



ELECTRO KAVEH

Mfg. & Ind. Group



LV PRODUCTS CATALOGUE 2024

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Cam - Operated Switch

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Introduction :

In 1982, Electro Kaveh Manufacturing Industrial Group was established by the certificate of Ministry of Industries to produce all kinds of Electric Cam operated switches. In the same year this group did the first and primary actions to construct the factory in Kaveh industrial city. In 1986, After constructing the building and fixing and operating the machinery and equipment, and as soon as the parts were available for assembling and started its production activities formally.

In 1988, Electro Kaveh designed and Produced a Floating Switch.

In 1991, by producing all kinds of the required metal and plastic parts, this company reached self-sufficiency and then gradually and little by little succeeded to do mass-production of Electric Cam switches from 12A up to 630A in various types.

In 1996, the production line of Miniature Circuit Breakers in Electro Kaveh factory was operated and it succeeded to produce MCB switches from 2A up to 63A in SP, DP, TP and TPN types. Their design updated in 2013 and increase rated current up to 125A for AC & DC MCBs and added the RCCBs and RCBOs to KAVEH products.

In 2006, in order to give variety to the products, the company put the production of Electric Automotive parts into the program of its activities and succeeded to produce kinds of DC relays for light & heavy vehicles.

In 2011, Electro Kaveh designed and produced the Changeover Switch.

In 2013, Electro Kaveh started the MCCB production project and in 2016 produced them.

In 2015, Electro Kaveh produced the Single Phase Multi-Tariff Electronic Energy Meter.

In 2016, Electro Kaveh designed and produced the AC Contactor and Thermal Over load relay.

In 2016, Electro Kaveh Manufacturing Industrial Group by means of its 30-year experience has conformed itself with the modern world technology and has put in its programs and activities the new design of Cam switches in high protection degree (IP 65).

In 2017, Electro Kaveh designed and produced the Electronic Relays.



Cam - Operated Switch



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Cam - Operated Switch

General :

Cam - Operated Switch is a kind of switch with semi-independent manual operation that is defined in the standard as follows :

Switch: Mechanical Making and Breaking device capable of connecting to, Transmit & disconnect the circuit is in normal conditions which may include specified operating overload conditions and can also be for a certain period under abnormal conditions such as short circuit current will crossing. A Switch short-circuit currents may be able to connect, but can not break it.

Semi – independent manual operation: The action applies only to direct energy to be done manually. Manually force to a much greater extent so that it leads to increased switching Unless the operator is deliberately delayed .

Cam operated & Selector Switches from Electro Kaveh company, covers a full range of cam operated switches which are suitable for Switching circuits and power supplies, Changeover switch (power - generator), Multi-step switch (selector switch), Ammeter switch, voltmeter switch and Motor Reversing cam switches like star – triangle ,

Rated currents from 12A up to 630A with rotation angles of 30, 45, 60 and 90 degrees, ability to install inter - lock mechanism and very high variation in the layout and arrangement of contacts in utilization category AC-23A (switching motor loads or other loads to highly inductive) in accordance with international standards IEC60947-1&3 and national standards ISIRI4835 –1&3 are been produced in Electro Kaveh Group.

The quality of Electro Kaveh Switch is far beyond the expectations and requirements of the standards. The products not only approved by famous European institutions such as the International German VDE and Semko of Sweden but also local organizations like the Niroo Research Institute (NRI) and the organizations affiliated to the Ministry of Petroleum and Ministry of Energy.

Electro kaveh has certification mandatory standard from National Iranian Standards Organization .



Cam - Operated Switch

KS Model Cam-Operated switch:

KS Model is an evolution of cam-operated switches produced during several years based on the experience acquired in manufacturing different kinds of switches to local foresees industry market.

In most attempts has been taken in this type of switch to add features and capabilities and advantages other its previous ones . In order to increase our loyal customer's satisfaction.

Technical features of KS Model :

- Dimensional compatibility for mounting on the equipment ease of installation.
- Operation endurance in vibration condition.
- Variety of contact configuration to cover different needs ability to be installed on MCB Rail.
- Capability of locking in each position.
- Better performance longer lifetime than ever other designs.
- Ingress protection of terminal to IP20.
- Ingress protection of plate and knob to IP65.

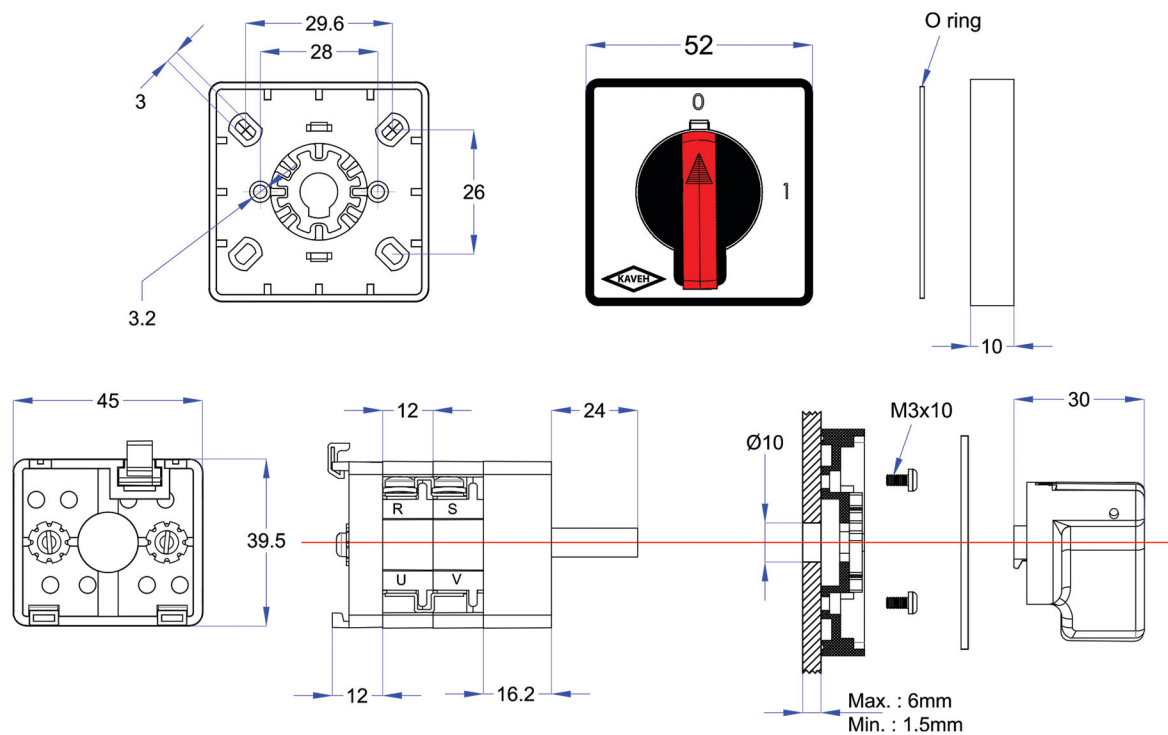
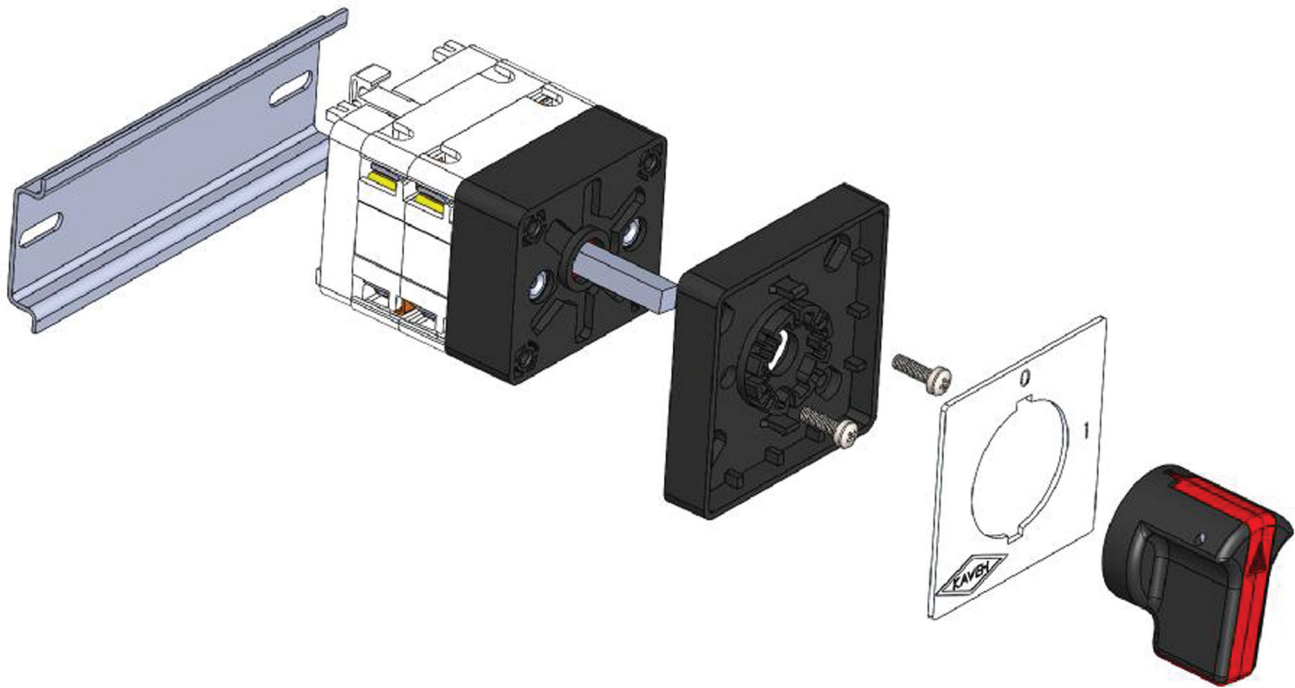


Technical Specification:

Rated Voltage (Vn)	230/400 Vac
Rated Frequency	50/60 Hz
Utilization Category	AC-23A
Rated Current (In)	12A , 16A , 20A
Thermal Current (Ith)	16A , 20A , 25A
Rated Power (400Vac)	4kW , 7.5kW , 9kW
Standard No.	IEC/EN 60947-1&3

Cam - Operated Switch

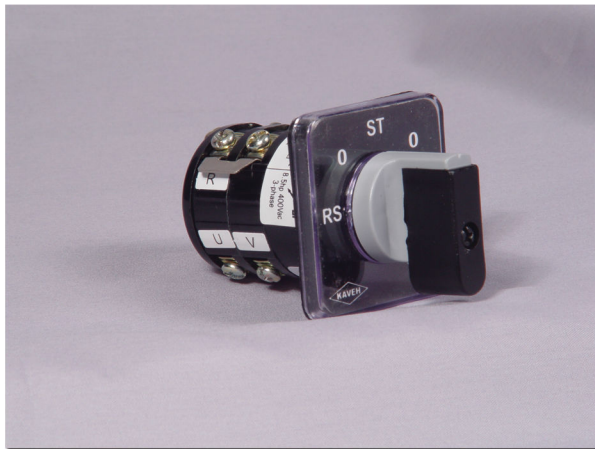
Dimension of KS Model Cam-Operated switch:



All sizes are in "mm"

Cam - Operated Switch

KA Model Classification :



KA16.00 Series



KA25.00 Series



KA50.00 Series



KA63.00 Series



KA100.00 Series



KA200.00 Series

Cam - Operated Switch

AC Utilization Category :

Rated Current Utilization Cat.		Power (KW)											
		12A	16A	20A	25A	32A	40A	50A	63A	100A	200A	400A	630A
Single Phase	110V	0.75	1.00	1.30	1.60	2.30	3.00	3.90	5.10	8.10	10.0	18.0	28.0
	230V	1.50	2.10	2.60	3.30	4.60	6.10	7.80	10.3	16.2	20.0	36.0	56.0
	400V	2.60	3.60	4.50	5.70	8.00	10.0	13.3	17.6	28.0	34.0	62.0	96.0
AC1 Non-inductive or slightly inductive loads (Resistance furnaces, lighting circuits).	110V	1.80	2.50	3.00	3.50	5.00	6.20	6.90	10.0	13.2	26.0	50.0	80.0
	230V	3.50	4.40	5.50	7.00	10.0	12.5	13.8	20.0	26.5	52.0	100	160
	400V	6.00	7.50	9.50	12.0	17.0	20.0	24.0	33.0	45.6	90.0	172	275
AC2 Slip-Ring Motors: Starting & Reversing the motor rapidly while the motor is running.	110V	1.50	2.20	2.80	3.20	4.40	5.50	6.50	8.20	13.0	23.0	44.0	70.0
	230V	3.00	4.50	5.50	6.60	8.80	11.0	13.0	16.5	26.0	46.0	88.0	140
	400V	5.10	7.40	9.00	11.7	15.2	19.0	23.0	28.5	44.0	78.0	150	240
AC3 Squirrel cage motors: Starting , Switching OFF motors during running.	110V	1.30	1.80	2.20	2.50	4.00	5.10	6.00	8.00	11.0	20.0	38.0	60.0
	230V	2.20	3.70	4.00	5.50	7.50	9.00	11.0	15.0	22.0	30.0	76.0	120
	400V	3.50	5.50	7.50	10.0	15.0	16.3	18.0	22.0	37.0	45.0	130	205
AC4 Squirrel Cage motors: Starting , Plugging , Inching.	110V	1.00	1.40	1.70	2.00	3.00	3.80	4.20	6.10	7.00	14.0	26.0	41.0
	230V	2.00	2.70	3.30	4.00	6.10	7.70	8.50	12.0	17.5	28.0	52.0	82.0
	400V	3.40	4.70	5.50	7.00	10.3	13.2	14.7	21.3	30.0	48.0	89.0	141
AC-21A⁽¹⁾ Switching of resistive loads including moderate overloads.	110V	2.00	2.75	3.30	4.40	5.50	6.90	8.50	11.0	17.6	32.0	57.0	90.0
	230V	4.00	5.50	6.60	8.80	11.0	13.8	17.0	22.0	35.2	64.0	114	180
	400V	6.90	9.50	11.4	15.7	19.0	24.0	28.8	38.0	60.0	108	196	310
AC-22A Switching of mixed resistive & inductive loads including moderate overloads.	110V	1.80	2.50	3.00	3.90	5.00	6.30	7.60	9.80	15.6	28.0	49.0	77.0
	230V	3.50	5.00	6.00	7.80	10.0	12.5	13.3	19.6	31.2	56.0	98.0	154
	400V	6.00	8.50	10.3	13.5	17.3	21.5	25.7	34.0	54.0	95.0	168	265
AC-23A Switching of motor Overloads or other Highly inductive loads.	110V	1.50	2.10	2.60	3.30	4.20	5.20	6.40	8.30	13.2	24.0	41.0	64.0
	230V	3.00	4.00	5.50	8.50	10.0	12.0	15.0	18.5	30.0	48.0	82.0	128
	400V	4.00	7.50	9.00	15.0	18.5	21.0	25.0	30.0	45.0	82.0	141	220

(1) - A: Frequent Operations. B: Infrequent Operations.

Cam - Operated Switch

DC Utilization Category :

Rated Current (AC-23A)		12A	16A	20A	25A	32A	40A	50A	63A	100A	200A
Utilization Cat.	V(DC)	Power (KW)									
Single Pole Switching of resistive loads	24	0.28	0.38	0.48	0.60	0.75	0.90	1.15	1.40	2.20	4.50
	48	0.50	0.68	0.86	1.05	1.35	1.60	2.05	2.50	3.95	8.10
	110	1.00	1.30	1.65	2.05	2.50	3.15	4.00	5.00	8.00	15.0
	250	1.50	2.00	2.50	3.10	3.85	4.80	6.10	7.75	12.0	22.5
DC -.21B⁽¹⁾ Switching of resistive loads including moderate overloads.	24	0.25	0.34	0.43	0.55	0.67	0.80	1.00	1.25	2.00	4.00
	48	0.45	0.61	0.77	0.94	1.20	1.45	1.80	2.25	3.60	7.20
	110	0.90	1.15	1.50	1.80	2.25	2.80	3.60	4.50	7.20	13.5
	250	1.35	1.80	2.25	2.75	3.40	4.30	5.45	6.95	10.8	20.2
DC -.22B Switching of mixed resistive & inductive loads including moderate overloads.	24	0.19	0.25	0.32	0.41	0.50	0.60	0.75	0.94	1.50	3.00
	48	0.34	0.45	0.58	0.70	0.90	1.10	1.35	1.69	2.70	5.40
	110	0.67	0.86	1.12	1.35	1.69	2.10	2.70	3.35	5.40	10.1
	250	1.00	1.35	1.69	2.05	2.55	3.22	4.05	5.20	8.10	15.1
DC -.23B Switching of motor Overloads or other Highly inductive loads.	24	0.13	0.17	0.21	0.27	0.33	0.40	0.50	0.62	1.00	2.00
	48	0.22	0.30	0.38	0.47	0.60	0.77	0.90	1.13	1.80	3.60
	110	0.45	0.57	0.75	0.90	1.13	1.40	1.80	2.25	3.60	6.75
	250	0.65	0.90	1.12	1.35	1.70	2.10	2.65	3.40	5.00	10.0
(1) - A: Frequent Operations. B: Infrequent Operations.											

Cam - Operated Switch

Standard Diagrams :

Code:01 کلید تک فاز یکطرفه

		1		POS.
1	2		CONT.	
		1	ELEM.	

60°

Single . Pole Switch

Code:02 کلید دو فاز یکطرفه

		1		POS.
1	2		CONT.	
		1	ELEM.	

60°

Double . Pole Switch

Code:03 کلید سه فاز یکطرفه

				1		POS.
1	2	3	4		CONT.	
				1	ELEM.	

60°

Three . Pole Switch

Code:04 کلید سه فاز و نول یکطرفه

					1		POS.
1	2	3	4			CONT.	
					1	ELEM.	

60°

Four . Pole Switch

Code:05 کلید تک فاز دو طرفه

		2		POS.
		0		
1	2		CONT.	
		1	ELEM.	

60°

Single . Pole Line Change Over Switch

Code:06 کلید دو فاز دو طرفه

				2		POS.
				0		
1	2	3	4		CONT.	
				1	ELEM.	

60°

Double . Pole Line Change Over Switch

Code:07 کلید سه فاز دوطرفه

					2		POS.
					0		
1	2	3	4	5	6		CONT.
						1	ELEM.

60°

Three . Pole Line Change Over Switch

Code:07/2 N کلید سه فاز با نول دوطرفه

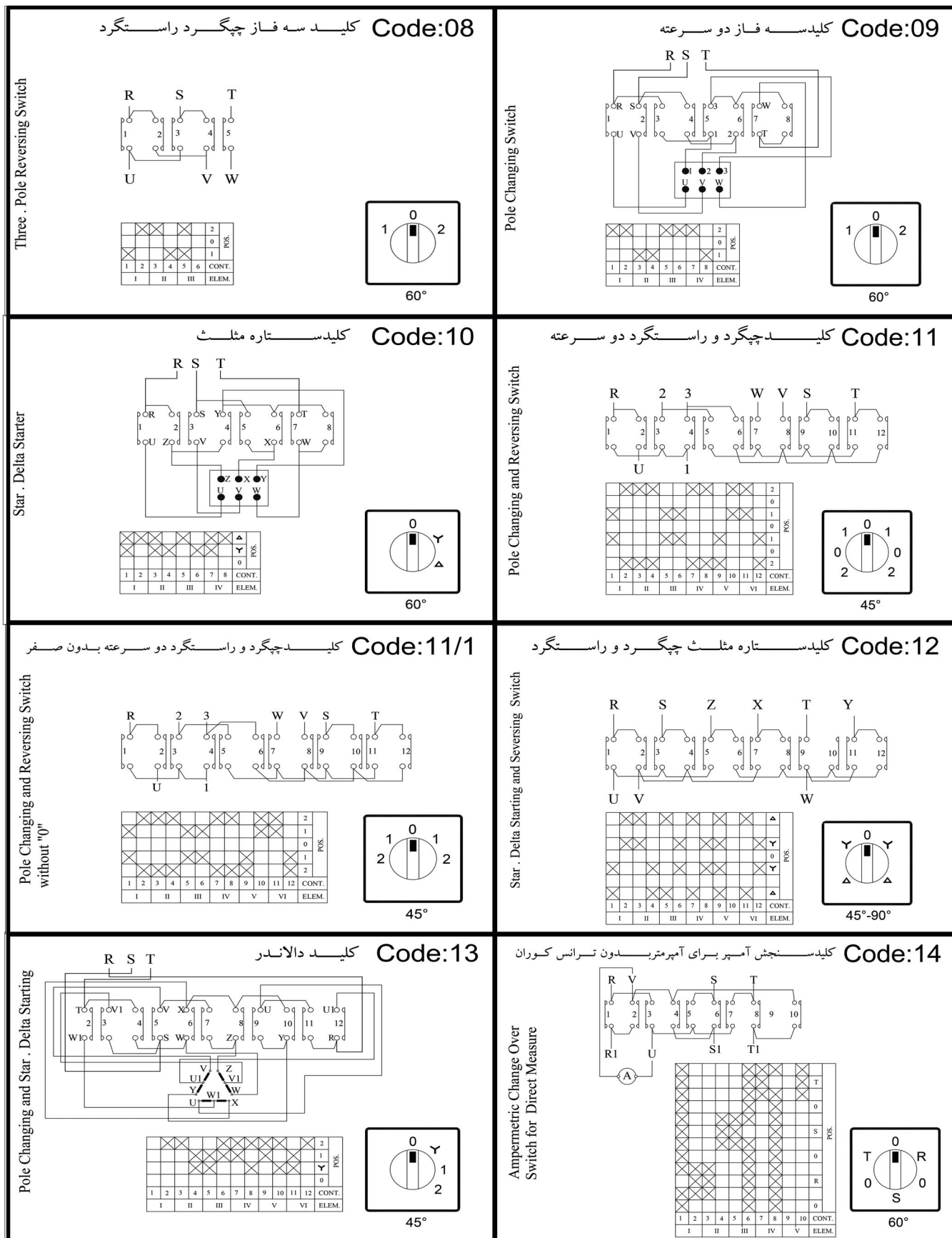
						2		POS.
						0		
1	2	3	4	5	6	7	8	CONT.
								ELEM.

60°

Four . Pole Line Change Over Switch

Cam - Operated Switch

Standard Diagrams :

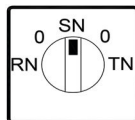
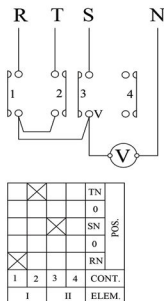


Cam - Operated Switch

Standard Diagrams :

Code:15 کلید ولت بین فاز و نول

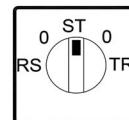
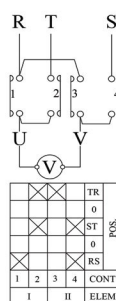
Voltmetric Change Over Switch Phase - Neutral



45°

Code:16 کلید ولت بین فاز و فاز

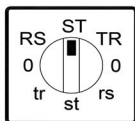
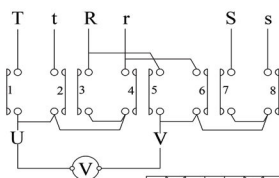
Voltmetric Change Over Switch Phase - Phase



45°

Code:17 کلید ولت بین فاز و فاز برای دو ولتاژ سه فاز

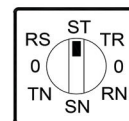
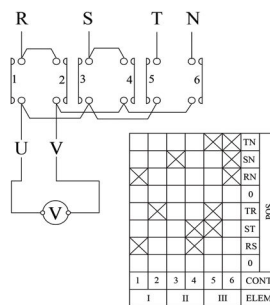
Voltmetric Change Over Switch Phase - Phase for 2 Three-Phase Voltages



45°

Code:18 کلید ولت بین فاز و فاز و هر فاز و نول

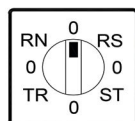
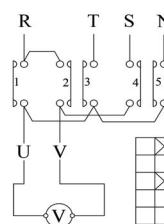
Voltmetric Change Over Switch Phase - Phase - Neutral



45°

Code:19 کلید ولت بین یک فاز با نول و فاز و فاز

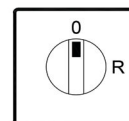
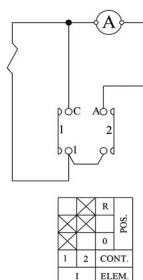
Voltmetric Change Over Switch Phase - Neutral - phase - Phase



45°

Code:20 کلید تک فاز آمپر متر

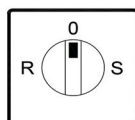
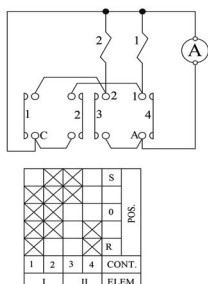
Single-Pole Ampermetric Change Over Switch for 1 Divider



90°

Code:21 کلید دو فاز آمپر متر

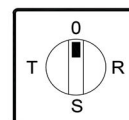
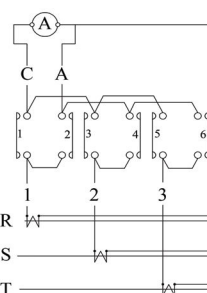
Single-Pole Ampermetric Change Over Switch for 2 Dividers



90°

Code:22 کلید سه فاز آمپر متر با ترانس کوران

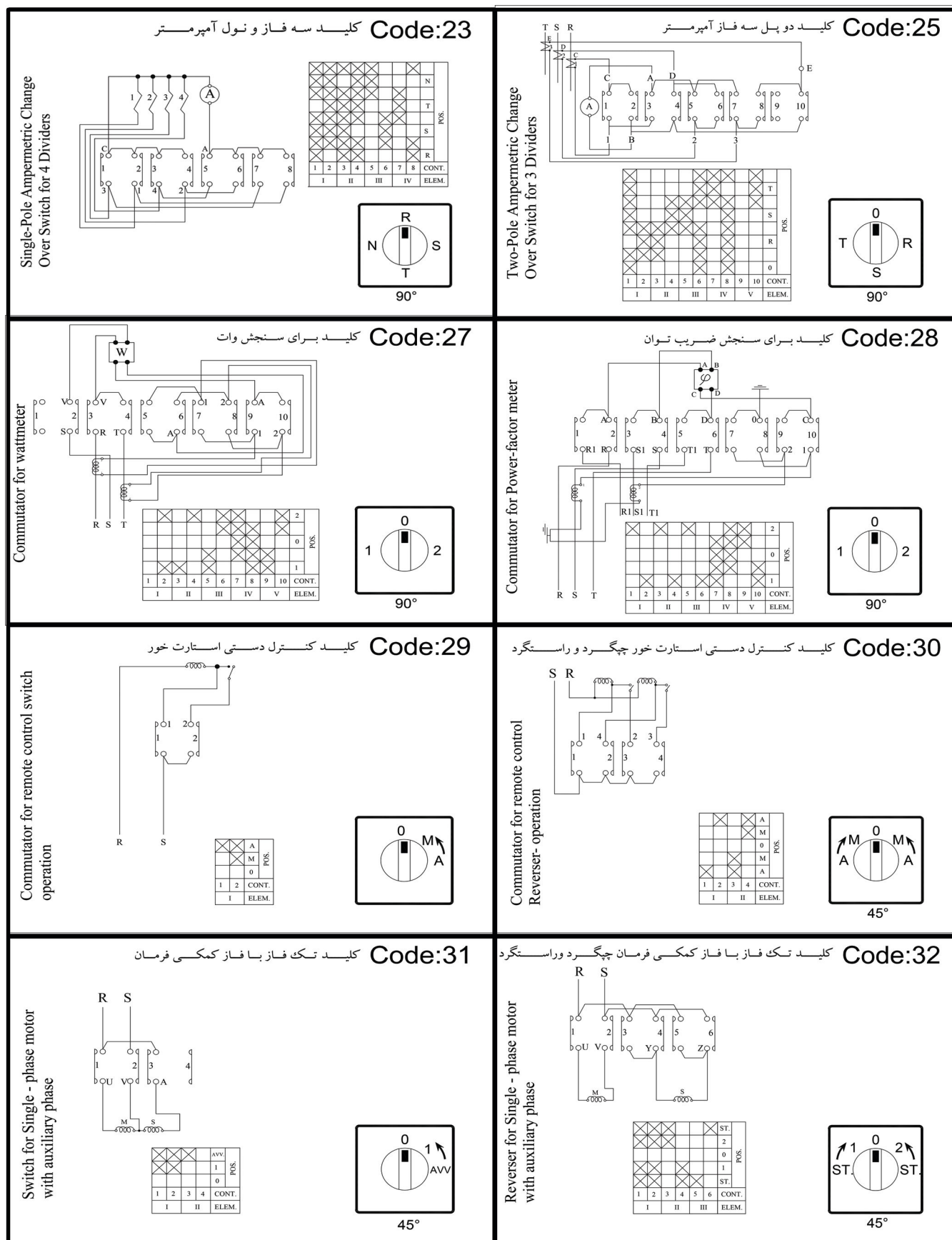
Single-Pole Ampermetric Change Over Switch for 3 Dividers



90°

Cam - Operated Switch

Standard Diagrams :



Cam - Operated Switch

Standard Diagrams :

Code:33 کلید تک فاز دو طرفه با فاز کمکی فرمان

Pole change Switch for Single - phase motor with auxiliary phase

					2	POS.
					0	
					1	AVV
1	2	3	4	5	6	CONT.
I	II	III	ELEM.			

45°

Code:34 کلید تک فاز چگردد و راستگرد با قطع کننده گریز از مرکز

Reverser for Single - Phase Motor With Centrifugal Cut-Out Switch

					2	POS.
					0	
					1	AVV
1	2	3	4	5	6	CONT.
I	II	III	ELEM.			

60°

Code:35 کلید سه فاز یکطرفه خود برگشت

Three pole switch with break self-return

				1	POS.
				0	
1	2	3	4		CONT.
I	II	ELEM.			

45°

Code:36 کلید سه فاز چگردد و راستگرد خود برگشت

Three Pole Reverser With Break Self - Return

					2	POS.
					0	
					1	AVV
1	2	3	4	5	6	CONT.
I	II	III	ELEM.			

45°

Code:37 کلید ستاره مثلث خود برگشت از ستاره به صفر

Star- delta starter with self-return to 0 position from star position

								1	POS.
								0	
								1	AVV
1	2	3	4	5	6	7	8		CONT.
I	II	III	IV	ELEM.					

30°-90°

Code:38 کلید ستاره مثلث با ترمز در جهت مقابل جریان

Star- delta starter with counter current break

										1	POS.
										0	
										1	AVV
1	2	3	4	5	6	7	8	9	10		CONT.
I	II	III	IV	V	ELEM.						

45°

Code:39 کلید تک فاز یکطرفه خود برگشت

1 Pole Switch With Break Self-Return 2 Positions

		1	POS.
		0	
1	2		CONT.
I	ELEM.		

45°

Code:40 کلید تک فاز دو طرفه خود برگشت

1 Pole Switch With Break Self-Return 3 Positions

		2	POS.
		0	
		1	
1	2		CONT.
I	ELEM.		

45°

Cam - Operated Switch

Selector Switch Diagrams :

1 Pole Changeover Switch 2 Positions, with "0" Code:CM012 کلید تک فاز دو حالتی با صفر 60°	1 Pole Changeover Switch 2 Positions, with "0" whereas previous contacts are connected Code:CM012/1 کلید تک فاز دو حالتی با صفر در حالیکه کنتاکتهای قبلی وصل هستند 60°
1 Pole Changeover Switch 2 Positions, without "0" Code:CM12 کلید تک فاز دو حالتی بدون صفر 60°	1 Pole Changeover Switch 3 Positions, with "0" Code:CM013 کلید تک فاز سه حالتی با صفر 60°
1 Pole Changeover Switch 3 Positions, with "0" whereas previous contacts are connected Code:CM013/1 کلید تک فاز سه حالتی با صفر در حالیکه کنتاکتهای قبلی وصل هستند 60°	1 Pole Changeover Switch 3 Positions, without "0" Code:CM13 کلید تک فاز سه حالتی بدون صفر 60°
1 Pole Changeover Switch 4 Positions, with "0" Code:CM014 کلید تک فاز چهار حالتی با صفر 60°	1 Pole Changeover Switch 4 Positions, without "0" Code:CM14 کلید تک فاز چهار حالتی بدون صفر 60°

Selector Switch Diagrams :

1 Pole Changeover Switch 5 Positions, with "0" Code:CM015 کلید تک فاز پنج حالتی با صفر 60°	1 Pole Changeover Switch 5 Positions, without "0" Code:CM15 کلید تک فاز پنج حالتی بدون صفر 45°
1 Pole Changeover Switch 6 Positions, with "0" Code:CM016 کلید تک فاز شش حالتی با صفر 45°	1 Pole Changeover Switch 6 Positions, without "0" Code:CM16 کلید تک فاز شش حالتی بدون صفر 60°
1 Pole Changeover Switch 7 Positions, with "0" Code:CM017 کلید تک فاز هفت حالتی با صفر 45°	1 Pole Changeover Switch 7 Positions, without "0" Code:CM17 کلید تک فاز هفت حالتی بدون صفر 45°
1 Pole Changeover Switch 8 Positions, without "0" Code:CM18 کلید تک فاز هشت حالتی بدون صفر 45°	2 Poles Changeover Switch 2 Positions, with "0" Code:CM022 کلید دو فاز دو حالتی با صفر 60°

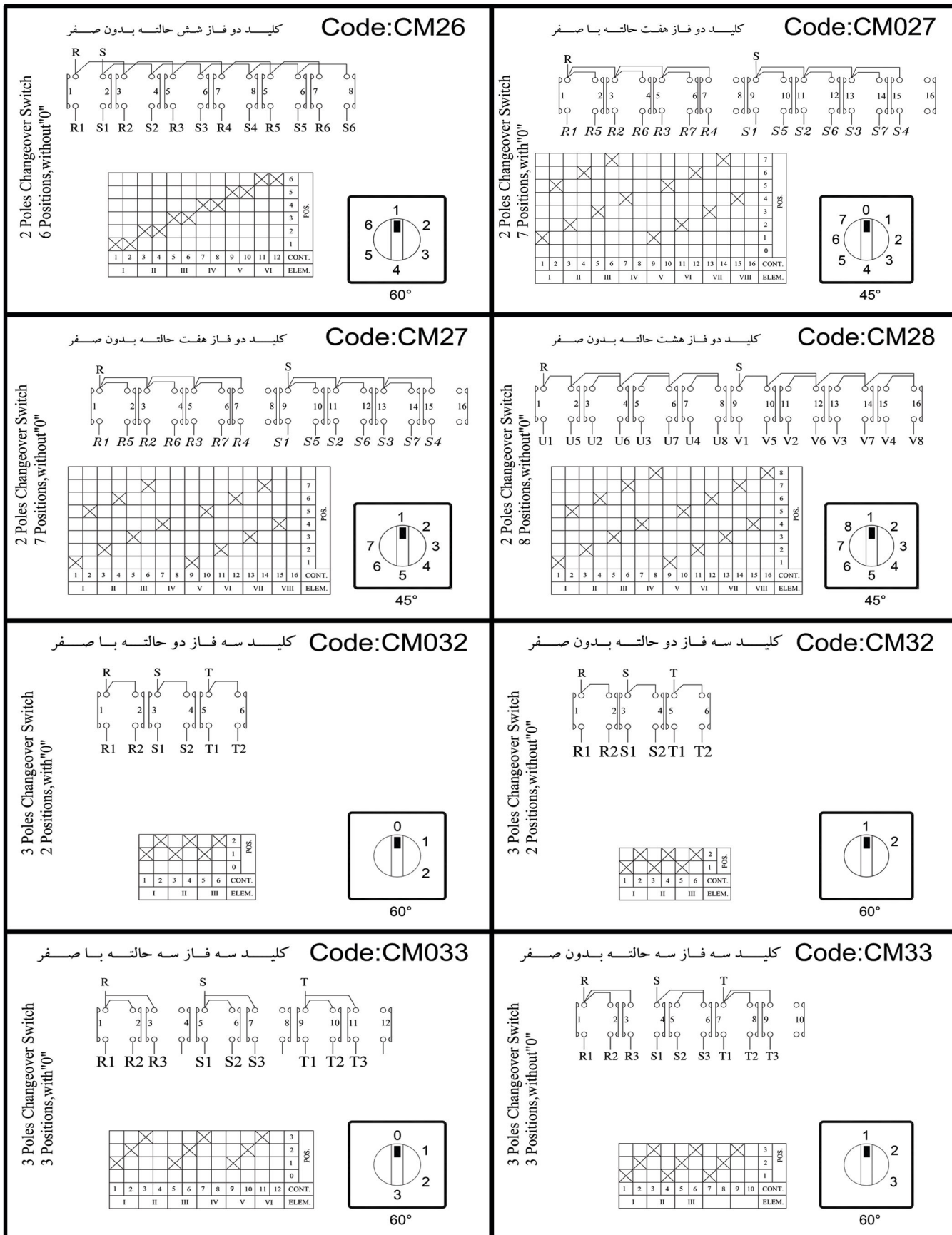
Cam - Operated Switch

Selector Switch Diagrams :

Code:CM22 کلید دو فاز دو حالتی بدون صفر 2 Poles Changeover Switch 2 Positions, without "0" 60°	Code:CM023 کلید دو فاز سه حالتی با صفر 2 Poles Changeover Switch 3 Positions, with "0" 60°
Code:CM23 کلید دو فاز سه حالتی بدون صفر 2 Poles Changeover Switch 3 Positions, without "0" 60°	Code:CM024 کلید دو فاز چهار حالتی با صفر 2 Poles Changeover Switch 4 Positions, with "0" 45°
Code:CM24 کلید دو فاز چهار حالتی بدون صفر 2 Poles Changeover Switch 4 Positions, without "0" 60°	Code:CM025 کلید دو فاز پنج حالتی با صفر 2 Poles Changeover Switch 5 Positions, with "0" 60°
Code:CM25 کلید دو فاز پنج حالتی بدون صفر 2 Poles Changeover Switch 5 Positions, without "0" 60°	Code:CM026 کلید دو فاز شش حالتی با صفر 2 Poles Changeover Switch 6 Positions, with "0" 45°

Cam - Operated Switch

Selector Switch Diagrams :



Cam - Operated Switch

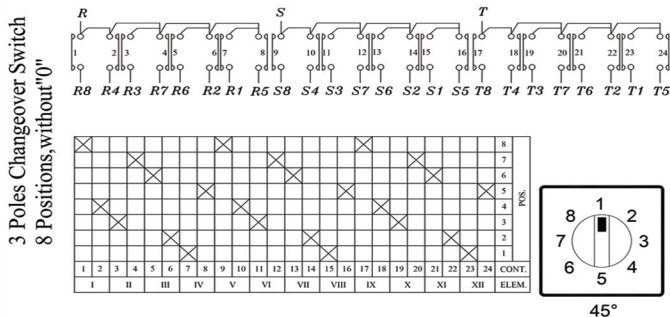
Selector Switch Diagrams :

کلید سه فاز چهار حالتی با صفر Code:CM034 3 Poles Changeover Switch 4 Positions, with "0"	کلید سه فاز چهار حالتی بدون صفر Code:CM34 3 Poles Changeover Switch 4 Positions, without "0"
کلید سه فاز پنج حالتی با صفر Code:CM035 3 Poles Changeover Switch 5 Positions, with "0"	کلید سه فاز پنج حالتی بدون صفر Code:CM35 3 Poles Changeover Switch 5 Positions, without "0"
کلید سه فاز شش حالتی با صفر Code:CM036 3 Poles Changeover Switch 6 Positions, with "0"	کلید سه فاز شش حالتی بدون صفر Code:CM36 3 Poles Changeover Switch 6 Positions, without "0"
کلید سه فاز هفت حالتی با صفر Code:CM037 3 Poles Changeover Switch 7 Positions, with "0"	کلید سه فاز هفت حالتی بدون صفر Code:CM37 3 Poles Changeover Switch 7 Positions, without "0"

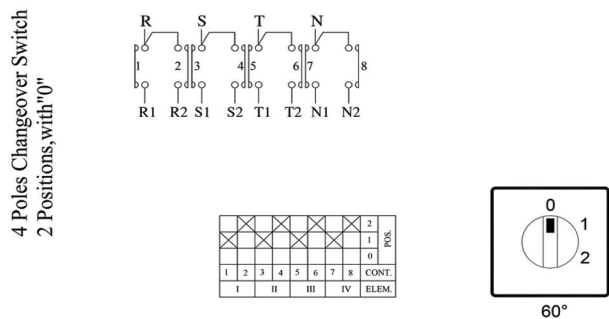
Cam - Operated Switch

Selector Switch Diagrams :

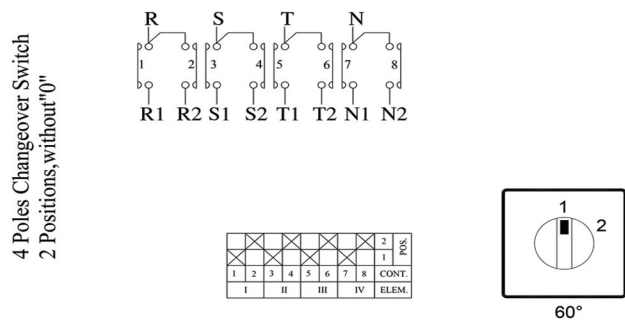
Code:CM38 کلید سه فاز هشت حالتی بدون صفر



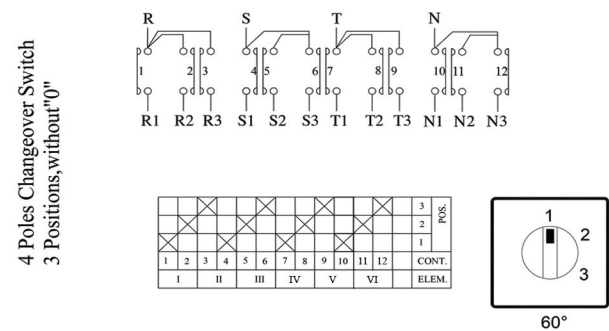
Code:CM042 کلید چهار پل دو حالتی با صفر



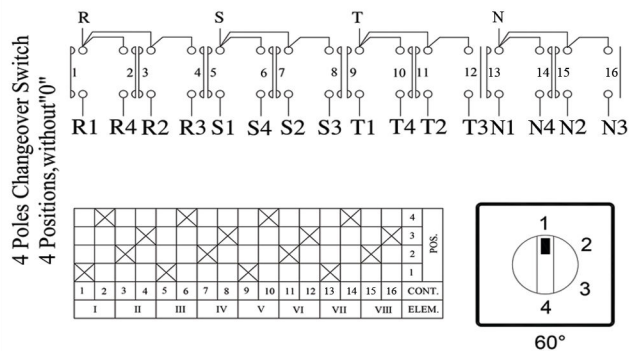
Code:CM42 کلید چهار پل دو حالتی بدون صفر



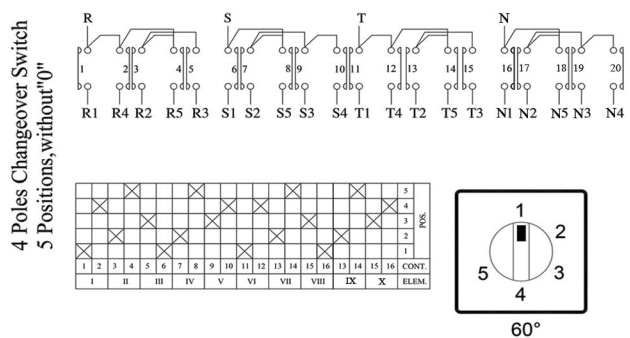
Code:CM43 کلید چهار پل سه حالتی بدون صفر



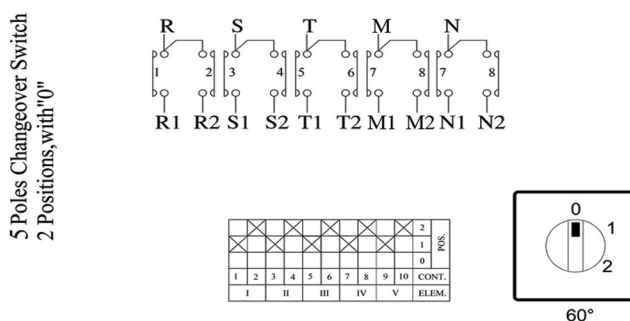
Code:CM44 کلید چهار پل چهار حالتی بدون صفر



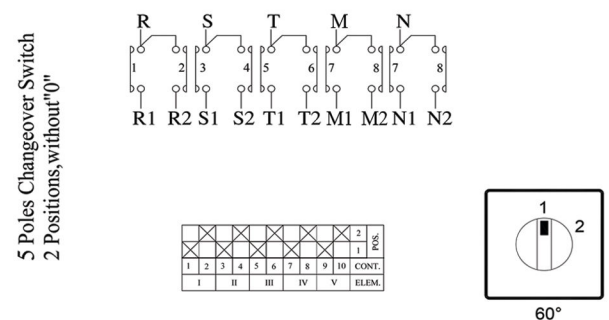
Code:CM45 کلید چهار پل پنج حالتی بدون صفر



Code : CM052 کلید پنج پل، دو حالتی با صفر



Code:CM52 کلید پنج پل دو حالتی بدون صفر

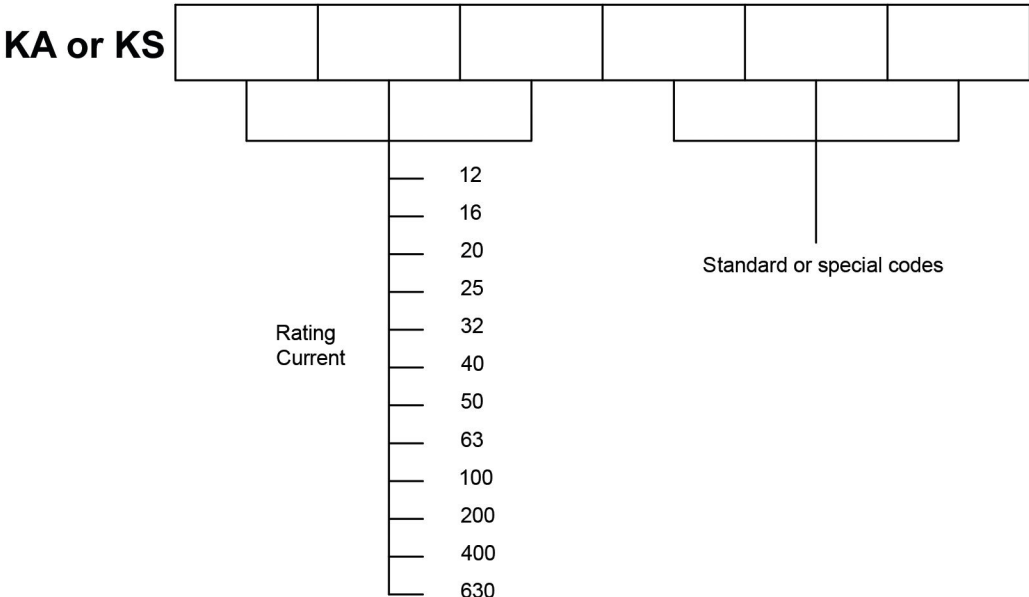


Cam - Operated Switch

Ordering Information :

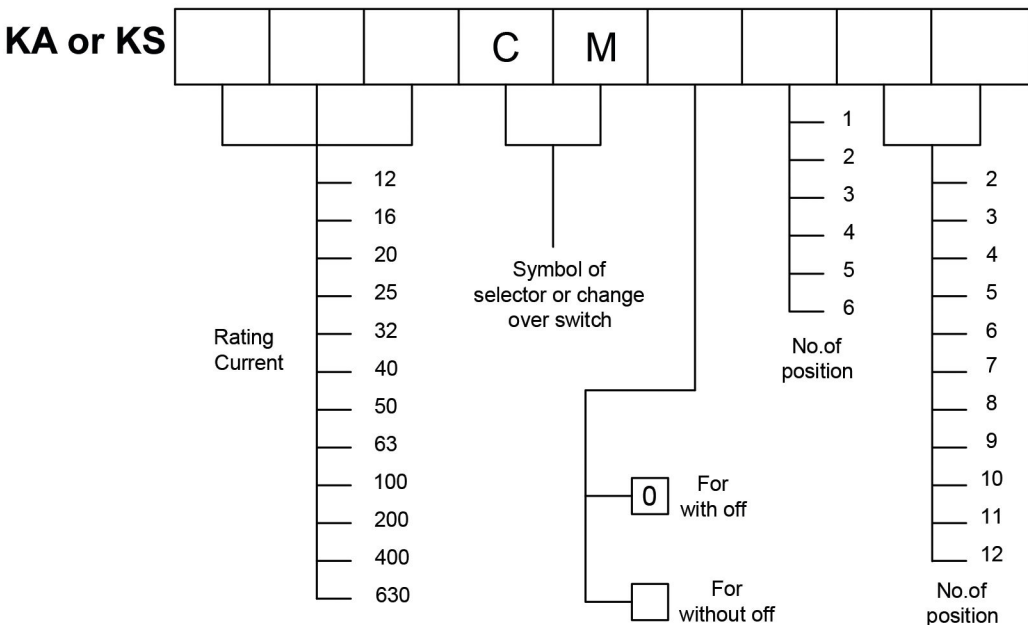
Standard and special switches in according AC-23A (AC3)

Standard switch , available for prompt delivery in flush and rear mounting version A... The diagram number forms part of the switches ,in the last two position. For example :A three - pole linechange - over switch (diagram 07)in 25A Series (A.2500) is identified by the type number 2507.



Selector and changeover switches in according AC-23A(AC3)

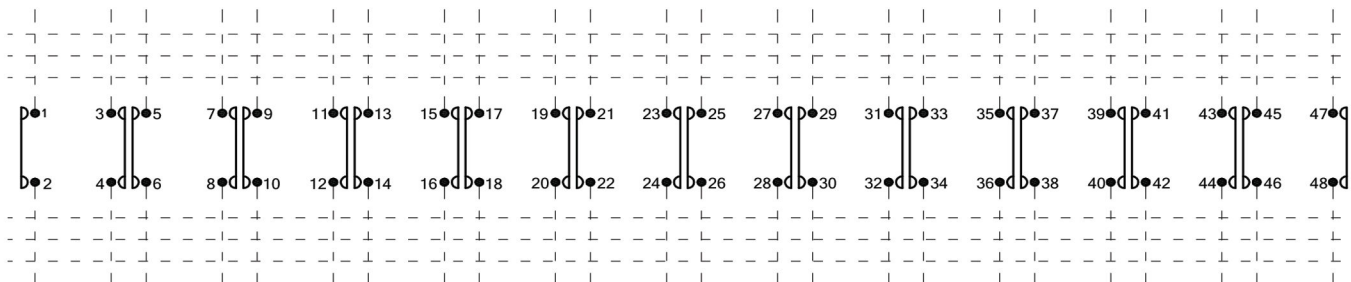
For example: A three - pole changeover switch 2 position, without off in 16A is identified by the number 16CM32.



Cam - Operated Switch

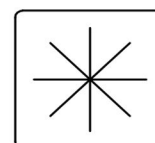
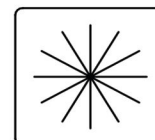
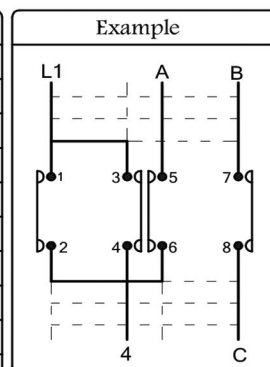
Order sheet for Special :

External Connection & Terminals Symbol



Internal Function

POSITION																								
ELEMENT	1	2	3	4	5	6	7	8	9	10	11	12												
CONTACT	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18	19 - 20	21 - 22	23 - 24	25 - 26	27 - 28	29 - 30	31 - 32	33 - 34	35 - 36	37 - 38	39 - 40	41 - 42	43 - 44	45 - 46	47 - 48



Without Back Plate ☐

Metal Back Plate ☐

Plastic Back Plate ☐

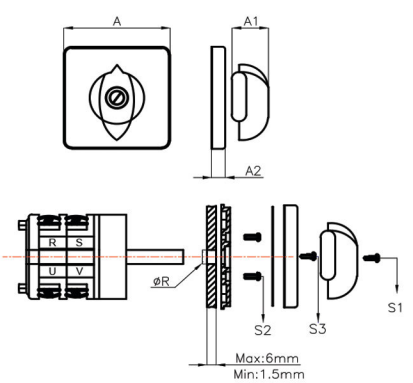
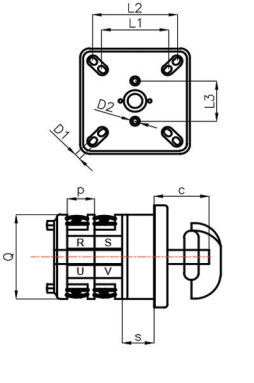
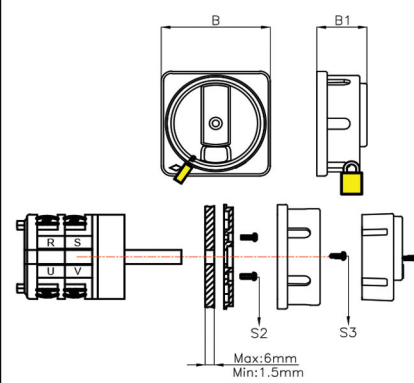
☐ Open Contact	☒ Closed contact
☒ Closed contact with break in current between positions	☒ Closed contact with out break in current between positions
☒ short-circuited contacts	☐ spring-return
☒ open contact with advanced closing	

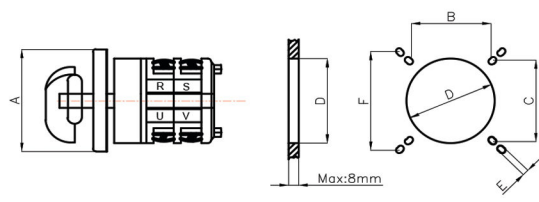
Series	Dimention of Plate	
12 A to 20 A	52 x 52 mm	☐
12 A to 25 A	64 x 64 mm	☐
12 A to 40 A	75 x 75 mm	☐
	PADLOCK PLATE 75x75 mm	☐
40 A to 100 A	105 x 105 mm	☐
	PADLOCK PLATE 105x105 mm	☐
100 A to 630A	130 x 130 mm	☐

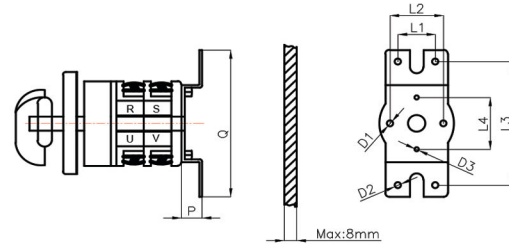
Customer :	Date :	Dwg.No. :
Current Rating (A) :	Voltage(V) :	Series :
Version :	Quantity :	Packing :
Note : ----- ----- ----- ----- -----		

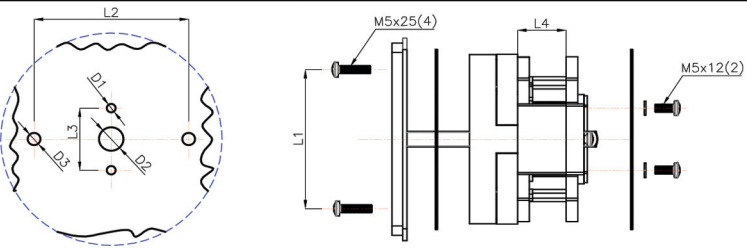
Cam - Operated Switch

Dimensions for KA Model Switches :

Plastic Plate Version							Installation Diagram						Pad Lock Plate Version						
																			
Series	A	A1	A2	B	B1	R	C	P	S	Q	L1	L2	L3	D1	D2	S1	S2	S3	
A16.00	52	19	7	52	24	10	22	12	16	39	—	37	28	4	4	2.9x9.5	3.5x10	2.9x6.5	
	64	20	9	75	28	10	24	12	16	39	—	47	28	4	4	2.9x9.5	3.5x10	2.9x6.5	
	75	20	9	75	28	10	24	18	20	58	44	59	28	4	4	2.9x9.5	3.5x10	2.9x6.5	
A25.00	64	20	9	75	28	10	24	18	20	58	—	47	28	4	4	2.9x9.5	3.5x10	2.9x6.5	
	75	20	9	75	28	10	24	18	20	58	44	59	28	4	4	2.9x9.5	3.5x10	2.9x6.5	
	105	30	11	105	40	10	24	18	20	58	—	85	28	5.5	5.5	4x10	3.5x12	2.9x11	
A50.00	105	30	11	105	40	12	36	18.3	20	73	—	85	40	5.5	5.5	4x10	5x12	2.9x11	
A63.00	105	30	11	105	40	12	36	25	30	84	—	85	40	5.5	5.5	4x10	5x12	2.9x11	
A100.00	130	42	13	—	—	16.5	46	30	30	110	—	110	89	5.5	5.5	5x20	5x25	2.9x13	
A200.00	130	42	13	—	—	16.5	46	39	30	110	—	110	89	5.5	5.5	5x20	5x25	2.9x13	

Chase Assembly Of Plastic Or Pad-Lock Plate													Series	A	B	C	D	E	F
													A16.00	52	36	36	40	4	36
														64	48	48	40	4	48
														75	44	44	40	4	58
													A25.00	64	48	48	58	4	58
														75	44	44	58	5.5	85
														105	85	85	58	5.5	85
													A50.00	105	85	85	73	5.5	85
													A63.00	105	85	85	84	5.5	85
													A100.00	130	95	95	110	5.5	110
													A200.00	130	95	95	110	5.5	110

Metal Back Plate Assembly													Series	L1	L2	L3	L4	D1	D2	D3	Q	P
													A16.00	18	27	60	28	4	5	4	71	10
													A25.00	18	27	60	28	4	5	4	71	10
													A50.00	26	40	87	40	5.3	5.3	5.3	99	12.5
													A63.00	26	40	87	40	5.3	5.3	5.3	99	12.5

Assembly Template													Series	L1	L2	L3	L4	D1	D2	D3
													A100.00	89.5	96	40	30	5.5	15	10
													A200.00	89.5	96	40	40	5.5	15	10

All sizes are in "mm".

Cam - Operated Switch

Accessories :

1- Handles & Install Plates



General Type :

Transparent Plates :
52, 64, 75, 105 & 130 mm
with Black Knob , IP40.
In = 16A upto 630A.

B&G (2Pcs) Type :

Transparent Plates :
52, 64, 75 mm with Black and
Gray Knob , IP40.
In = 16A upto 40A.



Lock Type :

Yellow plates : 52,75,105 & 130 mm
with Red padlock knob
(Max. 3 padlocks) , IP40.
In = 16A upto 630A.



Handwheel Type :

Transparent Plates :
130 x 130 mm , IP40
with Black Handwheel.
In = 100A upto 630A.

2- Thermoplastic Enclosure Boxes :



Protection degree upto IP65 .
Front or Lateral lever drive .
Small Box Size : 120 x 95 x 77 mm (L x W x D).
Large Box Size : 190 x 135 x 114 mm (L x W x D).

Handles & Install plates type :

BLU : Lock type & Front. , **BLS** : Lock type & Lateral.

BPU : General type & Front. , **BPS** : General type & Lateral.

BCS : Black Lever Length from Lateral.

3- Mechanical door Inter lock

Handles and Install Plates with Inter Lock

Size of Plates :

52 x52, 64x64, 75x75, 105x105mm

Handel type :

General, B&G, Lock, Black lever length



4- Transparent Terminal Cover :



Transparent cover on main switches body for avoiding
accessibility on electrical Sections and prevent dusts.
There are 3 types: 16,25,63A series.

5- Base mount by Metal Bracket (MBP):



The MBP assembly is the switch which enables the user to mount the
Switch to internal plate of switch cabinet. This bracket can be mount to
switch up to 63A types.

There are 2 sizes :

Small: 12A upto 40A.

Large: 50A upto 63A.

For upper types, this possibility is considered generally & no need for this
bracket.

Miniature Circuit Breaker



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Miniature Circuit Breaker

General :

Miniature switch as a circuit breaker in most homes today and protect sensitive systems for phones and safety of persons and equipment against overload and short circuit currents are used to.

Miniature Circuit Breaker structure is as follows:

Base & Cover : All parts inside are MCB and must be insulated with a Min. voltage of 2500 V and a thermal resistance of 960°C with a flare (Normally the Bakelite, melamine or a particular type of polyamide).

Magnet : Copper coil, fixed and mobile core made of ferromagnetic materials, springs, fittings and ... is composed that Several times of the rated current MCB (the MCB type lighting or motor or hard motor is than 3 times the rated current is equal to 20) or short-circuit reacts and MCB will cause immediate trip. The standard MCB for each rated current, its own magnet.

Handel : Means for inserting a MCB is plugged in or disconnected mode.

Bi-Metal : Overload Relay used in MCBs is a kind of Bi-metal. When the MCB is generated by a miniature screws, precision switch nominal current is set by the factory polish. It works off the circuit against overload relay is responsible.

Arc chamber : Is composed of parallel metal plates, are separated by a layer of insulation, when trip into small spark to ignite dangerous sparks and noise and helps prevent overheating. The MCBs are usually of poor quality and cheap price, there's this piece is perhaps the simplest or most basic way to identify it, is the MCB to weight loss.

Springs and connectors : These components must be mechanically and possesses a special structure and are resistant to corrosion.

Terminals : Stainless conductors must be designed to be comfortable in it.

Use protective equipment to avoid dangers such as fires in a circuit, overload and short circuit caused the error occurred in the system is required. One of these devices due to the unique characteristics such as being used after each cut, etc. used today, has three phase synchronous automatic trip Switches, are or miniaturized. Usually two types of AC and DC will be produced.

Miniature Circuit Breakers Kaveh three types of alternating current brightness (B) and motor (C) and (D) in a variety of single-pole, single pole with neutral (1P+N), two-poles, three-poles, three poles and neutral (3P+N) and the four bridges are produced.

Currently, two international standards IEC/EN 60898-1 and IEC/EN 60947-2 in accredited facilities and building miniature Circuit Breakers are used. In IRAN, the national standard for Miniature Circuit Breakers is ISIRI2611-1 foundation developed the standard IEC/EN 60898-1.

It should be noted that the AC MCB in DC circuit cannot be used under any circumstances that the risks, such as failure to stop short time (due to union contacts) includes, It's a slow burn also added several contacts resulting in improper connection of fixed & moving contacts and the heat is generated. DC Miniature Circuit Breakers, in addition to having a natural magnet for the relay to operate on direct current is magnetic. So we can also use the DC MCBs in AC circuits.



Miniature Circuit Breaker

Technical Information (AC) :

	Description	Unit	Specification of KAVEH MCB					
			IEC/EN 60898-1			IEC/EN 60947-2		
Electrical Features	Rated current I _n	A	2 , 4 , 6 , 10 , 16 , 20 , 25 , 32 , 40 , 50 , 63 , 80 , 100 , 125					
	Poles	n	1P , 1P+N , 2P , 3P , 3P+N , 4P					
	Rated voltage U _e	V	230 / 400					
	Insulation voltage U _i	V	500					
	Rated frequency	Hz	50 / 60					
	Rated breaking capacity I _{cu}	A	4500 , 6000 , 10000 , 15000					
	Energy limiting class	n	3					
	Rated impulse withstand voltage U _{imp}	V	4000					
	Dielectric test voltage at ind. Freq. for 1 min.	KV	2.5					
	Pollution degree	n	3					
	Maximum Power loss per pole	W	2A(2.1 W) , 4A(2.3 W) , 6A(2.6 W) , 10A(2.7 W)					
		W	16A(3.2 W) , 20A(3.5 W) , 25A(3.9 W) , 32A(4.5 W)					
		W	40A(5.9 W) , 50A(7.5 W) , 63A(9.8 W)					
	Thermo-magnetic release characteristic		B	C	D	Z	K	S
		3-5 I _n	5-10 I _n	10-20 I _n	2 - 3 I _n	8 - 12 I _n	13 - 17 I _n	
Mechanical Features	Electrical life	Cycle	6000 for I _n ≤ 32A , 4000 for I _n >32A					
	Mechanical life	Cycle	20000					
	Contact position indicator		Yes					
	protection degree		IP 20					
	Reference temperature for setting of thermal element	°C	30					
	Ambient temperature (with daily averages ≤ 35°C)	°C	- 5 ... +40 (Special application please refer to P03 for temperature compensation correction)					
	Storage temperature	°C	-25 ... +70					
	Vibration	g	5					
	Shock	mm	40mm free fall					
	Installation	Terminal connection type		Cable / U - type busbar / Pin - type busbar				
Terminal size top/bottom for flexible cables		mm ²	25 (Upto 63A) , 50 (80A to 125A)					
		AWG	18 - 3 , 3 - 1					
Terminal size top/bottom for rigid cables		mm ²	35 (Upto 63A) , 70 (80A to 125A)					
		AWG	16 - 2 , 2 - 00					
Tightening torque		N.m	2.5 (Upto 63A) , 3 (80A to 125A)					
		in-lbs.	22 , 26.5					
Installation position			Vertical / Horizontal					
Mounting			on DIN rail EN60715 (35mm) by means of fast clip device					
Connection			From top and bottom					
Base & Cover material		Moulded, Flame retardant thermoplastic in accordance IEC60695						
Combination with Accessories	Auxiliary contact		Yes					
	Shunt release		Yes					
	Under voltage release		Yes					
	Alarm contact		Yes					

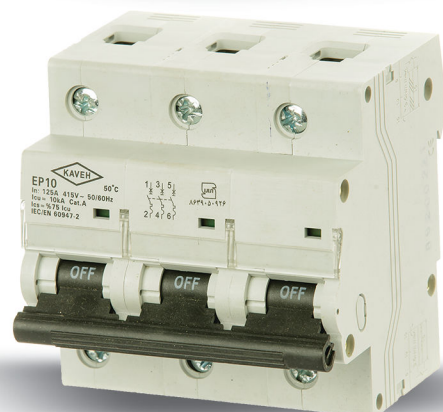
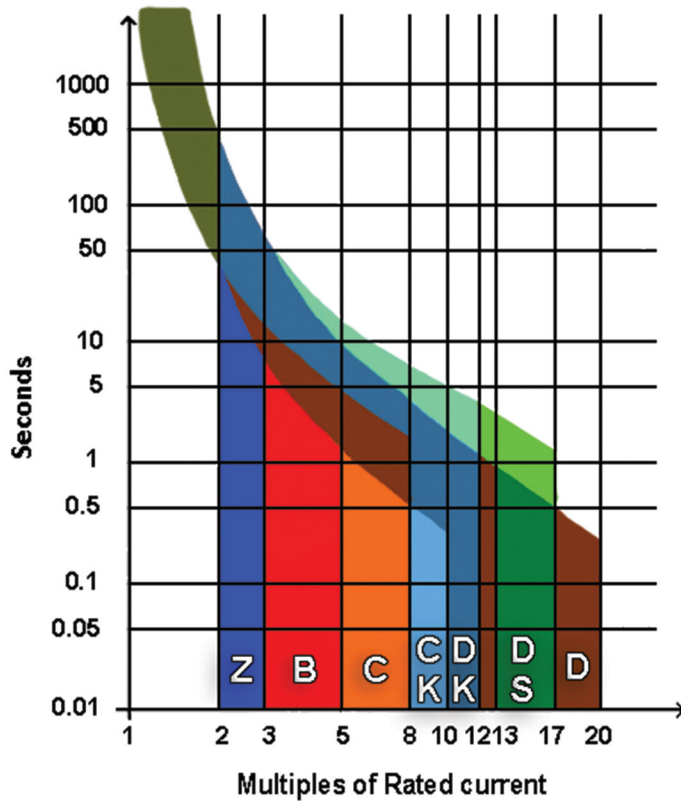
Miniature Circuit Breaker

Technical Information (DC) :

	Description	Unit	Specification of KAVEH MCB
			IEC/EN 60898-1
Electrical Features	Rated current I_n	A	1, 2, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63
	Poles	n	1P, 2P
	Rated voltage U_e	V	240
	Insulation voltage U_i	V	500
	Rated breaking capacity (Icu)	KA	6, 10
	Rated breaking capacity (Icn)	A	6000
	Energy limiting class	n	3
	Rated impulse withstand voltage U_{imp}	V	6000
	Dielectric test voltage at ind. Freq. for 1 min.	KV	2.5
	Pollution degree	n	3
	Power loss per pole	W	1A(1.5 W) , 2A(2.2 W) , 4A(2.6 W) , 6A(2.5 W) , 10A(2.5 W)
		W	16A(3 W) , 20A(3.2 W) , 25A(3.9 W) , 32A(4.5 W)
		W	40A(6.1 W) , 50A(7.8 W) , 63A(9.8 W)
Mechanical Features	Thermo-magnetic release characteristic		B C D 3 - 5 I_n 5 - 10 I_n 10 - 20 I_n
	Electrical life	Cycle	4000
	Mechanical life	Cycle	20000
	Contact position indicator		Yes
	protection degree		IP 20
	Reference temperature for setting of thermal element	°C	30
	Ambient temperature (with daily averages $\leq 35^\circ\text{C}$)	°C	- 5 ... +40 (Special application please refer to P03 for temperature compensation correction)
	Storage temperature	°C	-25 ... +70
	Vibration	g	5
	Shock	mm	40mm free fall
Installation	Terminal connection type		Cable / U - type busbar / Pin - type busbar
	Terminal size top/bottom for flexible cables	mm ²	25
		AWG	18 - 3
	Terminal size top/bottom for rigid cables	mm ²	35
		AWG	16 - 2
	Tightening torque	N.m	2.5
		in-lbs.	22
	Installation position		Vertical / Horizontal
	Mounting		on DIN rail EN60715 (35mm) by means of fast clip device
Combination with Accessories	Connection		From top and bottom
	Base & Cover material		Moulded, Flame retardant thermoplastic in accordance IEC60695
	Auxiliary contact		Yes
	Shunt release		Yes
	Under voltage release		Yes
	Alarm contact		Yes

Miniature Circuit Breaker

Tripping Characteristic Curve:



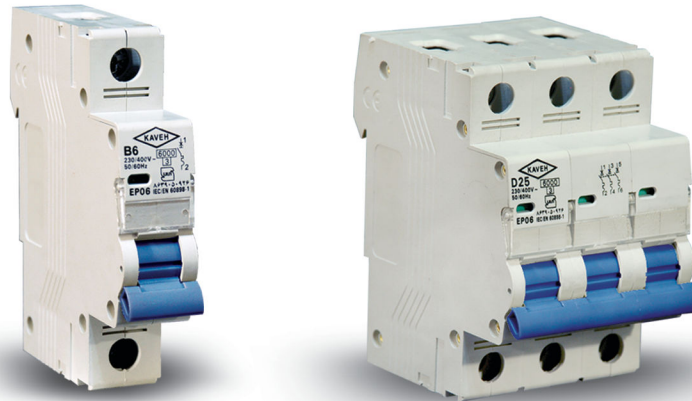
Tripping Curve of KAVEH Miniature Circuit Breakers (IEC60898-1 & IEC60947-2)

As per Standard	Thermal Tripping				Magnetic Tripping		
	Not tripping current	Tripping current	Tripping current	Time Limits	Hold Current	Rapidly trip Current	Time Limits
IEC60898-1	I_1	I_2	I_3		I_4	I_5	
B	$1.13 I_n$	$1.45 I_n$	$2.55 I_n$	$> 1h$ $< 1h$ $I_n \leq 32A, 1 < t \leq 60s$ $I_n > 32A, 1 < t \leq 120s$	$3 I_n$	$5 I_n$	$> 0.1s$ $\leq 0.1s$
C	$1.13 I_n$	$1.45 I_n$	$2.55 I_n$	$> 1h$ $< 1h$ $I_n \leq 32A, 1 < t \leq 60s$ $I_n > 32A, 1 < t \leq 120s$	$5 I_n$	$10 I_n$	$> 0.1s$ $\leq 0.1s$
D	$1.13 I_n$	$1.45 I_n$	$2.55 I_n$	$> 1h$ $< 1h$ $I_n \leq 32A, 1 < t \leq 60s$ $I_n > 32A, 1 < t \leq 120s$	$10 I_n$	$20 I_n$	$> 0.1s$ $\leq 0.1s$

As per Standard	Thermal Tripping				Magnetic Tripping		
	Not tripping current	Tripping current	Tripping current	Time Limits	Hold Current	Rapidly trip Current	Time Limits
IEC60947-2	I_1	I_2	I_3		I_4	I_5	
Z	$1.05 I_n$	$1.30 I_n$	$1.50 I_n$	$> 1h$ $< 1h$ $I_n \leq 63A, 1 < t \leq 60s$ $I_n > 63A, 1 < t \leq 120s$	$2 I_n$	$3 I_n$	$> 0.2s$ $\leq 0.2s$
K	$1.05 I_n$	$1.30 I_n$	$2.50 I_n$	$> 1h$ $< 1h$ $I_n \leq 63A, 1 < t \leq 60s$ $I_n > 63A, 1 < t \leq 120s$	$8 I_n$	$12 I_n$	$> 0.2s$ $\leq 0.2s$
S	$1.05 I_n$	$1.30 I_n$	$2.50 I_n$	$> 1h$ $< 1h$ $I_n \leq 63A, 1 < t \leq 60s$ $I_n > 63A, 1 < t \leq 120s$	$13 I_n$	$17 I_n$	$> 0.2s$ $\leq 0.2s$

Miniature Circuit Breaker

Isolating Switches :



Rated current I_e	A	16 , 20 , 25 , 32 , 40 , 50 , 63 , 80 , 100 , 125
Rated voltage U_e	V	240 / 415 AC (110/220VDC)
Poles	n	1P , 2P , 3P , 4P
Utilization category		AC - 22A / DC - 22B
Insulation voltage U_i	V	690
Rated frequency	Hz	50 / 60
Rated making & breaking capacity		$3I_e$, $1.05U_e$, PF=0.65
Rated short - circuit making capacity I_{cn}		$20I_e$, $t = 0.1s$
Rated impulse withstand voltage U_{imp}	V	6000
Dielectric test voltage at ind. Freq. for 1 min.	KV	2.5
Pollution degree	n	3
I_{cw}		$12I_e$, $t=1s$
Electrical life	Cycle	1500
Mechanical life	Cycle	8500
Contact position indicator		Yes
protection degree		IP 20
Reference standard No.		IEC60947-3
Ambient temperature (with daily averages $\leq 35^\circ\text{C}$)	$^\circ\text{C}$	- 15 ... +55
Storage temperature	$^\circ\text{C}$	-25 ... +70
Vibration	g	6
Shock	mm	40mm free fall
Terminal connection type		Cable / U - type busbar / Pin - type busbar
Terminal size top/bottom for flexible cables	mm ² AWG	25 (Upto 63A) , 50 (80A to 125A) 18 - 3 , 3 - 1
Terminal size top/bottom for rigid cables	mm ² AWG	35 (Upto 63A) , 70 (80A to 125A) 16 - 2 , 2 - 00
Tightening torque	N.m in-lbs.	2.5 (Upto 63A) , 3 (80A to 125A) 22 , 26.5
Installation position		Vertical / Horizontal
Mounting		on DIN rail EN60715 (35mm) by means of fast clip device
Connection		From top and bottom
Base & Cover material		Moulded, Flame retardant thermoplastic in accordance IEC60695

Miniature Circuit Breaker

Accessories:

General :

Standard No.	Confirming to EN/IEC 60947-5-1
Rated Insulation Voltage U_i	500 VAC
Rated Voltage U_n	230 VAC
Electric Endurance	30000 Cycle
Mechanical Endurance	40000 Cycle
Dielectric Strength	2000VAC / 1Minute
Protection Degree	IP20

OF Auxiliary Contact :

Contact Capacity	AC	DC
	3A / 400V	1A / 125V
	6A / 230V	2A / 48V
	6A / 125V	3A / 24V
Dielectric Strength	2000VAC / 1Minute	
Mounted on the Left side of the MCB		

SD Alarming Contact :

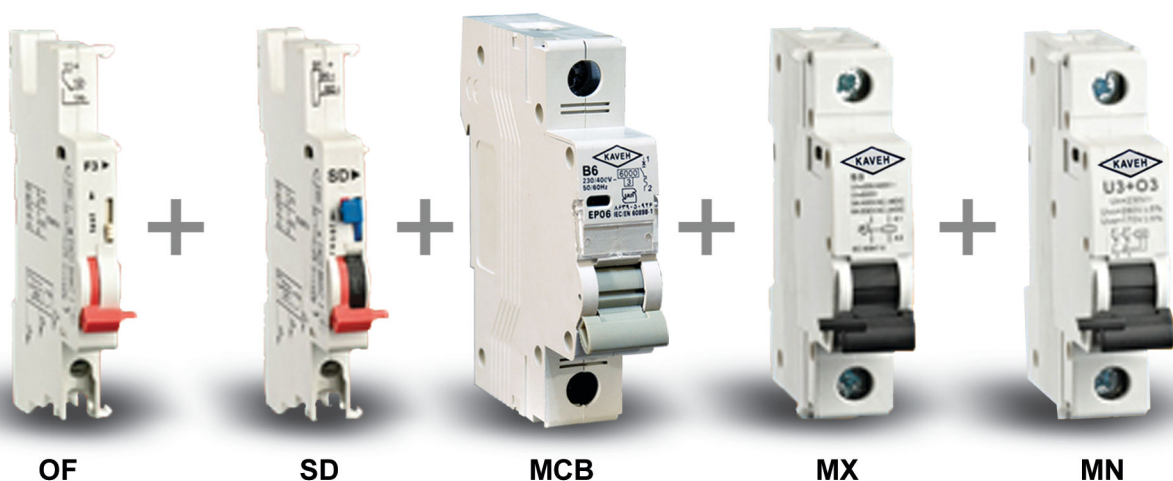
Send out signal when the circuit breaker fail to trips.
 Mechanical indicator on the front panel, which can indicate failure trip.
 Screw-type thread pressed terminal, can connect with 1 or 2 conducting wire of 2.5mm² Max. cross sectional area.
 Obvious marks upon terminal.
 Mounted on the Left side of the MCB. Indication "ON" , "OFF" status of combined MCB.

MX Shunt trip :

Rated Insulation Voltage U_i	500VAC	
Rated Power Voltage U_s	125VAC , 230VAC , 400VAC	
Operate Voltage Range	70% ~ 100% U_s	
Contact Capacity	AC	DC
	3A / 400V	1A / 125V
	6A / 230V	2A / 48V
	9A / 125V	3A / 24V
Dielectric Strength	2000VAC / 1Minute	
Mounted on the Right side of the MCB/RCBO, used to trip the combined MCB/RCBO by remote controlling device.		

MN Over-Voltage / Under-Voltage trip :

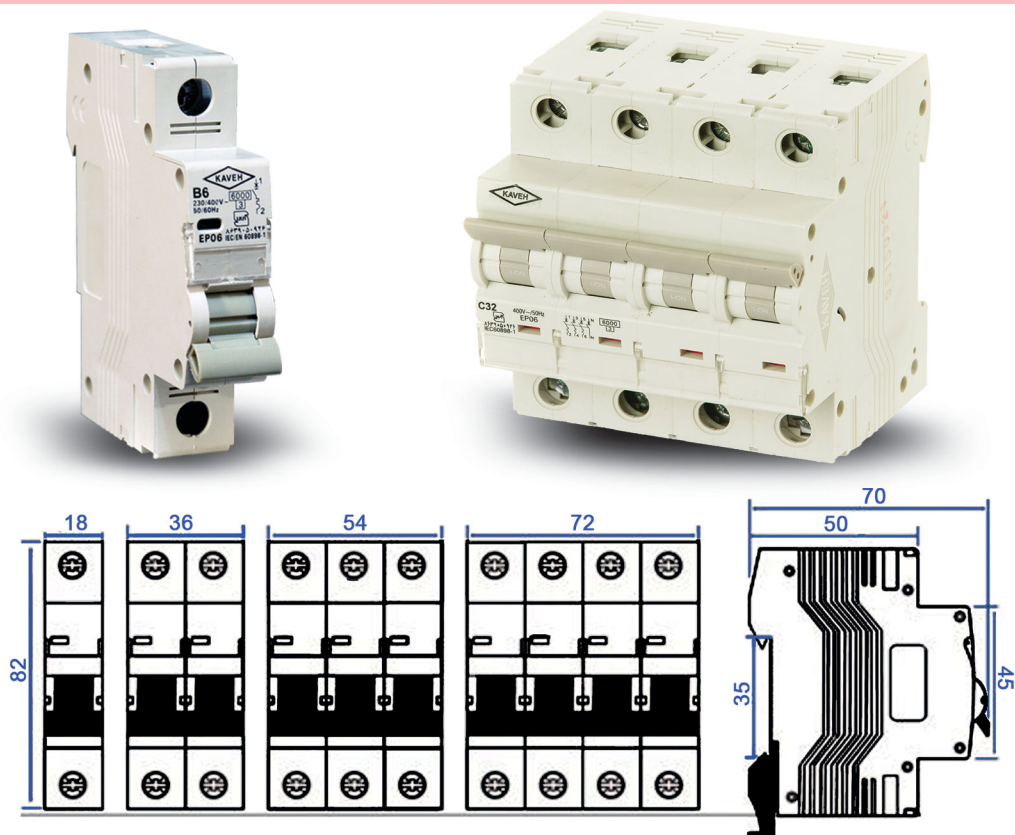
Rated Voltage U_e	230VAC
Rated Insulation Voltage U_i	500VAC
Over-Voltage tripping range	280VAC $\pm$ 5%
Under-Voltage tripping range	170VAC $\pm$ 5%
Mounted on the Right side of circuit breaker, actuate the combined device to trip in case of under-voltage or over-voltage, effectively prevent the device from closing operation under abnormal power voltage condition.	



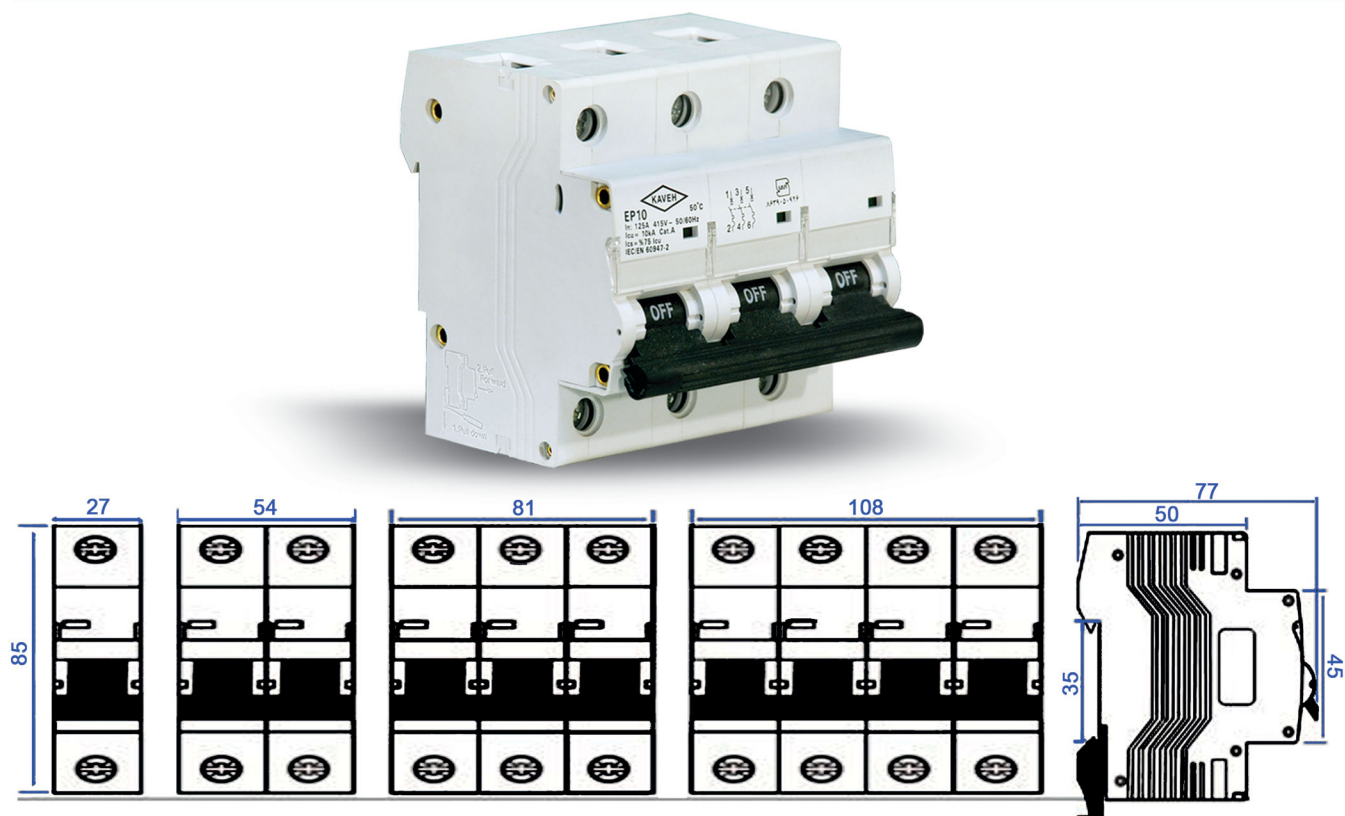
Miniature Circuit Breaker

Dimensions :

Dimension of MCBs from 1A upto 63A



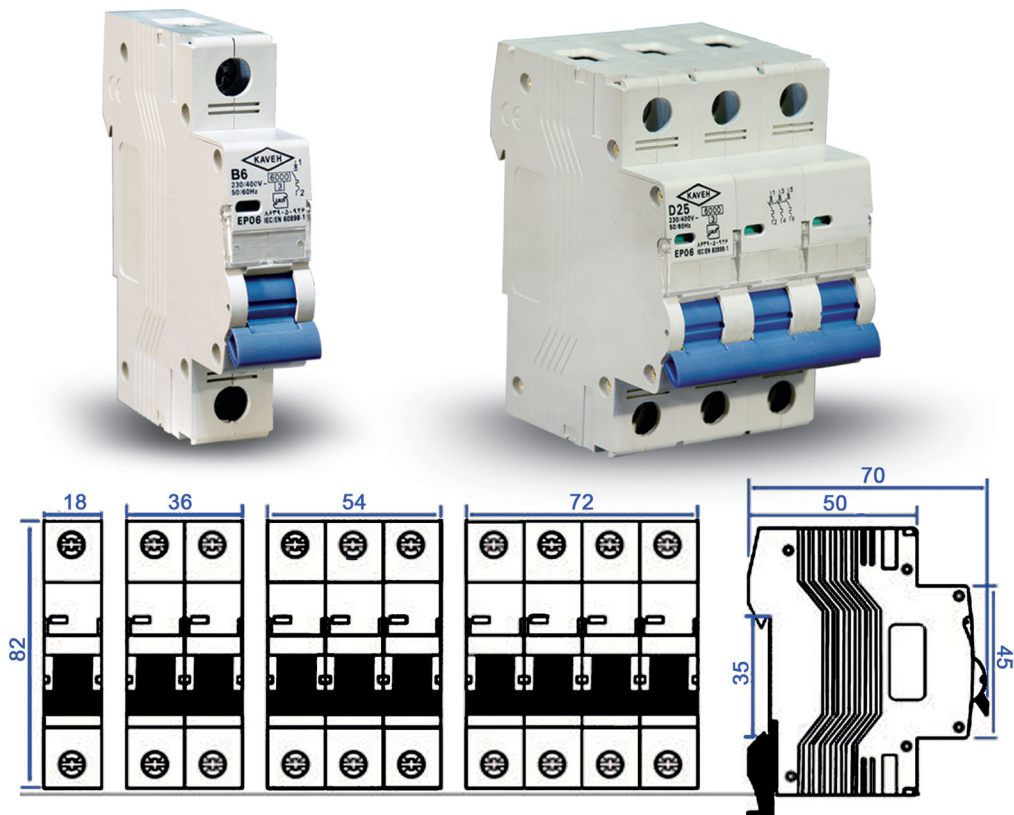
Dimension of MCBs from 80A upto 125A



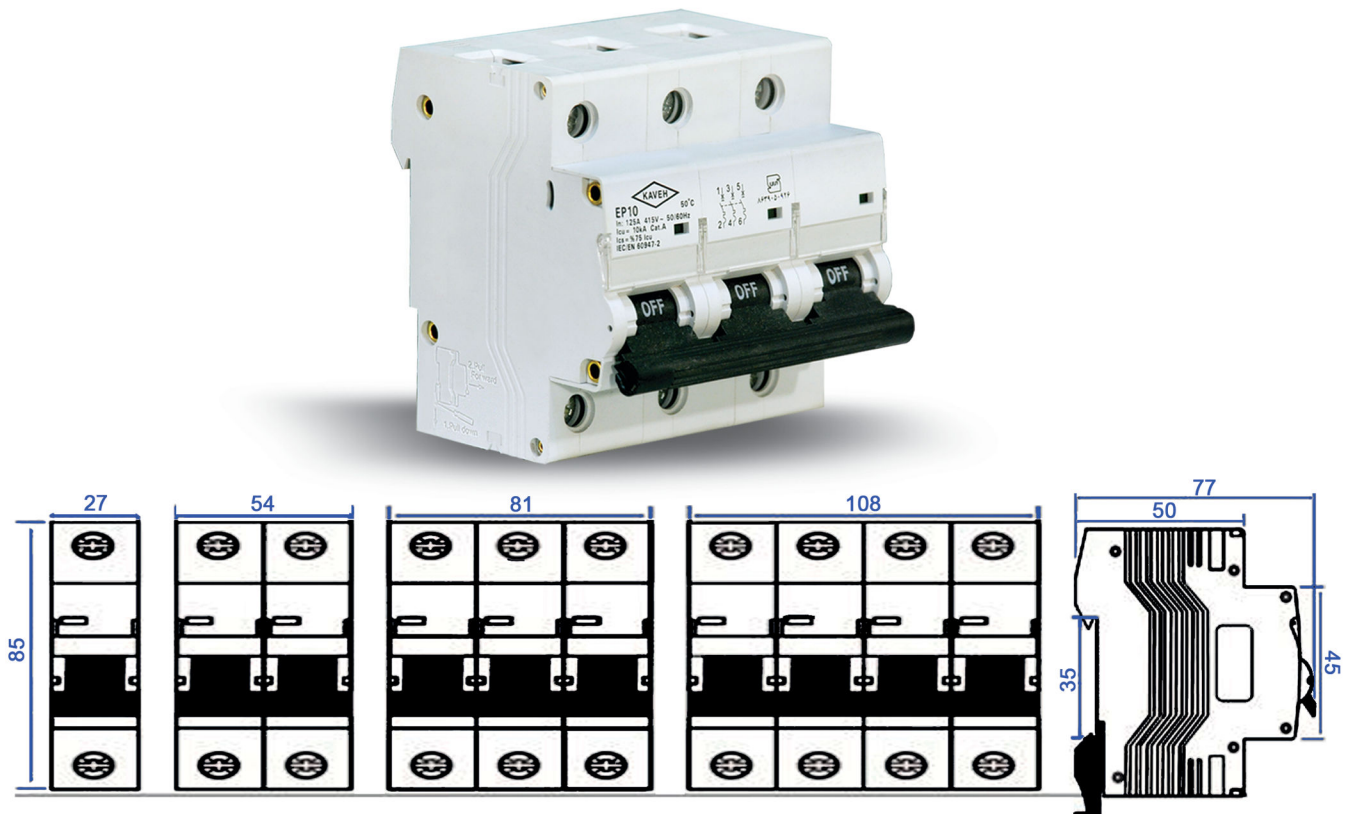
Miniature Circuit Breaker

Dimensions :

Dimension of Isolating switches from 16A upto 63A



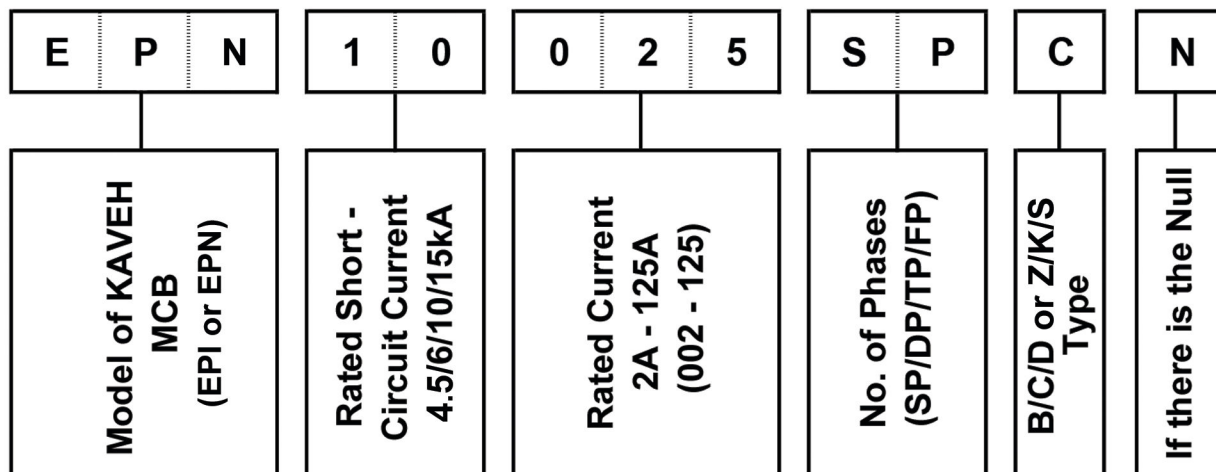
Dimension of Isolating switches from 80A upto 125A



Miniature Circuit Breaker

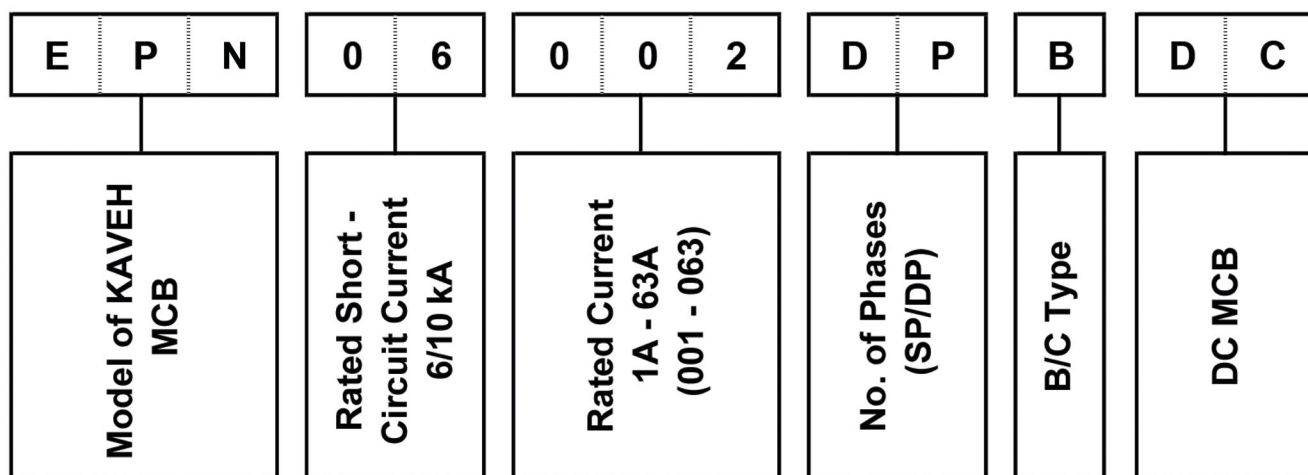
Ordering Information:

- AC MCB



Example : AC MCB , EPN Model , 10kA , 25A and C type , Single pole + Null

- DC MCB



Example : DC MCB , 6kA , 2A and B type , Double pole