

5 DIGITAL DUAL INPUT & SCREEN MICRO-PROCESS METER with 1~2 ALARMS / RS-485

AM5H-D

FEATURES

- Accuracy: $\pm 0.1\%$ F.S. ± 1 digit (DC); $\pm 0.2\%$ F.S. ± 1 digit (AC)
- Measuring AC, DC Voltage / AC, DC Current individually
- High brightness 0.4" LED display range: -19999~99999; decimal point selectable
- Reset / 1~2 Alarms (Hi or Lo) programmable / Analog output (15 bit resolution) or RS-485 communication optional
- High stability, non-flammable case (PC), high safety
- CE approval



ORDER INFORMATION: AM5H-D - [Code 1] - [Code 2] [Code 3] - [Code 4] [Code 5] [Code 6] [Code 7]

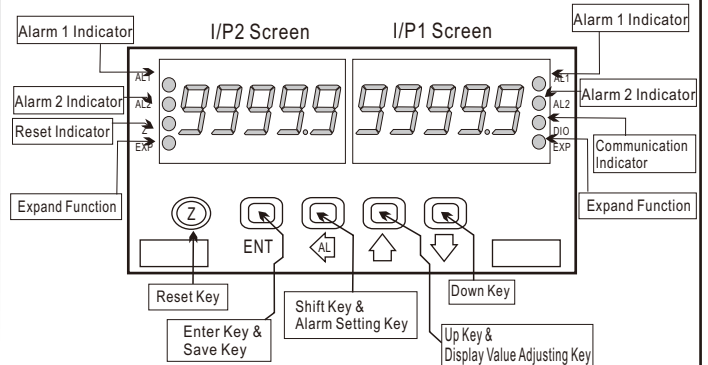
Code 1	Input Type	Code 2	I/P 1	Code 3	I/P 2	Code 4	Aux. Power	Code 5	I/P 1 Alarm	Code 6	I/P 2 Alarm	Code 7	Output
D	DC	1	0~50mV	1	0~50mV	A	AC/DC 100~240V	N	None	N	None	N	None
A	AC AVG	2	0~10V	2	0~10V	D	AC/DC 22~60V	1	1 Relay	1	1 Relay	Y	RS-485
M	AC TRMS	3	0~300V	3	0~300V			2	2 Relays	2	2 Relays	A	4~20 mA
		4	0~20mA	4	0~20mA			3	1 Open Collect	3	1 Open Collect	V	0~10V
		5	4~20mA	5	4~20mA			4	2 Open Collect	4	2 Open Collect	O	Option
		6	0~2A	6	0~2A								
		7	0~5A	7	0~5A								
		O	Option	O	Option								

**1:3 Relay type only offers A(NormalOpen) output. O.C. (Open Collect) offers NPN of C.E. output.

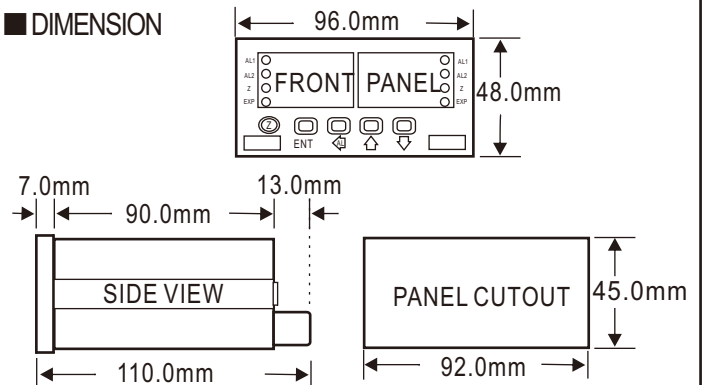
SPECIFICATION

- ◆ Accuracy: $\pm 0.1\%$ F.S. ± 1 digit (DC)
 $\pm 0.2\%$ F.S. ± 1 digit (AC)
- ◆ Display Screen: High brightness red LED; 10.16mm(0.4")
- ◆ Sampling Time: 16 cycles / sec
- ◆ Display Range: -19999~99999
- ◆ Zero Adjustment: -19999~99999
- ◆ Over Range Indication: doFL / ioFL or -doFL / -ioFL
- ◆ Polarity Indication: Automatic with "-" indication
- ◆ Parameters Setting: Push buttons
- ◆ Back Up Memory: EEPROM
- ◆ Alarm Action: " \geq (Hi) on" or " $<$ (Lo) on"
- ◆ Alarm Run Delay Time: 0~99 sec
- ◆ Relay Contact: AC 277V / 7A; DC 30V / 7A
- ◆ Analog Output Resolution: 15 bit
- ◆ Output Response Time: <250 msec (0~90%)
- ◆ Output Capability: Voltage Output: <20mA
Current Output: <10V
- ◆ Communication: RS-485 Modbus RTU mode
- ◆ Baud Rate: 38400 / 19200 / 9600 / 4800 bps
- ◆ Temperature Coefficient: 100ppm / $^{\circ}$ C (0~60 $^{\circ}$ C)
- ◆ Operating Temperature: 0~60 $^{\circ}$ C
- ◆ Operating Humidity: 20~90% RH (non-condensing)
- ◆ Storage Temperature: -10~70 $^{\circ}$ C
- ◆ Storage Humidity: 20~90% RH (non-condensing)
- ◆ Power Supply: AC/DC 100~240V; AC/DC 22~60V
- ◆ Power Consumption: 8.5VA (all functions output)
- ◆ Surge Test: 1.5kVac / 1min (Input / Power)
- ◆ Input Impedence: Voltage: $>2V$ for 20k Ω / V; $\leq 2V$ for $>200M\Omega$
Current: $\geq 0.2A$ at 100mV; $<0.2A$ at 1V

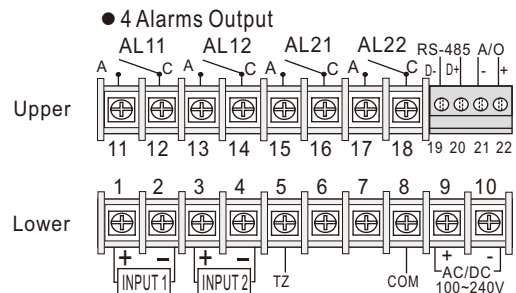
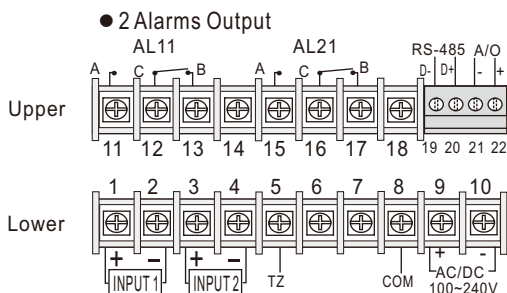
FRONT PANEL & KEY FUNCTIONS



DIMENSION

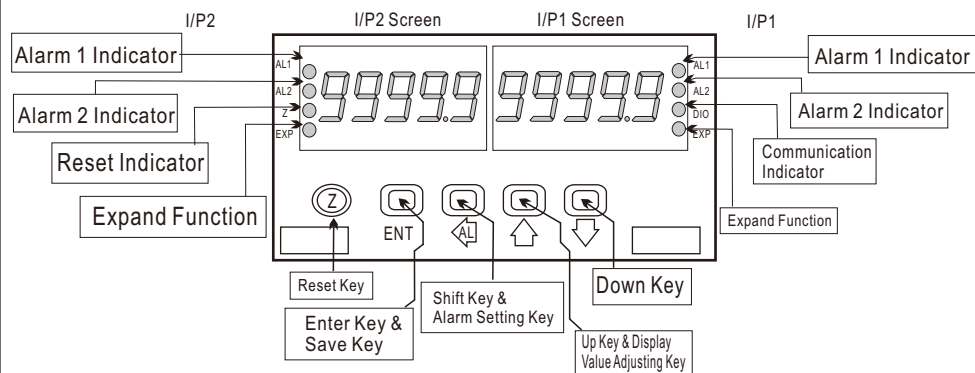


WIRING CONNECTION



* Please understand key indicators & functions at the first operation.

FRONT PANEL & KEY FUNCTIONS



Key Name	Symbol	Descriptions
Reset Key	Ⓩ	1. Press this key to enable the reset function & reset indicator (Z) is light; press this key again to disable the reset function & reset indicator (Z) is dark.
Enter Key & Save Key	ENT	1. In the measuring status, press this key can enter to parameter pages. 2. In the parameter setting, press this key can save the value & go to next parameter.
Shift Key & Alarm Setting Key	←AL	1. In the measuring status, press this key for 3 sec can enter to alarm setting page (The selecting digit will be flashed) 2. In the parameter setting, press this key can move the cursor left.
Up Key & Display Value Adjusting Key	↑	1. In the measuring status, press this key for 3 sec can enter to display value adjustment of "ZERO" & "SPAN" 2. In the parameter setting, press this key can increase the digits.
Down Key	↓	1. In the parameter setting, press this key can decrease the digits.

- **1. The following block charts are parameters codes, parameter codes & parameters will alternate flashing if the parameters can be modified.
 2. To modify the parameters, please press ←, ↑, ↓, and press ENT to save the parameter after the modification.
 3. Please don't forget the new pass code after modification.
 4. In any pages, press ↑ & ↓, or don't press any keys for 2 minutes that will back to measuring status.

GENERAL MODE OPERATING PROCEDURES

Block Charts	Display	Descriptions	Default	
Power ON	10000	Measuring Status	Present value for measurement.	
Press: ← for 3 sec	AL 11	I/P1's Alarm 1 Setpoint (AL11)	Press ←, ↑, ↓ to modify input 1's alarm 1 setpoint.	00000
Press: ENT	AL 12	I/P1's Alarm 2 Setpoint (AL12)	Press ←, ↑, ↓ to modify input 1's alarm 2 setpoint.	00000
Press: ENT	AL 21	I/P2's Alarm 1 Setpoint (AL21)	Press ←, ↑, ↓ to modify input 2's alarm 1 setpoint.	00000
Press: ENT	AL 22	I/P2's Alarm 2 Setpoint (AL22)	Press ←, ↑, ↓ to modify input 2's alarm 2 setpoint.	00000
Press: ENT		Display: "ZERO" & "SPAN" Adjustment		
Power ON	10000	Measuring Status	Present value for measurement.	
Press: ↑ for 3 sec	dPEr 1	Display Zero 1 Adjustment (dZEro1)	Press ← to select adjusting speed rate, press ↑, ↓ to modify the zero value. PS: To use this function to adjust the real zero value.	00000
Press: ENT	dSPA 1	Display Span 1 Adjustment (dSPAN1)	Press ← to select adjusting speed rate, press ↑, ↓ to modify the span value. PS: To use this function to adjust the real span value.	00000
Press: ENT				
Press: ENT	dPEr 2	Display Zero 2 Adjustment (dZEro2)	Press ← to select adjusting speed rate, press ↑, ↓ to modify the zero value. PS: To use this function to adjust the real zero value.	00000
Press: ENT	dSPA 2	Display Span 2 Adjustment (dSPAN2)	Press ← to select adjusting speed rate, press ↑, ↓ to modify the span value. PS: To use this function to adjust the real span value.	00000

PROGRAMMING MODE OPERATING PROCEDURES

Block Charts	Display	Descriptions	Default	
Power ON	10000	Measuring Status	Present value for measurement.	
Press: ENT	PCod	Pass Code (P.Cod)	Press ←, ↑, ↓ to enter pass code.	00000
Press: ENT	P.Code Correct		Pass code is correct that will enter to parameter groups. Pass code is wrong that will back to measuring status.	
NO				
YES	SYS	System Setting Group		
Press: ENT	roP	Alarm Setting Group		
Press: ENT	RoP or doP	A/O Setting Group		
Press: ENT		RS485 Setting Group		

Display	Descriptions	Default
System Setting Group Procedures		
System Setting Page (SYS)		
595		
Press ENT ↓ dP1	Decimal Point 1 Setting (dP1)	Customers specify
Press ENT ↓ dSPL1	Display Low Scale 1 Setting (dSPL1)	Customers specify
Press ENT ↓ dSPH1	Display Hi Scale 1 Setting (dSPH1)	Customers specify
Press ENT ↓ dP2	Decimal Point 2 Setting (dP2)	Customers specify
Press ENT ↓ dSPL2	Display Low Scale 2 Setting (dSPL2)	Customers specify
Press ENT ↓ dSPH2	Display Hi Scale 2 Setting (dSPH2)	Customers specify
Press ENT ↓ AvG	Display Average Setting (AvG)	00005
Press ENT ↓ LCut	Display Low Cut Setting (LCut)	00000
Press ENT ↓ CodE	Pass Code Setting (CodE)	00000
Press ENT ↓ LoCK	Key Lock Setting (LoCK)	no
Press ENT ↓ AZ.SEL	Auto Zeroing Selection Setting (AZ.SEL)	in12
Alarm Setting Group Procedures		
Alarm Setting Page (roP)	The following steps are only available for alarm output.	
Press ENT ↓ ACt11	Alarm Action Setting	Hi
Press ENT ↓ ACt12		
Press ENT ↓ ACt21		
Press ENT ↓ ACt22		
Press ENT ↓ HYS11	Alarm Hysteresis Setting	00000
Press ENT ↓ HYS12		
Press ENT ↓ HYS21		
Press ENT ↓ HYS22		
Press ENT ↓ dEL11	Alarm Run Delay Setting	00000
Press ENT ↓ dEL12		
Press ENT ↓ dEL21		
Press ENT ↓ dEL22		

Display	A/O Setting Group Procedures	Default
A/O Setting Group Procedures		
RoP	A/O Setting Page (AoP)	The following steps are only available for analog output.
Press ENT ↓ PoLARr	A/O Polarity Setting (PoLAR)	Press \leftarrow \rightarrow to select output for positive or negative pole.
Press ENT ↓ AnLo	A/O Low Scale Setting (AnLo)	Press \leftarrow \rightarrow to adjust A/O low scale to correspond to the display value (programmable). EX: A/O is 0~10V, the display is 10.0 to output 0V, this value must be set for 10.0.
Press ENT ↓ AnHi	A/O Hi Scale Setting (AnHi)	Press \leftarrow \rightarrow to adjust A/O hi scale to correspond to the display value (programmable). EX: A/O is 0~10V, the display is 90.0 to output 10V, this value must be set for 90.0.
RS485 Setting Group Procedures		
doP	RS485 Setting Page (doP)	The following steps are only available for RS485 type.
Press ENT ↓ Addr	Address Setting (Addr)	Press \leftarrow \rightarrow to modify address (0~255).
Press ENT ↓ bAUd	Baud Rate Setting (bAUd)	Press \leftarrow \rightarrow to select baud rate (38400/19200/9600/4800).
Press ENT ↓ PARr	Parity Setting (PARi)	Press \leftarrow \rightarrow to select parity (n.8.2/n.8.1/even/odd).

Error Code of Self-Diagnosis	
Display	Descriptions
1.0FL	Input signal is over 120% of input range.
-1.0FL	Input signal is under -20% of input range.
AdEr	Input signal is over 180% of input range or meter error.
doFL	Input signal is over display range (99999)
-doFL	Input signal is under display range (-19999)
E-00	EEPROM reading/writing suffers the interference (about 1 million times).
**Please check the wiring connection is correct first, if the problem still exist, please return the meter to the factory.	

Remark: 1. There are 3 parameter groups of "System Setting Group(SYS)", "Alarm Setting Group(roP)", "RS485 Setting Group(doP)" for modification.
2. Press \leftarrow to select each group page, and press ENT to enter each group or parameter page for modification or saving the parameters.
3. Some of optional functions of parameter pages still exist, but the functions are disable.

Modbus RTU Mode Protocol Address Table

Data: 16Bit/32Bit, +/- is 8000~7FFF (-32768~32767), 80000000~7FFFFFFF (-2147483648~2147483647)

Modbus	HEX	Name	Descriptions	Act
40001	0000	ID	Model number identification; AM5H-D is "04"	R
40002	0001	STATUS	Current alarm output & external control input status display; range:0000~00FE (0~254) (0:OFF, 1:ON) (Bit7:AL22, Bit6: AL21, Bit5: AL12, Bit4: AL11, Bit1:AZ)	R
40003	0002	FUNC	Parameters setting; range: 0000~00FF (0~255) Bit0~3: ACT11~22 (0:HI, 1:LO), Bit4:AZSEL0, Bit5:AZSEL1, Bit6:LOCK, Bit7:FRAME (0:NO, 1:YES)	R/W
40004	0003	DP1	Input 1 decimal point setting; range: 0000~0004 (0~4) 0:10 ⁰ , 1:10 ⁻¹ , 2:10 ⁻² , 3:10 ⁻³ , 4:10 ⁻⁴	R/W
40005	0004	DP2	Input 2 decimal point setting; range: 0000~0004 (0~4) 0:10 ⁰ , 1:10 ⁻¹ , 2:10 ⁻² , 3:10 ⁻³ , 4:10 ⁻⁴	R/W
40006	0005	BAUD	Baud rate setting; range: 0000~0003 (0~3) 0:38400, 1:19200, 2:9600, 3:4800	R/W
40007	0006	PARI	Parity setting; range: 0000~0003 (0~3), 0:N.8.2., 1:N.8.1., 2:EVEN, 3:ODD	R/W
40008	0007	AVG	Display average setting; range: 0001~0063 (1~99)	R/W
40009	0008	LCUT	Display low cut setting; range: 0000~0063 (0~99)	R/W
40010	0009	ADDR	Address setting; range: 0000~00FF (0~255)	R/W
40011	000A	DEL11	Input 1 alarm 1 act delay time setting; range: 0000~0063 (0~99)	R/W
40012	000B	DEL12	Input 1 alarm 2 act delay time setting; range: 0000~0063 (0~99)	R/W
40013	000C	DEL21	Input 2 alarm 1 act delay time setting; range: 0000~0063 (0~99)	R/W
40014	000D	DEL22	Input 2 alarm 2 act delay time setting; range: 0000~0063 (0~99)	R/W
40015	000E	HYS11	Input 1 alarm 1 hysteresis setting; range: 0000~0063 (0~99)	R/W
40016	000F	HYS12	Input 1 alarm 2 hysteresis setting; range: 0000~0063 (0~99)	R/W
40017	0010	HYS21	Input 2 alarm 1 hysteresis setting; range: 0000~0063 (0~99)	R/W
40018	0011	HYS22	Input 2 alarm 2 hysteresis setting; range: 0000~0063 (0~99)	R/W
40019	0012	CODE	Pass code setting; range: 0000~4E1F (0~19999)	R/W
40020	0013	DSPL1	Input 1 display low scale setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W
40021	0014		Input 1 display low scale setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40022	0015	DSPH1	Input 1 display hi scale setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W
40023	0016		Input 1 display hi scale setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40024	0017	DSPL2	Input 2 display low scale setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W
40025	0018		Input 2 display low scale setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40026	0019	DSPH2	Input 2 display hi scale setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W
40027	001A		Input 2 display hi scale setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40028	001B	AL11	Input 1 alarm 1 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W
40029	001C		Input 1 alarm 1 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40030	001D	AL12	Input 1 alarm 2 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W
40031	001E		Input 1 alarm 2 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40032	001F	AL21	Input 2 alarm 1 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W
40033	0020		Input 2 alarm 1 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40034	0021	AL22	Input 2 alarm 2 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R/W

Modbus	HEX	Name	Descriptions	Act
40035	0022		Input 2 alarm 2 setpoint setting; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R/W
40036	0023	DISPLAY1	Input 1 current display; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R
40037	0024		Input 1 current display; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R
40038	0025	DISPLAY2	Input 2 current display; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R
40039	0026		Input 2 current display; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R
40040	0027	INLO1	Input 1 low calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Hi Bit	R
40041	0028		Input low calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Low Bit	R
40042	0029	INH11	Input 1 hi calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Hi Bit	R
40043	002A		Input 1 hi calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Low Bit	R
40044	002B	INLO2	Input 2 low calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Hi Bit	R
40045	002C		Input 2 low calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Low Bit	R
40041	002D	INH12	Input 2 hi calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Hi Bit	R
40042	002E		Input 2 hi calibrated value display; range: 00029F16~004EA4A8 (171798~5153960) Low Bit	R
40043	002F	AZ1	Input 1 auto zero; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R
40044	0030		Input 1 auto zero; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R
40045	0031	AZ2	Input 2 auto zero; range: FFFF B1E1~0001869F (-19999~99999) Hi Bit	R
40046	0032		Input 2 auto zero; range: FFFF B1E1~0001869F (-19999~99999) Low Bit	R

CALIBRATION OPERATING PROCEDURES

Display	Descriptions	Default
10000 <small>Press: ENT & ⏏ together for 3 sec</small>	Measuring Status: Present value for measurement Press ENT & ⏏ together for 3 sec will enter to calibration operating procedures.	
, nLo1 <small>Press: ENT</small>	Input Low Scale 1 Calibration (inLo1)	1. Input standard low scale signal to input 1. 2. Press ⏏⏏⏏ to calibrate input low scale.
, nHi1 <small>Press: ENT</small>	Input Hi Scale 1 Calibration (inHi1)	1. Input standard hi scale signal to input 1. 2. Press ⏏⏏⏏ to calibrate input hi scale.
, nLo2 <small>Press: ENT</small>	Input Low Scale 2 Calibration (inLo2)	1. Input standard low scale signal to input 2. 2. Press ⏏⏏⏏ to calibrate input low scale.
, nHi2 <small>Press: ENT</small>	Input Hi Scale 2 Calibration (inHi2)	1. Input standard hi scale signal to input 2. 2. Press ⏏⏏⏏ to calibrate input hi scale.
595 <small>Press: ⏏ & ⏏ together for 3 sec</small>	System Setting Page(SYS)	1. Finish calibration operating procedures will enter to system setting group. 2. Press ⏏ & ⏏ together to back to measuring status.

Warning: Calibration of this meter requires a standard signal with 0.01% accuracy or better and an external meter with 0.005% accuracy or better.