



## Features

- ★ Standard DIN size (48mm x 96mm)
- ★ 5 digit display ( $\pm 99999$ )
- ★ High-speed sampling rate (4000 times/sec)
- ★ Communication and setting by USB connection (Option)
- ★ BCD, RS-232C, RS-485 output (Option)
- ★ Sensor power supply 24Vdc $\pm 10\%$  40mA

## Ordering code

AMH-763- **VA** - **1** **□** - **□**

Code	Input
VA	DC Voltage & Current ( $\pm 1V$ , $\pm 10V$ , $\pm 5V$ , 4 to 20mA)

Code	Power supply
1	100 to 240Vac $\pm 10\%$

Code	Output
1	Display only
2	BCD output (Open collector)
3	BCD output (TTL)
4	RS-232C output
5	RS-485 output
6	USB output
7	Analog output

Code	Comparative output
1	Relay output
2	Photocoupler output

## Input Specifications

### ◆ DC voltage, DC Current

Range	Measurement range	Resolution	Impedance	Max. allowable input	Accuracy
0~1	$\pm 1V$	100 $\mu V$	1M $\Omega$ or more	$\pm 250V$	$\pm 0.1\%$ of FS
0~10	$\pm 10V$	1mV			
1~5	$\pm 5V$	100 $\mu V$			
4~20	4 to 20mA	1 $\mu A$	Approx. 50 $\Omega$	$\pm 70mA$	

Note : Measurement range is selectable by input range settings

<b>Number of input</b>	2 channel input (Between Ach and Bch is non-isolated)
<b>Input calculation</b>	K-A, A+B, A-B, K-(A+B) $((A-B)/ B ) \times 1000$ $B/A \times 1000$ , $(1-B/A) \times 1000$ $(B/A-1) \times 1000$ *K the available setting value

## Specifications

### ◆ Common specifications

<b>Display</b>	Main display: Red or green 7 segment LED (height 14.2mm) Sub display : Green 7 segment LED (height 8mm)
<b>Polarity</b>	'-' is displayed automatically at negative polarity
<b>Display range</b>	-99999 to 99999 (5 digits)
<b>Scaling</b>	Offset $\pm 99999$ , Full scale $\pm 99999$
<b>Decimal point</b>	Able to set to any digit
<b>Zero display</b>	Leading zero suppression
<b>Operating temperature</b>	0 to 50°C
<b>Operating relative humidity</b>	35 to 85% (non-condensing)
<b>Power supply</b>	100 to 240Vac $\pm 10\%$ (50/60Hz)
<b>Power consumption</b>	20VA max.
<b>Dimensions</b>	96mm(W) x 48mm(H) x 144.5mm(D) DIN size (147.0(D)mm when BCD output)
<b>Weight</b>	Approx. 400g
<b>Dielectric strength</b>	1500VAC per 1 min. : Power supply terminal - input terminal / output terminal / external control terminal 1500VAC per 1 min. : Earth terminal - power supply terminal / input terminal
<b>Insulation resistance</b>	500Vdc, 100M $\Omega$ or more on the above terminals
<b>Sampling rate</b>	Approx. 0.25msec (4000 times per second) to approx. 1sec (1 time per second)
<b>Moving average</b>	None / 2 / 4 / 8 / 16 / 32 / 64 selectable
<b>Display update cycle</b>	Max. 50msec (20 times per second) to Min. 1sec (1 time per second)
<b>Sensor excitation (Sensor power supply)</b>	24Vdc $\pm 10\%$ 40mA (Ripple $\pm 100mVp-p$ or less)
<b>Standard accessory</b>	2 unit sticker, terminal cover, connector for BCD output when BCD output option
<b>Optional accessory</b>	Front panel cover (WP-3)

◆ External control

<b>Start / Hold</b>	Hold the display at any time (Ach, Bch independent)
<b>Digital zero</b>	Displays 0 at any time (Ach, Bch independent)
<b>Peak hold</b>	Holds Max. value (PH) / Min. value (VH) / Max. value-Min. value (PVH) (Ach, Bch independent)
<b>Pattern select</b>	Available for switching 8 pattern analog output scaling value, scaling setup value, hysteresis, comparator setup value
<b>Comparator output reset</b>	Stops comparator operation at any time
<b>Clear</b>	Clears Max. value / Min. value

◆ Comparative output specifications

<b>Comparison result</b>	5 setpoints (HH/Hi/GO/LO/LL)						
<b>Comparator objective</b>	1ch : Comparator output to present value 2ch : Comparator output to calculation value						
<b>Output method</b>	Relay output or photocoupler output						
<b>Output rating</b>	<b>Relay output :</b> Output rating AC250V 1A (resistance load), DC30V 1A (resistance load) The electrical life 50 thousand times (The rated load) <b>Photocoupler output:</b> Output rating DC30V 20mA Output saturation 1.2V or less (When 20mA)						
<b>Setting range</b>	-99999 to 99999						
<b>Hysteresis</b>	Able to set 1 to 50000 digit for each setpoints						
<b>Operation speed</b>	Relay : Max. 10msec, Photocoupler : Max. 100µsec						
<b>Comparative condition</b>	Result	Comarator output					Relay contact
		HH	HI	GO	LO	LL	
Display value > HH	HH	ON	OFF	OFF	OFF	OFF	Normal open
Display value > H	HI	OFF	ON	OFF	OFF	OFF	
HH, HI ≥ Display value ≥ LL, LO	GO	OFF	OFF	ON	OFF	OFF	
LO > Display value	LO	OFF	OFF	OFF	ON	OFF	
LL > Display value	LL	OFF	OFF	OFF	OFF	ON	

◆ Analog output specifications

Analog output	Load resistance	Resolution	Accuracy	Ripple
0 to 10V	10kΩ or more	0.2mV	±0.5% of FS	±50mVp-p
1 to 5V				±20mVp-p
4 to 20mA	500Ω or less	0.4µA		

◆ BCD output specifications

<b>Output format</b>	BCD (Binary-coded decimal) / Binary number
<b>Output method</b>	TTL or NPN open collector
<b>TTL specifications</b>	Positive logic TTL level Fan-out 2 (CMOS compatible)
<b>NPN Open collector specifications</b>	DC30V 10mA (MAX) Output saturation voltage: No more than 1.2V
<b>ENABLE input specifications</b>	When Enable and COM short, each output will be "OFF". (Open collector: transistor OFF, TTL: High impedance) ON electric voltage: 0 to 0.8V OFF electric voltage: 3 to 5V Input current: No more than -0.5mA

◆ RS-232C, RS-485 communication

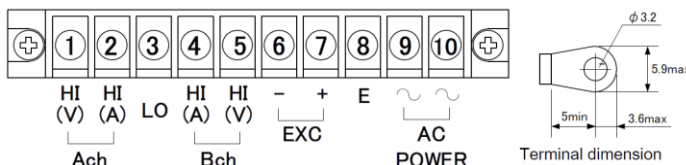
	RS-232C	RS-485
<b>Synchronization scheme</b>	Start-stop synchronization method	
<b>Communication method</b>	Full duplex	2-wire half-duplex
<b>Transmission speed</b>	38400 / 19200 / 9600 bps	
<b>Start bit</b>	1bit	
<b>Data length</b>	7bit / 8bit	
<b>Parity</b>	Even parity/ odd parity/ none	
<b>Error detection</b>	None	BCC
<b>Stop bit</b>	1bit / 2bit	
<b>Character code</b>	ASCII code	
<b>Transmission control process</b>	Ignored process	
<b>Signal name</b>	TXD, RXD, RTS, CTS, SG	+non reversal, -reversal
<b>Max. No. of meter connected</b>	1	31
<b>Line Length</b>	15m	Max. 500m (in total)
<b>Delimiter</b>	CR / LF / CR+LF	

◆ USB communication

<b>USB interface specification</b>	Rev1.1/2.0 full speed transfer B connector
<b>Supported OS</b>	Windows XP SP2, Windows Vista (32bit)
<b>Synchronization scheme</b>	Start-stop synchronization method
<b>Transmission speed</b>	9600 / 19200 / 38400bps
<b>Data bit length</b>	7bit / 8bit
<b>Stop bit length</b>	1bit / 2bit
<b>Parity</b>	Even parity/ odd parity/ none

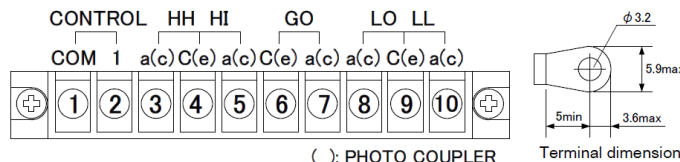
Terminal connections

◆ Lower terminals



No.	Name	Description
1	Ach HI (V)	Ach voltage input terminal (+)
2	Ach HI (A)	Ach current input terminal (+)
3	LO	Ach / Bch common input terminal (-)
4	Bch HI (A)	Bch current input terminal (+)
5	Bch HI (V)	Bch voltage input terminal (+)
6	EXC (-)	Sensor power supply (-)
7	EXC (+)	Sensor power supply (+)
8	E	Ground terminal
9	POWER	power supply terminal
10	POWER	(Nonpolarity)

◆ Upper terminals



( ) : PHOTO COUPLER

■ Relay output Comparative output code 1

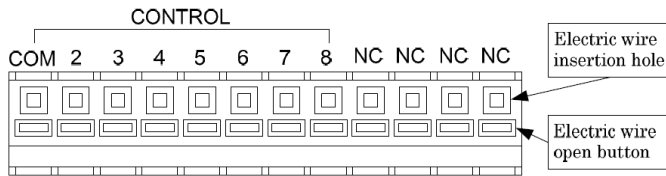
No.	Name	Description
1	COM	Ach voltage input terminal (+)
2	CONTROL 1	Ach current input terminal (+)
3	HH-a	Ach / Bch common input terminal (-)
4	HH/Hi-c	Bch current input terminal (+)
5	HI-a	Bch voltage input terminal (+)
6	GO-c	Sensor power supply (-)
7	GO-a	Sensor power supply (+)
8	LO-a	Ground terminal
9	LO/LL-c	power supply terminal
10	LL-a	(Nonpolarity)

■ Photocoupler output Comparative output code 2

No.	Name	Description
1	COM	Ach voltage input terminal (+)
2	CONTROL 1	Ach current input terminal (+)
3	HH-c	Ach / Bch common input terminal (-)
4	HH/Hi-e	Bch current input terminal (+)
5	HI-c	Bch voltage input terminal (+)
6	GO-e	Sensor power supply (-)
7	GO-c	Sensor power supply (+)
8	LO-c	Ground terminal
9	LO/LL-e	power supply terminal
10	LL-c	(Nonpolarity)

## ◆ Intermediate terminals

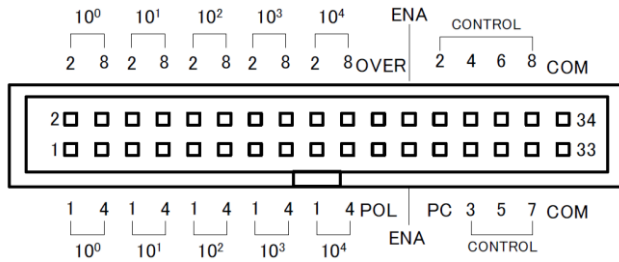
### ■ Display only Output code **1**



\*Conforming lead: Single wire  $\phi 0.4\text{mm}$  (AWG26) to  $\phi 1.0\text{mm}$  (AWG18)  
Stranded wire  $0.3\text{mm}^2$ (AWG22) to  $0.75\text{mm}^2$ (AWG20)

Name	Description
CONTROL COM	Control input common terminal
CONTROL 2	Control input No.2 terminal
CONTROL 3	Control input No.3 terminal
CONTROL 4	Control input No.4 terminal
CONTROL 5	Control input No.5 terminal
CONTROL 6	Control input No.6 terminal
CONTROL 7	Control input No.7 terminal
CONTROL 8	Control input No.8 terminal
NC	No connection
NC	No connection
NC	No connection
NC	No connection

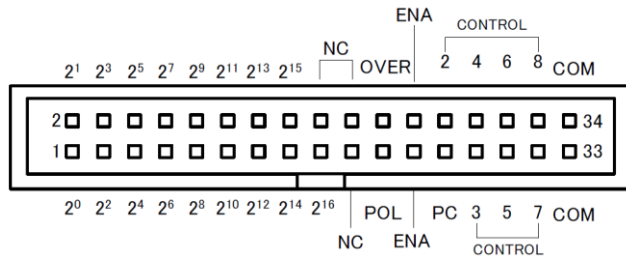
### ■ BCD output Output code **2 3**



\*Conforming lead: Single wire  $\phi 0.4\text{mm}$  (AWG26) to  $\phi 1.0\text{mm}$  (AWG18)  
Stranded wire  $0.3\text{mm}^2$ (AWG22) to  $0.75\text{mm}^2$ (AWG20)

No.	Name	Description	No.	Name	Description	
1	$10^0$ 1	Data output	18	$10^1$ 2	Data output	
2	$10^0$ 2		19	$10^1$ 4		
3	$10^0$ 4		20	$10^1$ 8		
4	$10^0$ 8		21	POL		Polarity output
5	$10^1$ 1		22	OVER		Over output
6	$10^1$ 2		23	ENA		Output enable input
7	$10^1$ 4		24			
8	$10^1$ 8		25	PC		Printing command signal
9	$10^2$ 1		26	CONTROL 2		Control input No.2 terminal
10	$10^2$ 2		27	CONTROL 3		Control input No.3 terminal
11	$10^2$ 4		28	CONTROL 4		Control input No.4 terminal
12	$10^2$ 8		29	CONTROL 5		Control input No.5 terminal
13	$10^3$ 1		30	CONTROL 6		Control input No.6 terminal
14	$10^3$ 2		31	CONTROL 7		Control input No.7 terminal
15	$10^3$ 4		32	CONTROL 8		Control input No.8 terminal
16	$10^3$ 8		33	COM		Common terminal
17	$10^4$ 1		34			

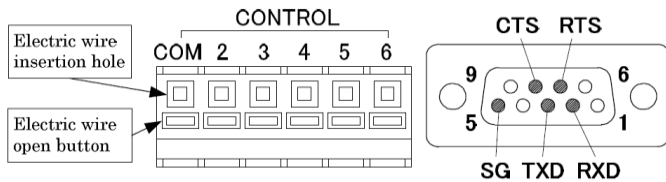
### ■ Binary type Output code **2 3**



\*Conforming lead: Single wire  $\phi 0.4\text{mm}$  (AWG26) to  $\phi 1.0\text{mm}$  (AWG18)  
Stranded wire  $0.3\text{mm}^2$ (AWG22) to  $0.75\text{mm}^2$ (AWG20)

No.	Name	Description	No.	Name	Description	
1	$2^0$	Data output	18	Data output		
2	$2^1$		19		NC	No connection
3	$2^2$		20		POL	Polarity output
4	$2^3$		21			
5	$2^4$		22		OVER	Over output
6	$2^5$		23		ENA	Output enable input
7	$2^6$		24			
8	$2^7$		25		PC	Printing command signal
9	$2^8$		26		CONTROL 2	Control input No.2 terminal
10	$2^9$		27		CONTROL 3	Control input No.3 terminal
11	$2^{10}$		28		CONTROL 4	Control input No.4 terminal
12	$2^{11}$		29		CONTROL 5	Control input No.5 terminal
13	$2^{12}$		30		CONTROL 6	Control input No.6 terminal
14	$2^{13}$		31		CONTROL 7	Control input No.7 terminal
15	$2^{14}$		32		CONTROL 8	Control input No.8 terminal
16	$2^{15}$		33		COM	Common terminal
17	$2^{16}$		34			

### ■ RS-232C output Data output code **4**



\*Conforming lead: Single wire  $\phi 0.4\text{mm}$  (AWG26) to  $\phi 1.0\text{mm}$  (AWG18)  
Stranded wire  $0.3\text{mm}^2$ (AWG22) to  $0.75\text{mm}^2$ (AWG20)  
Cable: D-SUB 9 pin (female) cross cable (maximum 15m)

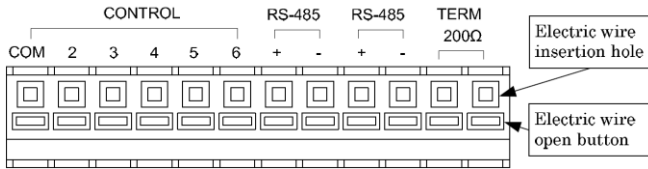
#### Terminal connection side

No.	Name	Description
1	CONTROL COM	Control input common terminal
2	CONTROL 2	Control input No.2 terminal
3	CONTROL 3	Control input No.3 terminal
4	CONTROL 4	Control input No.4 terminal
5	CONTROL 5	Control input No.5 terminal
6	CONTROL 6	Control input No.6 terminal

#### Connector connection side

No.	Name	Description
1	NC	No connection
2	RXD	Received exchange data
3	TXD	Transmit exchange data
4	NC	No connection
5	SG	Signal grand
6	NC	No connection
7	RTS	Request to send
8	CTS	Clear to send
9	NC	No connection

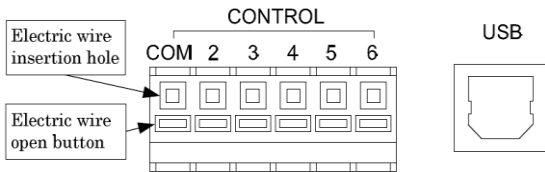
■RS-485 output Output code **5**



\*Conforming lead: Single wire  $\phi 0.4\text{mm}$  (AWG26) to  $\phi 1.0\text{mm}$  (AWG18)  
Stranded wire  $0.3\text{mm}^2$ (AWG22) to  $0.75\text{mm}^2$ (AWG20)

No.	Name	Description
1	CONTROL COM	Control input common terminal
2	CONTROL 2	Control input No.2 terminal
3	CONTROL 3	Control input No.3 terminal
4	CONTROL 4	Control input No.4 terminal
5	CONTROL 5	Control input No.5 terminal
6	CONTROL 6	Control input No.6 terminal
7	RS-485 (+)	RS-485 non-inversion input & output
8	RS-485 (-)	RS-485 inversion input & output
9	RS-485 (+)	RS-485 non-inversion input & output
10	RS-485 (-)	RS-485 inversion input & output
11		
12	TERM 200Ω	Termination resistor

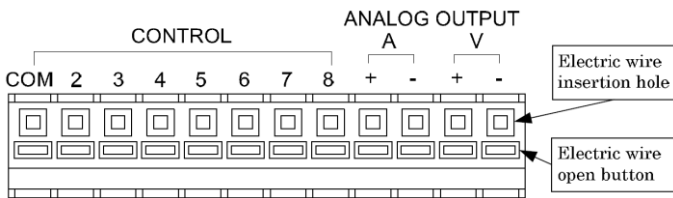
■USB output Data output code **6**



\*Conforming lead: Single wire  $\phi 0.4\text{mm}$  (AWG26) to  $\phi 1.0\text{mm}$  (AWG18)  
Stranded wire  $0.3\text{mm}^2$ (AWG22) to  $0.75\text{mm}^2$ (AWG20)  
Connector :USB B type, cable length maximum 5m

No.	Name	Description
1	CONTROL COM	Control input common terminal
2	CONTROL 2	Control input No.2 terminal
3	CONTROL 3	Control input No.3 terminal
4	CONTROL 4	Control input No.4 terminal
5	CONTROL 5	Control input No.5 terminal
6	CONTROL 6	Control input No.6 terminal

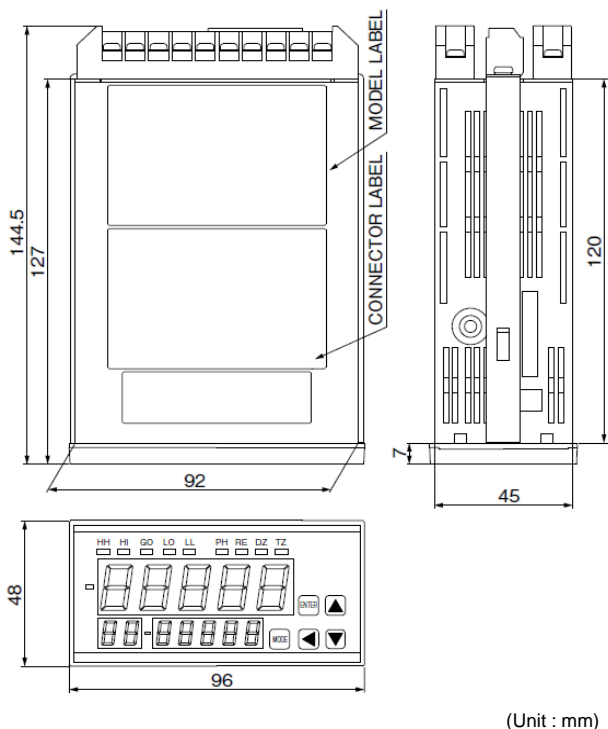
■Analog output Output code **7**



\*Conforming lead: Single wire  $\phi 0.4\text{mm}$  (AWG26) to  $\phi 1.0\text{mm}$  (AWG18)  
Stranded wire  $0.3\text{mm}^2$ (AWG22) to  $0.75\text{mm}^2$ (AWG20)

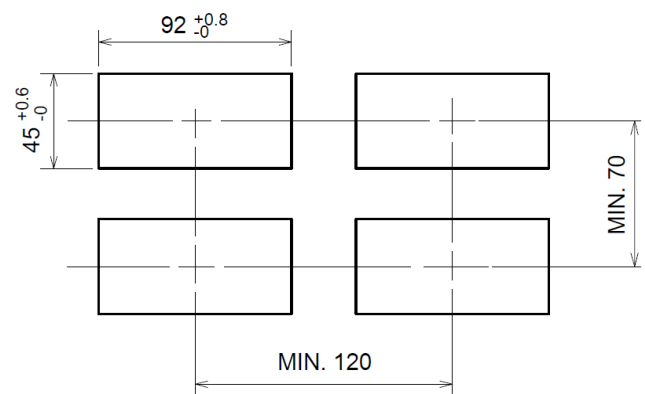
No.	Name	Description
1	CONTROL COM	Control input common terminal
2	CONTROL 2	Control input No.2 terminal
3	CONTROL 3	Control input No.3 terminal
4	CONTROL 4	Control input No.4 terminal
5	CONTROL 5	Control input No.5 terminal
6	CONTROL 6	Control input No.6 terminal
7	CONTROL 7	Control input No.7 terminal
8	CONTROL 8	Control input No.8 terminal
9	Analog A (+)	Analog current output + side terminal
10	Analog A (-)	Analog current output - side terminal
11	Analog V (+)	Analog voltage output + side terminal
12	Analog V (-)	Analog voltage output - side terminal

**Dimensions**



(Unit : mm)

**Panel cutout**



\*Recommended Panel thickness 0.8mm to 5mm

(Unit : mm)

\* Specification is subject to change without notice