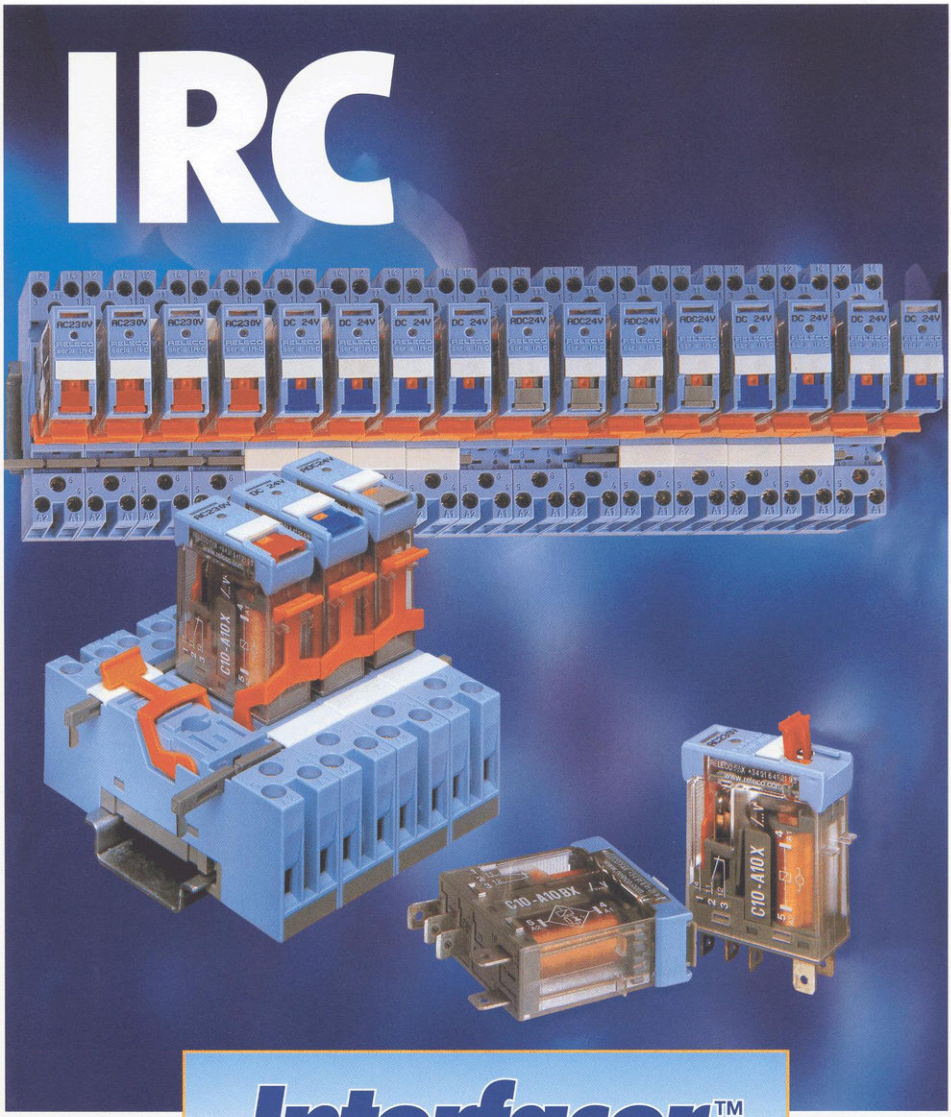
RELECO

Catalogue
IR-C Series

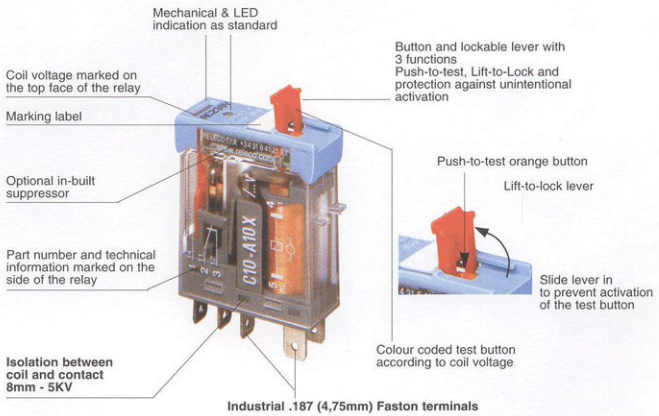


The Relay

The C10 is a full-featured industrial plug-in relay, with special characteristics for input/output PLC application. This single pole relay has a switching capacity of 10A, with DC and AC coils up to 230V.

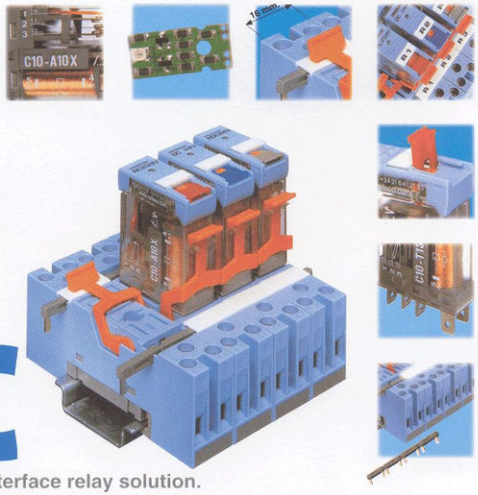
For input application, we have a specially designed relay with bifurcated (twin) contacts, to switch low level signals down to 1mA.

Indicating LED, test button and mechanical indication are standard. Not to mention our 24V AC/DC "one type fits all" relay.



The Releco family now has a new member: an industrial interface relay we have named **IRC**

It has been a real challenge to offer in a smaller format all the well-known and desirable features of its bigger brothers of the MR-C and QR-C series, and combined them with the necessary versatility of an interface relay.



IRC

The most versatile interface relay solution.

General information

Electrical and Mechanical Life
The IR-C series is specifically designed for industrial heavy duty applications as well as low level signals such as those usually required for input interface applications. Standard contact materials are AgNi for 10A heavy duty and, AgNi + 3µ Au for low level bifurcated (twin) contacts. Upon request, 10µ gold plate contacts are available for both types (C10-A1**8**X...V and C10-T**12**X...V).
These relays are able to withstand a minimum of 100.000 operations at full rated load and more than 20 x 10^6 mechanical operations measured at 6.000 ops/hour (see tables). Laboratory life tests give values higher than 100 x 10^6 operations.
The maximum switching frequency is 1.200 operations/hour at max. rated load and 6.000 ops/hour at 50% of max. load.

Materials and Temperatures
All parts are made of high performance, self-extinguishing materials for electrical equipment which are able to withstand temperatures up to 130°C without deformation. Operating and storage temperatures are respectively –20°C...+60°C and –20°C...+100°C.

Coil
The temperature rise in the coil when permanently energised, at nominal voltage, is 45°C max. at AC and 35°C max. at DC.
All coils are calculated to withstand a permanent connection at maximum ambient temperature of 60°C and 10% above the nominal voltage.
The coil inrush power of AC coils is approx. 1,3 x nominal power.
The max. back EMF of DC coils (without FWD) can be higher than 10 x the nominal voltage.
For AC tensions of 24 and 48V, Releco recommends the use of AC/DC coils as they offer more advantages than AC coils, like chattering free operation and pulse suppression.
Nevertheless, AC coils in this range of tension are available upon request.

Vac/dc	Ω ± 10%	mA
24	773	31
48	3K5	13

Vdc	Ω ± 10%	mA
5	45	111
12	224	53
24	773	31
110	19K9	5,5

Vac	Ω ± 10%	mA
24	Use 24Vac/dc*	
115	7K1	8,7
230	28K3	4,3

All values (LED included) measured at U_N with an ambient temperature of 20°C.
* 24Vac and any other coil values, as well as special coils, are available upon request.

Pull-in voltages
DC and AC/DC relays: 0,75 x U_N
AC relays: 0,75 x U_N (at 50 and 60Hz)

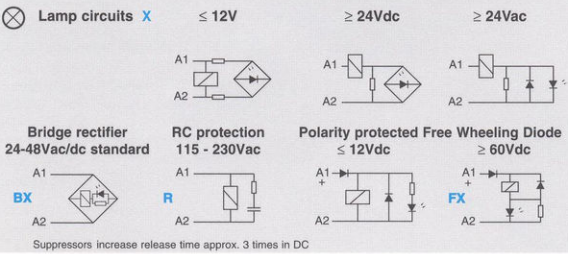
Drop-out voltages
DC and AC/DC relays: 0,15 x U_N
AC relays: 0,35 x U_N (at 50 and 60Hz)

Additions to the coil
As standard, all IR-C relays are supplied with a polarity free **operation indicating LED** (code **X**), except AC relays with RC protection (code **R**).
Other available additions to the coil are:

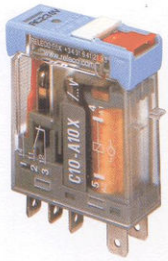
- **Bridge rectifier** (code **B**X) (standard for AC relays 24 and 48V)
  Allows the relay to operate both AC and DC. Also acts as a free wheeling diode without any polarity inconvenience.
- **Free wheeling diode with Polarity protection** (code **F**X).
  Dampen transients caused by the relay coil upon de-energisation and polarity protection.
  Note: reverse polarity (minus on A1) available upon request for FX (code FRX).

Surge immunity ($U_{1,2/50\mu sec.}$)
500V for voltages ≤ 12V
2.000V for voltages > 12V
1.000V for AC/DC relays up to 48V

Diagrams of additions to the coil



Suppressors increase release time approx. 3 times in DC



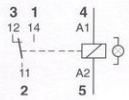
C10-A10X...

Single pole relay, 10A

10A / 400V AC1 — 10 A @ 30V DC1
6A / 400V AC15 — 0,5A @ 110V DC1

Contacts

Standard material	AgNi
Optional material	code 8 - AgNi + 10µ Au
Max. switching current	10 A
Peak inrush current (10 ms)	30 A
Max. switching voltage, (pollution 3)	250 V
Max. switching voltage, (pollution 2)	400 V
Max. AC resistive load (table 1)	2,5 KVA
Max. DC load	(table 2)



⊗ For lamp, see appropriate diagram

Standard types (50/60 Hz and DC)

AC/DC 24, 48
AC 115, 230
DC 5, 12, 24, 48, 110

X = LED (standard)	**C10-A10 X/ ...V**
AC/DC rectifier (48V max.)	**C10-A10B X/ ...V**
FWD - polarity protected	**C10-A10F X/ ...V**
RC protection (no LED)	**C10-A10R / ...V**

Specifications

Coil power including LED	1,1 VA, 0,65 W
Operate time + bounce time	10 + 1 ms
Release time + bounce time	5 + 3 ms
Isolation: EN60947 pollution 3, Gr C	250 V
Dielectric strength, contact / coil	8 mm / 5 KV
Weight avg.	21 grs.

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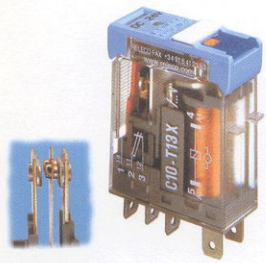
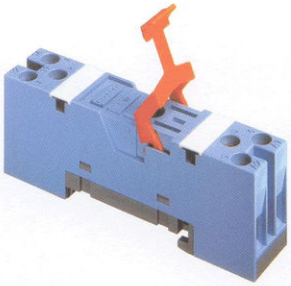
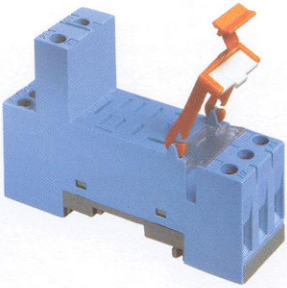
LED & protection circuits available
• standard ○ optional

Voltage	X	BX	FX	R
AC 6 ... 12	•			
AC 24 ... 48	○	•		
AC 115 ... 230	•			○
DC 5 ... 12	•		○	
DC 24 ... 48	•	○		
DC 60 ... 110	•		○	







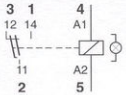
C10-T13X... low level

Single pole relay, bifurcated contact

6A / 400V AC1 6A @ 30V DC1
Min. 1mA @ DC 5V

Contacts

Standard material	code 3 - AgNi + 3µ Au
Optional material	code 2 - AgNi + 10µ Au
Switching current	min. 1 mA; max. 6 A
Peak inrush current (5 ms)	15 A
Max. switching voltage, (pollution 3)	250 V
Max. switching voltage, (pollution 2)	400 V
Max. AC resistive load	1,5 KVA
Max. DC load @ 24 V	6 A



⊗ For lamp, see appropriate diagram

Standard types (50/60 Hz and DC)

AC/DC 24, 48
AC 115, 230
DC 5, 12, 24, 48, 110

X = LED (standard)	**C10-T13 X/ ...V**
AC/DC rectifier (48V max.)	**C10-T13B X/ ...V**
FWD - polarity protected	**C10-T13F X/ ...V**
RC protection (no LED)	**C10-T13R / ...V**

Specifications

Coil power including LED	1,1 VA, 0,65 W
Operate time + bounce time	10 + 1 ms
Release time + bounce time	5 + 3 ms
Isolation: EN60947 pollution 3, Gr C	250 V
Dielectric strength, contact / coil	8 mm / 5 KV
Weight avg.	21 grs.

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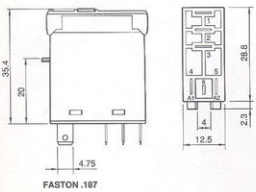
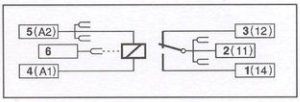


S-10 Input-Output socket for C10 relay

Bridge bar for coil and movable contact, Integrated clip, DIN rail or panel mounting

Specifications

Nominal load	10 A / 250 V
Dielectric strength (input-output)	8 mm - 5 KV
Dielectric strength (screws / rail)	5 KV
M3, Pozi screw max. torque	1,2 Nm
Wire inlet capacity multi-core	22 - 14 AWG
Wire inlet solid wire	4 mm² or 2 x 2,25 mm²
Weight avg.	28 grs.



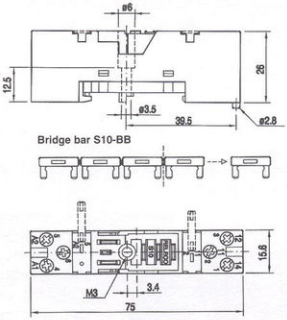


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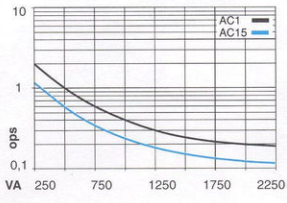
Table 1: C10-A10X Electrical life (ops. x 10⁶)

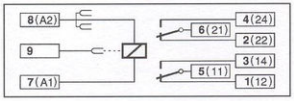


S7-IO Input-Output socket for 2 pole C7 relay

Bridge bar for coil (A2), Integrated clip, DIN rail or panel mounting

Specifications

Nominal load	10 A / 250 V
Dielectric strength (input-output)	2,5 KV
Dielectric strength (screws / rail)	2,5 KV
M3, Pozi screw max. torque	1,2 Nm
Wire inlet capacity multi-core	22 - 14 AWG
Wire inlet solid wire	4 mm² or 2 x 2,25 mm²
Weight avg.	48 grs.



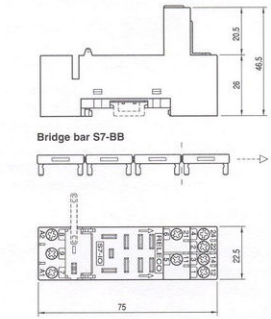


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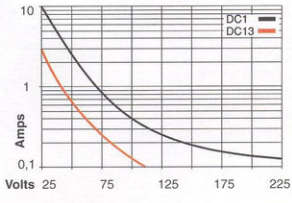
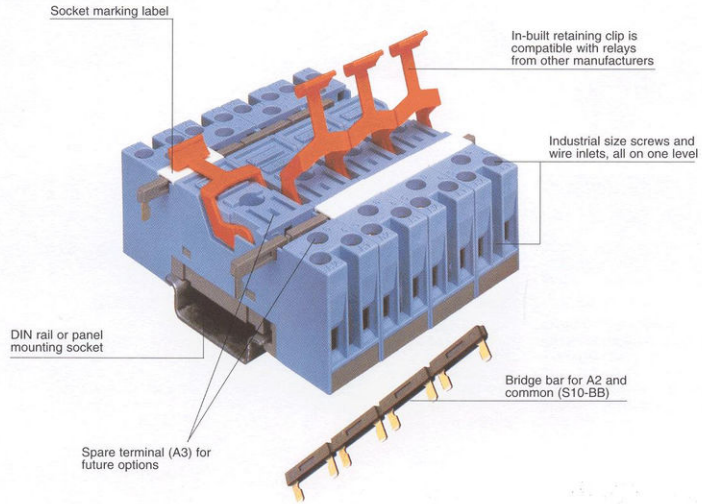
Table 2: C10-A10X Max. DC load



The Socket

The S-10 is a single-pole* interface socket with input/output configuration (coil terminals on one side, contact terminals on the opposite one).

To make the wiring job easier, we have provided it with a bridge bar system to link both A2 coil terminals and movable contact terminals (11).



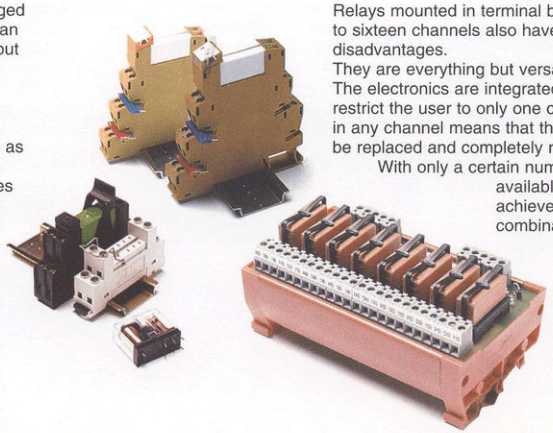
* for two-pole, see the S7-IO socket.

Releco versatility Vs other solutions on the market

Terminal block style relays do offer a reduction in size but have many other disadvantages. Generally more expensive, the relay and connection is often a single unit with electronics. If a fault occurs, then the whole unit needs to be replaced, wiring has to be re-worked and hence maintenance costs are increased. Not to mention the number of articles a distributor has to keep on stock!

Isn't it a lot easier to wire a socket once for all and then just to plug in the relay with all its integrated electronics whenever you need it?

Circuit board relays plugged into DIN rail sockets are an inexpensive alternative, but their weak "circuit board legs" are not suited to industrial applications. Moreover, these basic relays lack features such as test buttons, marking labels, suppression diodes and LED indication (although you can have LEDs and suppressors as additional features with generally more expensive modules).



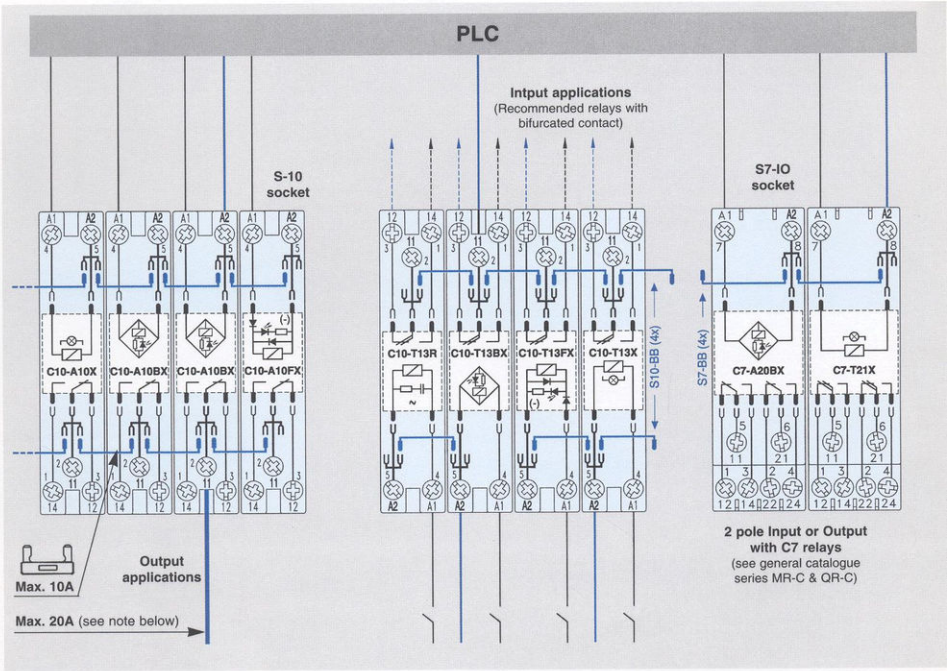
Relays mounted in terminal block modules with up to sixteen channels also have a number of disadvantages.

They are everything but versatile.

The electronics are integrated in the block and restrict the user to only one coil voltage. Any fault in any channel means that the whole block has to be replaced and completely rewired.

With only a certain number of relays available it is often difficult to achieve the needed combination of input or output relays. In addition, this type of block often uses printed circuit board relays...

Typical Interface Wiring and Applications



Bridge bars

Releco sockets S-10 and S7-IO can be easily connected together by means of bridge bars in order to avoid wiring.
The standard bridge bar, made of 4 briges, can be divided into single elements. To bridge more than 4 sockets, use as many standard 4 element bars or single elements as necessary.
On socket S-10, coil terminal A2 and movable contact 11 can be briged with bar **S10-BB** as shown above.
On socket S7-IO, coil terminal A2 can be bridged with bar **S7-BB**

Note for Output application

When linking movable contacts (11), maximum current per bridge is 10A and maximum current on the common cable is 20A as shown above.
If a ferrule with insulation is required for cables of 2,2 mm² (14AWG) in terminal 11, the minimum length needs to be 14 mm.

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