

## Instructions

**Before installing the device, please read the instructions.**

## 1 Summary

### 1.1 Main application

FM\_S series pushbuttons with complete functions can fully meet the domestic and foreign CNC program control devices needs, which can be widely used in below 24V DC machine tools, textiles, shipping, aviation, automobile, tobacco, electric power, telecommunications medical devices and other fields as control circuits, signals, interlocks and other supporting use.

FM □ S - □□□ - □□□□/□□ - □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

- ① FM: Flush design Mental Pushbutton
- ② Mounting cut-outs: Ø12、Ø16、Ø19、Ø22、Ø25
- ③ Series: S: Ultrathin pushbutton
- ④ Shell material: S: stainless steel, A: anodized aluminum(customization)
- ⑤ Shape of head: F: flat round
- ⑥ Terminal type: P: plug-in terminal
- ⑦ Contact arrangement: 10:1NO
- ⑧ Action Function : Regular: momentary
- ⑨ LED:D1: Circle ;
- ⑩ Symbol : S0: NO symbol S1:power symbol S99: Customization
- ⑪ LED Color: r:red g:green y:yellow b:blue w:white k:black; rg:red&green; rb:red&blue; gb:green&blue
- ⑫ Voltage code: 21: AC/DC 6V 22:AC/DC12V 23: AC/DC 24V
- ⑬ 1.No mark: Nomal 2.Marked: marked as required. Marked code is composed of 2-10 characters to mark the supply information.

- 8) Electrical lifetime:  
Momentary:200,000cycles
- 9) Type of fuse in test of rated limited short-circuit current:NT00-6A;
- 10) Actuation force≤5 N;
- 11) Head protection:  
Momentary:IP65;
- 12) Switching capacity:AC-15、 DC-13;  
Comparison table of rated operational current Ie (A) and rated operational voltage Ue (V) see table 1:

Table 1

Product Type	Switching capacity	Ue	Ie
FM12S/16S/19S/22S/25S	DC-12	24V	0.3A

- 13) The rated working current corresponding to the rated working voltage of the lamp button is shown in Table 2

Table 2

Power supply	Rated voltage	Rated current
AC/DC	6V	≤15mA
	12V	≤15mA
	24V	≤15mA

## 2 Installation caution

- 1) We must turn off power before installation and recondition;
- 2) We need to check whether the type meet selection requirement;
- 3) Choose the correct operational voltage.

## 3 Technical feature

### 3.1 Technical parameters

- 1) Rated insulation voltage (Ui) :25V;
- 2) Conventional thermal current: (Ith) :2A;
- 3) Rated impulse withstand voltage (Uimp):500V;
- 4) Power frequency withstand voltage: 1000V  
AC (Valid values) 50Hz, 60s;
- 5) Initial contact resistance: ≤50mΩ
- 6) Dielectric properties:  
Electrical gap ≥0.8mm;  
Creepage distance: ≥1.5mm;
- 7) Mechanical lifetime:  
Momentary:1000,000 cycles

### 3.2 Work Environment

- 1) Use environment temperature:-25℃ ~ +55℃ ;
- 2) Air relative humidity:≤90%;
- 3) The altitude is less than 2000m;
- 4) Installation category is II ;
- 5) Pollution degree is 3。

## 4 Installation method and Installation dimension

### 4.1 Installation method(figure 3)

- 1) Insert the operator into the mounting hole from the front of panel.
- 2) Clamping ring from the mounting plate will fit on the back pushbutton on the head, then tighten the nut.

### 4.2 Installation instructions

The thickness of the mounting panel and mounting torque is shown in Table 3 , When installing the fastening nut, all the buttons have their own operating force limit, and it is enough to operate in place when using the nut. Do not overexert yourself, which may lead to short life or damage of parts.

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4.3 Mounting cut-outs: See Figure 1 (Unit :mm)  
See Table 3 for installation dimensions of each pushbutton

Table 3

Type	Panel thickness (L)	Mounting torque	a	b	D
FM12S	Max3	0.2N·m	Min20	Min20	12.1 <sup>+0.2</sup> <sub>0</sub>
FM16S	Max3	0.4N·m	Min25	Min25	16.2 <sup>+0.2</sup> <sub>0</sub>
FM19S	Max3	0.4N·m	Min30	Min40	19.3 <sup>+0.3</sup> <sub>0</sub>
FM22S	Max3	0.8N·m	Min50	Min50	22.4 <sup>+0.4</sup> <sub>0</sub>
FM25S	Max3	1.2N·m	Min40	Min55	25.5 <sup>+0.5</sup> <sub>0</sub>

4.4 Outlines dimensions as shown in Figure 2 (Unit :mm)  
See Table 4 for the overall dimensions of each type of pushbutton

Table 4

Type	Diameter (D)	Thread diameter (d)	h	f
FM12S□FP	17.5	12	Max15	Max2
FM16S□FP	17.5	16	Max15	Max2
FM19S□FP	17.6	19	Max15	Max2
FM22S□FP	17.6	22	Max15	Max2
FM25S□FP	17.6	25	Max15	Max2

4.5 Product installation steps are shown in Figure 3

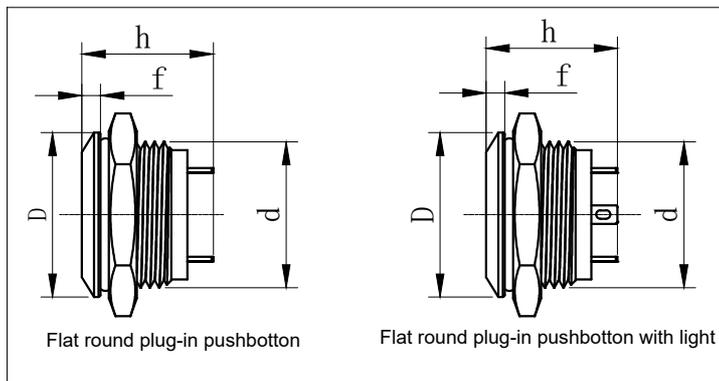


Figure 2: Outline dimension of product

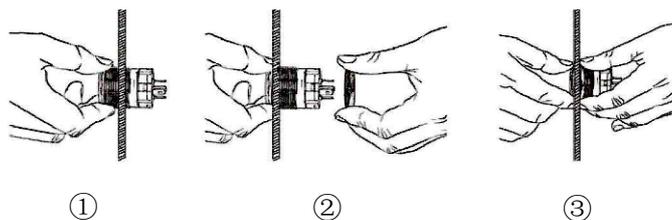


Figure 3: Product installation steps

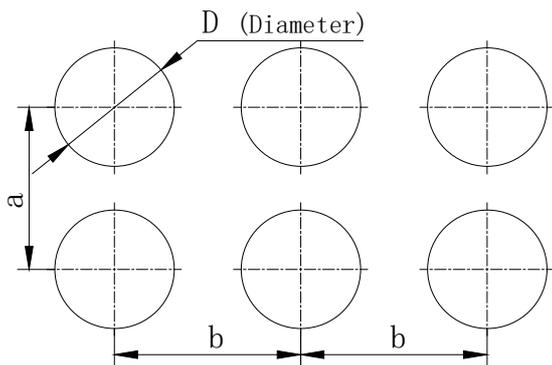


Figure 1: mounting cut-outs