Miniature Switches and Pilot lights

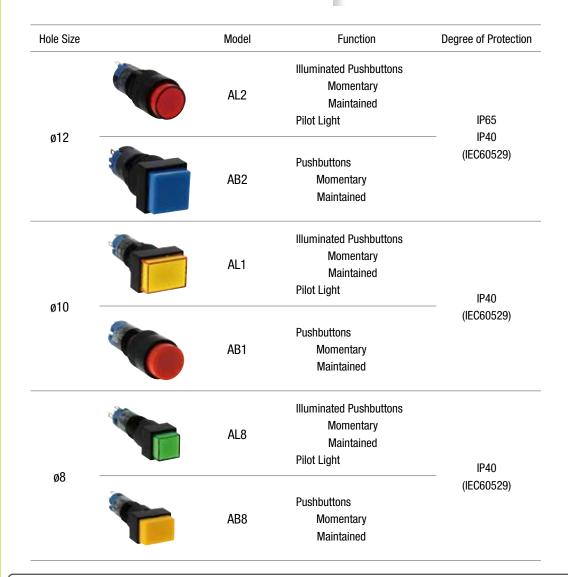
Ø12 A2 Series Ø10 A1 Series Ø8 A8 Series



Bright illumination face and snap-action switching.



• See website for details on approvals and standards.



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

Bright illumination face and snap-action switching. 22 mm short body.

Contact Ratings (Contact Block)

Rated Insulation	on Voltage	250V					
Rated Thermal	Current	3A	3A				
Operating Volta	age (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			
DO	Resistive Load	1.0A	0.2A	—			
DC	Inductive Load	0.7A	0.1A	_			
Contact Mater	ial	Silver					

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

Weight (Example)

Mainlat	A2 Series	4g (AL2M-M11, AL2M-P1, AB2M-M1)		
Weight (approx.)	A1 Series	3g (AL1M-M11, AL1M-P1, AB1M-M1)		
	A8 Series	2g (AL8M-M11, AL8M-P1, AB8M-M1)		

Specifications

Specifica	ations		
Operating T	emperature	-25 to +55°C (no freezing)	
Storage Temperature		-30 to +80°C (no freezing)	APEM
Operating Humidity		45 to 85% RH (no condensation)	Switches & Pilot Lights
Contact Res	istance	50 m Ω maximum (initial value)	
Insulation R	esistance	100 M Ω minimum (500V DC megger)	Control Boxes
		Between live and dead metal parts: 2,000V AC, 1 minute	Emergency Stop Switches
Dielectric Strength		Between terminals of different poles: 2,000V AC, 1 minute	Enabling Switches
	Switch Unit	Between terminals of the same pole:	Safety Products
		1,000V AC, 1 minute Between contact and lamp terminals:	Explosion Proof
		1,500V AC, 1 minute	Terminal Blocks
Illumination Unit		Between live part and ground: 2,000V AC, 1 minute	Relays & Sockets
Vibration Re	esistance	Damage limits, Operating extremes: 5 to 55 Hz, amplitude 0.75 mm	Circuit Protectors
Shock Resis	stance	Damage limits: 500 m/s ² (50G) Operating extremes: 200 m/s ² (20G)	Power Supplies
Mechanical	Durobility	Momentary: 200,000 operations	LED Illumination
(minimum c		Maintained: 100,000 operations	Controllers
Electrical D	urability	Momentary: 100,000 operations Maintained: 50,000 operations	Operator Interfaces
(minimum c	perations)	(Switching frequency 1200 operations/h)	Sensors
Degree of P	rotection (*1)	IP40, IP65 (IEC 60529)	
*1) IP65: A2	series only		AUTO-ID

LED Lamp Ratings (LAD-S)

(
Built-in LED Part No.	LAD-SA	LAD-SG	LAD-SR	LAD-SY	Flush Silhouette				
Lamp Base		Exclusive for A series							
Forward Current (If)		20 r	mA		ø16				
Forward Voltage (Vf) (nominal)	2.2V	2.1V	1.7V	2.2V	ø22				
Reverse Voltage (Vr)		4	V		┨				
Illumination Color	A	G	R	Y	ø30				
LED Lamp Color	Amber Clear	Yellow Diffused	Red Clear	Yellow Clear	Miniature				
Applicable Lens Color	Amber	Green	Red	Yellow and White	Pilot Lights				
Base Plastic Color		Red							
LED Lamp Life (reference value)	Approx. 50,000 hours (The ill	Approx. 50,000 hours (The illuminance reduces to 50% of the initial intensity when used on complete DC.)							
Operating Voltage & External Current- limiting Resistor	6V DC: 200Ω, 1/2W								
(recommended value) (Note)	12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W				AP22				
Internal Circuit		A Series							
					LD6A				

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.

• The base plastic color for all LEDs are red.

Flush Silhouette

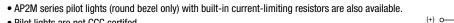
LD6A

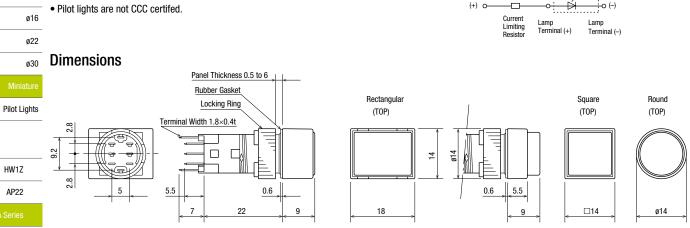
ø12 A2 Series Illuminated Pushbuttons & Pilot Lights

LED Lamp Part No., Rated Current (External Resistor
Recommended Value)
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: 200Ω, 1/2W 12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W
24V DO. 1.1 K12, 1VV

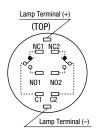
• LED lamps do not have a current-limiting resistor. Connect a current-limiting resistor in series, otherwise LED lamps will be damaged.

• External current-limiting resistor is not necessary when an optional socket with built-in resistor is used (see B-383).



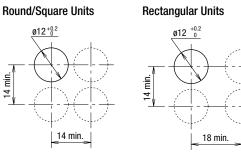


Terminal Arrangement



SPDT has NC1, NO1, and C1 only.

Mounting Hole Layout



Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.

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

Switches & Pi

						Package Quantity: 1	⁹ ilot Lights
Shape	Button Style	Operation	Contact	F	Part No.	Color Code 12	Ligh
опаро	Button otylo	oporation	oontaot	IP40	IP65		ts -
Round AB2M		Momentary	SPDT	AB2M-M11	AB2M-M1P①	B: black G: green	
ABSIM	Button	Womentary	DPDT	AB2M-M21	AB2M-M2P①	R: red	
-	Batton	Maintained	SPDT	AB2M-A11	AB2M-A1P1	S: blue W: white	APEM
		Wantaneu	DPDT	AB2M-A2 ①	AB2M-A2P1	Y: yellow	Switches & Pilot Lights
		Momentary	SPDT	AB2M-M1L ²	AB2M-M1PL ²	A: amber	Control Boxes
	Lens	Womentary	DPDT	AB2M-M2L ²	AB2M-M2PL ²	G: green R: red	Emergency Stop Switches
	Lens	Maintained	SPDT	AB2M-A1L2	AB2M-A1PL ²	W: white	Enabling
		Walltalleu	DPDT	AB2M-A2L2	AB2M-A2PL ²	Y: yellow	Switches
Square			SPDT	AB2Q-M11	AB2Q-M1P1	B: black	Safety Products
AB2Q	Button	Momentary	DPDT	AB2Q-M21	AB2Q-M2P ^①	G: green R: red S: blue W: white Y: yellow	Explosion Proof
	BULLOII	Maintained	SPDT	AB2Q-A11	AB2Q-A1P1		Terminal Blocks
		Maintaineu	DPDT	AB2Q-A21	AB2Q-A2P1		Relays & Sockets
		Momentary -	SPDT	AB2Q-M1L2	AB2Q-M1PL2	A: amber G: green R: red	Circuit
	Lono		DPDT	AB2Q-M2L2	AB2Q-M2PL ²		Protectors
	Lens	Maintainad	SPDT	AB2Q-A1L ²	AB2Q-A1PL@	W: white	Power Supplies
		Maintained	DPDT	AB2Q-A2L ²	AB2Q-A2PL@	Y: yellow	LED Illumination
Rectangular		Mamantary	SPDT	AB2H-M11	AB2H-M1P1	B: black	Controllers
AB2H	Dutton	Momentary	DPDT	AB2H-M2①	AB2H-M2P1	G: green R: red	Operator
	Button	Maintainad	SPDT	AB2H-A11	AB2H-A1P①	S: blue W: white	Interfaces
		Maintained	DPDT	AB2H-A21	AB2H-A2P①	Y: yellow	Sensors
		Momentary	SPDT	AB2H-M1L ²	AB2H-M1PL ²	A: amber	AUTO-ID
	Lana	Momentary	DPDT	AB2H-M2L2	AB2H-M2PL@	G: green	
	Lens	Meinteined	SPDT	AB2H-A1L2	AB2H-A1PL2	R: red W: white	
		Maintained	DPDT	AB2H-A2L2	AB2H-A2PL2	Y: yellow	Flush Silhouette

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

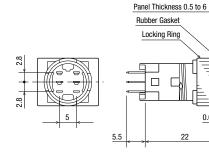
0.6

9

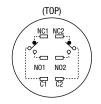
14 min.

ø12 A2 Series Pushbuttons

Dimensions



Terminal Arrangement



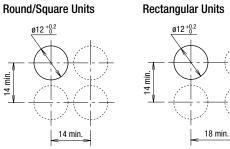
SPDT has NC1, NO1, and C1 only.

Mounting Hole Layout

18

Rectangular

(TOP)

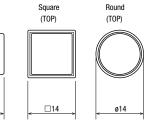


14

Note: Determine mounting centers to ensure easy operation.

0.6 5.5

9



Pilot Lights
HW1Z
AP22

ø16 ø22

ø30

LD6A

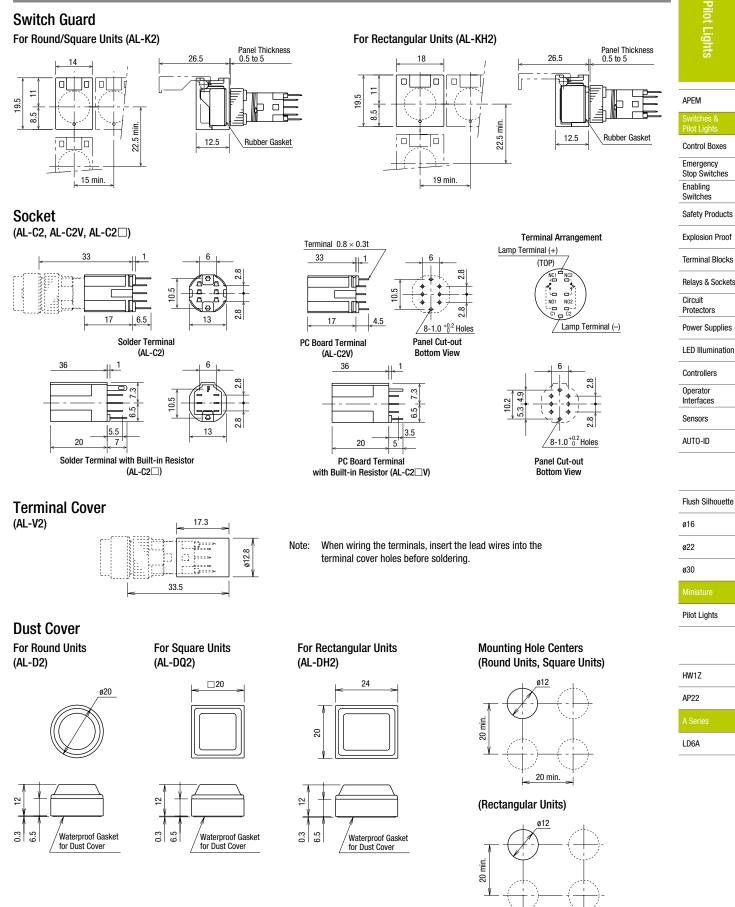
All dimensions in mm.

ø12 A2 Series Accessories

Enabling Switches Socket Solder Terminal AL-C2 AL-C2 1	emains 90° open)
Plot Lights Control Boxes For round/square unit AL-K2 AL-K2 1 • Degree of protection: IP40 Control Boxes Emergency Stop Switches 90° open For rectangular unit AL-K2 AL-K2 1 • Degree of protection: IP40 • Used to protect pushbuttons from inadvertent operation. Emabling Switches Socket Socket Solder Terminal AL-C2 AL-C2 1 • Snaps on the rear of the A2 series	
Emergency Stop Switches Subject 90° open For rectangular unit AL-KH2 AL-KH2 1 from inadvertent operation. • See B-384 for dimensions. from inadvertent operation. Safety Products Socket Solder Terminal AL-C2 AL-C2 1 • Snaps on the rear of the A2 series	
Safety Products Socket Solder Terminal AL-C2 AL-C2 1 Explosion Proof. • Snaps on the rear of the A2 series	3.
-vnlosion Proof	S.
Terminal Blocks PC Board Terminal AL-C2V AL-C2V 1 (see B-384 for dimensions)	
Relays & Sockets Socket with Built-in Resistor 5V DC AL-C21 AL-C21 1 Blue • A current limiting relation	
Circuit Protectors Solder 6V DC AL-C22 AL-C22 1 Contained, eliminat external resistors.	ing the need for
Power Supplies Terminal 12V DC AL-C23 AL-C23 1 S Yellow • When using the soor built-in resistor, may built-i	
LED Illumination 24V DC AL-C24 AL-C24 1 E Red continuous current	is 1A maximum
Power Supplies LED Illumination Controllers Operator SV DC AL-C23 AL-C23 1 Sv Vellow • When Using the soch built-in resistor, marked the soch built-in resoch built-in resistor, marked the soch built-i	n collective
Operator Interfaces PC Board 6V DC AL-C22V AL-C22V 1 5 Green mounting, keep cer spacing of 20 mm	
Sensors Terminal 12V DC AL-C23V AL-C23V 1 adjacent units in co- built-in resistor hea	
AUTO-ID 24V DC AL-C24V AL-C24V 1 Red • See B-384 for dime	•
Flush Silhouette Terminal Cover Nylon AL-V2 AL-V2PN10 10 •When wiring the terminals, insert into the terminal cover holes before te	re soldering.
022 Dust Cover ① For round units AL-D2 AL-D2 1 • When mounting the units with the installed, refer to mounting hole la	ayout on <mark>B-384</mark> .
ø30 ① ② ③ Miniature Ø Image: Second sec	
Pilot Lights Image: Constraint of the second se	ounting hole
Mounting Hole Plug Nitryl rubber (black) AL-B2 AL-B2PN05 5 • Degree of protection: IP65 AP22 A Series	

LD6A

ø12 A2 Series Dimensions



Note: Determine mounting centers to ensure easy operation.

24 min.

All dimensions in mm.

ø12 A2 Series Maintenance Parts

\circ								
ot Lights	Shape	Specifica	tion	Part No.	Ordering Part No.	Package Quantity	Color Code ①②	
nts	Marking Plate	Round		AL2M-W	AL2M-WPN05			
APEM		Square		AL2Q-W	AL2Q-WPN05	5	White	
Switches & Pilot Lights		Rectangular		AL2H-W AL2H-WPN05				
Control Boxes	Lens Unit		Round	AL2M-LK1-@	AL2M-LK1-@PN02			
Stop Switches Enabling	🛸 🚔 🧀	For IP40 units	Square	AL2Q-LK1-@	AL2Q-LK1-@PN02	2		
Switches Safety Products	<u>eš</u> O D D		Rectangular	AL2H-LK1-@	AL2H-LK1-@PN02		Specify a color code in place of ② in the Part No. A: amber G: green R: red W: white	
Explosion Proof	n Proof Blocks	For IP65 illuminated pushbuttons	Round	AL2M-LK2-@	AL2M-LK2-@			
Terminal Blocks			Square	AL2Q-LK2-@	AL2Q-LK2-2			
Relays & Sockets			Rectangular	AL2H-LK2-@	AL2H-LK2-②			
Circuit			Round	AL2M-LK3-@	AL2M-LK3-@	1	Y: yellow	
Protectors Power Supplies		For IP65 pilot lights	Square	AL2Q-LK3-@	AL2Q-LK3-@			
LED Illumination			Rectangular	AL2H-LK3-@	AL2H-LK3-②			
Controllers	Button Unit		Round	AB2M-BK1-①	AB2M-BK1-①PN02		 Specify a color code in place of 	
Operator	۵	For IP40 pushbuttons	Square	AB2Q-BK1-①	AB2Q-BK1-①PN02	2	① in the Part No.	
Interfaces Sensors			Rectangular	AB2H-BK1-①	AB2H-BK1-①PN02		B: black	
AUTO-ID			Round	AB2M-BK2-①	AB2M-BK2-①		G: green R: red S: blue	
		For IP65 pushbuttons	Square	AB2Q-BK2-①	AB2Q-BK2- ①	1	S: blue W: white	
			1	1			V· vellow	

AB2H-BK2-①

Rectangular

AB2H-BK2-①

Flush Silhouette ø16

ø22 ø30

Pilot Lights

HW1Z AP22 LD6A

B-385

Y: yellow

ø10 A1 Series Illuminated Pushbuttons & Pilot Lights

					Package Quantity: 1	Pilot Lights
			Part No.		LED Lamp	Ligt
Shape	Operation	Contact	IP40	② Lens Color Code	Part No., Rated Current (External Resistor Recommended Value)	nts
Round AL1M	Momentary	SPDT	AL1M-M112			APEM Switches &
	Maintained	SPDT	AL1M-A11@	-		Pilot Lights Control Boxes Emergency
	Pilot Light		AL1M-P1@	_		Stop Switches Enabling Switches
Square AL1Q	Momentary	SPDT	AL1Q-M11@	 Specify a color code in	A: LAD-SA G: LAD-SG R: LAD-SR	Safety Products Explosion Proof
	Maintained	SPDT	AL1Q-A112	 place of ② in the Part No. A: amber G: green 	W/Y: LAD-SY Rated Current: 20 mA	Terminal Blocks Relays & Sockets
	Pilot Light		AL1Q-P1@	R: red W: white Y: yellow	5V DC: 150Ω, 1/2W 6V DC: 200Ω, 1/2W 12V DC: 510Ω, 1/W	Circuit Protectors Power Supplies
Rectangular AL1H		CDDT		-	12V DC: 510Ω, 1W 24V DC: 1.1 kΩ, 1W	LED Illumination
ALIN	Momentary	SPDT	AL1H-M11@	_		Operator Interfaces
	Maintained	SPDT	AL1H-A11@			Sensors
	Pilot Light		AL1H-P1@	-		AUTO-ID
 LED lamps do not have a current-limit 	ting resistor. Connect a	current-limiting	resistor in series, other	wise LED	//	Flush Silhouette
lamps will be damaged. • AP1M series pilot lights (round bezel of	only) with built-in curre	nt-limiting resist	or are also available.	(+) 0—	<u>−−−−−−</u> ◦(−)	ø16
 Pilot lights are not CCC certifed. 						ø22 ø30
Dimensions						Miniature
Panel Thickne		Rectangular	Square	Round		Pilot Lights
Terminal Width 1.8×0		(TOP)	(TOP)	(TOP)		
						HW1Z
6 5.5	<u>5.5</u> 22 9	16	→ □12	ø12 < 012 →		AP22 A Series
.1 1.	.ll					LD6A
Terminal Arrangement (bo	ttom view)			Hole Layout		
(TOP)			Round/Square	e Units	Rectangular Units	
Lamp Terminal (+)				2 min.	e10*02 16 min.	
			Note: Determi	ne mounting centers to ensur	e easy operation.	

All dimensions in mm.



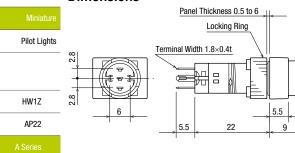
ø10 A1 Series Pushbuttons

APEM Batton Momentary SPDT ABIM-MIO B black G green K red Spot Stop Switches Subjections Control Boxes Control Boxes Subjections ABIM-AIO ABIM-AIO S bblack G green K red Stop Switches Subjections ABIM-AIO S bblack G green K red Stop Switches Subjections Control Boxes Subjections ABIM-AIO ABIM-AIO S bblack S bblack K red G green K red S bblack K red S bblack K red S bblack S bblack S bblack S green K red S green K red S green K red S green K red S bblack S bblack S stars S ADTO- Derrior Infrates S SPDT ABI0-AIIO S black S black S green K red S green K red S green K red S green K red S bblack S bblack S bblack S bblack S stars S ADTO- Derrior Infrates S SPDT ABI0-AIIO S black S stars S bblack S	lot						Package Quantity: 1
ABIM ABIM ABIM ABIM Correct Reind Studies Subjection Studies Subjection Studies Control Boxes ABIM ABIM-M10 Cigreen Reind Studies Subjection Reind Subjection Reind Subjection Reind Subjection Reind Subjection Su	lot Lights	Shape	Button Style	Operation	Contact		Color Code ①②
APEM SPDT AB1M-A10 S: blue W: white Side Control Boxes Emergency Stop Switches Babling Switches Sentation Switches Sentation Switches Babling Switches Switc				Momentary	SPDT	AB1M-M1①	G: green
Description Partner weights Part	APEM		Button				S: blue
Emergency Stop Switches Switches Euros Momentary SPDT AB1M-M1L2 A amber G. green R: red Switches Switches Maintained SPDT AB1M-A1L2 R: red Switches Surare Maintained SPDT AB1M-A1L2 B black G: green R: red Switches Surare Maintained SPDT AB10-M10 B black G: green R: red Explosion Proot Maintained SPDT AB10-A10 R: red S: blue Relays & Sockets Momentary SPDT AB10-A10 R: red S: blue Power Supplies Lens Momentary SPDT AB10-A10 R: red S: blue LeD llumination Lens Momentary SPDT AB10-A112 R: red S: proon Controllers Rectangular AB1H Button Momentary SPDT AB10-A112 R: red S: proon AB10- Maintained SPDT AB10-A112 R: red S: proon R: red S: proon AB1H-M1C Fersor Momentary SPDT AB1H-M10 R: red S: proon AB10-A10<				Maintained	SPDT	AB1M-A1①	
Enabling Switches Image: switches Image: switches Maintained SPDT AB1M-A1L2 W: white Y: yellow Satey Products Explosion Prod AB10 Momentary SPDT AB10-M10 B black G: green R: red B black G: green R: red Terminal Blocks Maintained SPDT AB10-M10 C: green R: red B black G: green R: red Circuit Protectors Momentary SPDT AB10-A10 A: amber G: green R: red Power Supples Momentary SPDT AB10-M1L2 A: amber G: green R: red Controllers Rectangular Momentary SPDT AB10-A112 A: amber R: red Maintained SPDT AB10-A112 A: amber G: green R: red B black G: green R: red Maintained SPDT AB10-A112 A: amber G: green R: red Maintained SPDT AB10-A112 B: black G: green R: red Maintained SPDT AB1H-M10 B: black G: green R: red Maintained SPDT AB1H-A10 S: blue W: white Maintained SPDT AB1H-A10 A: amber G: green R: red Momentary SPDT AB1H-M12 A: amber G: green R: red	Emergency			Momentary	SPDT	AB1M-M1L2	G: green
Explosion Prod AB1Q AB1Q Button Momentary SPDT AB1Q-M1① B black Green S blue Relays & Sockets Circuit Protectors Momentary SPDT AB1Q-M1① R: red S blue Sblue Circuit Protectors Power Supplies Momentary SPDT AB1Q-M1① AB1Q-M1① LED Illumination Lens Momentary SPDT AB1Q-M1L② A: amber G green R: red S blue Momentary SPDT AB1Q-M1L② A: amber G green R: red S green R: red S blue Autro-In Rectangular AB1H B black G green R: red S blue G green R: red S blue B black G green R: red S blue Autro-In Momentary SPDT AB1H-M1① B black G green R: red S blue Autro-In Momentary SPDT AB1H-M1① A: amber G green R: red S blue Autro-In Lens Momentary SPDT AB1H-M1② A: amber G green R: red S blue	Enabling		Lens	Maintained	SPDT	AB1M-A1L2	W: white
Explosion Proof Image: Section proof Button Image: Section proof R: red S: blue W: white Y: yellow Terminal Blocks Relays & Sockets Cricuit Protectors Power Supplies Maintained SPDT AB1Q-A1① A: amber G: green R: red W: white Y: yellow LED Illumination Rectangular BH Button Momentary SPDT AB1Q-A1L2 A: amber G: green R: red W: white Y: yellow Controllers Rectangular BH Button Momentary SPDT AB1H-M1① B black G: green R: red W: white Y: yellow Autro-ID Autro-ID Momentary SPDT AB1H-M1① AB1H-M1① A: amber G: green R: red Autro-ID Momentary SPDT AB1H-M1① A: amber G: green R: red S: blue W: white Autro-ID Lens Momentary SPDT AB1H-M1① A: amber G: green R: red	Safety Products	Square					
Terminal Blocks Relays & Sockets Maintained SPDT AB1Q-A1① S: DUC W: white Y: yellow Relays & Sockets Circuit Protectors Momentary SPDT AB1Q-A1① Y: yellow Power Supplies LED Illumination Maintained SPDT AB1Q-A1① Y: yellow Controllers Rectangular AB1H AB1H Momentary SPDT AB1Q-A1L② B: black G: green R: red Controllers Rectangular AB1H Button Momentary SPDT AB1H-M1① B: black G: green R: red Sensors Sensors AUTO-ID Momentary SPDT AB1H-A1① A: amber G: green R: red AUTO-ID Lens Momentary SPDT AB1H-A1① A: amber G: green R: red AUTO-ID Lens Momentary SPDT AB1H-A1① A: amber G: green R: red K: white Lens Momentary SPDT AB1H-M1L② A: amber G: green R: red	Explosion Proof	AB1Q	Button	Momentary SF	SPDT	AB1Q-M1①	R: red
Relays & Sockets Image: constraint of the sector of th	Terminal Blocks		Dutton	Maintained SPDT	AB10-A11		
Protectors Power Supplies LED Illumination Lens Controllers Rectangular AB1U-A1L2 Operator Interfaces Button AUTO-ID Momentary AUTO-ID Lens	Relays & Sockets						Y: yellow
Instruction Image: Controllers interfaces Rectangular AB1H Maintained SPDT AB1Q-A1L2 W: white Y: yellow Controllers Operator Interfaces Rectangular AB1H Button Button Momentary SPDT AB1H-M1① B black G: green R: red S: blue W: white Y: yellow AUTO-ID AUTO-ID Image: Control operator Interfaces Momentary SPDT AB1H-A1① AB1H-A1① A: amber G: green R: red S: blue W: white Y: yellow				Momentary	SPDT	AB1Q-M1L2	G: green
Operator Interfaces AB1H AB1H G: green R: red Sensors AUTO-ID AUTO-IC Momentary SPDT AB1H-M1① G: green R: red AUTO-ID AUTO-IC Momentary SPDT AB1H-A1① S: blue W: white Y: yellow AUTO-ID Lens Momentary SPDT AB1H-M1L② A: amber G: green R: red			Lens	Maintained	SPDT	AB1Q-A1L@	W: white
Operator Interfaces Normalization Button Maintained SPDT AB1H-A1① R: red S: blue W: white Y: yellow AUTO-ID AUTO-ID Lens Momentary SPDT AB1H-M1L2 A: amber G: green R: red	Controllers			Momentary	SPDT	AB1H-M1 ①	
Sensors AUTO-ID Maintained SPDT AB1H-A1① W: white Y: yellow AUTO-ID Lens Momentary SPDT AB1H-M1L② A: amber G: green R: red W: white			Button				R: red
AUTO-ID AUTO-ID Lens Momentary SPDT AB1H-M1L [®] A: amber G: green R: red W: white	Sensors			Maintained	SPDT	AB1H-A11 W: wh	W: white
Lens R: red W: white	AUTO-ID			Momentary	SPDT	AB1H-M1L [®]	A: amber
W: white			Lens				R: red
Flush Silhouette Maintained SPDI AB1H-A1L@ Y: yellow	Flush Silhouette			Maintained	SPDT	AB1H-A1L [®]	

 \bullet Specify a color code in place of (1) or (2) in the Part No.

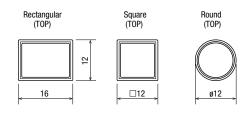
^{ø30} Dimensions

ø16 ø22



Terminal Arrangement (bottom view)

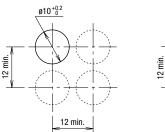




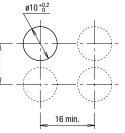
Mounting Hole Layout

Round/Square Units

Rectangular Units



nootangular onito



Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.

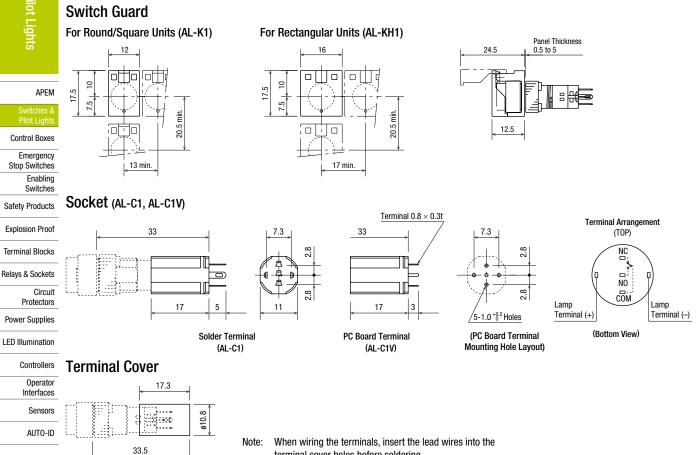
LD6A

ø10 A1 Series Access	Ø10 A1 Series Accessories All dimensions in mm.						
Shape		Material		Ordering No.	Package Quantity	Remarks	es & Pilot Lights
Locking Ring Wrench	Metal (nickel-plat	Metal (nickel-plated brass)		MT-003	1	• Used to tighten the locking ring when installing the A1 series into a panel.	APEM Switches &
Switch Guard		For round/ square unit	AL-K1	AL-K1	1	Used to protect pushbuttons from inadvertent operation. See B-389 for dimensions.	Pilot Lights Control Boxes
	90° open	For rectangular unit	AL-KH1	AL-KH1	1	(remains 90° open)	Emergency Stop Switches Enabling Switches
Socket	et Solder Terminal		AL-C1	AL-C1	1	• Snaps on the rear of the A1 series. (see B-389 for dimensions)	Safety Products
	PC Board T	PC Board Terminal		AL-C1V	1	-	Explosion Proof Terminal Blocks
Terminal Cover	Nylon	Nylon		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. 	Relays & Sockets Circuit Protectors Power Supplies
Mounting Linio Diug				 	+	- Dagree of exchantion: IDEE	LED Illumination
Mounting Hole Plug Nitryl rubber (black)		AL-B1	AL-B1PN05	5	• Degree of protection: IP65 $\begin{array}{c c} & & & \\ & & & \\ \hline \end{array}$	Operator Interfaces Sensors	
							AUTO-ID

Flush Silhouette	
ø16	
ø22	
ø30	
Miniature	
Pilot Lights	
HW1Z	
AP22	

LD6A

ø10 A1 Series Dimensions



terminal cover holes before soldering.

Flush Silhouette

ø16	ø10 A1 Series Maint	All dimensions in mm.				
ø22 ø30	Shape		Part No.	Ordering No.	Package Quantity	Color Code ①②
Miniature	Marking Plate	Round	AL1M-W	AL1M-WPN05		
Pilot Lights		Square	AL1Q-W	AL1Q-WPN05	5	• White
		Rectangular	AL1H-W	AL1H-WPN05		
HW1Z	Lens Unit	Round	AL1M-LK1-@	AL1M-LK1-@PN02		Specify a color code in place of ② in the
AP22	a 😭 🦛	Square	AL1Q-LK1-@	AL1Q-LK1-@PN02	2	Part No. A (amber), G (green), R (red)
A Series		Rectangular	AL1H-LK1-@	AL1H-LK1-@PN02		W (white), Y (yellow)
LD6A	Button Unit	Round	AB1M-BK1-①	AB1M-BK1-①PN02		Specify a color code in place of ${f I}$ in the
		Square	AB1Q-BK1-①	AB1Q-BK1-①PN02		Part No. B (black), G (green), R (red)
		Rectangular	AB1H-BK1-①	AB1H-BK1-①PN02		S (blue), W (white), Y (yellow)

ø8 A8 Series Illuminated Pushbuttons & Pilot Lights

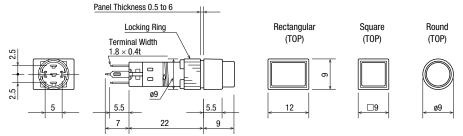
						Package Quantity: 1	Pilot Lights
				Part No.		LED Lamp	Ligt
	Shape	Operation	Contact	IP40	② Lens Color Code	Part No., Rated Current (External Resistor Recommended Value)	nts
Round AL8M		Momentary	SPDT	AL8M-M112			APEM Switches &
4		Maintained	SPDT	AL8M-A11@			Pilot Lights Control Boxes
		Pilot Light		AL8M-P12	_	A: LAD-SA G: LAD-SG R: LAD-SR W/Y: LAD-SY	Emergency Stop Switches Enabling
Square					Specify a color code in place of ② in the Part No. A: amber		Switches Safety Products
AL8Q	<i>2</i> •	Momentary	SPDT	AL8Q-M112			Explosion Proof
		Maintained	SPDT	AL8Q-A112		Rated Current: 20 mA	Terminal Blocks
				G: green		Relays & Sockets	
		Pilot Light	_	AL8Q-P1@	R: red W: white Y: yellow	5V DC: 150Ω, 1/2W 6V DC: 200Ω, 1/2W 12V DC: 510Ω, 1W	Circuit Protectors
Destangular						24V DC: 1.1 kΩ, 1W	Power Supplies
Rectangular AL8H		Momentary	SPDT	AL8H-M112			LED Illumination
					_		Controllers
		Maintained	SPDT	AL8H-A112			Operator Interfaces
					-		Sensors
		Pilot Light		AL8H-P1@			AUTO-ID

• LED lamps do not have a current-limiting resistor. Connect a current-limiting resistor in series, otherwise LED (+) o (+) o

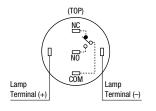
• AP8M series pilot lights (round bezel only) with built-in current-limiting resistor are also available.

• Pilot lights are not CCC certified.

Dimensions



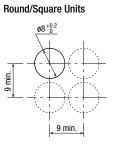
Terminal Arrangement



Mounting Hole Layout

Becta





12 min.

-0 (-)

Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.

Flush Silhouette

ø16 ø22

ø30

Pilot Lights

HW1Z

AP22

LD6A

ø8 A8 Series Pushbuttons

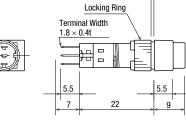
Pilot Lights						Package Quantity:
Lig	Shape	Button Style	Operation	Contact	Part No.	Color Code 10
hts	бларе	Bullon Style	Operation	Contact	IP40	Color Code 12
	Round AB8M	Dutter	Momentary	SPDT	AB8M-M1①	B black G: green R: red
APEM Switches & Pilot Lights		Button	Maintained	SPDT	AB8M-A1①	S: blue W: white Y: yellow
Control Boxes			Momentary	SPDT	AB8M-M1L2	A: amber G: green
Emergency Stop Switches Enabling Switches		Lens	Maintained	SPDT	AB8M-A1L2	R: red W: white Y: yellow
Safety Products	Square AB8Q		Momentary	SPDT	AB8Q-M11	B black G: green R: red
Explosion Proof Terminal Blocks		Button	Maintained	SPDT	AB8Q-A11	S: blue W: white Y: yellow
Relays & Sockets Circuit			Momentary	SPDT	AB8Q-M1L@	A: amber G: green
Protectors Power Supplies		Lens	Maintained	SPDT	AB8Q-A1L2	R: red W: white Y: yellow
LED Illumination	Rectangular AB8H		Momentary	SPDT	AB8H-M1①	B black G: green R: red
Operator Interfaces		Button	Maintained	SPDT	AB8H-A11	S: blue W: white Y: yellow
Sensors AUTO-ID			Momentary	SPDT	AB8H-M1L2	A: amber G: green
		Lens	Maintained	SPDT	AB8H-A1L2	R: red W: white Y: yellow
Flush Silhouette	Specify a color code in place of ①	or ② in the Part No.	1		1	

• Lens style buttons can be used with marking plate and film.

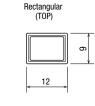
Dimensions ø30

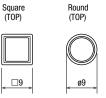


ø16 ø22



Panel Thickness 0.5 to 6



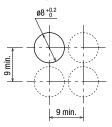


Terminal Arrangement (bottom view)



Mounting Hole Layout

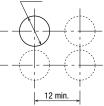
Round/Square Units



Rectangular Units

Ø8^{+0.2}

9 min.

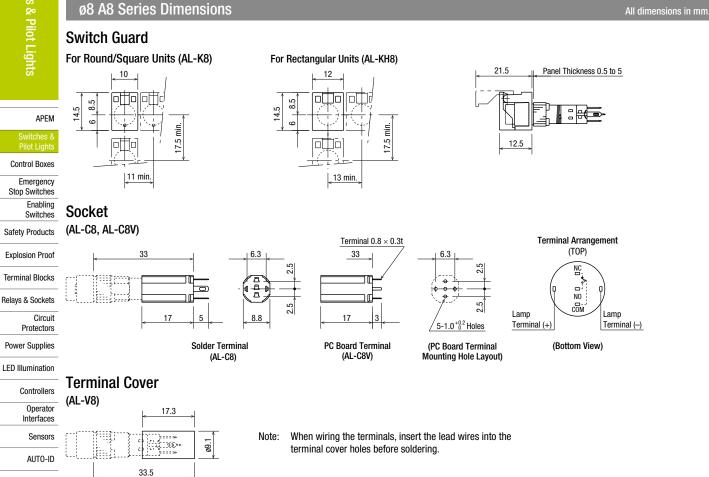


Note: Determine mounting centers to ensure easy operation.

All dimensions in mm.

ø8 A8 Series Acce	ssories					All dimensions in mm.	nes & Pilot Lights
Shape	Shape Material		Part No. Ordering Package Part No. Quantity			Remarks	lot Lig
Locking Ring Wrench	Metal (nickel-plated brass)		MT-004	MT-004	1	• Used to tighten the locking ring when installing the A8 series into a panel.	hts
55							APEM
Switch Guard		For round/square	AL-K8	AL-K8	1	Used to protect pushbuttons from inadvertent operation.	Switches & Pilot Lights
NOR AND	90° open	onit				• See B-393 for dimensions.	Control Boxes
		For rectangular	AL-KH8	AL-KH8	1	「巴里」 (remains 90° open)	Emergency Stop Switches
		unit				(Enabling Switches
Socket	Solder Terr	minal	AL-C8	AL-C8	1	Snaps on the rear of the A8 series. (see B-393 for dimensions)	Safety Products
Contraction of the second seco							Explosion Proof
	PC Board Terminal		AL-C8V	AL-C8V	1		Terminal Blocks
de,			712 001	12 001			Relays & Sockets
Terminal Cover						• When wiring the terminals, insert the lead wires into the terminal cover holes before soldering.	Circuit Protectors
	Nylon		AL-V8	AL-V8PN10	10	• Terminal cover is not attached and must be	Power Supplies
N. Contraction						ordered separately.	LED Illumination
							Controllers
Mounting Hole Plug						Degree of protection: IP65	Operator Interfaces
	Nitryl rubb	Nitryl rubber (black)		AL-B8PN05	5		Sensors
							AUTO-ID

Flush Silhouette
ø16
ø22
ø30
Pilot Lights
HW1Z



Flush Silhouette

ø16

ø8 A8 Series Maintenance Parts

ø22 ø30	Shape		Part No.	Ordering Part No.	Package Quantity	Color Code ①②
Miniature	Marking Plate	Round	AL8M-W	AL8M-WPN05		• White
Pilot Lights		Square	AL8Q-W	AL8Q-WPN05	5	
		Rectangular	AL8H-W	AL8H-WPN05		
HW1Z	Lens Unit	Round	AL8M-LK1-@	AL8M-LK1-@PN02		Specify a color code in place of \textcircled{O} in the Part No. A (amber), G (green), R (red) W (white), Y (yellow)
AP22		Square	AL8Q-LK1-@	AL8Q-LK1-@PN02		
A Series		Rectangular	AL8H-LK1-@	AL8H-LK1-@PN02	2	
LD6A	Button Unit	Round	AB8M-BK1-①	AB8M-BK1-①PN02	2	Specify a color code in place of ${f 0}$ in the Part No.
	🍋 🕋 🦳	Square	AB8Q-BK1-①	AB8Q-BK1-①PN02		B (black), G (green), R (red)
		Rectangular	AB8H-BK1-①	AB8H-BK1-①PN02		S (blue), W (white), Y (yellow)

A2/A1/A8 Series Accessories All dimensions in mm. When ordering, specify the Ordering No. Ordering Package Quantity Material Part No. Shape Remarks Part No. Lens Removal Tool APEM Stainless Steel MT-101 MT-101 1 • Used to remove the lens and button. 60.0 Control Boxes Lamp Holder Tool Emergency Stop Switches Enabling Switches Rubber 0R-66 **OR-66** • Used to remove and install the LED lamps. 1 Safety Products 70 Explosion Proof

A2/A1/A8 Series Maintenance Parts

	Protectors
cify the Ordering No.	Power Supplie
	LED Illuminati

Cir

Terminal Blocks Relays & Sockets

						When o	rdering, specify the Ordering No.	Power Supplies
Shap	Part No.	Ordering Part No.	Package Quantity	Remarks			LED Illumination	
LED Lamp			LAD-SR	1				Controllers
100	Illumination color: red	LAD-SR	LAD-SRPN10	10		Red	LED color: clear red	Operator Interfaces
	Illumination color: green Illumination color: amber		LAD-SG	1		Green Amber White/ Yellow	LED color: yellow diffused	Sensors AUTO-ID
		LAD-SG	LAD-SGPN10	10	color			
5.3 0.48		LAD-SA	LAD-SA	1	Lens			Flush Silhouette
< 9.0 →			LAD-SAPN10	10				ø16
Current-limiting		LAD-SY	LAD-SY	1			LED color: yellow clear	ø22
contained.	Illumination color: yellow		LAD-SYPN10	10				ø30 Miniature

Pilot Lights

HW1Z
AP22
A Series
LD6A

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

APEM

Control Boxes

Emergency

Switches

Safety Products

Explosion Proof

Relavs & Sockets

LED Illumination

Controllers

Operator

Sensors

AUTO-ID

Protectors

Safety Precautions

- Turn off the power to A series before starting installation, removal, wiring, maintenance, and inspection of the 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

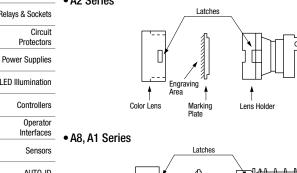
Replacement of Lens and Marking Plate

Stop Switches Removal Enabling

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.

Terminal Blocks A2 Series



Engraving

A

Color lens



ø16

ø22

ø30

Pilot Lights

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

Marking

Plate

- Sprina

Sprina

Holder

Retaining

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 the same marking plate as illuminated units. Be sure to install the marking plate when replacing the button.

Replacing the LED Lamp

overheating and create a fire hazard.

Removal

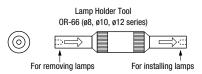
Use the lamp holder tool (OR-66) to remove lamps. Do not use pliers.

For wiring, use wires of a proper gauge to meet the voltage and

current requirements. Failure to tighten terminal screws may cause

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 units into a panel, use the optional locking ring wrench (MT-002/-003/-004) to tighten the locking ring. Do not use pliers. Tightening torque must not exceed 0.78 N·m (A8, A1 series : 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 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 unit with the TOP markings on the 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.

HW1Z

AP22

Switches & Pilot Lights

APEM

Control Boxes

Emergency Stop Switches Enabling

Switches Safety Products

- Explosion Proof
- Terminal Blocks
- Relavs & Sockets
- Circuit
- Protectors
- Power Supplies
- LED Illumination
- Controllers Operator Interfaces

Sensors

AUTO-ID

- Flush Silhouette ø16 ø22
- ø30
- Pilot Lights
- HW1Z AP22 LD6A

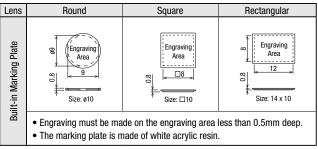
Operating Instructions

Marking

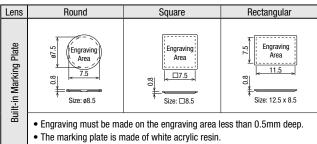
For A series illuminated pushbuttons, legends and symbols can be engraved on the built-in marking plates, or printed film can be inserted under the lens.

Marking Plate & Engraving Area

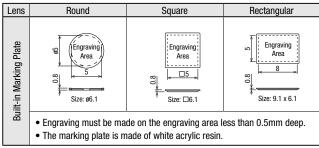
A2 Series



A1 Series



A8 Series



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 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.

IP65 Units (A2 series only)

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.

