ATM-M Series
5 DIGIT DUAL INPUT MICRO PROCESSOR MATH FUNCTION ISOLATED TRANSMITTER

USER'S MANUAL (V1.0)

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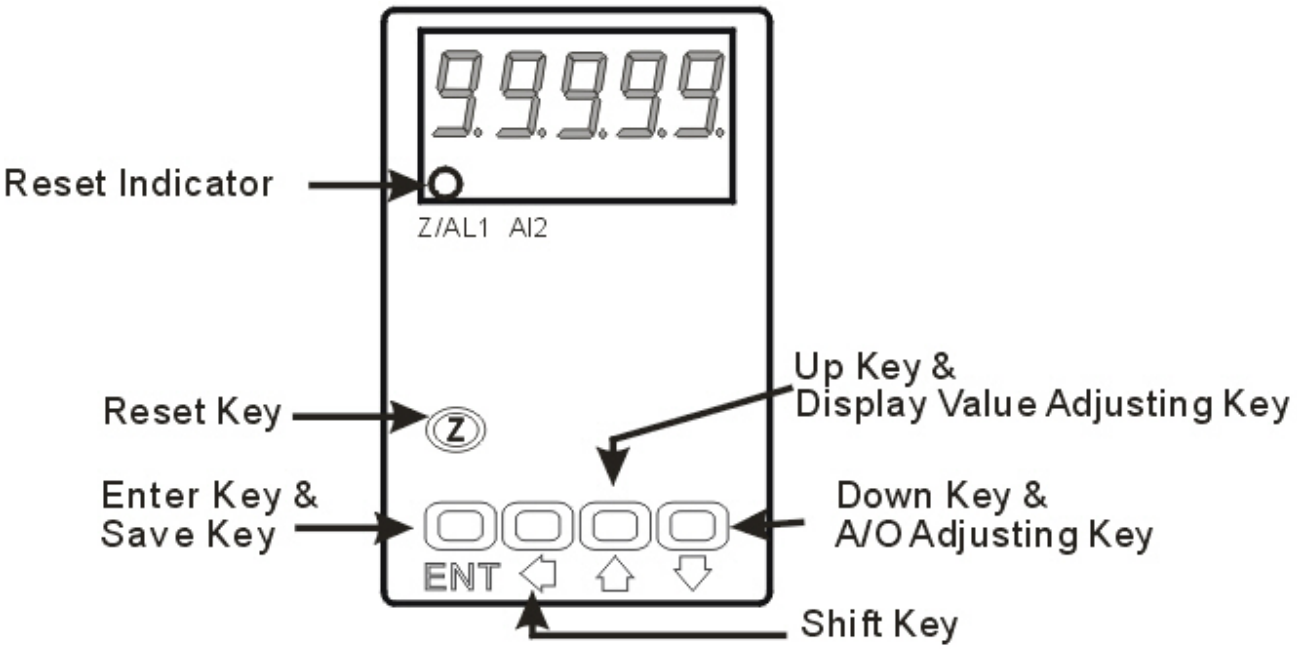
1. Features

- Versatile Input selection : 0~50mV , 0~10V , 0~300V , 0~200mA , 4~20mA
- Versatile output selection : 4~20mA , 0~20mA , 0~5V , 0~10V
- Accuracy : ±0.1% F.S.
- Mathmatic function (A±B , AXB , A/B , A&B(Hi or Lo) , IAI , $\sqrt{A}$)
- General input & output selectable
- Surge test of AC 2000V/1min between input / output / power

2. Specifications

- Input selection : 0~50mV , 0~10V , 0~300V , 0~200mA , 4~20mA
- Output selection : 4~20mA , 0~20mA , 0~5V , 0~10V
- Accuracy : ±0.1% F.S.
- Display Screen : High brightness red LED; 10.16mm(0.4")
- Display Range : -19999~99999
- Zero Adjustment : ±9999
- Span Adjustment : ±9999
- Parameters Setting : Push buttons
- Back Up Memory : EEPROM
- Over Range Indication : doFL/ioFL or -doFL/-ioFL
- Analog Output Resolution : 15 bit
- Output Ripple : ≦±0.1% F.S.
- Output Response Time : ＜250 msec (0~90%)
- Output Capability : Voltage Output: ＜20mA
  Current Output: ＜10V
- Isolation : Input / Output / Power / Case
- Insulation Resistance : ＞100MΩ with 500Vdc
- Surge Test : 2KVac/1min
- Input Impendence : Voltage: ＞2V for 20KΩ/V; ≦2V for ＞200MΩ
  Current: ≧0.2A at 100mV; ＜0.2A at 1V
- Temperature Coefficient :100ppm/degree C (0~60 degree C)
- Operating Temperature : 0-60 degree C
- Operating Humidity : 20 to 90% RH (non-condensing)
- Storage Temperature : -10-70 degree C
- Storage Humidity : 20 to 90% RH (non-condensing)
- Power Supply : AC 110, AC 220V
- Installation : Socket / Plug-in

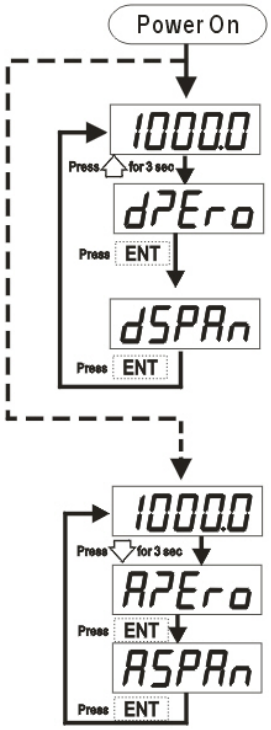
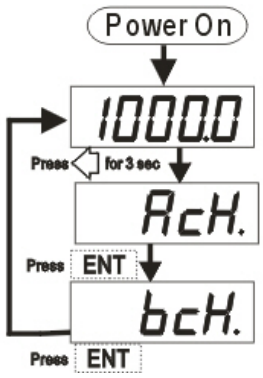
3. Front panel & Key functions



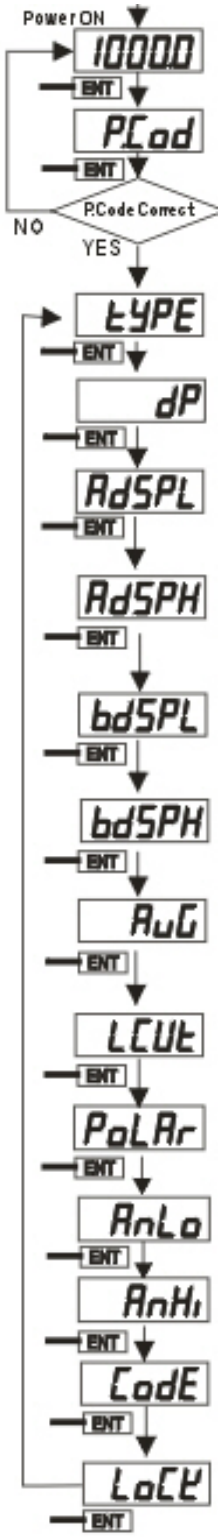
Key Name	Symbol	Descriptions
Reset Key	Z	1. Press this key to enable the reset function & reset indicator (Z) is light; press this key again to disable the reset function & reset indicator (Z) is dark.
Enter Key & Save Key	ENT	1. In the measuring status, press this key can enter to parameter pages. 2. In the parameter setting, press this key can save the value & go to next parameter.
Shift Key	⇦	1. 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 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 parameters after the modification.
3. Please don't forget the new pass code after modification.
4. In any pages, pres ⇧ & ⇩ , or don't press any keys for 2 minutes that will back to measuring status.

4. General Mode Operating Procedures

Block Charts	Display	Descriptions	Default
		**Display : "ZERO" & "SPAN" Adjustment**	
	Measuring Status	Present value for measurement.	
	Display (dZEro) 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.	00000
	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.	00000
		Analog Output: "ZERO" &"SPAN" Adjustment	
	Measuring Status	Present value for measurement.	
	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.	00000
	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.	00000
		**Display Value: Preview Input A & Input B**	
	Measuring Status	Present value for measurement.	
	Preview Input A Display Value (A CH.)	press ⇧ ⇩ to show the current input A display value	Input A Display Value
	Preview Input B Display Value (B CH.)	press ⇧ ⇩ to show the current input B display value	Input B Display Value

5. Programming Mode Operating Procedures

Block Charts	Display	Descriptions	Default
	Measuring Status	Present value for measurement.	
	Pass Code (P.Cod)	Press⇦ ⇧ ⇩ to enter pass code.	00000
		Pass code is correct that will enter to parameter groups. Pass code is wrong that will back to measuring status.	
	Math Type Setting (tYPE)	Pass ⇧ ⇩ to select the math type of input A & input B; A (Sqr. $\sqrt{A}$), |A| (Abs.A), A+B (Add.Ab) , A-B (Sub.Ab) , AXB (MUL.Ab) , A/B (div.Ab) , A&BHi (And.Hi) , A&BLo (And.Lo) .	SqrA
	Decimal Point Setting (dP)	Pass ⇧ ⇩ to select decimal point (0, 1, 2, 3, 4). EX: if the value shows "0.00" that means the decimal point is 2 digits.	00000
	Input A Display Low Scale (AdSPL)Setting	Pass ⇦ ⇧ ⇩ 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
	Input A Display Hi Scale Setting (AdSPH)	Pass ⇦ ⇧ ⇩ 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
	Input B Display Low Scale (BdSPL)Setting	Pass ⇦ ⇧ ⇩ 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
	Input B Display Hi Scale Setting (BdSPH)	Pass ⇦ ⇧ ⇩ 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)	Pass ⇦ ⇧ ⇩ 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)	Pass ⇦ ⇧ ⇩ to modify display low cut to 0 (0~99).	00000
	A/O Polarity Setting (PoLAr)	Pass ⇦ ⇧ ⇩ to modify output is positive pole 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)	Pass ⇦ ⇧ ⇩ to 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

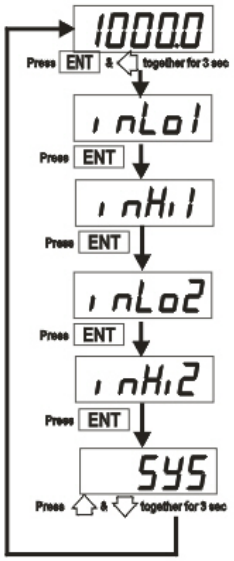
	A/O Hi Scale Setting (AnHi)	Pass ⇦ ⇧ ⇩ to adjust A/O hi scale to correspond to the display value. EX : A/O is 0~10V, the display is 90.0 to output1 0V, this value must be set for 90.0.	99999
	Pass Code Setting (CodE)	Pass ⇦ ⇧ ⇩ to modify pass code (0~19999). PS: Please don't forget the new pass code after modification.	00000
	Key Lock Setting (LoCK)	Pass ⇧ ⇩ 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

6. Error Code of Self-Diagnosis

Display	Descriptions
	Input signal is over 120% of input range.
	Input signal is under -20% of input range.
	Input signal A is over display range (19999).
	Input signal A is under display range (-19999).
	Input signal is over 180% of input range or meter error.
	Math operating result is over display range (19999).
	Math operating result is under display range (-19999).
	Input signal B is over display range (19999).
	Input signal B is under display range (-19999).
	EEPROM reading/writing suffers the interference (about 1 million times).

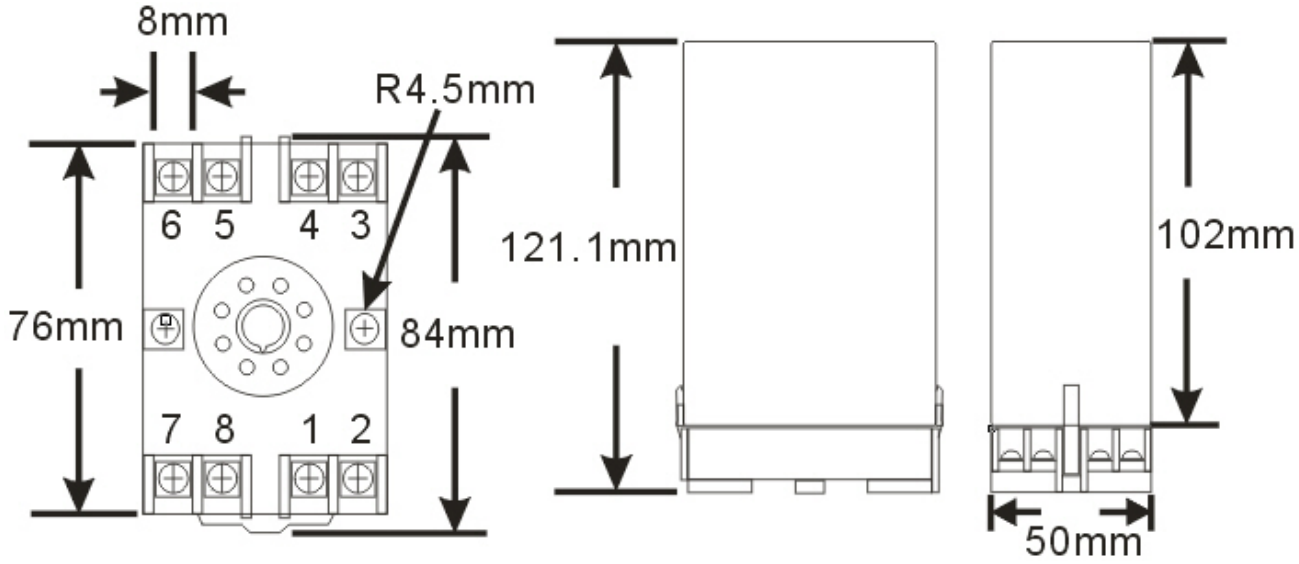
※Please check the wiring connection is correct first, if the problem still exist, please return the meter to the factory.

7. Calibration Operating Procedures

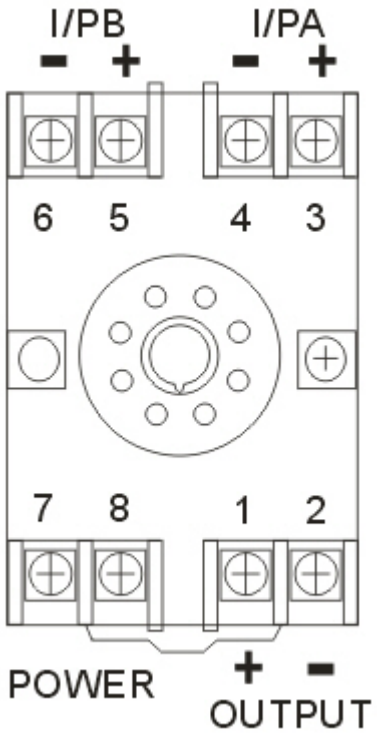
	Display	Descriptions	Default
	Measuring Status	Present value for measurement Press ENT & ⇦ together for 3 sec will enter to calibration operating procedures.	
	Input Low Scale 1 Calibration (inLo1)	1. Input standard low scale signal to input 1. 2. Press⇦ ⇧ ⇩ to calibrate input low scale.	
	Input Hi Scale 1 Calibration (inHi 1)	1. Input standard hi scale signal to input 1. 2. Press⇦ ⇧ ⇩ to calibrate input hi scale	
	Input Low Scale 2 Calibration (inLo2)	1.Input standard low scale signal to input 2. 2.Press⇦ ⇧ ⇩ to calibrate input low scale.	
	Input Hi Scale 2 Calibration (inHi 2)	1.Input standard hi scale signal to input 2. 2.Press⇦ ⇧ ⇩ to calibrate input hi scale	
	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.

8. Dimensions



9. Wiring Connection



10. Ordering information

ATM - M - Code 1 Code 2 Code 3 - Code 4 - Code 5

Code 1	Input Type
D	DC
A	AC AVG
M	AC TRMS

Code 2	I/P A
1	0~50mV
2	0~10V
3	0~300V
4	0~20mA
5	4~20mA
O	Option

Code 3	I/P B
1	0~50mV
2	0~10V
3	0~300V
4	0~20mA
5	4~20mA
O	Option

Code 4	Aux. Power
A	AC110V
B	AC220V
C	DC24V

Code 5	Analog Output
1	4~20mA
2	0~20mA
3	0~5V
4	0~10V
O	Option