ø16 A6 Series Miniature Control Units

Light duty in short 22mm body length.

- Features IDEC's original mechanism for snap-action switching. Suitable for a wide variety of office and factory aplications.
- The LED lamp contains a current-limiting resistor and a diode for protection against reverse connection.
- Degree of protection: IP40 and IP65 (IEC 60529)
- UL recognized, CSA certified, EN compliant, and CCC approved.

Applicable Standards	Mark	File No. or Organization
UL508	19	UL Recognition File No. E55996
CSA C22.2 No.14	S ₽°	CSA File No. LR 21451
EN60947-5-1	CE	EU Low Voltage Directive
GB14048.5	((()	CCC 2003010305027381 (switches) 2008010304288772 (pilot lights)

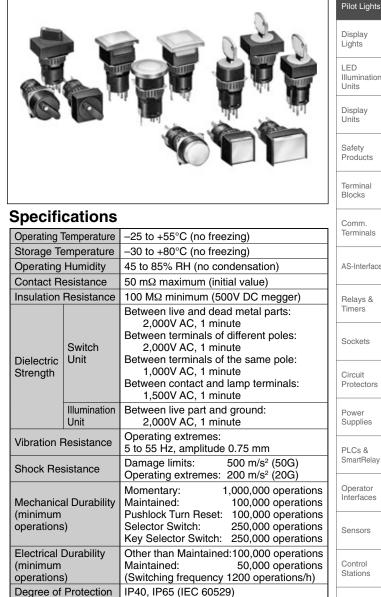
Contact Ratings (Contact Block)

Rated Insulati	on Voltage	250V					
Rated Therma	al Current	ЗA					
Operating Vol	12V	24V	110V	220V			
AC 50/60 Hz	Resistive Load	-	-	1.0A	0.5A		
	Inductive Load	-	-	0.7A	0.5A		
DC	Resistive Load	1.0A	1.0A	0.2A	-		
	Inductive Load	0.7A	0.7A	0.5A –	-		
Contact Mater	Gold-clad silver						

 Minimum applicable load: 5V AC/DC, 1 mA (applicable range may vary with operating conditions and load types)

Weight (example)

	AL6M-M24:	8g	
	AL6M-M221:	46g	
	AL6M-P4:	6g	
Weight (approx.)	AL6M-P21:	45g	
	AB6M-M2:	7g	
	AS6M-2Y2:	9g	
	AS6M-2KT2A	: 21g	



Explosion Protection

References

LED Lamp Ratings (LATD)

•				
Part No).	LATD-52	LATD-1@	LATD-22
Lamp Base		Exclusive for A series control units		
Voltage Range	•	5V DC ±5%	12V AC/DC ±10%	24V AC/DC ±10%
Rated Voltage		5V DC	12V AC/DC	24V AC/DC
	AC	—	9 mA	9 mA
Current Draw	DC 8 mA		8 mA	8 mA
Color Code 2		A (amber), G (green), JW (pure white	e), R (red), S (blue), W (white), Y (yello	w)
Lamp Base Co	lor	Same as illumination color (except J)	N - gray base)	
Voltage Markin	ıg	Die stamped on the base		
Life (reference	value)	Approx. 50,000 hours (The luminance is reduced to 50% of	the initial intensity when used on com	plete DC.)
Internal Circuit				LED Chip - H Protection Diode - Zener Diode

• Specify a color code in place of ② in the Part No.

A (amber), G (green), JW (pure white), R (red), S (blue), W (white), Y (yellow)

Flush Silhouette

Switches &

Illuminated Pushbuttons

				Dev	L N I -	Package Quantity:	
Shape	Operation	Operating Voltage	Contact		t No.	 ② Illumination Color Code 	
Round		vollage	0007	IP40	IP65	Color Code	
AL6M		5V DC ±5%	SPDT	AL6M-M112	AL6M-M11P2	-	
			DPDT	AL6M-M212	AL6M-M21P2	-	
	Momentary	12V AC/DC	SPDT	AL6M-M132	AL6M-M13P2	_	
0.5		±10%	DPDT	AL6M-M232	AL6M-M23P2	-	
		24V AC/DC	SPDT	AL6M-M142	AL6M-M14P2	-	
		±10%	DPDT	AL6M-M242	AL6M-M24P2		
		5V DC ±5%	SPDT	AL6M-A112	AL6M-A11P2		
		01 20 20 /0	DPDT	AL6M-A212	AL6M-A21P2		
	Maintained	12V AC/DC	SPDT	AL6M-A132	AL6M-A13P2		
	Maintaineu	±10%	DPDT	AL6M-A232	AL6M-A23P2		
Ð (€ @)		24V AC/DC	SPDT	AL6M-A142	AL6M-A14P2		
		±10%	DPDT	AL6M-A242	AL6M-A24P2		
Square			SPDT	AL6Q-M112	AL6Q-M11P2		
AL6Q		5V DC ±5%	DPDT	AL6Q-M212	AL6Q-M21P2		
	Moreceter	12V AC/DC	SPDT	AL6Q-M132	AL6Q-M13P2		
	Momentary	±10%	DPDT	AL6Q-M232	AL6Q-M23P2	1	
		24V AC/DC ±10%	SPDT	AL6Q-M142	AL6Q-M14P2		
			DPDT	AL6Q-M242	AL6Q-M24P2		
			SPDT	AL6Q-A112	AL6Q-A11P2	-	
		5V DC ±5%	DPDT	AL6Q-A212	AL6Q-A21P2	-	
		12V AC/DC	SPDT	AL6Q-A132	AL6Q-A13P2	Specify a color code	
	Maintained	±10%	DPDT	AL6Q-A232	AL6Q-A23P2	in place of 2 in the	
		24V AC/DC	SPDT	AL6Q-A142	AL6Q-A14P2	- Part No.	
AI (} ((((()		±10%	DPDT	AL6Q-A242	AL6Q-A24P2	A: amber	
Rectangular			SPDT	AL6H-M112	ALGU AL41 @	G: green JW: pure white R: red	
AL6H		5V DC ±5%	DPDT	AL6H-M212	AL6H-M21P2		
			SPDT	AL6H-M132	AL6H-M13P2	S: blue	
	Momentary	12V AC/DC ±10%	DPDT	AL6H-M232	AL6H-M23P2	W: white Y: yellow	
100			SPDT	AL6H-M142	AL6H-M14P2		
		24V AC/DC ±10%	DPDT	AL6H-M242	AL6H-M24P2	-	
		1070			AL6H-M24P2 AL6H-A11P2	-	
		5V DC ±5%	SPDT	AL6H-A112		-	
			DPDT	AL6H-A212	AL6H-A21P2	-	
	Maintained	12V AC/DC ±10%	SPDT	AL6H-A132	AL6H-A13P2	-	
			DPDT	AL6H-A232	AL6H-A23P2	-	
91 🚯 (€ ((())		24V AC/DC ±10%	SPDT	AL6H-A142	AL6H-A14P2	-	
U		±1070	DPDT	AL6H-A242	AL6H-A24P2	-	
Rectangular w/three-sided barrier		5V DC ±5%	SPDT	AL6G-M112	AL6G-M11P2	-	
AL6G			DPDT	AL6G-M212	AL6G-M21P2	-	
	Momentary	12V AC/DC	SPDT	AL6G-M132	AL6G-M13P2	-	
1.00		±10%	DPDT	AL6G-M232	AL6G-M23P2	-	
at Para		24V AC/DC	SPDT	AL6G-M142	AL6G-M14P2	-	
		±10%	DPDT	AL6G-M24@	AL6G-M24P2	-	
		5V DC ±5%	SPDT	AL6G-A112	AL6G-A11P2		
		2. 20 10/0	DPDT	AL6G-A212	AL6G-A21P2		
	Maintained	12V AC/DC	SPDT	AL6G-A132	AL6G-A13P2		
		±10%	DPDT	AL6G-A232	AL6G-A23P2		
		24V AC/DC	SPDT	AL6G-A142	AL6G-A14P2		
91 🚯 (€ @@		±10%	DPDT	AL6G-A242	AL6G-A24P2		

• See page 136 for dimensions.

• See page 149 for marking plate size and engraving area.

• When using white lens unit (clear lens + white marking plate) with color codes A, G, R, or S, specify "W" before 2 in the Part No. (without CCC marking) Example: AL6H-M24<u>W</u>2

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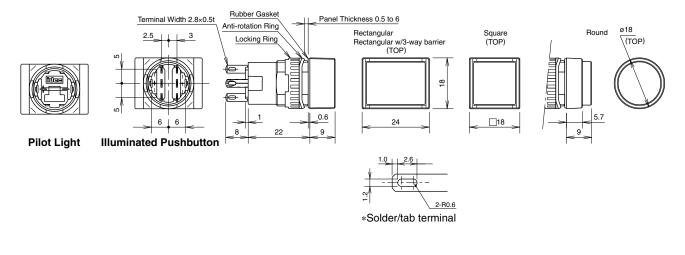
A6 Series Pilot Lights Ø16

Pilot Lights					Flush
				Package Quantity: 1	Silhouette
Shape	Operating Voltage		t No.	2 Illumination	Switches &
• •	oporating voltage	IP40	IP65	Color Code	Pilot Lights
Round AL6M-P	5V DC ±5%	AL6M-P12	AL6M-P1P2		Display Lights
	12V AC/DC ±10%			-	LED Illumination Units
	12V AC/DC ±10%	AL6M-P3②	AL6M-P3P2	_	Display Units
FL ® (€ @	24V AC/DC ±10%	AL6M-P4②	AL6M-P4P2		Safety Products
Square AL6Q-P	5V DC ±5%	AL6Q-P1@	AL6Q-P1P2		Terminal Blocks
				_	Comm. Terminals
	12V AC/DC ±10%	AL6Q-P32	AL6Q-P3P2	Specify a color code in	AS-Interface
	24V AC/DC ±10%	AL6Q-P42	AL6Q-P4P2	place of ② in the Part No.	Relays & Timers
Rectangular				G: green JW: pure white R: red	Sockets
AL6H-P	5V DC ±5%	AL6H-P12	AL6H-P1P2	S: blue W: white Y: yellow	Circuit Protectors
	12V AC/DC ±10%	AL6H-P3@	AL6H-P3P2		Power Supplies
				_	PLCs & SmartRelay
91 @ (€ @)	24V AC/DC ±10%	AL6H-P42	AL6H-P4P2		Operator Interfaces
Rectangular w/three-sided barrier AL6G-P	5V DC ±5%	AL6G-P1@	AL6G-P1P②		Sensors
				-	Control Stations
	12V AC9DC ±10%	AL6G-P3@	AL6G-P3P2		Explosion Protection
91 @ ((@)	24V AC/DC ±10%	AL6G-P4@	AL6G-P4P②		References

See page 136 for dimensions.
See page 149 for marking plate size and engraving area.
When using white lens unit (clear lens + white marking plate) with color codes A, G, R, or S, specify "W" before 2 in the Part No. (without CCC marking) Example: AL6H-M24W2

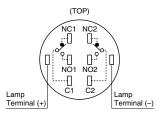
Ø16 A6 Series Miniature Control Units

Dimensions (Illuminated Pushbuttons & Pilot Lights)



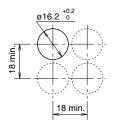
Terminal Arrangement (bottom view)

Illuminated Pushbutton



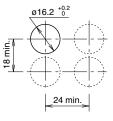
Mounting Hole Layout

Round/Square



Pilot Light

Rectangular Rectangular w/3-way barrier



Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.

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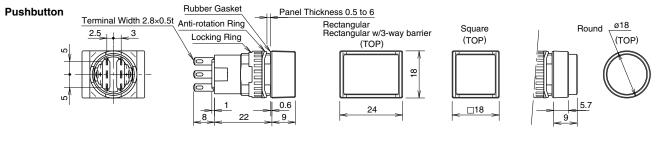
Pushbuttons						Package Quantity: 1	Flush Silhoue
				Par	t No.		
Shape	Button Style	Operation	Contact	IP40	IP65	Color Code 12	Switche Pilot Lig
Round			SPDT	AB6M-M1①	AB6M-M1P1	B black	
AB6M		Momentary	DPDT	AB6M-M2(1)	AB6M-M2P1	G: green	Display
-	Button		SPDT	AB6M-A11	AB6M-M21	R: red S: blue	Lights
		Maintained	DPDT	AB6M-A2(1)	AB6M-A11 ()	W: white Y: yellow	LED
			SPDT	AB6M-M1L2	AB6M-M1PL2	A: amber	Illumin Units
A		Momentary	DPDT	AB6M-M2L [®]	AB6M-M1PL2	G: green	
-	Lens		SPDT	AB6M-A1L2	AB6M-M2PL@	R: red S: blue	Display Units
91 🚯 (E 🚳		Maintained	DPDT	AB6M-A1L@	AB6M-ATPL@	W: white	
Square			SPDT	AB6Q-M11	AB6Q-M1P1	Y: yellow B black	Safety Produc
AB6Q		Momentary				G: green	Produc
Com.	Button		DPDT	AB6Q-M2①	AB6Q-M2P1	R: red S: blue	Termir
		Maintained	SPDT	AB6Q-A1①	AB6Q-A1P1	W: white	Blocks
			DPDT	AB6Q-A2①	AB6Q-A2P1	Y: yellow A: amber	Comm
		Momentary	SPDT	AB6Q-M1L2	AB6Q-M1PL2	G: green	Terminals
	Lens		DPDT	AB6Q-M2L2	AB6Q-M2PL2	R: red S: blue	AS-Interf
		Maintained	SPDT DPDT	AB6Q-A1L2	AB6Q-A1PL2	W: white	
				AB6Q-A2L2	AB6Q-A2PL2	Y: yellow	
Rectangular AB6H		Momentary -	SPDT	AB6H-M11	AB6H-M1P1	B black G: green	Relays
	Button		DPDT	AB6H-M2 ①	AB6H-M2P1	R: red S: blue W: white	Timers
R-			SPDT	AB6H-A11	AB6H-A1P1		
			DPDT	AB6H-A21	AB6H-A2P1	Y: yellow	Socke
		Momentary	SPDT	AB6H-M1L2	AB6H-M1PL ²	A: amber G: green	
	Lens	Momentary	DPDT	AB6H-M2L2	AB6H-M2PL2	R: red	Circuit Protec
Al (): ((((()	Lens	Maintained	SPDT	AB6H-A1L2	AB6H-A1PL2	S: blue - W: white	
		Maintaineu	DPDT	AB6H-A2L2	AB6H-A2PL2	Y: yellow	Power Suppli
Rectangular		Momentary	SPDT	AB6G-M11	AB6G-M1P1	B black	Cappin
w/three-sided barrier AB6G	Button	womentary	DPDT	AB6G-M2 ①	AB6G-M2P1	G: green R: red	PLCs a
	Bullon	Maintained	SPDT	AB6G-A11	AB6G-A1P1	S: blue W: white	SmartF
the second	1	wantaned	DPDT	AB6G-A2 ①	AB6G-A2P1	Y: yellow	Operat
		Momenter	SPDT	AB6G-M1L2	AB6G-M1PL2	A: amber	Interfa
Station of the		Momentary	DPDT	AB6G-M2L2	AB6G-M2PL2	G: green R: red	
	Lens		SPDT	AB6G-A1L2	AB6G-A1PL2	S: blue	Senso
91 () () () () () () () () () () () () ()		Maintained		AB6G-A2L2	AB6G-A2PL2	W: white Y: vellow	

Specify a color code in place of ① or ② in the Part No.
See page 138 for dimensions.
See page 149 for marking plate size and engraving area.
Black is available for lens style buttons. Black lens consists of a clear lens and a black marking plate. Specify "B" in place of ② in the Part Explosion Protection

No. Example: AB6H-M2LB

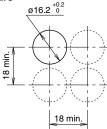
References

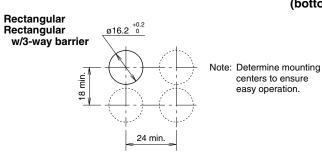
Dimensions



Mounting Hole Layout

Round/Square

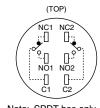




(bottom view) Pushbutton

centers to ensure easy operation.

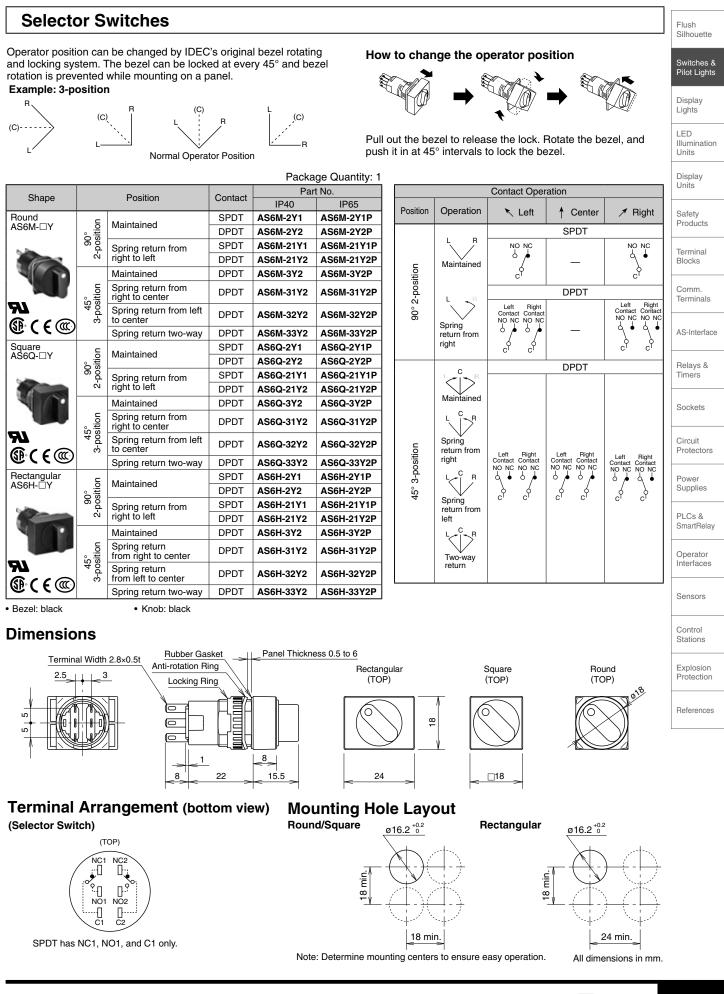
Terminal Arrangement



Note: SPDT has only NC1, NO1, and C1 terminals.

All dimensions in mm.

A6 Series Selector Switches Ø16



IDEC

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Key Selector Switches

							Package Quantity: 1	
Shape	Position	Operation	K	ey Retained	Contact	Part	No.	
	1 03/001	Operation		at 🗨		IP40	IP65	
Round				U B	SPDT	AS6M-2K□1A	AS6M-2K□1PA	
AS6M		Maintained	A	\sim	DPDT	AS6M-2K□2A	AS6M-2K□2PA	
			в	Q 🖗	SPDT	AS6M-2K□1B	AS6M-2K□1PB	
	90°			\sim	DPDT	AS6M-2K□2B	AS6M-2K□2PB	
	2-position		с	Q B	SPDT	AS6M-2K□1C	AS6M-2K□1PC	
			_	\sim	DPDT	AS6M-2K□2C	AS6M-2K□2PC	
		Spring return from right	в	L .9	SPDT	AS6M-21K□1B	AS6M-21K□1PB	
		Spring return norm ngrit		\sim	DPDT	AS6M-21K□2B	AS6M-21K□2PB	
			А	Q B	DPDT	AS6M-3K□2A	AS6M-3K□2PA	
		Maintained	в	L C B	DPDT	AS6M-3K□2B	AS6M-3K□2PB	
			с	0 C B	DPDT	AS6M-3K□2C	AS6M-3K□2PC	
			Maintained	D	0 C B	DPDT	AS6M-3K□2D	AS6M-3K□2PD
Disc tumbler key			Е	C O R	DPDT	AS6M-3K□2E	AS6M-3K□2PE	
			G	C G G	DPDT	AS6M-3K□2G	AS6M-3K□2PG	
	45°		н	0 0 B	DPDT	AS6M-3K□2H	AS6M-3K□2PH	
	3-position		в		DPDT	AS6M-31K□2B	AS6M-31K□2PB	
Wave key		Spring return from right	D	€	DPDT	AS6M-31K□2D	AS6M-31K□2PD	
			G	₽ ₽ ₽ ₽ ₽	DPDT	AS6M-31K□2G	AS6M-31K□2PG	
			с	C B	DPDT	AS6M-32K□2C	AS6M-32K□2PC	
		Spring return from left	D	C G	DPDT	AS6M-32K□2D	AS6M-32K□2PD	
			н	C B	DPDT	AS6M-32K□2H	AS6M-32K□2PH	
91 @ ((((())		Spring return two-way	D	● © ®	DPDT	AS6M-33K□2D	AS6M-33K□2PD	

• Specify the key code in place of \Box in the Part No.: T (disc tumbler key), S (wave key)

• For contact operation, see page 143.

• Key is retained at • positions and removable at O positions.

• Two keys are supplied.

• The front of key cylinder is made of metal.

• For disc tumbler key, only one type of key is available.

• For wave key, besides the standard key (key number 0H), six other keys are also available.

To order other keys, specify the key number as shown below:

Example: AS6M-2KS1PA-1H

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

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

A6 Series Key Selector Switches Ø16

Key Selector	Switche	S						Flush Silhouette
							Package Quantity: 1	Sinouelle
Shape	Position	Operation	Key Retained		Contact	Part	No.	Switches &
Onapo		Operation		at 🗨		IP40	IP65	Pilot Lights
Square			Α	Q B	SPDT	AS6Q-2K⊡1A	AS6Q-2K□1PA	Display
AS6Q			Ľ		DPDT	AS6Q-2K□2A	AS6Q-2K□2PA	Lights
		Maintained	в	Q 🖟	SPDT	AS6Q-2K⊡1B	AS6Q-2K□1PB	LED
	90°				DPDT	AS6Q-2K□2B	AS6Q-2K□2PB	Illumination
	2-position		с	₽ ®	SPDT	AS6Q-2K⊡1C	AS6Q-2K□1PC	Onito
			Ľ		DPDT	AS6Q-2K□2C	AS6Q-2K□2PC	Display Units
		Spring return from right	в	Ū, 🗣	SPDT	AS6Q-21K□1B	AS6Q-21K□1PB	
					DPDT	AS6Q-21K□2B	AS6Q-21K□2PB	Safety
		Maintained	А	Q B	DPDT	AS6Q-3K□2A	AS6Q-3K□2PA	Products
			в	Û [©] Ø	DPDT	AS6Q-3K□2B	AS6Q-3K□2PB	Terminal Blocks
			с	0 C B	DPDT	AS6Q-3K□2C	AS6Q-3K□2PC	Comm. Terminals
			D	0 ° 0	DPDT	AS6Q-3K□2D	AS6Q-3K□2PD	AS-Interface
Disc tumbler key			Е	C O B	DPDT	AS6Q-3K□2E	AS6Q-3K□2PE	Relays &
			G	Q O B	DPDT	AS6Q-3K□2G	AS6Q-3K□2PG	Timers
	45°		н	0 G B	DPDT	AS6Q-3K□2H	AS6Q-3K□2PH	Sockets
Carl Carl	3-position		в		DPDT	AS6Q-31K□2B	AS6Q-31K□2PB	Circuit Protectors
Wave key		Spring return from right	D	€ C C C C C C	DPDT	AS6Q-31K□2D	AS6Q-31K□2PD	Power Supplies
			G	₽ <mark>₽</mark> ₿	DPDT	AS6Q-31K□2G	AS6Q-31K□2PG	PLCs & SmartRelay
		Spring return from left	с	0 C R	DPDT	AS6Q-32K□2C	AS6Q-32K□2PC	Operator
			D	₽_© ₽	DPDT	AS6Q-32K□2D	AS6Q-32K□2PD	Interfaces
			н	B B	DPDT	AS6Q-32K□2H	AS6Q-32K□2PH	Sensors
91 🛞 (€ 		Spring return two-way	D	₽ [©] ₿	DPDT	AS6Q-33K□2D	AS6Q-33K□2PD	Control Stations

Specify the key code in place of □ in the Part No.: T (disc tumbler key), S (wave key)
For contact operation, see page 143.
Key is retained at ● positions and removable at O positions.

• Two keys are supplied.

• The front of key cylinder is made of metal.

• For disc tumbler key, only one type of key is available.

• For wave key, besides the standard key (key number 0H), six other keys are also available. To order other keys, specify the key number as shown below:

Example: AS6M-2KS1PA-1H

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

Note:

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

Explosion Protection

Key Selector Switches

		1					Package Quantity: 1
Shape	Position	Operation	K	ey Retained	Contact	Part	No.
	1 0010011	opolation		at 🗨		IP40	IP65
Rectangular			Α	Q B	SPDT	AS6H-2K□1A	AS6H-2K□1PA
AS6H				\sim	DPDT	AS6H-2K□2A	AS6H-2K□2PA
		Maintained	в	Q Ø	SPDT	AS6H-2K⊡1B	AS6H-2K□1PB
	90°	Maintainea		\sim	DPDT	AS6H-2K□2B	AS6H-2K□2PB
	2-position		с	Q B	SPDT	AS6H-2K□1C	AS6H-2K□1PC
				\sim	DPDT	AS6H-2K□2C	AS6H-2K□2PC
		Spring roturn from right		Ū, J	SPDT	AS6H-21K⊡1B	AS6H-21K□1PB
		Spring return from right	В	\sim	DPDT	AS6H-21K□2B	AS6H-21K□2PB
			А	Q B	DPDT	AS6H-3K□2A	AS6H-3K□2PA
		Maintained	в	© 0	DPDT	AS6H-3K□2B	AS6H-3K□2PB
			с	0 © ®	DPDT	AS6H-3K□2C	AS6H-3K□2PC
			D	0 C O	DPDT	AS6H-3K□2D	AS6H-3K□2PD
Disc tumbler key			Е	L O R	DPDT	AS6H-3K□2E	AS6H-3K□2PE
			G		DPDT	AS6H-3K□2G	AS6H-3K□2PG
A CONTRACTOR	45°		н	0 ⁶ ^R	DPDT	AS6H-3K□2H	AS6H-3K□2PH
100	3-position		в	Ů, [©] , G	DPDT	AS6H-31K□2B	AS6H-31K□2PB
Wave key		Spring return from right	D	€ ©_G	DPDT	AS6H-31K□2D	AS6H-31K□2PD
			G		DPDT	AS6H-31K□2G	AS6H-31K□2PG
			с	C B	DPDT	AS6H-32K□2C	AS6H-32K□2PC
		Spring return from left	D	0 G	DPDT	AS6H-32K□2D	AS6H-32K□2PD
			н	C B	DPDT	AS6H-32K□2H	AS6H-32K□2PH
91 🖗 (E 📖		Spring return two-way	D	₿ C C C C C C C C C C C C C C C C C C C	DPDT	AS6H-33K□2D	AS6H-33K□2PD

• Specify the key code in place of
in the Part No.: T (disc tumbler key), S (wave key)

• For contact operation, see page 143.

Key is retained at ● positions and removable at O positions.

Two keys are supplied.
The front of key cylinder is made of metal.

• For disc tumbler key, only one type of key is available.

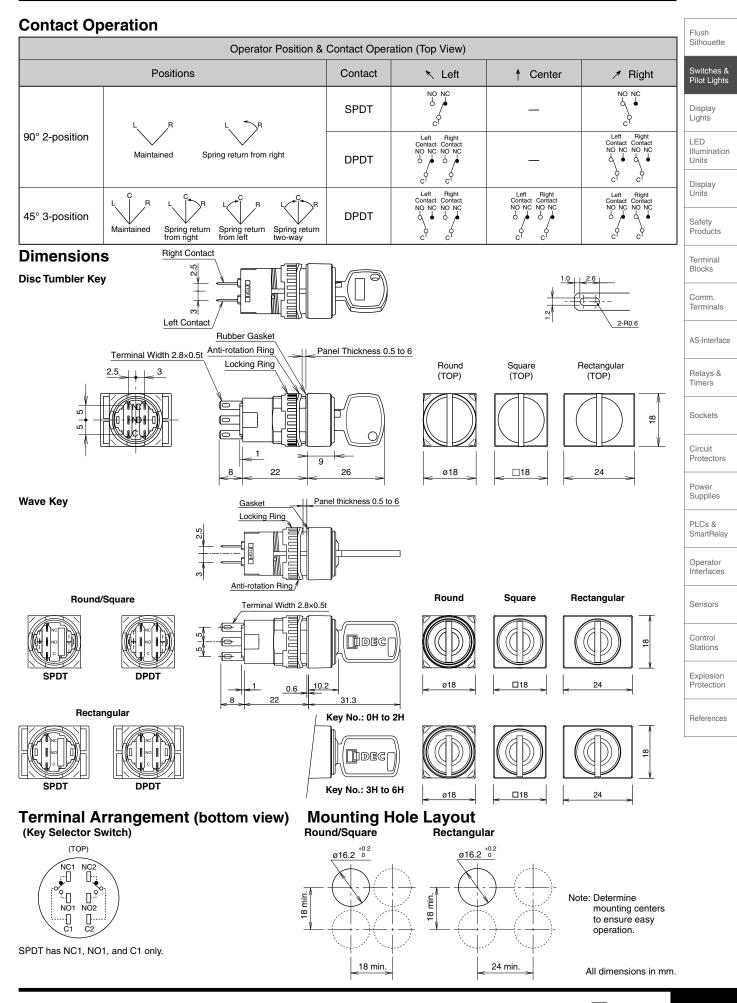
• For wave key, besides the standard key (key number 0H), six other keys are also available. To order other keys, specify the key number as shown below:

Example: AS6M-2KS1PA-1H

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

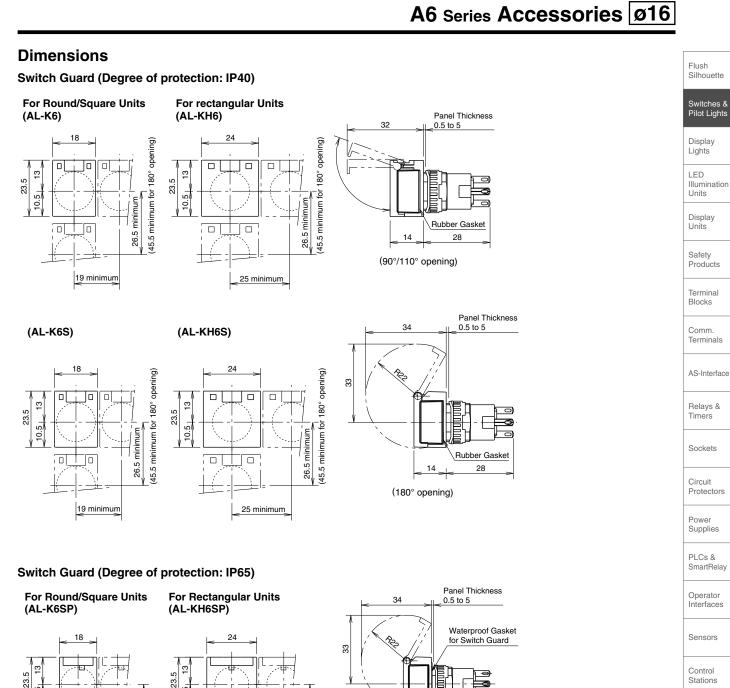
Note: Key number is indicated on the key cylinder. Standard keys do not have a key number indication.

A6 Series Key Selector Switches Ø16

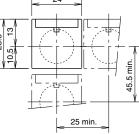


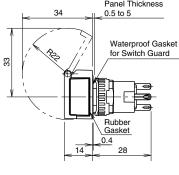
Accessories

	Shape		Material	Part No.	Ordering No.	Package Quantity	Remarks
Locking Ring \	Wrench	0 0 0	Metal (nickel-plated brass)	MT-001	MT-001	1	 Used to tighten the locking ring when installing A6 control units into a panel.
Lamp Holder T		<u>₹</u> 09	Rubber	OR-77	OR-77	1	Used to install and remove the LED lamps.
Lens Removal	Lens Removal Tool			MT-101	MT-101	1	Used to install and remove lenses and buttons.
Switch Guard	Switch Guard For round/ square - units (remains 90° open)			AL-K6	AL-K6	1	Degree of protection: IP40
T	For rectan- gular units (remains 110° open)		Guard (polyarylate)	AL-KH6	AL-KH6	1	Used to protect pushbuttons from inadvertent operation.
	For round/		Base (polyacetal)	AL-K6S	AL-K6S	1	
	Square units (180° spring return)	Spring	See page 145 for dimen- sions.	AL-K6SP	AL-K6SP	1	 Degree of protection: IP65 (when used with IP65 control units) Used to protect pushbuttons from inadvertent operation.
				AL-KH6S	AL-KH6S	1	 Degree of protection: IP40 Used to protect pushbuttons from inadvertent operation.
	(180° spring return)			AL- KH6SP	AL-KH6SP	1	 Degree of protection: IP65 (when used with IP65 control units) Used to protect pushbuttons from inadvertent operation.
Dust Cover		For round units	Translucent	AL-D6	AL-D6	1	When mounting the control units with
10		For square units	cover: elastomer	AL-DQ6	AL-DQ6	1	the dust covers installed, refer to mounting hole layout on page 146.
	States	For rectan- gular units	Black part: polypropylene	AL-DH6	AL-DH6	1	• Operating temperature: -10 to +55°C
Terminal Cove	r	100	Polyamide (white) See page 146 for dimen- sions.	AL-V6	AL- V6PN10	10	 When wiring the terminals, insert the lead wires into the terminal cover holes before soldering. Terminal cover is not attached and must be ordered separately.
Socket		Solder Terminal	See page 146	AL-C6	AL-C6	1	Plugs on the rear of the A series
		PC Board Terminal	for dimen- sions.	AL-C6V	AL-C6V	1	control units.
Mounting Hole	Plug	Rubber	Nitryl rubber (black)	AL-B6	AL- B6PN05	5	• Degree of protection: IP65
Mounting Hole	Plug	Metal	Plug: metal (diecast) Locking ring: polyacetal Gasket: nitrile	AL-BM6	AL-BM6	1	• Degree of protection: IP65 • Tightening torque: 0.1 to 0.29 N·m. 2.5 Gasket Locking Ring Panel Thickness 0.5 to 6 All dimensions in mm.









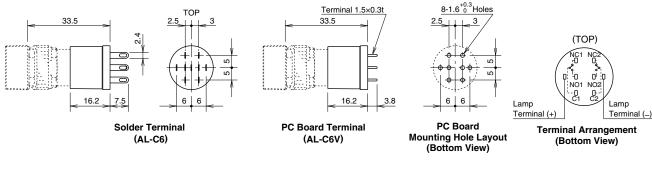
All dimensions in mm.

Explosion Protection

References

Ø16 A6 Series Accessories

Socket



Terminal Cover

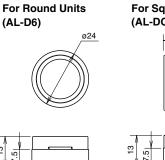


Note: When wiring the terminals, insert the lead wires into the terminal cover holes before soldering.

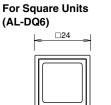
Dust Cover

<u></u>

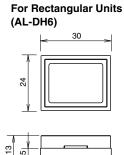
0.3

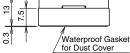


0.3



Waterproof Gasket for Dust Cover

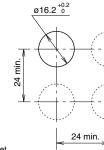


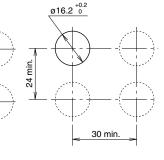


Mounting Hole Centers

Round/Square Units

Rectangular Units

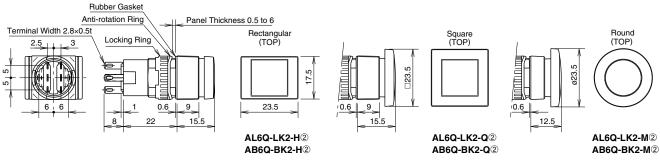




Large Lens and Large Button

Waterproof Gasket

for Dust Cover



All dimensions in mm.

A6 Series Maintenance Parts Ø16

Maintenan	co Parte							_
Maintenan								Flush Silhouette
Sha	ape	Specifi	cation	Part No.	Ordering No.	Package Quantity	Remarks	Switches & Pilot Lights
Lens	Round			AL6M-L2	AL6M-L@PN05		Specify a color code in place of ② in the Part No.	Display
	Square	Polyary	late	AL6Q-L2	AL6Q-L2PN05		A (amber), C (clear), G (green) R (red), S (blue), Y (yellow)	Lights
	Rectangular	-		AL6H-L2	AL6H-L2PN05	1	• Use a C (clear) lens for W (white) and JW (pure white) illumination.	LED Illuminatior
Button	Round			AB6M-B1	AB6M-B①PN05		Specify a color code in place of ①	Units
	Square	Polyary	late	AB6Q-B1	AB6Q-B①PN05		in the Part No. B (black), G (green), R (red)	Display Units
	Rectangular		1	AB6H-B1	AB6H-B1PN05	5	S (blue), W (white), Y (yellow)	Safety
Marking Plate	Round		White	AL6M-W	AL6M-WPN05			Products
		_	Black	AL6M-B	AL6M-BPN05			Terminal
	Square	Acrylic	White	AL6Q-W	AL6Q-WPN05			Blocks
		_	Black	AL6Q-B	AL6Q-BPN05	1		Comm. Terminals
	Rectangular		White	AL6H-W	AL6H-WPN05 AL6H-BPN05	1		
Large Lens Unit		Translu	Black	AL6H-B			Specify a color code in place of	AS-Interface
7	Round (installed on	color lei	าร	AL6M-LK2-M2	AL6M-LK2-M2		 ② in the Part No. Degree of protection: IP65 	Delaus 8
	round units)	Opaque button	9	AB6M-BK2-M2	AB6M-BK2-M2		© Color Code	Relays & Timers
	Square (installed	Translu color lei	าร	AL6Q-LK2-Q2	AL6Q-LK2-Q2	- 1	Translucent Color Lens Opaque Button	Sockets
	on square units)	Opaque button Translu		AB6Q-BK2-Q2	AB6Q-BK2-Q2	_	A (amber)B (black)G (green)G (green)R (red)R (red)S (blue)S (blue)	Circuit Protectors
	Rectangular (installed on	color lei	าร	AL6Q-LK2-H2	AL6Q-LK2-H2	-	W (white) W (white) Y (yellow) Y (yellow)	Devuer
	square units)	Opaque button)	AB6Q-BK2-H2	AB6Q-BK2-H2		See page 146 for dimensions.	Power Supplies
Locking Ring		Polyacetal		HA9Z-LN	HA9Z-LNPN10		• Black	PLCs & SmartRelay
Anti rotation Bing						10		Operator Interfaces
Anti-rotation Ring		Stainles Steel	S	AL6-LP	AL6-LPPN10			Sensors
Spare key								Control Stations
	Key selector (disc tumbler key)	Brass w nickel p		AS6-SK-132	AS6-SK-132PN02	2	Thickness 1.8 mm	Explosion Protection
Spare Key								References
Reversible Non-reversible	Key selector (wave key)	Diecast alloy (ni plated)		LA9Z-SK-	LA9Z-SK-□PN02	2	 Specify a key number in place of in the Part No. 0H: Standard key (reversible) 1H to 2H: Reversible key 3H to 6H: Non-reversible key 	
Gasket		Rubber		AP6M-WM	AP6M-WMPN10	10		

Ø16 A6 Series Maintenance Parts

LED Lamps

Dimensions	Operating	Current Draw		Part No.	Ordering No.	2 Illumination	Package	Base								
Differisions	Voltage	AC	DC	Tarrivo.	Ordening No.	Color Code	Quantity	Dase								
	5V DC		8 mA	LATD-5 ②	LATD-52	On a sife a salar	1									
	±5%		0 1114	LAID-52	LATD-5@PN10	oodo in pidoo	10									
0	6V DC	7 mA (G, S, JW)	5 mA (G, S, JW)	LATD-62									LATD-62	of ② in the Ordering No.	1	
	±5%	8 mA (A, R, W, Y)	6 mA (A, R, W, Y)		LATD-62PN10	A: amber	10	Exclusive for A6 series								
	12V AC/	9 mA	8 mA	LATD-12	LATD-12	G: green JW: pure white	1									
	DC ±10%	9 MA	5 IIIA		LATD-1@PN10	D. rod	10									
Voltage	24V AC/	9 mA	8 mA		LATD-22	W: white Y: vellow	1									
	DC ±10%	3 114	0 IIIA	LATD-22	LATD-22PN10		10									

Safety Precautions

- Turn off the power to A series control units before starting installation, removal, wiring, maintenance, and inspection of the control units. Failure to turn power off may cause electrical shocks or fire hazard.
- To avoid a burn on your hand, use the lamp holder tool when replacing lamps.

Operating Instructions

Replacement of Lens and Marking Plate

Removal

Remove the lens assembly (color lens, marking plate, lens holder, and spring) by holding the color lens recesses with the Lens Removal Tool (MT-101) and pulling it out. Remove the marking plate by disengaging the latches between the color lens and lens holder. Fitting Groove

The marking plate must be engraved on the front side as shown at right. When using a color film, insert it between the color lens and marking plate.



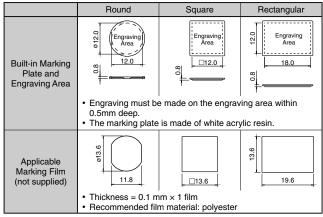
Place the marking plate on the lens holder in the correct direction, and press the color lens onto the lens holder to engage the latches. Put the spring on the lens holder and insert the lens holder into the housing in the correct direction.

Color Lens

Marking

For A series illuminated pushbuttons, legends and symbols can be engraved on the built-in marking plates, or printed film can be inserted under the lens for labelling purposes.

Marking Plate & Engraving Area



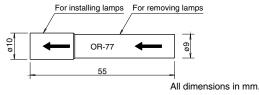
Replacing the LED Lamp

Removal

Use the lamp holder tool (OR-77) to remove lamps. Do not use pliers.

Installation

Use the lamp holder tool (OR-77) to install lamps. Note the correct side of the tool for removal or installation.



· For wiring, use wires of a proper size to meet the voltage and current requirements. Failure to tighten terminal screws may cause overheating and create a fire hazard.

Display Lights

Switches 8 Pilot Lights

Flush Silhouette

LED Illumination Units

Display Units

Safety Products

Terminal Blocks

Comm Terminals

AS-Interface

Sockets

Relays &

Timers

Circuit Protectors

Power Supplies

LCs &	
martRelay	

Sensors

Operator Interfaces

Control Stations

Explosion Protection

References

149

the operating voltage. Replacement of Buttons (Illuminated/Non-illuminated)

Do not replace buttons of maintained action units while the button is in the locked position. Replacing the button in the locked position may damage the internal mechanism. Be sure to release the button before replacing.

Operating and Storage Environment

- 1. Make sure that the operating/storage temperature and humidity are within the ratings.
- 2. Do not use enclosed type units in an environment subject to oil, water or dust accumulation. In such an area, use the waterproof/ oiltight units (IP65).

Microswitch Contacts

Do not connect NO and NC contacts of a microswitch to different voltages or different power sources to prevent a dead short-circuit.

IP65 Units

IP65 units are evaluated by conventional cutting and cooling oils, and can not be used with some special oils. Contact IDEC for resistance against specific oils.

Panel Mounting

When mounting the control units into a panel, use the optional locking ring wrench (MT-001) to tighten the locking ring. Do not use pliers. Tightening torque must not exceed 0.88 N·m. Excessive tightening will damage the locking ring.

Wiring

Solder the terminal at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu is recommended when using lead-free solder. When soldering, do not touch the control unit 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. Use a non-corrosive rosin flux.

Installing the Socket

Install the socket on the control unit with the TOP markings on the control unit and the socket placed in the same direction.

Switch Guard

IP65 (IEC 60529) switch guards must be used with IP65 (IEC 60529) control units only. Even if IP65 type switch guards are installed, enclosed type (IP40) control units are not made waterproof.

	Item	Switch Guard					
	nem	IP65 (IEC 60529)			Р		
Control Unit	IP65	IP65	IP40		SI		
Control Unit	IP40	IP40	IP40				

Operating Voltage of LED Lamps

The operating voltage of 5V DC is measured at complete DC.

Other Notes

Close Proximity Mounting

When mounting pilot lights or illuminated pushbuttons collectively

or lighting them continuously, heat may cause the ambient temperature to rise above the rated operating temperature. When the mounting panel is not made of metal or when the control units are mounted in an enclosed panel, provide for ventilation or lower



Π1



ns Holde

Marking Plate

ø12 A2 Series Miniature Control Units

Short 22-mm-long body miniature control unit series with bright LED illumination face and snap-action switching.

- Degree of protection: IP40 and IP65 (IEC 60529)
- All series have terminals on the same plane.
- UL recognized, CSA certified

Applicable Standards	Mark	File No. or Organization
UL508	19	UL Recognition File No. E55996
CSA C22.2 No.14	(SP)	CSA File No. LR 21451



Specifications

(minimum operations)

Degree of Protection

Operating Temperature -25 to +55°C (no freezing) -30 to +80°C (no freezing) Storage Temperature 45 to 85% RH (no condensation) **Operating Humidity** $50 \text{ m}\Omega \text{ maximum (initial value)}$ **Contact Resistance** Insulation Resistance 100 M Ω minimum (500V DC megger) Between live and dead metal parts: 2.000V AC, 1 minute Between terminals of different poles: 2,000V AC, 1 minute Switch Unit Between terminals of the same pole: Dielectric 1.000V AC, 1 minute Strength Between contact and lamp terminals: 1,500V AC, 1 minute Illumination Between live part and ground: Unit 2,000V AC, 1 minute Damage limits, Operating extremes: Vibration Resistance 5 to 55 Hz, amplitude 0.75 mm Damage limits: 500 m/s² (50G) Shock Resistance Operating extremes: 200 m/s² (20G) Mechanical Durability Momentary: 200,000 operations Maintained: 100,000 operations (minimum operations) Momentary: 100,000 operations Electrical Durability Maintained: 50,000 operations

Contact Ratings (Contact Block)

	<u> </u>		,			
Rated Insulati	on Voltage	250V				
Rated Therma	al Current	3A				
Operating Vol	tage (AC/DC)	24V	110V	220V		
AC 50/60 Hz	Resistive Load	-	1.0A	0.5A		
AC 50/60 HZ	Inductive Load	-	0.7A	0.5A		
DC	Resistive Load	1.0A	0.2A	-		
Inductive Load		0.7A	0.1A	-		
Contact Mate	rial	Silver				

 Minimum applicable load: 5V AC/DC, 3 mA (applicable range may vary with operating conditions and load types)

Weight

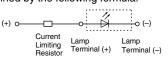
	AL2M-M11: 4g
Weight (approx.)	AL2M-P1: 4g
	AB2M-M1: 4g

LED Lamp Ratings (LAD-S)

	,							
Built-in LED Part No.	LAD-SA	LAD-SG	LAD-SR	LAD-SY				
Lamp Base		Exclusive for A series control units						
Forward Current (If)		20	mA					
Forward Voltage (Vf) (nominal)	2.2V	2.1V	1.7V	2.2V				
Reverse Voltage (Vr)		4	V					
Illumination Color	А	G	R	Y				
LED Lamp Color	Amber Clear	Yellow Diffused	Red Clear	Yellow Clear				
Applicable Lens Color	Amber	Green	Red	Yellow and White				
Base Plastic Color		Re	ed					
LED Lamp Life (reference value)	Approx. 50,000 hours (Th DC.)	ne illuminance reduces to t	50% of the initial intensity	when used on complete				
Operating Voltage & External Current-limiting Resistor (recommended value) (Note)	5V DC: 150Ω, 1/2W 6V DC: 200Ω, 1/2W 12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W							
Internal Circuit		(+) 0	✓ ○ (−)					

Note: When LED lamps are used on voltages other than the above, external resistor value R is determined by the following formula: R = (operating voltage - Vf) / If

 LED lamps do not have a current-limiting resistor, and external resistors of recommended values for each voltage must be provided. Connect a current-limiting resistor in series, otherwise LED lamps will be damaged. Because no protection diode is contained, ensure the correct polarity is observed.



(Switching frequency 1200 operations/h)

IP40, IP65 (IEC 60529)

A2 Series Illuminated Pushbuttons & Pilot Lights Ø12

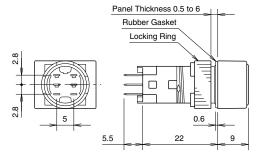
Illuminated Pushbuttons & Pilot Lights								
			j			Package Quantity: 1	Flush Silhouette	
			Part No.		-	LED Lamp	Switches &	
Shape	Operation	Contact	IP40	IP65	② Lens Color Code	Part No., Rated Current (External Resistor Recommended Value)	Pilot Lights Display Lights	
Round AL2M	Momenten	SPDT	AL2M-M112	AL2M-M11P2			LED	
	Momentary	DPDT	AL2M-M212	AL2M-M21P2			Illumination Units	
		SPDT	AL2M-A112	AL2M-A11P2	-		Display Units	
	Maintained	DPDT	AL2M-A212	AL2M-A21P2			Safety Products	
71 ().	Pilot Light	_	AL2M-P12	AL2M-P1P2			Terminal	
Square AL2Q		SPDT	AL2Q-M112	AL2Q-M11P2	Specify a color	A: LAD-SA G: LAD-SG	Blocks	
and the second s	Momentary	DPDT	AL2Q-M212	AL2Q-M21P2	code in place of ② in the Part No.	R: LAD-SR W/Y: LAD-SY	Comm. Terminals	
	Mointaine	SPDT	AL2Q-A112	AL2Q-A11P2	A: amber G: green	Rated Current: 20 mA	AS-Interface	
	Maintained	DPDT	AL2Q-A212	AL2Q-A21P2	R: red W: white	5V DC: 150Ω, 1/2W 6V DC: 200Ω, 1/2W	Relays & Timers	
BT (Pilot Light	_	AL2Q-P1@	AL2Q-P1P2	Y: yellow	12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W	Sockets	
Rectangular AL2H	Momentary	SPDT	AL2H-M112	AL2H-M11P2	-		SUCKEIS	
1		DPDT	AL2H-M212	AL2H-M21P2	_		Circuit Protectors	
	Maintained	SPDT	AL2H-A112	AL2H-A11P2			Power Supplies	
FL ()		DPDT	AL2H-A212	AL2H-A21P2	_		PLCs & SmartRelay	
	Pilot Light	_	AL2H-P1@	AL2H-P1P [®]			Operator	
 LED lamps do not have a curre External current-limiting resisto AP2M series pilot lights (round 	or is not neces	sary when a	in optional socket v	with built-in resistor	is used (see page		Interfaces	
	2020: 0,) ,				(+) o	Current Lamp Lamp	Sensors	
Dimensions	el Thickness 0.5 t	06				Resistor Terminal (+) Terminal (-)	Control Stations	
<u>R</u>	Locking Ring		Rectangu (TOP)			Square Round (TOP) (TOP)	Explosion	
	al Width 1.8×0.4t						Protection	
				014 014			References	
	7 22	9	> 18		9	<u> </u>		
Terminal Arrangement Mounting Hole Layout								
Lamp Terminal (+)		Rou	Ind/Square Units		gular Units			
(TOP) NC1 NC2 NC1 N		14 min. ▼	ø12 ⁺⁰²			Note: Determine mounting centers to ensure easy operation.		
			14 min.		< 18 min.	All dimensions in mm.		

Pushbuttons

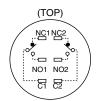
						Package Quantity
Shape	Button Style	Operation	Contact	Part	No.	Color Code 1
•	Buildin Style	Operation	Contact	IP40	IP65	
Round AB2M		Momentary	SPDT	AB2M-M11	AB2M-M1P ①	B: black G: green
	Button	womentary	DPDT	AB2M-M2 ①	AB2M-M2P ①	R: red
1	Dutton	Maintained	SPDT	AB2M-A11	AB2M-A1P1	S: blue W: white
		wamaneu	DPDT	AB2M-A2 ①	AB2M-A2P1	Y: yellow
		Momenter	SPDT	AB2M-M1L2	AB2M-M1PL2	A: amber
	1	Momentary	DPDT	AB2M-M2L2	AB2M-M2PL2	G: green R: red
	Lens	Maintained	SPDT	AB2M-A1L2	AB2M-A1PL2	W: white
71 ()]		wantained	DPDT	AB2M-A2L2	AB2M-A2PL2	Y: yellow
quare			SPDT	AB2Q-M11	AB2Q-M1P1	B: black
AB2Q	Dutter	Momentary	DPDT	AB2Q-M21	AB2Q-M2P1	G: green R: red
STA	Button		SPDT	AB2Q-A11	AB2Q-A1P1	S: blue
		Maintained	DPDT	AB2Q-A2 ①	AB2Q-A2P 1	W: white Y: yellow
		Momentary	SPDT	AB2Q-M1L2	AB2Q-M1PL2	A: amber
			DPDT	AB2Q-M2L2	AB2Q-M2PL2	G: green
	Lens		SPDT	AB2Q-A1L2	AB2Q-A1PL2	R: red W: white
71 (f):		Maintained	DPDT	AB2Q-A2L2	AB2Q-A2PL2	Y: yellow
Rectangular			SPDT	AB2H-M11	AB2H-M1P1	B: black
AB2H	Dutter	Momentary	DPDT	AB2H-M2 ①	AB2H-M2P ①	G: green R: red
2 Ann	Button	Maintainard	SPDT	AB2H-A11	AB2H-A1P1	S: blue W: white
		Maintained	DPDT	AB2H-A2 ①	AB2H-A2P 1	Y: yellow
			SPDT	AB2H-M1L2	AB2H-M1PL2	A: amber
		Momentary	DPDT	AB2H-M2L2	AB2H-M2PL2	G: green
	Lens	Mariatalia	SPDT	AB2H-A1L2	AB2H-A1PL2	R: red W: white
71 ()]*		Maintained	DPDT	AB2H-A2L2	AB2H-A2PL2	Y: yellow

• Specify a color code in place of ① or ② in the Part No.

Dimensions



Terminal Arrangement



SPDT has NC1, NO1, and C1 only.

Mounting Hole Layout

4

0.6 5.5

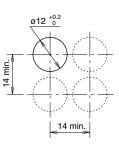
9

Round/Square Units

18

Rectangular

(TOP)



Rectangular Units

Square

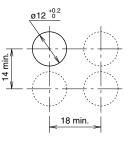
(TOP)

□14

Round

(TOP)

ø14



Note: Determine mounting centers to ensure easy operation.

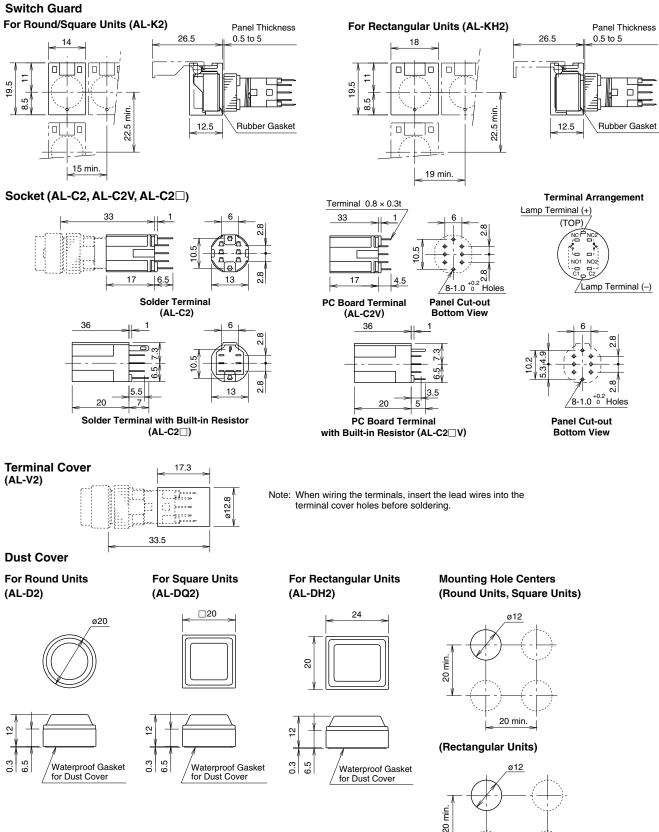
All dimensions in mm.

A2 Series Accessories Ø12

Accessories									Flush
Shape	Ν	Naterial	Part No.	Ordering	Package	Remarks		Pomarka	Silhouette Switches &
Locking Ring Wrench	Ň	hatenai	Fait NO.	Part No.	Quantity				Pilot Lights
	Metal (nickel-pla	ated brass)	MT-002	MT-002	1	 Used to tighten the locking ring when installing the A2 control units into a panel. 			Display Lights LED
Lens Removal Tool	Stainless Steel		MT-101	MT-101	1	• Used to remove lens and button.		move lens and button.	LED Illumination Units Display Units
Lamp Holder Tool	Rubber		OR-66	OR-66	1	Used to remove and install LED lamps		move and install LED lamps.	Safety Products
Switch Guard		For round/ square unit	AL-K2	AL-K2	1	IF • U	P40 sed to pr		Terminal Blocks Comm.
	90° open	For rectangular unit	AL-KH2	AL-KH2	1	in • S	ushbutto adverter ee page imension	Terminals AS-Interface	
Socket	Solder Te	rminal	AL-C2	AL-C2	1	Snaps on the rear of the A2 series control units.			Relays & Timers
	PC Board	Terminal	AL-C2V	AL-C2V	1		(see page 154 for dimensions)		Sockets
Socket with Built-in Resistor		5V DC	AL-C21	AL-C21	1		Blue	 A current limiting resistor is contained, eliminating the 	
	Solder	6V DC	AL-C22	AL-C22	1	<u> </u>	Green	need for external resistors. • When using the socket with	Circuit Protectors
	Terminal	12V DC	AL-C23	AL-C23	1	Color	Yellow	a built-in resistor, make sure that the continuous current is 1A maximum and the operating temperature is	Power
		24V DC	AL-C24	AL-C24	1	Socket Bottom	Red		Supplies
		5V DC	AL-C21V	AL-C21V	1	et Bo	Blue	-25 to +40°C. In collective mounting, keep center-to	PLCs &
	PC Board	6V DC	AL-C22V	AL-C22V	1	socke	Green	center-spacing of 20 mm or more between adjacent	SmartRelay
	Terminal	12V DC	AL-C23V	AL-C23V	1		Yellow	units in consideration of built-in resistor heating.	Operator Interfaces
		24V DC	AL-C24V	AL-C24V	1		Red	 See page 154 for dimensions. 	
Terminal Cover		1						ng the terminals, insert the	Sensors
	Nylon		AL-V2	AL-V2PN10	10	lead wires in before solde • Terminal cov		into the terminal cover holes dering. over is not attached and rdered separately.	Control Stations
Dust Cover	For round	units	AL-D2	AL-D2	1	th	ne dust co	unting the control units with overs installed, refer to	Explosion Protection
P	For squar	For square units		AL-DQ2	1	 mounting hole layout on page 154. Operating temperature: -10 to +55°C Material Front part: Elactomer (transparent) 			References
	For rectangular units		AL-DH2	AL-DH2	1	 Rear part: Polypropylene (black) See page 154 for dimensions and mounting hole layout. 			
Mounting Hole Plug	Nitryl rubb	per (black)	AL-B2	AL-B2PN05	5	Degree of protection: IP65			

Dimensions





Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.



A2 Series Maintenance Parts Ø12

Shape	Specification		Specification Part No. Ordering Part No.		Package			or Code 1	Switches 8		
Marking Plate	Round		AL2M-W	AL2M-WPN05	Quantity				Pilot Lights		
	Square		AL2Q-W	AL2Q-WPN05	5	wr	nite		Display Lights		
	Rectangular		AL2H-W	AL2H-WPN05	_				-		
Lens Unit		Round	AL2M-LK1-2	AL2M-LK1-@PN02					LED Illuminatio Units		
	For IP40 units	Square	AL2Q-LK1-2	AL2Q-LK1-@PN02	2						
s in in		Rectangular	AL2H-LK1-2	AL2H-LK1-2PN02	-	•s	pecify a	color code in	Display Units		
		Round	AL2M-LK2-2	AL2M-LK2-2		p	lace of	2 in the Part No.	Safety		
6 6 6	For IP65 illumi- nated pushbut-	Square	AL2Q-LK2-2	AL2Q-LK2-2	_		A: amber G: green		Products		
	tons	Rectangular	AL2H-LK2-2	AL2H-LK2-2	-	R:	red	Terminal Blocks			
🙆 🗑 🎾		Round	AL2M-LK3-2	AL2M-LK3-2	- 1	1	white yellow	DIUCKS			
	For IP65 pilot lights	Square	AL2Q-LK3-2	AL2Q-LK3-2					Comm. Terminals		
	lights	Rectangular	AL2H-LK3-2	AL2H-LK3-2	-						
Button Unit		Round	AB2M-BK1-1	AB2M-BK1-①PN02		• s	pecify a	AS-Interfac			
the time time	For IP40 pushbuttons	Square	AB2Q-BK1-①	AB2Q-BK1-①PN02			lace of	Relays &			
	puonsatione	Rectangular	AB2H-BK1-①	AB2H-BK1-①PN02		B: black			Timers		
8 8 B		Round	AB2M-BK2-①	AB2M-BK2- ①		R:	green red	Sockets			
	For IP65 pushbuttons	Square	AB2Q-BK2-①	AB2Q-BK2-1	1			S: blue W: white			SUCKEIS
		Rectangular	AB2H-BK2-①	AB2H-BK2- ①		Y:	yellow		Circuit Protectors		
LED Lamp		ombor	LAD-SA	LAD-SA	1		Amber	LED color: amber	Protectors		
	Illumination color:	amper	LAD-SA	LAD-SAPN10	10		Amper	clear	Power Supplies		
Current-limiting	Illumination color	aroon	LAD-SG	LAD-SG	1]_	Green	LED color: yellow			
resistor is not contained.		green	LAD-5G	LAD-SGPN10	10	color	Green	diffused	PLCs & SmartRelay		
	Illumination color:			LAD-SR	1	1 sua	sus	Red	LED color: clear	Operator	
		or: red LAD-SR		LAD-SRPN10	10			red	Interfaces		
<u>9.0</u>	Illumination color:	vellow	LAD-SY	LAD-SY	1		White/	LED color: yellow	Sensors		
All dimensions in mm.		. yenow		LAD-SYPN10	10		Yellow	clear	0013013		

Control Stations

Explosion Protection

References

Safety Precautions

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

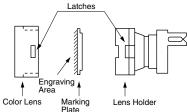
Operating Instructions

Replacement of Lens and Marking Plate

Removal

Remove the lens assembly (color lens, marking plate, lens holder, and spring) by holding the color lens recesses with the Lens Removal Tool (MT-101) and pulling it out. Remove the marking plate by disengaging the latches between the color lens and lens holder.

The marking plate must be engraved on the front side as shown below.



Installation

Place the marking plate on the lens holder in the correct direction, and press the color lens onto the lens holder to engage the latches. Put the spring on the lens holder and insert the lens holder into the housing in the correct direction.

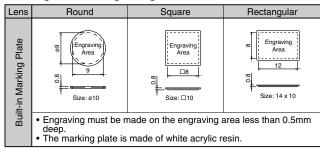
Installing Non-illuminated Button

Non-illuminated pushbuttons contain a marking plate like illuminated units. Be sure to install the marking plate when replacing the button.

Marking

For A series illuminated pushbuttons, legends and symbols can be engraved on the built-in marking plates, or printed film can be inserted under the lens.

Marking Plate & Engraving Area



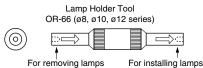
Replacing the LED Lamp

Removal

Use the lamp holder tool (OR-66) to remove lamps. Do not use pliers.

Installation

Use the lamp holder tool (OR-66) to install lamps. Note the correct side of the tool for removal or installation.



 For wiring, use wires of a proper gauge to meet the voltage and current requirements. Failure to tighten terminal screws may cause overheating and create a fire hazard.

Panel Mounting

When mounting the control units onto a panel, use the optional locking ring wrench (MT-002) to tighten the locking ring. Do not use pliers. Tightening torque must not exceed 0.78 N·m. Excessive tightening will damage the locking ring.

Wiring

Solder the terminal at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu is recommended when using lead-free solder. When soldering, do not touch the control unit 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.

Use non-corrosive rosin flux.

Installing the Socket

Install the socket on the control unit with the TOP markings on the control unit and the socket placed in the same direction.

Operating Voltage of LED Lamps

The operating voltage is measured at complete DC. When using a pulsating voltage such as a full-wave rectification voltage, keep peak currents within the forward current If. Peak currents exceeding the If may shorten the LED lamp life.

Other Notes

Close Proximity Mounting

When mounting pilot lights or illuminated pushbuttons collectively or lighting them continuously, heat may cause the ambient temperature to rise above the rated operating temperature. When the mounting panel is not made of metal or when the control units are mounted in an enclosed panel, provide for ventilation or lower the operating voltage.

Replacement of Buttons (Illuminated/Non-illuminated)

Do not replace buttons of maintained action units while the button is in the locked position. Replacing the button in the locked position may damage the internal mechanism. Be sure to release the button before replacing.

Operating and Storage Environment

- 1. Make sure that the operating/storage temperature and humidity are within the ratings.
- Do not use enclosed units (IP40) in an environment subject to oil, water or dust accumulation. In such an area, use the waterproof/oiltight units (IP65).

Microswitch Contacts

Do not connect NO and NC contacts of the microswitch to different voltages or different power sources to prevent a dead short-circuit. **IP65 Units**

IP65 units are evaluated by conventional cutting and cooling oils, and can not be used with some special oils. Contact IDEC for resistance against special oils.

156

ø10 A1 Series Miniature Control Units

Short 22-mm-long body miniature control unit series with LED illumination face and snap-action switching.

- Switches & Pilot Liahts
- Display

LED Illumination Units

Display Units

Safety Products

Terminal

Terminals

AS-Interface

Protectors

Power

PLCs &

Operator

Sensors

Control

Stations

Explosion Protection

References

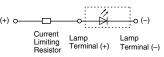
Reverse Voltage (Vr) 4V Illumination Color γ А G R LED Lamp Color Amber Clear Yellow Diffused **Red Clear** Yellow Clear Applicable Lens Color Amber Green Red Yellow and White **Base Plastic Color** Red Approx. 50,000 hours (The illuminance reduces to 50% of the initial intensity when used on complete LED Lamp Life (reference value) DC.) 5V DC: **Operating Voltage & External** 150Ω, 1/2W **Current-limiting Resistor** 6V DC: 200Ω, 1/2W (recommended value) 12V DC: 510Ω, 1W (Note) 24V DC: 1.1 kΩ, 1W ĥ Internal Circuit (+) 0--0 (-)

Note: When LED lamps are used on voltages other than the above, external resistor value R is determined by the following formula: R = (operating voltage - Vf) / If

· LED lamps do not have a current-limiting resistor, and external resistors of recommended values for each voltage must be provided. Connect a current-limiting resistor in series, otherwise LED lamps will be damaged. Because no protection diode is contained, ensure the correct polarity is observed.

LAD-SA

2.2V



· Bright and clear LED illumination.

- All series have terminals on the same plane.
- UL recognized, CSA certified

Applicable Standards	Mark	File No. or Organization
UL508	19	UL Recognition File No. E55996
CSA C22.2 No.14	(F	CSA File No. LR 21451

Contact Ratings (Contact Block)

Rated Insulati	on Voltage	250V				
Rated Therma	al Current	3A				
Operating Vol	Itage (AC/DC) 24V 110V 22			220V		
AC 50/60 Hz	Resistive Load	-	1.0A	0.5A		
AC 50/60 HZ	Inductive Load	-	0.7A	0.5A		
DC	Resistive Load		0.2A	-		
Inductive Load		0.7A	0.1A	-		
Contact Mate	rial	Silver				

• Minimum applicable load: 5V AC/DC, 3 mA

(applicable range may vary with operating conditions and load types)

Weight

Weight (approx.)	AL1M-M11: 3g
	AL1M-P1: 3g
	AB1M-M1: 3g

LED Lamp Ratings (LAD-S)

Built-in LED Part No.

Forward Current (If)

Forward Voltage (Vf) (nominal)

Lamp Base

Specifications **Operating Temperature**

Storage Temperature

Operating Humidity

Contact Resistance

Dielectric

Strength

Insulation Resistance

Switch Unit

Illumination

Unit

Vibration Resistance

Mechanical Durability

(minimum operations)

(minimum operations)

Degree of Protection

Exclusive for A series control units

20 mA

LAD-SG

2.1V

Electrical Durability

Shock Resistance

-25 to +55°C (no freezing)

-30 to +80°C (no freezing)

2,000V AC, 1 minute

2.000V AC. 1 minute

1,000V AC, 1 minute

1,500V AC, 1 minute

2,000V AC, 1 minute

Damage limits:

IP40 (IEC 60529)

LAD-SR

1.7V

Between live part and ground:

5 to 55 Hz, amplitude 0.75 mm

Momentary: 200,000 operations

Maintained: 100,000 operations

Momentary: 100,000 operations

Maintained: 50,000 operations

45 to 85% RH (no condensation)

100 MΩ minimum (500V DC megger) Between live and dead metal parts:

Between terminals of different poles:

Between terminals of the same pole:

Between contact and lamp terminals:

Damage Limits, Operating extremes:

Operating extremes: 200 m/s² (20G)

(Switching frequency 1200 operations/h)

500 m/s² (50G)

LAD-SY

2.2V

50 mΩ maximum (initial value)

Lights

Blocks

Comm.

Relays &

Timers

Sockets

Circuit

Supplies

SmartRelay

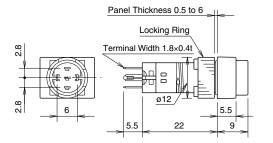
Interfaces

Illuminated Push	Illuminated Pushbuttons & Pilot Lights							
					Package Quantity: 1			
			Part No.		LED Lamp			
Shape	Operation	Contact	IP40	2 Lens Color Code	Part No., Rated Current (External Resistor Recommended Value)			
Round AL1M	Momentary	SPDT	AL1M-M11@					
	Maintained	SPDT	AL1M-A11@					
• 1	Pilot Light	_	AL1M-P12	Specify a color code in place of ② in the Part No. A: amber G: green R: red W: white Y: yellow				
Square AL1Q	Momentary	SPDT	AL1Q-M112		A: LAD-SA G: LAD-SG R: LAD-SR W/Y: LAD-SY			
	Maintained	SPDT	AL1Q-A11@		Rated Current: 20 mA			
Ð 1R	Pilot Light	_	AL1Q-P12		5V DC: 150Ω, 1/2W 6V DC: 200Ω, 1/2W 12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W			
Rectangular AL1H	Momentary	SPDT	AL1H-M11@					
	Maintained	SPDT	AL1H-A11@					
91 ()	Pilot Light	_	AL1H-P1@					

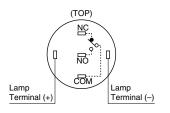
• LED lamps do not have a current-limiting resistor. Connect a current-limiting resistor in series, otherwise LED lamps will be damaged. • AP1M series pilot lights (round bezel only) with built-in current-limiting resistor are also available.

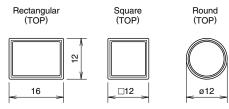


Dimensions



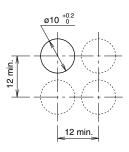
Terminal Arrangement (bottom view)



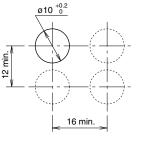


Mounting Hole Layout

Round/Square Units



Rectangular Units



Note: Determine mounting centers to ensure easy operation.

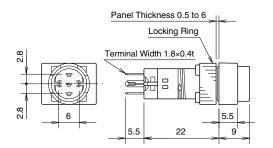
All dimensions in mm.

A1 Series Pushbuttons Ø10

Pushbuttons						Flush
					Package Quantity: 1	Silhouette
Shape	Button Style	Operation	Contact	Part No.	Color Code 12	Switches &
	Button Style	Operation	Contact	IP40		Pilot Lights
Round AB1M	Button	Momentary	SPDT	AB1M-M1①	B black G: green R: red	Display Lights
1 may 1		Maintained	SPDT	AB1M-A1①	S: blue W: white Y: yellow	LED Illumination Units
	Lens	Momentary	SPDT	AB1M-M1L2	A: amber G: green - R: red	Display Units
FL ()		Maintained	SPDT	AB1M-A1L2	W: white Y: yellow	Safety
Square AB1Q	Button	Momentary	SPDT	AB1Q-M1①	B black G: green R: red S: blue W: white Y: yellow	Products
(Diese		Maintained	SPDT	AB1Q-A11		Blocks
		Momentary	SPDT	AB1Q-M1L2	A: amber G: green	Comm. Terminals
F1 (f)	Lens	Maintained	SPDT	AB1Q-A1L2	R: red W: white Y: yellow	AS-Interface
Rectangular AB1H	5	Momentary	SPDT	AB1H-M1①	B black G: green R: red	Relays & Timers
	Button	Maintained	SPDT	AB1H-A11	S: blue W: white Y: yellow	Sockets
	Lens	Momentary	SPDT	AB1H-M1L2	A: amber G: green R: red	Circuit Protectors
F1 (]]	Lens	Maintained	SPDT	AB1H-A1L2	W: white Y: yellow	Power Supplies

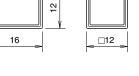
• Specify a color code in place of ① or ② in the Part No.

Dimensions



Terminal Arrangement (bottom view)





Rectangular (TOP)

Square (TOP)



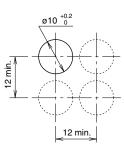
Rectangular Units

12 min.

ø10 ^{+0.2}

Mounting Hole Layout

Round/Square Units



Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.

16 min.



Operator Interfaces Sensors

Control Stations

PLCs &

SmartRelay

Explosion Protection

References

Accessories

Shape	Ν	Naterial	Part No.	Ordering No.	Package Quantity	Remarks		
Locking Ring Wrench	Metal (nickel-plated brass)		MT-003	MT-003	1	 Used to tighten the locking ring when installing the A1 control units into a panel. 		
Lens Removal Tool	Stainless Steel		Stainless Steel		MT-101	MT-101	1	 Used to remove lens and button.
Lamp Holder Tool	Rubber		OR-66	OR-66	1	Used to remove and install LED lamps.		
Switch Guard	90° open	For round/ square unit	AL-K1	AL-K1	1	• Used to protect pushbuttons from inadvertent operation.		
	ou open	For rectangular unit	AL-KH1	AL-KH1	1	• See page 161 for (remains dimensions. 90° open)		
Socket	Solder Ter	minal	AL-C1	AL-C1	1	Snaps on the rear of the A1 series control units.		
	PC Board	Terminal	AL-C1V	AL-C1V	1	(see page 161 for dimensions)		
Terminal Cover	Nylon		AL-V1	AL-V1PN10	10	 When wiring the terminals, insert the lead wires into the terminal cover holes before soldering. Terminal cover is not attached and must be ordered separately. 		
Mounting Hole Plug	Nitryl rubber (black)		AL-B1	AL-B1PN05	5	• Degree of protection: IP65		



For Round/Square Units (AL-K1) For Rectangular Units (AL-KH1) Switches & Pilot Lights Panel Thickness 12 16 24.5 0.5 to 5 Display oЩo 우 우 Lights 17.5 17.5 2.5 2.5 LED 20.5 min. Illumination Units 20.5 min 12.5 ίο 1 Display Units = + 13 min. 17 min. Safety Products Socket (AL-C1, AL-C1V) Terminal 0.8 × 0.3t **Terminal Arrangement** Terminal Blocks 33 33 (TOP) NC NO Comm. Terminals 舟 Сом 2.8 8. 10 Lamp Lamp 17 5 11 17 3 AS-Interface Terminal (+) Terminal (-) 5-1.0^{+0.2} Holes (PC Board Terminal (Bottom View) PC Board Terminal Solder Terminal Relays & Mounting Hole Layout) (AL-C1) (AL-C1V) Timers **Terminal Cover** Sockets 17.3 Note: When wiring the terminals, insert the lead wires into the terminal cover holes before soldering. ø10.8 Circuit Protectors 33.5 All dimensions in mm. Power

Maintenance Parts

Dimensions

Switch Guard

Shape	Shape		Shape Part No.		Ordering No.	Package Quantity		Co	lor Code ①②			
Marking Plate	Round	AL1M-W	AL1M-WPN05		• White							
	Square	AL1Q-W	AL1Q-WPN05	5								
	Rectangular	AL1H-W	AL1H-WPN05									
Lens Unit	Round	AL1M-LK1-2	AL1M-LK1-@PN02		Spec	ify a co	lor code in place of ②					
	Square	AL1Q-LK1-@	AL1Q-LK1-@PN02			Part N	lo. G (green), R (red)					
	Rectangular	AL1H-LK1-2	AL1H-LK1-@PN02	2		W (white), Y (yellow)		_				
Button Unit	Round	AB1M-BK1-①	AB1M-BK1-①PN02	2	Spec	Specify a color code in place of ① in the Part No. B (black), G (green), R (red)						
	Square	AB1Q-BK1-①	AB1Q-BK1-①PN02									
	Rectangular	AB1H-BK1- ①	AB1H-BK1-①PN02				(white), Y (yellow)					
LED Lamp	Illumination	LAD-SA	LAD-SA	1	A make a	Am	Amber	LED color: amber				
	color: amber	LAD-SA	LAD-SAPN10	10] '	Amber	clear					
	Illumination	LAD-SG	LAD-SG	1] _ [0	LED color: yellow					
Current-limiting	color: green	LAD-3G	LAD-SGPN10	10	l col	Green	diffused					
contained.	Illumination	imination LAD-SR LAD-SR 1	sue	Ded								
5.3 0	color: red	LAD-SR	LAD-SRPN10	10	 - '	Red	LED color: clear red					
All dimensions in mm.	Illumination	LAD-SY	LAD-SY	1		White/	LED color: yellow					
	color: yellow	LAD-ST	LAD-SYPN10	10] `	Yellow	clear					

Supplies

PLCs &

SmartRelay

Safety Precautions

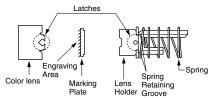
- Turn off the power to A series control units before starting installation, removal, wiring, maintenance, and inspection of the control units. Failure to turn power off may cause electrical shocks or fire hazard.
- To avoid burning your hand, use the lamp holder tool when replacing lamps.

Operating Instructions

Replacement of Lens and Marking Plate

Removal

Remove the lens assembly (color lens, marking plate, lens holder, and spring) by holding the color lens recesses with the Lens Removal Tool (MT-101) and pulling it out. Remove the marking plate by disengaging the latches between the color lens and lens holder. The marking plate must be engraved on the front side as shown below.



Note: Make sure that the spring is inserted in the correct direction. The base of spring must fit the groove in the holder.

Installation

Place the marking plate on the lens holder in the correct direction, and press the color lens onto the lens holder to engage the latches. Put the spring on the lens holder and insert the lens holder into the housing in the correct direction.

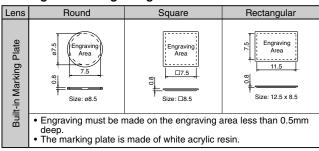
Installing Non-illuminated Button

Non-illuminated pushbuttons contain a marking plate like illuminated units. Be sure to install the marking plate when replacing the button.

Marking

For A series illuminated pushbuttons, legends and symbols can be engraved on the built-in marking plates, or printed film can be inserted under the lens.

Marking Plate & Engraving Area

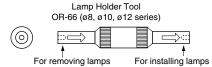


Replacing the LED Lamp

Removal

Use the lamp holder tool (OR-66) to remove lamps. Do not use pliers. Installation

Use the lamp holder tool (OR-66) to install lamps. Note the correct side of the tool for removal or installation.



 For wiring, use wires of a proper gauge to meet the voltage and current requirements. Failure to tighten terminal screws may cause overheating and create a fire hazard.

Panel Mounting

When mounting the control units into a panel, use the optional locking ring wrench (MT-003) to tighten the locking ring. Do not use pliers. Tightening torque must not exceed 0.29 N·m. Excessive tightening will damage the locking ring.

Wiring

Solder the terminal at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu is recommended when using lead-free solder. When soldering, do not touch the control unit 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.

Use non-corrosive rosin flux

Installing the Socket

Install the socket on the control unit with the TOP markings on the control unit and the socket placed in the same direction.

Operating Voltage of LED Lamps

The operating voltage is measured at complete DC. When using a pulsating voltage such as a full-wave rectification voltage, keep peak currents within the forward current If. Peak currents exceeding the If may shorten the LED lamp life.

Other Notes

Close Proximity Mounting

When mounting pilot lights or illuminated pushbuttons collectively or lighting them continuously, heat may cause the ambient temperature to rise above the rated operating temperature. When the mounting panel is not made of metal or when the control units are mounted in an enclosed panel, provide for ventilation or lower the operating voltage.

Replacement of Buttons (Illuminated/Non-illuminated)

Do not replace buttons of maintained action units while the button is in the locked position. Replacing the button in the locked position may damage the internal mechanism. Be sure to release the button before replacing.

Operating and Storage Environment

- 1. Make sure that the operating/storage temperature and humidity are within the ratings.
- 2. Do not use enclosed type units in an environment subject to oil, water or dust accumulation.

Microswitch Contacts

Do not connect NO and NC contacts of the microswitch to different voltages or different power sources to prevent a dead short-circuit.

Ø8 A8 Series Miniature Control Units

Short 22-mm-long body miniature control unit series with LED illumination face and snap-action switching.

Switches & Pilot Lights

Display Lights

LED Illumination Units

Display Units

Safety Products

Terminal Blocks

Comm.

Terminals

AS-Interface

Relays & Timers

Sockets

Circuit Protectors

Power Supplies

PLCs & SmartRelay

Operator Interfaces

Sensors

Control Stations

Explosion Protection

References

Bright and clear LED illumination.All series have terminals on the same plane.

• UL recognized, CSA certified

Applicable Standards	Mark	File No. / Organization
UL508	19	UL Recognition File No. E55996
CSA C22.2 No.14	(SP)	CSA File No. LR 21451

Contact Ratings (Contact Block)

<u> </u>					
Rated Insulati	on Voltage	250V			
Rated Therma	Rated Thermal Current 3A				
Operating Vol	tage (AC/DC)	24V 110V 220V			
AC 50/60 Hz	Resistive Load	-	1.0A	0.5A	
	Inductive Load	-	0.7A	0.5A	
DC	Resistive Load		0.2A	-	
	Inductive Load	0.7A	0.1A	-	
Contact Mate	rial	Silver			

 Minimum applicable load: 5V AC/DC, 3 mA (applicable range may vary with operating conditions and load types)

Weight

Weight (approx.)	AL8M-M11: 2g
	AL8M-P1: 2g
	AB8M-M1: 2g

A COLOR	

Specifications

Shecui	calions		
Operating Temperature		-25 to +55°C (no freezing)	
Storage Temperature		-30 to +80°C (no freezing)	
Operating	Humidity	45 to 85% RH (no condensation)	
Contact R	esistance	50 mΩ maximum (initial value)	
Insulation	Resistance	100 MΩ minimum (500V DC megger)	
Dielectric Strength	Switch Unit	Between live and dead metal parts 2,000V AC, 1 minute Between terminals of different poles: 2,000V AC, 1 minute Between terminals of the same pole: 1,000V AC, 1 minute Between contact and lamp terminals: 1,500V AC, 1 minute	
	Illumination Unit	Between live part and ground: 2,000V AC, 1 minute	
Vibration I	Resistance	Damage Limits, Operating extremes: 5 to 55 Hz, amplitude 0.75 mm	
Shock Re	sistance	Damage limits: 500 m/s ² (50G) Operating extremes: 200 m/s ² (20G)	
Mechanical Durability (minimum operations)		Momentary: 200,000 operations Maintained: 100,000 operations	
Electrical Durability (minimum operations)		Momentary: 100,000 operations Maintained: 50,000 operations (Switching frequency 1200 operations/h)	
Degree of	Protection	IP40 (IEC 60529)	

LED Lamp Ratings (LAD-S)

David Nie							
Part No.	LAD-SA	LAD-SG	LAD-SR	LAD-SY			
Lamp Base		Exclusive for A se	eries control units				
Forward Current (If)		20	mA				
Forward Voltage (Vf) (nominal)	2.2V	2.2V 2.1V 1.7V 2.2V					
Reverse Voltage (Vr)		4	V				
Illumination Color	A	G	R	Y			
LED Lamp Color	Amber Clear	Yellow Diffused	Red Clear	Yellow Clear			
Applicable Lens Color	Amber	Green	Red	Yellow and White			
Base Plastic Color		Re	ed				
LED Lamp Life (reference value)	Approx. 50,000 hours (Th DC.)	ne illuminance reduces to t	50% of the initial intensity	when used on complete			
Operating Voltage & External Current-limiting Resistor (recommended value) (Note)	5V DC: 150Ω, 1/2W 6V DC: 200Ω, 1/2W 12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W						
Internal Circuit		(+) •	, 				

Note: When LED lamps are used on voltages other than the above, external resistor value R is determined by the following formula: R = (operating voltage - Vf) / If

 LED lamps do not have a current-limiting resistor, and external resistors of recommended values for each voltage must be provided. Connect a current-limiting resistor in series, otherwise LED lamps will be damaged.
 Because no protection diode is contained, ensure the correct polarity is observed. (+) O Current Lamp Lamp Resistor Terminal (+) Terminal (-)

IDEC

LED Illuminated Pushbuttons & Pilot Lights						
					Package Quantity: 1	
Shape	Operation	Contact	Part No.		LED Lamp Part No., Rated Current (External Resistor Recommended Value)	
			IP40	2 Lens Color Code		
Round AL8M	Momentary	SPDT	AL8M-M112			
	Maintained	SPDT	AL8M-A112			
91 ()	Pilot Light	_	AL8M-P12			
Square AL8Q RN ()	Momentary	SPDT	AL8Q-M112	Specify a color code in place of ② - in the Part No.	 A: LAD-SA G: LAD-SG R: LAD-SR W/Y: LAD-SY Rated Current: 20 mA 5V DC: 150Ω, 1/2W 6V DC: 200Ω, 1/2W 12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W 	
	Maintained	SPDT	AL8Q-A11②	A: amber G: green R: red		
	Pilot Light	_	AL8Q-P1②	W: white Y: yellow		
Rectangular AL8H	Momentary	SPDT	AL8H-M112			
	Maintained	SPDT	AL8H-A11@			
AT @	Pilot Light	_	AL8H-P12			

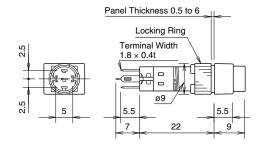
• LED lamps do not have a current-limiting resistor. Connect a current-limiting resistor in series, otherwise LED lamps will be damaged.

Rectangular

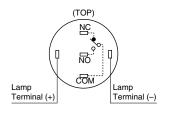
(TOP)

• AP8M series pilot lights (round bezel only) with built-in current-limiting resistor are also available.

Dimensions



Terminal Arrangement





Square

(TOP)

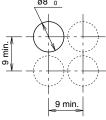
Round

(TOP)

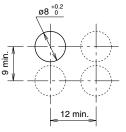
Mounting Hole Layout

Round/Square Units

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Rectangular Units



Note: Determine mounting centers to ensure easy operation.

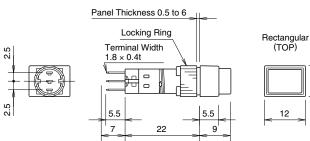
All dimensions in mm.

A8 Series Pushbuttons Ø8

Pushbuttons						Flush Silho
					Package Quantity: 1	
Shape	Button Style	Operation	Contact -	Part No. IP40	Color Code 12	Switc Pilot
Round AB8M	Button	Momentary	SPDT	AB8M-M1 ①	B black G: green R: red	Displa Lights
	Buildin	Maintained	SPDT	AB8M-A1 ①	S: blue W: white Y: yellow	LED Illumi Units
Lens	Long	Momentary	SPDT	AB8M-M1L2	A: amber G: green — R: red	Displ
	Lens	Maintained	SPDT	AB8M-A1L2	W: white Y: yellow	Safet
	Button	Momentary	SPDT	AB8Q-M1①	B black G: green R: red	Term
	Bullon	Maintained	SPDT	AB8Q-A1 ①	S: blue W: white Y: yellow	Com
		Momentary	SPDT	AB8Q-M1L2	A: amber G: green	Term AS-Ir
91 ()];	Lens	Maintained	SPDT	AB8Q-A1L2	R: red W: white Y: yellow	Rela
Rectangular AB8H		Momentary	SPDT	AB8H-M1①	B black G: green R: red	Time
FL (j)	Button	Maintained	SPDT	AB8H-A1 ①	S: blue W: white Y: yellow	Sock
		Momentary	SPDT	AB8H-M1L@	A: amber G: green	Circu Prote
	Lens	Maintained	SPDT	AB8H-A1L2	R: red W: white Y: yellow	Pow Supp

- Specify a color code in place of 1 or 2 in the Part No. - Lens style buttons can be used with marking plate and film.

Dimensions



Terminal Arrangement (bottom view)





Round (TOP)

ø9

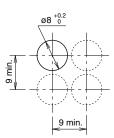
Round/Square Units

Square (TOP)

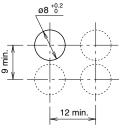
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12



Rectangular Units



Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.



SmartRelay

Operator Interfaces

Sensors

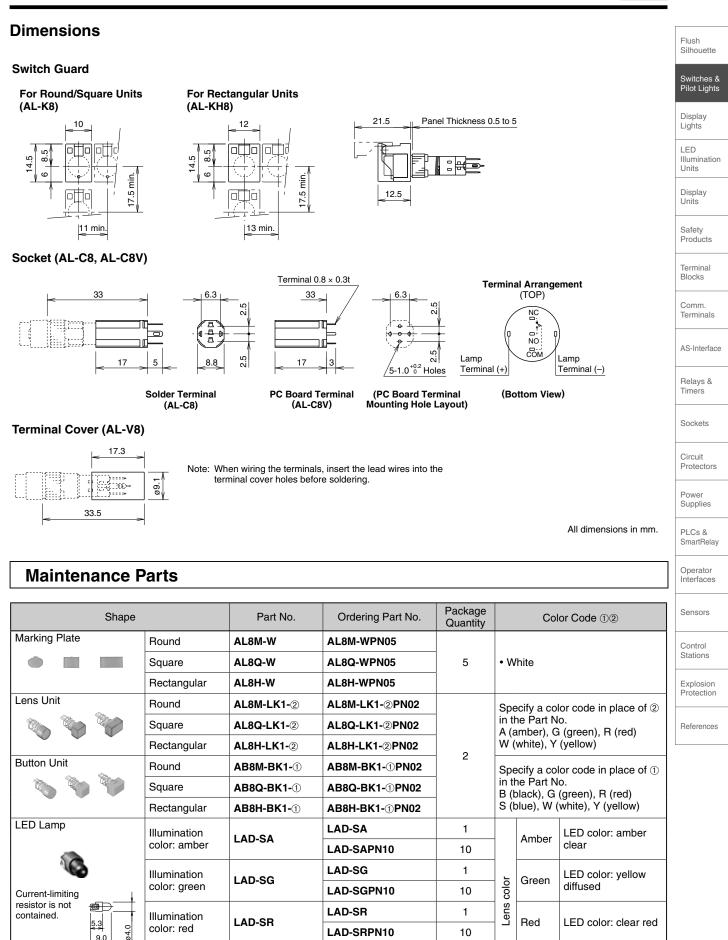
Control Stations

Explosion Protection

References

Accessories

Shape	Material		Part No.	Ordering Part No.	Package Quantity	Remarks
Locking Ring Wrench	Metal (nickel-plated brass)		MT-004	MT-004	1	 Used to tighten the locking ring when installing the A8 series control units into a panel.
Lens Removal Tool	Stainless Steel		MT-101	MT-101	1	 Used to remove the lens and button.
Lamp Holder Tool	Rubber		OR-66	OR-66	1	 Used to remove and install the LED lamps.
Switch Guard	90° open	For round/ square Unit	AL-K8	AL-K8	1	• Used to protect pushbuttons from inadvertent operation.
	90 Open	For rectangular unit	AL-KH8	AL-KH8	1	See page 167 for dimensions. See page 167 for dimensions. See page 167 for given because the second s
Socket	Solder Ter	Solder Terminal		AL-C8	1	 Snaps on the rear of the A8 series control units.
PC Board Termin		Terminal	AL-C8V	AL-C8V	1	(see page 167 for dimensions)
Terminal Cover	Nylon		AL-V8	AL-V8PN10	10	 When wiring the terminals, insert the lead wires into the terminal cover holes before soldering. Terminal cover is not attached and must be ordered separately.
Mounting Hole Plug	Nitryl rubber (black)		AL-B8	AL-B8PN05	5	Degree of protection: IP65



LAD-SRPN10

LAD-SYPN10

LAD-SY

9.0

Illumination

color: yellow

LAD-SY

All dimensions in mm

10

1

10

White/

Yellow

A8 Series Maintenance Parts Ø8

LED color: yellow

clear

Safety Precautions

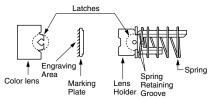
 Turn off the power to A series control units before starting installation, removal, wiring, maintenance, and inspection of the control units. Failure to turn power off may cause electrical shocks or fire hazard.

Operating Instructions

Replacement of Lens and Marking Plate

Removal

Remove the operator (color lens, marking plate, lens holder, and spring) by holding the color lens recesses with the Lens Removal Tool (MT-101) and pulling it out. Remove the marking plate by disengaging the latches between the color lens and lens holder. The marking plate must be engraved on the front side as shown below.



Note: Make sure that the spring is inserted in the correct direction. The base of spring must fit the groove in the holder.

Installation

Place the marking plate on the lens holder in the correct direction, and press the color lens onto the lens holder to engage the latches. Put the spring on the lens holder and insert the lens holder into the housing in the correct direction.

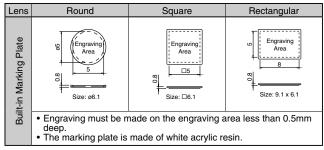
Installing Non-illuminated Button

Non-illuminated pushbuttons contain a marking plate like illuminated units. Be sure to install the marking plate when replacing the button.

Marking

For A series illuminated pushbuttons, legends and symbols can be engraved on the built-in marking plates, or printed film can be inserted under the lens.

Marking Plate & Engraving Area



- To avoid burning your hand, use the lamp holder tool when replacing lamps.
- For wiring, use wires of a proper size to meet the voltage and current requirements. Failure to tighten terminal screws may cause overheating and create a fire hazard.

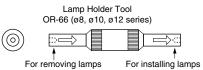
Replacing the LED Lamp

Removal

Use the lamp holder tool (OR-66) to remove lamps. Do not use pliers.

Installation

Use the lamp holder tool (OR-66) to install lamps. Note the correct side of the tool for removal or installation.



Panel Mounting

When mounting the control units onto a panel, use the optional locking ring wrench (MT-004) to tighten the locking ring. Do not use pliers. Tightening torque must not exceed 0.29 N·m. Excessive tightening will damage the locking ring.

Wiring

Solder the terminal at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu is recommended when using lead-free solder. When soldering, do not touch the enabling switch 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.

Use a non-corrosive rosin flux.

Installing the Socket

Install the socket on the control unit with the TOP markings on the control unit and the socket placed in the same direction.

Operating Voltage of LED Lamps

The operating voltage of 5V DC is measured at complete DC. When using a pulsating voltage such as a full-wave rectification voltage, keep peak currents within the forward current If. Peak currents exceeding the If may shorten the LED lamp life.

Other Notes

Close Proximity Mounting

When mounting pilot lights or illuminated pushbuttons collectively or lighting them continuously, heat may cause the ambient temperature to rise above the rated operating temperature. When the mounting panel is not made of metal or when the control units are mounted in an enclosed panel, provide for ventilation or lower the operating voltage.

Replacement of Buttons (Illuminated/Non-illuminated)

Do not replace buttons of maintained action units while the button is in the locked position. Replacing the button in the locked position may damage the internal mechanism. Be sure to release the button before replacing.

Operating and Storage Environment

- 1. Make sure that the operating/storage temperature and humidity are within the ratings.
- 2. Do not use enclosed type units in an environment subject to oil, water or dust accumulation.

Microswitch Contacts

Do not connect NO and NC contacts of the microswitch to different voltages or different power sources to prevent a dead short-circuit.