Page 20-4

HR10
- Slim electromechanical relay with
- Socket width 6.2mm
- 1 changeover contact
- Ith rated current 6A
- Sockets with built-in LED
- Sockets with screw or spring terminals
- Control voltage from 12 to 230VAC/DC
- 20 poles parallel busbars
- Available version with relay factory assembled on the socket.

Page 20-4

HR20
- Slim solid state relay (SSR)
- Socket width 6.2mm
- 1 solid-state (SSR) output
- Output current 2A in AC and 4A in DC
- Sockets with built-in LED
- Sockets with screw or spring terminals
- Control voltage 24VDC
- 20 poles parallel busbars
- High switching speed
- Theoretically infinite electrical life.
- Zero crossing.

Page 20-5

HR30
- Miniature relay
- Socket width 15.8mm
- 1 or 2 changeover contacts
- Ith rated current:
  – 1 contact: 10A (16A on PCB)
  – 2 contacts: 8A
- AC or DC control voltage
- Sockets with screw, spring or pins for PCB terminals
- 8 poles parallel busbars
- Small dimensions
- Can be used for direct mounting on PCB
- Snap-on surge suppressor filters.

Page 20-6

HR40
- Miniature relay in clear enclosure
- Socket width 15.8mm
- 1 or 2 changeover contacts
- Ith rated current:
  – 1 contact: 10A (16A on PCB)
  – 2 contacts: 10A
- AC or DC control voltage
- Sockets with screw, spring or pins for PCB terminals
- 8 poles parallel busbars
- Clear enclosure for contacts visibility
- Can be used for direct mounting on PCB
- Snap-on surge suppressor filters.

Page 20-6

HR50
- Miniature relay with LED status indicator and mechanical actuator
- Socket width 15.8mm
- 1 or 2 changeover contacts
- Ith rated current:
  – 1 contact: 10A (16A on PCB)
  – 2 contacts: 8A
- LED and mechanical status indicator
- Mechanical test actuator with latch option
- AC or DC control voltage
- Sockets with screw, spring or pins for PCB terminals
- 8 poles parallel busbars
- Can be used for direct mounting on PCB
- Snap-on surge suppressor filters.

Page 20-7

HR60
- Industrial relay with LED status indicator and mechanical actuator
- Socket width 27mm
- 2 or 4 changeover contacts
- Ith rated current:
  – 2 contacts: 7A
  – 4 contacts: 5A
- LED and mechanical status indicator
- Mechanical test actuator with latch option
- AC or DC control voltage
- Sockets with screw or spring terminals
- Snap-on surge suppressor filters.

Page 20-8

HR70
- Industrial relay with LED status indicator and mechanical actuator
- Socket width 38mm
- 8-pin and 11-pin industrial relay
- 2 or 3 changeover contacts
- Ith rated current: 10A
- LED and mechanical state indicator
- Mechanical test actuator with latch option
- Versions with AC or DC control.

Lovato electric

Code	Retaining clips	Code	Marker tags	Code	Parallel busbars	Code	Surge suppressor filters
	Included in the socket	**HR1X 30**		**HR1X 9020** (black)	20 poles 	Resistor - Capacitor **HR6X 77024** 6…24VAC/DC **HR6X 77230** 110…230VAC/DC Diode + LED **HR6X 78024** 6...24VDC	
		HR1X 3016 (strip with 16 plates)		**HR1X 9120** (red)			
HR3X 88❻							
HR3X 86❺							
HR5X 88❻		**HR5X 30❻**		**HR5X 9008** (black) ❹	8 poles 		
HR5X 86❺							
HR5X 87❻							
HR6X 88		**HR6X 30**					
		HR5X 30 (only for sockets with spring terminals)					
HR7X 87							

❶ Final S in code indicates spring terminals.
❷ Voltage dependent on selected relay socket; rated insulation voltage only for relay 60VDC.
❸ Rated current if the relay is soldered directly onto the board; with socket the maximum current is 10A.
❹ For sockets with screw terminals.
❺ Only mounting on socket HR5X S21P.
❻ Not suitable for HR5X S21P socket.

Miniature relays

HR30...

Order code	Control voltage	Contacts	Rated current	Description	Qty per pkg
			[A]		no.
Miniature relays.					
HR30 1C D012	12VDC	1 C/O	16	Fitting on socket HR5XS2... (max 10A)	20
HR30 1C D024	24VDC	1 C/O	16	Fitting on socket HR5XS2... (max 10A)	20
new **HR30 1C D048**	48VDC	1 C/O	16	Fitting on socket HR5XS2... (max 10A)	20
HR30 1C A024	24VAC	1 C/O	16	Fitting on socket HR5XS2... (max 10A)	20
HR30 1C A110	110/120VAC	1 C/O	16	Fitting on socket HR5XS2... (max 10A)	20
HR30 1C A230	230VAC	1 C/O	16	Fitting on socket HR5XS2... (max 10A)	20
HR30 2C D012	12VDC	2 C/O	8	Fitting on socket HR5XS2...	20
HR30 2C D024	24VDC	2 C/O	8	Fitting on socket HR5XS2...	20
new **HR30 2C D048**	48VDC	2 C/O	8	Fitting on socket HR5XS2...	20
HR30 2C A024	24VAC	2 C/O	8	Fitting on socket HR5XS2...	20
HR30 2C A110	110/120VAC	2 C/O	8	Fitting on socket HR5XS2...	20
HR30 2C A230	230VAC	2 C/O	8	Fitting on socket HR5XS2...	20

General characteristics
Miniature relays have compact dimensions but high functional performance. It's the ideal device for those looking for a cost-effective solution without compromising performance.

Operational characteristics
- Rated insulation voltage: 250V
- Rated impulse withstand voltage: 4kV
- Relay control voltage: 12, 24 and 48VDC - 24, 110/120 and 230VAC, 50/60Hz
- Max controllable power in AC-1 (1C/2C): 4000/2000W
- Max controllable power in AC-15 (1C/2C): 300/150VA
- Maximum current (1C/2C): 16A/10A.

Certifications and compliance
Certifications obtained: cURus, CSA, EAC, VDE (VDE except for HR30 1C A...).
Compliant with standards: IEC/EN 61810.

Sockets

HR5X S21

HR5X S22

HR5X S21S

HR5X S21P

Order code	Description	Qty per pkg
		no.
Sockets for relays (supplied without retain/release clip). Terminal layout see page 20-10.		
HR5X S21	Screw terminals, contact terminals all on upper side	10
HR5X S22	Screw terminals. Fitting on DIN rail or with screws	10
HR5X S21S	Spring terminals. Fitting on DIN rail or with screws	10
HR5X S21P	PIN terminals for Printed Circuit Board	40

General characteristics
HR5X... series sockets can have screw terminals or spring terminals for quick wiring. Screw terminals are available in 2 versions: with contact terminals separated from the coil terminals or with NC contact terminals near the coil terminals. Surge suppressor filters, parallel busbars and plates for writing can be snap-fitted to the sockets.

Operational characteristics
- Rated insulation voltage: 250V
- Rated impulse withstand voltage: 4kV
- Maximum current: 10A
- Terminal layout see page 20-10.

Certifications and compliance
Certifications obtained: cURus, CSA, EAC (cURus only for PCB socket).
Compliant with standards: IEC/EN 61810.

Accessories

HR3X 88

HR3X 86

HR5X 30

HR6X 78 024

HR5X 9008

Order code	Description	Qty per pkg
		no.
HR3X 88	Retain/release clip. Not suitable for HR5XS21P socket	20
HR3X 86	Retaining clip. Only mounting on socket HR5XS21P	10
HR5X 30	Marker tags	100
HR6X 78 024	Plug-in surge suppressor filters. 6...24VDC with LED	10
HR6X 77 024	Plug-in surge suppressor filters. 6...24VAC/DC (RC)	10
HR6X 77 230	Plug-in surge suppressor filters. 110...230VAC/DC (RC)	10
HR5X 9008	8-pole parallel busbar - black - for sockets with screw terminals	10

Industrial relays with LED state indicator and mechanical actuator

HR60...

new

Order code	Control voltage	Contacts	Rated current	Description	Qty per pkg
			[A]		no.
Industrial relays with LED state indicator and mechanical actuator.					
HR60 2C D012	12VDC	2 C/O	7	Fitting on socket HR6XS2...	10
HR60 2C D024	24VDC	2 C/O	7	Fitting on socket HR6XS2...	10
HR60 2C D048	48VDC	2 C/O	7	Fitting on socket HR6XS2...	10
HR60 2C A012	12VAC	2 C/O	7	Fitting on socket HR6XS2...	10
HR60 2C A024	24VAC	2 C/O	7	Fitting on socket HR6XS2...	10
HR60 2C A110	110/120VAC	2 C/O	7	Fitting on socket HR6XS2...	10
HR60 2C A230	230VAC	2 C/O	7	Fitting on socket HR6XS2...	10
HR60 4C D012	12VDC	4 C/O	5	Fitting on socket HR6XS4...	10
HR60 4C D024	24VDC	4 C/O	5	Fitting on socket HR6XS4...	10
HR60 4C D048	48VDC	4 C/O	5	Fitting on socket HR6XS4...	10
HR60 4C A012	12VAC	4 C/O	5	Fitting on socket HR6XS4...	10
HR60 4C A024	24VAC	4 C/O	5	Fitting on socket HR6XS4...	10
HR60 4C A110	110/120VAC	4 C/O	5	Fitting on socket HR6XS4...	10
HR60 4C A230	230VAC	4 C/O	5	Fitting on socket HR6XS4...	10

new

General characteristics
HR60... type industrial relays are available in 2/4-changeover-contact versions. They are equipped with LEDs that indicate control voltage, a mechanical contact state indicator and a mechanical actuator. The actuator is particularly useful for performing functional tests; it can also keep the relay closed continuously.

Operational characteristics
- Rated insulation voltage: 250V
- Rated impulse withstand voltage: 4kV
- Relay control voltage: 12, 24 or 48VDC - 12, 24, 110/120 and 230VAC, 50/60Hz
- Max controllable current in AC-1 (2C/4C): 7/5A
- Maximum current (2C/4C): 7A/5A.

Certifications and compliance
Certifications obtained: cURus, CSA, EAC, VDE.
Compliant with standards: IEC/EN 61810.

Sockets

HR6X S21

HR6X S41

HR6X S42

HR6X S41S

Order code	Description	Qty per pkg
		no.
Sockets for relays (supplied without retein/release clip) for fitting on DIN rail or with screws. Terminal layout see page 20-10 and 11. For relays with 2 changeover contacts.		
HR6X S21	Screw terminals, contact terminals all on upper side	10
HR6X S22	Screw terminals	10
HR6X S21S	Spring terminals	10
For relays with 4 changeover contacts.		
HR6X S41	Screw terminals, contact terminals all on upper side	10
HR6X S42	Screw terminals	10
HR6X S41S	Spring terminals	10

General characteristics
HR6X.. series sockets have screw terminals and are supplied in two versions for relays with 2 or 4 contacts. Surge suppressor filters and plates for writing can be plugged in to the sockets.
They can be fixed on DIN rails or with screws.

Operational characteristics
- Rated insulation voltage: 250V
- Rated impulse withstand voltage: 4kV
- Maximum current: 10A
- Terminal layout see page 20-10 and 11.

Certifications and compliance
Certifications obtained: cURus, CSA, EAC.
Compliant with standards: IEC/EN61810.

Accessories

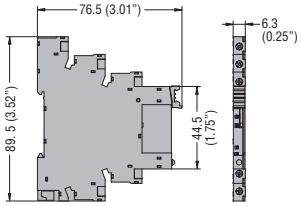
HR6X 88

HR5X 30

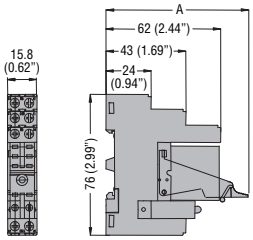
HR6X 78 024

Order code	Description	Qty per pkg
		no.
HR6X 88	Retain/release clip	20
HR6X 30	Marker tag for sockets with screw terminals	100
HR5X 30	Marker tag for sockets with spring terminals	100
HR6X 78 024	Plug-in surge suppressor filters. 6...24VDC with LED	10
HR6X 77 024	Plug-in surge suppressor filters. 6...24VAC/DC (RC)	10
HR6X 77 230	Plug-in surge suppressor filters. 110...230VAC/DC (RC)	10

HRA10... - HR10... - HR20 with socket HR1XS...

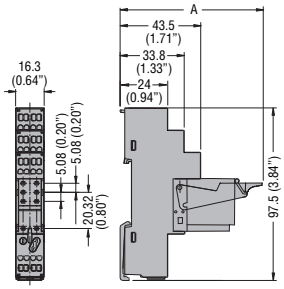


HR30... - HR40... - HR50... with socket HR5XS21



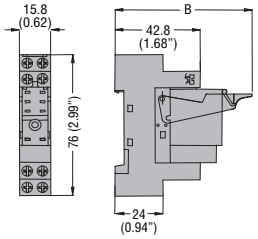
A: 64mm (2.52") with HR3X88
75mm (2.95") with XR5X88

HR30... - HR40... - HR50... with socket HR5XS21S



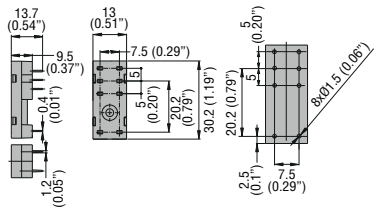
A: 64mm (2.52") with HR3X88
75mm (2.95") with XR5X88

HR30... - HR40... - HR50... with socket HR5XS22

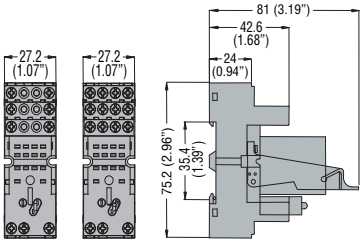


B: 57.5mm (2.26") with HR3X88
68mm (2.68) with XR5X88

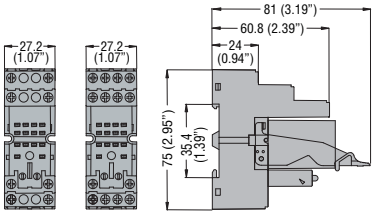
HR5X S21P



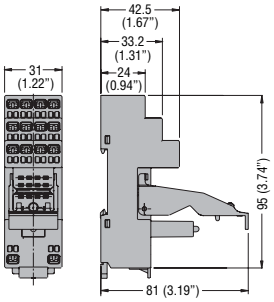
HR60... with socket HR6XS21 - HR6XS41



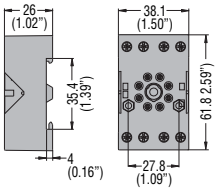
HR60... with socket HR6XS22 - HR6XS42



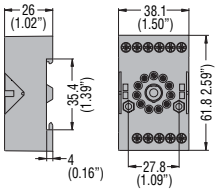
HR60 2C... - HR60 4C... with socket HR6XS21S - HR6XS41S



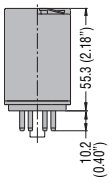
HR7XS1



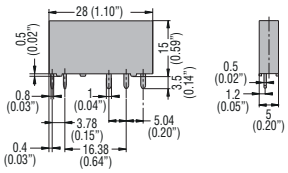
HR7XS2



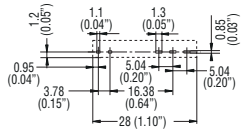
HR70 2C... - HX70 3C...



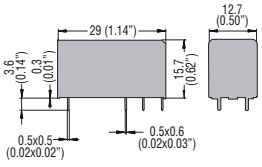
HR10 - HR20



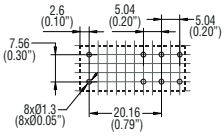
PCB layout



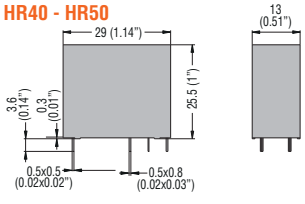
HR30



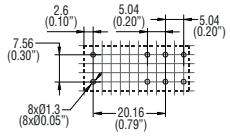
PCB layout



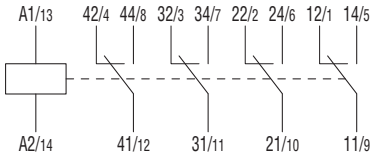
HR40 - HR50



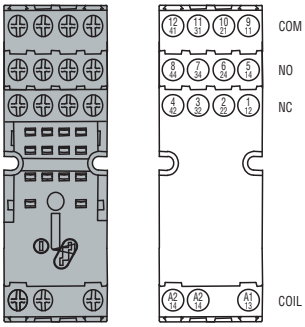
PCB layout



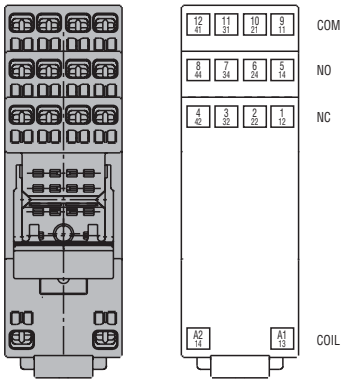
HR604C...



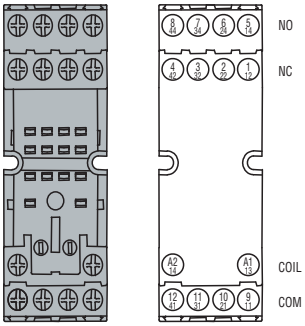
HR6XS41



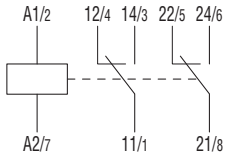
HR6XS41S



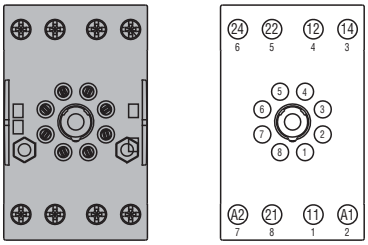
HR6XS42



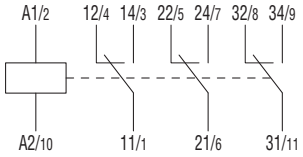
HR702C...



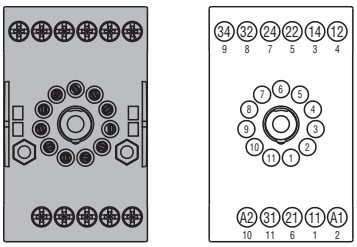
HR7XS1



HR703C...



HR7XS2



Type		HRA10... HR10...	HR20 1AS024	HR20 1DS024	HR30 1C..	HR30 2C..
CHARACTERISTICS OF THE CONTACTS						
Contact configuration		1 C/O	1 static	1 static	1 C/O	2 C/O
Rated insulation voltage Ui	VAC/DC	250	2500 (input/output)	2500 (input/output)	250	250
Rated impulse withstand voltage Uimp	kV	4	–	–	6	6
Conventional free air thermal current Ith	A	6	2	4	16❷	8
Maximum instantaneous current	A	20 (500ms)	80 (10ms)	48 (10ms)	60❶	20❶
Rated operating voltage AC1	VA	1500	❹	❺	4000	2000
Rated operating voltage AC15 (230VAC)	VA	360	❹	❺	300❶	150❶
Single-phase motor control (230VAC)	kW	0.186	❹	❺	0.4	0.2
Rated operating voltage DC1: 30/110/220V	A	6 / 0.2 / 0.12	❹	❺	12 / 0.3 / 0.1	8 / 0.3 / 0.1
Minimum switching load	V / mA	5 / 100	24 / 0.1	3 / 0.02	5 / 100	
Contact impedance	mΩ	100	-	-	100	
Contact material		Ag/Ni	-	-	AgSnO2	
Max socket terminal tightening torque	Nm	0.5			0.6	
Socket screw tightening tool (cross / flat blade)		Phillips 0 / 3.5mm			Phillips 1 / 4.5mm❸	
Wire section on sockets with screw terminals (min...max)	mm^2	0.5...1.5			0.5...2.5	
	AWG	20...16			20...14	
OPERATING TIMES						
Closing	ms	≤8	10	0.3	10	
Opening	ms	≤4	10	0.3	5	
ENDURANCE						
Mechanical	Cycles	10,000,000	Theoretically infinite		10,000,000	
Electrical with load AC1	Cycles	30,000❶	Theoretically infinite		50,000❶	
COIL CHARACTERISTICS						
Average coil consumption AC (50/60Hz) at 20°C	VA	–	–	–	0.9	
Average coil consumption DC at 20°C	W	0.2	–	–	0.45	
Operating range closing	(% Un)	≥75	80...120	80...120	70...110 AC/ 75...110 DC	
opening	(% Un)	≥5			20...55 AC/ 10...30 DC	
Maximum cycle frequency	cycles/h	10,000	>100,000	>100,000	3,600	
AMBIENT CONDITIONS						
Operating temperature	°C	-40...+70	-30...+80		-40...+85	
Storage temperature	°C	-40...+80	-30...+100		-40...+85	
Fitting position		Any				
OTHER CHARACTERISTICS						
Indicator LED		Yes (on the socket)			No	
Mechanical contact position indicator		No			No	
Mechanical test actuator		No			No	
Socket fixing		On 35mm DIN rail			On 35mm DIN rail and with screws	

❶ NO contact.
❷ Maximum socket current of 10A.
❸ 2.5mm flat blade for versions with spring terminals.
❹ 2A output 24...280VAC.
❺ 4A output 3...28VDC.

	HR40 1C..	HR40 2C..	HR50 1C..	HR50 2C..	HR60 2C..	HR60 4C..	HR70 2C..	HR70 3C..
	1 C/O	2 C/O	1 C/O	2 C/O	2 C/O	4 C/O	2 C/O	3 C/O
	250		250		500		250	
	4	5	6		4		6	
	16❷	10	16❷	8	7	5	10	10
	60	26	20❶	10❶	–	–	–	–
	4000	2500	4000	2000	1750	1250	2500	2500
	500	400	150❶	150❶	150❶	150❶	500	500
	0.37	0.3	0.1	-	0.37	0.37	1.2	1.2
	10 / 0.3 / 0.12	8 / 0.3 / 0.12	12 / 0.3 / 0.1	8 / 0.3 / 0.1	12 / 0.3 / 0.1	8 / 0.3 / 0.1	10 / - / -	10 / - / -
	5 / 100		5 / 100		5 / 100		5 / 100	
	100		100		100		100	
	AgSnO2		Ag/Ni		Ag/Ni		Ag/Ni	
	0.6		0.6		0.6		0.6	
	Phillips 1 / 4.5mm❸		Phillips 1 / 4.5mm❸		Phillips 1 / 4.5mm		Phillips 1 / 4.5mm	
	0.5...2.5		0.5...2.5		0.5...2.5		0.5...2.5	
	20...14		20...14		20...14		20...14	
	< 15		< 15		< 25		< 30	
	< 5		< 15		< 25		< 30	
	10,000,000		10,000,000		20,000,000		5,000,000	
	100,000❶		50,000❶	20,000❶	100,000		100,000	
	–	–	1		1.7		3	
	0.7	0.5	0.4		1.1		1.5	
	75...110	75...110	70...110 AC / 75...110 DC		70...110 AC / 75...110 DC		70...110 AC / 75...110 DC	
	10...30	10...30	20...55 AC / 10...30 DC		20...55 AC / 10...30 DC		20...55 AC / 10...30 DC	
	3,600	3,600	3,600		3,600		3,600	
	-40...+85		-40...+85		-40...+70		-40...+55	
	-40...+85		-40...+85		-40...+80		-40...+70	
	Any							
	No		Yes		Yes		Yes	
	No		Yes		Yes		Yes	
	No		Yes		Yes		Yes	
	On 35mm DIN rail and with screws		On 35mm DIN rail and with screws		On 35mm DIN rail and with screws		On 35mm DIN rail and with screws	