

# CAM SWITCHES



## Cam switches



On-Off switches



Change Over Switches



Star Delta Starters



Motor Reversing Switches



Ammeter Switches



Voltmeter Switches



Safety switches

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TS EN 60947-3  
EN 60947-3  
IEC 60947-3  
CE

**Assembly Position** : Free  
**Altitude** : 2000 m (max)  
**Relative Humidity** : 50% (40°C) , 90% (20°C)  
**Ambient Temperature** : between -5°C and + 40°C  
**Pollution Degree** : III  
**Protection Class** : IP40 (On front face)

# CAM SWITCHES



Manual switches, which consist of consecutive order of more than one same contact slots on a shaft and which can rotate around an axis; which are used in motor connection works, measurement device commutators and control and distribution panels, are called Cam (paco) switches. Medium and large-power motors are controlled with contactors and relays. However, as controlling of small-power motors are more economical and simple, they are controlled with Cam switches. Federal Cam switches are manufactured in accordance with IEC60947-3 / EN 60947-3 and CE. Cam switches, which have two, three or four silver-alloy contacts in each slice, are utilized in various controlling operations by increasing number of slices. Moving contact has a swaged surface, whereas fixed contact has a flat one. In this way, full contact and lowest resistance are ensured. Since contacts are opened and closed by pressing and cams on the shaft perform simultaneous opening-closing of contacts, it has been allowed to open and close all the controlling circuits or phases at the same time without any delay.

Cam switches	Usage classes	Type	FCS1				FCS2	
		Continuous operating current Ith (A)	10	16	20	25	32	63
		Rated insulation voltage Ui (V) 50-60 Hz	690	690	690	690	690	690
Operating currents (A)	AC1	220-240 V	10	16	20	25	32	63
		380-440 V	6	10	13	16	20	40
		660-690 V	4	6	8	10	13	25
	AC15	220-240 V	3	5	6	7.5	10	20
		380-440 V	2	4	4	5	6	12
		660-690 V	-	-	-	-	-	-
	AC21	220-240 V	10	16	20	25	32	63
		380-440 V						
		660-690 V						
Operating powers (kW)	AC23A	220-240 V 1p	1.25	2	2.5	3	3.5	11
		220-240 V 3p	2.2	3.7	3.7	6	7.5	15
		380-440 V 1p	2	3	3.7	5	3.8	15
		380-440 V 3p	3.7	6	7.5	10	10	25
		660-690 V 1p	2	3	4	5	13	15
		660-690 V 3p	3.7	6.5	7.5	10	5.5	25
	AC3	220-240 V 1p	1	2	2.2	3	3	5.5
		220-240 V 3p	1.8	3	3	5	5.5	11
		380-440 V 1p	2	3	3	5	3.5	10
		380-440 V 3p	3	5	5.5	8	7.5	18.5
		660-690 V 1p	2	3	3	5	5	10
		660-690 V 3p	3	5.2	5.5	8	10	18.5
Maximum front fuse current against short circuit gL/gG (A)			16	20	25	32	40	80

## Usage Classes :

**AC 1** :Non-inductive or low-inductive loads (Resistance furnaces).

**AC 3** :Cage motor direct starting load shut-down, Star-Delta (Squirrel Cage motors; Starting; disablement in operation.)

**AC 15** : Enablement of motor and other high inductive loads with frequent intervals (Switching of motor loads or quite high inductive loads)

**AC 21A** :Magnetic drives, contactor, valves, magnetic coil control (Electromagnetic loads)

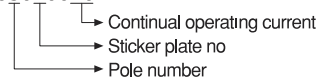
**AC 23A** :Control of low overloaded, resistive - inductive mixed loads (Switching of medium-degree overloads)

# CAM SWITCHES

## On-Off switches

Type	Rated Thermal Current Ith (A)	Number of Pole - Stages	Label Plate	Connection Diagram	Order Code
FCS1	10 16 20 25	1 Pole - 1 Stage 2 Pole - 1 Stage 3 Pole - 2 Stage			9TO-10Δ0□-00◇◇
FCS2	32 63	4 Pole - 2 Stage			9TO-20Δ0□-00◇◇

Δ Pole number, □ Sticker plate, ◇◇ Continual operating current. Descriptions of order codes: 9TO103020020



## Change Over Switches

Type	Rated Thermal Current Ith (A)	Number of Pole - Stages	Label Plate	Connection Diagram	Order Code
FCS1	10 16 20 25	1 Pole - 1 Stage			9TK-10Δ04-00◇◇
FCS2	32 63	3 Pole - 3 Stage			9TK-20Δ04-00◇◇

## Star Delta Starters

Type	Rated Thermal Current Ith (A)	Number of Pole - Stages	Label Plate	Connection Diagram	Order Code
FCS1	16 25	3 Pole - 4 Stage			9TS-10Δ05-00◇◇

## Motor Reversing Switches

Type	Rated Thermal Current Ith (A)	Number of Pole - Stages	Label Plate	Connection Diagram	Order Code
FCS1	10 16 20 25	1 Pole - 2 Stage 3 Pole - 4 Stage			9TE-10Δ06-00◇◇

## Voltmeter Switches

Type	Rated Thermal Current Ith (A)	Function Number of Stages	Label Plate	Connection Diagram	Order Code
FCS1	20	4 Poz - 2 Stage			9TV-123V1-0020
		7 Poz - 3 Stage			9TV-143V2-0020

## Ammeter Switches

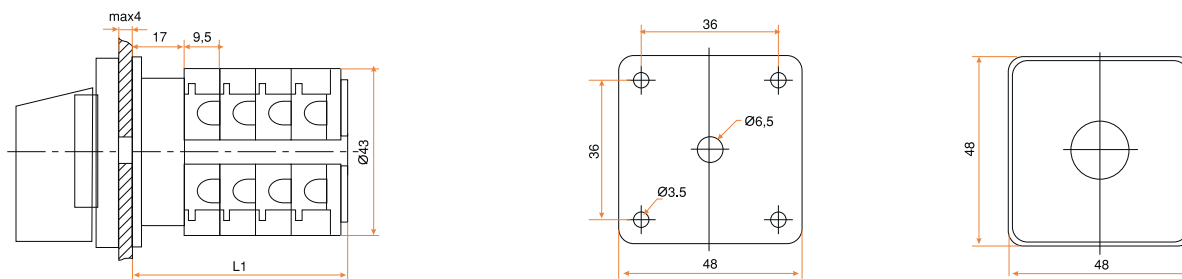
Type	Rated Thermal Current Ith (A)	Number of Pole - Stages	Label Plate	Connection Diagram	Order Code
FCS1	20	3 Pole - 4 Stage			9TA-103037-0020

## Safety Switches

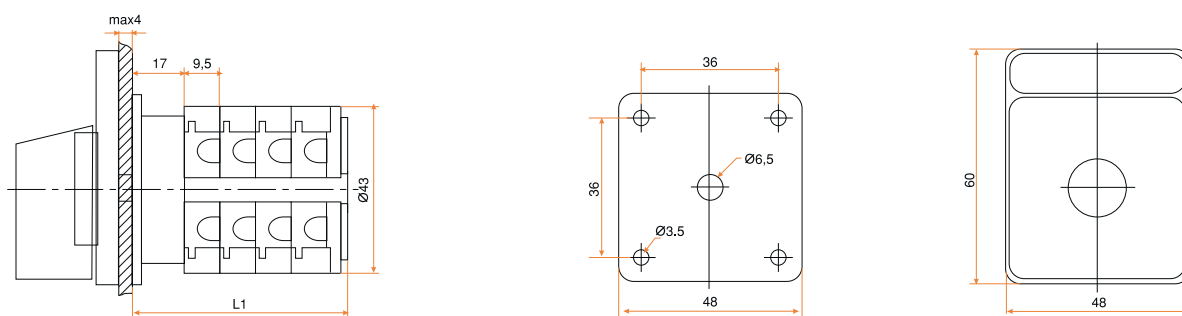
Type	Rated Thermal Current Ith (A)	Number of Pole - Stages	Label Plate	Connection Diagram	Order Code
FCS2	20 32 40 63	3 Pole - 2 Stage			φ °y° φ °τ °
					φτ °y° φ °◇◇

# CAM SWITCHES

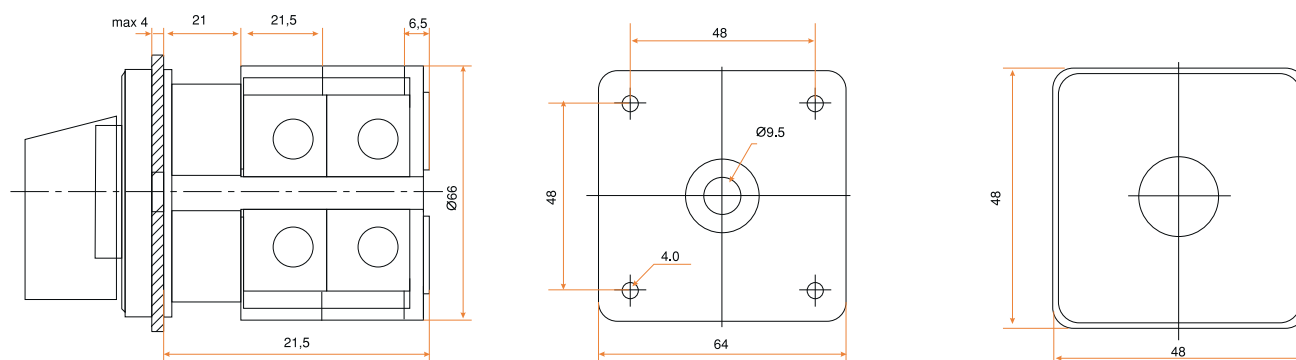
## FCS1:



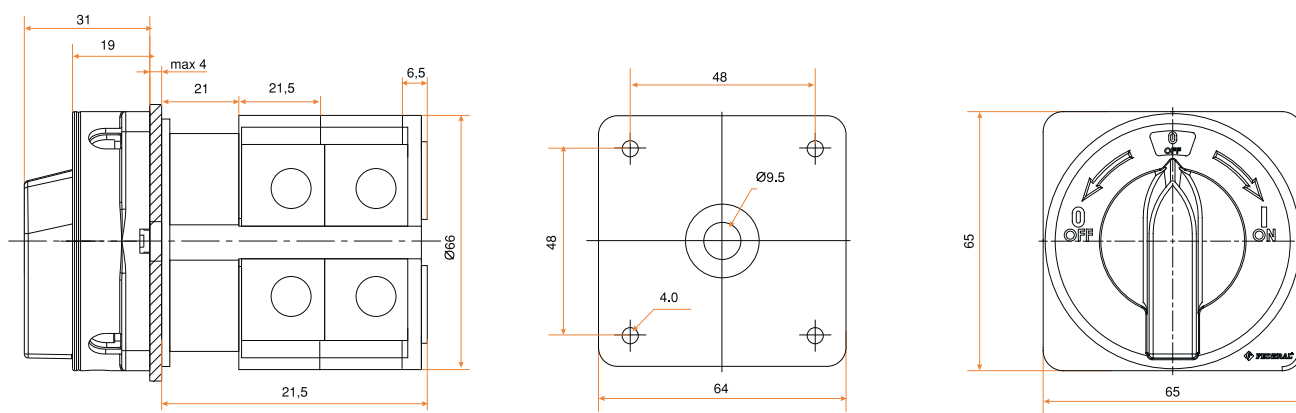
## FCS1 Voltmeter - Ammeter Switches:



## FCS2:



## FCS2 Safety switches:



## Body lengths:

Number of Slices	1	2	3	4
FCS1 Body Length (L1)	31.5	41	50.5	60
FCS2 Body Length (L2)	49	70.5	92	113.5

## Order Code:

20A	9TP-10308-0020
32A	9TP-20308-0032
63A	9TP-20308-0063

