# M16

CSM\_M16\_DS\_E\_6\_2

## Cylindrical 16-dia. Indicator

• Same basic design as the A16 Pushbutton Switch.





Refer to Safety Precautions for All Pushbutton Switches/ Indicators and Safety Precautions on page 11.

#### **List of Models**

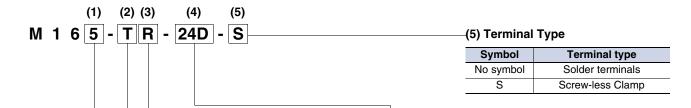
	A	ppearance	Model
	Rectangular		M16-J
Solder terminals	Square		M16-A
	Round		M16-T
Voltage- reduction lighting			M16-□
Screw-less Clamp			M16-□

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#### **Model Number Structure**

Model Number Legend ..... The model numbers used to order sets of Units are illustrated below. One set comprises the Display, Case, Lamp, and Socket.

For information on combinations, refer to Ordering Information on the following pages.



#### (1) Degree of Protection (2) Shape of Display (3) Color of Display (4) Light Source

Symbol

symbol 5

Protection

IP40

IP65 oil-resistant

Symbol	Shape
J	Rectangular
Α	Square

Round

Symbol	Color	
R	Red	
G	Green	
Υ	Yellow	
PY	Pure yellow	
W	White	
PW	Pure white	
Α	Blue	
0-1		

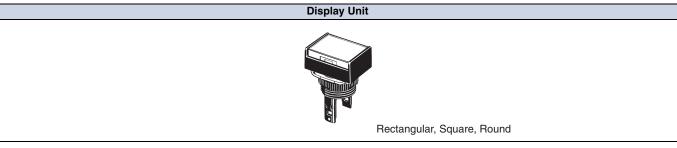
- Color illuminated models are also available (see page 4).
- Order the parts separately.

Symbol	Туре	Operating voltage	Rated voltage
5	Incondessent	5 VAC/VDC	6 VAC/VDC
12	Incandescent lamp	12 VAC/VDC	14 VAC/VDC
24		24 VAC/VDC	28 VAC/VDC
5D		5 ±5% VDC	5 VDC
12D	LED	12 ±5% VAC/VDC	12 VAC/VDC
24D		24 ±5% VAC/VDC	24 VAC/VDC

#### Voltage Reduction Unit (24-V Built-in LED)

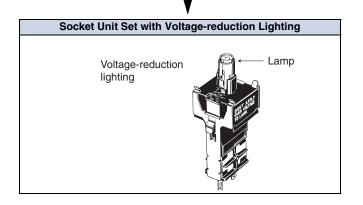
Symbol	Туре	Operating voltage	Rated voltage
T1	LED	100/110 VAC/VDC	110 VAC/VDC
T2	LLD	200/220 VAC/VDC	220 VAC/VDC

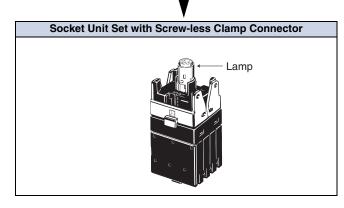
- Solder terminals are available only with 100-V models.
- Screw-less clamp connectors are used for 200-V models.





#### **Lighted Models**





Ordering as a Set ...... The model numbers used to order sets of Units are given in the following tables. One set comprises the Display, Case, Lamp, and Socket.

#### M16□-J (Rectangular) Models **Solder Terminal Models**

Appearance	Lighting	Degree of protection	IP40	IP65 oil-resistant	Display color symbol *
Reduction	LED without Voltage Reduction Unit	5 VDC	M16-J□-5D	M165-J□-5D	R: red Y: yellow G: green A: blue W: white PY: pure yellow PW: pure white
		12 VAC/VDC	M16-J□-12D	M165-J□-12D	
		24 VAC/VDC	M16-J□-24D	M165-J□-24D	
		5 VAC/VDC	M16-J□-5	M165-J□-5	R: red Y: yellow
	Incandescent lamp	12 VAC/VDC	M16-J□-12	M165-J□-12	G: green A: blue
		24 VAC/VDC	M16-J□-24	M165-J□-24	W: white PY: pure yellow

<sup>\*</sup> Enter the desired color symbol into the box in the model number.

#### M16□-A (Square) Models **Solder Terminal Models**

Appearance	Lighting	Degree of protection	IP40	IP65 oil-resistant	Display color symbol *
Reduction Un		5 VDC	M16-A□-5D	M165-A□-5D	R: red Y: yellow
	LED without Voltage Reduction Unit	12 VAC/VDC	M16-A□-12D	M165-A□-12D	G: green A: blue W: white
		24 VAC/VDC	M16-A□-24D	M165-A□-24D	PY: pure yellow PW: pure white
		5 VAC/VDC	M16-A□-5	M165-A□-5	R: red Y: yellow
	Incandescent lamp 1	12 VAC/VDC	M16-A□-12	M165-A□-12	G: green A: blue
		24 VAC/VDC	M16-A□-24	M165-A□-24	W: white PY: pure yellow

<sup>\*</sup> Enter the desired color symbol into the box in the model number.

#### M16□-T (Round) Models **Solder Terminal Models**

Appearance	Lighting	Degree of protection	IP40	IP65 oil-resistant	Display color symbol *
Reduction Unit		5 VDC	M16-T□-5D	M165-T□-5D	R: red Y: yellow
	LED without Voltage Reduction Unit	12 VAC/VDC	M16-T□-12D		
		24 VAC/VDC	M16-T□-24D	M165-T□-24D	PW: pure white  R: red Y: yellow G: green A: blue W: white
	Incandescent lamp  5 VAC/VDC  12 VAC/VDC  24 VAC/VDC	5 VAC/VDC	M16-T□-5	M165-T□-5	
		12 VAC/VDC	M16-T□-12	M165-T□-12	
		24 VAC/VDC	M16-T□-24	M165-T□-24	

Note: Neon lamps are not available with models that are ordered as a set. They must be ordered individually if required.

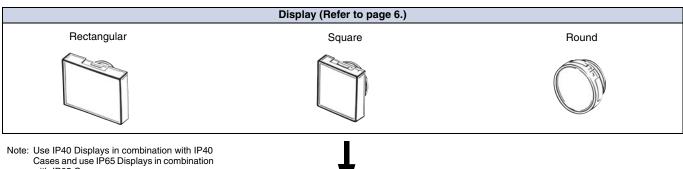
Individual models: Refer to pages 4 to 7.

(The Display, Lamp, Case, and Switch can be ordered separately.)

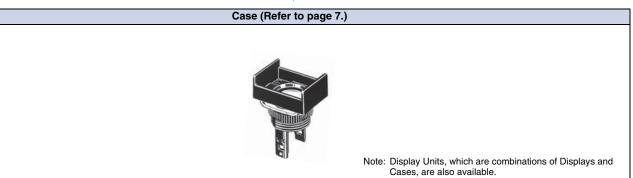
- Accessories, replacements, and tools: Refer to the A16.
- Ratings and characteristics: Refer to the A16.
- Dimensions: Refer to pages 9 to 10.

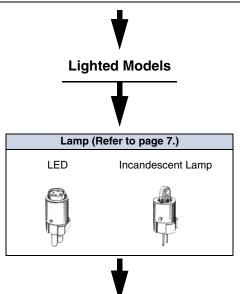
<sup>\*</sup> Enter the desired color symbol into the box in the model number.

Ordering Individually......Displays, Cases, Lamps, and Sockets can be ordered separately. Combinations that are not available as sets can be created using individual parts. Also, store the parts as spares for maintenance and repairs.



with IP65 Cases. The Display has a legend plate built in.





## Socket (Refer to page 7.) Solder Terminals (Without Voltage Reduction Unit) Note: Socket Units, which are combinations of Lamps and Sockets, are also available.

• For colored illumination, order the Display, Case, Lamp, and Socket Unit separately.

Sets ..... Sets that combined a Display and Cases are also available.

#### **Display Set**

Appearance	Classification		Model
	IP40 Oil-resistant IP65	Rectangular (2-way guard)	A16-J□M
		Square (2-way guard)	A16-A□M
		Round (projecting model)	A16-T□M
		Rectangular (2-way guard)	A165-J□M
		Square (2-way guard)	A165-A□M
		Round (projecting model)	A165-T□M

Insert one of the following symbols into the box in the model number.

Symbol	Color	Remarks	
R	Red		
Υ	Yellow	LED and in conde	
PY	Pure yellow	LED and incandes- cent lamps	
Α	Blue	CCIT Idilips	
W	White*		
GY	Green	LED only	
G	Green	Incandescent only	

<sup>\*</sup> Use this pushbutton color if the illumination color of the LED is white or pure

#### **Socket Unit Sets with Incandescent Lamps**

Appearance	C	Classification	Model
	5 V		M16-5
	12 V	Solder terminals	M16-12
	24 V		M16-24

#### **Socket Unit Sets with LEDs**

Appearance	Classification	Model
	Solder terminals	M16-11-2

#### Socket Unit Sets with Voltage-reduction Lighting (Solder Terminals)

Appearance	Classification	Model
	100/110 VAC/VDC	M16-1-T1

Note: The LED has 24-VAC/VDC circuit built in.

#### **Socket Unit Sets with Screw-less Clamp Connectors**

Appearance	Classification			Model
Display	No voltage-reduction lighting		M16-1-2-S	
	Display	Voltage-reduc- tion lighting	100/110 VAC/VDC	M16-1-T1-S
	(See note.)	200/220 VAC/VDC	M16-1-T2-S	

Note: 1. The LED built into the 100-V model is 24 VAC/VDC. 2. The LED built into the 200-V model is high-intensity 24 VAC/VDC.

Insert symbols into the boxes with circled numbers.

Symbol	Color
R	Red
Υ	Yellow
Α	Blue
W	White
G	Green

2

Symbol	Туре	Operating voltage
5D		5 VDC
12D	LED	12 VAC/VDC
24D		24 VAC/VDC

Ordering Individually .......Displays, Cases, Lamps, and Sockets can be ordered separately. Combinations that are not available as sets can be created using individual parts. Also, store the parts as spares for maintenance and repairs.

#### **Display**

#### For LED-lighted Models

Sealing	IP40			IP65 oil-resistant		
	Rectangular	Square	Round	Rectangular	Square	Round
Appearance						
Color of Display			<u> </u>		9	
Red	A16L-JR	A16L-AR	A16L-TR	A165L-JR	A165L-AR	A165L-TR
Yellow	A16L-JY	A16L-AY	A16L-TY	A165L-JY	A165L-AY	A165L-TY
Pure yellow	A16L-JPY	A16L-APY	A16L-TPY	A165L-JPY	A165L-APY	A165L-TPY
Green	A16L-JGY	A16L-AGY	A16L-TGY	A165L-JGY	A165L-AGY	A165L-TGY
White	A16L-JW	A16L-AW	A16L-TW	A165L-JW	A165L-AW	A165L-TW
Blue	A16L-JA	A16L-AA	A16L-TA	A165L-JA	A165L-AA	A165L-TA

#### Incandescent Lamps (With the exception of green, the Units are the same as for LEDs.)

Sealing	IP40			IP65 oil-resistant		t .
	Rectangular	Square	Round	Rectangular	Square	Round
Appearance						
Color of Display						
Red	A16L-JR	A16L-AR	A16L-TR	A165L-JR	A165L-AR	A165L-TR
Yellow	A16L-JY	A16L-AY	A16L-TY	A165L-JY	A165L-AY	A165L-TY
Pure yellow	A16L-JPY	A16L-APY	A16L-TPY	A165L-JPY	A165L-APY	A165L-TPY
Green	A16L-JG	A16L-AG	A16L-TG	A165L-JG	A165L-AG	A165L-TG
White	A16L-JW	A16L-AW	A16L-TW	A165L-JW	A165L-AW	A165L-TW
Blue	A16L-JA	A16L-AA	A16L-TA	A165L-JA	A165L-AA	A165L-TA

Ordering set combinations: Refer to page 3.

- Accessories, replacements, and tools: Refer to the A16.
- Ratings and characteristics: Refer to the A16.
- Dimensions: Refer to pages 9 to 10.

Ordering Individually ....... Displays, Cases, Lamps, and Sockets can be ordered separately. Combinations that are not available as sets can be created using individual parts. Also, store the parts as spares for maintenance and repairs.

A16-24DPW

#### Lamp LED

Operating voltage	High intensity				
Color	5 VDC	12 VAC/VDC	24 VAC/VDC		
Red	A16-5DSR	A16-12DSR	A16-24DSR		
Yellow	A16-5DSY	A16-12DSY	A16-24DSY		
Green	A16-5DSG	A16-12DSG	A16-24DSG		
White *	A16-5DSW	A16-12DSW	A16-24DSW		
Dlue	A1C EDA	A1C 10D A	A16 04DA		

A16-12DPW

#### **Incandescent Lamp**

Pure white

Appearance	Operating voltage	Model
	5 VAC/VDC	A16-5
	12 VAC/VDC	A16-12
	24 VAC/VDC	A16-24

A16-5DPW

#### Case

Appearance	Classif	Model number	
		Rectangular	A16-CJM
	IP40	Square	A16-CAM
		Round	A16-CTM
	IP65 oil-resistant	Rectangular	A165-CJM
		Square	A165-CAM
		Round	A165-CTM

#### Socket

Appearance	Classi	Model number		
	Solder terminals			M16-0
	PCB to	M16-0P		
	Screw-Less Clamp			M16-S
Y	Solder terminals	Voltage-	100 V	M16-T1
	Corour loss Clamp	reduction	100 V	M16-T1-S
Solder terminals	Screw-less Clamp lighting		200 V	M16-T2-S

Ordering set combinations: Refer to page 3.

- Accessories, replacements, and tools: Refer to the A16.
- Ratings and characteristics: Refer to the A16.
- Dimensions: Refer to pages 9 to 10.

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<sup>\*</sup> Use the white LED when the required illumination color is white or pure yellow.

## **Specifications**

### **Approved Standard Ratings**

UL, cUL (File No. E76675)

LED: 24 VDC max. Incandescent lamp: 24 VDC/VAC max.

Note: Certification has been obtained for the Socket Unit.

For detailed information on individual products that have received certification, consult your supplier.

#### **Ratings**

Ambient operating temperature	-10°C to 55°C (with no icing or condensation)
Ambient operating humidity	35% to 85%RH
Ambient storage temperature	-25°C to 65°C (with no icing or condensation)

#### Super-bright LED

Rated voltage	Rated current	Operating voltage	Built-in limiting resistance
5 VDC		5 VDC ±5%	Red, yellow, white: 300 $\Omega$ Green, blue, pure white: 160 $\Omega$
12 VAC/VDC	8 mA	12 VAC/VDC ±5%	Red, yellow, white: 1 k $\Omega$ Green, blue, pure white: 910 $\Omega$
24 VAC/VDC		24 VAC/VDC ±5%	2.4 kΩ

#### **Incandescent Lamp**

Rated voltage	Rated current	Operating voltage	
6 VAC/VDC	60 mA	5 VAC/VDC	
14 VAC/VDC	40 mA	12 VAC/VDC	
28 VAC/VDC	24 mA	24 VAC/VDC	

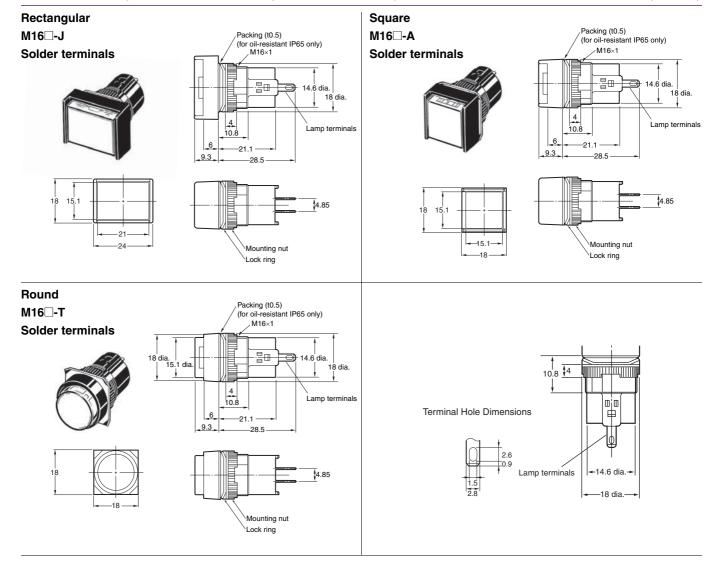
#### **Characteristics**

#### **Screw-less Clamp**

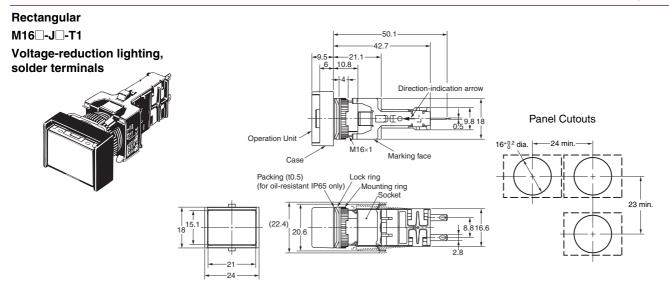
Item Type		Screw-less Clamp				
Recommended wire size		0.5 mm <sup>2</sup> twisted wire or 0.8 mm-dia. solid wire				
Usable wires and tensile strength	Twisted wire	0.3 mm <sup>2</sup>	0.5 mm <sup>2</sup>	0.75 mm <sup>2</sup>	1.25 mm <sup>2</sup>	
	Solid wire	0.5 mm dia.	0.8 mm dia.	1.0 mm dia.		
	Tensile strength	10 N	20 N	30 N	40 N	
Length of exposed wire		10 ±1 mm				
Compliant standards		JIS C 2811 Terminal Blocks for Industrial Use				

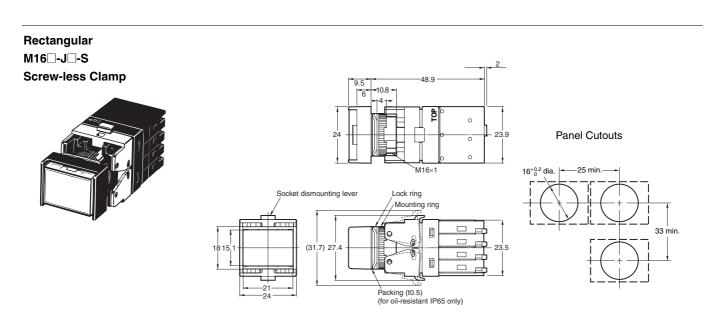
8

(Unit: mm)



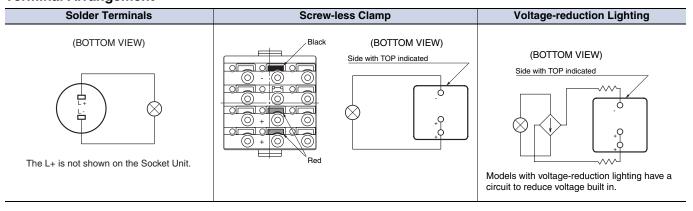
Dimensions (Unit: mm)





#### **Dimensions**

#### **Terminal Arrangement**



#### Accessories, Replacements, and Tools

The accessories, replacements, and tools are also used with the A16 Pushbutton Switch. Refer to the A16 datasheet.

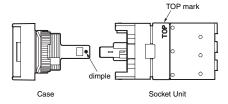
### **Safety Precautions**

Refer to Safety Precautions for All Pushbutton Switches/Indicators and Safety Precautions for the A16.

#### **Precautions for Correct Use**

#### Mounting

 When mounting the Case onto the Socket Unit, ensure that the orientation is correct. Perform mounting with the dimple on the Case and the TOP mark on the Socket Unit facing in the same direction.



#### Wiring

- When using stranded wire, gather the ends of the strands together before wiring.
- When wiring, insert the wire until it comes into contact with something. After wiring is completed, pull on the wires to confirm that they are connected securely.
- After wiring, ensure that continuous pressure is not applied to the terminals.
- Refer to internal connections diagrams and confirm the terminal numbers before performing wiring.

#### **Screw-less Clamps**

#### **Mounting Procedure**

- Strip a length of 10 mm off the end of the wire (allowable range: 10±1 mm).
- 2. Bunch wire strands together and straighten them.
- Insert the wire into the insertion hole while pressing the release button at the side of the hole. (Using a precision screwdriver is recommended.)
- 4. Let go of the release button to lock the wire into place.
- After locking, pull on the wire gently to confirm that it is securely locked.

#### **Removing Procedure**

1. Remove wires by pulling them while pressing the release button.

Note: When reusing wires that have already been locked, cut off the end of the wire and strip the wire again before using.

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- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
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- Systems, machines, and equipment that could present a risk to life or property.

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- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



**«JONHON»** (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«**FORSTAR**» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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