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ø8·10·12·16 AP Series Miniature Pilot Lights

Super Bright LEDs with built-in current-limiting resistor and reverse polarity protection diode

- Space saving miniature style.
- Long life
- Illumination colors: amber, blue, green, pure white, red, white, and yellow (blue and pure white available for AP8M and AP1M only)
- Marking is available on flat lens units. (except AP8M series)
- Built-in protection diode ensures a reverse withstand voltage of 100V.
- UL recognized and CSA certified

AP6M Series



Dome Flat

AP2M Series



Dome Flat

AP1M Series



Dome Flat

AP8M Series



Dome Flat

AP6M Series

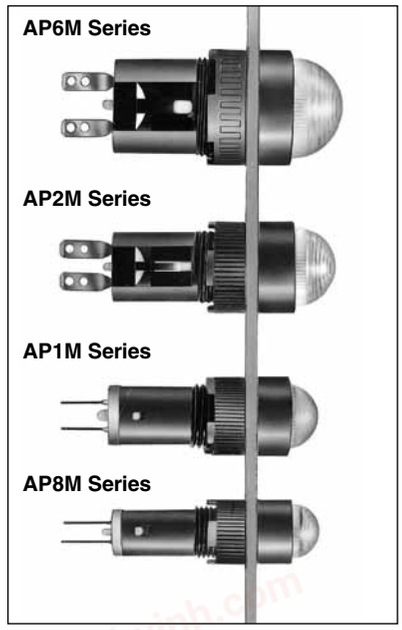


AC adapter unit
Flasher unit

AP2M Series



AC adapter unit



Pilot Light

Input Type	Full voltage					
Rated Voltage	5V DC	6V DC	12V AC/DC	12V DC	24V AC/DC	24V DC
Voltage Range	5V DC±5%	6V DC±5%	12V AC/DC±10%	12V DC±10%	24V AC/DC±10%	24V DC±10%
Rated Current	AP1M, AP8M: 9 mA (yellow: 15 mA)	AP6M, AP2M: 33 mA	AP1M, AP8M: 9 mA (yellow: 15 mA)	AP6M, AP2M: 22 mA	AP1M, AP8M: 9 mA (yellow: 15 mA)	AP6M, AP2M: 11 mA
Illumination Color Code	AP6M, AP2M: A (amber), G (green), R (red), Y (yellow), W (white) AP8M, AP1M: A (amber), G (green), PW (pure white), R (red), S (blue), Y (yellow), W (white)					
Operating Temperature	–20 to +55°C (no freezing)					
Storage Temperature	–30 to +55°C (no freezing)					
Operating Humidity	45 to 85% RH (no condensation)					
Insulation Resistance	Between live and dead parts: 100 MΩ minimum (500V DC megger)					
Dielectric Strength	Between live and dead parts: 1000V, 1 minute					
Reverse Withstand Voltage	100V (AP2M, AP6M), 200V (AP8M, AP1M)					
Solder Terminal	Soldering 350°C maximum (3 sec)					
Applicable Wire	ø1.0 or 0.75 mm^2 maximum (20 to 16 AWG)					
Weight (approx.)	AP6M: 7.5g, AP2M: 4.5g, AP1M: 2.5g, AP8M: 2.0g					
Degree of Protection	AP6M, AP2M, AP1M: IP65 AP8M: IP40 (according to IEC 60529)					

AC Adapter/DC-DC Converter (Option)

Unit	AC Adapter	DC-DC Converter
Applicable Unit	AP6M and AP2M (6V rating only)	
Rated Voltage	100/110V AC, 200/220V AC 50/60 Hz	110V DC
Voltage Range	100/110V AC±10% 200/220V AC±10%	90 to 140V
Power Consumption	1.6 VA maximum	1W maximum
Insulation Voltage	250V AC	140V DC
Insulation Resistance	Between live and dead parts: 100 MΩ minimum (500V DC megger)	
Dielectric Strength	Between live and dead parts: 2000V, 1 minute	
	Between I/O terminals: 2000V AC/, 1 minute	Between I/O terminals: 1500V AC, 1 minute
Terminal Style	M3 screw	
Weight (approx.)	38g	20g

Flasher Unit (Option)

Applicable Unit	AP6M (12V and 24V DC rating only)
Rated Voltage	12/24V DC compatible
Voltage Range	12/24V DC±10%
Flashing Period	Adjustable between approximately 30 to 600 cycles per minute (period 0.1 to 2 sec)
Current Draw	4 mA (OFF) to 6 mA (ON)
Terminal Style	M3 screw
Weight (approx.)	13.5g

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AP6M Series (ø16)

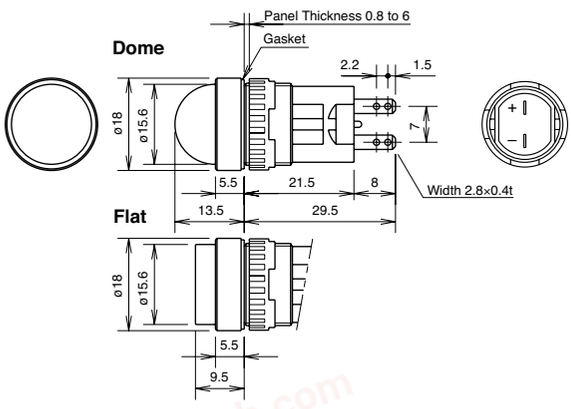
Shape	Operating Voltage	Part No.	Ordering No.	Package Quantity	Lens Color Code
Dome 	6V DC ±5%	**AP6M266②**	**AP6M266②**	1	Specify a lens color code in place of ② in the Part No. A: amber G: green R: red W: white Y: yellow
			AP6M266②PN10	10	
	12V DC ±10%	**AP6M211②**	**AP6M211②**	1	
			AP6M211②PN10	10	
	24V DC ±10%	**AP6M222②**	**AP6M222②**	1	
			AP6M222②PN10	10	
Flat (marking) 	6V DC ±5%	**AP6M166②**	**AP6M166②**	1	
			AP6M166②PN10	10	
	12V DC ±10%	**AP6M111②**	**AP6M111②**	1	
			AP6M111②PN10	10	
	24V DC ±10%	**AP6M122②**	**AP6M122②**	1	
			AP6M122②PN10	10	

- Degree of protection: IP65 (IEC 60529)
- The LED cannot be replaced.

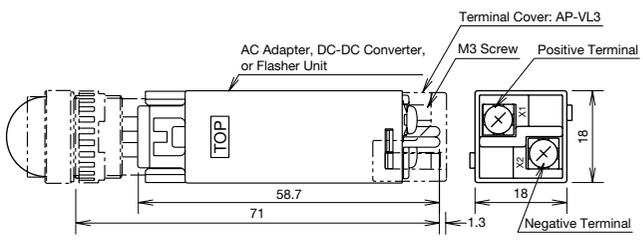
AC Adapter, DC-DC Converter, Flasher Unit

Unit	Operating Voltage	Part No.	Applicable Pilot Light	Package Quantity
AC Adapter	100/110V AC	**AP6-016D**	**AP6M266②** (dome: 6V DC) **AP6M166②** (flat: 6V DC)	1
	200/220V AC	**AP6-026D**		
DC-DC Converter	110V DC (90 to 140V DC)	**AP6-016DD**		
Flasher Unit	12/24V DC	**UZ6-F10**	**AP6M211②** (dome: 12V DC) **AP6M222②** (dome: 24V DC) **AP6M111②** (flat: 12V DC) **AP6M122②** (flat: 24V DC)	

Dimensions

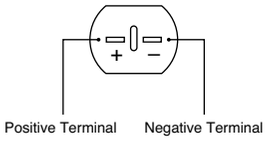


With AC Adapter, DC-DC Converter, Flasher Unit

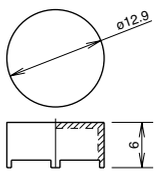


Terminal cover is not supplied.
When using terminal covers, order AP-VL3 terminal covers.

Terminal Arrangement (Bottom View)

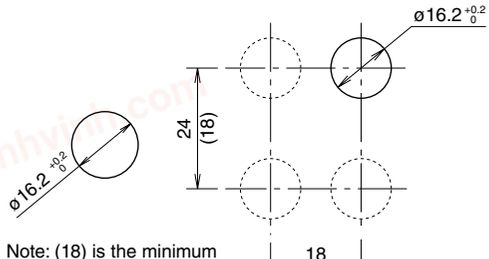


Marking Plate



Engraving depth: 0.5 mm maximum
Marking plate material: White acrylic

Panel Cut-out / Mounting Hole Layout



Note: (18) is the minimum mounting hole layout without AC adapter or flasher unit.

All dimensions in mm.

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ø12 AP Series Miniature Pilot Lights

AP2M Series (ø12)

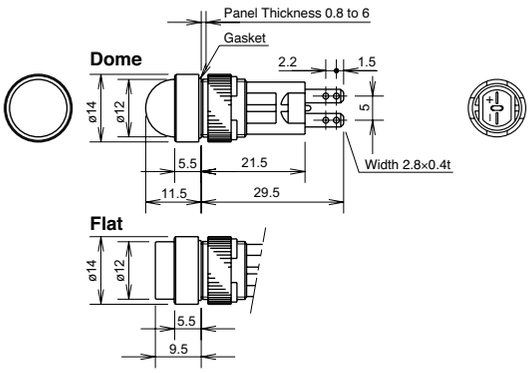
Shape	Operating Voltage	Part No.	Ordering No.	Package Quantity	Lens Color Code
Dome 	6V DC ±5%	**AP2M266②**	**AP2M266②**	1	Specify a lens color code in place of ② in the Part No. A: amber G: green R: red W: white Y: yellow
			AP2M266②PN10	10	
	12V DC ±10%	**AP2M211②**	**AP2M211②**	1	
			AP2M211②PN10	10	
	24V DC ±10%	**AP2M222②**	**AP2M222②**	1	
			AP2M222②PN10	10	
Flat (marking) 	6V DC ±5%	**AP2M166②**	**AP2M166②**	1	
			AP2M166②PN10	10	
	12V DC ±10%	**AP2M111②**	**AP2M111②**	1	
			AP2M111②PN10	10	
	24V DC ±10%	**AP2M122②**	**AP2M122②**	1	
			AP2M122②PN10	10	

- Degree of protection: IP65 (IEC 60529)
- The LED cannot be replaced.

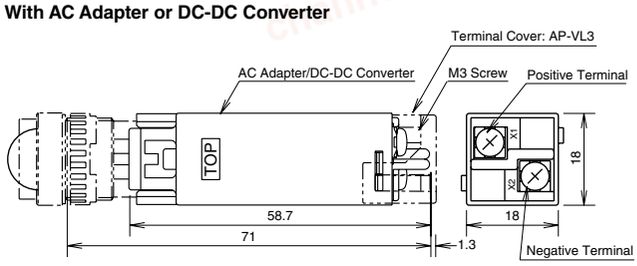
AC Adapter, DC-DC Converter

Unit	Operating Voltage	Part No.	Applicable Pilot Light	Package Quantity
AC Adapter	100/110V AC	**AP2-016D**	**AP6M266②** (dome: 6V DC) **AP6M166②** (flat: 6V DC)	1
	200/220V AC	**AP2-026D**		
DC-DC Converter	110V DC (90 to 140V DC)	**AP2-016DD**		

Dimensions

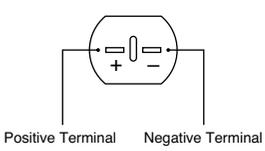


With AC Adapter or DC-DC Converter

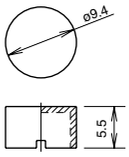


Terminal cover is not supplied.
When using terminal covers, order AP-VL3 terminal covers.

Terminal Arrangement (Bottom View)

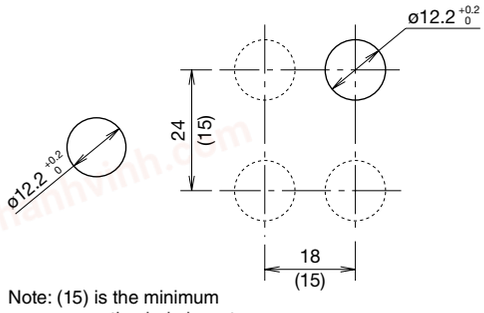


Marking Plate



Engraving depth: 0.5 mm maximum
Marking plate material: White acrylic

Panel Cut-out / Mounting Hole Layout



Note: (15) is the minimum mounting hole layout without AC adapter or flasher unit.

All dimensions in mm.

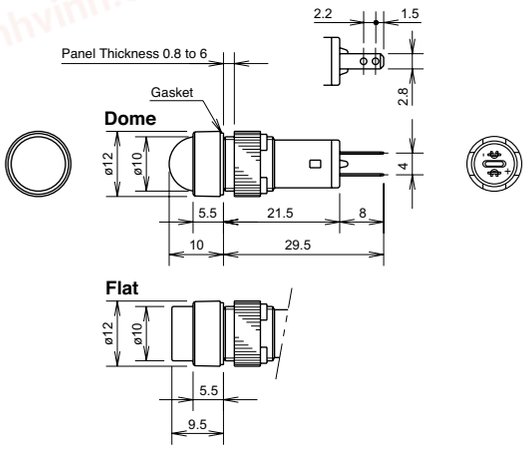
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AP1M Series (ø10)

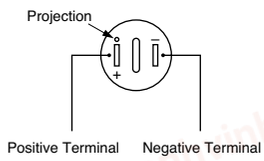
Shape	Operating Voltage	Part No.	Ordering No.	Package Quantity	Lens Color Code
Dome 	5V DC ±5%	**AP1M255②**	**AP1M255②**	1	Specify a lens color code in place of ② in the Part No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow
			AP1M255②PN10	10	
	12V AC/DC ±10%	**AP1M211②**	**AP1M211②**	1	
			AP1M211②PN10	10	
	24V AC/DC ±10%	**AP1M222②**	**AP1M222②**	1	
			AP1M222②PN10	10	
Flat (marking) 	5V DC ±5%	**AP1M155②**	**AP1M155②**	1	
			AP1M155②PN10	10	
	12V AC/DC ±10%	**AP1M111②**	**AP1M111②**	1	
			AP1M111②PN10	10	
	24V AC/DC ±10%	**AP1M122②**	**AP1M122②**	1	
			AP1M122②PN10	10	

- Degree of protection: IP65 (IEC 60529)
- The LED cannot be replaced.
- Separate transformer (TWR512, TWR522, TWR542) can be used for 24V AC/DC pilot lights.

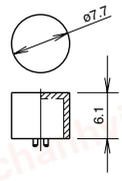
Dimensions



Terminal Arrangement (Bottom View)

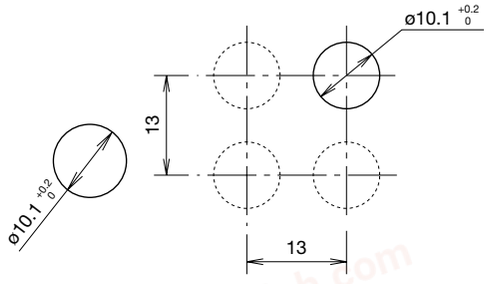


Marking Plate



Engraving depth: 0.5 mm maximum
Marking plate material: White acrylic

Panel Cut-out / Mounting Hole Layout



All dimensions in mm.

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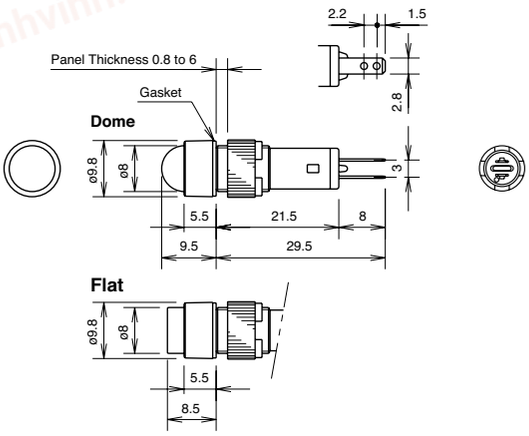
ø8 AP Series Miniature Pilot Lights

AP8M Series (ø8)

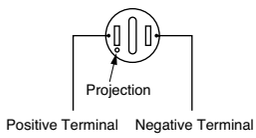
Shape	Operating Voltage	Part No.	Ordering No.	Package Quantity	Lens Color Code
Dome 	5V DC ±5%	**AP8M255②**	**AP8M255②**	1	Specify a lens color code in place of ② in the Part No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow
			AP8M255②PN10	10	
	12V AC/DC ±10%	**AP8M211②**	**AP8M211②**	1	
			AP8M211②PN10	10	
	24V AC/DC ±10%	**AP8M222②**	**AP8M222②**	1	
			AP8M222②PN10	10	
Flat 	5V DC ±5%	**AP8M155②**	**AP8M155②**	1	
			AP8M155②PN10	10	
	12V AC/DC ±10%	**AP8M111②**	**AP8M111②**	1	
			AP8M111②PN10	10	
	24V AC/DC ±10%	**AP8M122②**	**AP8M122②**	1	
			AP8M122②PN10	10	

- The lens or LED cannot be removed or replaced.
- Degree of protection: IP40 (IEC 60529)
- Separate transformer (TWR512, TWR522, TWR542) can be used for 24V AC/DC pilot lights.

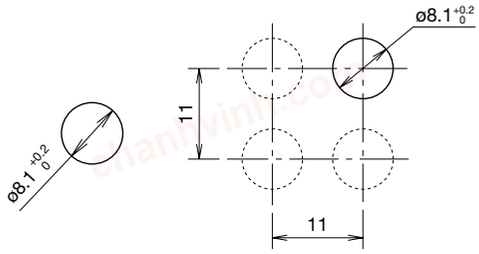
Dimensions



Terminal Arrangement (Bottom View)



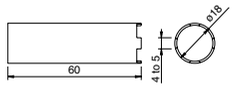
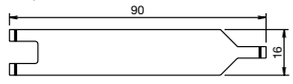
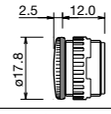
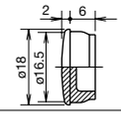
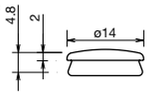
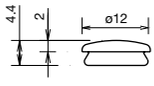
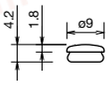
Panel Cut-out / Mounting Hole Layout



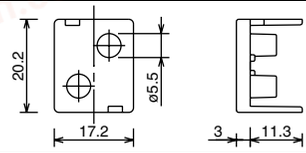
All dimensions in mm.

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Accessories

Shape	For	Material	Part No.	Ordering No.	Package Quantity	Remarks
Locking Ring Wrench 	ø16	Metal (nickel-plated brass)	**MT-001**	**MT-001**	1	• Used to tighten the locking ring when installing an AP unit onto an panel. • Tighten the locking ring using a recommended tightening torque.  Part No. / Size: MT-001 ø18; MT-002 ø14; MT-003 ø12; MT-004 ø9.5
	ø12		**MT-002**	**MT-002**	1	
	ø10		**MT-003**	**MT-003**	1	
	ø8		**MT-004**	**MT-004**	1	
Removal Tool 		Stainless steel	**MT-100**	**MT-100**	1	• Used to remove the AC adapter, DC-DC converter, or flasher unit. 
Mounting Hole Plug 	ø16	Metal (diecast) Locking ring (polyacetal)	**AL-BM6**	**AL-BM6**	1	• Degree of protection: IP65 
		Nitryl rubber (black)	**AL-B6**	**AL-B6PN05**	5	• Degree of protection: IP65 
	ø12	Nitryl rubber (black)	**AL-B2**	**AL-B2PN05**	5	• Degree of protection: IP65 
	ø10	Nitryl rubber (black)	**AL-B1**	**AL-B1PN05**	5	• Degree of protection: IP65 
	ø8	Nitryl rubber (black)	**AL-B8**	**AL-B8PN05**	5	• Degree of protection: IP65 

Replacement Parts for AP6M/AP2M/AP1M

Shape	For		Part No.	Ordering No.	Package Quantity	Lens Color Code
Lens 	AP6M	Dome lens	**AP6M-L2②**	**AP6M-L2②PN05**	5	A (amber), G (green), R (red), W (white), Y (yellow) (Note 1)
		Flat lens	**AP6M-L1②**	**AP6M-L1②PN05**	5	A (amber), C (clear), G (green), R (red), Y (yellow) (Note 2)
	AP2M	Dome lens	**AP2M-L2②**	**AP2M-L2②PN05**	5	A (amber), G (green), R (red), W (white), Y (yellow) (Note 1)
		Flat lens	**AP2M-L1②**	**AP2M-L1②PN05**	5	A (amber), C (clear), G (green), R (red), Y (yellow) (Note 2)
	AP1M	Dome lens	**AP1M-L2②**	**AP1M-L2②PN05**	5	A (amber), G (green), R (red), S (blue), W (white), Y (yellow) (Note 1)
		Flat lens	**AP1M-L1②**	**AP1M-L1②PN05**	5	A (amber), C (clear), G (green), R (red), S (blue), Y (yellow) (Note 2)
Marking Plate 	AP6M	Flat lens	**AP6M-P1W**	**AP6M-P1WPN05**	5	White
	AP2M		**AP2M-P1W**	**AP2M-P1WPN05**	5	
	AP1M		**AP1M-PN1W**	**AP1M-PN1WPN05**	5	
Diffusion Plate	AP1M	Dome lens	**AP1M-PN2W**	**AP1M-PN2WPN05**	5	White
Terminal Cover 	AP6M AP2M	AC adapter DC-DC converter Flasher unit	**AP-VL3**	**AP-VL3**	1	

Specify a lens color code in place of ② in the Ordering No.
Note 1: On the dome lens, use a white (W) lens for white (W) illumination.
Note 2: On the flat lens, use a clear (C) lens for white (W) illumination.

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ø8·10·12·16 AP Series Miniature Pilot Lights

Safety Precautions

- Turn off power to the AP series pilot lights before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- For wiring, use wires of proper size to meet the voltage and current requirements. Improper wiring may cause overheating and create a fire hazard. Tighten the M3 terminal screws to a torque of 0.6 to 1.0 N·m. Failure to tighten terminal screws may cause overheating and fire.

Instructions

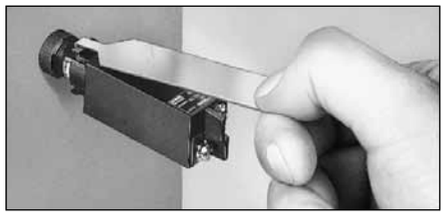
Panel Mounting

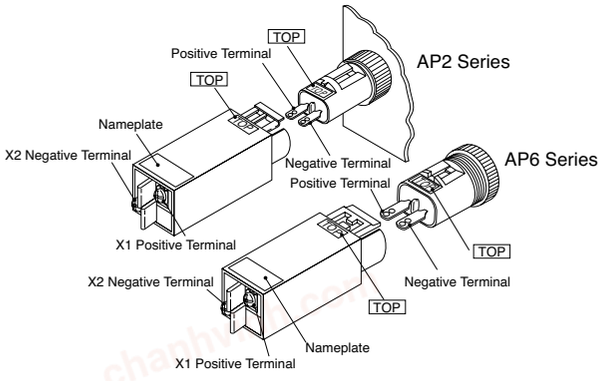
When mounting the AP series pilot lights on a panel, use the optional locking ring wrench. Do not use pliers. Excessive tightening will damage the locking ring.

Unit	Tightening Torque
AP6M	0.88 N·m
AP2M	0.78 N·m
AP1M	0.29 N·m
AP8M	0.29 N·m

Installing the AC Adapter, DC-DC Converter, and Flasher Unit

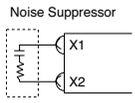
1. Make sure that the voltage rating and terminal style of the AP series pilot lights are applicable to the AC adapter, DC-DC Converter, and flasher units.
2. Install the pilot light into a panel cut-out before mounting an AC adapter, DC-DC Converter, or flasher unit. Note that the pilot light cannot be installed in a panel cut-out with an AC adapter, DC-DC Converter, or flasher unit mounted.
3. When installing an AC adapter, DC-DC Converter, or flasher unit, make sure that the TOP marking is on the same side as the TOP making of the pilot light. AC adapter, DC-DC Converter, and flasher unit are snapped on to the back of the pilot light.
4. To remove the AC adapter, DC-DC Converter, or flasher unit, insert the tip of the removal tool into the joint hook and pull towards you as shown in the photo below.





Note: Do not apply excessive force to terminals X1 and X2 during wiring.

5. When using an AC adapter, DC-DC Converter, or flasher unit where the units are subjected to noise, connect a noise supressor across terminals X1 and X2 as shown in the diagram below.



Wiring

1. Note the positive and negative polarities when wiring.
2. All DC type AP series pilot lights contain a diode for protection against reverse polarity and a current limiting resistor, eliminating the need for external resistors.
3. Solder the terminal at 350°C within 3 seconds using a 60W soldering iron. SnAgCu type lead-free solder is recommended. When soldering, do not touch the pilot light housing with the 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.

DC-DC Converter

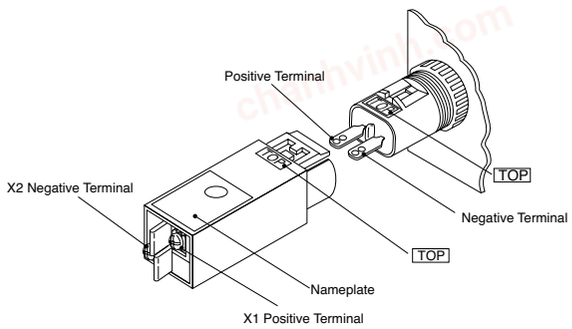
DC-DC converters employ an electronic oscillating circuit. Oscillating sounds may be heard depending on operating conditions, but will not affect performance characteristics.

Marking

AP6M, AP2M, and AP1M round flat lenses contain a white marking plate inside the lens. (AP8M lens cannot be removed.)

Flasher Unit

Pierce the round mark on the nameplate on top of the flasher unit with a flat screwdriver and adjust the variable resistor inside.Turn clockwise to lengthen the flashing period.



Note: Do not apply excessive force to terminals X1 and X2 during wiring.