SETPOINT COMPARATOR

AM-147

✻ RS232C output

■ DC Voltage Measurement

Input	Range	Measuring Range	Display Adjustable	Input Impedance	Input Protection
DV	11	±99.9mV	Offset ±9999 Fullscale ±0 to 9999	100MΩ	±250V
	12	±999.9V		100MΩ	±250V
	13	±9.999V		1MΩ	±250V
	14	±99.99V		10MΩ	±500V
	15	±700.0V		10MΩ	±700V
	IV	1 to 5V		1MΩ	±250V

Accuracy: ±(0.03% of rdg + 2 digit)(23°C±5°C 45 to 75% RH)

■ DC Current Measurement

Input	Range	Measuring Range	Display Adjustable	Internal Resistance	Input Protection
DA	23	±9.999mA	Offset ±9999 Fullscale ±0~9999	10Ω	±150mA
	24	±99.99mA		1Ω	±500mA
	25	±999.9mA		0.1Ω	±3A
	2A	4 to 20mA		10Ω	±150mA

Accuracy: ±(0.1% of rdg +2 digit)(23°C±5°C 45 to 75% RH)
±(0.3% rdg +2 digit) for 25 range

■ General specifications

●Measurement block

Input configuration: Single ended
Operation method: Dual slope
Conversion rate: 12.5 time/sec (50 Hz), 15 time/sec (60 Hz)
Noise rejection ratio: NMR more than 50 dB (50/60 Hz)
Temp. coefficient: ±(0.005% of rdg +0.3 digit)/°C
Display: Red LED, 14.2 mm height
Green LED, 8 mm height for setpoint
Polarity display: Automatic "–" display when the computation result is minus
Overrange warning: When input exceeds the maximum display, display 0L or –0L
Maximum display: 0 to ±9999 (4 digit)
Decimal poin: Settable to any digit position (by front sheet switch)
Zero display: Leading zero suppression

●External control block

Hold: Shorted COM terminal and S/H terminal or level "0"
Start: Shorted COM terminal and S/H terminal or level "1"
Digital zero: Shorted COM terminal and DZ terminal or level "0" (displayed zero and that value is stored)

Peak hold
Valley hold: Shorted COM terminal and PH terminal or level "0"
Peak Valley hold
Pattern selection: Any one of 8 patterns is settable in combination of COM terminal and P.SEL terminal 0, 1 and 2
Level "0" : 0 to 1.5V
Level "1" : 3.5 to 5 V
Input current : less than -2 mA

●Comparison block

Control method: Computation by microcomputer
Setting range: -9999 to 0 to +9999 (Including polarity)
Setting condition:

■ Features

- Conversion rate 12.5times/sec(50Hz) or 15times/sec(60Hz)
- Four setpoint(Can display two setpoint)
- Maltiple range
- Scaling value and setting value stored 8 pattern
- Peak hold, Valley hold, Peak-valley hold, Digital zero, Moving average(standard)
- Power supply for sensor 24VDC 40mA
- Direct setting function
- Power supply 90 to 264VAC

Comparison condition:

Comparison condition	Comparison result
High high limit set value < Measured value	HH
High limit set value < Measured value	HI
High high limit set value Low low limit set value ≧ Measured value ≧ High limit set value Low limit set value	GO
Measured value < Low limit set value	LO
Measured value < Low low limit set value	LL

Comparison relay output: Contact capacity
250 V AC 0.2 A Resistive load
120 V AC 0.5 A Resistive load
28 V DC 1 A Resistive load
Photo coupler output: (NPN) Voltage = Max. 30 V
Current = Max. 50 mA
Saturation voltage = less than 1.2 V at 50 mA
Hysteresis: 1 to 999 digit for each set point
External control: Relay reset
Shorted COM terminal and R.RE terminal or level "0"
Level "0" : 0 to 1.5 V
Level "1" : 3.5 to 5 V
Input current : less than -2 mA

●Common block

Memory backup: EEPROM (rewrite 100,000 times) back up 10 years
Operating temp: 0 to 50°C 35 to 85% RH (No condensation)
Storage temp: -10 to 70°C less than 60% RH
Power supply: 90 to 264 V AC (50 Hz/60 Hz)
Power consumption: Approx 10 VA typ (at 100 V AC)
Dimensions: 96 mm(W) X 348 mm(H) X 3148 mm(D) DIN size
Weight (unit only): Approx 450 g
Dielectric strength: Input/COM, EXC (0 V), comparative output, 500 V DC/1 min.
Input/COM of each output (BCD:FD.COM, ANALOG:-, RS-232C:SG, RS-485) 500 V DC/1 min.
Power supply terminal/input terminal, COM, EXC (0 V), case, comparative output, 1500 V AC/1 min.
Power supply terminal/COM of each output (BCD:D.COM, ANALOG:-, RS-232C:SG, RS-485) 1500 V AC/1 min.
Insulation resistance: 500 V DC more than 100 MΩ at the above terminals
Dielectric noise: Power supply terminal normal/common mode ±1500 V
Power supply for sensor: 24 V DC±10% 40 mA ripple 100 mVp-p
Accessories: Instruction manual
quick manual, setting list, unit label, terminal cover

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AM-147

■ Output specifications

●BCD data output (isolated input (Lo))

• At TTL

Measured data:	Tri-stage parallel BCD, Positive logic, latch output
Polarity signal:	Level "1" at minus input
Over signal:	Level "1" at overflow input
Printing command signal:	Positive pulse approx. 20 ms at every measurement completion (available negative logic the above signals)

TTL level, funout 2, CMOS 5V

• At open collector (NPN)

Measured data:	Negative logic transistor "ON" at logic 1
Polarity signal:	Transistor "ON" at minus input
Over signal:	Transistor "ON" at overflow input
Printing command signal:	Transistor "ON" during a period of approx. 20 ms at every measurement completion
Transistor output capacity:	Applied voltage, max. 30V current max. 10 mA saturated output voltage less than 1.2 V at 10 mA
ENABLE:	Shorted ENABLE terminal and D.COM terminal or level "0", Transistor output are OFF (TTL output is high impedance status)
	Level "0" : 0 to 1.5 V
	Level "1" : 3.5 to 5 V
	Input current : less than - 2 mA

●RS-485 (Isolated input (Lo))

Electrical characteristics:	Conforming to EIA RS-485
Communication method:	2-wires system half-duplex (Polling and selecting)
Transmission speed:	2400/4800/9600/19200 bps
Start bit:	1 bit
Data length:	7 bits
Error detection:	Even parity (BCC)
Stop bit:	2 bits
Character code:	ASCII code
Transmission control:	No protocol
Signal name used:	

Signal name	Signal	Signal direction
Non-reversible output	+	Input/output
Reversible output	–	Input/output

No. of connectable meter:	Up to 31 meters
Line length:	Up to 500 m in total

●RS-232C (Isolated input (Lo))

Electrical characteristics:	Conforming to EIA RS-232C
Communication method:	Full duplex
Synchronous method:	Start and stop
Transmission speed:	2400/4600/9600/19200 bps
Start bit:	1 bit
Data length:	7 bits
Error detection:	Even parity
Stop bit:	2 bits
Character code:	ASCII code

●Analog output (Isolated input (Lo))

Resolution:	13 bits
Output response:	Less than 0.5S (0 to 90%)

Output	Resistive load	Accuracy (23°C ± 5°C)	Ripple
0 to 10 V	More than 10 kΩ	±0.5% FS	50 mV P-P
4 to 20 mA	0 to 550Ω	±0.5% FS	Less than 0.5%

* Ripple for 4 to 20 mA at resistive load 250Ω, 20 mA

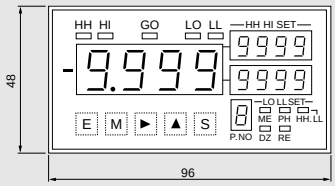
■ Ordering Code

AM-147-□□-□□-□

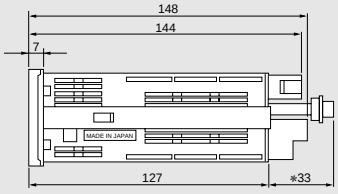
- Comparator Output: 1. Relay, 2. Photo Coupler
- Output: 1. None, 2. BCD(Open collector), 3. BCD(TTL), 4. RS-485, 5. RS-232C, 6. ANALOG(4 to 20mA), 7. ANALOG(0 to 10V)
- Power Supply: 1. 90 to 264VAC
- Input Range: DV(11,12,13,14,15,1V), DA(23,24,25,2A)

■ Dimensions

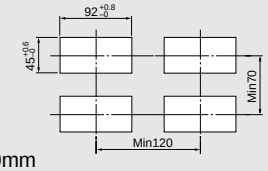
Front



Side



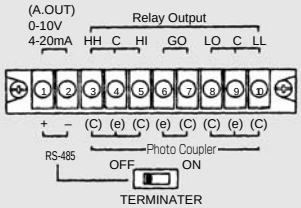
Panel Cutout



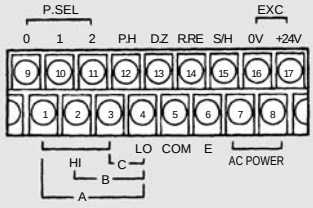
Panel thickness 0.8 to 5.0mm

■ Connection Diagram

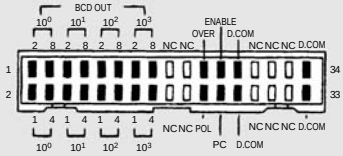
Upper



Lower



BCD output



RS232C output