

# DC VOLTMETER & AMMETER

## AP-101

\*Standard 3 1/2 Digit



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-101-11	±199.9mV	100μV	100MΩ	±250V
AP-101-12	±1.999 V	1mV	100MΩ	±250V
AP-101-13	±19.99 V	10mV	10MΩ	±250V
AP-101-14	±199.9 V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit (23°C±5°C)

### DC Current Measurement

Model	Range	Maximum Resolution	Internal Resistance	Input Protection
AP-101-21	±199.9μA	100nA	1kΩ	±10mA
AP-101-22	±1.999mA	1μA	100Ω	±50mA
AP-101-23	±19.99mA	10μA	10Ω	±150mA
AP-101-24	±199.9mA	100μA	1Ω	±500mA
AP-101-25	±1.999A	1mA	0.1Ω	±3A

Accuracy: ±0.2% rdg. ±1 digit (23°C±5°C)  
±0.3% rdg. ±1 digit only for AP-101-25

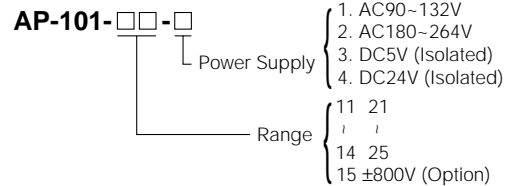
### Specifications

Input Configuration:	Single Ended
Input Bias Current:	50pA (Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	TYP. 40dB (50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 14.2mm 3 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 1999 flashes.
Power Supply:	AC90~132V AC180~264V DC5V±5%, 100mA (Max.) DC24V±20%, 30mA (Max.)
Operating Temperature:	0~50°C, 35 to 85% RH
Power Consumption:	1.5VA
Dimensions:	48(H) × 96(W) × 73(D)mm DIN Size
Weight:	Approx. 150g (For AC), 85g (For DC)
Dielectric Strength:	AC type: Between input (Lo) terminal and earth, DC500V Between power supply terminal and input terminal, earth, common, case, AC1500V/1 min. DC type: Between input (Lo) and power supply (0V), DC±500V
Insulation Resistance:	DC500V 100MΩ at above terminals

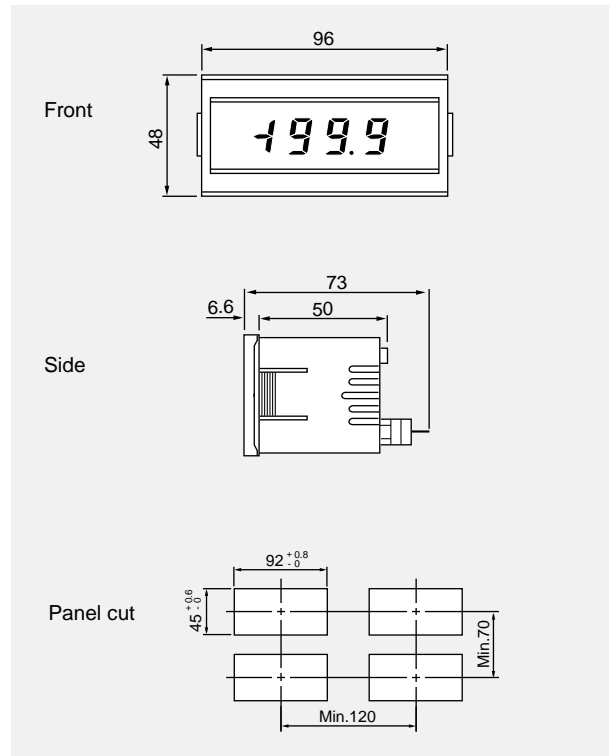
### Features

- Low Cost
- Bright LED 14.2mm (Red)
- AC180~264V, 90~132V, DC5V, DC24V
- 200mV~200V, 200μA~2A Measurement
- ±800V Measurement (option)

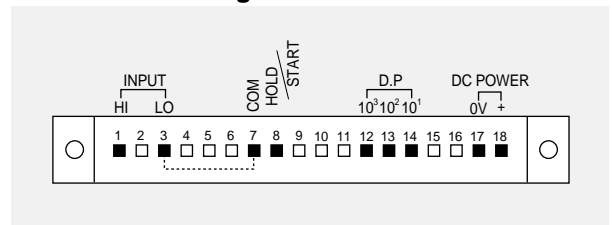
### Ordering Code



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-102

### \*BCD Output(Optional)



### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-102-10	±19.99mV	10μV	100MΩ	±250V
AP-102-11	±199.9mV	100μV	100MΩ	±250V
AP-102-12	±1.999V	1mV	100MΩ	±250V
AP-102-13	±19.99V	10mV	10MΩ	±250V
AP-102-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit (23°C±5°C)

### ■ DC Current Measurement

Model	Range	Maximum Resolution	Internal Resistance	Input Protection
AP-102-21	±199.9μA	100nA	1kΩ	±10mA
AP-102-22	±1.999mA	1μA	100Ω	±50mA
AP-102-23	±19.99mA	10μA	10Ω	±150mA
AP-102-24	±199.9mA	100μA	1Ω	±500mA
AP-102-25	±1.999A	1mA	0.1Ω	±3A

Accuracy: ±0.2% rdg. ±1 digit(23°C±5°C)  
±0.3% rdg. ±1 digit only for AP-102-25

### ■ Specifications

Input configuration: Single Ended  
 Input Bias Current: 50PA(Typ.)  
 Conversion Rate: 2.5/sec or 12.5/sec(50Hz), 15/sec(60Hz)  
 Normal Mode Rejection: More than 40dB(50/60Hz)  
 Zero Stability: Automatic Zero Adjustment  
 Display: LED, 14.2mm 3 1/2 -digit  
 Polarity: A " - " is displayed automatically  
 Decimal Point: Settable to any digit position  
 Overrange Indication: When input exceeds the maximum display, 1999 or -1999 flashes.  
 Power Supply: AC90~132V, AC180~264V, DC5V±5%  
 Operating Temperature: 0~50°C, 35 to 85%RH  
 Power Consumption: 1.5VA  
 Dimensions: 48(H) × 96(W) × 73(D)mm DIN Size  
 Weight: Approx. 150g(For AC), 85g(For DC)  
 Dielectric Strength: AC type:Between input(Lo)terminal and earth, DC500V  
 Between power supply terminal and input terminal, earth, common, case, AC1500V/1 min.  
 DC type:Between input(Lo)and power supply(OV), DC500V  
 Insulation Resistance: DC500V 100MΩ at above terminals

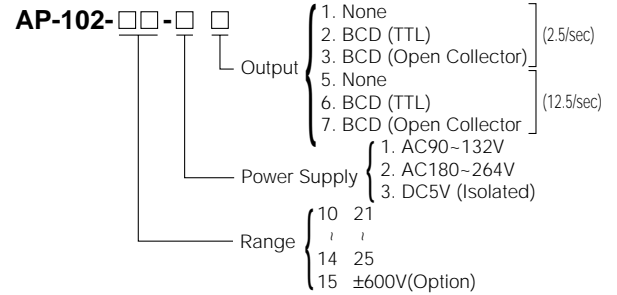
### ■ BCD Data Output (Isolated from input (Lo))

Measured data: Tri-state parallel BCD positive logic latch output  
 Polarity signal: " 1 " level at plus input  
 " OVER " signal: " 1 " level at overflow input  
 Printing command signal: A positive pulse of approx 1ms at every measurement completion  
 Each signal of the above: TTL level Fanout=2  
 \*Each signal of the above can be changed to negative logic

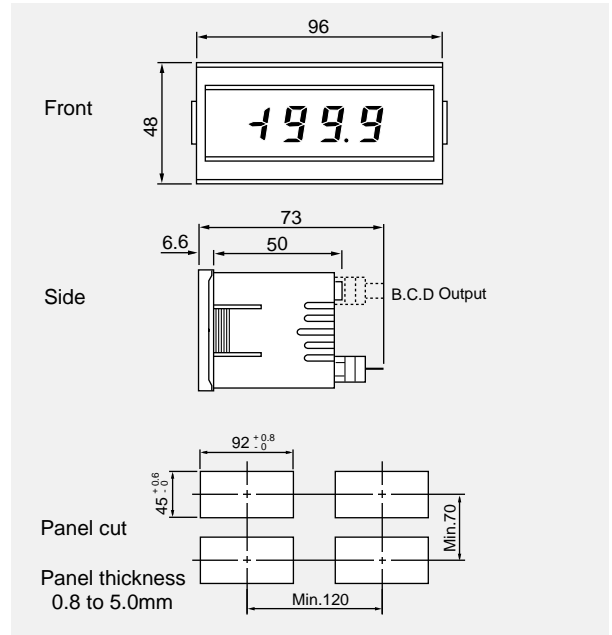
### ■ Features

- BCD(option)
- Bright LED 14.2mm(Red)
- AC180~264V, 90~132V, DC5V
- 20mV~200V, 200μA~2A Measurement
- ±600V Measurement(option)
- BCD Open Collector available

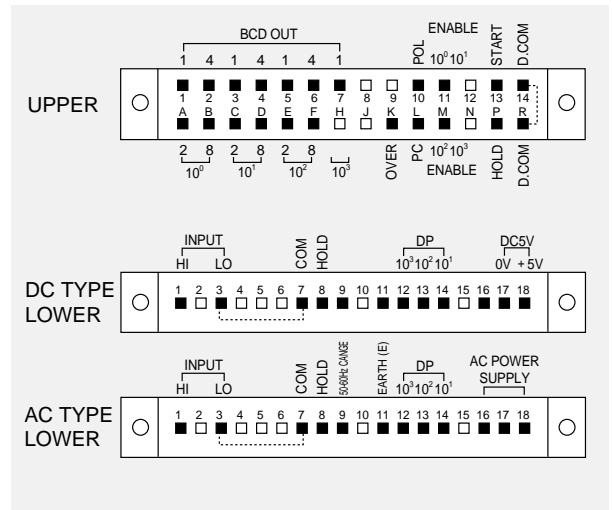
### ■ Ordering Code



### ■ Dimensions



### ■ Connection Diagram



# DC VOLTMETER & AMMETER

## AP-141

\*Standard 4 1/2 Digit



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-141-12	±1.9999V	100μV	100MΩ	±100V
AP-141-13	±19.999V	1mV	1MΩ	±250V
AP-141-14	±199.99V	10mV	1MΩ	±500V

Accuracy: ±0.03% rdg ±1 digit (23°C ±5°C)

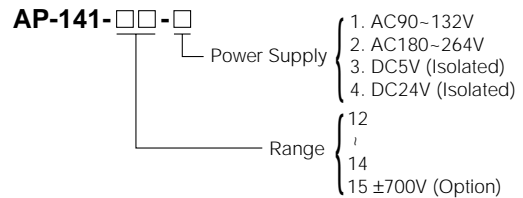
### Specifications

Input configuration:	Single Ended
Input Bias Current:	100PA(Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	More than 50dB(50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 14.2mm 4 1/2 -digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 0000 or -0000 flashes
Power Supply:	AC90~132V AC180~264V DC5V±5% 150mA (Max.) DC24V±20% 35mA (Max.)
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	2VA
Dimensions:	48(H) × 96(W) × 73(D)mm DIN Size
Weight:	Approx. 160g(For AC), 90g(For DC)
Dielectric Strength:	AC type: Between input(Lo) terminal and earth, DC500V Between power supply terminal and input terminal, earth, common, case, AC1500V/1 min. DC type: Between input(Lo) and power supply(0V), DC500V
Insulation Resistance:	DC500V 100MΩ at above terminals

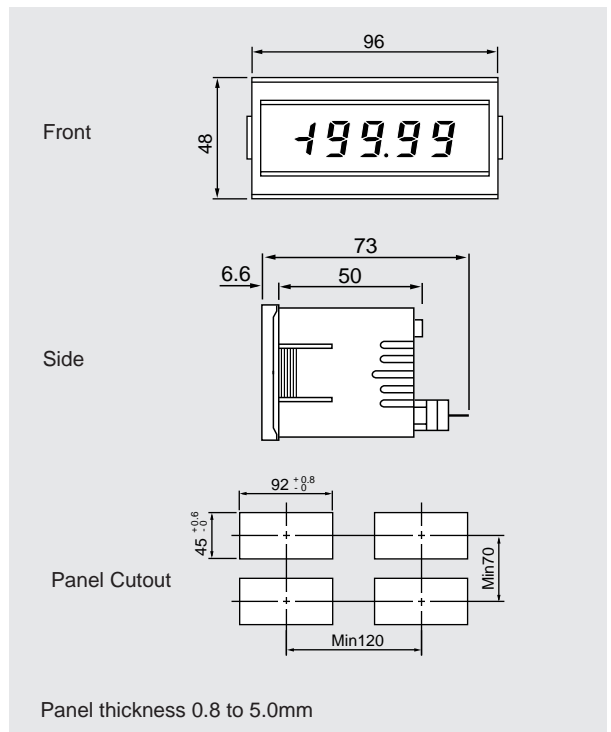
### Features

- Low Cost
- Bright LED 14.2mm(Red)
- AC180~264V, 90~132V, DC5V, DC24V
- 2V~200V Measurement
- ±700V Measurement(Optional)

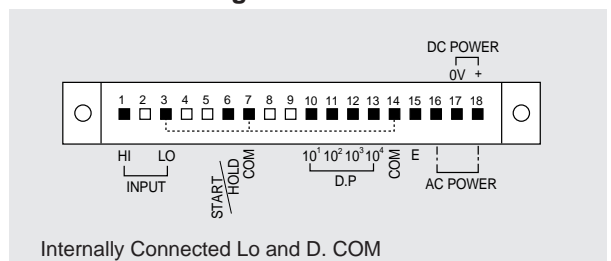
### Ordering Code



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-142

### \*BCD Output (Option)



### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-142-11	±199.99mV	100μV	100MΩ	±250V
AP-142-12	±1.9999V	100μV	100MΩ	±250V
AP-142-13	±19.999V	1mV	1MΩ	±250V
AP-142-14	±199.99V	10mV	1MΩ	±500V

Accuracy: ±0.03%rdg ±1digit (23°C±5°C)

### ■ Specifications

Input Configuration:	Single Ended
Input Bias Current:	100PA (Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	More than 50dB (50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED 14.2mm 4 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 0000 or -0000 flashes.
Power Supply:	AC90~132V AC180~264V DC5V ±5%, 170mA (Max.)
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	2VA
Dimensions:	48(H) × 96(W) × 73(D)mm DIN Size
Weight:	Approx. 190g (For AC), 125g (For DC)
Dielectric Strength:	AC type: Between input (Lo) terminal and earth, DC ±500V Between power supply terminal and input terminal, earth, common, case, AC1500V/1 min. DC type: Between input (Lo) and power supply (OV), DC ±500V
Insulation Resistance:	DC500V 100MΩ at above terminals

### ■ BCD Data Output (Isolated from input (Lo))

• At Open Collector (option)	
Measured data:	Negative logic transistor "ON" at logic "1"
Polarity signal:	Transistor "ON" at plus input
" OVER " signal:	Transistor "ON" at overflow input
Printing command signal:	Transistor "ON" during a period of approx. 1ms at every measurement completion
Transistor output capacity:	Applied voltage, 30V max. current, 10mA max. Saturated output voltage less than 1.2V at 10mA
(NPN)	

• At TTL level	
Measured data:	Tri-state parallel BCD positive logic latch output
Polarity signal:	"1" level at plus input
"OVER" signal:	"1" level at overflow input
Printing command signal:	A positive pulse of approx 1ms at every measurement completion

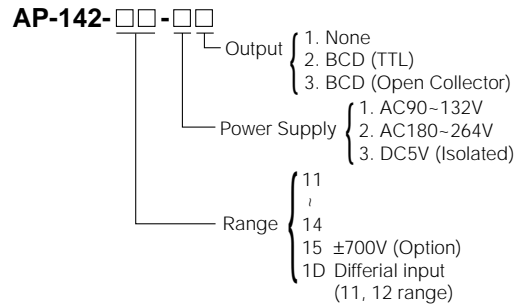
Each signal of the above: TTL level Fanout= 2

\*Each signal of the above can be changed to negative logic

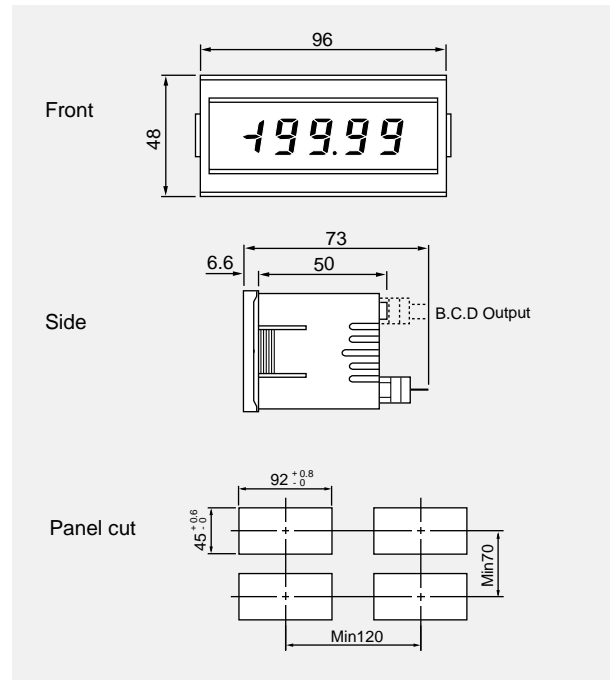
### ■ Features

- BCD (Option)
- Bright LED 14.2mm (Red)
- AC180~264V, 90~132V, DC5V
- 200mV~200V Measurement
- ±700V Measurement (option)
- Current Measurement (option)
- BCD Open Collector available (option)

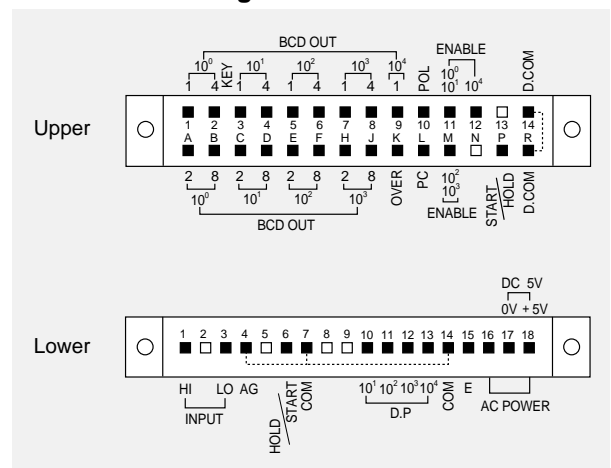
### ■ Ordering Code



### ■ Dimensions



### ■ Connection Diagram



# DIGITAL PANEL METER

## AP-200

NEW



### ■ Features

- Low cost
- Screw terminal
- 1/32 DIN size, Depth 39.7mm
- 200mV ~ 200V measurement

### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-200-11	± 199.9mV	100uV	100MΩ	± 100V
AP-200-12	± 1.999V	1mV	100MΩ	± 100V
AP-200-13	± 19.99V	10mV	10MΩ	± 250V
AP-200-14	± 199.9V	100mV	10MΩ	± 500V

Accuracy: ±(0.1% of rdg + 1 digit) (23°C ± 5°C, 35to85%RH)  
Stability max 2 digit for only AP-200-11

### ■ Specifications

Input configuration:	Single Ended
Input Bias:	50PA(TYP)
Conversion Rate:	2.5/sec
Display:	LED, 10.16mm (Red)
Polarity:	A "-" is displayed automatically
Decimal point:	Settable to any digit position
Overrange Indication:	Flashes 1999 or -1999
Power Supply:	DC5V ± 5%
Operating Temperature:	0~50°C 35 to 85%RH
Power Consumption:	Approx 60mA (TYP)
Dimensions:	48(W)×24(H)×39.7(D)mm DIN size
Weight:	Approx. 30g
Dielectric Strength:	Between LO and case, DC1500V/min.
Insulation Resistance:	Between LO and case, DC500V more than 500 Ω

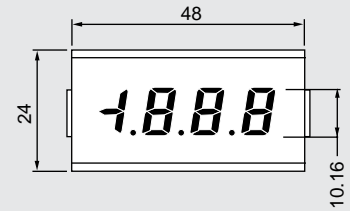
### ■ Ordering Code

AP-200-□ □

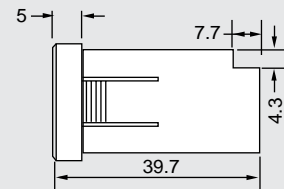
Range

### ■ Dimensions

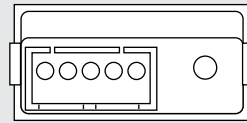
Front



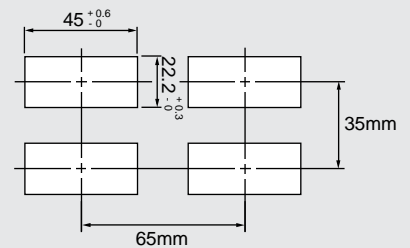
Side



Back

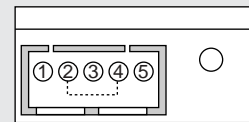


Panel cutout



Panel thickness 0.8 to 3.5mm

### ■ Connection Diagram



Terminal No.	Description
1	Input HI
2	Input LO
3	HOLD
4	Power supply 0V
5	Power supply +5V

# DC VOLTMETER & AMMETER

## AP-201A

\*Standard 3 1/2 Digit



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-201A-11	±199.9mV	100μV	100MΩ	±100V
AP-201A-12	±1.999V	1mV	100MΩ	±100V
AP-201A-13	±19.99V	10mV	10MΩ	±250V
AP-201A-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit (23°C±5°C) Stability Max. 2 digits for only AP-201A-11

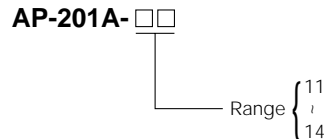
### Specifications

Input configuration:	Single Ended.
Input Bias Current:	50PA(Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	40dB(Typ.)(50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 10.2mm 3 1/2 -digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	Flashes 1 or -1 of the most significant digit for an input signal exceeding the maximum display range.
Power Supply:	DC5V±5%, 60mA
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	Approx. 60mA
Dimensions:	24(H) × 48(W) × 73(D)mm DIN Size
Weight:	Approx. 40g
Dielectric Strength:	Between input(Lo) terminal and mounted plate. AC1500V/1 min.
Insulation Resistance:	DC500V 100MΩ at above terminals

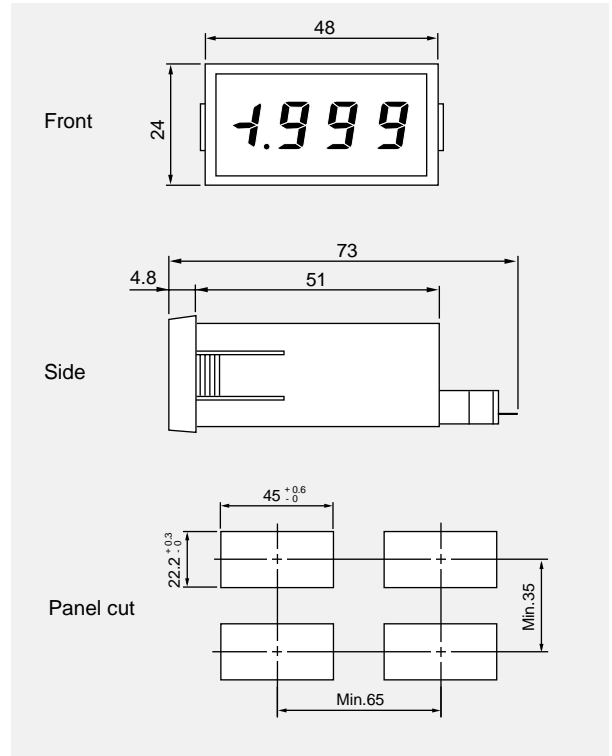
### Features

- Low Cost
- Bright LED 10.2mm(Red)
- DC5V(Non-Isolated)
- 200mV~200V Measurement

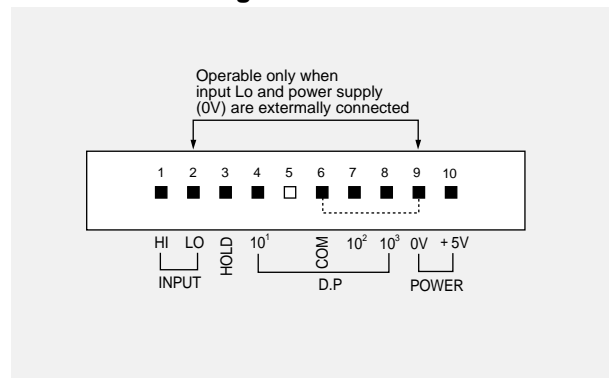
### Ordering Code



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-202A

### \*ISOLATED Power Supply



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-202A-11	±199.9mV	100μV	100MΩ	±100V
AP-202A-12	±1.999V	1mV	100MΩ	±100V
AP-202A-13	±19.99V	10mV	10MΩ	±250V
AP-202A-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit (23°C ±5°C)

### DC Current Measurement

Model	Range	Maximum Resolution	Input Resistance	Input Protection
AP-202A-21	±199.9μA	100nA	1kΩ	±10mA
AP-202A-22	±1.999mA	1μA	100Ω	±50mA
AP-202A-23	±19.99mA	10μA	10Ω	±150mA
AP-202A-24	±199.9mA	100μA	*1Ω	±500mA
AP-202A-25	±1.999A	1mA	*0.1Ω	±3A

Accuracy: ±0.2% rdg. ±1 digit (23°C ±5°C)  
±0.3% rdg. ±1 digit only for AP-202A-25

\* These resistors are connected to the outside of the unit.

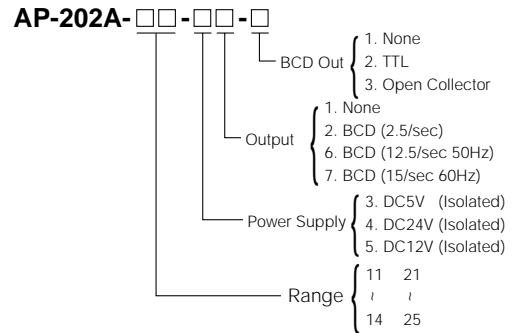
### Specifications

Input Configuration:	Single Ended
Input Bias Current:	50pA (Typ.)
Conversion Rate:	2.5/sec or 12.5/sec (50Hz), 15/sec (60Hz)
Normal Mode Rejection:	40dB (Typ.) (50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 10.2mm 3 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 1999 flashes.
Power Supply:	DC5V ±5%, 120mA DC12V ±20%, 50mA DC24V ±20%, 25mA
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	650 mW
Dimensions:	24(H) × 48(W) × 73(D)mm DIN Size
Weight:	Approx. 50g
Dielectric Strength:	Between Input (Lo) terminal and power supply (0V), DC ±500V Between power supply terminal and case, AC1500V/1 min.
Insulation Resistance:	DC500V 100MΩ at above terminals

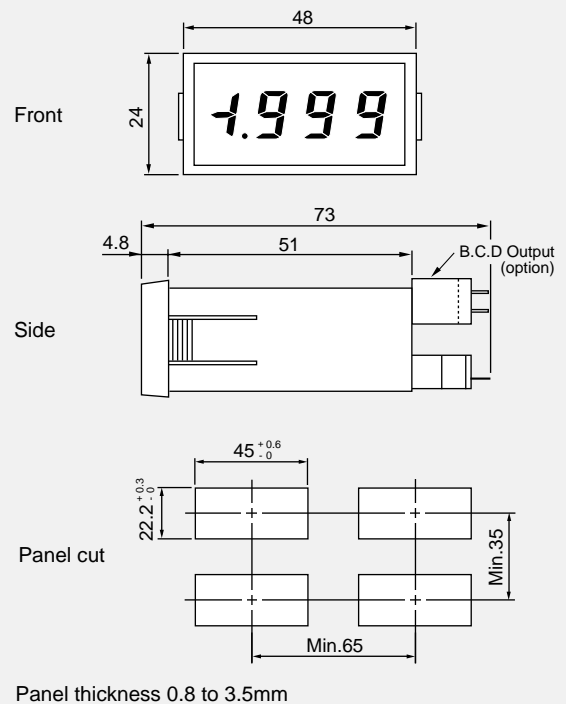
### Features

- BCD (option)
- DC5V, DC12V, DC24V (Isolated)
- Bright LED 10.2mm (Red)
- Conversion Rate 2.5/sec or 12.5/sec (50Hz), 15/sec (60Hz)
- 200mV~200V, 200μA~2A Measurement

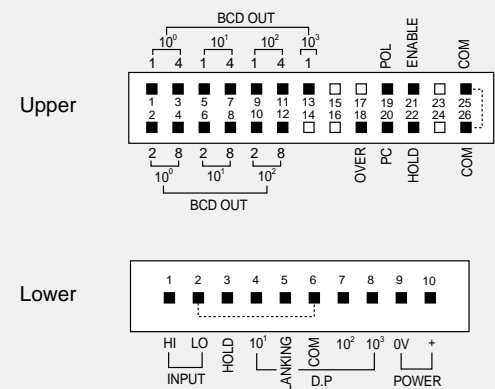
### Ordering Code



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-241A

\*Standard 4 1/2 Digit



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-241A-12	±1.9999V	100μV	100MΩ	±100V
AP-241A-13	±19.999V	1mV	1MΩ	±250V
AP-241A-14	±199.99V	10mV	10MΩ	±500V

Accuracy: ±0.03% rdg ±1 digit (23°C±5°C)

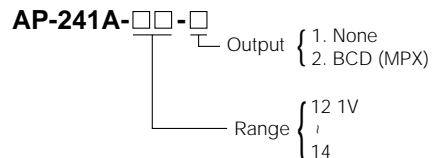
### Specifications

Input configuration:	Differential(12-range), Single Ended(13/14-range)
Input Bias Current:	100PA (Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	More than 50dB(50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 8mm 4 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 0000 flashes
Power Supply:	DC5V±5%, 75mA(Max)
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	Approx. 375mW
Dimensions:	24(H) × 48(W) × 73(D)mm DIN Size
Weight:	Approx. 55g
Dielectric Strength:	Between input terminal(Lo)and case AC 1500 V/1min.
Insulation Resistance:	DC500V 100MΩ at above terminals

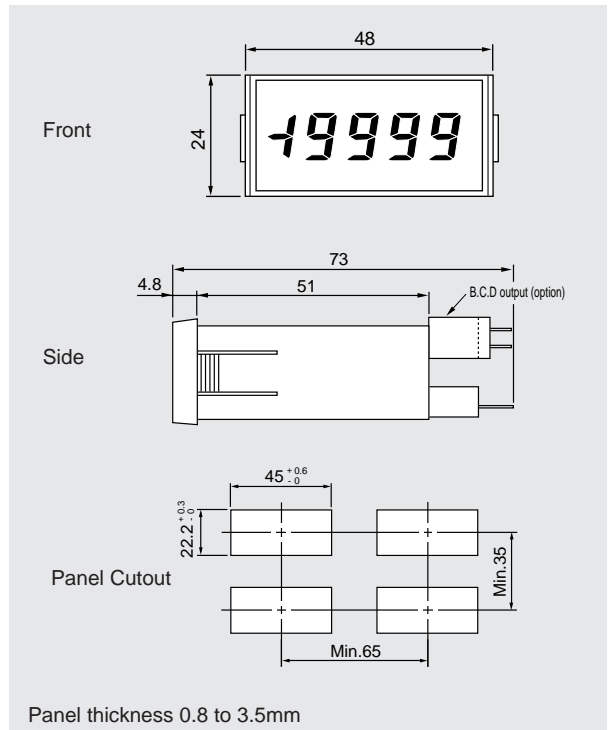
### Features

- BCD(MPX)(option)
- DC5V(Non-Isolated)
- Bright LED, 8mm(Red)
- 2V~200V Measurement

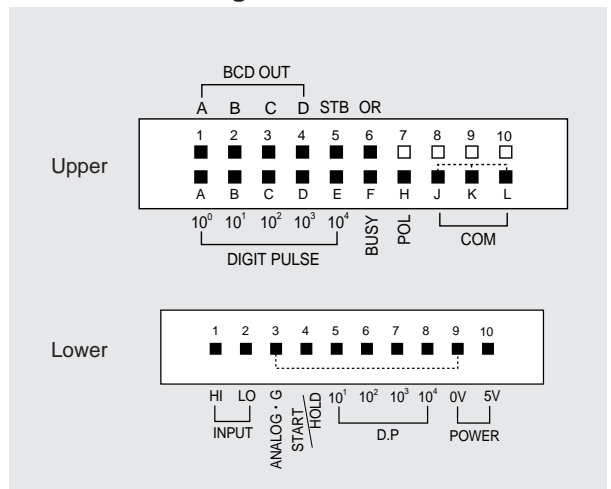
### Ordering Code



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-242A

### \*ISOLATED Power Supply



### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-242A-12	±1.9999V	100μV	100MΩ	±100V
AP-242A-13	±19.999V	1mV	1MΩ	±250V
AP-242A-14	±199.99V	10mV	1MΩ	±500V

Accuracy: ±0.03% rdg ±1 digit (23°C±5°C)

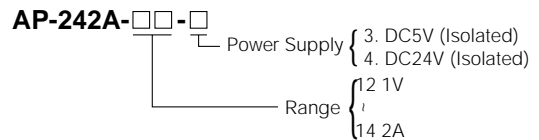
### ■ Specifications

Input Configuration:	Differential (12-range), Single Ended (13/14-range)
Input Bias Current:	100pA (Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	More than 50dB (50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 8mm 4 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 0000 flashes.
Power Supply:	DC5V ±5% DC24V ±20%
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	Approx. 500 mW
Dimensions:	24(H) × 48(W) × 73(D)mm DIN Size
Weight:	Approx. 55g
Dielectric Strength:	Between input (Lo) terminal and mounted plate. AC1500V/1 min. Between power supply (0V) and input (Lo) terminal, DC500V
Insulation Resistance:	DC500V 100MΩ at above terminals

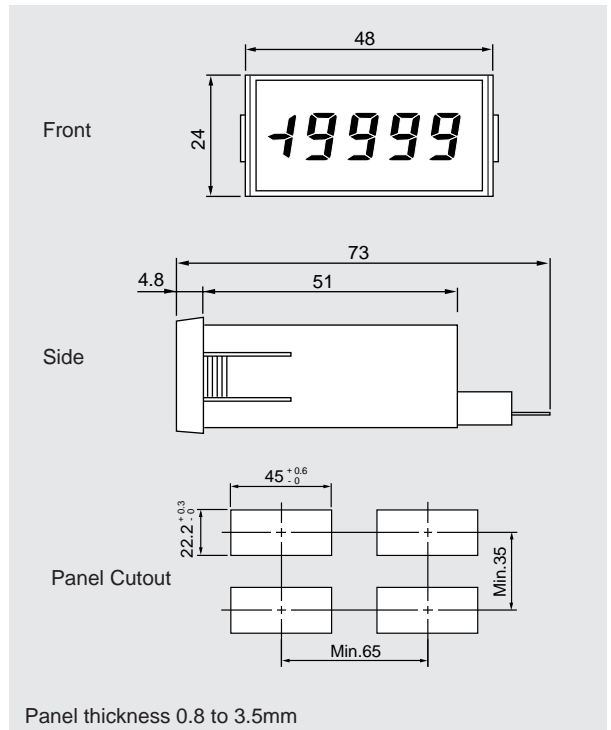
### ■ Features

- Low Cost
- DC5V, DC24V (Isolated)
- Bright LED, 8mm (Red)
- 2V~200V Measurement

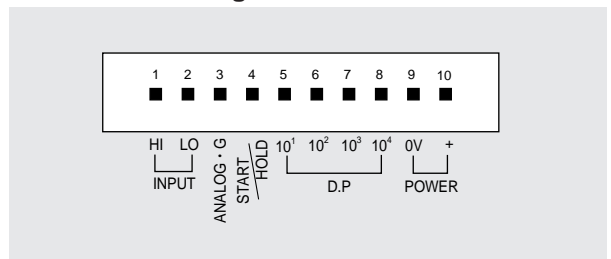
### ■ Ordering Code



### ■ Dimensions



### ■ Connection Diagram



# DC VOLTMETER & AMMETER

## AP-244

### \*BCD Output(Option)



### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-244-12	±1.9999V	100μV	1MΩ	±100V
AP-244-13	±19.999V	1mV	1MΩ	±250V
AP-244-14	±199.99V	10mV	1MΩ	±500V

Accuracy:±0.03% rdg ±1 digit (23°C±5°C)

### ■ Specifications

Input Configuration:	Single ended
Input Bias Current:	100PA(Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	NMR50dB(50/60Hz)
Display:	LED 8mm 4 1/2 digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 0000 flashes
Power Supply:	5VDC±5%, 24VDC±20%
Operating Temp.:	0~50°C, 35 to 85%RH
Power Consumption:	120mA at 5VDC(Max.) 30mA at 24VDC(Max.)
Dimensions:	24(H) × 48(W) × 87(D)mm Din size
Weight:	50g
Dielectric Strength:	Between input(Lo)terminal and mounted plate, AC1500V/1 min. Between input(Lo)terminal and power supply(0V), 500VDC/1 min.

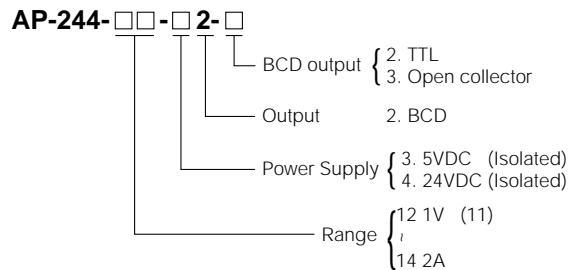
### ■ BCD Data Output(Isolated from input(Lo))

•At Open collector	
Measured data:	Negative logic transistor "ON" at logic "1"
Polarity signal:	Transistor "ON" at plus input
"OVER" signal:	Transistor "ON" at overflow input
Printing command signal:	Transistor "ON" during a period of approx. 100 to 200ms at every measurement completion
Transistor output capacity:	Applied voltage, 30V max current, 10mA max Saturated output voltage less than 1.2V at 10mA
•AT TTL level	
Measured data:	Tri-state parallel BCD positive logic latch output
Polarity signal:	"1" level at plus input
"OVER" signal:	"1" level at overflow input
Printing command signal:	A positive pulse of approx 100 to 200ms at every measurement completion
Each signal of the above:	TTL level Fanout=2
* Each signal of the above can be changed to negative logic	

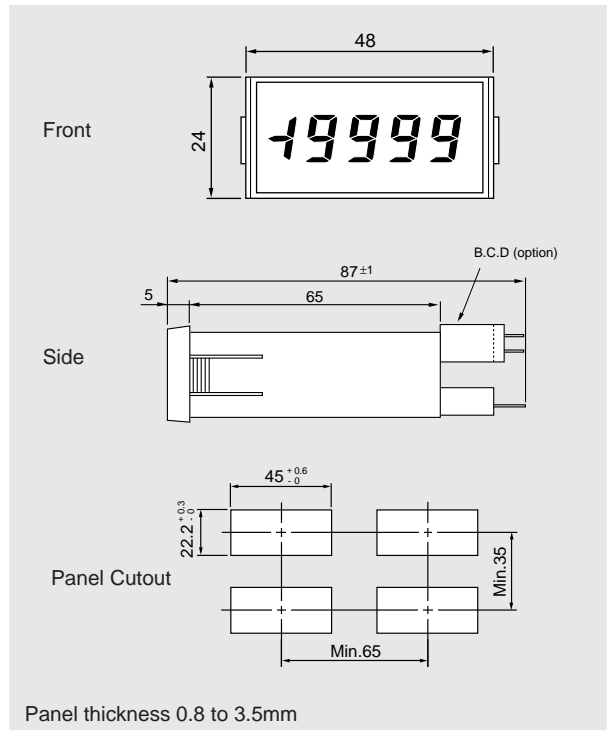
### ■ Features

- 5V, 24VDC(Isolated)
- Bright LED, 8mm(Red)
- 2V to 200V Measurement
- BCD Output(option)

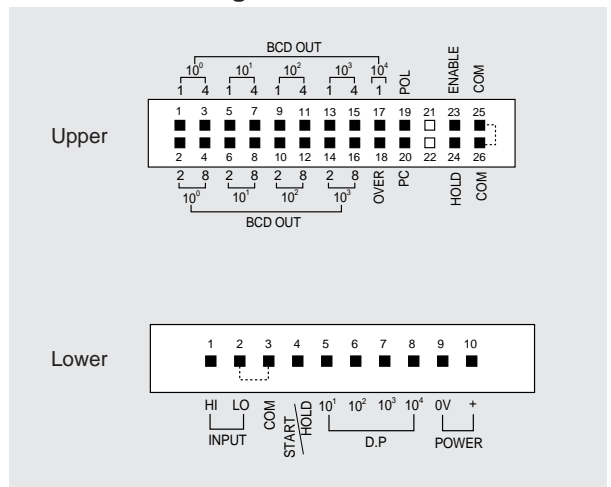
### ■ Ordering Code



### ■ Dimensions



### ■ Connection Diagram



# DC VOLTMETER & AMMETER

## AP-301

\*Compact Size, 14.2mm LED



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-301-11	±199.9mV	100μV	100MΩ	±100V
AP-301-12	±1.999V	1mV	100MΩ	±100V
AP-301-13	±19.99V	10mV	10MΩ	±250V
AP-301-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit (23°C ±5°C)

### Specifications

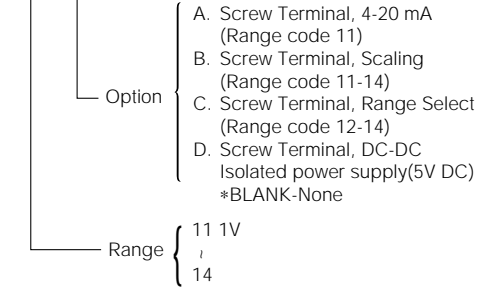
Input Configuration:	Single Ended
Input Bias Current:	50PA (Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	40dB (Typ.) (50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 14.2mm 3 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 1999 flashes
Power Supply:	DC5V ±5%, 80mA (Max.)
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	400mW
Dimensions:	36(H) × 72(W) × 29(D)mm DIN Size
Weight:	Approx. 35g
Dielectric Strength:	Between input (Lo) terminal and case, AC1500V/1 min. Between input (Lo) terminal and power supply (0V), DC500V
Insulation Resistance:	DC500V 100MΩ at above terminals

### Features

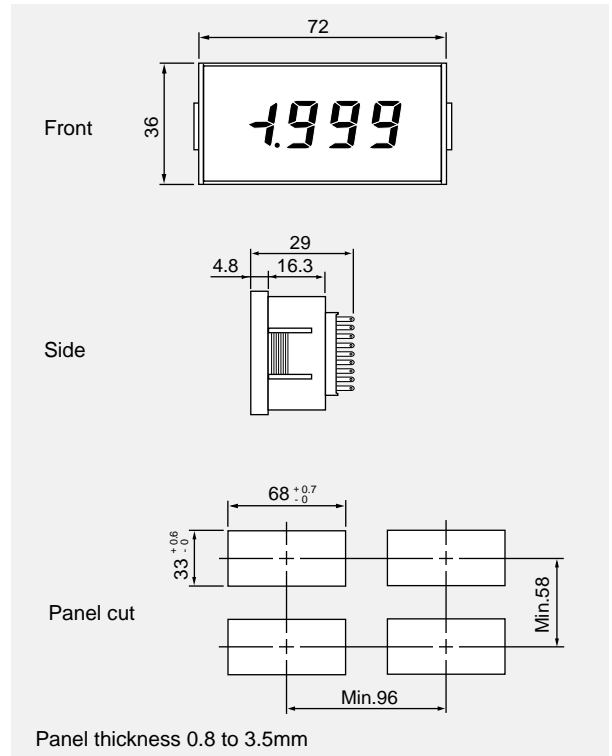
- Compact Size, 36(H) × 72(W) × 29(D)mm
- Bright LED, 14.2mm (Red)
- DC5V(Non-Isolated)
- 200mV~200V Measurement
- Isolated DC24V Available (Option A or D)

### Ordering Code

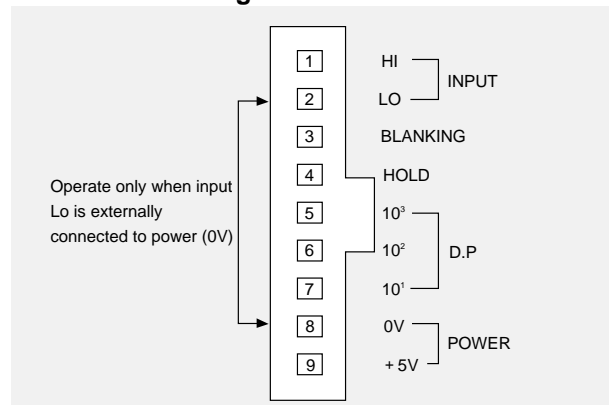
AP-301-□□-□



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-310

\*Compact Size, 14.2mm LED



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-310-11	±199.9mV	100μV	100MΩ	±250V
AP-310-12	±1.999V	1mV	10MΩ	±250V
AP-310-13	±19.99V	10mV	10MΩ	±250V
AP-310-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg ±1 digit (23°C±5°C)

### DC Current Measurement

Model	Range	Maximum Resolution	Internal Resistance	Input Protection
AP-310-21	±199.9μA	100nA	1kΩ	±10mA
AP-310-22	±1.999mA	1μA	100Ω	±50mA
AP-310-23	±19.99mA	10μA	10Ω	±150mA
AP-310-24	±199.9mA	100μA	1Ω	±500mA
AP-310-25	±1.999A	1mA	0.1Ω	±3A

Accuracy: ±0.2% rdg ±1 digit (23°C±5°C)  
±0.3% rdg ±1 digit for AP-310-25

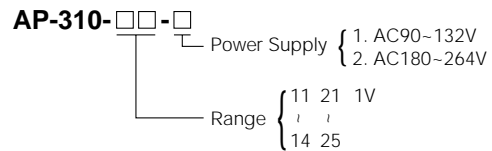
### Specifications

Input Configuration:	Single Ended
Input Bias Current:	50PA(Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	40dB(Typ.)(50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 14.2mm 3 1/2 digit
Decimal Point:	Settable to any digit position
Polarity:	A "-" is displayed automatically
Overrange Indication:	When input exceeds the maximum display, flashes 1 or -1 at 10 <sup>3</sup> .
Power Supply:	AC90~132V AC180~264V
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	1.5VA
Dimensions:	36(H) × 72(W) × 110(D)mm DIN Size
Weight:	Approx. 200g
Dielectric Strength:	Between power supply and input terminal, earth, COM AC1500V/1 min.
Insulation Resistance:	DC500V 100MΩ at above terminals

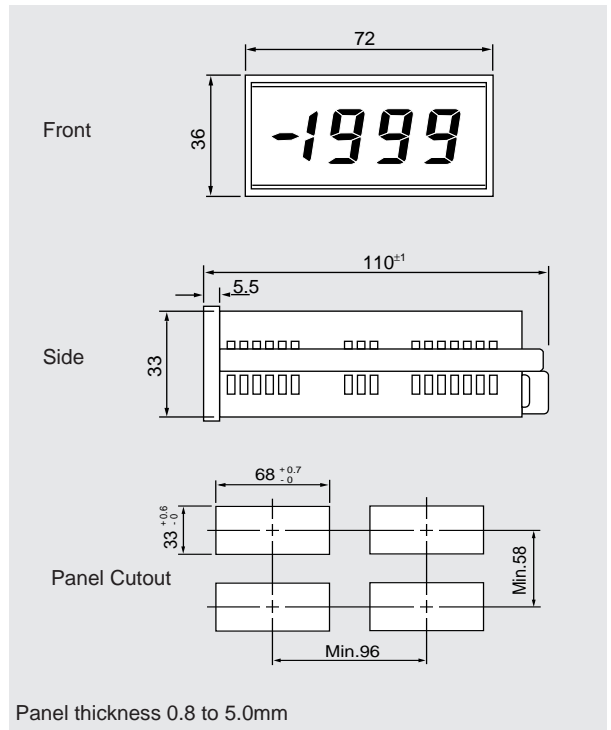
### Features

- Bright LED 14.2mm(Red)
- AC90~132V, AC180~264V
- 200mV~200V, 200μA~2A Measurement
- Compact Size, 36(H) × 72(W) × 110(D)mm
- Screw terminal

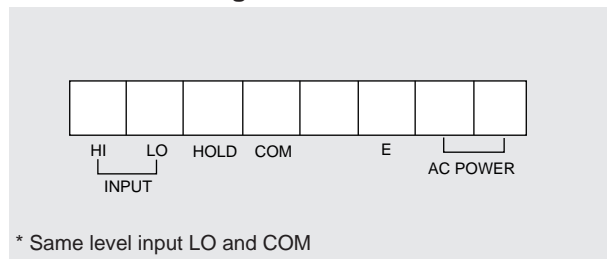
### Ordering Code



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-341

BCD Output(Option), 14.2mm LED



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-341-11	±199.99mV	10μV	100MΩ	±250V
AP-341-12	±1.9999V	100μV	100MΩ	±250V
AP-341-13	±19.999V	1mV	1MΩ	±250V
AP-341-14	±199.99V	10mV	1MΩ	±500V

Accuracy: ±0.03% rdg ±1 digit (23°C±5°C)

### Specifications

**Input Configuration:** Single Ended  
**Input Bias Current:** 100PA(Typ.)  
**Conversion Rate:** 2.5/sec  
**Normal Mode Rejection:** More than 50dB(50/60Hz)  
**Zero Stability:** Automatic Zero Adjustment  
**Display:** LED, 14.2mm 4 1/2 digit  
**Decimal Point:** Settable to any digit position  
**Polarity:** A "-" is displayed automatically  
**Overrange Indication:** When input exceeds the maximum display, 0000 flashes  
**Power Supply:** AC90~132V  
 AC180~264V  
**Operating Temperature:** 0~50°C, 35 to 85%RH  
**Power Consumption:** 2VA  
**Dimensions:** 36(H) × 72(W) × 110(D)mm DIN Size  
**Weight:** Approx. 230g  
**Dielectric Strength:** Between input(Lo)and earth DC500V  
 Between power supply terminal and input terminal. COM, case, AC1500V/1 min.  
**Insulation Resistance:** DC500V 100MΩ at above terminals

### BCD Data Output(Isolated from input(Lo))

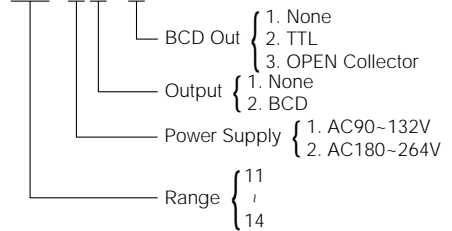
**•At Open collector**  
**Measured data:** Negative logic transistor "ON" at logic "1"  
**Polarity signal:** Transistor "ON" at plus input  
**"OVER" signal:** Transistor "ON" at overflow input  
**Printing command signal:** Transistor "ON" during a period of approx. 1ms at every measurement completion  
**Transistor output capacity:** Applied voltage, 30V max (NPN)  
 current, 10mA max  
 Saturated output voltage less than 1.2V at 10mA  
**•AT TTL level**  
**Measured date:** Tri-state parallel BCD positive logic latch output  
**Polarity signal:** "1" level at plus input  
**"OVER" signal:** "1" level at overflow input  
**Printing command signal:** A positive pulse of approx 1ms at every measurement completion  
**Each signal of the above:** TTL level Fanout=2  
 \*Each signal of the above can be changed to negative logic

### Features

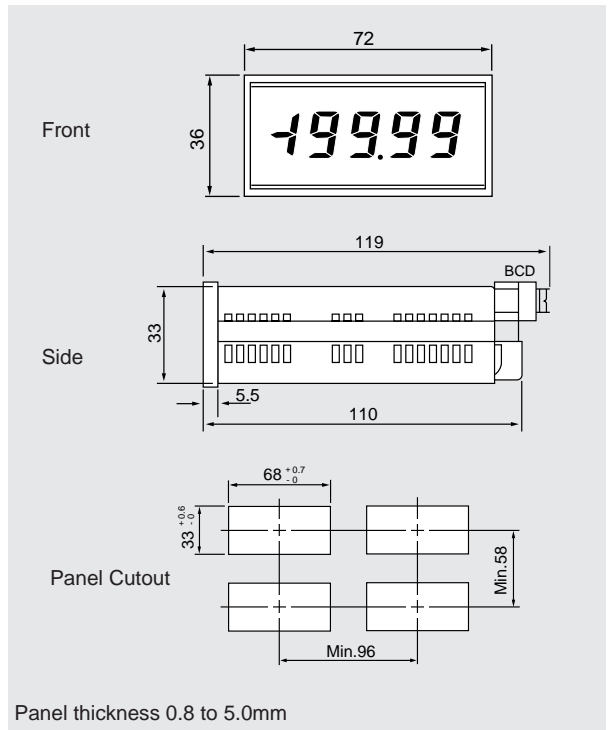
- Bright LED 14.2mm(Red)
- BCD Output(option)
- AC90~132V, AC180~264V
- 200mV~200V Measurement
- Compact Size, 36(H) × 72(W) × 110(D)mm
- Screw terminal

### Ordering Code

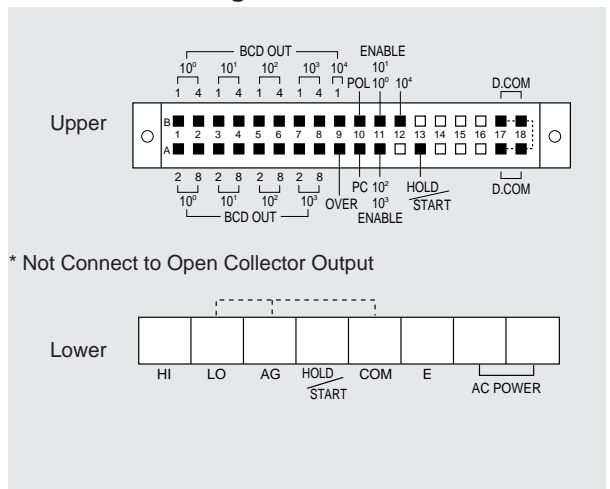
AP-341-□□-□□-□



### Dimensions



### Connection Diagram



# DC VOLTMETER & AMMETER

## AP-501A

\*Super Thin Case, Low Cost



### DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-501A-11	±199.9mV	100μV	100MΩ	±100V
AP-501A-12	±1.999V	1mV	100MΩ	±100V
AP-501A-13	±19.99V	10mV	10MΩ	±250V
AP-501A-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit (23°C ±5°C)

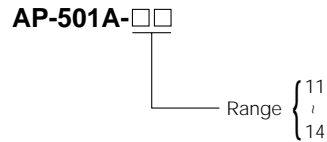
### Specifications

Input Configuration:	Differential (11/12-range), Single Ended (13/14-range)
Input Bias Current:	50pA (Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	40dB (Typ.) (50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 14.2mm 3 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	Display 1 or -1 of the most significant digit for an input signal exceeding the maximum display range.
Power Supply:	DC5V ±5%, 120mA
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	Approx. 120mA
Dimensions:	48(H) × 96(W) × 34.5(D)mm DIN Size
Weight:	Approx. 50g
Dielectric Strength:	Between input (Lo) terminal and mounted plate. AC1500V/1 min.
Insulation Resistance:	DC500V 100MΩ at above terminals

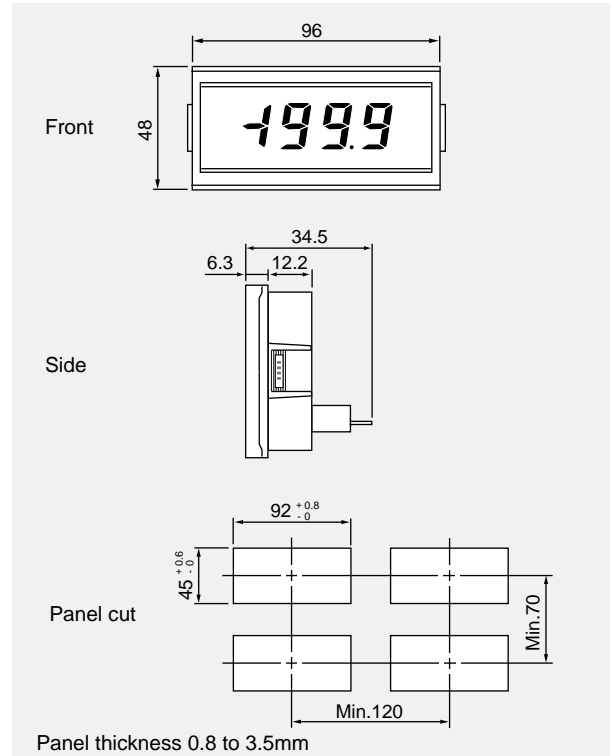
### Features

- Low Cost
- Bright LED, 14.2mm (Red)
- Thin Case (Depth 34.5mm)
- DC5V(Non-Isolated)
- 200mV~200V Measurement

### Ordering Code

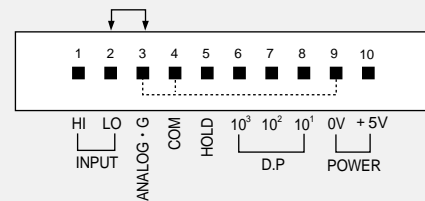


### Dimensions



### Connection Diagram

When use single ended, connect terminal and (COMMON and 0V Terminal is internally connected)



# DC VOLTMETER & AMMETER

## AP-502

### \*ISOLATED Power Supply



### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-502-11	±199.9mV	100μV	100MΩ	±250V
AP-502-12	±1.999V	1mV	100MΩ	±250V
AP-502-13	±19.99V	10mV	10MΩ	±250V
AP-502-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit(23°C±5°C)

### ■ DC Current Measurement

Model	Range	Maximum Resolution	Input Resistance	Input Protection
AP-502-21	±199.9μA	100nA	1KΩ	±10mA
AP-502-22	±1.999mA	1μA	100Ω	±50mA
AP-502-23	±19.99mA	10μA	10Ω	±150mA
AP-502-24	±199.9mA	100μA	1Ω	±500mA
AP-502-25	±1.999A	1mA	0.1Ω	±3A

Accuracy: ±0.2% rdg ±1 digit(23°C±5°C)  
±0.3% rdg. ±1 digit only for AP-502-25

### ■ Specifications

Input configuration:	Single Ended
Input Bias Current:	50PA(Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	More than 40dB(50/60Hz)
Zero Stability:	Automatic Zero Adjustment
Display:	LED, 14.2mm 3 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, 1999 flashes.
Power Supply:	DC5V±5%, 120mA(Max.)
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	Approx. 120mA
Dimensions:	48(H) × 96(W) × 32(D)mm DIN Size
Weight:	Approx. 60g
Dielectric Strength:	Between input(Lo)terminal and power supply(0V), DC500V. Between input(Lo)terminal and mounted plate. AC1500V/1 min.
Insulation Resistance:	DC500V 100MΩ at above terminals

### ■ Features

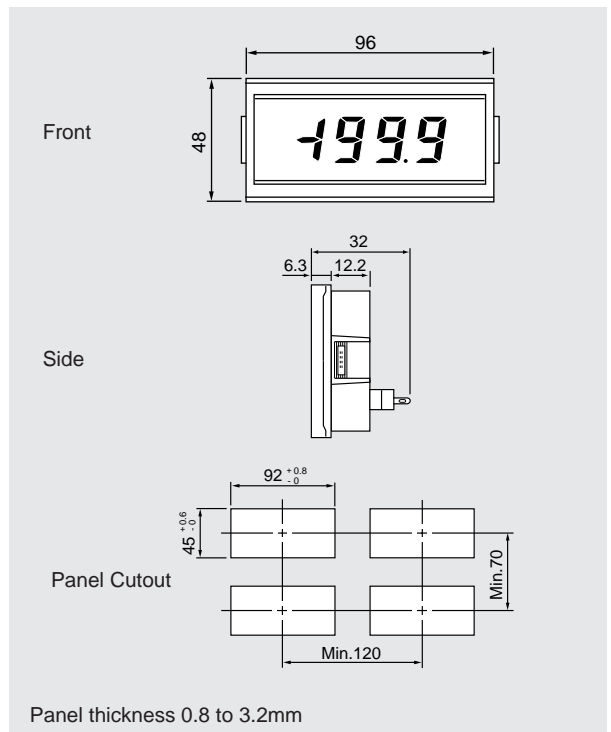
- Low Cost
- Bright LED 14.2mm(Red)
- Serial Data Output
- Thin Case(Depth 32mm)
- DC5V(Isolated)
- 200mV~200V, 200μA~2A Measurement

### ■ Ordering Code

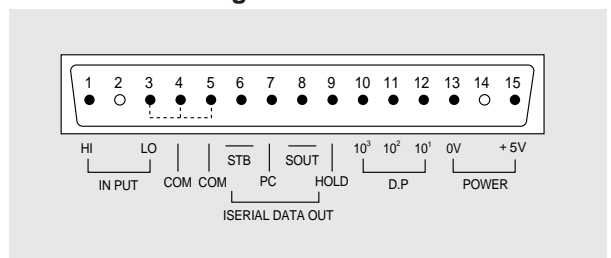
AP-502-□□

Range { 11 21 1V  
1 1  
14 25 2A

### ■ Dimensions



### ■ Connection Diagram



# DC VOLTMETER & AMMETER

## AP-520

### \*LCD Display



### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-520-11	±199.9mV	100μV	100MΩ	±100V
AP-520-12	±1.999V	1mV	100MΩ	±100V
AP-520-13	±19.99V	10mV	10MΩ	±250V
AP-520-14	±199.9V	100mV	10MΩ	±500V

Accuracy: ±0.1% rdg. ±1 digit (23°C ±5°C)

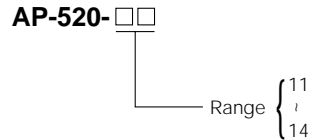
### ■ Specifications

Input Configuration:	Differential (11/12-range) Single Ended (13/14-range)
Input Bias Current:	50pA (Max.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	40dB (Typ.) 50/60Hz
Zero Stability:	Automatic zero adjustment
Display:	LCD, 12.7mm 3 1/2-digit
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	Display 1 or -1 of the most significant digit for an input signal exceeding the maximum display range.
Power Supply:	DC5V ±5%
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	Approx. 15mW
Dimensions:	48(H) × 96(W) × 34.5(D)mm DIN Size
Weight:	Approx. 60g
Dielectric Strength:	Between input terminal (Lo) and mounting panel DC500V.
Insulation Resistance:	DC500V 100MΩ at above terminals

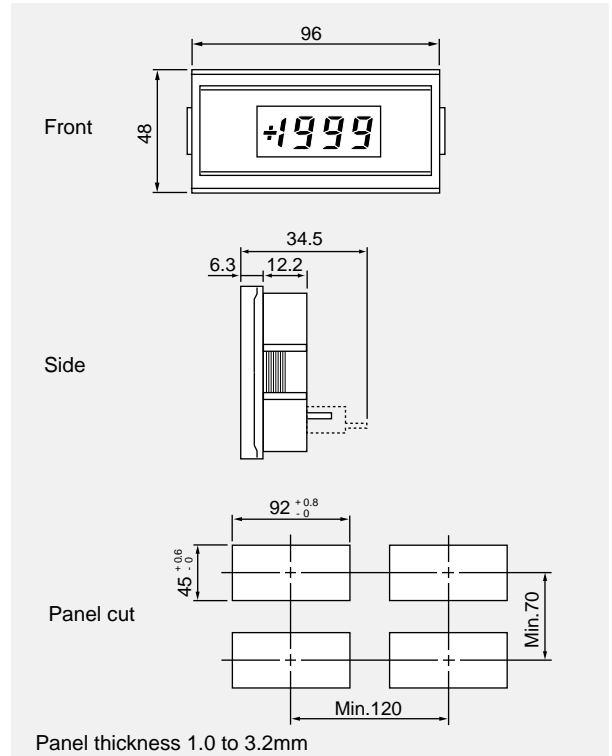
### ■ Features

- LCD, 12.7mm
- Thin Case (Depth 34.5mm)
- DC5V(Non-Isolated)
- 200mV~200V Measurement

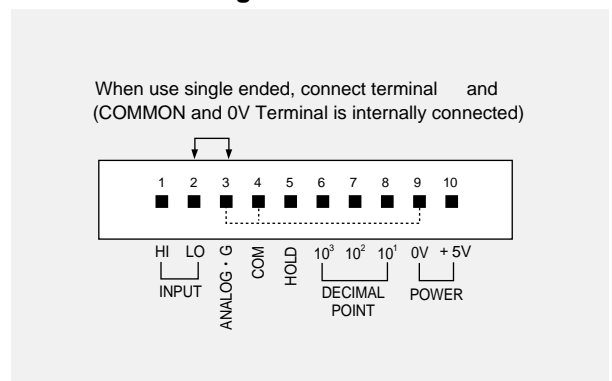
### ■ Ordering Code



### ■ Dimensions



### ■ Connection Diagram



# DC VOLTMETER & AMMETER

## AP-540



### DC Voltage Measurement

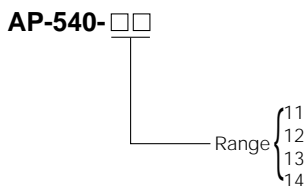
Model	Range	Maximum Resolution	Input Impedance	Input Protection
AP-540-11	±199.99mV	10μV	100MΩ	±100V
AP-540-12	±1.9999V	100μV	100MΩ	±100V
AP-540-13	±19.999V	1mV	1MΩ	±250V
AP-540-14	±199.99V	10mV	1MΩ	±500V

Accuracy: ±(0.03% of rdg + 1 digit) (23; C±5; C 45~75%RH)

### Specifications

Input configuration:	Single ended
Input bias current:	100 pA (TYP.)
Conversion rate:	2.5/sec
Normal mode rejection:	More than NMR50dB (50/60 Hz)
Maximum display:	19999
Overrange indication:	When input exceeds the maximum display, 0000 flashes
Display:	LED, 14.2 mm (Red)
Polarity:	A "-" is displayed automatically
Hold:	START/HOLD terminal and 0 V shorted or level "0"
Start:	START/HOLD terminal and 0 V open or level "1"
Decimal point:	Settable to any digit position
Operating temperature:	0~50°C 35~85%RH
Power supply:	DC 5 V±5%
Power consumption:	75 mA (Max.)
Dimensions:	48(H) × 96(W) × 34.5(D)mm DIN size
Weight (unit):	Approx. 60 g
Dielectric strength:	Between LO and case, AC 1500 V/l min.
Insulation resistance:	More than DC 500 V 100 MΩ at the above terminals
Accessory:	Connector, instruction manual

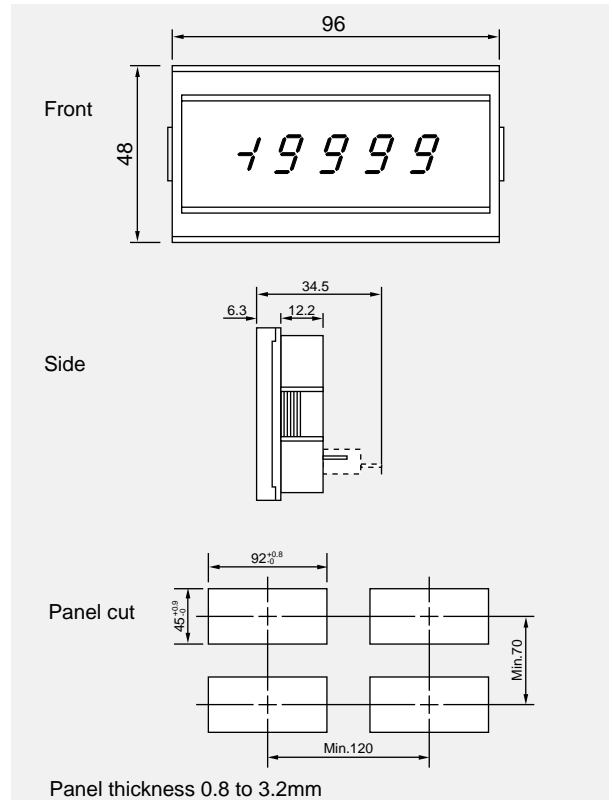
### Ordering Code



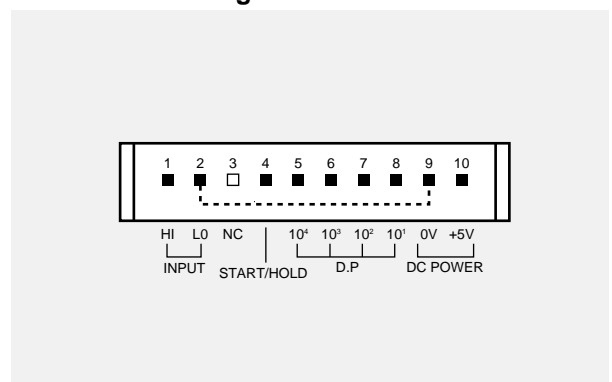
### Features

- Bright LED, 14.2 mm (Red)
- Thin Case (Depth 34.5 mm)
- Power supply DC 5V (Non-isolated)
- 200 mV ~ 200 V measurement

### Dimensions



### Connection Diagram



# OPEN CASE METER

## AH-330, 331

### \*EASY Installation



(AH-331)

### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AH-330-11	±99.9mV	100μV	100MΩ	±100V
AH-330-12	±0.999V	1mV	100MΩ	±100V
AH-331-11	±199.9mV	100μV	100MΩ	±100V
AH-331-12	±1.999V	1mV	100MΩ	±100V

Accuracy: ±0.1% rdg ±1 digit(23°C±5°C)

### ■ Specifications

Input Configuration:	Single Ended
Input Bias Current:	50PA(Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	40dB(Typ.)
Zero Stability:	Automatic zero adjustment
Display:	LED, 14.2mm
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, lights up "OVER" LED(AH-330)or 1999 flashes(AH-331)
Power Supply:	DC5V±5%
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	AH-330 75mA, AH-331 80mA
Dimensions:	29.5(H) × 65(W) × 18.2(D)mm
Weight:	Approx. 20g

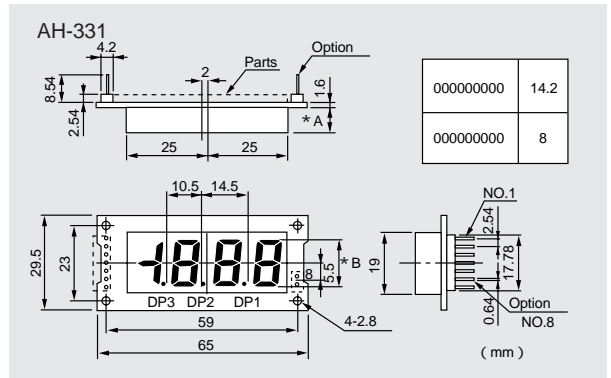
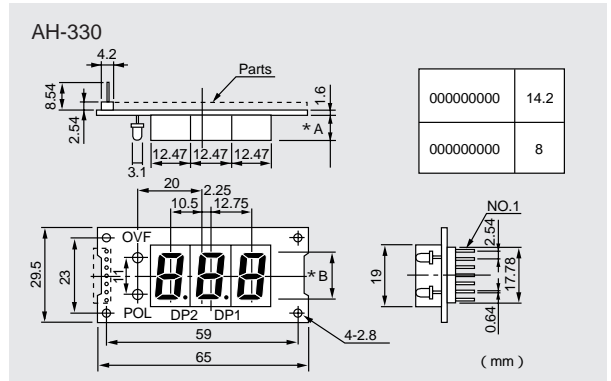
### ■ Ordering Code

AH-330-□□	Range { 11 12
331	

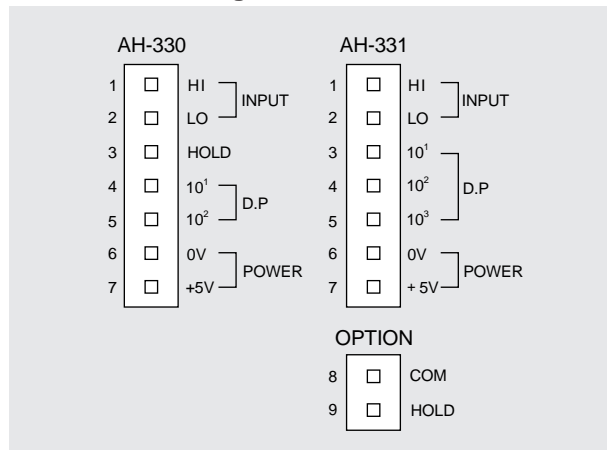
### ■ Features

- Uncased, 3 digits(AH-330) 3 1/2 digits(AH-331)
- Bright LED, 14.2mm(Red)
- Hold for AH-331(option)
- Power Supply DC5V±5%

### ■ Dimensions



### ■ Connection Diagram



# OPEN CASE METER

## AH-381

### \*LCD Display



### ■ DC Voltage Measurement

Model	Range	Maximum Resolution	Input Impedance	Input Protection
AH-381-11	±199.9mV	100μV	100MΩ	±100V
AH-381-12	±1.999V	1mV	100MΩ	±100V

Accuracy: 0.1% rdg. ±1 digit(23°C±5°C)

### ■ Specifications

Input Configuration:	Single Ended
Input Bias Current:	100PA(Typ.)
Conversion Rate:	2.5/sec
Normal Mode Rejection:	40dB(Typ.)
Zero Stability:	Automatic zero adjustment
Display:	LCD, 10.2mm
Polarity:	A "-" is displayed automatically
Decimal Point:	Settable to any digit position
Overrange Indication:	When input exceeds the maximum display, display 1 or -1 of the most significant digit
Power Supply:	DC5V±5%
Operating Temperature:	0~50°C, 35 to 85%RH
Power Consumption:	3mA(Max.)
Dimensions:	29.5(H) × 65(W) × 16.5(D)mm
Weight:	Approx. 17g

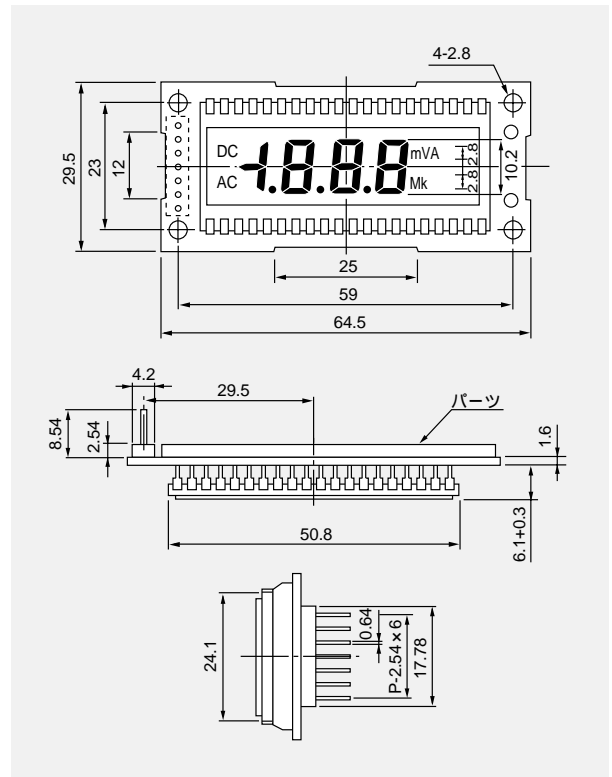
### ■ Features

- LCD, 10.2mm
- Engineering units available
- Power supply 5V DC±5%
- 200mV~2V Measurement

### ■ Ordering Code

AH-381-□□  
 Range { 11  
 12

### ■ Dimensions



### ■ Connection Diagram

