SPEC SHEET

Digital Indicating Conductivity Meter

AER-102- ECH (High 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	H	☐	, ☐☐☐	
Input points	2					2 points
Input		EC				4-electrode conductivity sensor (Temperature element: Pt100) (*1)
						4-electrode conductivity sensor (Temperature element: Pt1000) (*1)
Concentration			H			High 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 ECH.
(*3) If Transmission output 2 (TA2 option) is ordered, EVT1 is not available.

Measurement range (Rated scale)

Input			Scale Range	Resolution	Conductivity Zero Adjustment Value Setting Range
Conductivity	Conductivity	Cell constant 1.0/cm	0.00 to 20.00 mS/cm	0.01 mS/cm	-2.00 to 2.00
			0.0 to 200.0 mS/cm	0.1 mS/cm	-20.0 to 20.0
			0.0 to 500.0 mS/cm	0.1 mS/cm	-50.0 to 50.0
			0 to 500 mS/cm	1 mS/cm	-50 to 50
			0.000 to 2.000 mS/cm	0.001 mS/cm	-0.200 to 0.200
			0.000 to 5.000 mS/cm	0.001 mS/cm	-0.500 to 0.500
			0.00 to 50.00 mS/cm	0.01 mS/cm	-5.00 to 5.00
			0 to 2000 μS/cm	1 μS/cm	-200 to 200
			0 to 5000 μS/cm	1 μS/cm	-500 to 500
			0.000 to 2.000 S/m	0.001 S/m	-0.200 to 0.200
			0.00 to 20.00 S/m	0.01 S/m	-2.00 to 2.00
			0.00 to 50.00 S/m	0.01 S/m	-5.00 to 5.00
			0.0 to 50.0 S/m	0.1 S/m	-5.0 to 5.0
			0 to 2000 mS/m	1 mS/m	-200 to 200
			0.000 to 5.000 S/m	0.001 S/m	-0.500 to 0.500
			0.0 to 200.0 mS/m	0.1 mS/m	-20.0 to 20.0
			0.0 to 500.0 mS/m	0.1 mS/m	-50.0 to 50.0
			0.0 to 20.0 g/L	0.1 g/L	-2.0 to 2.0
			0 to 200 g/L	1 g/L	-20 to 20
			0 to 500 g/L	1 g/L	-50 to 50
			0 to 2000 mg/L	1 mg/L	-200 to 200
			0 to 5000 mg/L	1 mg/L	-500 to 500

Conduc-tivity	Conduc-tivity	Cell constant 10.0/cm	0.0 to 200.0 mS/cm	0.1 mS/cm	-20.0 to 20.0
			0.0 to 500.0 mS/cm	0.1 mS/cm	-50.0 to 50.0
			0 to 2000 mS/cm	1 mS/cm	-200 to 200
			0.00 to 20.00 S/m	0.01 S/m	-2.00 to 2.00
			0.00 to 50.00 S/m	0.01 S/m	-5.00 to 5.00
			0.0 to 200.0 S/m	0.1 S/m	-20.0 to 20.0
			0 to 200 g/L	1 g/L	-20 to 20
			0 to 500 g/L	1 g/L	-50 to 50
			0 to 2000 g/L	1 g/L	-200 to 200
	Seawater salinity		0.00 to 4.00%	0.01%	-0.40 to 0.40
	NaCl salinity		0.00 to 20.00%	0.01%	-2.00 to 2.00
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 Salinity conversion: ±1% of measurement span TDS conversion: ±1.5% of measurement span
Linearity	Conductivity: ±0.5% of measurement span Salinity conversion: ±1% of measurement span TDS conversion: ±1.5% of measurement span
Indication accuracy	Temperature: ±1℃
Conductivity calibration	Setting range of conductivity zero adjustment value: Refer to the Measurement range.
Temperature calibration	Calibration range: -10.0 to 10.0℃
Contact output	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
Transmission output 1	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
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 com-pensation range	0.0 to 100.0℃
Ambient temperature	0 to 50℃ (32 to 122℉)
Ambient humidity	35 to 85 %RH (Non-condensing)
Power supply (user-specified)	AER-102-ECH: 100 to 240 V AC 50/60 Hz Allowable fluctuation range: 85 to 264 V AC AER-102-ECH 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 conductivity, 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	1
Data bit	7	7 (8) (Selectable)	8
Parity	Even	Even (No parity, Odd) (Selectable)	No parity (Even, Odd) (Selectable)
Stop bit	1	1 (2) (Selectable)	1 (2) (Selectable)

EVT3, EVT4 outputs (Contact output 3, 4) [EVT3 option]	Same as Contact output.
Transmission output 2 [TA2 option]	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

Dimensions (Scale: mm)	Gasket Screw type mounting bracket Terminal cover (sold separately) 96 48 11.5 98.5 91 106.2 104.5 (when terminal cover is used)
Panel cutout (Scale: mm)	130 92$^{+0.8}_{0}$ 45$^{+0.5}_{0}$ n×48-3 $^{+0.5}_{0}$ 92$^{+0.8}_{0}$ Horizontal close mounting n: Number of mounted units
Terminal arrangement	GND ① POWER SUPPLY + ② 24V AC/DC ③ POWER SUPPLY ② 100to240V AC ③ ④ RS-485 YA(−) YB(+) SG RS-485 YA(−) YB(+) SG TRANSMIT OUTPUT2 + ⑤ − ⑥ EVT1 ⑤ NO ⑥ 3A 250V AC EVT2 ⑦ NO ⑧ 3A 250V AC ⑨ ⑩ EVT3 NO 1A 250V AC EVT4 NO 1A 250V AC TRANSMIT OUTPUT1 + ⑪ − ⑫ 1 ⑬ 2 ⑭ 3 ⑮ 4 ⑯ SENSOR E ⑰ A/T ⑱ B/T ⑲ B ⑳ 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, 3, 4: Conductivity sensor terminals (⑬-⑭-⑮-⑯) 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)