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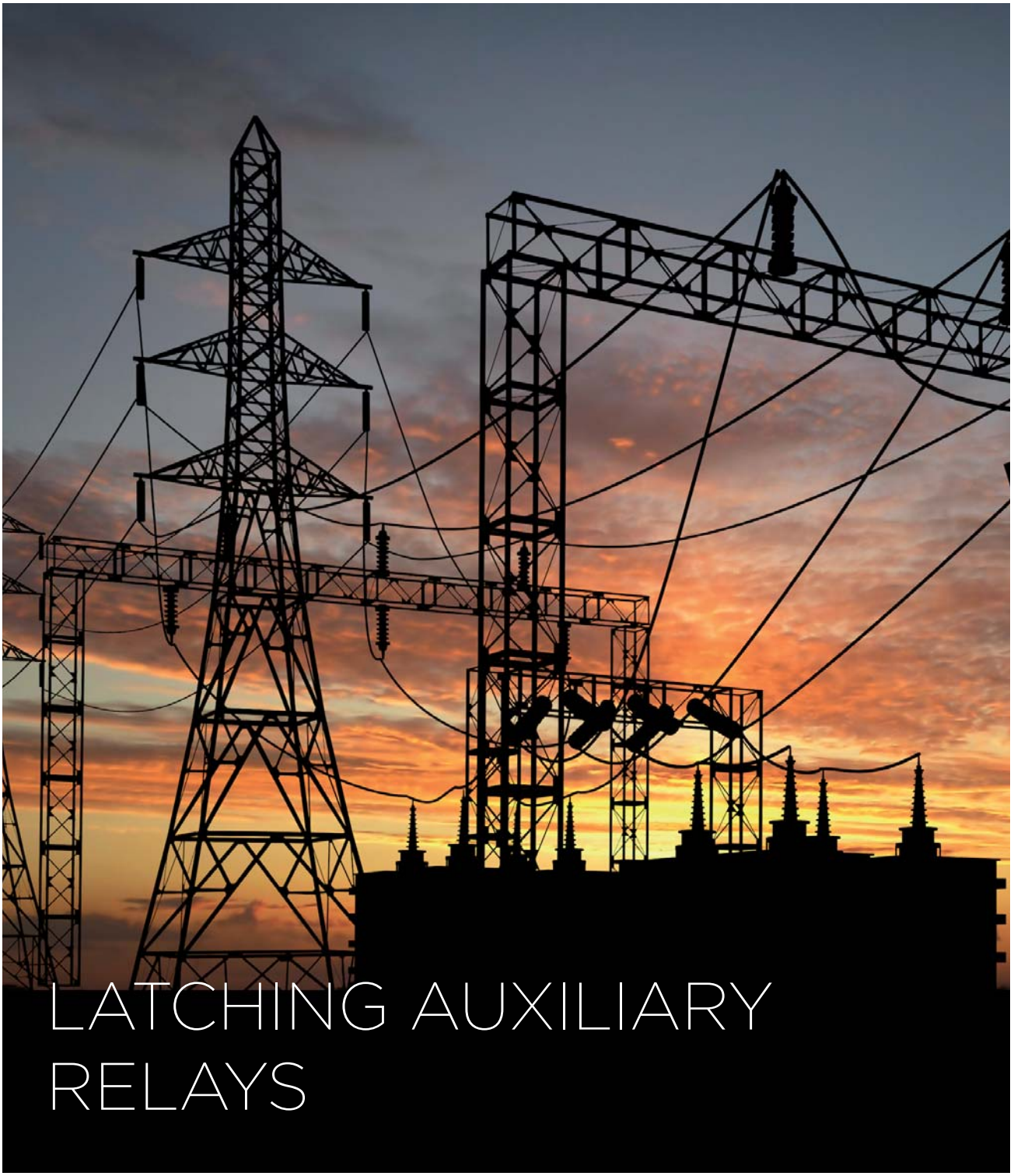


LATCHING AUXILIARY RELAYS

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

Moving together

INDEX

ANSWERS FOR ANY APPLICATION

ARTECHE latching relays are relays whith 2 stable position for the output contacts. Depending on which coil is energized, the output contacts will change from one position to another. The design of Arteche relay allows to have no consumption in permanence.

ARTECHE latching relays range are designed to guarantee the best features and complete security even in the hardest working environment.

The design, durability and quality of the different alternatives that ARTECHE latching relays can offer (FF range and standard range), make them suitable for high responsibility controls in different areas, highlighting:

ELECTRICAL UTILITIES:

Power plants, electrical substations.

- Position monitoring of circuit breaker and sectionalizer
- Direct operation on MV / HV (circuit breaker, sectionalizer)
- Position memory:
  - manual / automatic
  - local / remote
- Galvanic isolation between the control system and the primary equipment
- Applications where high speed operation is a must
- Applications where high breaking capacity is required
- Tripping and lockout functions
- Low duty loads control, activate digital inputs. FF range

RAILWAY SECTOR:

Electrification, signalling, interlocking and rolling stock.

- Boarding doors locking
- Brake circuit command
- Lighting and air conditioned systems operation
- Traction system
- Low duty loads control, activate digital inputs. FF range

INDUSTRIAL SECTOR:

Continuous process industries (Petrochemical, concrete, iron industries), water treatment, ...

- Critical process surveillance
- Position monitoring circuit breaker and sectionalizer
- Galvanic isolation between the control and the power systems
- Low duty loads control, activate digital inputs. FF range
- Activation of security sistems in industrial processes:
  - bloking electrical machines

The great power of the output contacts makes possible direct action on HV and MV switchgear, because their making/breaking capacities, continuous through-current and overvoltage capacity guarantee perfect insulation.

GENERAL CHARACTERISTICS

The main features of ARTECHE's latching auxiliary relays are the followings:

- Designed to allow continuous operation even in high temperature ambient, within the whole voltage range.
- No consumption in permanence.
- Self-cleaning contacts.
- High level of electrical insulation between input and output circuits.
- Availability of extended voltage range (+25/-30%) for high security applications.
- Capable to operate under low duty loads, activate digital inputs, and operate without any load. FF Range.
- High speed operation (up to 10 ms).
- Capable to withstand vibrations and seismic conditions.
- Sturdy design.
- Front state indication on the nameplatte.
- High protection degree (IP40), with transparent cover, making them suitable for use in salty and tropical atmospheres.
- In compliance with the most demanding test standards: IEC, EN, IEEE and bearing the CE mark.
- Wide range of auxiliary voltage levels (Vdc and Vac).
- Up to 16 output contacts in one single relay for contact multiplication (ask for technical characteristics of the 16 contacts model).
- Simplicity of installation (plug-in relays in a wide range of sockets with different installation configurations).
- Capable to work under ambient of 100% humidity.
- No need of maintenance after installation.

Large variety of assemblies with frontal and rear connection sockets by screw or fast-on clip.

TECHNICAL STANDARDS

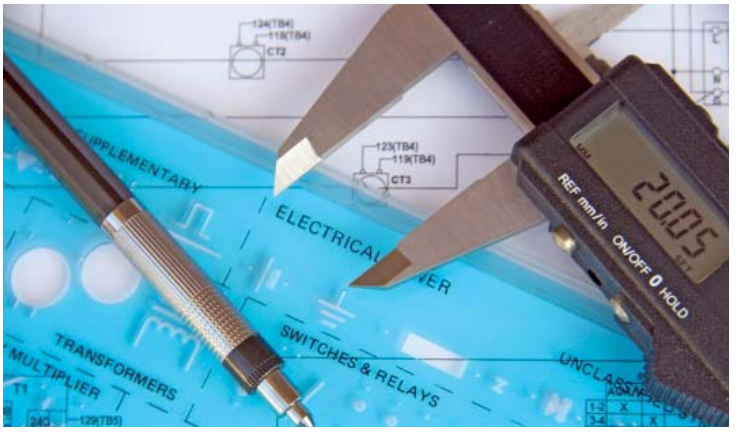
RAILWAY APPLICABLE STANDARDS

- **EN 60077 Series.** Rolling stock equipment.
  - Part 1: General conditions in service and general terms.
  - Part 2: Electrotechnical components.
- **IEC 50155** (IEC 60571 equivalente). Railway applications - Rolling stock equipment.

GENERAL STANDARDS

In addition to the specific applicable standards, ARTECHE latching relays are designed based on the fulfilment of the following standards:

- **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.



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

General purpose latching relays

The bistable ARTECHE relays with 2 stable positions. These positions are held by a permanent magnet, which prevents intermediate positions, giving a huge security operation. The position change is made with 2 sets of coils with separate entrances in BF3 and BJ8 and with breaking-flame contacts for each set of coils.

Their pick-up time lower than 20 ms and the high breaking capacity of their contacts make them appropriate to be used as an interface between the protection system and the breaker. The main application for these relays is multiply the output contacts in those controls that need to memorite 2 stables positions:

- automatic / manual
- close / open

Auxiliary trip and lockout relays

ARTECHE offers specific relays intended to be used in tripping and lockout applications, where high quality requirement in operating time (with models that assure the trip ever in less than 10 ms) and breaking capacity are needed.

Front indication on the nameplatte, that indicate if the relay has changed the contact positions.

All the relays include a diode in parallel with the coil (see bistable relays with overvoltage protection characteristic).

There is also the possibility of a bistable trip and lockout relay with manual reset.

Latching relays with coil overvoltage protection

ARTECHE's auxiliary relays, either Vdc or Vac, have the possibility of including an element in parallel with the coil (diode or varistance).

These elements aimed to prevent the over voltage peak generated by the coil itself and it may could affect other equipment installed on the same line.

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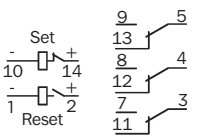
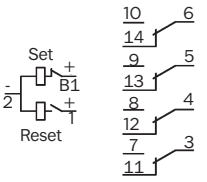
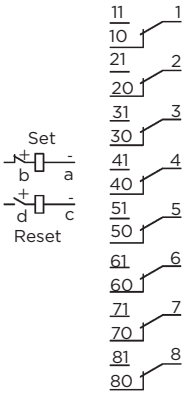
TECHNICAL FEATURES PER MODEL

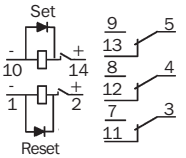
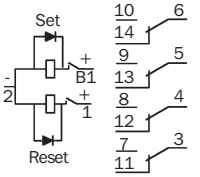
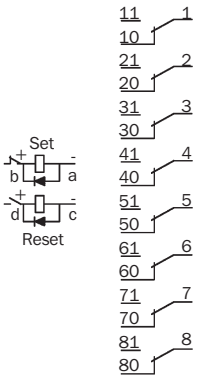
› World-class range of auxiliary relays for energy sector, specially designed for the most demanding applications

GENERAL PURPOSE LATCHING RELAYS

Model	BF-3	BF-4	BJ-8
			
Applications	Relays with two stable positions. Required when the position memory (open-close, automatic-manual, local-remote...) is needed.		
Construction characteristics			
Contacts no.	3 Changeover	4 Changeover	8 Changeover
Connections			
Options	Options are not available		
Weight (g)	300		600
Dimensions (mm)	45 x 45 x 96,5 (F short Type)		90 x 50 x 100,5 (J short Type)
Coil characteristics			
Standard voltages[1]	24, 48, 72, 110, 125, 220 Vdc / 63,5, 110, 127, 230 Vac (50-60 Hz)		
Voltage range	+25% -30% U_N		
Pick-up voltage	See pick-up voltage / temperature curves for Latching relays		
Consumptions only in the change-over	≤6 W		≤12 W
Operating time			
Pick-up time	<20 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 (1 contact configuration)		
Max. breaking capacity	See value for 50.000 operations		
U_{max} opened contact	250 Vdc / 400 Vac		
Performance data			
Mechanical endurance	10^7 operations		
Operating temperature	-40ºC +70ºC		
Storage temperature	-40ºC +70ºC		
Max. operating humidity	93% / +40ºC		
Operating altitude[2]	<2000 m		

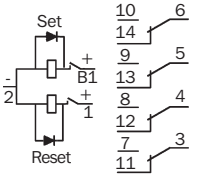
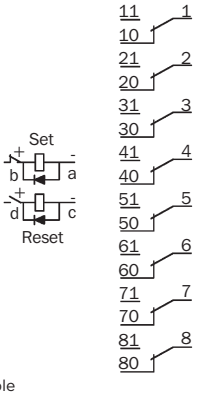
[1] Other voltage upon request
[2] Ask for higher altitudes

TRIP AND LOCKOUT RELAYS (I)

Model	BF-3R	BF-4R	BJ-8R
			
Applications	Intended for trip and lockout applications where high demanding requirements in operating time and breaking capacity are needed.		
Construction characteristics			
Contacts no.	3 Changeover	4 Changeover	8 Changeover
Connections			
Options	Options are not available		
Weight (g)	300		600
Dimensions (mm)	45 x 45 x 96,5 (F short Type)		90 x 50 x 100,5 (J short Type)
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		
Consumptions only in the change-over	27 W	23 W	35,5 W
Operating time			
Pick-up time	<10 ms (Vdc) <20 ms (Vac)		<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 (1 contact configuration)		
Max. breaking capacity	See value for 50.000 operations		
U_{max} opened contact	250 Vdc / 400 Vac		
Performance data			
Mechanical endurance	10^7 operations		
Operating temperature	-40ºC +70ºC		
Storage temperature	-40ºC +70ºC		
Max. operating humidity	93% / +40ºC		
Operating altitude[2]	<2000 m		

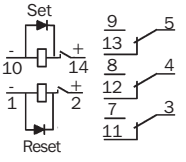
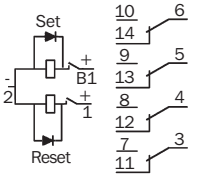
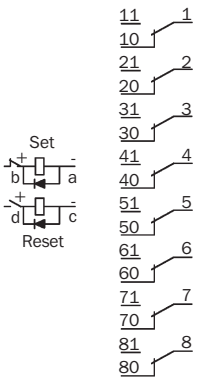
[1] Other voltage upon request
[2] Ask for higher altitudes

TRIP AND LOCKOUT RELAYS (II)

Model	BF-4RP	BJ-8RP
		
Applications	Intended for tripping and locking applications where high quality requirements in operating time and breaking capacity are needed, with manual reset.	
Construction characteristics		
Contacts no.	4 Changeover	8 Changeover
Connections		
Options	Options are not available	
Weight (g)	300	600
Dimensions (mm)	45 x 45 x 96,5 (F short Type)	90 x 50 x 100,5 (J short Type)
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 (20ºC)	See pick-up voltage / temperature curves for Latching relays	
Consumptions only in the change-over	23 W	35,5 W
Operating time		
Pick-up time	<10 ms (Vdc) <13 ms (Vac)	<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 (1 contact configuration)	
Max. breaking capacity	See value for 50,000 operations	
U_{max} opened contact	250 Vdc / 400 Vac	
Performance data		
Mechanical endurance	10^7 operations	
Operating temperature	-40ºC +70ºC	
Storage temperature	-40ºC +70ºC	
Max. operating humidity	93% / +40ºC	
Operating altitude[2]	<2000 m	

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

LATCHING RELAYS WITH COIL OVERVOLTAGE PROTECTION

Model	BF-3BB	BF-4BB	BJ-8BB
			
Applications	Intended to protect the contact of the equipment that feeds the coil in our relay.		
Construction characteristics			
Contacts no.	3 Changeover	4 Changeover	8 Changeover
Connections			
Options	Options are not available		
Weight (g)	300		600
Dimensions (mm)	45 x 45 x 96,5 (F large Type)		90 x 50 x 100,5 (J large Type)
Coil characteristics			
Standard voltages[1]	24, 48, 72, 110, 125, 220 Vdc[3]		
Voltage range	+25% -30% U_N		
Pick-up voltage	See pick-up voltage / temperature curves for Latching relays		
Consumptions only in the change-over	≤6 W		≤12 W
Operating time			
Pick-up time	<20 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 (1 contact configuration)		
Max. breaking capacity	See value for 50,000 operations		
U_{max} opened contact	250 Vdc / 400 Vac		
Performance data			
Mechanical endurance	10^7 operations		
Operating temperature	-40ºC +70ºC		
Storage temperature	-40ºC +70ºC		
Max. operating humidity	93% / +40ºC		
Operating altitude[2]	<2000 m		

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

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.

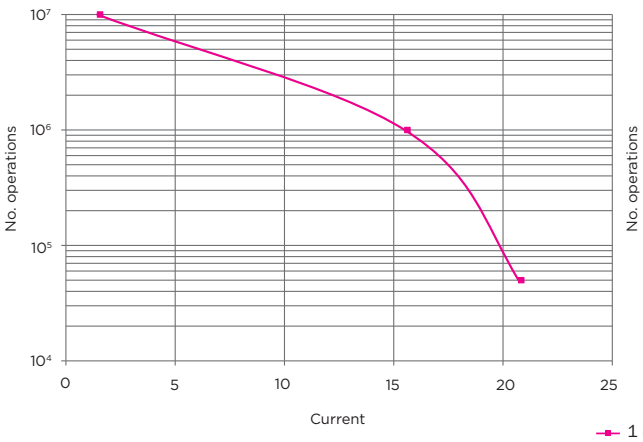
In any configuration, ARTECHE's auxiliary relays have a high breaking capacity values. These limits are showed in the table below, in terms of power and current values. In all the cases, these relays guarantee a right performance during 50,000 operations.

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.

24 Vdc voltage
Different loads configurations.

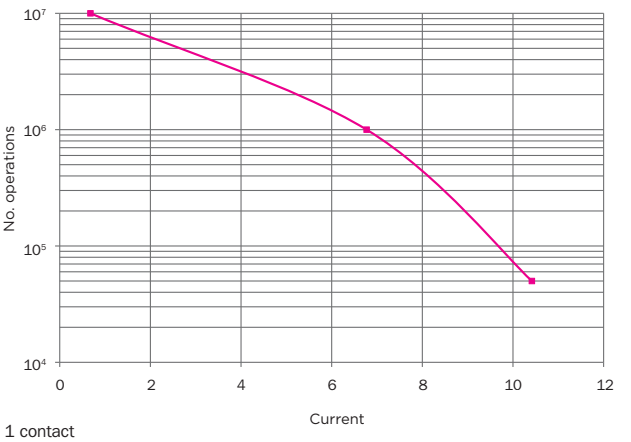
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



1 contact

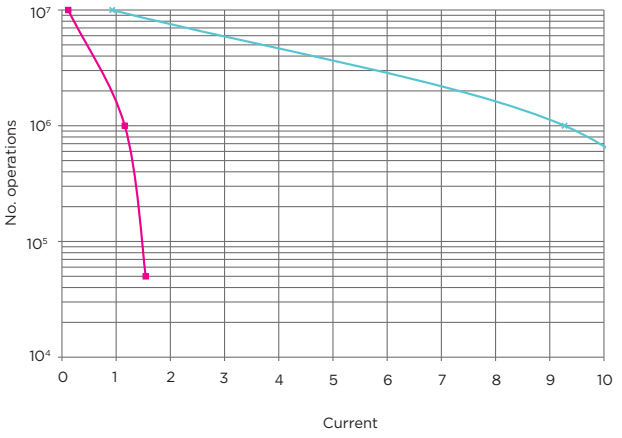
		0 ms		20 ms		40 ms	
Vdc	Contact configuration	P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
24	1 contact	500	20,83	370	15,42	250	10,42

(*) Ask for data and curve of serial contacts

110 Vdc voltage
Different loads configurations.

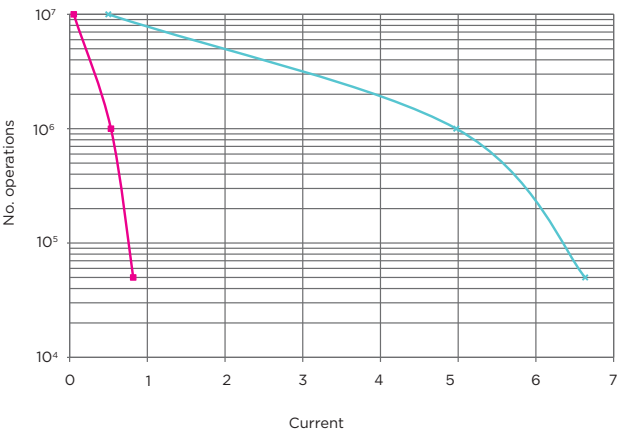
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



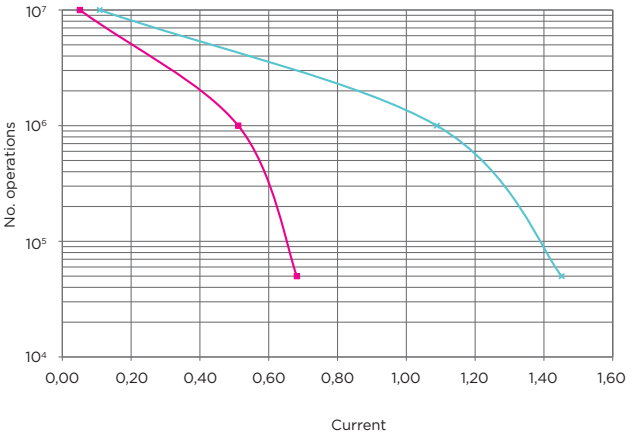
1 contact
2 contacts

		0 ms		20 ms		40 ms	
Vdc	Contact configuration	P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
110	1 contact	170	1,55	140	1,27	90	0,82
	2 contacts	1,360	12,36	1,106	10,05	730	6,63

220 Vdc voltage
Different loads configurations.

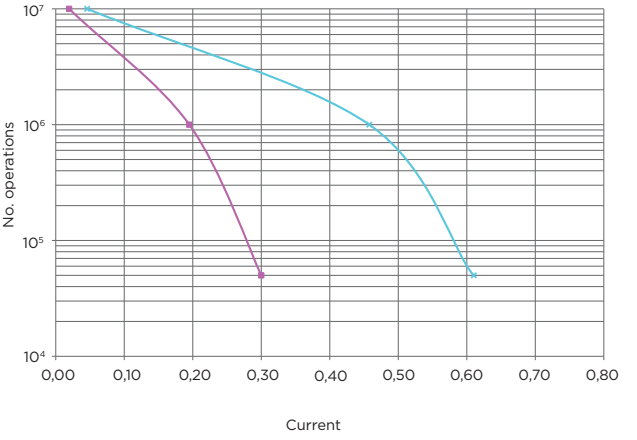
Resistive load:

› L/R= 0 ms.



Highly inductive load:

› L/R= 40 ms.



1 contact
2 contacts

		0 ms		20 ms		40 ms	
Vdc	Contact configuration	P(W)	I(A)	P(W)	I(A)	P(W)	I(A)
220	1 contact	150	0,68	115	0,52	66	0,30
	2 contacts	319	1,45	234	1,06	134	0,61

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 two different curves:

- 1 contact: Breaking capacity of the relays with distance between contacts = 1.8 mm.
- 2 contacts: Breaking capacity for relays with serial contacts, and distance between contacts=1.8 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.

Thus, ARTECHE relays have the following alternatives and recommendations:

- Possibility of external connection of equipment (serial contacts) getting an important increase of breaking capacity in these equipment is shown, guaranteeing the right performance during a high number of operations.

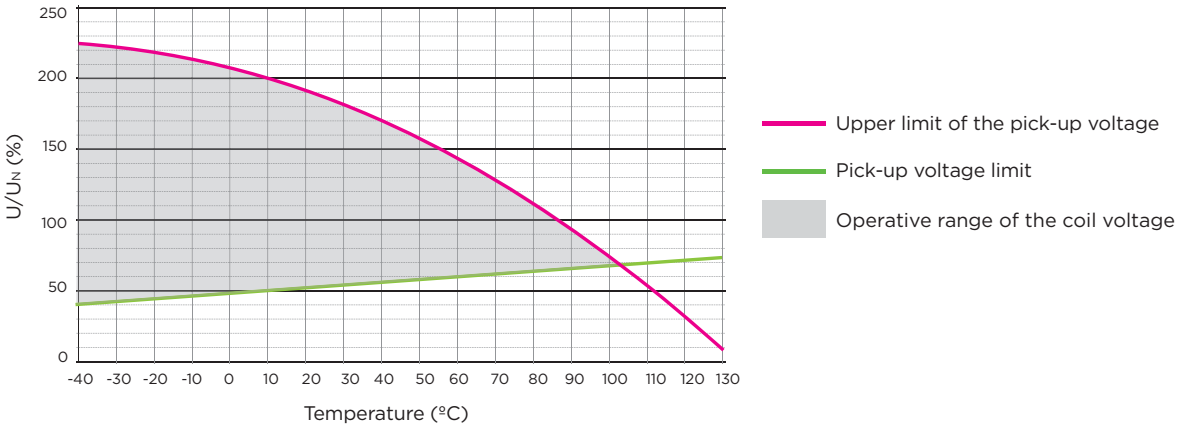
PICK-UP VOLTAGE/RELEASE VOLTAGE-TEMPERATURE CHARTS

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

General purpose latching relays and relays with coil overvoltage protection.

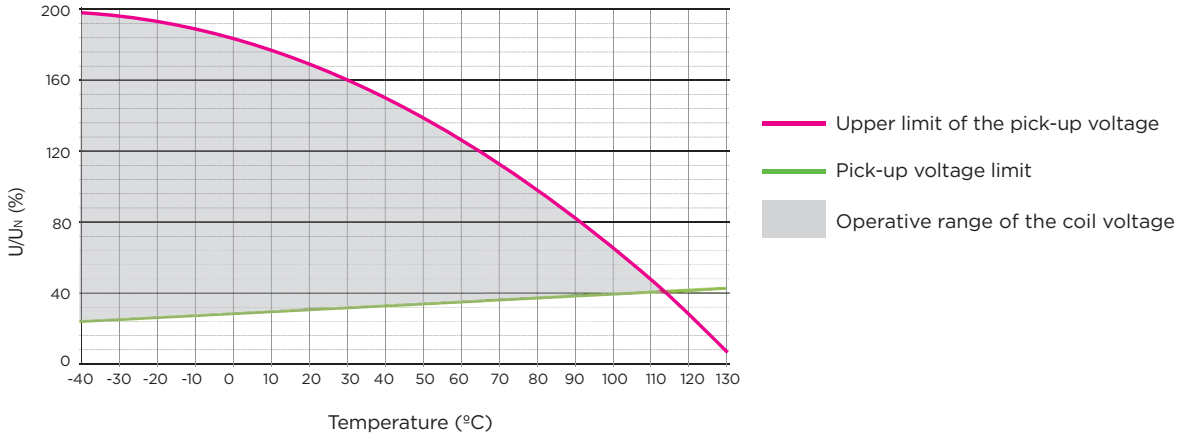
GENERAL PURPOSE RELAYS

Operative range against ambient temperature.



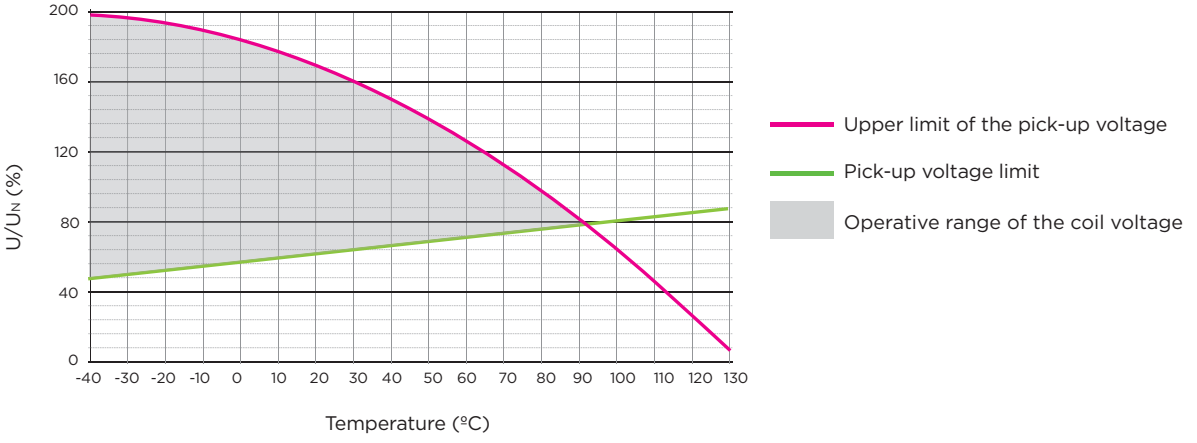
TRIP AND LOCKOUT RELAYS

Operative range against ambient temperature.



TRIP AND LOCKOUT RELAY WITH PUSH TO RESET BUTTON

Operative range against ambient temperature.



MODELS SELECTION

Latching	Type	Range	Range FF(*)	Aux. Supply Vdc or Vac.
General purpose range				
3 contacts relay	BF-3			
4 contacts relay	BF-4			
8 contacts relay	BJ-8			
Options				
Diode in parallel with the coil (only Vdc)		BB		
Fast acting trip and lock out relay (electrical reset only)		R		
Fast acting trip and lock out relay (electrical and manual reset) (**)		RP		
Range FF				
	No		-	
	Yes		FF	
Aux. Supply Vdc o Vac				
Indicate voltage level and if it is VDC or VAC (ex: 24 VDC)				

Restrictions

(*) Indicate just if FF range is required

(**) Unavailable for 3 contacts

Trip and lockout	Type	Range
General purpose range		
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	•
Options		
With manual reset		

Restrictions

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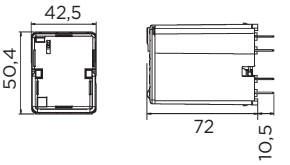
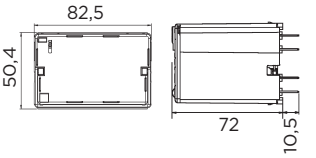
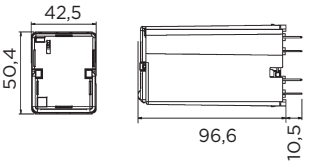
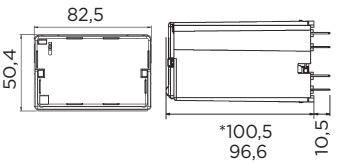
Arteche has more than 100 customer service technical points, an expert engineers network close to you everywhere

DIMENSIONS OF THE RELAYS

Relay dimensions

Type F	Type J
F Short	J Short
	
F Long	J Long
	
	*depending on the model

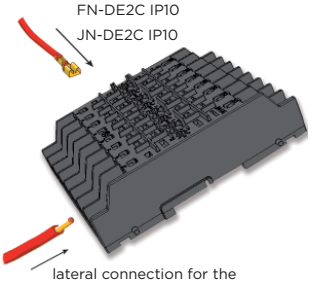
SOCKETS: DIMENSIONS AND CUT-OUT

Sockets		Options		
Relay	Type	Screw	Faston	Weight (g)
BF	IP10 Front connection	FN-DE IP10	FN-DE2C IP10	110
	IP20 Front connection	FN-DE IP20	FN-DE2C IP20	110
	IP20 Rear connection	FN-TR OP	FN-TR2C OP	90
	IP20 Flush mounting	F-EMP OP		300
BJ	IP10 Front connection	JN-DE IP10	JN-DE2C IP10	225
	IP20 Front connection	JN-DE IP20	JN-DE2C IP20	225
	IP20 Rear connection	JN-TR OP	JN-TR2C OP	180
	IP20 Flush mounting	J-EMP OP		400

Accessories
Retaining clips
Function signs on the extraction ring

	Relays type F	Relays type J
Sockets for DIN rail (1) (2)	FN-DE IP10 • FN-DE2C IP10	JN-DE IP10 • JN-DE2C IP10
	FN-DE IP20 • FN-DE2C IP20	JN-DE IP20 • JN-DE2C IP20
Sockets for rear connection	FN-TR OP • FN-TR2C OP	JN-TR OP • JN-TR2C OP
Sockets for flush mounting	F-EMP OP • F-EMP (short) OP	J-EMP OP • J-EMP (short) OP
	F-EMP OP • F-EMP (long) OP	J-EMP OP • J-EMP (long) OP
Cut-out		

Front connection for double faston IP10 sockets
DN-DE2C IP10
FN-DE2C IP10
JN-DE2C IP10



lateral connection for the rest of the sockets

(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.

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MOVING TOGETHER

Actualizaciones: ARTECHE_CT_Latching-Auxiliary-Relays_E
Versión: A1