AD 7-Segment Display

AD

Display with switch function, LED. Supports PLC input.

■ Digit display：14.6-mm-high characters, displayed by BCD codes.
■ Illumination color：Red, Green
■ Mounting：One-touch easy mounting with side plates.
■ Unit type：NUMERICAL unit, CHARACTER unit
■ Terminal：Connector (Selling separately)
■ Accessories：Blank unit

CHARACTERISTICS

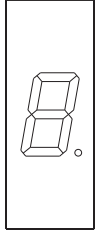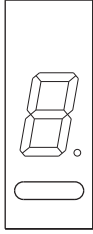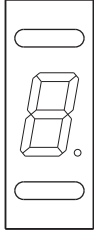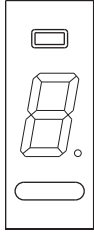|	
CHARACTER Height	14.6 mm
Illumination Color	Red, Green
Outer Dimension	H39 mm×W15 mm×D48 mm (1 unit)
Max. Digits	8 digits
Supply Voltage	DC 5V, 12V, 24V ± 5%
Consumption Current	100 mA max. (1 unit)
Display Method	Decimal system
Control Method	BCD codes (Positive Logic, Negative Logic)
Data Input Method	TTL input, PLC input
Switch Contact	1a×1, 1a×2 (Tact swtich)
Contact Rating	DC 5 to 24 V, 1 to 50 mA (Resistive Load)
Rated Insulation Voltage	DC 30V
Switch Connection	NC
Contact Resistance	Less than 300 mΩ at DC 5 V 1 mA
Mechanical Life	More then 1,000,000 operations
Terminal Shape	MIL connector (16 pins)
Ambient Operating Temperature	−15℃ to 50℃ (No Freeze, No Condensation)
Ambient Operating Humidity	80%RH max. (No Condensation)
Ambient Storage Temperature	−25℃ to 65℃ (No Freeze, No Condensation)
Ambient Storage Humidity	80%RH max. (No Condensation)
RoHS (10 Substances)	Conform to standards

BLOCK DIAGRAM
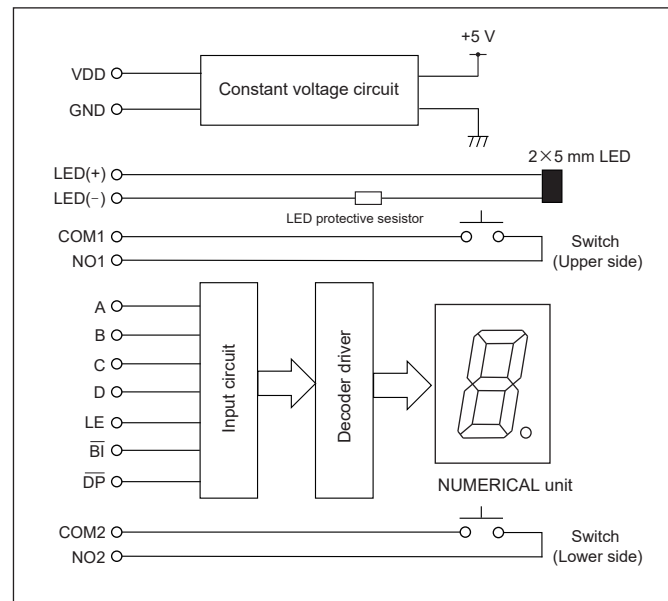
※ DC 5 V, DC 12 V input type does not have a built-in constant voltage circuit.

UNIT TYPE

NUMERICAL unit	NUMERICAL unit + Switch 1 circuit	NUMERICAL unit + Switch 2 circuit	NUMERICAL unit + Switch 1 circuit + 2×5 mm LED	CHARACTER unit
				SEC

※ Characters are an example.

DIMENSIONS／PANEL CUTOUT

MULON mark

39

14.6

23＋15(n−1)

36

Panel cutout dimension

$36.5^{+0.15}_{-0.1}$

$21.5+15(n-1)^{+0.15}_{-0.1}$

Recommended panel thickness : 1 to 5 mm
n : Number of Units

15

5

43

37

20.6＋15(n−1)
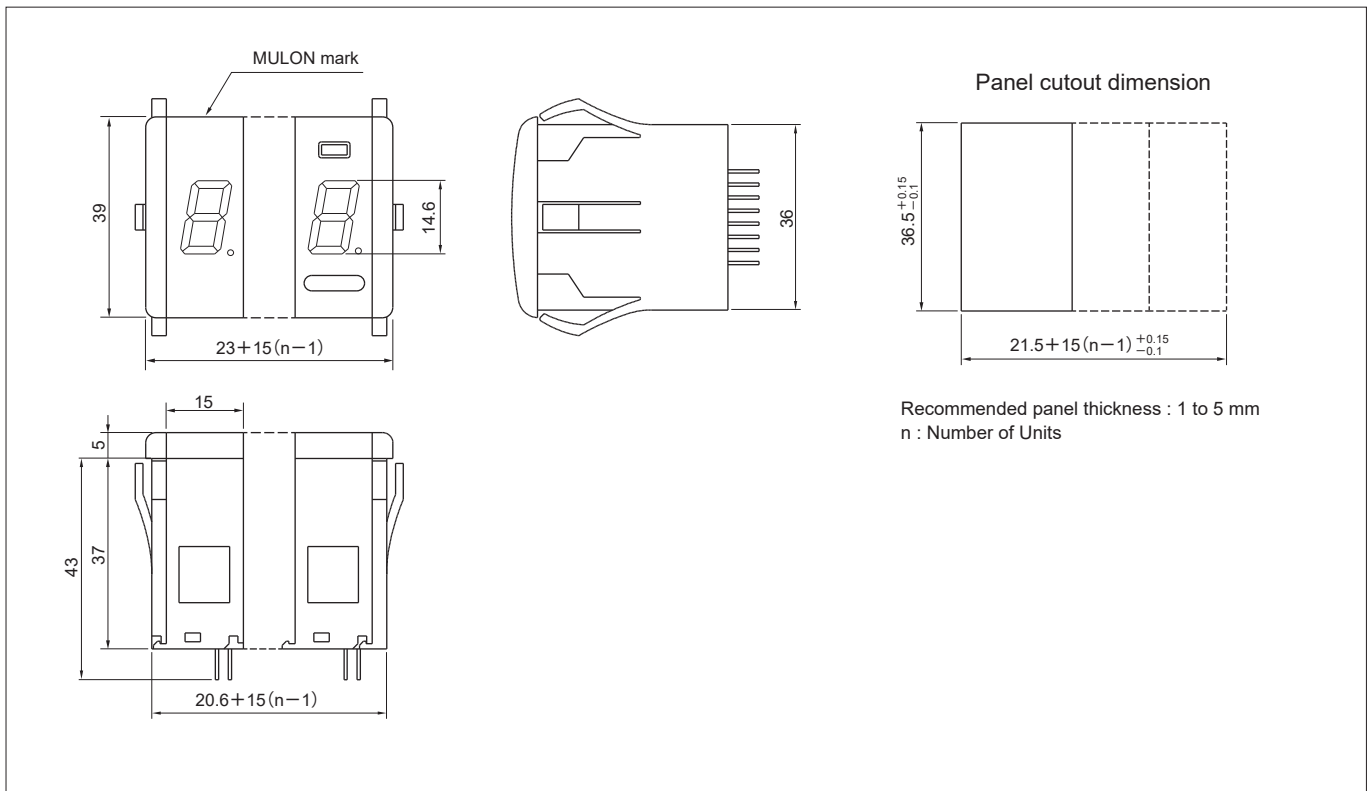
※ Up to 8 units can be connected in series.

※ Blank unit also has the same dimensions.

※ If the panel is to be finished (e.g. coated), make sure that the panel meets the specified dimensions after the coating.
   In case the panel cut dimension is too small, it may cause malfunction.
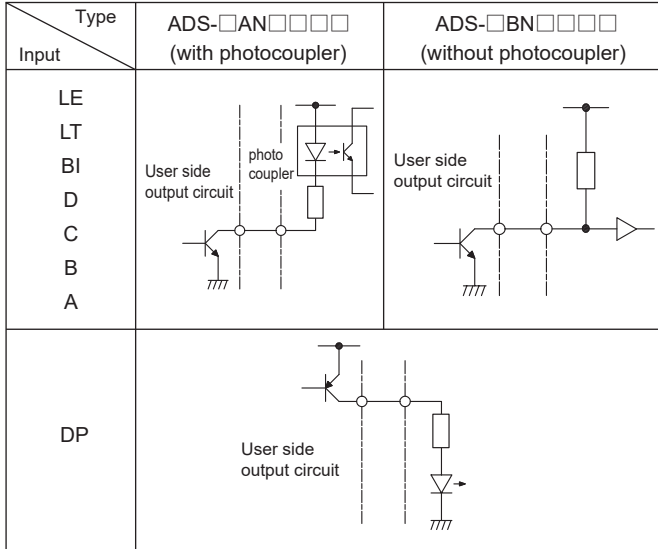
※ After the panel-cutting process, make sure to remove burrs on the surface.

Tolerance : ± 0.4 mm

Sunmulon Co., Ltd.

AD-2

SPECIFICATIONS 【NUMERICAL UNIT】TTL INPUT TYPE

● Input Circuit and Connection

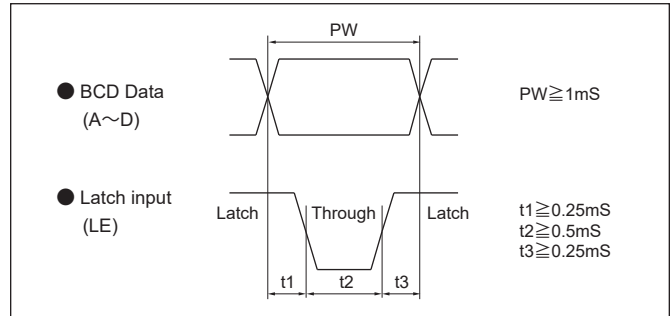| Type / Input	ADS-□AN□□□□ (with photocoupler)	ADS-□BN□□□□ (without photocoupler)
LE LT BI D C B A	User side output circuit / photo coupler	User side output circuit
DP	User side output circuit	

※ User side outout circuit is an example.

● 2×5 mm LED Specifications

Voltage	Current (mA)		
	Red	Green	Yellow
DC 5 V ±5%			
DC12V ±5%	5	20	10
DC24V ±5%			

● Input Timing

● BCD Data (A～D)   PW≧1mS

● Latch input (LE)   Latch | Through | Latch

t1≧0.25mS
t2≧0.5mS
t3≧0.25mS

● BCD Signals Truth Table

D	C	B	A	LE	LT	BI	DP	D	C	B	A	Output
X	X	X	X	X	L	X	X	X	X	X	X	8
X	X	X	X	X	H	L	X	X	X	X	X	Blank
L	L	L	L	L	H	H	X	H	H	H	H	0
L	L	L	H	L	H	H	X	H	H	H	L	1
L	L	H	L	L	H	H	X	H	H	L	H	2
L	L	H	H	L	H	H	X	H	H	L	L	3
L	H	L	L	L	H	H	X	H	L	H	H	4
L	H	L	H	L	H	H	X	H	L	H	L	5
L	H	H	L	L	H	H	X	H	L	L	H	6
L	H	H	H	L	H	H	X	H	L	L	L	7
H	L	L	L	L	H	H	X	L	H	H	H	8
H	L	L	H	L	H	H	X	L	H	H	L	9
H	L	H	L	L	H	H	X	L	H	L	H	Blank
H	L	H	H	L	H	H	X	L	H	L	L	Blank
H	H	L	L	L	H	H	X	L	L	H	H	Blank
H	H	L	H	L	H	H	X	L	L	H	L	Blank
H	H	H	L	L	H	H	X	L	L	L	H	Blank
H	H	H	H	L	H	H	X	L	L	L	L	Blank
X	X	X	X	X	X	X	H	X	X	X	X	.
X	X	X	X	H	H	H	X	X	X	X	X	(See note)

Column groups: ADS-□N1□□□□ = Positive Logic (D C B A); Common (LE LT BI DP); ADS-□N2□□□□ = Negative Logic (D C B A); Output.

※ Opened H is acceptable. Either H or L is acceptable for X.

※ Input is sink type. Use NPN output. However, only DP (decimal point) input is source input lights by applying the same voltage as VDD.
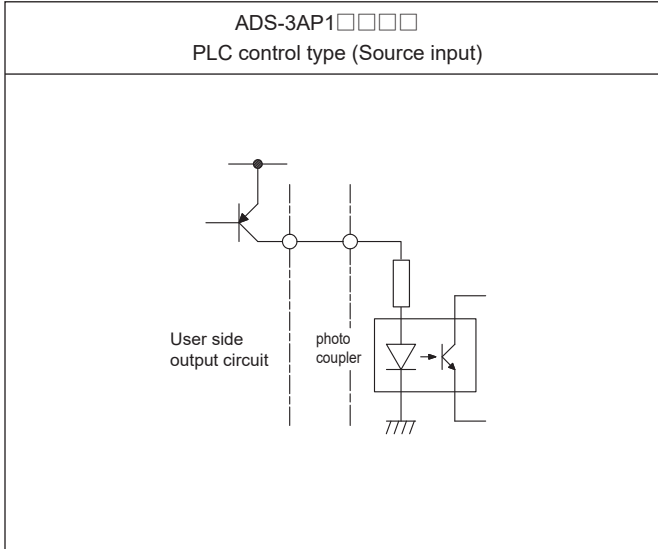
Note：The immediately display states of A to D before LE goes H or L will be held.

● Terminals Function Table

Pin No.	Display	Switch 1 circuit LED	Switch 1 circuit Non-LED	Switch 2 circuit	Functions
1	—	LED Anode	—	COM1	Depending on the model, swich or LED is connected.
2	—	LED Cathode	—	NO1	Depending on the model, swich or LED is connected.
3	VDD	VDD	VDD	VDD	⊕ Power input
4	LE	LE	LE	LE	When controlled using the latch, the state is H (data held) or L (data read). To control without using the latch, connect to GND. Be sure to use either control method. With no connection, the display will not appear or change.
5	GND	GND	GND	GND	⊖ Power input Electrical potential norm of all signals.
6	L̄T̄	L̄T̄	L̄T̄	L̄T̄	"L" makes display `OFF' except Decimal point.
7	D	D	D	D	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
8	B̄Ī	B̄Ī	B̄Ī	B̄Ī	"L" makes display `OFF' except Decimal point.
9	C	C	C	C	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
10	—	—	—	—	————
11	B	B	B	B	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
12	—	—	—	—	————
13	A	A	A	A	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
14	D̄P̄	D̄P̄	D̄P̄	D̄P̄	Set high for the decimal point lights. ※The same voltage as VDD is applied to light.
15	—	COM	COM	COM2	Depending on the model, swich is connected.
16	—	NO	NO	NO2	Depending on the model, swich is connected.

Column group header: ADS-□N1□□□□ / ADS-□N2□□□□

● Input Circuit and Connection

ADS-3AP1□□□□
PLC control type (Source input)

User side output circuit

photo coupler

※ User side outout circuit is an example.

● 2×5 mm LED Specifications

Voltage	Current (mA)		
	Red	Green	Yellow
DC 5 V ±5%			
DC12V ±5%	5	20	10
DC24V ±5%			

● Input Timing

● BCD Data (A～D)   PW≧1mS

● Latch input (LE)   Latch / Through / Latch   t1≧0.25mS t2≧0.5mS t3≧0.25mS

● BCD Signals Truth Table

ADS-3AP1□□□□								Output
LE	LT	BI	DP	D	C	B	A	
X	H	X	X	X	X	X	X	8
X	L	H	X	X	X	X	X	Blank
H	L	L	X	L	L	L	L	0
H	L	L	X	L	L	L	H	1
H	L	L	X	L	L	H	L	2
H	L	L	X	L	L	H	H	3
H	L	L	X	L	H	L	L	4
H	L	L	X	L	H	L	H	5
H	L	L	X	L	H	H	L	6
H	L	L	X	L	H	H	H	7
H	L	L	X	H	L	L	L	8
H	L	L	X	H	L	L	H	9
H	L	L	X	H	L	H	L	Blank
H	L	L	X	H	L	H	H	Blank
H	L	L	X	H	H	L	L	Blank
H	L	L	X	H	H	L	H	Blank
H	L	L	X	H	H	H	L	Blank
H	L	L	X	H	H	H	H	Blank
X	X	X	H	X	X	X	X	•
L	L	L	X	X	X	X	X	(See note)

※ Opened L is acceptable. Either H or L is acceptable for X.
※ Use PNP output.
Note：The immediately display states of A to D before LE goes H or L will be held.

● Terminals Function Table

ADS-3AP1□□□□				Functions
Pin No.	Display	Switch 1 circuit LED	Switch 1 circuit Non-LED	Switch 2 circuit	
1	—	LED Anode	—	COM1	Depending on the model, swich or LED is connected.
2	—	LED Cathode	—	NO1	Depending on the model, swich or LED is connected.
3	VDD	VDD	VDD	VDD	⊕ Power input
4	LE	LE	LE	LE	When controlled using the latch, the state is H (data held) or L (data read). To control without using the latch, connect to GND. Be sure to use either control method. With no connection, the display will not appear or change.
5	GND	GND	GND	GND	⊖ Power input Electrical potential norm of all signals.
6	LT	LT	LT	LT	"L" makes display `OFF' except Decimal point. DP is not related.
7	D	D	D	D	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
8	BI	BI	BI	BI	"L" makes display `OFF' except Decimal point. DP is not related.
9	C	C	C	C	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
10	—	—	—	—	———
11	B	B	B	B	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
12	COM GND	COM GND	COM GND	COM GND	Common GND for the input signal.
13	A	A	A	A	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
14	DP	DP	DP	DP	Set high for the decimal point lights. ※The same voltage as VDD is applied to light.
15	—	COM	COM	COM2	Depending on the model, swich is connected.
16	—	NO	NO	NO2	Depending on the model, swich is connected.

SPECIFICATIONS 〔NUMERICAL UNIT〕 PLC SINK INPUT TYPE
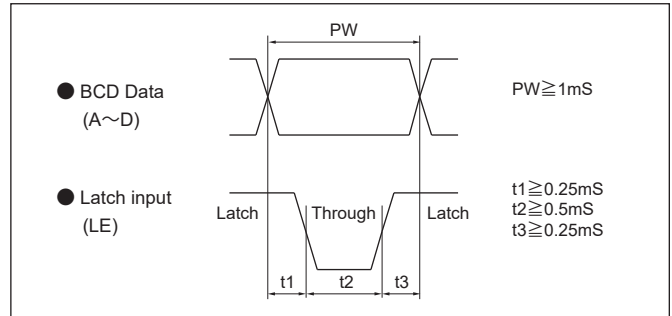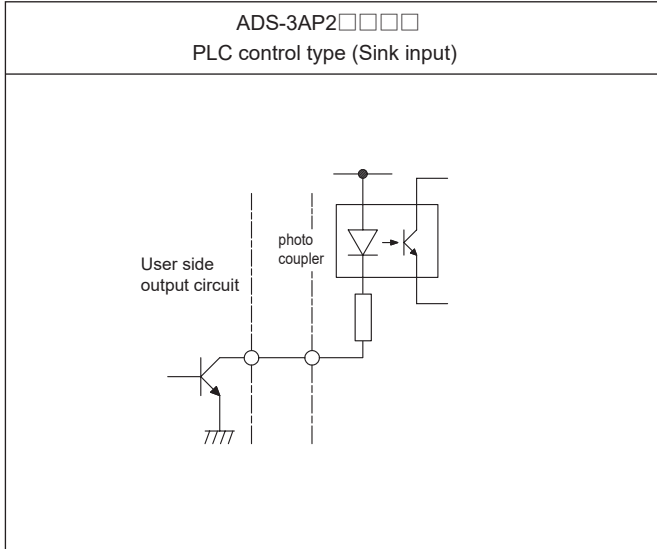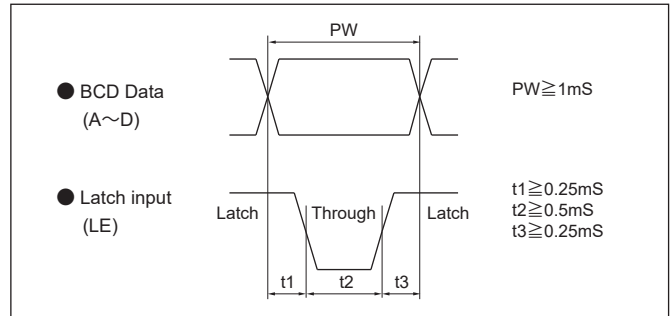
● Input Circuit and Connection

ADS-3AP2□□□□
PLC control type (Sink input)

photo coupler

User side output circuit

※ User side outout circuit is an example.

● 2×5 mm LED Specifications

Voltage		Current (mA)		
		Red	Green	Yellow
DC 5V	±5%			
DC12V	±5%	5	20	10
DC24V	±5%			

● Input Timing

● BCD Data (A～D)   PW≧1mS

● Latch input (LE)
Latch | Through | Latch

t1≧0.25mS
t2≧0.5mS
t3≧0.25mS

t1 t2 t3

● BCD Signals Truth Table

LE	LT	BI	DP	D	C	B	A	Output
X	L	X	X	X	X	X	X	8
X	H	L	X	X	X	X	X	Blank
L	H	H	X	H	H	H	H	0
L	H	H	X	H	H	H	L	1
L	H	H	X	H	H	L	H	2
L	H	H	X	H	H	L	L	3
L	H	H	X	H	L	H	H	4
L	H	H	X	H	L	H	L	5
L	H	H	X	H	L	L	H	6
L	H	H	X	H	L	L	L	7
L	H	H	X	L	H	H	H	8
L	H	H	X	L	H	H	L	9
L	H	H	X	L	H	L	H	Blank
L	H	H	X	L	H	L	L	Blank
L	H	H	X	L	L	H	H	Blank
L	H	H	X	L	L	H	L	Blank
L	H	H	X	L	L	L	H	Blank
L	H	H	X	L	L	L	L	Blank
X	X	X	L	X	X	X	X	•
H	H	H	X	X	X	X	X	(See note)

※ Opened H is acceptable. Either H or L is acceptable for X.
※ Use NPN output.
Note：The immediately display states of A to D before LE goes H or L will be held.

● Terminals Function Table

ADS-3AP2□□□□

Pin No.	Display	Switch 1 circuit LED	Switch 1 circuit Non-LED	Switch 2 circuit	Functions
1	—	LED Anode	—	COM1	Depending on the model, swich or LED is connected.
2	—	LED Cathode	—	NO1	Depending on the model, swich or LED is connected.
3	VDD	VDD	VDD	VDD	⊕Power input
4	LE	LE	LE	LE	When controlled using the latch, the state is H (data held) or L (data read). To control without using the latch, connect to GND. Be sure to use either control method. With no connection, the display will not appear or change.
5	GND	GND	GND	GND	⊖Power input Electrical potential norm of all signals.
6	L̄T̄	L̄T̄	L̄T̄	L̄T̄	"L" makes display `OFF' except Decimal point. DP is not related.
7	D	D	D	D	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
8	B̄Ī	B̄Ī	B̄Ī	B̄Ī	"L" makes display `OFF' except Decimal point. DP is not related.
9	C	C	C	C	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
10	—	—	—	—	———
11	B	B	B	B	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
12	COM VDD	COM VDD	COM VDD	COM VDD	Common VDD for the input signal.
13	A	A	A	A	Displays a digit corresponding to the value ot the BCD code signal. Refer to truth table.
14	D̄P̄	D̄P̄	D̄P̄	D̄P̄	The cathode side of the LED is out as an external terminal, so when connected to GND, the decimal point lights up.
15	—	COM	COM	COM2	Depending on the model, swich is connected.
16	—	NO	NO	NO2	Depending on the model, swich is connected.

● BCD Signals Truth Table

Pin No.	AD-0□□□
1	Common Anode
2	――
3	Common Anode
4	――
5	Common Cathode
6	――
7	Common Cathode
8	――
9	――
10	――
11	――
12	――
13	――
14	――
15	――
16	――

● Internal Connection Arrangemens

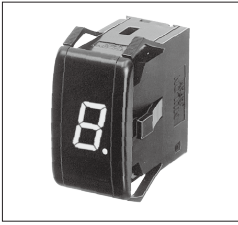| Voltage	
DC5V	
DC12V DC24V	
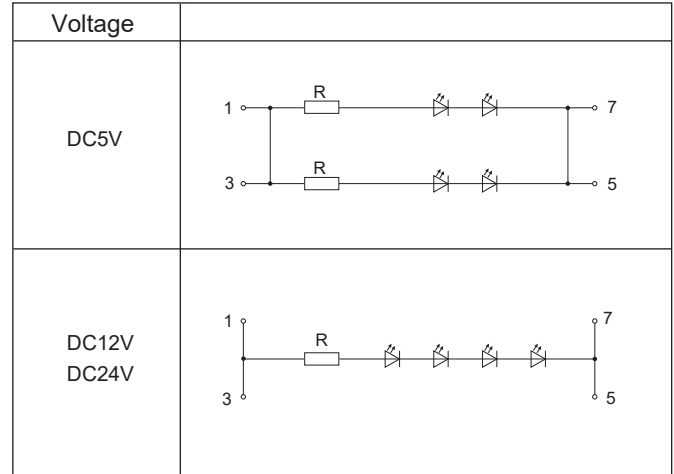
● LED Specifications

Voltage	Current (mA)	
	Red	Green
DC 5V ±5%	10	13
DC12V ±5%	5	6
DC24V ±5%	5	6

NUMERICAL unit

※ Side plates to be ordered separately.

AD S － □ N □ □ 0 X X

● **DISPLAY**

S	NUMERICAL unit

● **Supply voltage Photocoupler**

1A	DC 5V with photocoupler
1B	DC 5V without photocoupler
2A	DC12V with photocoupler
2B	DC12V without photocoupler
3A	DC24V with photocoupler

● **BCD CODE LOGIC**

1	Positive
2	Negative

Inputs are Sink inputs except for DP (decimal point) input.

● **LED COLOR**

R	Red
G	Green

● **CONTACT**

0	Display

● **BUTTON COLOR**

X	Without button

● **2×5mm LED COLOR**

X	Without LED

NUMERICAL unit ＋Switch 1 circuit ＋Switch 2 circuit

Switch 1 circuit

Switch 2 circuit

※ Side plates to be ordered separately.

AD S － □ N □ □ □ □ X

● **DISPLAY**

S	NUMERICAL unit

● **Supply voltage Photocoupler**

1A	DC 5V with photocoupler
1B	DC 5V without photocoupler
2A	DC12V with photocoupler
2B	DC12V without photocoupler
3A	DC24V with photocoupler

● **BCD CODE LOGIC**

1	Positive
2	Negative

Inputs are Sink inputs except for DP (decimal point) input.

● **LED COLOR**

R	Red
G	Green

● **CONTACT**

1	1 circuit
2	2 circuit

● **BUTTON COLOR**

K	Black
H	Gray

● **2×5mm LED COLOR**

X	Without LED

NUMERICAL unit ＋Switch 1 circuit ＋2×5 mm LED

※ Side plates to be ordered separately.

AD S － □ N □ □ 1 □ □

● **DISPLAY**

S	NUMERICAL unit

● **Supply voltage Photocoupler**

1A	DC 5V with photocoupler
1B	DC 5V without photocoupler
2A	DC12V with photocoupler
2B	DC12V without photocoupler
3A	DC24V with photocoupler

● **BCD CODE LOGIC**

1	Positive
2	Negative

Inputs are Sink inputs except for DP (decimal point) input.

● **LED COLOR**

R	Red
G	Green

● **CONTACT**

1	1 circuit

● **BUTTON COLOR**

K	Black
H	Gray

● **2×5mm LED COLOR**

4	Red
5	Green
6	Yellow

NUMERICAL unit

※ Side plates to be ordered separately.

AD S－3AP□□ 0 X X

● **DISPLAY**

S	NUMERICAL unit

● **Supply voltage Photocoupler**

3A	DC24V with photocoupler

● **INPUT**

1	Source input
2	Sink input

● **LED COLOR**

R	Red
G	Green

● **2×5mm LED COLOR**

X	Without LED

● **BUTTON COLOR**

X	Without button

● **CONTACT**

0	Display

NUMERICAL unit ＋Switch 1 circuit ＋Switch 2 circuit
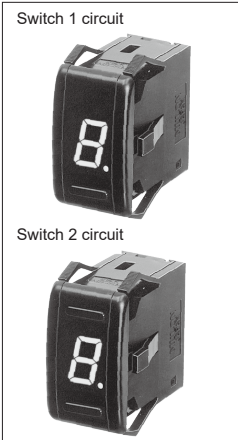
Switch 1 circuit

Switch 2 circuit

AD S－3AP□□□□ X

● **DISPLAY**

S	NUMERICAL unit

● **Supply voltage Photocoupler**

3A	DC24V with photocoupler

● **INPUT**

1	Source input
2	Sink input

● **LED COLOR**

R	Red
G	Green

● **2×5mm LED COLOR**

X	Without LED

● **BUTTON COLOR**

K	Black
H	Gray

● **CONTACT**

1	1 circuit
2	2 circuit

NUMERICAL unit ＋Switch 1 circuit ＋2×5 mm LED

※ Side plates to be ordered separately.

AD S－3AP□□ 1 □□

● **DISPLAY**

S	NUMERICAL unit

● **Supply voltage Photocoupler**

3A	DC24V with photocoupler

● **INPUT**

1	Source input
2	Sink input

● **LED COLOR**

R	Red
G	Green

● **2×5mm LED COLOR**

4	Red
5	Green
6	Yellow

● **BUTTON COLOR**

K	Black
H	Gray

● **CONTACT**

1	1 circuit

ORDERING CODE 【CHARACTER UNIT】

CHARACTER unit   This unit displays any engraved characters.
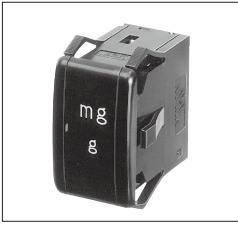
※ Side plates to be ordered separately.

※ Custom legend plate can be made. Engraving is available separately.

AD － 0 ☐ ☐ ☐

● **DISPLAY**

0	Full-Face

● **LED COLOR**

R	Red
G	Green

● **LEGEND PLATE**

A	With legend plate
B	Without legend plate

● **Supply Voltage to LED**

1	DC 5V
2	DC12V
3	DC24V

TERMINALS

● TERMINALS DIMENSIONS

MULON mark

2.54×7

1 2
3 4
5 6
7 8
9 10
11 12
13 14
15 16

2.63 2.54

● TERMINAL SHAPE

6

□0.635
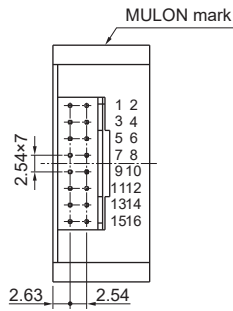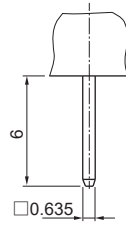
【Applicable connectors】

OMRON made　XG4M-1630 , XG4T-1604
　　　　　　　（Socket）　　（Strain relief）
　　　　　　　XG5M-1635 , XG5S-0801
　　　　　　　（Socket）　　（Semi cover）

HRS made　　HIF3BA-16D-2.54R

※ We do not sell the above products.
　 For more information, please refer to these
　 manufacturers' catalogs.
　 No anti-release protection.

ACCESSORIES／REPLACEMENT PARTS

● SIDE PLATE

Part no.	AD-1440-K	Black
	AD-1440-H	Gray

※ A pair of side plate (right and left) is necessary for mounting on panel.
　（This part no. is a set of right and left.）
※ Available in Black only.

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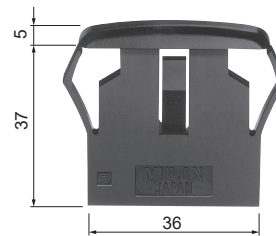
● BLANK UNIT

Part no.	AD-1546-SR	Semitransparent Red
	AD-1546-SG	Semitransparent Green

※ This unit is used when blanks are needed between digits.

MULON mark

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5　37
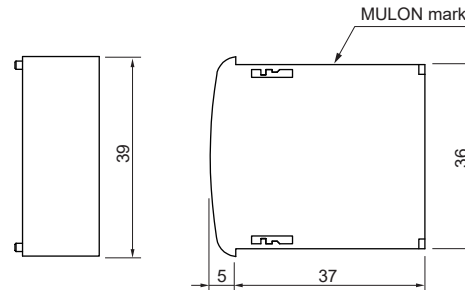
● LEGEND PLATE

Part no.	AD-1417

※ Used for CHARACTER unit.

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13.6

Black silk printing on
LEGEND FACE

LEGEND
PLATE
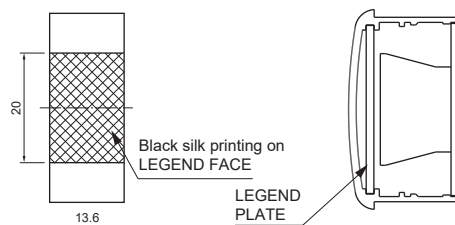
Tolerance：± 0.4 mm

REFERENCE WIRING DIAGRAM

● ADS-□N1□1 □□ （NUMERICAL unit＋2×5 mm LED＋Switch 1 circuit） Example of data common wiring
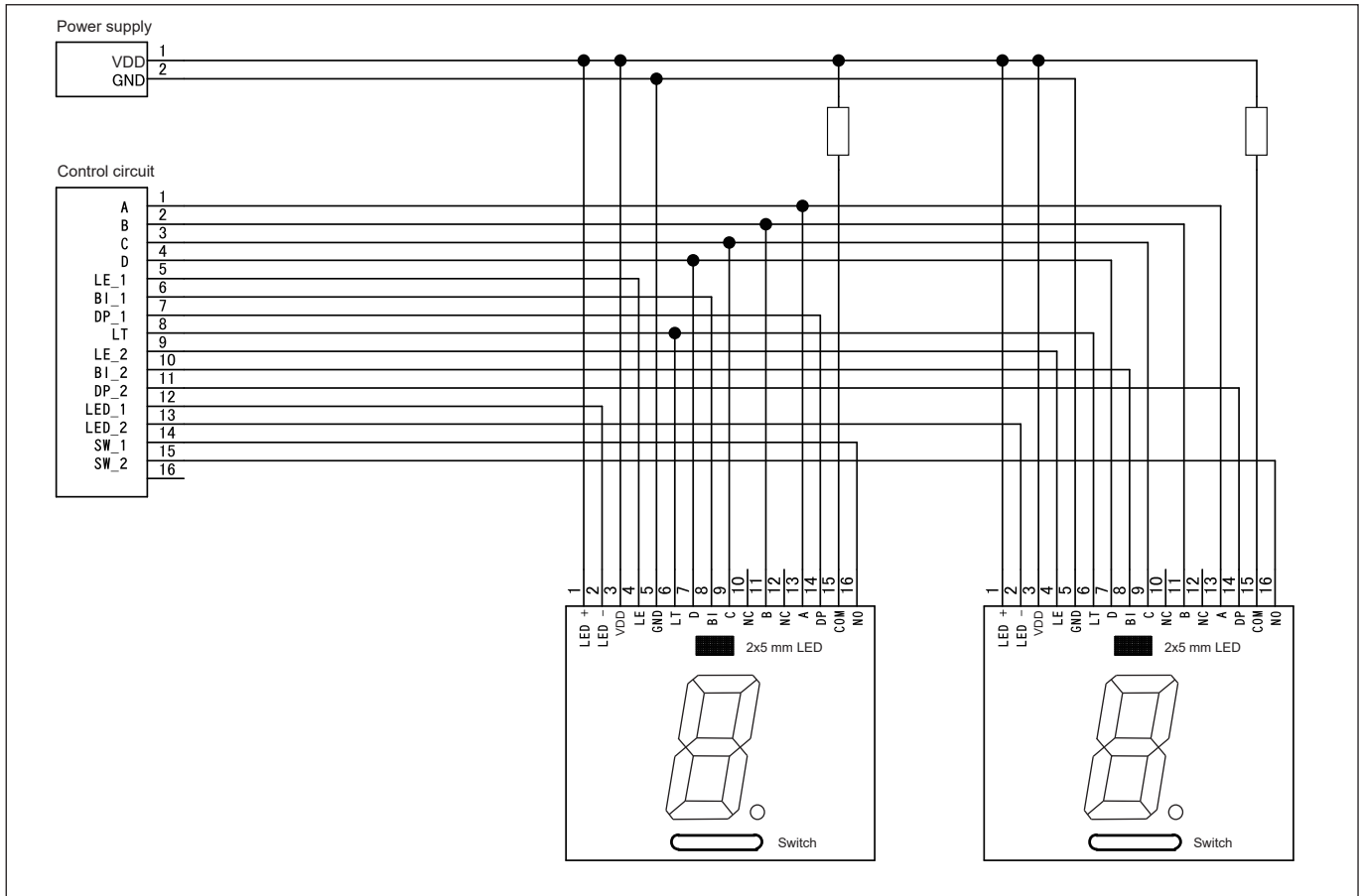
● ADS-□N1□1 □□ （NUMERICAL unit＋2×5 mm LED＋Switch 1 circuit） Example of single wiring
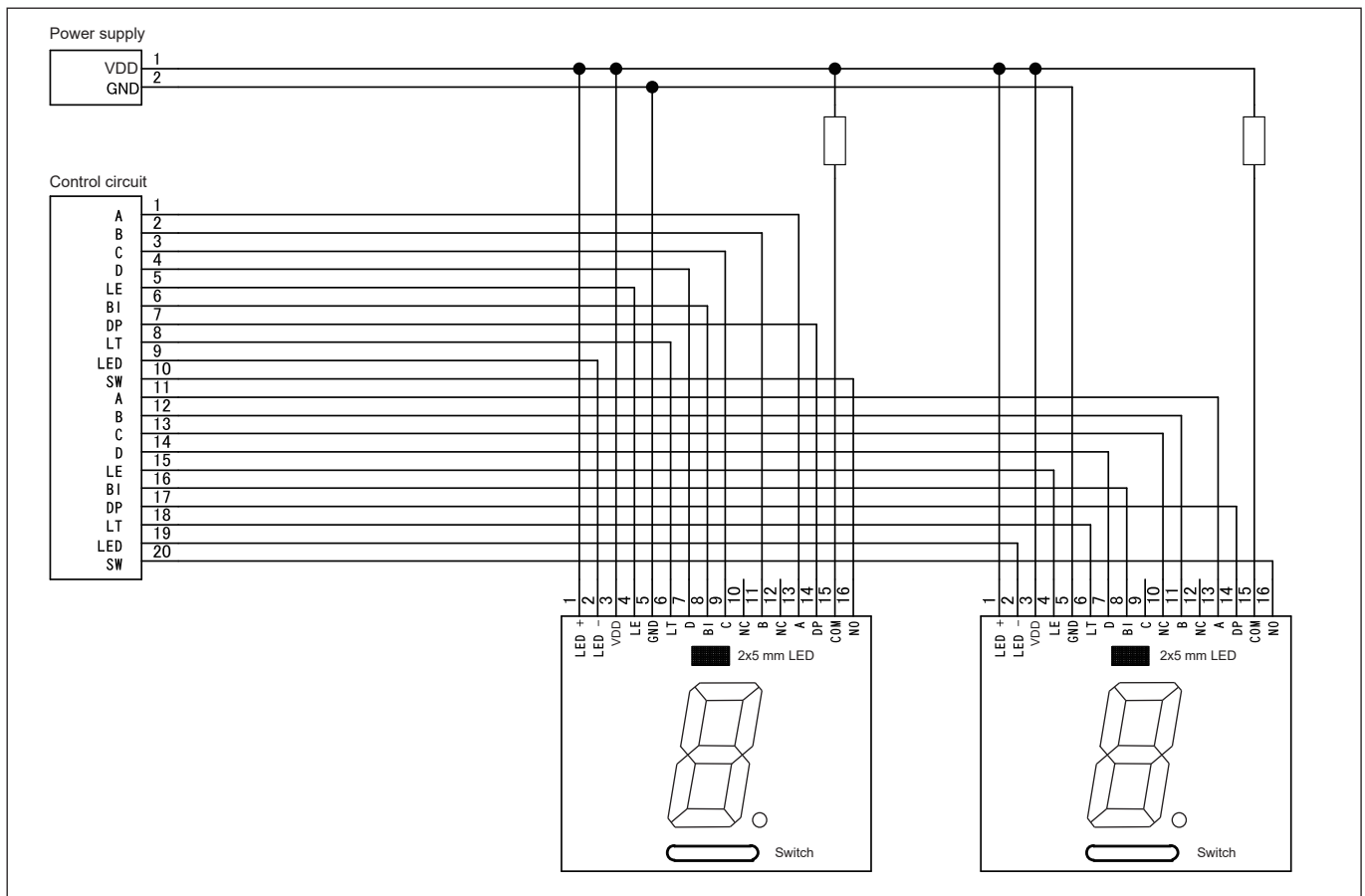
MOUNTING

1. Engraving on CHARACTER unit

   How to engrave by yourself.

   1）Engrave on the black silk printing side.
   The engraved area will allow light to pass through.

   2）The possible engraving range is shown on the right.

   LEGEND PLATE

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   13.6

   engravable range
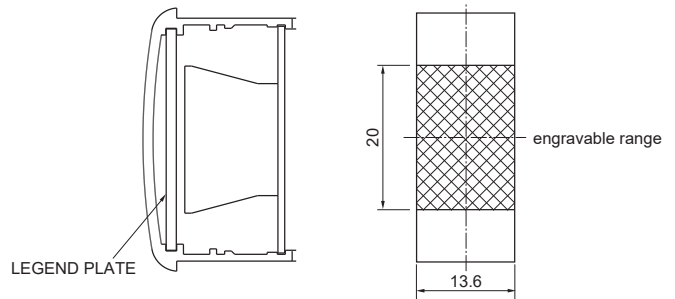
2. Mounting

   Align the groove and projection at the top and bottom of the adjacent cases,
   and fit them in the order of 1, 2.

   After setting the side plates on both sides and insert them into the panel cut-out.

   ②

   ①
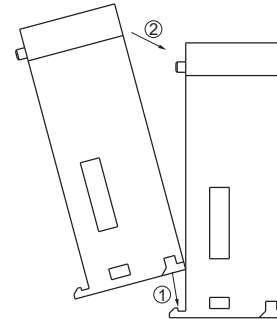
PRECAUTIONS FOR CORRECT USE

1. Buttons cannot be replaced.
2. When assembling the unit, insert the unit slowly and in parallel to avoid excess force on the case's pins and connector's pins.

※ For handling instructions and precautions other than the above, please refer to "Safety Precautions for All 7-Segment displays".

Tolerance : ± 0.4 mm

As of November 2023

Sunmulon Co., Ltd.

AD-12

Safety Precautions for All 7-Segment Displays

1. Notes on contents of Catalogs

(1) Rated values, performance values, and specification values of Sumulon products listed in this catalog are values acquired under respective conditions in independent testing, and do not guarantee values gained in combined conditions.

(2) The ambient operating temperature(humidity) is guaranteed by evaluation based on characteristics, and does not guarantee continuous use for a long period of time near the upper or lower limit of the ambient operating temperature(humidity) or permanent use at that temperature(humidity).

(3) Reference data and reference values listed in catalogs are for reference purposes only, and do not guarantee that the product will always operate appropriately in that range.

(4) The specifications / appearance and accessories of Sunmulon products listed in catalogs are subject to change or termination of sales without notice, for improvemnet or other reasons.

(5) The content of catalogs is subject to change without notice.

2. Note on applications

(1) If using Sunmulon products in combination with other products, confirm the following suitability by yourself. Sunmulon shall provide no guarantees regarding the combination suitability.
   (a) Regulations, satndards, or laws to which your machinery, equipment, ect. must conform
   (b) Functionality and safety of your machinery and equipment

(2) Wiring and installation that ensures the Sunmulon product used in your system, machine, device, or the like can perform and function according to its specifications.

(3) When using Sunmulon products, be cautious when implementing the following.
   (a) Use of Sunmulon products with sufficient allowance for rating and performance.
   (b) Safety design, including redundant design and malfunction prevention design that prevents other danger and damage even in the event that Sumulon product fails.

(4) Sunmulon products are designed and manufactured as general-purpose products for general industrial products. They are not intended for use in the following applications, and in the event that you use Sunmulon product for these applications, unless otherwise agreed upon between you and Sunmulon, Sunmulon shall provide no guarantees whatsoever regarding Sunmulon products.
   (a) Safety devices intended for human body protection
   (b) Direct control of transport equipmnt (railroads / airplanes / ships / vehicles / vehicle instruments, etc.)
   (c) Space equipment, submarine equipment
   (d) Nuclear power control equipment, radiation related equipment
   (e) Combustion equipment, electric heat equipment
   (f) Disaster prevention and security equipment
   (g) Elevating equipment
   (h) Amusement facilities
   (i) Facilities subject to government or industry regulations
   (j) Use in applications that require a high degree of safety, any other equipment, instruments, or the like that could endanger life or human health

3. Warranty

(1) The warranty period for Sunmulon products shall be 1 year after purchase or delivery to the specified location.

(2) Warranty scope should a failure occur in Sunmulon product during the above warranty period for reasons attributable to Sunmulon, then Sunmulon shall provide that product, free of charge, the same quantity. Further, in no event shall liability of Sunmulon exceed the individual price of the product on which liability is asserted.

(3) Failures cause by the following reasons shall be deemed outside the scope of this warranty.
   (a) The product was handled or used deviating from conditions / environment listed in the catalogs
   (b) The failure was caused by reasons other than Sunmulon product
   (c) Modification or repair was performed by a party other than Sunmulon
   (d) Replacement of maintenance parts, installation of accessories, or the like was not performed properly in accordance with the user's manual and catalogs
   (e) The failure could not have been predicted with the scientific and technical standards at the time when the product was shipped from Sunmulon
   (f) The failure was due to other causes not attributable to Sunmulon (including cases of force majeure such as natural disasters and other disasters)
(4) The warranty listed in this Safety Precautions is the full and complete warranty for Sunmulon products, and Sunmulon shall bear no liability whatsoever regarding special damages, indirect damages, incidental damages, or passive damages that occurred due to Sunmulon product.

4. Handling precautions for 7-Segment display

(1) Note that if the storage temperature range is exceeded, the product may not operate properly even if it is returned to within the specified operating temperature range.

(2) Note that the LSI used internally may be destroyed by the floating or latch-up if each signal is input before the VDD is stabilized.

(3) The power input and control signal sections are not equipped with protection circuits, so do not apply electrical stress such as power supply fluctuations (ripple currents and voltages), lightning surges, and noise reverse voltages.
If the element is damaged, it may cause smoke, fire, or burnout. Be sure to use with a protection circuit.

(4) Wire the terminals with correct polarity. Connecting connectors backwards may cause a power short, resulting in burnout.

(5) Turn off the power to the product before starting installation, removal, wiring, maintenance, or inspection. Failure to turn power off may cause electrical shock or fire.

(6) Be careful of electrostatic breakdown when handling.

(7) Do not drop or otherwise apply strong force to the 7-Segment display.

(8) Do not place heavy objects on the switch.

(9) The product should be mounted on a solid surface.

(10) Do not use the switch under loads that exceed the rated switching capacity or other contact ratings. Doing so may result in welding of the contact, or burnout accidents.

(11) Assemble correctly according to the handing instructions. Do not assemble or disassemble the product other than as described in the catalog, as this may cause defects or accidents.

(12) Illumination
(a) Do not apply a voltage between the LED terminal that is greater than the rated voltage. Doing so may damage the LED, cause lighting failure.
(b) LEDs cannot be lit directly by AC circuit should be provided rectifier smoothing circuit for products other than AC input type.

Correct   Incorrect
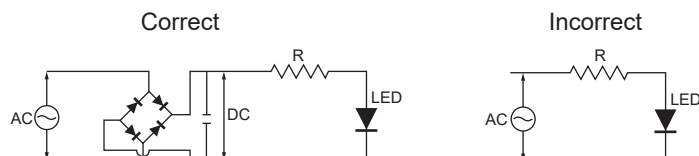
(13) Wiring
(a) Avoid wiring input lines in parallel with high-voltage lines and power lines, and use ceded wires and metal tubes for noise suppression.
(b) When tighting terminals or connecting connectors, do not apply more force than necessary form the back side.
   Support the 7-Segment display with one hand as it may slip out of the front of the panel.
(c) Use the applicable connectors listed in the catalog for each model.

(14) Terminology explained
(a) With or without Photocoupler The interface with the user side is isolated by specifying with photocoupler to prevent malfunction from noise. It is especially effective for long-distance transmission, which is vulnerable to noise. (AD series)
(b) Positive logic, Negative logic Applies to BCD code entry only. The input circuit is pulled up. When the user side indicates 0 on input with an open collector output circuit, a positive logic turns on all transistors for inputs A to D. Negative logic turns off all transistors for inputs A to D.
(c) Decoder driver This circuit converts the input of BCD code into a signal to drive 7-Segment LED.
(d) Data latch The 4 bits of data from A to D must be in the holding sate. If LE is set to H (or open), the display will not change even if data comes in later.
(e) Data through The 4 bits of data from A to D must be in the read state. When LE is set to L (GND), the display changes as the data input changes.

(15) Usage environment
(a) Do not use in the presence of flammable or explosive gases such as gasoline, thinner, LPG, etc.
(b) Avoid using the product in places where corrosive or silicon gas is generated, high temperature, high humidity, sea breeze or direct sunlight.
(c) Provide appropriate protection when using the product in places where it is exposed to water, oil, metal powder, or dust.
(d) Do not use the product in a place subject to vibration or shock. It may cause malfunction or damage.
(e) When installed in a close grouping or continuously lit, the ambient temperature may exceed the specified value due to heat generation. Take measures such as ventilation and lowering the operating voltage.
(f) When checking the actual equipment, load conditions and operating environment should be the same as the actual operating conditions.
(g) The ambient temperature for storage is －25℃ to 65 ℃ (No freeze, no condensation).

(16) When wiping off dirt on the exterior of the 7-Segment display and accessories such as side plates, wipe lightly with a soft, dry cloth. Organic solvents such as thinner, benzene, alcohol, or other acidic chemicals may cause deformation, discoloration, or malfunction.

(17) Store the product away from malignant gases, dust, high temperature and high humidity, and keep it in our packing condition.

(18) Periodic inspection and replacement
(a) Although mechanical and electrical durability are listed in the specifications column, deterioration of various parts (deterioration of resins and corrosion of metal parts) is possible due to the operating environment and method of use. We ask that you implement inspections for Sunmulon products to prevent accidents from occurring by conducting periodic inspections and replacements.

(19) Service scope
The price of Sunmulon products do not include the cost of services, such as dispatching technicians.