RELECO PARAMOUNT

RELECO PARAMOUNT

Ordering Information

C10 - A10 FX / AC230

Model Series Coil Voltage
C10 - Miniature Faston 0.187 (4.75mm)
C12 - Miniature Faston 0.098 (2.50mm)

Type
A - Standard Change Over Contacts
T - Twin Contact (Bifurcated)
G - Open Contact

Number of Contacts

Contact Materials
0 - Standard
1 - Gold Flashed 0.2 µ Au for Twin Contact & C12 Relays
2 - Gold Plated 10 µ Au for Twin Contact Only
3 - Gold Plated 3 µ Au for Twin Contact Only

Coil Voltage
DC - 5, 12, 24, 48, 110
AC - 115, 230
AC/DC - 24, 48

Additions to the coil
X - LED (Not for latching)
F - Polarity & Free Wheeling Diodes (DC only)
B - Rectifying Bridge for AC / DC relays
For 24 to 48V AC & DC Relays
R - RC Suppressor (No LED) for AC Coils

Special Executions
E - Cover for Flange Panel Mounting

General Information

A Change-Over Contacts
General application

0.5A @ 110V DC — 0.2A @ 220V DC
Gap: 0.5 mm — Isolation between contacts : 1000 V

G Open Contacts
DC application

0.8A @ 110V DC — 0.4A @ 220V DC
Gap: 1 mm — Isolation between contacts : 2000 V

T Bifurcated contacts. Gold plated 3µ Au
Low Level applications — PLC's input

1mA @ 5V DC — 0.5 A @ 110VDC — 0.4A @ 220V DC
Gap: 0.5 mm — Isolation between contacts : 1000 V

Contacts
Either a long storing or polluted ambient may cause some surface oxidation of silver contacts or its alloys, by creating a thin surface film which may produce switching malfunction in low current and voltages.
To prevent that oxidation, using gold-plated contacts is recommended.

T relays standard contacts are gold-plated with 3µ Au and ideal for low current and signal input to PLC's

Standard Versions
Available standard types and all possible options are shown in pages reading technical specification of each model.

Types **C14-**... and **C15-...** do **not** allow any option for coil protection circuits and any mechanical features.

Other types made according to customer specifications canbe supplied, as special, and marked as RF Nº....

Protection against back EMF
When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

If triac, transistor etc, controls a relay, appropriate steps must be taken to avoid or reduce back EMF to a safe level.

Both Polarity and Free-Wheeling Diodes **(FX),** must be used to protect coils, to avoid malfunctions of DC coil relays when used with battery or DC supply.

Making or breaking motor, transformers or contractors in an industrial environmental, may generate high voltage pulses, either isolated or burst, through the main line. The voltage level of those pulse may be high enough to affect the isolation of the coil.

Specifications
Each relay specific data, refer to typical values measured at 20° C.

Electrical Life and Max. Load on DC tables show the typical performance reached at an ambient temperature of 20° C and a frequency of 1,200 ops/hour

Ambient Temperature
Max. ambient temperature is -40° C ..... +70° C, without ice, for a single relay. On close cabinets with several relays in battery inside, ambient temperature may exceed 70° C.
Sockets S10-M and S12, mounted aside, assures a free space between relays for heat dissipation.
But it could be necessary an adequate ventilation inside the cabinet.

Min. Pull-in Voltage
It is the minimum voltage that has to be applied to the coil, so the NO contacts close and the relay acts without vibration.
Given value of 0.8 x UN ensures the relay works at a temperature of 20° C

AC and DC relays pull-in voltages ≤ 0.8 x U_n
Pull-in voltage increases with coil temperature

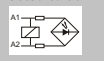
Max. drop-out voltage
It is the voltage, higher than zero, at which the relay opens and the NC contacts close.

DC relays drop-out voltage 0.10 x U_n
AC relays drop-out voltage 0.35 x U_n

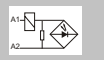
Drop-out time of relays with DC coil increases if free wheeling diode connected in parallel with the coil.

LED and protection circuit connected to coil

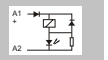
X LED with no polarity(standard)
Coils ≤ 12V... DC / AC
LED rectifier bridge in parallel



X LED with no polarity(standard)
Coils ≥12V... DC / AC
LED rectifier bridge in series

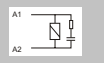


FX LED with polarity **A1+** (option)
Every DC coil voltage
Polarity and free wheeling diodes

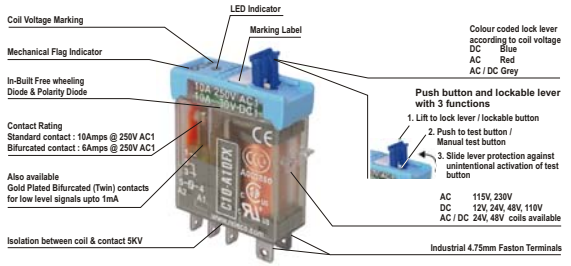


BX LED with no polarity (option)
Only 24V and 48V AC / DC coils
Rectifier bridge for AC / DC relays

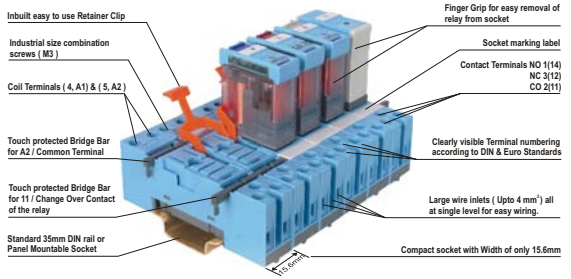
R LED not available (option)
All DC coil voltage
RC protection against pulses on AC



Benefits of the new C Plus system



C10 is a Single Pole full Featured Industrial Plugin Relay with all the In-Built Mechanical and Electronic features which are absolute must for Input / Output PLC applications.



S10 is a Single Pole Single Level Touch protected Interface Socket with Input / Output configuration Coil Terminals (A1 & A2) on one side and Contact Terminals (NO, NC, CO) on the opposite side.

Industrial relays MRC, QRC, IRC
General information
Contents

Application	Types		Poles	AC ratings	DC ratings	Sockets
General purpose	C2-A2x	Universal 8 pin, standard	2 CO	10A / 250V	0,5A @ 110V	S2...
	C3-A3x	Universal 11 pin, standard	3 CO	10A / 250V	0,5A @ 110V	S3...
	C4-A4x	Square base, 4 pole	4 CO	10A / 250V	0,5A @ 110V	S4...
	C5-A2x	Square base AC power	2 CO	16A / 400V	0,5A @ 110V	S5...
	C5-A3x	Square base AC power	3 CO	16A / 400V	0,5A @ 110V	S5...
	C7-A1x	Miniature AC power	1 CO	16A / 250V	0,5A @ 110V	S7...
	C7-A2x	Miniature AC power	2 CO	10A / 250V	0,5A @ 110V	S7...
	C9-A4x	Miniature, 14 pin plug-in	4 CO	5A / 250V	0,2A @ 110V	S9...
	C10-A1x	Interface standard	1 CO	10A / 250V	0,5A @ 110V	S10...
	C12-A2x	Interface standard	2 CO	5A / 250V	0,5A @ 110V	S12...
Low level loads	C2-T2x	Universal 8 pin, plug-in	2 CO	6A / 250V	Min. 1mA @ 5V	S2...
	C3-T3x	Universal 11 pin, plug-in	3 CO	6A / 250V	Min. 1mA @ 5V	S3...
	C7-T2x	Miniature	2 CO	6A / 250V	Min. 1mA @ 5V	S7...
	C10-T13	Interface Twin	1 CO	6A / 250V	Min. 1mA @ 5V	S10...
	C10-GT13	Interface Twin NO	1 NO	6A / 250V	Min. 1mA @ 5V	S10...
General purpose with return signal	C7-H23	Special aplication:				
		1 Standard	1 CO	10A / 250V	0,5A / 110 V	S7...
		2 Bifurcated	1 CO	6A / 250V	0,5A / 110 V	
DC load switching	C2-G2x	Universal 8 pin, plug-in	2 NO	10A / 250V	1,2A @ 110V	S2...
	C3-G3x	Universal 11 pin, plug-in	3 NO	10A / 250V	1,2A @ 110V	S3...
	C5-G3x	Square base	3 NO	16A / 400V	1,2A @ 110V	S5...
		Miniature	2 NO	10A / 250V	0,8A @ 110V	S7...
Interface application	C7-G2x	Interface NO	1 NO	10A / 250V	0,5A @ 110V	S10...
	C10-G1x	Interface NO	2 NO	5A / 250V	0,8A @ 110V	S12...
	C12-G2x					
DC load switching Doublemake	C3-X1x	11 pin, plug-in DC power	1 DM	10A / 250V	7A @ 110V	S3...
	C4-X2x	Square base DC power	2 DM	10A / 250V	7A @ 110V	S4...
	C5-X1x	Square base DC power	1 DM	10A / 250V	7A @ 110V	S5...
	C7-X1x	Miniature DC power	1 DM	10A / 250V	6A @ 110V	S7...
Latching	C3-R2x	11 pin plug-in	2 CO	10A / 250V	0,5A @ 110V	S3...
	C4-R3x	Square base,14 pin	3 CO	10A / 250V	0,5A @ 110V	S4...
	C5-R2x	Square base	2 CO	10A / 250V	0,5A @ 110V	S5...
Biestable	C9-R2x	Miniature	2 CO	5A / 250V	0,2A @ 110V	S9...

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Industrial relays MRC, QRC, IRC
General information
Contents

Application	Types		Poles	AC ratings	DC ratings	Sockets
DC load switching Magnet blow-out	C3-M1x	Square base. High DC load	1 DM	10A / 250V	10A @ 220V	S3...
	C5-M1x	Square base. High DC load	1 DM	16A / 400V	10A @ 220V	S5...
	C5-M2x	Square base	2 NO	16A / 250V	7A @ 110V	S5...
Sensitive 500mW...800mW	C3-E2x	Universal 11 pin plug-in	2 CO	6A / 250V	0,5A @ 110V	S3...
	C3-N3x	Universal 11 pin plug-in	3 CO	6A / 250V	0,5A @ 110V	S3...
	C9-E2x	Miniature	2 CO	5A / 250V	0,2A @ 110V	S9...
Lamp switching	C7-W1x	Miniature, faston 187	1 NO	10A / 250V	0,5A @ 110V	S7...
Time modules MRC	CT2	8 pin plug-in timer module	2 CO	10A / 250V	0,5A @ 110V	S2...
	CT3	11 pin plug-in timer module	3 CO	10A / 250V	0,5A @ 110V	S3...
Solid state relay	CSS AC	Instantaneous	1 NO	3A/250v		S10...
	CSS AZ	Zero-cross	1 NO	3A/250v		S10...
	CSS-DCN	Common negative	1 NO		2A/50v	S10...
	CSS-DCP	Common positive	1 NO		2A/50v	S10...
Railway	R3-N3x	Railway Aplication	3 CO	6A / 250V	0,5A / 110V	S3...
	R7-A2x	Railway Aplication	2 CO	10A / 250V	0,5A / 110V	S7...
	R7-T2x	Railway Aplication	2 CO	6A / 250V	0,5A / 110V	S7...
New Products	SMS relay	AC 110 – 240V ~ 50/60Hz		DC 12-48V ⎓ max. 10%		
	CM3	Universal time delay relay		DC12-24 ⎓ or DC 24-48V⎓ / AC 24-240V~		
	CIM1	Universal time delay relay		UC 24 - 240V		
	RINT	Interface Module		UC 24 or UC 230		
	RIC	Installation Contactor AC/DC		UC 24 or UC 230		

Industrial relays MRC, QRC, IRC
General information

Product range
Releco offers a wide range of relay types and versions and associated bases and accessories.

Standard (general-purpose) relay, MRC series
35 x 35 mm round plug-in relay, 8- or 11-terminals multipole connector according to IEC 67 with 2 or 3 contacts up to 10 A and different contact types and contact materials.
Standard relay 35 x 35 mm with flat blade connectors with up to 4 contacts and up to 16 A with 3 contacts.

Miniature industrial relay, QRC series
22.5 mm series with up to 4 contacts and up to 10 A with 1 or 2 contacts

Interface relay, IRC series
Overall width 13 mm with up to 2 electromechanical contacts, or fully electronic switches.

Special relays, remanence relays
While "normal" relays are monostable, i.e. they return to the idle state when the excitation is switched off, remanence relays are bistable, i.e. the current switching state is retained irrespective of the excitation. Relays of this type are available in different versions.

Electronic relay, CSS
In the IRC series different electronic DC or AC relays up to 3 A are available. For AC relays a distinction is made between synchronously (zero crossing) and asynchronously switching versions. For switching transformer loads we recommended using asynchronously switching semiconductor switches. For incandescent lamp loads etc. synchronously switching switches are ideal for avoiding high switch-on currents.

Accessories
Suitable bases are available for the different relay series for DIN rail mounting or panel mounting. In addition, retaining clips are available for the relays, some of which are included in the scope of supply. Suitable bridges for cost-saving wiring in series are also available.

Basic identification principle (type designation code)

C n(n) - T X y z z /....V Ref. nnnn

Ref. nnnn
Relays with a reference number are versions with special (e.g. customised) features. These features may relate to special test criteria, tolerances or other properties.

Availability of such relays may be limited to certain customers or applications.

Nominal coil voltage or current specification
AC ... V, DC ... V, UC ... V (AC/DC)
AC ... A, DC ... A
The relays are generally available for voltages of 6 V . DC 220 V/AC 240 V (AC 400 V) or UC 6 . 48 V. Current relays available on request.

Describes the options
D = Integrated freewheeling diode
F = Integrated freewheeling diode and series diode e.g. for common alarm circuits
R = RC connection for the coil
X = Electric position indicating device with LED
B = Bridge rectifier

Definition of contact material
This code may differ depending on type.
Examples:

0 in the standard range stands for AgNi
1-9 see contact material for each type

Number of contacts

Relay type
A = Standard (general-purpose) contact
E = Sensitive drive with 500 mW coil power
G = Refers to a NO contact
H = Single-point contact + twin contact load to signal current circuit for switching state feed back. Mixed contact configuration
M = Relay with highly effective neodimium blow magnet for fast quenching of the arc. This relay is particularly suitable for high DC loads.
N = Sensitive drive 800mW coil power
R = Code for remanence relays, drive-specific ID
S = Sensitive drive with 250 mW exciter input
T = Twin contact for signal and control circuit
W = With tungsten contact for maximum switch-on currents

Basic type refers to the product line
Numbers between 2 and 12 are used.

Normal industrial relay code
Relays with code R are used for railway series.

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Coil accessories

MRC - QRC

Protection against transients

When the coil is disconnected from an electromagnet, peaks of inverse voltage appear at the terminals which can reach very high values. These pulses can be transmitted down the line associated with the coil and could possibly affect other components.
In the case of a relay being operated by such devices as transistors, triacs, etc; it may be necessary to protect against transients.

Transients carried in the line

High voltage surges can be carried in the supply line to the relay coil. These may appear in the form of peaks or bursts and are generated by the connection and disconnection of electric motors, transformers, capacitors etc.
Normally a relay is unaffected by these pulses, but if a diode is connected in association with the coil, it must be cap- able of withstanding an inverse voltage higher than those of the incoming peaks.

Protection circuits

A protection circuit must efficiently cope with pulses generated by the coil as well as incoming line surges (surges $U_{1,2/50\mu s.}$).

Releco relays are available with integrated protection circuits or with modules plugged into sockets S3-MP or S3-MS.

X LED indication with rectifier.
For DC and AC relays up to 250V
Surges of 1000V up to 24V
Surges of 2000V from 25 to 60V
Surges of 4000V from 61 to 250V
Note: LED connected in series with the coil @ 220Vdc in QRC types.

D Free-wheeling diode.

DX Free-wheeling diode + LED
Dampens transients caused by the relay coil on de-energisation.
Surges of 2000V up to 60 Vdc
Surges of 4000V from 61 to 250 Vdc (*)

F Polarity and free wheeling diodes.

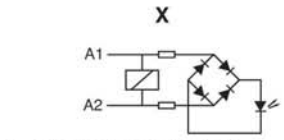
FX Polarity + free wheeling diode + LED
A diode in series with the coil protects the relay from reverse connection.
Surges of 1000V up to 60 Vdc
Surges of 4000V from 61 to 250 Vdc (*)

B Bridge rectifier incorporated.

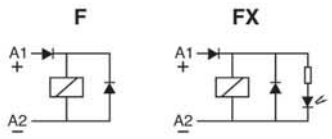
BX Bridge rectifier + LED indication
Allows the relay to operate in both AC or DC without any polarity inconvenience.
Available only in voltages up to 60V.
Surges of 1000V

R Resistor and capacitor.
Suppressor for AC coils. Surges of 2000V. Available only in **MRC** types

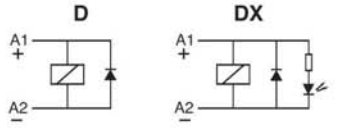
(*) Surges of 2000V in **QRC** types.



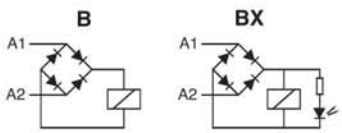
LED consumption: 1mA



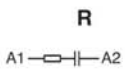
Increases release time approx. 4 times



Increases release time approx. 4 times



Increases release time approx. 3 times



IRC

LED and protection circuit connected to coil.

X LED with no polarity, (standard)
Coils ≤ 12 V CC y CA
LED rectifier bridge in parallel

X LED with no polarity, (standard)
Coils ≥ 24V ... CC y CA
LED rectifier bridge in series

FX LED with polarity **A1+** (option)
Every DC coil voltage
Polarity and Free-wheeling diodes

BX LED with no polarity, (option)
Only 24V and 48V ADC coils
Rectifier bridge for AC/DC relays

R LED not available (option)
RC protection against pulses on AC

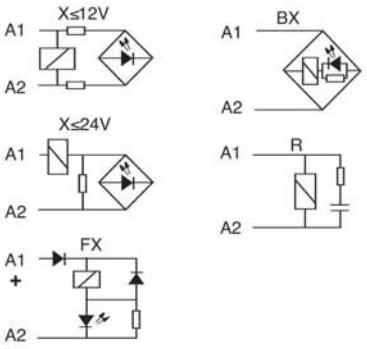
Protection against pulses

When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

If triac, transistor, etc. controls a relay, appropiate steps must be taken to avoid or decrease peaks down to a non risky level.

Both Polarity and Free-Wheeling diodes (**FX**), must protect coils, to avoid malfunctions, provided DC relays in battery are installed.

Making or breaking engines, transformers or contactors in an industrial environmental, may generate high voltage pulses, either isolated or burst, through the main line.
The voltage level of those pulse may be high enough to affect the isolation of the coil.



Contacts

There are different contact types. The main distinction is between single contacts and twin contacts. While single contacts are more suitable for higher loads, twin contacts are significantly more reliable at small loads, i.e. < 24 V, < 100 mA.

Contact Material

There is no all-purpose contact!
AgNi is used as standard material for a wide range of applications. AgNi contacts with hard gold plating (up to 10 µm) are offered for applications in aggressive atmosphere.
Relays with gold contacts are approved for relatively high currents (e.g. 6 A, 250 V), but in practice values of 200 mA, 30 V should not be exceeded for operation with intact gold plating.
Relays with a tungsten pre-contact are available for very high switch-on currents (up to 500 A, 2.5 ms). For some applications AgNi contacts with gold flashing (0.2 µm) are available. The purpose is corrosion protection during storage. There is no other purpose.
Tin oxide is specially appropiated for load with high-inrush current.

Minimum load

The minimum load value is a recommended value under normal conditions such as regular switching, no special ambient conditions, etc. Under these conditions reliable switching behaviour can be expected.

Contact resistance

In practice the contact resistance may vary depending on the load and other conditions. For higher currents the contact resistance is around 10 mΩ. For very small loads, resistances of more than 1 Ω may occur.

Contact spacing

Normally all contacts have an air gap between 0,5 ... 1.5 mm when they are open. They are referred to as µ contacts. According to the Low-Voltage Directive and the associated standards these contacts are not suitable for safe disconnection.
For switching of DC loads large contact clearances are beneficial for quenching the arc.
See special relays: series connections.

Switching capacity

The contact switching capacity is the product of switching voltage and switching current. For AC the permitted switching capacity is generally high enough to handle the max. continuous AC1 current over the whole voltage range. For DC the load limit curve must never be exceeded, because this would lead to a remaining switch-off arc and immediate destruction of the relay. The order of magnitude of the DC switching capacity is a few 100 W (DC 1).

Drive (coil)

The drive of a relay refers to the coil plus connections.
The coil has special characteristics, depending on the rated voltage and the type of current.

Coil design

The coil consists of a plastic former (resistant up to about 130 °C) and doubly insulated high-purity copper wire, temperature class F. The winding must withstand threshold voltages (EN 61000-4-5) of more than 2000 V. This is ensured through forced separation of the start and end of the winding

Coil resistance and other properties

Each coil has an ohmic coil resistance that can be verified with an ohmmeter. The specified coil resistance applies to a temperature of 20 °C. The tolerance is ± 10 %.
For AC operation the coil current will not match the ohmic value, because self-inductance plays a dominant role. At 230 V this may reach more than 90 H. When a relay is switched off, self-inductance results in a self-induced voltage that may affect the switching source (destruction of transistors, EMC problems).

Drive voltages

A distinction is made between the standardised voltages according to EN 60947 as guaranteed values, and typical values that can be expected with a high degree of probability.

Pick-up voltage, Release voltage

The pick-up voltage is the voltage at which the relay engages safely. For DC the typical trip voltage is approx. 65% of Unom, for AC approx. 75%. The release voltage, on the other hand, is approx. 25% or 60% respectively.
For DC these voltages are strongly temperature-dependent, according to the temperature coefficient of Cu. This is not the case for AC, where the inductive resistance is the controlling factor, which is practically constant over a wide temperature range.
With AC, in a certain undervoltage range the relay may hum, and the armature may flutter. This voltage range must be avoided.

Operating voltage range

Unless specified otherwise, the following characteristic curve applies for the operating voltage range. The upper limit of the coil voltage is determined by self-heating and the ambient temperature. Self-heating through contacts under high load must not be underestimated. It may be higher than the power dissipation in the drive.

During intermittent operation significantly higher overvoltages temporary may occur for short periods. If in doubt please consult our specialists.
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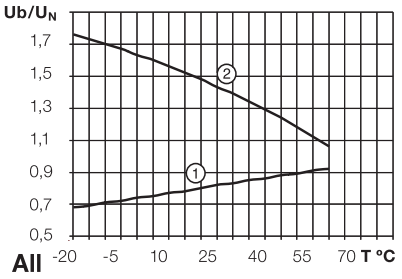

General design

RELECO relays are made from high-quality, carefully selected materials.
They comply with the latest environmental regulations such as RohS. Their meticulous design makes them particularly suitable for industrial applications and installation engineering.
They are particularly service-friendly through robust terminals, mechanical position indicating device a standard, manual operation, dynamic, permanent characteristics.
Colour coding for manual operation as a function of the coil voltage is another useful feature. Further options such as different coil connections, freewheeling diode, LED display, bridge rectifier for AC/DC drives etc., and short-term availability of special versions for practically any drive voltage up to DC 220 V/ AC 400 V leave nothing to be desired.
Apart from a few special versions, the standard RELECO industrial relays feature manual operation (push/pull) and a mechanical position indicating device.
For safety reasons, manual operation may be replaced with a black button, if required.

Coil connections

Different coil connections can be integrated in the relay as an option.
For DC a cost-effective freewheeling diode is available. Please note that the stated release times are generally specified without the coil connection.
While an additional LED status indicator has practically no effect, a freewheeling diode (D) will lead to an increase in release time by a factor 2 to 5, or 0 ms to 30 ms. For AC VDRs or RC elements may be used. In this case resonance effects may have to be considered.
VDRs and common RC elements may increase release times by < 5 ms.

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Standards, conformities
While CE marking of relays/bases is controversial, since relays are sometimes regarded as components to which the marking requirement does not apply, all RELECO relays feature the CE mark to indicate that CE standards may also be applied to the relays, e.g. 2 kV surge resistance according to EN 61000-4-5.

A significant and not generally available characteristic is that the coils and in particular the connections are able to withstand the voltage spikes that may occur in practice.
In addition, the relays feature various technical approvals depending on the respective relay code, and they comply with further standards and guidelines. The main technical approvals include cURus, CSA, and CCC.
The associated information is provided in the respective data sheets.

Switching classes
EN 60947 defines different switching classes that specify the suitability of contacts for different load types.

Examples:
AC1 = Ohmic AC load
AC5b = AC incandescent lamp loads
AC15 = Power contactors, solenoid valves, solenoids
DC1 = Ohmic DC load
DC6 = DC incandescent lamps
DC13 = DC contactors, solenoids

UL508 contains different technical approval criteria such as general purpose, control application etc. Switching classes are defined based on the electrical switching capacity, e.g. B600 etc.

Main technical approvals and standards

Country	Technical approval
China	A003850 Authority: CQC Specification GB14048.5-2001
Canada	Authority: CSA Specification C 22,2; UL 508
Russia	Authority: KORPORATSIA STANDART Specification GOST R 50030.5.1
USA	Authority: UL Specification C 22,2; UL 508
United Kingdom	Authority: GB Lloyd´s Register of Shipping

Utilisation categories according to
EN 60947-4-1/-5-1

Pollution category
Cat. 1
Dry, non-conductive contamination without further effect

Cat. 2
Occasional conductive contamination, short duration due to moisture condensation

Cat. 3
Dry, non-conductive and conductive contamination with moisture condensation

Cat. 4
Contamination with persistent conductivity through conductive dust, rain

Protection class IP according to DIN 40050 and other standards. Industrial relays and their bases can be classified as follows:
Base IP20: Contact safety
Relay IP40/IP50: not watertight, but protected against ingress of coarse contaminants.

Further information and tips
The main operational criteria for relays such as number of cycles, switching frequency, ambient conditions, reliability requirements, load type, switch-on current, load switch-off energy must be clarified in order to ensure reliable operation and long service life.

Example
If the number of cycles is expected to exceed several 100,000 operations per year (e.g. clock generators, fast running machines), an electronic solution is no doubt more appropriate, although we also offer solutions for this type of application.
In AC applications crosstalk caused by long control leads is often problem and can result in constant humming of the relay or even inadvertent triggering due to interference. Here, too, we offer solutions.

Various, apparently harmless loads may lead to very high switch-on currents or switch-off energy values, resulting in an unacceptable reduction in service life.
Particularly tricky are DC loads, particularly if they are inductive.
Circuits with relays and their connections often require a level of developer skill that is frequently no longer offered during standard education and training.
Your supplier will be very happy to provide expert advice

Characteristics of various loads:

Heating circuits
No higher switch-on currents, no higher switch-off loads.

Incandescent lamps, halogen lamps
Switch-on currents during a few ms in the range 10 ... 18 x rated. Switch-off at rated load.

Low-energy lamps
Very high, but very short switch-on currents due to built-in decoupling capacitors.

Contacts have a tendency to fuse.

Transformers, AC contactors
Switching on during zero-transition may lead to switch-on currents of 8 ... 15 x rated.
High inductive switch-off energy is possible.
The load must be connected, not least due to EMC problems.
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