

### List of Relays

SN.	Make	Type	Specification	DMC & TC	Population
1	LEACH	Series FD470 Railway Relay	H022 Type relay - 2PDT Double contacts-110VDC -1A	5	10
2	ESTERLINE	F670 Railway Relay 6 PDP/ 1Amp/72 VDC	NON LATCHING RELAY 6PDT 55V	8	16
3	DNI	Universal Reversing Relay 40/ 10A- 24V -DNI- Electrical Conductor	TIME RELAY WIND SCREEN WIPER	1	2
4	DNI	Universal Reversing Relay 40/ 10A- 24V -DNI- Electrical Conductor	TIME-LAG RELAYS-OFF DELAY-72V-10ms-3.6ks-4REV-SWITCH ON	2	4
5	STPI	Hermetically Sealed relay	H400 TYPE RELAY - 4PDT - 4 HIGH LEVEL - 110VDC - 1A	23	46
6	STPI	Latching relay	SH400 BISTABLE RELAY - 4PDT - 4 HIGH LEVEL - 110VDC - 0,5A	1	2
7	STPI	Time delay relay	H TYPE TIME DELAY RELAY - 1 SOLID STATE OUTPUT - 110VDC - 0,25A - TIME DELAY ON RELEASE	3	6
8	STPI	Polarised relay	H600 TYPE RELAY - 6PDT - 6 HIGH LEVEL - 110VDC - 1A	27	54
9	STPI	H type relay	Relay H400/24/UJU	1	2
10	LUTZE	Multifunctional time relay	RELAY, TIME DELAY, 2 CONTACTS, 24-110VDC	1	2
11	Mors Smitt	Voltage monitoring relay	MTDV4-U204 0.5S/0.5S 88-137.5VDC	1	2
12	LEACH	Series F470 relay	RELAY MONO-110V-VDC-4NO	6	
13	ESTERLINE	Series EC400	COIL PEAK LIMITER FOR H RELAYS - 110VDC	79	158
14	ESTERLINE	Series 284 278 -STF	Peak limiter for relay H 24V	1	2
15	ESTERLINE	Series EC400	COIL PEAK LIMITER FOR H RELAYS - 110VDC	15	30
16	MECATRACTI ON	Splice closed End	LUG/CLIP--CYLINDRICAL-5.3mm2-6.86mm	16	32
17	MECATRACTI ON	Pre insulated terminals for thin insulating conductors	CRIMP Part	739	1478
18	Mors Smitt	Double crimp preinsulated disconnects 2, 8-5-6, 35 mm width	CRIMP Part	16	32
19	MECATRACTI ON	Double crimp preinsulated disconnects 2, 8-5-6, 35 mm width	CRIMP Part	11	22
20	ESTERLINE	Socket for relay	SOCKET WITH LUG FOR SH400 BISTABLE AND TIME DELAY RELAYS	4	8
21	ESTERLINE	Socket for relay	SOCKET WITH LUG FOR H600 & H033 MONOSTABLE RELAYS	58	116
22	ESTERLINE	Socket for relay	SOCKET WITH LUG FOR H400 & H022 MONOSTABLE RELAYS	9	18
23	Mors Smitt	On-off contact socket	Socket for Mors smitt relay	1	2

### List of MCBs

SN.	Make	Type	Specification	DMC & TC	Population
1	ABB	HYDRULICS MAGNETIC CIRCUIT	HYDRO-MAGNETIC MICRO CIRCUIT BREAKER - 1 POLE - 110VDC - 10A - MEDIUM DELAY	20	400
2	ABB	HYDRULICS MAGNETIC CIRCUIT	HYDRO-MAGNETIC MICRO CIRCUIT BREAKER - 1 POLE - 110VDC - 5A - MEDIUM DELAY	31	620
3	ABB	HYDRULICS MAGNETIC CIRCUIT	HYDRO-MAGNETIC MICRO CIRCUIT BREAKER - 1 POLE - 110VDC - 3A - MEDIUM DELAY	40	800
4	ABB	HEINEMANN- HYDRULICS MAGNETIC CIRCUIT	CIRCUIT BREAKER 5A	5	100
5	ABB	RCBO - DS	CIRCUIT BREAKER DIFFERENTIAL 1 POLE 230 VAC 30MA CALIBRE 16A	3	60
6	ABB	HYDRULICS MAGNETIC CIRCUIT	HYDRO-MAGNETIC MICRO CIRCUIT BREAKER - 1 POLE - 110VDC - 16A - MEDIUM DELAY	4	80
7	ABB	HYDRULICS MAGNETIC CIRCUIT PROTECTORS	MICRO CB UNIPOLAR HYDRO-MAGNETIC 110VDC - 1A - MEDIUM DELAY	11	220
8	ABB	HYDRULICS MAGNETIC CIRCUIT PROTECTORS	HYDRO-MAGNETIC MICRO CIRCUIT BREAKER - 1 POLE - 110VDC - 8A - MEDIUM DELAY	4	80
9	ABB	MCBS, S 280-K SERIES	MINIATURE CIRCUIT BREAKER S283-K 32	1	20
10	ABB	MCBS, S 280-K SERIES	MINIATURE CIRCUIT BREAKER S283-K 6	1	20
11	ABB	HIGH RUPTURING CAPACITY M.C.B'S	MINIATURE CIRCUIT BREAKER, 3P, 440V,63A	2	40
12	ABB	S800S-B	MINI DISJUNTOR 1 POLO 10A 50KA 250VDC	1	20
13	ABB	S800-AUX AUXILIARY CONTACT	AUXILIARY CONTACT FOR CIRCUIT BREAKER S800	2	40
14	ABB	HIGH PERFORMANCE MCB WITH RING TERMINAL CABLE CONNECTION	MINI DISJUNTOR 1 POLO 100A 50KA 250VDC	1	20
15	ABB	S2-H11 -AUXILIARY CONTACT	AUXILIARY CONTACT 1NA+1NC S2-H11	2	40
16	ABB	MCBS, S 280-K SERIES	DISJ. TRIPOLAR 110V 16A 480VAC	2	40
17	ABB	AUXILIARY CONTACT	AUXILIARY CONTACT TYPE S 2C-H6R	3	60
18	ABB	MINIATURE CIRCUIT BREAKER S200 M UC	AUTOMATIC CIRCUIT BREAKER 1POL K 2A 2CDS271061R0277 S201M-K2UC	1	20
19	ABB	MINIATURE S200 SERIAL P	MINIA.CIRCUIT BREAKER SERIAL S 202P	1	20
20	ABB	AUXILIARY CONTACT (AUX-C1Q+1SY)	DISJ. 3 POLOS 110VDC 160A + CONT.AUX.	1	20
21	ABB	CIRCUIT BREAKER	CIRCUIT BREAKER 110VDC 2A	1	20
22	ABB	CIRCUIT BREAKER	MICRO CB HYDRO-MAGNETIC UNIPOLAR 110VDC - 0.3A - MEDIUM CURVE	1	20
23	ABB	S800-AUX AUXILIARY CONTACT	Auxiliary contact for S 800 series MCB	1	20

### List of Contactors

SN.	Make	Type	Specification	DMC & TC	Population
1	Schneider	Three-phase contactors 12 A	Contactors (LC1D12FD TeSys D contactor - 3P (3NO) -AC-3-<= 440V 12A - 110 V DC coil	8	320
2	ABB	Unit Auxiliary Contactor	S2-H1 1NO/1NC AUXILIARY CONTACTS	4	160
3	SCHALTBAU	SNAP ACTION SWITCH	SERIES S826	2	80
4	SCHALTBAU	SNAP ACTION SWITCH	SERIES S847	24	960
5	SCHALTBAU	SNAP ACTION SWITCH	SERIES S870	6	240
6	SCHALTBAU	HANDLE SELECTOR SWITCH	SERIES S847	2	80
7	MICROELETTR ICA SCIENTIFICA	PRECHARGE CONTACTOR PMCF	LTCS 100, 1 NO, ARC CHUTE MATERIAL POLYSTER RESIN	2	80
8	MICROELETTR ICA SCIENTIFICA	MAIN CONTACTOR	LTCH 10001 SADO, 110 V, 2 (1NO+1 NC), ARC CHUTE MATERIAL CERAMIC	2	80
9	Schneider	FAN TRIPOLAR CONTACTOR	LC1D123FD TeSys D Contactor -3P (3NO) -AC-3-<= 440V 12A - 110 V DC coil	2	80
10	MICROELETTR ICA SCIENTIFICA	FOUR POLE OUTPUT CONTACTOR	LTCN03004*A00, 24-220 Vdc, Max 4 * (1NO+1 NC OR 2 NO), POLYSTER RESIN	2	80
11	MICROELETTR ICA SCIENTIFICA	PRECHARGE CONTACTOR PTCF	LC1D65AFD TeSys D Contactor - -3P (3NO) -AC-3-<= 440V 12A - 110 V DC coil	2	80
12	MICROELETTR ICA SCIENTIFICA	INVERSER CONTACTOR	LC1DT80AFD TeSys D Contactor - -4P (4NO) -AC-1-<= 440V 80A - 110 V DC coil	4	160
15	EAO	SLOW MAKE SWITCHING ELEMENT OF <b>PUSH BUTTONS</b>	<b>1)Material of contact</b> Hard Silver, Gold/Silver, Silver/Palladium (for aggressive atmosphere) <b>2)Switch housing</b> Polycarbonate (PC) <b>3) Terminals</b> Plug-in terminals 6.3 x 0.8 mm	43	1720
16	EAO	BUZZER	Electrical characteristics Standards The switches comply with the "Standards for low-voltage switching devices" EN IEC 60947-5-1 Rated Insulations voltage Ui 500 VAC/600 VDC, as per EN IEC 60947-5-1 Contact resistance New state ≤50mΩ as per DIN IEC 60512-2-4 Conventional free air thermal current Ith 10A, as per EN IEC 60947-5-1 The maximum current in continuous operations and at ambient temperature must not exceed the quoted maximum values.	1	40

17	Kraus & Naimer	Rotary Switches	<p><b>Electrical characteristics</b>  Minimum Voltage: 20 V  Rated Impulse Withstand Voltage Uimp: 4 kV  Short Circuit Protection  Max. fuse size (g<sub>c</sub>-characteristic) 10 A  Rated short-time withstand current (1s-current) 90 A</p> <p><b>Electrical characteristics for DC</b>  <b>Switch Rating DC</b>  Resistive loads T = 51 ms  Number of series contact(s)      Switch Capacity  1    2    3    4    5    6    8  24 V 48 V 70 V 95 V 120 V 145 V 190 V    10 A  48 V 95 V 140 V 190 V 240 V 290 V 350 V    6 A  60 V 120 V 180 V 240 V 300 V 360 V 450 V    2.5 A  110 V 220 V 330 V 440 V 550 V 660 V        0.7 A  220 V 440 V 660 V                                0.3 A  440 V 660 V                                        0.2 A  Inductive loads T = 50 ms  Number of series contact(s)      Switch Capacity  1    2    3    4    5    6    8  24 V 48 V 70 V 95 V 120 V 145 V 190 V    8 A  30 V 60 V 90 V 120 V 150 V 180 V 240 V    3 A  48 V 95 V 140 V 190 V 240 V 290 V 350 V    1 A  60 V 120 V 180 V 240 V 300 V 360 V 450 V    0.7 A  110 V 220 V 330 V 440 V 550 V 660 V        0.3 A</p> <p><b>Environmental conditions</b>  <b>Operating temperature</b>  Ambient Temperatures of Stages  open at 100 % l.u/h 55 °C during 24 h with peaks up to 60 °C  enclosed at 100 % l.u/h 35 °C during 24 h with peaks up to 40 °C</p>	<p><b>Electrical characteristics for AC</b>  Standards  The devices comply with : EN IEC 60947-3, VDE 0660 part 107  Rated Operational Voltage Ue: 440 V  Rated Insulation Voltage Ui: 440 V  Rated Thermal Current I<sub>th</sub>: 10 A  <b>Rated Operational Current Ie</b>  AC-15 Switching of control devices, contactors, valves etc.  110 V - 120 V 2.5 A  220 V - 240 V 2.5 A  380 V - 440 V 1.5 A  No load operation: 10 A  AC-21A Switching of resistive loads, including moderate overloads  For switching of power &gt; 1 kW: 10 A  AC-22A Switching of combined resistive or low inductive loads  including moderate overloads  220 V - 240 V 10 A  <b>Rated Utilization Category</b>  AC-2 Slip ring motor starting, reversing and plugging, star-delta  starting: 3 phase, 3 pole  220 V - 240 V 2.5 kW  380 V - 440 V 4.5 kW  AC-3 Direct-on-line starting, star-delta starting  3 phase, 3 pole 220 V - 240 V 2.5 kW  380 V - 440 V 2.2 kW  1 phase, 2 pole 110 V - 120 V 0.3 kW  3 phase, 3 pole 220 V - 240 V 0.37 kW  380 V - 440 V 0.75 kW  AC-Direct-on-line starting, reversing, plugging and inching  3 phase, 3 pole 220 V - 240 V 0.37 kW  380 V - 440 V 0.55 kW  1 phase, 2 pole 110 V - 120 V 0.15 kW  220 V - 240 V 0.25 kW  380 V - 440 V 0.5 kW  AC-23A Frequent switching of motors or other high inductive loads  3 phase, 3 pole 220 V - 240 V 1.8 kW  380 V - 440 V 3 kW  1 phase, 2 pole 110 V - 120 V 0.37 kW  220 V - 240 V 0.75 kW  380 V - 440 V 1.1 kW</p>	17	680
18	Rotex	2 way solenoid valve		3	120	
19	ABB	DC Contactor - (Head Light Dipped Contactor, Head Light Main Contactor )	1SBL143061R6201, TAL9-30-01 77-143V	2	80	
20	ABB	DC Contactor - (Loadshed Contactor)	TAL9-30-01 77-143V DC Contactor	1	40	
21	ABB	3-Pole Contactor- (Train Wake-up Contactor )	1SFL497001R6911 - AF185-30-11 48-130V 50HZ / 48-130V 60Hz /48-130V DC	1	40	
22	ABB	3-Pole Contactor- (Oil pump contactor Transformer Ventilation - Speed 1 Transformer Ventilation - Speed 2 Transformer Ventilation - Speed 3 Transformer Ventilation - Speed 4 Transformer Ventilation - Speed 5 Transformer Ventilation - Speed 6 Pantograph Control Contactor)	AF09ZB..RT ... AF38ZB..RT 3-pole contactors 4 to 18.5 Kw	8	320	
23	ABB	4-Pole Contactor- (Pantograph Control Contactor Transformer Ventilation - Speed 1 Transformer Ventilation - Speed 3 Transformer Ventilation - Speed 4 Transformer Ventilation - Speed 6 Oil pump contactor)	AF09ZB..RT ... AF26ZB..RT 4-pole contactors 25 to 45 A AC-1	6	240	
24	ABB	3-Pole Contactor- (Transformer Ventilation - Speed 4 Transformer Ventilation - Speed 6)	AF09ZB..RT ... AF38ZB..RT 3-pole contactors 4 to 18.5 Kw	2	80	
25	ABB	Auxiliary contact blocks - (Transformer Ventilation - Speed 2 Transformer Ventilation - Speed 5)	2-pole CA4, 4-pole CA4, 2-pole CAT4, 2-pole CAL4	2	80	
26	ABB	Contactor - (Transfer Contactor, Train Wake-up Contactor, Battery Isolation Contactor)	LW 185 - 1SFN074707R1000	3	120	
27	Schneider	Contactor - (Compressor, condenser fan , supply air fan)	GV2ME006 series, 1NO + 1 NC	12	480	
28	Schneider	Contactor - Heater	LC1D096 FD S207, 110V DC, 1 NO+ 1 NC	8	320	
29	Schneider	MPCB	C60N/ C20A, 415V, 3 Pole	8	320	
30	Schneider	MCB	Single pole C6 A 500V , MGN61846	4	160	