30mm Hazardous Location Switches:
EU2B Series

PRODUCT DESCRIPTION

Complying with UL and ATEX Directives for hazardous environments, new 30mm EU2B Hazardous Location Switches provide increased safety for your applications.

Available models include:

- Pushbuttons
- Pilot Lights
- Selector Switches
- Key Selector Switches
- Emergency Stop Switches
- Meters

STANDARDS COMPLIANCE

	Switches	Pilot Lights	Meters
UL	Class I, Zone 1, AEx de IIC T6 Gb Class I, Div 2, Groups A, B, C and D	Class I, Zone 1, AEx de IIC T6 Gb Class I, Div 2, Groups A, B, C and D	Class I, Zone 1, AEx de IIC T6 Gb Class I, Div 2, Groups A, B, C and D
c-UL	Class I, Zone 1, Ex de IIC T6 Gb Class I, Div 2, Groups A, B, C and D	Class I, Zone 1, Ex de IIB T6 Gb Class I, Div 2, Groups C and D	Class I, Zone 1, Ex de IIC T6 Gb Class I, Div 2, Groups A, B, C and D
ATEX		⟨Ex⟩ II2G Ex de IIC ⟨Ex⟩ II2D tD A21 IP65	⟨Ex⟩ II2G Ex de IIC Gb ⟨Ex⟩ II2D Ex tb IIIC Db IP65

KEY FEATURES

- Class I, Zone 1/Division 2
- Applicable in explosive gas atmospheres (AEx de IIC T6 Gb)
- UL Type 4X rated
- Up to 3 contact blocks
- Selector switches available with lever or key
- Selector switches available with overlapping contacts
- Exposed and finger-safe (IP20) screw terminals available

CERTIFICATE NUMBERS

UL/cUL	E347230
ATEX	PTB 08 ATEX 1053 U PTB 08 ATEX 1003 U

APPLICABLE STANDARDS

Products	Applicable Standards	Mark	Certifications
Pushbuttons Selector Switches Key Selector Switches Pilot Lights	EN60947-5-1	CE	EU Low Voltage Directive
Emergency Stop Switches	EN60947-5-5	TÜV	TÜV SÜD
		CE	EU Low Voltage Directive

IECEx is pending approval

SPECIFICATIONS

General Specifications

Degree of Protection	IP65 (IEC60529), Type 4X
Insulation Resistance	100 MΩ minimum (500V DC megger)
Operating Temperature	–20 to +50°C (no freezing)
Operating Humidity	45 to 85% (no condensation)
Altitude	2,000m Maximum
Pollution Degree	3
Shock Resistance	Operating Extremes	100-m/s² Emergency Stop Switch: 150-m/s² (without Meter)
	Damage Limits	1000-m/s²
Vibration Resistance	Operating Extremes	5 to 55-Hz, amplitude 0.5 mm Emergency Stop Switch: 5 to 500-Hz, amplitude 0.35-mm, acceleration 50-m/s² (without Meter)
	Damage Limits	30Hz, amplitude 1.5-mm Emergency Stop Switch: 5 to 500-Hz, amplitude 0.35-mm, acceleration 50-m/s²

Contact Rating (Switches)

Rated Insulation Voltage (Ui)			600V			
Rated Thermal Current (Ith)			10A*			
Rated Operating Voltage (Ue)			24V	120V	240V	500V
Rated Operating Current (Ie)	AC 50/60Hz	Resistive Load (AC12)	10A*	10A*	6A	2.8A
		Inductive Load (AC15)	10A*	6A	3A	1.4A
	DC	Resistive Load (DC12)	8A	2.2A	1.1A	—
		Inductive Load (DC13)	4A	1.1A	0.55A	—

Note: Up to 2 contacts (per control unit): 10A
3 contacts (per control unit): 9A
Minimum applicable load: 3V AC/DC, 5mA
Applicable operating locations may vary according to operating conditions and load types.

Contact Rating Code Designation	Thermal Continuous Test Current Amperes	Maximum current, Amperes								Maximum Volt-Amperes	
		120 Volt		240 Volt		480 Volt		600 Volt		600 Volt	
		Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A600	10	60	6.00	30	3.00	15	1.5	12	1.2	7200	720

Switches

Rated Insulation Voltage		600V
Contact Resistance		50mΩ maximum (initial value)
Impulse Withstand Voltage (Uimp)		6kV
Insulation Resistance		100MΩ minimum (500V DC megger)
Short-Circuit Protection		250V/10A fuse (Type aM IEC60269-1/IEC60269-2)
Conditional Short-Circuit Current		1,000A
Mechanical Life	Pushbutton	1,000,000 operations minimum
	Selector Switch	500,000 operations minimum
	Key Selector Switch	500,000 operations minimum
	Emergency Stop Switch	50,000 operations minimum
Electrical Life	Pushbutton	250,000 (switching frequency 1800 operations/h)
	Selector Switch	250,000 (switching frequency 900 operations/h)
	Key Selector Switch	250,000 (switching frequency 900 operations/h)
	Emergency Stop Switch	50,000 (switching frequency 900 operations/h)
Minimum Operator Stroke Required for Direct Opening Action	Emergency Stop Switch	7.0mm
Maximum Operator Stroke	Emergency Stop Switch	9.0mm

Note: Contacts will bounce during operation of pushbuttons and selector switches (reference value: 20-ms). Be sure to take contact bounce time into consideration when designing a control circuit.

Pilot Lights

Rated Insulation Voltage (Ui)		500V
Rated Operating Voltage (Ue)	Voltage	6V, 12V, 24V AC/DC
	Transformer	120V, 230V, 240V, 380V, 480V AC
Impulse Withstand Voltage (Uimp)		4kV
Insulation Resistance		100 MΩ minimum (500V DC)
Frequency		50/60Hz
Power Consumption (approx.)	Full Voltage	0.3W
	Transformer	1.5VA
Life (reference value)		Approx. 40,000 hours

Note: Because the built-in LED lamp is a high-brightness version, the lamp may light dimly due to induction even when power is off.

Meters

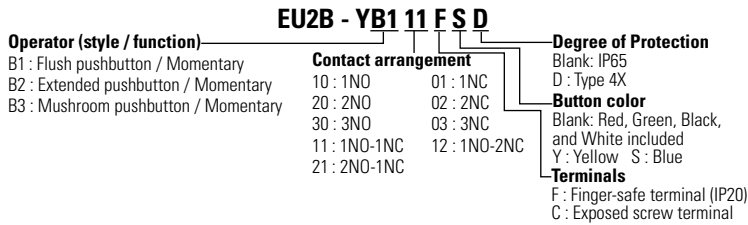|		
Accuracy Class		2.5
Insulation Resistance		100 MΩ minimum (500V DC megger)
AC ammeter	Rated Insulation Voltage (Ui)	300V
	Operation	Moving core
	Impulse Withstand Voltage (Uimp)	4kV
	Power Consumption	1VA
	Measurement	5A, 10A, 30A, 50A, etc
	Input (CT Ratio)	1A, 5A
	Extended Memory	3 times, etc
DC ammeter	Rated Insulation Voltage (Ui)	150V
	Operation	Moving coil
	Impulse Withstand Voltage (Uimp)	2.5kV
	Input	0 to10V DC, 4 to 20mA, etc.
	Power Consumption	0.15W
	Consumption Current	1mA

Note: Use a commercially available CT (current transformer) for all AC ammeters, and install the CT in a non-hazardous location.

PART NUMBERS

Pushbuttons

Part Number Structure

EU2B - YB1 11 F S D

Operator (style / function)
B1 : Flush pushbutton / Momentary
B2 : Extended pushbutton / Momentary
B3 : Mushroom pushbutton / Momentary

Contact arrangement
10 : 1NO   01 : 1NC
20 : 2NO   02 : 2NC
30 : 3NO   03 : 3NC
11 : 1NO-1NC   12 : 1NO-2NC
21 : 2NO-1NC

Degree of Protection
Blank: IP65
D : Type 4X

Button color
Blank: Red, Green, Black, and White included
Y : Yellow   S : Blue

Terminals
F : Finger-safe terminal (IP20)
C : Exposed screw terminal

Note: Use only when interpreting part numbers. Do not use for developing part numbers.

Part Number	Style and Function	Contact Arrangement	Weight (Approx.)	① Button Color
EU2B-YB110④①②	Flush Momentary	1NO	68g	① Blank - supplied with red, green, black, and white buttons For yellow or blue buttons, specify Y (yellow) or S (blue).
EU2B-YB101④①②		1NC		
EU2B-YB111④①②		1NO-1NC	92g	
EU2B-YB120④①②		2NO		
EU2B-YB102④①②		2NC		
EU2B-YB121④①②		2NO-1NC	116g	
EU2B-YB112④①②		1NO-2NC		
EU2B-YB130④①②		3NO		
EU2B-YB103④①②		3NC		
EU2B-YB210④①②	Extended Momentary	1NO	70g	Specify a button color code in place of ① in the part number B : black G : green R : red S : blue W : white Y : yellow
EU2B-YB201④①②		1NC		
EU2B-YB211④①②		1NO-1NC	94g	
EU2B-YB220④①②		2NO		
EU2B-YB202④①②		2NC		
EU2B-YB221④①②		2NO-1NC	118g	
EU2B-YB212④①②		1NO-2NC		
EU2B-YB230④①②		3NO		
EU2B-YB203④①②		3NC		
EU2B-YB310④①②	Mushroom Momentary	1NO	76g	
EU2B-YB301④①②		1NC		
EU2B-YB311④①②		1NO-1NC		
EU2B-YB320④①②		2NO	101g	
EU2B-YB302④①②		2NC		
EU2B-YB321④①②		2NO-1NC	125g	
EU2B-YB312④①②		1NO-2NC		
EU2B-YB330④①②		3NO		
EU2B-YB303④①②		3NC		

Note: ① Button Color.

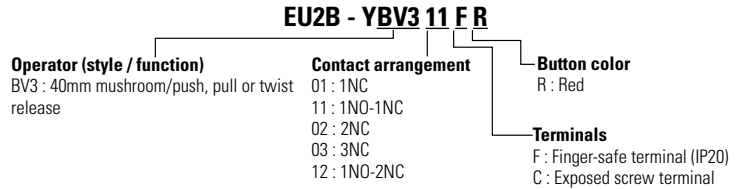For ②, select –D for Type 4X (UL only) version, or leave blank for IP65 (ATEX/UL) version.

Specify a contact terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

For Type 4X models, installation of a rubber boot is required on flush and extended versions; see page 10 for ordering information. This is only applicable to the flush and extended pushbuttons. All other models are Type 4X without any boot.

Emergency Stop Switches

Part Number Structure

EU2B - YBV3 11 F R

Operator (style / function)
BV3 : 40mm mushroom/push, pull or twist release

Contact arrangement
01 : 1NC
11 : 1NO-1NC
02 : 2NC
03 : 3NC
12 : 1NO-2NC

Button color
R : Red

Terminals
F : Finger-safe terminal (IP20)
C : Exposed screw terminal

Note: Use only when interpreting part numbers. Do not use for developing part numbers.

Part Number	Operator	Contact Arrangement	Weight (Approx.)	Button Color
EU2B-YBV301④R	ø40 Mushroom	1NC	96g	R : Red
EU2B-YBV311④R		1NO-1NC	120g	
EU2B-YBV302④R		2NC		
EU2B-YBV312④R		1NO-2NC	144g	
EU2B-YBV303④R		3NC		

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

Pilot Lights

Part Number Structure
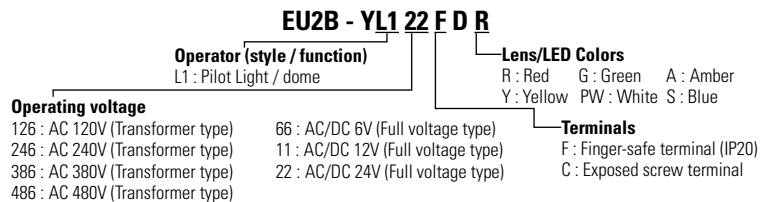
EU2B - YL1 22 F D R

Operator (style / function)
L1 : Pilot Light / dome

Operating voltage
126 : AC 120V (Transformer type)
246 : AC 240V (Transformer type)
386 : AC 380V (Transformer type)
486 : AC 480V (Transformer type)

66 : AC/DC 6V (Full voltage type)
11 : AC/DC 12V (Full voltage type)
22 : AC/DC 24V (Full voltage type)

Lens/LED Colors
R : Red   G : Green   A : Amber
Y : Yellow   PW : White   S : Blue

Terminals
F : Finger-safe terminal (IP20)
C : Exposed screw terminal

Note: Use only when interpreting part numbers. Do not use for developing part numbers.

| Part Number	Type	Operating Voltage	Weight (Approx.)	① Illumination Color Code
EU2B-YL1126④D①	Transformer	120V AC	150g	R : red G : green A : amber Y : yellow PW : white S : blue
EU2B-YL1236④D①		230V AC		
EU2B-YL1246④D①		240V AC		
EU2B-YL1386④D①		380V AC		
EU2B-YL1486④D①		480V AC		
EU2B-YL166④D①	Full Voltage	6V AC/DC	108g	
EU2B-YL111④D①		12V AC/DC		
EU2B-YL122④D①		24V AC/DC		

Note: ① Illumination Color.
Specify a contact terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

Selector Switches

Part Number Structure

EU2B - YS 2 11 N1 F

Operator (style / function)
S : Selector (Knob operator)

Number of Positions / Spring Return Action
2 : 2-position / Maintained
2R : 2-position / Maintained (Overlap)
2J : 2-position / Maintained (Special function)
21 : 2-position / Spring return from right

3 : 3-position / Maintained
31 : 3-position / Spring return from right
32 : 3-position / Spring return from left
33 : 3-position / Spring return two-way

Contact arrangement
10 : 1NO   03 : 3NC
11 : 1NO-1NC 02 : 2NC
01 : 1NC   21 : 2NO-1NC
30 : 3NO   12 : 1NO-2NC
20 : 2NO

Terminals
F : Finger-safe terminal (IP20)
C : Exposed screw terminal

Circuit Number
Blank : No Designation
N* : See charts

Note: Use only when interpreting part numbers. Do not use for developing part numbers.

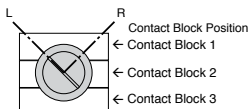### 2-Position Selector Switches

Contact	Mounting	Operator Position L	Operator Position R	Maintained L⌄R	Spring Return from Right L⌄R	Weight (approx)
NO	1		●			
				EU2B-YS210④	EU2B-YS2110④	
						74g
				EU2B-YS201④	EU2B-YS2101④	
NC	3	●				
NO	1		●			
				EU2B-YS220④	EU2B-YS2120④	
NO	3		●			
NC	1	●				
				EU2B-YS202④	EU2B-YS2102④	98g
NC	3	●				
NO	1		●			
				EU2B-YS211④	EU2B-YS2111④	
NC	3	●				
NO	1		●			
NO	2		●	EU2B-YS230④	EU2B-YS2130④	
NO	3		●			
NC	1	●				
NC	2	●		EU2B-YS203④	EU2B-YS2103④	
NC	3	●				
NO	1		●			122g
NO	2		●	EU2B-YS221④	EU2B-YS2121④	
NC	3	●				
NO	1		●			
NC	2	●		EU2B-YS212④	EU2B-YS2112④	
NC	3	●				
NO	1	▬▬▬				
				EU2B-YS2R11④	N/A	98g
NC	2	▬▬▬				

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

2-Position Selector Switches (Inverse Cam)

Contact	Mounting	Operator Position L	Operator Position R	Maintained L⌄R	Weight (approx)
NO	1	●			
				EU2B-YS2J10④	
					74g
				EU2B-YS2J01④	
NC	3		●		
NO	1	●			
				EU2B-YS2J20④	
NO	3	●			
NC	1		●		
				EU2B-YS2J02④	98g
NC	3		●		
NO	1	●			
				EU2B-YS2J11④	
NC	3		●		
NO	1	●			
NO	2	●		EU2B-YS2J30④	
NO	3	●			
NC	1		●		
NC	2		●	EU2B-YS2J03④	
NC	3		●		122g
NO	1	●			
NO	2	●		EU2B-YS2J21④	
NC	3		●		
NO	1	●			
NC	2		●	EU2B-YS2J12④	
NC	3		●		

L   R
←Contact Block 1
←Contact Block 2
←Contact Block 3

3-Position Selector Switches

Contact	Mounting	Operator Position L	C	R	Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two Way	Weight (approx)
NO	1	●			EU2B-YS320④	EU2B-YS3120④	EU2B-YS3220④	EU2B-YS3320④	98g
NO	3			●					
NO	2	●		●	EU2B-YS320N1④	EU2B-YS3120N1④	EU2B-YS3220N1④	EU2B-YS3320N1④	
NO	3			●					
NC	1		▬▬▬		EU2B-YS302④	EU2B-YS302④	EU2B-YS3202④	EU2B-YS3302④	
NC	3	▬▬▬							
NC	2		●		EU2B-YS302N1④	EU2B-YS3102N1④③	EU2B-YS3202N1④③	EU2B-YS3302N1④	
NC	3	▬▬▬							
NO	1	●			EU2B-YS311④	EU2B-YS311④	EU2B-YS3211④	EU2B-YS3311④	
NC	3	▬▬▬							
NC	1		▬▬▬		EU2B-YS311N1④	EU2B-YS3111N1④	EU2B-YS3211N1④	EU2B-YS3311N1④	
NO	3			●					
NO	1	●			EU2B-YS311N2④	EU2B-YS3111N2④	EU2B-YS3211N2④	EU2B-YS3311N2④	
NC	2		●						
NC	2		●		EU2B-YS311N3④	EU2B-YS3111N3①	EU2B-YS3211N3①	EU2B-YS3311N3①	
NO	3			●					
NO	2	●		●	EU2B-YS311N4④	EU2B-YS3111N4④	EU2B-YS3211N4④	EU2B-YS3311N4④	
NC	3	▬▬▬							
NO	1	●			EU2B-YS330④	EU2B-YS3130④	EU2B-YS3230④	EU2B-YS3330④	122g
NO	2	●		●					
NO	3			●					
NC	1		▬▬▬		EU2B-YS303④	EU2B-YS3103④	EU2B-YS3203④	EU2B-YS3303④	
NC	2		●						
NC	3	▬▬▬							
NO	1	●			EU2B-YS3 21N1④	EU2B-YS3121N1④	EU2B-YS3221N1④	EU2B-YS3321N1④	
NC	2		●						
NO	3			●					
NC	1		▬▬▬		EU2B-YS3 12N1④	EU2B-YS3112N1④	EU2B-YS3212N1④	EU2B-YS3312N1④	
NO	2	●		●					
NC	3	▬▬▬							

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

←Contact Block 1
←Contact Block 2
←Contact Block 3
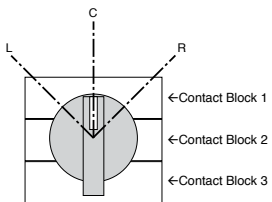
Key Selector Switches

Part Number Structure

EU2B - YSK 2 11 N1 F A

Operator (style / function)
SK : Key selector (Key operator)

Number of Positions / Spring Return Action
2 : 2-position / Maintained
2R : 2-position / Maintained (Overlap)
2J : 2-position / Maintained (Special function)
21 : 2-position / Spring return from right

3 : 3 -position / Maintained
31 : 3-position / Spring return from right
32 : 3-position / Spring return from left
33 : 3-position / Spring return two-way

Contact arrangement
10 : 1NO   03 : 3NC
11 : 1NO-1NC 02 : 2NC
01 : 1NC   21 : 2NO-1NC
30 : 3NO   12 : 1NO-2NC
20 : 2NO

Key Removable Position
See Key removable option codes below

Terminals
F : Finger-safe terminal (IP20)
C : Exposed screw terminal

Circuit Number
Blank : No Designation
N* : See the following charts

Note: Use only when interpreting part numbers. Do not use for developing part numbers.

2-Position Key Selector Switches

Contact	Mounting	Operator Position L	Operator Position R	Maintained L / R	Spring Return from Right L / R	Weight (approx)
NO	1		●			
				EU2B-YSK210④③	EU2B-YSK2110④③	96g
				EU2B-YSK201④③	EU2B-YSK2101④③	
NC	3	●				
NO	1		●			
				EU2B-YSK220④③	EU2B-YSK2120④③	
NO	3		●			
NC	1	●				
				EU2B-YSK202④③	EU2B-YSK2102④③	120g
NC	3	●				
NO	1		●			
				EU2B-YSK211④③	EU2B-YSK2111④③	
NC	3	●				
NO	1		●			
NO	2		●	EU2B-YSK230④③	EU2B-YSK2130④③	
NO	3		●			
NC	1	●				
NC	2	●		EU2B-YSK203④③	EU2B-YSK2103④③	
NC	3	●				144g
NO	1		●			
NO	2		●	EU2B-YSK221④③	EU2B-YSK2121④③	
NC	3	●				
NO	1		●			
NC	2	●		EU2B-YSK212④③	EU2B-YSK2112④③	
NC	3	●				
NO	1	▬▬▬				
				EU2B-YSK2R11④③	N/A	120g
NC	2	▬▬▬				

Key is removable in all maintained positions. Specify key removal position in place of ③ in the part number. See table.

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal).

Operator Position
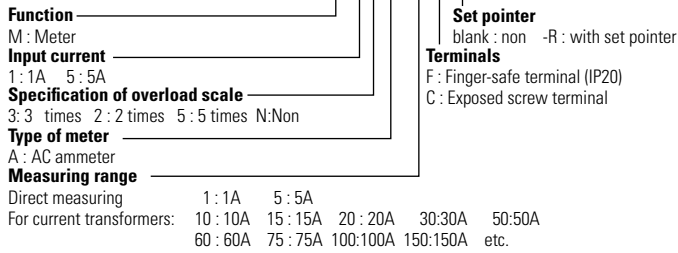

The key can be released in any maintained position.

2-Position Key Selector Switches (Inverse Cam)

Contact	Mounting	Operator Position L	Operator Position R	Maintained L / R	Weight (approx)
NO	1	●			
				EU2B-YSK2J10④③	96g
				EU2B-YSK2J01④③	
NC	3		●		
NO	1	●			
				EU2B-YSK2J20④③	
NO	3	●			
NC	1		●		
				EU2B-YSK2J02④③	120g
NC	3		●		
NO	1	●			
				EU2B-YSK2J11④③	
NC	3		●		
NO	1	●			
NO	2	●		EU2B-YSK2J30④③	
NO	3	●			
NC	1		●		
NC	2		●	EU2B-YSK2J03④③	
NC	3		●		144g
NO	1	●			
NO	2	●		EU2B-YSK2J21④③	
NC	3		●		
NO	1	●			
NC	2		●	EU2B-YSK2J12④③	
NC	3		●		

③ Key Removable Option Codes (2-position)

Code	Description
A	Key removable in any position
B	Key removable in left position
C	Key removable in right position

3-Position Key Selector Switches
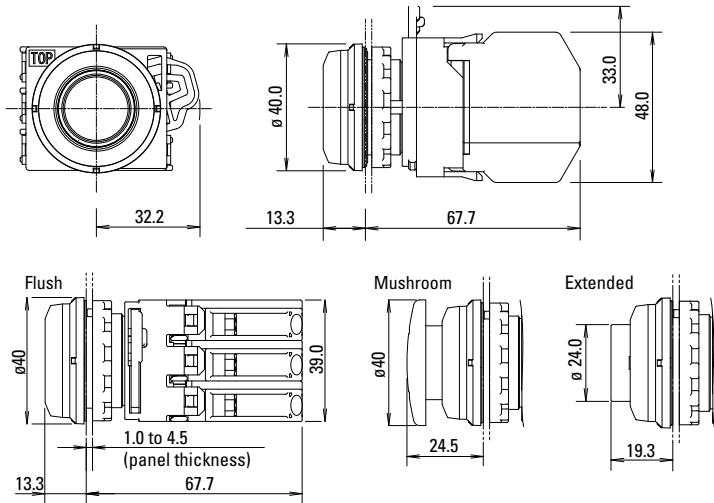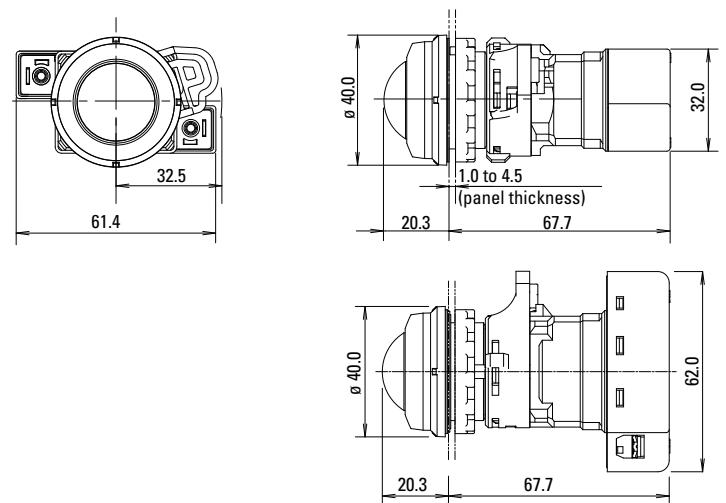
Contact	Mounting	Operator Position L	C	R	Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two Way	Weight (approx)
NO	1	●			EU2B-YSK320④③	EU2B-YSK3120④③	EU2B-YSK3220④③	EU2B-YSK3320④③	120g
NO	3			●					
NO	2	●		●	EU2B-YSK320N1④③	EU2B-YSK3120N1④③	EU2B-YSK3220N1④③	EU2B-YSK3320N1④③	
NO	3			●					
NC	1		▬		EU2B-YSK302④③	EU2B-YSK302④③	EU2B-YSK3202④③	EU2B-YSK3302④③	
NC	3	▬							
NC	2		●		EU2B-YSK302N1④③	EU2B-YSK3102N1④③	EU2B-YSK3202N1④③	EU2B-YSK3302N1④③	
NC	3	▬							
NO	1	●			EU2B-YSK311④③	EU2B-YSK311④③	EU2B-YSK3211④③	EU2B-YSK3311④③	
NC	3	▬							
NC	1		▬		EU2B-YSK311N1④③	EU2B-YSK3111N1④③	EU2B-YSK3211N1④③	EU2B-YSK3311N1④③	
NO	3			●					
NO	1	●			EU2B-YSK311N2④③	EU2B-YSK3111N2④③	EU2B-YSK3211N2④③	EU2B-YSK3311N2④③	
NC	2		●						
NC	2		●		EU2B-YSK311N3④③	EU2B-YSK3111N3④③	EU2B-YSK3211N3④③	EU2B-YSK3311N3④③	
NO	3			●					
NO	2	●		●	EU2B-YSK311N4④③	EU2B-YSK3111N4④③	EU2B-YSK3211N4④③	EU2B-YSK3311N4④③	
NC	3	▬							
NO	1	●			EU2B-YSK330④③	EU2B-YSK3130④③	EU2B-YSK3230④③	EU2B-YSK3330④③	144g
NO	2	●		●					
NO	3			●					
NC	1		▬		EU2B-YSK303④③	EU2B-YSK3103④③	EU2B-YSK3203④③	EU2B-YSK3303④③	
NC	2		●						
NC	3	▬							
NO	1	●			EU2B-YSK321N1④③	EU2B-YSK3121N1④③	EU2B-YSK3221N1④③	EU2B-YSK3321N1④③	
NC	2		●						
NO	3			●					
NC	1		▬		EU2B-YSK312N1④③	EU2B-YSK3112N1④③	EU2B-YSK3212N1④③	EU2B-YSK3312N1④③	
NO	2	●		●					
NC	3	▬							

Key is removable in all maintained positions. Specify key removal position in place of ③ in the part number. See table.

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal) ③

Key Removable Option Codes (3-Position)

Operator Position

L   C   R
Contact Block Position
← Contact Block 1
← Contact Block 2
← Contact Block 3
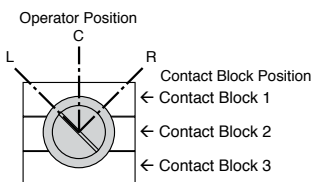
The key can be released in any maintained position.

Code	Description
A	Key removable in any position
B	Key removable in left and center positions
C	Key removable in center and right positions
D	Key removable in center position
E	Key removable in left and right positions
G	Key removable in left position
H	Key removable in right position)

Meters

Part Number Structure - AC Ammeter

EU2B - YM 5 3 A 10 F R

Function
M : Meter
Input current
1 : 1A   5 : 5A
Specification of overload scale
3 : 3 times 2 : 2 times 5 : 5 times N:Non
Type of meter
A : AC ammeter
Measuring range
Direct measuring   1 : 1A   5 : 5A
For current transformers: 10 : 10A   15 : 15A   20 : 20A   30:30A   50:50A
                           60 : 60A   75 : 75A 100:100A 150:150A   etc.

Set pointer
blank : non   -R : with set pointer
Terminals
F : Finger-safe terminal (IP20)
C : Exposed screw terminal

Note: Use only when interpreting part numbers. Do not use for developing part numbers.

Part Number Structure - DC Ammeter or Voltmeter

EU2B - YM 010 VD F-PER-R
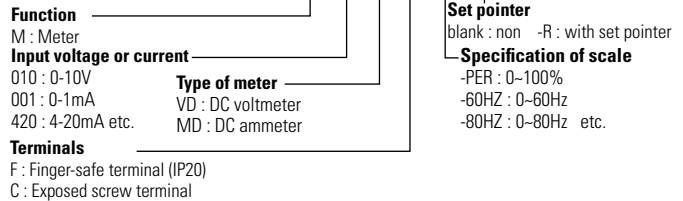
Function
M : Meter
Input voltage or current
010 : 0-10V
001 : 0-1mA
420 : 4-20mA etc.
Terminals
F : Finger-safe terminal (IP20)
C : Exposed screw terminal

Type of meter
VD : DC voltmeter
MD : DC ammeter

Set pointer
blank : non   -R : with set pointer
Specification of scale
-PER : 0~100%
-60HZ : 0~60Hz
-80HZ : 0~80Hz etc.

Note: Use only when interpreting part numbers. Do not use for developing part numbers.

Input	Part Number	Description		Weight (approx.)
AC input meter (ammeter)	EU2B-YM53A5④	Capacity: 5A	Expansion scale: x3	270g
	EU2B-YM53A10④	Capacity:10/5A	Expansion scale: x3	
	EU2B-YM13A10④	Capacity:10/1A	Expansion scale: x3	
	EU2B-YM53A15④	Capacity:15/5A	Expansion scale: x3	
	EU2B-YM13A15④	Capacity:15/1A	Expansion scale: x3	
	EU2B-YM13A20④	Capacity:20/1A	Expansion scale: x3	
	EU2B-YM53A30④	Capacity:30/5A	Expansion scale: x3	
	EU2B-YM13A30④	Capacity:30/1A	Expansion scale: x3	
	EU2B-YM53A50④	Capacity:50/5A	Expansion scale: x3	
	EU2B-YM53A60④	Capacity:60/5A	Expansion scale: x3	
	EU2B-YM53A75④	Capacity:75/5A	Expansion scale: x3	
	EU2B-YM53A100④	Capacity:100/5A	Expansion scale: x3	
	EU2B-YM53A150④	Capacity:150/5A	Expansion scale: x3	
DC input meter	EU2B-YM010VD④-PER	0-10V DC Input	Scale: 0 to 100%	
	EU2B-YM010VD④-60HZ	0-10V DC Input	Scale: 0 to 60Hz	
	EU2B-YM001MD④-PER	0-1mA DC Input	Scale: 0 to 100%	
	EU2B-YM001MD④-60HZ	0-1mA DC Input	Scale: 0 to 60Hz	
	EU2B-YM001MD④-80HZ	0-1mA DC Input	Scale: 0 to 80Hz	
	EU2B-YM420MD④-PER	4-20mA DC Input	Scale: 0 to 100%	
	EU2B-YM420MD④-60HZ	4-20mA DC Input	Scale: 0 to 60Hz	

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

DIMENSIONS

All dimensions in mm

Pushbuttons

Shown with finger-safe contacts

ø 40.0

33.0

48.0

32.2   13.3   67.7

Flush

ø40   39.0

1.0 to 4.5
(panel thickness)

13.3   67.7

Mushroom

ø40

24.5

Extended

ø 24.0

19.3

Pilot Lights

Shown with finger-safe contacts

ø 40.0

32.0

32.5

61.4

1.0 to 4.5
(panel thickness)

20.3   67.7

ø 40.0

62.0

20.3   67.7

Emergency Stop Switches

Shown with finger-safe contacts

32.2

47.4

ø 40.0   38.4

1.0 to 4.5 (panel thickness)

35.0   67.7
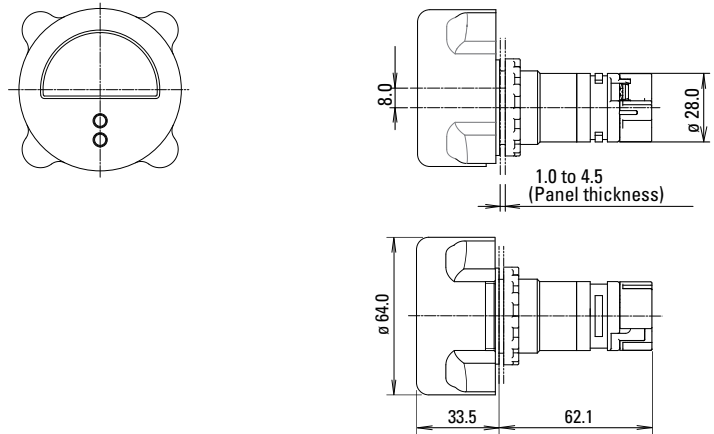
Selector Switches

Shown with finger-safe contacts

32.2

47.4

ø 40.0   38.4

1.0 to 4.5
(panel thickness)

27.3   67.7

Meters

Shown with finger-safe contacts

8.0

ø 28.0

1.0 to 4.5
(Panel thickness)

ø 64.0

33.5   62.1
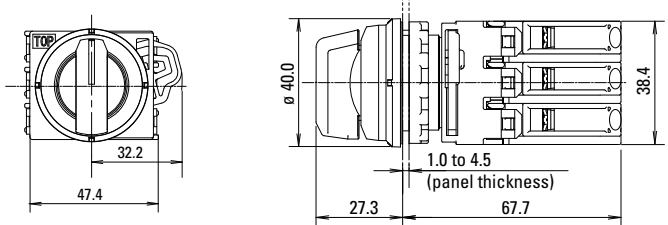
Mounting Hole Dimensions

Panel thickness: 1.0 to 4.5 mm.

*Note: The meter can be mounted on the top mounting holes of a standard 50mm mounting centers. The meter can be mounted on any mounting hole with a 70mm or larger mounting center.

ø30.5 $^{+0.5}_{0}$

4.8 $^{+0.2}_{0}$

33 $^{+0.5}_{0}$

50 minimum (*note)

70 minimum
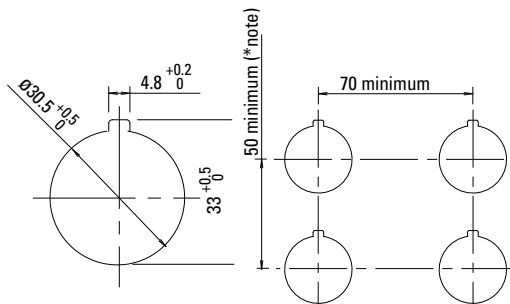
Key Selector Switch

Shown with finger-safe contacts

32.2

47.4

ø 40.0   38.4

1.0 to 4.5 (panel thickness)

37.3   67.7
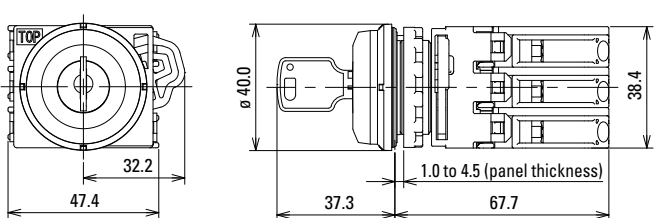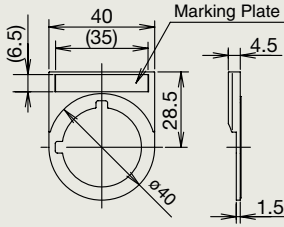
ACCESSORIES
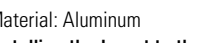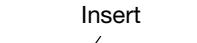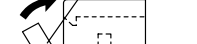
All dimensions in mm

Nameplates

Used for pilot light, pushbutton, selector switch, and key selector switch.

Appearance	Part Number	Dimensions
	EU9Z-NM	

Nameplate Inserts

Appearance	Legend	Part Number
HAND OFF AUTO	Blank	EU9Z-NP0
	ON	EU9Z-NP1
O N	OFF	EU9Z-NP2
	START	EU9Z-NP3
OFF	STOP	EU9Z-NP4
	OFF-ON	EU9Z-NP31
	HAND-AUTO	EU9Z-NP35
	HAND-OFF-AUTO	EU9Z-NP53

Material: Aluminum

Installing the Insert to the Nameplate

Insert

① ②
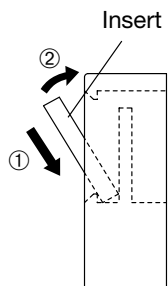
Removing the Insert from the Nameplate

Flat screwdriver
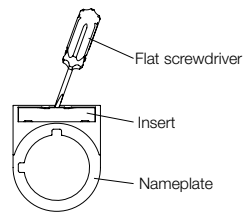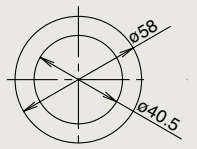
Insert

Nameplate

To remove the Insert, insert a flat screwdriver between the Insert and Nameplate.

Rubber Boots

Appearance	Description/Usage	Part Number
For Flush Pushbuttons	Not for use with name plate	EU9Z-DB1
For Flush Pushbuttons	For use with name plate	EU9Z-DB1N
For Extended Pushbuttons	Not for use with name plate	EU9Z-DB2
For Extended Pushbuttons	For use with name plate	EU9Z-DB2N

Note: Rubber boot must be mounted on flush or extended pushbuttons to achieve UL Type 4X rating

Emergency Stop Switch Nameplate Stickers
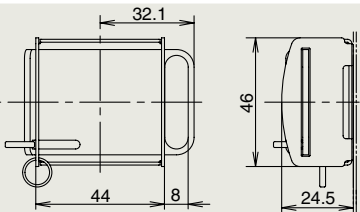
Appearance	Legend	Part Number	Dimensions
	Blank	EU9Z-NVS0	ø58 / ø40.5
	Emergency Stop	EU9Z-NVS27	ø58 / ø40.5

Material: synthetic paper Background: yellow Legend: black

Padlock Cover

EU2B-YB2 extended pushbutton: to maintain latched status
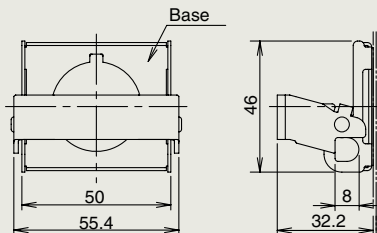
EU2B-YB1 flush pushbutton/EU2B-YSK key selector switch: to prevent operation

Appearance	Part Number	Dimensions
	EU9Z-PC	32.1 / 46 / 44 / 8 / 24.5

Material: Stainless Steel

Emergency Stop Switch Padlock Cover
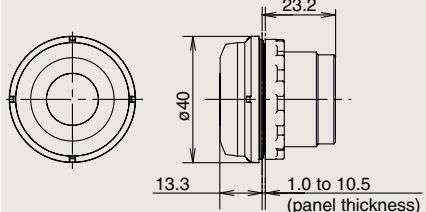
Used with EU2B-YBV emergency stop switch to maintain the switch in the latched status.

Appearance	Part Number	Dimensions
	EU9Z-PCE	Base / 46 / 50 / 55.4 / 8 / 32.2

Coating: yellow Material: Stainless Steel

Mounting Hole Plug

Used to plug unused mounting holes (ø30.5) on the mounting panel.

Appearance	Part Number	Dimensions / Usage
	EU9Z-BP	23.2 / ø40 / 13.3 / 1.0 to 10.5 (panel thickness)

Buttons

Appearance	Style	Part Number	Button Color Code
	Flush	HW1A-B1①	Specify a color code in place of ① in the Ordering Number. R : red G : green B : black Y : yellow W : white S : blue
	Extended	HW1A-B2①	
	ø40 Mushroom	HW1A-B4①	

Material: Polyacetal

Lenses

Appearance	Lens Color	Part Number
	Red	EU9Z-LR
	Green	EU9Z-LG
	Amber	EU9Z-LA
	Yellow	EU9Z-LY
	White	EU9Z-LW
	Blue	EU9Z-LS

Material: AS resin (gasket supplied)

LED Lamps

Operating Voltage	Current Draw		Part Number	Illumination Color Code	Base
	AC	DC			
6V AC/DC±10%	8mA	7mA (A, R, W) 5.5mA (G, PW, S)	LSTD-6①	Specify a color code in place of ① in the part number R : red G : green A : amber PW : white S : blue Use a white (PW) LED with yellow (Y) lens.	BA9S/13
12V AC/DC±10%	11mA	10mA	LSTD-1①		
24V AC/DC±10%	11mA	10mA	LSTD-2①		

OPERATING INSTRUCTIONS

Wiring

Applicable Wires

Stranded wire: 1.5 to 2.5 mm², solid wire: ø1.2 to ø1.6 mm (AWG16 to 14)

Note: Do not connect more than 2 wires to the same terminal.

Applicable crimping terminal

Ring and spade terminals cannot be used with IP20 finger-safe terminal blocks.

When connecting 2 ferrules to the EU2B control unit, use ferrules without insulating sheath.
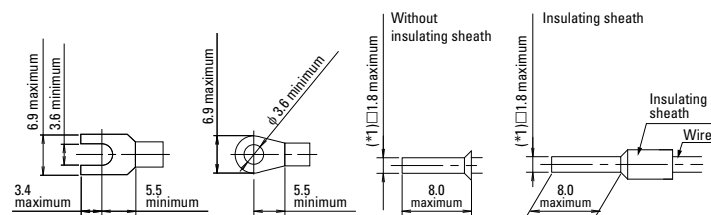
Recommended crimping terminal (WAGO)

Ferrule with insulating sheath: 216-204

Ferrule without insulating sheath: 216-104

Crimping plier: 206-204

Recommended Tightening Torque

EU2B control units (M3.5): 1.0 to 1.3 N·m

Warning

Incorrect wiring may cause fire hazard. Observe the following conditions.

- Be sure to install an insulating sheath on the crimping terminal or the crimping terminal with insulation.
- When connecting solid wires or stranded wires directly, strip the insulation, mentioned below, and insert the wire all the way in.
      EU2B Control units: 8.6 mm maximum
      Crimping terminal: 8 to 9 mm
- When using stranded wires, make sure that there are no wire whiskers.
- Make sure that the spade crimping terminals and ferrules are inserted all the way in.
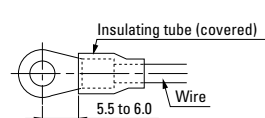
### Removing and Installing the Contact Unit / Lamp

Unit

To remove the contact unit or the lamp unit from the operator, pull the protruding yellow part of the locking lever outwards as shown in the figure below using a screwdriver, and turn it to the left. The contact unit or lamp unit can be removed.
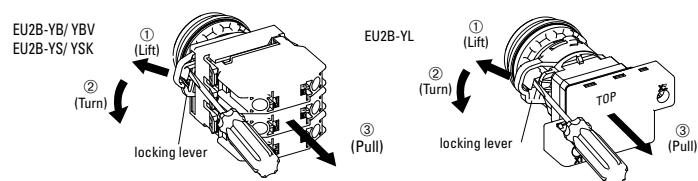
When the contact unit is removed from the emergency stop switch operator, the NO contact closes and the NC contact opens.

Do not turn the locking lever when the contact unit is removed from the operator (the red indicator is protruding out. See the figure below) or the switch can be damaged.
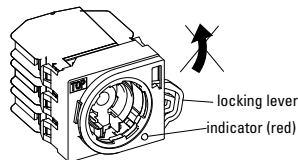
Panel mounting for the operator, lens unit and meter

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from the panel front into the panel hole. Place the projection on the operator with TOP marking upward and the recess on the mounting panel in the same direction. (The meter has no projection.)

Tighten the locking ring using ring wrench XN9Z-T1 to a torque of 2.5 Nm. When using a nameplate or padlocking cover, install it between the operator and panel. Make sure that the groove of the namplate or padlocking cover and the projection on the TOP marking of the operator are in the same direction.

Note: The locking ring for emergency stop switches and meter is metallic. The meter can't mount the nameplate or podlocking cover.

Installing the contact unit and lamp unit

To install the contact unit, place the TOP marking on the operator and the TOP marking on the contact block adapter in the same direction, and then attach the contact unit to the operator. Then turn the locking lever to the right. Follow the same procedure when installing the lamp unit.

When installing the lamp unit, check that the inner lens is not loose.

The contact block adapters for emergency stop switches cannot be used for the pushbutton, selector and key selector switches.
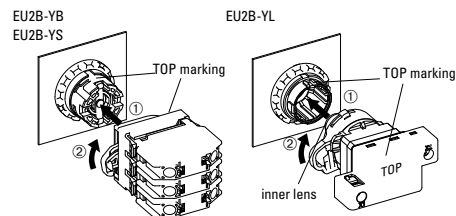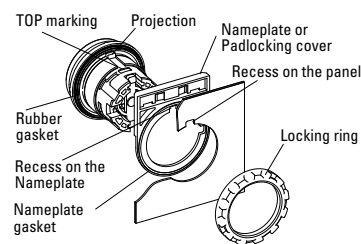
Removing the Contact Block

To remove the contact block, insert a flat screwdriver under the latch of the contact block adaptor and disengage the latch as shown in the figure below.
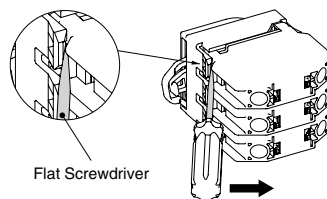
Installing the Contact block

When installing the contact block after maintenance or wiring, make sure that the contact configuration is correct. Installing the contact block in the incorrect position or incomplete installation may cause malfunction of the switch.

Remove the contact block from the operator before installing the contact block to the contact block adaptor. Also make sure that the contact block is correctly installed to the contact block adaptor before attaching the operator. Do not install the contact block adaptor with the operator attached. Otherwise, malfunction may result.

Accessories

Padlock Cover

The following padlocks and hasps can be used.

(Padlock Size)	a	b	c
Flush/extended pushbutton/key selector switch	ø3.5 to 7.0 mm	15 mm min.	70 mm max.
Emergency Stop Switch	ø5.5 to 7.0 mm	—	—

Recommended Hasp

Manufacturer	Part No.
Panduit	PSL-1, PSL-1A, PSL-1.5, PSL-1.5A, PSL-HD1
Master Lock	420, 421

Padlock and hasp are available in various shapes and sizes. Make sure that they do not interfere with the control units. Note: Not supplied by IDEC.

Keep the total weight of padlock and hasp under 1500g max, otherwise the switch may malfunction or result in failure. No vibration should be applied when padlock or hasp are installed. When padlock or hasp are disfigured, stop usage immediately.

Ensure that no shock or electric sparks are generated.

When using the plate lock padlock cover with the extended pushbutton, the switch contact may turn on/off when the cover is being installed. Ensure to provide functional safety measure to prevent unexpected startup.

When using the padlock cover on the safety-related part of the control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform risk assessment before operation.

Installing EU9Z-PC Padlock Cover

(Flush/extended pushbtton/key selector switch)

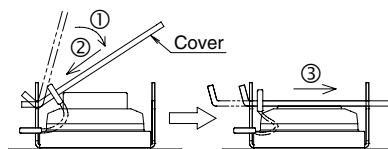EU9Z-PC can be installed in the following two ways.

Remove the cover in the reverse step of installing the cover. Do not install or remove the cover forcefully, or it will cause failure.
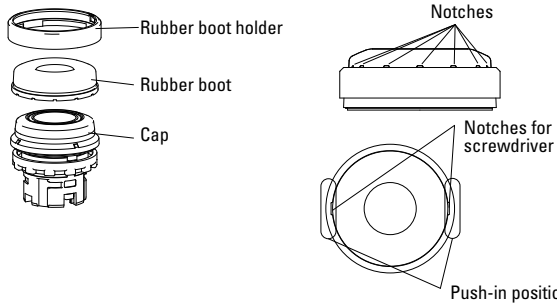
[Installation A]

[Installation B]

This method is effective when the neighboring control unit interferes when installing in method A.

Installing EU9Z-DB Rubber Boots

To install the rubber boot on flush and extended pushbuttons, place the rubber boot on the cap and push the rubber boot holder straight. The notches around the rubber boot must show evenly.


Push the rubber boot holder further around on the two notches on the holder so that the holder fits the button completely

Make sure that the rubber boot and rubber boot holder are installed straight.

On Nameplate Types, the EU2B and the rubber boot holder must be aligned so that when installed, the anti-rotation projection on the EU2B comes to the center of the groove on the holder.

Make sure that the rubber boot is installed completely, otherwise Type 4X degree of protection cannot be obtained. Water droplets might enter the rubber boot, but no water will enter the control box.
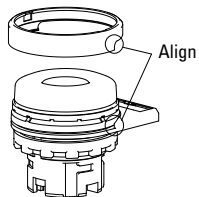
To remove the rubber boot from the flush and extended pushbuttons, gently insert the slotted screwdriver (0.5t x 4w or below) inside a notch on the rubber boot holder and tilt to the direction shown by the arrow ①. To prevent damage, do not apply excessive force to the EU2B when removing the rubber boot.
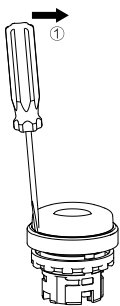
Maintenance and Inspection

EU2B switches should be installed in an appropriate control box.

Maintenance and Inspection Method

Perform daily or periodical maintenance and inspection for items such as damage and temperature rise of the EU2B switches listed in the Maintenance and Inspection table below.

Maintenance and Inspection

Inspection Items	Inspection Method	Inspections	Measures
Enclosure base	Visual	No rusting No damages	Cleaning Rust-resistant treatment
Tightening bolt, screws	Visual, tactile	No loosening No rusting	Tightening Cleaning
Packings	Visual	No cracks No apparent deformation	Replacement
Connecting parts	Visual, tactile	No loosening of screws No dirt on insulation materials	Tightening Cleaning
Temperature rise	Thermometer, tactile	Surface temperature 80°C max.	Investigate the cause

Disposal

Observe laws and regulations set by each country concerning refuse disposal.

Safety Precautions

Use EU2B switches that are applicable for use in hazardous areas (potentially explosive atmosphere where explosive gas or vapor may exist), otherwise explosion or fire hazard may result.

- EU2B switches can be installed only in zones 1 and 2. Do not use in zone 0.
- Turn power off to the EU2B switches before installation, removal, wiring, or maintenance, otherwise explosion, fire hazard, or electric shock may result.
- Do not disassemble, repair, or modify, otherwise damage or accident may result.
- Do not use damaged EU2B switches, otherwise damage or accident may result.
- When connecting external devices, make sure that each cable is connected to the correct terminal, otherwise electric shock, fire hazard, or explosion may result.
- Use wires of a proper size to meet voltage and current requirements. Incorrect wiring may cause abnormal temperature rise and lead to fire hazard and explosion.
- Connect the grounding terminal to a proper ground, otherwise electric shock, fire hazard, or explosion may result.
- Operate the EU2B switches at the rated current and voltage specified in this catalog, otherwise short-circuiting, fire hazard, or explosion may result.
- Stop operation immediately if abnormal operation occurs. Otherwise, a secondary accident may occur.

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