

**30mm Hazardous Location Switches EU2B Series:
30mm Hazardous Location Switches
EC2B Series: Hazardous Location Control Stations**

Key features:

- Pre-configured stations
- Custom-configured stations
- Open control boxes
- Mounting holes for up to 18 control units
- 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
- Corrosion resistant stainless steel enclosure (SUS304)
- Melamine coating
- NPT and Metric reducer options



IECEX is pending approval

Specifications

Standards Compliance

	Switches	Pilot Lights	Meters	Control Boxes
UL		Class I, Zone 1 AEx d e 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 de IIC Gb Ex tb IIIC Db IP65		Ex de IIC T6 Gb Ex tb IIIC T80°C Db (dust)
IECEX		Ex de IIC Gb Ex tb IIIC Db IP65		Ex de IIC T6 Gb Ex tb IIIC T80°C Db (dust)

Certificate Numbers

	UL/c-UL	ATEX	IECEX
E347230		PTB 08 ATEX 1053 U PTB 08 ATEX 1003 U PTB 08 ATEX 1048	IECEX PTB 15.0006U IECEX PTB 15.0007U IECEX PTB 15.0032

Applicable Standards

Control Units	Standards	Mark
	EN60947-5-1	
Pushbuttons Selector Switches Key Selector	UL60079-0 UL60079-1 UL60079-7	
Switches Pilot Lights Meters	CAN/CSA C22.2 No. 60079-0 CAN/CSA C22.2 No. 60079-1 CAN/CSA C22.2 No. 60079-7 EN60079-0 EN60079-1 EN60079-7 EN60079-31	
	IEC60079-0 IEC60079-1 IEC60079-7 IEC60079-31	
Emergency Stop Switches	EN60947-5-5	

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

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/s ² Emergency Stop Switch: 150-m/s ² (without Meter)
	Damage Limits	1000-m/s ²
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/s ² (without Meter)
	Damage Limits	30Hz, amplitude 1.5-mm Emergency Stop Switch: 5 to 500-Hz, amplitude 0.35-mm, acceleration 50-m/s ²

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/hr)
	Selector Switch	250,000 (switching frequency 900 operations/hr)
	Key Selector Switch	250,000 (switching frequency 900 operations/hr)
	Emergency Stop Switch	50,000 (switching frequency 900 operations/hr)
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.

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

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	1.5W
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 input meter	Rated Insulation Voltage (Ui)	150V
	Operation	Moving coil
	Impulse Withstand Voltage (Uimp)	2.5kV
	Input	0 to 10V DC, 4 to 20mA, etc.
	Power Consumption (DC ammeter)	0.15W
	Consumption Current (DC voltmeter)	1mA

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

Control Boxes

Degree of protection	IP65 (IEC60529), Type 4X	Agency Approvals	UL/c-UL, IECEx/ATEX certified	
Housing Material	Stainless steel (SUS304)	Applicable Enclosure	All enclosures except for 6 Control Units x 3 Column	
Standard Coating	Melamine	Mounting Style	Wall Mount	
	1-column: Outside coating 2-, 3-column: Inside and outside coating			
Rated Insulation Voltage	600V (with pilot light or ET2A-8PE screw terminal block: 500V)	Control Unit	Pilot Light	Yes ¹
	Meter AC input: 300V		Pushbutton	Yes
	Meter DC input: 150V		Emergency Pushbutton	Yes
Insulation Resistance	100 MΩ minimum (500V DC megger)		Selector Switch	Yes
	Operating Temperature		-20 to +50°C (no freezing)	Key Selector Switch
Operating Humidity	45 to 85% (no condensation)		Meter	Yes
Altitude	2000m maximum	Reducer Screw	NPT Thread (standard) Metric Thread	
		Degree of Protection	IP65, TYPE4X (UL)	
		Grounding Terminal Screw Material	Stainless Steel	
		Applicable Wire	Stranded Wire (mm ²)	1.5 to 2.5
			Solid Wire (mm ²)	1.2 to 1.6
			Solid/Stranded Wire (AWG)	16-14

1: c-UL explosion protection is different when pilot light is installed.

Switches (Control Units)



Pushbuttons



Emergency Stop Switches



Pilot Lights



Selector Switches



Key Selector Switches



Meters

Pushbuttons

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

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

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

Part Number	Style and Function	Contact Arrangement	Weight (Approx.)	① Button Color
EU2B-YB110④①-D	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-YB101④①-D		1NC		
EU2B-YB111④①-D		1NO-1NC		
EU2B-YB120④①-D		2NO	92g	
EU2B-YB102④①-D		2NC		
EU2B-YB121④①-D		2NO-1NC		
EU2B-YB112④①-D		1NO-2NC	116g	
EU2B-YB130④①-D		3NO		
EU2B-YB103④①-D		3NC		
EU2B-YB210④①-D	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-YB201④①-D		1NC		
EU2B-YB211④①-D		1NO-1NC		
EU2B-YB220④①-D		2NO	94g	
EU2B-YB202④①-D		2NC		
EU2B-YB221④①-D		2NO-1NC		
EU2B-YB212④①-D		1NO-2NC	118g	
EU2B-YB230④①-D		3NO		
EU2B-YB203④①-D		3NC		
EU2B-YB310④①-D	Mushroom Momentary	1NO	76g	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-YB301④①-D		1NC		
EU2B-YB311④①-D		1NO-1NC		
EU2B-YB320④①-D		2NO	101g	
EU2B-YB302④①-D		2NC		
EU2B-YB321④①-D		2NO-1NC		
EU2B-YB312④①-D		1NO-2NC	125g	
EU2B-YB330④①-D		3NO		
EU2B-YB303④①-D		3NC		

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

Pilot Lights

EU2B - YL1 22 F D R

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

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

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)

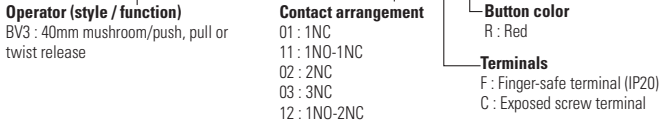
Terminals
 F : Finger-safe terminal (IP20)
 C : Exposed screw terminal

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)

Emergency Stop Switches

EU2B - YBV3 11 F R

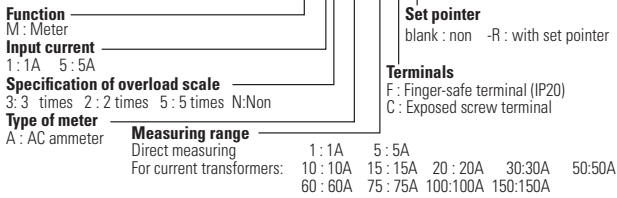


Part Number	Operator	Contact Arrangement	Weight (Approx.)	Button Color
EU2B-YBV301ⓄR	ø40 Mushroom	1NC	96g	R : Red
EU2B-YBV311ⓄR		1NO-1NC	120g	
EU2B-YBV302ⓄR		2NC		
EU2B-YBV312ⓄR		1NO-2NC	144g	
EU2B-YBV303ⓄR		3NC		

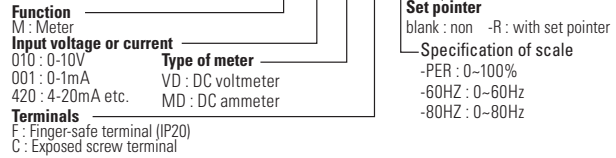
Specify a terminal style in place of Ⓞ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

Meters

EU2B - YM 5 3 A 10 F R



EU2B - YM 010 VD F-PER-R



Input	Part Number	Description	Weight (approx.)
AC input meter (ammeter)	EU2B-YM53A5Ⓞ	Capacity: 5A Expansion scale: x3	270g
	EU2B-YM53A10Ⓞ	Capacity:10/5A Expansion scale: x3	
	EU2B-YM13A10Ⓞ	Capacity:10/1A Expansion scale: x3	
	EU2B-YM53A15Ⓞ	Capacity:15/5A Expansion scale: x3	
	EU2B-YM13A15Ⓞ	Capacity:15/1A Expansion scale: x3	
	EU2B-YM13A20Ⓞ	Capacity:20/1A Expansion scale: x3	
	EU2B-YM53A30Ⓞ	Capacity:30/5A Expansion scale: x3	
	EU2B-YM13A30Ⓞ	Capacity:30/1A Expansion scale: x3	
	EU2B-YM53A50Ⓞ	Capacity:50/5A Expansion scale: x3	
	EU2B-YM53A60Ⓞ	Capacity:60/5A Expansion scale: x3	
	EU2B-YM53A75Ⓞ	Capacity:75/5A Expansion scale: x3	
	EU2B-YM53A100Ⓞ	Capacity:100/5A Expansion scale: x3	
DC input meter	EU2B-YM010VDⓄ-PER	0-10V DC Input Scale: 0 to 100%	
	EU2B-YM010VDⓄ-60HZ	0-10V DC Input Scale: 0 to 60Hz	
	EU2B-YM001MDⓄ-PER	0-1mA DC Input Scale: 0 to 100%	
	EU2B-YM001MDⓄ-60HZ	0-1mA DC Input Scale: 0 to 60Hz	
	EU2B-YM001MDⓄ-80HZ	0-1mA DC Input Scale: 0 to 80Hz	
	EU2B-YM420MDⓄ-PER	4-20mA DC Input Scale: 0 to 100%	
EU2B-YM420MDⓄ-60HZ	4-20mA DC Input Scale: 0 to 60Hz		

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

2 Position Selector Switches

EU2B - YSK 3 11 N1 F A

Operator (style / function)

S: Selector (Knob operator)
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 option codes below

Terminals

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

Circuit Number

Blank: No Designation
N*: See charts

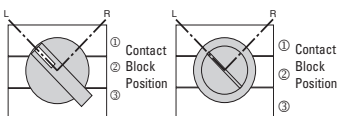
Contact	Mounting	Selector Switches				Key Selector Switches			
		Operator Position		Maintained	Spring Return from Right	Maintained	Spring Return from Right		
		L	R	L R	L R	L R	L R		
NO	1		●	EU2B-YS210④	EU2B-YS2110④	EU2B-YSK210④③	EU2B-YSK2110④③		
				EU2B-YS201④	EU2B-YS2101④	EU2B-YSK201④③	EU2B-YSK2101④③		
NC	3	●		EU2B-YS220④	EU2B-YS2120④	EU2B-YSK220④③	EU2B-YSK2120④③		
			●	EU2B-YS202④	EU2B-YS2102④	EU2B-YSK202④③	EU2B-YSK2102④③		
NO	1		●	EU2B-YS211④	EU2B-YS2111④	EU2B-YSK211④③	EU2B-YSK2111④③		
				EU2B-YS230④	EU2B-YS2130④	EU2B-YSK230④③	EU2B-YSK2130④③		
NC	2	●		EU2B-YS203④	EU2B-YS2103④	EU2B-YSK203④③	EU2B-YSK2103④③		
			●	EU2B-YS221④	EU2B-YS2121④	EU2B-YSK221④③	EU2B-YSK2121④③		
NO	1		●	EU2B-YS212④	EU2B-YS2112④	EU2B-YSK212④③	EU2B-YSK2112④③		
				EU2B-YS2R11④	N/A	EU2B-YSK2R11④③	N/A		

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).

2-position, 2-position/inverse cam

Selector Switch

Key Selector Switch



Contact	Mounting	Operator Position		Selector Switches	Key Selector Switches
		L	R	Maintained	Maintained
		L	R	L R	L R
NO	1		●	EU2B-YS2J10④	EU2B-YSK2J10④③
				EU2B-YS2J01④	EU2B-YSK2J01④③
NC	3	●		EU2B-YS2J20④	EU2B-YSK2J20④③
			●	EU2B-YS2J02④	EU2B-YSK2J02④③
NO	1		●	EU2B-YS2J11④	EU2B-YSK2J11④③
				EU2B-YS2J30④	EU2B-YSK2J30④③
NC	2	●		EU2B-YS2J03④	EU2B-YSK2J03④③
			●	EU2B-YS2J21④	EU2B-YSK2J21④③
NO	1		●	EU2B-YS2J12④	EU2B-YSK2J12④③

③ Key Removable Option Codes (2-position)

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

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

3 Position Selector Switches

		Selector Switches						Key Selector Switches				
Contact	Mounting	Operator Position			Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two Way	Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two Way
NO	1	●			EU2B-YS320④	EU2B-YS3120④	EU2B-YS3220④	EU2B-YS3320④	EU2B-YSK320④③	EU2B-YSK3120④③	EU2B-YSK3220④③	EU2B-YSK3320④③
NO	3			●								
NO	2	●		●	EU2B-YS320N1④	EU2B-YS3120N1④	EU2B-YS3220N1④	EU2B-YS3320N1④	EU2B-YSK320N1④③	EU2B-YSK3120N1④③	EU2B-YSK3220N1④③	EU2B-YSK3320N1④③
NO	3			●								
NC	1			■	EU2B-YS302④	EU2B-YS302④	EU2B-YS3202④	EU2B-YS3302④	EU2B-YSK302④③	EU2B-YSK302④③	EU2B-YSK3202④③	EU2B-YSK3302④③
NC	3			■								
NC	2		●		EU2B-YS302N1④	EU2B-YS3102N1④③	EU2B-YS3202N1④③	EU2B-YS3302N1④	EU2B-YSK302N1④③	EU2B-YSK3102N1④③	EU2B-YSK3202N1④③	EU2B-YSK3302N1④③
NC	3			■								
NO	1	●			EU2B-YS311④	EU2B-YS311④	EU2B-YS3211④	EU2B-YS3311④	EU2B-YSK311④③	EU2B-YSK311④③	EU2B-YSK3211④③	EU2B-YSK3311④③
NC	3			■								
NC	1			■	EU2B-YS311N1④	EU2B-YS311N1④	EU2B-YS3211N1④	EU2B-YS3311N1④	EU2B-YSK311N1④③	EU2B-YSK311N1④③	EU2B-YSK3211N1④③	EU2B-YSK3311N1④③
NO	3			●								
NO	1	●			EU2B-YS311N2④	EU2B-YS311N2④	EU2B-YS3211N2④	EU2B-YS3311N2④	EU2B-YSK311N2④③	EU2B-YSK311N2④③	EU2B-YSK3211N2④③	EU2B-YSK3311N2④③
NC	2		●									
NO	1	●			EU2B-YS311N3④	EU2B-YS311N3①	EU2B-YS3211N3①	EU2B-YS3311N3①	EU2B-YSK311N3④③	EU2B-YSK311N3④③	EU2B-YSK3211N3④③	EU2B-YSK3311N3④③
NO	3			●								
NO	2	●		●	EU2B-YS311N4④	EU2B-YS311N4④	EU2B-YS3211N4④	EU2B-YS3311N4④	EU2B-YSK311N4④③	EU2B-YSK311N4④③	EU2B-YSK3211N4④③	EU2B-YSK3311N4④③
NC	3			■								
NO	1	●			EU2B-YS330④	EU2B-YS3130④	EU2B-YS3230④	EU2B-YS3330④	EU2B-YSK330④③	EU2B-YSK3130④③	EU2B-YSK3230④③	EU2B-YSK3330④③
NO	2	●		●								
NO	3			●								
NC	1			■	EU2B-YS303④	EU2B-YS3103④	EU2B-YS3203④	EU2B-YS3303④	EU2B-YSK303④③	EU2B-YSK3103④③	EU2B-YSK3203④③	EU2B-YSK3303④③
NC	2		●									
NC	3			■								
NO	1	●			EU2B-YS321N1④	EU2B-YS3121N1④	EU2B-YS3221N1④	EU2B-YS3321N1④	EU2B-YSK321N1④③	EU2B-YSK3121N1④③	EU2B-YSK3221N1④③	EU2B-YSK3321N1④③
NC	2		●									
NO	3			●								
NC	1			■	EU2B-YS312N1④	EU2B-YS3112N1④	EU2B-YS3212N1④	EU2B-YS3312N1④	EU2B-YSK312N1④③	EU2B-YSK3112N1④③	EU2B-YSK3212N1④③	EU2B-YSK3312N1④③
NO	2	●		●								
NC	3			■								

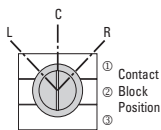
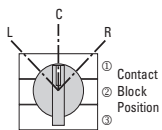
Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal).

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

3-position, 3-position/inverse cam

Selector Switch

Key Selector Switch



③ Key Removable Option Codes (3-Position)





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

Control Boxes

1 Column

1 control unit	2 control units	3 control units	4 control units	5 control units
EC2B-B21B011N2Ⓣ-U	EC2B-B21B021N2Ⓣ-U	EC2B-B31B031N2Ⓣ-U	EC2B-B51B041N3Ⓣ-U	EC2B-B51B051N3Ⓣ-U
				

2 Columns

4 control units	6 control units	8 control units	10 control units
EC2B-B32B042N2Ⓣ-U	EC2B-B32B062N2Ⓣ-U	EC2B-B52B082N3Ⓣ-U	EC2B-B52B102N3Ⓣ-U
			

3 Columns

6 control units	9 control units	12 control units	15 control units	18 control units
EC2B-B33B063N2Ⓣ-U	EC2B-B33B093N2Ⓣ-U	EC2B-B53B123N3Ⓣ-U	EC2B-B53B153N3Ⓣ-U	EC2B-B63B183N3Ⓣ-U
				

Thread Size

Code	Description
M1	M16
M2	M20
M3	M25
M4	M32
M5	M40
N1	NPT1/2
N2	NPT3/4
N3	NPT1
N4	NPT1 1/4

Ⓣ Terminal Block Style

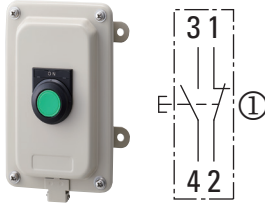
Code	Description
blank	no terminal block
C	Exposed screw terminals
F	Finger-safe terminals

Other thread size options available. To specify different thread sizes, use table at left to select a code to use in place of N2 or N3 in the part number.
Specify terminal block style in place of Ⓣ in part number (standard versions do not contain a terminal block).

Standard Control Stations

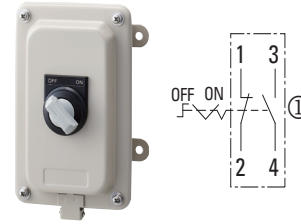
1 Control Unit × 1 Column

1 pushbutton



	EC2B-1102BN2N□1-U	EC2B-1102BN2N□2-U
①	Flush momentary 1NO contact Nameplate ON Button color: black, green, red, and white 1NO-1NC contact	Flush momentary 1NC contact Nameplate OFF Button color: black, green, red, and white

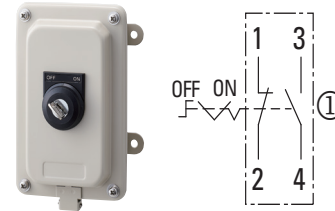
1 selector switch



	EC2B-1106BN2N□1-U	
①	Knob selector 2-position maintained 1NO-1NC contact Name plate OFF-ON	

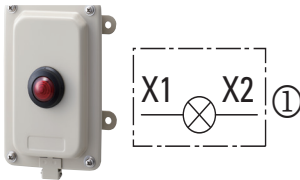
	EC2B-1102BN2N□3-U	EC2B-1102BN2N□4-U
①	Flush momentary 1NO-1NC contact Nameplate ON Button color: black, green, red, and white	Flush momentary 1NO-1NC contact Nameplate OFF Button color: black, green, red, and white

1 key selector switch



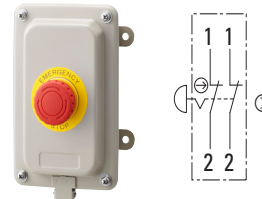
	EC2B-1106BN2N□4-U	
①	Key selector 2-position maintained (removable at all positions) 1NO-1NC contact Nameplate OFF-ON	

1 pilot light



	EC2B-1101BN2□11-U	EC2B-1101BN2□12-U	EC2B-1101BN2□3-U
①	120V AC Illumination color: red	240V AC Illumination color: red	24V AC/DC Illumination color: red

1 e-stop switch

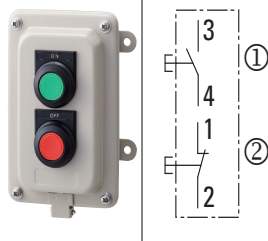


	EC2B-1101BN2□13-U	EC2B-1101BN2□14-U	EC2B-1101BN2□6-U
①	120V AC Illumination color: green	240V AC Illumination color: green	24V AC/DC Illumination color: green

	EC2B-1102BN2N□7-U	
①	Emergency stop switch 2NC contact Nameplate EMERGENCY STOP Button color (red)	

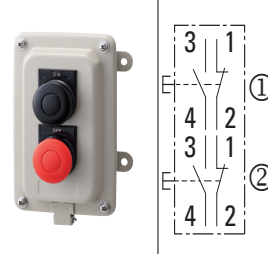
2 Control Units × 1 Column

2 flush pushbuttons



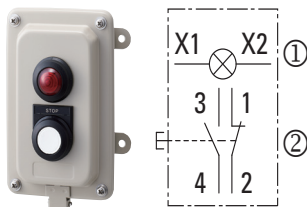
①	Flush momentary 1NO contact, Nameplate ON Button color (black, green, red, white)
②	Flush momentary 1NC contact, Nameplate OFF Button color (black, green, red, white)

2 Mushroom Pushbuttons



①	Mushroom momentary 1NO-1NC contact, Nameplate ON Button color (black)
②	Mushroom momentary 1NO-1NC contact, Nameplate OFF Button color (red)

1 pilot light/1 pushbutton

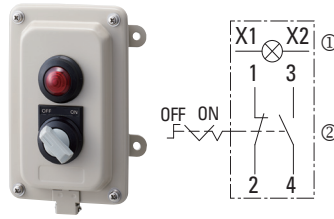




	EC2B-2110BN2N□5-U	EC2B-2110BN2N□6-U	EC2B-2110BN2N□3-U
①	120V AC Illumination color: red	240V AC Illumination color: red	24V AC/DC Illumination color: red
②	Flush momentary 1NO-1NC contact Name plate STOP Button color (black, green, red, white)	Flush momentary 1NO-1NC contact Name plate STOP Button color (black, green, red, white)	Flush momentary 1NO-1NC contact Name plate STOP Button color (black, green, red, white)

Specify terminal style code in place of □ in part no. C (standard screw terminal), F (finger-safe screw terminal)

2 Control Units × 1 Column

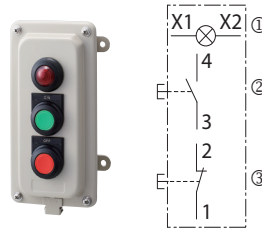
1 pilot light / 1 selector switch



	EC2B-2117BN2N□3-U	EC2B-2117BN2N□4-U
①	120V AC Illumination color: red	240V AC Illumination color: red
②	Knob, 2-position, 1NO-1NC contact Maintained, Name plate OFF-ON 	Knob, 2-position, 1NO-1NC contact Maintained, Name plate OFF-ON 

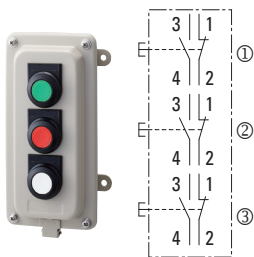
3 Control Units × 1 Column

1 pilot light / 2 pushbuttons



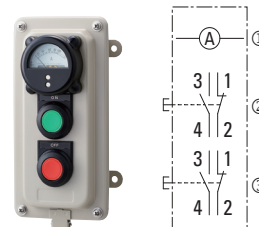
	EC2B-3110BN2N□5-U	EC2B-3110BN2N□6-U	EC2B-3110BN2N□3-U
①	120V AC Illumination color: red	240V AC Illumination color: red	24V AC/DC Illumination color: red
②	Flush momentary 1NO contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO contact, Nameplate ON Button color (black, green, red, white)
③	Flush momentary 1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NC contact, Nameplate OFF Button color (black, green, red, white)

3 pushbuttons



EC2B-3102BN2N□1-U	
①	Flush momentary 1NO-1NC contact, Blank nameplate Button color (black, green, red, white)
②	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)
③	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)

1 meter / 2 pushbuttons

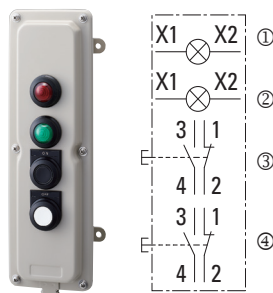


EC2B-3152BN2N□1△-U	
①	Specify input, capacity, and scale
②	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)
③	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)

Specify the meter's capacity and scale in place of △ in the part number

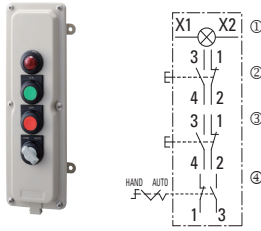
4 Control Units × 1 Column




2 pilot lights / 2 pushbuttons



	EC2B-4110BN3N□5-U	EC2B-4110BN3N□6-U	EC2B-4110BN3N□3-U
①	120V AC, Illumination color: red	240V AC, Illumination color: red	24V AC/DC, Illumination color: red
②	120V AC, Illumination color: green	240V AC, Illumination color: green	24V AC/DC, Illumination color: green
③	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)
④	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)

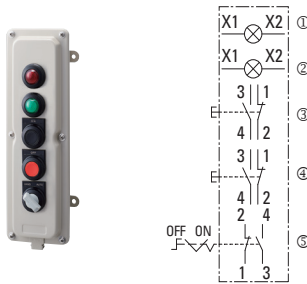
1 pilot light / 2 pushbuttons / 1 selector switch






	EC2B-4113BN3N□5-U	EC2B-4113BN3N□6-U	EC2B-4113BN3N□3-U
①	120V AC, Illumination color: red	240V AC, Illumination color: red	24V AC/DC, Illumination color: red
②	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)
③	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)
④	Knob, 2-position, maintained 1NO-1NC contact Nameplate HAND-AUTO 	Knob, 2-position, maintained 1NO-1NC contact Nameplate HAND-AUTO 	Knob, 2-position, maintained 1NO-1NC contact Nameplate HAND-AUTO 

5 Control Units × 1 Column

2 pilot lights / 2 pushbuttons / 1 selector switch



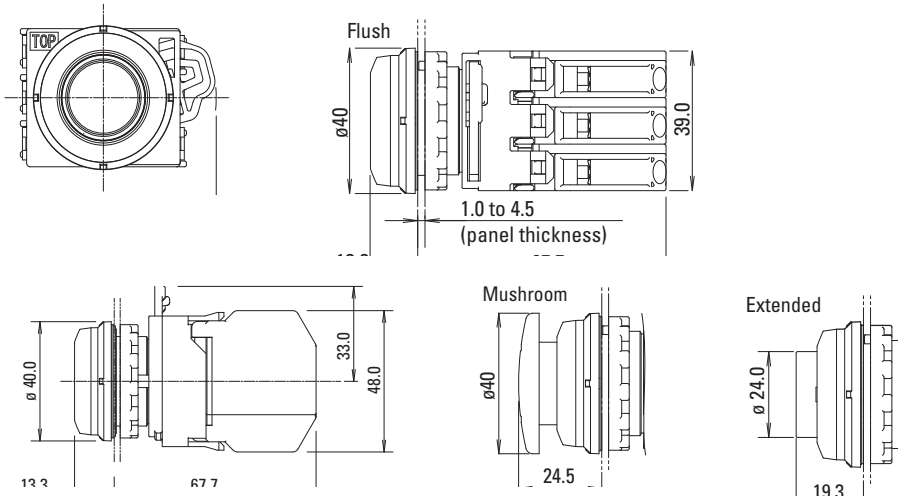
	EC2B-5113BN3N□5-U	EC2B-5113BN3N□6-U	EC2B-5113BN3N□3-U
①	120V AC, Illumination color: red	240V AC, Illumination color: red	24V AC/DC, Illumination color: red
②	120V AC, Illumination color: green	240V AC, Illumination color: green	24V AC/DC, Illumination color: green
③	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, white)
④	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, white)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color black, green, red, white)
⑤	Knob, 2-position, Main- tained, 1NO-1NC contact, Name plate HAND-AUTO 	Knob, 2-position, Main- tained, 1NO-1NC contact Name plate HAND-AUTO 	Knob, 2-position, Main- tained, 1NO-1NC contact Name plate HAND-AUTO 

Specify terminal style code in place of □ in part no. C (standard screw terminal), F (finger-safe screw terminal)

Dimensions

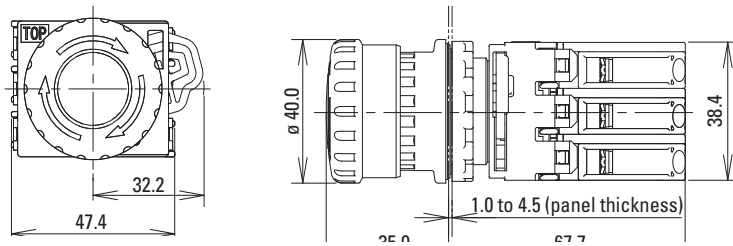
Pushbuttons

Shown with finger-safe contacts



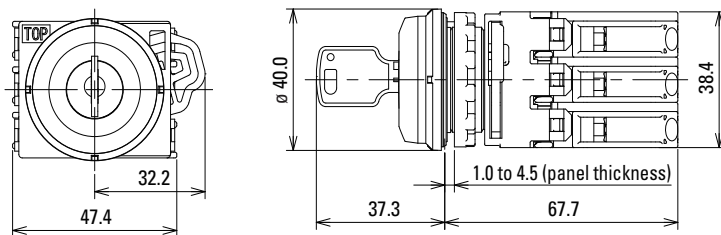
Emergency Stop Switches

Shown with finger-safe contacts



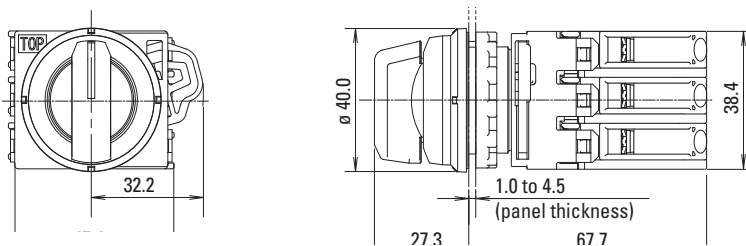
Selector Switches

Shown with finger-safe contacts



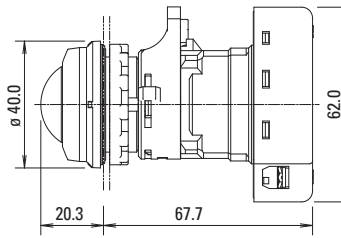
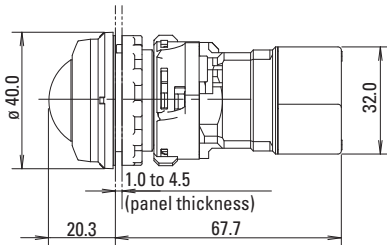
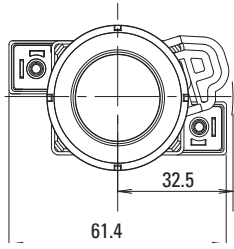
Key Selector Switch

Shown with finger-safe contacts



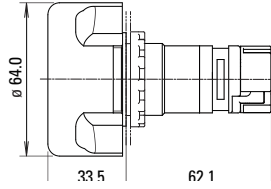
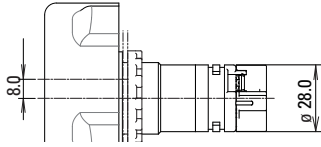
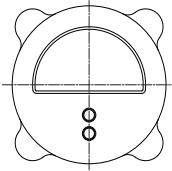
Pilot Lights

Shown with finger-safe contacts

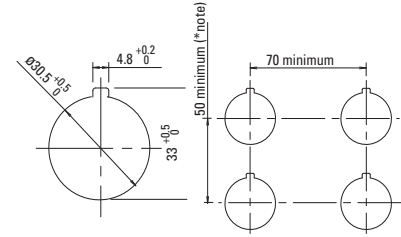


Meters

Shown with finger-safe contacts



Mounting Hole Dimensions

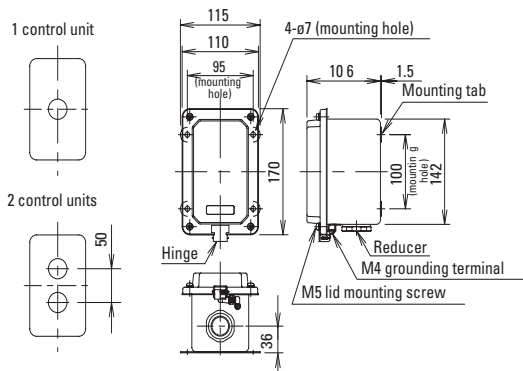


Panel thickness: 1.0 to 4.5 mm.

*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.

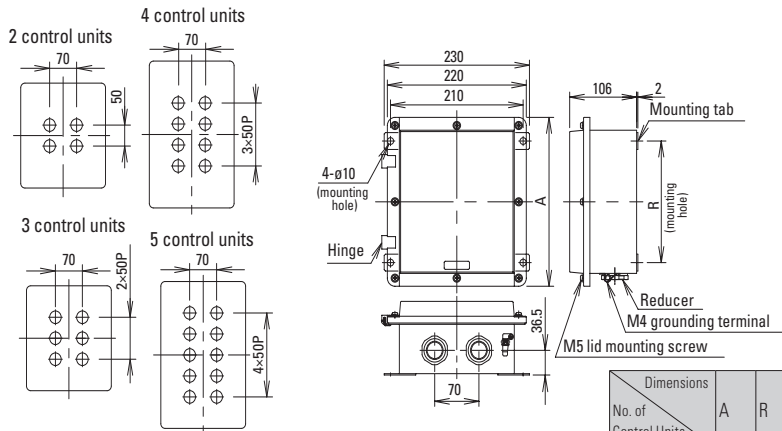
1, 2 control units x 1 column

weight: 1.2kg/1.4kg



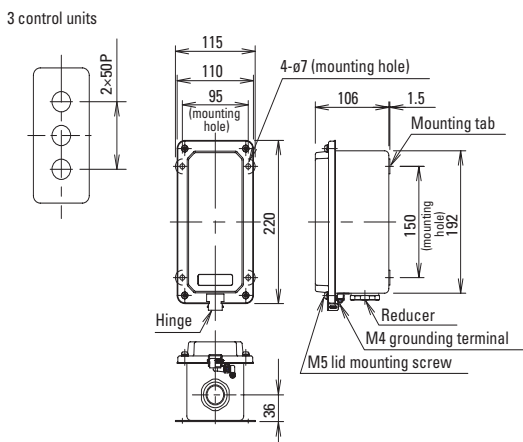
2, 3, 4, 5 control units x 2 columns

weight: 3.8/4.2/4.6/5.0 kg



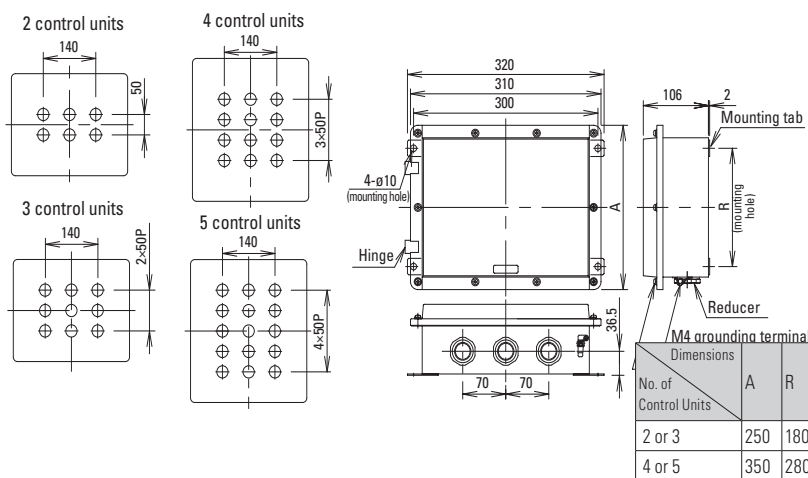
3 control units x 1 column

weight: 1.8kg



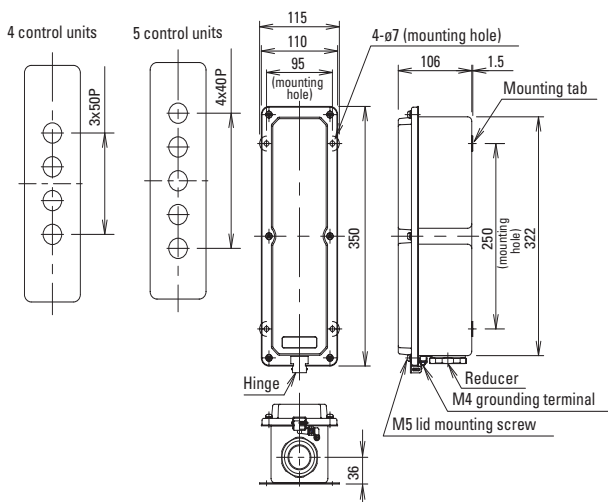
2, 3, 4, 5 control units x 3 columns

weight: 4.8/5.2/6.5/7.1 kg



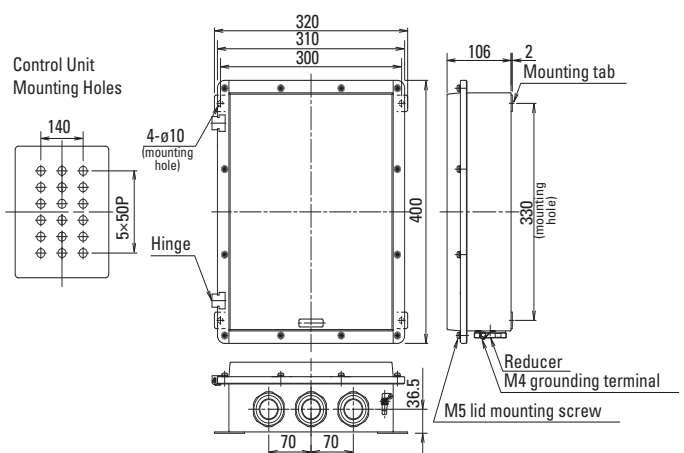
4, 5 control units x 1 column

weight: 2.4kg



6 control units x 3 columns

weight: 8.1kg



Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

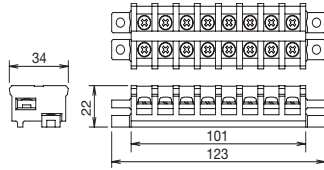
Circuit Breakers

Terminal Blocks

Terminal blocks are not supplied with the standard control boxes (without wiring). When wiring inside the control box is required, specify the wiring circuit. The terminal block type used on the control boxes with wiring depends on the terminal style of the control unit.

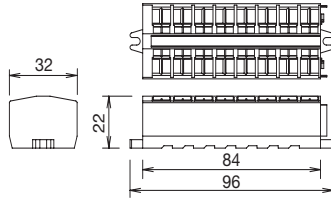
C terminal style

exposed screw terminal
ET2A-8PE
polyamide
IECEX TUR 15.0043U,
TÜV 15 ATEX 7799U

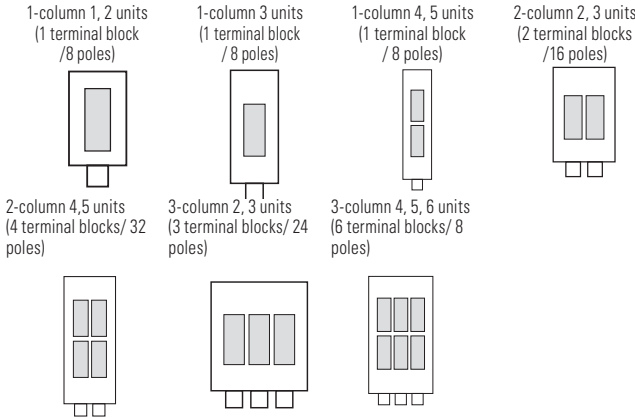


F terminal style

finger-safe screw terminal
IP20 clamp terminal: 264-238 (WAGO)
polyamide
IECEX PTB 04.0003U, PTB 98 ATEX
3129U



The number of terminal blocks, poles, and the installation direction that can be installed on the control box are as follows:



Fittings and Reducers

Reducers installed at the bottom of the control box are as follows: 1 column: 1 reducer, 2 columns: 2 reducers, 3 columns: 3 reducers. Material is nickel-plated brass. Use cable lead-in fittings that are commercially available. See the following table for optional reducers.

Control Box Style	Part No.	Thread Size	Symbol	UL c-UL
1 column (1 to 3 control units) 2, 3 columns (2, 3 control units)	EC9E-H3M16E-UL	M16	M1	○
	EC9E-H3M20E-UL	M20	M2	○
	EC9E-H3M25E-UL	M25	M3	○
	EC9E-H3M32E-UL	M32	M4	○
	EC9E-H3NPT1E-UL	NPT 1/2	N1	○
	EC9E-H3NPT2E-UL	NPT 3/4	N2	●
1, 2, 3 columns (4, 5 control units) 3 columns (6 control units)	EC9E-H3NPT3E-UL	NPT 1	N3	○
	EC9E-H4M25E-UL	M25	M3	○
	EC9E-H4M32E-UL	M32	M4	○
	EC9E-H4M40E-UL	M40	M5	○
	EC9E-H4NPT2E-UL	NPT 3/4	N2	○
	EC9E-H4NPT3E-UL	NPT 1	N3	●
	EC9E-H4NPT4E-UL	NPT 1 1/4	N4	○


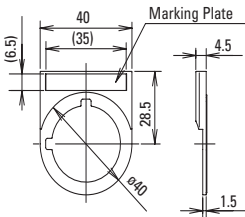
●: Standard reducer ○: non-standard reducer

The reducers in the table above are for replacement use only. All EC2B boxes are supplied with a reducer that has been secured to the housing per UL regulations. If it is necessary to replace a reducer, the user should follow appropriate UL standards for securing to EC2B housing.

Accessories





Nameplates

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

Appearance	Part Number	Dimensions
	EU9Z-NM	

All dimensions in mm


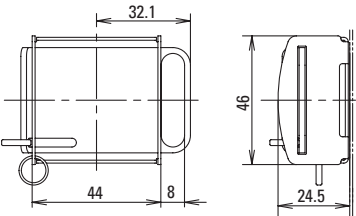
Rubber Boots

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

Padlock Cover

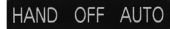



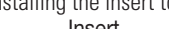


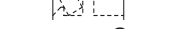
EU2B-YB2 extended pushbutton: to maintain latched status

EU2B-YB1 flush pushbutton/EU2B-YSK key selector switch: to prevent operation

Appearance	Part Number	Dimensions
	EU9Z-PC	

Note: mounted to outside of enclosure with screws, not provided by IDEC
Material: Stainless Steel

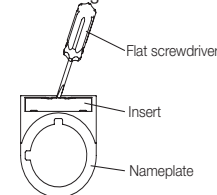
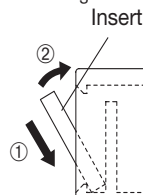
Nameplate Inserts

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


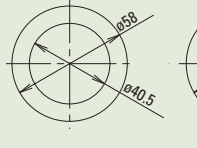

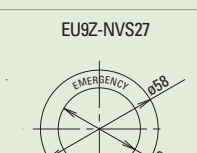
Material: Aluminum

Installing the insert to the nameplate

Removing the insert from the nameplate




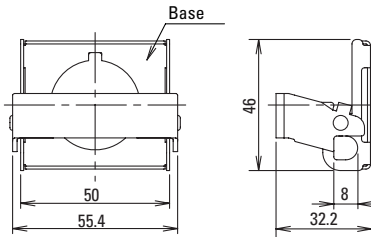
Emergency Stop Switch Nameplate Stickers

Appearance	Legend	Part Number	Dimensions
	Blank	EU9Z-NVS0	
	Emergency Stop	EU9Z-NVS27	

Material: yellow synthetic paper Legend: black

Emergency Stop Switch Padlock Cover


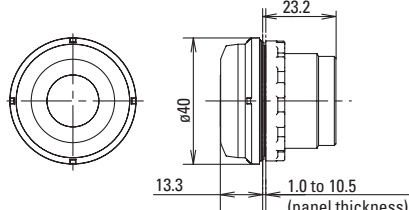
Used with EU2B-YBV emergency stop switch to maintain the switch in the latched status.

Appearance	Part Number	Dimensions
	EU9Z-PCE	


Coating: yellow Material: Stainless Steel

Mounting Hole Plug

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

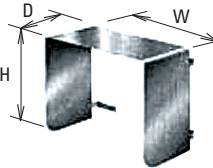
Appearance	Part Number	Dimensions / Usage
	EU9Z-BP	

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)




Control Box Shade

Shape	Part No.	Applicable Control Box	Dimensions (mm)		
			H	W	D
	EC9Z-F2A21M	EC2B-11*B EC2B-21*B	180	160	160
	EC9Z-F2A31M	EC2B-31*B	230	160	160
	EC9Z-F2A51	EC2B-41*B	360	160	160
		EC2B-51*B			
	EC9Z-F2A32	EC2B-22*B	260	420	160
		EC2B-32*B			
	EC9Z-F2A52	EC2B-42*B	360	420	160
		EC2B-52*B			
	EC9Z-F2A33	EC2B-23*B	260	510	160
		EC2B-33*B			
EC9Z-F2A53	EC2B-43*B	360	510	160	
	EC2B-53*B				
EC9Z-F2A63	EC2B-63*B	410	510	160	

Material: stainless steel
Thickness: 1mm
Photo: Part No. EC9Z-F2A52

Protects control units from direct sunlight and rain. The surface of the control box shade is uncoated. Can be installed by tightening to the mounting tabs on the control box.

Buttons

Appearance	Style	Part Number	Button Color Code
	Flush	HW1A-B1Ⓢ	Specify a color code in place of Ⓢ in the Ordering Number. R : red G : green B : black Y : yellow W : white S : blue
	Extended	HW1A-B2Ⓢ	
	ø40 Mushroom	HW1A-B4Ⓢ	

Material: Polyacetal

LED Lamps



Operating Voltage	Current Draw		Part Number	Illumination Color Code	Base
	AC	DC			
6V AC/ DC±10%	8mA	7mA (A, R, W)	LSTD-6Ⓢ	Specify a color code in place of Ⓢ 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
		5.5mA (G, PW, S)			
12V AC/ DC±10%	11mA	10mA	LSTD-1Ⓢ		
24V AC/ DC±10%	11mA	10mA	LSTD-2Ⓢ		

Operating Instructions

Installation Area

Do not install the EC2B control box in an environment where more than IP65 protection degree (more than Type 4X in North America) is required.

Use the EC2B control box under ambient temperature of -20 to $+50^{\circ}\text{C}$. If the control box is exposed to direct sunlight and the surface temperature may rise above 50°C , provide a shade to keep the surface temperature below 50°C .

Installation

Use four M6 bolts for 1-column, four M8 bolts for 2- and 3-column, or other methods with equivalent strength to install the control box. Mounting tab thickness is 1.5mm for 1 column and 2mm for 2, 3, and 4 columns.

If bolts become may loose due to vibration, use spring washers.

If bolt corrosion is anticipated, use anti-corrosion bolts or other countermeasures.

Notes on Emergency Stop Switches

When using the emergency stop switches on safety-related parts of the control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform a risk assessment before operation.

Opening/Closing the Lid

Use a Philips screwdriver to loosen lid mounting screws. While holding the unhinged side, open the lid slowly without exerting excessive force on the hinge.

Before closing the lid, make sure of the following:

No foreign substances are on the packing or joint surfaces.

No displacement of the waterproof packing.

Wires are not caught between the joint surfaces.

Next, close the lid slowly and tighten the screws to a proper torque of 1.6 to 2.4 N-m.

Limitation of the Operating Current

Major heat sources comes from the wiring which is connected to the control box. Therefore, not only the operating current but wiring conditions (size, no. of wires, no. of wire bundles) may cause temperature rise. When wiring, observe the following conditions.

Stranded wire: 1.5 to 2.5 mm² (UL-c-UL certified) / Solid wire: ø1.2 to ø1.6 mm (16 to 14 AWG)

Maximum no. of wires per bundle: 16

Maximum operating current: 10A

When using the control box under an operating environment of 40°C minimum, use a heat resistant cable of 70°C minimum.

Determine the operating current so that the total heat value of 1 wire bundle is below 300 [A²× wires]. Also, when calculating the heat value, take the current fluctuation (10%) into consideration. [calculation example: EC2B-41**B (8 circuit)]

- ① Apply 10A to 1 circuit, 1A to the remaining 7 circuits:

$$\{(10\text{A} \times 1.1)^2 \times 2 \text{ wires}\} + \{(1\text{A} \times 1.1)^2 \times 14 \text{ wires}\} \approx 259 \text{ (can be used because } < 300)$$

- ② Apply 10A to 1 circuit, 2A to the remaining 7 circuits:

$$\{(10\text{A} \times 1.1)^2 \times 2 \text{ wires}\} + \{(2\text{A} \times 1.1)^2 \times 14 \text{ wires}\} \approx 310 \text{ (cannot be used because } > 300)$$

See the table below for the allowable operating current when applying current evenly to each control box.

Allowable Operating Current

Control Box Part No.	Max. No. of Circuits	Max No. of Wires per Bundle (*1) [wires] ([wires]×[bundle])		Allowable Operating Current (reference) (*2)
		Without terminal-blocks	With terminal blocks	
EC2B-11	3	16 (16×1)	8 (8×1)	7A
EC2B-21	6	16 (16×1)	8 (8×1)	5A
EC2B-31	9	16 (16×1)	8 (8×1)	4A
EC2B-41	12	16 (16×1)	16 (16×1)	3A
EC2B-51	15	16 (16×1)	16 (16×1)	3A
EC2B-22	12	32 (16×2)	16 (8×2)	5A
EC2B-32	18	32 (16×2)	16 (8×2)	4A
EC2B-42	24	32 (16×2)	32 (16×2)	3A
EC2B-52	30	32 (16×2)	32 (16×2)	3A
EC2B-23	18	48 (16×3)	24 (8×3)	5A
EC2B-33	27	48 (16×3)	24 (8×3)	4A
EC2B-43	36	48 (16×3)	48 (16×3)	3A
EC2B-53	45	48 (16×3)	48 (16×3)	3A
EC2B-63	54	48 (16×3)	48 (16×3)	3A

*1: Make sure that the number of wires per bundle is a maximum of 16 by reducing the wiring or by jumper wiring. The maximum number of wires per bundle may need to be further reduced depending on the wire size, lead-in fitting, or conduit size.

*2: The allowable current value (reference) when applying current evenly to all circuits of the maximum number of circuits.

Wiring Construction

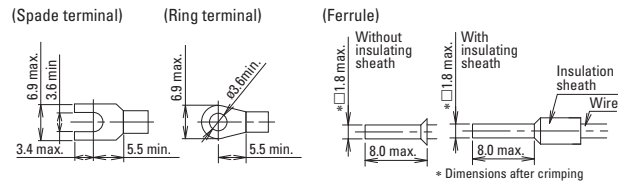
Observe the laws and regulations in each country concerning wiring construction. Use cable wiring or metal conduit wiring for installation in hazardous locations. If foreign objects or water may enter the box, install a sealing fitting near the cable entry of the box and seal the control box using a compound. Standard type control boxes do not contain a terminal block. Wire the control units directly.

Applicable Wires

Stranded wire: 1.25 to 2.5 mm², solid wire: ø1.2 to ø1.6 mm (AWG16 to 14). Do not connect more than 2 wires to the same terminal.

Applicable crimping terminal

Ring and spade terminals cannot be used for EU2B control units with IP20 finger-safe terminals. Ring and spade terminals cannot be used for IP20 clamp type terminal blocks. When connecting two ferrules to an EU2B control unit, use ferrules without insulating sheath.



For screw terminal ET2A-8PE For IP20 clamp terminal (WAGO: 264-238)



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) and ET2A-8PE terminal block (M4): 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 as mentioned below, and insert the wire all the way in.

- EU2B Control units: 8.6 mm maximum
- IP20 crimping terminal: 8 to 9 mm

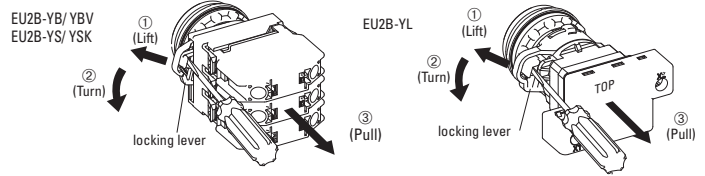
When using stranded wires, make sure that there are no wire whiskers. Make sure that the spade crimping terminals and ferrules are inserted all the way in.

Use insulated ring terminals for the ET2A-8PE terminal block. Use only applicable crimping terminals and do not directly connect stranded wires or solid wires.

Removing and Installing the Contact Unit / Lamp Unit

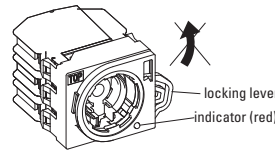
To remove the contact unit or the lamp unit from the operator, pull the protruding yellow part of the locking lever outwards as shown in the figure below using a screwdriver, and turn it to the left. The contact unit or lamp unit can be removed.

Wiring



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 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. Meters have 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 nameplate or padlocking cover and the projection on the TOP marking of the operator are in the same direction.

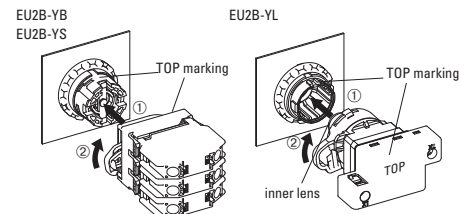
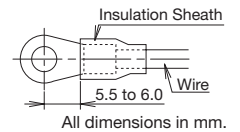
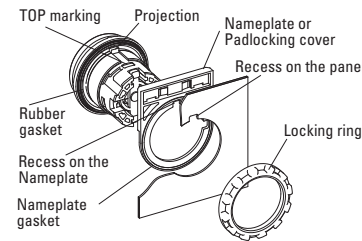
Note: The locking ring for emergency stop switches and meter is metallic. The meter can't mount the nameplate or padlocking cover.

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.

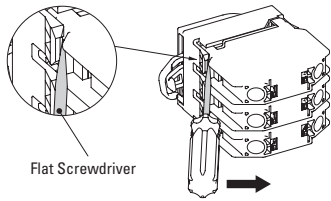
When installing the lamp unit, check that the inner lens is not loose.

The contact block adapters for emergency stop switches cannot be used for pushbuttons, selector, or 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.

Protective Grounding

Protective grounding must be performed according to the installation environment and rating requirements. Observe laws and regulations set by each country. Connect the M4 grounding terminal of the EC2B control box to a proper ground (grounding resistance 10Ω maximum). When operating the EC2B control box by connecting to circuits of 300V or below, the grounding resistance must be 100Ω maximum.

When using cables, connect one of the cable cores to the grounding terminal in the enclosure.

If the grounding terminal in the enclosure cannot be used, use the M4 grounding terminal on the outside of the enclosure.

Recommended tightening torque: M4: 1.0 to 1.3 Nm, M6: 3.9 to 5.4 Nm
For grounding, use appropriate wires (size, material, insulation) that can tolerate the expected maximum grounding current. Be sure to protect the grounding wire with protection, such as metal conduit, from external damage.

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.

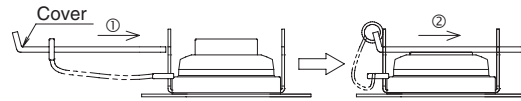
Installing EU9Z-PC Padlock Cover

(Flush/extended pushbutton/key selector switch)

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

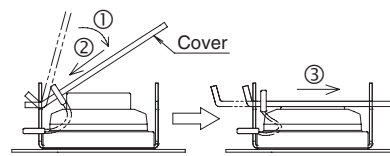
Remove the cover in the reverse step of installing the cover. Do not install or remove the cover forcefully, or it will cause failure.

[Installation A]



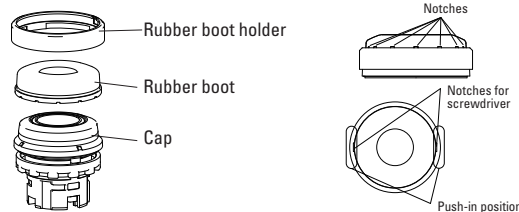
[Installation B]

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 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.

Observe laws and regulations set by each country. Do not open the lid when inspecting the EC2B while it is energized. Never disassemble the control box. Do not use tools that cause sparks during maintenance and inspection. When using measuring devices, use explosion-protected types. When the EC2B needs to be disassembled or assembled for maintenance or repair, contact IDEC.

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

EU2B Control Units

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.

Use explosion-proof electrical equipment 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.

EC2B Control Boxes

EC2B control boxes can be installed only in zones 1 and 2. Do not use in zone 0. In North America, the EC2B can be installed in Division 2 areas, but cannot be installed in Division 1 areas.

Turn power off to the EC2B control box before installation, removal, wiring, or maintenance, otherwise explosion, fire hazard, or electric shock may result.

Special skills and knowledge of explosion protection, electric system installation, and relevant laws/regulations are required to transport, install, wire, operate, repair, and inspect the EC2B control box. People without such expertise must not use the EC2B control box, otherwise damage or accident may result.

Do not modify the EC2B, otherwise damage or accident may result.

Do not use a damaged EC2B control box, 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.

Do not sit on or hang from the EC2B control box, otherwise damage, personal injury, or accident may result.

Do not open the lid of the EC2B control box when it is energized, otherwise electric shock, fire hazard, or explosion may result.

Operate the EC2B control box at the rated current and voltage specified in this catalog, otherwise short-circuiting, fire hazard, or explosion may result.

When measuring the insulation resistance of the EC2B control box, make sure that potentially explosive atmosphere of explosive gas or vapor does not exist in the vicinity, otherwise explosion may result. Also, do not touch the terminals without paying attention, otherwise electric shock will result.

Do not place any obstacles in front of the nameplate.

Do not remove the nameplate.

When opening the lid for wiring, maintenance or inspection, make sure that substances such as dust, concrete powder, or metal powder do not enter inside the box, otherwise contact failure or insulation failure may result.

Do not drop the EC2B control box during transportation.

Be sure to open the carton the right way up, otherwise damage or personal injury may result.

Check that the product is what you have ordered. Using an incorrect model might result in malfunction or accident.

Stop operation immediately if abnormal operation occurs. Otherwise, a secondary accident may occur.

The surface temperature of the EC2B control box may become extremely hot during operation. Before maintenance or inspection of the EC2B, be sure to wear gloves to prevent burning your hand.