SPEC SHEET

Digital Indicating Conductivity Meter

AER-102- ECL (Low Concentration)

- 48 x 96 mm, panel mounting type
- Drip-proof/Dust-proof IP66 (for front panel only)
- Power supply 24 V AC/DC (user-specified)
- 2-points Contact output (standard), additional 2 points (optional)
- Proportional control, max. 4 points of relay contact
- Various settings & calibration via software communication (RS-485) (optional)
- Transmission output 2 (optional)

Name: Digital indicating conductivity meter

Model

AER - 1 0	2	-EC	L	□	, □□□	
Input points	2					2 points
Input		EC				2-electrode conductivity sensor (Temperature element: Pt100) (*1)
						2-electrode conductivity sensor (Temperature element: Pt1000) (*1)
Concentration			L			Low concentration
Power supply voltage						100 to 240 V AC (standard)
				1		24 V AC/DC (*2)
Option					C5	Serial communication RS-485
					EVT3	EVT3, EVT4 outputs (Contact output 3, 4)
					TA2	Transmission output 2 (*3)

(*1) This input temperature specification was specified at the time of ordering.
(*2) Power supply voltage100 to 240 V AC is standard.
When ordering 24 V AC/DC, enter 1 in Power supply voltage, after ECL.
(*3) If Transmission output 2 (TA2 option) is ordered, EVT1 is not available.

Measurement range (Rated scale)

Input		Cell Constant	Scale Range	Resolution	Conductivity Zero Adjustment Value Setting Range
Conductivity	Conductivity	0.01/cm	0.000 to 2.000 μS/cm	0.001 μS/cm	-0.200 to 0.200
			0.00 to 20.00 μS/cm	0.01 μS/cm	-2.00 to 2.00
			0.00 to 50.00 μS/cm	0.01 μS/cm	-5.00 to 5.00
			0.000 to 0.200 mS/m	0.001 mS/m	-0.020 to 0.020
			0.000 to 2.000 mS/m	0.001 mS/m	-0.200 to 0.200
			0.000 to 5.000 mS/m	0.001 mS/m	-0.500 to 0.500
			0.00 to 2.00 mg/L	0.01 mg/L	-0.20 to 0.20
			0.0 to 20.0 mg/L	0.1 mg/L	-2.0 to 2.0
			0.0 to 50.0 mg/L	0.1 mg/L	-5.0 to 5.0
		0.1/cm	0.00 to 20.00 μS/cm	0.01 μS/cm	-2.00 to 2.00
			0.00 to 50.00 μS/cm	0.01 μS/cm	-5.00 to 5.00
			0.0 to 500.0 μS/cm	0.1 μS/cm	-50.0 to 50.0
			0.000 to 2.000 mS/m	0.001 mS/m	-0.200 to 0.200
			0.000 to 5.000 mS/m	0.001 mS/m	-0.500 to 0.500
			0.00 to 50.00 mS/m	0.01 mS/m	-5.00 to 5.00
			0.0 to 20.0 mg/L	0.1 mg/L	-2.0 to 2.0
			0 to 200 mg/L	1 mg/L	-20 to 20
			0 to 500 mg/L	1 mg/L	-50 to 50
		1.0/cm	0.0 to 200.0 μS/cm	0.1 μS/cm	-20.0 to 20.0
			0.00 to 20.00 mS/m	0.01 mS/m	-2.00 to 2.00
			0 to 200 mg/L	1 mg/L	-20 to 20
Temp. (*)	Pt100 or Pt1000		0.0 to 100.0℃	0.1℃	

(Abbreviation: Temp.: Temperature)
(*) Decimal point place is selectable for temperature input indication.

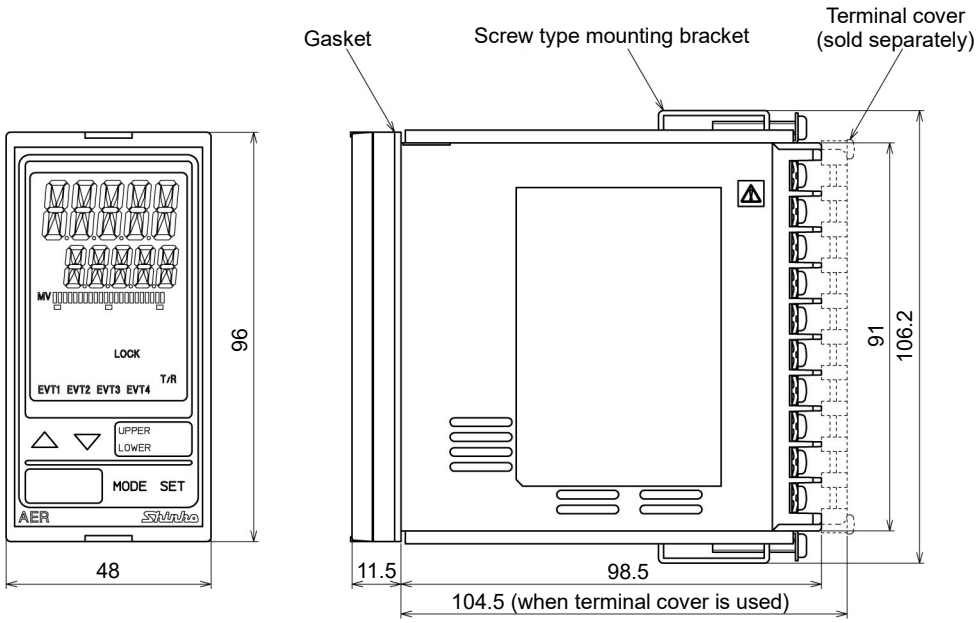
Repeatability: Conductivity: ±0.5% of measurement span
TDS conversion: ±1.5% of measurement span

Linearity: Conductivity: ±0.5% of measurement span
TDS conversion: ±1.5% of measurement span

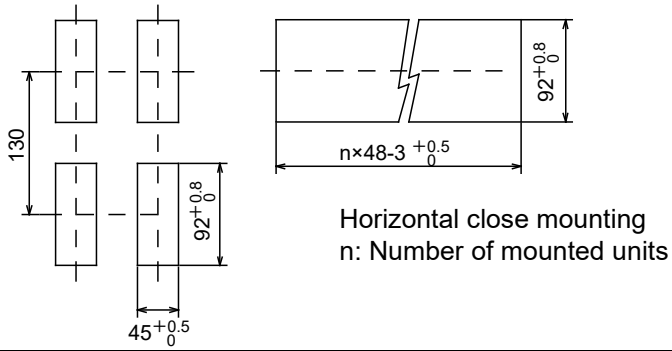
Indication accuracy: Temperature: ±1℃

<table>
<tr><td>Conductivity calibration</td><td>Setting range of conductivity Zero adjustment value: Refer to the Measurement range.</td></tr>
<tr><td>Temperature calibration</td><td>Calibration range: -10.0 to 10.0℃</td></tr>
<tr><td>Contact output</td><td>Relay contact: 1a
Control capacity: 3 A 250 V AC (Resistive load), 1 A 250 V AC (Inductive load, cosϕ=0.4)
Electrical life: 100,000 cycles, Output action: P control, ON/OFF control</td></tr>
<tr><td>Transmission output 1</td><td>Converting conductivity, temperature or MV to analog signal every input sampling period, outputs the value in current. (Factory default: Conductivity)
If Transmission output 1 high limit and low limit are set to the same value, Transmission output 1 will be fixed at 4 mA DC.
Transmission output can be indicated with the bar graph.
Resolution: 12000, Current: 4 to 20 mA DC (Load resistance: Max. 550 Ω)
Output accuracy: Within ±0.3% of Transmission output 1 span</td></tr>
<tr><td>Self-diagnosis</td><td>The CPU is monitored by a watchdog timer, and if an abnormal status occurs, the instrument is switched to warm-up status.</td></tr>
<tr><td>Temperature compensation range</td><td>0.0 to 100.0℃</td></tr>
<tr><td>Ambient temperature</td><td>0 to 50℃ (32 to 122℉)</td></tr>
<tr><td>Ambient humidity</td><td>35 to 85 %RH (Non-condensing)</td></tr>
<tr><td>Power supply (user-specified)</td><td>AER-102-ECL: 100 to 240 V AC 50/60 Hz Allowable fluctuation range: 85 to 264 V AC
AER-102-ECL 1: 24 V AC/DC 50/60 Hz Allowable fluctuation range: 20 to 28 V AC/DC</td></tr>
<tr><td>Structure</td><td>Flush (Applicable panel thickness: 1 to 8 mm)
Case: Flame-resistant resin, Color: Black, Front panel: Membrane sheet
Drip-proof/Dust-proof: IP66 (for front panel only)</td></tr>
<tr><td>Protection structure</td><td>Overvoltage category Ⅱ, Pollution degree 2 (IEC61010-1)</td></tr>
<tr><td>Safety standards</td><td>RoHS directive compliant</td></tr>
<tr><td>Dimensions</td><td>W48 x H96 x D110 mm, Case depth: 98.5 mm (when mounted through a control panel)</td></tr>
<tr><td>Weight</td><td>Approx. 280 g</td></tr>
<tr><td>Serial communication [C5 option]</td><td>The following operations can be carried out from an external computer.
(1) Reading and setting of various set values, (2) Reading of conductivity, temperature and status,
(3) Function change and adjustment, (4) Reading and setting of user save area
<table>
<tr><td>Cable length</td><td>1.2 km (max.), Cable resistance: Within 50 Ω (Terminators are not necessary, but if used, use 120 Ω or more on both sides.)</td></tr>
<tr><td>Communication line</td><td>EIA RS-485</td></tr>
<tr><td>Communication method</td><td>Half-duplex communication</td></tr>
<tr><td>Communication speed</td><td>9600, 19200, 38400 bps (Selectable by keypad)</td></tr>
<tr><td>Synchronization method</td><td>Start-stop synchronization</td></tr>
<tr><td>Code form</td><td>ASCII, Binary</td></tr>
<tr><td>Communication protocol</td><td>Shinko protocol, MODBUS ASCII, MODBUS RTU
(Selectable by keypad)</td></tr>
<tr><td>Data bit/parity</td><td>8-bits/No parity, 7-bits/No parity, 8-bits/Even, 7-bits/Even,
8-bits/Odd, 7-bits/Odd (Selectable by keypad)</td></tr>
<tr><td>Stop bit</td><td>1, 2 (Selectable by keypad)</td></tr>
<tr><td>Error correction</td><td>Command request repeat system</td></tr>
<tr><td>Error detection</td><td>Parity check, Checksum (Shinko protocol), LRC (MODBUS protocol ASCII), CRC-16 (MODBUS protocol RTU)</td></tr>
</table>
Data Format
<table>
<tr><th>Communication Protocol</th><th>Shinko Protocol</th><th>MODBUS ASCII</th><th>MODBUS RTU</th></tr>
<tr><td>Start bit</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>Data bit</td><td>7</td><td>7 (8) (Selectable)</td><td>8</td></tr>
<tr><td>Parity</td><td>Even</td><td>Even (No parity, Odd) (Selectable)</td><td>No parity (Even, Odd) (Selectable)</td></tr>
<tr><td>Stop bit</td><td>1</td><td>1 (2) (Selectable)</td><td>1 (2) (Selectable)</td></tr>
</table></td></tr>
<tr><td>EVT3, EVT4 outputs (Contact output 3, 4) [EVT3 option]</td><td>Same as Contact output.</td></tr>
<tr><td>Transmission output 2 [TA2 option]</td><td>Converting conductivity, temperature or MV to analog signal every input sampling period, outputs the value in current.
(Factory default: Transmission output 1: Conductivity, Transmission output 2: Temperature)
If Transmission output 2 high limit and low limit are set to the same value, Transmission output 2 will be fixed at 4 mA DC. Transmission output can be indicated with the bar graph.
Resolution: 12000, Current: 4 to 20 mA DC (Load resistance: Max. 550 Ω)
Output accuracy: Within ±0.3% of Transmission output 2 span</td></tr>
</table>

Dimensions
(Scale: mm)

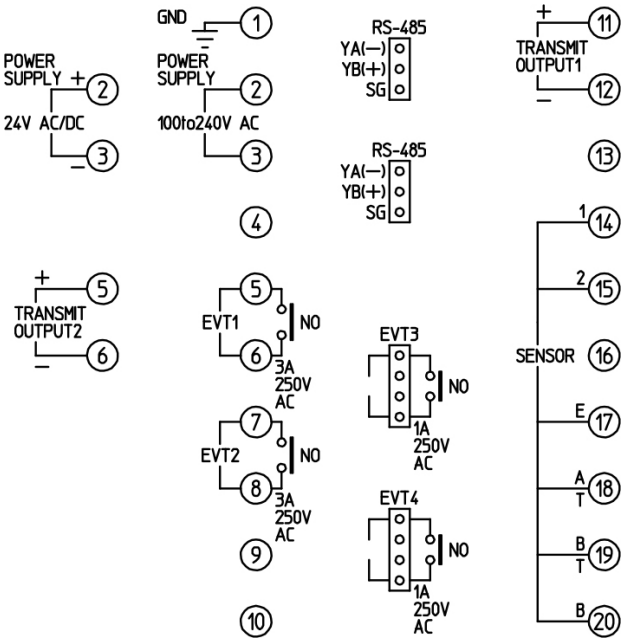


Panel cutout
(Scale: mm)



Horizontal close mounting
n: Number of mounted units

Terminal
arrangement



GND: Ground terminal (①)
POWER SUPPLY: Power terminals (②-③)
EVT1: EVT1 output terminals (Contact output 1) (⑤-⑥)
EVT2: EVT2 output terminals (Contact output 2) (⑦-⑧)
TRANSMIT OUTPUT1: Transmission output 1 terminals (⑪-⑫)
1, 2: Conductivity sensor terminals (⑭-⑮)
E: Shield wire terminal (⑰)
A, B: Temperature compensation sensor terminals
Pt100 (2-wire type), Pt1000 (⑱-⑲)
A, B, B: Temperature compensation sensor terminals
Pt100 (3-wire type) (⑱-⑲-⑳)
When C5 option is ordered:
RS-485: Serial communication
2 connectors are wired internally.
When EVT3 option is ordered:
EVT3: EVT3 output (Contact output 3)
EVT4: EVT4 output (Contact output 4)
When TA2 option is ordered:
TRANSMIT OUTPUT2: Transmission output 2 terminals (⑤-⑥)