



Instructions

Before installing the device, please read the instructions.

1 Summary

1.1 Main application

FM_N series pushbuttons with complete functions can fully meet the domestic and foreign CNC program control devices needs, which can be widely used in below 220V AC/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 □ N - □□□ - □□□□/□□□ - □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

- ① FM: Flush design Metal Pushbutton
- ② Mounting cut-outs: Ø12、Ø16、Ø19、Ø22、Ø25、Ø30
- ③ Series: N: Nomal pushbutton
- ④ Shell material: S: stainless steel, A: anodized aluminum(customization)
- ⑤ Shape of head: F: flat round H: high round D: dome
- ⑥ Terminal type: P: plug-in terminal
- ⑦ Contact arrangement: 10:1NO; 11:1NO1NC; 22:2NO2NC
- ⑧ Action Function : Regular: momentary T: Maintained X: two-position rotary XS: three-position rotary Z: Emergency stop Y: Two-position key switch YS: three-position key switch
- 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 24: AC/DC36V 25:AC/DC48V 26:AC/DC110V 28: AC/DC220V
- ⑬ Position of selector switch/ key switch:
fu: Right self recovery;
ffu: Left and right autogenous
- ⑭ 1.No mark: Nomal 2.Marked: marked as required. Marked code is composed of 2-10 characters to mark the supply information.

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 Techenical parameters

- 1) Rated insulation voltage (Ui) :250V;
- 2) Conventional thermal current:(Ith) :5A(FM12N_3A);
- 3) Rated impulse withstand voltage (Uimp):2.5KV;
- 4) Rated insulation voltage: 1500V AC (Valid values) 50Hz, 60s;
- 5) Initial contact resistance: ≤50mΩ
- 6) Dielectric properties:Electrical gap ≥1.5mm,
Creepage distance: ≥4mm;
- 7) Mechanical lifetime:
Momentary:1000,000 cycles, Maintained :300,000 cycles; Selector switch/key switch:100,000 cycles; E-Stop: 50,000 cycles

8) Electrical lifetime:

Momentary:200,000cycles (FM12N_100,000cycles),

Maintained/Selector switch/key switch; E-Stop:50,000 cycles;

9) Type of fuse in test of rated limited short-circuit current:NT00-6A;

10) Actuation force≤5 N;

11) Head protection:

Momentary/Maintained/E-Stop:IP65;

Selector switch:IP40 key switch:IP54

12) Switching capacity:AC-15、DC-13;

Comparison table of rated operational current Ie (A) and rated operational voltage Ue (V) see table1:

Table 1

Type	Capacity	Ue	220V	110V	24V
FM12N	AC-15	Ie	0.5A	1A	1A
	DC-13	Ie	0.1A	0.2A	0.7A
FM16/19/22/25N	AC-15	Ie	0.5A	1A	3A
	DC-13	Ie	0.1A	0.2A	0.7A

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
	36V	≤15mA
	48V	≤15mA
	110V	≤15mA
	220V	≤15mA

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

- 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 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
FM12N	Max6	0.2N·m	Min20	Min20	12.1 ₀ ^{+0.2}
FM16N	Max6	0.4N·m	Min25	Min25	16.2 ₀ ^{+0.2}
FM19N	Max6	0.4N·m	Min30	Min40	19.3 ₀ ^{+0.3}
FM22N	Max6	0.8N·m	Min50	Min50	22.4 ₀ ^{+0.4}
FM25N	Max6	1.2N·m	Min40	Min55	25.5 ₀ ^{+0.5}

4.4 Outline dimension 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
FM12N□FP	13.9	12	Max40	Max1.5
FM12N□HP	13.9	12	Max40	Max2.7
FM16N□FP	18.8	16	Max40	Max1.5
FM16N□HP	18.8	16	Max40	Max4.0
FM16N□FP-□X/XS	17.8	16	Max40	Max8.5
FM16N□FP-□Y/YS	17.8	16	Max40	Max2.0
FM16N□FP-□Z	24.2	16	Max40	Max18
FM19N□FP	21.8	19	Max40	Max1.5
FM19N□HP	21.8	19	Max40	Max4.0
FM19N□FP-□X/XS	21.8	19	Max40	Max8.5
FM19N□FP-□Y/YS	21.8	19	Max40	Max2.0
FM19N□FP-□Z	24.2	19	Max40	Max23
FM22N□FP	24.8	22	Max40	Max1.5
FM22N□HP	24.8	22	Max40	Max5.0
FM22N□FP-□X/XS	25.0	22	Max40	Max8.5
FM22N□FP-□Y/YS	25.0	22	Max40	Max2.0
FM22N□FP-□Z	30.5	22	Max40	Max23
FM25N□FP	28.0	25	Max40	Max1.5
FM25N□HP	28.0	25	Max40	Max5.5
FM25N□FP-□X/XS	28.0	25	Max40	Max8.5
FM25N□FP-□Y/YS	28.0	25	Max40	Max2.0
FM25N□FP-□Z	32.5	25	Max40	Max23

4.5 Product installation steps are shown in Figure 3

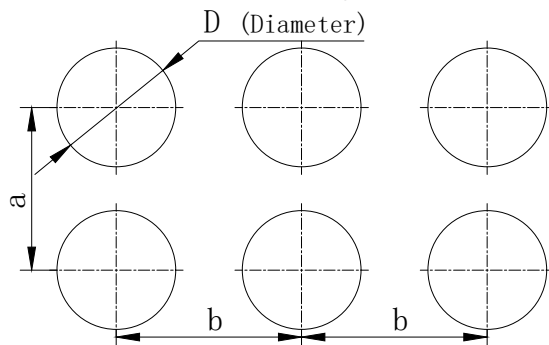


Figure 1: mounting cut-outs

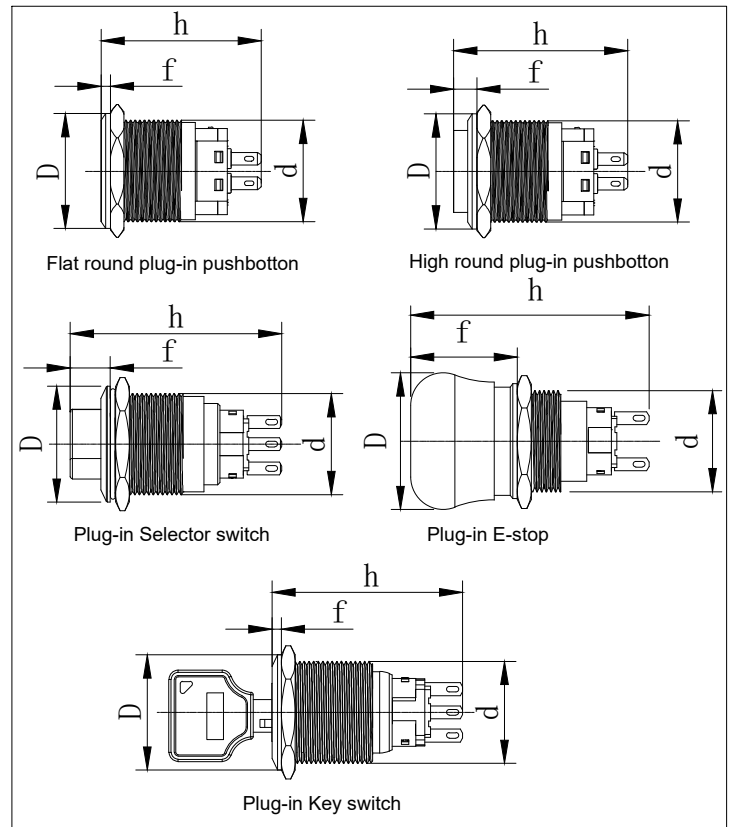


Figure 2: Outline dimension

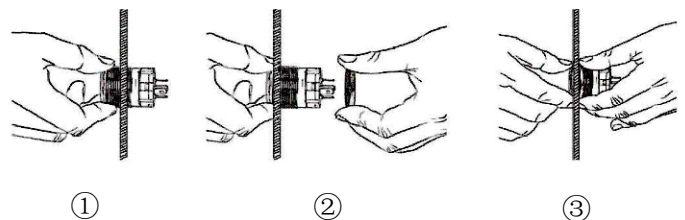


Figure 3: Product installation steps