

## ø22 Flush Mount CW Switches &amp; Pilot Devices

**Flush bezel projects only 2.5mm from front of panel and only 39.9mm behind the panel!**

**Key features:**

- ø22.3mm mounting hole compliant with IEC 60947-5-1
- 3.5-mm operator travel for pushbuttons ensures comfortable and reliable operation
- Black and metallic bezels available
- Illuminated pushbuttons, pushbuttons, pilot lights, selector switches and key selector switches are available
- Direct opening NC contact
- Seven different keys can be chosen for key selector switches
- 10A contact rating; up to three contact blocks for non-illuminated and two contact blocks for illuminated models can be connected
- Contact blocks can be removed by locking lever
- IP20 finger-safe screw terminals
- IP65 degree of protection (IEC 60529) from panel front

| Applicable Standards     | Mark                                                                              | File No. or Organization |
|--------------------------|-----------------------------------------------------------------------------------|--------------------------|
| UL508<br>CSA C22.2 No.14 |  | UL/c-UL File No. E68961  |
| EN60947-5-1              |  | TÜV SÜD                  |
|                          |  | EC Low Voltage Directive |

**Specifications**

|                                         |                                                                                                                 |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Operating Temperature                   | Non-illuminated: -25 to +60°C (no freezing)<br>LED illuminated: -25 to +55°C (no freezing)                      |
| Operating Humidity                      | 45 to 85% RH (no condensation)                                                                                  |
| Storage Temperature                     | -40 to +80°C                                                                                                    |
| Contact Resistance                      | 50 mΩ maximum (initial value)                                                                                   |
| Insulation Resistance                   | 100 MΩ minimum (500V DC megger)                                                                                 |
| Overvoltage Category                    | II (IEC 60664-1)                                                                                                |
| Impulse Withstand Voltage               | 2.5 kV (IEC60664-1/60947-5-1)                                                                                   |
| Pollution Degree                        | 3 (IEC60947-5-1)                                                                                                |
| Vibration Resistance                    | Operating extremes: 5 to 55Hz, amplitude 0.5 mm                                                                 |
| Shock Resistance                        | Operating extremes: 100 m/s <sup>2</sup><br>Damage limits: 1000 m/s <sup>2</sup>                                |
| Mechanical Life<br>(minimum operations) | Pushbutton, illuminated pushbutton: 2,000,000<br>Selector switch: 250,000<br>Key selector switch: 250,000       |
| Electrical Life<br>(minimum operations) | 50,000 (see Contact Ratings)<br>100,000 (see Contact Ratings)<br>(switching frequency 1800 operations/h)        |
| Degree of Protection (IEC60529)         | Panel front: IP65<br>Terminals: IP20<br>Type 4X ratings pending                                                 |
| Short-circuit Protection                | 250V/10A fuse, (Type aM IEC60269-1, IEC602069-2)                                                                |
| Electrical Shock Protection             | Class II (IEC61140)                                                                                             |
| Terminal Style                          | Screw terminal (M3.5 slotted Phillips screw)                                                                    |
| Bezel Material                          | Polyamide                                                                                                       |
| Applicable Wire Size                    | Up to 2 wires of 2 mm <sup>2</sup> (solid wire ø1.6)<br>maximum (AWG14 to 16)<br>(Ring terminal cannot be used) |
| Recommended Tightening Torque           | Terminal: 1.0 to 1.3 N·m<br>Locking ring: 1.2 N·m                                                               |

**Contact Ratings**

|                               |                                    |             |                        |        |       |       |
|-------------------------------|------------------------------------|-------------|------------------------|--------|-------|-------|
| Rated Insulation Voltage (Ui) |                                    |             |                        | 300V   |       |       |
| Rated Thermal Current (Ith)   |                                    |             |                        | 10A    |       |       |
| Rated Operating Voltage (Ue)  |                                    |             |                        | 24V    | 120V  | 240V  |
| Rated Operating Current (Ie)  | Electrical Life 50,000 operations  | AC 50/60 Hz | Resistive Load (AC-12) | 10A    | 10A   | 6A    |
|                               |                                    |             | Inductive Load (AC-15) | 10A    | 6A    | 3A    |
|                               |                                    | DC          | Resistive Load (DC-12) | 8A     | 2.2A  | 1.1A  |
|                               |                                    |             | Inductive Load (DC-13) | 4A     | 1.1A  | 0.55A |
|                               | Electrical Life 100,000 operations | AC 50/60 Hz | Resistive Load (AC-12) | 5A     | 5A    | 3A    |
|                               |                                    |             | Inductive Load (AC-15) | 5A     | 3A    | 1.5A  |
|                               |                                    | DC          | Resistive Load (DC-12) | 4A     | 1.1A  | 0.55A |
|                               |                                    |             | Inductive Load (DC-13) | 2A     | 0.55A | 0.27A |
| Contact Material              |                                    |             |                        | Silver |       |       |



1. Minimum applicable load (reference value): 3V AC/DC, 5 mA (Applicable range is subject to the operating conditions and load.)
2. The operational current represents the classification by making and breaking currents (IEC 60947-5-1).
3. UL, c-UL rating: A300

**Direct Opening of Key Selector Switch**

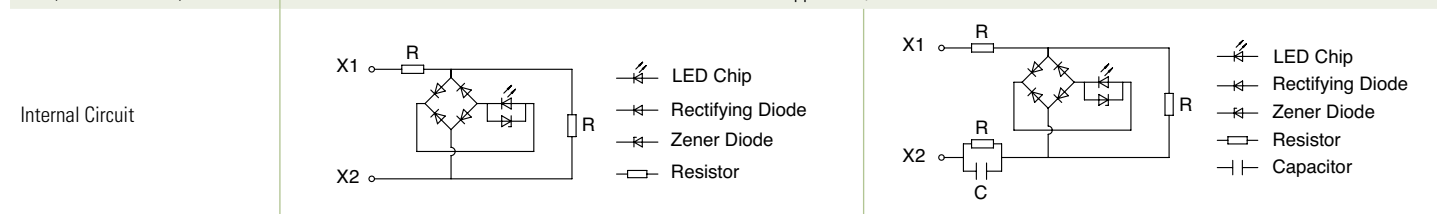
|                                                   | 2-position (3NC) | 3-position (2NC) |
|---------------------------------------------------|------------------|------------------|
| Operator Angle for Direct Opening Action          | 90°              | 45°              |
| Minimum Operator Torque for Direct Opening Action | 0.2 N·m          | 0.3 N·m          |
| Maximum Operator Angle                            | 90°              | 45°              |

## Weights

|                        |                                      |
|------------------------|--------------------------------------|
| Illuminated Pushbutton | 46g (CW1L-M1E02QH, 2 contact blocks) |
| Pushbutton             | 45g (CW1B-M1E03, 3 contact blocks)   |
| Pilot Light            | 27g (CW1P-1EQH)                      |
| Selector Switch        | 48g (CW1S-2E03, 3 contact blocks)    |
| Key Selector Switch    | 61g (CW1K-2E03, 3 contact blocks)    |

## LED Module

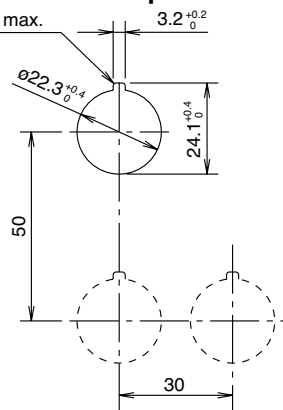
|                               |                                                     |               |               |                 |                 |
|-------------------------------|-----------------------------------------------------|---------------|---------------|-----------------|-----------------|
| Rated Insulation Voltage (Ui) | 250V                                                |               |               |                 |                 |
| Rated Operating Voltage (Ue)  | 6V AC/DC                                            | 12V AC/DC     | 24V AC/DC     | 100/120V AC     | 230/240V AC     |
| Operating Voltage Range       | 6V AC/DC±10%                                        | 12V AC/DC±10% | 24V AC/DC±10% | 100/120V AC±10% | 230/240V AC±10% |
| Illumination Color Code ②     | A (amber), G (green), PW (white), R (red), S (blue) |               |               |                 |                 |
| LED Module Part Number        | CW-EAQ2②                                            | CW-EAQ3②      | CW-EAQ4②      | CW-EAQH②        | CW-EAQM4②       |
| Current Draw                  | 15 mA                                               | 15 mA         | 16.5 mA       | 18 mA           | 18 mA           |
| Life (reference value)        | Approx. 30,000 hours                                |               |               |                 |                 |



1. Specify an illumination color code in place of ② in the part number.
2. Use the white (PW) LED module for yellow illumination.

**Mounting Hole Layout**  
**IEC 60947-5-1 compliant**

R0.8 max.



Note: Determine mounting centers to ensure proper spacing.

## Illuminated Pushbuttons (Assembled)

| Style                                                                                                                                                                                                                                                | Operating Voltage | Contact Configuration | Black Bezel    | Metallic Bezel | Illumination Color Code ②                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|----------------|----------------|---------------------------------------------------------------------|
| Round Flush<br>CW□L-□1<br><br><br>(black bezel)<br><br><br>(metallic bezel)        | 6V AC/DC          | 1NO                   | CW1L-③1E10Q2②  | CW4L-③1E10Q2②  | A: amber<br>G: green<br>PW: white<br>R: red<br>S: blue<br>Y: yellow |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③1E01Q2②  | CW4L-③1E01Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③1E11Q2②  | CW4L-③1E11Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③1E20Q2②  | CW4L-③1E20Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③1E02Q2②  | CW4L-③1E02Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      | 12V AC/DC         | 1NO                   | CW1L-③1E10Q3②  | CW4L-③1E10Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③1E01Q3②  | CW4L-③1E01Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③1E11Q3②  | CW4L-③1E11Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③1E20Q3②  | CW4L-③1E20Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③1E02Q3②  | CW4L-③1E02Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      | 24V AC/DC         | 1NO                   | CW1L-③1E10Q4②  | CW4L-③1E10Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③1E01Q4②  | CW4L-③1E01Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③1E11Q4②  | CW4L-③1E11Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③1E20Q4②  | CW4L-③1E20Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③1E02Q4②  | CW4L-③1E02Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      | 100/120V AC       | 1NO                   | CW1L-③1E10QH②  | CW4L-③1E10QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③1E01QH②  | CW4L-③1E01QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③1E11QH②  | CW4L-③1E11QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③1E20QH②  | CW4L-③1E20QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③1E02QH②  | CW4L-③1E02QH②  |                                                                     |
|                                                                                                                                                                                                                                                      | 230/240V AC       | 1NO                   | CW1L-③1E10QM4② | CW4L-③1E10QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③1E01QM4② | CW4L-③1E01QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③1E11QM4② | CW4L-③1E11QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③1E20QM4② | CW4L-③1E20QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③1E02QM4② | CW4L-③1E02QM4② |                                                                     |
| Round Extended<br>CW□L-□2<br><br><br>(black bezel)<br><br><br>(metallic bezel) | 6V AC/DC          | 1NO                   | CW1L-③2E10Q2②  | CW4L-③2E10Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③2E01Q2②  | CW4L-③2E01Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③2E11Q2②  | CW4L-③2E11Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③2E20Q2②  | CW4L-③2E20Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③2E02Q2②  | CW4L-③2E02Q2②  |                                                                     |
|                                                                                                                                                                                                                                                      | 12V AC/DC         | 1NO                   | CW1L-③2E10Q3②  | CW4L-③2E10Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③2E01Q3②  | CW4L-③2E01Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③2E11Q3②  | CW4L-③2E11Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③2E20Q3②  | CW4L-③2E20Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③2E02Q3②  | CW4L-③2E02Q3②  |                                                                     |
|                                                                                                                                                                                                                                                      | 24V AC/DC         | 1NO                   | CW1L-③2E10Q4②  | CW4L-③2E10Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③2E01Q4②  | CW4L-③2E01Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③2E11Q4②  | CW4L-③2E11Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③2E20Q4②  | CW4L-③2E20Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③2E02Q4②  | CW4L-③2E02Q4②  |                                                                     |
|                                                                                                                                                                                                                                                      | 100/120V AC       | 1NO                   | CW1L-③2E10QH②  | CW4L-③2E10QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③2E01QH②  | CW4L-③2E01QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③2E11QH②  | CW4L-③2E11QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③2E20QH②  | CW4L-③2E20QH②  |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③2E02QH②  | CW4L-③2E02QH②  |                                                                     |
|                                                                                                                                                                                                                                                      | 230/240V AC       | 1NO                   | CW1L-③2E10QM4② | CW4L-③2E10QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NC                   | CW1L-③2E01QM4② | CW4L-③2E01QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 1NO-1NC               | CW1L-③2E11QM4② | CW4L-③2E11QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NO                   | CW1L-③2E20QM4② | CW4L-③2E20QM4② |                                                                     |
|                                                                                                                                                                                                                                                      |                   | 2NC                   | CW1L-③2E02QM4② | CW4L-③2E02QM4② |                                                                     |



- Specify an illumination color code in place of ② in the Part Number.
- Specify function code in place of ③ in the Part Number. M: momentary, A: maintained
- See page 543 for dimensions.
- See next page for replacement LED modules.
- A dummy block is installed when one contact block is used.

## Illuminated Pushbuttons (Sub-assembled)

Contact Blocks + LED Module + Mounting Adapter + Operator + Lens = Completed Unit



### Contact Blocks

| Style                                                                             | Contacts                   | 1NO     | 1NC    |
|-----------------------------------------------------------------------------------|----------------------------|---------|--------|
|  | Finger-safe screw terminal | YW-E10R | YW-E01 |
|  | Dummy Block                | CW-DB   |        |

### LED Module

| Style                                                                              | Part Number |
|------------------------------------------------------------------------------------|-------------|
|  | CW-EAQ ②①   |

-  1. In place of ①, specify the Lens/LED Color Code from table.  
2. In place of ②, specify the Voltage Code from table.  
3. Use PW LED for yellow lens.

### Contact Block Mounting Adaptor

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

### Operators

| Style                                                                             |            |                | Black Bezel | Metallic Bezel |
|-----------------------------------------------------------------------------------|------------|----------------|-------------|----------------|
|  | Momentary  | Round Flush    | CW1L-M10    | CW4L-M10       |
|                                                                                   |            | Round Extended | CW1L-M20    | CW4L-M20       |
|  | Maintained | Round Flush    | CW1L-A10    | CW4L-A10       |
|                                                                                   |            | Round Extended | CW1L-A20    | CW4L-A20       |

### Lens

| Style                                                                               |                | Part Number |
|-------------------------------------------------------------------------------------|----------------|-------------|
|   | Round Flush    | CW9Z-L11①   |
|  | Round Extended | CW9Z-L12①   |

-  1. In place of ①, specify the Lens/LED Color Code from table.

### ① Lens/LED Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | PW   |
| Yellow | Y    |

### ② Voltage Code

| Voltage     | Code |
|-------------|------|
| 6V AC/DC    | 2    |
| 12V AC/DC   | 3    |
| 24V AC/DC   | 4    |
| 100/120V AC | H    |
| 230/240V AC | M4   |

## Non-Illuminated Pushbuttons (Assembled)

| Style                                                                                                                              | Contact Configuration | Black Bezel | Metallic Bezel | Button Color Code ①                                                |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|----------------|--------------------------------------------------------------------|
| Round Flush<br>CW□B-□1<br><br>(black bezel)       | 1NO                   | CW1B-③1E10① | CW4B-③1E10①    | B: black<br>G: green<br>R: red<br>S: blue<br>W: white<br>Y: yellow |
|                                                                                                                                    | 1NC                   | CW1B-③1E01① | CW4B-③1E01①    |                                                                    |
|                                                                                                                                    | 1NO-1NC               | CW1B-③1E11① | CW4B-③1E11①    |                                                                    |
|                                                                                                                                    | 2NO                   | CW1B-③1E20① | CW4B-③1E20①    |                                                                    |
|                                                                                                                                    | 2NC                   | CW1B-③1E02① | CW4B-③1E02①    |                                                                    |
|                                                                                                                                    | 2NO-1NC*              | CW1B-M1E21① | CW4B-M1E21①    |                                                                    |
|                                                                                                                                    | 1NO-2NC*              | CW1B-M1E12① | CW4B-M1E12①    |                                                                    |
|                                                                                                                                    | 3NO*                  | CW1B-M1E30① | CW4B-M1E30①    |                                                                    |
|                                                                                                                                    | 3NC*                  | CW1B-M1E03① | CW4B-M1E03①    |                                                                    |
| Round Extended<br>CW□B-□2<br><br>(metallic bezel) | 1NO                   | CW1B-③2E10① | CW4B-③2E10①    |                                                                    |
|                                                                                                                                    | 1NC                   | CW1B-③2E01① | CW4B-③2E01①    |                                                                    |
|                                                                                                                                    | 1NO-1NC               | CW1B-③2E11① | CW4B-③2E11①    |                                                                    |
|                                                                                                                                    | 2NO                   | CW1B-③2E20① | CW4B-③2E20①    |                                                                    |
|                                                                                                                                    | 2NC                   | CW1B-③2E02① | CW4B-③2E02①    |                                                                    |
|                                                                                                                                    | 2NO-1NC*              | CW1B-M2E21① | CW4B-M2E21①    |                                                                    |
|                                                                                                                                    | 1NO-2NC*              | CW1B-M2E12① | CW4B-M2E12①    |                                                                    |
|                                                                                                                                    | 3NO*                  | CW1B-M2E30① | CW4B-M2E30①    |                                                                    |
|                                                                                                                                    | 3NC*                  | CW1B-M2E03① | CW4B-M2E03①    |                                                                    |



1. Specify a button color code in place of ① in the part number.
  2. Specify function code in place of ③ in the Part Number. M: momentary, A: maintained
  3. See page 543 for dimensions.
  4. Two or one dummy block is installed when one or two contact blocks are used, respectively.
- \*These contact configurations are not available in maintained action

## Non-Illuminated Pushbuttons (Sub-assembled)

| Contact Blocks                                                                      | + | LED Module                                                                          | + | Lens                                                                                | = | Completed Unit                                                                        |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|
|  |   |  |   |  |   |  |

## Contact Blocks

| Style                                                                               | Contacts                   | 1NO     | 1NC    |
|-------------------------------------------------------------------------------------|----------------------------|---------|--------|
|  | Finger-safe screw terminal | YW-E10R | YW-E01 |
|  | Dummy Block                | CW-DB   |        |

## Operators\*

| Style                                                                               |            | Black Bezel    | Metallic Bezel |          |
|-------------------------------------------------------------------------------------|------------|----------------|----------------|----------|
|  | Momentary  | Round Flush    | CW1B-M1①       | CW4B-M1① |
|                                                                                     |            | Round Extended | CW1B-M2①       | CW4B-M2① |
|  | Maintained | Round Flush    | CW1B-A1①       | CW4B-A1① |
|                                                                                     |            | Round Extended | CW1B-A2①       | CW4B-A2① |

## ① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



1. Specify a button color code in place of ①.
2. \*Operator button is not removable from operator.

## Contact Block Mounting Adaptor

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

## Pilot Lights (Assembled)

| Style                                                                                                                                  | Operating Voltage | Black Bezel | Metallic Bezel | Illumination Color Code ②                                           |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|----------------|---------------------------------------------------------------------|
| Round Flush Lens<br>CW□P-1<br><br><br>(black bezel)   | 6V AC/DC          | CW1P-1EQ2②  | CW4P-1EQ2②     | A: amber<br>G: green<br>R: red<br>S: blue<br>PW: white<br>Y: yellow |
|                                                                                                                                        | 12V AC/DC         | CW1P-1EQ3②  | CW4P-1EQ3②     |                                                                     |
|                                                                                                                                        | 24V AC/DC         | CW1P-1EQ4②  | CW4P-1EQ4②     |                                                                     |
|                                                                                                                                        | 100/120V AC       | CW1P-1EQH②  | CW4P-1EQH②     |                                                                     |
|                                                                                                                                        | 230/240V AC       | CW1P-1EQM4② | CW4P-1EQM4②    |                                                                     |
| Round Dome Lens<br>CW□P-2<br><br><br>(metallic bezel) | 6V AC/DC          | CW1P-2EQ2②  | CW4P-2EQ2②     |                                                                     |
|                                                                                                                                        | 12V AC/DC         | CW1P-2EQ3②  | CW4P-2EQ3②     |                                                                     |
|                                                                                                                                        | 24V AC/DC         | CW1P-2EQ4②  | CW4P-2EQ4②     |                                                                     |
|                                                                                                                                        | 100/120V AC       | CW1P-2EQH②  | CW4P-2EQH②     |                                                                     |
|                                                                                                                                        | 230/240V AC       | CW1P-2EQM4② | CW4P-2EQM4②    |                                                                     |



- Specify an illumination color code in place of ② in the Part Number
- See page 543 for dimensions.
- See page 545 for replacement LED modules.
- Two dummy blocks are installed.

## Pilot Lights (Sub-assembled)

| Contact Blocks*                                                                    | + | LED Module                                                                         | + | Mounting Adaptor                                                                   | + | Operator                                                                           | + | Lens                                                                                  | = | Completed Unit                                                                       |
|------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|
|  |   |  |   |  |   |  |   |  |   |  |



\* 2 dummy blocks are required for each completed pilot light.

### Contact Block

| Style                                                                               | Contacts    | Part Number |
|-------------------------------------------------------------------------------------|-------------|-------------|
|  | Dummy Block | CW-DB       |

### LED Module

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | CW-EAQ ②①   |

- In place of ①, specify the Lens/LED Color Code from table.
- In place of ②, specify the Voltage Code from table.
- Use PW LED for yellow lens.

### Contact Block Mounting Adaptor

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

### Operators

| Style                                                                               | Black Bezel | Metallic Bezel |
|-------------------------------------------------------------------------------------|-------------|----------------|
|  | CW1P-00     | CW4P-00        |

### Lens

| Style                                                                                             | Part Number |
|---------------------------------------------------------------------------------------------------|-------------|
|  Round Flush | CW9Z-L11①   |
|  Round Dome  | CW9Z-L15①   |



- In place of ①, specify the Lens/LED Color Code from table.

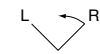
### ① Lens/LED Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | PW   |
| Yellow | Y    |

### ② Voltage Code

| Voltage     | Code |
|-------------|------|
| 6V AC/DC    | 2    |
| 12V AC/DC   | 3    |
| 24V AC/DC   | 4    |
| 100/120V AC | H    |
| 230/240V AC | M4   |

## Selector Switches (Assembled)

| Shape            | CW□S<br>(Knob Operator) |               |  | (black bezel)     |  | (metallic bezel)                                                                                 |                                                                                                                 |
|------------------|-------------------------|---------------|-----------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| No. of Positions | Contact Configuration   | Contact Block |                                                                                   | Operator Position |                                                                                    | <br>Maintained | <br>Spring return from right |
| 90° 2-position   | 1NO<br>(10)             | 1             | NO                                                                                |                   | ●                                                                                  | CW□S-2E10                                                                                        | CW□S-21E10                                                                                                      |
|                  |                         | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | —                                                                                 | Dummy             |                                                                                    |                                                                                                  |                                                                                                                 |
|                  | 1NC<br>(01)             | 1             | —                                                                                 | Dummy             |                                                                                    | CW□S-2E01                                                                                        | CW□S-21E01                                                                                                      |
|                  |                         | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |
|                  | 1NO-1NC<br>(11)         | 1             | NO                                                                                |                   | ●                                                                                  | CW□S-2E11                                                                                        | CW□S-21E11                                                                                                      |
|                  |                         | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |
|                  | 2NO<br>(20)             | 1             | NO                                                                                |                   | ●                                                                                  | CW□S-2E20                                                                                        | CW□S-21E20                                                                                                      |
|                  |                         | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NO                                                                                |                   | ●                                                                                  |                                                                                                  |                                                                                                                 |
|                  | 2NC<br>(02)             | 1             | NC                                                                                | ●                 |                                                                                    | CW□S-2E02                                                                                        | CW□S-21E02                                                                                                      |
|                  |                         | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |
|                  | 2NO-1NC<br>(21)         | 1             | NO                                                                                |                   | ●                                                                                  | CW□S-2E21                                                                                        | CW□S-21E21                                                                                                      |
|                  |                         | 2             | NO                                                                                |                   | ●                                                                                  |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |
|                  | 1NO-2NC<br>(12)         | 1             | NO                                                                                |                   | ●                                                                                  | CW□S-2E12                                                                                        | CW□S-21E12                                                                                                      |
|                  |                         | 2             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |
|                  | 3NO<br>(30)             | 1             | NO                                                                                |                   | ●                                                                                  | CW□S-2E30                                                                                        | CW□S-21E30                                                                                                      |
|                  |                         | 2             | NO                                                                                |                   | ●                                                                                  |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NO                                                                                |                   | ●                                                                                  |                                                                                                  |                                                                                                                 |
|                  | 3NC<br>(03)             | 1             | NC                                                                                | ●                 |                                                                                    | CW□S-2E03                                                                                        | CW□S-21E03                                                                                                      |
|                  |                         | 2             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |
|                  |                         | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                  |                                                                                                                 |



1. Specify a bezel color code in place of □ in the part number: 1 (black bezel), 4 (metallic bezel).
2. Lever operator is also available. For dimensions, see page 544.
3. To order a lever operator selector switch, insert L before E in the knob operator part number.  
Example: Knob Operator part number CW1S-2E10 becomes CW1S-2LE10 for Lever Operator.

## Lever Operator

CW1S-□L  
(black bezel)CW4S-□L  
(metallic bezel)

## Contact Block Mounting Position



|   |    | Left | Center | Right |                   |
|---|----|------|--------|-------|-------------------|
|   |    | L    | C      | R     | Operator Position |
| 1 | NO | ●    |        |       |                   |
| 2 | NC |      | ●      |       |                   |
| 3 | NC |      | ●      |       |                   |

| No. of Positions  | Contact Configuration | Contact Block     |      | Operator Position |   |   |  |  |  |  |
|-------------------|-----------------------|-------------------|------|-------------------|---|---|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                   |                       | Mounting Position | Type | L                 | C | R | Maintained                                                                        | Spring return from right                                                          | Spring return from left                                                             | Spring return two-way                                                               |
| 45°<br>3-position | 1NO-1NC (11)          | 1                 | NO   | ●                 |   |   | CW□S-3E11                                                                         | CW□S-31E11                                                                        | CW□S-32E11                                                                          | CW□S-33E11                                                                          |
|                   |                       | 2                 | —    | Dummy             |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N1)        | 1                 | NC   |                   | ■ |   | CW□S-3E11N1                                                                       | CW□S-31E11N1                                                                      | CW□S-32E11N1                                                                        | CW□S-33E11N1                                                                        |
|                   |                       | 2                 | —    | Dummy             |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N2)        | 1                 | NO   | ●                 |   |   | CW□S-3E11N2                                                                       | CW□S-31E11N2                                                                      | CW□S-32E11N2                                                                        | CW□S-33E11N2                                                                        |
|                   |                       | 2                 | NC   |                   | ● |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | —    | Dummy             |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N3)        | 1                 | —    | Dummy             |   |   | CW□S-3E11N3                                                                       | CW□S-31E11N3                                                                      | CW□S-32E11N3                                                                        | CW□S-33E11N3                                                                        |
|                   |                       | 2                 | NC   |                   | ● |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N4)        | 1                 | —    | Dummy             |   |   | CW□S-3E11N4                                                                       | CW□S-31E11N4                                                                      | CW□S-32E11N4                                                                        | CW□S-33E11N4                                                                        |
|                   |                       | 2                 | NO   | ●                 |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO (20)              | 1                 | NO   | ●                 |   |   | CW□S-3E20                                                                         | CW□S-31E20                                                                        | CW□S-32E20                                                                          | CW□S-33E20                                                                          |
|                   |                       | 2                 | —    | Dummy             |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO (20N1)            | 1                 | —    | Dummy             |   |   | CW□S-3E20N1                                                                       | CW□S-31E20N1                                                                      | CW□S-32E20N1                                                                        | CW□S-33E20N1                                                                        |
|                   |                       | 2                 | NO   | ●                 |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NC (02)              | 1                 | NC   |                   | ■ |   | CW□S-3E02                                                                         | CW□S-31E02                                                                        | CW□S-32E02                                                                          | CW□S-33E02                                                                          |
|                   |                       | 2                 | —    | Dummy             |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NC (02N1)            | 1                 | —    | Dummy             |   |   | CW□S-3E02N1                                                                       | CW□S-31E02N1                                                                      | CW□S-32E02N1                                                                        | CW□S-33E02N1                                                                        |
|                   |                       | 2                 | NC   |                   | ● |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO-1NC (21)          | 1                 | NO   | ●                 |   |   | CW□S-3E21                                                                         | CW□S-31E21                                                                        | CW□S-32E21                                                                          | CW□S-33E21                                                                          |
|                   |                       | 2                 | NO   | ●                 |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO-1NC (21N1)        | 1                 | NO   | ●                 |   |   | CW□S-3E21N1                                                                       | CW□S-31E21N1                                                                      | CW□S-32E21N1                                                                        | CW□S-33E21N1                                                                        |
|                   |                       | 2                 | NC   |                   | ● |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-2NC (12)          | 1                 | NO   | ●                 |   |   | CW□S-3E12                                                                         | CW□S-31E12                                                                        | CW□S-32E12                                                                          | CW□S-33E12                                                                          |
|                   |                       | 2                 | NC   |                   | ● |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-2NC (12N1)        | 1                 | NC   |                   | ■ |   | CW□S-3E12N1                                                                       | CW□S-31E12N1                                                                      | CW□S-32E12N1                                                                        | CW□S-33E12N1                                                                        |
|                   |                       | 2                 | NO   | ●                 |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 3NO (30)              | 1                 | NO   | ●                 |   |   | CW□S-3E30                                                                         | CW□S-31E30                                                                        | CW□S-32E30                                                                          | CW□S-33E30                                                                          |
|                   |                       | 2                 | NO   | ●                 |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |   | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 3NC (03)              | 1                 | NC   |                   | ■ |   | CW□S-3E03                                                                         | CW□S-31E03                                                                        | CW□S-32E03                                                                          | CW□S-33E03                                                                          |
|                   |                       | 2                 | NC   |                   | ● |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |   |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |



1. Specify a bezel color code in place of □ in the Part Number, 1 (black bezel), 4 (metallic bezel)
2. For the contact block mounting position, see page 540.
3. Lever operator is also available. For dimensions, see page 544.
4. To order a lever operator selector switch, insert L before E in the knob operator part number.  
Example: Knob Operator part number CW1S-3E11 becomes CW1S-3LE11 for Lever Operator.

## Selector Switches (Sub-assembled)

|               |   |                  |   |          |   |                |
|---------------|---|------------------|---|----------|---|----------------|
| Contact Block | + | Mounting Adaptor | + | Operator | = | Completed Unit |
|---------------|---|------------------|---|----------|---|----------------|



## Contact Blocks

| Style                                                                             | Contacts                   | 1NO     | 1NC    |
|-----------------------------------------------------------------------------------|----------------------------|---------|--------|
|  | Finger-safe screw terminal | YW-E10R | YW-E01 |
|  | Dummy Block                | CW-DB   |        |

## Contact Block Mounting Adaptor

| Style                                                                              | Part Number |
|------------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

## Operators

| Style                                                                                                        | Position   | Handle | Description              | Black Bezel | Metallic Bezel |
|--------------------------------------------------------------------------------------------------------------|------------|--------|--------------------------|-------------|----------------|
| <br>(knob operator shown) | 2 position | Knob   | Maintained               | CW1S-2      | CW4S-2         |
|                                                                                                              |            |        | Spring return from right | CW1S-21     | CW4S-21        |
|                                                                                                              |            | Lever  | Maintained               | CW1S-2L     | CW4S-2L        |
|                                                                                                              |            |        | Spring return from right | CW1S-21L    | CW4S-21L       |
|                                                                                                              | 3 position | Knob   | Maintained               | CW1S-3      | CW4S-3         |
|                                                                                                              |            |        | Spring return from right | CW1S-31     | CW4S-31        |
|                                                                                                              |            |        | Spring return from left  | CW1S-32     | CW4S-32        |
|                                                                                                              |            |        | Spring return two-way    | CW1S-33     | CW4S-33        |
|                                                                                                              |            | Lever  | Maintained               | CW1S-3L     | CW4S-3L        |
|                                                                                                              |            |        | Spring return from right | CW1S-31L    | CW4S-31L       |
|                                                                                                              |            |        | Spring return from left  | CW1S-32L    | CW4S-32L       |
|                                                                                                              |            |        | Spring return two-way    | CW1S-33L    | CW4S-33L       |



Lever or knob is supplied with operator.

## Key Selector Switches (Assembled)

| Shape            | CW□K                  |                   |  | (black bezel)     |   |                | (metallic bezel)                                                                                                |  |
|------------------|-----------------------|-------------------|-----------------------------------------------------------------------------------|-------------------|---|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--|
|                  |                       |                   |                                                                                   |                   |   |                                                                                                  |                                                                                                                 |  |
| No. of Positions | Contact Configuration | Contact Block     |                                                                                   | Operator Position |   | <br>Maintained | <br>Spring return from right |  |
|                  |                       | Mounting Position | Type                                                                              | L                 | R |                                                                                                  |                                                                                                                 |  |
| 90° 2-position   | 1NO (10)              | 1                 | NO                                                                                |                   | ● | CW□K-2AE10                                                                                       | CW□K-21BE10                                                                                                     |  |
|                  |                       | 2                 | —                                                                                 | Dummy             |   |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | —                                                                                 | Dummy             |   |                                                                                                  |                                                                                                                 |  |
|                  | 1NC (01)              | 1                 | —                                                                                 | Dummy             |   | CW□K-2AE01                                                                                       | CW□K-21BE01                                                                                                     |  |
|                  |                       | 2                 | —                                                                                 | Dummy             |   |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |
|                  | 1NO-1NC (11)          | 1                 | NO                                                                                |                   | ● | CW□K-2AE11                                                                                       | CW□K-21BE11                                                                                                     |  |
|                  |                       | 2                 | —                                                                                 | Dummy             |   |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |
|                  | 2NO (20)              | 1                 | NO                                                                                |                   | ● | CW□K-2AE20                                                                                       | CW□K-21BE20                                                                                                     |  |
|                  |                       | 2                 | —                                                                                 | Dummy             |   |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NO                                                                                |                   | ● |                                                                                                  |                                                                                                                 |  |
|                  | 2NC (02)              | 1                 | NC                                                                                | ●                 |   | CW□K-2AE02                                                                                       | CW□K-21BE02                                                                                                     |  |
|                  |                       | 2                 | —                                                                                 | Dummy             |   |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |
|                  | 2NO-1NC (21)          | 1                 | NO                                                                                |                   | ● | CW□K-2AE21                                                                                       | CW□K-21BE21                                                                                                     |  |
|                  |                       | 2                 | NO                                                                                |                   | ● |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |
|                  | 1NO-2NC (12)          | 1                 | NO                                                                                |                   | ● | CW□K-2AE12                                                                                       | CW□K-21BE12                                                                                                     |  |
|                  |                       | 2                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |
|                  | 3NO (30)              | 1                 | NO                                                                                |                   | ● | CW□K-2AE30                                                                                       | CW□K-21BE30                                                                                                     |  |
|                  |                       | 2                 | NO                                                                                |                   | ● |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NO                                                                                |                   | ● |                                                                                                  |                                                                                                                 |  |
|                  | 3NC (03)              | 1                 | NC                                                                                | ●                 |   | CW□K-2AE03                                                                                       | CW□K-21BE03                                                                                                     |  |
|                  |                       | 2                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |
|                  |                       | 3                 | NC                                                                                | ●                 |   |                                                                                                  |                                                                                                                 |  |



- Specify a bezel color code in place of □ in the Part Number: 1 (black bezel), 4 (metallic bezel).
- On the spring-returned models, the key can be released only from the maintained position. On the maintained models, the key can be released from any position. Key retained positions are also available. See below.
- Two keys are supplied.
- Key cylinder material: Metal
- Besides the standard key (key number 0H), six other keys are also available. See below.
- For the contact block mounting position, see page 541.
- For dimensions, see page 544.
- When ordering an optional key or optional key retained positions, specify designation codes as shown below:  
Example: CW1K-2AE10-1H

(blank): Standard key (0H, reversible)  
1H to 2H: Reversible key  
3H to 6H: Non-reversible key

Note:  
Key number is indicated on the key cylinder.  
Standard keys do not have a key number indication.

Key removal position code  
2-position  
A: Removable in all positions  
B: Removable in left only  
C: Removable in right only

3-position  
A: Removable in all positions  
B: Removable in left and center  
C: Removable in right and center  
D: Removable in center only  
E: Removable in right and left  
G: Removable in left only  
H: Removable in right only

Note: Key is retained in all spring-returned positions.

| No. of Positions  | Contact Configuration | Contact Block     |      | Operator Position |       |   | <br>Maintained | <br>Spring return from right | <br>Spring return from left | <br>Spring return two-way |
|-------------------|-----------------------|-------------------|------|-------------------|-------|---|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|                   |                       | Mounting Position | Type | L                 | C     | R |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
| 45°<br>3-position | 1NO-1NC (11)          | 1                 | NO   | ●                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 2                 | —    |                   | Dummy |   | CW□K-3AE11                                                                                      | CW□K-31BE11                                                                                                   | CW□K-32CE11                                                                                                    | CW□K-33DE11                                                                                                  |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N1)        | 1                 | NC   |                   |       | ■ | CW□K-3AE11N1                                                                                    | CW□K-31BE11N1                                                                                                 | CW□K-32CE11N1                                                                                                  | CW□K-33DE11N1                                                                                                |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N2)        | 1                 | NO   | ●                 |       |   | CW□K-3AE11N2                                                                                    | CW□K-31BE11N2                                                                                                 | CW□K-32CE11N2                                                                                                  | CW□K-33DE11N2                                                                                                |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N3)        | 1                 | —    |                   | Dummy |   | CW□K-3AE11N3                                                                                    | CW□K-31BE11N3                                                                                                 | CW□K-32CE11N3                                                                                                  | CW□K-33DE11N3                                                                                                |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N4)        | 1                 | —    |                   | Dummy |   | CW□K-3AE11N4                                                                                    | CW□K-31BE11N4                                                                                                 | CW□K-32CE11N4                                                                                                  | CW□K-33DE11N4                                                                                                |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO (20)              | 1                 | NO   | ●                 |       |   | CW□K-3AE20                                                                                      | CW□K-31BE20                                                                                                   | CW□K-32CE20                                                                                                    | CW□K-33DE20                                                                                                  |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO (20N1)            | 1                 | —    |                   | Dummy |   | CW□K-3AE20N1                                                                                    | CW□K-31BE20N1                                                                                                 | CW□K-32CE20N1                                                                                                  | CW□K-33DE20N1                                                                                                |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NC (02)              | 1                 | NC   |                   |       | ■ | CW□K-3AE02                                                                                      | CW□K-31BE02                                                                                                   | CW□K-32CE02                                                                                                    | CW□K-33DE02                                                                                                  |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NC (02N1)            | 1                 | —    |                   | Dummy |   | CW□K-3AE02N1                                                                                    | CW□K-31BE02N1                                                                                                 | CW□K-32CE02N1                                                                                                  | CW□K-33DE02N1                                                                                                |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO-1NC (21)          | 1                 | NO   | ●                 |       |   | CW□K-3AE21                                                                                      | CW□K-31BE21                                                                                                   | CW□K-32CE21                                                                                                    | CW□K-33DE21                                                                                                  |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO-1NC (21N1)        | 1                 | NO   | ●                 |       |   | CW□K-3AE21N1                                                                                    | CW□K-31BE21N1                                                                                                 | CW□K-32CE21N1                                                                                                  | CW□K-33DE21N1                                                                                                |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-2NC (12)          | 1                 | NO   | ●                 |       |   | CW□K-3AE12                                                                                      | CW□K-31BE12                                                                                                   | CW□K-32CE12                                                                                                    | CW□K-33DE12                                                                                                  |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-2NC (12N1)        | 1                 | NC   |                   |       | ■ | CW□K-3AE12N1                                                                                    | CW□K-31BE12N1                                                                                                 | CW□K-32CE12N1                                                                                                  | CW□K-33DE12N1                                                                                                |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 3NO (30)              | 1                 | NO   | ●                 |       |   | CW□K-3AE30                                                                                      | CW□K-31BE30                                                                                                   | CW□K-32CE30                                                                                                    | CW□K-33DE30                                                                                                  |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 3NC (03)              | 1                 | NC   |                   |       | ■ | CW□K-3AE03                                                                                      | CW□K-31BE03                                                                                                   | CW□K-32CE03                                                                                                    | CW□K-33DE03                                                                                                  |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |



- Specify a bezel color code in place of □ in the Part Number: 1 (black bezel), 4 (metallic bezel)
- On the spring-returned types, the key can be released only from the maintained position. On the maintained types, the key can be released from every position. Key retained positions are also available. See page 540.
- Two keys are supplied.
- Key cylinder material: Metal
- Besides the standard key (key number 0H), six other keys are also available. See page 540.
- For the contact block mounting position, see right.
- For dimensions, see page 544.

## Contact Block Mounting Position



|   |    | Left | Center | Right |                   |
|---|----|------|--------|-------|-------------------|
|   |    | L    | C      | R     | Operator Position |
| 1 | NO | ●    |        |       |                   |
| 2 | NC |      | ●      |       |                   |
| 3 | NC |      | ■      |       |                   |

Key Selector Switches (Sub-assembled)



Contact Block

| Style                                                                                                                                                                  | Contacts                   | 1NO     | 1NC    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|--------|
| <br> | Finger-safe screw terminal | YW-E10R | YW-E01 |
|                                                                                       | Dummy Block                | CW-DB   |        |

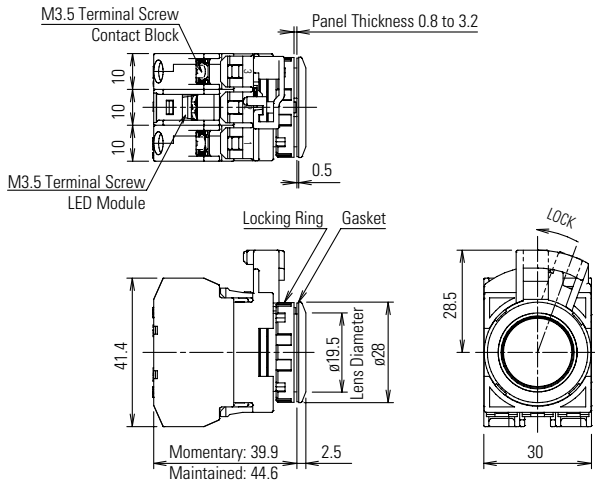
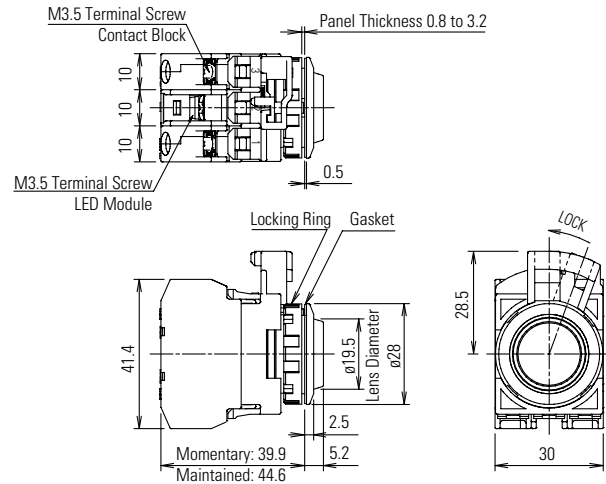
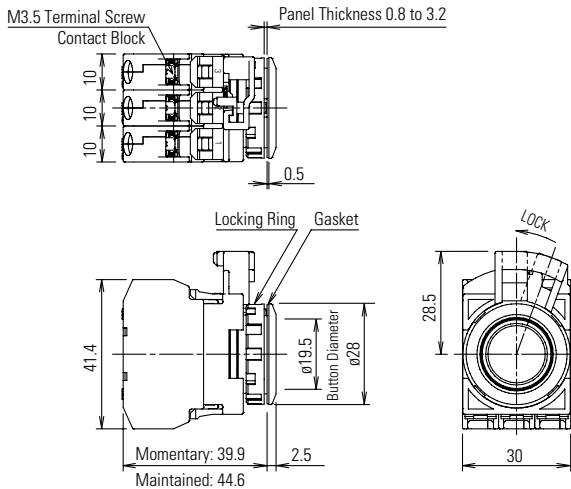
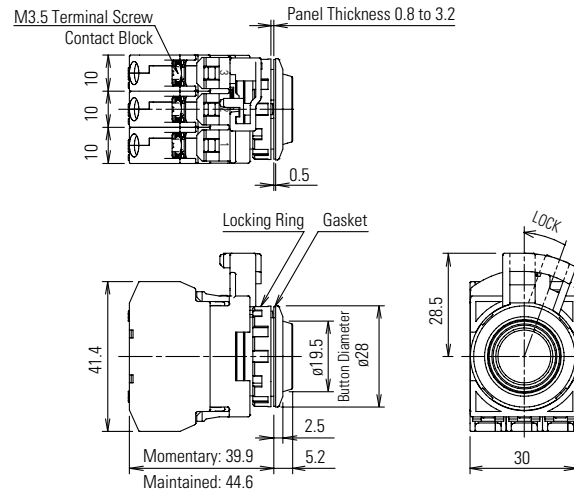
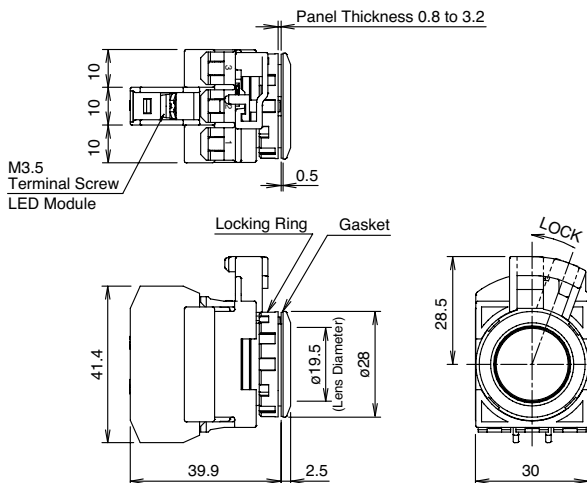
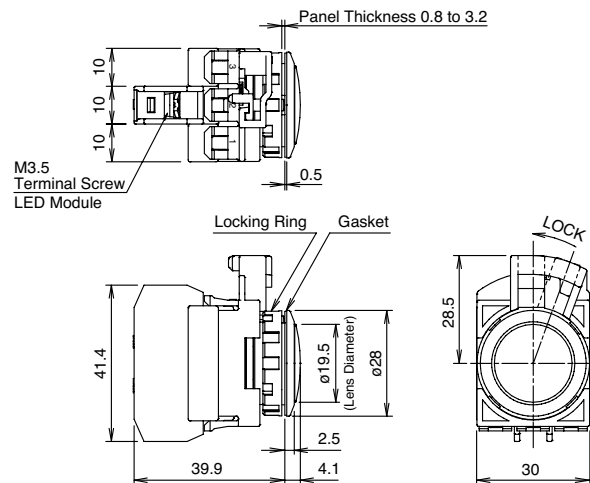
Contact Block Mounting Adaptor

| Style                                                                             | Part Number |
|-----------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

Operator

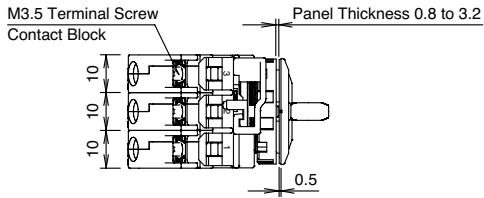
| Style                                                                                                                                                                      | Position   | Description                                                | Black Bezel | Metallic Bezel |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------|-------------|----------------|
| <br> | 2 position | Maintained, key removable all positions                    | CW1K-2A     | CW4K-2A        |
|                                                                                                                                                                            |            | Maintained, key removed left only                          | CW1K-2B     | CW4K-2B        |
|                                                                                                                                                                            |            | Maintained, key removed right only                         | CW1K-2C     | CW4K-2C        |
|                                                                                                                                                                            |            | Spring return from right                                   | CW1K-21B    | CW4K-21B       |
|                                                                                                                                                                            | 3 position | Maintained, key removable all positions                    | CW1K-3A     | CW4K-3A        |
|                                                                                                                                                                            |            | Maintained, key removed left and center only               | CW1K-3B     | CW4K-3B        |
|                                                                                                                                                                            |            | Maintained, key removed right and center only              | CW1K-3C     | CW4K-3C        |
|                                                                                                                                                                            |            | Maintained, key removed center only                        | CW1K-3D     | CW4K-3D        |
|                                                                                                                                                                            |            | Maintained, key removed left and right only                | CW1K-3E     | CW4K-3E        |
|                                                                                                                                                                            |            | Maintained, key removed left only                          | CW1K-3G     | CW4K-3G        |
|                                                                                                                                                                            |            | Maintained, key removed right only                         | CW1K-3H     | CW4K-3H        |
|                                                                                                                                                                            |            | Spring return from right, key removed left and center only | CW1K-31B    | CW4K-31B       |
|                                                                                                                                                                            |            | Spring return from right, key removed center only          | CW1K-31D    | CW4K-31D       |
|                                                                                                                                                                            |            | Spring return from right, key removed left only            | CW1K-31G    | CW4K-31G       |
|                                                                                                                                                                            |            | Spring return from left, key removed right and center only | CW1K-32C    | CW4K-32C       |
|                                                                                                                                                                            |            | Spring return from left, key removed center only           | CW1K-32D    | CW4K-32D       |
|                                                                                                                                                                            |            | Spring return from left, key removed right only            | CW1K-32H    | CW4K-32H       |
|                                                                                                                                                                            |            | Spring return two-way, key removed center only             | CW1K-33D    | CW4K-33D       |

 2 keys supplied with operator.

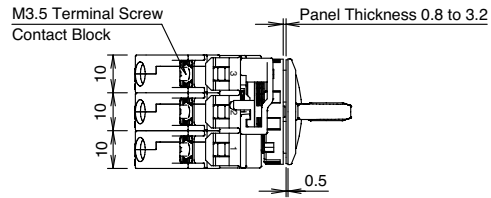
**Illuminated Pushbuttons****Round Flush****Round Extended****Pushbuttons****Round Flush****Round Extended****Pilot Lights****Round Flush****Round Dome**

## Selector Switches

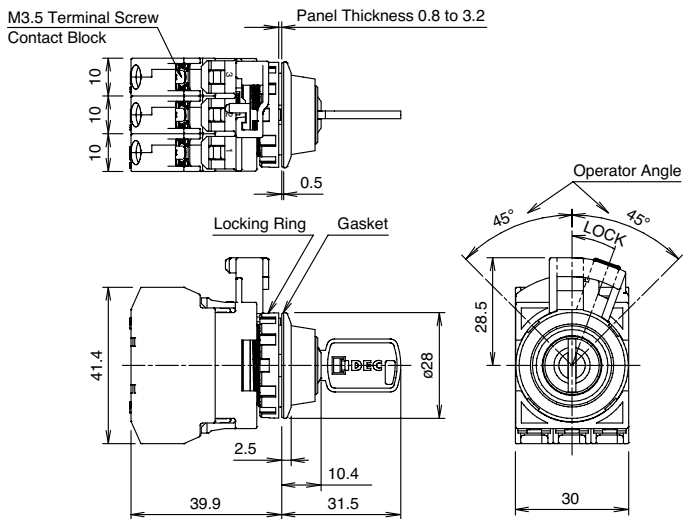
### Knob Operator



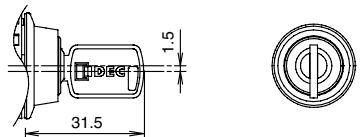
### Lever Operator



## Key Selector Switches



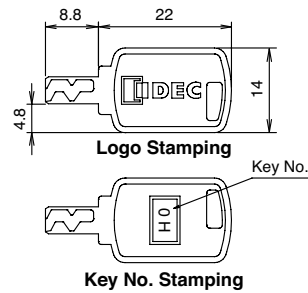
Key No.: 0H to 2H (reversible key)



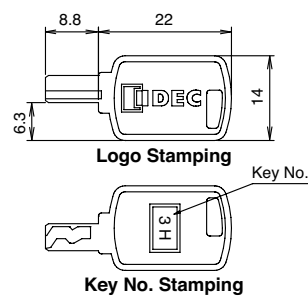
Key No.: 3H to 6H (non-reversible key)

## Keys

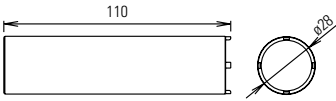
### Reversible Key



### Non-reversible Key



## Accessories

| Item                | Appearance                                                                        | Material          | Part Number | Remarks                                                                                                                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------|-------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locking Ring Wrench |  | Brass             | MW9Z-T1     | <ul style="list-style-type: none"> <li>Used to tighten the locking ring when installing the CW series control unit in a panel cut-out</li> <li>Weight: Approx 150g</li> </ul>  |
| Mounting Hole Plug  |  | Polyamide (black) | LW9Z-BP1    | <ul style="list-style-type: none"> <li>Used to plug an unnecessary ø22.3mm hole in the panel</li> <li>Degree of protection: IP65</li> <li>Panel thickness: 0.8 to 6.0mm</li> </ul>                                                                                |

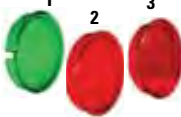
## LED Modules

| Shape                                                                             | Operating Voltage Range | Current Draw | Part Number | Illumination Color Code ②                                                                                                     |
|-----------------------------------------------------------------------------------|-------------------------|--------------|-------------|-------------------------------------------------------------------------------------------------------------------------------|
|  | 6V AC/DC±10%            | 15 mA        | CW-EAQ2②    | Specify an illumination color code in place of ② in the Part Number<br>A: amber<br>G: green<br>PW: white<br>R: red<br>S: blue |
|                                                                                   | 12V AC/DC±10%           | 15 mA        | CW-EAQ3②    |                                                                                                                               |
|                                                                                   | 24V AC/DC±10%           | 16.5 mA      | CW-EAQ4②    |                                                                                                                               |
|                                                                                   | 100/120V AC±10%         | 18 mA        | CW-EAQH②    |                                                                                                                               |
|                                                                                   | 230/240V AC±10%         | 18 mA        | CW-EAQM4②   |                                                                                                                               |

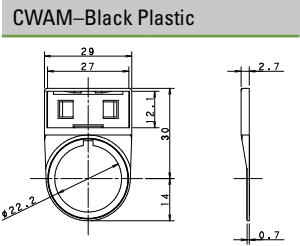


Use a white (PW) LED module for yellow (Y) illumination.

## Replacement Parts

| Item                                                                                       | Material             | Part Number  | Remarks                                                                                                                                                        |
|--------------------------------------------------------------------------------------------|----------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lens<br> | 1 Round Flush        | Polyallylate | CW9Z-L11②                                                                                                                                                      |
|                                                                                            | 2 Round Extended     | Polyallylate | CW9Z-L12②                                                                                                                                                      |
|                                                                                            | 3 Round Dome         | Polyallylate | CW9Z-L15②                                                                                                                                                      |
| Contact Blocks                                                                             | 1NO                  | YW-E10R      | Housing color: Blue/Black<br>Terminal No.: 3-4                                                                                                                 |
|                                                                                            | 1NC                  | YW-E01       | Housing color: Reddish purple<br>Terminal No.: 1-2                                                                                                             |
| Dummy Block                                                                                | Polyamide (black)    | CW-DB        |                                                                                                                                                                |
| Locking Ring                                                                               | Polyamide (black)    | CW9Z-LN      |                                                                                                                                                                |
| Gasket                                                                                     | Nitrile rubber       | CW9Z-WM      | Waterproof gasket between CW control unit bezel and the mounting panel.                                                                                        |
| Spare Key                                                                                  | Zinc (nickel-plated) | LA9Z-SK-□    | Specify a key No. in place of □.<br>0H: Standard key (reversible)<br>1H to 2H: Reversible key<br>3H to 6H: Non-reversible key<br>For dimensions, see page 544. |
| Rubber Boot (clear)                                                                        | Round Flush          | CW9Z-D11     | Use for flush buttons and pilot lights.                                                                                                                        |
|                                                                                            | Round Extended       | CW9Z-D12     | Use for extended buttons and dome pilot.                                                                                                                       |
| Nameplate                                                                                  | Plastic              | CWAM-OB      |                                                                                                                                                                |

Nameplate



|                                                  |         |                                                                                   |
|--------------------------------------------------|---------|-----------------------------------------------------------------------------------|
| Nameplate<br>(blank engraving<br>plate included) | CWAM-OB |                                                                                   |
| Nameplate<br>(engraved)                          | CWAM-①  |                                                                                   |
| Additional Insert<br>(blank)                     | HWNP-O  | HWNP<br>Dimensions                                                                |
| Additional Insert<br>(engraved)                  | HWNP-①  |  |

1. In place of Ⓢ, insert either the standard legend code from table below or custom engraving delimited by " ".
2. Standard engravings are available at no charge.

Nameplates - CW Series

Standard Legend Codes

| Pushbuttons |      |               |      | Pushbuttons/Selector Switches |      |                   |      | Selector Switches |      |
|-------------|------|---------------|------|-------------------------------|------|-------------------|------|-------------------|------|
| Legend      | Code | Legend        | Code | Legend                        | Code | Legend            | Code | Legend            | Code |
| AUTO        | 101  | OPEN          | 116  | AUTO-MAN                      | 201  | REV-FOR           | 216  | AUTO-MAN-OFF      | 301  |
| CLOSE       | 102  | OUT           | 117  | CLOSE-OPEN                    | 202  | RUN-JOG           | 217  | AUTO-OFF-MAN      | 302  |
| DOWN        | 103  | RAISE         | 118  | DOWN-UP                       | 203  | RUN-SAFE          | 218  | CLOSE-OFF-OPEN    | 303  |
| EMERG.STOP  | 104  | RESET         | 119  | FAST-SLOW                     | 204  | SAFE-RUN          | 219  | DOWN-OFF-SLOW     | 304  |
| FAST        | 105  | REVERSE       | 120  | FOR-REV                       | 205  | SLOW-FAST         | 220  | FAST-OFF-SLOW     | 305  |
| FORWARD     | 106  | RUN           | 121  | HAND-AUTO                     | 206  | START-STOP        | 221  | FOR-OFF-REV       | 306  |
| HAND        | 107  | SLOW          | 122  | HIGH-LOW                      | 207  | STOP-START        | 222  | LEFT-OFF-RIGHT    | 307  |
| HIGH        | 108  | START         | 123  | JOG-RUN                       | 208  | UP-DOWN           | 223  | LOWER-OFF-RAISE   | 308  |
| IN          | 109  | STOP          | 125  | LEFT-RIGHT                    | 209  | OI (Int'l OFF ON) | 250  | OFF-MAN-AUTO      | 309  |
| INCH        | 110  | TEST          | 126  | LOWER-RAISE                   | 210  |                   |      | OFF-SLOW-FAST     | 310  |
| JOG         | 111  | UP            | 127  | MAN-AUTO                      | 211  |                   |      | OFF-1-2           | 311  |
| LOW         | 112  | I (Int'l On)  | 150  | OFF-ON                        | 212  |                   |      | OPEN-OFF-CLOSE    | 312  |
| LOWER       | 113  | O (Int'l Off) | 151  | ON-OFF                        | 213  |                   |      | SLOW-OFF-FAST     | 313  |
| OFF         | 114  | EMO           | 152  | OPEN-CLOSE                    | 214  |                   |      | SUMMER-OFF-WINTER | 314  |
| ON          | 115  |               |      | RAISE-LOWER                   | 215  |                   |      | UP-OFF-DOWN       | 315  |
|             |      |               |      |                               |      |                   |      | 1-OFF-2           | 316  |
|             |      |               |      |                               |      |                   |      | HAND-OFF-AUTO     | 317  |

1. To order engraved nameplates, add legend code to nameplate part number.
2. Character height based on the number of characters and size of nameplate. Standard character size is 3/16".
3. Nameplates with standard legends are the same list price as blank nameplates.

Nameplates Order Form — CW Series

Copy this order form and use it to specify Letter Height, Custom Engravings, Location of Engraving on Nameplate, and Quantity Desired.

To ensure engraving accuracy, fax it to your IDEC representative or Distributor.

Your Company:

Name:

Telephone:

Fax & Email:

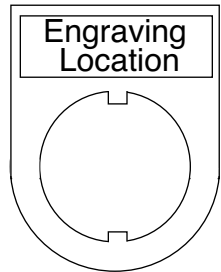
IDEC Rep/Distributor Contact:

PO number (if known):

IDEC Rep/Distributor Phone:

IDEC Rep/Distributor Fax & Email:

CWAM Nameplate



Step 1.  
Choose Letter Size - 7/64" or 1/8".  
Check the box for the letter size you want.  
Then write your lettering in box below the check boxes. Note: 1/8" size letters cannot exceed 9 characters.

Step 2.  
Specify Quantity.  
Enter the number of nameplates desired in the box on the right.

Qty

7/64" Letter Size ☐

11 characters maximum (for 7/64" size letters)

1/8" Letter Size ☐

9 characters maximum (for 7/8" size letters)

1

2

3

4

5

6

7

8

9

10

11

Sample Letter Sizes  
7/64" Letters: A B C D  
1/8" Letters: A B C D

## Safety Precautions

Turn off the power to CW series switches before installation, removal, wiring and maintenance. Failure to turn power off may cause electrical shocks or fire hazard.

When wiring, use wires of a proper size to meet the voltage and current requirements. Tighten the M3.5 terminal screws to a tightening torque of 1.0 to 1.3 N·m. Failure to tighten the terminal screws may cause overheating and fire.

## Operating Instructions

### Notes for Operation

When using the CW series switches in a safety-related circuit of a control system, observe safety rules and regulations of each country concerning particular applications of the actual machines and facilities. Perform risk assessment before operation to ensure safety.

### Operating Conditions

In corrosive gas or high-temperature, high-humidity environments, contact failure due to corrosion or color change or breakage of the housing may occur.

Main parts of the CW series switches are made of plastic. Do not scratch the surface with a sharp object or apply excessive electric shock or load, otherwise the switches may be damaged. In particular, keep the button, lens and bezel from such damage, otherwise appearance and function may be impaired.

Do not apply detergents, cutting oils, or chemicals which may impair the function and appearance of the CW series switches.

### Panel Mounting

First remove the contact block and then the locking ring from the operator. Insert the operator into the panel cut-out from the front, tighten the locking ring from the back, then install the contact block to the operator.

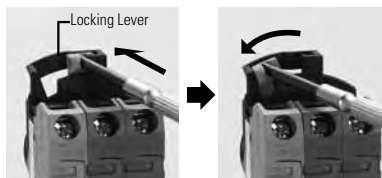
### Mounting Hole

1. Mounting hole dimensions are in compliance with IEC60947-5-1.
2. If the anti-rotation projection is removed from the bezel, CW series switches can be mounted in ø22.3mm mounting holes. To remove the anti-rotation projection, remove the gasket and use cutting pliers to break the projection.



### Removing and Installing the Contact Unit

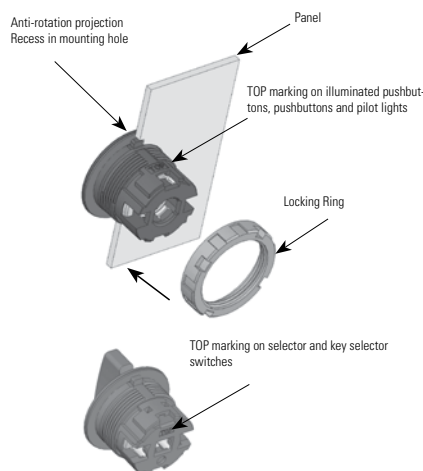
1. To remove the contact block from the operator, push the yellow locking lever and turn it to the left.



2. To install, align the TOP marking on the operator with the TOP marking on the contact block mounting adaptor, and turn the locking lever to the right.

### Installation in Panel Cut-out

Remove the locking ring from the operator. With the anti-rotation projection on the operator aligned with the recess in the mounting hole, insert the operator into the mounting hole. Tighten the locking ring from the rear of the panel.



### Note for Panel Mounting

When installing the operator in a panel cut-out, use the optional locking ring wrench (MW9Z-T1) to tighten the locking ring to a recommended tightening torque of 1.2 N·m. Do not use pliers and do not tighten excessively, otherwise the operator may be damaged.

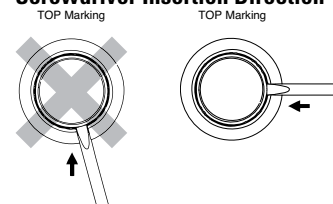
### Illuminated Pushbuttons and Pilot Lights

#### Removing the Lens

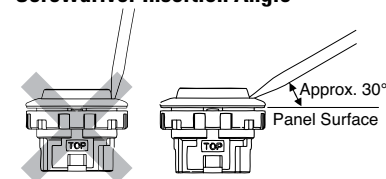
To remove the lens from an illuminated pushbutton or pilot light, insert a flat screwdriver under the flange of the lens at 90° from the TOP marking and twist the screwdriver.

Do not insert the screwdriver too far and do not apply excessive force to the lens, otherwise the bezel surface may be damaged.

#### Screwdriver Insertion Direction

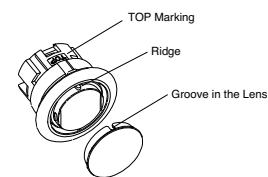


#### Screwdriver Insertion Angle



#### Installing the Lens

Turn the groove in the lens to the TOP marking on the operator housing. With the groove aligned with the ridge, press the lens in.



#### Marking

Marking film can be applied for inscriptions or identification.

#### Applicable Marking Film Size

| Illuminated Pushbutton (Round Flush)<br>Pilot Light (Round Flush, Round Extended) | Illuminated Pushbutton (Round Extended) |
|-----------------------------------------------------------------------------------|-----------------------------------------|
|                                                                                   |                                         |

Thickness: 0.2 mm maximum

Film material: Polyester (recommended)

Note: Film is not supplied and must be provided by the user.

## Pushbuttons

Pushbutton caps cannot be removed. Do not tamper with the cap using a screwdriver or pliers, otherwise it may be damaged.

## Selector Switches

Turn the selector operator or key to the detent positions.

### Key Selector Switches

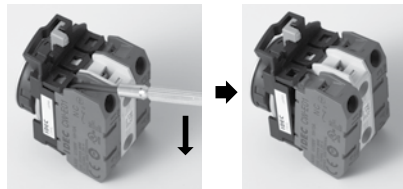
To prevent malfunction and damage, take the following precautions.

- Completely insert the key before turning.
- Do not remove the key while turning.
- Besides the standard key (0H), six other keys are available. Use only a key with a number that matches the number on the switches' key cylinder. (The standard key does not have a key number.)
- Keys are available in two shapes.
  - 0H (standard), 1H, 2H: reversible keys
  - 3H, 4H, 5H, 6H: non-reversible keys
 Make sure of correct insertion direction.

## Operating Instructions, con't

### Contact Blocks and LED Modules

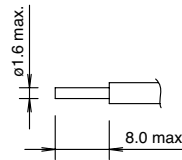
To remove the contact block from the operator, insert a flat screwdriver under the latch and push the screwdriver down as shown below. Before removing the LED module, first remove all contact blocks, and then remove the LED module in the same manner.



## Wiring

### Applicable Wires

Stranded wire: 2.0 mm<sup>2</sup> maximum (14AWG)  
Solid wire: ø1.6 mm maximum

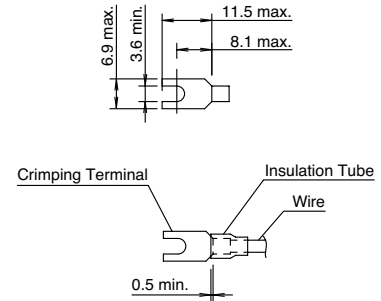


One or two wires can be connected to the terminal.

### Applicable Crimping Terminals

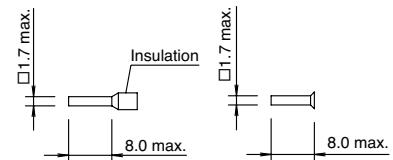
#### Spade terminal

When using crimping terminals, be sure to use insulating tubes or insulated crimping terminals.



#### Ferrule

When connecting two ferrules to one terminal, use ferrules without insulation.



When using spade terminals or ferrules, ensure that they are inserted completely. Ring terminals cannot be used.

### Screw Tightening Torque

Tighten the M3.5 terminal screws to a recommended torque of 1.0 to 1.3 N·m.