INSTRUTION MANUAL
DIGITAL SCALING METER
MODEL AS-101 Series

■Key to Warning Symbols

⚠ Warning	Incrrect handling may cause death or injury.

■Attention Symbols

⚠ Attention

Do not disassemble or touch the interior while the power is ON.
This may cause an electric shock

⚠ Caution

(1) The application of voltage or current exceeding its maximum allowable value to the input terminals may result in instrument damage.
(2) The supply of power out of its allowable range may cause fire, electric shock or instrument failure.
(3) The content of this manual may subject to change without prior notice for product improvement.
(4) The manual is carefully prepared. However, if any question arises, or any mistake, omission or suggestion is found in the content of this manual, contact your nearest our sales agent.
(5) After read this manual, please keep it as anytime can see.

1. Specifications

●DC Voltage Measurement

Model & Range Code	Measuring range	Display	Input Imperdance	Maximum. Allowable Input voltage
AS-101-1V	1 to 5V	Offset ±10 Fullscale 100 to 1999	Approx 1MΩ	±100V
AS-101-2V	0 to 5V			
AS-101-3V	0 to 10V			

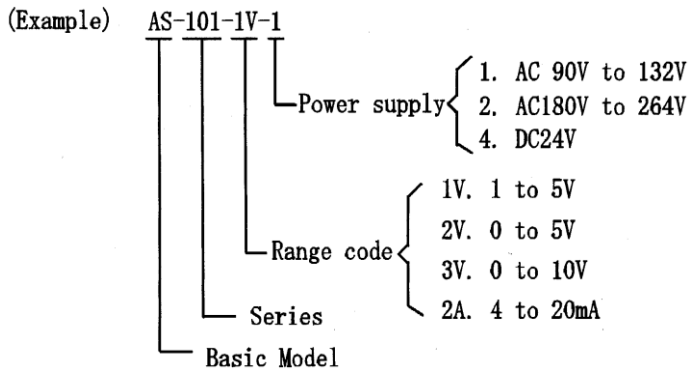
Accuracy:±(0.1% of rdg +2digit)(at 23℃±5℃ 35 to 85% RH)

●DC Current Measurement

Model & Range Code	Measuring Range	Display	Input Resistance	Maximum. Allowable Current
AS-101-2A	4 to 20mA	Offset ±10 Fullscale 100 to 1999	51Ω	±70mA

Accuracy:±(0.2% of rdg +2digit)(at 23℃±5℃ 35 to 85% RH)

●Model Configuration



2. Common Specifications

Measuring function	: DC voltage & current measurement Specify one model fom among 4 models.
Operation method	: Dual slope integration
Input circuit	: Single-ended type
Input bias current	: 2.0nA(Typical)
Sampling speed	: 2.5 times／sec.
Noise elimination	: More than 40 dB(50/60Hz)(Typical)
Max. No. of display digits	: 1999
Overrange alarm	: 1999 or -1999 flashes when an input exceeding the maximum display range is applied.
Display	: LED(Light Emitting Diode)numeric element Height;14.2mm red
Polarity	: Automatic Polarity selection
Polarity display	: ” －” is displayed automatically if input signal becomes negative.
External control	: External display hold(S/H) Hold by shorting the HOLD terminal with the COM terminal or setting to level “0” “1” level:2.5V to 5V “0” level:0V to 1.5V
Decimal point	: Settable to any digit position
Operating temperature/humidity	: 0 to 50℃,35 to 85%RH (Nodew-Condense)
Storange temperature	: -10 to 70℃,60%RH max.
Power supply	: For AC, 90 to 132V 50/60Hz Approx. 2.0VA(at 100V)(Maximum) 180 to 264V 50/60Hz Approx. 2.0VA(at 200V)(Maximum) For DC, 24V DC±20% 40mA(Maximum)Isolated
Dimensions	: 96mm(W)×48mm(H)×71mm(D)
Weight	: For AC; Approx. 175g(Mainfram) For DC; Approx. 100g(Mainfram)
Dielectric strength	: For AC; 2100VAC for 1 minute between power supply terminal and input terminal/COMMON/case For DC; DC±500V between power terminal(LO)and input(LO) terminal/case
Insulation resistance	: More than 100MΩ at 500VDC between power terminal and input terminal
Accessories	: Instruction manual, connector cover 2-axis,2-screw
Standards	: EN61326-1 EMI:Class A EMS:Industrial locations Cable length:30m or less (In the case of DC drive) DC power supply port: DC commections between parts of equipment(30m or less) EN61010-1 EN IEC 63000
Setup enviroment	: Installation category Ⅱ, Pollution degree2
Altitude	: 2000m max.

3. Operation

3-1 General cautions and preparation prior to operation

1) This instrument should be used at an ambient temperature of 0 to 50℃ and a humidity of 80% or less, paying special attention to dew condensation.
2) It must be used at a location free of dust.
3) Care should be taken to prevent vibration and shock.

4)Noise

(a)Electric circuit

Because it is difficult for such a small instrument as this to accommodate a perfect noise prevention circuit, use a surge absorbing circuit such as an external line filter or varistor to prevent excess surge when the instrument is used at a location where lightening frequently occurs or magnetic switches are likely to be actuated on the same power line.

(b)Shielding

If noise causes a problem, connect the E terminal(11) for AC, or the power 0V terminal(17)for DC to the ground or equipment grounding terminal.

If space induction causes a problem, it can be prevented by covering the instrument case with a metal plate.

3-2 Mounting

1)Panel mounting

Make a rectangular cutout as shown in Fig. 1, insert the instrument in the panel as shown in Fig.2, and then fully push the instrument into the panel.

(It is recommended that panel thickness be from 0.8 to 5mm)

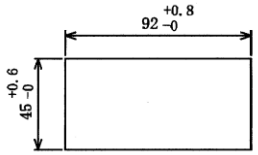


Fig.1

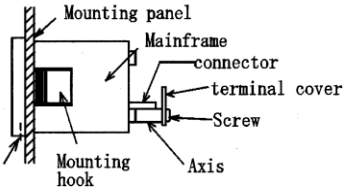


Fig.2

2)Removal of the front panel

Remove the front panel as shown in Fig.3.

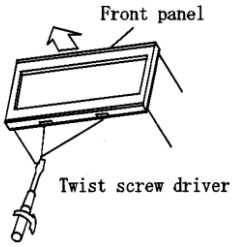


Fig.3

3-3 Connector connection

1)Power connection

For AC, connect power to terminals 7 to 8, operate the instrument at a power supply voltage of 90 to 132V or 180 to 264V.

For DC, connect power to terminals 7 to 8.

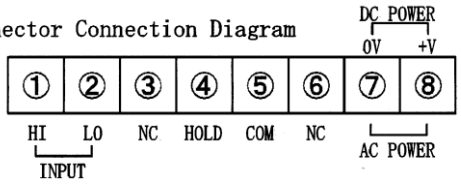
Power variation in this case is 24V DC±20%

(Because this instrument is not provided with a power supply switch, it starts operating when power is supplied.)

2)Input connection

Connect an input signal(DC voltage or DC current to terminals 1 to 3. Use a 2-core shielded cable and connect the shield to the input LO side at one point near the signal source.

● Connector Connection Diagram



⚠ Caution

NC indicates a vacant terminal. However, do not use it as a junction terminal.

Input LO and COM have the same potential.

3)Hold and external start

By shorting the S/H terminal(No.4) with the COM(No.5) terminal or setting them to level "0", the displayed value just after they are shorted or set to level "0" is held.

In addition, measurement starts by opening them or setting to level"0"at the necessary timing.

A minimum of 400ms is required for one measurement.

In addition, as the input(LO) and COMMON(7) terminals are connected and not DC-isolated, use a mechanical contact signal such as a relay or switch for control as much as possible. When performing control by TTL. or transistor, and such an external circuit in Fig.4. (This circuit is absolutely necessary for isolation when the input floated.)

"1" level:2.5V to 5V "0" level:0V to 1.5V

Input current -0.5mA

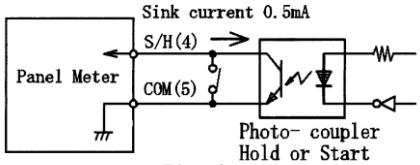
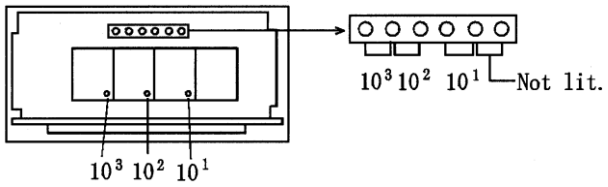


Fig. 4

3-4 Desimal point setting

Remove the case front panel from the meter.

Set the upper S2 socket to the desired digit.



⚠ Do not touch any parts other than those specified.

⚠ Do not make the setting during power-on.

4.Scaling

Remove the case front panel from the meter.

(1)Zero Adjustment

Input:1V range=1V, 2V range=0V, 3V range=0V,2A range=4mA

Turn the ZERO adjuster on the front panel until the display shows 000.

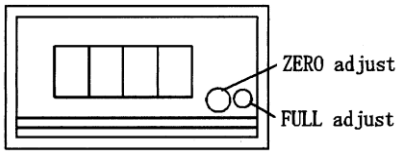
(2)Full adjustment

Input:1V range=5V, 2V range=5V, 3V range=10V,2A range=20mA

Turn the FULL adjuster on the front panel until the display shows the desired value.

Caution

Do not reverse the order of (1) and then (2) described above.



⚠ Do not touch any parts other than those specified.

5.Maintenance

5-1 Caution for maintenance

The storage temperature of this instrument should be between −10℃ to +70℃ at a relative humidity of 60% or less.

As the instrument case and bezel are mode of molded Plastic, do not use a volatile liquid such as thinner to clean them.

6.Warranty

This meter is warranted for a period of one year from date of delivery. Any defect which occurs in this period and is undoubtedly caused by Watanabe Electric Industry faults will be remedied free of charge. This warranty dose not apply to the meter showing abuse or damage which has been altered or repaired by others except as authorized by Watanabe Electric Industry.

7.After-sale service

This meter is delivered after being manufactured, tested and inspected under strict quality control. However, if any problem dose occur, contact your nearest Watanabe Electric Industry sales agent giving as much information on problem as possible.

watanabe
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