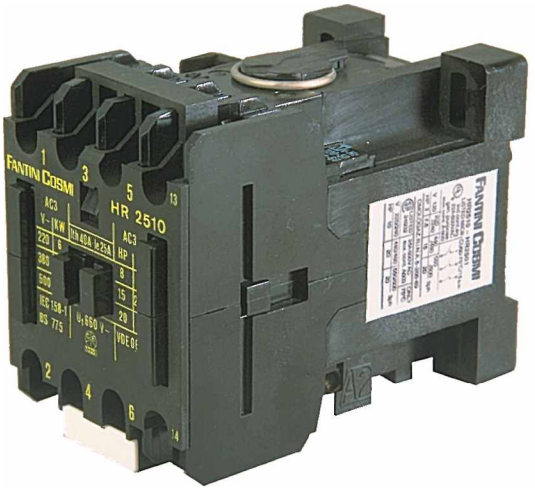
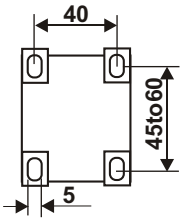
THREE-POLE CONTACTORS series HR17-HR25 up to 11 kW

USE
Series HR contactors are particularly suitable for controlling motors, heating elements and three-phase and single-phase loads in general.

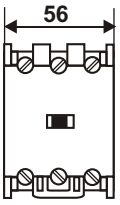
OPERATION AND INSTALLATION
Screw mounting, distance between centres for fixing to EN 50003 or snap fitted onto 35 mm metal rail EN50022-3 DIN 46277-3
Mounting tilt not exceeding ± 30° in relation to the vertical
Ambient temperature from -5°C to 40°C
Altitude up to 2,000 metres
Relative humidity not exceeding 50% at 40°C

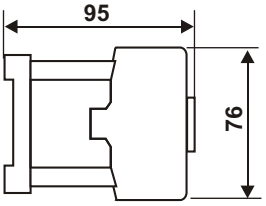
STANDARDS AND APPROVALS
Compliance with recommendations and standards
IEC 947-4, CEI EN 60947-1, CEI EN 60947-4-1, VDE 0660, BS 60947-4-1, UTE - NCF 63-110, NEMA NBN C63158, AS1029
APPROVALS:





Cable section
HR17 2x6 mm²
HR25 2x6 mm²





Control coil codes

Code	F	G	D	U	X	C	W	B	Z
50 Hz -V	24	48	110 to 115	220 to 230	220 to 240	366	380 to 400	440	480 to 500
60 Hz -V		58				440		528	

TYPE □	Contact diagram	Rated thermal current Ith	Rated current in AC3 380V~ Ie	Controllable powers of **three-phase** motors in category AC2-AC3 220-240V	380-415V	440V	660V	Unit weight Kg.	Packs of No
HR1710N □	A1 1 3 5 13 A2 2 4 6 14	40 A	**17A**	4 kW 5.5 HP	**7.5 kW 10.5 HP**	8.5 kW 11.5 HP	8.5 kW 11.5 HP		
HR1701N □	A1 1 3 5 21 A2 2 4 6 22								
HR2510N □	A1 1 3 5 13 A2 2 4 6 14	40 A	**25A**	6 kW 8 HP	**11 kW 15 HP**	12.5 kW 17 HP	12.5 kW 17 HP		
HR2501N □	A1 1 3 5 21 A2 2 4 6 22								

ACCESSORIES

Instantaneous auxiliary contacts.....**IR..**
Time-delayed auxiliary contacts.....**IT..**
Auxiliary contacts for d.c. control.....**IDC..**
Mechanical interlock.....**I85**
Waterproof insulating enclosures IP65.....**UH13**
Thermal relay.....**JA25**

SPARE PARTS

Coils.....**IH25**□
add code of voltage required to code (see control coil codes indicated above)
Power pole for HR17, complete with 1 portable contact + 2 fixed contacts.....**pole HR17**
Power pole for HR25, complete with 1 portable contact + 2 fixed contacts .....**polo HR25**

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TECHNICAL SPECIFICATIONS CONTACTORS series HR17-HR25

CONTACTORS type:				HR17	HR25
Rated insulation voltage	IEC	Ui	V ~	660	660
Rated thermal voltage	IEC	Ith	A	40	25
Rated operating current at 380V~ in AC-1 - Ie			A	35	22
Rated operating current at 380V~ in AC-3 - Ie			A	17	13
Electric life in AC-3				see graph	see graph
Mechanical life	(cl.IV 1200man/h)		millions of cycles	20	20
CONTROLLABLE POWERS IN OPERATING CATEGORY **AC-3** TRIFASE **IEC 947-4-1 CEI EN 60947-4-1**		220 - 240 V~	kW *(HP)*	4 *(5.5)*	*6 (8)*
		380 - 415 V~	kW *(HP)*	7.5 *(5.5)*	*11 (15)*
		500 V~	kW *(HP)*	10 *(7.5)*	*15 (20)*
CONTROLLABLE POWERS according to standards UL LISTED 88c9		120V~	HP	2	3
		220 - 240 V~	HP	5	7.5
		440 - 480 V~	HP	10	15
		550 - 600 V~	HP	15	120
Rated operating current at 600 V~			A	17	22
CONTROLLABLE POWERS according to standards CSA LISTED 24932		220 - 240 V~	HP	7.5	20
		440 - 480 V~	HP	15	10
		550 - 600 V~	HP	15	20
Rated operating current at 600 V~			A	25	25

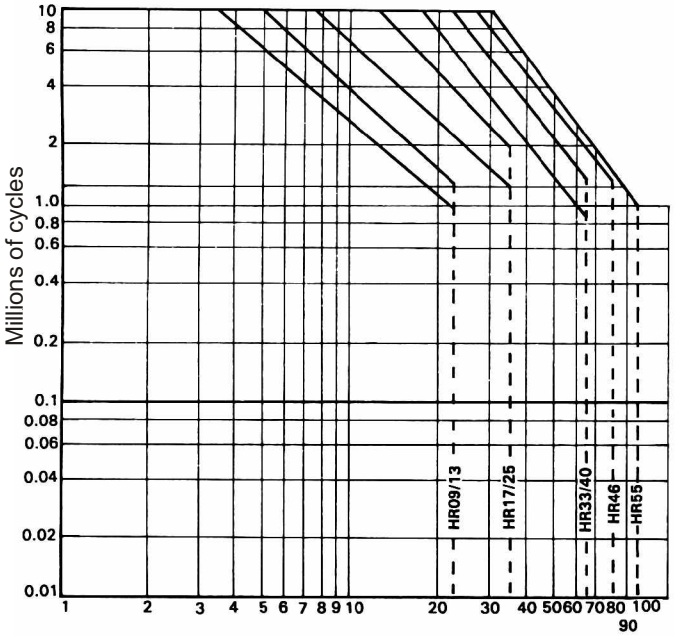
CONTROL COIL			
Alternating current absorption	inrush	VA	80
	sealed	VA	7
Direct current absorption	inrush	W	130
	sealed	W	8
Minimum and maximum supply voltage	Un	V	from 0.85 to 1.1 V
Switching times at rated voltage	make	ms	20to30
	break	ms	17to22
Coil insulation	Class		F

INSTANTANEOUS AUXILIARY CONTACTS				
Rated thermal current a.c.		Ith	A	10
RATED OPERATING CURRENT IN CATEGORY **IEC 947-5-1 CEI EN 60947-5-1**	**AC-15**	220/240V ~	A	3
		380/415V ~	A	1.5
		500V ~	A	1
	DC-13	110V c.c.	A	1
		230V c.c.	A	0.5
According to UL CSA		classif. A600	A	1.5

THREE-POLE CONTACTORS HR - electric life

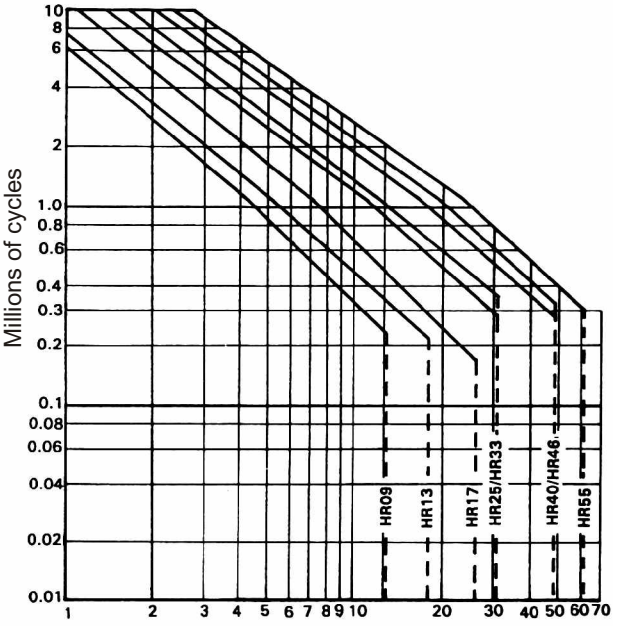
Diagram of the electric life of contacts as a function of the operating current

Category AC-1



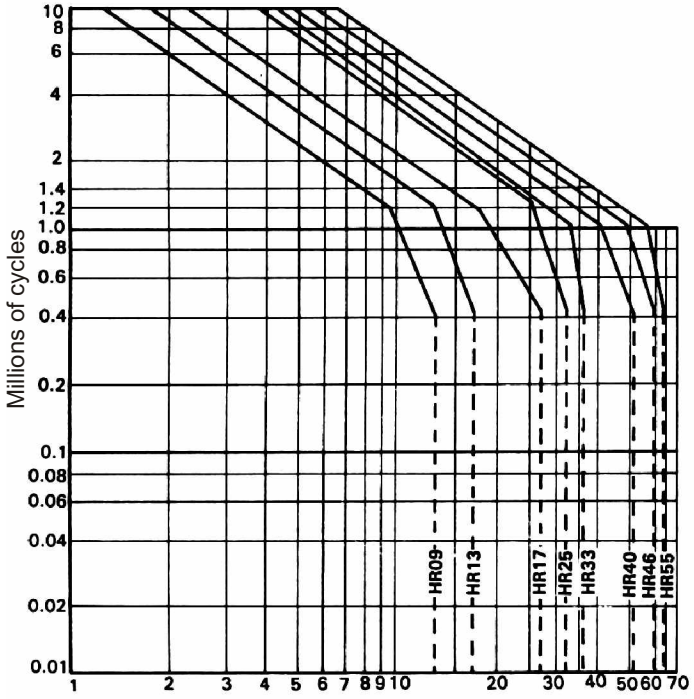
Operating current Ie (A) at 380/415V~

Category AC-2



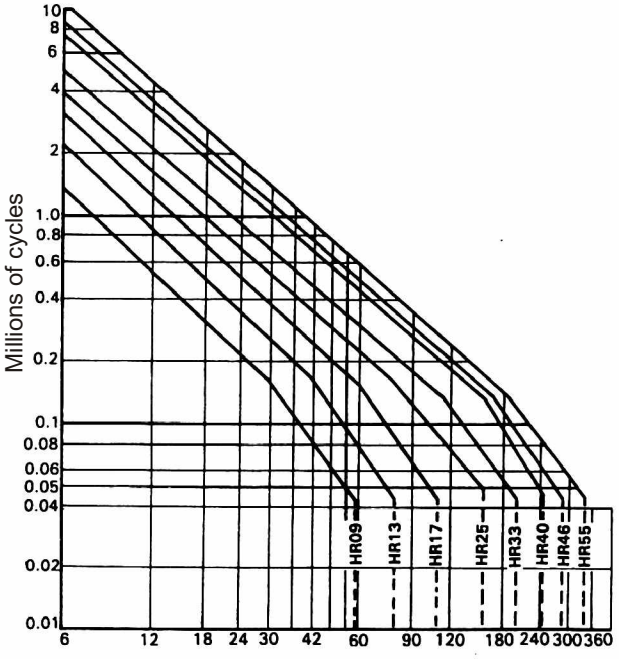
Operating current Ie (A) at 380/415V~

Category AC-3



Operating current Ie (A) at 380/415V~

Category AC-4



Operating current Ie (A) at 380/415V~

ACCESSORIES FOR CONTACTORS SERIES HR

IR11

IR22

INSTANTANEOUS AUXILIARY CONTACT BLOCKS
to fix to the top of the contactors

TYPE	Contacts diagram	Rated thermal current Ith	Rated current Ie AC-15 EN 60947-5-1 IEC947-5-1 220V 240V	380V 415V	500V
IR02	21 31 / 22 32	10 A	3 A	1.5 A	1 A
IR11	21 33 / 22 34				
IR22	21 31 43 53 / 22 32 44 54				
IR13	21 31 41 53 / 22 32 42 54				
IR31	21 33 43 53 / 22 34 44 54				

IT60

TIME-DELAYED AUXILIARY CONTACT BLOCKS
to fix to the top of the contactors

TYPE	Contacts diagram	Timed delay:	Rated insulation voltage Ui	Rated thermal current Ith	Rated current Ie AC-15 220V 230V	380V 415V	500V
IT60D	55 57 / 56 58	3-50 sec. From energising	690V	10 A	6 A	6 A	3 A
IT60I	57 55 / 58 56	3-50 sec. From de-energising					

IDC10

I85

UH13`

AUXILIARY CONTACT BLOCKS FOR DIRECT CURRENT CONTROL OF CONTACTORS WITH ALTERNATING CURRENT COIL to fix to the top of contactors, complete with saving resistance and delayed NO contact. One normally open NO (DC 10) or NC (IDC01) contact remains available.

F	G	D	U	ADDITIONAL CODE
24V	48V	110V	230V	Coil voltage in a.c.

TYPE □	Contact diagram	Rated thermal current Ith	Rated current Ie AC-11 220V 240V	380V 415V	500V
IDC10 □	23 35 / 24 36 RA	10 A	3 A	1.5 A	1 A
IDC01 □	21 35 / 22 36 RA				

MECHANICAL INTERLOCK side mounting

I85	Prevents two contactors, even of different sizes, from closing simultaneously

WATERPROOF INSULATING ENCLOSURES IP65

UH13Y	With blind cover and reset button standard, for contactors HR09-HR13 and direct starters HS09Y - HS13Y
UH25Y	With blind cover and reset button standard, for contactors HR17-HR25 and direct starters HS17Y - HS25Y
UH13YP	With run-stop/reset buttons for direct starters HS09Y..P - HS13Y..P
UH25YP	With run-stop/reset buttons for direct starters HS17Y..P - HS25Y..P

H

THERMAL RELAY FOR CONTACTORS HR09-HR13-HR17-HR25

USE

For protection against damage caused by overloads of three-phase and single-phase users, both with balanced and unbalanced load between phases.
For single-phase loads, connect two poles of the thermal relay in series to obtain heating of three bimetals.

SPECIFICATIONS

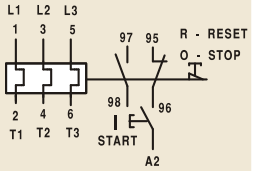
Direct mounting on HR contactors
Automatic compensation of ambient temperature
Auxiliary contacts 1 NO + 1 NC
Manual reset
Stop/reset button
Trip indicator and release test
Operating temperature from -5°C to +55°C
Storage temperature from -40°C to +70°C
Relative Humidity from 45 to 85%

STANDARDS AND APPROVALS

VDE 0660 CEI EN 60947-4-1 IEC 947-4-1
Approval:

SELECTION TABLE

REGULATION SCALE CODES	PROTECTION FUSES (A)	
	aM	gI
A 0.15 to 0.25	0.5	-
B 0.22 to 0.33	0.5	-
C 0. 3 to 0.45	1	2
D 0.42 to 0.63	1	2
E 0.6 to 0.9	2	4
F 0.85 to 1.27	2	4
G 1.2 to 1.75	2	4
H 1.7 to 2.6	4	6
I 2.5 to 3.7	6	10
L 3.6 to 5.4	8	16
M 5.3 to 7.5	10	20
N 7.3 to 10.2	12	20
O 10 to 15	16	25
P 13.5 to 20	25	50
Q 18 to 26	40	63

TYPE ☐	Regulation scale A	Terminal diagram and numbering		Contact specifications: Rated thermal current Ith	Rated current Va.c. 220V 240V	380V 415V	500V	Vd.c. W	Unit weight Kg	Packs of No
JA25 ☐	From 0.15 to 26 (see selection table)			10 A	3 A	1.5 A	1 A	50		

ACCESSORIES FOR THERMAL RELAYS JA25

SUPPORT FOR SEPARATE MOUNTING OF THERMAL RELAY JA25

I84	Support with terminal block to install the thermal relay separately from the contactor. May be fixed to the base plate or 35 mm rail EN 50022-3 DIN 46277-3

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TECHNICAL SPECIFICATIONS THERMAL RELAYS JA25 - Ja46

THERMAL RELAY type:				JA25	JA46
Rated insulation voltage		Ui	V~	660	660
Admissible ambient temperature			°C	-25 to 50	-20 to 60
Temperature compensation			°C	-5 to 50	-20 to 60
Maximum humidity			%RH	95% a 40°C	95% a 40°C
Reset				manual and automatic	manual and automatic
Trigger simulation button				yes	yes
Auxiliary contacts				1NO + 1NC	1NO+1NC
Rated thermal current a.c.		Ith	A	10	10
RATED OPERATING CURRENT IN CATEGORY	Va.c.	220/240V ~	A	3	6
		380/415V ~	A	1.5	3
		500V ~	A	1	1.5
	Vd.c.		W	50	100

SELECTION TABLE FOR THERMAL RELAYS JA25 - Ja46

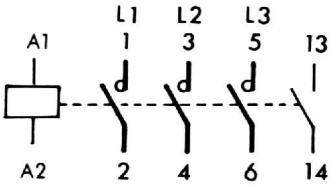
N.B. The absorption values are indicative and relate to direct starting three-phase motors.
To select thermal relay calibration and fuse value, refer to the ratings plate of the motor.
For high switching frequency it is advisable to select the contactor with higher power.

220V			240V			380V			415V			440V			500V			600V			660V			RECOMMENDED CONTACTOR	THERMAL RELAY CALIBRATION	FUSES aM	FUSES gl
KW	HP	A	KW	HP	A	KW	HP	A	KW	HP	A	KW	HP	A	KW	HP	A	KW	HP	A	KW	HP	A				
						0.06	0.08	0.22				0.06	0.08	0.19	0.06	0.08	0.16	0.09	0.12	0.21	0.09	0.12	0.19		JA25A 0.15to 0.25	0.5	-
															0.09	012	0.24								JA25A 0.15to 0.25	0.5	-
																									JA25B 0.22to 0.33	0.5	-
												0.09	0.12	0.28				0.12	0.16	0.27	0.12	0.16	0.25		JA25B 0.22to 0.33	0.5	-
						0.09	0.12	0.33							0.12	0.16	0.33								JA25B 0.22to 0.33	0.5	-
																									JA25C 0.3 to0.45	1	2
0.06	0.08	0.38	0.06	0.08	0.35							0.12	0.16	0.37				0.18	0.24	0.4	0.18	0.24	0.35		JA25C 0.3 to 0.45	1	2
						0.12	0.16	0.42																	JA25C 0.3 to 0.45	1	2
																									JA25D 0.42to 0.63	1	2
0.09	0.12	0.55	0.09	0.12	0.5							0.18	0.24	0.55	0.18	0.24	0.55	0.18	0.24	0,46	0.25	0.34	0.55		JA25D 0.42to 0.63	1	
															0.250	34	0.6								JA25D 0.42to 0.63	1	2
																									JA25E 0.6 to 0.9	2	0.12
0.16	0.75	0.12	0.16	0.68	0.18	0.24	0.64				0.25	0.34	0.75				0.37	0.5	0.77	0.37	0.5	0.7		HR09	JA25E 0.6 to 0.9	2	4
						0.25	0.34	0.8							0.37	0.5	0.9				0.55	0.75	0.9	HR13	JA25E 0.6 to 0.9	2	4
																									JA25F 0.85to 1.27	2	0.18
0.24	1.10	0.18	0.24	1							0.37	0.5	1.06				0.55	0.75	1	0.75	1	1.1			JA25F 0.85to 1.27	2	4
						0.37	0.5	1.2				0.55	0.75	1.25	0.55	0.75	1.2	0.75	1	1.2					JA25F 0.85to 1.27	2	4
																									JA25G 1.2 to 1.75	2	4
0.25	0.34	1.4	0.25	0.34	1.38	0.55	0.75	1.5				0.75	1	1.65	0.75	1	1.5	1.1	1.5	1.65	1.1	1.5	1.5		JA25G 1.2 to 1.75	2	4
0.37	0.5	2	0.37	0.5	1.9	0.75	1	2	0.75	1	2	1.1	1.5	2.3	1.1	1.5	2	1.5	2	2.2	1.5	2	2		JA25H 1.7 to 2.6	4	6
			0.55	0.75	2.3																						
						1.1	1.5	2.6	1.1	1.5	2.5				1.5	2	2.6								JA25H 1.7 to 2.6	4	6
																									JA25I 2.5 to 3,7	6	10
0.55	0.75	2.7	0.75	1	3	1.5	2	3.5	1.5	2	3.5	1.5	2	3.1				2.2	3	3.1	2.2	3	2.9		JA25I 2.5 to 3.7	6	10
0.75	1	3.3																			3	4	3.5				
1.1	1.5	4.5	1.1	1.5	4	2.2	3	5	2.2	3	5	2.2	3	4.3	2.2	3	3.8	3	4	4.2	4	5.5	4.9		JA25L 3.6 to 5.4	8	16
															3	4	5								JA25L 3.6 to 5.4	8	16
																									JA25M 5.3 to 7.5	10	20
1.5	2	6	1.5	2	5.5	3	4	6.6	3	4	6.5	3	4	5.8	4	5.5	6.5	4	5.5	5.5	5.5	5.7	6.7		JA25M 5.3 to 7.5	10	20
																		5.5	7.5	7.5					JA25M 5.3 to 7.5	10	20
																									JA25N 7.3 to 10.2	12	20
2.2	3	8.7	2.2	3	7.9	4	5.5	8.5	4	5.5	8.5	4	5.5	7.6	5.5	7.5	9				7.5	10	9		JA25N 7.3 to 10.2	12	20
																		7.5	10	10				HR13	JA25N 7.3 to 10.2	12	20
																									JA25O 10 to 15	16	25
3	4	11.5	3	4	10.5	5.5	7.5	11.5	5.5	7.5	11	5.5	7.5	10.3	7.5	10	12				11	15	13	HR13	JA25O 10 to 15	16	25
			4	5.5	14				7.5	10	14	7.5	10	13.5				11	15	14				HR17			
4	5.5	15	5.5	7.5	19	7.5	10	15.5				11	15	19	11	15	17	15	20	19	15	20	17.5	HR17	JA25P 13.5 to 20	25	50
																								HR25			
5.5	7.5	21	7.5	10	24.5	11	15	22	11	15	21				15	20	23	18.5	25	23.5	18.5	25	21	HR25	JA25Q 18 to 26	40	63
																								HR33	JA46B 20 to 33	40	63
7.5	10	27				15	20	30	15	20	28	15	20	26	18.5	25	28	22	30	27	22	30	25	HR33	JA46C 28 to 42	50	80
			11	15	35				18.5	25	35	18.5	25	32	22	30	33	30	40	37	30	40	33	HR40			
11	15	39				18.5	25	37				22	30	37										HR40	JA46C 28 to 42	50	80
						22	30	44	22	30	40										37	50	42	HR46	JA46D 35 to 50	63	100
			15	20	48							30	40	50	30	40	44	37	50	45	45	60	49	HR55	JA46E 46 to 65	80	100
15	20	52	18.5	25	58.5	30	40	60	30	40	55	37	50	62	37	50	54	45	60	54	55	75	60				

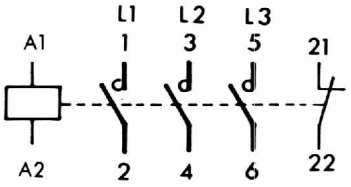
WIRING DIAGRAMS

CONTACTORS

CONTROL EXAMPLES:

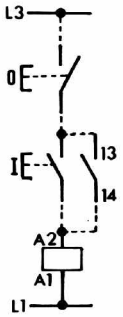


HR..10 HM..10

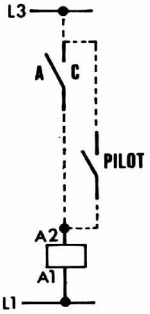


HR..01 HM..01

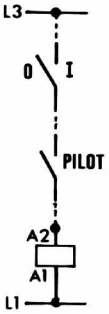
With Run-Stop switch(or remote pilot)



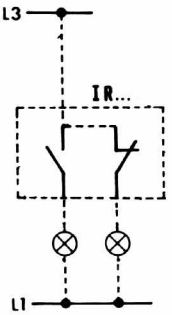
With Run-Stop buttons (only for HR..10)



With pilot and Auto-Continuous switch



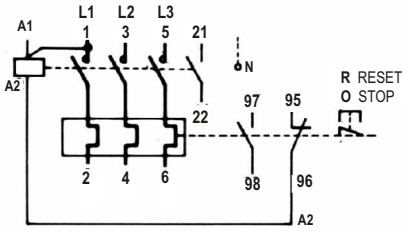
With pilot and Run-Stop switch



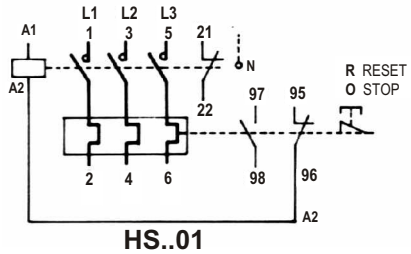
Operation-Stop indication

DIRECT STARTERS (series HS)

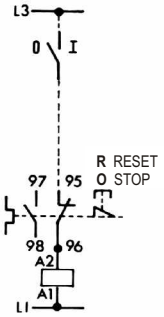
IN WATERPROOF ENCLOSURES IP65 Y



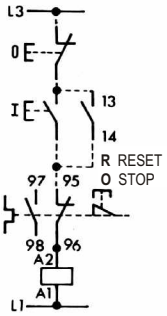
HS..10



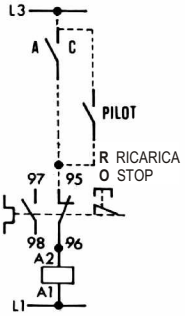
HS..01



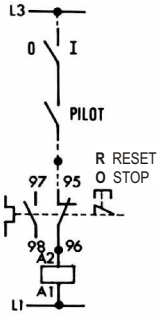
With Run-Stop switch (or remote pilot)



With Run-Stop buttons (only for HR..10)

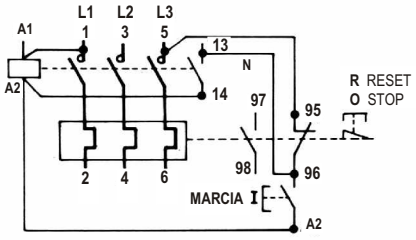


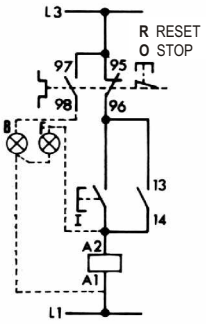
With pilot and Autom-Continuous switch



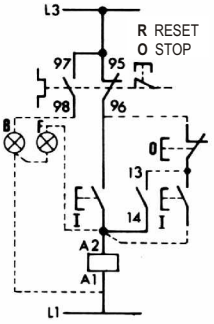
With pilot and Run-Stop switch

IN WATERPROOF ENCLOSURES IP65 WITH RUN-STOP/RESET BUTTONS YP



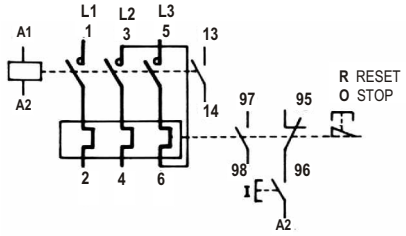


Example: thermal relay trip and operation lights triggered with mechanical Run-Stop buttons (only HS..10)



Control with remote Run-Stop buttons and trip and operation lights trigger (only HS..10)

FOR SINGLE-PHASE LOADS



For single-phase loads, connect two poles of the thermal relay in series to obtain heating of the three bimetals.

2003/01

USER CATEGORIES

Nature of the current	User categories	Typical applications
Alternating current	AC-1	Non-inductive or low inductive loads, heating element ovens
	AC-2	Slip-ring motors: start up, stop
	AC-3	Cage motors: start up, stop of the motor during running (1)
	AC-4	Cage motors: start-up, reverse-current braking, pulsed switching
	AC-5a	Control of discharge lamps
	AC-5b	Control of incandescent lamps
	AC-6a	Control of transformers
	AC-6b	Control of capacitor batteries
	AC-7a	Light inductive loads in domestic and similar applications
	AC- 7b	Motor loads in domestic applications
	AC-8a	Control of motors for refrigerator hermetic compressors with manual reset of the overload release (2)
	AC-8b	Control of motors for refrigerator hermetic compressors with automatic rest of the overload release (2)
Direct current	DC-1	Non-inductive or low inductive loads, heating element ovens
	DC-3	Shunt motors: start-up, reverse current braking, pulsed switching. Dynamic braking of direct current motors
	DC-5	Motors in series: start-up, reverse current braking, pulsed switching. Dynamic braking of direct current motors
	DC-6	Control of incandescent lamps

1)Equipment classified in category AC-3 may be used for occasional pulsed switching or reverse current braking, for limited periods such as those relative to positioning the machine. During these limited periods, the number of these operations must not exceed 5 per minute and exceed 10 in a period of 10 minutes.

2)Motors for refrigerator hermetic compressors are a combination composed of motor and compressor enclosed in the same casing without external shaft, as the motor operates immersed in the coolant.

USER CATEGORIES FOR SWITCHING ELEMENTS

Current type	Category	Typical applications
Alternating current	AC-12	Control of resistive loads and solid state loads with isolation obtained with opto-isolators
	AC-13	Control of solid state loads with isolating transformer
	AC-14	Control of small electromagnetic loads (= 72 VA)
	AC-15	Control of electromagnetic loads (> 72 VA)
Direct current	DC-12	Control of resistive loads and solid state loads with isolation obtained with opto-isolators
	DC-13	Control of electromagnets
	DC-14	Control of electromagnetic loads with economizing resistors in the circuit