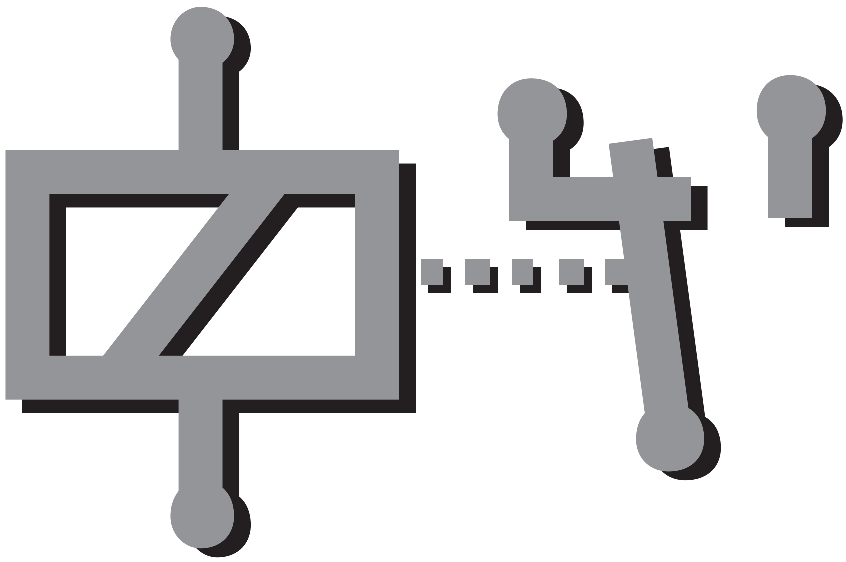
All-or-nothing relays

Overview and selection table

10/86-1.00 EN



- **CE Identification**
  The products in this Catalog comply with the relevant EC Directives and bear the CE identification mark on the product, the packaging or both. Exceptions are possible for products that are being phased out as indicated in the Catalog and that are applied in existing installations only.
- **DQS Certificate**
  The products in this Catalog are manufactured by ABB, an EN ISO 9001 certified company
- **Scope of Delivery**
  All-or-nothing relays
  Latching relays
  Signaling relays
  Repeaters

ZERTIFIKAT

Die
DQS Deutsche Gesellschaft zur Zertifizierung von Managementsystemen mbH
bescheinigt hiermit, dass das Unternehmen

ABB Automation Products GmbH
Industriestraße 28
D-65760 Eschborn

mit den im Anhang gelisteten Unternehmenseinheiten

für den Geltungsbereich

Entwicklung, Herstellung und Vertrieb
von Produkten und Dienstleistungen für die
Mess-, Steuer-, Antriebs-, Analysen- und Automatisierungstechnik

ein
Qualitätsmanagementsystem
eingeführt hat und anwendet.

Durch ein Audit, dokumentiert in einem Bericht, wurde der Nachweis erbracht, dass dieses Qualitätsmanagementsystem die Forderungen der folgenden Norm erfüllt:

DIN EN ISO 9001
Ausgabe August 1994

Dieses Zertifikat ist gültig bis	2003-08-29
Zertifikat-Registrier-Nr.:	70213-01
Frankfurt am Main, Berlin	2000-08-30

Dr.-Ing. K. Petrick — Dipl.-Ing. J. Pärsch
GESCHÄFTSFÜHRER

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Definitions

Our relays are designed, manufactured and tested in compliance with the relevant VDE regulations and EN standards.

Standards and Directives (examples)

- IEC 61810-1: 1998
  EN 61810-1, VDE 0435 Part 201 (April 1999),
  Electromechanical non-specified time all-or-nothing relays
  Part 1: General requirements
- IEC 61810-5: 1998
  EN 61810-5, VDE 0435 Part 140 (April 1999),
  Electromechanical non-specified time all-or-nothing relays
  Part 5: Insulation coordination
- IEC 60255-23: 1994
  EN 60255-23, VDE 0435 Part 120 (March 1997),
  Electrical relays – Part 23: Contact performance
- EN 116000-3: 1996
  Electromechanical all-or-nothing relays
  Part 3: Test and measurement procedures
- IEC 60721-3-3: 1994 and /A2: 1996
  EN 60721-3-3 (September 1995) and /A2 (July 1997)
  Classification of environmental conditions
  Part 3: Stationary use at weatherprotected locations
- IEC 60529: 1989 (2nd edition)
  VDE 0470 Part 1, (November 1992); EN 60529: 1991
  Degrees of protection provided by enclosures (IP code)
- 73/23/EEC – Low-voltage directive

Important

⚠ Covers for the purpose of shock protection must be applied by the user unless already in place. Where stranded conductors are used for threaded terminals, wire end ferrules must be employed.

Operating range of the energizing quantity

The function of an all-or-nothing relay must be assured within a tolerance band above and below the rated value. These tolerance bands are:
Class 1 devices: 80 % to 110 % of the rated value
Class 2 devices: 85 % to 110 % of the rated value

The products in this Catalog are rated class 1. In addition to the rated values, we state the possible operating range (V_{min}...V_{max}). All rated values are possible that fall (with their range of 0.8 ×...1.1 ×) into the possible operating range.

⚠ Caution: The maximum permissible voltage as determined by the coordination of insulation must be taken into account!

The relays must operate from the lowest value onwards but may operate earlier. The release must take place at the latest when the value falls to 5 % (for DC current/voltage) or 15 % (for AC current/voltage) of the rated value.

Relevant for this are the specified operate value Θ_{OP} of the system and the specified release value Θ_{RL} of the system. These values limit the operating range. A further limit is given by the maximum permissible heating. The coil resistance is stated as nominal value at 20 °C (with the permissible tolerance). If heating to above 20 °C, the coil resistance is increased by 0.38 %/K; if cooling to below 20 °C, the coil resistance is increased by 0.38 %/K.

For an energizing quantity 'current' this means: The permissible operating range is constant for the entire temperature range.

For an energizing quantity 'voltage' this means: For higher coil temperatures, a higher voltage is needed to reach or exceed the operate sensitivity. For lower coil temperatures, a lower voltage is needed to reach or fall below the release value.

Compared with the preferential temperature range of -5...40 °C the following holds for temperatures outside this range: If extending from, for example, -5 °C...-25 °C, the maximum permissible voltage decreases since at lower temperatures the voltage only reaches or falls below the release value at lower voltages.

If extending from, for example, 40 °C...70 °C, the minimum permissible voltage increases since at higher temperatures the voltage only reaches or exceeds the operate value at higher voltages. At the same time, the maximum permissible voltage decreases since at higher temperatures the maximum permissible power loss (and thus the maximum permissible voltage) are lower.

Mechanical service life and switching capacity of the contacts

The mechanical service life is the number of the switching operations that will be safely reached for non-energized contacts. The mechanical service life of the contacts under load depends considerably on the electrical stress and is stated for the number of switching operations possible without detrimental wear under permissible stress. By connecting 2 contacts in series, the breaking capacity is increased by a factor 2.5 applied to the stated value.

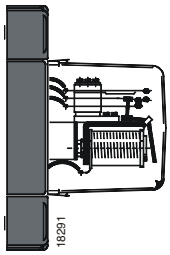
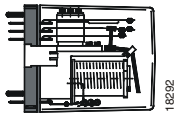
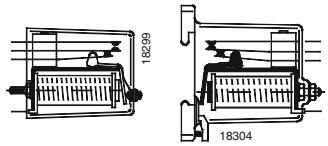
Contact materials

Silver is the standard material for relay contacts due to its high electrical conductivity. It is less suitable for sulphurous atmospheres. (Our devices are gold-bloomed for storage stability.)
Recommended application range: for current > 50 mA,
for voltage > 1 V,
for power > 1 W.

Silver-palladium is less sensitive to sulphurous atmospheres than silver. It has better erosion resistance than silver but a higher contact resistance. (Our devices are gold-bloomed for storage stability.)
Recommended application range: for current > 50 mA,
for voltage > 1 V,
for power > 0.5 W.

Silver-cadmium oxide is distinguished by a high erosion resistance and low welding tendency. It is therefore particularly suitable for high making currents and peak currents. (Our devices are passivated.)
Recommended application range: for current > 500 mA,
for voltage > 12 V,
for power > 10 W.

Gold is used for switching low currents and low voltages at low loads.
Recommended application range: for current > 1 mA < 0,2 A,
for voltage > 1 mV < 24 V,
for power < 5 W.

Data Sheet		10/86-2.20 EN				10/86-2.36 EN	
Type		All-or-nothing relay RH 110	Latching relay[1] RHH 110	All-or-nothing relay RHG 110	Latching relay[1] RHGH 110	All-or-nothing relay RH 1000	All-or-nothing relay RHM1000
View scale							
Case		Wall-mounting case		Plug-in case		Plug-in case	Wall-mounting/ top-hat rail case
Installation	Relay	bolt		plug		bolt, plug	bolt, snap
	Socket	–		bolt, snap		bolt, snap	–
Connection	Relay	bolt		plug		plug, solder	plug, solder
	Flush-mounting socket	–		solder		crimp, solder	–
	Surface-mounting socket	–		bolt		bolt	–
Mechanical service life		50 x 10^6 switching operations		50 x 10^6 switching operations		20 x 10^6 switching operations	
Permissible switching frequency		200 switching operations/minute		200 switching operations/minute		200 switching operations/minute	
Coil circuit (reference values)							
Power consumption		1.8...2.6 W	2.8...4.1 W	1.8...2.6 W	2.8...4.1 W	1.7...2.2 W	1.7...2.2 W
Voltage coil		5...250 V DC 12...250 V AC	5...250 V DC –	5...250 V DC 12...250 V AC	5...250 V DC –	5...250 V DC 12...250 V AC	5...250 V DC 12...250 V AC
Contact circuit							
Components		3 or 4 changeover contacts		3 or 4 changeover contacts		3 or 4 changeover contacts	
Switching voltage		500 V AC/600 V DC		500 V AC/600 V DC		400 V AC/450 V DC	
Making current		≤ 10 A AC/DC		≤ 10 A AC/DC		≤ 10 A AC/DC	
Continuous current		≤ 6 A AC/DC		≤ 6 A AC/DC		≤ 6 A AC/DC	
CE classification							
Overvoltage category		III		III		III	
Pollution degree		3		3		3	
Rated impulse voltage		4 kV		4 kV		4 kV	
Nominal contact voltage e.g. for switching in TN and TT systems		250 V AC/DC 230/400 V		250 V AC/DC 230/400 V		250 V AC/DC 230/400 V	

[1] Magnetic latching after operating until the reverse operating winding is triggered

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Data Sheet		10/86-2.43 EN	10/86-6.20 EN		10/86-7.44 EN
Type		All-or-nothing relay RH 1713	Signaling relay RA 32		Repeater AM 0
Ansichten					
Case		Wall-mounting case	Surface- or flush-mounting case		Flush-mounting case
Installation	Relay	bolt	bolt	plug	bolt,
	Socket	–	–	bolt	
Connection	Relay	bolt	bolt	plug	bolt
	Flush-mounting socket	–	–	bolt	–
	Surface-mounting socket	–	–	bolt	–
Mechanical service life		20 x 10^6 switching operations	5 x 10^5 switching operations		2 x 10^6 display changes
Permissible switching frequency		200 switching operations/minute	200 switching operations/hour		–
Coil circuit (reference values)					
Power consumption		0.8 W	2.4...3.3 W		1.2...2.0 W
Voltage coil		22.5 V DC –	5...250 V DC 12...250 V AC		5...250 V DC 12...250 V AC
Contact circuit					
Components		3 changeover contacts	2 contacts (function selectable)		–
Switching voltage		380 V AC/450 V DC	400 V AC/450 V DC		–
Making current		≤ 10 A AC/DC	≤ 10 A AC/DC		–
Continuous current		≤ 6 A AC/DC	≤ 6 A AC/DC		–
CE classification					
Overvoltage category[1)]		[1)] Insulation group and reference voltage as per VDE 0110/11.72 Group C: 250 V AC/300 V DC Group B: 380 V AC/450 V DC	III		III
Pollution degree[1)]			3		2
Rated impulse voltage[1)]			4 kV		–
Nominal contact voltage[1)]			250 V AC/DC		–
e.g. for switching in TN and TT systems			230/400 V		–

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