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arteche

AUXILIARY RELAYS FOR TRIPPING APPLICATIONS

This document may be subject to changes. Contact ARTECHE to confirm the characteristics and availability of the products described here.

Moving together

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ANSWER FOR ANY TRIPPING APPLICATION

ARTECHE offers a wide range of relays specially designed to be used in circuit breaker tripping applications.

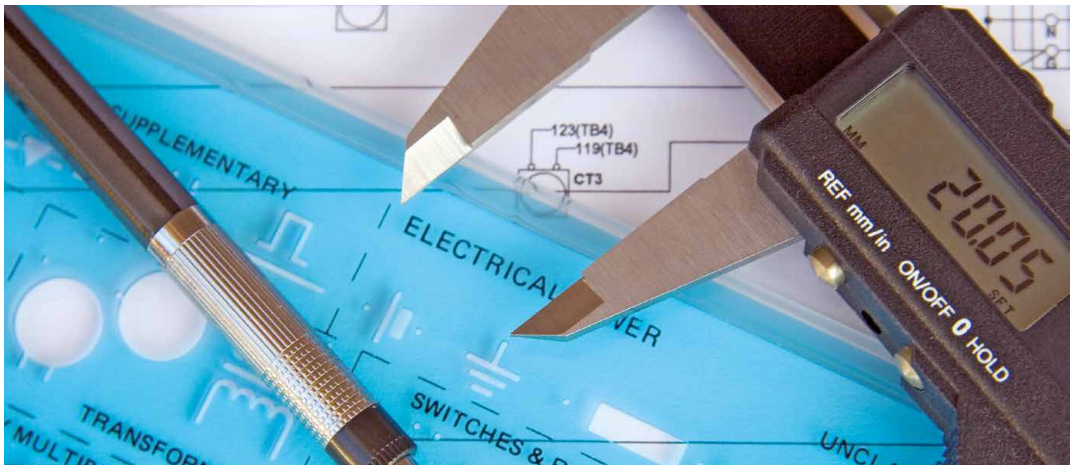
- Interface between protection and control equipments and HV and/or MV primary equipment, protecting valuable and with not easy replacement assets from the failure of those main actuators.
- Trip contacts multiplication, to operate directly on the primary equipment and transmit the corresponding alarms in a minimum and cohesive time.
- Trip and lock-out, with electric or hand reset to avoid accidental actuation on circuit breakers associated to power transformers, generators or machines.
- The surveillance of the trip circuit, guarantees it is in perfect conditions to allow the trip when it is needed.

TECHNICAL STANDARDS

GENERAL STANDARDS

In addition to the specific applicable standards, ARTECHE auxiliary relays are designed to comply the following standards as reference:

- **IEC 61810:** Electromechanical all-or-nothing relays.
- **IEC 60255:** Electrical relays. Measuring relays and protection equipment.
- **IEC 61812:** Specified time relays for industrial use.
- **IEC 60947:** Low-voltage switchgear and controlgear.
- **IEC 61000:** Electromagnetic compatibility.



GENERAL CHARACTERISTICS

Some of the general characteristics of the ARTECHE trip relays are:

- High isolation level between circuits, which guarantees that a problem in the primary equipment will not cause irreparable damages in the secondary equipment (typically, protection/control electronics).
- Fast operating times, down to 3 ms, minimizing the impact on the total trip time.
- High breaking capacity, which allows direct operation on highly inductive circuits.
- Sturdy design, which ensures high reliability.
- Wide range of auxiliary voltage (Vdc and Vac).
- Self-cleaning of the contacts.
- Security contacts according to EN 50205.
- Versatile installation (plug-in relays with different installation possibilities).
- Designed to work in permanent service, even at high temperature for the whole voltage range.
- Capable to work under environments with relative humidity around 100%.
- Tested to comply seismic standards, allowing their use in installations which can be subject to vibrations, as for example in power stations or in regions with high risk of seism.
- High protection degree (IP40), with transparent cover, enabling its use in tropical and saline environments.
- Compliant of the most demanding standards: IEC, EN, IEEE, CE and UL mark.
- No maintenance needed.

In addition, the different number of alternatives available while the equipment is selected, both technically (increase of the breaking capacity by serializing contacts, high speed operation, possibility of adding different options to the relay) and in the assembly method (front, rear or flush mounted sockets, with screws or fastons) must be considered.

E322124

UL Recognized Component Marks for USA and Canada: The combined UL signs for the USA and Canada are recognized by the authorities of both countries. All auxiliary relays identified with this mark meet the requirements of both countries.

RANGE OF PRODUCTS

TRIP RELAYS

Instantaneous trip relays, whose contacts change instantaneously from the rest position to the working position when the coil is energized. The contacts return to the rest position when the coil is no longer energized.

This range includes relays with 2, 4, 8 and 16 contacts, with operating times from 3 ms to 8 ms, depending on the model.

All the relays include a diode in parallel with the coil (see auxiliary relays with overvoltage protection characteristic) and comply with the shock and vibration standards, related to the relays with seismic characteristics.

TRIP AND LOCKOUT RELAYS

Trip relays with 2 stable positions for the output contacts. Depending on which coil is energized, the contacts will change from one position to the other. The design of the ARTECHE relays has no consumption in permanence, and prevents both coils from being energized simultaneously.

This range includes relays with 3, 4, 8 and 16 contacts, with operating times below 10 ms, depending on the model, and possibility of manual reset. The position change is made with 2 sets of coils with separated entrances, in BF-3 and BJ-8, and with breaking-flame contacts for each set of coils.

TRIP CIRCUIT SUPERVISION RELAYS

For single phase or three phase coil breakers. Through a small supervision current the whole circuit is supervised, in both positions of the circuit breaker (open or closed).

The correct state of the circuit is showed with a green LED on the front plate of the relay. The output contacts change their position if the relay detects a failure in the continuity of the circuit.

The single coil trip circuit supervision relay can be manufactured with different LED indicator configurations, refers to selection chart for more detailed information

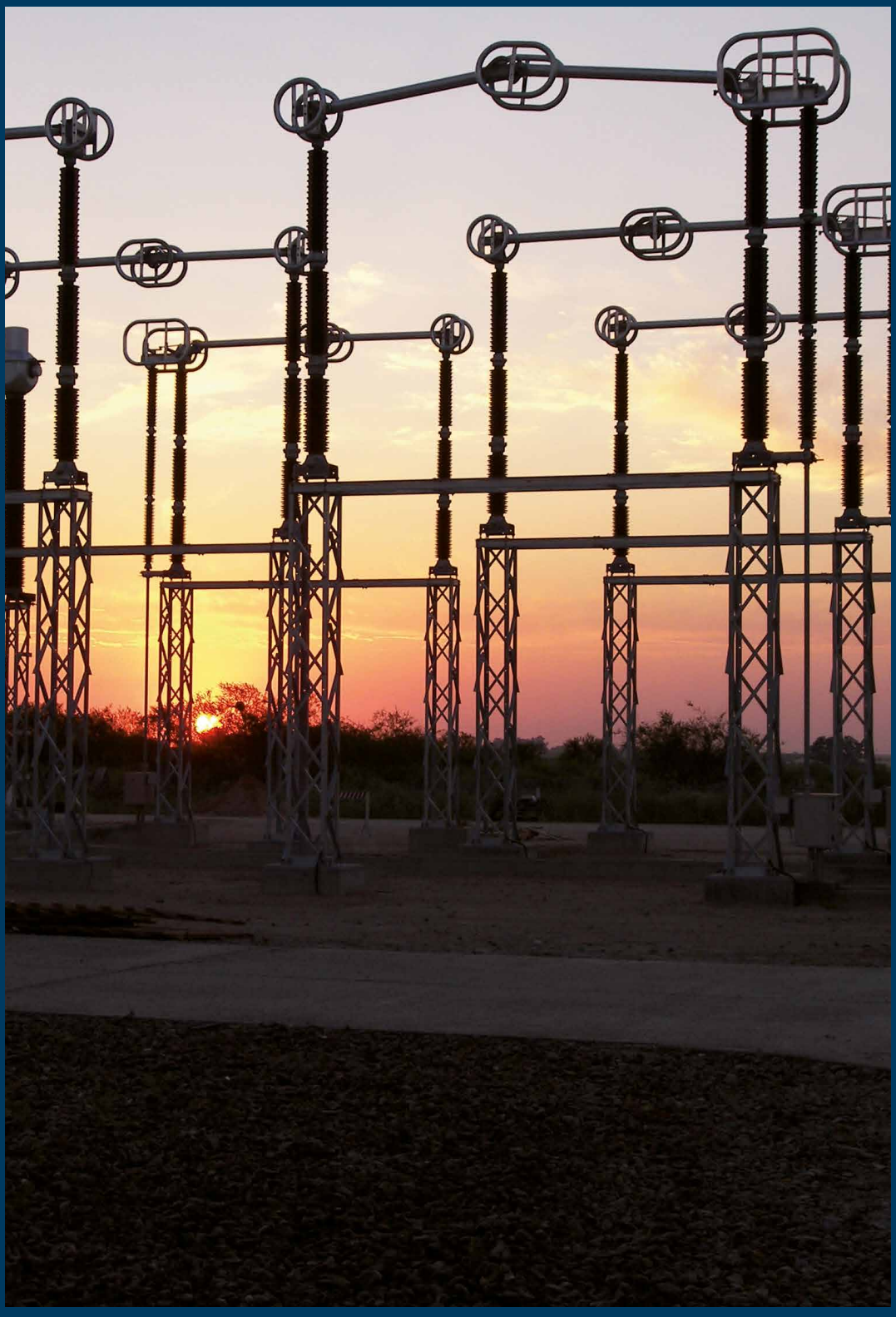
AUXILIARY SUPPLY CIRCUIT SUPERVISION RELAYS

Auxiliary relay with four changeover contacts, aimed to supervise the failure of trip supply.

Connecting the relay across the trip circuit supply, the equipment is normally energized. Faults will occur when the trip voltage is lost, so the relay drops off in those cases, providing the related signs and alarms. In order to avoid faulty alarms due to instantaneous supply voltage dips, the drop off time of the relay is delayed over 100 ms so those non-permanent failures of trip supply would not be considered.

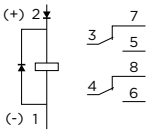
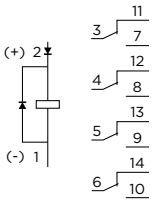
Auxiliary supply circuit supervision relays can be manufactured with different LED indicator configuration, refers to selection chart for more detailed information

TRIP RELAYS



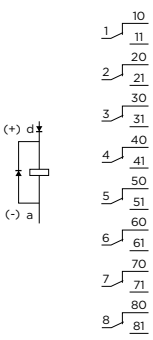
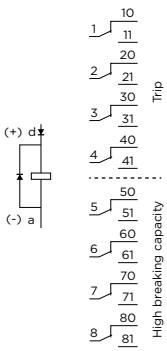
› World-class range of auxiliary relays for energy sector, specially designed for the most demanding applications

TRIP RELAYS (I)

Model		RD-2R	RD-2XR	RF-4R	RF-4XR
					
Applications		Intended for tripping applications where high demanding requirements in operating time (with tripping time from 8ms to 3 ms) and breaking capacity are needed, that is the case of tripping HV and MV circuit breakers.			
High burden configuration		not available		See page 15 for technical details	
Construction characteristics					
Contacts no.		2 Changeover		4 Changeover	
Connections					
Options		With 0P options • LED included • Diode in parallel with the coil included			
Weight (g)		125		250	
Dimensions (mm)		(A) 22,5 x (B) 50,4 x (C) 72 (D type)		(A) 42,5 x (B) 50,4 x (C) 72 (F short type)	
Coil characteristics					
Standard voltages[1]		24, 48, 110, 125, 220, 250 Vdc /110, 127, 230 Vac (50-60Hz)	48, 110, 125, 220, 250 Vdc	24, 48, 110, 125, 220, 250 Vdc / 110, 127, 230 Vac (50-60 Hz)	48, 110, 125, 220, 250 Vdc
Voltage range		+10% -20% U_N			
Pick-up voltage		See pick-up/release voltage-temperature curves			
Release voltage					
Average consumption	In permanence (U_N)	0,95 W		1 W	
	Peak • ≤96 Vdc	0,8 A / 20 ms	2,5 A / 20 ms	0,8 A / 20 ms	2,5 A / 20 ms
	Peak • >96 Vdc	0,3 A / 20 ms	0,8 A / 20 ms	0,3 A / 20 ms	0,8 A / 20 ms
Operating time					
Pick-up time		<8 ms (<10 ms Vac)	<5,5 ms	<8 ms (<10 ms Vac)	<5,5 ms
Drop-out time		Vdc: <40 ms Vac: <50 ms	Vdc: <40 ms	Vdc: <40 ms Vac: <50 ms	Vdc: <40 ms
Contacts					
Contact material		AgNi			
Contacts resistance[2]		≤30 mΩ			
Distance between contacts		1,2 mm			
Permanent current		10 A			
Instantaneous current		30 A during 1 s / 80 A during 200 ms / 200 A during 10 ms			
Max. making capacity		40 A / 0,5 s / 110 Vdc			
Breaking capacity		See breaking capacity curves (Contact configuration type B)			
Max. breaking capacity		See value for 50.000 operations			
U_{max} opened contact		250 Vdc / 400 Vac			
Perfomance data					
Mechanical endurance		10^7 operations			
Operating temperature		-25ºC +70ºC			
Storage temperature		-40ºC +85ºC			
Max. operating humidity		93% / +40ºC			
Operating altitude[3]		<2000 m			

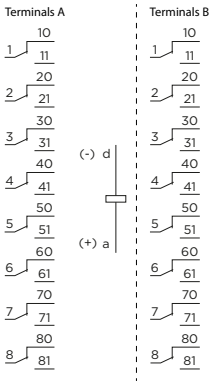
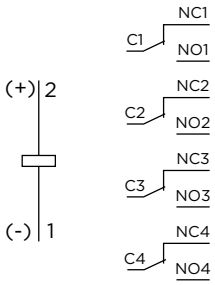
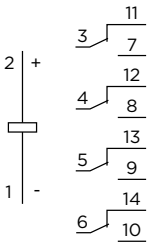
[1] Other voltage upon request
[2] Guarantee data for relays just manufactured
[3] Ask for higher altitudes

TRIP RELAYS (II)

Model		RJ-8R	RJ-8XR	RJ-4XR4*
				
Applications		Intended for tripping applications where high quality requirements in operating time (with models even tripping in less than 3 ms) and breaking capacity are needed, that is the case of tripping HV and MV circuit breakers.		
High burden configuration		See page 15 for technical details	See page 15 for technical details	not available
Características constructivas				
Contacts no.		8 Changeover		4 Changeover + 4 Fast Singles-Inversors without break power
Connections				
Options		With 0P options • LED included • Diode in parallel with the coil included		
Weight (g)		500		335
Dimensions (mm)		(A) 82,5 x (B) 50,4 x (C) 72 (J short type)		(A) 82,5 x (B) 50,4 x (C) 72 (J short Type)
Coil characteristics				
Standard voltages[1]		24, 48, 110, 125, 220, 250 Vdc/110, 127, 230 Vac (50-60 Hz)	48, 110, 125, 220, 250 Vdc	110, 125, 220, 250 Vdc
Voltage range		+10% -20% U_N		+15% -20% U_N
Pick-up voltage		See pick-up/release voltage-temperature curves		85% U_N
Release voltage				65% U_N
Average consumption	In permanence (U_N)	1,4 W		6,5 W
	Peak • ≤96 Vdc	0,8 A / 20 ms	2,5 A / 20 ms	25 W / 5 ms
	Peak • >96 Vdc	0,3 A / 20 ms	0,8 A / 20 ms	
Operating time				
Pick-up time		<8 ms Vdc (<10 ms Vac) (Range 24 Vdc <10 ms)	<6,5 ms	Contacts 1-4: <3 ms Contacts 5-8: <20 ms
Drop-out time		Vdc: <40 ms Vac: <50 ms	Vdc: <40 ms	Contacts 1-4: <25 ms Contacts 5-8: <50 ms
Contacts				
Contact material		AgNi		
Contacts resistance[2]		≤30 mΩ		
Distance between contacts		1,2 mm		Contacts 5-8: 1,2 mm
Permanent current		10 A		Contacts 1-4: 8 A Contacts 5-8: 15 A
Instantaneous current		30 A during 1 s / 80 A during 200 ms / 200 A during 10 ms		Contacts 5-8: 30 A during 1 s / 80 A during 200 ms / 200 A during 10 ms
Max. making capacity		40 A / 0,5 s / 110 Vdc		Contacts 5-8: 40 A / 0,5 s / 110 Vdc
Breaking capacity		See breaking capacity curves (Contact configuration type B)		Contacts 5-8: See breaking capacity curves (Contact configuration type B)
Max. breaking capacity		See value for 50,000 operations		Contacts 5-8: See value for 50,000 operations
U_{max} opened contact		250 Vdc / 400 Vac		
Perfomance data				
Mechanical endurance		10^7 operations		
Operating temperature		-25ºC +70ºC		-40ºC +55ºC
Storage temperature		-40ºC +85ºC		
Max. operating humidity		93% / +40ºC		
Operating altitude[3]		<2000 m		

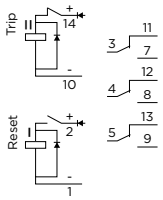
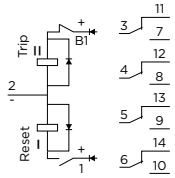
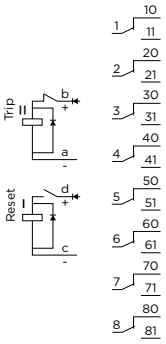
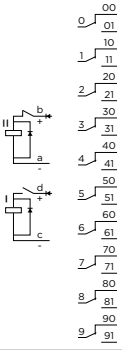
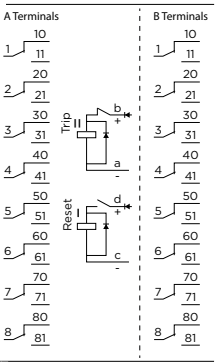
[1] Other voltage upon request
[2] Guarantee data for relays just manufactured
[3] Ask for higher altitudes
*Not recognized by UL

TRIP RELAYS (III)

Model	RI-16R	RXR-4	RF-4UR
			
Applications	Intended for trip applications where high demanding requirements in operating time and breaking capacity are needed.	Tripping applications with very high speed requirements.	Tripping applications with very high speed requirements.
High burden configuration	See page 15 for technical details	Not available	Not available
Construction characteristics			
Contacts no.	16 Changeover	4 Changeover	4 Changeover
Connections			
Options	With OP options • Operation indication LED • Alarm indication LED with manual reset	No options available	With 0P options • LED included • Diode in parallel with the coil included
Weight (g)	1250	126	250
Dimensions (mm)	(A) 120 x (B) 110 x (C) 105	(A) 53 x (B) 90 x (C) 58	(A) 42,5 x (B) 50,4 x (C) 72 (type F short)
Coil characteristics			
Standard voltages[1]	48, 110, 125, 220 Vdc	110, 125, 250 Vdc	110, 125, 250 Vdc
Voltage range	+10% -20% U_N	+10% -20% U_N	+10% -20% Un
Pick-up voltage	See pick-up/release voltage-temperature curves	61%	75%
Release voltage		26%	40%
Average consumption	12 W	2,8 W	2 W
Operating time			
Pick-up time	< 10ms	<3 ms	< 3ms
Drop-out time	<50 ms	<4 ms	< 4ms
Contactos			
Contact material	AgNi	AgNi	AgNi
Permanent current	10 A	8 A	8 A
Max. making capacity	40A / 0,5 s / 110 Vdc	15 A during 4s	15 A during 4s
Breaking capacity	ee breaking capacity curves (Contact configuration type A)	See breaking capacity curves	See breaking capacity curves
U_{max} opened contact	250 Vdc / 400 Vac	250 Vdc / 400 Vac	250 Vdc / 400 Vac
Performance data			
Mechanical endurance	10^7 operations	10^7 operations	10^7 operations
Operating temperature	-25ºC +70ºC	-40ºC +55ºC	-40ºC +55ºC
Storage temperature	-40ºC +85ºC	-40ºC +85ºC	-40ºC +85ºC
Max. operating humidity	93% / +40ºC	93% / +40ºC	93% / +40ºC
Operating altitude[2]	<2,000 m	<2,000 m	<2,000 m

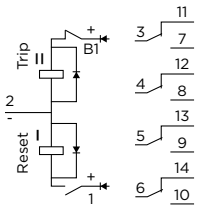
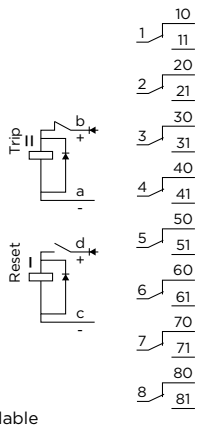
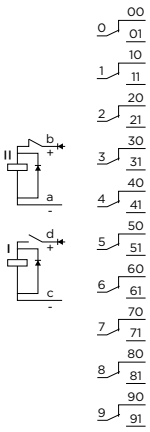
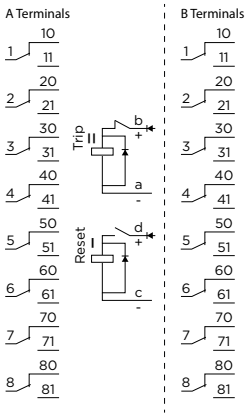
[1] Other voltage upon request
[2] Ask for higher altitudes

TRIP AND LOCKOUT RELAYS (I)

Model	BF-3R	BF-4R	BJ-8R	BJ-10R	BI-16R
					
Applications	Intended for trip and lockout applications where high demanding requirements in operating time and breaking capacity are needed.				
High burden configuration	not available	See page 15 for technical details	See page 15 for technical details	See page 15 for technical details	See page 15 for technical details
Construction characteristics					
Contacts no.	3 Changeover	4 Changeover	8 Changeover	10 Changeover	16 Changeover
Connections					
Options	Options are not available				
Weight (g)	300		600	600	1250
Dimensions (mm)	(A) 45 x (B) 45 x (C) 96,5 (F large Type)		(A) 90 x (B) 50 x (C) 100,5 (J large Type)	(A) 109 x (B) 50 x (C) 111	(A) 120 x (B) 110 x (C) 105
Coil characteristics					
Standard voltages[1]	24, 48, 72, 110, 125, 220 Vdc / 63,5, 110, 127, 230 Vac (50-60 Hz)				
Voltage range	+10% -20% U_N				
Pick-up voltage	See pick-up voltage / temperature curves for Latching relays				
Average consumptions only in the change-over	17 W	17 W	30 W	30 W	90 W
Operating time					
Pick-up time	<10 ms (Vdc) <20 ms (Vac)				
Contacts					
Contact material	AgNi				
Distance between contacts	1,8 mm				
Permanent current	10 A				
Instantaneous current	80 A during 200 ms / 200 A during 10 ms				
Max. making capacity	40 A / 0,5 s / 110 Vdc				
Breaking capacity	See breaking capacity curves (Contact configuration type A)				
Max. breaking capacity	See value for 50.000 operations				
U_{max} opened contact	250 Vdc / 400 Vac				
Performance data					
Mechanical endurance	10^7 operations				10^6 operations
Operating temperature	-40ºC +70ºC				
Storage temperature	-40ºC +85ºC				
Max. operating humidity	93% / +40ºC				
Operating altitude[2]	<2000 m				

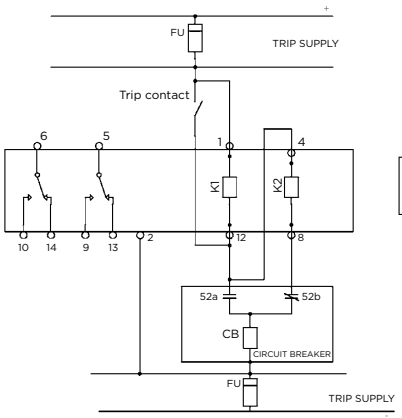
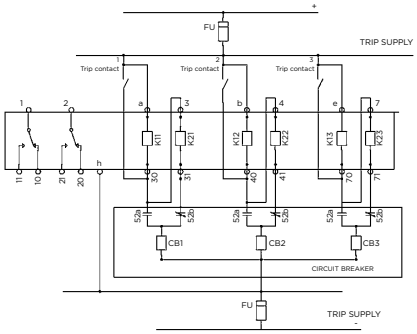
[1] Other voltage upon request
[2] Ask for higher altitudes

TRIP AND LOCKOUT RELAYS (II)

Model	BF-4RP	BJ-8RP	BJ-10RP	BI-16RP
				
Applications	Intended for tripping and locking applications where high quality requirements in operating time and breaking capacity are needed, with manual reset.			
High burden configuration	See page 15 for technical details			
Construction characteristics				
Contacts no.	4 Changeover	8 Changeover	10 Changeover	16 Changeover
Connections				
Options	Options are not available			
Weight (g)	300	600	600	1400
Dimensions (mm)	(A) 45 x (B) 45 x (C) 96,5 (F large Type)	(A) 90 x (B) 50 x (C) 100,5 (J large Type)	(A) 109 x (B) 50 x (C) 111	(A) 120 x (B) 110 x (C) 105
Coil characteristics				
Standard voltages[1]	24, 48, 72, 110, 125, 220 Vdc 63,5, 110, 127, 230 Vac (50-60 Hz)			48, 110, 125, 220 Vcc[3]
Voltage range	+10% -20% U_N			
Pick-up voltage (20ºC)	See pick-up voltage / temperature curves for Latching relays			
Average consumptions only in the change-over	17 W	30 W	30 W	90W
Operating time				
Pick-up time	<10 ms (Vdc) <13 ms (Vac)	<10 ms (Vdc) <20 ms (Vac)	<10 ms (Vdc) <20 ms (Vac)	<10 ms
Contacts				
Contact material	AgNi			
Distance between contacts	1,8 mm			
Permanent current	10 A			
Instantaneous current	80 A during 200 ms / 200 A during 10 ms			
Max. making capacity	40 A / 0,5 s / 110 Vdc			
Breaking capacity	See breaking capacity curves (Contact configuration type A)			
Max. breaking capacity	See value for 50,000 operations			
U_{max} opened contact	250 Vdc / 400 Vac			
Performance data				
Mechanical endurance	10^7 operations			10^6 operations
Operating temperature	-40ºC +70ºC			
Storage temperature	-40ºC +85ºC			
Max. operating humidity	93% / +40ºC			
Operating altitude[2]	<2000 m			

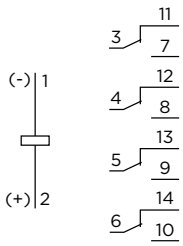
[1] Other voltage upon request
[2] Ask for higher altitudes
[3] Vac voltage upon request

TRIP CIRCUIT SUPERVISION RELAYS

Model	VDF-10	VDJ-30
		
Applications	Trip circuit supervision for single-phase circuit breakers	Trip circuit supervision for three-phase circuit breakers
Construction characteristics		
Timing Contacts no.	2 Changeover	2 Changeover
Connections		
Options	With OP options. See model selection table.	Options are not available.
Weight (g)	100	163
Dimensions (mm)	(A) 42,5 x (B) 50,4 x (C) 96,6 (F large Type)	(A) 82,5 x (B) 50,4 x (C) 96,6 (J large Type)
Coil characteristics		
Standard voltages[1]	24/30, 60, 110/125, 220 Vdc, 110/127, 230 Vac (50-60 Hz)	24/30, 60, 110/125, 220 Vdc
Voltage range	+10% -25% U_N	
Pick-up voltage (23º C)	70% U_N	
Release voltage (23º C)	60% U_N	
Consumptions	1,35 W	1,6 W
Operating time		
Drop-out time	>500 ms	
Contacts		
Contact material	AgNi	
Permanent current	8 A	
Instantaneous current	15 A	
Max. making capacity	15 A during 4 s	
Max. breaking capacity	0,3 A / 110 Vdc	
U_{max} opened contact	250 Vdc / 400 Vac	
Performance data		
Mechanical endurance	10^7 operations	
Operating temperature	-40ºC +55ºC	
Storage temperature	-40ºC +85ºC	
Max. operating humidity	93% / +40ºC	
Operating altitude[2]	<2000 m	

[1] Other voltage upon request
[2] Ask for higher altitudes

AUXILIARY SUPPLY SUPERVISION RELAYS

Model	RUT- 4 OP	RUT- 4 OP 2
		
Applications	Supervise only the auxiliary supply circuit of the protection equipments, avoiding false alarms due to short-time drop of supply	
Construction characteristics		
Timing Contacts no.	4 Changeover	
Connections		
Options	With OP options. See model selection table.	
Weight (g)	265	
Dimensions (mm)	(A) 42,5 x (B) 50,4 x (C) 96,6 (F large Type)	
Coil characteristics		
Standard voltages [1]	24, 48, 72, 110, 125, 220 Vdc 63,5 , 110 , 127 , 230 Vac	48, 60, 110, 125 Vdc
Voltage range	+10% -20% U_N	
Voltage limits	See pick-up release voltage-temperature curves for standard relays	
Average consumptions in permanence	4,5 W	
Operating time		
Timing range		
Pick-up time	<20 ms	< 35 ms
Drop-out time To minimum voltage To maximum voltage	 >100 ms <400 ms	
Tolerance		
Contacts		
Contact type	4 Changeover	
Contact material	AgNi	
Contacts resistance [2]	≤30 mΩ	
Distance between contacts	1,8 mm	
Permanent current	10 A	
Instantaneous current	80 A during 200 ms / 200 A during 10 ms	
Max. making capacity	40 A / 0,5 s / 110 Vdc	
Breaking capacity	See breaking capacity curves (Contact Configuration Type A)	
Max. breaking capacity	See value for 50.000 operations	
U_{max} opened contact	250 Vdc / 400 Vac	
Performance data		
Operating temperature	-40ºC +55ºC	
Storage temperature	-40ºC +85ºC	
Max. operating humidity	93% / +40ºC	
Operating altitude[3]	<2000 m	

[1] Other voltage upon request
[2] Guarantee data for relays just manufactured
[3] Ask for higher altitudes

HIGH / LOW BURDEN CONFIGURATION

High Burden configuration:
› Fast and extra-fast types

Low Burden configuration:
› Ultra-fast, extra-fast and fast types

The standard high speed tripping relays are manufactured with a low burden configuration, considering that the initiating contact is placed close to the tripping relay.

However, and in order to avoid unwanted trip relay operation due to pickup or transients, particularly if the relay operating coil is connected to extensive wiring, ARTECHE tripping relays could be manufactured with a high burden configuration, complying with ESI 48-4 international standard, as EB2 class relays. These EB2 class relays are suitable for use in high security circuit breaker tripping circuits, increasing their immunity to capacitance discharge currents.

For relays with rated voltage up to and including the 125 V, the relays will withstand, without operating, a discharge into their operate circuits of a 10μF capacitor charged to 120% of the nominal voltage.

For relays with rated voltage of 220 V, the relays will withstand, without operating a discharge into their operate circuits of a 10μF capacitor charged to 100% of the nominal voltage.

Specifications:

ESI 48-4 EB1: 1983	Low Burden
ESI 48-4 EB2: 1983	High Burden

HIGH BURDEN RELAYS CONSUMPTIONS

See table below:

Standard Voltage Consumption			
	Model	Peak (< 2ms)	Steady-State
Instantaneous	RF4R HB	≤ 300 W	≤ 4 W
	RJ8R HB		≤ 6 W
	RI16R HB		≤ 4 W
Latching Electrical and hand&electric reset	RF4R (RP) HB	≤ 500 W	≤ 21 W (Only In commutation)
	BJ8R (RP) HB		≤ 45 W (Only In commutation)
	BJ10R (RP) HB		≤ 45 W (Only In commutation)
	BI16R (RP) HB		≤ 90 W (Only In commutation)

arteche

BREAKING CAPACITY

› With devices operating worldwide, also heavy industries like oil & gas sector trust in our relays.

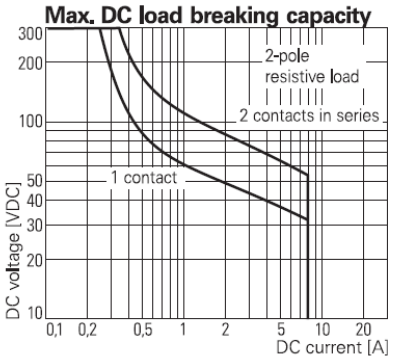
BREAKING CAPACITY

The breaking capacity is a critical parameter on the design and the applications of the relays. Its mechanical life could be considerably reduced, depending on the value of the load (especially with heavy duty loads), the number of operations and the environmental conditions in which the relay is operating.

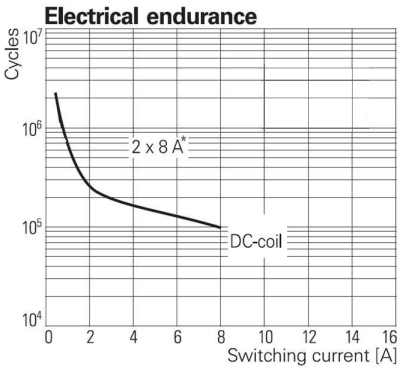
In any configuration, ARTECHE's auxiliary relays have a high breaking capacity values. These limits are showed in the table below, in terms of power and current values. In all the cases, these relays guarantee a right performance during 50,000 operations.

Likewise, the values showed in the following charts have been obtained in standard conditions in the laboratory, and they could be different in real conditions. In any case, the possibility of connecting serial contacts or a bigger distance between contacts makes these values to be considerably increased.

MAX. BREAKING CAPACITY ULTRA-FAST TYPE (Tripping contact):



ELECTRICAL ENDURANCE ULTRA-FAST TYPE (Tripping contact):



- Voltage 250Vac
- Configuration of resistive load:
  - L/R=0 ms

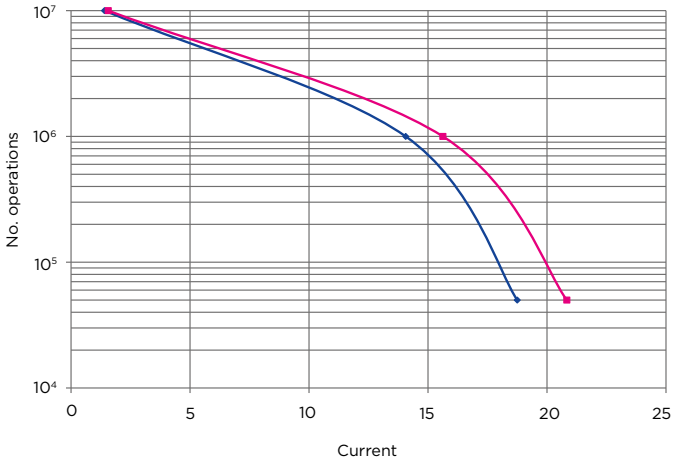
**The two loads may open simultaneously up to 8A*

ELECTRICAL ENDURANCE OTHER MODELS

24 Vdc voltage
Different loads configurations.

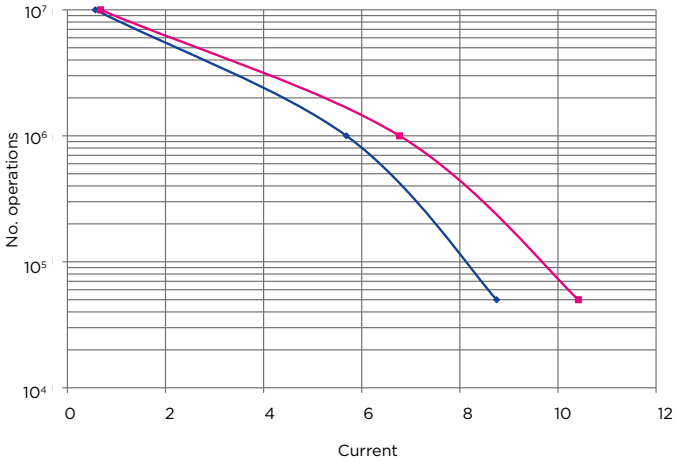
Resistive load:

- L/R= 0 ms.



Highly inductive load:

- L/R= 40 ms.



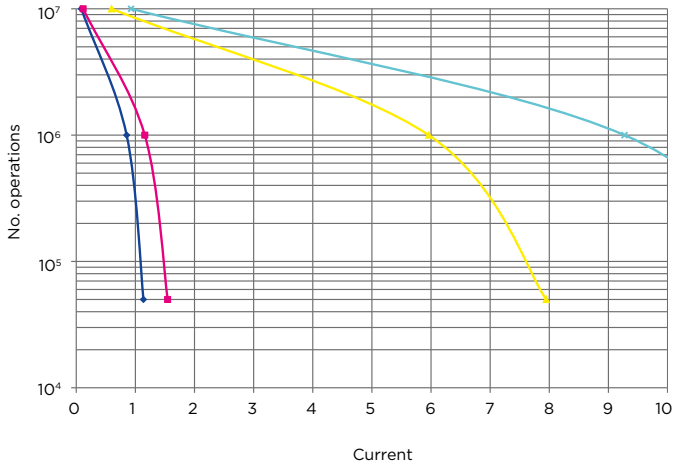
Type A (Distance between contacts = 1,8 mm)
Type B (Distance between contacts = 1,2 mm)

		0 ms		20 ms		40 ms	
Vdc	Contact configuration	P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
24	Type A	500	20,83	370	15,42	250	10,42
	Type B	450	18,75	300	12,50	210	8,75

110 Vdc voltage
Different loads configurations.

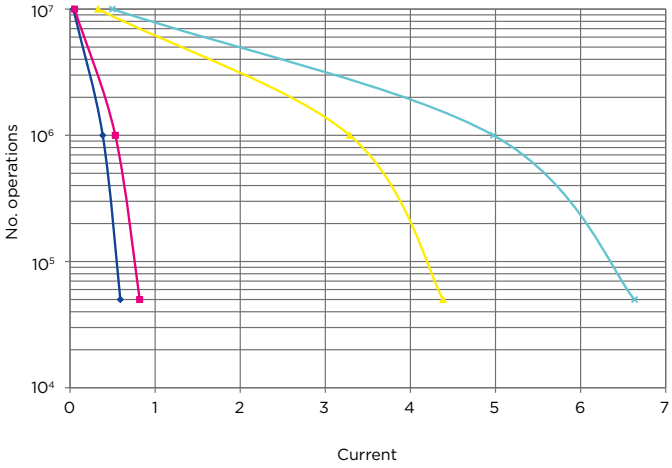
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



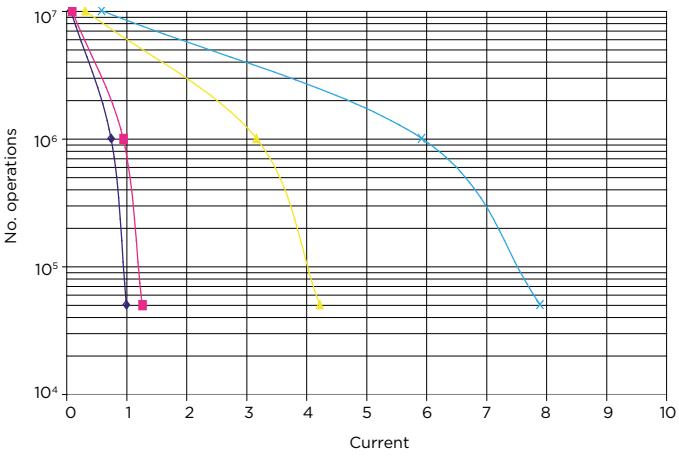
Type A (Distance between contacts = 1,8 mm)
Type B (Distance between contacts = 1,2 mm)
2 contacts type A
2 contacts type B

		0 ms		20 ms		40 ms	
Vdc	Contacts configuration	P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
110	Type A	170	1,55	140	1,27	90	0,82
	Type B	125	1,14	100	0,91	65	0,59
	2 contacts type A	1.360	12,36	1.106	10,05	730	6,63
	2 contacts type B	874	7,95	742	6,74	482	4,38

125 Vdc voltage
Different loads configurations.

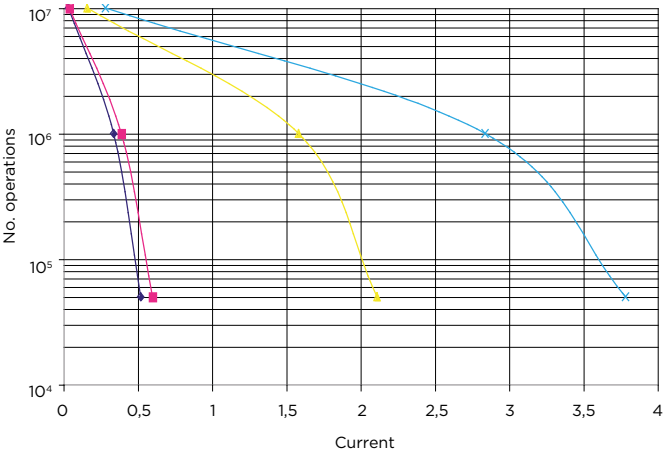
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



Type A (Distance between contacts = 1,8 mm)
Type B (Distance between contacts = 1,2 mm)
2 contacts type A
2 contacts type B

		0 ms		20 ms		40 ms	
Vdc	Contacts configuration	P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
125	Type A	158	1,26	120	0,96	75	0,60
	Type B	125	1	96	0,77	65	0,52
	2 contacts type A	987,5	7,90	733,809	5,87	472,972	3,78
	2 contacts type B	528,547	4,23	395,983	3,17	263,827	2,11

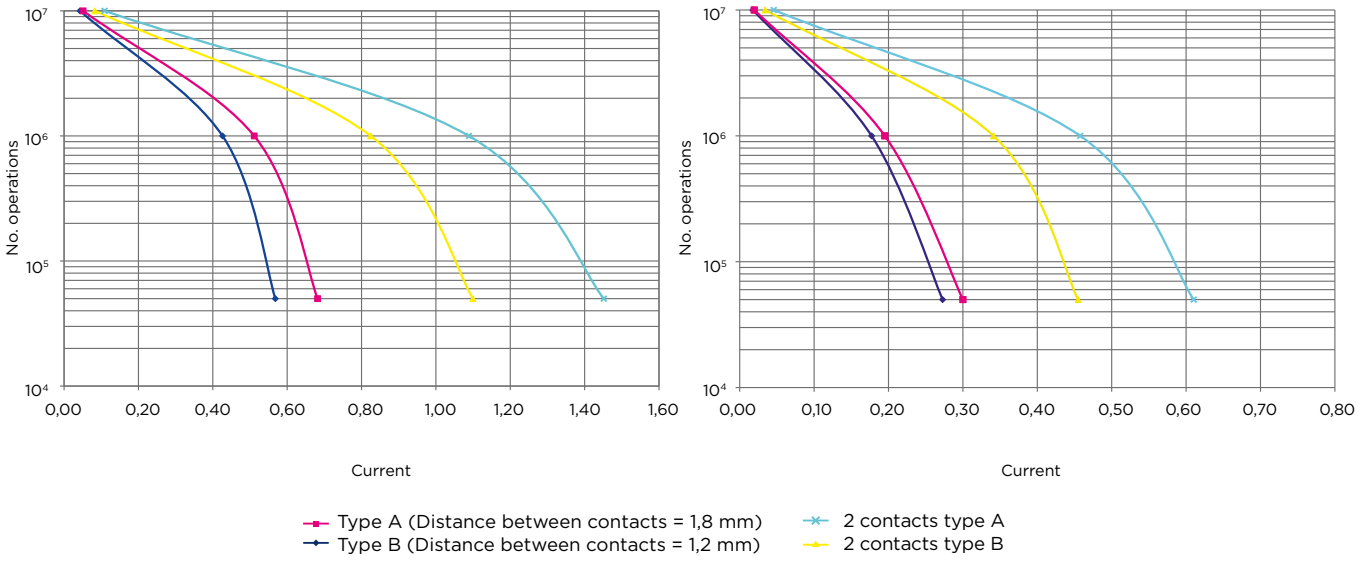
220 Vdc voltage
Different loads configurations.

Resistive load:

› L/R= 0 ms.

Highly inductive load:

› L/R= 40 ms.



		0 ms		20 ms		40 ms	
Vdc	Contacts configuration	P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
220	Type A	150	0,68	115	0,52	66	0,30
	Type B	125	0,57	104	0,47	60	0,27
	2 contacts type A	319	1,45	234	1,06	134	0,61
	2 contacts type B	242	1,10	177	0,81	100	0,45

HOW TO SELECT THE CURVE OF MY RELAY

These charts show the breaking capacity values, either for resistive and highly inductive loads, in three voltage values of reference (ask for other voltage values). The charts show four different curves:

- Type A: Breaking capacity of the relays with distance between contacts = 1.8 mm.
- Type B: Breaking capacity of the relays with distance between contacts = 1.2 mm.
- 2 contacts type A: Breaking capacity for relays with serial contacts, and distance between contacts=1.8 mm.
- 2 contacts type B: Breaking capacity for relays with serial contacts, and distance between contacts=1.2 mm.

The distance between contacts is shown in the tables of technical data.

HOW THE BREAKING CAPACITY CAN BE INCREASED

ARTECHE's auxiliary relays are power relays, designed specially to have a high breaking capacity. Thus, there are applications where the loads are so high that it is necessary to even increase the breaking capacity, keeping the reliability of the contacts of the auxiliary relays.

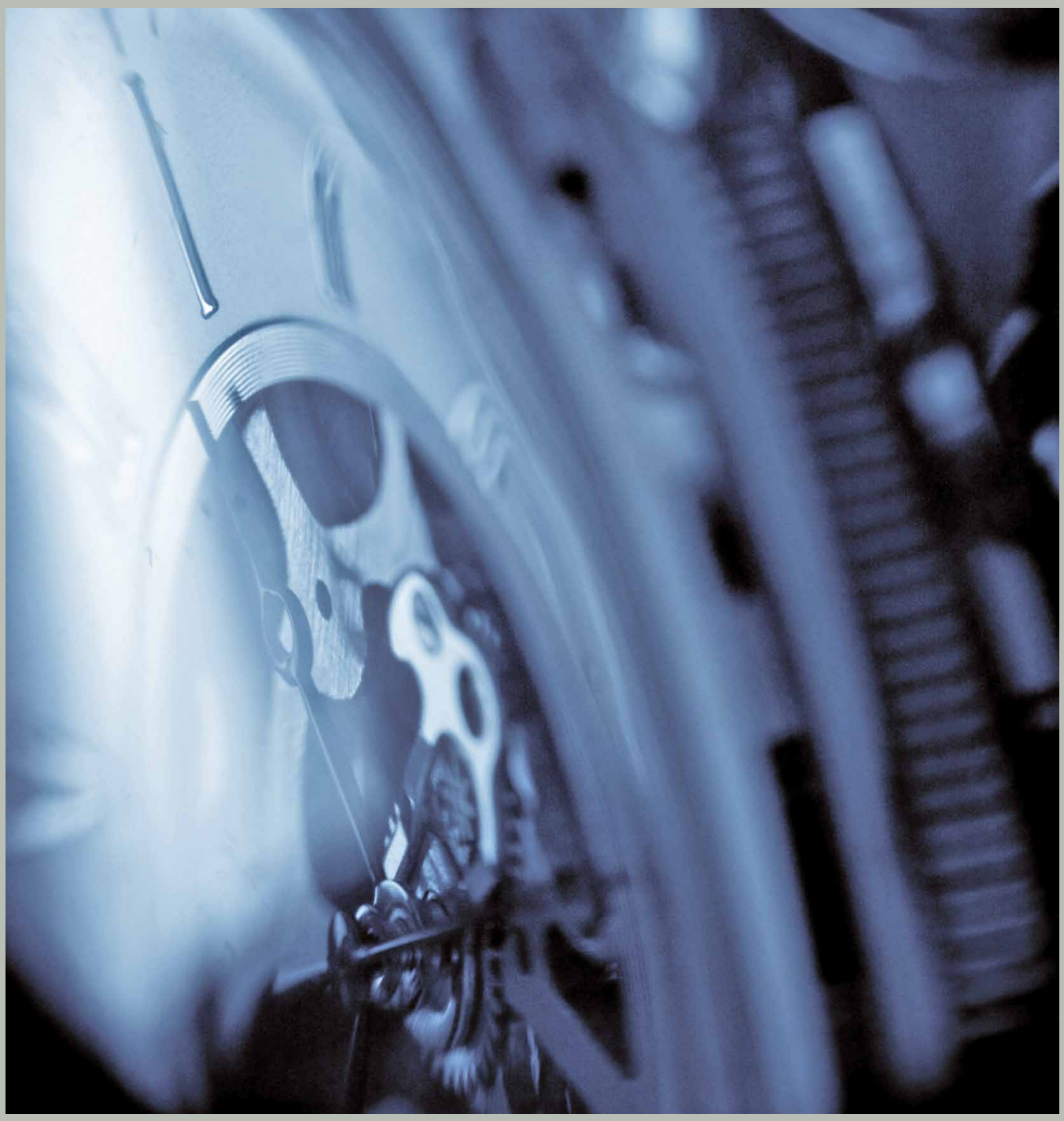
Recommendations to increase breaking capacity:

- Connect contacts in series. The breaking capacity is increased considerably, guaranteeing the right performance during a high number of operations. See curves for two contacts.
- Use ARTECHE range of contactors. See ARTECHE contactors catalogue for more detailed information.

LOW DUTY LOADS CAPALBLE RELAYS (LDL)

There are some applications where the relay contacts stablish circuits where the driven current is intrinsically low and are very dependent upon the voltage applied. In this kind of use, if the voltage applied to those kind of circuits differs (even slightly) from the one already specified, the circuit energisation fails. One of these cases is when we use relays to activate digital inputs. In these situations is necessary to minimise the contact resistance in the relay. To achieve that, while the relay is manufactured, its contacts are submitted to an special conditioning to make its contacts resistance extremely low.

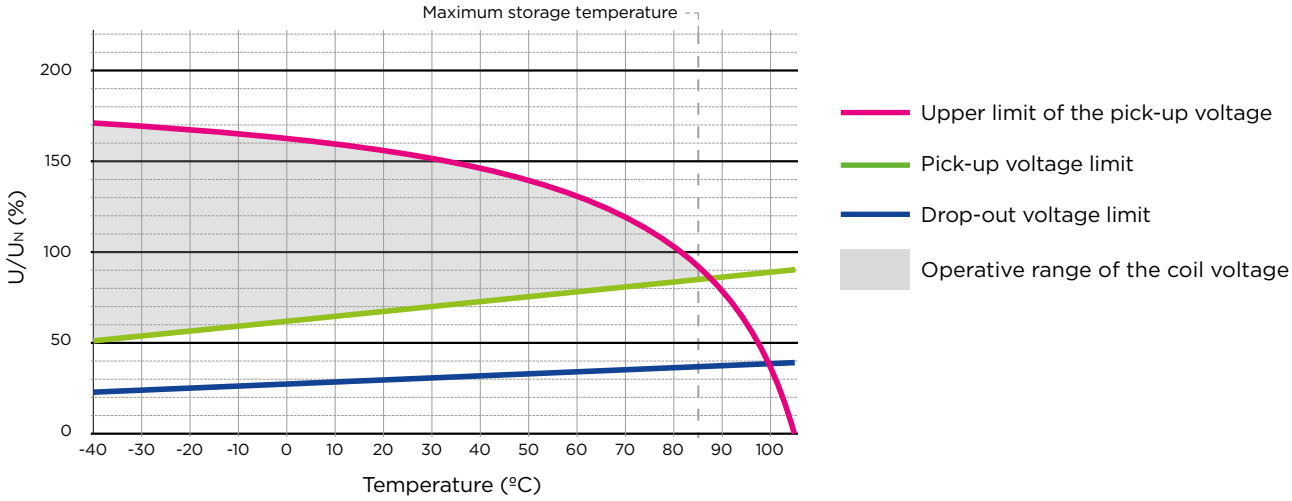
PICK-UP VOLTAGE/RELEASE VOLTAGE-TEMPERATURE CHARTS



Variability of operative voltage range against temperature for the instantaneous auxiliary relays.

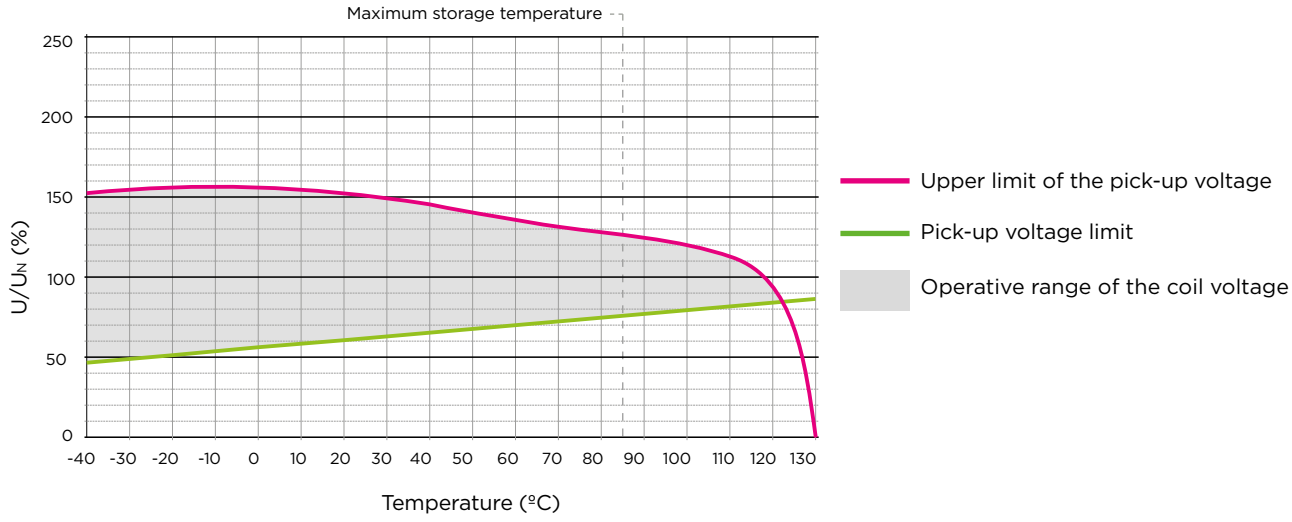
TRIPPING RELAYS

Operative range against ambient temperature.



TRIP AND LOCKOUT RELAYS AND TRIP AND LOCKOUT RELAYS WITH RESET PUSH BUTTON

Operative range against ambient temperature.



MODEL SELECTION

TRIP

Model Selection ▶▶	Type	Range	Aux. Supply	OP	Options				
Relay type									
2 contacts relay	RD-2R	-*		0*	1	0	0	0	Standard model
2 contacts relay	RD-2XR	-*		0*	1	0	0	0	
4 contacts relay	RF-4R			0*	1	0	0	0	
4 contacts relay	RF-4XR			0*	1	0	0	0	
8 contacts relay	RJ-8R			0*	1	0	0	0	
8 contacts relay	RJ-8XR			0*	1	0	0	0	
Ultra-fast (only Vdc)	RJ-4XR4	-*		0*	1*	0*	0*	0*	
Ultra-fast (only Vdc)	RXR-4	-*		-*	-*	-*	-*	-*	
Ultra-fast (only Vdc)	RF-4UR	-*		-*	-*	-*	-*	-*	
Range									
High Burden		HB							
Low burden (all by default)		-							
Low duty loads**		LD							
Aux. Supply Vdc or Vac									
Indicate voltage level and if it is VDC or VAC (ex: 24 VDC)									
Options									
				0					
Front LED	No				0				
	Yes				1				
Mechanical contact position indicator	No					0			
	Yes					1			
Trip flag	No						0		
	Yes						1		
Push to test button	No							0	
	To Push the contacts							1	

*Mandatory option

** For more information refer to railway application brochure

*** Option only available for HB models with 48 and 125 Vdc rated voltage. Red LED for trip signaling.

Trip

Model Selection ▶▶	Type	Range	Aux. Supply	OP	Options	
Relay type						
16 contacts relay	RI-16R				-0*	
Range						
High Burden		HB				
Low burden (all by default)		-				
Aux. Supply - Vdc or Vac						
Indicate voltage level and if it is VDC or VAC						
Options						
					0	
Front LED	Operation indicator (green) LED					1000
	Alarm indicator (red) LED with manual reset**					2010

*Mandatory option

**Available for 125 and 48 VDC, other voltages upon request.

Trip and lockout

Model Selection ▶▶	Type	Range	Aux. Supply
Relay type			
3 contacts relay	BF-3R	-	
4 contacts relay	BF-4R		
4 contacts relay	BF-4RP		
8 contacts relay	BJ-8R		
8 contacts relay	BJ-8RP		
10 contacts relay	BJ-10R		
10 contacts relay	BJ-10RP		
16 contacts relay	BI-16R		
16 contacts relay	BI-16RP		
Range			
High Burden		HB	
Low burden (all by default)		-	
Aux. Supply - Vdc or Vac			
Indicate voltage level and if it is VDC or VAC (ex: 24 VDC)			

Trip circuit supervision

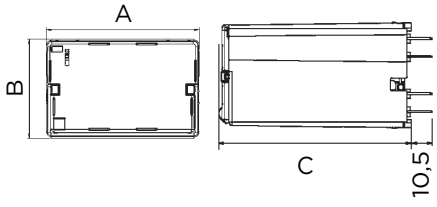
Model Selection ▶▶	Type	LED Indicator configuration	Aux. Supply
Relay type			
One phase	VDF-10		
Three phase	VDJ-30		
One phase relay LED Indicators configurator			
Correct operation of the VDF-10 OP is shown via an illuminated green LED (in the bottom left)		OP.	
Correct operation of the VDF-10 OP is shown via an illuminated red LED (in the bottom left)		OP.1	
Correct operation of the VDF-10 OP is shown via an illuminated green LED (in the bottom left) in case of loss of continuity a red LED is illuminated in the upper left		OP.2	
Aux. Supply- Vdc or Vac			
Indicate voltage level and if it is VDC or VAC (ex: 24 VDC)			

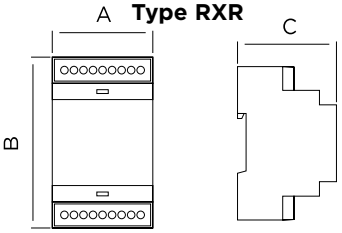
Auxiliary supply circuit supervision

Model Selection ▶▶	Type	LED Indicator configuration	Aux. Supply
Relay type			
One phase	RUT-4		
One phase relay Indicators.Options			
Correct operation of the RUT-4 OP is shown via an illuminated green LED (in the bottom left)		OP.	
Correct operation of the RUT-4 OP is shown via an illuminated green LED (in the bottom left) in case of voltage lack a red LED is illuminated in the upper left		OP.2	
Aux. Supply- Vdc or Vac			
Indicate voltage level and if it is VDC or VAC (ex: 24 VDC)			

DIMENSIONS OF THE RELAYS

› Dimensions: A x B x C



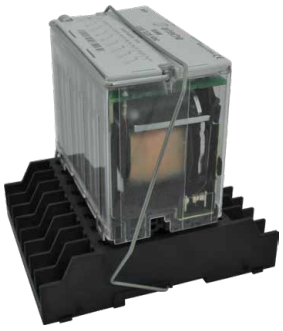


Size and weight vary depending on the model. Please refer to datasheet for detailed info.

RETAINING CLIPS

RETAINING CLIPS	OP SOCKET	RELATED PLUGGED RELAY	
E0	Universal (D and F sized sockets require 2 units ; J sized sockets require 4 units)	RD; RF; RJ; TDF; TDJ; VDF; VDJ; BJ10	Universal (Bag of 20 units)
			Universal (Bag of 100 units)
E41	DN-DE IP, DN-DE 2C IP	RD OP	
E50	DN-TR OP, DN-TR 2C OP	RD OP	
E40	FN-DE IP, FN-DE 2C IP	RF OP	
E43	FN-DE IP, FN-DE 2C IP	TDF OP; VDF OP; RUT	
E42	FN-TR OP, FN-TR 2C OP	RF OP	
E44	FN-TR OP, FN-TR 2C OP	TDF OP; VDF OP; RUT	
E31	FN-DE IP, FN-DE 2C IP	BF	
E21	FN-TR OP, FN-TR 2C OP	BF	
E45	JN-DE IP, JN-DE 2C IP	RJ OP	
E47	JN-DE IP, JN-DE 2C IP	TDJ OP; VDJ OP	
E46	JN-TR OP, JN-TR 2C OP	RJ OP	
E48	JN-TR OP, JN-TR 2C OP	TDJ OP; VDJ OP	
E49	J10N-TR OP, J10N-TR 2C OP	BJ10	
E51	JN10-DE IP, J10N-DE 2C IP	BJ10	
E29	JN-DE IP, JN-DE 2C IP	BJ; UJ	
E27	JN-TR OP, JN-TR 2C OP	BJ; UJ	
OTHER ACCESSORIES			
Security pins for RD; RF; RJ; TDF; TDJ; VDF; VDJ relays (bag of 100 units)			

› E0 retaining clips

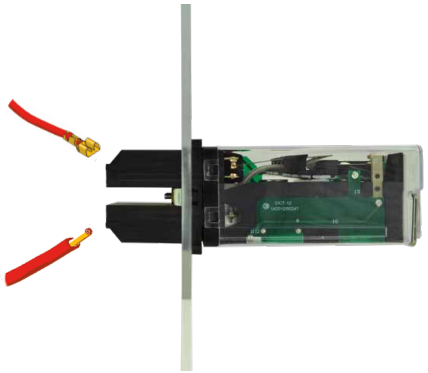


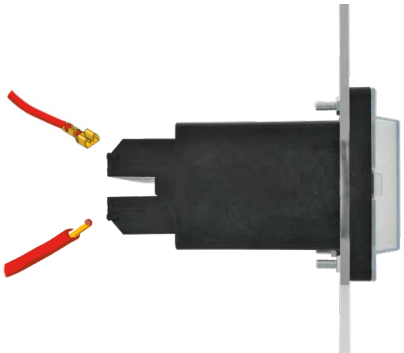
› E** retaining clips

SOCKETS, DIMENSIONS AND CUT-OUT

Sockets		Accessories		
Relay	Type	Screw	Double faston	Weight (g)
D	IP10 Front connection	DN-DE IP10	DN-DE2C IP10	60
	IP20 Front connection	DN-DE IP20	DN-DE2C IP20	60
	IP10 Rear connection	DN-TR OP	DN-TR2C OP	50
F	IP10 Front connection	FN-DE IP10	FN-DE2C IP10	110
	IP20 Front connection	FN-DE IP20	FN-DE2C IP20	110
	IP10 Rear connection	FN-TR OP	FN-TR2C OP	90
	IP10 Flush mounting (short)	F-EMP CORTA OP		300
	IP10 Flush mounting	F-EMP OP		300
J	IP10 Front connection	JN-DE IP10	JN-DE2C IP10	225
	IP20 Front connection	JN-DE IP20	JN-DE2C IP20	225
	IP10 Rear connection	JN-TR OP	JN-TR2C OP	180
	IP10 Flush mounting (short)	J-EMP CORTA OP		300
	IP10 Flush mounting	J-EMP OP		300
J10	IP20 Front connection	J10N-DE IP20	J10N-DE2C IP20	280
	IP10 Rear connection	J10N-TR OP	J10N-TR2C OP	225
	IP10 Flush mounting	J10-EMP OP		325
I	IP10 Rear connection	I-TR	I-TR2C	500
	IP10 Flush mounting	I-EMP		500

Accessories
Retaining clips
Function signs on the extraction ring
Security pins

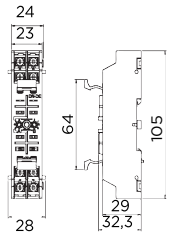
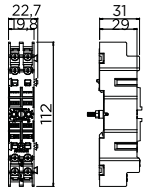
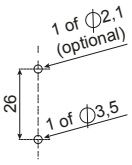
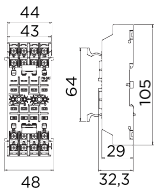
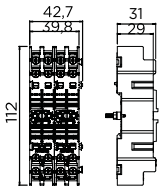
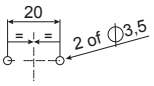
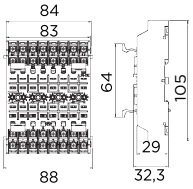
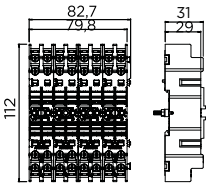
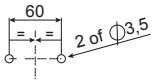
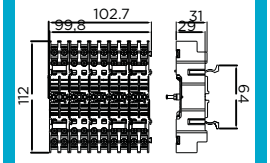
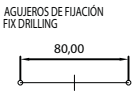
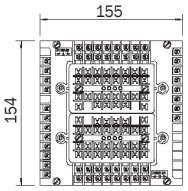
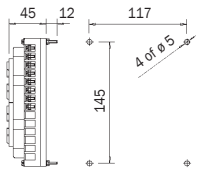
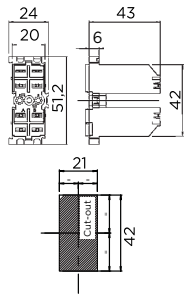
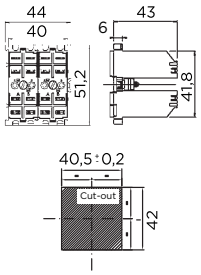
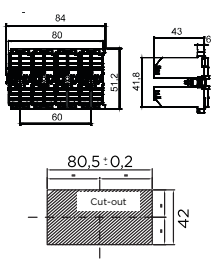
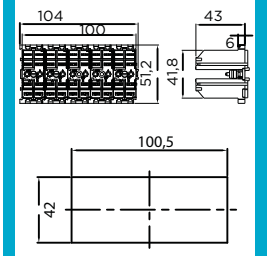
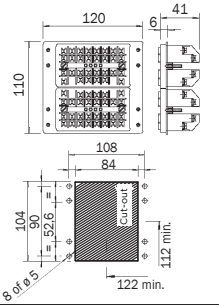




› Front connection socket

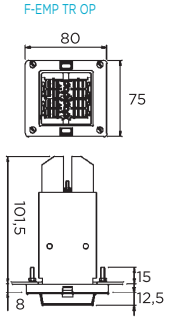
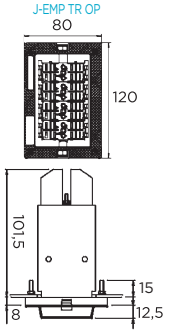
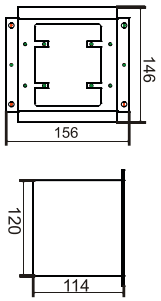
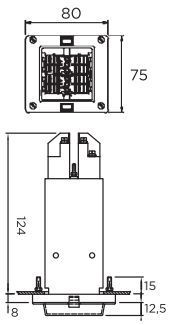
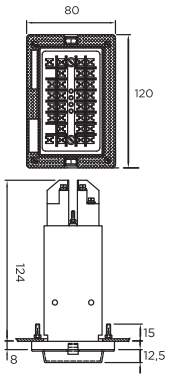
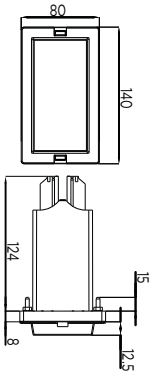
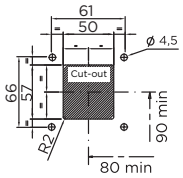
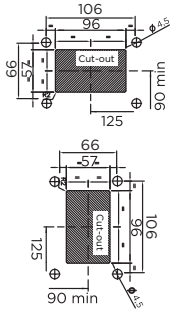
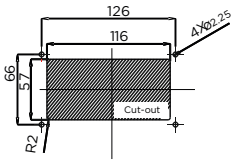
› Rear connection socket

› Flush mounting socket

	Relays Type D	Relays Type F	Relays Type J	Relays Type J10	Relays Type I
Socket rear connection for DIN rail or fix Drilling (1) (2)	DN-DE IP10 • DN-DE2C IP10  DN-DE IP20 • DN-DE2C IP20  Fix Drilling 	FN-DE IP10 • FN-DE2C IP10  FN-DE IP20 • FN-DE2C IP20  Fix Drilling 	JN-DE IP10 • JN DE2C IP10  JN-DE IP20 • JN-DE2C IP20  Fix Drilling 	J10N DE IP20 • J10N DE2C IP20  Fix Drilling 	I-DE IP10  Fix Drilling 
Sockets for rear connection	DN-TR OP IP10 • DN-TR2C OP IP10 	FN-TR OP IP10 • FN-TR2C OP IP10 	JN-TR OP IP10 • JN-TR2C OP IP10 	J10N TR OP • J10N TR2C OP 	I-TR, I-TR2C IP10 

(1) DIN rail according to EN50022 DIN46277/3

(2) Minimum distance between sockets will depend on type of relay and sockets. Please request sockets user manual for more detailed information.

	Relays Type D	Relays Type F	Relays Type J	Relays Type J10	Relays Type I
Flush mounting sockets for rear connection		F-EMP TR OP 	J-EMP TR OP 		I-EMP IP20 
		F-EMP TR OP 	J-EMP TR OP 	J10 EMP TR OP 	
Cut-Out					

arteche
Moving together

Updates: ARTECHE_CT_Tripping-relays_EN
Version: 3.2