

APEM

ilot Lights

Control Boxes Emergency

Stop Switches Enabling

Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
LB

Flush Bezel

UP

LB Series Flush Silhouette Switches Slim 2mm-thick bezels for stylish panels. LBW Series Flush Silhouette Switches Smart appearance with large surface for secure operation. LB Series LBW Series Bezel Bezel 2/**□22m**m 26/□26mm Control Unit ø16mm LB Series **Miniature Switches and Pilot Lights** Short body for space-saving installation. Short Body 27.9 Depth of only 27.9mm behind panel. Reduces the size of machines and control mm 45mr panels.

Flush Silhouette & Control Unit

Stylish and Functional

wide range of applications.

Hush Silhouette

Projects only 2mm from the panel

surface. For sleek and refined style.

Flush Silhouette

IDEC's extensive range of LB/LBW series switches can be used for a

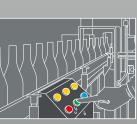
Removable Contact Block /Single Board Mounting Removable contacts enable easy wiring / Single board mounting for space-saving installation.



Separate & One Board

Waterproof Degree of protection: IP65

Waterproof



UP series



UP series has the same depth as LB/LBW series. Mounts on the same panel. (Flush bezel: 34.9mm, standard bezel: 27.9mm)



Flush bezel projects only 2 mm from front of panel.

Contact F	Ratings	(See B-120 fc	or approval	ratings)
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Gold Contact (switch base: blue)

Rated Insulation Voltage	250V		
Rated Thermal Current	3	A	
Rated Operating Voltage		30V DC	125V AC
Rated Operating Current (electrical life: 100,000 operations)	Resistive Load	0.1A	0.1A
Contact Material	Gold-cla	ad silver	

• Minimum applicable load (reference value): 5V AC/DC, 1 mA Applicable range is subject to the operating conditions and load.

· See electrical life in Specifications.

Silver Contact (switch base: gray)

Rated Insulation Voltage					250V		
Rated Oper	ating Voltage			30V	125V	250V	
	Electrical AC		Resistive load		5A	5A	
	Life	50/60Hz	Inductive load		3A	1.5A	
Data	50,000	50,000	DO	Resistive load	5A	1.1A	
Rated operations	operations	DC	Inductive load	2A	0.4A	—	
Operating Current	100.000	AC	Resistive load	—	5A	ЗA	
ourroint		50/60Hz	Inductive load	—	3A	1.5A	
		DC	Resistive load	ЗA	0.6A	_	
operations		DC	Inductive load	1A	0.22A	—	
Rated Thermal Current				5A			
Contact Material				Silver			

• AC inductive load: PF=0.6 to 0.7 DC inductive load: L/R=7 ms max.

LED Ratings

Rated Voltage	5V DC	12V AC/DC	24V AC/DC	
Voltage Range	5V DC±5%	12V AC/DC±10%	24V AC/DC ±10%	
LED Part No.	LB9Z-LED5@	LB9Z-LED1@	LB9Z-LED22	
Current Draw	A, R: 18 mA G, S: 6 mA PW: 5 mA			
Voltage Marking	Marked on the side of the LED unit			
LED Life (reference value)	Approx. 30,000 hours [until the brightness reduces to 50% of the initial value when lit at the rated voltage (direct current) under 25°C environment.]			
	A, G, R, PW, S			
Internal Circuit			LED Chip 	

• 2 (color code): A (amber), G (green), PW (pure white), R (red), S (blue)

• Use the pure white (PW) module for yellow illumination.

• LED lamp contains a current-limiting resistor.



-25 to +60°C (no freezing)

-30 to +80°C (no freezing) 45 to 85% RH (no condensation)

Illuminated units: -25 to +55°C

50 mΩ maximum (initial value)

Between live part and ground:

2,000V AC, 1 minute

2,000V AC, 1 minute

1,000V AC, 1 minute

2,000V AC, 1 minute Operating extremes/Damage limits:

Damage limits:

Selector switches:

Selector switches: Key selector switches:

IP65 (IEC 60529)

PC board terminal

14g (LB8L-M1T24) 13g (LB8P-1T04) 13g (LB8B-M1T2)

15g (LB8S-2T2) 27g (LB8K-2ST2A) 15g (LB8GL-M1T24) 14g (LB8GB-M1T2)

Solder/tab terminal #110

Key selector switches:

Momentary: 50,000 / 100,000 (*1)

Maintained: 50,000 / 100,000 (*2)

Momentary:

Maintained:

Between live part and ground:

5 to 55 Hz, amplitude 0.5 mm Operating extremes: 100 m/s²

100 MΩ minimum (500V DC megger)

Between terminals of different poles:

Between terminals of the same poles:

1,000 m/s²

2,000,000

250.000

250.000

250,000

50,000 / 100,000 (*2)

50,000 / 100,000 (*2)

Switches & Pilot Lights APEM Control Boxes Emergency Stop Switches Enabling Switches

Safety Products Explosion Proof Terminal Blocks

Relays & Sockets
Circuit Protectors
PIOLECIOIS
Power Supplies
LED Illumination
Controllers
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Interfaces
Sensors

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Flush Silhouette
ø16
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CW
LW-F
LB
LBW
UP

*1: Switching frequency 1,800 operations/h.

*2: Switching frequency 1,200 operations/h.

Specifications

Operating Temperature

Storage Temperature

Operating Humidity

Contact Resistance

Dielectric

Strength

Insulation Resistance

Switch Unit

Illumination

Unit

Vibration Resistance

Shock Resistance

Mechanical Life

Electrical Life

Terminal Style

Weight (approx.)

(minimum operations)

(minimum operations)

Degree of Protection

Flush Bezel

Controllers

Operator

Interfaces

Sensors

AUTO-ID

ø16

ø22

ø30 Miniature Pilot Lights

> CW LW-F

UP Flush Bezel

nes & Pilot Lights	Illuminat Solder/Tab Termir	ed Pushbuttons nal				Package Quantity:1
Lights	Part No. / Shape	LB①L-②1T③		0		
APEM			Round /	Black Bezel Square /	Black Bezel Rectangular / Black Be	zel
Switches & Pilot Lights						
Control Boxes		Round / Metallic Bezel	Square / Metallic Bezel	Rectangular / Metallic Bezel	Round with Guard Squ	are with Guard Rectangular with Guard
Emergency Stop Switches	① Shape	^② Operation	3 Contact	④ LED Operating Voltage	Part No.	* Illumination Color Code
Enabling Switches		Manaantanu	Gold/SPDT		LB@L-M1T14*	
Safety Products	Black bezel	Momentary	Gold/DPDT	24V AC/DC	LB①L-M1T24*	
	DIACK DEZEI	Maintained	Gold/SPDT	24V AC/DC	LB ^① L-A1T14*	Specify the color code in place of * in
Explosion Proof		Maintaineu	Gold/DPDT	241 10/00	LB①L-A1T24*	the Part No.
Terminal Blocks		Momentary	Gold/SPDT	24V AC/DC	LB①L-M1T14*	
Deleve & Or electe	Metallic bezel		Gold/DPDT	241710/00	LB①L-M1T24*	A: amber G: green
Relays & Sockets	Wietanie Bezei	Maintained	Gold/SPDT	SPDT 24V AC/DC	LB ^① L-A1T14*	– PW: pure white
Circuit Protectors		Maintaineu	Gold/DPDT	247 70/00	LB①L-A1T24*	R: red
		Momentary	Gold/SPDT	24V AC/DC	LB①L-M1T14*	S: blue
Power Supplies	Guard Type	momontary	Gold/DPDT		LB ^① L-M1T24*	Y: yellow
LED Illumination		Maintained	Gold/SPDT		LB ^① L-A1T14*	

Illuminated pushbuttons contain an LED unit. For details on LED units, see B-130.

• The guard opens 180 degrees spring-return.

Maintained

• Illuminated pushbuttons can be used with legend markings. Engraving can be done on a marking plate which is placed in the lens, or a clear film can be printed and placed in the lens. See B-133 for details on the marking plate and film.

24V AC/DC

• PC board terminals available for gold contacts. Silver contacts also available. To specify, see Part Number Development below.

Gold/DPDT

• 5V DC and 12V AC/DC LED operating voltages also available.

• Other bezel sizes available (LBW series). For details, see B-093.

Part Number Development

LB1L-21T345*

-	 Shape 					
_	Code	Shape				
	6	Round / Black Bezel				
-	7	Square / Black Bezel				
_	8	Rectangular / Black Bezel				
	6M	Round / Metallic Bezel				
	7M	Square / Metallic Bezel				
-	8M	Rectangular / Metallic Bezel				
_	6G	Round with Guard				
	7G	Square with Guard				
	8G	Rectangular with Guard				

2 Operation

Code	Operation
Α	Maintained
М	Momentary

③ Contacts			
Code	Contact		
1	Gold/SPDT		
2	Gold/DPDT		
5	Silver/SPDT		
6	Silver/DPDT		

LB1L-A1T24*

④ LED Operating Voltage

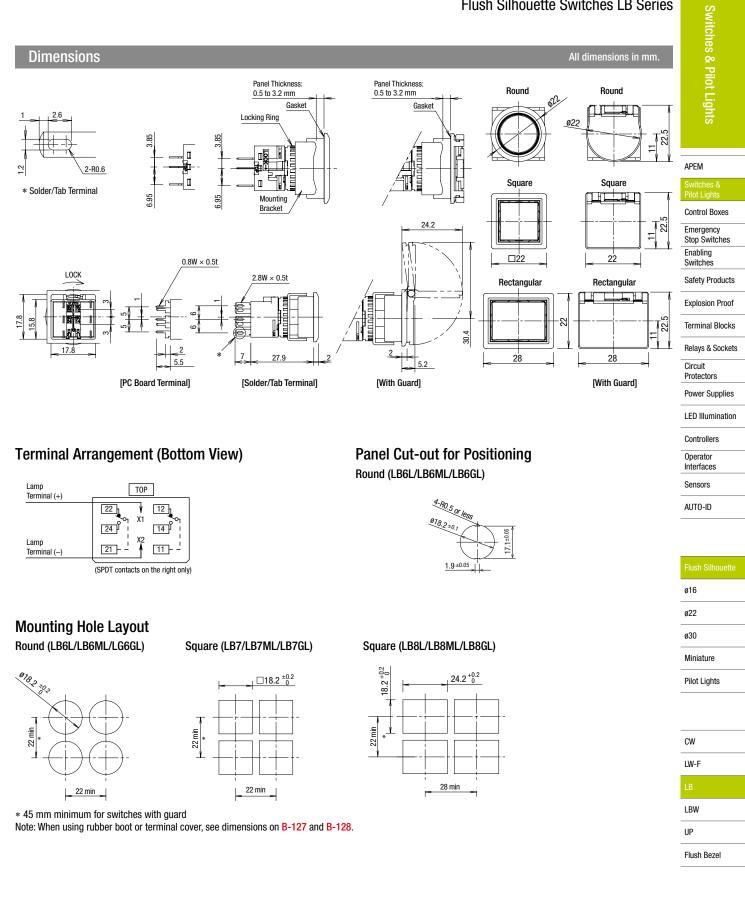
Code	Rated Operating Voltage			
1	5V DC			
3	12V AC/DC			
4	24V AC/DC			

5 Others LBW

-	Code	Specification	Part No. Example
-	Blank	Solder/Tab Terminal	—
	V	PC Board Terminal (Gold Contact Only)	LB6L-M1T14 <u>V</u> *

• Specify the color code in place of * in the table above.

All dimensions in mm.



• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.

Relays & Sockets

LED Illumination

Controllers

Operator Interfaces Sensors

AUTO-ID

Circuit Protectors

ches & Pilot Lights	Pilot Lights											
Pilot	Solder/Tab Terminal Package Quantity:1											
Lights	Part No. / Shape LB①P-②T0③④*											
APEM		N	T	r i	0	I	I		1			
Switches & Pilot Lights		Round / Black Bezel	Square / Black Bezel	Rectangular / Black Bezel	Round / Metallic Bezel	Dome / Black Bezel	Square / Metallic Bezel	Rectangular / Metallic Bezel	Dome / Metallic Bezel			
Control Boxes	© Lens Shape	1) Shape	3 LED Opera		Part No.		* Illuminat	ion Color Codo				
Emergency Stop Switches		Voltage			rait No.	* Illumination Color Code						
Enabling Switches	Thick	Black Bezel	24V AC/DC	LB①P-1	LB①P-1T04*		Specify the color code in place of $*$ in the Part No.					
Safety Products	Flush	Motollio Dozol		LB ^① P-1	T04.	A such as						
Explosion Proof		Metallic Bezel 24V AC/DC			104*	A: amber G: green						
Terminal Blocks		Black Bezel	24V AC/DC	LB6P-21	Г 04*	PW: pure w R: red S: blue						
Relave & Sockets	Dome											

• Pilot lights contain an LED unit. For maintenance LED units see B-130.

Power Supplies • Legends and symbols can be engraved on a marking plate or film to be inserted under the lens by users for labelling purposes. See B-133 for details.

LB6MP-2T04*

• PC board terminals available. To specify, see Part Number Development below.

24V AC/DC

• 5V DC and 12V AC/DC LED operating voltages also available.

Metallic Bezel

• Other bezel sizes available (LBW series). For details, see B-095.

Part Number Development

LB1P-2T034*

(1) Shape

	Code	Shape					
uette	6	Round / Black Bezel					
ø16	7	Square / Black Bezel					
-00	8	Rectangular / Black Bezel					
ø22	6M	Round / Metallic Bezel					
ø30	7M	Square / Metallic Bezel					
	8M	Rectangular / Metallic Bezel					

Miniature • Round only for dome.

Pilot Lights

CW

LW-F

LBW UP

④ Others							
Code	Specification	Part No. Example					
Blank	Solder/Tab Terminal	—					
V	PC Board Terminal	LB6P-1T04V*					

• Specify the color code in place of * in the table above.

2 Lens Shape

S Lono Onapo						
Code	Lens Shape					
1	Flush					
2	Dome					

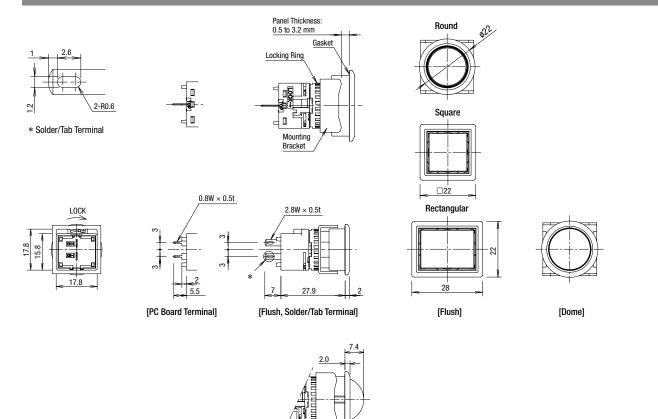
3 LED Operating Voltage

Y: yellow

S == 2 operaning reinage								
Code	Rated Operating Voltage							
1	5V DC							
3	12V AC/DC							
4	24V AC/DC							

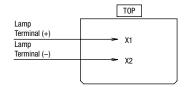
All dimensions in mm.

Dimensions



[Dome]

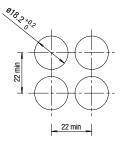
Terminal Arrangement (Bottom View)

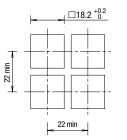


Mounting Hole Layout

Round (LB6P/LB6MP)

Square (LB7P/LB7MP)



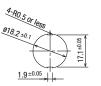


Note: When using rubber boot or terminal cover, see dimensions on B-127 and B-128.

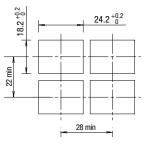
• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.

Panel Cut-out for Positioning Round (LB6P/LB6MP)



Square (LB8P/LB8MP)



Explosion Proof Terminal Blocks Relays & Sockets Circuit Protectors

Safety Products

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors AUTO-ID

ø16 ø22 ø30 Miniature Pilot Lights

CW LW-F LBW UP Flush Bezel

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APEM

Control Boxes Emergency Stop Switches Enabling Switches

che										
% Sé	Pushbut	tons								
Pilo	Solder/Tab Terminal Package Quantity:1									
ches & Pilot Lights	Part No. / Shape	LB1B-21	T34*	Round / Black Be	zel Square / Black E	Bezel Rectangular / Blac	k Bezel			
APEM					and the second se			and the second s		
Switches & Pilot Lights										
Control Boxes		Round / Metallic B	ezel Square / Me	tallic Bezel Recta	angular / Metallic Bezel	Round with Guard	Square with Guard	Rectangular with Guard		
Emergency Stop Switches	1 Shape	Button Style	② Operation	3 Contact		Part No. Silver Contact		Color Code		
Enabling				SPDT	Gold Contact LB1B-M1T1*	LB ^① B-M1T5*	D black			
Switches			Momentary	DPDT	LB ^① B-M1T2*	LB@B-M1T6*	B: black G: green			
Safety Products		Dutter		3PDT	LB ^① B-M1T3*	LB ^① B-M1T7*	R: red			
Explosion Proof		Button		SPDT	LB ^① B-A1T1*	LB ^① B-A1T5*	S: blue			
			Maintained	DPDT	LB1B-A1T2*	LB10B-A1T6*	W: white			
Terminal Blocks	Black bezel			3PDT	LB10B-A1T3*	LB10B-A1T7*	Y: yellow			
Relays & Sockets	Diddk Dozoi	Lens	Momentary Maintained	SPDT	LB1B-M1T1L*	LB1B-M1T5L*	A: amber			
				DPDT	LB1B-M1T2L*	LB1B-M1T6L*	G: green			
Circuit Protectors				3PDT	LB1B-M1T3L*	LB ^① B-M1T7L*	R: red			
				SPDT	LB1B-A1T1L*	LB@B-A1T5L*	S: blue W: white			
Power Supplies				DPDT	LB [®] B-A1T2L*	LB@B-A1T6L*	Y: vellow			
LED Illumination				3PDT	LB ^① B-A1T3L*	LB@B-A1T7L*				
			Momontony	SPDT DPDT	LB1B-M1T1* LB1B-M1T2*	LB1B-M1T5* LB1B-M1T6*	B: black			
Controllers			Momentary	3PDT	LBUB-MIT2*	LBUB-M1T7*	G: green R: red			
Operator		Button		SPDT	LB0B-A1T1*	LB@B-A1T5*	R: red S: blue			
Interfaces			Maintained	DPDT	LB ^① B-A1T2*	LB@B-A1T6*	W: white			
Sensors			Maintainea	3PDT	LB ^① B-A1T3*	LB@B-A1T7*	Y: yellow			
	Metallic bezel			SPDT	LB ^① B-M1T1L*	LB1B-M1T5L*	A: amber			
AUTO-ID			Momentary	DPDT	LB ^① B-M1T2L*	LB1B-M1T6L*	G: green			
		1		3PDT	LB1B-M1T3L*	LB1B-M1T7L*	R: red			
		Lens		SPDT	LB1B-A1T1L*	LB1B-A1T5L*	S: blue			
			Maintained	DPDT	LB1B-A1T2L*	LB1B-A1T6L*	W: white			
Flush Silhouette				3PDT	LB ^① B-A1T3L*	LB1B-A1T7L*	Y: yellow			
				SPDT	LB1B-M1T1*	LB1B-M1T5*	B: black			
ø16			Momentary	DPDT	LB1B-M1T2*	LB10B-M1T6*	G: green			
ø22		Button		3PDT	LB1B-M1T3*	LB10B-M1T7*	R: red			
				SPDT	LB [®] B-A1T1*	LB@B-A1T5*	S: blue			
ø30			Maintained	DPDT	LB1B-A1T2*	LB1B-A1T6*	W: white Y: yellow			
Ministur-	Guard Type			3PDT SPDT	LB1B-A1T3* LB1B-M1T1L*	LB1B-A1T7* LB1B-M1T5L*				
Miniature			Momentary	DPDT	LB0B-M1T2L*	LB()B-M1T6L*	A: amber			
Pilot Lights			womentary	3PDT	LB ^① B-M1T3L*	LB@B-M1T7L*	G: green R: red			
		Lens		SPDT	LB ^① B-A1T1L*	LB@B-A1T5L*	S: blue			
			Maintained	DPDT	LB ^① B-A1T2L*	LB@B-A1T6L*	W: white			
				3PDT	LB ^① B-A1T3L*	LB1B-A1T7L*	Y: yellow			
		•								

• The guard opens 180 degrees spring-return.

• Pushbuttons can be used with legend markings. Engraving can be done on a marking plate which is placed in the lens, or a clear film can be printed and placed in LW-F the lens. See B-133 for details on the marking plate and film.

• Black is available for lens. Black lens consists of a transparent lens and a black marking plate. To specify, see Part Number Development below.

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

• Other bezel sizes available (LBW series). For details, see B-097.

Flush Bezel

CW

LBW

UP

Part Number Development

LB1B-21T34*

① Shape					
Code	Shape				
6	Round / Black Bezel				
7	Square / Black Bezel				
8	Rectangular / Black Bezel				
6M	Round / Metallic Bezel				
7M	Square / Metallic Bezel				
8M	Rectangular / Metallic Bezel				
6G	Round with Guard				
7G	Square with Guard				
8G	Rectangular with Guard				

② Operation			③ Contacts					
Code Operation			Code	Contact	Code	Contact		
Α	A Maintained		1	Gold/SPDT	5	Silver/SPDT		
M Momentary			2	Gold/DPDT	6	Silver/DPDT		
			3	Gold/3PDT	7	Silver/3PDT		

④ Others

Code	Specification	Part No. Example
Blank	Solder/Tab Terminal	—
В	Black Translucent Lens (Lens Only)	LB6B-M1T1L <u>B</u>
V	PC Board Terminal (Gold Contact Only)	LB6B-M1T1 <u>V</u> *

For more information, visit http://asia.idec.com

Round

All dimensions in mm.

Round

5

3

- 60







Emergency Stop Switches Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets Circuit

Protectors Power Supplies

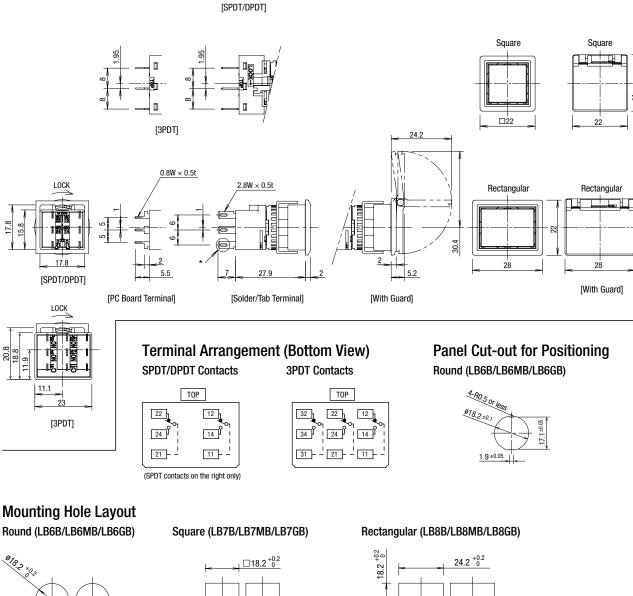
LED Illumination

Controllers Operator

Interfaces Sensors AUTO-ID

ø16 ø22 ø30 Miniature Pilot Lights

CW
LW-F
LB
LBW
UP
Flush Bezel



Panel Thickness:

Gasket

0.5 to 3.2 mm

Locking Ring

<u>- 5</u>

Π

Mounting Bracket

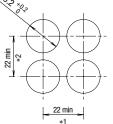
3.85

6.95

Π

Panel Thickness:

0.5 to 3.2 mm Gasket



Dimensions

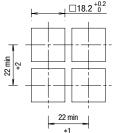
* Solder/Tab Terminal

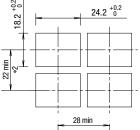
2-R0.6

2

17.8

20.





*1: 23.2 mm minimum for 3PDT

*2: 45 mm minimum for switches with guard

Note: When using rubber boot or terminal cover, see dimensions on B-127 and B-128.

• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.



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APEM Switches & Pilot Lights Control Boxes Emergency Stop Switches Enabling Switches Safety Products	Selector Solder/Tab Termin Part No. / Shape	Switches hal LB ① S - ② (Knob Op Gound / Blac Lever Op	erator k Bezel Square / Black Bezel	Rectangular / R Square / Metal		Metallic Bezel	Square / Metallic Bezel	Package Quantity:1
Explosion Proof	1 Shape		② Operator Position		③ Contact	Part N Gold Contact		
						1		Silver Contact
Terminal Blocks		90° 2-position	Maintained	LR	SPDT	LB [®] S-2T1		LB ^① S-2T5
Relays & Sockets					DPDT	LB①S	-2T2	LB ^① S-2T6
Circuit					3PDT	LB①S	-2T3	LB ^① S-2T7
Protectors	Black bezel		Maintained	ĻĊŖ	DPDT	LB①S	-3T2	LB1)S-3T6
Power Supplies		45° 3-position		\bigvee	3PDT	LB ^① S-3T3		LB1)S-3T7
LED Illumination			Spring return two-way	L-C-R	DPDT	LB1)S-33T2		LB ^① S-33T6
Controllers				\bigvee	3PDT	LB ^① S-33T3		LB ^① S-33T7
Operator			Maintained		SPDT	LB①S	-2T1	LB ^① S-2T5
Interfaces Sensors		90° 2-position	L F		DPDT LBC		-2T2	LB ^① S-2T6
					3PDT	LB ^① S-2T3		LB ^① S-2T7
AUTO-ID	Metallic bezel		Maintained	LCR	DPDT	LB①S	-3T2	LB ^① S-3T6
		45°		\bigvee	3PDT	LB①S	-3T3	LB ^① S-3T7
		3-position	Spring return two-way	L_C_R	DPDT	LB①S	-33T2	LB ^① S-33T6
Flush Silhouette				\vee	3PDT	LB①S	-33T3	LB ^① S-33T7
ø16		•	cify, see Part Number Developn					
	 PC hoard terminals 	available for cold	contacts. To specify see Part N	umher Develo	nment helow			

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

ø22 • 2-position spring return from right, 3-position spring return from right, and 3-position spring return from left also available. To specify, see Part Number Development below. ø30

• For contact operation, see B-119.

• Other bezel sizes available (LBW series). For details, see B-099.

Shape

Miniature Pilot Lights

> CW LW-F

LBW

UP

Flush Bezel

Part Number Development

Round / Black Bezel

Square / Black Bezel

Round / Metallic Bezel

Square / Metallic Bezel

Rectangular / Metallic Bezel

Rectangular / Black Bezel



1 Shape Code

6

7

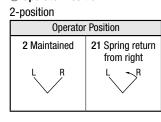
8

6M

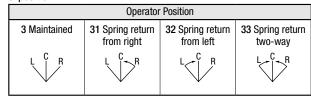
7M

8M

2 Operator Position



3-position



③ Operator					
Operator Shape					
Knob					
Lever					

④ Contacts						
Code	Contact					
1	Gold/SPDT (90° 2-position only)					
2	Gold/DPDT					
3	Gold/3PDT					
5	Silver/SPDT (90° 2-position only)					
6	Silver/DPDT					
7	Silver/3PDT					

⑤ Others						
Code	Specification	Part No. Example				
Blank	Solder/Tab Terminal	_				
V	PC Board Terminal (Gold Contact Only)	LB6S-2T1 <u>V</u>				

For more information, visit http://asia.idec.com

Round

Square

Rectangular

[Lever Operator]

Round

Square

Rectangular

[Knob Operator]

All dimensions in mm.

er?



APEM

Control Boxes

Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator

Interfaces

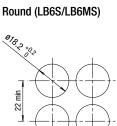
- Sensors
- AUTO-ID
- ø16 ø22 ø30 Miniature

Pilot Lights

- CW LW-F LBW UP Flush Bezel
- 11.1 [3PDT] [Lever Operator] Panel Cut-out for Positioning **3PDT Contacts** Round (LB6S/LB6MS) 4-R0.5 or les TOP 32 22 12 Ø18.2±0.1 17.1±0.05 34 24 14 31 -- 21 - 11 1.9 ±0.05 **Mounting Hole Layout** Square (LB7S/LB7MS) Rectangular (LB8S/LB8MS) 2<u>0</u>2 24.2 +0.2 □18.2 ^{+0.2}₀ 18.2 22 min 22 min 28 min _ 22 min 22 min *: 23.2 mm minimum for 3PDT Note: When using rubber boot or terminal cover, see dimensions on B-128.

• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.





[Knob Operator PC Board Terminal]

8.5

Panel Thickness: 0.5 to 3.2 mm

Locking Ring ۵Ś ahni

Π

Mounting

2.8W × 0.5t

Bracket

6.95

[SPDT/DPDT]

[3PDT]

0.8W × 0.5t

Π

Π

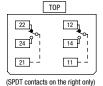
5.5

[PC Board Terminal]

6.95

Gasket

Terminal Arrangement (Bottom View) SPDT/DPDT Contacts



Dimensions

* Solder/Tab Terminal

17.8 5

20.8 18.8

11.9

2-R0.6

LOCK

17.

[SPDT/DPDT]

LOCK

2

📩 Download catalogs and CAD from http://asia.idec.com/downloads

LED Illumination

Controllers

Operator

Interfaces

Sensors

AUTO-ID

nes			0 11 1						
<u>~</u>	Illumina	ted Selecto	or Switches	S					
liot	Solder/Tab Termi	nal							Package Quantity:1
hes & Pilot Lights	Part No. / Shape	LB①F-②) T 345*						
APEM				0 0 0					
Switches & Pilot Lights				Ro	und / Black Bez	el Square / Black Be:	zel Round / Metallic I	Bezel	
Control Boxes									
Emergency Stop Switches	① Shape	ର (perator Position		③ Contact	④ LED Operating	Par	t No.	* Illumination
Enabling	U Shape	© 0			Contact	Voltage	Gold Contact	Silver Contact	Color Code
Switches		90°	Maintained	L R	SPDT	24V AC/DC	LB①F-2T14*	LB①F-2T54*	
Safety Products		2-position		\bigvee	DPDT	24V AC/DC	LB①F-2T24*	LB10F-2T64*	
Explosion Proof	Black bezel		Maintained	, C p					Specify the color
Terminal Blocks		45° 3-position		LUR	DPDT	24V AC/DC	LB①F-3T24*	LB①F-3T64*	code in place of * in the Part No.
Relays & Sockets			Maintained	L R	SPDT	24V AC/DC	LB①F-2T14*	LB①F-2T54*	G: green
Circuit Protectors		90° 2-position			DPDT	24V AC/DC	LB①F-2T14*	LB①F-2T64*	R: red PW: pure white
Power Supplies	Metallic bezel		Maintained	C					

24V AC/DC

Illuminated selector switches contain an LED unit. For maintenance LED units see B-130.

Maintained

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

• 5V DC and 12V AC/DC LED operating voltages also available. To specify, see Part Number Development below.

ç

R

DPDT

• For contact operation, see B-119.

Part Number Development

Round / Black Bezel

④ LED Operating Voltage

5V DC

12V AC/DC

24V AC/DC

Round / Metallic Bezel

Shape

Rated Operating Voltage

45°

3-position

LB(1)F-(2)T(3)(4)(5)*

6

6M

Code

1

3

4

ø16 1) Shape Code ø22

ø30

Miniature

Pilot Lights

CW

LW-F

LBW UP

2 Operator Position 2-position 3-position

Operator Position					
2 Maintained	3 Maintained				
L R	LCR				

③ Contacts

LB①F-3T24*

0					
Contact					
Gold/SPDT (90° 2-position only)					
Gold/DPDT					
Silver/SPDT (90° 2-position only)					
Silver/DPDT					

LB①F-3T64*

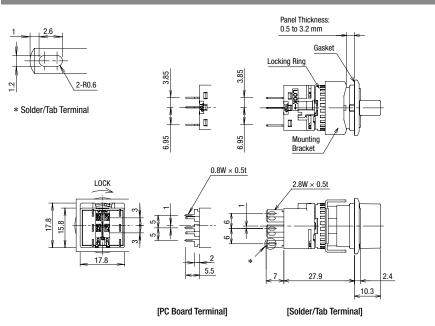
5 Others

Code	Specification	Part No. Example
Blank	Solder/Tab Terminal	—
V	PC Board Terminal (Gold Contact Only)	LB6F-2T14 <u>V</u> *

• Specify a color code in place of <u>* in the Part No.</u>

Flush Bezel

Dimensions



Terminal Arrangement (Bottom View)

Lamp Terminal (+)	ТОР			
	22 12 12 ~ X1 ~ ~ 24 14			
Lamp Terminal (–)				
	(SPDT contacts on the right only)			

Mounting Hole Layout Round (LB6F/LB6MF)



Note: When using terminal cover, see dimensions on B-128.

• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.

Panel Cut-out for Positioning Round (LB6F/LB6MF)

Round

Sl



CW
LW-F
LB
LBW
UP
Flush Bezel

APEM

Control Boxes Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
LB

Control Boxes Emer Stop Swi Ena

LED Illumination

Controllers

Operator

Sensors

AUTO-ID

CW LW-F

LBW

Flush Bezel

thes &	1/ 0 1						
	Key Sele	ector Switches					
i i	Solder/Tab Termi	inal					Package Quantity:1
Pilot Liahts	Part No. / Shape	LB1K-23T45-6)				
APEM		1	Ø	10	0		
vitches & ot Lights		Round / Black Bezel Square	/ Black Bezel	Rectangular / Black Bezel	Round / Metallic Bezel	Square / Metallic Bezel	Rectangular / Metallic Bezel
ol Boxes	① Shape	② Operator Position	© Koy P	emovable Position	@ Contact	Part	No.
	U Sliape		l a vel u	EIIIUVADIE FUSILIUII	Gontact	Gold Contact	Silver Contact

	U Unapo		10311011	l liter normova		Ounder	Gold Contact	Silver Contact
Emergency Stop Switches		90°		A: Key removable		SPDT	LB [®] K-2ST1A	LB ^① K-2ST5A
Enabling		2-position	Maintained	in all positions		DPDT	LB ^① K-2ST2A	LB ^① K-2ST6A
Switches	Black bezel					3PDT	LB ^① K-2ST3A	LB ^① K-2ST7A
Safety Products		45°	Maintained	A: Key removable		DPDT	LB [®] K-3ST2A	LB ^① K-3ST6A
Explosion Proof		3-position	in all position	in all positions	sitions	3PDT	LB ^① K-3ST3A	LB ^① K-3ST7A
Terminal Blocks	Metallic bezel	90° 2-position Maintaine		A: Key removable in all positions	L R	SPDT	LB ^① K-2ST1A	LB ^① K-2ST5A
			Maintained			DPDT	LB ^① K-2ST2A	LB ^① K-2ST6A
Relays & Sockets					\sim	3PDT	LB ^① K-2ST3A	LB ^① K-2ST7A
Circuit Protectors		45°	Maintained	A: Key removable		DPDT	LB [®] K-3ST2A	LB [®] K-3ST6A
Power Supplies		3-position	Wallitalieu	in all positions	\bigvee	3PDT	LB [®] K-3ST3A	LB ^① K-3ST7A

· For operator position, see Part Number Development below.

• For key removable position, see Part Number Development below. The key cannot be removed at the return position.

• Two keys are supplied.

Besides the standard key (key number 0H), six other keys are available. To specify, see Part Number Development below.

• Disc tumbler keys also available. Only the standard key is available. To specify, see Part Number Development below. Interfaces

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

• For contact operation, see B-119.

• Other bezel sizes available (LBW series). For details, see B-101.

Part Number Development

LB1K-23T45-6

ø16	U Snape				
	Code	Shape			
ø22	6	Round / Black Bezel			
#20	7	Square / Black Bezel			
ø30	8	Rectangular / Black Bezel			
Miniature	6M	Round / Metallic Bezel			
	7M	Square / Metallic Bezel			
Pilot Lights	8M	Rectangular / Metallic Bezel			

2 Operator Position

•	
Code	Operator Position
2	90° 2-position maintained
21	90° 2-position spring return from right
3	45° 3-position maintained
31	45° 3-position spring return from right
32	45° 3-position spring return from left
33	45°-3-position spring return two-way

UP **③ Key Style**

Code	Key Style
S	Wave key
Blank	Disc tumbler key

④ Contacts

Code	Contact
1	Gold/SPDT (90° 2-position only)
2	Gold/DPDT
3	Gold/3PDT
5	Silver/SPDT (90° 2-position only)
6	Silver/DPDT
7	Silver/3PDT

5 Key Removal Position

2-position

	Key Removable Position			
A: Key removable	B: Key removable	C: Key removable	© €	
in all positions	at left	at right		

3-position

	Key Rem	ovable Position	
A: Key removable in all positions	B: Key removable at left / center	C: Key removable at center / right	D: Key removable at center
	C C B	€ ®	O C B
E: Key removable at right / left	G: Key removable at left	H: Key removable at right	
L R		B	

For key selectors with the following operations, the key cannot be removed at the return position.

3-position

Spring return from right	Spring return from left	Spring return two-way
	O R	● [©] 6

• Key is removable at \mathbb{O} , \mathbb{O} , \mathbb{R} . Key is retained at $\mathbf{0}$, \mathbf{O} , and $\mathbf{0}$.

6 Key Number

6 Key Nurr	6 Key Number		ers		
Code		С	ode	Specification	Part No. Example
Blank	Standard key (0H)	В	lank	Solder/Tab Terminal	—
1H to 2H	Reversible key		v	PC Board Terminal	LB6K-2ST1VA
3H to 6H	Non-reversible key		v	(Gold Contact Only)	
e Wayo kay anty					

· Wave key only.

Round

Square

All dimensions in mm.

APEM

Control Boxes Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit

Protectors Power Supplies

LED Illumination

Controllers

Operator

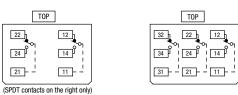
Interfaces

Sensors

AUTO-ID

ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
LB
LBW
UP
Flush Bezel

[3PDT] $\Box 22$ LOCK 2.8W × 0.5t LOCK 0.8W imes 0.5tRectangular **DD**E(17.8 1 18.8 辰 7 27 24.3 [SPDT/DPDT] [3PDT] Key No. : N/A to 2H [Solder/Tab Terminal] [PC Board Terminal] Dec Key No. :3H to 6H Key Selector Switches with Disc Tumbler Key Gasket Panel Thickness: 0.5 to 3.2 mm Locking Ring 3.85 Round 1.2 2-R0.6 ah∥î ++ Π Π * Solder/Tab Terminal 6.95 Mounting Bracket [SPDT/DPDT] Square Π Π Π [3PDT] $0.8W \times 0.5t$ $2.8W \times 0.5t$ LOCK LOCK Rectangular 17.8 15.8 o. 18.8 2 2 17.8 28 5.5 27.9 18 [SPDT/DPDT] [3PDT] [PC Board Terminal] [Solder/Tab Terminal] **Terminal Arrangement (Bottom View)** SPDT/DPDT Contacts **3PDT Contacts**



Dimensions

12

Key Selector Switches with Wave Key

2-R0 6

* Solder/Tab Terminal

• For details on mounting hole layout, see B-120.

• For details on pc board and circuit design, see B-121.

For details on single board mounting, see B-122.

Panel Thickness: 0.5 to 3.2 mm

Gasket

Locking Ring

Π

Mounting Bracke

i,

85

3.95

[SPDT/DPDT]

85

3.95

Π

es & Pilot Lights	Lever Sv Solder/Tab Termi	Switches ninal Package Quantity: 1						
Lights	Part No. / Shape							
APEM								
Switches & Pilot Lights		Round / Black Bezel						
Control Boxes								
Emergency Stop Switches	Shape		Operator Position	Contact	Part No.			
Enabling					Gold Contact	Silver Contact		
Switches			Maintained	SPDT	LB6T-2T1	LB6T-2T5		
Safety Products		2-position		DPDT	LB6T-2T2	LB6T-2T6		
Explosion Proof			D	3PDT	LB6T-2T3	LB6T-2T7		
Terminal Blocks	Black bezel		Maintained	DPDT	LB6T-3T2	LB6T-3T6		
Relays & Sockets				3PDT	LB6T-3T3	LB6T-3T7		
Circuit Protectors	3-position		Spring return from	DPDT	LB6T-33T2	LB6T-33T6		
Power Supplies			top/bottom	3PDT	LB6T-33T3	LB6T-33T7		

 \bullet PC board terminals available for gold contacts. Add "V" to the Part No.

Example: LB6T-2T1V Controllers

• For contact operation, see **B-119**.

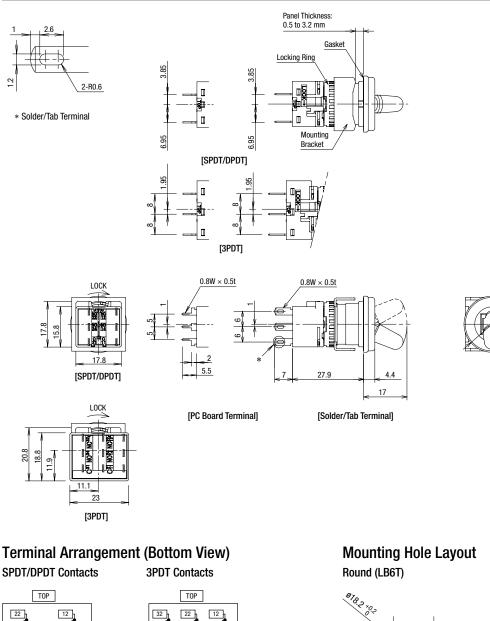
ø16 ø22 ø30 Miniature Pilot Lights CW LW-F

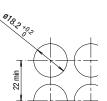
LED Illumination

Operator Interfaces Sensors AUTO-ID

All dimensions in mm.

Dimensions





22 min

*: 23.2 mm minimum for 3PDT Note: When using terminal cover, see dimensions on B-128.

ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
LB

Flush Bezel

LBW

UP



Round (LB6T)

[14]

11

Panel Cut-out for Positioning

(SPDT contacts on the right only)

34

24

31 - 21 - 11 -

14

24

21 - -

 \bullet For details on pc board and circuit design, see $\ensuremath{\text{B-121}}$.

 \bullet For details on single board mounting, see $\ensuremath{\text{B-122}}$.



APEM

Control Boxes

Emergency Stop Switches

Safety Products Explosion Proof

Terminal Blocks

Relays & Sockets

Power Supplies

LED Illumination

Controllers

Operator

Interfaces

Sensors AUTO-ID

Circuit Protectors

Enabling Switches

Download catalogs and CAD from http://asia.idec.com/downloads

B-088

Buzzers

Specifications

opcomoations	
Rated Insulation Voltage	30V
Rated Operating Voltage	12, 24V DC
Operating Voltage Range	12V DC±10%, 24V DC±10%
Current Draw	26 mA
Inrush Current	80 mA maximum
Sound Pressure	Steady sound: 80 dB minimum
(at 0.1m)	(at the rated voltage)
Sound Frequency	2.3±0.3kHz
Response Speed	50 ms maximum
Operating Temperature	-25 to +60°C (no freezing)
Storage Temperature	-30 to +80°C(no freezing)
Operating Humidity	45 to 85% (no condensation)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Dielectric Strength	Between live and dead parts: 1,000V AC, 1 minute
Vibration Resistance	Operating extremes/Damage limits: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Operating extremes: 100m/s ² Damage limits:1,000m/s ²
Life	1,000 hours minimum (beep sound)
Degree of Protection	IP54 (IEC60529)
Terminal Style	Solder/tab terminal #110 PC board terminal
Weight (approx.)	13g (round), 14g (square)

Standards



• UL, CSA ratngs: Operating voltage 12, 24V DC.

• See website for details on approvals and standards.

LED Illumination
Controllers
Operator Interfaces
Sensors

Package	Quantity: 1

IIIICIIACES	<u> </u>							
Sensors		Part No. / Shape						
AUTO-ID							and the second se	
			4	0 4	0 4(
ush Silhouette			Round	Black Bezel Rectangular	r / Black Bezel Round / Meta	allic Bezel	Rectangular / Metallic Bezel	
ø16								
						Part	No.	
ø16 ø22	Sha	ape	Operating Voltage	Degree of Protection		Part Termina		
ø16	Sha	аре	Operating Voltage	Degree of Protection	Solder/tab termir	Termina		
ø16 ø22		ape Round	Operating Voltage 24V DC	Degree of Protection IP54	Solder/tab termin	Termina	al Style	
ø16 ø22 ø30 Miniature	Sha Black bezel					Termina	al Style PC board terminal	
ø16 ø22 ø30		Round	24V DC	IP54	LB6Z-1T04	Termina	al Style PC board terminal LB6Z-1T04V	

• 12V DC operating voltages also available. Specify "-1T04" in place of "-1T03" in the Part No. Example: LB6Z-<u>1T03</u>

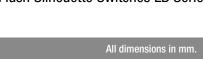
APEM

Switches & Pilot Lights Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof Terminal Blocks Relays & Sockets Circuit Protectors Power Supplies

CW LW-F

LBW UP

Flush Bezel



APEM

Pilot Lights Control Boxes

Emergency Stop Switches Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
LB
LBW

Flush Bezel

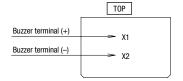
UP

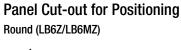


 $0.8W \times 0.5t$

5.5

[PC Board Terminal]







Panel Thickness: 0.5 to 3.2 mm

Round

Rectangular

28

02

Gasket Locking Ring

Шŝ

Π

Mounting Bracket

 $2.8W \times 0.5t$

27.9

[Solder/Tab Terminal]

Mounting Hole Layout

Round (LB6Z/LB6MZ)

Dimensions

* Solder/Tab Terminal

2-R0.6

LOCK

XX-3

17.8

1.2

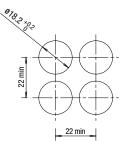
17.8 15.8

Rectangular (LB8Z/LB8MZ)

 $24.2^{+0.2}_{0}$

+0.2

8.2



22 min _____

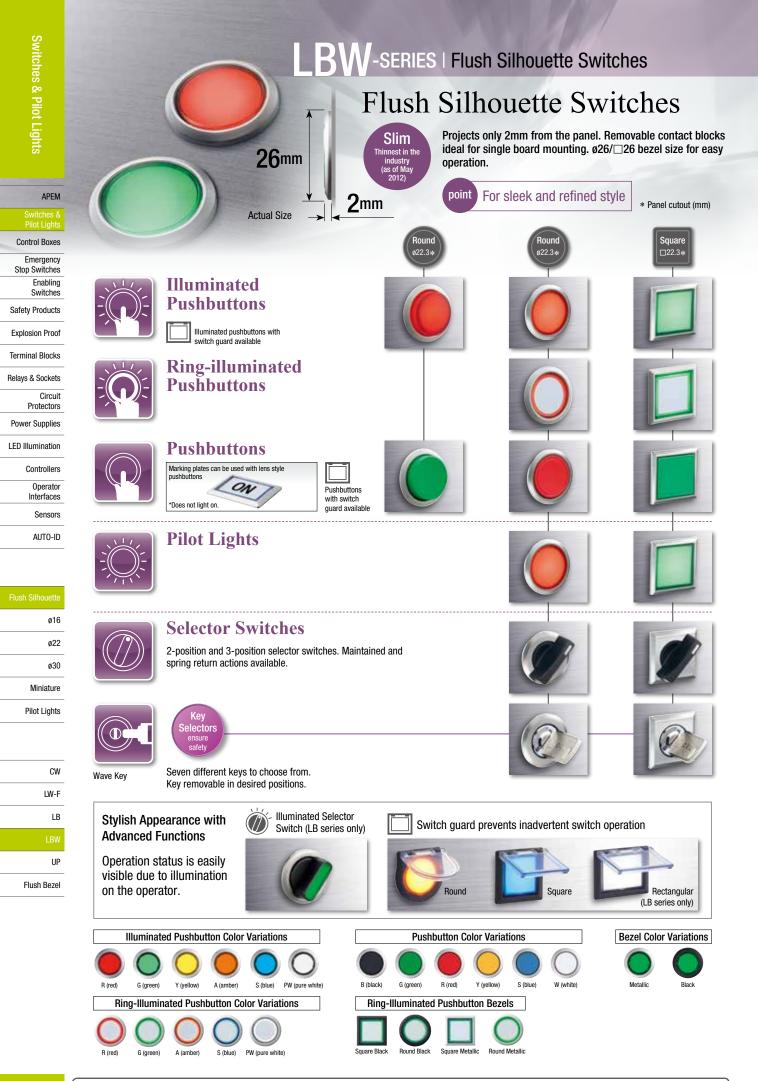
22 min

Note: When using rubber boot or terminal cover, see dimensions on B-127 and B-128.

• For details on pc board and circuit design, see **B-121**.

• For details on single board mounting, see B-122.





For more information, visit http://asia.idec.com

APEM

Flush Silhouette Switches LBW Series

Flush bezel projects only 2 mm from front of panel.

Contact Ratings

Gold Contact (switch base: blue)

Rated Insulation Voltage	250V		
Rated Thermal Current		3	A
Rated Operating Voltage		30V DC	125V AC
Rated Operating Current (electrical life: 100,000 operations)	Resistive Load	0.1A	0.1A
Contact Material		Gold-cla	ad silver

• Minimum applicable load (reference value): 5V AC/DC, 1 mA Applicable range is subject to the operating conditions and load.

• See electrical life in Specifications.

Silver Contact (switch base: gray)

Rated Insulation Voltage					250V	
Rated Oper	ating Voltage			30V	125V	250V
	Electrical AC		Resistive load		5A	5A
	Life	50/60Hz	Inductive load	—	3A	1.5A
	50,000	DC	Resistive load	5A	1.1A	—
Rated	operations	DC	Inductive load	2A	0.4A	—
Operating Current	Electrical	AC	Resistive load	_	5A	ЗA
ourroint	Life	50/60Hz	Inductive load	—	3A	1.5A
	100,000	DC	Resistive load	ЗA	0.6A	—
	operations DC		Inductive load	1A	0.22A	—
Rated Thermal Current				5A		
Contact Material					Silver	

• AC inductive load: PF=0.6 to 0.7 DC inductive load: L/R=7 ms max.

LED Ratings

J.					
Rated Voltage	5V DC	12V AC/DC	24V AC/DC		
Voltage Range	5V DC±5%	12V AC/DC±10%	24V AC/DC ±10%		
LED Part No.	LB9Z-LED5@	LB9Z-LED1@	LB9Z-LED22		
Current Draw	A, R: 18 mA G, S: 6 mA PW: 5 mA				
Voltage Marking	Marked on the side of the LED unit				
LED Life (reference value)	Approx. 30,000 hours [until the brightness reduces to 50% of the initial value when lit at the rated voltage (direct current) under 25°C environment.]				
		A, G, R, PW, S			
Internal Circuit			LED Chip LED Chip Zener Diode Resistor		

• 2 (color code): A (amber), G (green), PW (pure white), R (red), S (blue)

• Use the pure white (PW) module for yellow illumination.

• LED lamp contains a current-limiting resistor.



-25 to +60°C (no freezing)

-30 to +80°C (no freezing)

Illuminated units: -25 to +55°C

45 to 85% RH (no condensation)

50 mΩ maximum (initial value)

Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof Terminal Blocks Relays & Sockets Circuit Protectors Power Supplies LED Illumination Controllers

Contact neorotaneo			
Insulation Resistance		100 M Ω minimum (500V DC megger)	Operator Interfaces
		Between live part and ground: 2,000V AC, 1 minute	Sensors
Dielectric	Switch Unit	Between terminals of different poles: 2,000V AC, 1 minute	AUTO-ID
Strength		Between terminals of the same poles: 1,000V AC, 1 minute	
	Illumination Unit	Between live part and ground: 2,000V AC, 1 minute	
Vibration R	esistance	Operating extremes/Damage limits: 5 to 55 Hz, amplitude 0.5 mm	Flush Silhouette
Shock Resi	otonoo	Operating extremes: 100 m/s ²	010
SHOCK RESI	stance	Damage limits: 1,000 m/s ²	ø22
Mechanical Life (minimum operations)		Momentary: 2,000,000 Maintained: 250,000	ø30
		Selector switches: 250,000 Key selector switches: 250,000 Miniature	
Electrical L	ife	Momentary:50,000 / 100,000 (*1) Maintained: 50,000 / 100,000 (*2)	Pilot Lights
(minimum	operations)	Selector switches: 50,000 / 100,000 (*2)	
Degree of Protection		Key selector switches: 50,000 / 100,000 (*2) IP65 (IEC 60529)	-
Terminal Style		Solder/tab terminal #110 PC board terminal	CW
		16g (LBW7L-M1T24)	LW-F
		14g (LBW7P-1T04) 15g (LBW7B-M1T2)	LB
Weight (ap	prox.)	17g (LBW7S-2T2) 29g (LBW7K-2ST2A)	LBW
		17g (LBW7GL-M1T24) 18g (LBW7GB-M1T2)	UP

*1: Switching frequency 1,800 operations/h.

*2: Switching frequency 1,200 operations/h.

Specifications

Operating Temperature

Storage Temperature

Operating Humidity

Contact Resistance

Flush Bezel



hes & Pilot Lights	Illuminated Pushbuttons Package Quantity:1 Part No. / Shape LBW ① L-② ③ T ④ ⑤ ⑥ * Flush Flush					
APEM		1	0 🖲			
Switches & Pilot Lights		Round / Black Be	zel Square / Blac	k Bezel Round / Meta	allic Bezel Square / Metallic Bezel	Round with Guard Square with Guard
Control Boxes		Extended		Flush Ring-illu	minated	
Emergency Stop Switches						
Enabling Switches		(black bezel is also available)			(black bezel is also available)	
Safety Products	① Shape	② Operation	④ Contact	⑤ LED Operating Voltage	Part No.	* Illumination Color Code
Explosion Proof		Momentary	Gold/SPDT	24V AC/DC	LBW①L-M③T14*	
Terminal Blocks	Black bezel	womentary	Gold/DPDT	240 AG/DC	LBW①L-M③T24*	
Relays & Sockets		Maintained	Gold/SPDT	24V AC/DC	LBW1L-A3T14*	- Specify the color code in place
Circuit			Gold/DPDT		LBW1L-A3T24*	of * in the Part No.
Protectors		Momentary	Gold/SPDT	24V AC/DC	LBW@L-M@T14*	A: amber
Power Supplies	Metallic bezel	-	Gold/DPDT		LBW@L-M@T24*	G: green
LED Illumination		Maintained	Gold/SPDT Gold/DPDT	24V AC/DC	LBW①L-A③T14* LBW①L-A③T24*	PW: pure white
			Gold/DPD1 Gold/SPDT		LBW①L-A③124*	R: red S: blue
Controllers		Momentary		24V AC/DC		Y: yellow
Operator	Guard Type		Gold/DPDT Gold/SPDT		LBW①L-M③T24* LBW①L-A③T14*	-
Interfaces		Maintained	Gold/SPD1 Gold/DPDT	24V AC/DC	LBW①L-A③T14*	-
Sensors						
	 Flush/Extended cold 	or code: A (amber) G (or	een) PW (nure white) R	(red) S (blue) V (vellow	0	

• Flush/Extended color code: A (amber), G (green), PW (pure white), R (red), S (blue), Y (yellow)

• Ring-illuminated color code: PW (pure white), W (white), WA (amber), WG (green), WR (red), WS (blue)

• Illuminated pushbuttons contain an LED unit. For details on LED units, see B-130.

• The guard opens 180 degrees spring-return.

• Illuminated pushbuttons can be used with legend markings. Engraving can be done on a marking plate which is placed in the lens, or a clear film can be printed and placed in the lens. See B-134 for details on the marking plate and film.

• White lens type (when light is off) are available. Clear lens is used instead of colored lens for amber, green, red, and blue illuminated pushbuttons. Amber, green, red, or blue LED units are used. To specify, see Part Number Development below.

- ø22 • PC board terminals available for gold contacts. Silver contacts also available. To specify, see Part Number Development below.
- Extended pushbuttons available. To specify, see Part Number Development below. Pushbuttons with guard is not available. ø30

Extended pushbutton is available with momentary operation only.

• Flush ring-illuminated style is available. See Part Number Development below (③). Guard is not available with flush ring-illuminated style. Miniature

Pilot Lights

CW

LW-F

UP

Flush Bezel

AUTO-ID

ø16

 5V DC and 12V AC/DC LED operating voltages also available. • Other bezel sizes available (LB series). For details, see B-075.

Part Number Development

LBW(1)L-2(3)T(4)(5)(6)*

1) Shape LB

	-	
	Code	Shape
	6	Round / Black Bezel
	7	Square / Black Bezel
-	6M	Round / Metallic Bezel
	7M	Square / Metallic Bezel
	6G	Round with Guard
	7G	Square with Guard

2 Operation

Code	Operation
Α	Maintained
М	Momentary

③ Operator Style

	Code	Operator Style
	1	Flush
2		Extended
	1R	Flush Ring-illuminated

· Extended style is available only for round (black/metallic bezel) and in momentary operation.

· Guard model is not available for Flush Ring-illuminated types. Also, Y (yellow) is not available.

6 Others

Code	Specification	Part No. Example	
Blank	Solder/Tab Terminal	—	
۷	PC Board Terminal (Gold Contact Only)	LBW6L-M1T14 <u>V</u> *	

· Specify the color code in place of * in the table above.

Code	Contact
1	Gold/SPDT
2	Gold/DPDT
5	Silver/SPDT
6	Silver/DPDT

⑤ LED Operating Voltage

	Code	Rated Operating Voltage
	1	5V DC
	3	12V AC/DC
	4	24V AC/DC

For more information, visit http://asia.idec.com

Round

S?

All dimensions in mm.

Round

-ΩI

Switches & Pilot Lights

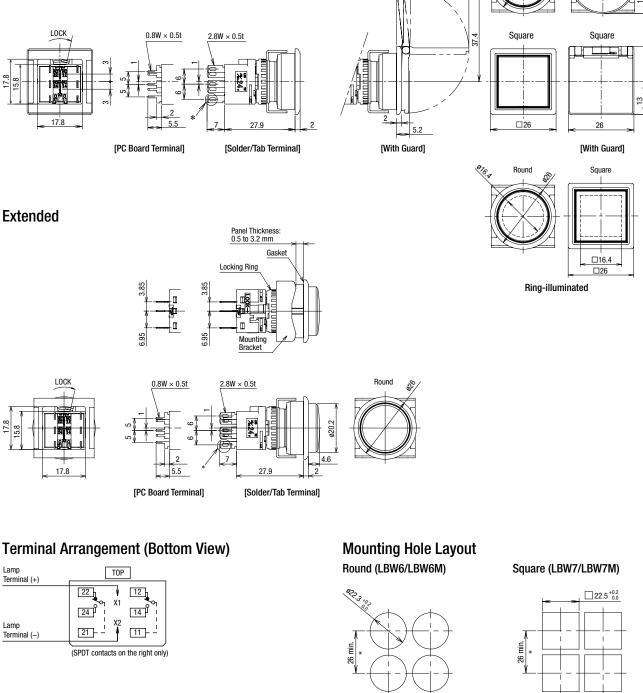




Relays & Sockets

5

- Circuit Protectors
- Power Supplies
- LED Illumination
- Controllers Operator
- Interfaces Sensors AUTO-ID
- ø16 ø22 ø30 Miniature Pilot Lights CW
- LW-F LB UP Flush Bezel



22



Dimensions

Flush/Ring-illuminated

2-R0.6

* Solder/Tab Terminal

LOCK

127

17.8

LOCK

17.8

17.8

Lamp Terminal (+)

Extended

Panel Thickness:

5

Mounting Bracket

Gasket

0.5 to 3.2 mm

Locking Ring

Π

0

6.95

6.95

Panel Thickness

Gasket

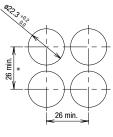
ď

28.7

0.5 to 3.2 mm

• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.



*: 53 mm minimum for switches with guard.



26 min.

hes & Pilot Lights	Pilot Lights						
liot	Solder/Tab Terminal Package						
Lights	Part No. / Shape	LBW①P-1T0②③)*				
APEM							
Switches & Pilot Lights		Round / E	Black Bezel Square	Square / Black Bezel Round / Metallic Bezel Square / M			c Bezel
Control Boxes							
Emergency Stop Switches	① Shape	③ LED Operating Voltage	Part No.	* Illumination Color Code			
Enabling Switches							
Safety Products	Black Bezel	24V AC/DC	LBW ^① P-1T04*	Specify	y the color code in place of * in the		
Explosion Proof				A: G:	amber green		
Terminal Blocks	(S			PW: pure white R: red			
Relays & Sockets	Metallic Bezel	24V AC/DC LBW DP-1T04*		S: blue			
Circuit Protectors				Y:	yellow		

- Power Supplies • Pilot lights contain an LED unit. For maintenance LED units see B-130.
- Legends and symbols can be engraved on a marking plate or film to be inserted under the lens by users for labelling purposes. See B-134 for details. LED Illumination
 - White lens type (when light is off) are available. Clear lens is used instead of colored lens for amber, green, red, and blue pilot lights. Amber, green, red, or blue LED units are used. To specify, see Part Number Development below. Controllers
 - PC board terminals available. To specify, see Part Number Development below. Operator
 - 5V DC and 12V AC/DC LED operating voltages also available. Interfaces
 - Other bezel sizes available (LB series). For details, see B-077.

Sensors AUTO-ID

Part Number Development

LBW1P-1T023*

ø16 ① Shape

ø22 ø30

Miniature Pilot Lights

> CW LW-F

> > LB

UP

2 LED Operating Voltage

Shape	Code	Rated Operating Voltage
Round / Black Bezel	1	5V DC
Square / Black Bezel	3	12V AC/DC
Round / Metallic Bezel	4	24V AC/DC
Square / Metallic Bezel		

7M **3 Others**

Code 6

7

6M

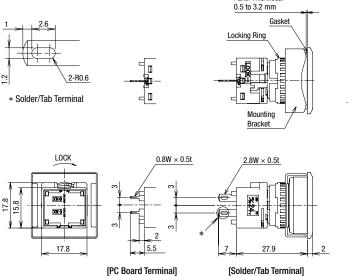
	Code Specification		Part No. Example		
-	Blank	Solder/Tab Terminal	-		
.	V	PC Board Terminal	LBW6P-1T04 <u>V</u> *		

• Specify the color code in place of * in the table above.

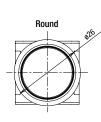
Flush Bezel

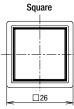
All dimensions in mm.

Dimensions



Panel Thickness:

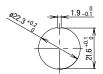




Terminal Arrangement (Bottom View)

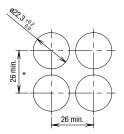
	TOP
Lamp Terminal (+)	
Lamp Terminal (–)	> X1
	→ X2

Panel Cut-out for Positioning Round (LBW6P/LBW6MP)

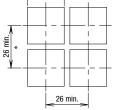


Mounting Hole Layout Round (LBW6P/LBW6MP)

Square (LBW7P/LBW7MP)







• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.

;

APEM Switches & Pilot Lights

Control Boxes Emergency Stop Switches Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

Flush Silhouette
ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F

CW
LW-F
LB
LBW
UP
Flush Bezel

ies & I	Pushbutt	ons						
Pilot	Solder/Tab Terminal Package Quantity:1							
Pilot Lights	Part No. / Shape	LBW1B-2						
		Flush					Extended	
APEM				I.		TO		
Switches & Pilot Lights		Round / Black Bez	zel Square / Black Bez	zel Round / Metal	lic Bezel Square / Metallic Beze	Round with Guard	Square with Guard	
Control Boxes							Round only (metallic bezel available)	
Emergency Stop Switches	1 Shape	Button Style	② Operation	③ Contact	Part	-	* Illumination Color Code	
Enabling			oporation		Gold Contact	Silver Contact		
Switches				SPDT	LBW [®] B-M1T1*	LBW [®] B-M1T5*	_	
Safety Products		Button	Momentary	DPDT	LBW [®] B-M1T2*	LBW ^① B-M1T6*	_	
Explosion Proof	Black bezel			3PDT	LBW [®] B-M1T3*	LBW ^① B-M1T7*	_	
				SPDT	LBW ^① B-A1T1*	LBW1B-A1T5*	_	
Terminal Blocks			Maintained	DPDT	LBW ^① B-A1T2*	LBW ^① B-A1T6*		
Relays & Sockets				3PDT	LBW ^① B-A1T3*	LBW1B-A1T7*	Specify the color code in place of * in the Part No.	
				SPDT	LBW1B-M1T1*	LBW ^① B-M1T5*		
Circuit Protectors			Momentary	DPDT	LBW ^① B-M1T2*	LBW ^① B-M1T6*		
	Metallic bezel	Button		3PDT	LBW ^① B-M1T3*	LBW ^① B-M1T7*	B: black	
Power Supplies				SPDT	LBW1B-A1T1*	LBW ^① B-A1T5*	G: green R: red	
LED Illumination			Maintained	DPDT	LBW ^① B-A1T2*	LBW ^① B-A1T6*	R: red S: blue	
				3PDT	LBW ^① B-A1T3*	LBW ^① B-A1T7*	W: white	
Controllers		ype Button Momentary Maintained		SPDT	LBW ^① B-M1T1*	LBW ^① B-M1T5*	Y: yellow	
Operator Interfaces	Guard Type		Momentary	Nomentary DPDT	LBW ^① B-M1T2*	LBW ^① B-M1T6*		
				3PDT	LBW [®] B-M1T3*	LBW ^① B-M1T6*		
Sensors			SPDT	LBW1B-A1T1*	LBW ^① B-A1T5*			
AUTO-ID			Maintained	DPDT	LBW ^① B-A1T2*	LBW ^① B-A1T6*		
				3PDT	LBW ^① B-A1T3*	LBW ^① B-A1T7*		

• The guard opens 180 degrees spring-return.

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

• Pushbuttons can be used with legend markings engraved on marking plates and lens buttons with clear film inserted in the lens is available. To specify, see Part Number Development below. See B-134 for details on the marking plate and film.

• Extended pushbuttons available. To specify, see Part Number Development below. Pushbuttons with guard is not available.

Extended pushbutton is available with momentary operation only.

• Other bezel sizes available (LB series). For details, see B-079.

Part Number Development

1

CW LW-F LB UP

ø16

ø22

ø30 Miniature

Pilot Lights

Shape					
Code	Shape				
6	Round / Black Bezel				
7	Square / Black Bezel				
6M	Round / Metallic Bezel				
7M	Square / Metallic Bezel				
6G	Round with Guard				
7G	Square with Guard				

Flush Bezel

Shape	Code
Black Bezel	Α
Black Bezel	М
Aetallic Rezel	

② Operation		
Code	Operation	
Α	Maintained	
М	Momentary	

	Code	Operation
	1	Flush
	2	Extended *

③ Operator Style

* Extended style is available only for round (black/metallic bezel) and in momentary operation. Guard model is not available.

④ Contacts

Code	Contact	Code	Contact
1	Gold/SPDT	5	Silver/SPDT
2	Gold/DPDT	6	Silver/DPDT
3	Gold/3PDT	7	Silver/3PDT

5 Others

Code	Specification	Part No. Example
Blank	Solder/Tab Terminal	_
L (Note 1)	Lens	LBW6B-M1T1 <u>L</u> *
V	PC Board Terminal (Gold Contact Only)	LB6WB-M1T1 <u>V</u> *
VL (Note 1)	PC Board Terminal with Lens (Gold Contact Only)	LB6WB-M1T1 <u>VL</u> *

Note 1: Codes L and VL are available with flush operator only.

• Color code (*) for lens:

A (amber), B (translucent lens with black nameplate), G (green), R (red), S (blue), W (white), Y (yellow)

LBW1B-231T45*

All dimensions in mm.

Switches & Pilot Lights





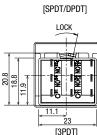
• For details on mounting hole layout, see **B-120**.

• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see **B-122**.



UP	
Flush Bezel	



Dimensions

Flush Pushbutton

* Solder/Tab Terminal

LOCK

2

17.8

[SPDT/DPDT] LOCK

+

C^T NOT NO Į į

1

명

2-R0.6

8

6.95

23 [3PDT]

Extended Pushbutton

* Solder/Tab Terminal

LOCK

17.8

2-R0.6

. 🗆

[SPDT/DPDT]

Π

[3PDT]

0.8W × 0.5t

[PC Board Terminal]

6.95

2

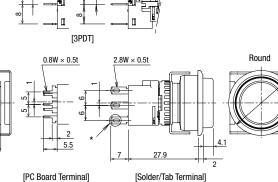
17.8

20.8 18.8 15.8

11.9

ç

17.8



Panel Thickness: 0.5 to 3.2 mm

Locking Ring

F

Mounting

Bracke

Ш

.85

6.95

[SPDT/DPDT]

Π

П

Panel Thickness: 0.5 to 3.2 mm

Locking Ring

Π

Mounting

Bracket

2.8W × 0.51

27.9

[Solder/Tab Terminal]

Gasket

6.95

Gasket

-
_
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\mathbf{O}
CD I
(d a 1
<u> </u>
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0
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Pilot L
Pilot Li
Pilot Li
Pilot Lig
Pilot Li

Controllers

Operator Interfaces

Sensors

AUTO-ID

ø22

ø30

CW

LW-F

LB

Miniature

Pilot Lights

witches & Pilot Lights	Selector	Switches					
liot	Solder/Tab Termin	al					Package Quantity:1
Lights	Part No. / Shape	LBW1)S-2	0T34				
APEM							
Switches & Pilot Lights			Round / Black Bezel	Square / Blac	k Bezel Round /	Metallic Bezel Square / Metallic	Bezel
Control Boxes							
Emergency Stop Switches	① Shape		② Operator Position		③ Contact		t No.
Enabling Switches			Maintained		SPDT	Gold Contact	Silver Contact
Safety Products		90°	Maintaineu	LR	-	LBW ^① S-2T1	LBW ^① S-2T5
		2-position		~	DPDT	LBW ^① S-2T2	LBW ^① S-2T6
Explosion Proof					3PDT	LBW 1 S-2T3	LBW ^① S-2T7
Terminal Blocks	Black bezel		Maintained	LCR	DPDT	LBW ^① S-3T2	LBW ^① S-3T6
Relays & Sockets		45°			3PDT	LBW ^① S-3T3	LBW ^① S-3T7
Circuit Protectors		3-position	Spring return two-way	L-C-R	DPDT	LBW ^① S-33T2	LBW ^① S-33T6
Power Supplies					3PDT	LBW ^① S-33T3	LBW [®] S-33T7
LED Illumination			Maintained	LR	SPDT	LBW [®] S-2T1	LBW ^① S-2T5

R

DPDT

3PDT

DPDT

3PDT

DPDT

DPDT

LBW^①S-2T2

LBW^①S-2T3

LBW^①S-3T2

LBW^①S-3T3

LBW^①S-33T2

LBW^①S-33T3

LBW^①S-2T6

LBW^①S-2T7

LBW^①S-3T6

LBW^①S-3T7

LBW^①S-33T6

LBW^①S-33T7

• PC board terminals available for gold contacts. To specify, see Part Number Development below. ø16

Maintained

Spring return two-way

• For contact operation, see B-119.

Metallic bezel

• Other bezel sizes available (LB series). For details, see B-081.

Part Number Development

90°

45° 3-position

2-position

LBW1S-2T34

① Shape

Code	Shape
6	Round / Black Bezel
7	Square / Black Bezel
6M	Round / Metallic Bezel
7M	Square / Metallic Bezel

UP

	③ Con	t
Flush Bezel		_

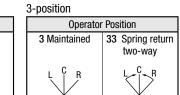
3 Contacts			
Code	Contact		
1	Gold/SPDT (90° 2-position only)		
2	Gold/DPDT		
3	Gold/3PDT		
5	Silver/SPDT (90° 2-position only)		
6	Silver/DPDT		
7	Silver/3PDT		

2 Operator Position

2 Maintained

R





④ Others

Code	Specification	Part No. Example
Blank	Solder/Tab Terminal	
V	PC Board Terminal (Gold Contact Only)	LBW6S-2T1 <u>V</u>

All dimensions in mm.



2-R0.6

Solder/Tab Terminal

*

APEM

Control Boxes Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

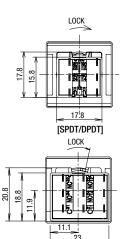
Sensors

AUTO-ID

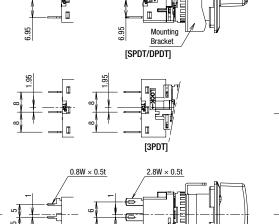
ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
LB

Flush Bezel

UP



[3PDT]



Panel Thickness: 0.5 to 3.2 mm

Locking Ring

Π

5.5

32

34

22

24

31 - 21 - 11 -

12

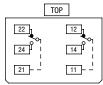
i 14

Gasket

[Solder/Tab Terminal]

[PC Board Terminal]

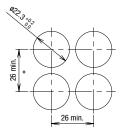
Terminal Arrangement (Bottom View) SPDT/DPDT Contacts **3PDT Contacts**

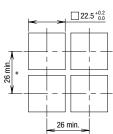


(SPDT contacts on the right only)

Mounting Hole Layout Round (LBW6S/LBW6MS)

Square (LBW7S/LBW7MS)





• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.

bownload catalogs and CAD from http://asia.idec.com/downloads

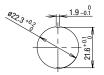
B-100

Panel Cut-out for Positioning

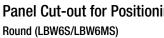
Round

Square

□26



TOP



LED Illumination

Controllers

Sensors

AUTO-ID

ø16

ø22

Miniature

Pilot Lights

ies & Pilot	Key Selector Switches Solder/Tab Terminal Package Quantity:1							
Pilot Lights	Part No. / Shape	LBW (1) K-(Wave Key	23T45-6	5	0			
APEM Switches & Pilot Lights	Round / Black Bezel Square / Black Bezel Round / Metallic Bezel Square / Metallic Bezel Round / Metallic Bezel Square /							
Control Boxes	1 Shape	2 Operator Position		5 Key Removable Position		(5) Contact	Part No.	
Emergency		© Oper				© oontdot	Gold Contact	Silver Contact
Stop Switches			A: Key removable in all positions		L B	SPDT	LBW ^① K-2ST1A	LBW ^① K-2ST5A
Enabling Switches		90° 2-position			DPDT	LBW ^① K-2ST2A	LBW ^① K-2ST6A	
Safety Products	Black bezel	- poonion				3PDT	LBW ^① K-2ST3A	LBW ^① K-2ST7A
Explosion Proof		45°	Maintained	A: Key removable	U ^C R	DPDT	LBW ^① K-3ST2A	LBW ^① K-3ST6A
· .		3-position Maintained in all position		in all positions	\mathbf{V}	3PDT	LBW ^① K-3ST3A	LBW ^① K-3ST7A
Terminal Blocks				A: Key removable	L ®	SPDT	LBW [®] K-2ST1A	LBW ^① K-2ST5A
Relays & Sockets		90° 2-position	Maintained	in all positions	\sim	DPDT	LBW [®] K-2ST2A	LBW ^① K-2ST6A
Circuit Protectors	Metallic bezel	2-00311011				3PDT	LBW ^① K-2ST3A	LBW ^① K-2ST7A
Power Supplies		45°	Maintainad	A: Key removable	(L) ^(C) (R)	DPDT	LBW ^① K-3ST2A	LBW ^① K-3ST6A
I FD Illumination		3-position	Maintained	in all positions	$\mathbf{V}^{\mathbf{c}}$	3PDT	LBW ^① K-3ST3A	LBW ^① K-3ST7A

· For operator position, see Part Number Development below.

• For key removable position. see Part Number Development below. The key cannot be removed at the return position.

Operator • Two keys are supplied. Interfaces

- Besides the standard key (key number OH), six other keys are available.
- Disc tumbler keys also available. Only the standard key is available. To specify, see Part Number Development below.
- PC board terminals available for gold contacts. To specify, see Part Number Development below.
- For contact operation, see B-119.
- Other bezel sizes available (LB series). For details, see B-085.

Part Number Development

LBW1K-23T45-6

1) Shape ø30

-	Code	Shape
_	6	Round / Black Bezel
	7	Square / Black Bezel
-	6M	Round / Metallic Bezel
	7M	Square / Metallic Bezel

5 Key Removal Position

The key cannot be removed at the return position.



CW

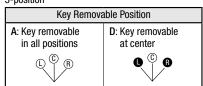
LB	Key Removable Position					
	A: Key removable	B: Key removable				
LBW	in all positions	at left				
UP	L R	L B				

Flush Bezel

② Operator Position

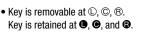
Code	Operator Position
2	90° 2-position maintained
3	45° 3-position maintained
33	45°-3-position spring return two-way

3-position



3-position





3H to 6H · Wave keys only.

1H to 2H

3 Key Style

Wave key

Gold/DPDT

Gold/3PDT

Silver/DPDT

Silver/3PDT

Standard key

Reversible key

Non-reversible key

Disc tumbler key

Key Style

Contact

Gold/SPDT (90° 2-position only)

Silver/SPDT (90° 2-position only)

Code

S Blank

④ Contacts Code

1

2

3

5

6

7

0H

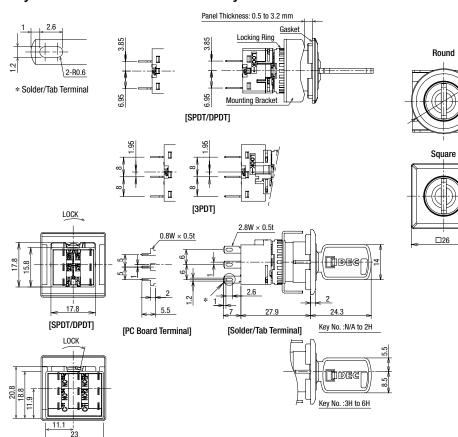
6 Key Number Code

Others

Code	Specification	Part No. Example
Blank	Solder/Tab Terminal	—
V	PC Board Terminal (Gold Contact Only)	LBW6K-2T1VA

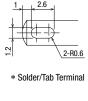
All dimensions in mm.

Key Selector Switches with Wave Key

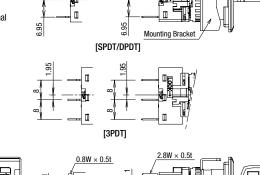


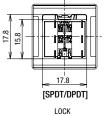
Key Selector Switches with Disc Tumbler Key

П



[3PDT]

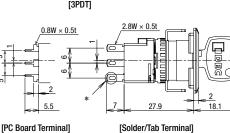




Ş 9 脖

[3PDT]

LOCK



Panel Thickness: 0.5 to 3.2 mm

Locking Ring

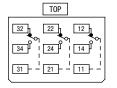
Gaske

[Solder/Tab Terminal]

Terminal Arrangement (Bottom View) SPDT/DPDT Contacts



3PDT Contacts



· For details on mounting hole layout, see B-120.

- · For details on pc board and circuit design, see B-121.
- For details on single board mounting, see B-122.



APEM

Control Boxes Emergency Stop Switches Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers Operator

Interfaces

Sensors

AUTO-ID

ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
LB

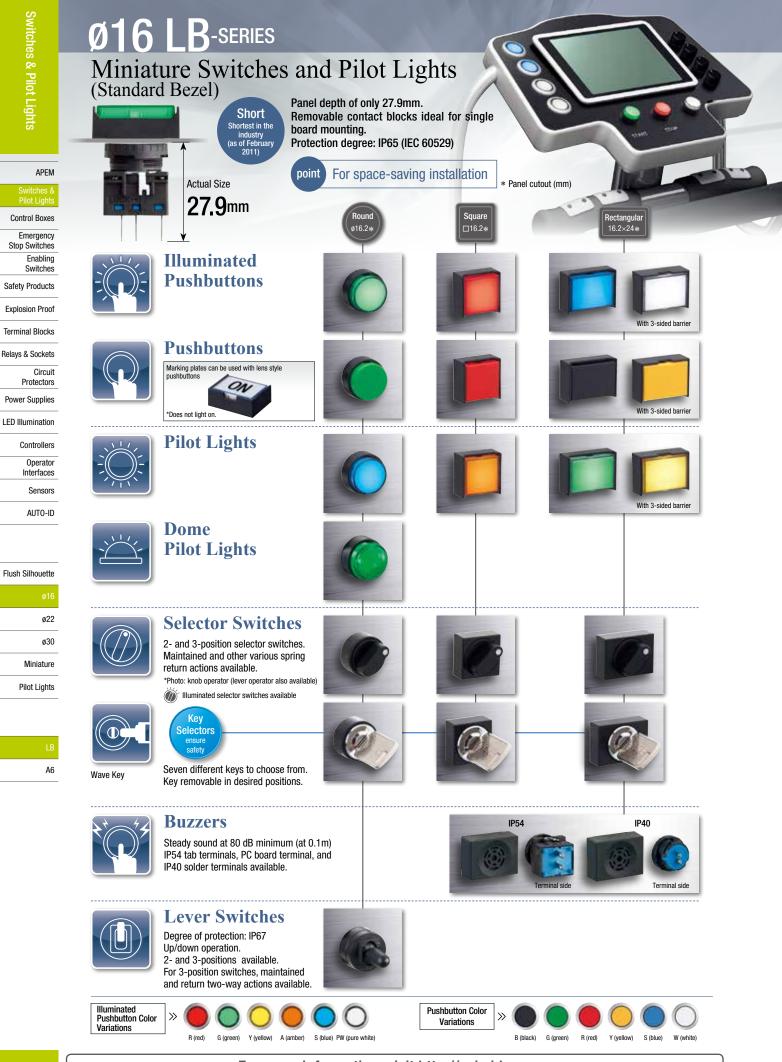
Flush Bezel

UP

Round

Square

□26



For more information, visit http://asia.idec.com

Panel depth of only 27.9mm.

Removable contact blocks ideal for single board mounting.

Contact Ratings

Gold Contact (switch base: blue)

Rated Insulation Voltage	250V		
Rated Thermal Current	3A		
Rated Operating Voltage	30V DC	125V AC	
Rated Operating Current (electrical life: 100,000 operations)	0.1A	0.1A	
Contact Material	Gold-cla	ad silver	

• Minimum applicable load (reference value): 5V AC/DC, 1 mA

Applicable range is subject to the operating conditions and load.

• See electrical life in Specifications.

Silver Contact (switch base: gray)

Rated Insulation Voltage			250V			
Rated Oper	Rated Operating Voltage			30V	125V	250V
	Electrical	AC	Resistive load		5A	5A
	Life	50/60Hz	Inductive load	_	3A	1.5A
	50,000	DC	Resistive load	5A	1.1A	—
Rated	operations	Inductive load		2A	0.4A	_
Operating Current	Electrical	AC	Resistive load	—	5A	3A
ountil	Life	50/60Hz	Inductive load		3A	1.5A
	100,000	DC	Resistive load	ЗA	0.6A	_
	operations	DC	Inductive load	1A	0.22A	—
Rated Ther	Rated Thermal Current				5A	
Contact Ma	Contact Material				Silver	

• AC inductive load: PF=0.6 to 0.7 DC inductive load: L/R=7 ms max.

LED Ratings

Rated Voltage	5V DC	12V AC/DC	24V AC/DC			
Voltage Range	5V DC±5%	12V AC/DC±10%	24V AC/DC ±10%			
LED Part No.	LB9Z-LED5@	LB9Z-LED1@	LB9Z-LED22			
Current Draw	A, R: 18 mA G, S: 6 mA PW: 5 mA					
Voltage Marking	Marked on the side of the LED unit					
LED Life (reference value)	Approx. 30,000 hours [until the brightness reduces to 50% of the initial value when lit at the rated voltage (direct current) under 25°C environment.]					
		A, G, R, PW, S, W				
Internal Circuit		X1 • • • • • • • • • • • • • • • • • • •	LED Chip 			

• 2 (color code): A (amber), G (green), PW (pure white), R (red), S (blue)

Use the pure white (PW) module for yellow illumination.

• LED lamp contains a current-limiting resistor.



Specifications

			-
Operating Temperature		-25 to +60°C (no freezing) Illuminated units: -25 to +55°C	LED Illumination
Storage Temperature		-30 to +80°C (no freezing)	Controllers
Operating Humidity		45 to 85% RH (no condensation)	Operator
Contact Re	sistance	50 mΩ maximum (initial value)	Interfaces
Insulation F	Resistance	100 MΩ minimum (500V DC megger)	
		Between live part and ground:	Sensors
		2,000V AC, 1 minute	AUTO-ID
	Switch Unit	Between terminals of different poles:	
Dielectric		2,000V AC, 1 minute Between terminals of the same poles:	
Strength		1,000V AC, 1 minute	
	Illumination	Between live part and ground:	Flush Silhouette
	Unit	2,000V AC, 1 minute	
Vibration R	esistance	Operating extremes/Damage limits:	ø16
VIDIATION	6313101106	5 to 55 Hz, amplitude 0.5 mm	-00
Shock Resi	stance	Operating extremes: 100 m/s ²	ø22
		Damage limits: 1,000 m/s ²	ø30
Mechanica	LLifo	Momentary: 2,000,000 Maintained: 250,000	
(minimum		Selector switches: 250,000	Miniature
(oportutiono,	Key selector switches: 250,000	Pilot Lights
		Momentary: 50,000 / 100,000 (*1)	
Electrical L	ife	Maintained: 50,000 / 100,000 (*2)	
(minimum	operations)	Selector switches: 50,000 / 100,000 (*2)	
		Key selector switches: 50,000 / 100,000 (*2)	
Degree of Protection		IP65 (IEC 60529)	LB
Terminal Style		Solder/tab terminal #110 PC board terminal	A6
Weight (approx.)		11g (LB3L-M1T24)	ł
		10g (LB3P-1T04)	
		10g (LB3B-M1T2)	
		12g (LB3S-2T2)	
		25g (LB3K-2ST2A)	J
** • • • • •			

*1: Switching frequency 1,800 operations/h.

*2: Switching frequency 1,200 operations/h.

APEM

Control Boxes Emergency Stop Switches Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks Relays & Sockets Circuit Protectors

Power Supplies

ø16mm LB Series Switches and Pilot Lights

LED Illumination

Controllers

Operator Interfaces Sensors

AUTO-ID

Flush Silhouette

s &	Illumina	ted Pushbuttor	IS				
Pilot	Solder/Tab Terminal						Package Quantity:1
Pilot Lights	Part No. / Shape	LB1L-21T	345*				
						h 11	
APEM					P 4		
Switches & Pilot Lights		Rour	ıd	Square		Rectangular	Rectangular with 3-sided Barrier
Control Boxes			④ LED Operating	Par	t No.		
Emergency Stop Switches	② Operation	③ Contact	Voltage	Gold Contact	Silver Contact	* Illumination	Color Code
Enabling Switches		SPDT		LB①L-M1T14*	LB①L-M1T54*	Specify the color code in pla	ce of * in the Part No.
Safety Products	Momentary		24V AC/DC				
Explosion Proof		DPDT		LB①L-M1T24*	LB1L-M1T64*	A: amber G: green	
Terminal Blocks		SPDT		LB①L-A1T14*	LB①L-A1T54*	PW: pure white R: red	
Relays & Sockets Circuit Protectors	Maintained	DPDT	24V AC/DC	LB①L-A1T24*	LB①L-A1T64*	S: blue Y: yellow	

• Illuminated pushbuttons contain an LED unit. For details on LED units, see B-130. Power Supplies

• Illuminated pushbuttons can be used with legend markings. Engraving can be done on a marking plate which is placed in the lens, or a clear film can be printed and placed in the lens. See B-133 for details on the marking plate and film.

③ Contacts

Code

1

2

5

6

Contact

Gold/SPDT

Gold/DPDT

Silver/SPDT

Silver/DPDT

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

• 5V DC and 12V AC/DC LED operating voltages also available. To specify, see Part Number Development below.

② Operation

Operation

Maintained

Momentary

Code

A

М

Part Number Development

LB1L-21T345*

① Shape

	Code	Shape
	1	Round
	2	Square
	3	Rectangular
-	4	Rectangular with 3-sided Barrier

Miniature **5** Others

ø22

ø30

Code	Specification	Part No. Example
Blank	Solder/Tab Terminal	—
V	PC Board Terminal (Gold Contact Only)	LB1L-M1T14 <u>V</u> ∗

• Specify the color code in place of * in the table above

A6

Pilot Lights

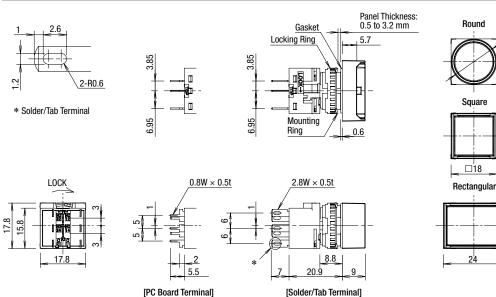
④ LED Operating Voltage

· · · · · · · · · · · · · · · · · ·					
Code	Rated Operating Voltage				
1	5V DC				
3	12V AC/DC				
4	24V AC/DC				

ø16mm LB Series Switches and Pilot Lights

018

Dimensions



[PC Board Terminal]

Terminal Arrangement (Bottom View)

TOP

(SPDT contacts on the right only)

12

[14]⁹

11

22

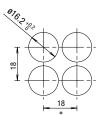
24

21

Panel Cut-out for Positioning (LB1L/LB2L/LB3L/LB4L)



Mounting Hole Layout (LB1L/LB2L/LB3L/LB4L)



Lamp Terminal (+)

Lamp

Terminal (-)

*: 24 mm for rectangular units. Note: When using rubber boot or terminal cover, see dimensions on B-127 and B-128.

• For details on pc board and circuit design, see **B-121**.

• For details on single board mounting, see B-122.

Control Boxes Emergency Stop Switches

APEM

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

```
Relays & Sockets
Circuit
```

Protectors Power Supplies

LED Illumination

```
Controllers
```

Operator Interfaces

Sensors

AUTO-ID

Flush Silhouette

ø16	
ø22	
ø30	
Miniature	
Pilot Lights	

_	
LB	
A6	

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All dimensions in mm.

APEM

Circuit

Protectors

Controllers Operator Interfaces

Sensors

AUTO-ID

Flush Silhouette

ø22

ø30

Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof Terminal Blocks Relays & Sockets

Pilot Lights							
Solder/Tab Terminal Package Quantity:1							
Part No. / Shape LB①P-②TO③④*							
				i ii i			
	Round	Square	R	Rectangular	Rectangular with 3-sided Barrier	Dome	
^② Lens Shape	③ LED Operating Voltage	Part No.		* Illumina	ation Color Code		
Flush	24V AC/DC	LB①P-1T04*	Specify the color code in place of * in the Part No. A: amber G: green				
Dome	24V AC/DC	LB1P-2T04*	PW: pure white R: red S: blue Y: yellow				

• Pilot lights contain an LED unit. For maintenance LED units see **B-130**.

Power Supplies • Legends and symbols can be engraved on a marking plate or film to be inserted under the lens by users for labelling purposes. See B-133 for details.

Lens Shape

2 Lens Shape

Flush

Dome

Code

1

2

• PC board terminals available. To specify, see Part Number Development below.
 • 5V DC and 12V AC/DC LED operating voltages also available. To specify, see Part

• 5V DC and 12V AC/DC LED operating voltages also available. To specify, see Part Number Development below.

Part Number Development

LB1P-2T034*

1) Shape

•	
Code	Shape
1	Round
2	Square
3	Rectangular
4	Rectangular with 3-sided Barrier

4 Rectangular with 3-sided Barrier

Round only for dome.

Miniature ④ Others

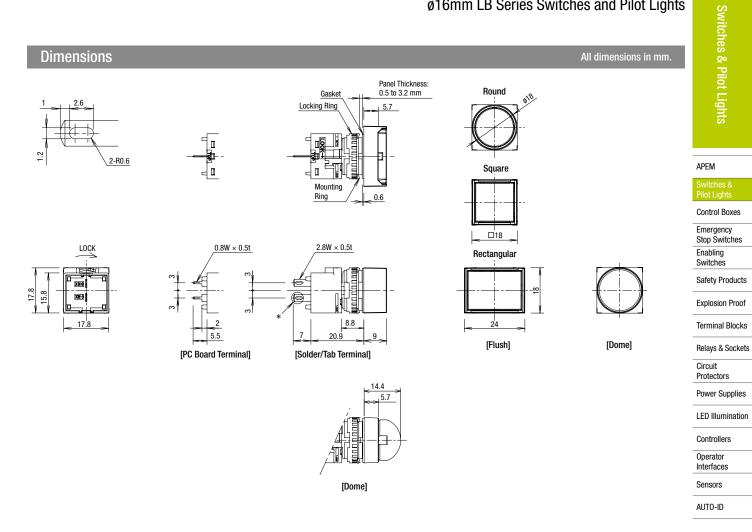
Miniature	Code	Specification	Part No. Example	
Pilot Lights	Blank	Solder/Tab Terminal	—	
	V	PC Board Terminal	LB1P-1T04 <u>V</u> *	

• Specify the color code in place of * in the table above

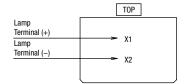
LB A6

③ LED Operating Voltage

	1 0 0
Code	Rated Operating Voltage
1	5V DC
3	12V AC/DC
4	24V AC/DC



Terminal Arrangement (Bottom View)



Panel Cut-out for Positioning (LB1P/LB2P/LB3P/LB4P)

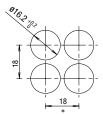


ø22
ø30
Miniature
Pilot Lights

Flush Silhouette

A6

Mounting Hole Layout (LB1P/LB2P/LB3P/LB4P)



*: 24 mm for rectangular units. Note: When using rubber boot or terminal cover, see dimensions on B-127 and B-128.

• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.



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Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof Terminal Blocks Relays & Sockets Circuit Protectors Power Supplies LED Illumination Controllers

Pushbuttons							
Solder/Tab Terminal Package Quantity:1							
Part No. / Shape	LB①B-②1T③④*						
	16 16 1 6 16 16						
	Round Square				r Rectangular with 3-sided Barrier		
Button Style	© Operation ③ Contact		* Illumination Color Code				
	Momentary	SPDT	LB1B-M1T1*	LB1B-M1T5*			
		DPDT	LB1B-M1T2*	LB ^① B-M1T6*	B: black G: green		
Button		3PDT	LB10B-M1T3*	LB10B-M1T7*	R: red		
Button	Maintained	SPDT	LB1B-A1T1*	LB10B-A1T5*	S: blue W: white		
		DPDT	LB10B-A1T2*	LB10B-A1T6*	Y: yellow		
		3PDT	LB1B-A1T3*	LB10B-A1T7*	-		
		SPDT	LB1B-M1T1L*	LB1B-M1T5L*			
	Momentary	DPDT	LB1B-M1T2L*	LB ^① B-M1T6L*	A: amber G: green		
Lens		3PDT	LB1B-M1T3L*	LB1B-M1T7L*	R: red		
Lono		SPDT	LB1B-A1T1L*	LB ^① B-A1T5L*	S: blue W: white		
	Maintained	DPDT	LB1B-A1T2L*	LB1B-A1T6L*	Y: yellow		
		3PDT	LB1B-A1T3L*	LB1B-A1T7L*	-		

. Lens can be used with legend markings. Engraving can be done on a marking plate which is placed in the lens, or a clear film can be printed and placed in the lens. See B-133 for details on the marking plate and film.

· Black is available for lens. Black lens consists of a transparent lens and a black marking plate. To specify, see Part Number Development below.

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

Flush Silhouette

Operator Interfaces

Sensors

AUTO-ID

Part Number Development

ø16	LBI) B-21T 34*			
ø22	① Shape				
ø30	Code	Shape			
	1	Bound			

Shape

ø30	Code	Shape		
Miniatura	1	Round		
wiiniature	2	Square		
Pilot Lights	3	Rectangular		
	4	Rectangular with 3-sided Barrier		
Miniature Pilot Lights	-	Square Rectangular		

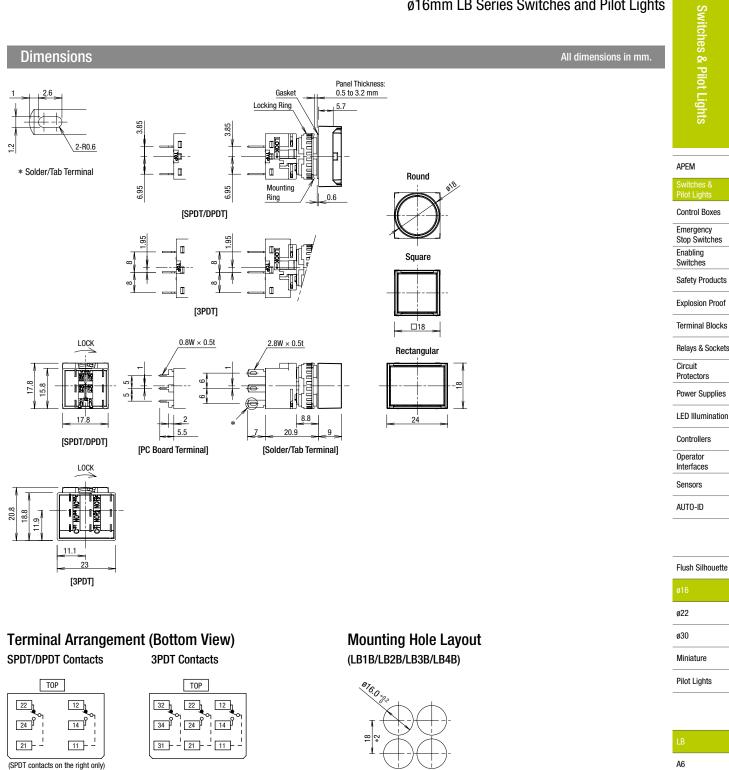
② Operation Code Operation А Maintained М Momentary

③ Conta	cts
Code	

Code	Contact
1	Gold/SPDT
2	Gold/DPDT
3	Gold/3PDT
5	Silver/SPDT
6	Silver/DPDT
7	Silver/3PDT

④ Others

A6	Code	Specification	Part No. Example
	Blank	Solder/Tab Terminal	—
	В	Black Translucent Lens (Lens Only)	LB1B-M1T1L <u>B</u>
	V PC Board Terminal (Gold Contact Only)		LB1B-M1T1 <u>V</u> *

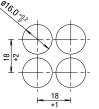


Panel Cut-out for Positioning (LB1B/LB2B/LB3B/LB4B)



• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.



*1: 24 mm for rectangular units, 23.2 mm for 3PDT *2: 21 mm for 3PDT

Note: When using rubber boot or terminal cover, see dimensions on B-127 and B-128.

es & Pilot Lights	Solder/Tab Terminal Package Quantity:1						
Lights	Part No. / Shape	LB(1)S-(2)(3)T(4)(5) Knob Operator)]	Lever Operator			
APEM		1 Cor		100			
Switches & Pilot Lights		Round	Square	Rectangular	Round Squ	are Rectangular	
Control Boxes					Part No.		
Emergency Stop Switches		② Operator Position		③ Contact	Gold Contact	Silver Contact	
Enabling Switches		Maintained		SPDT	LB ^① S-2T1	LB ^① S-2T5	
Safety Products	90° 2-position		LR	DPDT	LB ^① S-2T2	LB ^① S-2T6	
Explosion Proof			·	3PDT	LB ^① S-2T3	LB ^① S-2T7	
Terminal Blocks		Maintained	ĻĊŖ	DPDT	LB ^① S-3T2	LB ^① S-3T6	
Relays & Sockets	45°		\bigvee	3PDT	LB ^① S-3T3	LB ^① S-3T7	
Circuit Protectors	3-position	Spring return two-way		DPDT	LB ^① S-33T2	LB ^① S-33T6	
Power Supplies			\bigvee	3PDT	LB1)S-33T3	LB ^① S-33T7	

LED Illumination • Lever operators also available. To specify, see Part Number Development below.

• PC board terminals available for gold contacts. To specify, see Part Number Development below.

2 Operator Position

2 Maintained

Operator Position

21 Spring return

from right

• 2-position spring return from right, 3-position spring return from right, 3-position spring return from left also available. To specify, see Part Number Development below. • For contact operation, see B-119. Interfaces

3-position

3 Maintained

R

Part Number Development

LB1S-23T45

Shape

Round

Square

Rectangular

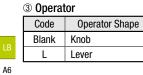


Controllers

Operator

Sensors

AUTO-ID



7

2-position

④ Contacts					
Code	Contact				
1	Gold/SPDT (90° 2-position only)				
2	Gold/DPDT				
3	Gold/3PDT				
5	Silver/SPDT (90° 2-position only)				
6	Silver/DPDT				

Silver/3PDT

6 Others

Code	Specification	Part No. Example			
Blank	Solder/Tab Terminal	—			
v	PC Board Terminal (Gold Contact Only)	LB1S-2T1 <u>V</u>			

32 Spring return

from left

R

33 Spring return

two-way

R

Operator Position

31 Spring return

from right

R

All dimensions in mm.

Round







Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers Operator Interfaces

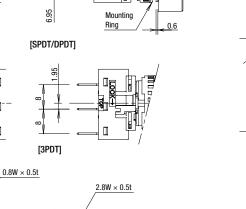


Flush Silhouette

Miniature

Pilot Lights

LB		
A6		



Gasket Locking Ring

Π

3.85

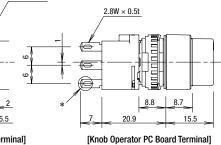
Ш

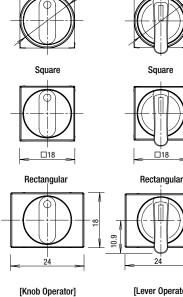
Π

Π

3.95

Panel Thickness: 0.5 to 3.2 mm



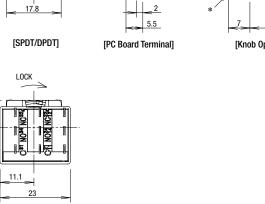


Round

[Lever Operator]

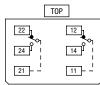


ø22 ø30



[3PDT]

Terminal Arrangement (Bottom View) SPDT/DPDT Contacts **3PDT Contacts**



Dimensions

* Solder/Tab Terminal

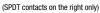
\$

17.8 15.8

20.8

2-R0.6

LOCK

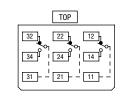


Panel Cut-out for Positioning (LB1S/LB2S/LB3S)

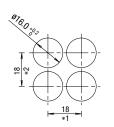


• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.



Mounting Hole Layout (LB1S/LB2S/LB3S)



*1: 24 mm for rectangular units, 23.2 mm for 3PDT *2: 21 mm for 3PDT Note: When using terminal cover, see dimensions on B-128.

8.7 18.

[Lever Operator]

Download catalogs and CAD from http://asia.idec.com/downloads

Control Boxes Emergency

Safety Products

Terminal Blocks

Relays & Sockets

LED Illumination

Controllers

Operator Interfaces Sensors

AUTO-ID

Protectors Power Supplies

Illuminated Selector Switches Solder/Tab Terminal Package Quantity:1 Part No. / LB1F-2T345* Shape APEM Round Square Rectangular Part No. ④ LED Operating Stop Switches 2 Operator Position ③ Contact * Illumination Color Code Voltage **Gold Contact** Silver Contact Enabling Switches Maintained SPDT 24V AC/DC LB1)F-2T14* LB1F-2T54* Specify the color code in place 90° R Explosion Proof 2-position of * in the Part No. DPDT 24V AC/DC LB1)F-2T24* LB①F-2T64* G: green R: red PW: pure white Maintained 45° R Circuit DPDT 24V AC/DC LB1)F-3T24* LB①F-3T64* 3-position

• Illuminated selector switches contain an LED unit. For maintenance LED units see B-130.

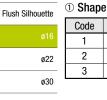
• PC board terminals available for gold contacts. To specify, see Part Number Development below.

• 5V DC and 12V AC/DC LED operating voltages also available. To specify, see Part Number Development below.

• For contact operation, see **B-119**.

Part Number Development

LB(1)F-(2)T(3)(4)(5)*



Shape Round

2 Square 3 Rectangular

Miniature

Pilot Lights

A6

④ LED Operating Voltage

Code	Rated Operating Voltage
1	5V DC
3	12V AC/DC
4	24V AC/DC

② Operator Position 2

-position 3-position				
Operator Position				
2 Maintained	3 Maintained			
L R				

③ Contacts

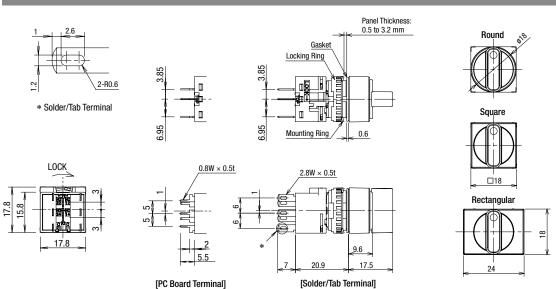
Code	Contact			
1	Gold/SPDT (90° 2-position only)			
2	Gold/DPDT			
5	Silver/SPDT (90° 2-position only)			
6	Silver/DPDT			

5 Others

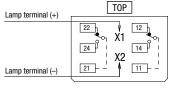
Code	Specification	Part No. Example	
Blank	Solder/Tab Terminal —		
V	PC Board Terminal (Gold Contact Only)	LB1F-2T14 <u>V</u> *	

• Specify a color code in place of <u>* in the Part No.</u>

Dimensions

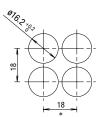


Terminal Arrangement (Bottom View)



(SPDT contacts on the right only)

Mounting Hole Layout Round (LB1F/LB2F/LB3F)



*: 24 mm for rectangular units. Note: When using terminal cover, see dimensions on B-128

• For details on pc board and circuit design, see B-121.

• For details on single board mounting, see B-122.

Panel Cut-out for Positioning Round (LB1F/LB2F/LB3F)



LED Illumination
Controllers
Operator Interfaces
Sensors
AUTO-ID
Flush Silhouette
ø16
ø22

Miniature		
Pilot Lights		

ø30

LB	
A6	



APEM

Control Boxes Emergency Stop Switches

Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets Circuit Protectors Power Supplies

All dimensions in mm.

APEM

Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof

Terminal Blocks

Relays & Sockets

Circuit

Controllers Operator

Interfaces Sensors

AUTO-ID

Flush Silhouette

ø22 ø30

Pilot Lights

A6

Key Sel	ector Switche	es				
Solder/Tab Tern	ninal					Package Quantity
Part No. / Shape	LB1K-23	T 45-6				
		10			To-	
		Round		Square	Rectangular	
⁽²⁾ Operator Position		© Key Removable	(5) Key Removable Position		Part No.	
		© Key Hernovable			Gold Contact	Silver Contact
		A: Key removable in		SPDT	LB ^① K-2ST1A	LB ^① K-2ST5A
90° 2-position		all positions	all positions	DPDT	LB ^① K-2ST2A	LB ^① K-2ST6A
			\checkmark	3PDT	LB ^① K-2ST3A	LB ^① K-2ST7A
45°	Majataja ad	A: Key removable in	C C R	DPDT	LB ^① K-3ST2A	LB ^① K-3ST6A
3-nosition	Maintained	all positions	$\langle \rangle$	2007	I BOK 2012A	

3PDT

· For operator position, see Part Number Development below.

• For key removable position, see Part Number Development below. The key cannot be removed at the return position.

all positions

Protectors • Two keys are supplied.

3-position

• Besides the standard key (key number OH), six other keys are available. Power Supplies

Disc tumbler keys also available. Only the standard key is available. To specify, see Part Number Development below.

LED Illumination • PC board terminals available for gold contacts. To specify, see Part Number Development below.

• For contact operation, see B-119.

Part Number Development

Shape

LB1K-23T45-6

Round

Square

Rectangular

2 Operator Position

e oporator i controli						
		Code	Operator Position			
		2	90° 2-position maintained			
		21	90° 2-position spring return from right			
		3	45° 3-position maintained			
	•	31	45° 3-position spring return from right			
		32	45° 3-position spring return from left			
		33	45°-3-position spring return two-way			

3 Key Style

Code	Key Style			
S	Wave key			
Blank	Disc tumbler key			

LB^①K-3ST3A

LB^①K-3ST7A

④ Contacts Miniature

① Shape

Code

1 2

3

Code	Contact
1	Gold/SPDT (90° 2-position only)
2	Gold/DPDT
3	Gold/3PDT
5	Silver/SPDT (90° 2-position only)
6	Silver/DPDT
7	Silver/3PDT

© Key N	lumber
---------	--------

Code	
Blank	Standard key (0H)
1H to 2H	Reversible key
3H to 6H	Non-reversible key

· Wave key only.

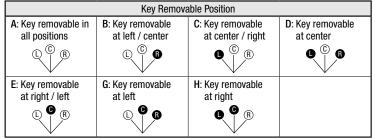
Others

Code Specification		Part No. Example
Blank	Solder/Tab Terminal	—
v	PC Board Terminal (Gold Contact Only)	LB1K-2ST1 <u>V</u> A

5 Key Removal Position

2-position			
	Spring return from right		
A: Key removable in all positions	B: Key removable at left	C: Key removable at right	

3-position



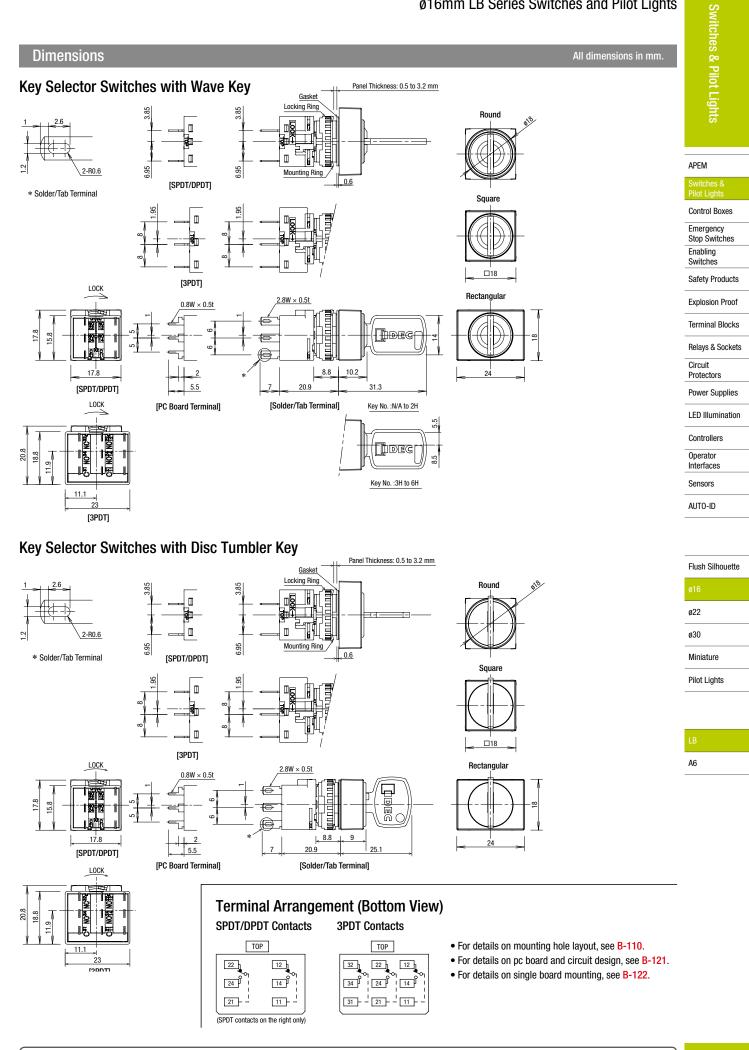
For key selectors with the following operations, the key cannot be removed at the return position.

3-position

Spring return from right	Spring return from left	Spring return two-way
	€ ®	

• Key is removable at \mathbb{O} , \mathbb{O} , \mathbb{B} . Key is retained at $m{0}$, $m{\Theta}$, and $m{B}$.

For more information, visit http://asia.idec.com



APEM

Control Boxes Emergency

Stop Switches

Safety Products

Explosion Proof

Terminal Blocks

Relays & Sockets

Power Supplies

LED Illumination

Controllers Operator Interfaces Sensors

Circuit

Protectors

Enabling

Switches

Package Quantity:1

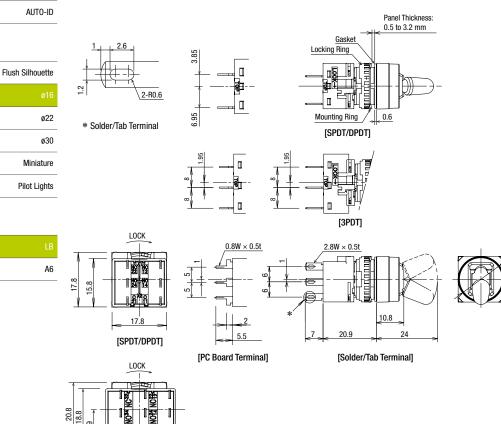


All dimensions in mm.

 PC board terminals available for gold contacts. Add "V" to the Part No. Example: LB1T-2T1V

• For contact operation, see **B-119**.

Dimensions



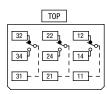
Terminal Arrangement (Bottom View)

SPDT/DPDT	Contacts
	_



(SPDT contacts on the right only)

3PDT Contacts



- For details on mounting hole layout, see **B-110**.
- For details on pc board and circuit design, see B-121.
- For details on single board mounting, see B-122.

For more information, visit http://asia.idec.com

11.1 23 [3PDT]

Buzzers

Specifications

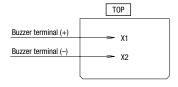
•				
Rated Insulation Voltage	30V	Dielectric Strength	Between live and dead parts:	ights
Rated Operating Voltage	12, 24V DC		1,000V AC, 1 minute	o
Operating Voltage Range	12V DC±10%, 24V DC±10%	Vibration Resistance	Operating extremes/Damage limits: 5 to 55 Hz, amplitude 0.5 mm	
Current Draw	26mA			
Inrush Current	80mA maximum	Shock Resistance	Operating extremes: 100m/s ² Damage limits:1,000m/s ²	APEM
Sound Pressure (at 0.1m)	Steady sound: 80 dB minimum (at the rated voltage)	Life	1,000 hours minimum (beep sound)	Switches & Pilot Lights
Sound Frequency	2.3±0.3kHz	Degree of Protection	LB3Z-1T0*: IP54 (IEC60529) LB3Z-104K: IP40 (IEC60529)	Control Boxes
Response Speed	50 ms maximum		LB3Z-1T0*: Solder/tab terminal #110	Emergency
Operating Temperature	-25 to +60°C (no freezing)	Terminal Style	PC board terminal	Stop Switches
Storage Temperature	-30 to +80°C(no freezing)		LB3Z-104K: Solder terminal	Enabling Switches
Operating Humidity	45 to 85% (no condensation)	Weight (approx.)	11g (LB3Z-1T0*), 8g (LB3Z-104K)	Cofety Dreducte
Insulation Resistance	100 MΩ minimum (500V DC megger)	For applicable standards a	nd UL, CSA ratings, see <mark>B-089</mark> .	Safety Products
			14 0L, 0011441190, 000 D 000.	Explosion Proof

Name and Shape		Operating Voltage	Terminal Chila	Part	Terminal Blocks	
		Operating Voltage	Terminal Style	IP54	IP40	
Rectangular			Solder/tab terminal	LB3Z-1T04	_	Relays & Sockets
Time I	1000	24V DC	PC board terminal	LB3Z-1T04V		Circuit Protectors
	SEA.	240 00				Power Supplies
IP54 IP40)		Solder terminal	—	LB3Z-104K	LED Illumination

• 12V DC operating voltages also available. Specify "-1T04" in place of "-1T03" in the Part No. Example: LB3Z-<u>1T03</u>

Dimensions

IP54 Terminal Arrangement (Bottom View)





LOCK

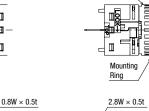
X1(+)

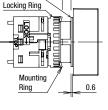
X2(-)

17.8

17.8

<u>2-R0.6</u> —



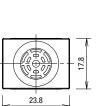


8.8

20.9

[Solder/Tab Terminal]

Gasket



Panel Thickness: 0.5 to 3.2 mm

ø30 Miniature Pilot Lights

Flush Silhouette

ø22

A6

Controllers

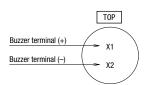
Operator Interfaces

Sensors

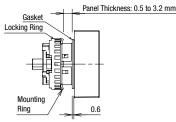
AUTO-ID

IP40

Terminal Arrangement (Bottom View)

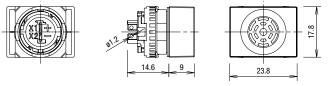


- For details on mounting hole layout, see B-110.
- For details on pc board and circuit design, see B-121.
- For details on single board mounting, see B-122.



5.5

[PC Board Terminal]



All dimensions in mm.

Switches & Pilot Lights

Contact Operation

Pilot Lights	Selector Switch / Illuminated Selector Switch / Key Selector Switch								
Ligh	Operator Position & Contact Operation (Top View)								
lts			Position			Contact	∖ Left	† Center	🗡 Right
APEM Switches &		L R L R Maintained Spring return from right			SPDT				
Pilot Lights Control Boxes Emergency Stop Switches	90° 2-position			L Spring retur	LR Spring return from right		Left Right 14 12 24 22 0 0 0 11 21		Left Right 14 12 24 22 14 12 24 22 14 12 24 22 11 21
Enabling Switches Safety Products Explosion Proof				3PDT	Left Center Right 14 12 24 22 34 32 0 0 0 0 0 11 21 31		Left Center Right 14 12 24 22 34 32 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Terminal Blocks Relays & Sockets Circuit	45°					DPDT	Left Right 14 12 24 22 • • • • • • 11 21	Left Right 14 12 24 22 	Left Right 14 12 24 22 0 0 0 0 11 21
Protectors Power Supplies LED Illumination	3-position	Maintained	Spring return from right	Spring return from left	Spring return two-way	3PDT	Left Center Right 14 12 24 22 34 32	Left Center Right 14 12 24 22 34 32 	Left Center Right 14 12 24 22 34 32 0 0 0 0 0 0 11 21 31
Controllers Operator Interfaces Sensors	Lever Switch					11		·	
				Lever Pos	sition & Contact Op	eration (Top	view)		
AUTO-ID									

	Lever Position & Contact Operation (Top View)							
AUTO-ID		Position		Contact	Down	Center	Up	
Flush Silhouette				SPDT	14 12 0 11		14 12 • • 11	
ø22 ø30	90° 2-position	Maint	U D tained	DPDT	Left Right 14 12 24 22 0 0 0 11 21		Left Right 14 12 24 22 0 0 0 0 11 21	
Miniature Pilot Lights				3PDT	Left Center Right 14 12 24 22 34 32 0 0 0 0 0 11 21 31		Left Center Right 14 12 24 22 34 32 $\phi \phi \phi \phi \phi \phi \phi$ 11 21 31	
CW LW-F	45° 3-position	u c	, u c	DPDT	Left Right 14 12 24 22 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Left Right 14 12 24 22 0 0 0 0 11 21	Left Right 14 12 24 22 0 0 0 0 11 21	
LB LBW UP		D Maintained	∽ _D Spring return two-way	3PDT	Left Center Right 14 12 24 22 34 32 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Left Center Right 14 12 24 22 34 32 0 0 0 0 0 0 0 11 21 31	Left Center Right 14 12 24 22 34 32 0 0 0 0 0 0 11 21 31	

Flush Bezel

Control Boxes

Stop Switches Enabling

Safety Products Explosion Proof

Terminal Blocks

Relays & Sockets

LED Illumination

Controllers

Operator

Interfaces Sensors

AUTO-ID

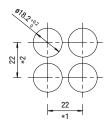
Circuit Protectors Power Supplies

Emergency

Switches

Mounting Hole Layout / PC Board Drilling Layout

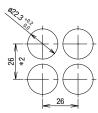
LB Series Flush Bezel Round (LB6/LB6M)



*1: 23.2 mm for 3PDT contacts *2: 45 mm for switches with guard

LBW Series Flush Bezel

Round (LBW6/LB6M/LBW6G)



* 53 mm for switches with guard

Panel Cut-out for Positioning

LB Series Flush Bezel







125V

3.5 A

2A

0.4A

0.2A



18

*1: 24 mm for rectangular type 23.2 mm for 3PDT contacts *2: 21 mm for 3PDT contacts

LB Series Standard Bezel Round (LB1/LB2/LB3)



ø22 ø30 Miniature Ρ

ilot	Lights	

CW LW-F UP

Flush Bezel

CSA

Rated

Operating

Current

UL

Gold Contact

Silver Contact

Rated Operating Voltage

Rated Operating Current

Rated Operating Voltage

AC

DC

Gold Contact

Rated Operating Voltage	30V DC	125V DC
Rated Operating Current	0.1A	0.1A

Approval Ratings and CCC Approval File No.

Res.

Ind.

Res

Ind.

30V DC

0.1A

30V

2, 3, 5A

1A

Silver Contact

Rated Operating Voltage		30V	125V	250V	
Rated AC Operating Current DC	Res.	—	3A	2, 3, 5A	
	AU	Ind.	—	2A	1.5A
	Res.	2, 5A	0.4A	_	
	00	Ind.	1A	0.2A	_

CCC Gold Contact

ΤÜV

Gold Contact

Silver Contact

Rated Operating

Current

Rated Operating Voltage

Rated Operating Current

Rated Operating Voltage

AC-12

DC-12

Rated Operating Voltage	30V DC	125V AC
Rated Operating Current	0.1A (DC-12)	0.1A (AC-12)

30V DC

0.1A (DC-12)

125V

3A

0.4A

30V

2, 5A

125V AC

0.1A (AC-12)

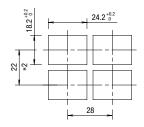
250V

2, 5A

Silver Contact

Rated Operating Voltage		30V	250V	
Rated Operating	AC-12	—	2, 5A	
Current	DC-12	2, 5A		

Rectangular (LB8/LB8M)



LB Series Standard Bezel

Note: When using the LB series with a rubber boot or terminal cover, make sure to note the dimensions on B-128.

Square (LBW7/LBW7M/LBW7G)

22

Square (LB7/LB7M)

\$22

□18.2 ^{+0.3}

22.5 +0.2 26 26

* 53 mm for switches with guard

Round (LB6/LB6M)





125V AC

0.1A

250V

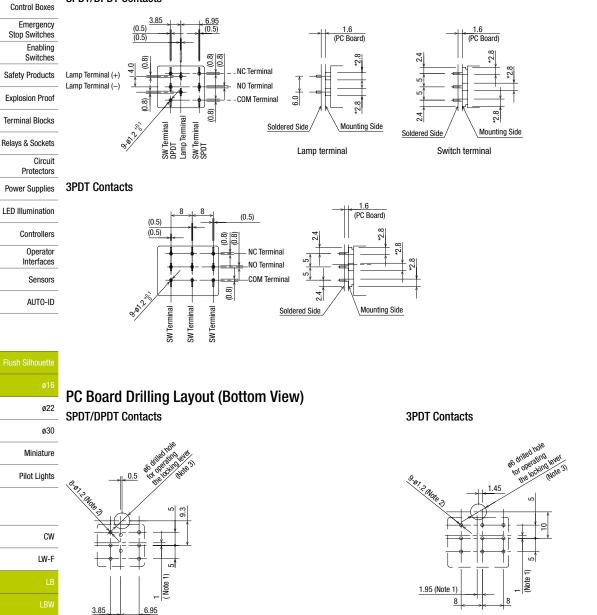
2, 3, 5A

1.5A

Notes for Designing PC Board and Circuit

- Use 1.6-mm-thick glass epoxy PC board with drilled holes.
- Design a circuit so that the LB/LBW series can operate within the rated voltage and current range. Make sure that inrush current and voltage do not exceed the rating.
- Minimum applicable load is 5V AC/DC, 1 mA on gold contacts. Applicable range is subject to the operating condition and load.
- Since the *2.8-mm-wide terminal touches the PC board as shown on the right, short circuit may occur with pattern lines. Design a circuit that prevents short circuits.

SPDT/DPDT Contacts



Flush Bezel Note 1: When designing, note the alignment of center lines of the contact blocks and center lines of the operators. Note 2: The diameter of the terminal hole is ø1.2.

Note 3: Hole diameter may vary to meet installation requirements. Determine the location and the size of the hole so that the locking lever can be operated.

UP

3PDT Contacts

min

22

22 min

<u>-</u>0

18.2

mi.

20

min

22

23.2 min

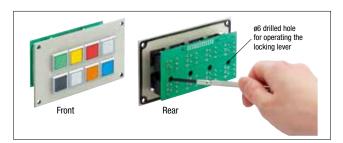
23.2 min

24.2 ±0.1

□18.2 ±0.1

Single Board Mounting

IDEC's LB/LBW Series is available for single board mounting.



Installing and Removing Contact Blocks

Turn the locking lever to install and remove contact blocks on the PC using a screwdriver from a hole in the PC board. See "Notes for Designing PC Board and Circuit" on B-121. Determine the location of the switches so that the locking lever can be operated. See "Removing and Installing the Contact Block" on B-131.

Mounting Holes and Assembly Procedure

Drill mounting holes in the panel as shown below. When the units are mounted collectively, provide adequate clearance.

Panel Cut-out for Positioning

Standard Bezel (LB1/LB2/LB3/LB4)



LBW Series Flush Bezel

(LBW6/LBW6M/LBW6G)

Mounting Hole Layout

SPDT/DPDT Contacts

or more

(24 or more for

rectangular units

18 more

Standard Bezel (LB1/LB2/LB3/LB4)

LB Series Flush Bezel (LB6/LB6M/LB6G)



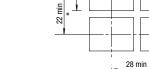
3PDT Contacts

23.2

or more

(24 or more for rectangular units)

21 more



min.

9

18.2 ±0.

* 45 mm minimum for switches with guard

LBW Series Flush Bezel LBW6/LBW6M/LBW6G

LB Series Flush Bezel SPDT/DPDT Contacts

22 min

22 min

24.2 ±0.1

□18.2^{±0.1}

LB6/LB6M/LB6G

Ø18,2

min

221

LB7/LB7M/LB7G

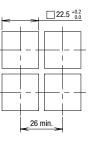
LB8/LB8M/LB8G

22 min

LBW Series Flush Bezela

28 min

LBW7/LBW7M/LBW7G



UP

Assembly Procedure

26 min.

- 2. Mount the contact block to the operator from the rear.
- 3. Turn the locking lever to lock the contact block.
- Note 1: Make sure that each terminal is inserted into the PC board correctly.
- Note 2: Do not apply tensile force to the connector cable for an extended period of time.
- Note 4: Ensure to lock contact blocks when the contact blocks are installed on the operators.



B-122

APEM

Control Boxes

Emergency Stop Switches Enabling

Switches

Safety Products

Explosion Proof

Terminal Blocks Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors AUTO-ID

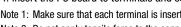
```
ø22
ø30
Miniature
```

CW LW-F

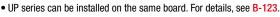
Pilot Lights

Flush Bezel

* 53 mm minimum for switches with guard



- 1. Install the operator to the panel.
 - - 4. Insert the PC board to terminals and solder.
- - Note 3: Do not expose the contact block to water.



Switche Pilot Lig Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof

Relays & Sockets

Protectors Power Supplies LED Illumination Controllers Operato Interfaces Sensors

UP Series Single Board Mount Pilot Lights

Mounts on the same panel as LB/LBW series

• Three illumination colors: Green (G), red (R), and white (W)

Specifications

	<u> </u>			
-	Color Code		Red (R), White (W)	G (Green)
	Rated Curren	t (I)	7mA	2mA
		Reverse Voltage (VR)	9V	5V
	Maximum Operating Current Temperature (Topr)		−25 to +55°C (no freezing)	
-		Storage Temperature (Tstg)	–30 to +80°C (no freezing)	
-	Forward Voltage (V _f)		Standard value: 2V (If=7mA)	Standard value: 2.7V (If=2 mA)
_	Dielectric Voltage		Between live and dead parts: 500V AC, 1 minute	
_	Weight (approx.)		4.3g (UP8-89V1), 5.1g (UP8-89V2)	

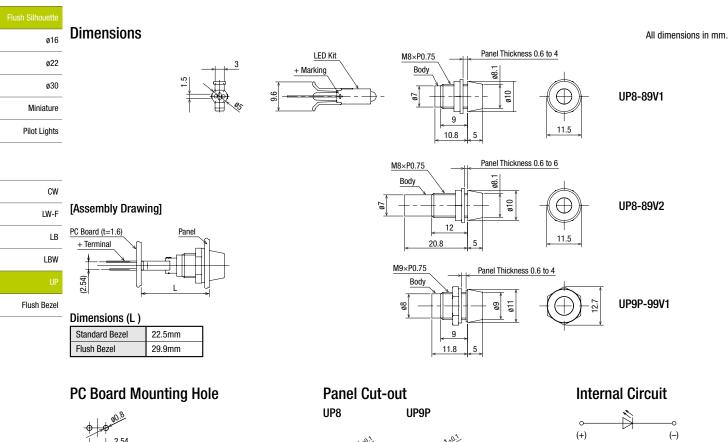


Terminal Blocks **UP Series**

	0. 0	01103							
circuit Protectors		Mounting Hole Size	Shape	Degree of Protection (IEC 60529)	Mountable Unit	Part No.	Ordering No.	Illumination Color Code	Package Quantity
ver Supplies	ø8 UP8	With standard bezel	Chroud		Standard Bezel	UP8-89V1*	UP8-89V1*PN10	Specify the color code	10
Controllers Operator Interfaces		With flush bezel	Shroud IP40 -	Flush Bezel	UP8-89V2*	UP8-89V2*PN10	in place of * in the Part No. G: green	10	
Sensors AUTO-ID	ø9 UP9F		Shroud	IP65	Standard bezel Flush bezel	UP9P-99V1*	UP9P-99V1*PN10	R: red W: white	10

• LED cannot be replaced.

Note: Connect an external current limiting resistor in series. Otherwise, the LED may be damaged.



The longer pin is the positive terminal

For more information, visit http://asia.idec.com

Control Boxes

Stop Switches

Safety Products

Explosion Proof

Terminal Blocks

Relavs & Sockets

Circuit

Protectors

Emergency

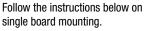
Enabling Switches

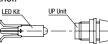
A Safety Precautions

- Turn off power to the unit before installation, removal, wiring, maintenance, and inspection.
- Failure to turn off may cause electrical shocks or fire hazard.
- For wiring, use wires of a proper size to meet the voltage and current requirements.
- Improper soldering or failure to tighten the terminal screw may cause overheating and fire.

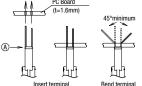
Single Board Mounting

UP series miniature pilot light single board mounting types can be mounted with LB/ LBW series on the same panel.





1. Mount the LED kit to the PC board.



panel.

Temporary mounting

shown on the left.

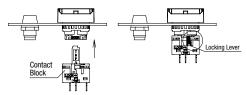
 Note the polarity of the terminals and insert the terminals to the PC board.
 Make sure that part A of the LED kit is pressed tightly to the PC board. Bend the terminals sideways as

 Insert terminal
 Bend terminal

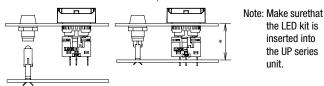
 2. Mount the operator and the UP series pilot lights on to the control

Panel Panel Canada Cana

Mount the contact block to the operator of the miniature control unit and lock the unit by turning the locking lever.



4. Install the PC board in 1. to the panel in 3.



* When mounting LB/LBW and UP series on a single board, make sure that the distance between the front of the panel and the mounting side of the PC board (gasket distortion is taken into consideration) is as shown in the table below.

Part No.	Mountable Unit	Distance (*)
UP8-89V1*	Standard bezel	22.5mm
UP8-89V2*	Flush bezel	29.9mm
UP9P-99V1*	Standard bezel	22.5mm
0P9P-99V1*	Flush bezel	29.9mm

5. Solder the terminals.

Before soldering, make sure that each terminal of the contact block is securely inserted into the PC board holes.

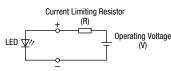
Instructions

Polarity

Pay attention to the polarity of the power supply as UP series units do not contain a diode for protection against reverse polarity. The long terminal is positive and the short terminal is negative.

Current Limiting Resistor

When using a UP series unit without a built-in current limiting resistor, connect an external current limiting resistor. Calculate the resistance using the following formula.



Resistance (Ω)= $\frac{\text{Operating Voltage (V)} - \text{Forward Voltage (Vf)}}{\text{Rated Current (I) } *}$

Rated Current (I) = R (red), W (white)	: 0.007A
G (green)	: 0.002A
Forward Voltage (Vf) = R (red), W (wh	ite) : 2V
G (green)	: 2.7V
	$ \begin{array}{l} G \mbox{ (green)} \\ \mbox{Forward Voltage (Vf)} = R \mbox{ (red), W (wh)} \end{array} $

Note: Use a resistor of higher resistance than the calculated value (Ω)

$$\frac{\text{Rated Wattage of Resistor}}{(W)} = \frac{\text{Rated Current}}{(I)} \times \frac{\text{Operating Voltage}}{(V)} \times 2 \text{ to } 3$$

* 2 to 3 is a safety fac

<Current Limiting Resistor Reference Value>

Color Operating Voltage	Red (R), White (W)	Green (G)
5V DC	430Ω (1/4W)	1200Ω (1/4W)
6V DC	560Ω (1/4W)	1600Ω (1/4W)
12V DC	1500Ω (1/4W)	4700Ω (1/4W)
24V DC	3000Ω (1/2W)	11000Ω (1/4W)

Countermeasures against Dim Lighting See B-136.

Wiring

Solder the terminal at 350°C within 3 seconds using a 60W soldering iron. SnAgCu type lead-free solder is recommended.

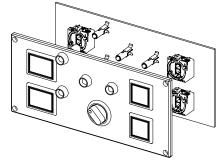
When soldering, do not touch the pilot light housing with the terminal. Do not bend the terminal or apply excessive force to the terminal.

Notes on Panel Mounting

Tightening torque should not exceed 0.49 N·m. Do not use pliers. Do not tighten with excessive force, otherwise the locking ring will be damaged.

PC Board and Circuit Design

Use glass epoxy copper clad laminate, double-sided through-hole PC boards with a thickness of 1.6 mm.



Example of single board mounting

	Power Supplies
× 2 to 3 *	LED Illumination
a safety factor	Controllers

```
Operator
Interfaces
Sensors
```

AUTO-ID

```
Flush Silhouette
ø16
ø22
ø30
Miniature
Pilot Lights
CW
LW-F
```

LW-F	
LB	
LBW	

Flush Bezel

APEM Switches & Pilot Lights Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof Terminal Blocks Relays & Sockets Circuit Protectors Power Supplies LED Illumination Controllers Operator Interfaces Sensors AUTO-ID

> ø22 ø30 Miniature Pilot Lights

> > CW LW-F

UP Flush Bezel

	Accessories							
				1		1		Package Quantity:1
		Shape		Specification	Part No.	Ordering No.	Package Quantity	Remarks
Lo	Locking Ring Wrench			Metal (Nickel-plated brass)	MT-001	MT-001	1	Used to tighten the locking ring when installing the units on to the panel.
			Stainless Steel	MT-101	MT-101	1	Used to remove the lens or button. (for standard bezels)	
	(180° Spring return	For round / square units (LB1/LB2)	Guard (Polyacetal)	AL-K6SP	AL-K6SP	1	Degree of protection: IP65 Used to protect pushbuttons and illuminated pushbuttons from inadvertent operation.
	(snring retur	Spring return	For rectangular units (LB3/LB4)	Base (Polyarylate)	AL-KH6SP	AL-KH6SP	1	See B-127 for dimensions. With the gasket mounted on the switch, attach the switch guard and mount on the panel.
	Switch Guard (sorring return)	180° Spring return for Single Board Mounting	For rectangular units (LB3/LB4)	Guard (Polyacetal) Base (Polyarylate)	LA9Z-K3	LA9Z-K3	1	Degree of protection: IP65 With the gasket mounted on the switch, attach the switch guard and mount on the panel. See B-127 for dimensions.
Eor Ctandard Bazalo	tch rutard (remains men)	Remains 110°/180° open (Can be used for single board mounting)	For round / square units (LB1/LB2)	Guard (Polyacetal) Base (Polyarylate)	LB9Z-K2	LB9Z-K2	1	Degree of protection: IP40 Used to protect pushbuttons and illuminated pushbuttons from inadvertent operation. See B-127 for dimensions. With the gasket mounted on the switch, attach the switch guard and mount on the panel. See B-136 for dimensions. When using for single board mounting, remove the rubber gasket from the switch.
Eor Star		For rectangular units (LB3/LB4)			LB9Z-K3P	LB9Z-K3P	1	Degree of protection: IP65 With the gasket mounted on the switch, attach the switch guard and mount on the panel. See B-127 for dimensions.
	Rı	1 December Boot	1. For round units (LB1)		LB9Z-D1	LB9Z-D1	1	
		®	2. For square units (LB2)	Rubber (Transparent silicon rubber)	LB9Z-D2	LB9Z-D2	1	Degree of protection: IP65 See B-127 for dimensions. See B-135 for mounting.
	units		3. For rectangular units (LB3/LB4)		LB9Z-D3	LB9Z-D3	1	
			Metal	[Plug] Metal (Zinc diecast) [Locking nut] Polyacetal [Gasket] Nitrile rubber	AL-BM6	AL-BM6	1	Degree of protection: IP65 Tightening torque: 0.1 to 0.29 N·m See <mark>B-127</mark> for dimensions.
	М	lounting Hole Plug	Rubber	Nitrile rubber (black)	AL-B6	AL-B6PN05	5	Degree of protection: IP65 See B-127 for dimensions.

A	ccessories							38 ¢
			(·			Package Quantity:1	Pilot
	Shape		Specification	Part No.	Ordering No.	Package Quantity	Remarks	es & Pilot Lights
	Rubber Boot	1. For round units (LB6/LB6M)		LB9Z-D6	LB9Z-D6	1		APEM
	@	2. For square units (LB7/LB7M)	Rubber (Transparent silicon rubber)	LB9Z-D7	LB9Z-D7	1	Degree of protection: IP65 See B-128 for dimensions. See B-135 for mounting.	Switches & Pilot Lights Control Boxes
Flush Bezels	3	3. For rectangular units (LB8/LB8M)		LB9Z-D8	LB9Z-D8	1		Emergency Stop Switches Enabling Switches
For LB Series I	Mounting Hole Plug	1. For round units (LB6/LB6M)	[Plug]	LB9Z-BS6*	LB9Z-BS6*	1		Safety Products Explosion Proof Terminal Blocks
	2	2. For square units (LB7/LB7M)	Polyamide (Black) [Gasket] Nitrile rubber	LB9Z-BS7*	LB9Z-BS7*	1	* Color code: blank (black), W (white) Degree of protection: IP65 Panel thickness: 0.5 to 3.2 mm See B-128 for dimensions.	Relays & Sockets Circuit Protectors
	3	3. For rectangular units (LB8/LB8M)	[Mounting Plate] Stainless Steel	LB9Z-BS8*	LB9Z-BS8*	1		Power Supplies LED Illumination
	Mounting Hole Plug	1. For round units (LBW6/LB6W6M)	[Plug] Polyamide (Black) [Gasket]	LBW9Z-BS6*	LBW9Z-BS6*	1	* Color code: blank (black), W (white) Degree of protection: IP65	Controllers Operator Interfaces Sensors
Bezels	2	2. For rectangular units (LBW7/LB6W7M)	[Mounting Plate] Stainless Steel	LBW9Z-BS7*	LBW9Z-BS7*	1	Panel thickness: 0.5 to 3.2 mm See B-128 for dimensions.	AUTO-ID
For LBW Series Flush Bezels	Mounting Hole Plug	Metal	[Plug] Zinc diecast [Locking Ring] Polyamide [Gasket] Nitrile rubber	LW9Z-BM	LW9Z-BM	1	Degree of protection: IP66 Tightening torque: 1.2 N·m See B-128 for dimensions.	Flush Silhouette ø16 ø22
	Mounting Hole Plug	Rubber	Nitrile rubber	LW9Z-BP1	LW9Z-BP1	1	Degree of protection: IP65 Tightening torque: 2.0 N·m See B-128 for dimensions.	ø30 Miniature Pilot Lights
Ter 1	minal Cover 2	1. For SPDT/DPDT contacts	PBT	LB9Z-VL2	LB9Z-VL2PN10	10	See B-128 for dimensions.	CW
	2. For 3PDT contacts		(White)	LB9Z-VL3	LB9Z-VL3PN10	10	See B-131 for mounting.	LW-F
Кеу	Reversible key	For key selector switches (wave key)	Metal (zinc nickel-plated)	LA9Z-SK-*	LA9Z-SK-*PN02	2	Specify a key number in place of * in the Part No. Blank: Standard key OH (reversible) 1H to 2H: Reversible key 3H to 6H: Non-reversible key See B-128 for dimensions.	LBW UP Flush Bezel
Key	's	For key selector switches (disc tumbler key)	Metal (brass nickel-plated) 18×1.8×25.1 t1.8	AS6-SK-132	AS6-SK-132PN02	2		



Switches

Circuit

Protectors

Sensors

Power Supplies

Pilot Lights Control Boxes Emergency Stop Switches Enabling

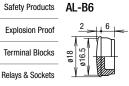
For LB Series Standard Bezel

Rubber Boot For round units (LB9Z-D1)





Mounting Hole Plug



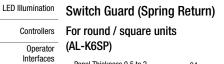


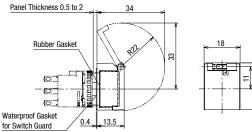
For square units

11.5

(LB9Z-D2)

□20



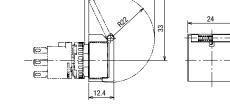


ø22

ø30 Miniature

Pilot Lights

CW LW-F LB

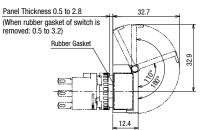


For Single Board Mounting (LA9Z-K3) (Note)

Switch Guard (Remains Open)

UP For round / square units (Note) Flush Bezel (LB9Z-K2)

Panel Thickness 0.5 to 3.2



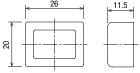


13

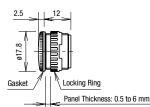
⊒]⊒

3.5

For rectangular units (LB9Z-D3)



AL-BM6



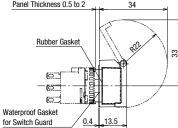
Mounting Hole Layout

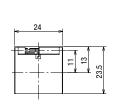
All dimensions in mm.



For rectangular units (AL-KH6SP)

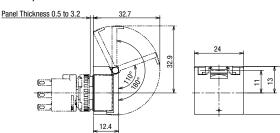






Note: The panel depth is the same for switches with or without switch guards. Both types can be installed on the same PC board.

For rectangular units (Note) (LB9Z-K3P)



Switches & Pilot Lights Dimensions for Accessories All dimensions in mm. For LB Series Flush Bezel **Rubber Boot** For round units (LB9Z-D6) For square units (LB9Z-D7) For rectangular units (LB9Z-D8) □24 30 APEM Control Boxes Emergency Stop Switches Enabling Switches **Mounting Hole Plug** Safety Products For round units Panel Thickness: 0.5 to 3.2 mm For square units For rectangular units Gasket Explosion Proof (LB9Z-BS6*) (LB9Z-BS7*) (LB9Z-BS8*) Mounting Plate Locking Ring Terminal Blocks Relays & Sockets Circuit Protectors 18.1 2 Power Supplies **Mounting Hole Layout** Mounting Hole Layout Mounting Hole Layout LED Illumination L= □18.2 ^{+0.2} 24.2 +0.2 Controllers $18.2^{+0.2}_{-0.2}$ Operator Interfaces Sensors AUTO-ID For LB Series Flush Bezel **Mounting Hole Plug** Metal (LW9Z-BM) Mounting Hole Layout Rubber (LW9Z-BP1) Mounting Hole Layout Rubber Gasket Panel Thicknes 0.8 to 6 12 3 .1 \$22.3⁴⁹² Locking Ring M12^{P:1} ø22 **25.8** ø30 Gasket Miniature Locking Ring 2 (Pilot Lights For round units Mounting For round units Mounting Panel Thickness: 0.5 to 3.2 mm (LBW9Z-BS6*) Hole Layout (LBW9Z-BS6*) Hole Layout Gasket Mounting Plate 22.5^{+0.2} Locking Ring CW LW-F 18.1 2 UP Key (Wave Key) **Terminal Cover** Flush Bezel For SPDT/DPDT contacts For 3PDT contacts Reversible key Non-reversible key (LB9Z-VL2) (LB9Z-VL3) 8.8 22 22 8.8 29.9 29.9 TOP TOP []]Deg DEG 4 4 ුධු 5 6.3 -5 Logo Side Logo Side Key No. Key No. -57 친권 0 H ຊູ່ ω Η 12.5 12.5 24.8 196

Key No. Side

Key No. Side

Accessories

	Shape)	Material / Dimensions (W×H×D)	Part No.	Ordering No.	Package Quantity	Remarks
ΙΓ	Lens	1. For round units	Polyarylate ø15.4 H4	AL6M-L*	AL6M-L*PN05	5	Specify the color code in place of * in the part no.
-		2. For square units	Polyarylate □15.4 H4	AL6Q-L*	AL6Q-L*PN05	5	A: Amber, C: Clear, G: Green, R: Red, S: Blue, Y: Yellow
	3 4	3. For rectangular units	Polyarylate W21.4 H4 D15.4	AL6H-L*	AL6H-L*PN05	5	Note: Use a clear lens for pure white (PW)
		4. For dome units	Polyarylate ø16 H9.4	AL6D-L*	AL6D-L*PN05	5	illumination.
	Buttons ① ②	1. For round units	Polyarylate ø15.4 H4	AB6M-B*	AB6M-B*PN05	5	
-		2. For square units	Polyarylate □15.4 H4	AB6Q-B*	AB6Q-B*PN05	5	Specify the color code in place of * in the part no. B: Black, G: Green, R: Red, S: Blue
-	3	3. For rectangular units	Polyarylate W21.4 H4 D15.4	AB6H-B*	AB6H-B*PN05	5	W: White, Y: Yellow
Corioo	Marking plate	1. For round units	Acrylic ø13.7 H0.8	AL6M-*	AL6M-*PN05	5	Specify the color code in place of * in the part no.
		2. For square units	Acrylic 13.7 H0.8	AL6Q-*	AL6Q-*PN05	5	B: Black, W: White
-		3. For rectangular units	Acrylic W19.7 H0.8 (0.4) D13.7	AL6H-*	AL6H-*PN05	5	See B-133 for dimensions and engraving area.
-	Diffusion plate	For dome units	Acrylic ø13.6 H2.8	AL6D-W	AL6D-WPN05	5	White
-	Anti-rotation Ring	Standard bezel	Metal (Stainless steel) □17.9 t0.6	LB9Z-LP1	LB9Z-LP1PN10	10	
-	Anti-rotation Ring	Flush bezel	Metal (Stainless steel) 21×8.2×20.6 t0.8	LB9Z-LP6	LB9Z-LP6PN10	10	
	Lens	1. For round flush units	Polyarylate ø20 H4	HA9Z-L11*	HA9Z-L11*PN05	5	Specify the color code in place of * in the part no. A: Amber, C: Clear, G: Green, R: Red, S: Blue, Y: Yellow
	2 () 3 ()	2. For square flush units	Polyarylate ø20 H4	HA9Z-L21*	HA9Z-L21*PN05	5	Note: Use a clear lens for pure white (PW) illumination.
-		3. For round extended units	Polyarylate ø20.2 H7.8	LBW9Z-L12*	LBW9Z-L12*PN05	5	Specify the color code in place of * in the part no. A: Amber, G: Green, R: Red, S: Blue, W: clear, Y: Yellow Note: Use a clear lens for pure white (PW) illumination.
-	Buttons	1. For round flush units	Polyacetal ø20 H3.2 (L5)	HA9Z-B11*	HA9Z-B11*PN05	5	
DM Corioo		2. For square flush units	Polyacetal ø20 H3.9 (L5)	HA9Z-B21*	HA9Z-B21*PN05	5	Specify the color code in place of $*$ in the part no.
		3. For round extended units	Polyacetal ø19.8 H7.3 (L9.1)	HA9Z-B12*	HA9Z-B12*PN05	5	B: Black, G: Green, R: Red, S: Blue W: White, Y: Yellow
-		4. For square extended units	Polyacetal ø19.8 H8 (L9.1)	HA9Z-B22*	HA9Z-B22*PN05	5	
	Marking plate	1. For round flush units	Acrylic ø17 t0.85 (L1.1)	HA9Z-P1*	HA9Z-P1*PN05	5	Specify the color code in place of * in the part no.
		2. For square units	Acrylic □18.4 t0.85	HA9Z-P2*	HA9Z-P2*PN05	5	B: Black, W: White See B-134 for dimensions and engraving area.
-	Anti-rotation Ring	LBW series	Metal (Stainless steel) 25×8.2×24.8 t0.8	LBW9Z-LP6	LBW9Z-LP6PN10	10	
	Locking ring All models		Polyamide ø17.9 H3.9	LB9Z-LN	LB9Z-LNPN10	10	
	Iluminated selector knob operator	Illuminated selector switches	<for operator=""> Polyarylate Waterproof O-gasket Nitryl rubber ø15.4 H13</for>	LA1A-F*	LA1A-F*PN02		Specify the color code in place of * in the part no. G: green, R: red, W: white

APEM

ø22 ø30 Miniature Pilot Lights

> CW LW-F

UP Flush Bezel

Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof Terminal Blocks Relays & Sockets Circuit Protectors Power Supplies LED Illumination Controllers Operator Interfaces Sensors AUTO-ID

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Maintenance Parts

LB Series Maintenance LED Unit

Shape	Rated Operating Voltage	Part No. (Ordering No.)	* Color Code
LED Unit	5V DC	LB9Z-LED5*	A: Amber G: Green
	12V AC/DC	LB9Z-LED1*	PW: Pure White R: Red
	24V AC/DC	LB9Z-LED2*	S: Blue W: White

• All LB/LBW series contain an LED unit.

• Use a pure white (PW) LED unit for yellow (Y) illumination.

Transformer

				Package quantity: 1
Transformer	Primary Voltage	Secondary Voltage	Part No. (Ordering No.)	Applicable Load
For 24V	100/110V AC	100/110V AC ±10%	TWR512	
200	200/220V AC	200/220V AC ±10%	TWR522	LB9Z-LED2* (24V AC/DC LED unit)
	400/440V AC	400/440V AC±10%	TWR542	(

• Terminal cover (TWR-VL3) is supplied as standard.

• Connect one LB9Z-LED2* to a transformer.

Specifications

Part No.	TWR5□2
Operating Voltage	100/110V AC, 200/220V AC, 400/440V AC (50/60Hz)
Current Draw	2.4VA
Rated Insulation Voltage	600V
Insulation Resistance	100 M Ω minimum (500V DC megger)
Operating Temperature	-30 to +60°C (no freezing)
Storage Temperature	-40 to +80°C (no freezing)
Operating Humidity	35 to 85% RH (no condensation)
Vibration Resistance	Damage Limits: 30 Hz, amplitude 1.5 mm Operating extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage limits: 1,000 m/s ² Operating Extremes: 100 m/s ²
Dielectric Strength	2,500V AC, 1 minute
Terminal Screw	M3.5
Applicable Wire	2 mm ² maximum, 2 wires maximum
Weight (approx.)	87g

Accessories

35mm DIN Rail

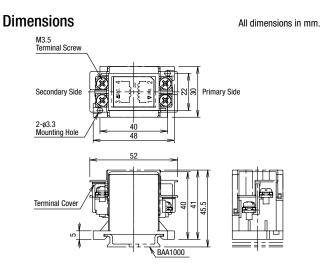
Part No.	Ordering No.	Length	Material	Package Quantity	
BAA1000	BAA1000PN10	1,000mm	Aluminum (approx. 200g)	10	
BAP1000	BAP1000PN10	1,000mm	Steel (approx. 320g)	10	LE

End Clip

Part No.	Part No. Ordering No. Applicable DIN Rail		Package Quantity Dimen		ions	Flush Bezel
BNL6	BNL6PN10	BAA1000 BAP1000	10	(172)	Approx. 15g Steel (Zinc-plated)	
BC9Z-E/NS35N	BC9Z-E/NS35NPN10	BAA1000 BAP1000	10		Approx. 15g	

• See H-071 for DIN rail products.

• Use end clip BC9Z-E/N35NPN10 when using 400/440V AC primary voltage transformers.



Package Quantity: 1

ø22 ø30 Miniature

Pilot Lights

CW	
LW-F	
LB	
LBW	
UP	

Controllers

Operator Interfaces

APEM

Control Boxes

Emergency Stop Switches

Explosion Proof

Terminal Blocks Relays & Sockets Circuit Protectors Power Supplies LED Illumination

Enabling Switches Safety Products

🔨 Safety Precautions

- Turn off the power to the LB/LBW series before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- To avoid burning your hand, use the lamp holder tool when replacing the lamps.

Instructions

Wiring

 Solder the terminals at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu type is recommended when using leadfree solder. When soldering, do not touch the LB series with the soldering iron. Also ensure that no tensile force is applied to the terminal. Do not bend the terminal or apply excessive force to the terminal.

2) Use non-corrosive liquid flux.

Terminal Cover

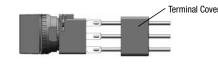
Solder/tab terminal

Insert the terminal cover into the contact block with the TOP markings on the contact block and the terminal cover in the same direction.

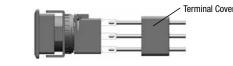
Note: When wiring, insert the lead wires into the terminal cover holes before soldering.

After wiring, the terminal covers cannot be installed.

Standard Bezel



Flush Bezel



Operating Environment

- Miniature
 • Do not use the LB/LBW series where corrosive gases exist or under an environment exceeding the operating temperature and humidity ranges. Otherwise, damages due to contact failure or change of surface color may occur.
 - Major parts of the switch are plastic. Scratches or damages may occur when scraped with a sharp object or applied with excessive load or shock. Note that this may cause operation and appearance failure of the operator and bezel.
 - Adherence of detergent, cutting oil, or special chemicals to the switch may result in operation failures and appearance failures such as change of surface color.

• For wiring, use wires of a proper size to meet voltage and current requirements. Solder correctly according to the instructions in "Wiring" and "Notes on Terminal Cover." Improper soldering may cause overheating and create a fire hazard. Also, when using tab terminals, use receptacles of appropriate size.

Handling

Contacts (micro switch)

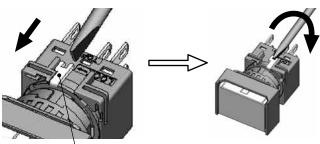
When using NC (normally closed) and NO (normally open) contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

Protection against oil (IP65)

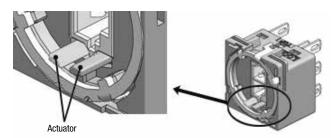
The LB series has been tested according to JIS C 0920: Appendix 1 by using water insoluble cutting oil Class N3, No. 8 (JIS K 2241) to prove that the switches will not be damaged by oil drops or splashes. This may not apply to special types of oils. Contact IDEC for details.

Removing and Installing the Contact Block

- 1) Turn the locking lever on the contact block in the direction opposite to the arrow on the housing. Then the contact block can be removed.
- 2) Insert the contact block with the TOP markings on the contact block and the operator placed in the same direction. Then lock the units, turning the locking lever in the direction of the arrow.
- Note: When removing/installing the contact block, or when using the contact block alone, do not apply excessive force on the actuator. Deformed actuator may affect contact operation.



Locking Lever



Switches & Pilot Lights

APEM

Control Boxes

Stop Switches

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Terminal Blocks

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Power Supplies

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Controllers

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AUTO-ID

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CW

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ΠP

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ø30

Miniature

Pilot Lights

Enabling

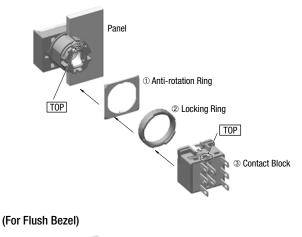
Switches

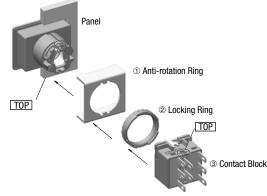
Instructions

Panel Mounting

Remove the contact block from the operator. Insert the operator into the panel cut-out from the front, then install the contact block to the operator.

(For Standard Bezel)





Notes on Mounting

Use the optional ring wrench (MT-001) to mount the operator onto the panel. The recommended tightening torque is 0.5 to 0.7 N·m. Do not use pliers. Excessive tightening will damage the locking ring.

Replacing the Lens and Marking Plate

Removing

[Removing the operator] Standard Bezel

- 1) From the opposite side of the TOP marking, remove the operator
- (lens, marking plate, and lens holder) using the optional lens removal tool (MT-101) by gripping the recesses of the color lens.



Flush Bezel

- 1) From the opposite side of the TOP marking, push the tip (width: 3 mm, thickness: 0.5 mm) of the flat screwdriver to the groove of the color lens and pull out the operator (lens, marking plate, lens holder).
- Note: For metallic bezels, the bezel may be damaged if the screwdriver is inserted from the TOP side or inserted deeply or with force into the groove of the lens.



[Removing the Operator]

2) Remove the marking plate by pushing the lens from the rear to disengage the latches between the lens and holder, using the screwdriver as shown below.



Note: The translucent in the lens holder cannot be removed because this filter is sealed to make the unit waterproof and oiltight.

LBW Series Pushbutton (button style)

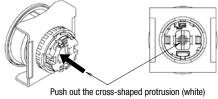
LBW series pushbuttons (button style, see B-097) can be removed according to the following procedure. LBW series pushbuttons (button style) cannot be removed from the front of the panel.

[Removing the Operator]

- 1) Detach the operator unit and contact block. (See Removing and Installing the Contact Block on B-131)
- 2) Remove the button unit (button, button holder) by pushing out the cross-shaped protrusion (white) at the back of the operator with a screwdriver.

LBW Series Illuminated Pushbutton (round extended)

Screw-in lens. The lens can be removed by turning anticlockwise.





Flush Bezel

UP

from the back of the operator unit.

Stop Switches

Safety Products

Explosion Proof Terminal Blocks

Relays & Sockets

Power Supplies

LED Illumination

Controllers Operator

Interfaces

Sensors

AUTO-ID

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CW

LW-F

Miniature

Pilot Lights

Circuit

Protectors

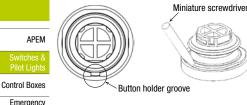
Enabling

Switches

Instructions

Removing the Button

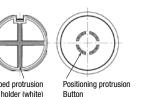
The button can be removed by inserting a small screwdriver into the groove of the button holder.



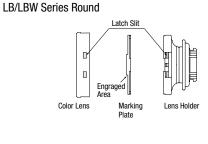
To attach the button to the button holder, align the groove on crossshaped protrusion with the positioning protrusion on the button and insert securely.

Installing

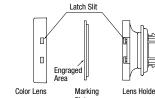




Insert the marking plate into the color lens, and press the lens onto the lens holder to engage the latches. Pay attention to the orientation of the marking plate.



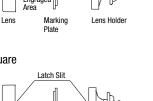
LB Series Square/Rectangular



LBW Series Square

Color Lens

UP Flush Bezel



Lens Holder

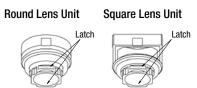
Marking

Plate

Button holder (white)

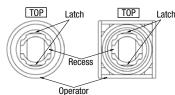
making sure that the latch on the operator is aligned with the latch on the lens unit.

Installing the Lens Unit and Contact Block

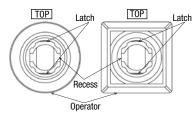


To insert the lens unit into the operator, press in the lens unit by

Standard Bezel



Flush Bezel

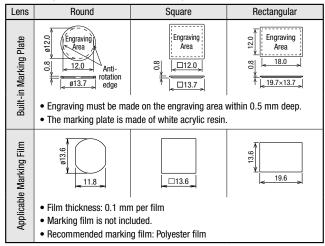


Marking Plates and Films

For illuminated pushbuttons, pushbuttons with lens, and pilot lights, legends and symbols can be engraved on the marking plates, or printed film can be inserted under the lens for labelling purposes.

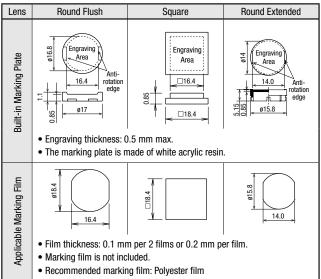
Marking Plate and Marking Film Size

LB Series (flush bezel / standard bezel)

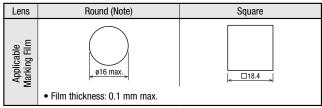


Instructions

LBW Series

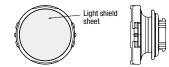


LBW Series (ring-illuminated model)



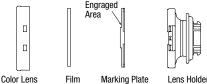
Note: Use a film with adhesive and attach on the light shield sheet. Make sure that the marking film is properly installed and does not protrude from the edge of light shield sheet.

Ring Illuminated Model Lens Holder

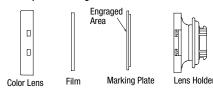


Insertion Order of Marking Plate and Film

LB/LBW Series Round



LB/LBW Series Square/Rectangular



Note: Film is not included.

The marking plate must be engraved on the specified side as shown above. Pay attention to the orientation of the marking plate. When inserting a film, make sure to insert between the color lens and marking plate.

Note: Marking plate is not supplied with ring-illuminated model.

Replacing the LED Unit

Orientation of the LED unit

Notes on replacing the LED Unit

applied.

The LED unit can be replaced without tools by pulling out the lens unit from the contact block.



Insert the LED unit into the contact block with the TOP markings on the

TOP

contact block and LED unit in the same orientation.

TOP



Emergency Stop Switches Enabling

Switches & Pilot Lights

Switches Safety Products

- Explosion Proof
- Terminal Blocks
- Relays & Sockets

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

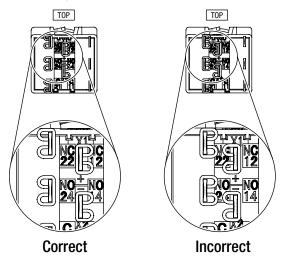
Make sure that the LB/LBW series has cooled down before replacing the LED unit. To avoid burn injuries, be careful not to touch the unit while it is still hot.

When replacing the LED unit, make sure that static electricity is not

Notes on Using Quick Connect Terminals

1) Use #110 tab quick connects, 0.5 mm-thick.

2) When connecting the terminals on the left and center, make sure that surfaces of the quick connects face each other. Otherwise, short-circuit may occur.



 Apply only horizontal force against the panel to the tab. The switch may be damaged if a force other than a horizontal force is applied. AUTO-ID
FUSS SINOUELE
016
022
030
Miniature
Pilot Lights
CW
CW
LW-F
LB
LBW

Flush Bezel

UP

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Instructions

Installing the Rubber Boot

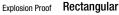
When using in places where the switches are subjected to water splash or an excessive amount of dust, make sure to use the optional rubber boot.

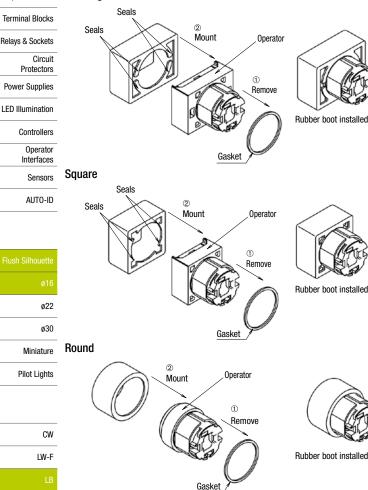
As shown in the drawing below, remove the gasket from the operator, and attach the rubber boot from the front (button side).

Standard Bezel

For rectangular and square units, pull out the seals of the rubber boot and place them around the operator sleeve as shown below. Make sure that the seals are not twisted or tucked inside and that the gasket is removed, otherwise waterproof and dustproof characteristics are not ensured.

How to Install the Rubber Boot



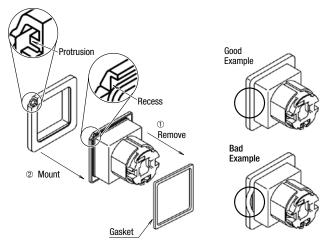


Flush Bezel

Mount the rubber boot so that the protrusion at the bottom surface of the operator fits with the recess on the operator, placing the rubber boot all around the operator sleeve.

Make sure that the protrusion on the rubber boot and the recess on the operator is properly fitted, otherwise, the waterproof and dustproof characteristics are not ensured.

How to Install the Rubber Boot



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

Maintained Pushbuttons

Do not replace the buttons when the pushbutton is in the maintained position. Replacing the button in the maintained position may damage the internal mechanism. Also, do not remove the contact block with the button in the maintained position. The contact may not operate properly when the contact block is remounted. Make sure to push down fully when using the pushbuttons.

Pushbuttons and Illuminated Pushbuttons with Switch Guard

Do not apply force to the switch guard when the switch guard is not attached to a panel. When opening the switch guard, do not open more than 180°. The hinge may break.

Selector Switches

When turning the operator or key, make sure that they are properly turned to each position.

Selector Switches with Key

Observe the following instructions to prevent malfunction or damage.

- Insert the key to the bottom of the key hole.
- Do not remove the key from any key retained position.
- Besides the standard key (key number 0H), six other key numbers are available. Use a key of the matching number with the key cylinder. The standard key does not have a key number indication.
- Keys are available in two types.
 Key numbers OH (standard), 1H, and 2H are reversible keys which can be inserted in two ways.

Key numbers 3H, 4H, 5H, and 6H are non-reversible keys. Make sure of correct insertion direction.

APEM

Control Boxes

Stop Switches

Emergency

Enabling

Switches Safety Products

UP

Flush Bezel

Control Boxes

Emergency Stop Switches Enabling

Switches

Safety Products Explosion Proof Terminal Blocks

Relays & Sockets

Power Supplies

LED Illumination

Controllers Operator

Interfaces

Sensors

AUTO-ID

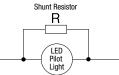
Circuit Protectors

Instructions

Countermeasures against Dim Lighting

Leakage currents through transistors or a contact protection circuit may cause the LED lamp to illuminate dimly even when the output is off.

When the LED lamp is illuminated by a transistor output, take the following measure.

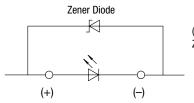


Leakage Current Shunt Resistor Allotment Table (Recommended)

		Shunt res	istance R		
Leakage Current	Red (R), V	White (W)	Green (G)		
10	Resistance Rated Power		Resistance	Rated Power	
0.1 mA max.	13kΩ	0.25W	18kΩ	0.25W	
0.1 to 0.7 mA	2k Ω	0.25W	2.7kΩ	0.25W	

Noise

LED elements deteriorate due to extraneous noise, resulting in significant decrease in luminance, hue change, or failure of lighting. When such effects are anticipated, take a protection measure shown below. However, measures may differ according to operating environment and condition



(Zener diode reference value) Zener voltage: 4.3 to 4.7V

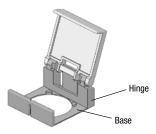
Static Electricity (UP Series)

UP series are delicate products that may be damaged by static electricity Make sure to take measures to prevent static electricity.

Switch Guards

Opening/closing the Switch Guard

When opening/closing the switch guard while the switch guard is not installed on a panel, make sure to hold the hinge. Holding the base might result in damage. Also do not apply force on the guard in other than open/close directions, otherwise the hinge may be damaged.



Rubber Gasket when using LB9Z-K2 Switch Guard (remains open) for Round/Square Units

Choose to use or not to use the rubber gasket for the switch referring to the conditions described below. Note that the degree of protection is IP40 with or without the rubber gasket.

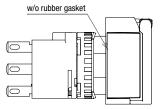
• When the panel thickness is up to 2.8mm

Install the switch onto the switch guard with rubber gasket, and mount on the panel.



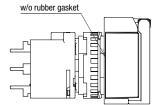
• When the panel thickness is 2.8 to 3.2mm

Remove the rubber gasket from the switch and install the switch onto the switch guard, and mount on the panel (discard the rubber gasket).



Single board mounting

Remove the rubber gasket from the switch and install the switch onto the switch guard, and mount on the panel (discard the rubber gasket).



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ø16
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