

5 DIGITAL MODBUS RTU DISPLAY METER with 2~4 ALARMS / ANALOG OUTPUT

AM5H-S01

FEATURES

- Display value can be set by panel keys or RS485.
- High brightness 0.8" LED display range: -19999~99999; decimal point selectable
- 2~4 Alarms (Hi or Lo) programmable / Analog output(15 bit resolution)
- High stability, non-flammable case (PC), high safety
- CE approval



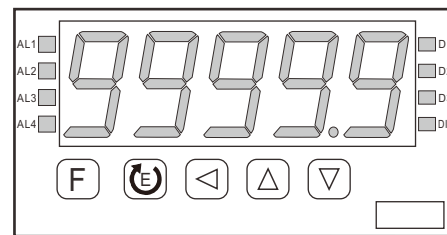
ORDER INFORMATION: AM5H-S01 - [Code 1] - [Code 2] [Code 3]

Code 1	Aux. Power	Code 2	Alarm Output	Code 3	Analog Output
A	AC/DC100~240V	N	None	N	None
D	AC/DC 22~60V	R2	2 Relays	A	4~20mA
O	Option	R3	3 Relays	V	0~10V
		R4	4 Relays	L	Loop Power 4~20 mA
				O	Option

SPECIFICATION

- ◆ Display Screen: High brightness red LED; 20.3mm(0.8")
- ◆ Display Range: -19999~99999
- ◆ Zero Adjustment: -19999~99999
- ◆ Polarity Indication: Automatic with "-" indication
- ◆ Parameters Setting: Push buttons
- ◆ Back Up Memory: EEPROM
- ◆ Alarm Action: "≥ (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 / °C (0~60°C)
- ◆ Operating Temperature: 0~60°C
- ◆ Operating Humidity: 20~90% RH (non-condensing)
- ◆ Storage Temperature: -10~70°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)

FRONT PANEL & KEY FUNCTIONS

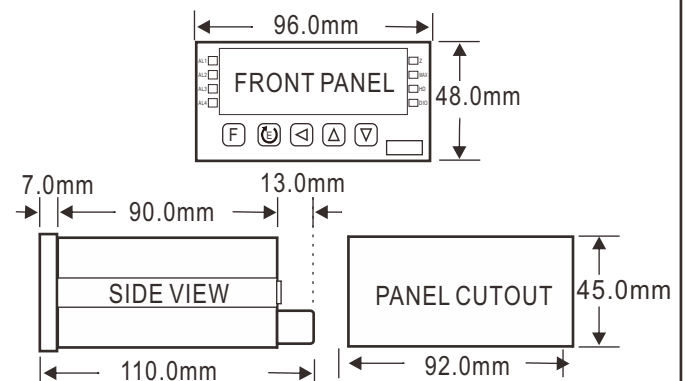


Indicators:

- AL1: Alarm 1 Indicator
- AL2: Alarm 2 Indicator
- AL3: Alarm 3 Indicator
- AL4: Alarm 4 Indicator
- D1: DI1 Action Indicator
- D2: DI2 Action Indicator
- D3: DI3 Action Indicator
- DIO: Communication Indicator

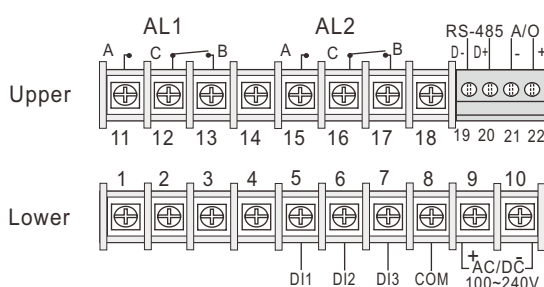
- [F] Reset Key/Tare
- [E] Enter Key & Save Key
- [<] Shift Key & Alarm Setting Key
- [>] Up Key & Value Adjusting Key
- [<=] Down Key & Analog Output Adjusting Key

DIMENSION

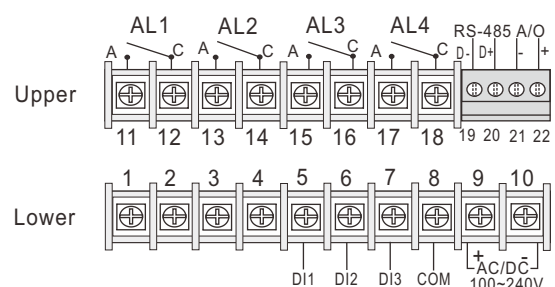


WIRING CONNECTION

2 Alarms Output:

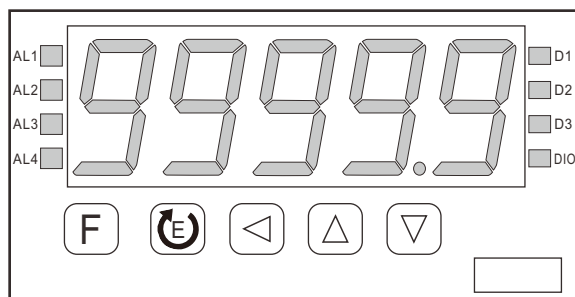


4 Alarms Output:



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

FRONT PANEL & KEY FUNCTIONS



Indicators:

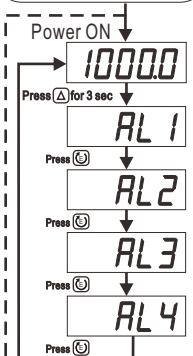
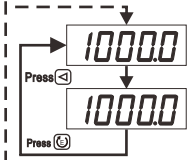
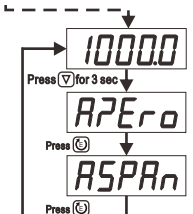
AL1: Alarm 1 Indicator D1: DI1 Action Indicator
AL2: Alarm 2 Indicator D2: DI2 Action Indicator
AL3: Alarm 3 Indicator D3: DI3 Action Indicator
AL4: Alarm 4 Indicator DIO: Communication Indicator

- F** Reset Key/Tare
- E** Enter Key & Save Key
- ◀** Shift Key & Alarm Setting Key
- ▲** Up Key & Value Adjusting Key
- ▼** Down Key & Analog Output Adjusting Key

Key Name	Symbol	Descriptions
Reset Key	F	1. Press this key to enable the reset function & reset indicator (F) is light; press this key again to disable the reset function & reset indicator (F) is dark.
Enter Key & Save Key	E	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 & Display Value Setting Key	◀	1. In the measuring status, press this key for 3 sec can enter to display value setting mode (The selecting digit will be flashed). 2. In the parameter setting, press this key can move the cursor left.
Up Key & Alarm Point Setting Key	▲	1. In the measuring status, press this key for 3 sec can enter to Alarm point setting page. 2. In the parameter setting, press this key can increase the digits.
Down Key & A/O Adjusting Key	▼	1. In the measuring status, press this key for 3 sec can enter to analog output adjustment. 2. 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 **E** 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

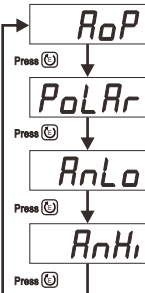
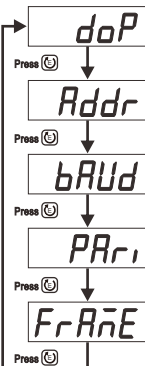
Block Charts	Display	Descriptions	Default
		Alarm Setpoint	
	Measuring Status	Present value for measurement	
	Alarm 1 Setpoint (AL1)	Modify alarm setpoint.	000000
	Alarm 2 Setpoint (AL2)		
	Alarm 3 Setpoint (AL3)		
	Alarm 4 Setpoint (AL4)		
		Display: "ZERO" & "SPAN" Adjustment	
		Measuring Status	Present value for measurement.
	Display Value Setting Mode	Set the display value, in setting mode, press the shift key, up key and down key to adjust the value.	000000
		Analog Output: "ZERO" & "SPAN" Adjustment	
	Measuring Status	The following steps are only available for analog output.	
	A/O Zero Adjustment (AZero)	Modify the zero value. PS: To use this function to adjust the real A/O zero.	000000
	A/O Span Adjustment (ASPan)	Modify the A/O span. PS: To use this function to adjust the real A/O span.	000000

- Remark: 1. There are 3 parameter groups of "System Setting Group(SYS)", "Alarm Setting Group(roP)", "Analog Output Setting Group (AoP)", "RS485 Setting Group(doP)" for modification.
2. Press **◀** to select each group page, and press **E** 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.

PROGRAMMING MODE OPERATING PROCEDURES

Block Charts	Display	Descriptions	Default
Power On	10000	Measuring Status	Present value for measurement
Press E	P.Cod	Pass Code (P.Cod)	Enter the pass code, or press E again if no pass code.
Press E	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	5YS	(SYS)	System Setting Group
Press ◀	roP	(roP)	Alarm Setting Group
Press ◀	AoP	(AoP)	A/O Setting Group
Press ◀	doP	(doP)	RS485 Setting Group

Display	Descriptions	Default
System Setting Page (SYS)		
	System Setting Group Procedures	
Decimal Point Setting (dP)	Select decimal point (0, 1, 2, 3, 4). EX: if the value shows "0.00" that means the decimal point is 2 digits.	Customers specify
Pass Code Setting (CodE)	Modify pass code (0~19999). PS: Please don't forget the new pass code after modification.	00000
Key Lock Setting (LoCK)	Lock the keys, using key lock function only can view the parameters, but cannot modify any values. PS: no (unlock), YES ("ENT" unlock, others lock).	no
Alarm Setting Group Procedures		
Alarm Setting Page (roP)	The following steps are only available for alarm output.	
Alarm 1 (ACT1)	Alarm Action Setting Modify alarm value that is $\geq$ (Hi) or $\leq$ (Lo) for alarm action.	Hi
Alarm 2 (ACT2)		
Alarm 3 (ACT3)		
Alarm 4 (ACT4)		
Hysteresis 1 (HYS1)	Alarm Hysteresis Setting Modify the value, when alarm runs lower or higher display value (depends on alarm action). Alarm setpoint $\pm$ this range (0~999) will turn off the alarm.	00000
Hysteresis 2 (HYS2)		
Hysteresis 3 (HYS3)		
Hysteresis 4 (HYS4)		
Delay Time 1 (dEL1)	Alarm Run Delay Setting Modify the value, when the display value reach the alarm value that need to wait for this time (0~99 sec) for alarm action.	00000
Delay Time 2 (dEL2)		
Delay Time 3 (dEL3)		
Delay Time 4 (dEL4)		
Alarm Start Band Setting (Sb)	Modify the value (-99~+99), if the display value don't over this range; the alarm will not be act.	00000
Alarm Start Band Time Setting (Sdt)	Modify the value (0~99 sec), if the display value reach alarm start band value; the alarm will be act after this value (sec). (The function is used with "Sb" function.)	00000

Display	Descriptions	Default	
A/O Setting Group Procedures			
	A/O Setting Page (AoP)	The following steps are only available for analog output.	
	A/O Polarity Setting (PoLAr)	Select output for positive or negative pole. PS : Voltage output ,NO: positive pole output (0~+10V) YES: positive & negative pole output (-10~+10V)	no
	A/O Low Scale Setting (AnLo)	Adjust A/O low scale to correspond to the display value. EX : A/O is 0~10V, the display is 10.0 to output 0V, this value must be set for 10.0.	00000
	A/O Hi Scale Setting (AnHi)	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 1 0V, this value must be set for 90.0.	99999
RS485 Setting Group Procedures			
	RS485 Setting Page (doP)	The following steps are only available for RS-485.	
	Address Setting (Addr)	Modify address (0~255).	00000
	Baud Rate Setting (bAUd)	Select baud rate (38400/19200/9600/4800).	19200
	Parity Setting (PAri)	Select parity (n.8.2/n.8.1/even/odd).	n8.2
	Frame Setting (FrAmE)	Select frame type. (NO:Hi→ Lo , YES:Lo→ Hi)	no

Error Code of Self-Diagnosis

Display	Descriptions
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.	

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-S01 is "1D"	R
40002	0001	STATUS	Current alarm output & external control input status display; range: 0000~00FF (0~254) (0:OFF, 1:ON) (Bit7:AL4, Bit6: AL3, Bit5: AL2, Bit4: AL1, Bit3:DI3, Bit2:DI2, Bit1:DI1)	R
40003	0002	FRAME	Data frame of RS485; range: 0000~0001 (0~1) 0:NO, 1:YES	R/W
40004	0003	ACT1	Alarm1 action direction; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40005	0004	ACT2	Alarm2 action direction; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40006	0005	ACT3	Alarm3 action direction; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40007	0006	ACT4	Alarm4 action direction; range: 0000~0001 (0~1) 0:HI, 1:LO	R/W
40008	0007	POLAR	A/O polarity; range: 0000~0001 (0~1) 0:NO, 1:YES	R/W
40009	0008	LOCK	Panel key lock; range: 0000~0001 (0~1) 0:NO, 1:YES	R/W
40010	0009	DP	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
40011	000A	BAUD	Baud rate setting; range: 0000~0003 (0~3) 0:38400, 1:19200, 2:9600, 3:4800	R/W
40012	000B	PARI	Parity setting; range: 0000~0003 (0~3), 0:N.8.2., 1:N.8.1., 2:EVEN, 3:ODD	R/W
40013	000C	ADDR	Address setting; range: 0000~00FF (0~255)	R/W
40014	000D	DEL1	Alarm 1 act delay time setting; range: 0000~0063 (0~99)	R/W
40015	000E	DEL2	Alarm 2 act delay time setting; range: 0000~0063 (0~99)	R/W
40016	000F	DEL3	Alarm 3 act delay time setting; range: 0000~0063 (0~99)	R/W
40017	0010	DEL4	Alarm 4 act delay time setting; range: 0000~0063 (0~99)	R/W
40018	0011	SB	Alarm start band setting; range: FF9D~0063 (-99~99)	R/W
40019	0012	SDT	Alarm start delay time setting; range: 0000~0063 (0~99)	R/W
40020	0013	HYS1	Alarm 1 hysteresis setting; range: 0000~270F (0~9999)	R/W
40021	0014	HYS2	Alarm 2 hysteresis setting; range: 0000~270F (0~9999)	R/W
40022	0015	HYS3	Alarm 3 hysteresis setting; range: 0000~270F (0~9999)	R/W
40023	0016	HYS4	Alarm 4 hysteresis setting; range: 0000~270F (0~9999)	R/W
40024	0017	CODE	Pass code setting; range: 0000~4E1F (0~19999)	R/W
40025	0018	AZERO	Analog output zero setting; range: D8F1~270F (-9999~9999)	R/W
40026	0019	ASPAN	Analog output span setting; range: D8F1~270F (-9999~9999)	R/W
40027	001A	AL1	Alarm 1 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40028	001B		Alarm 1 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W
40029	001C	AL2	Alarm 2 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40030	001D		Alarm 2 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W
40031	001E	AL3	Alarm 3 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40032	001F		Alarm 3 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W
40033	0020	AL4	Alarm 4 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40034	0021		Alarm 4 setpoint setting; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W

Modbus	HEX	Name	Descriptions	Act
40035	0035	ANLO	Analog output low scale setting; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40036	0023		Analog output low scale setting; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W
40037	0024	ANHI	Analog output hi scale setting; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40038	0025		Analog output hi scale setting; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W
40039	0026	DISPLAY	Current display; range: FFFFB1E1~0001869F (-19999~99999) Hi Bit	R/W
40040	0027		Current display; range: FFFFB1E1~0001869F (-19999~99999) Low Bit	R/W