

ø22 Flush Silhouette Switches CW Series

Flush bezel projects only 2.5mm from front of panel
Only 39.9mm depth behind the panel.

- 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 ensures shutdown without failure.
- 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 units can be connected.
- Contact blocks can be removed by the two-action locking lever integrated with a guard, ensuring safety.
- IP20 finger-safe screw terminals
- IP65 degree of protection (IEC 60529) from panel front.

Applicable Standards	Mark	File No. or Organization
UL508 CSA C22.2 No.14		UL/c-UL File No. E68961
EN60947-5-1		EU Low Voltage Directive
GB14048.5		No.2010010305385057 (Pilot lights: No.2009010304379237)

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		

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

Weight (Examples)

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)



Specifications

Operating Temperature	Non-illuminated: -25 to +60°C (no freezing) 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 ² Damage limits: 1000 m/s ²
Mechanical Life (minimum operations)	Momentary: 2,000,000 Maintained: 250,000 Selector switch: 250,000 Key selector switch: 250,000
Electrical Life (minimum operations)	50,000 (see Contact Ratings) 100,000 (see Contact Ratings) (switching frequency 1800 operations/h)
Degree of Protection (IEC60529)	Panel front: IP65 Terminal: IP20
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 ² (solid wire ø1.6) maximum (AWG14 to 16) (Ring terminal cannot be used.)
Recommended Tightening Torque	Terminal: 1.0 to 1.3 N·m Locking ring: 1.2 N·m

Direct Opening of Key Selector Switch

Applicable Type	2-position (3NC)	3-position (2NC)
Minimum 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°

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LED Module

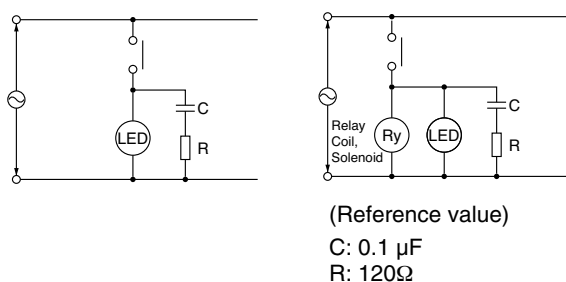
Rated Insulation Voltage (Ui)	250V					
Rated Operating Voltage (Ue)	6V AC/DC	12V AC/DC	24V AC/DC	100/120V AC	200/220V AC	230/240V AC
Operating Voltage Range	6V AC/DC±10%	12V AC/DC±10%	24V AC/DC±10%	100/120V AC±10%	200/220V AC±10%	230/240V AC 10%
Illumination Color Code ②	A (amber), G (green), PW (pure white), R (red), S (blue)					
LED Module Part No.	CW-EAQ2②	CW-EAQ3②	CW-EAQ4②	CW-EAQH②	CW-EAQM②	CW-EAQM4②
Current Draw	15 mA	15 mA	16.5 mA	18 mA	20 mA	18 mA
Life (reference value)	Approx. 30,000 hours (the illuminance is reduced to 50% of the initial intensity when used on complete DC at 25°C.)					
Internal Circuit	LED Chip Rectifying Diode Zener Diode Resistor LED Chip Rectifying Diode Zener Diode Resistor Capacitor					

- Specify an illumination color code in place of ② in the Part No.
- Use the pure white (PW) LED module for yellow illumination.

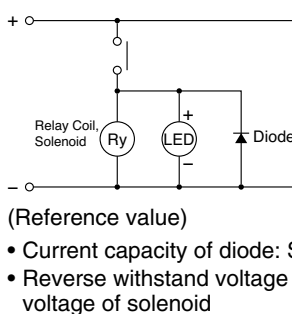
Notes for Using Illuminated Pushbuttons and Pilot Lights

When using LED illuminated control units, provide protection against electrical noise as shown below, otherwise the LED elements will deteriorate, resulting in reduced brightness, hue change, or no lighting. Use an RC circuit or surge absorber for suppressing noise.

Example 1: AC Circuit

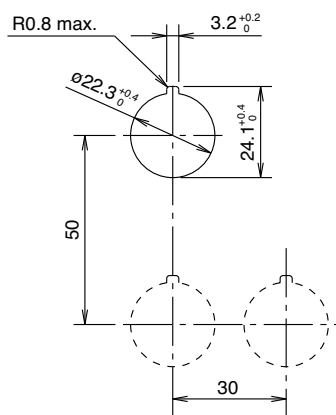


Example 2: DC Circuit



Mounting Hole Layout

IEC 60947-5-1 compliant



Note: Determine mounting centers to ensure easy operation.

Flush
SilhouetteSwitches &
Pilot LightsDisplay
LightsLED
Illumination
UnitsDisplay
UnitsSafety
ProductsTerminal
BlocksComm.
Terminals

AS-Interface

Relays &
Timers

Sockets

Circuit
ProtectorsPower
SuppliesPLCs &
SmartRelayOperator
Interfaces

Sensors

Control
StationsExplosion
Protection

References

ø22 Flush Silhouette Switches CW series Illuminated Pushbuttons

Illuminated Pushbuttons

Package quantity: 1

Shape	Operation	Operating Voltage	Contact Configuration	Part No.		Illumination Color Code ②
				Black Bezel	Metallic Bezel	
Round Flush CW□L-M1 CW□L-A1  (black bezel)  (metallic bezel)	Momentary	6V AC/DC	1NO	CW1L-M1E10Q2②	CW4L-M1E10Q2②	Specify an illumination color code in place of ② in the Part No. A: amber G: green PW: pure white R: red S: blue Y: yellow
			1NC	CW1L-M1E01Q2②	CW4L-M1E01Q2②	
			1NO-1NC	CW1L-M1E11Q2②	CW4L-M1E11Q2②	
			2NO	CW1L-M1E20Q2②	CW4L-M1E20Q2②	
			2NC	CW1L-M1E02Q2②	CW4L-M1E02Q2②	
		12V AC/DC	1NO	CW1L-M1E10Q3②	CW4L-M1E10Q3②	
			1NC	CW1L-M1E01Q3②	CW4L-M1E01Q3②	
			1NO-1NC	CW1L-M1E11Q3②	CW4L-M1E11Q3②	
			2NO	CW1L-M1E20Q3②	CW4L-M1E20Q3②	
			2NC	CW1L-M1E02Q3②	CW4L-M1E02Q3②	
		24V AC/DC	1NO	CW1L-M1E10Q4②	CW4L-M1E10Q4②	
			1NC	CW1L-M1E01Q4②	CW4L-M1E01Q4②	
			1NO-1NC	CW1L-M1E11Q4②	CW4L-M1E11Q4②	
			2NO	CW1L-M1E20Q4②	CW4L-M1E20Q4②	
			2NC	CW1L-M1E02Q4②	CW4L-M1E02Q4②	
		100/120V AC	1NO	CW1L-M1E10QH②	CW4L-M1E10QH②	
			1NC	CW1L-M1E01QH②	CW4L-M1E01QH②	
			1NO-1NC	CW1L-M1E11QH②	CW4L-M1E11QH②	
			2NO	CW1L-M1E20QH②	CW4L-M1E20QH②	
			2NC	CW1L-M1E02QH②	CW4L-M1E02QH②	
		200/220V AC	1NO	CW1L-M1E10QM②	CW4L-M1E10QM②	
			1NC	CW1L-M1E01QM②	CW4L-M1E01QM②	
			1NO-1NC	CW1L-M1E11QM②	CW4L-M1E11QM②	
			2NO	CW1L-M1E20QM②	CW4L-M1E20QM②	
			2NC	CW1L-M1E02QM②	CW4L-M1E02QM②	
		230/240V AC	1NO	CW1L-M1E10QM4②	CW4L-M1E10QM4②	
			1NC	CW1L-M1E01QM4②	CW4L-M1E01QM4②	
			1NO-1NC	CW1L-M1E11QM4②	CW4L-M1E11QM4②	
			2NO	CW1L-M1E20QM4②	CW4L-M1E20QM4②	
			2NC	CW1L-M1E02QM4②	CW4L-M1E02QM4②	
	Maintained	6V AC/DC	1NO	CW1L-A1E10Q2②	CW4L-A1E10Q2②	Specify an illumination color code in place of ② in the Part No. A: amber G: green PW: pure white R: red S: blue Y: yellow
			1NC	CW1L-A1E01Q2②	CW4L-A1E01Q2②	
			1NO-1NC	CW1L-A1E11Q2②	CW4L-A1E11Q2②	
			2NO	CW1L-A1E20Q2②	CW4L-A1E20Q2②	
			2NC	CW1L-A1E02Q2②	CW4L-A1E02Q2②	
		12V AC/DC	1NO	CW1L-A1E10Q3②	CW4L-A1E10Q3②	
			1NC	CW1L-A1E01Q3②	CW4L-A1E01Q3②	
			1NO-1NC	CW1L-A1E11Q3②	CW4L-A1E11Q3②	
			2NO	CW1L-A1E20Q3②	CW4L-A1E20Q3②	
			2NC	CW1L-A1E02Q3②	CW4L-A1E02Q3②	
		24V AC/DC	1NO	CW1L-A1E10Q4②	CW4L-A1E10Q4②	
			1NC	CW1L-A1E01Q4②	CW4L-A1E01Q4②	
			1NO-1NC	CW1L-A1E11Q4②	CW4L-A1E11Q4②	
			2NO	CW1L-A1E20Q4②	CW4L-A1E20Q4②	
			2NC	CW1L-A1E02Q4②	CW4L-A1E02Q4②	
		100/120V AC	1NO	CW1L-A1E10QH②	CW4L-A1E10QH②	
			1NC	CW1L-A1E01QH②	CW4L-A1E01QH②	
			1NO-1NC	CW1L-A1E11QH②	CW4L-A1E11QH②	
			2NO	CW1L-A1E20QH②	CW4L-A1E20QH②	
			2NC	CW1L-A1E02QH②	CW4L-A1E02QH②	
		200/220V AC	1NO	CW1L-A1E10QM②	CW4L-A1E10QM②	
			1NC	CW1L-A1E01QM②	CW4L-A1E01QM②	
			1NO-1NC	CW1L-A1E11QM②	CW4L-A1E11QM②	
			2NO	CW1L-A1E20QM②	CW4L-A1E20QM②	
			2NC	CW1L-A1E02QM②	CW4L-A1E02QM②	
		230/240V AC	1NO	CW1L-A1E10QM4②	CW4L-A1E10QM4②	
			1NC	CW1L-A1E01QM4②	CW4L-A1E01QM4②	
			1NO-1NC	CW1L-A1E11QM4②	CW4L-A1E11QM4②	
			2NO	CW1L-A1E20QM4②	CW4L-A1E20QM4②	
			2NC	CW1L-A1E02QM4②	CW4L-A1E02QM4②	

- See page 86 for dimensions.
- See page 89 for replacement LED modules.
- A dummy block is installed when one contact block is used.

Flush Silhouette Switches CW series Illuminated Pushbuttons ø22

Illuminated Pushbuttons

Package quantity: 1

Shape	Operation	Operating Voltage	Contact Configuration	Part No.		Illumination Color Code ②
				Black Bezel	Metallic Bezel	
Round Extended CW□L-M2 CW□L-A2  (black bezel)  (metallic bezel)	Momentary	6V AC/DC	1NO	CW1L-M2E10Q2②	CW4L-M2E10Q2②	Specify an illumination color code in place of ② in the Part No. A: amber G: green PW: pure white R: red S: blue Y: yellow
			1NC	CW1L-M2E01Q2②	CW4L-M2E01Q2②	
			1NO-1NC	CW1L-M2E11Q2②	CW4L-M2E11Q2②	
			2NO	CW1L-M2E20Q2②	CW4L-M2E20Q2②	
			2NC	CW1L-M2E02Q2②	CW4L-M2E02Q2②	
		12V AC/DC	1NO	CW1L-M2E10Q3②	CW4L-M2E10Q3②	
			1NC	CW1L-M2E01Q3②	CW4L-M2E01Q3②	
			1NO-1NC	CW1L-M2E11Q3②	CW4L-M2E11Q3②	
			2NO	CW1L-M2E20Q3②	CW4L-M2E20Q3②	
			2NC	CW1L-M2E02Q3②	CW4L-M2E02Q3②	
		24V AC/DC	1NO	CW1L-M2E10Q4②	CW4L-M2E10Q4②	
			1NC	CW1L-M2E01Q4②	CW4L-M2E01Q4②	
			1NO-1NC	CW1L-M2E11Q4②	CW4L-M2E11Q4②	
			2NO	CW1L-M2E20Q4②	CW4L-M2E20Q4②	
			2NC	CW1L-M2E02Q4②	CW4L-M2E02Q4②	
		100/120V AC	1NO	CW1L-M2E10QH②	CW4L-M2E10QH②	
			1NC	CW1L-M2E01QH②	CW4L-M2E01QH②	
			1NO-1NC	CW1L-M2E11QH②	CW4L-M2E11QH②	
			2NO	CW1L-M2E20QH②	CW4L-M2E20QH②	
			2NC	CW1L-M2E02QH②	CW4L-M2E02QH②	
		200/220V AC	1NO	CW1L-M2E10QM②	CW4L-M2E10QM②	
			1NC	CW1L-M2E01QM②	CW4L-M2E01QM②	
			1NO-1NC	CW1L-M2E11QM②	CW4L-M2E11QM②	
			2NO	CW1L-M2E20QM②	CW4L-M2E20QM②	
			2NC	CW1L-M2E02QM②	CW4L-M2E02QM②	
		230/240V AC	1NO	CW1L-M2E10QM4②	CW4L-M2E10QM4②	
			1NC	CW1L-M2E01QM4②	CW4L-M2E01QM4②	
			1NO-1NC	CW1L-M2E11QM4②	CW4L-M2E11QM4②	
			2NO	CW1L-M2E20QM4②	CW4L-M2E20QM4②	
			2NC	CW1L-M2E02QM4②	CW4L-M2E02QM4②	
	Maintained	6V AC/DC	1NO	CW1L-A2E10Q2②	CW4L-A2E10Q2②	Specify an illumination color code in place of ② in the Part No. A: amber G: green PW: pure white R: red S: blue Y: yellow
			1NC	CW1L-A2E01Q2②	CW4L-A2E01Q2②	
			1NO-1NC	CW1L-A2E11Q2②	CW4L-A2E11Q2②	
			2NO	CW1L-A2E20Q2②	CW4L-A2E20Q2②	
			2NC	CW1L-A2E02Q2②	CW4L-A2E02Q2②	
		12V AC/DC	1NO	CW1L-A2E10Q3②	CW4L-A2E10Q3②	
			1NC	CW1L-A2E01Q3②	CW4L-A2E01Q3②	
			1NO-1NC	CW1L-A2E11Q3②	CW4L-A2E11Q3②	
			2NO	CW1L-A2E20Q3②	CW4L-A2E20Q3②	
			2NC	CW1L-A2E02Q3②	CW4L-A2E02Q3②	
		24V AC/DC	1NO	CW1L-A2E10Q4②	CW4L-A2E10Q4②	
			1NC	CW1L-A2E01Q4②	CW4L-A2E01Q4②	
			1NO-1NC	CW1L-A2E11Q4②	CW4L-A2E11Q4②	
			2NO	CW1L-A2E20Q4②	CW4L-A2E20Q4②	
			2NC	CW1L-A2E02Q4②	CW4L-A2E02Q4②	
		100/120V AC	1NO	CW1L-A2E10QH②	CW4L-A2E10QH②	
			1NC	CW1L-A2E01QH②	CW4L-A2E01QH②	
			1NO-1NC	CW1L-A2E11QH②	CW4L-A2E11QH②	
			2NO	CW1L-A2E20QH②	CW4L-A2E20QH②	
			2NC	CW1L-A2E02QH②	CW4L-A2E02QH②	
		200/220V AC	1NO	CW1L-A2E10QM②	CW4L-A2E10QM②	
			1NC	CW1L-A2E01QM②	CW4L-A2E01QM②	
			1NO-1NC	CW1L-A2E11QM②	CW4L-A2E11QM②	
			2NO	CW1L-A2E20QM②	CW4L-A2E20QM②	
			2NC	CW1L-A2E02QM②	CW4L-A2E02QM②	
		230/240V AC	1NO	CW1L-A2E10QM4②	CW4L-A2E10QM4②	
			1NC	CW1L-A2E01QM4②	CW4L-A2E01QM4②	
			1NO-1NC	CW1L-A2E11QM4②	CW4L-A2E11QM4②	
			2NO	CW1L-A2E20QM4②	CW4L-A2E20QM4②	
			2NC	CW1L-A2E02QM4②	CW4L-A2E02QM4②	

- See page 86 for dimensions.
- See page 89 for replacement LED modules.
- A dummy block is installed when one contact block is used.

Flush
SilhouetteSwitches &
Pilot LightsDisplay
LightsLED
Illumination
UnitsDisplay
UnitsSafety
ProductsTerminal
BlocksComm.
Terminals

AS-Interface

Relays &
Timers

Sockets

Circuit
ProtectorsPower
SuppliesPLCs &
SmartRelayOperator
Interfaces

Sensors

Control
StationsExplosion
Protection

References

ø22 Flush Silhouette Switches CW Series Pilot Lights

Pilot Lights

Package quantity: 1

Shape	Operating Voltage	Part No.		Illumination Color Code ②
		Black Bezel	Metallic Bezel	
Round Flush CW□P-1  (black bezel) 	6V AC/DC	CW1P-1EQ2②	CW4P-1EQ2②	A: amber G: green PW: pure white R: red S: blue Y: yellow
	12V AC/DC	CW1P-1EQ3②	CW4P-1EQ3②	
	24V AC/DC	CW1P-1EQ4②	CW4P-1EQ4②	
	100/120V AC	CW1P-1EQH②	CW4P-1EQH②	
	200/220V AC	CW1P-1EQM②	CW4P-1EQM②	
	230/240V AC	CW1P-1EQM4②	CW4P-1EQM4②	
Round Extended CW□P-2  (metallic bezel) 	6V AC/DC	CW1P-2EQ2②	CW4P-2EQ2②	A: amber G: green PW: pure white R: red S: blue Y: yellow
	12V AC/DC	CW1P-2EQ3②	CW4P-2EQ3②	
	24V AC/DC	CW1P-2EQ4②	CW4P-2EQ4②	
	100/120V AC	CW1P-2EQH②	CW4P-2EQH②	
	200/220V AC	CW1P-2EQM②	CW4P-2EQM②	
	230/240V AC	CW1P-2EQM4②	CW4P-2EQM4②	

- Specify an illumination color code in place of ② in the Part No.
- See page 86 for dimensions.
- See page 89 for replacement LED modules.
- Two dummy blocks are installed.

Flush Silhouette Switches CW series Pushbuttons ø22

Pushbuttons

Package quantity: 1

Shape	Operation	Contact Configuration	Part No.		Button Color Code ①
			Black Bezel	Metallic Bezel	
Round Flush CW□B-M1 CW□B-A1  (black bezel) 	Momentary	1NO	CW1B-M1E10①	CW4B-M1E10①	B: black G: green R: red Y: yellow S: blue W: white
		1NC	CW1B-M1E01①	CW4B-M1E01①	
		1NO-1NC	CW1B-M1E11①	CW4B-M1E11①	
		2NO	CW1B-M1E20①	CW4B-M1E20①	
		2NC	CW1B-M1E02①	CW4B-M1E02①	
		2NO-1NC	CW1B-M1E21①	CW4B-M1E21①	
		1NO-2NC	CW1B-M1E12①	CW4B-M1E12①	
		3NO	CW1B-M1E30①	CW4B-M1E30①	
		3NC	CW1B-M1E03①	CW4B-M1E03①	
	Maintained	1NO	CW1B-A1E10①	CW4B-A1E10①	B: black G: green R: red Y: yellow S: blue W: white
		1NC	CW1B-A1E01①	CW4B-A1E01①	
		1NO-1NC	CW1B-A1E11①	CW4B-A1E11①	
		2NO	CW1B-A1E20①	CW4B-A1E20①	
		2NC	CW1B-A1E02①	CW4B-A1E02①	
		2NO-1NC	CW1B-A1E21①	CW4B-A1E21①	
		1NO-2NC	CW1B-A1E12①	CW4B-A1E12①	
		3NO	CW1B-A1E30①	CW4B-A1E30①	
Round Extended CW□B-M2 CW□B-A2  (metallic bezel) 	Momentary	1NO	CW1B-M2E10①	CW4B-M2E10①	B: black G: green R: red Y: yellow S: blue W: white
		1NC	CW1B-M2E01①	CW4B-M2E01①	
		1NO-1NC	CW1B-M2E11①	CW4B-M2E11①	
		2NO	CW1B-M2E20①	CW4B-M2E20①	
		2NC	CW1B-M2E02①	CW4B-M2E02①	
		2NO-1NC	CW1B-M2E21①	CW4B-M2E21①	
		1NO-2NC	CW1B-M2E12①	CW4B-M2E12①	
		3NO	CW1B-M2E30①	CW4B-M2E30①	
		3NC	CW1B-M2E03①	CW4B-M2E03①	
	Maintained	1NO	CW1B-A2E10①	CW4B-A2E10①	B: black G: green R: red Y: yellow S: blue W: white
		1NC	CW1B-A2E01①	CW4B-A2E01①	
		1NO-1NC	CW1B-A2E11①	CW4B-A2E11①	
		2NO	CW1B-A2E20①	CW4B-A2E20①	
		2NC	CW1B-A2E02①	CW4B-A2E02①	
		2NO-1NC	CW1B-A2E21①	CW4B-A2E21①	
		1NO-2NC	CW1B-A2E12①	CW4B-A2E12①	
		3NO	CW1B-A2E30①	CW4B-A2E30①	
		3NC	CW1B-A2E03①	CW4B-A2E03①	

- Specify a button color code in place of ① in the Part No.
- See page 86 for dimensions.
- Two or one dummy block is installed when one or two contact blocks are used, respectively.
- Momentary: The contact operates when button is pressed and returns when released.

Flush
SilhouetteSwitches &
Pilot LightsDisplay
LightsLED
Illumination
UnitsDisplay
UnitsSafety
ProductsTerminal
BlocksComm.
Terminals

AS-Interface

Relays &
Timers

Sockets

Circuit
ProtectorsPower
SuppliesPLCs &
SmartRelayOperator
Interfaces

Sensors

Control
StationsExplosion
Protection

References

ø22 Flush Silhouette Switches CW series Selector Switches

Selector Switches

Package quantity: 1

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

- Specify a bezel color code in place of □ in the Part No.: 1 (black bezel), 4 (metallic bezel)
- Lever operator is also available. For dimensions, see page 87.
- When ordering a lever operator selector switch, designate L before E in the Part No. of knob operator selector switches.

[Example] **CW1S-2E10** → **CW1S-2LE10**
 Knob Operator Lever Operator

Lever Operator



CW1S-□L
(black bezel)



CW4S-□L
(metallic bezel)

Contact Block Mounting Position



Flush Silhouette Switches CW series Selector Switches ø22

Package quantity: 1

No. of Positions	Contact Configuration	Contact Block		Operator Position							Flush Silhouette
		Mounting Position	Contact	L	C	R					
45° 3-position	1NO-1NC (11)	1	NO	●			CW□S-3E11	CW□S-31E11	CW□S-32E11	CW□S-33E11	Switches & Pilot Lights
		2	—		Dummy						Display Lights
		3	NC	●							LED Illumination Units
	1NO-1NC (11N1)	1	NC			●	CW□S-3E11N1	CW□S-31E11N1	CW□S-32E11N1	CW□S-33E11N1	Display Units
		2	—		Dummy						Safety Products
		3	NO			●					Terminal Blocks
	1NO-1NC (11N2)	1	NO	●			CW□S-3E11N2	CW□S-31E11N2	CW□S-32E11N2	CW□S-33E11N2	Comm. Terminals
		2	NC			●					AS-Interface
		3	—		Dummy						Relays & Timers
	1NO-1NC (11N3)	1	—		Dummy		CW□S-3E11N3	CW□S-31E11N3	CW□S-32E11N3	CW□S-33E11N3	Sockets
		2	NC			●					Circuit Protectors
		3	NO			●					Power Supplies
	1NO-1NC (11N4)	1	—		Dummy		CW□S-3E11N4	CW□S-31E11N4	CW□S-32E11N4	CW□S-33E11N4	PLCs & SmartRelay
		2	NO	●		●					Operator Interfaces
		3	NC			●					Sensors
	2NO (20)	1	NO	●			CW□S-3E20	CW□S-31E20	CW□S-32E20	CW□S-33E20	Control Stations
		2	—		Dummy						Explosion Protection
		3	NO			●					References
	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			●					

- Specify a bezel color code in place of □ in the Part No.: 1 (black bezel), 4 (metallic bezel)
- For the contact block mounting position, see page 82.
- Lever operator is also available. For dimensions, see page 87.
- When ordering a lever operator selector switch, designate L before E in the Part No. of knob operator selector switches.

[Example] **CW1S-3E11** → **CW1S-3LE11**
 Knob Operator Lever Operator

ø22 Flush Silhouette Switches CW series Key Selector Switches

Key Selector Switches

Package quantity: 1

Shape	CW□K						
	   			(black bezel)			(metallic bezel)
No. of Positions	Contact Configuration	Contact Block		Operator Position		 Maintained	 Spring return from right
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 No.: 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 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 85.
- For dimensions, see page 87.
- 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 the spring-returned position.

Flush Silhouette Switches CW series Key Selector Switches ø22

Package quantity: 1

No. of Positions	Contact Configuration	Contact Block		Operator Position			L C R Maintained	L C R Spring return from right	L C R Spring return from left	L C R Spring return two-way
		Mounting Position	Contact	L	C	R				
45° 3-position	1NO-1NC (11)	1	NO	●			CW□K-3AE11	CW□K-31BE11	CW□K-32CE11	CW□K-33DE11
		2	—	Dummy						
		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 No.: 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 84.
- Two keys are supplied.
- Key cylinder material: Metal
- Besides the standard key (key number 0H), six other keys are also available. See page 84.
- For the contact block mounting position, see right.
- For dimensions, see page 87.

Contact Block Mounting Position

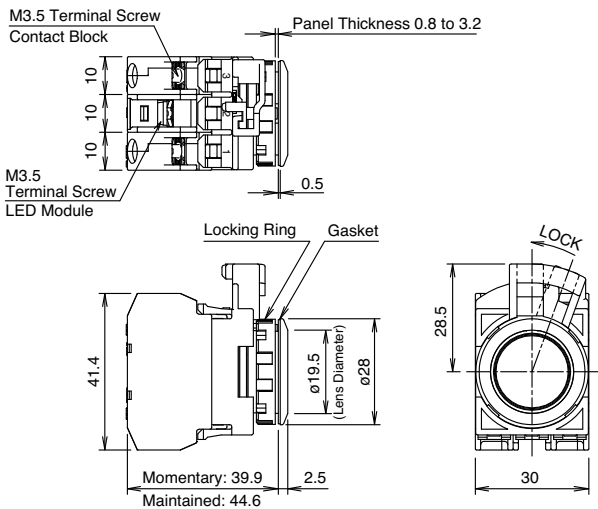


ø22 Flush Silhouette Switches CW series Dimensions

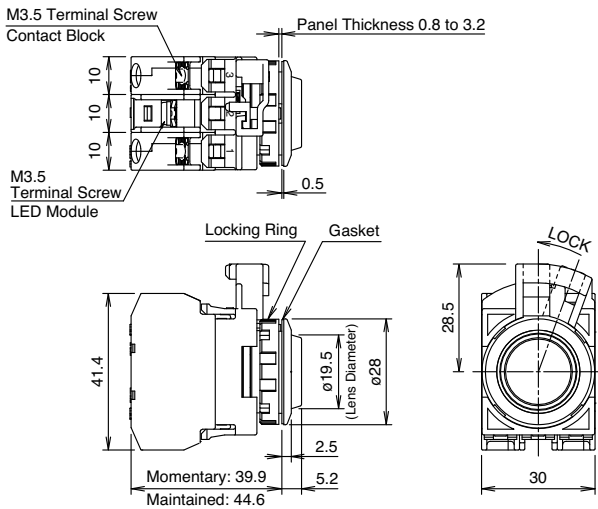
Dimensions: Illuminated Pushbuttons

All dimensions in mm.

Round Flush

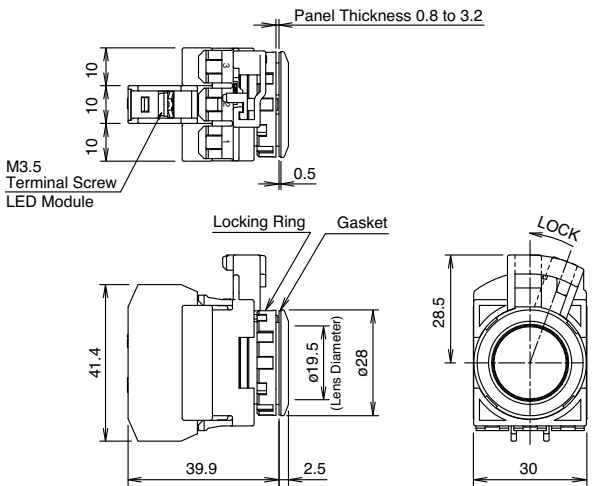


Round Extended

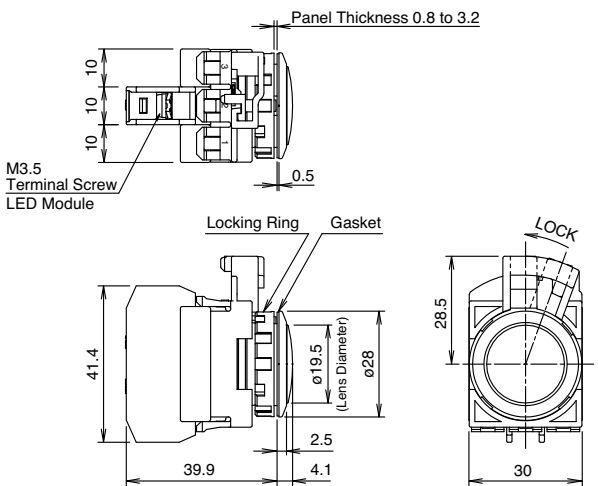


Dimensions: Pilot Lights

Round Flush

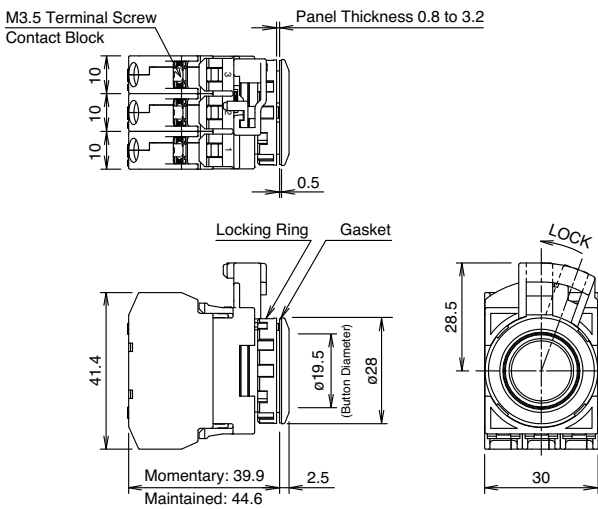


Round Extended

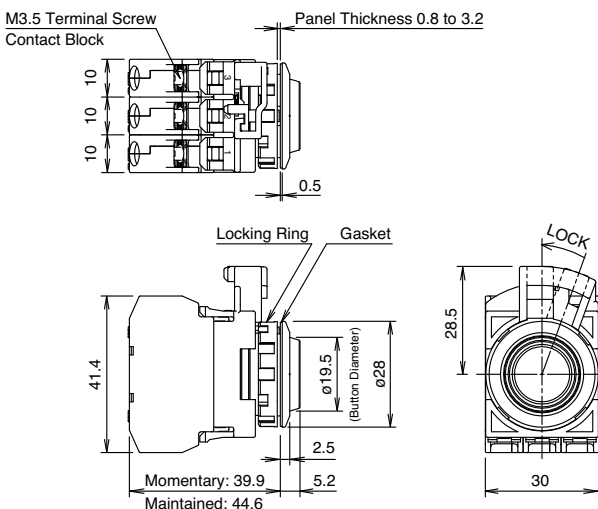


Dimensions: Pushbuttons

Round Flush



Round Extended

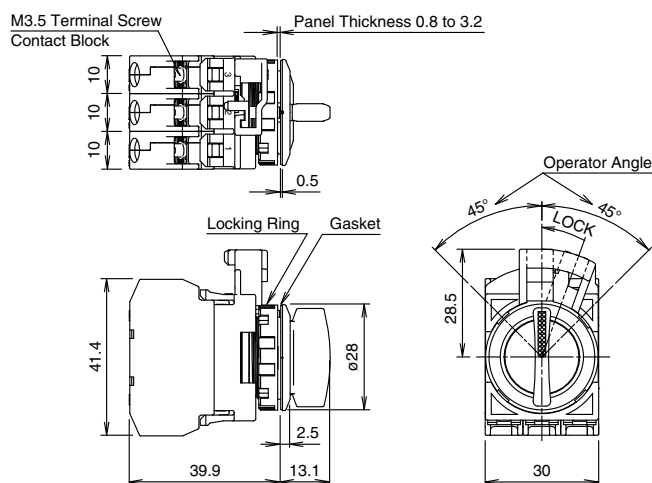


Flush Silhouette Switches CW series Dimensions ø22

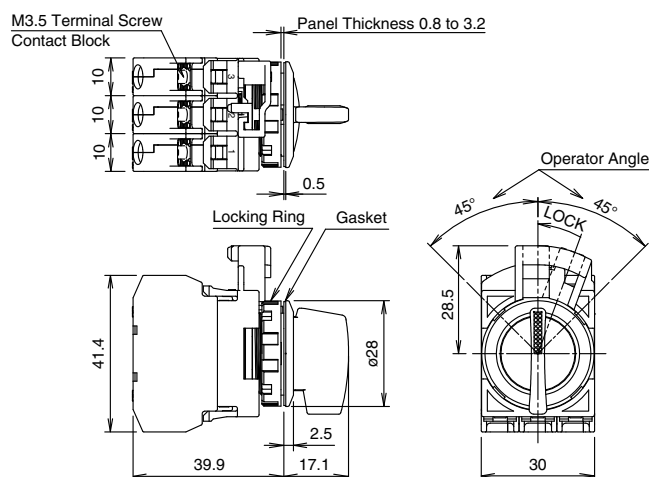
Dimensions: Selector Switches

All dimensions in mm.

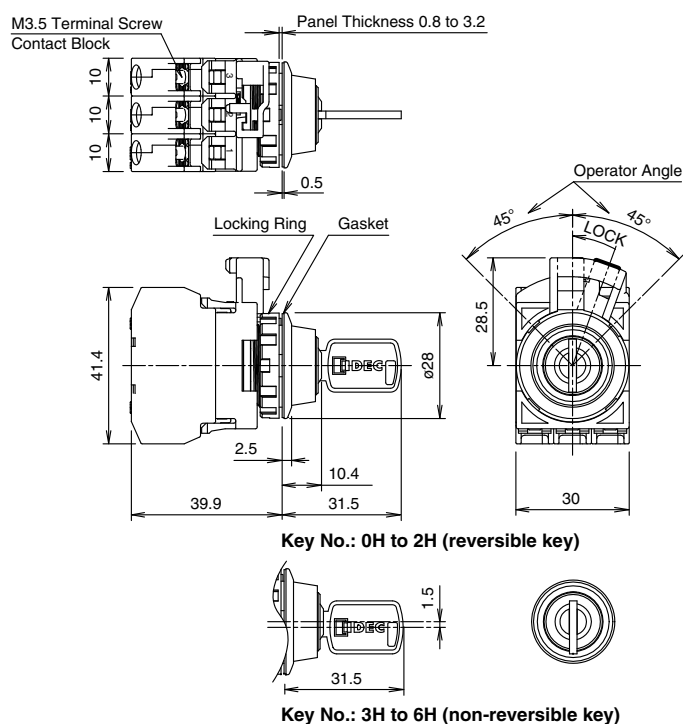
Knob Operator



Lever Operator

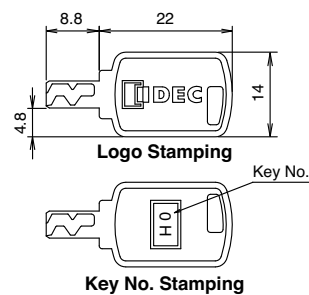


Dimensions: Key Selector Switches

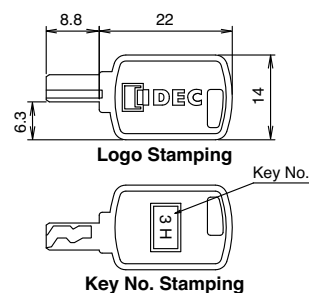


Dimensions: Keys

Reversible Key



Non-reversible Key

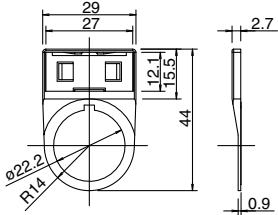


Accessories

Shape	Material	Part No.	Package Quantity	Remarks
	Brass	MW9Z-T1	1	- Used to tighten the locking ring when installing the CW series control unit in a panel cut-out. - Weight: Approx 150g 
	Polyamide (black)	LW9Z-BP1	1	- Used to plug an unnecessary ø22.3mm hole in the panel. - Degree of protection: IP65 - Panel thickness: 0.8 to 6.0 mm
	Rubber (Transparent silicon rubber)	CW9Z-D1	1	- Degree of protection: IP65 - Cannot be used with CWAM nameplate
		CW9Z-D2	1	

ø22 Flush Silhouette Switches CW Series Accessories / Maintenance Parts

Nameplates

Description	Legend	Material	Part No.	Ordering No.	Package Quantity	Dimensions (mm)
	Order marking plate (HWNP) separately.	Plastic (black)	CWAM	CWAM	1	
				CWAMPN10	10	

Making Plate

Description	Material	Part No.	Ordering No.	Package Quantity	Dimensions (mm)
HWNP	Aluminum (black) 1.0 mm thick	HWNP-*	HWNP*	1	
			HWNP-*PN10	10	

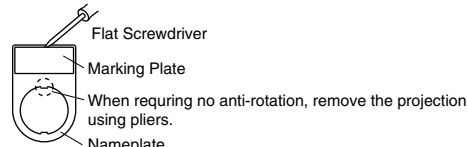
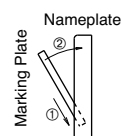
• Specify a legend code in place of * in the Ordering No.

• Installing the marking plate on a nameplate

• To remove the marking plate, insert the flat screwdriver between the marking plate and nameplate.

Legends

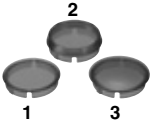
Code	Legend	Code	Legend
0	(blank)	4	STOP
1	ON	31	OFF-ON
2	OFF	33	HAND-AUTO
3	START	53	HAND-OFF-AUTO



Note: When using an nameplate, the mounting panel thickness is decreased by 1.5 mm.

Maintenance Parts

Used for replacement only. Do not use the maintenance parts to remodel or expand the CW series control units.

Shape		Material	Part No.	Ordering No.	Package Quantity	Remarks
Button 	1 For round flush	Polyarylate ø19.5 H3.5	CW9Z-B11①	CW9Z-B11①PN05	5	• For maintained pushbuttons. • Specify a button color code in place of ① in the Part No. B (black), G (green), R (red), S (blue), W (white), Y (yellow)
	2 For round extended	Polyarylate ø19.5 H6.2	CW9Z-B12①	CW9Z-B12①PN05	5	
Lens 	1 Round Flush	Polyalylate	CW9Z-L11②	CW9Z-L11②PN05	5	Color code ②: A (amber), C (clear), G (green), R (red), S (blue), Y (yellow) Use a clear (C) lens for pure white (PW) illumination. 1: For illuminated pushbutton, pilot light 2: For illuminated pushbutton 3: For pilot light
	2 Round Extended	Polyalylate	CW9Z-L12②	CW9Z-L12②PN05	5	
	3 Round Extended	Polyalylate	CW9Z-L15②	CW9Z-L15②PN05	5	
Contact Block 	1NO		YW-E10R	YW-E10R	1	Housing color: Blue and Black Terminal No.: 3-4
	1NC		YW-E01	YW-E01	1	Housing color: Reddish purple Terminal No.: 1-2
Dummy Block 		Polyamide (black)	CW-DB	CW-DBPN05	5	
Locking Ring 		Polyamide (black)	CW9Z-LN	CW9Z-LNPN05	5	
Gasket 		Nitrile rubber	CW9Z-WM	CW9Z-WMPN10	10	Waterproof gasket between CW control unit bezel and the mounting panel.
Spare Key  Non-reversible Reversible		Zinc (nickel-plated)	LA9Z-SK-□	LA9Z-SK-□PN02	2	Specify a key No. in place of □. 0H: Standard key (reversible) 1H to 2H: Reversible key 3H to 6H: Non-reversible key For dimensions, see page 87.

Flush Silhouette Switches CW series Instructions ø22

LED Module

Package quantity: 1

Shape	Operating Voltage Range	Current Draw	Part No.	Illumination Color Code ②
	6V AC/DC±10%	15 mA	CW-EAQ2 ②	Specify an illumination color code in place of ② in the Part No. A: amber G: green PW: pure white R: red S: blue
	12V AC/DC±10%	15 mA	CW-EAQ3 ②	
	24V AC/DC±10%	16.5 mA	CW-EAQ4 ②	
	100/120V AC±10%	18 mA	CW-EAQH ②	
	200/220V AC±10%	20 mA	CW-EAQM ②	
	230/240V AC±10%	18 mA	CW-EAQM4 ②	

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

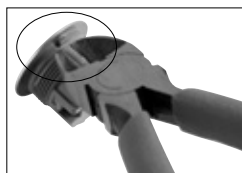
Safety Precautions

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

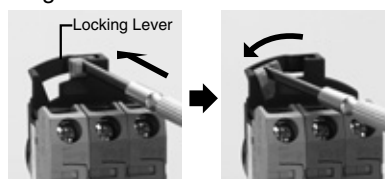
Notes for Operation

- When using the CW series control units 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.



Removing and Installing the Contact Unit

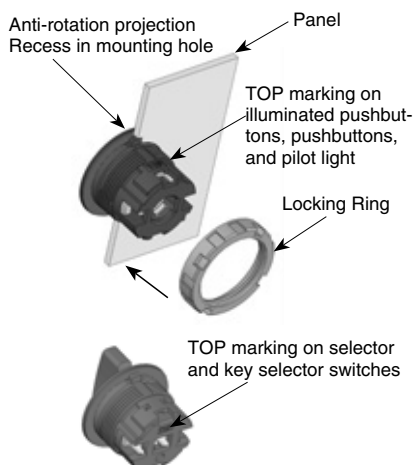
1. To remove the contact block from the operator, push the yellow locking lever and turn it to the left.



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.

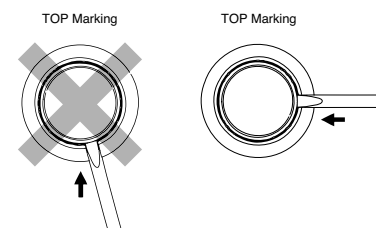
Illuminated Pushbuttons and Pilot Lights

Removing the Lens

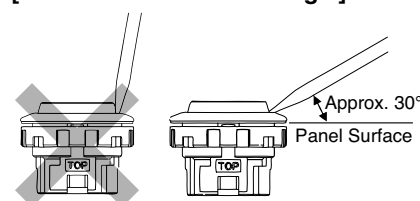
To remove the lens from an illuminated pushbutton or pilot light, insert a flat screwdriver under the flange of the lens at 90° from the TOP marking and twist the screwdriver.

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

[Screwdriver Insertion Direction]



[Screwdriver Insertion Angle]



Operating Conditions

- In corrosive gas or high-temperature, high-humidity atmosphere, contact failure due to corrosion or color change or breakage of the housing may occur.
- Main parts of the CW series control units are made of plastics. Do not scratch the surface with a sharp object or apply excessive shocks or load, otherwise the control units 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 control units.

Panel Mounting

Remove the contact block from the operator. Remove 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

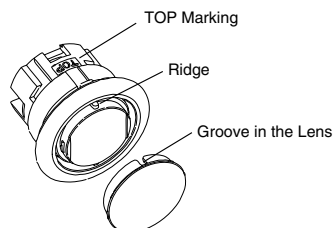
1. Mounting hole dimensions are in compliance with IEC60947-5-1.
2. If the anti-rotation projection is removed from the bezel, CW series control units can be mounted in ø22.3mm mounting holes. To remove the anti-rotation projection, remove the gasket and use cutting pliers to break the projection.

ø22 Flush Silhouette Switches CW Series Instructions

Operating Instructions

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 plates are not available for CW series illuminated pushbuttons and pilot lights. Marking film can be inserted to indicate legends.

Applicable Marking Film Size

Illuminated Pushbutton (Round Flush) Pilot Light (Round Flush, Round Extended)	Illuminated Pushbutton (Round Extended)

Thickness: 0.2 mm maximum

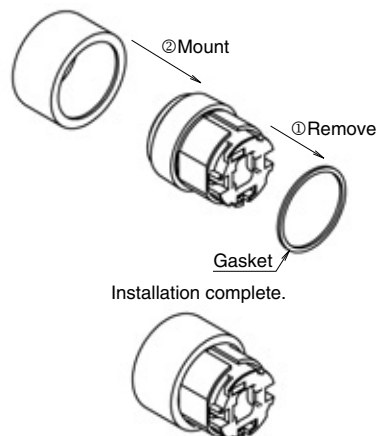
Film material: Polyester (recommended)

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

Installing the Rubber Boot

When using in places where the switches are subjected to water splash or an excessive amount of dust, make sure to use the optional rubber boot. Mount the rubber boot so that the protrusion at the bottom surface of the operator fits with the recess on the operator, placing the rubber boot all around the operator sleeve. Make sure that the protrusion on the rubber boot and the recess on the operator is properly fitted, otherwise, the waterproof and dustproof characteristics are not ensured.

How to Install the Rubber Boot



Note: Note: Install the rubber boot before mounting the unit to the panel.

Pushbuttons

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

Selector Switches

Turn the selector operator or key to the detent positions.

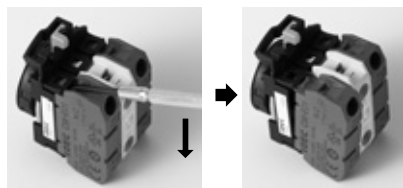
Key Selector Switches

To prevent malfunctions and damage, take the following precautions.

- Insert the key to the bottom before turning.
- Do not remove the key while turning.
- Besides the standard key (0H), six other keys are available. Use a key with a key selector switch of a matching number indicated on the key cylinder. Standard key does not have a key number indication.
- Keys are available in two shapes. Key numbers 0H (standard), 1H, and 2H are reversible keys. Key numbers 3H, 4H, 5H, and 6H are non-reversible keys. Make sure of correct insertion direction.

Contact Blocks and LED Modules

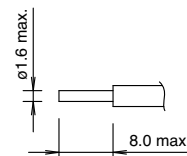
To remove the contact block from the operator, insert a flat screwdriver under the latch and push down the screwdriver as shown below. Before removing the LED module, first remove all contact blocks, and remove the LED module in the same manner.



Wiring

Applicable Wires

Stranded wire: 2.0 mm² maximum
Solid wire: ø1.6 mm maximum

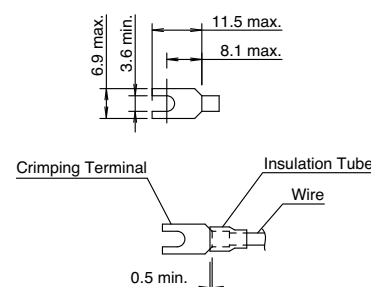


One or two wires can be connected to the terminal.

Applicable Crimping Terminals

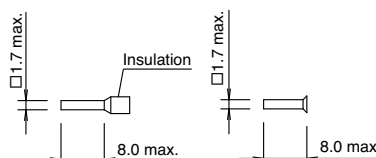
[Spade terminal]

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



[Ferrule]

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



When using spade terminals or ferrules, insert them to the bottom. 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.