

SPEC SHEET

Digital Indicating Resistivity Meter

AER-102- SE

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



Name	Digital indicating resistivity meter																																														
Model	<table border="1"> <tr> <td>AER - 1 0</td> <td>2</td> <td>-SE</td> <td><input type="checkbox"/></td> <td>,</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Input points</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2 points</td> </tr> <tr> <td rowspan="2">Input</td> <td rowspan="2"></td> <td rowspan="2">SE</td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td>2-electrode resistivity sensor (Temperature element: Pt100) (*1)</td> </tr> <tr> <td>2-electrode resistivity sensor (Temperature element: Pt1000) (*1)</td> </tr> <tr> <td rowspan="2">Power supply voltage</td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2">1</td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td>100 to 240 V AC (standard))</td> </tr> <tr> <td>24 V AC/DC (*2)</td> </tr> <tr> <td rowspan="3">Option</td> <td rowspan="3"></td> <td rowspan="3"></td> <td rowspan="3"></td> <td rowspan="3"></td> <td rowspan="3"></td> <td rowspan="3"></td> <td>C5 Serial communication RS-485</td> </tr> <tr> <td>EVT3 EVT3, EVT4 outputs (Contact output 3, 4)</td> </tr> <tr> <td>TA2 Transmission output 2 (*3)</td> </tr> </table>			AER - 1 0	2	-SE	<input type="checkbox"/>	,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Input points	2						2 points	Input		SE					2-electrode resistivity sensor (Temperature element: Pt100) (*1)	2-electrode resistivity sensor (Temperature element: Pt1000) (*1)	Power supply voltage			1				100 to 240 V AC (standard))	24 V AC/DC (*2)	Option							C5 Serial communication RS-485	EVT3 EVT3, EVT4 outputs (Contact output 3, 4)	TA2 Transmission output 2 (*3)
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<p>(*1) This input temperature specification was specified at the time of ordering. (*2) Power supply voltage 100 to 240 V AC is standard. When ordering 24 V AC/DC, enter 1 in Power supply voltage, after 'SE'. (*3) If Transmission output 2 (TA2 option) is ordered, EVT1 is not available.</p>																																															
Measurement range	<table border="1"> <thead> <tr> <th colspan="2">Input</th> <th>Scale Range</th> <th>Resolution</th> </tr> </thead> <tbody> <tr> <td rowspan="8">Resistivity</td> <td rowspan="8">Conductivity cell constant 0.01/cm</td> <td>0.000 to 0.200 MΩ·cm</td> <td>0.001 MΩ·cm</td> </tr> <tr> <td>0.00 to 2.00 MΩ·cm</td> <td>0.01 MΩ·cm</td> </tr> <tr> <td>0.00 to 20.00 MΩ·cm</td> <td>0.01 MΩ·cm</td> </tr> <tr> <td>0.0 to 100.0 MΩ·cm</td> <td>0.1 MΩ·cm</td> </tr> <tr> <td>0.00 to 2.00 kΩ·m</td> <td>0.01 kΩ·m</td> </tr> <tr> <td>0.0 to 20.0 kΩ·m</td> <td>0.1 kΩ·m</td> </tr> <tr> <td>0.0 to 200.0 kΩ·m</td> <td>0.1 kΩ·m</td> </tr> <tr> <td>0 to 1000 kΩ·m</td> <td>1 kΩ·m</td> </tr> <tr> <td>Temp. (*)</td> <td>Pt100 or Pt1000</td> <td>0.0 to 100.0°C</td> <td>0.1°C</td> </tr> </tbody> </table>			Input		Scale Range	Resolution	Resistivity	Conductivity cell constant 0.01/cm	0.000 to 0.200 MΩ·cm	0.001 MΩ·cm	0.00 to 2.00 MΩ·cm	0.01 MΩ·cm	0.00 to 20.00 MΩ·cm	0.01 MΩ·cm	0.0 to 100.0 MΩ·cm	0.1 MΩ·cm	0.00 to 2.00 kΩ·m	0.01 kΩ·m	0.0 to 20.0 kΩ·m	0.1 kΩ·m	0.0 to 200.0 kΩ·m	0.1 kΩ·m	0 to 1000 kΩ·m	1 kΩ·m	Temp. (*)	Pt100 or Pt1000	0.0 to 100.0°C	0.1°C																		
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(Abbreviation: Temp: Temperature) (*) Decimal point place is selectable for temperature input indication.																																															
Repeatability	±0.5% of measurement span																																														
Linearity	±0.5% of measurement span																																														
Indication accuracy	Temperature: ±1°C																																														
Cell constant correction value	0.001 to 5.000																																														
Temperature calibration	Calibration range: -10.0 to 10.0°C																																														
Contact output	Relay contact 1a (Bit reading via the status flag in Serial communication) 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																																														
Transmission output 1	Converting resistivity, temperature or MV to analog signal every input sampling period, outputs the value in current. (Factory default: Resistivity) 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																																														

Self-diagnosis	The CPU is monitored by a watchdog timer, and if an abnormal status occurs, the instrument is switched to warm-up status.		
Temperature compensation range	0.0 to 100.0°C		
Ambient temperature	0 to 50°C (32 to 122°F)		
Ambient humidity	35 to 85 %RH (Non-condensing)		
Power supply (user-specified)	AER-102-SE: 100 to 240 V AC 50/60 Hz Allowable fluctuation range: 85 to 264 V AC AER-102-SE 1: 24 V AC/DC 50/60 Hz Allowable fluctuation range: 20 to 28 V AC/DC		
Structure	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)		
Protection structure	Overvoltage category II, Pollution degree 2 (IEC61010-1)		
Safety standards	RoHS directive compliant		
Dimensions	W48 x H96 x D110 mm, Case depth: 98.5 mm (when mounted through a control panel)		
Weight	Approx. 280 g		
Serial communication [C5 option]	The following operations can be carried out from an external computer.		
	(1) Reading and setting of various set values		
	(2) Reading of resistivity, temperature and status		
	(3) Function change and adjustment		
	(4) Reading and setting of user save area		
	Cable length	1.2 km (max.), Cable resistance: Within 50 Ω (Terminators are not necessary, but if used, use 120 Ω or more on both sides.)	
	Communication line	EIA RS-485	
	Communication method	Half-duplex communication	
	Communication speed	9600, 19200, 38400 bps (Selectable by keypad)	
	Synchronization method	Start-stop synchronization	
	Code form	ASCII, Binary	
	Communication protocol	Shinko protocol, MODBUS ASCII, MODBUS RTU (Selectable by keypad)	
	Data bit/parity	8-bits/No parity, 7-bits/No parity, 8-bits/Even, 7-bits/Even, 8-bits/Odd, 7-bits/Odd (Selectable by keypad)	
	Stop bit	1, 2 (Selectable by keypad)	
	Error correction	Command request repeat system	
	Error detection	Parity check, Checksum (Shinko protocol), LRC (MODBUS protocol ASCII), CRC-16 (MODBUS protocol RTU)	
	Data Format		
	Communication Protocol	Shinko Protocol	MODBUS ASCII
			MODBUS RTU
	Start bit	1	1
	Data bit	7	7 (8) (Selectable)
	Parity	Even	Even (No parity, Odd) (Selectable)
	Stop bit	1	1 (2) (Selectable)
EVT3, EVT4 outputs (Contact output 3, 4) [EVT3 option]	Same as Contact output.		
Transmission output 2 [TA2 option]	Converting resistivity, temperature or MV to analog signal every input sampling period, outputs the value in current. (Default: Transmission output 1: Resistivity, 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		

