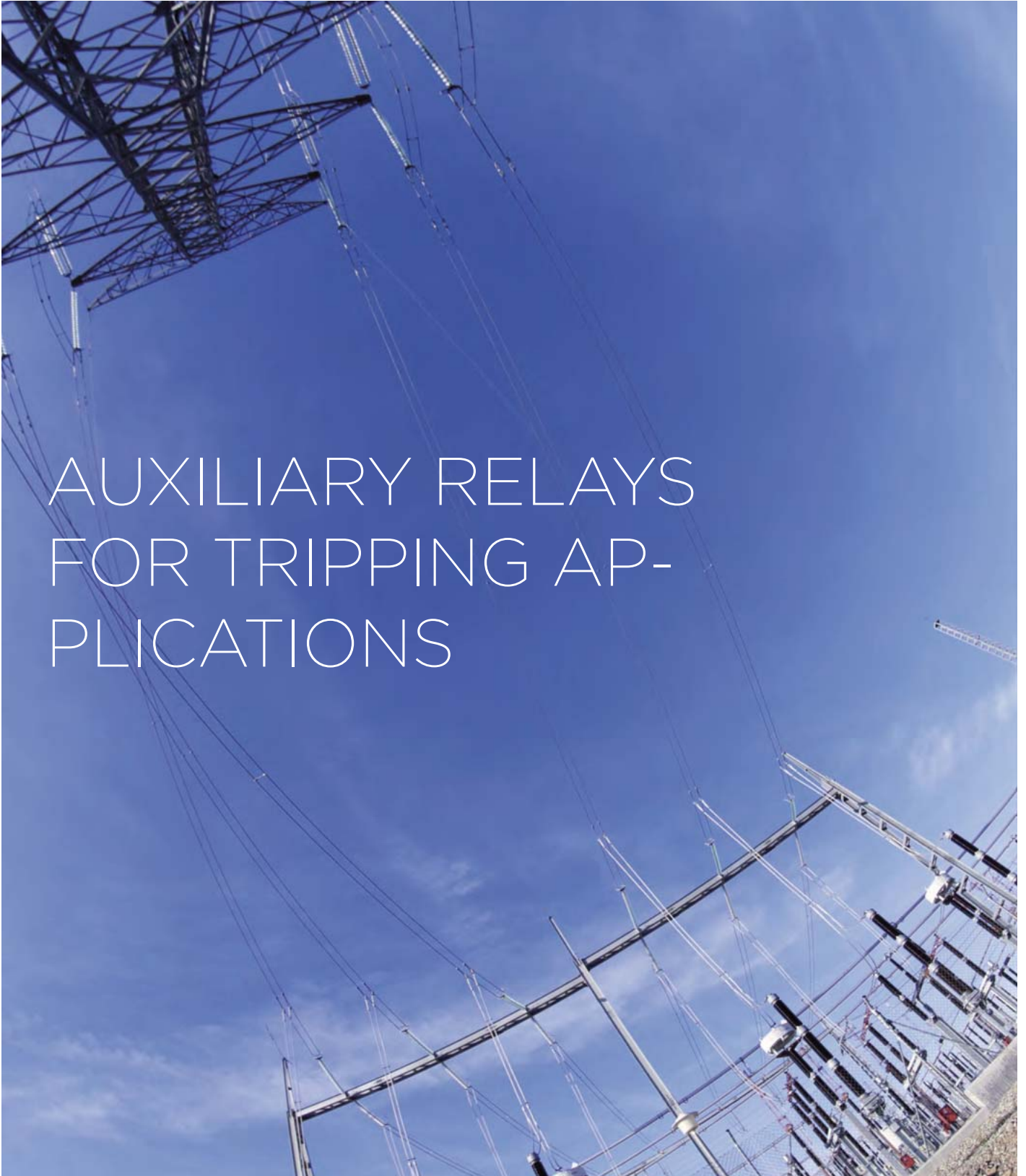


arteche

AUXILIARY RELAYS FOR TRIPPING AP- PLICATIONS



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

Moving together



INDEX

- 4. › Answers for any tripping application
- 4. › Technical standards
- 5. › General characteristics
- 6. › Range of products
- 7. › Trip relays
- 11. › Trip and lockout relays
- 13. › Trip circuit supervision relays
- 14. › Auxiliary supply circuit supervision relays
- 15. › High / low burden configuration
- 16. › Breaking capacity
- 22. › Pick-up voltage/release voltage-temperature charts
- 23. › Model selection
- 25. › Dimensions and panel mounting cut-off

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.



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 shown 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





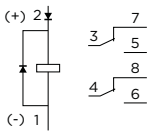
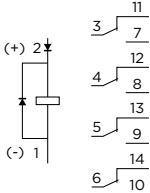


TRIP RELAYS



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

TRIP RELAYS (I)

Model	RD2R	RD2XR	RF4R	RF4XR	
					
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		4 Changeover		
Construction characteristics					
Contacts no.	2 Changeover		4 Inversores		
Connections					
Options	With OP 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 (Tipo D)		(A) 42,5 x (B) 50,4 x (C) 72 (Tipo F corto)		
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	See pick-up/release voltage-temperature curves				
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)	⁽⁴⁾ <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	30 A / 3 s / 300 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				
Performance data					
Mechanical endurance	10 ⁷ operaciones				
Operating temperature	-25°C +70°C				
Storage temperature	-40°C +85°C				
Humedad máxima utilización	93% / +40°C				
Operating altitude ⁽³⁾	<2000 m				




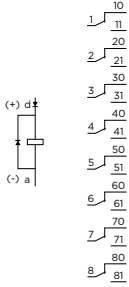
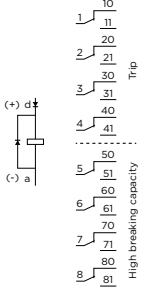
⁽¹⁾ Other voltage upon request

⁽²⁾ Guarantee data for relays just manufactured

⁽³⁾ Ask for higher altitudes

⁽⁴⁾ 24/30 Vcc < 8ms

TRIP RELAYS (II)

Model	RJ8R	RJ8XR	RJ4XR4*
			
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		Not available
Características constructivas			
Contacts no.	8 Changeover		4 Changeover + 4 Fast Singles-Inversors without break power
Connections			
Options	With OP options • LED included • Diode in parallel with the coil		
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	
	Peak • ≤96 Vdc	0,8 A / 20 ms	2,5 A / 20 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	30 A / 3 s / 300 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		
Performance data			
Mechanical endurance	10 ⁷ operations		
Operating temperature	-25°C +70°C		-40°C +55°C
Storage temperature	-40°C +85°C		
Max. operating humidity	93% / +40°C		
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	RI16R	RXR4	RF4UR
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 OP 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% U _n
Pick-up voltage	See pick-up/release voltage-temperature curves	61%	75%
Release voltage	See pick-up/release voltage-temperature curves	26%	40%
Average consumption	<3 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	
Permanent current	10 A		8 A
Max. making capacity	30A / 3 s / 300 Vdc		15 A during 4s
Breaking capacity	See breaking capacity curves (Contact configuration type B)		See breaking capacity curves
U _{max} opened contact		250 Vdc / 400 Vac	
Performance data			
Mechanical endurance		10 ⁷ operations	
Operating temperature	-25°C +70°C		-40°C +55°C
Storage temperature		-40°C +85°C	
Max. operating humidity		93% / +40°C	
Operating altitude ⁽²⁾		<2000 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	30 A / 3 s / 300 Vcc				
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	-40°C +70°C				
Storage temperature	-40°C +85°C				
Max. operating humidity	93% / +40°C				
Operating altitude ⁽²⁾	<2000 m				

⁽¹⁾ Other voltage upon request

⁽²⁾ Ask for higher altitudes

TRIP AND LOCKOUT RELAYS (II)



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 (20°C)	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	30 A / 3 s / 300 Vcc			
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	-40°C +70°C			
Storage temperature	-40°C +85°C			
Max. operating humidity	93% / +40°C			
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 (23° C)		70% U _N
Release voltage (23° 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		-40°C +55°C
Storage temperature		-40°C +85°C
Max. operating humidity		93% / +40°C
Operating altitude ⁽²⁾		<2000 m

⁽¹⁾ Other voltage upon request

⁽²⁾ Ask for higher altitudes

AUXILIARY SUPPLY SUPERVISION RELAYS

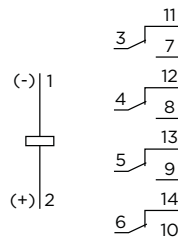
Model	RUT- 4 OP	RUT- 4 OP 2
-------	-----------	-------------


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

30 A / 3 s / 300 Vcc

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

-40°C +55°C

Storage temperature

-40°C +85°C

Max. operating humidity

93% / +40°C

Operating altitude⁽³⁾

<2000 m

⁽¹⁾ Other voltage upon request

⁽²⁾ Guarantee data for relays just manufactured

⁽³⁾ Ask for higher altitudes

TRIP AND LOCKOUT RELAYS - Reset Inhibitor (Trip Prioritizer)

All BF3-R/RP, BF-4R/RP, BJ-8R/RP, BJ-10R/RP and BI-16R/RP models of new production relays, with the exception of the HB versions of BF3 and BF4, can be ordered with the "Trip Priority" feature. This feature is activated in the event that the "Trip" and "Reset" signals are present simultaneously and prevents the latching relay from ringing, prioritizing the "Trip" coil over the "Reset" coil.

The prioritizer works by levels, so that in case the "Trip" signal disappears while the reset signal remains active, the relay will immediately switch to the "Reset" position. If

the "Trip" signal appears again, the relay will switch back to the "Trip" position even though the "Reset" signal has not ceased.

In an abstract way, it can be said that these relays give priority to one coil over the other in the event that both activation signals appear, regardless of the application that is being used.

No consumption occurs during the operation of the "Trip" preference, except for the consumption of the respective switches, if they are allowed.

HIGH / LOW BURDEN CONFIGURATION

High Burden configuration:

- › Fast and extra-fast types direct current, with limitation of 220 Vdc

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.

It is possible to request the "High Burden" feature so that they are less sensitive to spurious discharges of the capacitive type that may occur in the place of installation of these relays, especially in cases where there are long copper sections connected to their coils (relays installed in the substation yard, away from contact with protections that activate them).

This "HB" feature is incompatible with the "Reset Inhibitor" feature for BF-3R/RP and BF-4R/RP.

Specifications:

ESI 48-4 EB1: 1983

ESI 48-4 EB2: 1983

Low Burden

High Burden

HIGH BURDEN RELAYS CONSUMPTIONS

Standard Voltage Consumption			
	Model	Peak (< 2ms)	Steady-State
Instantaneous	RF4R HB	≤ 300 W	≤ 4 W
	RJ8R HB		≤ 6 W
	RI16R HB		10.20 W (24 Vdc model) < 3 W remaining models
Latching Electrical and hand&electric reset	BF4R (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)

The request for models with HB feature can only be associated to "R" or "RP" models with Vdc coil. It is not possible to associate the HB feature to XR or UR models specifically.

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.

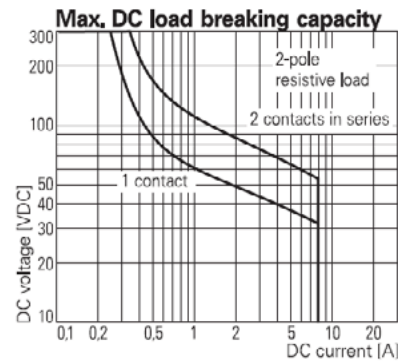
In any configuration, ARTECHE's auxiliary relays have a high breaking capacity values. These limits are showed in the table below, in terms of power and current values. In all the cases, these relays guarantee a right performance during 50,000 operations.

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.

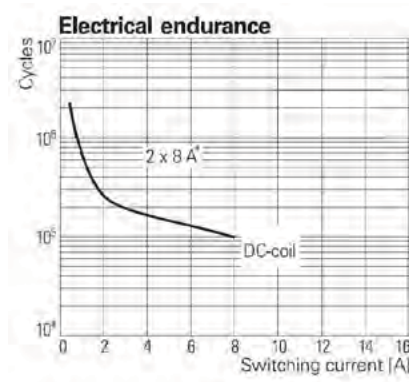
ELECTRICAL ENDURANCE OTHER MODELS

24 Vdc voltage
Different loads configurations.

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



ELECTRICAL ENDURANCE ULTRA-FAST TYPE (Tripping contact):

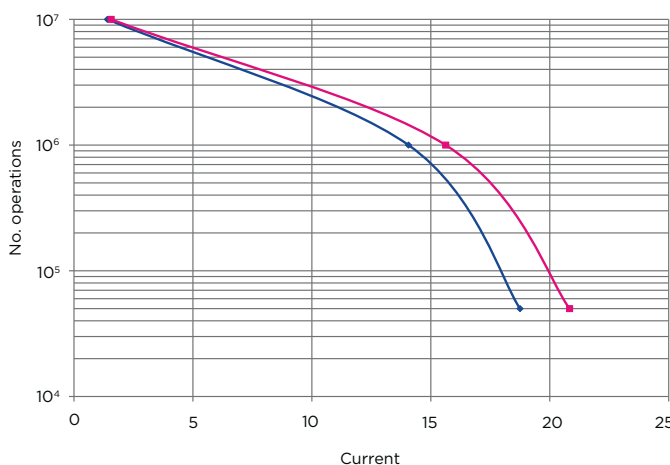


- > Voltage 250Vac
- > Configuration of resistive load:
- > L/R=0 ms

*The two loads may open simultaneously up to 8A

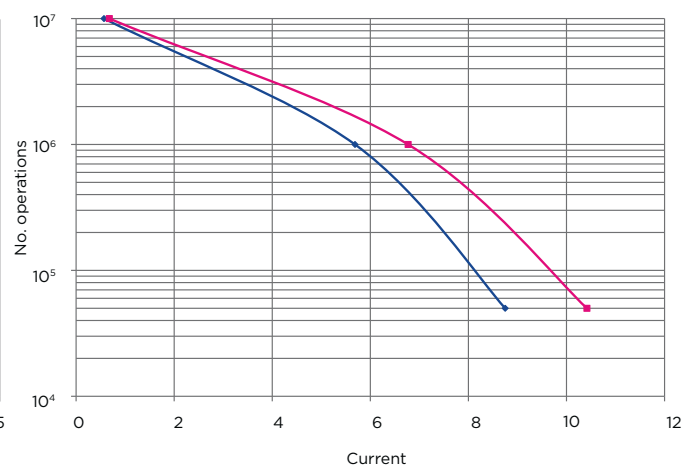
Resistive load:

- > 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)

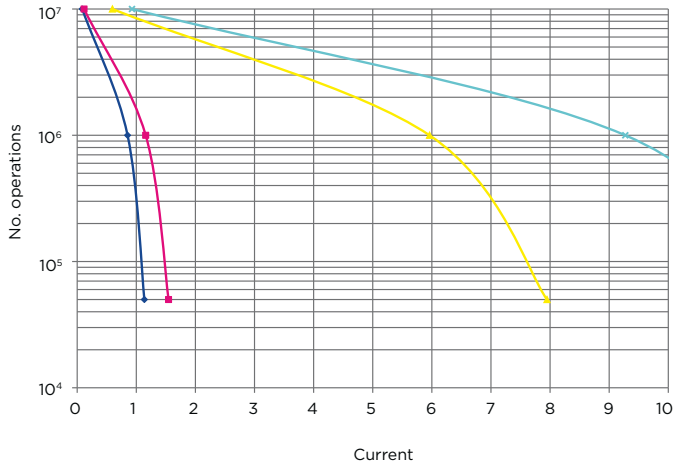
Vdc	Contact configuration	0 ms		20 ms		40 ms	
		P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
24	Type A	500	20,83	370	15,42	250	10,42
	Type B	450	18,75	300	12,50	210	8,75

110 Vdc voltage

Different loads configurations.

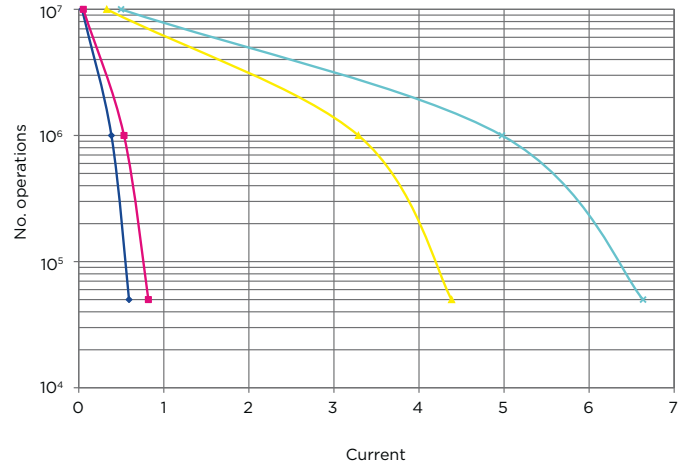
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



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

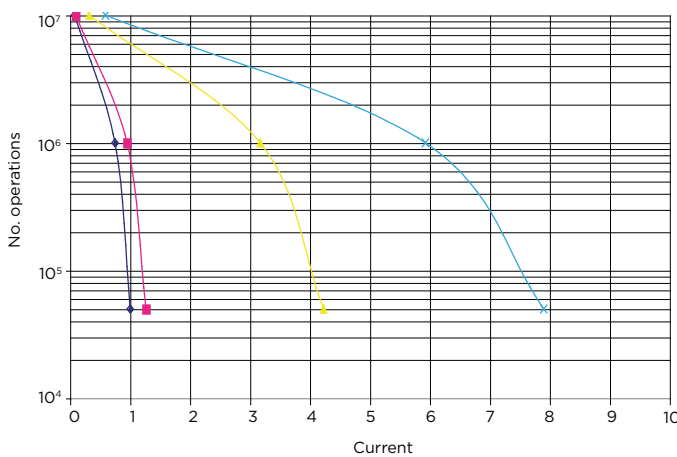
Vdc	Contacts configuration	0 ms		20 ms		40 ms	
		P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
110	Type A	170	1,55	140	1,27	90	0,82
	Type B	125	1,14	100	0,91	65	0,59
	2 contacts type A	1.360	12,36	1.106	10,05	730	6,63
	2 contacts type B	874	7,95	742	6,74	482	4,38

125 Vdc voltage

Different loads configurations.

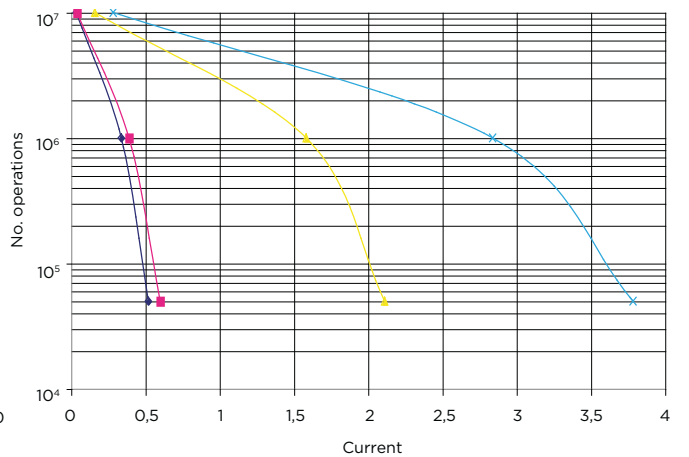
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



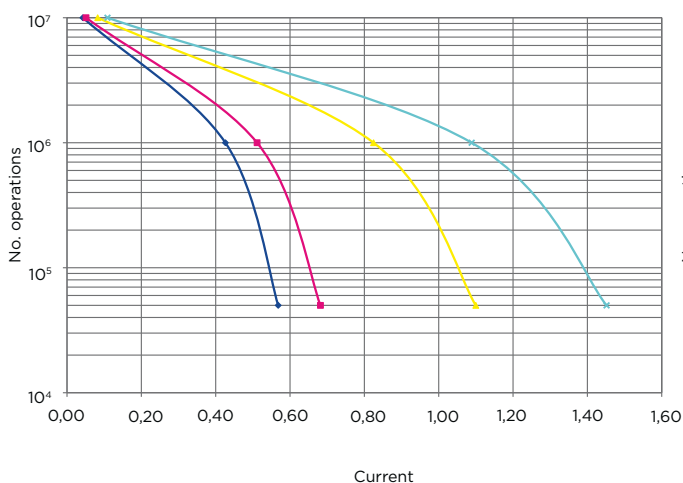
—■ Type A (Distance between contacts = 1,8 mm)
 —✦ 2 contacts type A
—■ Type B (Distance between contacts = 1,2 mm)
 —■ 2 contacts type B

Vdc	Contacts configuration	0 ms		20 ms		40 ms	
		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.

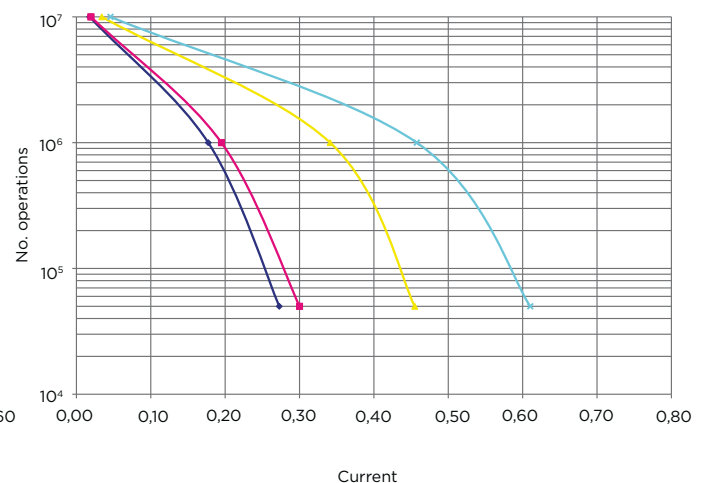
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



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

Vdc	Contacts configuration	0 ms		20 ms		40 ms	
		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 CAPABLE RELAYS (LDL)

There are some applications where the relay contacts establish 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 a special conditioning to make its contacts resistance extremely low.

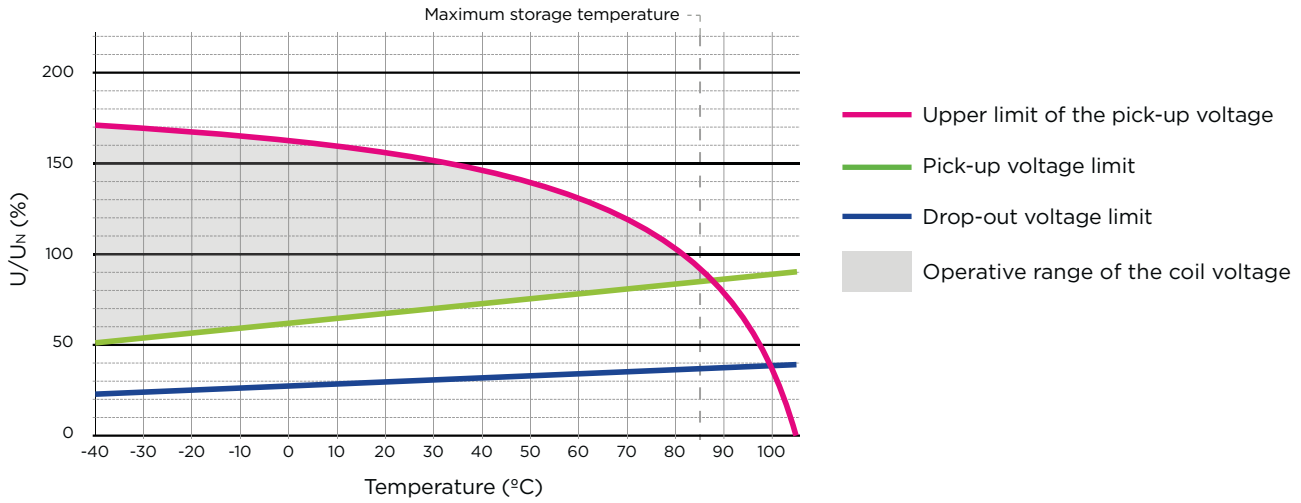
PICK-UP VOLTAGE/RELEASE VOLTAGE-TEMPERATURE CHARTS



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

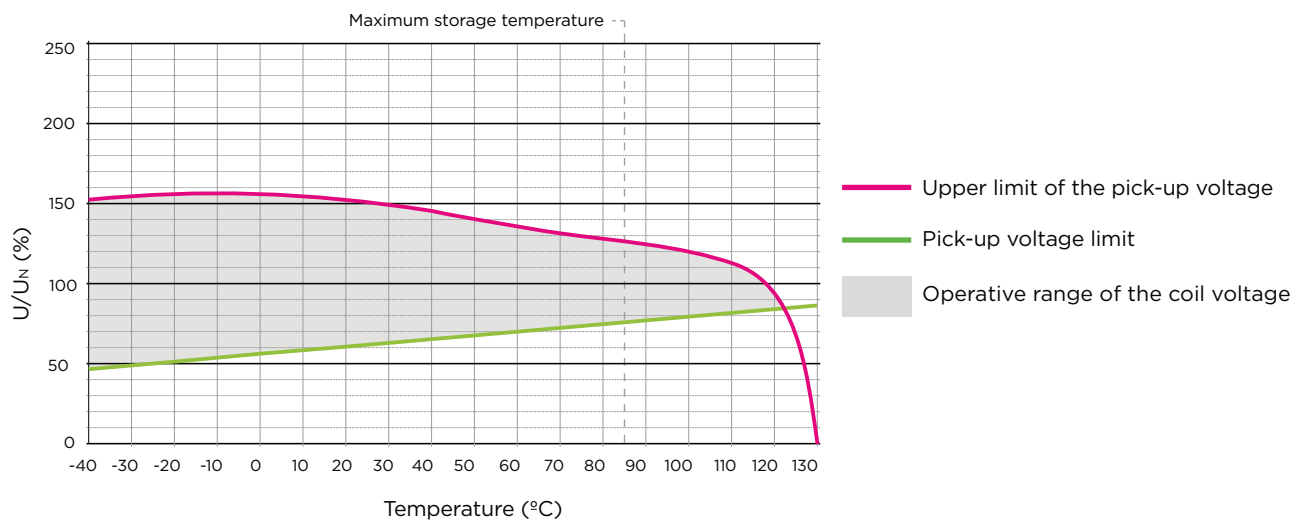
TRIPPING RELAYS

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		Type	Range	Aux. Supply	Options					
Model Selection ▶▶					OP					
Relay type										
2 contacts relay	RD-2R		-*		0*	1	0	0	0	0
2 contacts relay	RD-2XR		-*		0*	1	0	0	0	0
4 contacts relay	RF-4R				0*	1	0	0	0	0
4 contacts relay	RF-4XR				0*	1	0	0	0	0
8 contacts relay	RJ-8R				0*	1	0	0	0	0
8 contacts relay	RJ-8XR				0*	1	0	0	0	0
Ultra-fast (only Vdc)	RJ-4XR4		-*		0*	1*	0*	0*	0*	0*
Ultra-fast (only Vdc)	RXR-4		-*		-*	-*	-*	-*	-*	-*
Ultra-fast (only Vdc)	RF-4UR		-*		-*	-*	-*	-*	-*	-*
Range										
High Burden		HB	The HB option is not compatible with AC coils.							
Low burden (all by default)		-								
Low duty loads		LDL								
Aux. Supply Vdc or Vac										
Indicate voltage level and if it is Vdc or Vac (ex: 24 Vdc)										
Options										
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

Standard model

*Mandatory option

Trip		Type	Range	Aux. Supply	Options
Model Selection ▶▶					OP
Relay type					
16 contacts relay	RI-16R				-0*
Range					
High Burden		HB	The HB option is not compatible with AC coils.		
Low burden (all by default)		-			
Low duty loads		LDL			
Aux. Supply - Vdc or Vac					
Indicate voltage level and if it is Vdc or Vac					
Options					
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		Type	Range	IR*	Aux. Supply Vdc or Vac.	Range LDL**
Model Selection ▶▶						
Relay type						
3 contacts relay	BF3R		***			
4 contacts relay	BF4R					
4 contacts relay	BF4RP					
8 contacts relay	BJ8R					
8 contacts relay	BJ8RP					
10 contacts relay	BJ10R					
10 contacts relay	BJ10RP					
16 contacts relay	BI16R					
16 contacts relay	BI16RP					
Options						
Diode in parallel with the coil (only Vdc)			BB			
High Burden			HB			
Aux. Supply Vdc or Vac						
Indicate voltage level and if it is Vdc or Vac (ex: 24 Vdc) If AC, indicate if it is 50Hz or 60Hz						
Range LDL						
Low duty loads		No				-
		Yes				LDL

* IR indicates Reset Inhibitor

Gray shading indicates incompatibility of option IR with HB.

** Indicate just if LDL range is required.

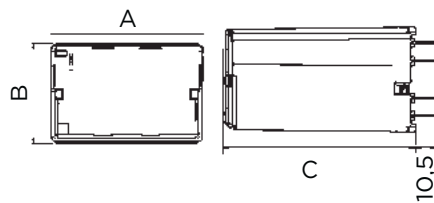
*** HB option not available

Trip circuit supervision		Type	LED Indicator configuration	Aux. Supply
Model Selection ▶▶				
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 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)				

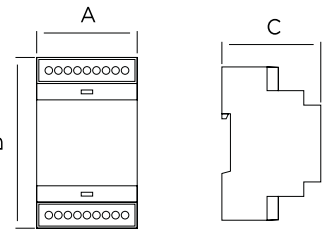
Auxiliary supply circuit supervision		Type	LED Indicator configuration	Aux. Supply
Model Selection ▶▶				
Relay type				
One phase		RUT-4		
One phase relay Indicators.Options				
Correct operation of the RUT-4 OP is shown via an illuminated green LED (in the bottom left)			OP.	
Correct operation of the 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



RXR Type



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
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

Accessories

Retaining clips

Function signs on the extraction ring

Security pins

SOCKETS, DIMENSIONS AND CUT-OUT

Sockets		Accessories		Weight (g)
Relay	Type	Screw	Double faston	
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
J	IP10 Flush mounting	F-EMP OP		300
	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
J10	IP10 Flush mounting	J-EMP OP		300
	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

› Front connection socket

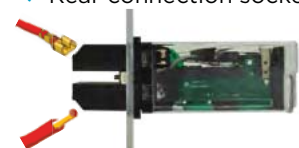
Front connection for double faston IP10 sockets

DN-DE2C IP10
FN-DE2C IP10
JN-DE2C IP10



Lateral connection for the rest of the sockets

› Rear connection socket



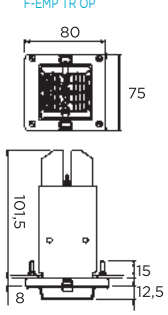
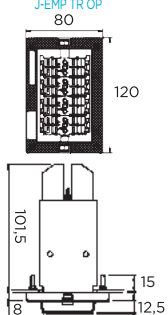
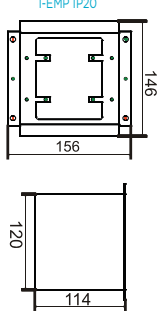
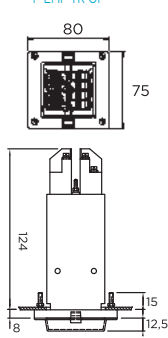
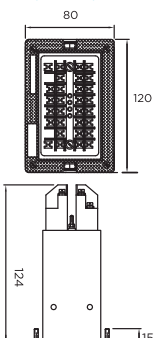
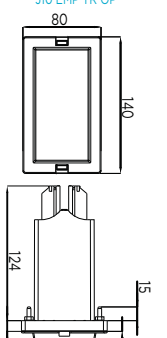
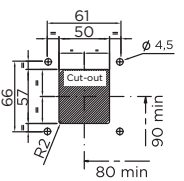
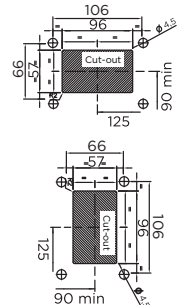
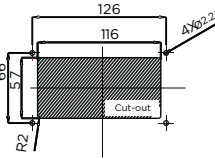
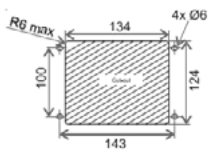
› Flush mounting socket



	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⁾	<p>DN-DE IP10 • DN-DE2C IP10</p>	<p>FN-DE IP10 • FN-DE2C IP10</p>	<p>JN-DE IP10 • JN-DE2C IP10</p>		<p>I-DE IP10</p>
	<p>DN-DE IP20 • DN-DE2C IP20</p> <p>Fix Drilling</p>	<p>FN-DE IP20 • FN-DE2C IP20</p> <p>Fix Drilling</p>	<p>JN-DE IP20 • JN-DE2C IP20</p> <p>Fix Drilling</p>	<p>J10N DE IP20 • J10N DE2C IP20</p> <p>Fix Drilling</p>	<p>I-DE IP20</p> <p>Fix Drilling</p>
Sockets for rear connection	<p>DN-TR OP IP10 • DN-TR2C OP IP10</p>	<p>FN-TR OP IP10 • FN-TR2C OP IP10</p>	<p>JN-TR OP IP10 • JN-TR2C OP IP10</p>	<p>J10N TR OP • J10N TR2C OP</p>	<p>I-TR, I-TR2C IP10</p>

⁽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		<p>F-EMP TR OP</p> 	<p>J-EMP TR OP</p> 		<p>I-EMP IP20</p> 
		<p>F-EMP TR OP</p> 	<p>J-EMP TR OP</p> 	<p>J10 EMP TR OP</p> 	
Cut-Out					



arteche
Moving together

Updates: ARTECHE_CT_Tripping-relays_EN
Version: 5.1