

## 1.5 Solid State Relays



Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
<b>CSS Series</b>						
AC Solid state relay, Instantaneous switching	CSS-I			3 A / 250 V		S10
AC Solid state relay synch. to zero crossing	CSS-Z			3 A / 250 V		S10
NPN Solid state relay	CSS-N				6 A / 48 V	S10
PNP Solid state relay	CSS-P				6 A / 48 V	S10
<b>CRINT Series</b>						
DC solid state switch	CRINT-C1x5				2 A / 24 V	
AC solid state switch	CRINT-C1x8			1 A / 240 V		

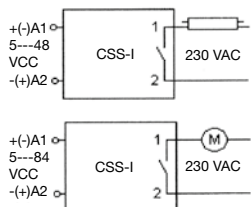
# CSS-I

## 4-pin, Interface solid state relay, 1-pole, plug-in faston

<b>Type</b>	<b>CSS-I</b> Solid state relay For switching resistive and inductive AC loads Instantaneous
<b>Output</b>	<b>1 N/O contact</b>
<b>Operating range</b>	<b>3 A, 24 ... 250 VAC, 50/60 Hz</b>
<b>Minimum contact load</b>	<b>35 mA</b>
<b>Control circuit</b>	
Input voltage range	5 ... 48 VDC
Input current	10 mA
<b>Output circuit</b>	Instantaneous
Max. output current	3 A
Min. output current	35 mA
Output voltage range	24...250 VAC
Inrush current	150 A/10 ms
Residual current	1 mA
I <sup>2</sup> t value	210 A <sup>2</sup> s
<b>Specifications</b>	
Ambient temperature operation/storage	-40 ... 70 °C / -40 ... 85 °C
Pick-up time	0.06 ms
Release time	0.06 ms
Weight	28 g

### Applications

It is specially suitable to switch inductive loads up to 3A/250 VAC. For switching loads with a high inrush or overcurrent as transformers, motors or fluorescents, the maximum output current will limit to 2 A.



### Standard types

VDC 5-48

**CSS-I12X/DC5-48V**

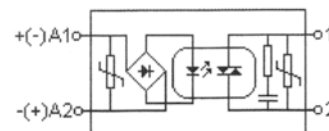
### Accessories

Socket:

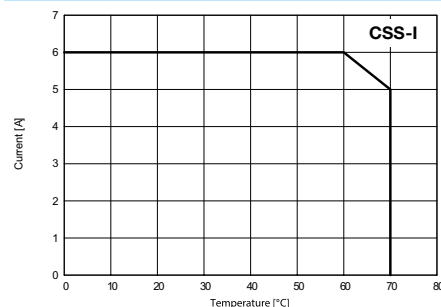
**S10, S10-M, S10-P**



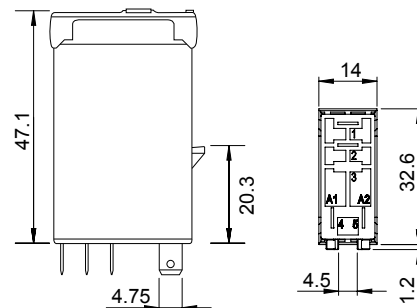
**Fig. 1 CSS-I diagram**



**Tab. 2 AC derating curve**



### Dimensions [mm]



### Technical approvals, conformities



# CSS-Z

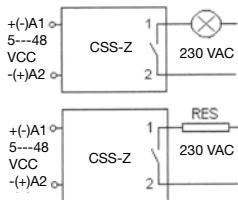
## 4-pin, Interface solid state relay, 1-pole, plug-in faston

<b>Type</b>	<b>CSS-Z</b> Solid state relay For switching resistive lamps and AC loads Synchronized to zero crossing
<b>Output</b>	<b>1 N/O contact</b>
<b>Operating range</b>	<b>3 A, 24 ... 250 VAC, 50/60 Hz</b>
<b>Minimum contact load</b>	<b>35 mA</b>
<b>Control parameters</b>	
Input voltage range	5 ... 48 VDC
Input current	10 mA
<b>Output</b>	Synchronized zero
Max. output current	3 A
Min. output current	35 mA
Output voltage range	24 ... 250 VAC
Inrush current	150 A/10 ms
Residual current	1 mA
I <sup>2</sup> t value	210 A <sup>2</sup> s
<b>Specifications</b>	
Ambient temperature operation/storage	-40...70 °C / -40 ... 85 °C
Pick-up time	10 ms
Release time	10 ms
Weight	28 g

### Applications

Switches ohmic AC loads up to 3 A/250 VAC in the zero-point of the tension and avoids any overcurrent peak in the connection.

Suitable for switching resistors, incandescent lamps, signalling equipment, etc. Not suitable for inductive loads



### Standard types

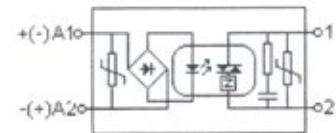
VDC 5-48 **CSS-Z12X/DC5-48V**

### Accessories

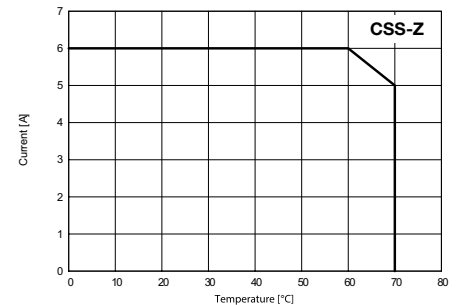
Socket: **S10, S10-M, S10-P**



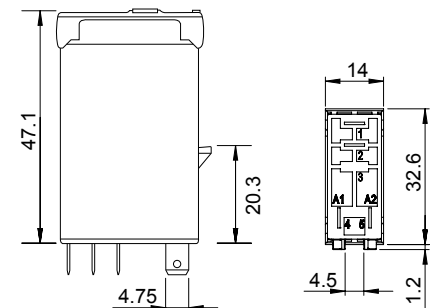
Fig. 1 CSS-Z diagram



Tab. 2 AC derating curve



### Dimensions [mm]



### Technical approvals, conformities



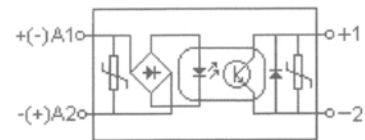
# CSS-N

## 4-pin, Interface solid state relay, 1-pole, plug-in faston

<b>Type</b>	<b>CSS-N</b> NPN solid state relay Terminal commun 2 negative (S10 socket)
<b>Output</b>	1 N/O contact
<b>Operating range</b>	<b>6 A, 5 ... 48 VDC</b>
<b>Minimum contact load</b>	<b>1 mA</b>
<b>Control parameters</b>	
Input voltage range	5 ... 48 VDC
Input current	4 mA
<b>Output</b>	
Type	NPN
Max. output current	6 A
Output voltage range	5 ... 48 VDC
Switch-on current max.	40 A / 10 ms
Max. voltage drop	≤ 0,14 VDC
Residual current	0,1 mA
<b>Specifications</b>	
Ambient temperature operation/storage	-40 ... 70 °C/-40 ... 85 °C
Test voltage between input/output	4 kV rms/1 min.
Turn-on delay	0,06 ms
Release delay	0,06 ms
Weight	28 g



**Fig. 1 CSS-N diagram**

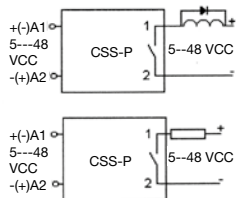


Negative common

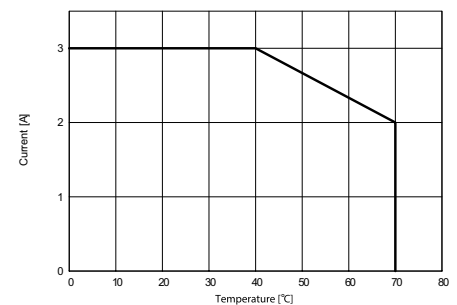
### Applications

For switching heating elements, electro valves, motors, PLC input/output signals, solenoids, incandescent and fluorescent lamps, etc. (up to 48 VDC).

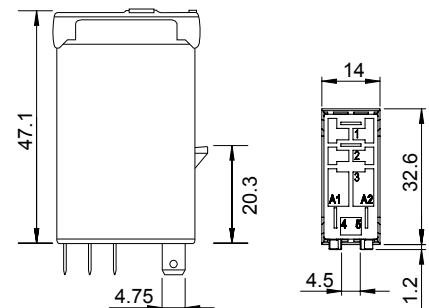
**Inductive loads must be shunted with an antiparallel diode.**



**Tab. 2 DC derating curve**



**Dimensions [mm]**



### Standard types

VDC 5-48

**CSS-N13X/DC5-48V**

### Accessories

Socket:

**S10, S10-M, S10-P**

### Technical approvals, conformities

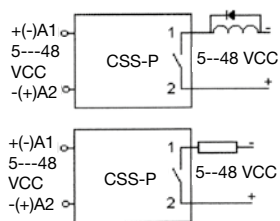


<b>Type</b>	<b>CSS-P</b> PNP solid state relay Terminal commun 2 positive (S10 socket)
<b>Output</b>	1 N/O contact
<b>Operating range</b>	<b>6 A, 5 ... 48 VDC</b>
<b>Minimum contact load</b>	<b>1 mA</b>
<b>Control parameters</b>	
Input voltage range	5 ... 48 VDC
Input current	4 mA
<b>Output</b>	
Type	PNP
Max. output current	6 A
Output voltage range	5 ... 48 VDC
Max. switch-on current	40 A / 10 ms
Max. voltage drop	0,14 VDC
Residual current	0,1 mA
<b>Specifications</b>	
Ambient temperature operation/storage	-40 ... 70 °C / -40 ... 85 °C
Turn-on delay	0,06 ms
Release delay	0,06 ms
Weight	28 g

**Applications**

For switching heating elements, electro valves, motors, PLC input/output signals, solenoids, incandescent and fluorescent lamps, etc. (up to 48 VDC).

**Inductive loads must be shunted with an antiparallel diode.**



**Standard types**

VDC 5-48

**CSS-P13X/DC5-48V**

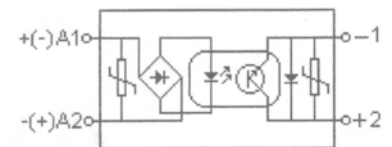
**Accessories**

Socket:

**S10, S10-M, S10-P**

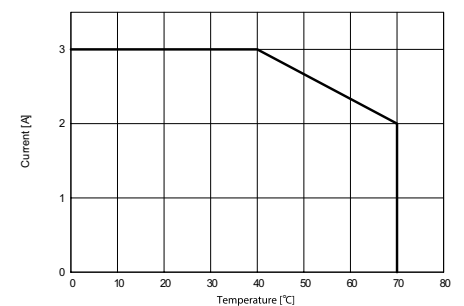


**Fig. 1 CSS-P diagram**

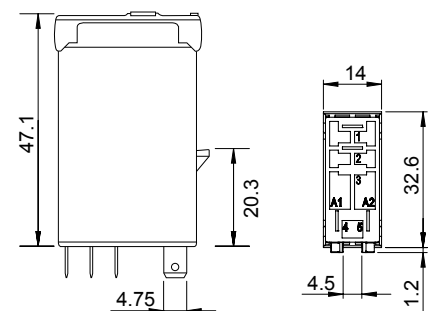


Positive common

**Tab. 2 DC derating curve**



**Dimensions [mm]**



**Technical approvals, conformities**



# CRINT 1x5 series

Solid state interface module with mechanical NO output contact

DIN Rail mounting according to DIN 43 880



**Types: CRINT-C115, CRINT-C125 / ...V**

For PLC's and process control. DC solid state switch, type NO.  
For fast and high frequent switching. With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12).

<b>Max. contact load</b>	<b>2 A, 24 V DC-1</b>
<b>Contact</b>	
Type	1 NO (Solid state DC)
Material	MOSFET
Switching current   <sub>TH</sub>	2 A 24 V DC
Recommended minimal load	20 mA / 5 V
Peak inrush current	48 A/10 ms
<b>Coil</b>	
Operation voltage AC 50/60 Hz / DC	0.8 ... 1.25 U <sub>N</sub>
Nominal power DC/AC	160 / — mW
<b>Insulation</b>	
Test voltage I / O	2.5 kVrms 1 minute
Pollution degree	3
Over voltage category	III
Open contact	1000 Vrms dielectric strength 1 min
Standard	EN61810-5

<b>General Specifications</b>	
Ambient temperature: operation / storage	-30 ... +70 °C / -40 ... +85 °C
Typical response time @ V <sub>n</sub>	1 ms
Typical release time @ V <sub>n</sub>	1 ms
Cond. cross section screw terminal	2.5 mm <sup>2</sup>
Cond. cross section spring cage	0.75 ... 2.5 mm <sup>2</sup>
Ingress protection	IP 20
Mounting position	any
Housing material	Polyamide PA6

<b>Order information</b>	
Screw terminal: <b>CRINT-C115/UC...V</b>	<b>UC12V</b> <b>UC24V</b> <b>UC48V</b>
Cage clamp terminal: <b>CRINT-C125/UC...V</b>	<b>UC60V</b> <b>UC110-125V</b> <b>UC220-240V</b>
„ ... “ enter the voltage for full type designation	

<b>Accessories</b>	
Jumper link (5 pcs):	blue: <b>CRINT-BR20-BU/5</b> red: <b>CRINT-BR20-RD/5</b> black: <b>CRINT-BR20-BK/5</b>

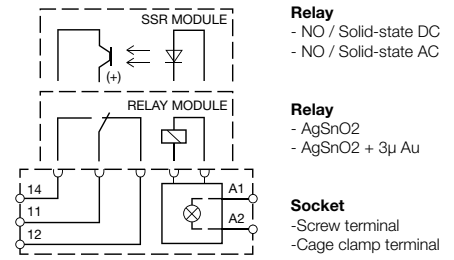
Label plate (64 pcs):	<b>CRINT-LAB/64</b>
Spacer (5 pcs):	<b>CRINT-SEP/5</b>

Replacement relays:	
<b>CRINT-R15/DC...V</b>	<b>DC12V</b> <b>DC24V</b> <b>DC48V</b> <b>DC60V*</b>
„ ... “ enter the voltage for full type designation	

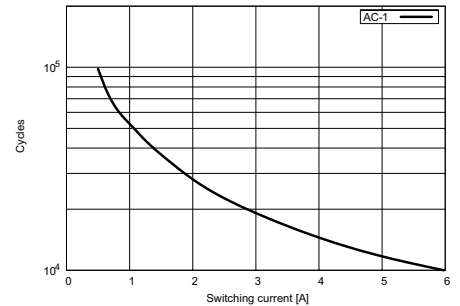
\*60V Relay used for all sockets with a nominal voltage higher or equal 60V



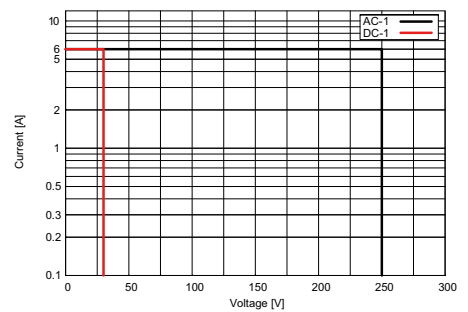
## Connection diagram



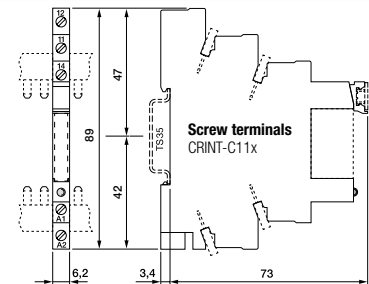
**Fig.1 AC voltage endurance**



**Fig. 2 DC load limit curve**



## Dimensions [mm]



## Technical approvals, conformities



# CRINT 1x8 series

Solid state interface module with mechanical NO output contact

DIN Rail mounting according to DIN 43 880

**Types: CRINT-C118, CRINT-C128 / ...V**

For PLC's and process control.

AC output interface zero synchronous switching NO for resistive or similar load. (No transformer rec.) With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12).

<b>Max. contact load</b>	<b>1 A, 240 V AC-1</b>
<b>Contact</b>	
Type	1 NO (Solid state AC)
Material	TRIAC
Switching current   <sub>TH</sub>	1 A 240 V AC
Recommended minimal load	22 mA / 12 V
Peak inrush current	80 A/10 ms
<b>Coil</b>	
Operation voltage AC 50/60 Hz / DC	0.8 ... 1.25 U <sub>N</sub>
Nominal power DC/AC	150 / — mW
<b>Insulation</b>	
Test voltage I / O	2.5 kVrms 1 minute
Pollution degree	3
Over voltage category	III
Open contact	1000 Vrms dielectric strength 1 min
Standard	EN61810-5
<b>General Specifications</b>	
Ambient temperature: operation / storage	-30 ... +70 °C / -40 ... +85 °C
Typical response time @ V <sub>n</sub>	1 ms
Typical release time @ V <sub>n</sub>	1 ms
Cond. cross section screw terminal	2.5 mm <sup>2</sup>
Cond. cross section spring cage	0.75 ... 2.5 mm <sup>2</sup>
Ingress protection	IP 20
Mounting position	any
Housing material	Polyamide PA6

**Order information**

Screw terminal: **CRINT-C118/UC...V**

- UC12V**
- UC24V**
- UC48V**
- UC60V**
- UC110-125V**
- UC220-240V**

Cage clamp terminal: **CRINT-C128/UC...V**

„ ...“ enter the voltage for full type designation

**Accessories**

- Jumper link (5 pcs):
- blue: **CRINT-BR20-BU/5**
  - red: **CRINT-BR20-RD/5**
  - black: **CRINT-BR20-BK/5**

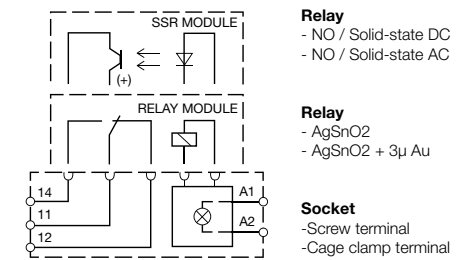
- Label plate (64 pcs): **CRINT-LAB/64**  
 Spacer (5 pcs): **CRINT-SEP/5**

- Replacement relays:
- CRINT-R18/DC...V**
  - „ ...“ enter the voltage for full type designation
  - DC12V**
  - DC24V**
  - DC60V\***

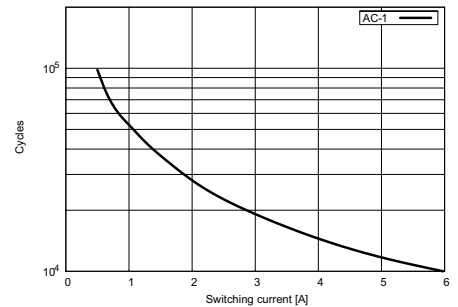
\*60V Relay used for all sockets with a nominal voltage higher or equal 60V



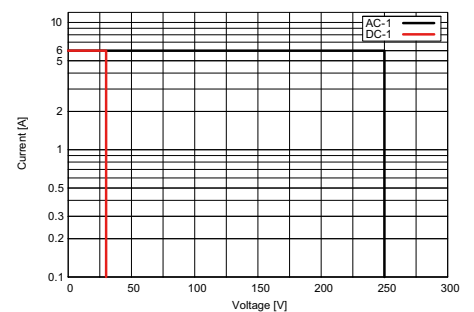
**Connection diagram**



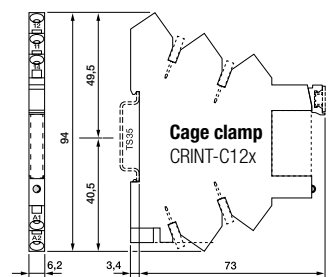
**Fig.1 AC voltage endurance**



**Fig. 2 DC load limit curve**



**Dimensions [mm]**



**Technical approvals, conformities**

