SC-SI/PR SERIES

Brake resistors

HIGHLIGHTS

- From 600 W up to 12000 W
- Spiral wirewound resistor
- Galvanised IP20 steel enclosure
- Optional thermal sensor
- ROHS (EU 2002/95/CE) and REACH compliant
- (CE low voltage directive) IEC 60634 compliant
- Negligible audible noise
- Natural convection



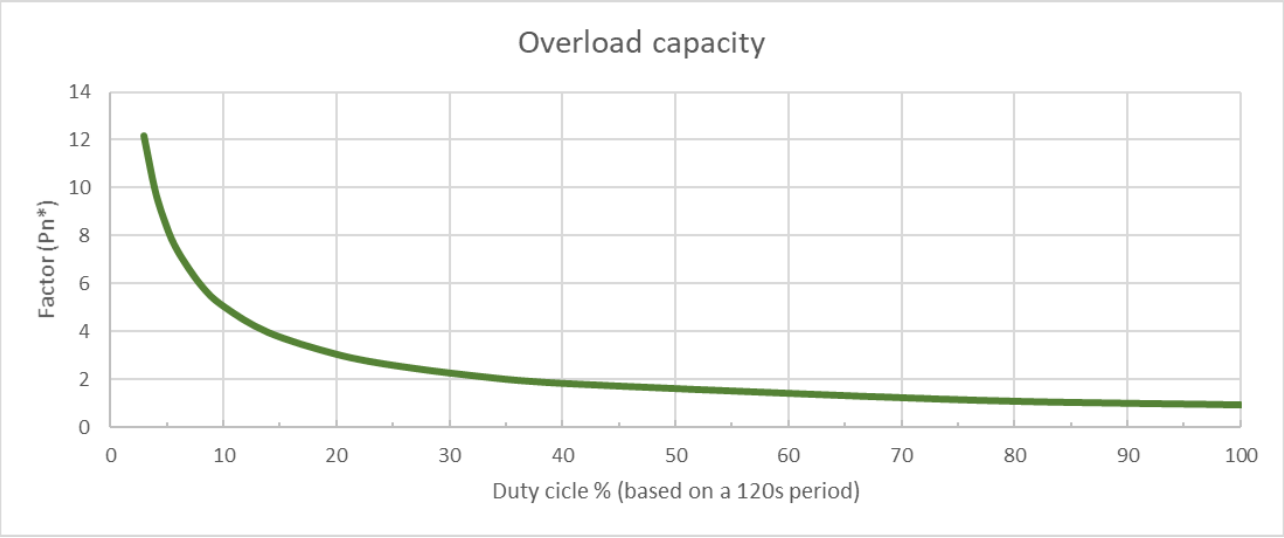
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GENERAL AND TECHNICAL CHARACTERISTICS

Spiral wire wound resistor composed by a ceramic tube with a high heat dissipation level and mechanical resistance used as support for the spiral resistive wire. Specially recommended **“**gearless” motor and for its “noiseless” characteristic.

Covering the tube and the extremities, we use a galvanised steel enclosure suitably perforated for correct ventilation. This protection is IP20. We can supply it with or without thermal sensor and with the customer’s ohm value specification.

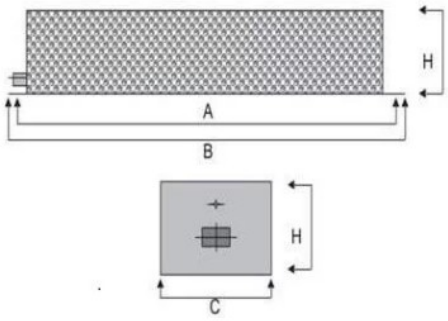
COMMON TECHNICAL CHARACTERISTICS	
Temperature coefficient	40 ppm to 250 ppm
Maximum load peak	10*Pn , 5 s. (see overload graph)
Maximum operating voltage	1000 V_{AC}
Standard protection	IP20
Resistor tolerance	5%
Inductance value	Less than 20µH
Ohmium resistance value	From 3R to 10KR
Insulation resistance	>10GOhms (1000V_{DC} / 1min.)
Superficial temperature	> 80ºC
Dielectric strength	3500V_{RMS} (50Hz / 1 min.)



Reserves the right to change limits, test conditions and dimensions given in this data sheet at any time without previous notice.

Reference	Nominal power W.	Dimensions (mm.)				Weigth (Kg)
		A	B	C	H	
SC-SI / PR1 xR 5% 600	600	390	431	80	135	2,2
SC-SI / PR1 xR 5% 1000	1000					
SC-SI /PR1 xR 5% 2000	2000					
SC-SI /PR2 xR 5% 3000	3000	390	431	180	135	5,0
SC-SI /PR2 xR 5% 4000	4000					
SC-SI /PR3 xR 5% 5000	5000	390	431	266	135	
SC-SI /PR3 xR 5% 6000	6000					7,5
SC-SI /PR4 xR 5% 7000	7000	390	431	352	135	10,0
SC-SI /PR4 xR 5% 8000	8000					
SC-SI /PR6 xR 5% 0000	10000	390	431	535	135	15,0
SC-SI /PR6 xR 5% 11000	11000					
SC-SI /PR6 xR 5% 12000	12000					
SC-SI /PR8 xR 5% 13000	13000	390	431	700	135	20,0
SC-SI /PR8 xR 5% 14000	14000					
SC-SI /PR8 xR 5% 15000	15000					
SC-SI /PR8 xR 5% 16000	16000					





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DETAILED DESCRIPTION

SC-SI/PR Hi-Power resistors models are manufactured using high grade Nickel Chrome wire. The resistance value of this changes little over the temperature range of the element.

They are wire wound resistors composed by a resistive element coiled on a ceramic tubular core used as support, to ensures high dissipation capacity and excellent resistance to thermal shock and overload. Low inductance open wound element.

The construction allows high power dissipation in a small space. This set, with lateral supports and galvanized enclosure perforated to insure correct ventilation, is in accordance with the IP20 protection requirement. They can be supplied with a thermal protector and with the ohmic value required by the customer.

SI/PR power resistors are designed to meet low cost requirements of industrial users and to have, at the same time, good quality and reliability, joined with high power dissipation, mechanical strength and excellent endurance.

The resistive element is wound not in close contact with the ceramic support, so that the resistive element can expand thermally in the presence of high loads, to the point of reaching even 800ºC.

Due to the peculiar form of the winding, the air turbulence will be favoured and consequently an excellent thermal exchange with the cooling air is assured.

Higher braking powers can be absorbed by a braking resistor connected across the DC link. Low temperature coefficient offering a constant ohmic value over a large temperature range. Power resistors being passive electronic or electrical units are not affected by the specific EMC standards. They do not produce any interfering radiations nor are they affected.

The characteristics of the SC-SI/PR resistors make them particularly suitable for limiting strong currents, battery discharge, etc.

MATERIAL USED

External protection: NA
Resistive element: Ni-Cr, according to DIN 17470
Substrate: Ceramic
Terminals: Nickel plated brass/stainless steel AISI 304 collars, IP00

MAIN CHARACTERISTICS

Flammability: All materials are inorganic and inherently no-burning and no-smoking.
Solvent resistance: The cemented coating and marking are resistant to all common industrial cleaning fluids.

THERMAL SWITCH CONNECTION

By removing the terminal plate, it is possible to reach the ceramic terminal to connect the resistor. A cable gland is provided for the power cable entry. For the versions with optional thermostat (Klixon) there is also a cable gland for connecting the thermostat

INSTALLATION

Unit is designed for mounting horizontally with the largest open face up. Other orientations may result in increased element temperatures. The resistor should be protected by appropriate safety measures against overloading. Do not mount the resistor with any obstruction in the air inlet or air outlet area. Mount the

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resistor on a plane area. The resistor has to be grounded.

WARNING

Units must never be situated so that the terminal box is the highest point of the resistor. Units must never be situated so that the largest open face is at the bottom. In cases of insufficient cooling or false mounting the resistor or the surrounding devices could be overheated or ruined

SAFETY INFORMATION

Please read carefully these instructions to correctly install and maintain this item as well as to guarantee a safety work and an efficient life. Only technically qualified and competent persons should install this SC-SI/PR. This resistor must be installed in accordance with these instructions. Disconnect and isolate all electrical connections before installation or maintenance.

MATERIALS

Materials that are combustible or that may be affected by the heat must not placed close to the enclosure. This is especially important above the enclosure. Such materials include most plastics and other non-metals.

HAZARDS

The SC-SI/PR contains hazardously high voltages when it is connected. The surfaces of the SC-SI/PR may be hazardously hot during operation. The resistor element(s) may glow briefly in operation. This is not a fault.

FACTORY TESTING

Every SC-SI/PR satisfies the following requirements:

- Resistor tolerance on nominal value at room temperature is: +10%, -0% (measurement uncertainty 0.1%)
- Voltage withstand capability (between resistor element and enclosure): 3kV for 1 second
- The enclosure gets hot. Do not use it to support any cables
- If required, connect the over temperature sensor (Push-on terminals)
- Ensure that all connections (including the earth) are tight before refitting the cover
- Isolate and check that the electrical supply is disconnected before working on the resistor.
- Check the ventilation holes in the enclosure are not obstructed.

The SC-SI/PR is fitted with a printed indication specifying its power rating and ohm value.

MAINTENANCE

The only maintenance required is to ensure that the SI is undamaged and reasonably clean. The frequency of maintenance checks will depend on the working environment. Initially checks should be made at least annually.

- Isolate and check that the electrical supply is disconnected before working on the resistor.
- Check the ventilation holes in the enclosure are not obstructed. Remove the cover and using a soft brush clean away any build up of dust and dirt.
- Check all connections are tight.

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- Check warning labels are clean and undamaged.
- Refit the cover.

ENVIRONMENTAL CONSIDERATIONS

SC-SI/PR model convert electricity into heat to produce an essential braking effect. They have no other environmental impact. SI models contain no hazardous materials.

At the end of their useful life all the metallic parts are recyclable and can be reprocessed.

INSTALLATION REQUIREMENTS

Free airflow

- It is essential to allow a free flow of air around the SC-SI/PR enclosure because the air leaving the resistor and the enclosure surface temperature can exceed 100ºC.
- The minimum recommended clearance to other equipment is 250mm
- Do not obstruct the ventilation holes in the enclosure If the SC-SI/PR is mounted within a cabinet:

The cabinet must be well ventilated. This means a minimum free air opening at the top and bottom of the cabinet of 30cm^2/kW of SC-SI/PR power. Forced cooling should be used where there is insufficient natural ventilation. The SC-SI/PR should be mounted as high as possible within the cabinet

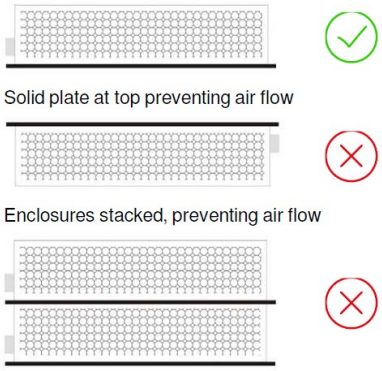
INSTALLATION PROCEDURE

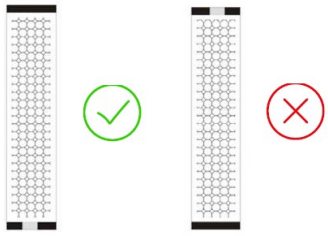
Isolate and check that the electrical supply is not live before beginning.

- Remove the cover if necessary to reach the mounting holes.
- Fix to mounting surface.
- Cable access is through ceramic connector block.
- Connect the resistor using suitably rated cable. The resistor is not polarity sensitive.
- Connect the cable earth to the earthing point in the enclosure.
- If required, connect the over temperature sensor.
- Ensure that all connections (including the earth) are tight before refitting the cover.
- Before operation ensure there are no obstructions to prevent proper ventilation.

POSITIONING REQUIREMENTS

The enclosure must be mounted on a flat surface, ideally horizontally with the solid plate at base





The cable compartment must be at the bottom when the enclosure is mounted vertically

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ORDER CODES

SC-SI / PRx 32R 5% 1000 KL
(1) (2) (3) (4) (5) (6)

(1) - Product reference (SC-SI)
(2) - Format (see dimensional data in table).
(3) - Resistive nominal value (in the example 32 Ohms)
(4) - Resistive tolerance value (standard 5%)
(5) - Power (in the example 1000 W)
(6) - Optional, thermal trip (150ºC NC)

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Cost Effective Products

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Advance Information: The product design is complete and final characterization for volume production is well in hand.
No Annotation: The product parameters are fixed and the product is available to data sheet specification.

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