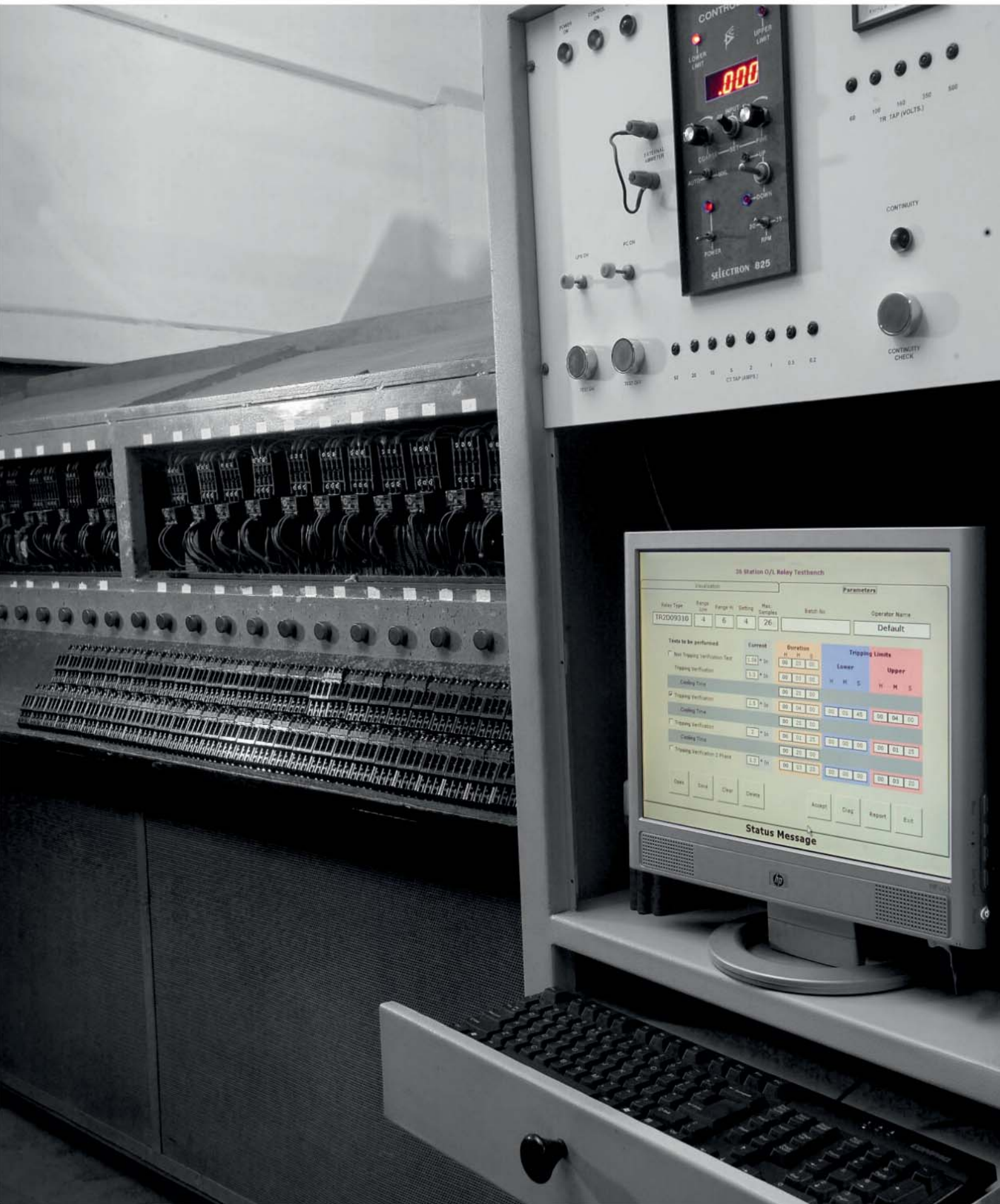


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IEC Industrial Controls





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robusta Contactors 115A~800A

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robusta Contactors & Overload Relays



- Wide range of Power Contactors 9A to 800A and Control Relays in AC & DC control; Choice of 10 ratings in 3 Pole & 4 Pole versions
- Common add-on accessories - Front / Side Auxilliary Contact Block, Pneumatic Timer - ON/OFF delay & Star Delta, Latch Block, Mechanical Interlock
- Compatible overload relays from 0.1A to 1000A having built-in single phase protection and Auto-Manual reset facility
- Heavy duty application core balance CT operated overload relays; range 2.5A to 400A

robusta Capacitor Duty Contactors



- Range from 10 kVAR to 60 kVAR
- Saves cost of expensive replacements
- High electrical life
- Reduced watt loss during 'ON' condition, saves energy
- Switching of Capacitor bank in parallel without de-rating

Definite Purpose Contactors



- Range; 1, 2, 3 & 4 Pole versions up to 90A
- Application: Ventilation & HVAC: Heating elements, Power Supplies etc.
- Maximum operating altitude: 2000 meters above sea level
- Ambient Air Temp: - 40 degree to + 65 degree C
- Ambient air dampness around the device: 45 to 85% RH
- Coil apply voltage: 80% - 105% rate voltage

Motor Starters



- 3 Pole Non-reversing Starters (NEMA type enclosure) up to 50 HP @ 460V
- 3 Pole Reversing Starters (NEMA type enclosure) up to 50 HP @ 460V
- DOL Starter in sheet steel enclosure up to 40 kW @ 480V
- DOL Starter in Plastic enclosure up to 11 kW @ 480V

Special Starters

- With Green Button & Red (Mushroom turn to release)
- With Red Button (Mushroom turn to release)
- With Green Jogging Switch
- Blank Cover without any Hole

Control & Signalling Devices, Control Stations



- Widest range Ø22.5; Push Buttons, Emergency Stop, Selectors, Illuminated and Non-illuminated Actuators
 - Pilot Lamps - LED / Filament / Neon
- Control Stations' range includes 1/2/ 3 / 4 ways-Aluminium die cast / Plastic boxes with different combination of Push Buttons / Selectors having Ingress protection IP 65 / 66; NEMA 4 / 4X



A robuTa Contactors & Overload Relays



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robuTa Capacitor Duty Contactors



- Range from 10 kVAR to 60 kVAR
- Saves cost of expensive replacements
- High electrical life
- Reduced watt loss during 'ON' condition, saves energy
- Switching of Capacitor bank in parallel without de-rating

Definite Purpose Contactors



- Range; 1, 2 & 3 Pole versions for 20A, 25A, 30A & 40A
- Application: Ventilation & HVAC: Heating elements, Power Supplies etc.
- Maximum operating altitude: 2000 meters above sea level
- Ambient Air Temp: - 40 degree to + 65 degree C
- Ambient air dampness around the device: 45 to 85% RH
- Coil apply voltage: 80% - 105% rate voltage

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- Control Stations' range includes 1/2 / 3 / 4 ways-Aluminium die cast / Plastic boxes with different combination of Push Buttons / Selectors having Ingress protection IP 65 / 66; NEMA 4 / 4X



Contactors Overload Relays & Accessories

robusta (9A ~ 95A)

3 & 4 Pole Contactors with AC operating coil Characteristics

General Characteristics

Type		Unit	TC1-D09 ~ TC1-D95
Rated insulation voltage (Ui)	IEC 60947-4-1	V	1000
Conforming to standards			NFC EN 60947, VDE 0660, BSEN 60947, IEC 60947 & IS 13947
Approvals			UL, CSA
Degree of Protection	Conforming to VDE 0106		Protection against direct finger contacts
Protective treatment	Standard version		"TH"
Ambient air temperature	Storage	°C	-60 to +80
(around the device)	Operation	°C	-5 to +55 (0.8 to 1.1Uc)
	Permissible	°C	-40 to +70, for operation at Uc
Maximum operating altitude	Without derating	Mtr.	3000
Operating Position	Without derating		+30° possible, in relation to normal vertical mounting plane

Pole Characteristics

Type	TC1-	Unit	D09	D12	D18	D22	D25	D32	D38	D40	D50	D65	D80	D95
Number of poles (Power)			3 or 4	3 or 4	3	3	3 or 4	3	3	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4
Power + Auxiliary			3+1	3+1	3+1	3+1	3+1	3+1	3+1	3+2	3+2	3+2	3+2	3+2
Rated current (Ie)	AC3 up to 440V @ 55°C	A	9	12	18	22	25	32	38	40	50	65	80	95
Rated operating Voltage	Upto	V	690	690	690	690	690	690	690	690	690	690	690	690
Frequency limits	Of the operational current	Hz	25-400											
Rated thermal current (Ith)	θ < 40°C	A	25	25	32	32	45	50	50	60	80	80	125	125
Rated making capacity	Irms conforming to IEC-60947-4	A	250	250	300	300	450	550	550	800	900	1000	1100	1200
Rated breaking capacity	Irms conforming to 220-440V	A	250	250	300	300	450	550	550	800	900	1000	1100	1100
	IEC-60947-4 500V	A	175	175	250	250	400	450	450	800	900	1000	1000	1100
	660-690V	A	85	85	120	120	180	180	180	400	500	630	640	640
Average impedance per pole	At Ith and 50Hz Milli Ω	Max.	2.5	2.5	2.5	2.5	2	2	2	1.5	1.5	1	0.8	0.8
Power dissipation per pole for the above operational currents	AC-3	W	0.2	0.36	0.8	0.8	1.25	2	2	2.4	3.7	4.2	5.1	7.2

Control Circuit Characteristics

Type			Unit	TC1- D09~D22	TC1- D25~D38	TC1- D40~D65	TC1- D80~D95	
Rated control circuit voltage (Uc)		50 or 60 Hz		V				
Control voltage		Operational		12 to 660				
limits (θ < 55°C)	50 or 60Hz Coil	Drop out		0.8 - 1.1 Uc				
	50/60Hz Coil	Operational		0.3 - 0.6 Uc				
Average consumption at 20°C and at Uc	AC 50 Hz	Inrush	50 Hz Coil	VA	60	90	200	200
			50/60 Hz Coil	VA	70	100	245	245
			COS ϕ		0.75	0.75	0.75	0.75
		Sealed	50 Hz Coil	VA	7	7.5	20	20
			50/60 Hz Coil	VA	8	8.5	26	26
			COS ϕ		0.3	0.3	0.3	0.3
	AC 60 Hz	Inrush	60 Hz Coil	VA	70	100	220	220
			50/60 Hz Coil	VA	70	100	245	245
			COS ϕ		0.75	0.75	0.75	0.75
		Sealed	60 Hz Coil	VA	7.5	8.5	22	22
			50/60 Hz Coil	VA	8	8.5	26	26
			COS ϕ		0.3	0.3	0.3	0.3
Average operating time at Uc		Closing time “C”	msec	12-22	15-24	20-26	20-35	
		Opening time “O”	msec	04-12	05-19	8-12	6-20	
Mechanical life Uc		50 or 60 Hz Coil		20(16 for TC1D18)	16	16	10	
(mechanical durability) in millions of operating cycles		50/60 Hz Coil or 50 Hz		15	12	6	4	
Maximum operating rate		In operating cycle/hour		3600	3600	3600	3600	

Integral Auxiliary Contact Characteristics

Type		Unit	TC1- D09 ~ TC1- D95
Rated thermal current (Ith)	θ < 55°C	A	10
Rated operational voltage (Ue)	Upto	V	660

robusTa (9A ~ 95A)

3 & 4 Pole Contactors with DC operating coil Characteristics

General Characteristics

Type		Unit	TP1-D09 ~ TP1-D80
Rated insulation voltage (Ui)	IEC 60947-4-1	V	1000
Conforming to standards			NFC EN 60947, VDE 0660, BSEN 60947, IEC 60947 & IS 13947
Approvals			UL, CSA
Degree of Protection	Conforming to VDE 0106		Protection against direct finger contacts
Protective treatment	Standard version		"TH"
Ambient air temperature	Storage	°C	-60 to +80
(around the device)	Operation	°C	-5 to +55 (0.8 to 1.1 Uc)
	Permissible	°C	-40 to +70, for operation at Uc
Maximum operating altitude	Without derating	Mtr.	3000
Operating Position	Without derating		+30° possible, in relation to normal vertical mounting plane

Pole Characteristics

Type	TP1-	Unit	D09	D12	D18	D22	D25	D32	D38	D40	D50	D65	D80
Number of poles (P0wer)			3 or 4	3 or 4	3	3	3 or 4	3	3	3 or 4	3 or 4	3 or 4	3 or 4
Power + Auxiliary			3+1	3+1	3+1	3+1	3+1	3+1	3+1	3+2	3+2	3+2	3+2
Rated current (Ie)	AC3 up to 440V @ 55°C	A	9	12	18	22	25	32	38	40	50	65	80
Rated operating Voltage (Ue)	Upto	V	690	690	690	690	690	690	690	690	690	690	690
Frequency limits	Of the operational current	Hz	25-400										
Rated thermal current (Ith)	θ < 40°C	A	25	25	32	32	45	50	50	60	80	80	125
Rated making capacity	Irms conforming to IEC-60947-4	A	250	250	300	300	450	550	550	800	900	1000	1100
Rated breaking capacity	Irms conforming to 220-440V	A	250	250	300	300	450	550	550	800	900	1000	1100
	IEC-60947-4 500V	A	175	175	250	250	400	450	450	800	900	1000	1000
	660-690V	A	85	85	120	120	180	180	180	400	500	630	640
Average impedance per pole	At Ith and 50Hz Milli Ω	Max.	2.5	2.5	2.5	2.5	2	2	2	1.5	1.5	1	0.8
Power dissipation per pole for AC-3	the above operational currents	W	0.2	0.36	0.8	0.8	1.25	2	2	2.4	3.7	4.2	5.1

Control Circuit Characteristics

Type		Unit	TP1-D09~D22	TP1-D25~D38	TP1-D4011~D65	TP1-D80
Rated control circuit voltage (Uc)	DC	V	12 to 660		12 to 660	
Control voltage limits (θ < 55°C)	Operational	Standard Coil	0.8 - 1.1 Uc		0.85 - 1.1 Uc	
		Wide Range Coil	0.7 - 1.25 Uc		0.75 - 1.25 Uc	
Average consumption DC at 20°C and at Uc	Drop out		0.1 - 0.25 Uc		0.1 - 0.3 Uc	
	DC	Inrush	W	9	11	22
		Sealed	W	9	11	22
Average operating time at Uc	Closing time "C"	msec	40-48		52-64	
	Opening time "O"	msec	6-14		8-14	
Mechanical life Uc (mechanical durability)	In millions of operating cycles		30		25	
Maximum operating rate (at ambient temp. of θ < 55°C)	In operating cycle/hour		3600		3600	

Integral Auxiliary Contact Characteristics

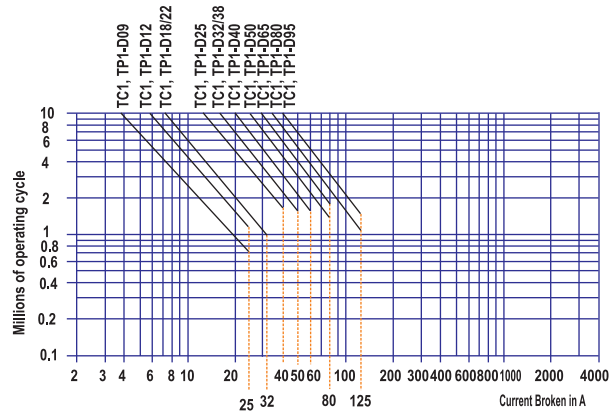
Type		Unit	TP1- D09 ~ TP1- D80
Rated thermal current (Ith)	θ < 40°C	A	10
Rated operational voltage (Ue)	Upto	V	660

B

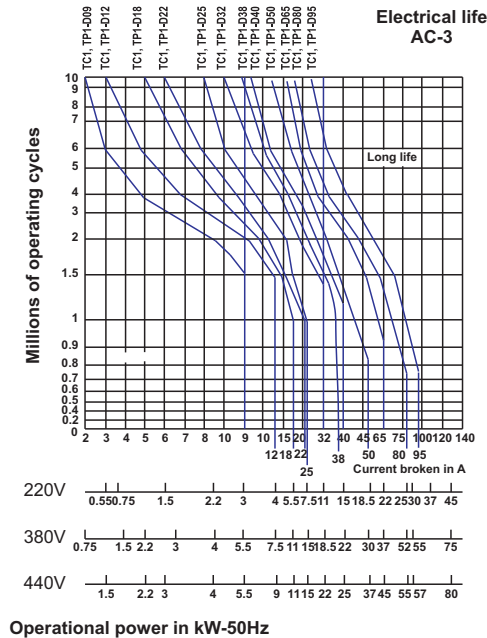
Contactors' Selection Guide

(according to the required electrical life)

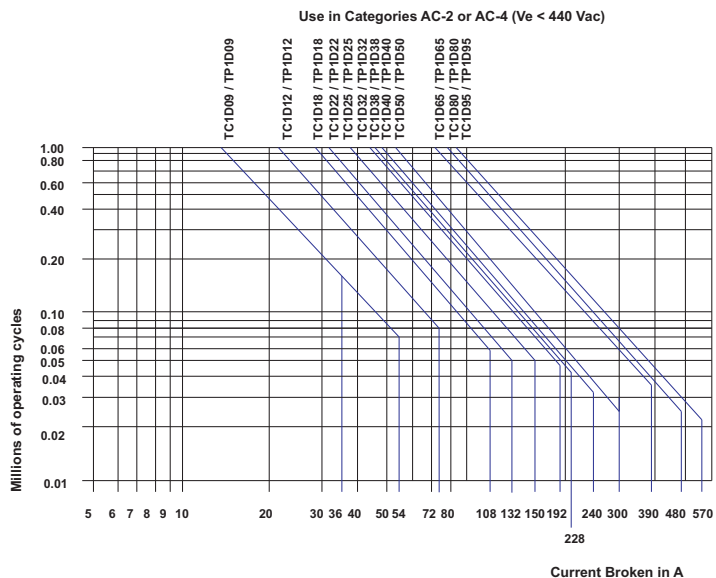
Use in Category AC-1 ($U_e < 440V$).
Control of resistive circuits ($\cos \phi > 0.95$). The current broken (I_b) in category AC-1 is equal to the current (I_e) normally drawn by the load.



Use in Category AC-3 ($U_e < 440V$).
Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor running. The current broken (I_b) in category AC-3 is equal to the current (I_e) normally drawn by the load.



Use in Categories AC-2, AC-4 ($U_e < 440V$). Control of 3-phase asynchronous squirrel cage (AC-4) or slip ring (AC-2) motors with breaking whilst motor stalled. The current broken in category AC-4 is equal to $6 \times I_e$. (I_e =rated operational current of the motor).



robusta (9A ~ 95A)

3 & 4 Pole Contactors with AC operating coil Specifications



TC1-D65●●-XX

3 Pole Contactor with AC operating coil

Maximum Current		Maximum HP						Aux. Contacts Built-in per contactor		Catalog Number
Inductive	Continuous	Single Phase		Three Phase						
AC-3 A	AC-1 A	120V	230V	200V	230V	480V	600V	NO	NC	
9	20	0.5	1	2	2	5	7.5	1	0	TC1-D0910-XX
								0	1	TC1-D0901-XX
12	25	1	2	3	3	7.5	10	1	0	TC1-D1210-XX
								0	1	TC1-D1201-XX
18	32	1	3	5	5	10	15	1	0	TC1-D1810-XX
								0	1	TC1-D1801-XX
22	32	2	3	5	7.5	15	20	1	0	TC1-D2210-XX
								0	1	TC1-D2201-XX
25	40	2	3	5	7.5	15	20	1	0	TC1-D2510-XX
								0	1	TC1-D2501-XX
32	50	2	5	10	10	20	25	1	0	TC1-D3210-XX
								0	1	TC1-D3201-XX
38	60	3	5	10	10	30	30	1	0	TC1-D3810-XX
								0	1	TC1-D3801-XX
40	60	3	5	10	10	30	30	1	1	TC1-D4011-XX
50	80	3	7.5	15	15	40	40	1	1	TC1-D5011-XX
65	80	5	10	20	20	50	50	1	1	TC1-D6511-XX
80	125	7.5	15	25	25	60	60	1	1	TC1-D8011-XX
95	125	7.5	15	25	25	60	60	1	1	TC1-D9511-XX

Note : Standard Fault Ratings U_i S High Fault Ratings U_i (100kA with class J/CC Fuse)

4 Pole Contactor with AC operating coil

Maximum Current		Maximum HP						Main Pole Configuration		Catalog Number
Inductive	Resistive	Single Phase		Three Phase						
AC-3 A	AC-1 A	120V	230V	200V	230V	480V	600V	NO	NC	
9	25	0.5	1	2	2	5	7.5	4	0	TC1-D09004-XX
		0.5	1	2	2	5	7.5	0	4	TC1-D09006-XX
		0.5	1	-	-	-	-	2	2	TC1-D09008-XX
12	25	1	2	3	3	7.5	10	4	0	TC1-D12004-XX
		1	2	3	3	7.5	10	0	4	TC1-D12006-XX
		1	2	-	-	-	-	2	2	TC1-D12008-XX
25	40	2	3	5	7.5	15	20	4	0	TC1-D25004-XX
		2	3	5	7.5	15	20	0	4	TC1-D25006-XX
		2	3	-	-	-	-	2	2	TC1-D25008-XX
40	60	3	5	10	10	30	30	4	0	TC1-D40004-XX
		3	5	-	-	-	-	2	2	TC1-D40008-XX
		5	10	20	20	50	50	4	0	TC1-D65004-XX
65	80	5	10	-	-	-	-	2	2	TC1-D65008-XX
		7.5	15	20	25	60	60	4	0	TC1-D80004-XX
		7.5	15	-	-	-	-	2	2	TC1-D80008-XX



TC1-D09004

3 Pole Mechanically Interlocked Contactor with AC coil (Pre-wired)

Maximum Current		Maximum HP 3 Phase				Aux. Contacts Built-in per contactor		Catalog Number
Inductive AC-3 A	Resistive AC-1 A					NO	NC	
		200V	230V	480V	600V			
9	25	2	2	5	7.5	0	1	TC2-D0901-XX
						1	0	TC2-D0911-XX
12	25	3	3	7.5	10	0	1	TC2-D1201-XX
						1	0	TC2-D1211-XX
18	32	5	5	10	15	0	1	TC2-D1801-XX
						1	0	TC2-D1811-XX
22	32	5	5	10	15	0	1	TC2-D2201-XX
						1	0	TC2-D2211-XX
25	40	5	7.5	15	20	0	1	TC2-D2501-XX
						1	0	TC2-D2511-XX
32	50	10	10	20	25	0	1	TC2-D3201-XX
						1	0	TC2-D3211-XX
38	50	10	10	20	25	0	1	TC2-D3801-XX
						1	0	TC2-D3811-XX
40	60	10	10	30	30	1	1	TC2-D4011-XX
50	80	15	15	40	40	1	1	TC2-D5011-XX
65	80	20	20	50	50	1	1	TC2-D6511-XX
80	125	20	25	60	60	1	1	TC2-D8011-XX
95	125	20	25	60	60	1	1	TC2-D9511-XX

Replace XX with voltage code from table - 1

Table-1 : XX-AC Coil Voltages

Volts AC	24	48	110	120	208	220	230	240	277	380	400	415	440	480	575	600
50 Hz	B5	E5	F5	-	-	M5	P5	U5	-	Q5	V5	N5	R5	-	-	-
60 Hz	B6	E6	F6	G6	L6	M6	-	U6	W6	Q6	-	-	R6	T6	S6	X6
50/60 Hz	B7	E7	F7	G7	-	M7	P7	U7	-	Q7	V7	N7	R7	-	-	-



TC2-D09●●-XX

robusta (9A ~ 95A)

3 & 4 Pole Contactors with DC operating coil Specifications

3 Pole Contactor with DC operating coil

Maximum Current		Maximum HP						Aux. Contacts Built-In per contactor		Catalog Number
Inductive	Resistive	Single Phase		Three Phase						
AC-3 A	AC-1 A	120V	230V	200V	230V	480V	600V	NO	NC	
9	25	0.5	1	2	2	5	7.5	1	0	TP1-D0910-XX
								0	1	TP1-D0901-XX
12	25	1	2	3	3	7.5	10	1	0	TP1-D1210-XX
								0	1	TP1-D1201-XX
18	32	1	3	5	5	10	15	1	0	TP1-D1810-XX
								0	1	TP1-D1801-XX
22	32	1	3	5	5	10	15	1	0	TP1-D2210-XX
								0	1	TP1-D2201-XX
25	40	2	3	5	7.5	15	20	1	0	TP1-D2510-XX
								0	1	TP1-D2501-XX
32	50	2	5	10	10	20	25	1	0	TP1-D3210-XX
								0	1	TP1-D3201-XX
38	50	2	5	10	10	20	25	1	0	TP1-D3810-XX
								0	1	TP1-D3801-XX
40	60	3	5	10	10	30	30	1	1	TP1-D4011-XX
50	80	3	7.5	15	15	40	40	1	1	TP1-D5011-XX
65	80	5	10	20	20	50	50	1	1	TP1-D6511-XX
80	125	7.5	15	20	25	60	60	1	1	TP1-D8011-XX

Note : Standard Fault Ratings UL SP High Fault Ratings UL (100kA with Fuse of class J/CC)

4 Pole Contactor with DC operating coil

Maximum Current		Maximum HP						Main Pole Configuration		Catalog Number
Inductive	Resistive	Single Phase		Three Phase						
AC-3 A	AC-1 A	120V	230V	200V	230V	480V	600V	NO	NC	
9	25	0.5	1	2	2	5	7.5	4	0	TP1-D09004-XX
		0.5	1	2	2	5	7.5	0	4	TP1-D09006-XX
		0.5	1	-	-	-	-	2	2	TP1-D09008-XX
12	25	1	2	3	3	7.5	10	4	0	TP1-D12004-XX
		1	2	3	3	7.5	10	0	4	TP1-D12006-XX
		1	2	-	-	-	-	2	2	TP1-D12008-XX
25	40	2	3	5	7.5	15	20	4	0	TP1-D25004-XX
		2	3	5	7.5	15	20	0	4	TP1-D25006-XX
		2	3	-	-	-	-	2	2	TP1-D25008-XX
40	60	3	5	10	10	30	30	4	0	TP1-D40004-XX
		3	5	-	-	-	-	2	2	TP1-D40008-XX
65	80	5	10	20	20	50	50	4	0	TP1-D65004-XX
		5	10	-	-	-	-	2	2	TP1-D65008-XX
80	125	7.5	15	20	25	60	60	4	0	TP1-D80004-XX
		7.5	15	-	-	-	-	2	2	TP1-D80008-XX

Note : Standard & High Fault Ratings UL (100kA with Fuse of class J/CC)

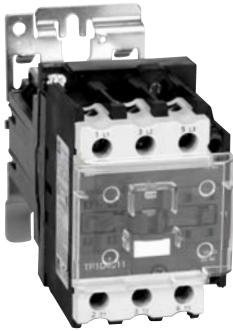
Low Height DC Contactor : 9A ~ 25A *

Maximum Current		Maximum HP 1 Phase		Maximum HP 3 Phase				Catalog Number
Inductive AC-3 A	Resistive AC-1 A	120V	230V	200V	230V	480V	600V	
9	25	0.5	1.0	2	2	5	7.5	TP1-DC09-XX
12	25	1.0	2.0	3	3	7.5	10	TP1-DC12-XX
25	40	2.0	3.0	5	7.5	15	20	TP1-DC25-XX

Replace XX with voltage code from table - 2

Table - 2: XX-DC Coil Voltages									
Volts DC	12	24	48	72	110	125	220	250	440
	JD	BD	ED	SD	FD	GD	MD	UD	RD

*Under UL approval



TP1-D40●●-XX



TP1-D2500●-XX

Accessories, Spare Coils



TA9-D1269



TA9RC980U



LA9-D09978



TX1-D-XX



LA6-DK01

Power Connectors Wire Sets for Reversing Contactors

With Two Identical Contactors	Catalog Number
TC1-D09, TC1-D12, TP1-D09, TP1-D12	TA9-D1269
TC1-D18, TP1-D18	TA9-D1869
TC1-D25, TP1-D25	TA9-D2569
TC1-D32, TP1-D32	TA9-D3269
TP1-D40, TP1-D65, TC1-D40, TC1-D50, TC1-D65	TA9-D6569
TC1-D80, TP1-D80, TC1-D 95	TA9-D8069

Mechanical / Electric Interlocks Horizontally Mounted

Use for Contactor	Mechanical	Electromechanical
TCA2DN, TCA3DN	LA9D09978	ELA9D09978
TC1D09 ~ D32, TP1D09 ~ D32		
TC1D40 ~ D65, TP1D40 ~ D65	LA9D50978	ELA9D50978
TC1D80 ~ D95, TP1D80	LA9D80978	ELA9D80978

Coil Suppressor

Description	Voltage Ratings	Catalog Number
Varistor (AC/DC)	24 ~ 48V AC/DC	TA9AMOV980E
Clip-on mounting for 9-95A Contactor	110 ~ 240V AC/DC	TA9AMOV980U
RC Circuit (AC)	24 ~ 48V AC	TA9RC980E
Clip-on mounting for 9A-95A Contactor	110 ~ 240V AC	TA9RC980U
	380 ~ 440V AC	TA9RC980N

Spare Coils (AC)

Use for contactor AC	Catalog Number
TC1-D09~D22	TX1-D2-XX
TC1-D25~D38	TX1-D4-XX
TC1-D40~D95	TX1-D6-XX

Replace XX with voltage code from table - 3

Table-3: XX-AC Coil Voltages

Volts AC	24	48	110	120	208	220	240	277	380	415	440	480	575	600
50 Hz	B5	E5	F5			M5	U5		Q5	N5	R5			
60 Hz	B6	E6	F6	G6	L6	M6	U6	W6	Q6		R6	T6	S6	X6
50/60 Hz	B7	E7	F7	G7		M7	U7		Q7	N7	R7			

Spare Coils (DC)

Use for contactor DC	Catalog Number
TP1-D09 ~ TP1-D22	TX4-D2-XX
TP1-D25 ~ TP1-D38	TX4-D4-XX
TP1-D40 ~ TP1-D65	TX4-D40-XX
TP1-D80	TX4-D80-XX
TP1-DC09 ~ TP1-DC12	TX4-DC2-XX *available coil voltage
TP1-DC25	TX4-DC4-XX *available coil voltage

Replace XX with voltage code from table - 4

Table- 4: XX-DC Coil Voltages

Volts DC	12	24*	48*	72	110*	125	220*	250	440
	JD	BD	ED	SD	FD	GD	MD	UD	RD

Mechanical Latching Blocks

Description of Contactors	Catalog Number
For Contactors up to 32 Amps	LA6DK01-XX

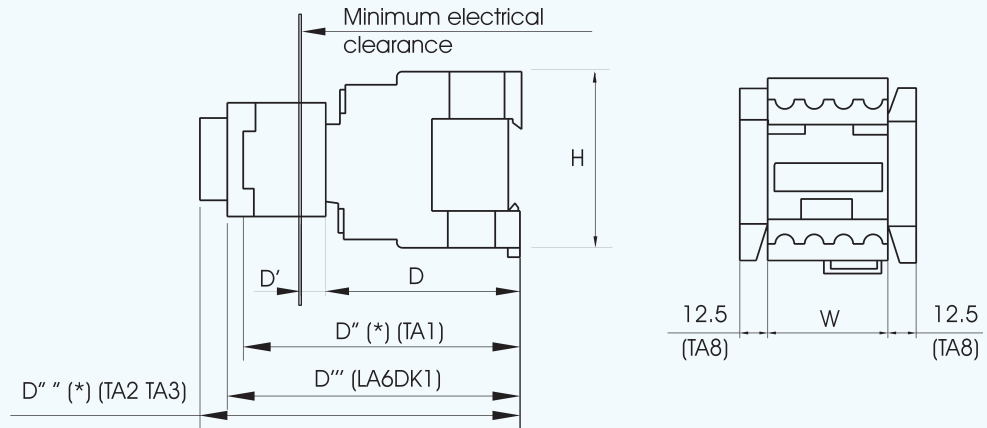
Replace XX with voltage code from table - 5 / 6

For Mechanical Latching Block	Table-5: For AC Voltage										
	24	48	110-115	120-127	220-225	230-240	380	400-415	440	500	660
LA6-DK01	B	E	F	G	M	U	Q	N	R	S	Y
For Mechanical Latching Block	Table-6: For DC Voltage										
	24	48	72	110-115	120-127	220-225	230-240				
LA6-DK01	BD	ED	SD	FD	GD	MD	UD				

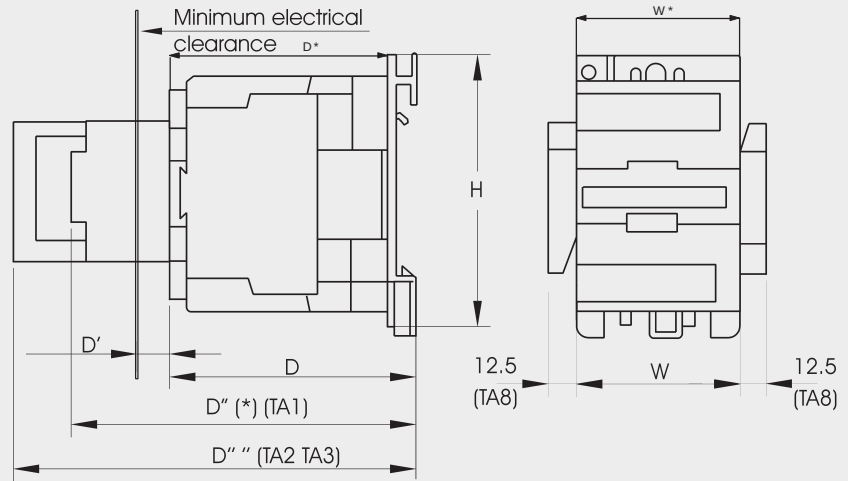
robusta (9A ~ 95A)

Contactors' Dimensions with AC operating coil

Product Dimensions TC1-D09~D38 TP1-DC09/DC12/DC25



TC1-D40 ~D95

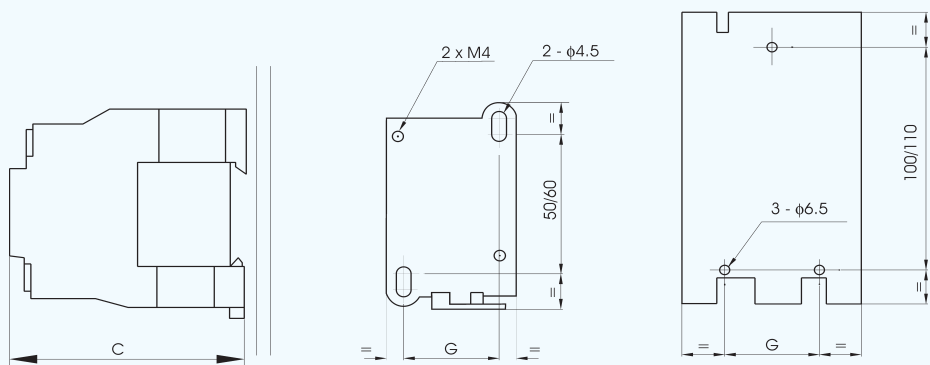


TC1-	D09	D12	D18	D22	D25	D32	D38	D40	D50	D65	D80~D95
TP1-	DC09	DC12	-	-	DC25	-	-	-	-	-	-
W (3 Pole)	45	45	45	45	56	56	56	75	75	75	85
W* (4 Pole)	45	45	-	-	56	-	-	85	85	85	96
H (3/4 Pole)	74	74	74	74	84	84	84	127	127	127	127
D (3/4 Pole)	80	80	85	85	94	99	99	114	114	114	120
D' (3/4 Pole)	10	10	10	10	10	10	10	12	12	12	12
D'' (3/4 Pole)	113	113	118	118	126	131	131	145	145	145	153
D''' (3/4 Pole)	120	120	125	125	135	140	140	-	-	-	-
D'''' (3/4 Pole)	133	133	138	138	147	152	152	166	166	166	173
D*(008)	-	-	-	-	-	-	-	124	124	124	140

Panel Mounting Reference TC1-D09~D95 TP1-DC09/DC12/DC25

TC1-D09~D38 TP1-DC09/DC12/DC25

TC1-D40~D95

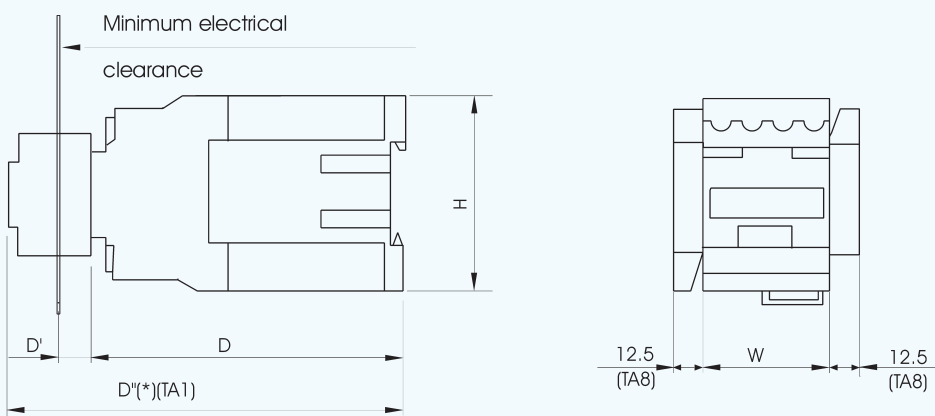


TC1-	D09	D12	D18	D22	D25	D32	D38	D40	D50	D65	D80	D95
TP1-	DC09	DC12	-	-	DC25	-	-	-	-	-	-	-
C	80	80	85	85	93	98	98	114	114	114	125	125
G	35	35	35	35	44	44	44	40	40	40	40	40

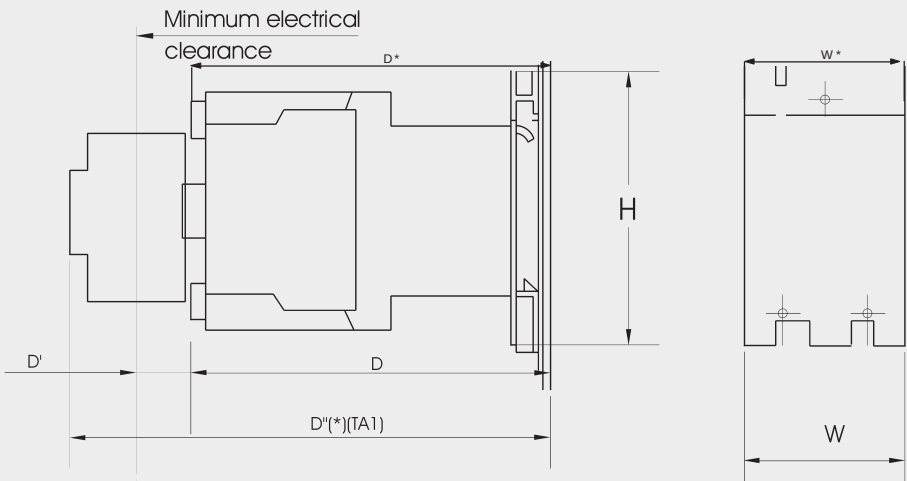
robusta (9A ~ 95A)

Contactors' Dimensions with DC operating coil

Product Dimensions
TP1-D09~D3810



TP1-D4011~D80



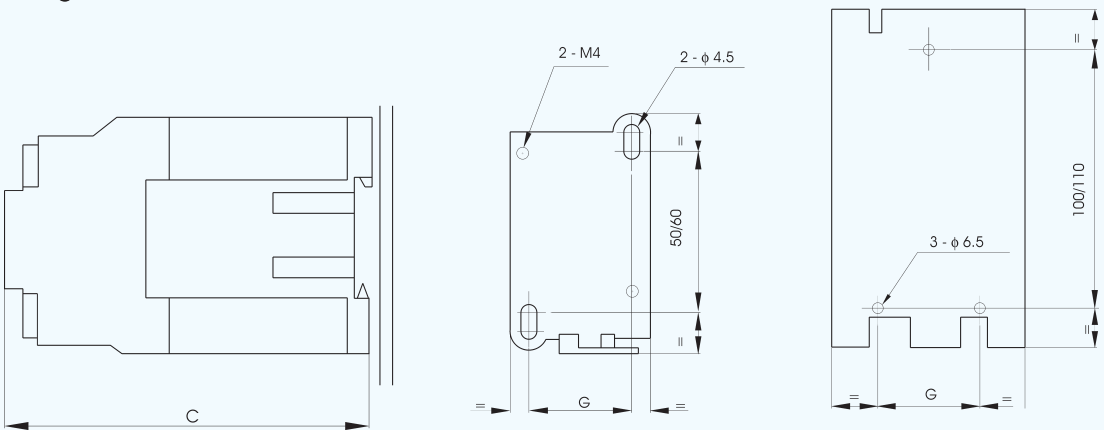
TP1-	D09	D12	D18	D22	D25	D32	D38	D40	D50	D65	D80
W (3 Pole)	45	45	45	45	56	56	56	75	75	75	85
W* (4 Pole)	45	45	-	-	56	-	-	85	85	85	96
H (3/4 Pole)	74	74	74	74	84	84	84	127	127	127	127
D (3/4 Pole)	115	115	120	120	130	135	135	171	171	171	181
D' (3/4 Pole)	10	10	10	10	10	10	10	12	12	12	12
D'' (3/4 Pole)	148	148	153	153	163	168	168	202	202	202	210
D*(008)	-	-	-	-	-	-	-	181	181	181	191

Panel Mounting Reference

TP1-D09~D38

TP1-D40~D80

Mounting



TP1-	D09	D12	D18	D22	D25	D32	D38	D40	D50	D65	D80
C	115	115	120	120	130	135	135	171	171	171	181
G	35	35	35	35	40	40	40	40	40	40	40

robusta (Control Relays)

Control Relays Characteristics

Environment

Type			TCA2DN	TCA3DN
Conforming to Standards			IEC 60947-1, 60947-5, VDE 0660	
Approvals			UL,CSA	
Degree of Protection	Protection against direct finger contact		Conforming to VDE 0106	
Ambient air Temperature around the device	Storage	°C	-40....+80	
	Operation	°C	-5.....+55	
	Permissible for operation at U _c	°C	-25....+70	
Maximum operating altitude	Without derating	m	3000	
Operating positions	Without derating		±30° possible, in relation to normal vertical mounting plane	
Shock Resistance	Control relay open		10g	8g
1/2 sine wave for 11 ms	Control relay closed		12g	11g
Vibration Resistance 5.....300Hz	Control relay open		5g	2g
	Control relay closed		10g	3g
Cabling	Flexible or solid cable with or without cable end	mm ²	Min: 1x1;	Max.: 2x2.5

Control Circuit Characteristics

Type			TCA2DN	TCA3DN
Rated Insulation Voltage (UI)	Conforming to IEC 947-1 & IEC 947-5	V	690	
	Conforming to CSA C22-2 no. 14	V	600	
Rated control circuit voltage (U _c)		V	12...600	
Permissible voltage variation	Operational		With 50 or 60 Hz coil: 0.8 ... 1.1 U _c With 50/60Hz coil: 0.85 ... 1.1 U _c	With standard Hz coil: 0.85 ... 1.1 U _c With wide range coil: 0.7 ... 1.25 U _c
Voltage limits	Drop-out		0.3 .. 0.6 U _c	0.1 .. 0.65 U _c
Average consumption at 20°C	~ 50 Hz	VA	Inrush: 60, Sealed:7	-
	~ 60 Hz	VA	Inrush: 70, Sealed:7.5	-
	~ 50/60 Hz	VA	Inrush: 70, Sealed:8	-
	With standard coil	W	-	Inrush or Sealed: 9
	With wide band coil	W	-	Inrush or Sealed: 11
Operating Time (at rated control circuit voltage and at 20°C)	Between coil energisation and opening of the NC contacts	ms	6...20	35...43
	- closing of the NO contacts	ms	12...22	40...48
	Between coil de-energisation and opening of the NO contacts	ms	4...12	6...14
	closing of the NC contacts	ms	6...17	11...19
Short supply failures	Max. duration without affecting hold-in of device	ms	2	2
Maximum operating rate	In operating cycles per second		3	3
Mechanical Life at U _c (mechanical durability)	In millions of operating cycles		20	-
	With: 50 or 60 Hz coil			
	50/60 Hz coil (at 50 Hz)		30	-
	Standard coil		-	30
	Wide band coil		-	30

Operating Power of Contactor with AC Supply categories AC-14 & AC-15

Electrical life (upto 3600 operating cycles/hr) on an inductive load such as the coil of an electromagnet: making power (cosφ 0.7)
- 10 times the power broken (cos φ 0.4)

	V	24	48	110/127	220/230	380/400	440	600
1 million operating cycles	VA	150	300	400	480	500	500	500
3 million operating cycles	VA	80	170	250	290	320	320	320
10 million operating cycles	VA	30	65	90	120	130	130	130
Occasional making capacity	VA	1200	2600	7000	13000	15000	13000	9000

- Breaking limit of contacts valid for maximum of 50 operating cycles at 10s intervals(breaking power=making power x cosφ 0.7)
- Electrical life of Contacts:
 - for 1 million operating cycles (2a);
 - for 3 million operating cycles (2b);
 - for 10 million operating cycles (2C)
- Thermal limit

Operating Power of Contactor with DC Supply categories DC-13

Electrical life (upto 1200 operating cycles/hr) on an inductive load such as the coil of an electromagnet without economy resistor, the time constant increasing with the power.

	V	24	48	110	220	440	600
1 million operating cycles	VA	120	90	75	68	61	58
3 million operating cycles	VA	70	50	38	33	28	27
10 million operating cycles	VA	25	18	14	12	10	9
Occasional making capacity	VA	1000	700	400	260	220	170

- Electrical life of Contacts:
 - for 1 million operating cycles (2a)
 - for 3 million operating cycles (2b)
 - for 10 million operating cycles (2C)
- Breaking limit of contacts valid for maximum of 20 operating cycles at 10s intervals and with current passing for 0.5s per operating cycle.
- Thermal limit

robusTa (Control Relays)

Control Relays Selection / Dimensions



TCA2-DN●●-XX



TCA3-DN●●-XX

Control Relays (AC)

Contacts		Catalog Number
NO	NC	
2	2	TCA2-DN22-XX
3	1	TCA2-DN31-XX
4	0	TCA2-DN40-XX

Replace XX with voltage code from table - 7

Table-7 : XX-AC Coil Voltages

Volts AC	24	48	110	120	208	220	230	240	277	380	400	415	440	480	575	600
50 Hz	B5	E5	F5			M5	P5	U5		Q5	V5	N5	R5			
60 Hz	B6	E6	F6	G6	L6	M6		U6	W6	Q6			R6	T6	S6	X6
50/60 Hz	B7	E7	F7	G7		M7	P7	U7		Q7	V7	N7	R7			

Control Relays (DC)

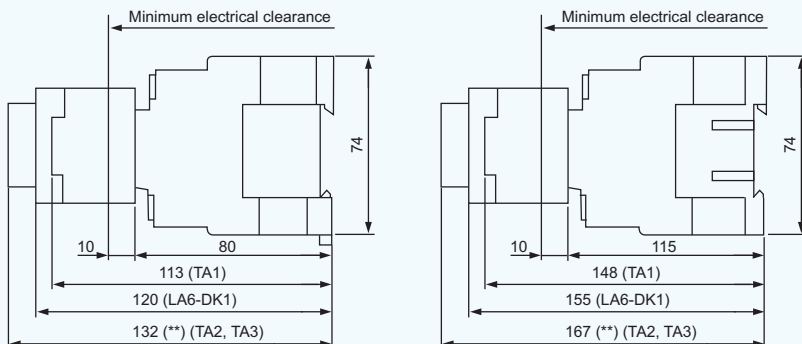
Contacts		Catalog Number
NO	NC	
2	2	TCA3-DN22-XX
3	1	TCA3-DN31-XX
4	0	TCA3-DN40-XX

Replace XX with voltage code from table - 8

Table - 8: XX-DC Coil Voltages

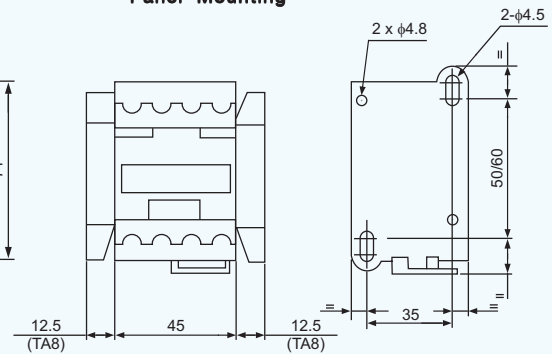
Volts DC	12	24	48	72	110	125	220	250	440
	JD	BD	ED	SD	FD	GD	MD	UD	RD

Independent Mounting

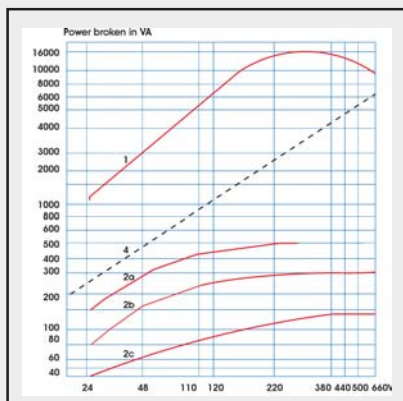


** + 4mm with lead sealing kit

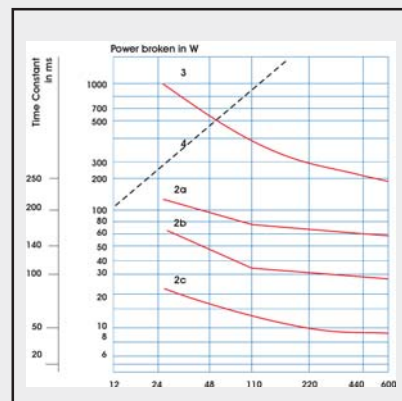
Panel Mounting



AC Supply categories AC-14 & AC-15



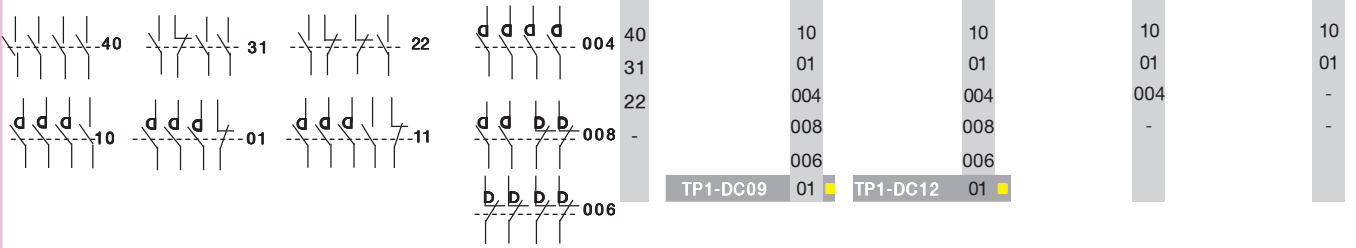
DC Supply categories DC-13



robusta (9A ~ 95A) / Control Relays

Synopsis - Contactors / Control Relays

Conforming to
IEC-VDE-BS-IS
For other standards, please refer to us

Code		AC				
		DC				
						
Maximum rated operational voltage	660V	690V	690V	690V	690V	
Maximum rated current for motor control (3 phase 440V, 50-60Hz, for AC3 Duty)	AC 15 duty (IEC 60947-5-1) AC 11 duty (IEC 851) 6A at 500V	9 A	12 A	18 A	22 A	
Maximum standard power rating for motor control for AC3 Duty $\theta < 55^{\circ}\text{C}$, 415V		Kw / hp 4 / 5.5	Kw / hp 5.5 / 7.5	Kw / hp 9 / 12.5	Kw / hp 11/15	
3 phase AC3  UL-Continuous Current	 230V HP	-	2	3	5	-
	 460/480V HP	-	5	7.5	10	-
	 575/600V HP	-	7.5	10	15	-
Mounting position (w.r.t. normal vertical mounting plane)*	+ 30 °	+ 30°	+ 30°	+ 30°	+ 30°	
Maximum thermal current I _{th} ($\theta < 40^{\circ}\text{C}$)	10 A	25 A	25 A	32 A	32 A	
Maximum operating rate (operations / hr)	AC 10800 DC 3600	3600 3600	3600 3600	3600 3600	3600 3600	
Average coil consumption (inrush / sealed)	TC1-D { 50 Hz 60 Hz 50 / 60 Hz	60 / 7 VA 70/7.5 VA 70 / 8 VA	60 / 7 VA 70/7.5 VA 70 / 8 VA	60 / 7 VA 70 / 7.5 VA 70 / 8 VA	60 / 7 VA 70 / 7.5 VA 70 / 8 VA	
		TP1-D TP1-DC DC 9 / 9W 9/9W 150/2.75W 9/9W 150/2.75W 9 / 9W 9 / 9W				
Power dissipation per pole at	AC1 AC3	1.56W 0.20W	1.56W 0.20W	1.56W 0.36W	2.5W 0.80W	2.5W 0.80W
Mechanical life (in millions of operations)	TC1-D 50 or 60 Hz TC1-D (50/60Hz)/TP1-DC TP1-D	30 20 30	20 15/15 30	20 15/15 30	20 15/- 30	20 15/- 30
Power contact terminal capacity mm ²		2.5	4	4	6	6
Overall dimensions in mm	TC1-D					
Projection (TCA2-D/TC1-D/TP1-DC)	TP1-DC	80mm	80mm	80mm	85mm	85mm
Over-all dimensions in mm	TP1-D					
Projection (TCA3-D/TP1-D)		115mm	115mm	115mm	120mm	120mm
Weight (TC1-D/TP1-D/TP1-DC)	kg		0.32/0.58/0.32	0.32/0.60/0.32	0.35/0.85/-	0.35/0.85/-
Weight (TCA2/TCA3)	kg	0.32/0.58				

For Contactor Type		Coil Reference	Coil Selection Chart																											
			Replace with ■ or ■ following codes																											
		Volts →	12	24	48	72	110	120	125	208	220	230	240	250	277	380	400	415	440	480	575	600								
TC1-D09-22		TX1-D2 ■	50 Hz		B5	E5		F5																						
TC1-D25-38		TX1-D4 ■	60 Hz		B6	E6		F6	G6		L6	M6		U6		W6	Q6		N6		F6	T6	S6	X6						
TC1-D40-95		TX1-D6 ■	50/60 Hz		B7	E7		F7	G7			M7	P7	U7			Q7	V7	N7		R7									
TP1-D09-22		TX4-D2 ■			BD	ED	SD	FD		GD		MD	PD		UD		QD	VD	ND	RD										
TP1-D25-38		TX4-D4 ■			BD	ED	SD	FD		GD		MD	PD		UD		QD	VD	ND	RD										
TP1-D40-80		TX4-D6 ■			BD	ED	SD	FD		GD		MD	PD		UD		QD	VD	ND	RD										
TP1-DC09-12		TX4-DC2 ■			BD	ED		FD				MD																		
TP1-DC25		TX4-DC4 ■			BD	ED		FD				MD																		

TC1-D25	● ■	TC1-D32	● ■	TC1-D38	● ■	TC1-D40	● ■	TC1-D50	● ■	TC1-D65	● ■	TC1-D80	● ■	TC1-D95	● ■
TP1-D25	● ■	TP1-D32	● ■	TP1-D38	● ■	TP1-D40	● ■	TP1-D50	● ■	TP1-D65	● ■	TP1-D80	● ■		
10		10		10		-		-		-		-		-	
01		01		01		11		11		11		11		11	
004		-		-		004		-		004		004		-	
008		-		-		008		-		008		008		-	
006		-		-				-						-	
TP1-DC25	01 ■														

690V	690V	690V	690V	690V	690V	690V	690V
25 A	32 A	38 A	40 A	50 A	65 A	80 A	95 A
Kw / hp	Kw / hp	Kw / hp	Kw / hp	Kw / hp	Kw / hp	Kw / hp	Kw / hp
11 / 15	15 / 20	18.5/25	22 / 30	25 / 35	37 / 50	45 / 60	45 / 60
7.5	10	-	10	15	20	25	25
15	20	-	30	40	50	60	60
20	25	-	30	40	50	60	60
+ 30°	+ 30°	+ 30°	+ 30°	+ 30°	+ 30°	+ 30°	+ 30°
40 A	50 A	50 A	60 A	80 A	80 A	125 A	125 A
3600	3600	3600	3600	3600	3600	3600	3600
3600	3600	3600	3600	3600	3600	3600	-
90 / 7.5 VA	90 / 7.5 VA	90 / 7.5 VA	200 / 20 VA	200 / 20 VA	200 / 20 VA	200 / 20 VA	200 / 20 VA
100 / 8.5 VA	100 / 8.5 VA	100 / 8.5 VA	200 / 22 VA	200 / 22 VA	200 / 22 VA	200 / 22 VA	200 / 22 VA
100 / 8.5 VA	100 / 8.5 VA	100 / 8.5 VA	245 / 26 VA	245 / 26 VA	245 / 26 VA	245 / 26 VA	245 / 26 VA
11/11W <u>250/3.5W</u>	11 / 11W	11 / 11W	22 / 22W	22 / 22W	22 / 22W	-	-
3.2W	5W	5W	5.4W	9.6W	6.4W	12.5W	12.5W
1.25W	2W	2W	2.4W	3.7W	4.2W	5.1W	7.2
16	16	16	16	16	16	10	10
12/12	12/-	12/-	6/-	6/-	6/-	4/-	4/-
25	25	25	20	20	20	20	-
10	10	10	25	25	25	50	50
							
93mm	98mm	98mm	114mm	114mm	114mm	125mm	125mm
							
130mm	135mm	135mm	171mm	171mm	171mm	181mm	
0.505/0.88/0.505	0.525/0.88/-	0.525/0.88/-	1.15 / 2.1/-	1.15 / 2.12 /-	1.15 / 2.16/ -	1.5 / 2.22 /-	1.5 / - /-

B

robusta (115A ~ 800A)

3 & 4 Pole Contactors Characteristics

General Characteristics

Type		Unit	LC1-FDP115A-800A, LC1FDP1154A-8004A
Rated Insulation Voltage (Ui)			
	IEC 60947-4-1	V	1500
Conforming to Standards			NFCEN60947, VDE0660, BSEN60947, JEM1038, IEC60947-1 & IEC60947-4
Approvals			UL*, CSA, IEC
Protective treatment	Standard Version		"TH"
Ambient air temperature	Storage	°C	-60 to +80
(around the device)	Operation	°C	-5 to +55 (0.8 to 1.1 Uc)
	Permissible	°C	-50 to +70, for operation at Uc
Maximum operating altitude	Without derating	Mtr.	3000
Operating position	Without derating		+30° possible, in relation to normal vertical mounting plane

* 4 Pole contactor under UL approval

Pole Characteristics

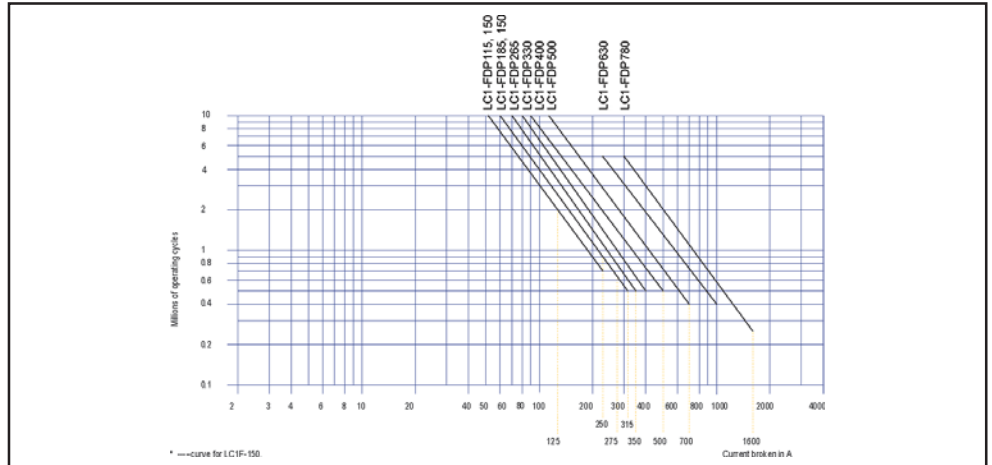
TYPE	LC1-FDP	UNIT	115A	150A	185A	225A	265A	330A	400A	500A	630A	780A	800A
Number of Poles (Power)			3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4
Rated current (Ie) in AC-3 $\theta < 55^\circ\text{C}$		A	115	150	185	225	265	330	400	500	630	780	800
Rated operating voltage upto		V	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency limits of the operating current		Hz	25-200	25-200	25-200	25-200	25-200	25-200	25-200	25-200	25-200	25-200	25-200
Rated thermal current (Ith) $\theta < 40^\circ\text{C}$		A	200	250	275	315	350	400	500	700	1000	1600	1000
Rated making capacity Irms conforming to IEC-60947-4		A	1300	1700	2100	2460	2940	3600	4500	5550	6740	8550	-
Rated breaking capacity Irms conforming to IEC-60947-4	220-440V	A	1300	1500	1800	2050	2450	3000	4000	5000	6300	7100	-
	500V	A	1100	1200	1600	1850	2200	2810	3500	4500	5400	6100	-
	690V	A	900	1100	1200	1350	1700	2350	3050	3560	4600	5200	-
Average impedance per pole at Ith & 50 Hz		MILLI Ω	0.4	0.4	0.36	0.36	0.32	0.28	0.28	0.18	0.12	0.1	0.12
Power dissipation per pole for above operational current AC-3		W	6	9	12	18	22	31	45	45	48	60	48
Tightening Torque	Power Circuit	Nm	10	18	18	35	35	35	35	35	58	58	58
Cabling													
Maximum CSA													
No. of Bars			2	2	2	2	2	2	2	2	2	2	2
Bar		mm	20x3	25x3	25x3	32x4	32x4	30x5	30x5	40x5	60x5	100x5	60x5
Cable with Lug		mm	95	120	150	185	240	240	2x150	2x240	-	-	-
Cable with connector		Sqmm	95	120	150	185	240	-	-	-	-	-	-
Bolt Diameter		Sqmm	6	8	8	10	10	10	10	10	12	2xDia 14	12

Control Circuit Characteristics

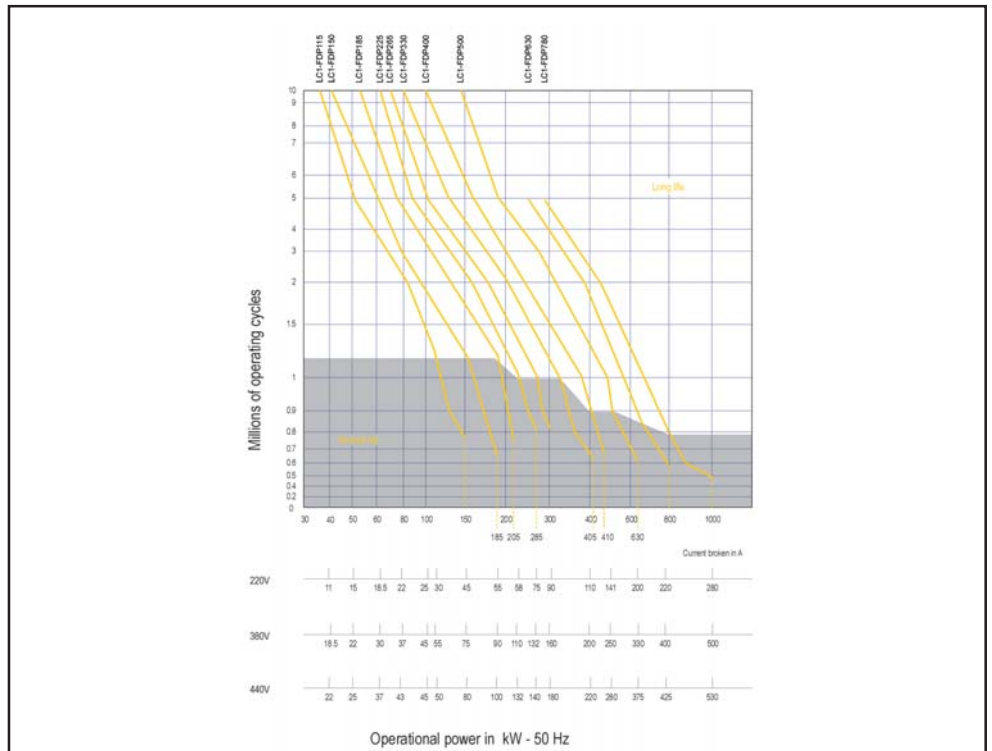
TYPE (LC1-F)		UNIT	115A	150A	185A	225A	265A	330A	400A	500A	630A	780A	800A
Rated control circuit voltage (Uc)	50 or 60 Hz	V	24...600							48...600	48...600	110...500	48...600
Control voltage limits	Operational		0.85 - 1.10Uc							0.85-1.10Uc	0.85-1.10Uc	0.85-1.10Uc	0.85-1.10Uc
Temperature $\theta < 55^\circ\text{C}$	Drop out		0.35 - 0.55Uc							0.3-0.5Uc	0.25-0.5Uc	0.2-0.4Uc	0.25-0.5Uc
Average consumption at 20 °C and at Uc, 50/60 Hz coil	Operational												
Average consumption at 20 °C and at Uc, AC 50 / 60hz	In rush 50 Hz coil	VA	550	550	805	805	1200	700	1075	1100	1650	2100	1900
	In rush 60 Hz coil	VA	660	660	970	970	1445	700	1075	1100	1650	2100	1900
	In rush 40 - 400 Hz coil	VA	-	-	-	-	700	700	1075	1100	1650	2100	1900
	In rush Cos ϕ		0.28	0.28	0.3	0.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Sealed 50 Hz coil	VA	45	45	55	55	95	10	15	18	22	50	15
	Sealed 60 Hz coil	VA	55	55	66	66	110	10	15	18	22	50	15
	Sealed 40 - 400 Hz coil	VA	-	-	-	-	10	10	15	18	22	50	22
	Sealed Cos ϕ		0.28	0.28	0.3	0.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Average operating time at Uc	Closing time "C"	msec	23-35	23-35	20-35	20-35	30-65	30-65	40-75	40-75	40-80	40-80	40-80
	Opening time "O"	msec	5-15	5-15	7-15	7-15	100-170	100-170	100-170	100-170	100-200	130-230	100-200
Mechanical life Uc (Mechanical durability) in millions of operating cycles	50 or 60 Hz coil	Cycles	10	10	10	10	10	10	10	10	5	5	5
	50/60 Hz coil	Cycles	10	10	10	10	10	10	10	10	5	5	5
Maximum operating rate	In operating cycle/hour		2400	2400	2400	2400	2400	2400	2400	2400	1200	600	1200
Tightening Torque	Power Circuit Connection	Nm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Cabling													
Minimum / Maximum C.S.A													
Flexible Cable without cable end	1or 2 Conductors	Sqmm	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Flexible Cable with en	1 Conductor	Sqmm	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Flexible Cable wiht en	2 Conductors	Sqmm	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5
Solid Cable without cable end	1 or 2 Conductors	Sqmm	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

Contactors' Selection Guide (according to the required electrical life)

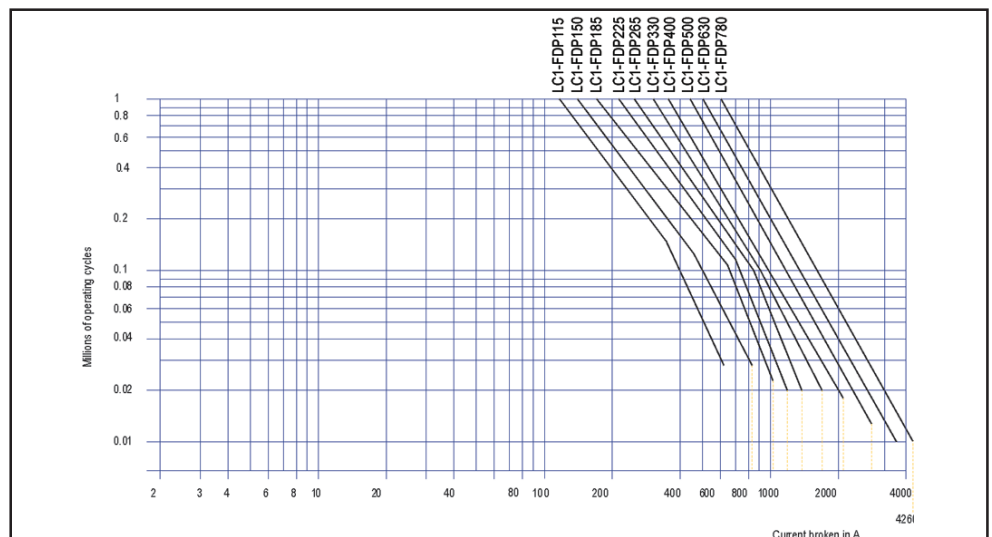
Use in Category AC-1 ($U_e < 440V$).
Control of resistive circuits ($\cos \phi > 0.95$). The current broken (I_b) in category AC-1 is equal to the current (I_e) normally drawn by the load.



Use in Category AC-3 ($U_e < 440V$).
Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor running. The current broken (I_b) in category AC-3 is equal to the current (I_e) normally drawn by the load.



Use in Categories AC-2, AC-4 ($U_e < 440V$). Control of 3-phase asynchronous squirrel cage (AC-4) or slip ring (AC-2) motors with breaking whilst motor stalled. The current broken in category AC-4 is equal to $6 \times I_e$. (I_e =rated operational current of the motor).



robustTa (115A ~ 800A)

Contactors' Specifications, Spare Coils



LC1-FDP115A-XX

3 Pole Contactor (without AC or DC operating coil)

Maximum Current		Maximum HP Rating				Main Pole Configuration		Catalog Number
Inductive A	Resistive AC-3 A	200V	230V	480V	600V	NO	NC	
115	200	30	40	75	100	3	-	LC1-FDP115A-■
150	250	40	50	100	125	3	-	LC1-FDP150A-■
185	275	50	60	125	150	3	-	LC1-FDP185A-■
225	315	50	65	130	155	3	-	LC1-FDP225A-■
265	350	60	75	150	200	3	-	LC1-FDP265A-■
330	400	75	100	200	250	3	-	LC1-FDP330A-■
400	500	100	125	250	300	3	-	LC1-FDP400A-■
500	700	150	200	400	500	3	-	LC1-FDP500A-■
630	1000	250	300	600	800	3	-	LC1-FDP630A-■
780	1600	Current rated				3	-	LC1-FDP780A-■
800	1000	Current rated				3	-	LC1-FDP800A-■

Note : 115A - 630A (UL) & 115A - 780A (CSA) approved (only for Standard Fault Ratings)

4 Pole Contactor (without AC or DC operating coil)

Maximum Current		Maximum HP Rating 3 Phase				Main Pole Configuration		Catalog Number
Inductive A	Resistive AC-3 A	200V	230V	480V	600V	NO	NC	
115	200	30	40	75	100	4	-	LC1-FDP1154A-■
150	250	40	50	100	125	4	-	LC1-FDP1504A-■
185	275	50	60	125	150	4	-	LC1-FDP1854A-■
225	315	50	65	130	155	4	-	LC1-FDP2254A-■
265	350	60	75	150	200	4	-	LC1-FDP2654A-■
330	400	75	100	200	250	4	-	LC1-FDP3304A-■
400	500	100	125	250	300	4	-	LC1-FDP4004A-■
500	700	150	200	400	500	4	-	LC1-FDP5004A-■
630	1000	250	300	600	800	4	-	LC1-FDP6304A-■
780	1600	Current Rated				4	-	LC1-FDP7804A-■

- If Contactors are required with coil replace ■ with coil codes given below
- 4P Contactors' (UL)/(CSA) listing under process

Coils (Replace ■ with coil code)

For Contactors	Catalog Number	
	AC	DC
F115A - F150	LX1FFXX	LX4FFXX
F185 - F225	LX1FGXX	LX4FGXX
F265 - F330	LX1FH.2XX	LX4FHXX
F400	LX1FJXX	LX4FJXX
F500	LX1FKXX(3P)LX1FLXX(4P)	LX4FKXX(3P)LX4FLXX(4P)
F630	LX1FLXX	LX4FLXX
F780	LX1FXXX	LX4FXXX
F800	LX4F8XX	LX4F8XX

Replace XX with voltage rating from Table -9 for AC Coil & from table 10 for DC Coil

Table-9: XX-AC Coil Voltages

Contactor	Volts AC	24	48	110	115	120	127	200	208	220	230	240	277	380	400	415	440	480	500	600	660
F115, F150	50 Hz	✓	✓	✓	x	x	✓	x	x	✓	✓	✓	x	✓	✓	✓	✓	x	✓	✓	x
F185, F225	60 Hz	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓
F265, F330	40-400Hz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	x	✓	x	✓	✓	✓	x
F400, F500, F630	40-400Hz	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x
F780	40-400Hz	x	✓	x	x	✓	x	x	x	✓	x	✓	x	x	x	✓	x	✓	x	x	x
F800	40-400Hz	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x

- If 24V, 50Hz Coil is required, replace XX with 24V, 50Hz

Table-10: XX-DC Coil Voltages

Volt DC	24	48	110	120	125	220	240	250	440
F115, F150, F185	✓	✓	✓	x	✓	✓	x	✓	✓
F225, F265, F330	✓	✓	✓	x	✓	✓	x	✓	✓
F115, F150, F185	✓	✓	✓	x	✓	✓	x	✓	✓
F400, F500	✓	✓	✓	x	✓	✓	x	✓	✓
F630	x	✓	✓	x	✓	✓	x	✓	✓
F780	x	x	✓	✓	x	✓	✓	✓	✓
F800	x	x	✓	✓	x	✓	✓	✓	✓

Note : Protected shrouds for main poles available & to be ordered separately from page B-25



LX1-FF-XX

Accessories, Spares



LA9-FF970

Mechanical Interlocks Horizontally Mounted

For Contactor Type	Catalog Number
LC1-FDP115A	LA9-FF970
LC1-FDP150A	
LC1-FDP185A	
LC1-FDP225A	LA9-FG970
LC1-FDP265A	
LC1-FDP330A	
LC1-FDP400A	LA9-FJ970
LC1-FDP500A	
LC1-FDP630A / LC1-FDP800A	
	LA9-FL970

Mechanical Interlocks Vertically Mounted

For Contactor Type	Catalog Number
LC1-FDP115A	LA9-FF4F
LC1-FDP150A	
LC1-FDP185A	
LC1-FDP225A	LA9-FG4G
LC1-FDP265A	
LC1-FDP330A	
LC1-FDP400A	LA9-FH4H
LC1-FDP500A	
LC1-FDP630A / LC1-FDP800A	
LC1-FDP780A	LA9-FJ4J
	LA9-FK4K
	LA9-FL4L
	LA9-FX970*

Main Contact Sets** for 3 Pole Contactor

For Contactor Type	Catalog Number
LC1-FDP115A	LA5-FF431 (F115)
LC1-FDP150A	LA5-FF431 (F150)
LC1-FDP185A	LA5-FG431 (F185)
LC1-FDP225A	LA5-FG431 (F225)
LC1-FDP265A	LA5-FH431 (F265)
LC1-FDP330A	LA5-F400803 (F330)
LC1-FDP400A	LA5-F400803 (F400)
LC1-FDP500A	LA5-F500803 (F500)
LC1-FDP630A	LA5-F630803 (F630)
LC1-FDP780A	LA5-F780801 (F780)***
LC1-FDP800A	LA5-F800803 (F800)

Main Contact Sets** for 4 Pole Contactor

For Contactor Type	Catalog Number
LC1-FDP1154A	LA5-FF441 (F1154)
LC1-FDP1504A	LA5-FF441 (F1504)
LC1-FDP1854A	LA5-FG441 (F1854)
LC1-FDP2254A	LA5-FG441 (F2254)
LC1-FDP2654A	LA5-FH441 (F2654)
LC1-FDP3304A	LA5-F400804 (F3304)
LC1-FDP4004A	LA5-F400804 (F4004)
LC1-FDP5004A	LA5-F500804 (F5004)
LC1-FDP6304A	LA5-F630804 (F6304)
LC1-FDP7804A	LA5-F780801 (F7804)***

* Double mechanical interlock mechanism with 2 interlock, connecting roads and 3 power connecting links

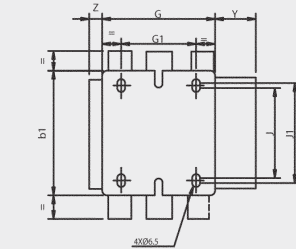
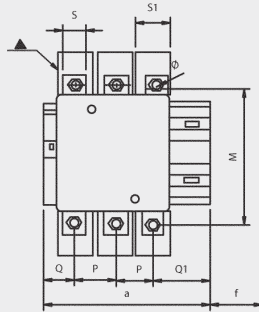
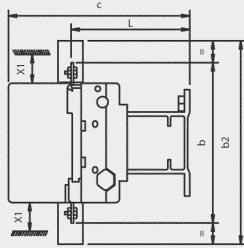
** For 3-pole contact (per pole: 2 fixed contacts and moving contacts, 2 deflectors, 1 back plate, fixing screws and washers).

*** Set of main contacts provided is 1 set of 2 blocks for one pole

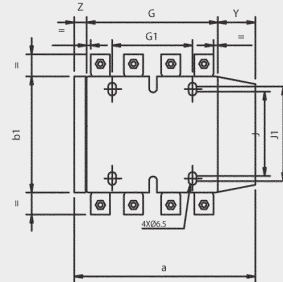
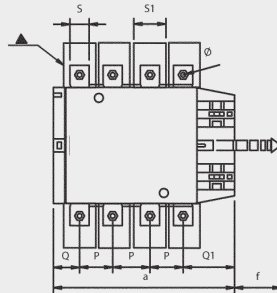
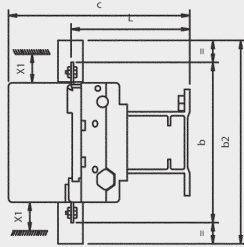
robusta (115A ~ 800A)

Contactors' Dimensions with AC/DC operating coil

LC1-FDP115...330A

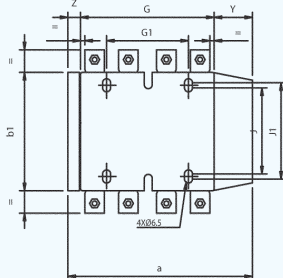
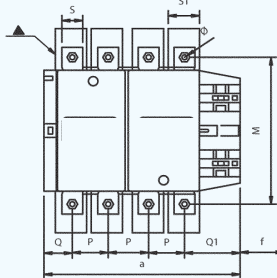
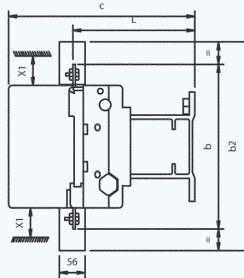


LC1-FDP1154...2654A



f:- minimum distance required for coil removal.
▲ Power terminal protection shroud

LC1-FDP3304A



f:- minimum distance required for coil removal.
▲ Power terminal protection shroud

LC1-	a	b	b1	b2	c	f	G	G1	J	J1	L	M	P	Q	Q1	S	S1	Y	Z	Ø
FDP115A	163.5	162	137	265	172	131	106	80	106	120	107	147	37	29.5	60	15	27	44	13.5	M6
FDP1154A	200.5	162	137	265	172	131	143	80	106	120	107	147	37	29.5	60	15	27	44	13.5	M6
FDP150A	163.5	171	137	301	172	131	106	80	106	120	107	150	40	26.5	57.5	20	34	44	13.5	M8
FDP1504A	200.5	171	137	301	172	131	143	80	106	120	107	150	40	25.5	55.5	20	34	44	13.5	M8
FDP185A	168.5	174	137	305	181	130	111	80	106	120	113.5	154	40	29	59.5	20	34	44	13.5	M8
FDP1854A	208.5	174	137	305	181	130	151	80	106	120	113.5	154	40	29	59.5	20	34	44	13.5	M8
FDP225A	168.5	197	137	364	181	130	111	80	106	120	113.5	172	48	20	51.5	25	44.5	44	13.5	M10
FDP2254A	208.5	197	137	364	181	130	151	80	106	120	113.5	172	48	17	47.5	25	44.5	44	13.5	M10
FDP265A	201.5	203	145	370	214	147	142	96	106	120	141	178	48	39	66.5	25	44.5	38	21.5	M10
FDP2654A	244.5	203	145	370	214	147	190	96	106	120	141	178	48	34	66.5	25	44.5	38	21.5	M10
FDP330A	206	206	145	375	220	147	154.5	96	106	120	147	181	48	43	74	25	44.5	38	20.5	M10
FDP3304A	254	206	145	375	220	147	202.5	96	106	120	147	181	48	43	74	25	44.5	38	20.5	M10

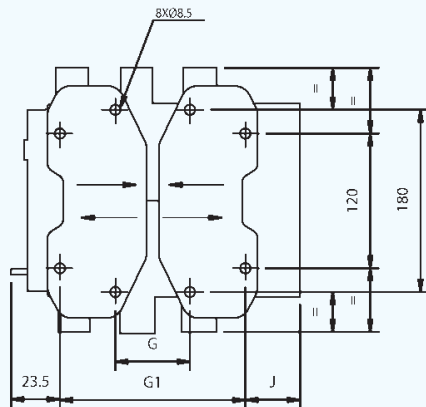
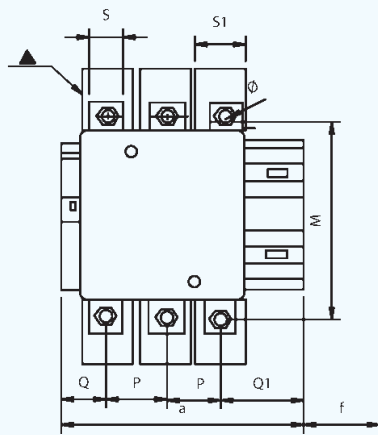
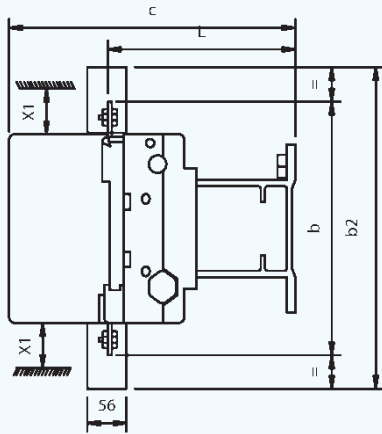
X1(mm) = Minimum electrical clearance according to operating voltage & breaking capacity		
LC1-	200 to 500V	600 to 1000V
FDP115A/1154A	10	15
FDP150A/1504A	10	15
FDP185A/1854A	10	15
FDP225A/2254A	10	15
FDP265A/2654A	10	15
FDP330A/3304A	10	15

robusta (115A ~ 800A)

Contactors' Dimensions with AC/DC operating coil

B

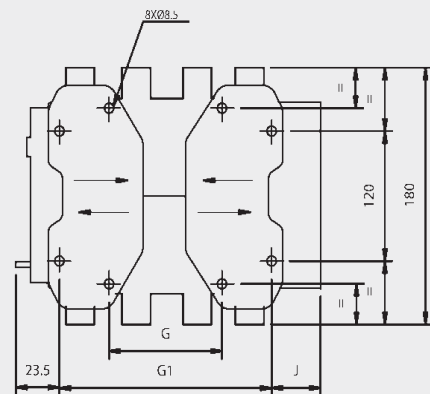
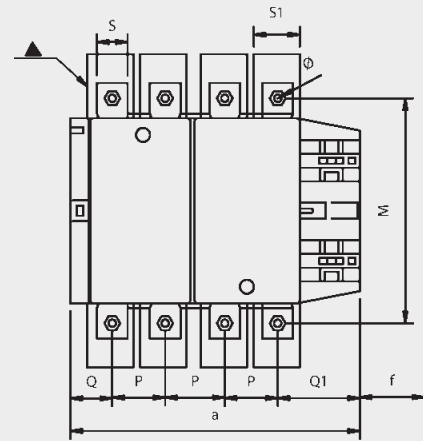
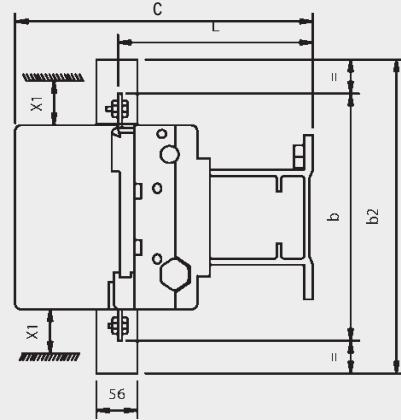
LC1-FDP400A/LC1-FDP500A



f: minimum distance required for coil removal.

▲ Power terminal protection shroud

LC1-FDP4004A



LC1-	a	b	b1	b2	c	f	G*	Gmin	Gmax	G1*	G1min	G1max	J	L	M	P	Q	Q1	S	S1
FDP400A	211	206	209	375	220	119	170	66	102	170	156	192	19.5	145	181	48	43	74	25	44.5
FDP4004A	261	206	209	375	220	119	170	66	150	170	156	240	67.5	145	181	48	43	74	25	44.5
FDP500A	231	238	209	400	235	141	170	66	120	170	156	210	39.5	146	205	55	46	77	30	44.5

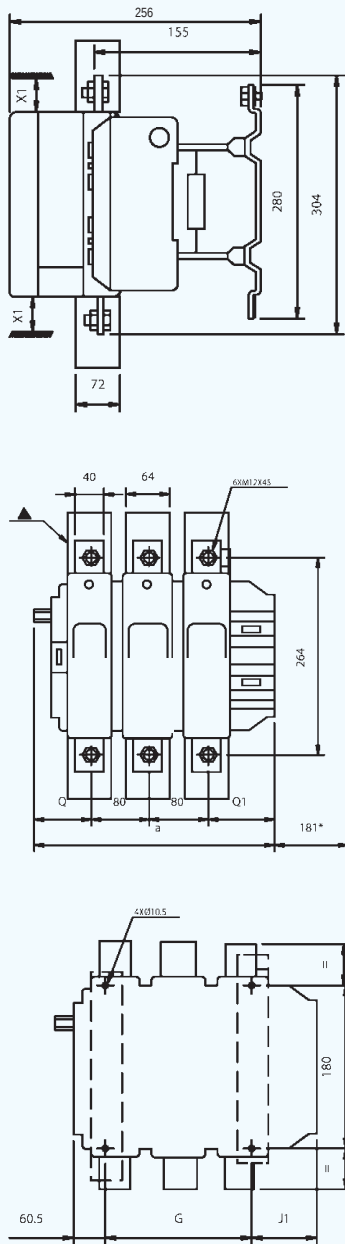
X1(mm) = Minimum electrical clearance according to operating voltage & breaking capacity

LC1-	200 to 500V	600 to 1000V
FDP400A	15	20
FDP500A	15	20

robusta (115A ~ 800A)

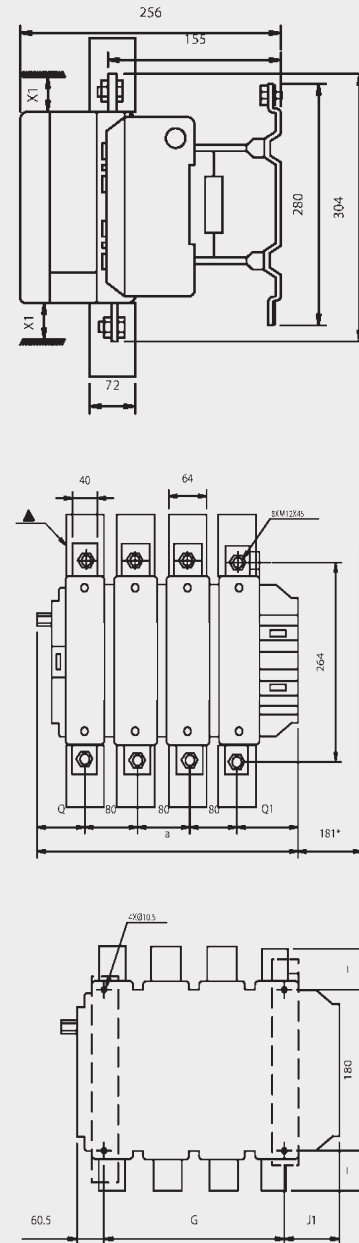
Contactors' Dimensions with AC/DC operating coil

LC1-FDP630A



* - minimum distance required for coil removal
 ▲ Power terminal protection shroud

LC1-FDP5004A/LC1-FDP6304A



LC1-	a	b2	G*	Gmin	Gmax	J1	Q	Q1	S	S1
FDP5004A	389	464	240	150	275	68.5	60	89	25	64
FDP630A	306	464	180	100	195	68.5	60	89	25	64
FDP6304A	389	464	240	150	275	68.5	60	89	30	64
FDP800A	306	464	180	100	195	68.5	60	89	25	64
FDP8004A	389	464	240	150	275	68.5	60	89	30	64

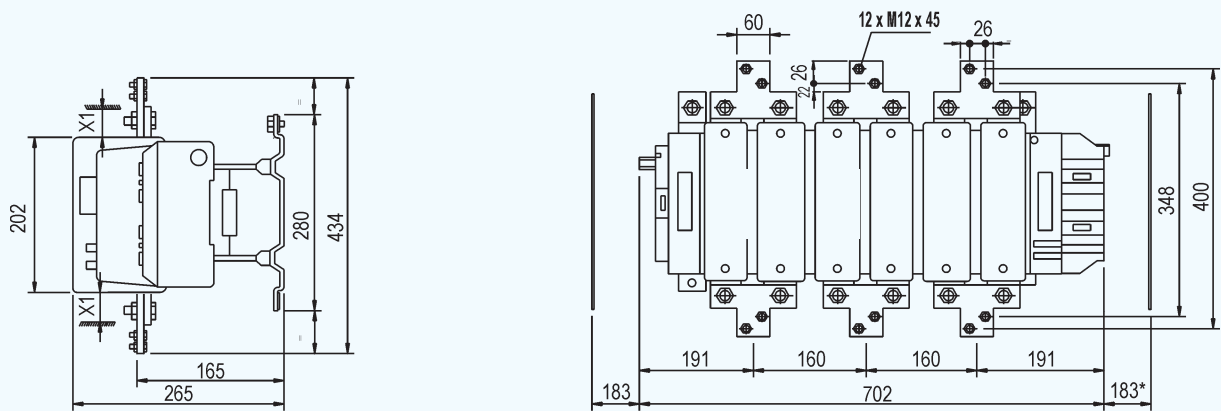
X1(mm) = Minimum electrical clearance according to operating voltage & breaking capacity

LC1-	200 to 500V	600 to 1000V
FDP630A	20	30
FDP5004A	15	20

robusTa (115A ~ 800A)

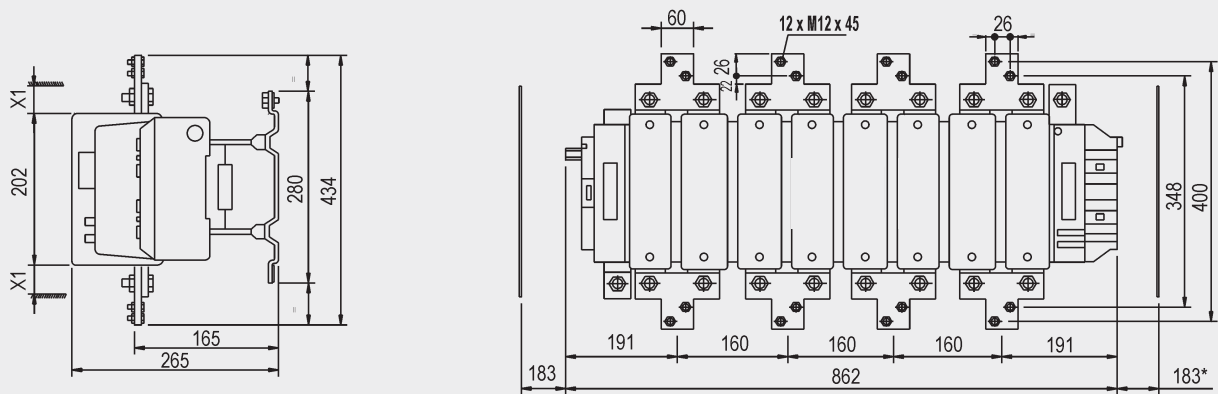
Contactors' Dimensions with AC/DC operating coil

LC1-FDP780A



B

LC1-FDP7804A



* - minimum distance required for coil removal

X1(mm) = Minimum electrical clearance according to operating voltage & breaking capacity		
LC1-FDP780A/7804A	200 to 500V	600 to 1000V
	30	35

robusta (115A ~ 800A)

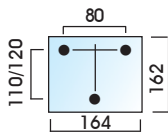
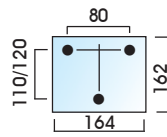
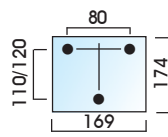
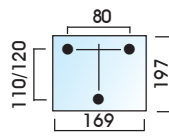
Synopsis - Contactors

Conforming to IEC-VDE-BS-IS
For other standards, please refer to us

Coil Reference (AC) ■																
Contactors	Volts AC	24	48	110	115	120	127	200	208	220	230	240	277	380	400	415
F115, F150	50 Hz	✓	✓	✓	x	x	✓	x	x	✓	✓	✓	✓	✓	✓	✓
F185, F225	60 Hz	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓
F265, F330	40-400Hz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
F400, F500, F630	40-400Hz	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
F780	40-400Hz	x	✓	x	x	✓	x	x	x	✓	✓	✓	x	x	✓	x

Coil Reference (DC) ■								
Volt DC	24	48	110	120	125	220	240	250
F115, F150, F185	✓	✓	✓	x	✓	✓	x	✓
F225, F265, F330	✓	✓	✓	x	✓	✓	x	✓
F115, F150, F185	✓	✓	✓	x	✓	✓	x	✓
F400, F500	x	✓	✓	x	✓	✓	x	✓
F630	x	✓	✓	x	✓	✓	x	✓
F780	x	x	✓	✓	x	✓	✓	✓

Code	A1 A2	AC	LC1-FDP115A+0	LC1-FDP150A+0	LC1-FDP185A+0	LC1-FDP225A+0
		DC				
3 Pole	4 Pole		LC1-FDP1154A+0	LC1-FDP1504A+0	LC1-FDP1854A+0	LC1-FDP2254A+0

Maximum rated operational voltage	690V	690V	690V	690V
Maximum rated current for motor control (3 phase 440V, 50-60Hz, for AC3 Duty)	115A	150A	185A	225A
Maximum standard power rating for motor control for AC3 Duty $\theta < 55^{\circ}\text{C}$, 415V	Kw / hp 59 / 80	Kw / hp 80 / 108	Kw / hp 100 / 136	Kw / hp 110 / 148
3 phase AC3  230V HP  460/480V HP 575/600V HP	40	50	60	75
	75	100	125	130
	100	125	150	150
Mounting position (w.r.t. normal vertical mounting plane)*	+ 30°	+ 30°	+ 30°	+ 30°
Maximum thermal current I _{th} ($\theta < 40^{\circ}\text{C}$)	200A	250A	275A	315A
Maximum operating rate AC (operations / hr)	2400	2400	2400	2400
Average coil consumption (inrush / sealed)	50 Hz	550 / 45 VA	550 / 45 VA	805 / 55 VA
	60 Hz	660 / 55 VA	660 / 55 VA	970 / 66 VA
	40-400 Hz	-	-	-
	DC	560 / 4.5W	560 / 4.5W	800 / 5W
Heat dissipation at	AC	12 to 16W	12 to 16W	18 to 24W
	DC	4.5W	4.5W	5W
Mechanical life (in millions of operations)	50 or 60 Hz	10	10	10
	50 / 60 Hz	-	-	-
Power contact terminal capacity mm ²		95	120	150
Over-all dimensions in mm				
Projection (LC1-F)	165mm	165mm	176mm	176mm

Note: 4P F-Range Contactor (UL) under process.

Coil Reference		AC	DC
①	②	③	④
LX1FF	LX1FG	LX1FH-2	LX1FJ
LX4FF	LX4FG	LX4FH-2	LX4FJ
⑤	⑥	⑦	
LX1FK	LX1FL	LX1FX	
LX4FK	LX4FL	LX4FX	

⑦ - 2 coils in series

DC Coil reference for LC1F800A Contactor		
Control Circuit Voltage	Voltage Code	Reference*
110/120	FW	LX4F8FW
220/240	MW	LX4F8MW
380/400	QW	LX4F8QW

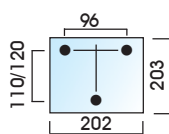
* For AC - Coil will be supplied with rectifier
add suffix DRTE4U in case of FW (110/120) & MW (220/240)
add suffix DRTE4S in case of QW (380/400)

B

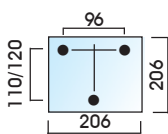
LC1-FDP265A+⑥	LC1-FDP330A+⑥	LC1-FDP400A+⑥	LC1-FDP500A+⑥	LC1-FDP630A+⑥	LC1-FDP780A+⑦	LC1-FDP800A+⑧
LC1-FDP2654A+⑥	LC1-FDP3304A+⑥	LC1-FDP4004A+⑥	LC1-FDP5004A+⑥	LC1-FDP6304A+⑥	LC1-FDP7804A+⑦	

If Contactors are required with DUST COVERS, replace ⑥ with 'DP' e.g. LC1-FDP115A

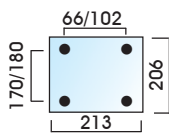
690V	690V	690V	690V	690V	690V	690V
265A	330A	400A	500A	630A	780A*	800A
Kw / hp	Kw / hp	Kw / hp	Kw / hp	Kw / hp	Kw / hp	Kw / hp
140 / 190	180 / 240	220 / 300	280 / 380	375 / 500	425 / 580	450 / 610
75	100	125	200	300	-	-
150	200	250	400	600	-	-
200	250	300	500	800	-	-
+ 30°	+ 30°	+ 30°	+ 30°	+ 30°	+ 30°	+ 30°
350A	400A	500A	700A	1000A	1600A	1000A
2400	2400	2400	2400	1200	600	1200
2400	2400	2400	2400	1200	600	1200
1200 / 95 VA	700 / 10 VA	1075 / 15 VA	1100 / 18 VA	1650 / 22 VA	2100 / 50 VA	1900 / 15 VA
1445 / 110 VA	700 / 10 VA	1075 / 15 VA	1100 / 18 VA	1650 / 22 VA	2100 / 50 VA	1900 / 15 VA
-	700 / 10 VA	1075 / 15 VA	1100 / 18 VA	1650 / 22 VA	2100 / 50 VA	1900 / 15 VA
750 / 5W	750 / 5W	1000 / 6W	1100 / 6W	1600 / 9W	2 x 1000 / 2 x 21W	1900 / 15W
30 to 40W	12	14W	18W	20W	2 x 22W	25W
5W	-	6W	6W	9W	2 x 21W	25W
10	10	10	10	5	5	5
-	10	10	10	5	5	5
240	240	2 x 150	2 x 240	2 x 60 x 5	2 x 60 x 5	2 x 60 x 5



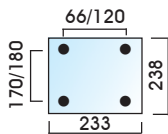
207mm



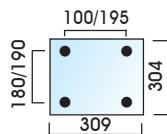
213mm



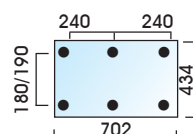
181mm



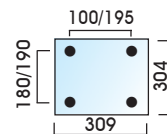
213mm



226mm



250mm



226mm

* LC1F 780/ only listing

Auxilliary Contacts, Time Delay Blocks, Mechanical Latching Blocks

Instantaneous Time Delay Contact Characteristics

Type		UNIT	TA1D	TA2D	TA3D	TA8D
Number of contacts			2 or 4	2	2	2
Rated operational Voltage (Ue)	Upto	V		660		
Rated Insulation Voltage (Ui)	Conforming to IEC 60947-1	V		690		
	Conforming to CSA C22-2 No. 14	V	6 00	-	-	-
Rated Thermal current (Ith)	For ambient temperature <40°C	A		10		
Frequency of operational current		Hz		25....400		
Minimum switching capacity	U min	V		17		
	I min	mA		5		
Short time rating	Permissible for 1s	A		100		
	500ms	A		120		
	100 ms	A		140		
Insulation resistance		MΩ		>10		
Time Delay	Ambient air temperature for operation°C			-40...+70		
(TA2D & TA3D contact blocks)	Repeat accuracy		-	± 5%	± 5%	
Accuracy only valid for setting range indicated on the front face	Drift upto 0.5 million operating cycles			+ 15%	+ 15%	
	Drift depending on ambient air temp.	-		0.25% per°C	0.25% per°C	-
Mechanical Life	In millions of operating cycles		30	5	5	30



TA1-DN22



TA8-DN11



TA1-DN20



TA2-DT2

Standard, instantaneous auxilliary contact blocks

No. of Contacts	Contacts		Snap-On Mounting	Catalog Number
	NO	NC		
4	2	2	To the front of TC1D09~D95 LC1F115A~800A TP1D09~D80 TP1-DC09/12/25 TCA2DN/TCA3DN	TA1DN22
	1	3		TA1DN13
	4	0		TA1DN40
	0	4		TA1DN04
	3	1		TA1DN31
2	1	1		TA1DN11
	2	0		TA1DN20
	0	2		TA1DN02
1	1	0	To the front of TC1D09~D95 TP1D09~D80 TP1DC09/12/25	TA1DN10
	0	1		TA1DN01
2	1	1	To the side of TC1D09~D95 TP1D09~D80 TP1DC09/12/25 TCA2DN / TCA3DN	TA8DN11
	2	0		TA8DN20

Pneumatic Timer Block (Front Mounted)

Description	Contacts		Range	Catalog Number
	NO	NC		
ON Delay	1	1	0.1 ... 3s	TA2-DT0
ON Delay	1	1	0.1 ... 30s	TA2-DT2
ON Delay	1	1	10 ... 180s	TA2-DT4
OFF Delay	1	1	0.1 ... 3s	TA3-DR0
OFF Delay	1	1	0.1 ... 30s	TA3-DR2
OFF Delay	1	1	10 ... 180s	TA3-DR4
On Delay	1	1	1 ... 30s*	TA2-DS2

* With switching time of 40msec + 15 msec between the opening of NC contact to the closing of NO contact (for Star Delta application)

Shrouds, Connectors, Mechanical Interlocks



TCET030SD



LA9-F701

Electronic Timer

Description	Contacts		Range	Catalog Number
	NO	NC		
Star Delta Timer	1	1	0 ... 30s	TCET030SD415VAC

Protective Shroud Covers for 115A ~ 800A Contactors

For 3P Contactor Type	Catalogue Number		
LC1-F115A	LA9-F701	LC1-F115 4A	LA9-F706
LC1-F150A	LA9-F702	LC1-F150 4A	LA9-F707
LC1-F185A		LC1-F185 4A	
LC1-F225A		LC1-F225 4A	
LC1-F265A	LA9-F703	LC1-F265 4A	LA9-F708
LC1-F330A		LC1-F330 4A	
LC1-F400A		LC1-F400 4A	
LC1-F500A		LC1-F500 4A	
LC1-F630A	LA9-F704	LC1-F630 4A	LA9-F709
LC1-F800A		LC1-F800 4A	

Coil Suppressor

Description	Voltage Ratings	Catalog Number
Wire mounting 250VAC/400VDC max	LC1F115~330	LA9F980(BR)
	LC1F400~780	LA9DO9980(BR)

Power Connectors Wire Sets for Reversing Contactors

Catalog Number	With two identical contactors
LC1-FDP115A	LA9-FF976
LC1-FDP150A	LA9-F15076
LC1-FDP185A	LA9-FG976
LC1-FDP225A	LA9-F22576
LC1-FDP265A	LA9-FH976
LC1-FDP330A	LA9-FJ976
LC1-FDP400A	LA9-FJ976
LC1-FDP500A	LA9-FK976
LC1-FDP630A	LA9-FL976
LC1-FDP800A	LA9-F80076

Set of Power Connections - 3 Pole Changeover Contactor Pair - On Request

Contactor Type	With two identical contactors
LC1-F115A	LA9-F11582
LC1-F150A	LA9-F15082
LC1-F185A	LA9-F18582
LC1-F225A	LA9-F22582
LC1-F265A	LA9-F26582
LC1-F330A	LA9-F33082
LC1-F400A	LA9-F40082
LC1-F500A	LA9-F50082
LC1-F630A	LA9-F60082

3 Pole Mechanically Interlocked 115A ~ 800A Contactors - On Request

Contactor Type	Catalog Number
LC1-F115A	LC2-F115A
LC1-F150A	LC2-F150A
LC1-F185A	LC2-F185A
LC1-F225A	LC2-F225A
LC1-F265A	LC2-F265A
LC1-F330A	LC2-F330A
LC1-F400A	LC2-F400A
LC1-F500A	LC2-F500A
LC1-F630A	LC2-F630A

1 “*” Reversers assembled using two contactors of identical rating type etc.

2 Replace “*” with available coils BD for 24V DC, ED for 48V DC and EED for 54V DC

Overload Relays Characteristics

Environment

Conforming to standards			IEC 60947-1, IEC 60947-4-1, NFCEN 60947-4-1, VDE 0660, BSEN 60947
Approvals			UL, CSA, IEC
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Protective treatment	Conforming to IEC 68		"TH"
Ambient air temperature (around the device)	Storage	°C	-60 to +70
	Operation, without derating	°C	-25 to +60
	Max. & Min. operating temp.	°C	-40 to +70
Shock resistance	Permissible acceleration		15gn - 11ms, conforming to IEC 68-2-7
Vibration resistance	Permissible acceleration		6gn, conforming to IEC 68-2-6
Dielectric strength at 50 Hz	Conforming to IEC 255-5	kV	6
Impulse withstand voltage	Conforming to IEC 801-5	kV	6

Electrical Characteristics of Power Circuit

TYPE	TR2-D	UNIT	09301-12316	18321	25322-65361	80363-95365
Tripping class			10	10	10	10
Rated insulation Voltage (Ui)	Conforming to IEC 60947-4-1	V	TR2-D09301~D32355:690V		TR2D40355~D95365:1000V	
Rated operating voltage upto	Conforming to UL, CSA	V	600	600	600	600
Rated impulse withstand voltage (Uimp)		kV	6	6	6	6
Frequency limits	Of the operational current	Hz	0... 400	0...400	0...400	0...400
Setting range	Depending on model	A	0.1...13	16...18	17...70	63...193
Connecting to screw clamp terminal			Minimum / Maximum CSA			
Flexible cable without cable end	1 conductor	mm ²	1.5 / 10	1.5 / 10	4 / 35	4 / 50
Flexible cable with cable end	1 conductor	mm ²	1 / 4	1 / 6	4 / 35	4 / 50
Solid cable without cable end	1 conductor	mm ²	1 / 6	1.5 / 4	4 / 35	4 / 50
Tightening torque		Nm	1.7	2.5	9	9
Connection to spring terminals			Minimum / Maximum CSA			
Flexible cable without cable end	1 conductor	mm ²	1.5 / 4	1.5 / 4	-	-
Solid cable without cable end	1 conductor	mm ²	1.5 / 4	1.5 / 4	-	-

Operating Characteristics

TYPE	TR2-D	UNIT	09301-12316	18321	25322-65361	80363-95365
Temperature Compensation		°C	-20...+60	-30...+60	-30...+60	-20...+60
Tripping Threshold	Conforming to IEC 6047-4-1	A		1.14 + 0.06In		
Sensitivity to phase failure	Conforming to IEC 60947-4-1		Tripping current 25% above In			

Auxiliary Contact Characteristics

Conventional thermal Curent		A			5			
Maximum consumption of operating coil of controlled contactors (Occasional operating cycles of contact 95 - 96)	AC Supply	V	24	48	110	220	380	600
		VA	100	200	400	600	600	600
		V	24	48	110	220	440	-
Short circuit protection	By gG or BS fuse Max. rating or by GB2 circuit-breaker	W	100	100	50	45	25	-
		A	5					
Connection to screw clamp terminal	Minimum / Maximum CSA							
Flexible cable without cable end	1 or 2 conductors	mm ²	1 / 2.5					
Flexible cable withcable end	1 or 2 conductors	mm ²	1 / 2.5					
Solid cable without cable end	1 or 2 conductors	mm ²	1 / 2.5					
Tightening torque	1 or 2 conductors	Nm	1.85					
Connecting to spring terminal	Minimum / Maximum CSA							
Flexible cable without cable end	1 or 2 conductors	mm ²	1 / 2.5					
Solid cable without cable end	1 or 2 conductors	mm ²	1 / 2.5					

Overload Relays - Specifications

Overload Relay (Class 10), Base Plate for Independent Mounting

RELAY REFERENCE	RELAY SETTING RANGE (A)	STANDARD POWER RATINGS OF SPARE MOTORS					AC3 CATEGORY		BACK UP		BASE PLATE* REFERENCE
		220V	380V	415V	440V	660V	FUSE RATING	g1 (A)			
		KW	KW	KW	KW	KW	aM(A)				
TR2-D09301	0.1 to 0.16	-	-	-	-	-	0.25	2	TA7D0964		
TR2-D09302	0.16 to 0.25	-	-	-	-	-	0.5	2			
TR2-D09303	0.25 to 0.4	-	-	-	-	-	1	2			
TR2-D09304	0.4 to 0.63	-	-	-	-	0.37	1	2			
TR2-D09305	0.63 to 1	-	-	-	-	0.55	2	4			
TR2-D09306	1 to 1.6	-	0.37	-	0.55	1.1	2	4			
TR2-D093X6	1.25 to 2	-	0.55	0.75	0.75	1.3	4	6			
TR2-D09307	1.6 to 2.5	0.37	0.75	1.1	1.1	1.5	4	6			
TR2-D09308	2.5 to 4	0.75	1.5	1.5	1.5	3	6	10			
TR2-D09310	4 to 6	1.1	2.2	2.2	2.2	4	8	16			
TR2-D09312	5.5 to 8	1.5	3	3.7	3.7	5.5	12	20	TA7D3264		
TR2-D09314	7 to 10	2.2	4	4	4	7.5	12	20			
TR2-D12316	9 to 13	3	5.5	5.5	5.5	10	16	25			
TR2-D18321	12 to 18	4	7.5	9	9	15	20	35			
TR2-D25322	17 to 25	5.5	11	11	11	18.5	25	50			
TR2-D32353	23 to 32	7.5	15	15	15	-	40	63			
TR2-D32355	28 to 36	9	15	18.5	18.5	-	40	80			
TR2-D40355	30 to 40	10	18.5	22	22	30	40	100			
TR2-D65357	37 to 50	11	22	25	25	37	63	100			
TR2-D65359	48 to 65	18.5	25	30	30	50	63	100	TA7D4064*		
TR2-D65361	55 to 70	20	30	37	37	55	80	125			
TR2-D80363	63 to 80	22	33	40	40	59	80	125			
TR2-D95365	80 to 93	25	45	49	50	80	100	160			
LR1-F105	65 to 105	25	51	55	59	90	0.25	160			
LR1-F125	80 to 125	30	59	59	63	110	125	200			
LR1-F160	100 to 160	45	80	80	90	140	160	250			
LR1-F200	125 to 200	55	90	100	110	160	200	315			
LR1-F250	160 to 250	63	110	129	140	200	250	400			
LR1-F315	200 to 315	80	150	160	160	257	315	500			
LR1-F400	250 to 400	110	185	200	220	335	400	630			
LR1-F500	315 to 500	140	250	257	280	445	500	800			
LR1-F630	400 to 630	180	315	355	375	500	630	800			
*LR1-F800	500 to 800	220	400	425	450	—	-	1000			
*LR1-F1000	630 to 1000	295	500	500	500	—	-	1250			



TR2-D25322



LR1-F105

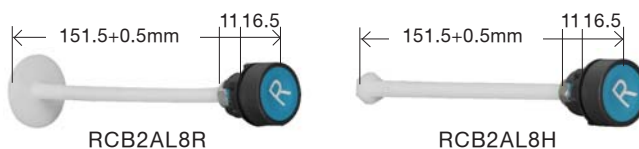
Notes : 1. Protected shrouds for main poles or power poles to be ordered separately for LR1 Relays

2. Standard Fault Ratings   with TR2 Relay.

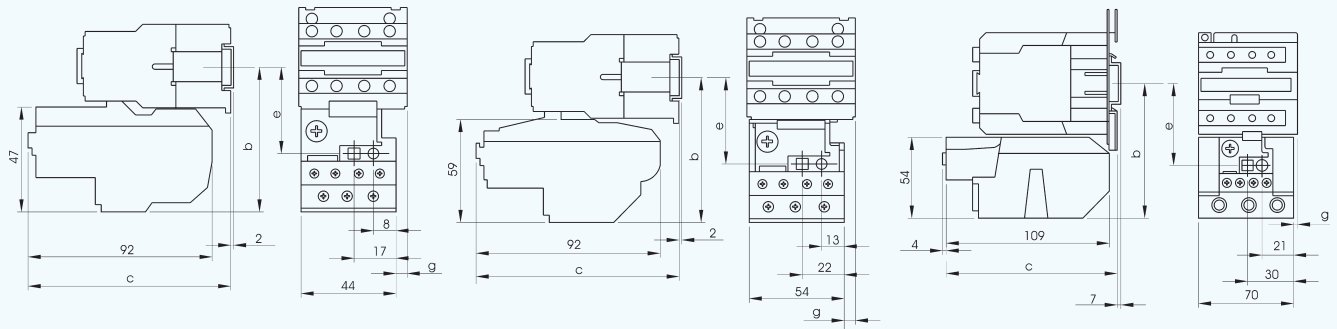
*Under UL/CSA approval

Reset Extended Push Button

Description	Reference
Reset Extended Push Button (Round Type)	RCB2AL8R
Reset Extended Push Button (Hex Type)	RCB2AL8H



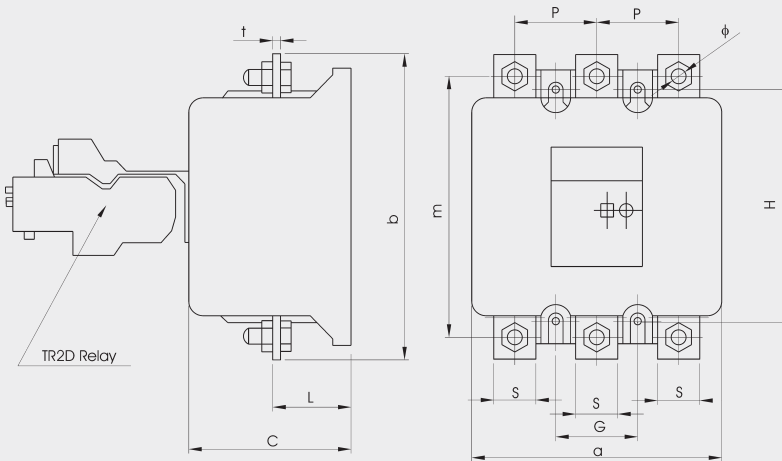
Overload Relays Dimensions, Tripping Curves



TR2D09301 - D25322				
Mounting With	b	c	e	g
TC1D09, D12, D18	81	98	50	0
TP1DC09, DC12				
TC1D25 / TP1DC25	86	108	55	10.7
TC1D32	86	109	55	8.1
TP1D09, D12, D18	81	133	50	0
TP1D25	86	152	55	10.7
TP1D32	86	153	55	8.1

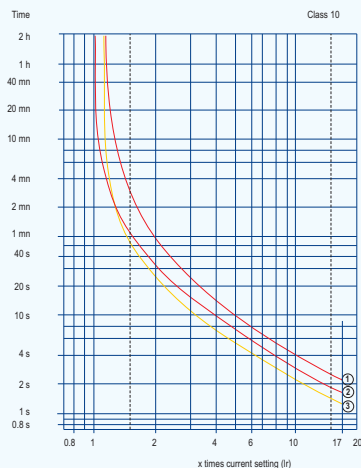
TR2D32353 - 32355				
Mounting With	b	c	e	g
TC1D25/TP1DC25	97.5	98	60	1.5
TC1D32	97.5	98	60	0.5
TP1D25	97.5	155	60	1.5
TP1D32	97.5	155	60	0.5

TR2D40355 - D95365				
Mounting With	b	c	e	g
TC1D40	111	119	72.4	4.5
TC1D50	111	119	72.4	4.5
TC1D65	111	119	72.4	4.5
TC1D80	115.5	123.4	76.9	9.5
TC1D95	115.5	123.4	76.9	9.5
TP1D40	111	176	72.4	4.5
TP1D50	111	176	72.4	4.5
TP1D65	111	176	72.4	4.5
TP1D80	115.5	179.4	76.9	9.5



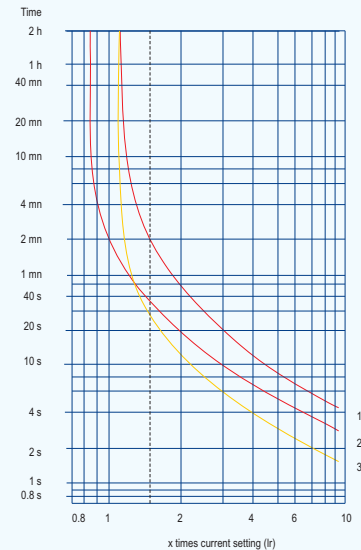
LR1-F	a	b	C	G	H	L	M	P	S	φ	t
105	126	160	81	40	110	56	140	40	20	9	3
125	126	160	81	40	110	56	140	40	20	9	3
160	126	160	81	40	110	56	140	140	20	9	3
200	126	160	81	40	110	56	140	140	20	9	3
250	171	182	120	49	140	44.5	157	48	25	11	4
315	171	182	120	49	140	44.5	157	48	25	11	4
400	171	182	120	49	140	44.5	157	48	25	11	4
500	171	194	120	49	140	45.5	164	55	25	11	5
630	171	194	120	49	140	45.5	164	55	30	11	5

TR2D09 to D95



- ① Balanced operation, 3-phase, from cold state.
- ② Balanced operation, 2-phase, from cold state.
- ③ Balanced operation, 3-phase, after a long period at the set current (hot state).

LR1F105 to F1000





Capacitor Duty Contactors

Capacitor Duty Contactors

Characteristics, Specifications & Dimensions

Why special Capacitor Duty Contactor



TC1-D12K02XX



TC1-D20K11XX



TC1-D60K12XX

Product Range

415V AC rating 10kVAR thru 60 kVAR, available in eight ratings, conforming to IEC - 60947, IS 13947-4-1

Benefits

- Conforms to utilization category AC6b as per IS 13947-4-1/IEC 60947-4-1
- Saves cost of expensive replacements
- High electrical life
- Reduced watt loss during 'ON' condition, saves energy
- High Safety
- No risk of dangerous voltage
- Switching of Capacitor bank in parallel without de-rating
- Less maintenance & down-time



Specifications

KVAR* rating at 50/60 Hz θ < 55°C (3)			Instantaneous Auxiliary Contacts		Maximum Operating Rate	Electrical Life at rated load	Catalog Number
200V 240V	400V 440V	660V 690V	NO	NC	Operations hour	Operations	
5.5	10.0		1	1	240	200000	TC1-D10K11XX TC1-D10K02XX
6.7	12.5	18	1 0	1 2	240	200000	TC1-D12K11XX TC1-D12K02XX
8.5	16.7	25	1 0	1 2	240	200000	TC1-D16K11XX TC1-D16K02XX
10.0	20.0	30	1 0	1 2	240	100000	TC1-D20K11XX TC1-D20K02XX
15.0	25.0	36	1 0	1 2	240	100000	TC1-D25K11XX TC1-D25K02XX
20.0	33.3	48	1	2	240	100000	TC1-D33K12XX
25.0	40.0	58	1	2	100	100000	TC1-D40K12XX
40.0	60.0	92	1	2	100	100000	TC1-D60K12XX

Notes

- (1) Additional Aux. Contact block (Side mounted) type TA8DN11 or TA8DN20 can be mounted, if required
- (2) Contactor Type TC1D12K - TC1D25K : Suitable type clip-on mountin into 35mm DIN rail
Contactor Type TC1D33K-TC1D60K : Suitable type clip-on mounting into 35mm & 75mm DIN rail
- (3) Average temperature over a 24-hour period, in accordance with IEC 70 and 831

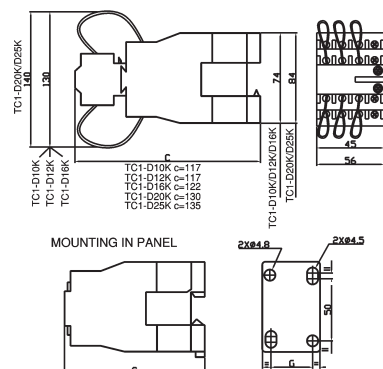
Replace XX with voltage code from table - 1

Table-1 : XX-AC Coil Voltages

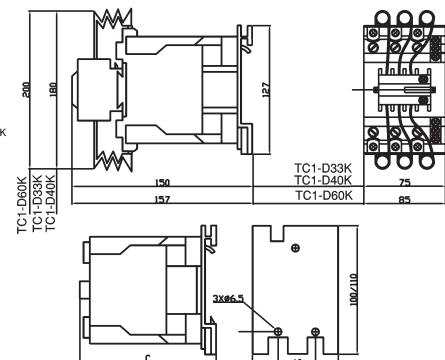
Volts AC	24	48	110	120	208	220	230	240	277	380	400	415	440	480	575	600
50 Hz	B5	E5	F5			M5	P5	U5		Q5	V5	N5	R5			
60 Hz	B6	E6	F6	G6	L6	M6	P6	U6	W6	Q6	V6	N6	R6	T6	S6	X6
50/60 Hz	B7	E7	F7	G7		M7	P7	U7		Q7	V7	N7	R7			

TC1-D10K ,D12K,D16K,D20K,D25K

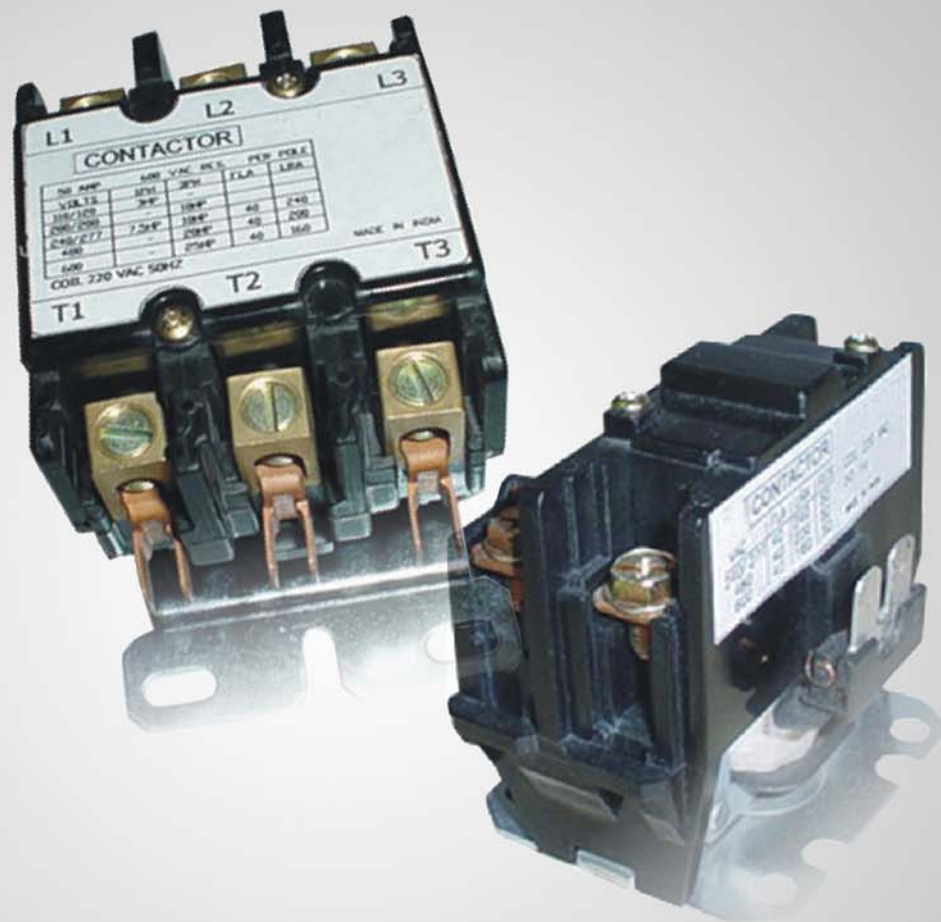
TC1-D33K, D40K, D60K



TC-1	D10K	D12K	D16K	D20K	D25K
C	80	80	85	93	98
G	35	35	35	40	40



TC-1	D33K	D40K	D60K
C	114	114	125



Definite Purpose Contactors

Definite Purpose Contactors

Technical Specifications



TCDP251S-XX

1 Pole without Shunt

Full Load Amps. (Inductive)	Locked Rotor (Per Pole)			Resistive Amps Rating	Catalog Number
	AC 240V AC 277V	AC 480V	AC 600V		
25	150	50	40	30	TCDP251-XX
30	150	75	50	40	TCDP301-XX
40	240	200	160	50	TCDP401-XX

1 Pole with Shunt

Full Load Amps. (Inductive)	Locked Rotor (Per Pole)			Resistive Amps Rating	Catalog Number
	AC 240V AC 277V	AC 480V	AC 600V		
25	150	50	40	30	TCDP251S-XX
30	150	75	50	40	TCDP301S-XX
40	240	200	160	50	TCDP401S-XX



TCDP202-XX

2 Pole

Full Load Amps. (Inductive)	Locked Rotor (Per Pole)			Resistive Amps Rating	Catalog Number
	AC 240V AC 277V	AC 480V	AC 600V		
20	120	100	80	30	TCDP202-XX
30	150	125	100	40	TCDP302-XX
40	240	200	150	50	TCDP402-XX

3 Pole*

Full Load Amps. (Inductive)	Locked Rotor (Per Pole)			Resistive Amps Rating	Catalog Number
	AC 240V AC 277V	AC 480V	AC 600V		
20	120	100	80	30	TCDP203-XX
25	150	125	100	35	TCDP253-XX
30	180	150	120	40	TCDP303-XX
40	240	200	160	50	TCDP403-XX

* Auxiliary contact block 1NO + 1NC side mount (TA8DP11) factory fitted available on request.



TCDP203-XX

Replace XX with voltage code from table - 1

Table-1: XX-AC Coil Voltages						
Volt AC	24	120	208	240	277	480
50 Hz	B5	G5	L5	U5	W5	T5
60 Hz	B6	G6	L6	U6	W6	T6

D



Motor Starters

Motor Starters

Non-Reversing, Reversing Starters (NEMA Type)



TE1D●



TE2D●



TA9●

3 Pole Enclosed, Type1, Non-Reversing Starters, Steel Enclosure

Maximum HP Ratings						Catalog Number
1-Phase		3-Phase				
120V	240V	208V	240V	480V	600V	
0.5	1	2	2	5	7.5	TE1D0936■
1	1	3	3	7.5	10	TE1D1236■
1	3	5	5	10	15	TE1D1836■
1.5	3	5	7.5	15	20	TE1D2536■
2	5	7.5	10	20	25	TE1D3236■
3	5	10	10	30	30	TE1D4036■
3	7.5	10	15	30	40	TE1D5036■
5	10	15	20	40	50	TE1D6536■
5	10	20	20	50	60	TE1D8036■

3 Pole Enclosed, Type 1, Reversing Starters, Steel Enclosure

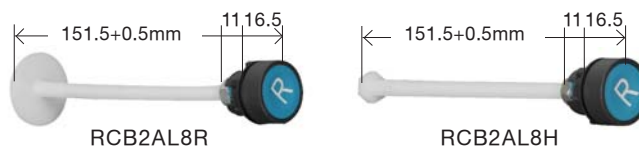
Maximum HP Ratings						Catalog Number
1-Phase		3-Phase				
120V	240V	208V	240V	480V	600V	
0.5	1	2	2	5	7.5	TE2D0936■
1	1	3	3	7.5	10	TE2D1236■
1	3	5	5	10	15	TE2D1836■
1.5	3	5	7.5	15	20	TE2D2536■
2	5	7.5	10	20	25	TE2D3236■
3	5	10	10	30	30	TE2D4036■
3	7.5	10	15	30	40	TE2D5036■
5	10	15	20	40	50	TE2D6536■
5	10	20	20	50	60	TE2D8036■

Push Buttons & Pilot Lights “Quick Kits”

Discription	Catalog Number
ON / OFF Selector Switch	TA9C6
Hand-OFF-Auto Selector Switch	TA9C
Red or Green Pilot Light 120V	TA9P12
SMArt / Stop Push Button	TA9A
ON / OFF Selector Switch with Red or Green P / L	TA9C6P12
SMArt / Stop Push Button with Red Light or Green P / L	TA9AP12
Forward / Reverse / Stop Push Buttons	TA9A1
Hand / OFF / Auto Selector Switch with Red or Green P / L 120V	TA9CP12
SMArt / Stop Push Button with Red or Green Transformer P/L 120V	TA9AP5152
Transformer Red or Green Pilot Light 120V	TA9P5152
Hand / OFF / Auto Selector Switch with Red or Green Transformer P / L 120V	TA9CP5152

Reset Extended Push Button

Description	Reference
Reset Extended Push Button (Round Type)	RCB2AL8R
Reset Extended Push Button (Hex Type)	RCB2AL8H



* Overload Relay not included. Please select from page B-27

Motor Starters

Direct-On-Line Motor Starters (IEC)



BE1



LE1D

Direct-On-Line Motor Starters in Sheet Steel Enclosures

Max. Motor Rating (kW) 3 phase 50 Hz					Overload Relay Range (Amps)	Contactor Reference	Contactor AC3 duty Rating	Starter Catalogue Reference	Recommended Back-up HRC Fuse Rating	
208V	240V	415V	480V	660V					(aM)	(gl)
-	-	0.5	-	0.55	0.63~1.00	TC1D12	12A	BE1T1235■305	2	4
-	0.37	0.55	0.75	1.1	1.00~1.60	TC1D12	12A	BE1T1235■306	2	4
0.37	0.75	1.1	1.1	1.5	1.60~2.50	TC1D12	12A	BE1T1235■307	4	6
0.75	1.5	1.5	1.5	3	2.50~4.00	TC1D12	12A	BE1T1235■308	6	10
1.1	2.2	2.2	2.2	4	4.00~6.00	TC1D12	12A	BE1T1235■310	8	16
1.5	3	3.7	3.7	5.5	5.50~8.00	TC1D12	12A	BE1T1235■312	12	20
2.2	4	4	4	7.5	7.00~10.0	TC1D12	12A	BE1T1235■314	12	20
3	5.5	5.5	5.5	10	9.0~13.0	TC1D12	12A	BE1T1235■316	16	25
4	7.5	9	9	15	12.0~18.0	TC1D18	18A	BE1T1835■321	20	32
5.5	11	11	11	18.5	17.0~25.0	TC1D25	25A	BE1T2535■322	25	50
7.5	15	15	15	-	23.0~32.0	TC1D32	32A	BE1T3235■353	40	63
10	18.5	22	22	30	30.0~40.0	TC1D40	40A	BE1T4035■355	63	-
11	22	25	25	37	37.0~50.0	TC1D50	50A	BE1T5035■357	63	-
18.5	25	30	30	50	48.0~65.0	TC1D65	65A	BE1T6535■359	63	-
20	30	37	37	55	55.0~70.0	TC1D65	65A	BE1T6535■361	80	-
22	33	40	40	59	63.0~80.0	TC1D80	80A	BE1T8035■363	80	-

Direct-On-Line Motor Starters in Plastic Enclosures**

-	-	0.5	-	0.55	0.63~1.00	TC1D12	12A	LE1D123■305	2	4
-	0.37	0.55	0.75	1.1	1.00~1.60	TC1D12	12A	LE1D123■306	2	4
0.37	0.75	1.1	1.1	1.5	1.60~2.50	TC1D12	12A	LE1D123■307	4	6
0.75	1.5	1.5	1.5	3	2.50~4.00	TC1D12	12A	LE1D123■308	6	10
1.1	2.2	2.2	2.2	4	4.00~6.00	TC1D12	12A	LE1D123■310	8	16
1.5	3	3.7	3.7	5.5	5.50~8.00	TC1D12	12A	LE1D123■312	12	20
2.2	4	4	4	7.5	7.00~10.0	TC1D12	12A	LE1D123■314	12	20
3	5.5	5.5	5.5	10	9.0~13.0	TC1D12	12A	LE1D123■316	16	25
4	7.5	9	9	15	12.0~18.0	TC1D18	18A	LE1D183■321	20	32
5.5	11	11	11	18.5	17.0~25.0	TC1D25	25A	LE1D253■322	25	50

3 Pole Enclosed, Type 4, Non-Reversing Starters, Plastic Enclosure

Maximum HP Ratings						Catalog Number
1-Phase		3-Phase				
120V	240V	208V	240V	480V	600V	
1	1	3	3	7.5	10	BE1D123XX
1	3	5	5	10	15	BE1D183XX
1.5	3	5	7.5	15	20	BE1D253XX
2	5	7.5	10	20	25	BE1D323XX

* Overload Relay not included. Please select from page B-27

** Standard Fault Ratings UL CS

Replace ■ with voltage code from table - 2

Table-2 : ■ -AC Coil Voltages

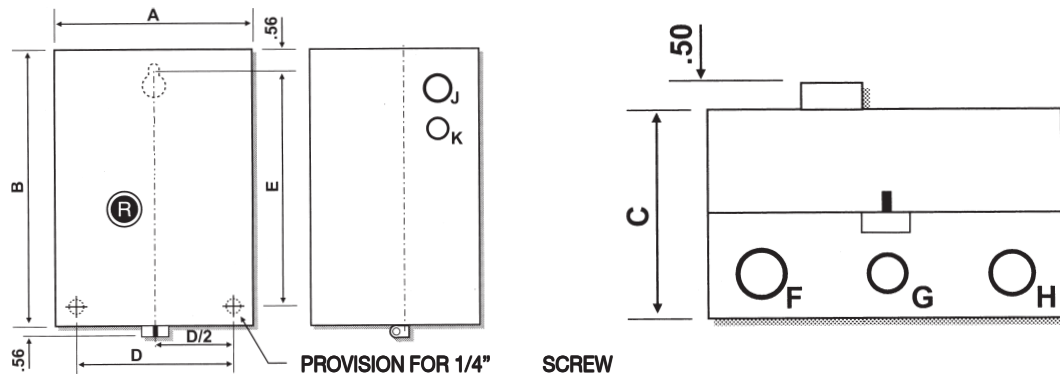
Volts AC	24	48	110	120	208	220	240	277	380	415	440	480	575	600
50 Hz	B5	E5	F5	-	-	M5	U5	-	Q5	N5	R5	-	-	-
60 Hz	B6	E6	F6	G6	L6	M6	U6	W6	Q6	-	R6	T6	S6	X6
50/60 Hz	B7	E7	F7	G7	-	M7	U7	-	Q7	N7	R7	-	-	-

E

Motor Starters

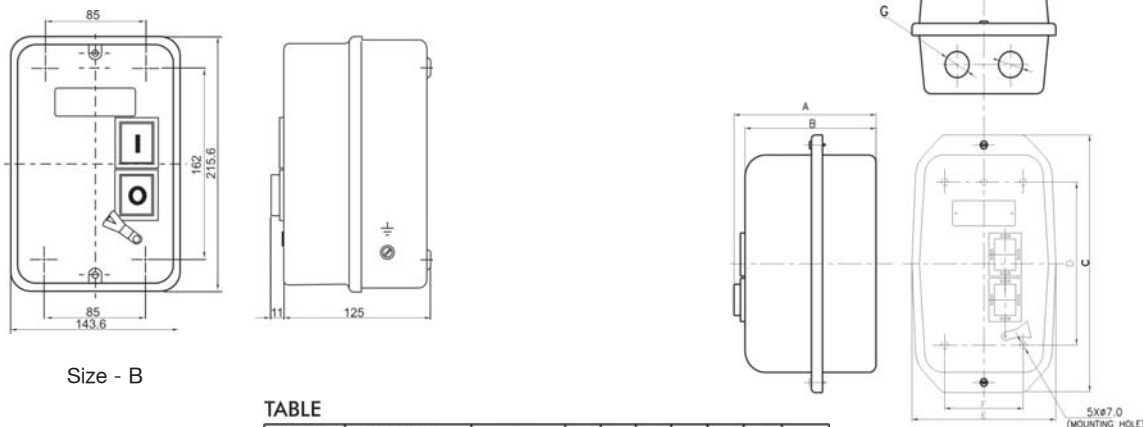
Dimensions

Non-Reversing/Reversing



Type of Starter		Box Dimensions										
Non-Reversing	Reversing	A	B	C	D	E	F	G	H	J	K	L
D09-25	-	6.77	10.04	6.25	5.38	9.00	1 - 1 1/4	1 1/4 - 3/4	-	1 - 1 1/4	12 - 3/4	12 - 3/4
D32-50	D09-32	8.66	10.83	7.21	7.25	9.75	1 1/4 - 1 1/2	1 1/4 - 3/4	1 - 1 1/4	1 - 1 1/4	12 - 3/4	12 - 3/4
D65-80	D40-82	10.63	13.98	7.21	9.22	12.94	1 1/4 - 1 1/2	1 1/4 - 3/4	1 - 1 1/4	1 - 1 1/4	12 - 3/4	12 - 3/4

Direct-ON-Line (Sheet Steel/Plastic)



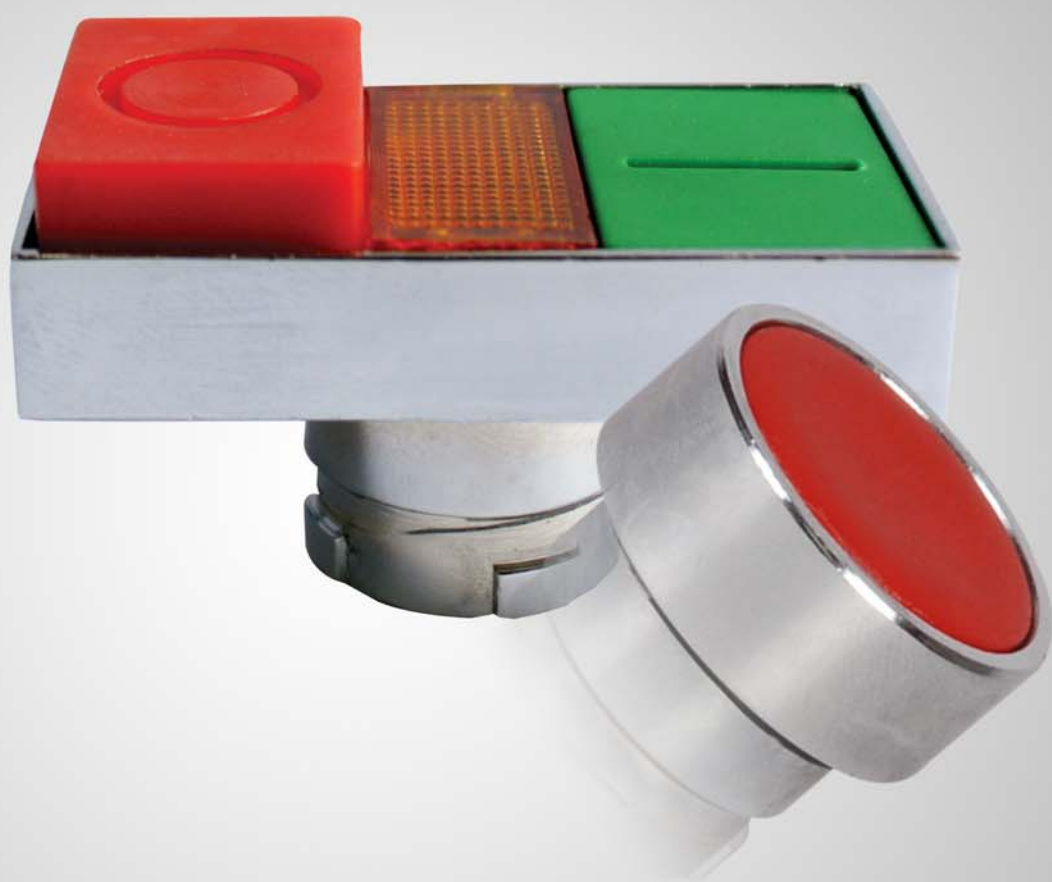
TABLE

ENCLO. SIZE	STARTER REFERENCE	HP RATING	A	B	C	D	E	F	G
'B' SIZE	BE1-T2535 - 3235	15.0-20.0	147	135	252	162	156	85	5xø27
'C' SIZE	BE1-T4035 - 8035	30.0-60.0	172	160	299	165	201	105	4xø27

Size - C

TABLE

ENCLO. SIZE	STARTER REFERENCE	HP RATING	A	B	C	D	E	F
'A' SIZE	LE1-D1235	0.5-7.5	140	120	166	150	88	4xø14
'B' SIZE	LE1-D1835 - 3235	12.0-20.0	155	135	185	165	101	4xø20



Control & Signalling Devices, Metal Series

Control & Signalling Units ϕ 22.5mm Metal

Characteristics

General Characteristics

Products	Push Buttons, Selector Switches, Key Selector Switches, Latching Mushroom Head Push Buttons, Pilot Lights & Illuminated Push Buttons
Reference Standard	IEC 60947-5-1, EN 60947-5-1, IEC 337-1, UL 508, CSA C-22-2 n° 14
Approval	UL, cUL, CSA, CE
Protection Degree	IP 65 / IP 66 according to IEC 60947-1;
Pollution Degree	3
Temperature	-40°C ~ + 70°C (Storage) -25°C ~ + 70°C (Working)
Vibration Resistance	Ø60mm Mushroom Head Push Buttons: 8g, Other Push Buttons & Pilot Lights: 15g (40Hz<frequency<500 Hz) conforming to IEC 68-2-6
Shock Resistance	Push Buttons : 70g, Mushroom Head Push Buttons: 15g, Selector Switches : 200g conforming to IEC 68-2-27
Working Position	All working positions are allowed
Mechanical Life Push Buttons	Push Buttons & Selector Switches 1 million operations, Latching Emergency Mushroom 300,000 operations

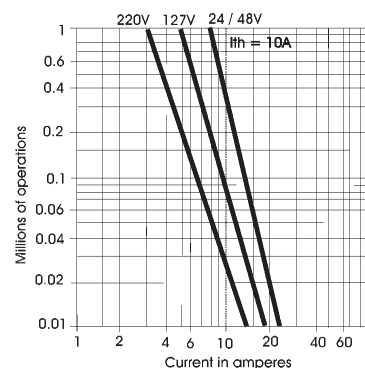
Contact Elements Characteristics

Rated Thermal Current I_{th}	10A
Rated Insulation Voltage U_i	500V conforming to IEC 60947-1, UL 508 & CSA 22-2 n° 14
Insulation Category	Group C conforming to NF C 20-040, VDE 0110
Operating Force	Push Buttons - 1 'NO' = 10N, 1 'NC' = 8N Additional contacts - 'NO' = +5N, 'NC' = +3N
Dielectric Strength	2.5KV for 1 minute
Insulation Resistance	2M Ohm min (500 VDC)
Initial Contact Resistance	< 25 milli Ohm
Short Circuits Protection	10A 500V, Cartridge Fuse g1 or N conforming to IEC 337-1
Cabling/Terminal Capacity	1x0.5mm ²2x1.5mm ²
Contact Operation	Slow action, Positive Opening
Rated Power	Conforming to IEC 60947-5-1; utilization categories AC 15 & DC 13

Standard Contact Blocks

AC Supply (50/60Hz)

 Inductive



DC Supply

Power broken in W

For 1 million operations

Voltage	24V	48V	120V
Inductive Load	65W	48W	40W

AC Ratings, Inductive - NEMA A600

35% Power Factor

Volts	Make Amperes	VA	Break Amperes	VA	Continuous carrying Amperes	Resistive 75% Power factor Make, Break & continuous Amperes
120	60	7200	6	720	10	10
240	30	7200	3	720	10	10
480	15	7200	1.5	720	10	10
600	12	7200	1.2	720	10	10

DC Ratings, NEMA Type Q600

Inductive and resistive

Volts	Make & Break (Amp.)	Continuous (Amp.)
125	0.55	2.5
250	0.27	2.5
600	0.10	2.5

Control & Signalling Units ϕ 22.5mm Metal

Non-Illuminated Push Buttons (Type RB2-B)

(Control Units with chromium plated metal bezel)

Operating Heads for Push Buttons, Spring Return - IP65

Description	Knob Size	Colour	
Flush Push Button Spring Return		○ White	RB2-BA1
		● Black	RB2-BA2
		● Green	RB2-BA3
		● Red	RB2-BA4
		● Yellow	RB2-BA5
		● Blue	RB2-BA6
		⬆ Black Arrow on White base	RB2-BA334
		⬆ White Arrow on Black base	RB2-BA335
Recess (Guarded) Push Button		○ White	RB2-BA16
		● Black	RB2-BA26
		● Green	RB2-BA36
		● Red	RB2-BA46
		● Yellow	RB2-BA56
		● Blue	RB2-BA66
		○ White	RB2-BL1
		● Black	RB2-BL2
Projecting Push Button Spring Return		● Green	RB2-BL3
		● Red	RB2-BL4
		● Yellow	RB2-BL5
		● Blue	RB2-BL6
		○ White	RB2-BP1
		● Black	RB2-BP2
		● Green	RB2-BP3
		● Red	RB2-BP4
Booted Push Button Spring Return IP66		● Yellow	RB2-BP5
		● Blue	RB2-BP6
		○ White	RB2-BA18
		● Black	RB2-BA28
		● Green	RB2-BA38
		● Red	RB2-BA48
		● Yellow	RB2-BA58
		● Blue	RB2-BA68
Flush Push Button Spring Return with Transparent Boot IP66		● Black	RB2-BC2
		● Green	RB2-BC3
		● Red	RB2-BC4
		● Yellow	RB2-BC5
		● Blue	RB2-BC6
		● Red	RB2-BR4
		● Red	RB2-BS44
		● Red	RB2-BS54
Mushroom Head Push Button Spring Return		● Red	RB2-BS64
		● Red	RB2-BS14
		● Red	RB2-BT4
		● Red	RB2-BT43
		● Red	RB2-BS44
		● Red	RB2-BS54
		● Red	RB2-BS64
		● Red	RB2-BS14
Mushroom Head Push Button Turn to Release		● Red	RB2-BS44
		● Red	RB2-BS54
		● Red	RB2-BS64
		● Red	RB2-BS14
		● Red	RB2-BT4
		● Red	RB2-BT43
		● Red	RB2-BS44
		● Red	RB2-BS54
Mushroom Head Push Button Key Release - Key No. 455		● Red	RB2-BS64
		● Red	RB2-BS14
		● Red	RB2-BT4
		● Red	RB2-BT43
		● Red	RB2-BS44
		● Red	RB2-BS54
		● Red	RB2-BS64
		● Red	RB2-BS14
Mushroom Head Push Button Push to Stay and Pull to Release		● Red	RB2-BT4
		● Red	RB2-BT43
		● Red	RB2-BS44
		● Red	RB2-BS54
		● Red	RB2-BS64
		● Red	RB2-BS14
		● Red	RB2-BT4
		● Red	RB2-BT43

Operating Heads with Black metal bezel

TO Order add Suffix '7' to above e.g. RB2-BA334 Becomes RB2-BA3347

- For legend plates refer page F9
- For accessories refer page F8 & F9
- For body / contact assemblies refer page F6
- For complete assemblies refer page F10 & F11



RB2-BA4



RB2-BA16



RB2-BL4



RB2-BP4



RB2-BA48



RB2-BS14



RB2-BT43



RB2-BA3347

Control & Signalling Units ϕ 22.5mm Metal

Non-Illuminated / Illuminated Double Headed Push Buttons, Selector Switches & Key Switches (Type RB2-B) (Control Units with Chromium plated metal bezel)



RB2-BA87



RB2-BW9



RB2-BL87



RB2-BLW9



RB2-BD2



RB2-BJ2



RB2-BG2

- For legend plates refer page F9
- For accessories refer page F8 & F9
- For contact assemblies refer page F6
- For complete assemblies refer page F10 & F11

Operating Heads for Double Headed Push Buttons

Description	Marking	Colour	Reference
2 Flush Push Buttons, Spring Return W/O Pilot Light - IP40	I O	Green Red	RB2-BA87
1 Flush Push Button 1 Pilot Light (in Centre) 1 Flush Push Button	I O	Green Amber Red	RB2BW9
Non-Illuminated Double Head Push Button with off Projected	I O	Green Red	RB2-BL87
Illuminated Double Head Push Button with off Projected	I O	Green Amber Red	RB2BLW9

Available with assembly unit & with following options :

Filament Bulb	Clear
Neon Bulb	Amber
LED	White
	Blue
	Green
	Clear
	Red
	Yellow
	Amber

Operating Heads for Selector Switches - IP65

Description	Type	Operator	Reference
2 Position	Stay Put	Standard Handle	RB2-BD2
		Long Handle	RB2-BJ2
	Spring Return to Centre from Right & Left	Standard Handle	RB2-BDR2
3 Position		Long Handle	RB2-BJR2
	Stay Put	Standard Handle	RB2-BD3
		Long Handle	RB2-BJ3
	Spring Return	Standard Handle	RB2-BDR3
		Long Handle	RB2-BJR3
	1 Spring Return Right to Centre	Standard Handle	RB2-BD8
		Long Handle	RB2-BJ8
	1 Spring Return Left to Centre	Standard Handle	RB2-BD7
		Long Handle	RB2-BJ7

Operating Heads for Key Switches (Key No. 455) - IP65

Description	Type	Key removal	Reference
2 Position	Stay Put	LH Position	RB2-BG2
		RH Position	RB2-BG02
		All Positions	RB2-BG4
	1 Spring Return Right to Left	LH Position	RB2-BG6
3 Position	Stay Put	Centre Position	RB2-BG3
		LH and RH Positon	RB2-BG5
		All 3 Positions	RB2-BG0
		RH Position	RB2-BG09
		LH Position	RB2-BG9
	Stay Put to Left Spring Return from Right to Centre	Centre Position	RB2-BG8
	Spring Return to Centre from Right and Left	Centre Position	RB2-BG7

Operating Heads with Black metal bezel

TO Order Add Suffix '7' to above e.g. RB2-BG2 Becomes RB2-BG27

Control & Signalling Units ϕ 22.5mm Metal

Illuminated Push Buttons & Selector Switches (Type RB2-B)

(Signalling Units with Chromium plated metal bezel)



RB2-BW34



RB2-BW14



RB2-BW54



RB2-BK124 /
RB2-BK134



RB2-BW44 /
RB2-BW64

Operating Heads for Illuminated Push Buttons - IP65

Description	Application	Colour	Reference
Flush Push Button Spring Return	For Incandescent Bulbs	○ White	RB2-BW31
		● Green	RB2-BW33
		● Red	RB2-BW34
		● Amber	RB2-BW35
		● Blue	RB2-BW36
		○ Clear	RB2-BW37
Projecting Push Button Spring Return	For Incandescent Bulbs	○ White	RB2-BW11
		● Green	RB2-BW13
		● Red	RB2-BW14
		● Amber	RB2-BW15
		● Blue	RB2-BW16
		○ Clear	RB2-BW17
Flush Push Button Spring Return	For LED	○ White	RB2-BWL31
		● Green	RB2-BWL33
		● Red	RB2-BWL34
		● Amber	RB2-BWL35
		● Blue	RB2-BWL36
		○ Clear	RB2-BWL37
Projecting Push Button Spring Return	For LED	● Yellow	RB2-BWL38
		○ White	RB2-BWL11
		● Green	RB2-BWL13
		● Red	RB2-BWL14
		● Amber	RB2-BWL15
		● Blue	RB2-BWL16
Booted Type Flush Push Button Illuminated Type	For Incandescent Bulbs	○ Clear	RB2-BWL17
		● Yellow	RB2-BWL18
		○ White	RB2-BW51
		● Green	RB2-BW53
		● Red	RB2-BW54
		● Amber	RB2-BW55
		● Blue	RB2-BW56
		○ Clear	RB2-BW57

Operating Heads for Illuminated Selector Switches - IP65

Description	Type	Colour	Reference
2 Position	Stay Put	● Green	RB2-BK123
		● Red	RB2-BK124
		● Amber	RB2-BK125
3 Position	Stay Put	● Green	RB2-BK133
		● Red	RB2-BK134
		● Amber	RB2-BK135

Operating Heads for Illuminated ϕ 40mm Mushroom Head Operator

Description	Type	Colour	Reference
2 Position Momentary		● Red	RB2-BW44
		● Green	RB2-BW43
2 Position Maintained		● Red	RB2-BW64
		● Green	RB2-BW63

Operating Heads with Black metal bezel

TO Order Add Suffix '7' to above e.g. RB2-BW31 Becomes RB2-BW317

- For legend plates refer page F9
- For contact assemblies refer page F6
- For complete assemblies refer page F10 & F11
- For accessories refer page F8 & F9

Control & Signalling Units ϕ 22.5mm Metal

Assemblies for Illuminated, Non-Illuminated type Push Buttons & Selector Switches (Type RB2-B)



RB2-BZ101

Body assemblies with fixing collar & contact blocks (screw clamp terminal connections)

Description	Contact	Type	Reference
For Push Buttons, Selector and Key Switches	NO	Standard	RB2-BZ101
	NC	Standard	RB2-BZ102
	NO+NO	Standard	RB2-BZ103
	NC+NC	Standard	RB2-BZ104
	NO+NC	Standard	RB2-BZ105
	NO	Gold Flash	RB2-BZ1016
	NC	Gold Flash	RB2-BZ1026
	NO+NO	Gold Flash	RB2-BZ1036
	NC+NC	Gold Flash	RB2-BZ1046
	NO+NC	Gold Flash	RB2-BZ1056

Additional / Replacement Contact Blocks

Description	Contact	Type	Reference
For making up Body Assemblies with 3, 4, 5 or Maximum of 6 Contact Blocks or Replacing 1 st OR 2 nd Contact	NO	Standard	RB2-BE101
	NC	Standard	RB2-BE102
	NO	Gold Flash	RB2-BE1016
	NC	Gold Flash	RB2-BE1026



RB2-BE101

Body assemblies for illuminated Push Buttons & Selectors with or w/o Contacts

Description	Supply Voltage	Contact	Colour	Reference
Direct BA 9s Filament Bulb* Supplied	12V / 24V / 48V / 110V / 130V (AC)(DC)○	NO + NC		RB2-BW065■
		W/O Contact Blocks		RB2-BW06■
Through Resistor BA 9s, 130V Filament Bulb Supplied	220V (AC)(DC)	NO + NC		RB2-BW075
		W/O Contact Blocks		RB2-BW07
Through Resistor & Diode BA 9s 130V Bulb Supplied	240V (AC)	NO + NC		RB2-BWD075
		W/O Contact Blocks		RB2-BWD07
Direct BA 9s Neon Bulb Supplied	220V / 380V / 415V (AC)(DC)	NO + NC	● Green	RB2-BWN0635■
			Natural	RB2-BWN0655■
		W/O Contact Blocks	● Green	RB2-BWN063■
			Natural	RB2-BWN065■
With Integral Circuit & Cluster LED	12V, 24V, 48V (AC)(DC) 110VAC, 110VDC 240V (AC) 220V (DC)	NO + NC	○ White	RB2-BWL715■
			● Green	RB2-BWL735■
			● Red	RB2-BWL745■
			● Amber	RB2-BWL755■
			● Blue	RB2-BWL765■
			Clear	RB2-BWL775■
			● Yellow	RB2-BWL785■
		W/O Contact Blocks	○ White	RB2-BWL71■
			● Green	RB2-BWL73■
			● Red	RB2-BWL74■
			● Amber	RB2-BWL75■
			● Blue	RB2-BWL76■
			Clear	RB2-BWL77■
			● Yellow	RB2-BWL78■



RB2-BW06



RB2-BWL7

- Body assemblies (suitable for bulb 2.6W max.) upto 230V max. available without bulb
- * Bulb rating 12V to 130V, 2.6W (max.);
- Please mention voltage while ordering
- For accessories refer page F8 & F9
- For complete assemblies refer page F10 & F11

Control & Signalling Units ϕ 22.5mm Metal

Pilot Light Heads & Bodies (Type RB2-B)



RB2-BV04



RB2-BV6■



RB2-BVN6



RB2-BVL7

Pilot Light Heads

Description	Colour		Reference
For Incandescent Bulbs	○	White	RB2-BV01
	●	Green	RB2-BV03
	●	Red	RB2-BV04
	●	Amber	RB2-BV05
	●	Blue	RB2-BV06
		Clear	RB2-BV07
High Contrast, for use With Neon Bulbs** or LEDs	○	White	RB2-BVL01
	●	Green	RB2-BVL03
	●	Red	RB2-BVL04
	●	Amber	RB2-BVL05
	●	Blue	RB2-BVL06
		Clear	RB2-BVL07
	●	Yellow	RB2-BVL08

Complete Pilot Light Bodies

Description	Supply voltage	Colour	Reference
Direct BA 9s Filament Bulb* Supplied	12V / 24V / 48V / 110V / 130V (AC)(DC) ○	-	RB2-BV6■
Through Resistor BA 9s, 130V Filament Bulb Supplied	240V (AC)(DC)	-	RB2-BV7
Through Resistor & Diode BA 9s, 130V Filament Bulb Supplied	240V (AC)	-	RB2-BVD7
Via Integral Transformer 1.2VA BA 9s, 6V Filament Bulb Supplied	110V / 6V (AC)	-	RB2-BV3
	220V-240V / 6V (AC)	-	RB2-BV4
Direct BA 9s, Neon Bulb Supplied	220V / 380V / 415V (AC)(DC)	● Green	RB2-BVN63■
		● Red	RB2-BVN64■
		● Amber	RB2-BVN65■
Integral Circuit & Cluster LED	12V, 24V, 48V (AC)(DC) 110VAC, 110VDC 220V (DC) 240V (AC)	○ White	RB2-BVL71■
		● Green	RB2-BVL73■
		● Red	RB2-BVL74■
		● Amber	RB2-BVL75■
		● Blue	RB2-BVL76■
		Clear	RB2-BVL77■
		● Yellow	RB2-BVL78■

- ○ Body assemblies (suitable for bulb 2.6W max.) upto 230V max. available without bulb
- * Bulb rating 12V to 130V, 2.6W (max.)
- ** For Neon bulbs, only Green, Red & Amber is available.
- ■ Please mention voltage while ordering
- For accessories refer page F8 & F9
- For legend plates refer page F9
- For complete assemblies refer page F10 & F11

Control & Signalling Units ϕ 22.5mm Metal

Accessories



RL1-CF■



RL1-CN■



RB2-BV004



RB2-BP004



RC-S



RCB2AL8R



RCB2AL8H

Bulbs

Description	Supply Voltage	Colour	Reference
Incandescent Filament Lamp (Different wattage for various voltages)	6V, 12V, 24V, 48V, 130V	Clear	RL1-CF■
Neon BA 9s	220V, 380V, 415V	Green	RL1-CN3■
		Natural	RL1-CN■

Lenses

Description	Colour	Reference
Set of Lens for (One Inner Diffuser & One outer lens) for Pilot Lamp Head	○ White	RB2-BV001
	● Green	RB2-BV003
	● Red	RB2-BV004
	● Amber	RB2-BV005
	● Blue	RB2-BV006
	○ Clear	RB2-BV007
	○ Clear	RB2-BV007
Set of Lens for (One Inner Diffuser & One outer lens) for Illuminating Actuator	○ White	RB2-BW001
	● Green	RB2-BW003
	● Red	RB2-BW004
	● Amber	RB2-BW005
	● Blue	RB2-BW006
	○ Clear	RB2-BW007
	○ Clear	RB2-BW007
Lenses for Illuminating LED & Neon* Actuator (Without Inner Diffuser)	○ White	RB2-BWL001
	● Green	RB2-BWL003
	● Red	RB2-BWL004
	● Amber	RB2-BWL005
	● Blue	RB2-BWL006
	○ Clear	RB2-BWL007
	● Yellow	RB2-BWL008

Boots

Description	Colour	Reference
Silicon Rubber Boots (for RB2-BP) Suitable for Oil & Humid Condition	○ White	RB2-BP001
	● Black	RB2-BP002
	● Green	RB2-BP003
	● Red	RB2-BP004
	● Yellow	RB2-BP005
	● Blue	RB2-BP006
Boots Suitable for Non-Illuminating Flush Pushbuttons (RB2-BA)	Clear	RC-S
Boots Suitable for Illuminated Flush Pushbuttons (RB2-BW)	Clear	RC-L

Reset Extended Push Button

Description	Reference
Reset Extended Push Button (Round Type)	RCB2AL8R
Reset Extended Push Button (Hex Type)	RCB2AL8H

- '■' Replace with voltage
- '*' For Neon bulbs, only Green, Red & Amber is available.

Control & Signalling Units ϕ 22.5mm Metal

Accessories & Legend Plates



RB2-B



RB2-RPX



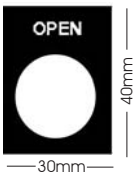
RB2-BZ41M



RB2-QC12



RB2 - K455



RB2-BY



RB2-BYN23**



RB2-B23**



RB2-PY9330

Accessories

Description	Reference
Fixing Collar	RB2-B
Reset Plunger	RB2-RPX
Bulb Extractor for Ba 9s Bulbs	RB2-X13
Quick Connector for NO / NC Contact	RB2-QC12
Spare / Replacement Keys for Key Operating Units (Key No. 455)	RB2-K455
Padlocking Attachment (Makes Flush Operator Inaccessible)	RB2-BZ6
Panel Adaptor Converts 30mm Hole to 22mm Hole	RB2-BZ41M

Legend Plates

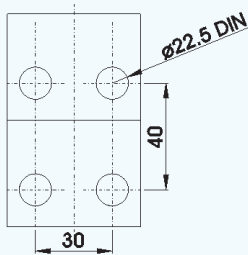
Metal (Aluminium)	Reference
Black Coated Legend Plates with Inscription in White Colour	RB2-BY**
Emergency Stop ϕ 60mm	RB2-AY9330
Emergency Stop ϕ 90mm	RB2-AY8330
Plastic	Reference
Emergency Stop ϕ 60mm	RP2-PY9330
Emergency Stop ϕ 90mm	RP2-PY8330
Legend Holder	RB2-BY32
Legend Plate (Reversible)	RB2-B23**
Legend Plate with Holder	RB2-BYN23**

Legends (Replace ** with...)

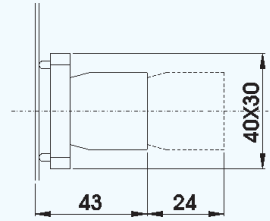
Text	Code	Text	Code
Blank	2301	Emergency Stop	2330
Start	2303	Stop	2304
Forward	2305	Reverse	2306
Up	2307	Down	2308
On	2311	Off	2312
Open	2313	Close	2314
Auto	2315	Hand	2316
Reset	2323	Inch	2321
Slow	2327	Fast	2328
Auto - Hand	2364	Auto - O - Hand	2385
Hand Off Auto	2387	Low	2333
High	2334	High Low	2335
Off On	2336	Stop Start	2337
Up Down	2338		

Control & Signalling Units ϕ 22.5mm Metal

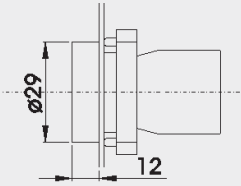
Dimensions / Complete Units' Reference



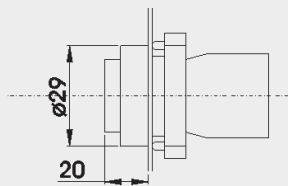
PANEL CUT-OUT
(Thickness: 6mm max.)



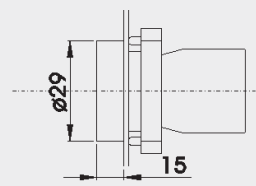
RB2-BE10♦+RB2-B = RCB2-BZ10♦



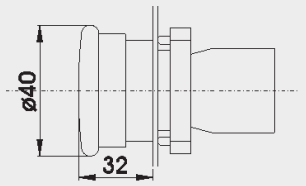
RB2-BA♦+RB2-BZ10♦=RCB2-BA♦♦
RB2-BA334+RB2-BZ10♦=RCB2-BA334♦



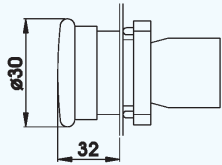
RB2-BL♦+RB2-BZ10♦=RCB2-BL♦♦



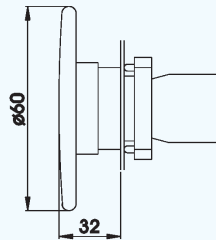
RB2-BP♦+RB2-BZ10♦=RCB2-BP♦♦
RB2-BA♦8+RB2-BZ10♦=RCB2-BA♦8♦



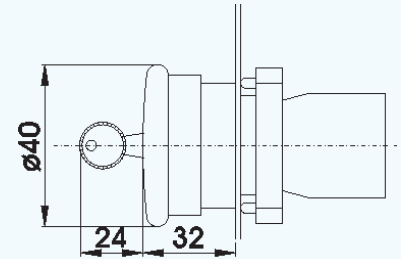
RB2-BC♦+RB2-BZ10♦=RCB2-BC♦♦
RB2-BS54+RB2-BZ10♦=RCB2-BS54♦
RB2-BT4+RB2-BZ10♦=RCB2-BT4♦



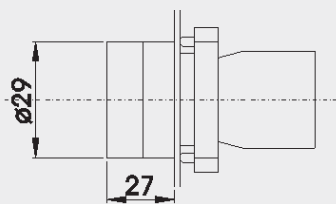
RB2-BS44+RB2-BZ10♦=RCB2-BS44♦



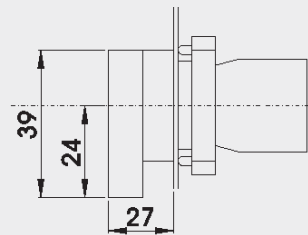
RB2-BR4+RB2-BZ10♦=RCB2-BR4♦
RB2-BS64+RB2-BZ10♦=RCB2-BS64♦



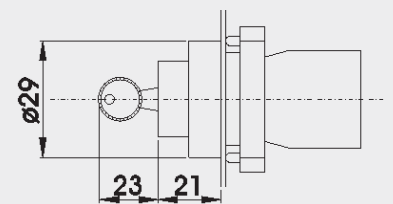
RB2-BS14+RB2-BZ10♦=RCB2-BS14♦



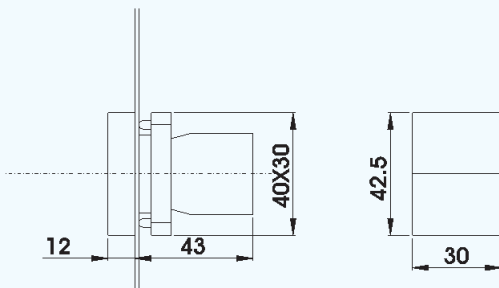
RB2-BD2+RB2-BZ10♦=RCB2-BD2♦
RB2-BD3+RB2-BZ10♦=RCB2-BD3♦



RB2-BJ2+RB2-BZ10♦=RCB2-BJ2♦
RB2-BJ3+RB2-BZ10♦=RCB2-BJ3♦



RB2-BG♦+RB2-BZ10♦=RCB2-BG♦♦
(Replace ♦ with code for position of Key removal & operation pattern)

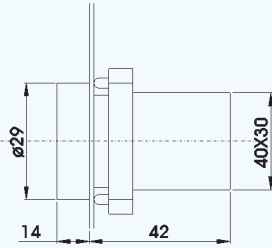


RB2-BA87+RB2-BZ10♦=RCB2-BA87♦

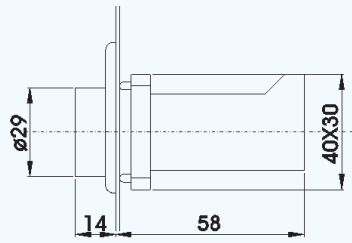
- Replace ♦ with codes for type of contacts (See page F6) & ● with colour codes (See page F3 & F4)
- For non-illuminated push button heads, selector switches & key switches, refer page F3 & F4

Control & Signalling Units ϕ 22.5mm Metal

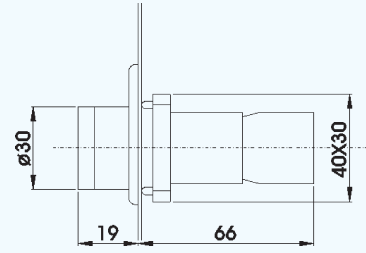
Dimensions / Complete Units' Reference



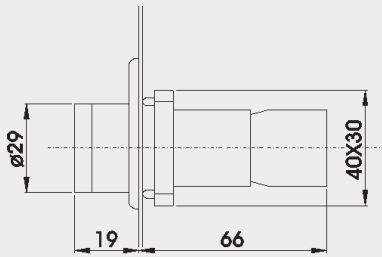
RB2-BV0●+RB2-BV6 = RCB2-BV6●
 RB2-BV0●+RB2-BVN6 = RCB2-BVN6●
 RB2-BV0●+RB2-BV7 = RCB2-BV7●
 RB2-BV0●+RB2-BVD7 = RCB2-BVD7●
 RB2-BVL0●+RB2-BVL7● = RCB2-BVL7●



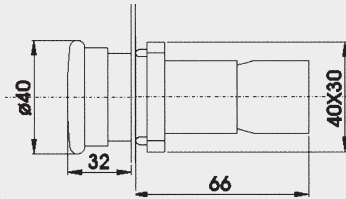
RB2-BV0●+RB2-BV3 = RCB2-BV3●
 RB2-BV0●+RB2-BV4 = RCB2-BV4●



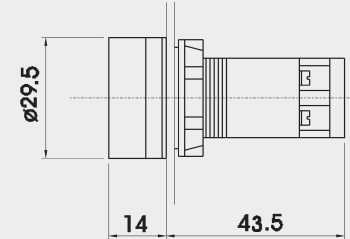
RB2-BW5●+RB2-BW06+RB2-BE10❖ = RCB2-BW5●6❖
 RB2-BW5●+RB2-BW07+RB2-BE10❖ = RCB2-BW5●7❖
 RB2-BW5●+RB2-BWD07+RB2-BE10❖ = RCB2-BWD5●7❖
 RB2-BW5●+RB2-BW06+RB2-BE10❖ = RCB2-BW5●6❖



RB2-BW3●+RB2-BW06+RB2-BE10❖ = RCB2-BW3●6❖
 RB2-BW3●+RB2-BW07+RB2-BE10❖ = RCB2-BW3●7❖
 RB2-BW3●+RB2-BWD07+RB2-BE10❖ = RCB2-BWD3●7❖
 RB2-BWL3●+RB2-BWN06●+RB2-BE10❖ = RCB2-BWN3●6❖
 RB2-BWL3●+RB2-BWL7●+RB2-BE10❖ = RCB2-BWL3●7❖



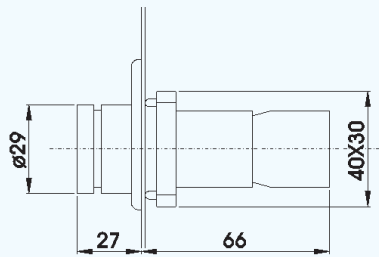
RB2-BW4●+RB2-BW06+RB2-BE10❖ = RCB2-BW4●6❖
 RB2-BW4●+RB2-BW07+RB2-BE10❖ = RCB2-BW4●7❖
 RB2-BW4●+RB2-BWD07+RB2-BE10❖ = RCB2-BWD4●7❖
 RB2-BW4●+RB2-BWN06●+RB2-BE10❖ = RCB2-BWN4●6❖
 RB2-BW4●+RB2-BWL7●+RB2-BE10❖ = RCB2-BWL4●7❖



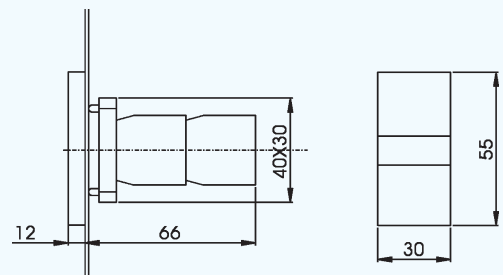
RCB7-IL-7●

RB2-BW1●+RB2-BW06+RB2-BE10❖ = RCB2-BW1●6❖
 RB2-BW1●+RB2-BW07+RB2-BE10❖ = RCB2-BW1●7❖
 RB2-BW1●+RB2-BWD07+RB2-BE10❖ = RCB2-BWD1●7❖
 RB2-BWL1●+RB2-BWN06●+RB2-BE10❖ = RCB2-BWN1●6❖
 RB2-BWL1●+RB2-BWL7●+RB2-BE10❖ = RCB2-BWL1●7❖

RB2-BW6●+RB2-BW06+RB2-BE10❖ = RCB2-BW6●6❖
 RB2-BW6●+RB2-BW07+RB2-BE10❖ = RCB2-BW6●7❖
 RB2-BW6●+RB2-BWD07+RB2-BE10❖ = RCB2-BWD6●7❖
 RB2-BW6●+RB2-BWN06●+RB2-BE10❖ = RCB2-BWN6●6❖
 RB2-BW6●+RB2-BWL7●+RB2-BE10❖ = RCB2-BWL6●7❖



RB2-BK12●+RB2-BW06+RB2-BE10❖ = RCB2-BK12●6❖
 RB2-BK12●+RB2-BW07+RB2-BE10❖ = RCB2-BK12●7❖
 RB2-BK12●+RB2-BWD07+RB2-BE10❖ = RCB2-BKD12●7❖
 RB2-BK13●+RB2-BW06+RB2-BE10❖ = RCB2-BK13●6❖
 RB2-BK13●+RB2-BW07+RB2-BE10❖ = RCB2-BK13●7❖
 RB2-BK13●+RB2-BWD07+RB2-BE10❖ = RCB2-BKD13●7❖



RB2-BW9+RB2-BW06+RB2-BE10❖ = RCB2-BW96❖
 RB2-BW9+RB2-BW07+RB2-BE10❖ = RCB2-BW97❖
 RB2-BW9+RB2-BWD07+RB2-BE10❖ = RCB2-BWD97❖
 RB2-BW9+RB2-BWN065+RB2-BE10❖ = RCB2-BWN965❖
 RB2-BW9+RB2-BWL75+RB2-BE10❖ = RCB2-BWL975❖

- Replace '❖' with codes for type of contacts (See page F6) & '●' with colour codes (see page F3 & F4)
- For illuminated push button heads, illuminated selector switches, refer page F5
- For pilot lamp head, refer page F7 & for double headed push button with pilot lamp, refer page F4



Control & Signalling Devices, Plastic Series

Control & Signalling Units ϕ 22.5mm Plastic

Characteristics

General Characteristics

Products	Push Buttons, Selector Switches, Key Selector Switches, Latching Mushroom Head Push Buttons, Pilot Lights & Illuminated Push Buttons
Reference Standard	IEC 60947-5-1, EN 60947-5-1, IEC 337-1, UL 508, CSA C-22-2 n° 14
Approval	UL*
Protection Degree	IP 65 / IP 66 according to IEC 60947-1;
Pollution Degree	3
Temperature	-40°C ~ + 70°C (Storage) -25°C ~ + 70°C (Working)
Vibration Resistance	Ø 60mm Mushroom Head Push Buttons: 8g, Other Push Buttons & Pilot Lights: 15g (40Hz<frequency<500 Hz) conforming to IEC 68-2-6
Shock Resistance	Push Buttons : 70g, Mushroom Head Push Buttons: 15g, Selector Switches : 200g conforming to IEC 68-2-27
Working Position	All working positions are allowed
Mechanical Life Push Buttons	Push Buttons & Selector Switches 1 million operations, Latching Emergency Mushroom 300,000 operations

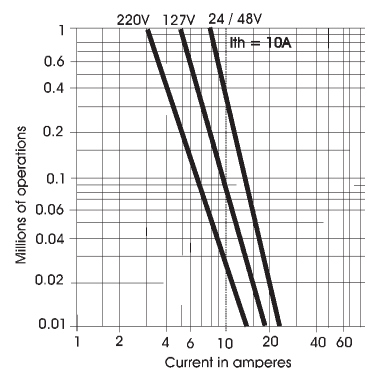
Contact Elements Characteristics

Rated Thermal Current I_{th}	10A
Rated Insulation Voltage U_i	500V conforming to IEC 60947-1, UL 508 & CSA 22-2 n° 14
Insulation Category	Group C conforming to NF C 20-040, VDE 0110
Operating Force	Push Buttons - 1 'NO' = 10N, 1 'NC' = 8N Additional contacts - 'NO' = +5N, 'NC' = +3N
Dielectric Strength	2.5KV for 1 minute
Insulation Resistance	2M Ohm min (500 VDC)
Initial Contact Resistance	< 25 milli Ohm
Short Circuits Protection	10A 500V, Cartridge Fuse g1 or N conforming to IEC 337-1
Cabling/Terminal Capacity	1x0.5mm ²2x1.5mm ²
Contact Operation	Slow action, Positive Opening
Rated Power	Conforming to IEC 60947-5-1; utilization categories AC 15 & DC 13

Standard Contact Blocks

AC Supply (50/60Hz)

 Inductive



DC Supply

Power broken in W

For 1 million operations

Voltage	24V	48V	120V
Inductive Load	65W	48W	40W

AC Ratings, Inductive - NEMA A600

35% Power Factor

Volts	Make Amperes	VA	Break Amperes	VA	Continuous carrying Amperes	Resistive 75% Power factor Make, Break & continuous Amperes
120	60	7200	6	720	10	10
240	30	7200	3	720	10	10
480	15	7200	1.5	720	10	10
600	12	7200	1.2	720	10	10

DC Ratings, NEMA Type Q600

Inductive and resistive

Volts	Make & Break (Amp.)	Continuous (Amp.)
125	0.55	2.5
250	0.27	2.5
600	0.10	2.5

* Under Approval

Control & Signalling Units ϕ 22.5mm Plastic

Non-Illuminated Push Buttons, Selector Switches (Type RP2-B)



RP2-BA3



RP2-BL6



RP2-BA48



RP2-BC2



RP2-BA26



RP2-BD2

Operating Heads for Push Buttons, Spring Return - IP65 (also for use with RC●P/RC●M type Control Stations)

Description	Knob Size	Colour	
Flush Push Button Spring Return		○ White	RP2-BA1
		● Black	RP2-BA2
		● Green	RP2-BA3
		● Red	RP2-BA4
		● Yellow	RP2-BA5
		● Blue	RP2-BA6
		↑ Black arrow on White base	RP2-BA334
		↑ White arrow on Black base	RP2-BA335
Projecting Push Button Spring Return		○ White	RP2-BL1
		● Black	RP2-BL2
		● Green	RP2-BL3
		● Red	RP2-BL4
		● Yellow	RP2-BL5
		● Blue	RP2-BL6
Flush Push Button Spring Return with Transparent Boot IP66		○ White	RP2-BA18
		● Black	RP2-BA28
		● Green	RP2-BA38
		● Red	RP2-BA48
		● Yellow	RP2-BA58
		● Blue	RP2-BA68
Mushroom Head Push Button Spring Return		● Black	RP2-BC2
		● Green	RP2-BC3
		● Red	RP2-BC4
		● Yellow	RP2-BC5
		● Blue	RP2-BC6
		● Red	RP2-BR4
Mushroom Head Push Button Turn to Release	ϕ 40mm	● Red	RP2-BS44
	ϕ 60mm	● Red	RP2-BS54
	ϕ 40mm	● Red	RP2-BS64
Mushroom Head Pushbutton Key Release - Key No. 455	ϕ 40mm	● Red	RP2-BS14
Recess (Guarded) Push Button		○ White	RP2-BA16
		● Black	RP2-BA26
		● Green	RP2-BA36
		● Red	RP2-BA46
		● Yellow	RP2-BA56
		● Blue	RP2-BA66

Operating Heads for Selector Switches - IP65 (also for use with RC●P/RC●M type Control Stations)

Description	Type	Operator	Reference
2 Position	Stay Put	Standard Handle	RP2-BD2
		Long Handle	RP2-BJ2
3 Position	Stay Put	Standard Handle	RP2-BD3
		Long Handle	RP2-BJ3
	Spring Return	Standard Handle	RP2-BDR3
		Long Handle	RP2-BJR3
	1 Spring Return Right to Centre	Standard Handle	RP2-BD8
		Long Handle	RP2-BJ8
	1 Spring Return Left to Centre	Standard Handle	RP2-BD7
		Long Handle	RP2-BJ7

- For legend plates refer page F20

- For body / contact assemblies refer page F17, F18 & F19

- For accessories refer page F19 & F20

- For complete assemblies refer page F21 & F22

Control & Signalling Units ϕ 22.5mm Plastic

Illuminated Push Buttons, Selector & Key Switches (Type RP2-B)



RP2-BG2

Operating Heads for Key Switches - IP65

Description	Type	Key removal	Reference
2 Position	Stay Put	LH Position	RP2-BG2
		RH Position	RP2-BG02
		All Positions	RP2-BG4
3 Position	Stay Put	Centre Position	RP2-BG3
		LH and RH Position	RP2-BG5
		All 3 Positions	RP2-BG0
		RH Position	RP2-BG09
		LH Position	RP2-BG9
		Centre Position	RP2-BG7
	Both Side Spring Return To Centre	Centre Position	RP2-BG8



RP2-BW35

Operating Heads for Illuminated Push Buttons - IP65

Description	Application	Colour	Reference
Flush Push Button Spring Return	For Incandescent Bulbs	○ White	RP2-BW31
		● Green	RP2-BW33
		● Red	RP2-BW34
		● Amber	RP2-BW35
		● Blue	RP2-BW36
		○ Clear	RP2-BW37
Projecting Push Button Spring Return	For Incandescent Bulbs	○ White	RP2-BW11
		● Green	RP2-BW13
		● Red	RP2-BW14
		● Amber	RP2-BW15
		● Blue	RP2-BW16
		○ Clear	RP2-BW17
Flush Push Button Spring Return	For LED	○ White	RP2-BWL31
		● Green	RP2-BWL33
		● Red	RP2-BWL34
		● Amber	RP2-BWL35
		● Blue	RP2-BWL36
		○ Clear	RP2-BWL37
Projecting Push Button Spring Return	For LED	● Yellow	RP2-BWL38
		○ White	RP2-BWL11
		● Green	RP2-BWL13
		● Red	RP2-BWL14
		● Amber	RP2-BWL15
		● Blue	RP2-BWL16
Booted Type Flush Push Button Illuminated Type	For Incandescent Bulbs	○ Clear	RP2-BWL17
		● Yellow	RP2-BWL18
		○ White	RP2-BW51
		● Green	RP2-BW53
		● Red	RP2-BW54
		● Amber	RP2-BW55
		● Blue	RP2-BW56
		○ Clear	RP2-BW57



RP2-BW14



RP2-BW16

- For legend plates refer page F20
- For accessories refer page F19 & F20
- For body / contact assemblies refer page F17, F18 & F19
- For complete assemblies refer page F21 & F22

Control & Signalling Units ϕ 22.5mm Plastic

Pilot Light Heads & Bodies (Type RP2-B)



RP2-BV03



RP2-BV05



RP2-BV6



RCB7-IVL-73

Pilot Light Heads

Description	Colour		Reference
For Incandescent Bulbs	○	White	RP2-BV01
	●	Green	RP2-BV03
	●	Red	RP2-BV04
	●	Amber	RP2-BV05
	●	Blue	RP2-BV06
		Clear	RP2-BV07
		Yellow	RP2-BV08
High Contrast, for use With Neon Bulbs** or LEDs	○	White	RP2-BVL01
	●	Green	RP2-BVL03
	●	Red	RP2-BVL04
	●	Amber	RP2-BVL05
	●	Blue	RP2-BVL06
		Clear	RP2-BVL07
		Yellow	RP2-BVL08

Complete Pilot Light Bodies

Description	Supply voltage	Colour	Reference
Direct BA 9s Filament Bulb* Supplied	12V / 24V / 48V / 110V / 130V (AC)(DC) ○	-	RP2-BV6■
Through Resistor BA 9s, 130V Filament Bulb Supplied	240V (AC)(DC)	-	RP2-BV7
Through Resistor & Diode BA 9s, 130V Filament Bulb Supplied	240V (AC)	-	RP2-BVD7
Via Integral Transformer 1.2VA BA 9s, 6V Filament Bulb Supplied	110V / 6V (AC)	-	RP2-BV3
	220V-240V / 6V (AC)	-	RP2-BV4
Direct BA 9s, Neon Bulb Supplied	220V / 380V / 415V (AC)(DC)	● Green	RP2-BVN63■
		● Red	RP2-BVN64■
		● Amber	RP2-BVN65■
Integral Circuit & Cluster LED	12V, 24V, 48V (AC)(DC) 110VAC, 110VDC 220V (DC) 240V (AC)	○ White	RP2-BVL71■
		● Green	RP2-BVL73■
		● Red	RP2-BVL74■
		● Amber	RP2-BVL75■
		● Blue	RP2-BVL76■
		Clear	RP2-BVL77■
		Yellow	RP2-BVL78■

Integrated LED Pilot Lamps (Barrel Type LEDs) ♦

Description	Supply voltage	Colour	Reference
Integrated LED Pilot Lamps	12V, 24V, 48V (AC)(DC) 110VAC 110VDC 220VDC 240VAC	○ White	RCB7-ML-71
		● Green	RCB7-IVL-73
		● Red	RCB7-IVL-74
		● Amber	RCB7-IVL-75
		● Blue	RCB7-IVL-76
		Clear	RCB7-IVL-77
		Yellow	RCB7-IVL-78

- ○ Body assemblies (suitable for bulb 2.6W max.) upto 230V max. available without bulb
- * Bulb rating 12V to 130V, 2.6W (max.)
- ** For Neon bulbs, only Green, Red & Amber is available.
- ■ Please mention voltage while ordering
- For accessories refer page F19 & F20
- For legend plates refer page F20
- For complete assemblies refer page F21 & F22
- ♦ UL approved

Control & Signalling Units ϕ 22.5mm Plastic

Double Colour LED, Buzzer & Assemblies for Illuminated / Non-Illuminated type Push Buttons & Selector Switches (Type RP2-B)



RCB7-IVL-734■



RB2-KS■



RB2-BE101

Double Colour LED ❖

Description	Application & Supply Voltage	Colour	Reference
Double Colour LED	Instead of two Pilot Lamps, only one is required. When installed with the circuit, during on stage Green will glow and when tripped Red will glow. 12V, 24V, 48V, 110V, 240V (AC)(DC)	● Red	RCB7-ML-734■
		● Green	
		● Red	RCB7-ML-736■
		● Blue	
		● Red	RCB7-ML-713■
		○ White	
		● Yellow	RCB7-ML-738■
		● Green	
		● Yellow	RCB7-ML-768■
		● Blue	
		● Yellow	RCB7-ML-718■
		○ White	

Buzzer ❖

Description	Application & Supply Voltage	Colour	Reference
Buzzer	Intermittent Sounding Flashing Buzzer 15~20mA, Sound level 80dB. 12V, 24V, 48V, 110V (AC)(DC) 220V DC, 240V AC	● RED	RB2-KS■

Body assemblies with fixing collar & contact blocks (screw clamp terminal connections)

Description	Contact	Type	Reference
For Push Buttons, Selector and Key Switches	NO	Standard	RP2-BZ101
	NC	Standard	RP2-BZ102
	NO+NO	Standard	RP2-BZ103
	NC+NC	Standard	RP2-BZ104
	NO+NC	Standard	RP2-BZ105
	NO	Gold Flash	RP2-BZ1016
	NC	Gold Flash	RP2-BZ1026
	NO+NO	Gold Flash	RP2-BZ1036
	NC+NC	Gold Flash	RP2-BZ1046
	NO+NC	Gold Flash	RP2-BZ1056

Additional / Replacement Contact Blocks

Description	Contact	Type	Reference
For Making up Body Assemblies with 3, 4, 5 Or maximum of 6 contact blocks Or replacing 1st or 2nd contact	NO	Standard	RB2-BE101
	NC	Standard	RB2-BE102
	NO	Gold Flash	RB2-BE1016
	NC	Gold Flash	RB2-BE1026

- Please mention voltage while ordering
- For accessories refer page F19 & F20
- For complete assemblies refer page F21 & F22
- ❖ Not UL approved

Control & Signalling Units ϕ 22.5mm Plastic

Assemblies for Illuminated / Non-Illuminated type Push Buttons & Selector Switches (Type RP2-B) & Accessories



RP2-BW06



RP2-BWL7



RL1-CF■



RL1-CN■



RP2-BV004

Body assemblies for illuminated Push Buttons & Selectors with or w/o Contacts

Description	Supply Voltage	Contact	Colour	Reference
Direct BA 9s Filament Bulb* Supplied	12V / 24V / 48V / 110V / 130V (AC)(DC)○	NO + NC		RP2-BW065■
		W/O Contact Blocks		RP2-BW06■
Through Resistor BA 9s, 130V Filament Bulb Supplied	220V (AC)(DC)	NO + NC		RP2-BW075
		W/O Contact Blocks		RP2-BW07
Through Resistor & Diode BA 9s 130V Bulb Supplied	240V (AC)	NO + NC		RP2-BWD075
		W/O Contact Blocks		RP2-BWD07
Direct BA 9s Neon Bulb Supplied	220V / 380V / 415V (AC)(DC)	NO + NC	● Green	RP2-BWN0635■
			○ Natural	RP2-BWN0655■
		W/O Contact Blocks	● Green	RP2-BWN063■
			○ Natural	RP2-BWN065■
With Integral Circuit & Cluster LED	12V, 24V, 48V (AC)(DC) 110VAC, 110VDC 240V (AC) 220V (DC)	NO + NC	○ White	RP2-BWL715■
			● Green	RP2-BWL735■
			● Red	RP2-BWL745■
			● Amber	RP2-BWL755■
			● Blue	RP2-BWL765■
			○ Clear	RP2-BWL775■
			● Yellow	RP2-BWL785■
		W/O Contact Blocks	○ White	RP2-BWL71■
			● Green	RP2-BWL73■
			● Red	RP2-BWL74■
			● Amber	RP2-BWL75■
			● Blue	RP2-BWL76■
			○ Clear	RP2-BWL77■
			● Yellow	RP2-BWL78■

Bulbs

Description	Supply Voltage	Colour	Reference
Incandescent Filament Lamp (Different wattage for various voltages)	6V, 12V, 24V, 48V, 130V	Clear	RL1-CF■
Neon BA 9s	220V, 380V, 415V	● Green	RL1-CN3■
		○ Natural	RL1-CN■

Lenses

Description	Colour	Reference
Set of Lens for (One Inner Diffuser & One outer lens) for Pilot Lamp Head	○ White	RP2-BV001
	● Green	RP2-BV003
	● Red	RP2-BV004
	● Amber	RP2-BV005
	● Blue	RP2-BV006
	○ Clear	RP2-BV007
Set of Lens for (One Inner Diffuser & One outer lens) for Illuminating Actuator	○ White	RP2-BW001
	● Green	RP2-BW003
	● Red	RP2-BW004
	● Amber	RP2-BW005
	● Blue	RP2-BW006
	○ Clear	RP2-BW007
Lenses for Illuminating LED & Neon** Actuator (Without Inner Diffuser)	○ White	RP2-BWL001
	● Green	RP2-BWL003
	● Red	RP2-BWL004
	● Amber	RP2-BWL005
	● Blue	RP2-BWL006
	○ Clear	RP2-BWL007
	● Yellow	RP2-BWL008

- ○ Body assemblies (suitable for bulb 2.6W max.) upto 230V max. available without bulb
- * Bulb rating 12V to 130V, 2.6W (max.);
- For accessories refer page F19 & F20
- ** For Neon Bulbs, only Green, Red & Amber is available
- ■ Please mention voltage while ordering
- For complete assemblies refer page F21 & F22

F

Control & Signalling Units ϕ 22.5mm Plastic

Accessories, Legend Plates & Reset Extended Push Buttons



RP2-B



RB2-RPX



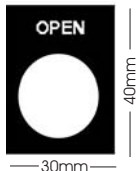
RP2-BZ41M



RB2-QC12



RB2 - K455



RB2-BY



RB2-BYN23**



RB2-B23**



Accessories

Description	Reference
Fixing Collar	RP2-B
Reset Plunger	RB2-RPX
Bulb Extractor for Ba 9s Bulbs	RB2-X13
Quick Connector for NO / NC Contact	RB2-QC12
Spare / Replacement Keys for Key	RB2-K455
Operating Units (Key No. 455)	
Padlocking Attachment (Makes Flush Operator Inaccessible)	RB2-BZ6
Panel Adaptor Converts 30mm Hole to 22mm Hole	RP2-BZ41M

Legend Plates

Plastic	Reference
Black Coated Legend Plates with Inscription in White Colour	RP2-BY**
Emergency Stop ϕ 60mm	RP2-PY9330
Emergency Stop ϕ 90mm	RP2-PY8330
Legend Holder	RB2-BY32
Legend Plate (Reversible)	RB2-B23**
Legend Plate with Holder	RB2-BYN23**

Legends (Replace ** with...)

Text	Code	Text	Code
Blank	2301	Emergency Stop	2330
Start	2303	Stop	2304
Forward	2305	Reverse	2306
Up	2307	Down	2308
On	2311	Off	2312
Open	2313	Close	2314
Auto	2315	Hand	2316
Reset	2323	Inch	2321
Slow	2327	Fast	2328
Auto - Hand	2364	Auto - O - Hand	2385
Hand Off Auto	2387	Low	2333
High	2334	High Low	2335
Off On	2336	Stop Start	2337
Up Down	2338		

Reset Extended Push Button

Description	Reference
Reset Extended Push Button (Round Type)	RCB2AL8R
Reset Extended Push Button (Hex Type)	RCB2AL8H



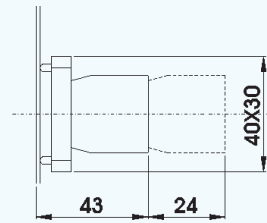
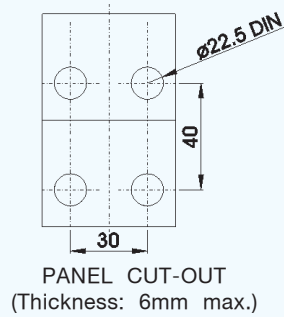
RCB2AL8R



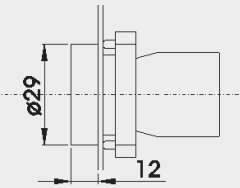
RCB2AL8H

Control & Signalling Units ϕ 22.5mm Plastic

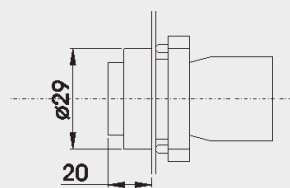
Dimensions / Complete Units' Reference



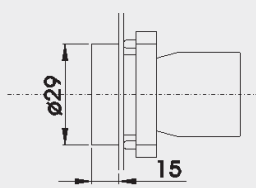
RB2-BE10+RP2-B = RCP2-BZ10



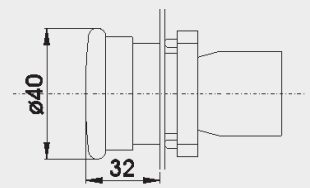
RP2-BA+RP2-BZ10=RCP2-BA
RP2-BA334+RP2-BZ10=RCP2-BA334



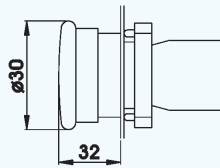
RP2-BL+RP2-BZ10=RCP2-BL



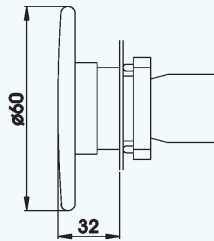
RP2-BA8+RP2-BZ10=RCP2-BA8



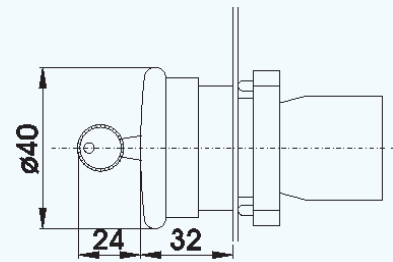
RP2-BC+RP2-BZ10=RCP2-BC
RP2-BS54+RP2-BZ10=RCP2-BS54



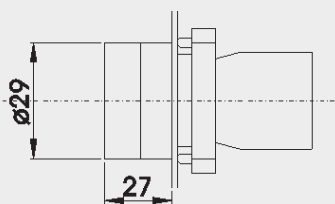
RP2-BS44+RP2-BZ10=RCP2-BS44



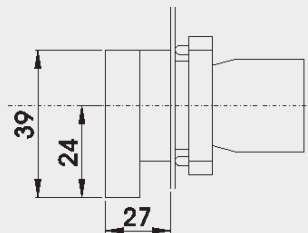
RP2-BR4+RP2-BZ10=RCP2-BR4
RP2-BS64+RP2-BZ10=RCP2-BS64



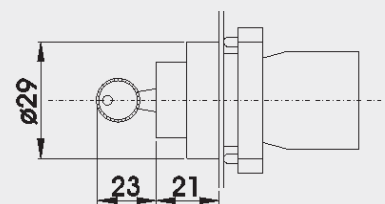
RP2-BS14+RP2-BZ10=RCP2-BS14



RP2-BD2+RP2-BZ10=RCP2-BD2
RP2-BD3+RP2-BZ10=RCP2-BD3



RP2-BJ2+RP2-BZ10=RCP2-BJ2
RP2-BJ3+RP2-BZ10=RCP2-BJ3

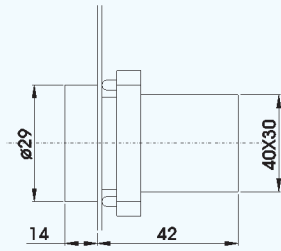


RP2-BG+RP2-BZ10=RCP2-BG
(Replace + with code for position of Key removal & operation pattern)

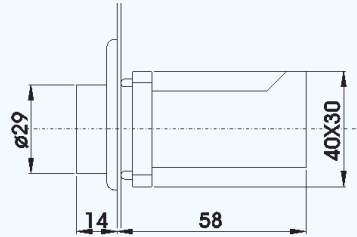
- Replace + with codes for type of contacts (See page F18) & • with colour codes (See page F15 & F16)
- For non-illuminated push button heads, selector switches & key switches, refer page F15 & F16

Control & Signalling Units ϕ 22.5mm Plastic

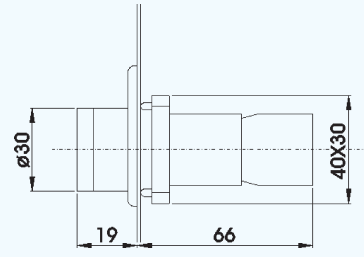
Dimensions / Complete Units' Reference



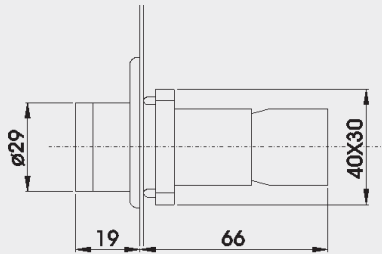
RP2-BV0●+RP2-BV6 = RCP2-BV6●
 RP2-BV0●+RP2-BVN6 = RCP2-BVN6●
 RP2-BV0●+RP2-BV7 = RCP2-BV7●
 RP2-BV0●+RP2-BVD7 = RCP2-BVD7●
 RP2-BVL0●+RP2-BVL7● = RCP2-BVL7●



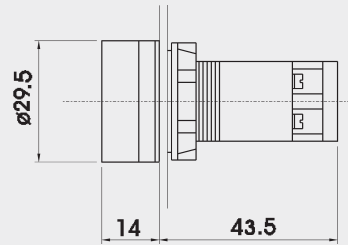
RP2-BV0●+RP2-BV3 = RCP2-BV3●
 RP2-BV0●+RP2-BV4 = RCP2-BV4●



RP2-BW5●+RP2-BW06+RB2-BE10❖ = RCP2-BW5●6❖
 RP2-BW5●+RP2-BW07+RB2-BE10❖ = RCP2-BW5●7❖
 RP2-BW5●+RP2-BWD07+RB2-BE10❖ = RCP2-BWD5●7❖
 RP2-BW5●+RP2-BW06+RB2-BE10❖ = RCP2-BW5●6❖



RP2-BW3●+RP2-BW06+RB2-BE10❖ = RCP2-BW3●6❖
 RP2-BW3●+RP2-BW07+RB2-BE10❖ = RCP2-BW3●7❖
 RP2-BW3●+RP2-BWD07+RB2-BE10❖ = RCP2-BWD3●7❖
 RP2-BWL3●+RP2-BWN06●+RB2-BE10❖ = RCP2-BWN3●6❖
 RP2-BWL3●+RP2-BWL7●+RB2-BE10❖ = RCP2-BWL3●7❖
 RP2-BW1●+RP2-BW06+RB2-BE10❖ = RCP2-BW1●6❖
 RP2-BW1●+RP2-BW07+RB2-BE10❖ = RCP2-BW1●7❖
 RP2-BW1●+RP2-BWD07+RB2-BE10❖ = RCP2-BWD1●7❖
 RP2-BWL1●+RP2-BWN06●+RB2-BE10❖ = RCP2-BWN3●6❖
 RP2-BWL1●+RP2-BWL7●+RB2-BE10❖ = RCP2-BWL3●7❖



RCP7-IVL-7●

- Replace '❖' with codes for type of contacts (See page F-18) & '●' with colour codes (See page F-16 & F-17)
- For illuminated push button heads, refer page F-16
- For pilot lamp head, refer page F-17



Control Stations

Control Stations

Characteristics

General Characteristics

Products	Control Stations
Reference Standard	IEC 60947-5-1, EN 60947-5-1, IEC 337-1, UL 508, CSA C-22-2 n° 14
Approval	UL, cUL, CSA, CE
Protection Degree	IP 65 / IP 66 (as per IEC), NEMA 4 / 4X (special version)
Ambient Temperature	-40°C ~ + 70°C (Storage) -25°C ~ + 70°C (Operation)
Vibration Resistance	15g (40 Hz < frequency < 500 Hz) conforming to IEC 68-2-6
Shock Resistance	Push Buttons : 70g, Mushroom Head Push Buttons : 15g, Selector Switches : 200g conforming to IEC 68-2-27
Material and Colour	Thermoplastic - grey lid and black base for 1,2,3,4 way, yellow lid & black base for one way Aluminium Die Cast - grey lid and dark grey base
Cable Entry	Knock-outs provided

Control Stations

Stations for Customer Assembly



RC1M114



RC2M241



RC3M341



RC-2M



RC-1M



RC-4M



RC-3M

Complete Control Stations - Start & Stop Functions Metal, Spring Return

Description	Scheme	Colour	Marking on Legend	Reference
1 Flush Push Button	NO	3	I START	RC 1M 102 RC 1M 103
1 Flush Push Button	NC	4	O STOP	RC 1M 112 RC 1M 114
Latching Push Button	NC	4	STOP	RC 1MBS542 RC 1MYBS542
Mushroom Head Key Switch	NC	4	STOP	RC 1MBS142
2 Flush Push Button	NO+NC	3 4	I O	RC 2M 213
2 Flush Push Button	NO+NC	3 4	START STOP	RC 2M 215

Complete Control Stations - Directional/Movement Metal, Spring Return

2 Flush Push Button	NO + NO	1	↕	RC 2M 222
		2	Up-Down	RC 2M 222A
		1	↔	RC 2M 223
		2	Right-Left	RC 2M 223A
		1	Open-Close	RC 2M 241
		2	Forward-Reverse	RC 2M 222B
3 Flush Push Button	NO + NC + NO	3	Forward Stop Reverse	RC 3M 311
		4	Up Stop Down	RC 3M 321
		3	Right Stop Left	RC 3M 331
		3	Open Stop Close	RC 3M 341
		1 4 2	↕ ○ ○	RC 3M 324
		1 4 2	↔ ○ ○	RC 3M 334

Empty Control Station Enclosures for customer assembly, Metal

Description	No. of Ways	Colour	Reference
Control Station	1	LID	RC-1M
		BASE	
	2	LID	RC-2M
		BASE	
	3	LID	RC-3M
		BASE	
	4	LID	RC-4M
		BASE	

Control Stations

Operating Heads for Control Stations

Metal Operating Heads for use with RC•P & RC•M enclosures - IP65

Description	Knob Size	Colour	
Flush Push Button Spring Return		○ White	RM2-BA1
		● Black	RM2-BA2
		● Green	RM2-BA3
		● Red	RM2-BA4
		● Yellow	RM2-BA5
		● Blue	RM2-BA6
		⬆ Black Arrow on White base	RM2-BA334
		⬆ White Arrow on Black base	RM2-BA335
Recess (Guarded) Push Button		○ White	RM2-BA16
		● Black	RM2-BA26
		● Green	RM2-BA36
		● Red	RM2-BA46
		● Yellow	RM2-BA56
		● Blue	RM2-BA66
Projecting Push Button Spring Return		○ White	RM2-BL1
		● Black	RM2-BL2
		● Green	RM2-BL3
		● Red	RM2-BL4
		● Yellow	RM2-BL5
		● Blue	RM2-BL6
Booted Push Button Spring Return IP66		○ White	RM2-BP1
		● Black	RM2-BP2
		● Green	RM2-BP3
		● Red	RM2-BP4
		● Yellow	RM2-BP5
		● Blue	RM2-BP6
Flush Push Button Spring Return with Transparent Boot IP66		○ White	RM2-BA18
		● Black	RM2-BA28
		● Green	RM2-BA38
		● Red	RM2-BA48
		● Yellow	RM2-BA58
		● Blue	RM2-BA68
Mushroom Head Push Button Spring Return		● Black	RM2-BC2
		● Green	RM2-BC3
		● Red	RM2-BC4
		● Yellow	RM2-BC5
		● Blue	RM2-BC6
	φ 40mm	● Red	RM2-BR4
	φ 60mm		
Mushroom Head Push Button Turn to Release	φ 30mm	● Red	RM2-BS44
	φ 40mm	● Red	RM2-BS54
	φ 60mm	● Red	RM2-BS64
Mushroom Head Push Button Key Release - Key No. 455	φ 40mm	● Red	RM2-BS14
Mushroom Head Push Button	φ 40mm	● Red (Pre Marked)	RM2-BT4
Push to Stay and Pull to Release		● Red	RM2-BT43

Operating Heads with Black metal bezel

TO Order add Suffix '7' to above e.g. RM2-BA1 Becomes RM2-BA17



RM2-BA4



RM2-BL4



RM2-BP4



RM2-BA48



RM2-BS54



RM2-BS14

Control Stations

Operating Heads for Control Stations & Dimensions



RM2-BD2



RM2-BJ2



RB2-BE101-BM

Metal Selector Heads for use with RC•P & RC•M enclosures - IP65

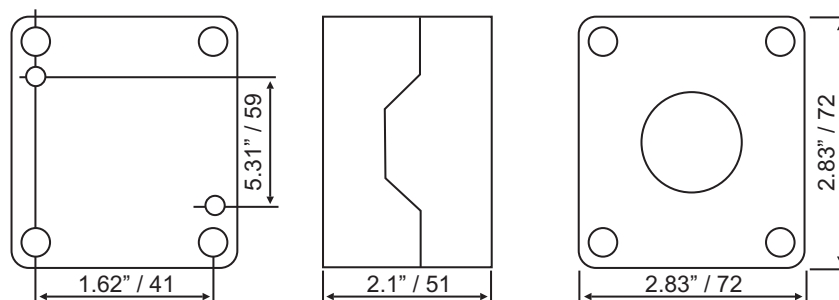
Description	Type	Operator	Reference
2 Position	Stay Put	Standard Handle	RM2-BD2
		Long Handle	RM2-BJ2
	Spring Return	Standard Handle	RM2-BDR2
		Long Handle	RM2-BJR2
3 Position	Stay Put	Standard Handle	RM2-BD3
		Long Handle	RM2-BJ3
	Spring Return	Standard Handle	RM2-BDR3
		Long Handle	RM2-BJR3
	1 Spring Return Right to Centre	Standard Handle	RM2-BD8
		Long Handle	RM2-BJ8
	1 Spring Return Left to Centre	Standard Handle	RM2-BD7
		Long Handle	RM2-BJ7

Metal Key Selector Heads for use with RC•P & RC•M enclosures - IP65

Description	Key Removal	Key Removal	Reference
2 Position Key Switch (Key No. 455)	Stay Put	LH Position	RM2-BG2
		RH Position	RM2-BG02
		All Positions	RM2-BG4
	1 Spring Return Right to Left	LH Position	RM2-BG6
3 Position Key Switch	Stay Put	Centre Position	RM2-BG3
		LH and RH Position	RM2-BG5
		All 3 Positions	RM2-BG0
		RH Position	RM2-BG09
		LH Position	RM2-BG9
	Both Side Spring Return to Centre	Centre Position	RM2-BG7
	Stay Put to Left Spring Return From Right to Centre	Centre Position	RM2-BG8

Contact Blocks (Base Mounted) for use with RC•M enclosures - IP65

Description	Contact	Type	Reference
Contact Blocks	NO	Standard	RB2-BE101-BM
	NC	Standard	RB2-BE102-BM
	NO	Gold Flash	RB2-BE1016-BM
	NC	Gold Flash	RB2-BE1026-BM



Control Stations

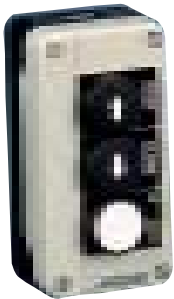
Plastic Operating Heads for Control Stations



RC1P114



RC2P241



RC3P341



RC-2P



RC-1P



RC-4P



RC-3P



RC-1PY

Complete Control Stations - Start & Stop Functions Plastic, Spring Return

Description	Scheme	Colour	Marking on Legend	Reference
1 Flush Push Button	NO	3	I START	RC 1P 102 RC 1P 103
1 Flush Push Button	NC	4	O STOP	RC 1P 112 RC 1P 114
Latching Push Button	NC	4	STOP	RC 1PBS542 RC 1PYBS542
Mushroom Head Key Switch	NC	4	STOP	RC 1PBS142 RC 1PYBS142
2 Flush Push Button	NO+NC	3 4	I O	RC 2P 213
2 Flush Push Button	NO+NC	3 4	START STOP	RC 2P 215

Complete Control Stations - Directional/Movement Plastic, Spring Return

2 Flush Push Button	NO + NO	1	↕	RC 2P 222A
		2	Up-Down	RC 2P 222A
		1	↔	RC 2P 223
		2	Right-Left	RC 2P 223A
		1	Open-Close	RC 2P 241
		2	Forward-Reverse	RC 2P 222B
3 Flush Push Button	NO + NC + NO	3 4 3	Forward Stop Reverse	RC 3P 311
			Up Stop Down	RC 3P 321
			Right Stop Left	RC 3P 331
			Open Stop Close	RC 3P 341
		1	↕	RC 3P 324
		4	↕	RC 3P 324
		2	↔	RC 3P 334
		2	↔	RC 3P 334

Empty Control Station Enclosures for customer assembly, plastic

Description	No. of Ways	Colour	Reference
Control Station Plastic Enclosure	1	LID	RC-1P
		BASE	
	2	LID	RC-2P
		BASE	
	3	LID	RC-3P
		BASE	
	4	LID	RC-4P
		BASE	
	1	LID	RC-1PY
		BASE	

Control Stations

Plastic Operating Heads for Control Stations & Dimensions



RP2-BA3



RP2-BL6



RP2-BA48



RP2-BC2



RP2-BA26



RP2-BD2

Plastic Operating Heads for use with RC●P & RC●M enclosures - IP65

Description	Knob Size	Colour	
Flush Push Button Spring Return		○ White	RP2-BA1
		● Black	RP2-BA2
		● Green	RP2-BA3
		● Red	RP2-BA4
		● Yellow	RP2-BA5
		● Blue	RP2-BA6
		↑ Black arrow on White base	RP2-BA334
		↑ White arrow on Black base	RP2-BA335
Projecting Push Button Spring Return		○ White	RP2-BL1
		● Black	RP2-BL2
		● Green	RP2-BL3
		● Red	RP2-BL4
		● Yellow	RP2-BL5
		● Blue	RP2-BL6
Flush Push Button Spring Return with Transparent Boot IP66		○ White	RP2-BA18
		● Black	RP2-BA28
		● Green	RP2-BA38
		● Red	RP2-BA48
		● Yellow	RP2-BA58
		● Blue	RP2-BA68
Mushroom Head Push Button Spring Return	φ 40mm	● Black	RP2-BC2
		● Green	RP2-BC3
		● Red	RP2-BC4
		● Yellow	RP2-BC5
		● Blue	RP2-BC6
		● Red	RP2-BR4
Mushroom Head Push Button Turn to Release	φ 30mm	● Red	RP2-BS44
	φ 40mm	● Red	RP2-BS54
	φ 60mm	● Red	RP2-BS64
Mushroom Head Pushbutton Key Release - Key No. 455	φ 40mm	● Red	RP2-BS14
Recess (Guarded) Push Button		○ White	RP2-BA16
		● Black	RP2-BA26
		● Green	RP2-BA36
		● Red	RP2-BA46
		● Yellow	RP2-BA56
		● Blue	RP2-BA66

Plastic Operating Heads for Selector Switches for use with RC●P & RC●M enclosures - IP65

Description	Type	Operator	Reference
2 Position	Stay Put	Standard Handle	RP2-BD2
		Long Handle	RP2-BJ2
3 Position	Stay Put	Standard Handle	RP2-BD3
		Long Handle	RP2-BJ3
	Spring Return	Standard Handle	RP2-BDR3
		Long Handle	RP2-BJR3
	1 Spring Return Right to Centre	Standard Handle	RP2-BD8
		Long Handle	RP2-BJ8
	1 Spring Return Left to Centre	Standard Handle	RP2-BD7
		Long Handle	RP2-BJ7

Control Stations

Push Button Operating Heads for Control Stations & Dimensions

Plastic Operating Heads for Key Switches - IP 65 for use with RC●P & RC●M enclosures - IP65

Description	Type	Key removal	Reference
2 Position	Stay Put	LH Position	RP2-BG2
		RH Position	RP2-BG02
		All Positions	RP2-BG4
3 Position	Stay Put	Centre Position	RP2-BG3
		LH and RH Position	RP2-BG5
		All 3 Positions	RP2-BG0
		RH Position	RP2-BG09
		LH Position	RP2-BG9
	Both Side Spring Return To Centre	Centre Position	RP2-BG7
	Stay Put To Left Spring Return From Right To Centre	Centre Position	RP2-BG8



RP2-BG2



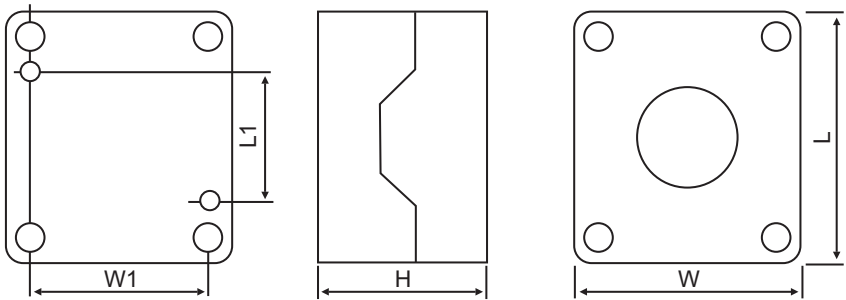
RB2-BE101-BP

Contact Blocks (Base Mounted) for use with RC●P enclosures - IP65

Description	Contact	Type	Reference
Contact Blocks	NO	Standard	RB2-BE101-BP
	NC	Standard	RB2-BE102-BP
	NO	Gold Flash	RB2-BE1016-BP
	NC	Gold Flash	RB2-BE1026-BP

Dimensions

	Plastic				Metal			
	1 Hole (inch/mm)	2 Hole (inch/mm)	3 Hole (inch/mm)	4 Hole (inch/mm)	1 Hole (inch/mm)	2 Hole (inch/mm)	3 Hole (inch/mm)	4 Hole (inch/mm)
H	2.1" / 51	2.1" / 51	2.1" / 51	2.1" / 51	2.1" / 51	2.1" / 51	2.1" / 51	2.1" / 51
W	2.68" / 68	2.68" / 68	2.68" / 68	2.68" / 68	2.68" / 68	2.68" / 68	2.68" / 68	2.68" / 68
L	2.91" / 74	4.09" / 104	5.28" / 134	6.46" / 164	2.91" / 74	4.13" / 105	5.28" / 134	6.46" / 164
W1	2.13" / 54	2.13" / 54	2.13" / 54	2.13" / 54	2.13" / 54	2.13" / 54	2.13" / 54	2.13" / 54
L1	1.5" / 38	2.68" / 68	2.68" / 68	5.04" / 128	1.31" / 46	3.07" / 78	4.25" / 108	5.43" / 138



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