

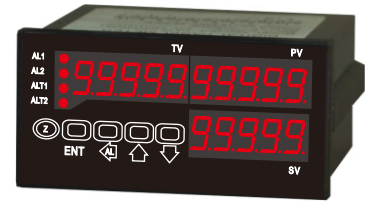
# 5 DIGITAL MICRO-PROCESS BATCH COUNTER

## with ALARMS / ANALOG OUTPUT / RS-485

# AM5H-CT

### FEATURES

- High brightness 0.4" LED display: -19999~99999 (Present Value / Total Value)
- Max. input frequency: 7KHz (1U2D / 1P2D); 3KHz (1A2B)
- Input pulse for pre-multiplication & pre-division
- Total value for synchronizing (Total) or non-synchronizing (Batch) selectable
- N / R / C relay output mode selectable
- 2 alarms output for Present Value & 2 alarms output for Total Value
- Analog output (15 bit resolution) / RS-485 communication optional  
(The above option can exist together)
- Reset / Pause count by external control terminal available
- High stability, non-flammable case (PC), high safety
- CE approval



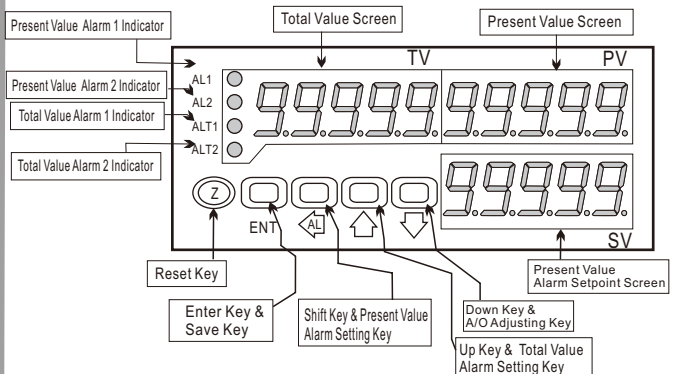
### ORDER INFORMATION: AM5H-CT -

Code 1		Code 2		Code 3		Code 4		Code 5		Code 6	
Code 1	Input Signal	Code 2	Aux. Power	Code 3	Count Alarm Output	Code 4	Batch Alarm Output	Code 5	Analog Output	Code 6	
N5	NPN(5V)	A	AC/DC 100-240V	N	None	N	None	N	None	RS-485	
N2	NPN(12V)	D	AC/DC 22-60V	R1	1 Relay	T1	1 Relay	A	4~20mA	N	None
P5	PNP(5V)			R2	2 Relays	T2	2 Relays	V	0~10V	Y	Yes
P2	PNP(12V)							O	Option		
	0										

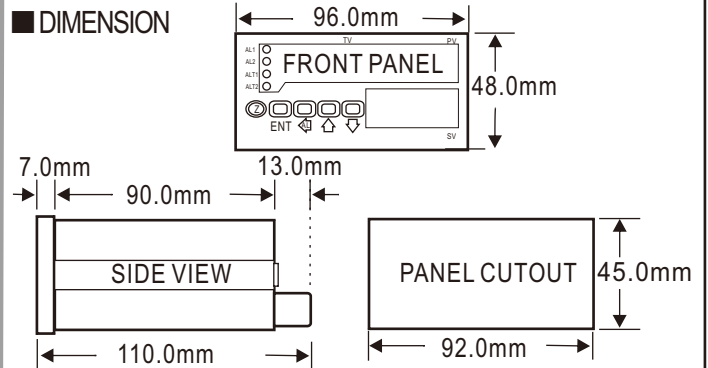
### SPECIFICATION

- ◆ Display Screen: High brightness red LED; 10.16mm(0.4")
- ◆ Max. Input Frequency: 7KHz (1U2D / 1P2D)  
3KHz (1A2B)
- ◆ Display Range: -19999~99999
- ◆ Parameters Setting: Push buttons
- ◆ Back Up Memory: EEPROM
- ◆ Relay Contact: AC 277V / 7A; DC 30V / 7A
- ◆ Relay Output Mode: N / R / C (depends on 1st alarm setpoint)
- ◆ Alarm Run Time: 1~99 sec
- ◆ 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)

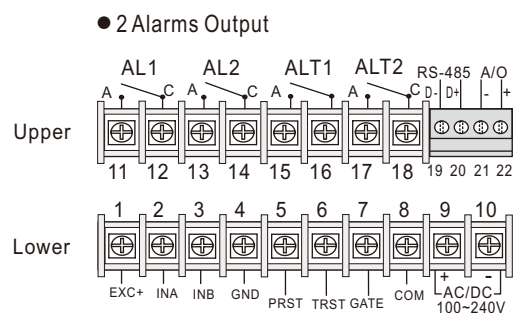
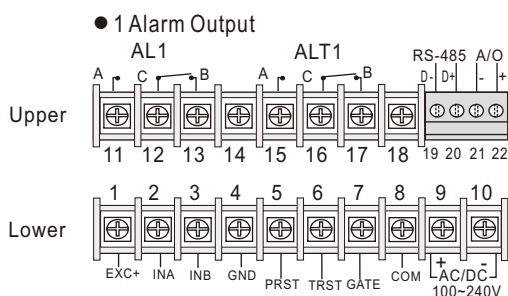
### FRONT PANEL & KEY FUNCTIONS



### DIMENSION

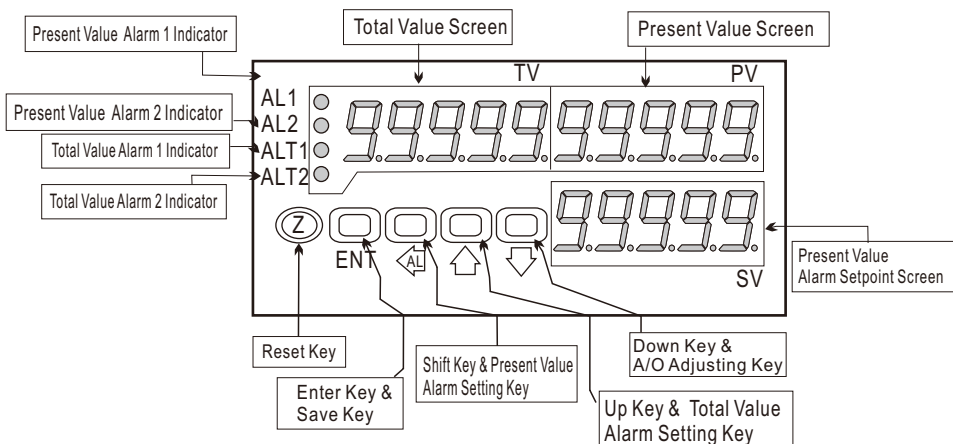


### WIRING CONNECTION



\* 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.
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 & Total Value Alarm 1 Setting Key	⬅	1. In the measuring status, press this key for 3 sec can enter to total value alarm 1 setting page (The selecting digit will be flashed) 2. In the parameter setting, press this key can move the cursor left.
Up Key & Present Value Alarm Setting Key	⬆	1. In the measuring status, press this key for 3 sec can enter to present value alarm setting page (The selecting digit will be flashed) 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 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	Total Value Alarm 1 Setpoint	
Press ⬅ for 3 sec	10000	Measuring Status	Present value for measurement
Press ENT	10000	Total Vale Alarm 1 Setpoint (AL1)	Press ⬅⬆⬇ to modify total value alarm 1 setpoint.
Press ENT	10000	Measuring Status	Present value for measurement
Press ⬅ for 3 sec	PvAL1	Present Vale Alarm 1 Setpoint (Pv.AL2)	Press ⬅⬆⬇ to modify present value alarm 1 setpoint.
Press ENT	PvAL2	Present Vale Alarm 2 Setpoint (Pv.AL2)	Press ⬅⬆⬇ to modify present value alarm 2 setpoint.
Press ENT	tvAL2	Total Vale Alarm 2 Setpoint (tv.AL2)	Press ⬅⬆⬇ to modify total value alarm 2 setpoint.
Press ENT	10000	Measuring Status	Present value for measurement
Press ⬅ for 3 sec	APeRo	A/O Zero Adjustment (AZeRo)	Press ⬅ to select adjusting speed rate, press ⬆⬇ to modify the A/O zero. PS: To use this function to adjust the real A/O zero.
Press ENT	ASpAn	A/O Span Adjustment (ASpAn)	Press ⬅ to select adjusting speed rate, press ⬆⬇ to modify the A/O span. PS: To use this function to adjust the real A/O span.
Press ENT	10000	Measuring Status	Present value for measurement
<b>Analog Output: "ZERO" &amp; "SPAN" Adjustment</b>			
The following steps are only available for analog output.			
Press ⬅ for 3 sec	APeRo	A/O Zero Adjustment (AZeRo)	Press ⬅ to select adjusting speed rate, press ⬆⬇ to modify the A/O zero. PS: To use this function to adjust the real A/O zero.
Press ENT	ASpAn	A/O Span Adjustment (ASpAn)	Press ⬅ to select adjusting speed rate, press ⬆⬇ to modify the A/O span. PS: To use this function to adjust the real A/O span.

- Remark: 1. There are 4 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 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.

PROGRAMMING MODE OPERATING PROCEDURES

Block Charts	Display	Descriptions	Default
Power On	10000	Parameter Group Setting Procedures	
Press ENT	P.Cod	Measuring Status	Present value for measurement
Press ENT	P.Cod	Pass Code (P.Cod)	Press ⬅⬆⬇ to enter pass code.
P.Code Correct		Pass code is correct that will enter to parameter groups. Pass code is wrong that will back to measuring status.	
Press ⬅	SYS	System Setting Group	
Press ENT	roP	Alarm Setting Group	
Press ⬅	AoP	A/O Setting Group	
Press ENT	doP	RS485 Setting Group	

Display	Descriptions	Default
<b>SYS</b> System Setting Page (SYS)	<b>System Setting Group Procedures</b>	
Press ENT → <b>tYPE</b> Input Type Setting (tYPE)	Press $\uparrow$ $\downarrow$ to modify the input type. (1U2D / 1P2D / 1A2B)	1U2d
Press ENT → <b>AccU</b> 1A2B Accurate Setting (AccU)	Press $\uparrow$ $\downarrow$ to modify 1A2B accurate (X1, X4).	41
Press ENT → <b>ModE</b> Count Mode Setting (ModE)	Press $\uparrow$ $\downarrow$ to modify count mode (SYN, NSYN). (SYN: synchronizing; NSYN: non-synchronizing)	SYn
Press ENT → <b>Pv.dP</b> Present Value Decimal Point Setting (Pv.dP)	Press $\uparrow$ $\downarrow$ to select present value decimal point (0, 1, 2, 3, 4). EX: if the value shows "0.00" that means the decimal point is 2 digits.	0000 1
Press ENT → <b>tv.dP</b> Total Value Decimal Point Setting (tv.dP)	Press $\uparrow$ $\downarrow$ to select total value decimal point (0, 1, 2, 3, 4). EX: if the value shows "0.00" that means the decimal point is 2 digits.	0000 1
Press ENT → <b>div</b> Pre-Division Setting (div)	Press $\uparrow$ $\downarrow$ to modify pre-division (1~999999).	0000 1
Press ENT → <b>SCALE</b> Scale Coefficient Adjustment (SCALE)	Press $\leftarrow$ $\uparrow$ $\downarrow$ to modify scale coefficient (0.0001 ~9.9999).	0.1000
Press ENT → <b>CodE</b> Pass Code Setting (CodE)	Press $\leftarrow$ $\uparrow$ $\downarrow$ to modify pass code (0~19999). PS: Please don't forget the new pass code after modification.	00000
Press ENT → <b>LoCK</b> Key Lock Setting (LoCK)	Press $\uparrow$ $\downarrow$ to 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
<b>Alarm Setting Group Procedures</b>		
<b>roP</b> Alarm Setting Page (roP)	<b>The following steps are only available for alarm output.</b>	
Press ENT → <b>Pv.oPM</b> Present Value Output Mode Setting (Pv.oPM)	Press $\uparrow$ $\downarrow$ to modify present value output mode (N, R, C). N: manual; R: return; C: continue	n
Press ENT → <b>tv.oPM</b> Total Value Output Mode Setting (tv.oPM)	Press $\uparrow$ $\downarrow$ to modify total value output mode (N, R, C). N: manual; R: return; C: continue	n
Press ENT → <b>Pv.oPt</b> Present Value Output Time Setting (Pv.oPt)	Press $\leftarrow$ $\uparrow$ $\downarrow$ to modify present value output time (1~99).	0000 1
Press ENT → <b>tv.oPt</b> Total Value Output Time Setting (tv.oPt)	Press $\leftarrow$ $\uparrow$ $\downarrow$ to modify total value output time (1~99).	0000 1
<b>A/O Setting Group Procedures</b>		
<b>RoP</b> A/O Setting Page (AoP)	<b>The following steps are only available for analog output.</b>	
Press ENT → <b>PoLAr</b> A/O Polarity Setting (PoLAr)	Press $\uparrow$ $\downarrow$ to select output for positive or negative pole. PS: Voltage output, NO: positive pole output (0~+10V) YES: positive & negative pole output (-10~+10V)	no
Press ENT → <b>AnLo</b> A/O Low Scale Setting (AnLo)	Press $\leftarrow$ $\uparrow$ $\downarrow$ 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.	00000
Press ENT → <b>AnHi</b> A/O Hi Scale Setting (AnHi)	Press $\leftarrow$ $\uparrow$ $\downarrow$ 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 1 0V, this value must be set for 90.0.	99999

Display	Descriptions	Default
<b>doP</b> RS485 Setting Page (doP)	<b>RS485 Setting Group Procedures</b>	
Press ENT → <b>Addr</b> Address Setting (Addr)	<b>The following steps are only available for RS-485.</b> Press $\leftarrow$ $\uparrow$ $\downarrow$ to modify address (0~255).	00000
Press ENT → <b>bAUd</b> Baud Rate Setting (bAUd)	Press $\uparrow$ $\downarrow$ to select baud rate (38400/19200/9600/4800)	19200
Press ENT → <b>PAri</b> Parity Setting (PAri)	Press $\uparrow$ $\downarrow$ to select parity (n.8.2/n.8.1/even/odd).	n8.2
Press ENT → <b>FrArE</b> Frame Setting (FrAmE)	Press $\uparrow$ $\downarrow$ to select frame type. (NO:Hi→Lo, YES:Lo→Hi)	no

### Error Code of Self-Diagnosis

Display	Descriptions
<b>E-00</b>	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.

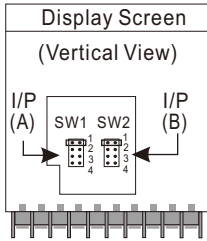
#### \*\*Relay Output Mode Descriptions:

- N: (Manual); the relay is on when the present value reaches the alarm setpoint, the present value is still counted and the relay don't deactivate until manual reset by "reset key" or "external control terminal". Then the present value is reset to zero.
- R: (Return); the relay is on when the present value reaches the alarm setpoint, the present value is counted until the relay output time is terminated. Then the present value is reset to zero.
- C: (Continue); the relay is on when the present value reaches the alarm setpoint, the present value is reset to zero. And the relay is still on until the relay output time is terminated.

MODE: SYN (present value & total is synchronizing)  
NSYN (present value reaches the 1st setpoint, total value added 1)

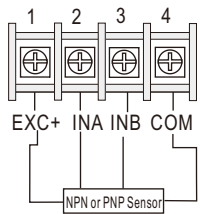
# Input Signal Modification

\*\*To Select the pin to modify the input signal for different sensors.  
PS: In dual input type, excitation power must be the same.



SW1	JUMPER	DEFINITION
• •	1	Open: 12V; Close: 5V
• •	2	Open: 10KHz; Close: 400Hz
• •	3	Open: NPN; Close: PNP
• •	4	Open: PNP; Close: NPN

\*\*Connection:



NPN (5V): 0~400 Hz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

NPN (5V): 0~10 KHz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

NPN (12V): 0~400 Hz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

NPN (12V): 0~10 KHz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

PNP (5V): 0~400 Hz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

PNP (5V): 0~10 KHz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

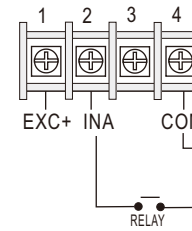
PNP (12V): 0~400 Hz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

PNP (12V): 0~10 KHz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

\*\*Connection:



Relay Contact: NPN 0~400 Hz

JUMPER	SW1/SW2
1	• •
2	• •
3	• •
4	• •

\*\*For relay input type, please select NPN 0~ 400 Hz.

## 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-CT is "0B"	R
40002	0001	STATUS	Current alarm output & external control input status display; range: 0000~00F0 (0~240) (0:OFF, 1:ON) (Bit7:ALT2, Bit6: ALT1, Bit5: AL2, Bit4: AL1)	R
40003	0002	POLAR	Analog output polarity setting; range: 0000~0001 (0~1) 0:NO, 1:YES	R/W
40004	0003	LOCK	Key lock setting; range: 0000~0001 (0~1) 0:NO, 1:YES	R/W
40005	0004	FRAME	Frame setting; range 0000~0001(0~1) 0:NO, 1:YES	R/W
40006	0005	P.ACT1	Present Value Alarm 1 act setting; range 0000~0001(0~1) 0:Hi, 1:Lo	R/W
40007	0006	P.ACT2	Present Value Alarm 2 act setting; range 0000~0001(0~1) 0:Hi, 1:Lo	R/W
40008	0007	T.ACT1	Total Value Alarm 1 act setting; range 0000~0001(0~1) 0:Hi, 1:Lo	R/W
40009	0008	T.ACT2	Total Value Alarm 2 act setting; range 0000~0001(0~1) 0:Hi, 1:Lo	R/W
40010	0009	TYPE	Input type setting; range: 0000~0002 (0~1) 0:1U2D, 1:1P2D, 2:1A2B	R/W
40011	000A	ACCU	1A2B accurate setting; range 0000~0001(0~1) 0:X1, 1:X4	R/W
40012	000B	MODE	Count mode setting; range 0000~0001(0~1) 0:SYN, 1:NSYN	R/W
40013	000C	PVDP	Present Value decimal point setting; range: 0000~0004 (0~4) 0:10; 1:10; 2:10; 3:10; 4:10 <sup>-4</sup>	R/W
40014	000D	TVDP	Total Value decimal point setting; range: 0000~0004 (0~4) 0:10; 1:10; 2:10; 3:10; 4:10 <sup>-4</sup>	R/W
40015	000E	PVOPM	Present value relay output mode setting; range: 0000~0002 (0~2) 0:N, 1:R, 2:C	R/W
40016	000F	TVOPM	Total value relay output mode setting; range: 0000~0002 (0~2) 0:N, 1:R, 2:C	R/W
40017	0010	BAUD	Baud rate setting; range: 0000~0003 (0~3) 0:38400, 1:19200, 2:9600, 3:4800	R/W
40018	0011	PARI	Parity setting; range: 0000~0003 (0~3), 0:N.8.2., 1:N.8.1., 2:EVEN, 3:ODD	R/W
40019	0012	ADDR	Address setting; range: 0000~00FF (0~255)	R/W
40020	0013	PVOPT	Present value relay output time setting; range: 0000~0063 (0~99)	R/W
40021	0014	TVOPT	Total value relay output time setting; range: 0000~0063 (0~99)	R/W
40022	0015	AZERO	Analog output zero setting; range: D8F1~270F (-9999~9999)	R/W
40023	0016	ASPAN	Analog output span setting; range: D8F1~270F (-9999~9999)	R/W
40024	0017	CODE	Pass code setting; range: 00000000~0001869F (0~99999) Hi Bit	R/W
40025	0018		Pass code setting; range: 00000000~0001869F (0~99999) Low Bit	R/W
40026	0019	DIV	Pre-division setting; range: 00000001~0001869F (1~99999) Hi Bit	R/W
40027	001A		Pre-division setting; range: 00000001~0001869F (1~99999) Low Bit	R/W
40028	001B	SCALE	Total scale setting; range: 00000001~0001869F (1~99999) Hi Bit	R/W
40029	001C		Total scale setting; range: 00000001~0001869F (1~99999) Low Bit	R/W
40030	001D	ANLO	Analog output low scale setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40031	001E		Analog output low scale setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W
40032	001F	ANHI	Analog output hi scale setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40033	0020		Analog output hi scale setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W
40034	0021	PVAL1	Present value alarm 1 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40035	0022		Present value alarm 1 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W

Modbus	HEX	Name	Descriptions	Act
40036	0023	PVAL2	Present value alarm 2 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40037	0024		Present value alarm 2 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W
40038	0025	TVAL1	Total value alarm 1 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40039	0026		Total value alarm 1 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W
40040	0027	TVAL2	Total value alarm 2 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40041	0028		Total value alarm 2 setpoint setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W
40042	0029	PV	Current present value setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40043	002A		Current present value setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W
40044	002B	TV	Current total value setting; range: FFFF1E1~0001869F (-19999~99999) Hi Bit	R/W
40045	002C		Current total value setting; range: FFFF1E1~0001869F (-19999~99999) Low Bit	R/W