

5 DIGITAL MICRO-PROCESS SIGNAL ISOLATED TRANSMITTER with 2 ALARMS / ANALOG OUTPUT / RS-485

GTM-A

FEATURES

- Accuracy: $\pm 0.1\%$ F.S. ± 1 digit (DC / Potentiometer / Resistor / PT-100 / Load Cell)
 $\pm 0.2\%$ F.S. ± 1 digit (AC)
- Measuring AC, DC Voltage / AC, DC Current / Potentiometer / Resistor / PT-100 / Load Cell)
- High brightness 0.4" LED display range: -19999~99999; decimal point selectable
- Display range programmable
- 2 Alarms (Hi or Lo) programmable / Analog output (15 bit resolution) / RS-485 communication optional (The above options can exist together)
- High stability, non-flammable case (PC), slim type 22.5mm, easily installation
- CE approval



ORDER INFORMATION: GTM-A - Code 1 - Code 2 - Code 3 - Code 4 - Code 5 - Code 6

Code 1	Input Type	Code 2	Voltage	Code 2	Current	Code 2	Potentiometer	Code 2	Resistor	Code 2	RTD (PT-100)	Code 2	Load Cell	Code 3	Aux. Power	Code 5	Analog Output
D	DC	V1	0~50mV	A1	0~20uA	P1	500Ω~10KΩ	I1	0~10Ω	T1	-50~50℃	L1	1mV/V EX.5V	A	AC/DC100~240V	N	None
A	AC AVG	V2	0~5V	A2	0~200uA	P2	10KΩ~100KΩ	I2	0~100Ω	T2	-100~100℃	L2	2mV/V EX.5V	C	DC 22~60V	A	4~20mA
M	AC TRMS	V3	1~5V	A3	0~2mA	P3	100KΩ~1MΩ	I3	0~1KΩ	T3	-200~200℃	L3	3mV/V EX.5V			V	0~10V
P	3 Wire Potentiometer	V4	0~10V	A4	0~20mA	PO	Option	I4	0~10KΩ	T4	0~600℃	L4	1mV/V EX.10V			O	Option
I	2 Wire Resistor	V5	0~36V	A5	0~200mA			I5	0~100KΩ	TO	Option	L5	2mV/V EX.10V				
T	RTD (PT-100)	V6	0~300V	A6	4~20mA			IO	Option			L6	3mV/V EX.10V				
L	Load Cell	V7	0~600V	A7	0~2A							LO	Option				
2	2, 3 Wire Sensor	VO	Option	A8	0~5A												
4	4 Wire Sensor			AO	Option												

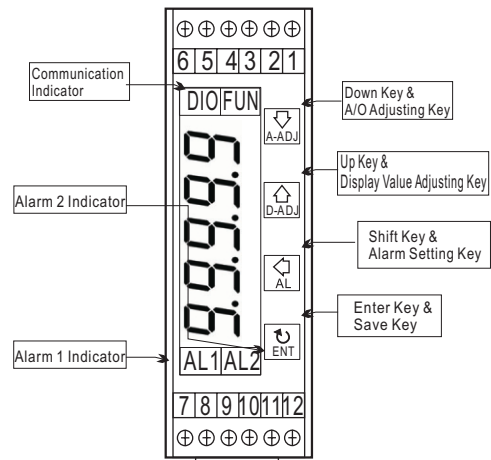
Code 4	Alarm Output
N	None
R1	1 Relay1
R2	2 Relays

Code 6	RS-485
N	None
Y	Yes

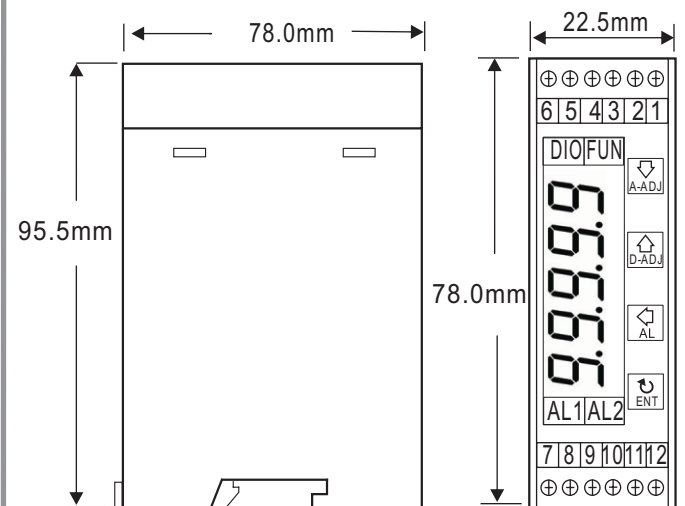
SPECIFICATION

- ◆ Accuracy: $\pm 0.1\%$ F.S. ± 1 digit (DC / Potentiometer / Resistor / PT-100 / Load Cell)
 $\pm 0.2\%$ F.S. ± 1 digit (AC)
- ◆ Display Screen: High brightness red LED; 10.14mm(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: 19200 / 9600 / 4800 / 2400 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; DC 22~60V
- ◆ Power Consumption: 8.5VA (all functions output)
- ◆ Surge Test: 1.5KVac / 1min (Input / Power)
- ◆ Input Impedence: Voltage: >2V for 20KΩ / V; $\leq 2V$ for >200MΩ
Current: $\geq 0.2A$ at 100mV; <0.2A at 1V

FRONT PANEL & KEY FUNCTIONS

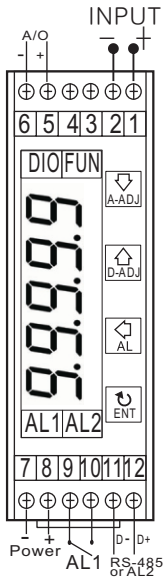


DIMENSION

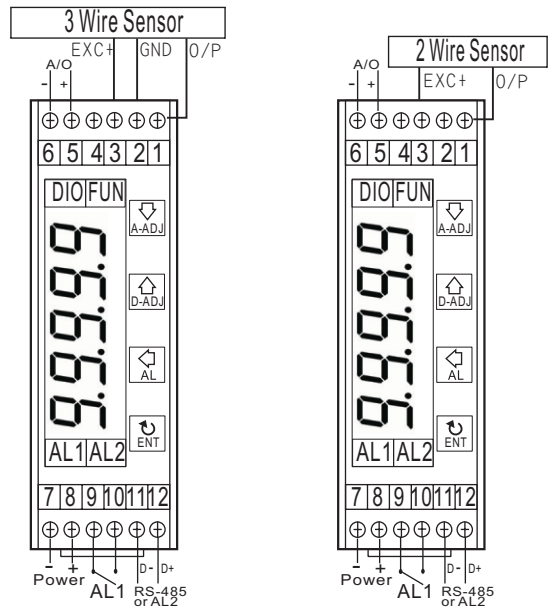


WIRING CONNECTION

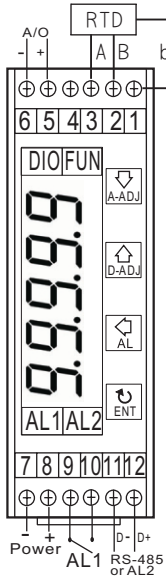
- Voltage, Current (AC, DC)



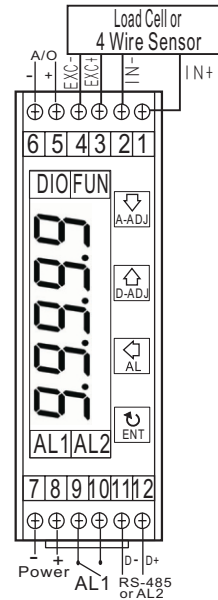
- 2,3 Wire Sensor



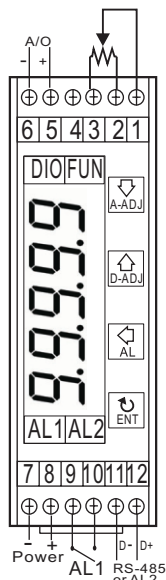
- Temperature (RTD)



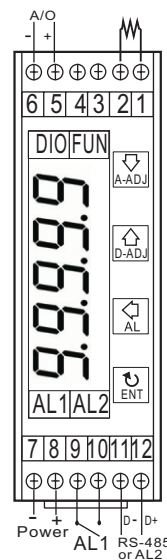
- 4 Wire Sensor or Load cell



- 3 Wire Potentiometer

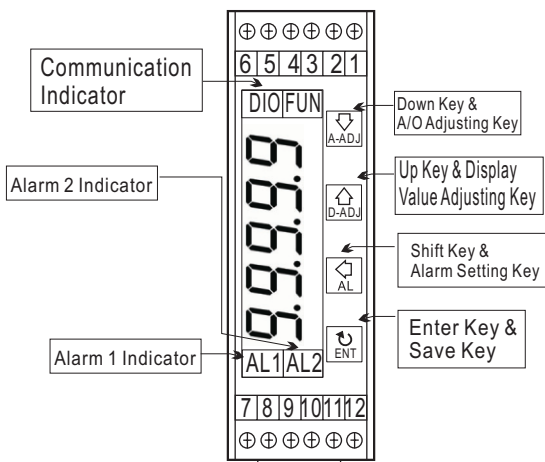


- 2 Wire Resistor



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

FRONT PANEL & KEY FUNCTIONS



Key Name	Symbol	Descriptions
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 & 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
Alarm Setpoint			
Power ON	10000	Measuring Status	Present value for measurement
Press ← for 3 sec	AL 1	Alarm 1 Setpoint (AL1)	Press ←↑↓ to modify alarm 1 setpoint.
Press ENT	AL 2	Alarm 2 Setpoint (AL2)	Press ←↑↓ to modify alarm 2 setpoint.
Press ENT			
Display: "ZERO" & "SPAN" Adjustment			
Power ON	10000	Measuring Status	Present value for measurement.
Press ↑ for 3 sec	dPEro	Display Zero Adjustment (dZEro)	Press ← to select adjusting speed rate, press ↑ ↓ to modify the zero value. PS: To use this function to adjust the real zero value.
Press ENT	dSPAN	Display Span Adjustment (dSPAN)	Press ← to select adjusting speed rate, press ↑ ↓ to modify the span value. PS: To use this function to adjust the real span value.
Press ENT			
Analog Output: "ZERO" & "SPAN" Adjustment			
Power ON	10000	Measuring Status	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.
Press ENT			

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
Parameter Group Setting Procedures			
Power On	10000	Measuring Status	Present value for measurement
Press ENT	P.Cod	Pass Code (P.Cod)	Press ←↑↓ to enter pass code.
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 (SYS)	
Press ←	roP	Alarm Setting Group (roP)	
Press ←	RoP	A/O Setting Group (AoP)	
Press ←	doP	RS485 Setting Group (doP)	
Press ENT			

Display	Descriptions	Default
System Setting Group Procedures		
System Setting Page (SYS)		
Decimal Point Setting (dP)	Press \uparrow \downarrow to 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
Display Low Scale Setting (dSPL)	Press \leftarrow \uparrow \downarrow to modify display low scale for the input signal zero value. EX: If the input signal is 4~20mA; 4mA is shown display 0.00, this parameter must be set for 000.00.	Customers specify
Display Hi Scale Setting (dSPH)	Press \leftarrow \uparrow \downarrow to modify display high scale for the input signal span value. EX: If the input signal is 4~20mA; 20mA is shown display 100.00, this parameter must be set for 100.00.	Customers specify
Display Average Setting (AvG)	Press \leftarrow \uparrow \downarrow to modify display average (1~99). PS: Please use this function for stable display value when input signal is unstable.	00005
Display Low Cut Setting (LCUt)	Press \leftarrow \uparrow \downarrow to modify display low cut to 0 (0~99).	000000
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.	000000
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
Alarm Setting Group Procedures		
Alarm Setting Page (roP)	The following steps are only available for alarm output.	
Alarm 1 (ACT1)	Alarm Action Setting Press \uparrow \downarrow to modify alarm value that is \geq (Hi) or $<$ (Lo) for alarm action. PS: 1. There are 4 alarms output optional. 2. This page is exist without alarm output, but the function will be disabled. 3. Press ENT to save the value and go to the next parameter.	Hi
Alarm 2 (ACT2)		
Hysteresis 1 (HYS1)		
Hysteresis 2 (HYS2)	Alarm Hysteresis Setting Press \leftarrow \uparrow \downarrow to modify the value, when alarm runs lower or higher display value (depends on alarm action). Alarm setpoint \pm this range (0~99) will turn off the alarm. PS: 1. There are 4 alarms output optional. 2. This page is exist without alarm output, but the function will be disabled. 3. Press ENT to save the value and go to the next parameter.	000000
Delay Time 1 (dEL1)	Alarm Run Delay Setting Press \leftarrow \uparrow \downarrow to modify the value, when the display value reach the alarm value that need to wait for this time (0~99 sec) for alarm action. PS: 1. There are 4 alarms output optional. 2. This page is exist without alarm output, but the function will be disabled. 3. Press ENT to save the value and go to the next parameter.	000000
Delay Time 2 (dEL2)		
Alarm Start Band Setting (Sb)	Press \leftarrow \uparrow \downarrow to modify the value (-99~+99), if the display value don't over this range; the alarm will not be act.	000000
Alarm Start Band Time Setting (Sdt)	Press \leftarrow \uparrow \downarrow to 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.)	000000

Display	Descriptions	Default
A/O Setting Group Procedures		
A/O Setting Page (AoP)	The following steps are only available for analog output.	
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.	000000
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 10V, this value must be set for 90.0.	999999
RS485 Setting Group Procedures		
RS485 Setting Page (doP)	The following steps are only available for RS-485.	
Address Setting (Addr)	Press \leftarrow \uparrow \downarrow to modify address (0~255).	000000
Baud Rate Setting (bAUd)	Press \uparrow \downarrow to select baud rate (19200/9600/4800/2400).	19200
Parity Setting (PAri)	Press \uparrow \downarrow to select parity (n.8.2/n.8.1/even/odd).	n8.2
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.		

Modbus RTU Mode Protocol Address Table

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

	HEX	Name	Descriptions	Act
0000	ACT1	Alarm 1 act setting; range: 0000~0001 (0~1)	0:HI, 1:LO	R/W
0001	ACT2	Alarm 2 act setting; range: 0000~0001 (0~1)	0:HI, 1:LO	R/W
0002	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
0003	LOCK	Key lock setting; range: 0000~0001 (0~1)	0:NO, 1:YES	R/W
0004	BAUD	Baud rate setting; range: 0000~0003 (0~3)	0:38400, 1:19200, 2:9600, 3:4800	R/W
0005	PARI	Parity setting; range: 0000~0003 (0~3)	0:N.8.2., 1:N.8.1., 2:EVEN, 3:ODD	R/W
0006	AVG	Display average setting; range: 0001~0063 (1~99)		R/W
0007	LCUT	Display low cut setting; range: 0000~0063 (0~99)		R/W
0008	ADDR	Address setting; range: 0000~00FF (0~255)		R/W
0009	HYS1	Alarm 1 hysteresis setting; range: 0000~03E7 (0~9999)		R/W
000A	HYS2	Alarm 2 hysteresis setting; range: 0000~03E7 (0~9999)		R/W
000B	DEL1	Alarm 1 act delay time setting; range: 0000~0063 (0~99)		R/W
000C	DEL2	Alarm 2 act delay time setting; range: 0000~0063 (0~99)		R/W
000D	SB	Alarm start band setting; range: FF9D~0063 (-99~99)		R/W
000E	SDT	Alarm start delay time setting; range: 0000~0063 (0~99)		R/W
000F	AZERO	Analog output zero setting; range: E890~1770 (-6000~6000)		R/W
0010	ASPAN	Analog output span setting; range: E890~1770 (-6000~6000)		R/W
0011	CODE	Pass code setting; range: 00000000~0001869F (0~99999)	Hi Bit	R/W
0012		Pass code setting; range: 00000000~0001869F (0~99999)	Low Bit	R/W
0013	DSPL	Display low scale setting; range: FFFB1E1~0001869F (-19999~99999)	Hi Bit	R/W
0014		Display low scale setting; range: FFFB1E1~0001869F (-19999~99999)	Low Bit	R/W
0015	DSPH	Display hi scale setting; range: FFFB1E1~0001869F (-19999~99999)	Hi Bit	R/W
0016		Display hi scale setting; range: FFFB1E1~0001869F (-19999~99999)	Low Bit	R/W
0017	AL1	Alarm 1 setpoint setting; range: FFFB1E1~0001869F (-19999~99999)	Hi Bit	R/W
0018		Alarm 1 setpoint setting; range: FFFB1E1~0001869F (-19999~99999)	Low Bit	R/W
0019	AL2	Alarm 2 setpoint setting; range: FFFB1E1~0001869F (-19999~99999)	Hi Bit	R/W
001A		Alarm 2 setpoint setting; range: FFFB1E1~0001869F (-19999~99999)	Low Bit	R/W
001B	ANLO	Analog output low scale setting; range: FFFB1E1~0001869F (-19999~99999)	Hi Bit	R/W
001C		Analog output low scale setting; range: FFFB1E1~0001869F (-19999~99999)	Low Bit	R/W
001D	ANHI	Analog output hi scale setting; range: FFFB1E1~0001869F (-19999~99999)	Hi Bit	R/W
001E		Analog output hi scale setting; range: FFFB1E1~0001869F (-19999~99999)	Low Bit	R/W
001F	DISPLAY	Current display; range: FFFB1E1~0001869F (-19999~99999)	Hi Bit	R
0020		Current display; range: FFFB1E1~0001869F (-19999~99999)	Low Bit	R
0021	STATUS	Alarm Display Status, display range 0000~03FF(0~1023), Bit 0: Alarm 1, Bit 1: Alarm 2, Bit 2: DOFL, Bit 3: -DOFL, Bit 4: IOFL		R