

# LW39 Cam Switch of Train Siemens APT

## Technical Data

Working Conditions: altitude ≤ 2,000m ambient environment  
 relative air humidity ≤ 90% -25 °C ~ +55 °C  
 pollution class: class 3 installation category: III

## Standards

GB14048.5 IEC60947-5 DIN5510-2

## Electrical Data:

Model		LW39-16A (B, C)	LW39-25
Ui	V	690	690
Ith	A	16	25
Uimp	V	2500	2500
AC Working Current Ie			
AC-21 On/OFF Resistive Load		16	25
AC-15 Control Electromagnet Load			
COSφ = 0.4	24V	16	25
	48V	8	22
	110V	5	18
	220V	3	12
	380V	1.8	8
AC-3 Cage Asynchronous Motor			
Start, ON/OFF during running			
	3-phase 3-pole 380V	KW	3
			5.5
AC-4 Cage Asynchronous Motor			
Start, brake, reversed rotation, inching			
	3-phase 3-pole 380V	KW	1.2
			4
DC Working Current Ie			
DC-21 ON/OFF Resistive Load			
Number of Series Contacts 1 2 3 4			
	24 48 70 95	A	16
	48 60 95 110	A	12
Voltage V	110 220 300	A	1
	220 440	A	0.4
	440	A	0.27
DC-13 Control Electromagnet Load			
T=300ms			
Number of Series Contacts 1 2 3 4			
	24 48 70 95	A	12
	48 60 95 110	A	2
Voltage V	110 220 300	A	0.4
	220 440	A	0.2
	440	A	0.1
AC endurance	10,000 times	20	20
DC endurance	10,000 times	10	10
Mechanical endurance	10,000 times	30	30

## Model

■ The user shall provide the specific model number when ordering LW39 series cam switch. There are three ways to decide the specific model number as follows:

- (1) Select from the models of common cam switches (please refer to P21~26 in the catalogue of Cam Switch). Please specify during the ordering if there is any further requirement;
- (2) Fill the detailed model according to the description of models;
- (3) Fill the blank junction table (refer to P28 in the catalogue of Cam Switch for details). We will help you verify the model.

LW39 - □ □ - □ □ / □ □ □ □ - □ - □

Tk: series products for locomotives Rw: special products for driver control

QF: lead seal product (only used for 16CU series)

Panel Printing Code (refer to P19)

Handle Type Code

Voltage Code 23: AC/DC24V 26: AC/DC110V 28: AC/DC220V 31: AC220V

Number of Pitches

Code of Pitch Point

Positioning Feature Code (refer to P17)

Function Model (to be selected according to the pictures)

Series Number 16: thermal current 16A Type A, 16B: thermal current 16A Type B, 16CU: thermal current 16A Type CU, 25A: thermal current 25A, 16CU-QF: thermal current 16A Type CU with lead seal self-locking

Cam Switch Code







# Cam Switch Series

## Codes of Positioning

■ The codes of the positioning features indicate the gear features of the cam switch, including two categories – positioning and spring-return.

(1) Positioning type: The positioning type does not have spring-return operating function. LW39 series cam switch can provide various positioning angles such as 30°, 45°, 60° and 90°.

Please pay attention to the models that the positioning angles are applicable to and fill the codes of the positioning features of the ordered cam switch according to the positioning ring graphs and code examples.

Positioning Angle	Applicable Model	Positioning Ring Graph	Code Example
30°	LW39-10、LW39-16、 LW39-25、LW39-63		“3KC” indicates 30° positioning, starting from position K and ending at position C clockwise. There are totally 5 positions – K, O, A, B, C.
45°	LW39-10、LW39-16、 LW39-25、LW39-63		“4OB” indicates 45° positioning, starting from position O and ending at position B clockwise. There are totally 3 positions – O, A, B.
60°	LW39-16B、LW39-16C、LW39-63		“6KE” indicates 60° positioning, starting from position K and ending at position E clockwise. There are totally 4 positions – K, A, C, E.
90°	LW39-10、LW39-16、 LW39-25、LW39-63		“9GC” indicates 90° positioning, starting from position G and ending at position C clockwise. There are totally 3 positions – G, A, C.

## Code Description:



Notes: If it is operated 360° without limit, the letters of both ending and starting are the same. For example: “3JJ” indicates 30° positioning, starting from -90° with 12 position and without limit.

(2) spring-return type: One or more gears of auto-resetting type have auto-resetting function. LW39 series cam switch provide tens of spring-return types for option and also can meet the special demands of the users.

The following table has listed the common auto-resetting functions and the codes of their positioning features. Please pay attention to the models that they are applicable to.

Code of Positioning	Handle Operation Position (Angle)	LW39-10	LW39-16A	LW39-16B(C)	LW39-25	LW39-63
A1	0° ←30°	Y*				
A2	0° ←45°		Y	Y	Y	Y
B1	-30° →0° ←30°	Y*				
B2	-45° →0° ←45°		Y	Y	Y	Y
B3	-60° →-30° →0° ←-30° ←-60°			Y*		
B4	-90° -45° 0° 45° ←90°		Y	Y	Y	Y
B5	-90° -45° 0° ←45°		Y	Y	Y	Y
BA	-90° →-45° →0° ←-45° ←-90°		Y	Y	Y	
BC	-45° →0° 0° ←45°		Y		Y	
BD	-30° →0° 0° ←30°			Y*		
Z1	-135° →-90° 0° ←45°		Y	Y	Y	Y
ZA	-90° →-45° 0° 45° ←-90°		Y	Y	Y	Y
ZB	-90° →-45° 0° 45°		Y	Y	Y	Y
ZC	-45° 0° 45° ←90°		Y	Y	Y	Y
ZD	-90° 0° ←45°		Y	Y	Y	Y
ZE	0° 45° ←90°		Y	Y	Y	Y
ZF	-45° 0° ←45°		Y	Y	Y	Y
ZG	-45° →0° 45°		Y	Y	Y	Y
ZK	-45° →0° 45° 90°		Y	Y	Y	Y
W	-120° →-90° 0° ←30°	Y*		Y*		
WA	-90° 0° ←30°	Y*				
WB	-30° →0° 90°	Y*				
WR	-120° →-90° 0° 90° ←-120°	Y*		Y*		
WS	-90° 0° 90° ←-120°	Y*		Y*		
WT	-120° →-90° 0° 90°	Y*		Y*		
WU	-90° -30° →0° ←-30°			Y*		
WV	-90° 0° ←-30° 90°			Y*		
WW	-90° -30° →0° ←-30° 90°			Y*		

Precautions: For the items with \*, the number of the cam switch pitches that are used shall not exceed 3; Please consult our technical support department for any further inquiry.

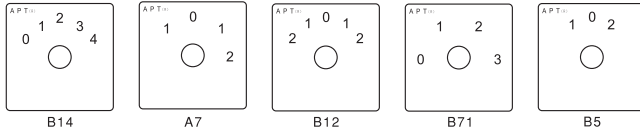
# Cam Switch Series

## Escutcheon Plates Code

The Escutcheon Plates Code of panel indicate the specific requirements for the prints on the panels of the cam switches. The user can select escutcheon plate code according to "Ordinary escutcheon Codes of Panel", or provide the requirements for customization. If there are no show in the Order Models, we will provide the panels according to the defaulted escutcheon plates code rule.

### 1. Defaulted escutcheon plates code Rules:

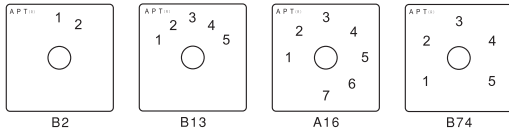
(1) If one position have no contactor closed, this position plate shall be "0" and then the position on both sides shall be show in sequence of Arabic figure as "1", "2", "3"..... For 3 position cam switch, there is not the plate as of 1-0-1, instead of 1-0-2.



(2) If the position haven't "0", each position will be showed in sequence of Arabic figure as "1", "2", "3".....(clockwise).

If there is no "0" gear, each gear will be printed in sequence of Arabic figure as "1", "2", "3"..... (clockwise).

For example:

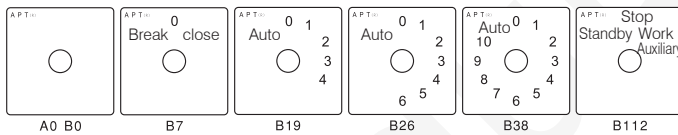


### 2. Common Escutcheon Plates Code

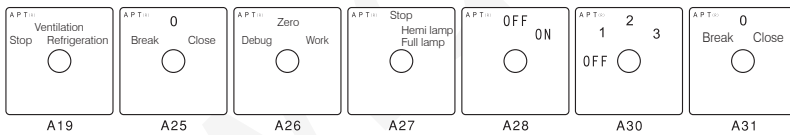
Notes: The codes starting with A are applicable to LW39-10, LW39-16A, LW39-25, and LW39-63.

The codes starting with B are applicable to LW39-16B, LW39-16C.

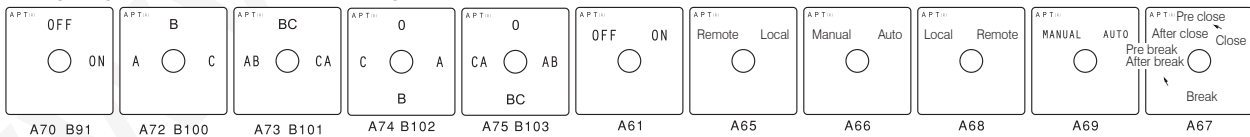
#### Positioning Angle - 30°



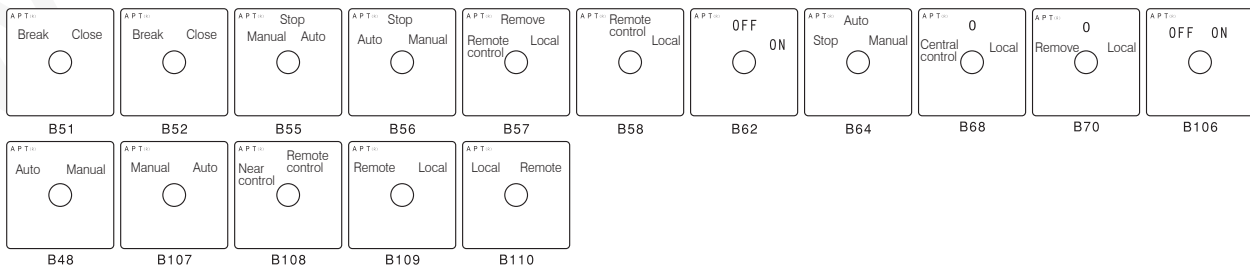
#### Positioning Angle - 45°



#### Positioning Angle - 90° and Combined Angles



#### Positioning Angle - 60°




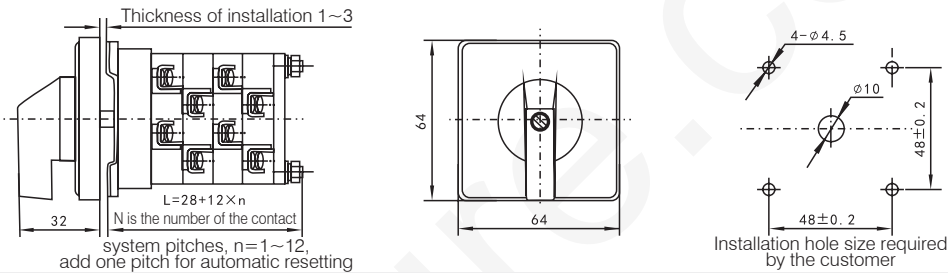
## LW39-16A Series

Good visual profile with easy operation, safe and reliable. The external wiring method is convenient for use.


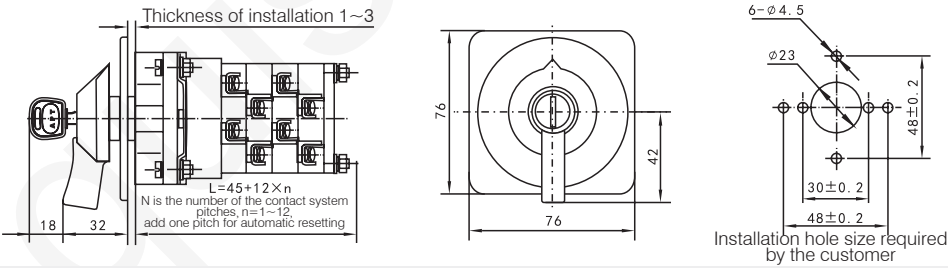
- Conventional thermal current 16A
- Operation angle 30°, 45°, 90°
- The maximum number of the contact system pole is 12

Note: If the working voltage is under 24V and the current is  $\leq 100\text{mA}$ , please specify in the purchase order. We will add the gold-plated process to the contacts.


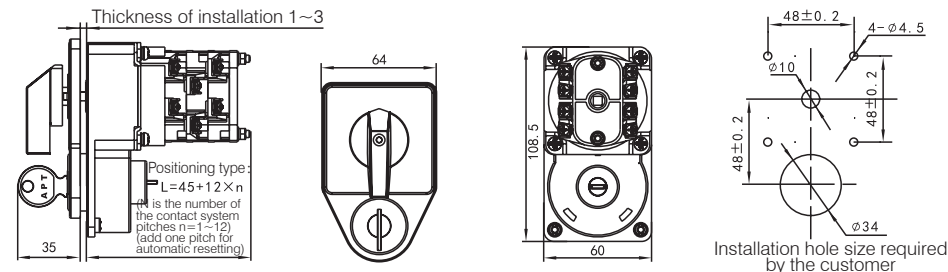
### Normal Type LW39-16A

Positioning Angle: 30° 45° 90°, max. 12 poles, handles type: all	
	 <p>Thickness of installation 1~3</p> <p><math>L=28+12 \times n</math> N is the number of the contact system pitches, <math>n=1\sim 12</math>, add one pitch for automatic resetting</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-16A-□-□/□□□ Refer to P16 in this catalogue for details	

### Handle with Key-lock Type LW39-16A YS

Positioning Angle: 45° 90°, max. 12 poles, handle is not selectable	
	 <p>Thickness of installation 1~3</p> <p><math>L=45+12 \times n</math> N is the number of the contact system pitches, <math>n=1\sim 12</math>, add one pitch for automatic resetting</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-16A YS -□-□/□□ Refer to P16 in this catalogue for details	
Key Operation: it can be removed at each position and the handle will be locked after the key is taken out. if there is any other requirement, please show us.	


### Panel with Key-lock Type LW39-16A YM

Positioning Angle: 45° 90°, max. 12 poles, handles type: A, B, C, D	
	 <p>Thickness of installation 1~3</p> <p>Positioning type: <math>L=45+12 \times n</math> N is the number of the contact system pitches, <math>n=1\sim 12</math>, (add one pitch for automatic resetting)</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-16A YM-□-□/□□□ Refer to P16 in this catalogue for details	
Key Operation: it can be removed at each position and the handle will be locked after the key is taken out. if there is any other requirement, please show us.	

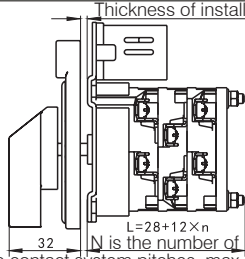
# Cam Switch Series

## Panel with illumination Type LW39-16A DM

Positioning Angle: 30° 45° 90°, max. 12 poles, handles type: all

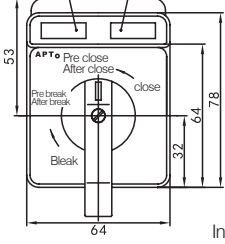
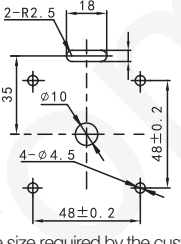


left red and right green



Thickness of installation 1~3

Green indicator Light Red indicator Light


$L=28+12 \times n$   
N is the number of the contact system pitches, max. 12 pitches, add one pitch for automatic resetting

Installation hole size required by the customer

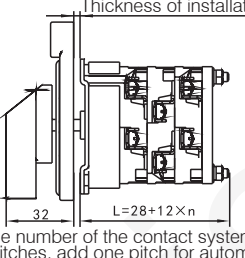
Model to be ordered: LW39-16A DM -□-□/□□□□ Refer to P16 in this catalogue for details

## Label Type LW39-16A P

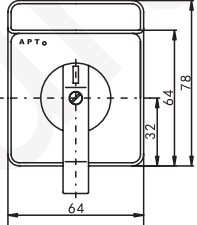
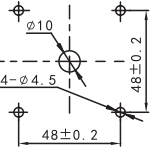
Positioning Angle: 30° 45° 90°, max. 12 poles, handles type: all



Voltage Cam Switch  
APT BC  
CA



Thickness of installation 1~3









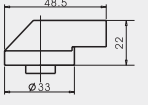
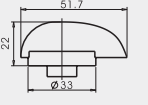
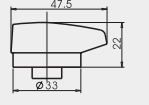
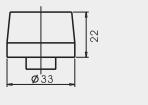









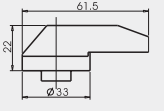
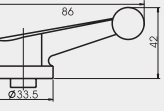
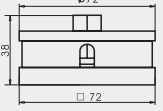
$L=28+12 \times n$   
N is the number of the contact system pitches, max. 12 pitches, add one pitch for automatic resetting

Installation hole size required by the customer

Model to be ordered: LW39-16A DM -□-□/□□□□ Refer to P16 in this catalogue for details

## Handles for to LW39-16A (default as Ak handle if the requirement is not specified)

Code	Ak	Ar	Bk	Br	Ck	Cr	Dk	Dr
Handle								
Size								

Code	Ek	Er	Fk	Fr	Gk	Gr
Handle						
Size						


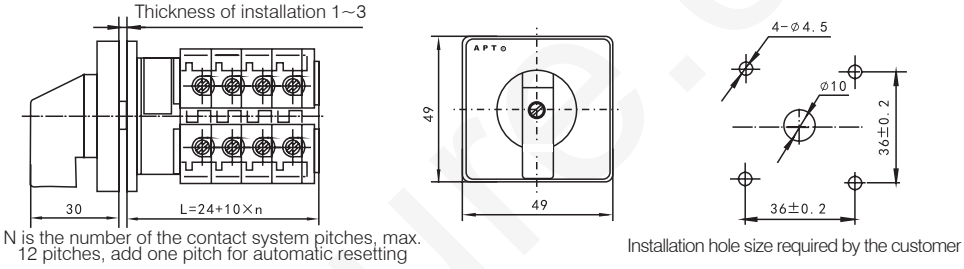
## LW39-16B Series

Have tiny, good and novel appearance and reliable structure. The built-in wiring method is safe and reliable.


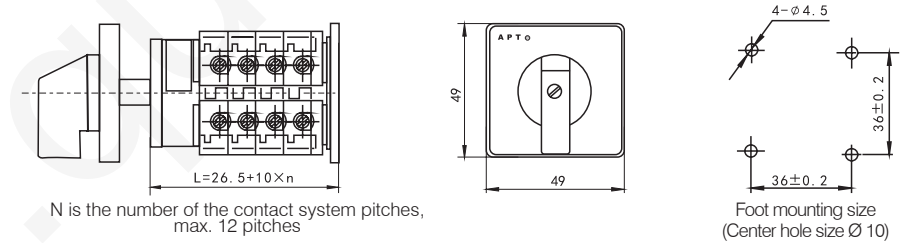
- Conventional thermal current 16A, built-in wiring, safe and reliable
- Operation angle 30°, 45°, 60°, 90°
- The maximum number of the contact system pole is 12. It is suggested to use no more than 8 poles

Note: If the working voltage is under 24V and the current is  $\leq 100\text{mA}$ , please specify in the purchase order and we will add the gold-plating process to the contacts.


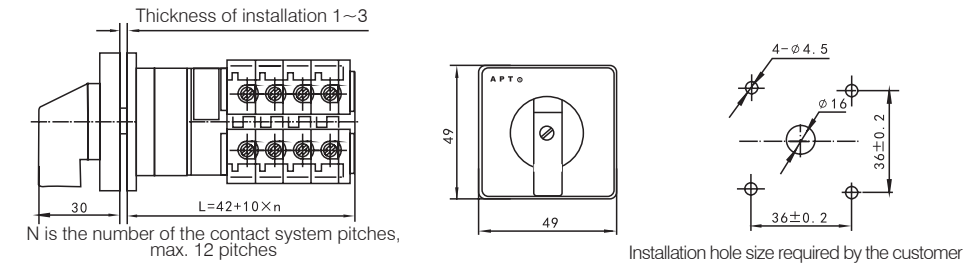
### Normal Type LW39-16B

Positioning Angle: 30° 45° 60° 90°, max. 12 poles and it is suggested within 8 poles, handles type: all	
	 <p>N is the number of the contact system pitches, max. 12 pitches, add one pitch for automatic resetting</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-16A DM -□-□/□□□□ Refer to P16 in this catalogue for details	

### Base-installation Type LW39-16B M

Positioning Angle: 30° 45° 60° 90°, max. 12 poles and it is suggested within 8 poles, handles type: all	
	 <p>N is the number of the contact system pitches, max. 12 pitches</p> <p>Foot mounting size (Center hole size <math>\varnothing 10</math>)</p>
Model to be ordered: LW39-16B M -□-□/□□□□ Refer to P16 in this catalogue for details	

### Pull-out spring-return Type LW39-16B ZL


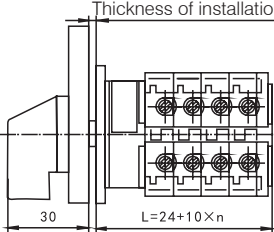
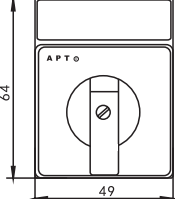
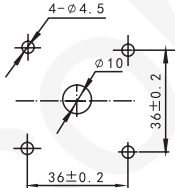
Positioning Features: 9GC or B1, max. 12 poles and it is suggested within 8 poles, handles type: all	
	 <p>N is the number of the contact system pitches, max. 12 pitches</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-16B M -□-□/□□□□ Refer to P16 in this catalogue for details	
Note – Applicable positioning features: -90°, 0°, 90° (Code 9GC); spring-return features: -30° → 0° ← -30° (Code B1)	



# Cam Switch Series

## Label Type LW39-16B P

Positioning Angle: 30° 45° 60° 90°, max. 12 poles, handles type: all


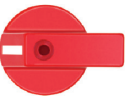




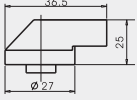
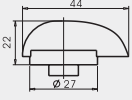
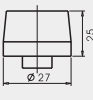
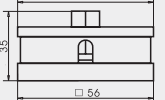





N is the number of the contact system pitches, max. 12 pitches

Installation hole size required by the customer

Model to be ordered: LW39-16B P - □ - □ / □ □ □ □ Refer to P16 in this catalogue for details

## Handles for LW39-16B (default as Ak handle if the requirement is not specified)

Code	Ak	Ar	Bk	Dk	Gk	Gr
Handle						
Size						

## LW39-16C Series

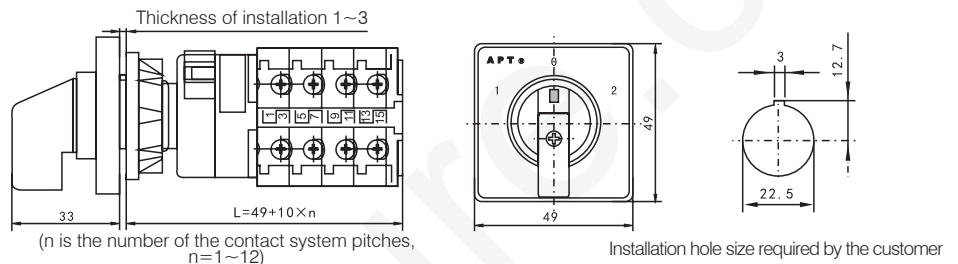
Single hole installation, with the same contact system as Series B. The international popular built-in wiring method is used, is safety and reliable.

- lth is 16A
- Operation angle 30°, 45°, 60°, 90°
- The maximum number of the contact poles is 12 and less than 8 poles is better.

Note: If the working voltage is under 24V and the current is  $\leq 100\text{mA}$ , please specify in the purchase order and we will add the gold-plating process to the contacts.

### Normal Type LW39-16C

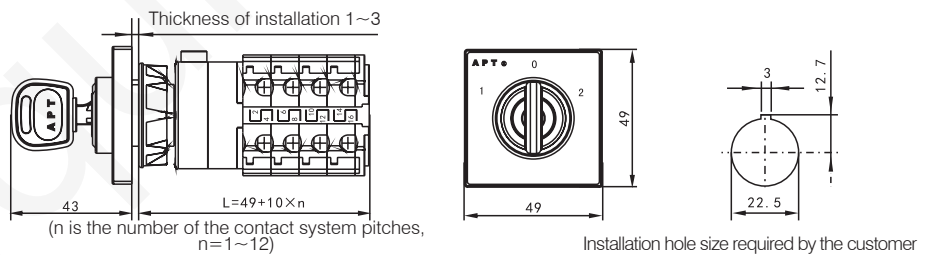
Positioning Features: 9GC or B1, max. 12 poles and it is suggested within 8 poles, handles type: all



Model to be ordered: LW39-16C -□-□/□□ Refer to P16 in this catalogue for details

### Handle with Key Type LW39-16C YS

Positioning Angle: 30° 60° 90°, max. 12 poles and it is suggested within 8 poles, no handle



Model to be ordered: LW39-16C YS -□-□/□□ Refer to P16 for details

Key Operation: it can be removed at each position and the handle will be locked after the key is taken out. if there is any other requirement, please show us.

# Cam Switch Series


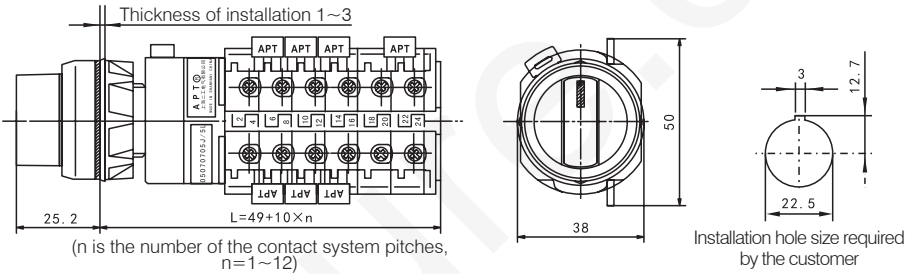
## LW39-16CU Series

Single hole installation, with the same contact system as Series B. The international popular built-in wiring method is used, is safety and reliable.

- Ith is 16A
- Operation angle 30°, 45°, 60°, 90°
- The maximum number of the contact poles is 12 and less than 8 poles is better.

Note: If the working voltage is under 24V and the current is  $\leq 100\text{mA}$ , please specify in the purchase order and we will add the gold-plating process to the contacts.

### Single-hole Installation without Panel Type LW39-16CU

Positioning Angle: 30° 60° 90°, max. 12 poles and it is suggested within 8 poles, handle is not selectable	
	 <p style="font-size: small;">(n is the number of the contact system pitches, n=1~12)</p> <p style="font-size: small;">Installation hole size required by the customer</p>
Model to be ordered: LW39-16CU -□-□/□□ Refer to P16 in this catalogue for details	


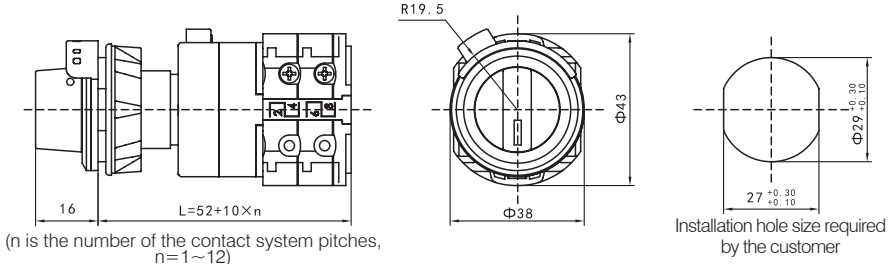
## LW39-16CU QF Lead Seal Series

Single hole installation, with the same contact system as Series B. The international popular built-in wiring method is used, is safety and reliable.

- Ith is 16A
- Operation angle 30°, 45°, 60°, 90°
- The maximum number of the contact poles is 12 and less than 8 poles is better.

Note: If the working voltage is under 24V and the current is  $\leq 100\text{mA}$ , please specify in the purchase order and we will add the gold-plating process to the contacts.

### Single-hole Installation without Panel with lead seal Type LW39-16CU QF Series


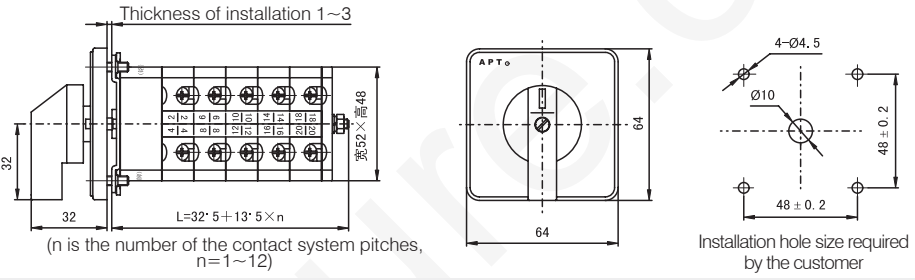
Positioning Angle: 30° 60° 90°, max. 12 poles and it is suggested within 8 poles, handle is not selectable	
	 <p style="font-size: small;">(n is the number of the contact system pitches, n=1~12)</p> <p style="font-size: small;">Installation hole size required by the customer</p>
Model to be ordered: LW39-16CU -□-□/□-QF-□ Refer to P16 in this catalogue for details	

## LW39-25 Gold-plated Contact Series


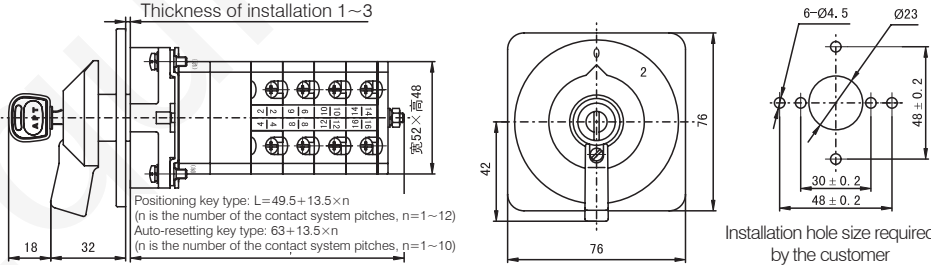
It is the latest product completely developed by us with multiple design patents. LW39-25 is applicable to the places with bigger capacities, especially DC application environments. The international popular built-in wiring method adopted is safe and reliable. The roller bearings are used inside with gentle action and touch feeling as well as long mechanical service life.

- Conventional thermal current 25A, DC breaking capacity reaches 5A/110V (DC-21)
- Operation angle 30°, 45°, 90°
- Have rich functional features. The maximum number of the contact system pitches is 12.
- The gold-plated silver alloy contacts greatly guarantee the contact reliability under low voltage and low current.

### Normal Type LW39-25


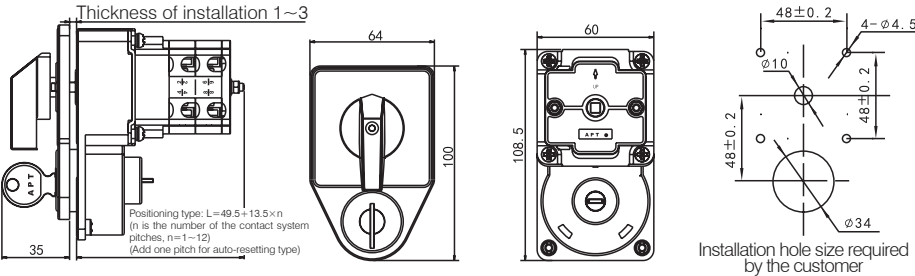
Positioning Angle: 30° 45° 90°, max. 12 poles, handles type: all	
	 <p>(n is the number of the contact system pitches, n=1~12)</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-25 -□-□/□□□□ Refer to P16 in this catalogue for details	

### Handle with Key-lock Type LW39-25 YS

Positioning Angle: 30° 45° 90°, max. 12 poles, handles type: all	
	 <p>(n is the number of the contact system pitches, n=1~12) Auto-resetting key type: 63+13.5×n (n is the number of the contact system pitches, n=1~10)</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-25 YS -□-□/□□□□ Refer to P16 in this catalogue for details	

Key Operation: it can be removed at each position and the handle will be locked after the key is taken out. if there is any other requirement, please show us.


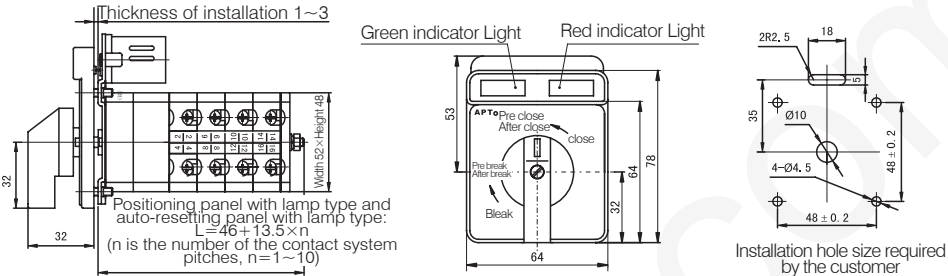
### Panel with Key-lock Type LW39-25 YM

Positioning Angle: 45° 90°, max. 12 poles, handles type: A, B, C, D	
	 <p>(n is the number of the contact system pitches, n=1~12) (Add one pitch for auto-resetting type)</p> <p>Installation hole size required by the customer</p>
Model to be ordered: LW39-25 YM -□-□/□□□□ Refer to P16 in this catalogue for details	

# Model Selection of Rail Transportation Product

## Panel with Light Type LW39-25 DM

Positioning Angle: 30° 45° 90°, max. 11 poles, handles type: all

Thickness of installation 1~3

Green indicator Light Red indicator Light


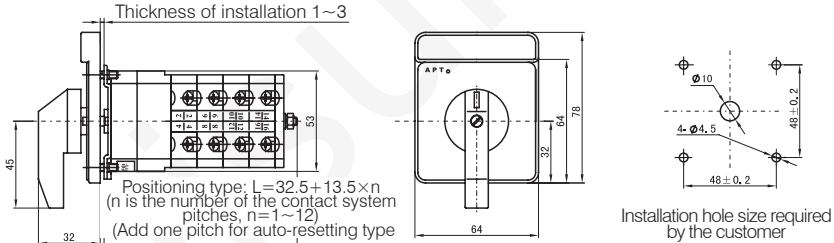
Positioning panel with lamp type and auto-resetting panel with lamp type:  
 $L = 46 + 13.5 \times n$   
 (n is the number of the contact system pitches,  $n = 1 \sim 10$ )

Installation hole size required by the customer

Model to be ordered: LW39-25 DM-□-□/□□□□ Refer to P16 in this catalogue for details

## Label Type LW39-25 P

Positioning Angle: 30° 45° 90°, max. 12 poles, handles type: all

Thickness of installation 1~3


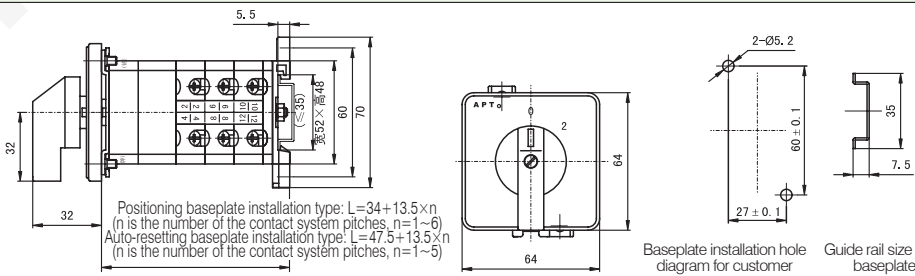
Positioning type:  $L = 32.5 + 13.5 \times n$   
 (n is the number of the contact system pitches,  $n = 1 \sim 12$ )  
 (Add one pitch for auto-resetting type)

Installation hole size required by the customer

Model to be ordered: LW39-25 P-□-□/□□□□ Refer to P16 in this catalogue for details

## Base-mounted Type LW39-25 M

Positioning Angle: 30° 45° 90°, max. 8 poles, handles type: all

Positioning baseplate installation type:  $L = 34 + 13.5 \times n$   
 (n is the number of the contact system pitches,  $n = 1 \sim 6$ )  
 Auto-resetting baseplate installation type:  $L = 47.5 + 13.5 \times n$   
 (n is the number of the contact system pitches,  $n = 1 \sim 5$ )

Baseplate installation hole diagram for customer

Guide rail size for customer's baseplate installation

Model to be ordered: LW39-25 M-□-□/□□□□ Refer to P16 in this catalogue for details

## Application projects

Category	Project Name	Places of Application	All Products
Large Railways	Various types of rail collection train set tamping machines, screen scarifiers, ballast distributing and trimming machines, material transportation machines, rail status verification machines etc.	Built-in, car body, driver control etc.	Whole series of APT products
	Official vehicle power distribution panels, special emergency power supply boxes for air-conditioned trains, train enclosures	Enclosures of 25T, 25K series of large railway passenger trains	Whole series of APT products
	SS9 locomotive, SS8 locomotive, SS7C locomotive, SS7D locomotive, 25G, 25K, 25T (locomotives)	DC600V power supply system cabinets of locomotives	1. Cam switches, 2. Two-color lights, 3. Key buttons, 4. Maintain buttons, 5. Normal buttons, 6. Acoustic and optical separately controlled buzzers, 7. Triangular key buttons (normally used in 25 series locomotives)
	Qinghai-Tibet Railway		1. Cam switches, 2. Two-color lights
Intercity Multiple Units (Trains)	Multiple units used for 200km	Driver control station and carriage enclosures	1. Cam switches, 2. Two-color lights, 3. Quadrangular key switches
	Multiple units used for 250km	Driver control station and carriage enclosures	1. Combined indications, 2. Buzzers, 3. Triangular key switches
	Multiple units used for 300km	Driver control station and carriage enclosures	1. Combined indications, 2. Illuminated buttons
	Multiple units used for 350km	Driver control station and carriage enclosures	1. Combined indications, 2. Illuminated buttons
City Metros	Chengdu Metro Lines	Control of metro stations	Whole series of APT products
	Chongqing Rail Line 3	Control of metro stations	Whole series of APT products
	Bombay Light Rail, India	Indications of light rail trains	35 series train door indicator lights
	Changchun Light Rail	Driver control station of light rail	TK series special pushbuttons and two-color indicator lights
	City Rail Vehicle Door Control Series	Auto door locks	Triangular key buttons, quadrangular key buttons and TK series special pushbuttons
	Chongqing Rail Line 3	Driver control station of metro	Whole series of APT products
	Beijing Metro Lines 1, 4 Chengdu Metro Lines Tianjin Metro Lines Guangzhou Metro Lines 3, 4, 5	Built-in, car body and driver control etc.	1. TK series pushbuttons, 2. Lead seal series knobs and cam switches, 3. Indicator lights, 4. Buzzers, 5. RW series pushbuttons
Metro Base Stations	Shanghai Metro Lines 2, 6, 7, 8, 9, 10, 11, 13 Shenzhen Metro Line 2 Shanghai Hongqiao Transportation Hub etc.	Various communication, control and power distribution systems etc.	Whole series of APT products

## Model Selection of Rail Transportation products

### Pushbutton, Indicator/Buzzer, Cam Switch Series