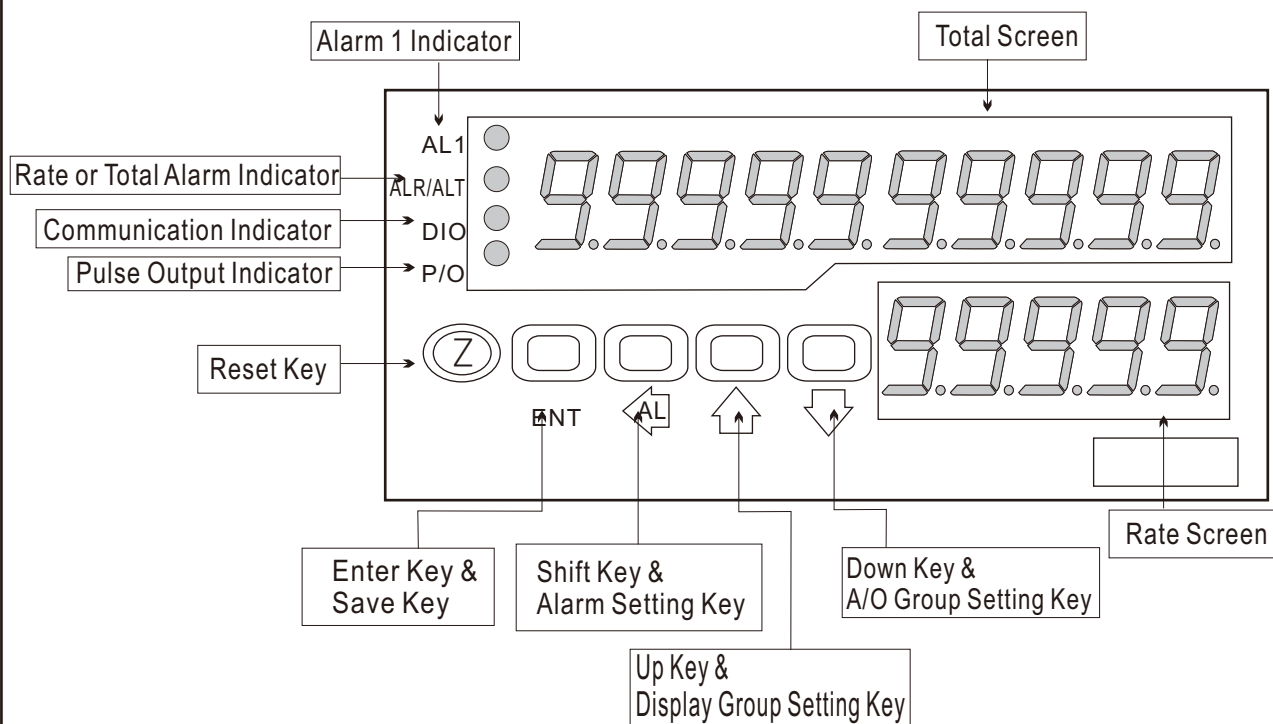


* Please understand key indicators & functions at the first operation.

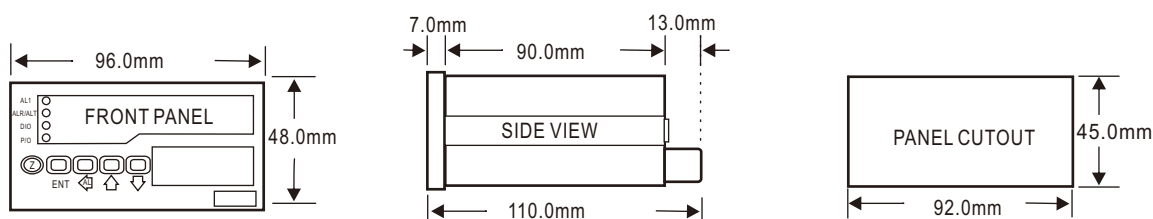
1.1 FRONT PANEL



1.2 KEY FUNCTIONS

Symbol	Key Name	Descriptions
Ⓩ	Reset Key	1. In the measuring status, press this key can reset the total value.
ENT	Enter Key & Save Key	1. In the measuring status, press this key can enter to parameter groups. 2. In the parameter setting, press this key can save the value & go to the next parameter.
←	Shift Key & Alarm Setting Key	1. In the measuring status, press this key for 3 sec can enter to Alarm Setpoint Modification. 2. In the parameter page, press this key can enter to parameter setting. 3. In the parameter setting, press this key can move the cursor left.
↑	Up Key & Display Group Setting Key	1. In the measuring status, press this key for 3 sec can enter to Display Group Setting. 2. In the parameter page, press this key can back to the last parameter page. 3. In the parameter setting, press this key can increase the digit.
↓	Down Key & A/O Group Setting Key	1. In the measuring status, press this key for 3 sec can enter to A/O Group Setting. 2. In the parameter page, press this key can go to the next parameter page. 3. In the parameter setting, press this key can decrease the digit.
↑ + ↓	Compound Key	1. In any status, press this key can back to measuring status.

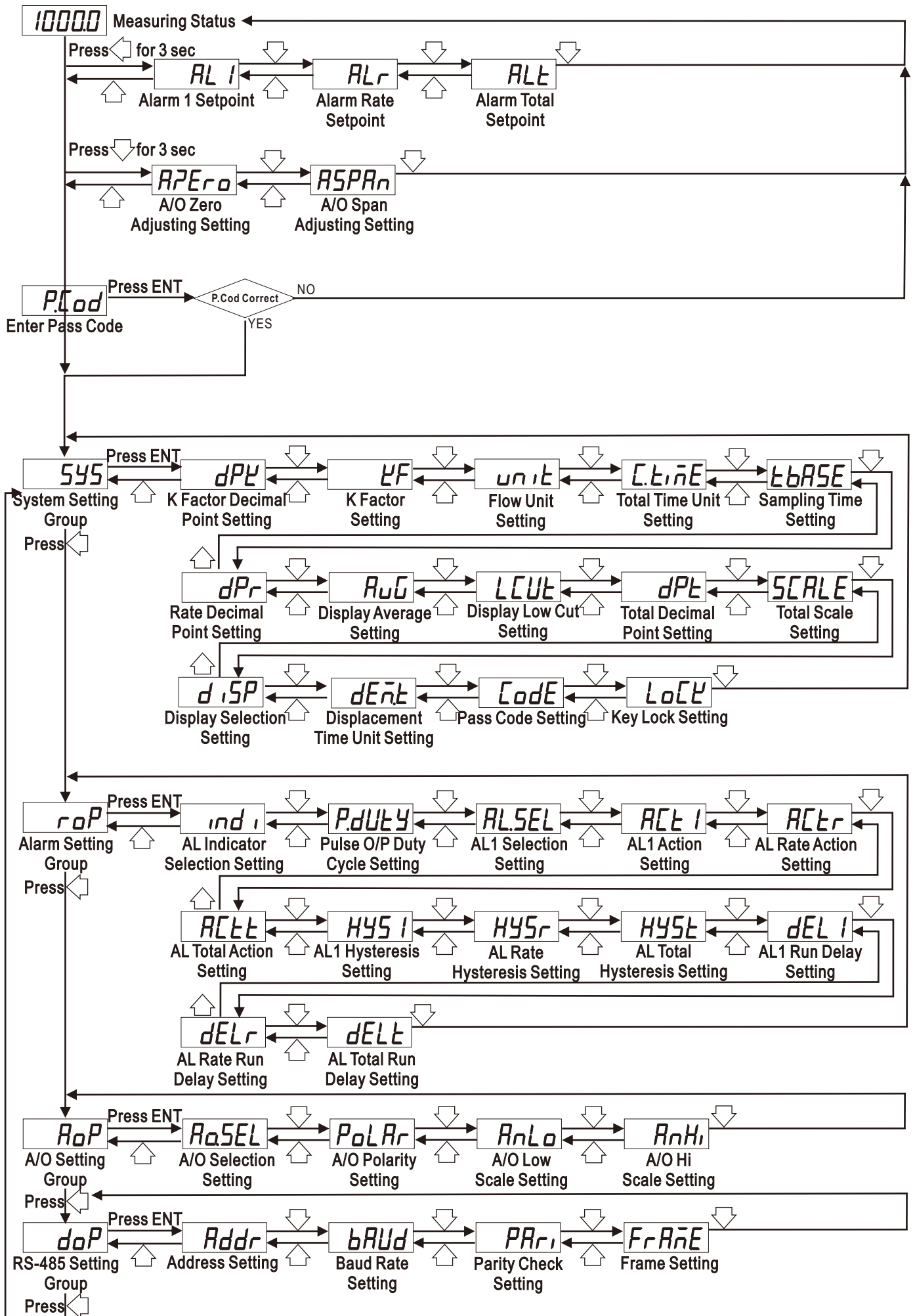
1.3 DIMENSIONS



■ WIRING CONNECTION

2 Alarms for Rate	2 Alarms for Rate / 1 Alarm for Total / Pulse Output for Total
● Pulse / Mechanical Contact / Magnetic (Pick Up) Upper Lower AL1 AL2(ALT) RS-485 A/O 11 12 13 14 15 16 17 18 19 20 21 22 1 2 3 4 5 6 7 8 9 10 EXC+ IN GND RST GATE MAXD RST COM AC/DC 100-240V	● Pulse / Mechanical Contact / Magnetic (Pick Up) Upper Lower AL1 AL2 ALT P/O RS-485 A/O 11 12 13 14 15 16 17 18 19 20 21 22 1 2 3 4 5 6 7 8 9 10 EXC+ IN GND RST GATE MAXD RST COM AC/DC 100-240V

2.1 OPERATING SEQUENCE



2.2 ALARM SETPOINT MODIFICATION

* In the measuring status, press $\leftarrow$ for 3 sec can enter to Alarm Setpoint Modification.

Display	Default	Name	Descriptions
$AL1$ $\uparrow \downarrow$	00000	Alarm 1 Setpoint (AL1)	1. Press $\leftarrow$ to enter the parameter setting, the digit will be flashed. 2. Press $\uparrow$ or $\downarrow$ can modify Alarm Setpoint. Range: -19999~99999 3. Press ENT to save the value and go to the next parameter.
ALr $\uparrow \downarrow$	00000	Alarm Rate Setpoint (AL2)	
ALt $\uparrow \downarrow$	00000	Alarm Total Setpoint (AL3)	

2.3 A/O ZERO & SPAN ADJUSTMENT

* In the measuring status, press $\downarrow$ for 3 sec can enter to A/O Zero & Span Adjustment.

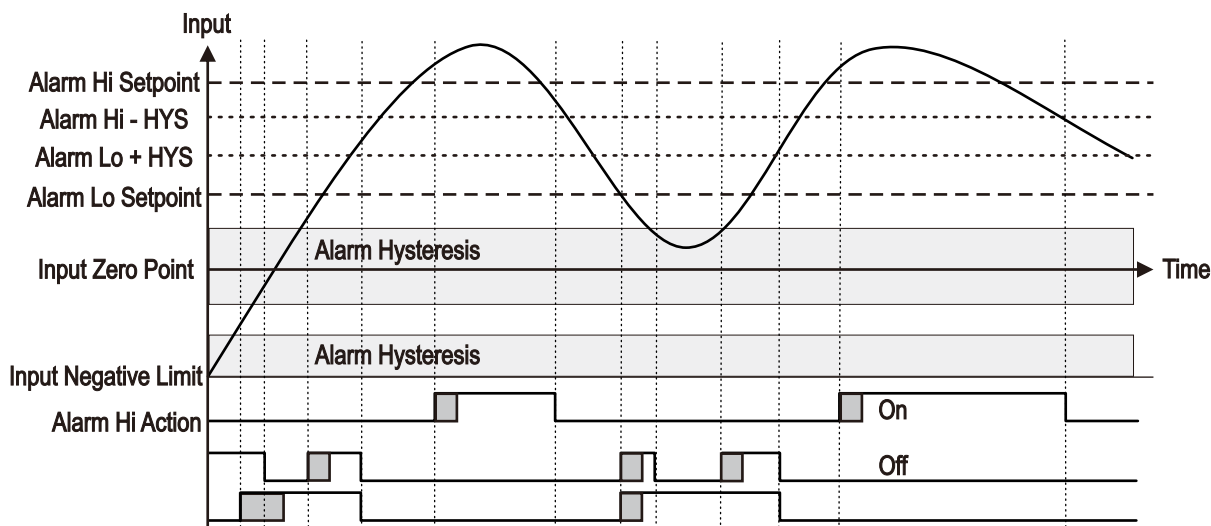
Display	Default	Name	Descriptions
$APEr0$ $\uparrow \downarrow$	00000	A/O Zero Adjusting Setting (AZero)	1. Press $\leftarrow$ to enter the parameter setting, the digit will be flashed. 2. Press $\leftarrow$ to move the flashing LED left to decide the adjusting speed. 3. Press $\uparrow$ or $\downarrow$ can adjust A/O Zero. 4. Press ENT to save the value and go to the next parameter. P.S.: If the flashing LED is on the left side, the adjusting speed will be fast.
$ASPA_n$ $\uparrow \downarrow$	00000	A/O Span Adjusting Setting (ASPA _n)	1. Press $\leftarrow$ to enter the parameter setting, the digit will be flashed. 2. Press $\leftarrow$ to move the flashing LED left to decide the adjusting speed. 3. Press $\uparrow$ or $\downarrow$ can adjust A/O Span. 4. Press ENT to save the value and go to the next parameter. P.S.: If the flashing LED is on the left side, the adjusting speed will be fast.

2.4 ERROR CODE OF SELF-DIAGNOSIS

Display	Descriptions
$ioFL$	Input signal is over 120% of input range.
$doFL$	Input signal is over display range (999999).
$E-00$	EEPROM reading / writing suffers the interference (about 1 million times).

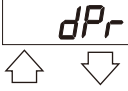
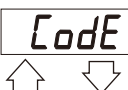
** Please check the wiring connection is correct first, if the problem still exist, please return the meter to the factory.

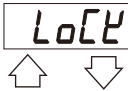
2.6 ALARM OUTPUT ACTION SEQUENCE



3.1 SYSTEM (SYS) SETTING GROUP PROCEDURE

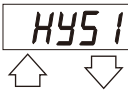
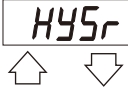
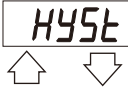
* While Pass Code is correct, Press  can select System Setting Group.

Display	Default	Name	Descriptions
	00000	K Factor Decimal Point Setting (dPk)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select K Factor Decimal Point. Range: 0, 1, 2, 3, 4 (DPK) 3. Press ENT to save the value and go to the next parameter.
	00000	K Factor Setting (kF)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify K Factor. Range: 0~99999 (Please key in the data of flow sensor) 3. Press ENT to save the value and go to the next parameter.
	Li tEr	Flow Unit Setting (unit)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Flow Unit. Range: LitEr (Liter), GAL (Gallon), hour (Hour), dAY (Day), Month (Month) 3. Press ENT to save the value and go to the next parameter.
	SEC	Total Time Unit Setting (C.tiME)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Total Time Unit. Range: SEC (Second), Min (Minute), hour (Hour), dAY (Day), Month (Month) 3. Press ENT to save the value and go to the next parameter.
	000 1.0	Sampling Time Setting (tbASE)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Sampling Time. Range: 0.1~999.9 (sec) 3. Press ENT to save the value and go to the next parameter.
	00000	Rate Decimal Point Setting (dPr)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Rate Decimal Point. Range: 0, 1, 2, 3, 4 (DPR) 3. Press ENT to save the value and go to the next parameter.
	00005	Display Average Setting (AvG)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Display Average. Range: 1~99 If this value is large, display will be stable & smooth. 3. Press ENT to save the value and go to the next parameter.
	00000	Display Selection Setting (diSP)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Display Low Cut. Range: 0~9999 If this value is 10, while display is under 10, display value will show 0. 3. Press ENT to save the value and go to the next parameter.
	00000	Total Decimal Point Setting (dPt)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Total Decimal Point. Range: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 (DPT) 3. Press ENT to save the value and go to the next parameter.
	10000	Total Scale Setting (SCALE)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Input Scale. Range: 0.0001~9.9999 3. Press ENT to save the value and go to the next parameter.
	rAtE	Display Selection Setting (FKEY)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select lower Display Selection. Range: rAtE (Ratet), MAX,d (Max displacement), dEM (Displacement) 3. Press ENT to save the value and go to the next parameter.
	Min	Displacement Time Setting (dEM.t)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Displacement Time Unit. Range: Min (Minute), hour (Hour), dAY (Day), Month (Month) 3. Press ENT to save the value and go to the next parameter.
	00000	Pass Code Setting (P.Cod)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Pass Code. Range: 0~19999 (Please do remember new Pass Code) 3. Press ENT to save the value and go to the next parameter.

Display	Default	Name	Descriptions
	<i>no</i>	Key Lock Setting (LoCK)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can close Key Lock. Range: no (Do Not Close), YES (Close) 3. Press ENT to save the value and back to System Setting Group.

3.2 ALARM (roP) SETTING GROUP PROCEDURE

* While Pass Code is correct, Press  can select Alarm Output Setting Group.

Display	Default	Name	Descriptions
	<i>ALr</i>	AL Indicator Selection Setting (indi)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select AL Indicator selection. Range: ALr (Alarm for Rate), ALt (Alarm for Total) 3. Press ENT to save the value and go to the next parameter.
	<i>00001</i>	Pulse O/P Duty Cycle Setting (P.dUTY)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Pulse O/P Cycle Setting. Range: 1~999 (msec) 3. Press ENT to save the value and go to the next parameter.
	<i>rAtE</i>	AL1 Selection Setting (AL.SEL)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select AL1 Selection Setting. Range: rAtE (Rate), totAL (Total) 3. Press ENT to save the value and go to the next parameter.
	<i>H1</i>	AL1 Action Setting (ACt1)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Alarm Action. Range: Hi ($\geq$ Alarm Setpoint On), Lo ($<$ Alarm Setpoint On) 3. Press ENT to save the value and back to A/O Group Setting.
	<i>H1</i>	AL Rate Action Setting (ACtr)	
	<i>H1</i>	AL Total Action Setting (ACtt)	
	<i>00000</i>	AL1 Hysteresis Setting (HYS1)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Alarm Hysteresis. Range: 0~9999 Alarm will be turned off while display value is higher or lower (depends on Alarm Action) Alarm Setpoint +/- Hysteresis. 3. Press ENT to save the value and go to the next parameter.
	<i>00000</i>	AL Rate Hysteresis Setting (HYSr)	
	<i>00000</i>	AL Total Hysteresis Setting (HYSlt)	
	<i>00000</i>	AL1 Run Delay Setting (dEL1)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Alarm Run Delay. Range: 0~99 (sec) Alarm will be turned on after this setting (sec). 3. Press ENT to save the value and go to the next parameter.
	<i>00000</i>	AL Rate Run Delay Setting (dELr)	
	<i>00000</i>	AL Total Run Delay Setting (dELt)	

3.3 A/O (AoP) SETTING GROUP PROCEDURE

* While Pass Code is correct, Press  can select A/O Setting Group.

Display	Default	Name	Descriptions
	<i>rAtE</i>	A/O Selection Setting (Ao.SEL)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Analog Output Selection. Range: rAtE (Rate), totAL (Total) 3. Press ENT to save the value and go to the next parameter.
	<i>no</i>	A/O Polarity Setting (PoLAr)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select A/O Polarity. Range: no (Positive Pole O/P; 0~10 Vdc), YES (Positive & Negative Pole O/P; -10~+10 Vdc) 3. Press ENT to save the value and back to A/O Setting Group.
	<i>00000</i>	A/O Low Scale Setting (AnLo)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify A/O Low Scale. Range: -199999~999999 If this value is 0, while display is 0, output signal will be 4 mAdc. 3. Press ENT to save the value and go to the next parameter.
	<i>99999</i>	A/O Hi Scale Setting (AnHi)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify A/O Hi Scale. Range: -199999~999999 If this value is 100, while display is 100, output signal will be 20 mAdc. 3. Press ENT to save the value and go to the next parameter.

3.4 RS-485 (doP) SETTING GROUP PROCEDURE

* While Pass Code is correct, Press  can select RS-485 Setting Group.

Display	Default	Name	Descriptions
	<i>00000</i>	Address Setting (Addr)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can modify Address. Range: 0~255 3. Press ENT to save the value and go to the next parameter.
	<i>38400</i>	Baud Rate Setting (bAUd)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Baud Rate. Range: 38400, 19200, 9600, 4800 (bps) 3. Press ENT to save the value and go to the next parameter.
	<i>n8.2.</i>	Parity Check Setting (PAri)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Parity Check. Range: n8.2., n8.1., EvEn, odd 3. Press ENT to save the value and go to the next parameter.
	<i>no</i>	Frame Setting (FrAME)	1. Press  to enter the parameter setting, the digit will be flashed. 2. Press  or  can select Frame. Range: no (Hi to Lo), YES (Lo to Hi) 3. Press ENT to save the value and back to RS-485 Setting Group.

4.1 MODBUS RTU MODE PROTOCOL ADDRESS TABLE

* Data form: 16 / 32 bit, +/-8000~7FFF(-32768~32767), 800000007FFFFFFF(-2147483648~2147483647)

Modbus	Hex	Name	Act	Descriptions
40001	0000	ID	R	Model number identification; GTR is 22
40002	0001	STATUS	R	Current alarm output & external control input status, range: 0000~00F0 (0~240) (Bit 7: P/O, Bit 6: ALT, Bit 5: ALR, Bit 4: AL1) 0:Off, 1:On
40003	0002	INDEX	R/W	Index, range: 0000~002D (0~45) [Please refer section 4.2 for detail.]
40004	0003	SELECT	R/W	O/P selection setting, range: 0000~0001 (0~1); 0:ALR, 1:ALT (Bit 1:AL.SEL, Bit0:AO.SEL)
40005	0004	POLAR	R/W	A/O polarity setting, range: 0000~0001 (0~1); 0:No, 1:YES
40006	0005	INDI	R/W	AL indicator selection setting, range: 0000~0001 (0~1); 0:ALR, 1:ALT
40007	0006	DISP	R/W	Display selection setting, range: 0000~0002 (0~2); 0:Rate, 1:Max.D, 2:Deml
40008	0007	DEM.T	R/W	Displacement time unit setting, range: 0000~0003 (0~3); 0:Min, 1:Hour, 2:Day, 3:Month
40009	0008	BAUD	R/W	Baud rate setting, range: 0000~0003 (0~3); 0:38400, 1:19200, 2:9600, 3:4800
40010	0009	PARI	R/W	Parity check setting, range: 0000~0003 (0~3); 0:n.8.2., 1:n.8.1., 2:EvEn, 3:odd
40011	000A	FRAME	R/W	Frame setting, range: 0000~0001 (0~1); 0:No, 1:YES
40012	000B	LOCK	R/W	Key lock setting, range: 0000~0001 (0~1); 0:No, 1:YES
40013	000C	UNIT	R/W	Flow unit setting, range: 0000~0003 (0~3); 0:Liter, 1:Gallon, 2:C.C., 3:M ³
40014	000D	ACT1	R/W	Alarm 1 action setting, range: 0000~0001 (0~1); 0:Hi, 1:Lo
40015	000E	ACTR	R/W	Alarm rate action setting, range: 0000~0001 (0~1); 0:Hi, 1:Lo
40016	000F	ACTT	R/W	Alarm total action setting, range: 0000~0001 (0~1); 0:Hi, 1:Lo
40017	0010	DPK	R/W	K factor decimal point setting, range: 0000~0004 (0~4); 0:10 ⁰ , 1:10 ⁻¹ , 2:10 ⁻² , 3:10 ⁻³ , 4:10 ⁻⁴
40018	0011	DPR	R/W	Rate decimal point setting, range: 0000~0004 (0~4); 0:10 ⁰ , 1:10 ⁻¹ , 2:10 ⁻² , 3:10 ⁻³ , 4:10 ⁻⁴
40019	0012	DPT	R/W	Decimal point setting, range: 0000~0009 (0~9); 0:10 ⁰ , 1:10 ⁻¹ , 2:10 ⁻² , 3:10 ⁻³ , 4:10 ⁻⁴ , 5:10 ⁻⁵ , 6:10 ⁻⁶ , 7:10 ⁻⁷ , 8:10 ⁻⁸ , 9:10 ⁻⁹
40020	0013	C.TIME	R/W	Total time unit setting, range: 0000~0004 (0~4); 0:Sec, 1:Min, 2:Hour, 3:Day, 4:Month
40021	0014	AVG	R/W	Display average setting, range: 0001~0063 (1~99)
40022	0015	ADDR	R/W	Address setting, range: 0000~00FF (0~255)
40023	0016	DEL1	R/W	Alarm 1 run delay setting, range: 0000~0063 (0~99)
40024	0017	DELR	R/W	Alarm rate run delay setting, range: 0000~0063 (0~99)
40025	0018	DELT	R/W	Alarm total run delay setting, range: 0000~0063 (0~99)
40026	0019	HYS1	R/W	Alarm 1 hysteresis setting, range: 0000~0063 (0~99)
40027	001A	HYSR	R/W	Alarm rate hysteresis setting, range: 0000~0063 (0~99)
40028	001B	HYST	R/W	Alarm total hysteresis setting, range: 0000~0063 (0~99)
40029	001C	LCUT	R/W	Display low cut setting, range: 0000~0063 (0~99)
40030	001D	CODE	R/W	Pass code setting, range: 0000~4E1F (0~19999)
40031	001E	P.DUTY	R/W	Pulse output duty cycle setting, range: 0001~03E7 (1~999)
40032	001F	T.BASE	R/W	Sampling time setting, range: 0001~270F (1~9999)
40033	0020	AZERO	R/W	A/O zero adjustment, range: D8F1~270F (-9999~9999)
40034	0021	ASpan	R/W	A/O span adjustment, range: D8F1~270F (-9999~9999)
40035	0022	SCALE	R/W	Total scale setting, range: 00000001~0001869F (1~99999) Hi Bit
40036	0023		R/W	Total scale setting, range: 00000001~0001869F (1~99999) Low Bit
40037	0024	KF	R/W	K factor setting, range: 00000001~0001869F (1~99999) Hi Bit
40038	0025		R/W	K factor setting, range: 00000001~0001869F (1~99999) Low Bit
40039	0026	ALR	R/W	Rate alarm setting, range: 00000000~0001869F (0~99999) hi Bit
40040	0027		R/W	Rate alarm setting, range: 00000000~0001869F (0~99999) Low Bit
40041	0028	AL1	R/W	Alarm 1, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40042	0029		R/W	Alarm 1, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40043	002A		R/W	Alarm 1, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40044	002B		R/W	Alarm 1, range: 0000000000000000~00000002540BE3FF (0~9999999999)

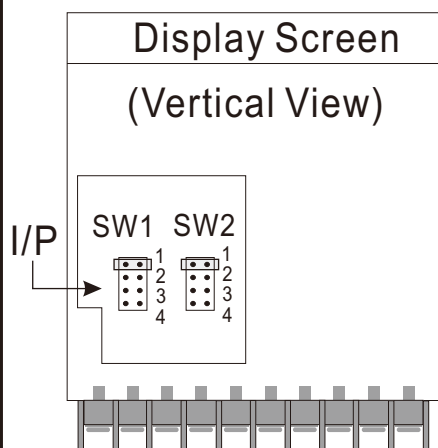
Modbus	Hex	Name	Act	Descriptions
40045	002C	ALT	R/W	Total alarm, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40046	002D		R/W	Total alarm, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40047	003E		R/W	Total alarm, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40048	003F		R/W	Total alarm, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40049	0030	ANLO	R/W	A/O low scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40050	0031		R/W	A/O low scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40051	0032		R/W	A/O low scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40052	0033		R/W	A/O low scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40053	0034	ANHI	R/W	A/O hi scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40054	0035		R/W	A/O hi scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40055	0036		R/W	A/O hi scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40056	0037		R/W	A/O hi scale setting, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40057	0038	TOTALIZE	R/W	Total display, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40058	0039		R/W	Total display, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40059	003A		R/W	Total display, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40060	003B		R/W	Total display, range: 0000000000000000~00000002540BE3FF (0~9999999999)
40061	003C	MAX.D	R/W	Max. displacement display, range: 00000000~0001869F (0~99999) Hi Bit
40062	003D		R/W	Max. displacement display, range: 00000000~0001869F (0~99999) Low Bit
40063	003E	DEMAND	R	Displacement display, range: 00000000~0001869F (0~99999) Hi Bit
40064	003F		R	Displacement display, range: 00000000~0001869F (0~99999) Low Bit
40065	0040	RATE	R	Rate display, range: 00000000~0001869F (0~99999) Hi Bit
40066	0041		R	Rate display, range: 00000000~0001869F (0~99999) Low Bit

4.2 INDEX CODE SUPPLEMENT

* The following codes are for hexadecimal.

Page / Name	Page / Name	Page / Name	Page / Name	Page / Name
00: SYS	01: roP	02: AoP	03: doP	04: P.Cod
05: E-00	06: AL.SEL	07: Ao.SEL	08: PoLAr	09: indi
0A: diSP	0B: dEM.t	0C: bAUd	0D: PAri	0E: FrAME
0F: LoCK	10: Unit	11: ACt1	12: ACtr	13: ACtt
14: dPK	15: dPr	16: dPt	17: C.tiME	18: AvG
19: Addr	1A: dEL1	1B: dELr	1C: dELt	1D: HYS1
1E: HYSr	1F: HYSt	20: LCUt	21: CodE	22: P.dUtY
23: t.bASE	24: AZEro	25: ASPAn	26: SCALE	27: KF
28: ALr	29: AL1	2A: ALt	2B: AnLo	2C: AnHi
2D: Current Display				

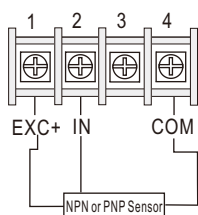
5.1 Frequency Input Signal Modification



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

SW1/SW2	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
1	
2	
3	
4	

NPN (5V): 0~10 KHz

JUMPER	SW1
1	
2	
3	
4	

NPN (12V): 0~400 Hz

JUMPER	SW1
1	
2	
3	
4	

NPN (12V): 0~10 KHz

JUMPER	SW1
1	
2	
3	
4	

PNP (5V): 0~400 Hz

JUMPER	SW1
1	
2	
3	
4	

PNP (5V): 0~10 KHz

JUMPER	SW1
1	
2	
3	
4	

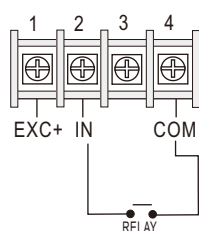
PNP (12V): 0~400 Hz

JUMPER	SW1
1	
2	
3	
4	

PNP (12V): 0~10 KHz

JUMPER	SW1
1	
2	
3	
4	

※Connection:



Relay Contact: NPN 0~400 Hz

JUMPER	SW1
1	
2	
3	
4	

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