

# Command Non-Illuminated 19mm Knob Plastic Selector Switches





**AF16PR-2C1B****AF16PR-6C2B**

## Command Non-Illuminated 19mm Knob Plastic Selector Switches

| Part Number                 | Price   | Drawing Link        | Operator        | Operation   | Type* | Contacts | Protection | Material                        |
|-----------------------------|---------|---------------------|-----------------|---|-------|----------|------------|---------------------------------|
| <a href="#">AF16PR-2C1B</a> | \$18.50 | <a href="#">PDF</a> | 22mm round Knob | 2-pos maintained  | Thin  | SPDT     | IP65       | Base: Plastic<br>Bezel: Plastic |
| <a href="#">AF16PR-2C2B</a> | \$20.50 | <a href="#">PDF</a> |                 |   |       | DPDT     |            |                                 |
| <a href="#">AF16PR-0C1B</a> | \$18.50 | <a href="#">PDF</a> |                 | 2-pos spring return from right                            |       | SPDT     |            |                                 |
| <a href="#">AF16PR-0C2B</a> | \$20.50 | <a href="#">PDF</a> |                 |   |       | DPDT     |            |                                 |
| <a href="#">AF16PR-3C2B</a> | \$20.50 | <a href="#">PDF</a> |                 | 3-pos maintained  |       | DPDT     |            |                                 |
| <a href="#">AF16PR-6C2B</a> | \$20.50 | <a href="#">PDF</a> |                 | 3-pos spring return to center from left, maintained right |       | DPDT     |            |                                 |
| <a href="#">AF16PR-7C2B</a> | \$20.50 | <a href="#">PDF</a> |                 | 3-pos spring return to center from right, maintained left |       | DPDT     |            |                                 |
| <a href="#">AF16PR-1C2B</a> | \$20.50 | <a href="#">PDF</a> |                 | 3-pos spring return to center from right or left          |       | DPDT     |            |                                 |

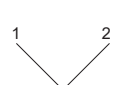
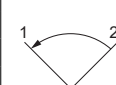
\* Type: Thin - 35.9 mm deep

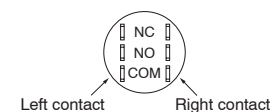
## Contact Operation Table

| No. of positions | Operator action   | Code     |
|------------------|---|----------|
| 2-position (90°) | Maintained  | <b>2</b> |
|                  | Spring return (Right to left)            | <b>0</b> |
| 3-position (45°) | Maintained  | <b>3</b> |
|                  | Spring/manual return (Left to center)    | <b>6</b> |
|                  | Spring/manual return (Right to center)   | <b>7</b> |
|                  | Spring return (Left or right to center)  | <b>1</b> |


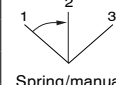
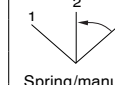

### • Key position and contact operation

#### 2-position

| Operator action (View from the front)   |  | Contact arrangement | Contact unit |     | Operator position <sup>12</sup> |   |
|---|--|---------------------|--------------|-----|---------------------------------|---|
| 2   | 0  |                     |              |     | 1                               | 2 |
| <br>Maintained/90° | <br>Spring return/90° | SPDT                | Left         | COM | NC                              | ● |
|   |  |                     |              | COM | NO                              | ● |
|   |  | 2PDT                | Left         | COM | NC                              | ● |
|   |  |                     |              | COM | NO                              | ● |
|   |  |                     | Right        | COM | NC                              | ● |
|   |  |                     |              | COM | NO                              | ● |

Terminal arrangement  
View from the terminal side (the back)

#### 3-position

| Operator action (View from the front)  |  |  |   | Contact arrangement | Contact unit |     | Operator position <sup>12</sup> |   |   |
|--|--|--|---|---------------------|--------------|-----|---------------------------------|---|---|
| 3  | 6  | 7  | 1   |                     |              |     | 1                               | 2 | 3 |
| <br>Maintained/each 45° | <br>Spring/manual return/each 45° | <br>Spring/manual return/each 45° | <br>Spring return/each 45° | 2PDT                | Left         | COM | NC                              | ● | ● |
|  |  |  |   |                     |              | COM | NO                              | ● | ● |
|  |  |  |   |                     | Right        | COM | NC                              | ● | ● |
|  |  |  |   |                     |              | COM | NO                              | ● | ● |

Note: <sup>12</sup> ●, ■: means the contact closed (ON).



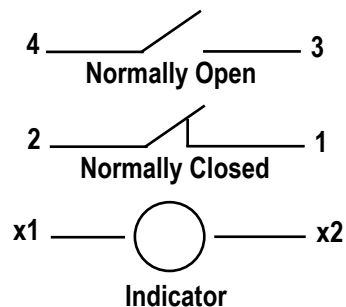
# Command Series 16mm/19mm Pilot Devices Specifications

| Specifications (Indoor Use)           |   |   |
|---------------------------------------|---|---|
|                                       | Pushbuttons / Selector Switches / Indicating Lights   | Emergency Stop Pushbuttons  |
| Rated thermal current (contact block) | D300  | C300 / R300   |
| Mechanical durability                 | Pushbuttons: Momentary 1 million operations<br>Alternate: 250,000 operations<br>Selector Switch: 250,000 operations<br>Indicating Lights: NA      | 100,000 operations  |
| Electrical durability                 | 100,000 operations (220 VAC 0.7A)   | 100,000 operations<br>(AC-15, AC-13, AC-12, DC-13, DC-12)                     |
| Operating frequency                   | 1200 operations/hour (On-load factor: 40%)  |   |
| Operating force (Avg)                 | Pushbuttons: 10N max<br>Selector switches 0.1 N·m max   | Push to lock: 25N max<br>Pull to reset: 20N max<br>Turn to reset: 0.3 N·m max |
| Dielectric strength                   | 2000 VAC for 1 min  |   |
| Insulation resistance                 | 100MΩ (500 VDC megger)  |   |
| Rated impulse dielectric strength     | 2.5kV   |   |
| Conditional short-circuit current     | 1000A   |   |
| Short-circuit protective device       | 2A  | 6A  |
| Pollution degree                      | 3 (inside the enclosure 2)  |   |
| Vibration                             | Resonance: 10 to 55Hz, double amplitude 0.1 mm* / Constant: 16.7 Hz, double amplitude 3mm   |   |
| Shock                                 | Malfunction: 100 m/s <sup>2</sup><br>Mechanical: 500 m/s <sup>2</sup>   | Malfunction: 150m/s <sup>2</sup><br>Durability: 1000 m/s <sup>2</sup>         |
| Ambient temperature                   | -10 to +55°C [+14 to +131°F] (no icing or no condensation)  |   |
| Temperature ratings                   | Storage: -40 to +70°C [-40 to +158°F]   |   |
| Humidity                              | 45 to 85% RH (within -5° to +40°C) (no icing or no condensation)  |   |
| Degree of protection                  | IP65  |   |
| Initial contact resistance            | 50mΩ max 6VDC 1A voltage drop   |   |
| Connections                           | 0.3 to 0.75 mm <sup>2</sup> (22 to 18 AWG)<br>Stripping length: 11 ± 1mm<br>Solder connection or 2.8 mm crimp-on disconnect connector             |   |
| Mounting tightening torque            | 0.6 to 1.0 N·m, 5.3 to 8.8 in·lb  |   |
| Contacts operation                    | Self-cleaning types. Slow action. Positive opening.   |   |
| Operation frequency                   | 1,200 cycle/hour (Application ratio 40%)  |   |
| Utilization category/contact ratings  | 120 VAC 1A (AC-13),<br>24 VDC 0.7 A (DC-13, to 0.95 = 21ms)<br>240 VAC 0.7 A (AC-13),<br>125 VDC 0.15 A (DC-13, to 0.95 = 21ms)                   | —   |
| Rated insulation voltage              | 250V AC/DC  |   |
| Materials                             | Enclosure: Polyamide / Contacts: silver, nickel   |   |
| Standards                             | UL 508, CSA C22.2, No.14,<br>TUV - EN60947-5-1<br>Pushbutton, Illuminated pushbutton: R50116757<br>Selector: R50116759<br>Pilot lights: R50116762 |   |
| Approvals                             | cURus File Number E44592, CE  |   |

To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.

## Control Circuit Contact Electrical Ratings and Wiring

### Typical Wiring



### NEMA Mechanical Switching Ratings and Test Values for DC Control Circuit Contacts

| Contact Rating Designation | Thermal Continuous Test Current (A) | Maximum Make or Break DC Current (A) |           |                  | Volt amperes |
|----------------------------|-------------------------------------|--------------------------------------|-----------|------------------|--------------|
|                            |                                     | 125 Volts                            | 250 Volts | 301 to 600 Volts |              |
| P300                       | 5.0                                 | 1.1                                  | 0.55      | ---              | 138          |
| P600                       | 5.0                                 | 1.1                                  | 0.55      | 0.20             | 138          |
| Q300                       | 2.5                                 | 0.55                                 | 0.27      | ---              | 69           |
| Q600                       | 2.5                                 | 0.55                                 | 0.27      | 0.10             | 69           |
| R300                       | 1.0                                 | 0.22                                 | 0.11      | ---              | 28           |

This chart is provided as a guideline only, and the ratings and values are not guaranteed to be accurate. It is the users' responsibility to properly size their control circuit devices. The chart values are from NEMA Standard ICS 5-2000, Table 1-4-2.

### NEMA Mechanical Switching Ratings and Test Values for AC Control Circuit Contacts

| Contact Rating Designation | Thermal Continuous Test Current (A) | Maximum AC Current, 50/60Hz (A) |       |           |       |           |       |           |       | Volt amperes |       |
|----------------------------|-------------------------------------|---------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|--------------|-------|
|                            |                                     | 120 Volts                       |       | 240 Volts |       | 480 Volts |       | 600 Volts |       |              |       |
|                            |                                     | Make                            | Break | Make      | Break | Make      | Break | Make      | Break | Make         | Break |
| A300                       | 10                                  | 60                              | 6.00  | 30        | 3.00  | ---       | ---   | ---       | ---   | 7200         | 720   |
| A600                       | 10                                  | 60                              | 6.00  | 30        | 3.00  | 15        | 1.50  | 12        | 1.20  | 7200         | 720   |
| B300                       | 5                                   | 30                              | 3.00  | 15        | 1.50  | ---       | ---   | ---       | ---   | 3600         | 360   |
| B600                       | 5                                   | 30                              | 3.00  | 15        | 1.50  | 7.5       | 0.75  | 6         | 0.60  | 3600         | 360   |
| C600                       | 2.5                                 | 15                              | 1.5   | 7.5       | 0.75  | 3.75      | 0.375 | 3.00      | 0.30  | 1800         | 180   |

This chart is provided as a guideline only, and the ratings and values are not guaranteed to be accurate. It is the users' responsibility to properly size their control circuit devices. The chart values are from NEMA Standard ICS 5-2000, Table 1-4-1.



# Command Series Pilot Devices

Fuji Electric Command Series pilot devices are used in machine tools, industrial machines, control panels, distribution panels, and instrumentation panels. Pushbuttons improve interfacing by allowing better layout and wiring, easier installation and increased safety. Reliability is also built in to handle complex multi-functional controls.

The AR16, AR22 and AR30 series are configurable with a wide range of choices. Our selection of 16mm, 19mm, 22mm and 30mm pushbuttons include non-illuminated as well as

illuminated models with flush round heads, extended round heads, and mushroom style heads. Other 16mm, 22mm and 30mm pilot devices available include emergency stop pushbuttons, selector switches, pilot lights, joystick selector switches, and buzzers.

We also offer a wide array of accessories to complement our selection of Fuji 16mm, 19mm, 22mm and 30mm Command Series pilot devices.

## AR16 Series Features

- 16.2 or 19.2 mm diameter hole
- Fits 1 to 6mm max panel thickness
- Integrated structure with built-in contacts that reduce control panel depth
- Offered in Thin-type profile with only 2mm of panel protrusion for high-density mounting and attractive panel designs
- Bright LED-illuminated surface with less power consumption
- Gold-plated contacts and snap-action mechanism with low 1mA at 5V switching
- Oil- and dust-proof operator modules (IP65)

## AR22 Series Features

- 22.3 mm diameter hole
- Fits 1 to 6mm max panel thickness
- Mountable in either a 22.3 or 25.5 mm diameter cutout (except for joysticks and buzzers)
- Provided with release arm
- Terminal cover included for added safety
- Wiring possible in vertical and horizontal directions
- Oil- and dust-proof operator modules (IP65), except for buzzers DR22B5 (IP00), DR22B8 (IP54)

## AR30 Series Features

- 30.5 mm diameter hole
- Fits 1mm to 6mm max panel thickness
- Quick snap-on replacement of contact blocks
- Double-break self-cleaning contacts
- Terminal cover included for added safety
- Wiring possible in vertical and horizontal directions
- Oil- and dust-proof operator modules (IP65) except for buzzer DR30B5 (IP00)



Pushbuttons



E-Stop Pushbuttons



Selector Switches



Pilot Lights



Electronic Buzzers



Joysticks

## Command Series Accessories



TO OBTAIN THE MOST CURRENT AGENCY APPROVAL INFORMATION, SEE THE AGENCY COMPLIANCE & CERTIFICATIONS CHECKLIST SECTION ON THE SPECIFIC PART NUMBER'S WEB PAGE.