a 0 or 4 to 20mA control signal
- Up to 1600Vp non-repetitive peak voltage
- Red LED status indicators for line and load energization, built-in MOV protection
- Optional over-temperature protection
- 66 x 103 x 73.5mm (H x W x D) chassis mount housing

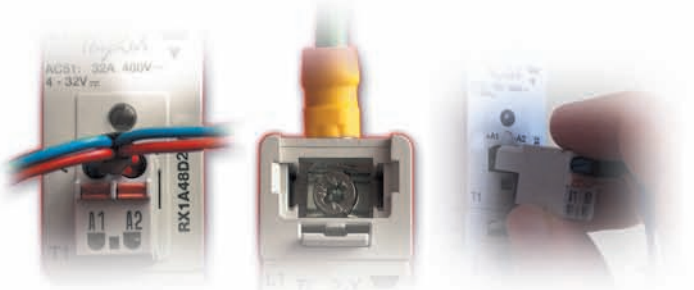
PCB & Chassis Mount Solid State Relays

Innovative *Fast-Connect* ThyReX Series

Three Options in One Device



Various Solutions to Fit All Your Needs



For Looping | For Ring Terminals | Quick Troubleshooting

Faster, More Efficient Panel Building: The revolutionary THYREX fast-connect system allows technical staffs to pre-wire the cable harness outside of the panel. Base modules can be separately pre-mounted onto their heatsink – an operation requiring much less expertise. **Result:** Leaner panel building. **Fast assembly:** Both power and control terminals plug-on.

RM1*x* Series Chassis Mount Solid State Relays

Clip-on protection cover is removable with a screwdriver

Terminals with support surface for connection of cables with wire clamps, cable shoes or ring terminals

IP protected connection of cables with ring terminals up to 5 AWG (16 mm²)

Quick, safe installation which can easily be tested through the protective cover's holes

A Wide Variety of Heat Sinks for Efficient Heat Dissipation

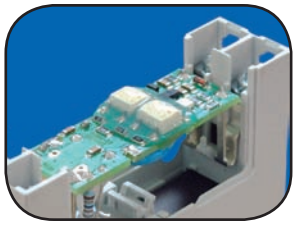
Carlo Gavazzi offers an extensive range of RHS Series heat sinks and other various accessories including:
fork terminals (lug connectors for larger size load wires), thermal paste, MOVs, protective covers, PCB SSR sockets, etc.

SOLITRON Solid State Relays and Contactors

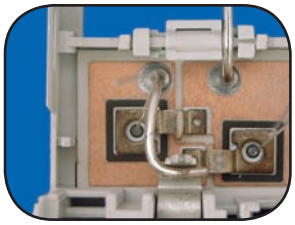
Larger amperage SOLITRONS are provided with an integral fan

CARLO GAVAZZI's SOLITRON Series is the result of over two decades experience in designing, manufacturing and marketing solid state relays. With the SOLITRON family, customers get a product with exceptional features, which provide unparalleled benefits, resulting in a prolonged application life. It is offered in several switching types, including dual input/output types, which is unmatched in the industry. They provide a fast switching, long lasting alternative to noisy electromechanical contactors and environmentally hazardous mercury contactors.

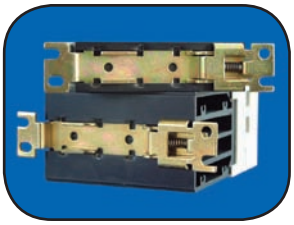
Features



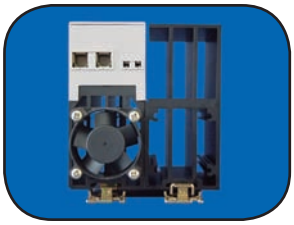
Surface mount technology provides reliability



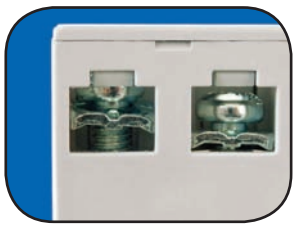
Direct copper bonding technology used throughout



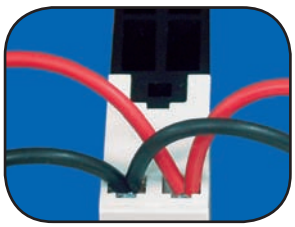
DIN-rail or panel mounting supports



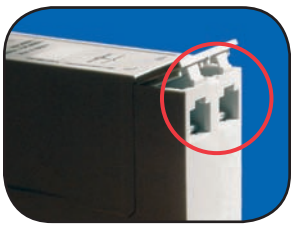
Mounting holes for forced air cooling
(Midi & Power only)



Self-lifting terminal clamps
(Mini only)



Secure looping of cables up to 2.5mm² — AWG 12
(Mini only)



Removeable IP20 cover
(Mini only)

Use of ring terminals for cables up to 4mm² — AWG 10
(Mini only)

Cage-clamp terminals from 45 to 90A guaranteeing secure connection of cables up to 25mm² — AWG 3
(Midi & Power only)

Choice of two terminal layouts making it easier to fit into existing panel designs

Identification window and LED indication of input status and optional over-temperature alarm status

Optional over-temperature alarm signal output
(Midi & Power only)

DIN Rail Mount Solid State Relays/Contactors

RJ2A SOLITRON MINI

RJ1A SOLITRON POWER
RJD2A Two Pole SOLITRON
RJ2A/RJ3A Three Phase SOLITRON

RJ1P
Analog Switching
SOLITRON

RJ1A SOLITRON MINI

RJ1A SOLITRON MIDI
RJD2A Two Pole SOLITRON
RJ2A/RJ3A Three Phase SOLITRON

RJCS
Current Sensing
SOLITRON

RJ1P
Modbus
SOLITRON

RJ1A Series SOLITRON MINI*
- Zero switching thyristor, up to 30A @ 660VAC
- 4-32VDC or 24-275VAC control voltage
- 80 x 22.5 x 103mm (H x W x D) DIN rail mount housing

RJ2A Series SOLITRON MINI (2 Pole)*
- Two pole, zero switching thyristors, up to 18A @ 530VAC
- Common control input for two single pole switching or 2-pole 3-phase economy switching (leaving one pole live)
- 4-32VDC control voltage
- 103 x 22.5 x 125mm (H x W x D) DIN rail mount housing

RJ1A Series SOLITRON MIDI*
- Zero switching thyristor, up to 75A @ 660VAC
- 4-32VDC or 24-275VAC control voltage
- 45A/50A: 81.7 x 45 x 103mm (H x W x D) DIN rail mount housing
- 75A: 122 x 45 x 103mm (H x W x D) DIN rail mount housing

RJ1A Series SOLITRON POWER*
- Zero switching thyristor, up to 90A @ 660VAC
- 4-32VDC or 24-275VAC control voltage
- 70A: 81.7 x 90 x 103mm (H x W x D) DIN rail mount housing
- 90A: 122 x 90 x 103mm (H x W x D) DIN rail mount housing

RJD2A Series Two Pole SOLITRON*
- Two pole, zero switching thyristors, up to 45A @ 660VAC
- Individually controlled by two inputs, 4-32VDC control voltage
- 30A: 81.7 x 45 x 103mm (H x W x D) DIN rail mount housing
- 45A: 81.7 x 90 x 103mm (H x W x D) DIN rail mount housing

RJ2A Series 3-Phase SOLITRON (2-Pole)*
- Three phase, zero switching thyristors, up to 32A @ 660VAC
- Two pole switching (with one live pole) provides economical switching of three phase resistive loads, i.e. heating elements
- Optional over-temperature protection
- 5-32VDC or 24-275VAC/24-190VDC control voltage
- 25A: 81.7 x 45 x 103mm (H x W x D) DIN rail mount housing
- 32A: 122 x 90 x 103mm (H x W x D) DIN rail mount housing

RJ3A Series 3-Phase SOLITRON (3 Pole)*
- Three phase, zero switching thyristors, up to 32A @ 660VAC
- Three pole switching provides switching of three phase resistive loads, i.e. heating elements, bands, etc.
- Over-temperature protection on 32A version (optional on 20 and 25A) versions
- 5-32VDC or 24-275VAC/24-190VDC control voltage
- 20A: 81.7 x 45 x 103mm (H x W x D) DIN rail mount housing
- 25A: 81.7 x 90 x 103mm (H x W x D) DIN rail mount housing
- 32A: 122 x 45 x 103mm (H x W x D) DIN rail mount housing which features an integral fan and over-temperature protection

RJCS Series Current Sensing SOLITRON*
- Provides a transistor alarm output upon detecting a voltage or current load or line failure
- Relay 'teaching' can be done manually or remotely from PLC
- Adjustable 2-40 second time delay for current sensing alarm output
- Over-temperature protection
- Zero switching thyristor, up to 50A @ 660VAC
- Diagnostic green and red LED status indicators
- 81.7 x 45 x 103mm (H x W x D) DIN rail mount housing

RJ1P Analog Switching SOLITRON*
- Single pole analog switching of resistive loads up to 50A @ 660VAC
- Five selectable mode of operation: Phase Angle, Distributed Full Cycle, Burst Control (1, 3 or 10 seconds)
- 0-10VDC or 4-20mA control input
- Load and control status indication
- 81.7 x 45 x 107mm(H x W x D) DIN rail mount housing

RJ1P Modbus SOLITRON*
- Four software selectable modes: On/Off, Phase Angle, Distributed and Burst Firing
- Single phase switching of resistive loads up to 50A @ 265VAC
- SSR control is done in Modbus protocol over RS485 interface
- 81.7 x 45 x 122mm (H x W x D) DIN rail mount housing
- Monitoring of over-temperature, SSR fault and line and load loss are standard features
- Measurement of voltage, current, power and frequency is an optional feature

*All SOLITRONS feature one or more green LED status indicator(s), a built-in protective snubber network and up to 1200Vp non-repetitive peak voltage ratings.

По вопросам продаж и поддержки обращайтесь:

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Казахстан (7172)727-132

cgo@nt-rt.ru || https://gavazzi.nt-rt.ru/