

# 5 DIGITAL MICRO-PROCESS METER with 5 ALARMS / SIMULATION OUTPUT

## LM5

### FEATURES

- Accuracy:  $\pm 0.1\%$  F.S.  $\pm 1$  digit (DC / Potentiometer / Resistor / PT-100 / Load Cell)  
 $\pm 0.2\%$  F.S.  $\pm 1$  digit (AC)
- Measuring AC, DC Voltage / AC, DC Current / Potentiometer / Resistor / PT-100 / Load Cell
- High brightness 0.8" LED display range: -19999~99999; decimal point selectable
- Max. Hold / Data Hold / Reset / 2~4 Alarms (Hi or Lo) programmable / Analog output (15 bit resolution) / RS-485 communication optional (The above options can exist together)
- Alarm 5 can be set for ERROR mode to detect the error of the meter
- Individual simulation analog output to check the sensors
- High stability, non-flammable case (PC), high safety
- CE approval



### ORDER INFORMATION: LM5 - [Code 1] [Code 2] - [Code 3] - [Code 4]

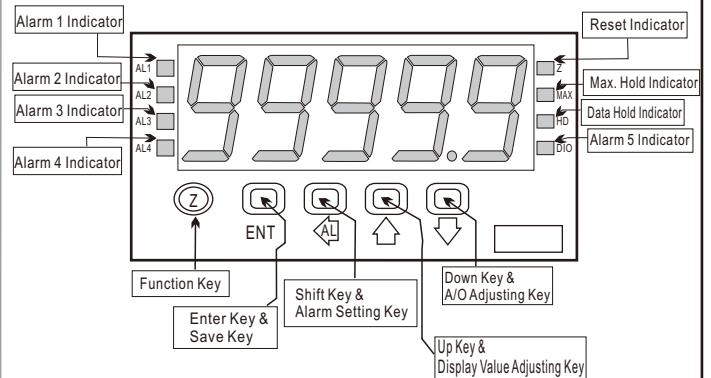
Code 1	Input Type	Code 2	Voltage	Code 2	Current	Code 2	Potentiometer	Code 2	Resistor	Code 2	RTD (PT-100)	Code 2	Load Cell	Code 3	Aux. Power	Code 4	Analog Output
D	DC	V1	0~50mV	A1	0~20uA	P1	500Ω~10KΩ	I1	0~10Ω	T1	-50~50℃	L1	1mV/V EX.5V	A	AC/DC100~240V	N	None
A	AC AVG	V2	0~5V	A2	0~200uA	P2	10KΩ~100KΩ	I2	0~100Ω	T2	-100~100℃	L2	2mV/V EX.5V	D	AC/DC22~60V	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			A9	0~10A												
				AO	Option												

- \*\*1: 2 wire type offers excitation power DC24V for 2 wire (Loop Power) pressure, temperature, humidity sensors using.  
 2: Please specify the input signal and display value, inquiry salespersons for special type.  
 3: Load Cell type of excitation power DC5V can have 2 load cell in parallel; DC10V only can offer 1 load cell to use.

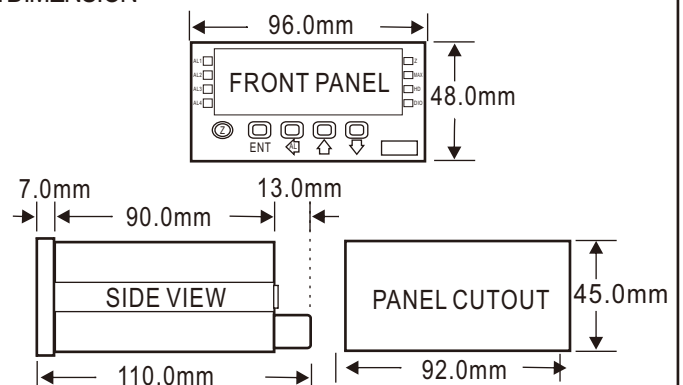
### SPECIFICATION

- ◆ Accuracy:  $\pm 0.1\%$  F.S.  $\pm 1$  digit (DC / Potentiometer / Resistor / PT-100 / Load Cell)  
 $\pm 0.2\%$  F.S.  $\pm 1$  digit (AC)
- ◆ Display Screen: High brightness red LED; 20.3mm(0.8")
- ◆ 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"  
"(Error) on" (Alarm 5 only)
- ◆ 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℃)
- ◆ Operating Temperature: 0~60℃
- ◆ Operating Humidity: 20~90% RH (non-condensing)
- ◆ Storage Temperature: -10~70℃
- ◆ 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)
- ◆ Input Impedance: Voltage: >2V for 20KΩ / V;  $\leq 2V$  for >200MΩ  
Current:  $\geq 0.2A$  at 100mV; <0.2A at 1V

### FRONT PANEL & KEY FUNCTIONS

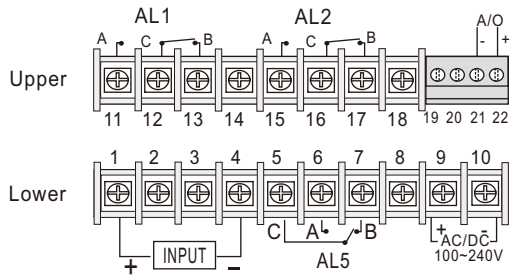


### DIMENSION

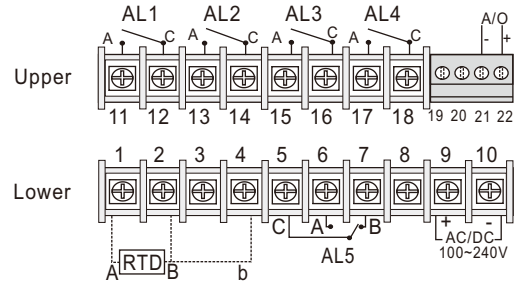


## WIRING CONNECTION

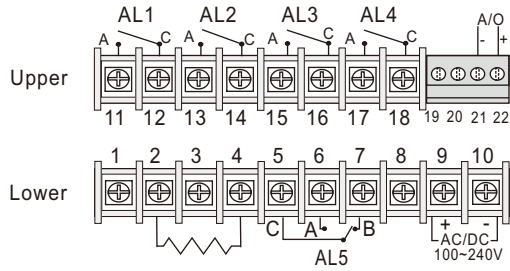
### ● Voltage, Current (AC, DC)



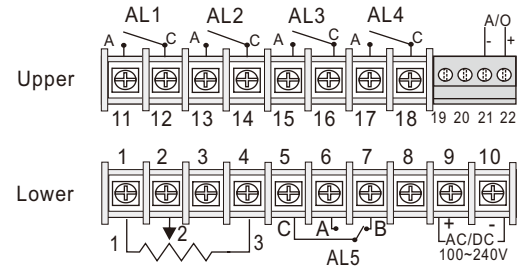
### ● Temperature (RTD)



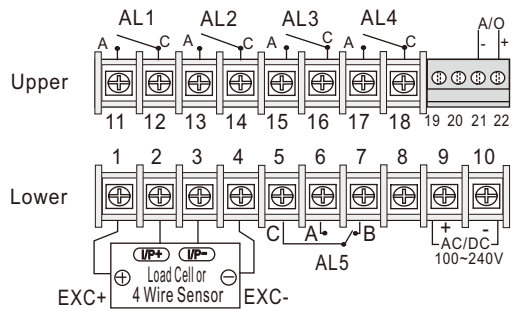
### ● 2 Wire Resistor



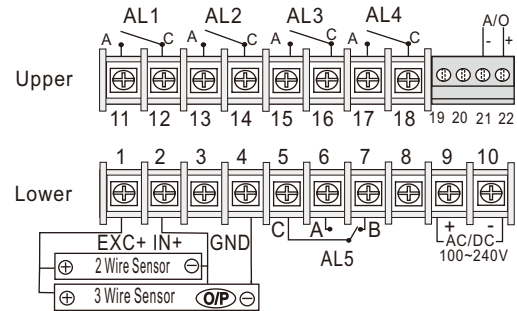
### ● 3 Wire Potentiometer



### ● 4 Wire Sensor or Load cell

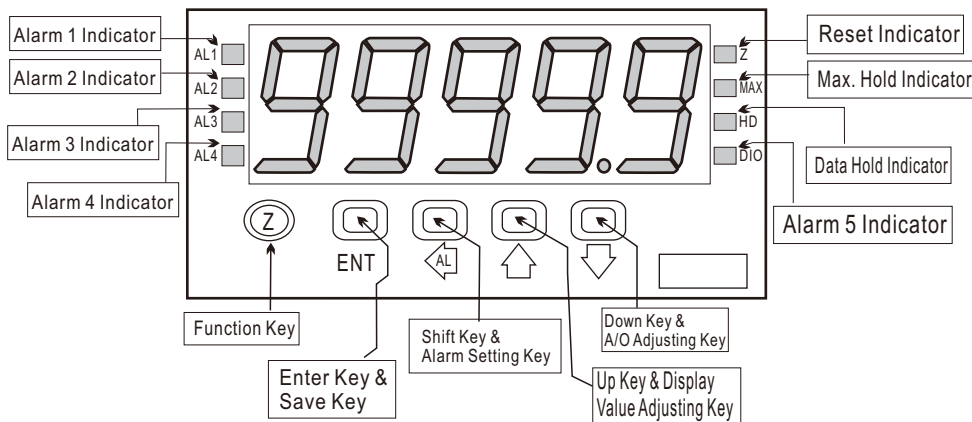


### ● 2,3 Wire Sensor



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

FRONT PANEL & KEY FUNCTIONS



Key Name	Symbol	Descriptions
Function Key	Ⓩ	1. Press this key to enable the Z key function & the relative indicator is light; press this key again to disable the Z key function & the relative indicator 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 & 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
<b>Alarm Setpoint</b>			
Power ON	10000	Measuring Status	Present value for measurement
Press: ENT 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	AL 3	Alarm 3 Setpoint (AL3)	Press ←↑↓ to modify alarm 3 setpoint.
Press: ENT	AL 4	Alarm 4 Setpoint (AL4)	Press ←↑↓ to modify alarm 4 setpoint.
Press: ENT	AL 5	Alarm 5 Setpoint (AL5)	Press ←↑↓ to modify alarm 5 setpoint.
<b>Display: "ZERO" &amp; "SPAN" Adjustment</b>			
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.
<b>Analog Output: "ZERO" &amp; "SPAN" Adjustment</b>			
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	ASPA n	A/O Span Adjustment (ASPA n)	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	Si n	Simulation Output Setting (SiM)	Press ↑ ↓ to select simulation output off(NO) or on(YES)
Press: ENT	Si n-u	Simulation Output Percent Setting (SiM-v)	Press ←↑↓ to modify simulation output percent (-100~+100%)

PROGRAMMING MODE OPERATING PROCEDURES

Block Charts	Display	Descriptions	Default
<b>Parameter Group Setting Procedures</b>			
Power On	10000	Measuring Status	Present value for measurement
Press: ENT	PCod	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	595	(SYS)	System Setting Group
Press: ENT	roP	(roP)	Alarm Setting Group
Press: ENT	RoP	(AoP)	A/O Setting Group

Display	Descriptions	Default
<b>System Setting Group Procedures</b>		
5YS Press: ENT ↓	System Setting Page (SYS)	
dP Press: ENT ↓	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
dSPL Press: ENT ↓	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
dSPH Press: ENT ↓	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
AvG Press: ENT ↓	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
LCUt Press: ENT ↓	Display Low Cut Setting (LCUt) Press $\leftarrow$ $\uparrow$ $\downarrow$ to modify display low cut to 0 (0~99).	00000
CodE Press: ENT ↓	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
P-KEY Press: ENT ↓	Z Key Functions Setting (Z-KEY) Press $\uparrow$ $\downarrow$ to select Z key functions AZ, MAX or HD	AP
LoCK Press: ENT ↓	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>		
roP Press: ENT ↓	Alarm Setting Page (roP)	The following steps are only available for alarm output.
ACT1 Press: ENT ↓	Alarm 1 (ACT1) Press $\uparrow$ $\downarrow$ to modify alarm value that is $\geq$ (Hi) or $<$ (Lo) for alarm action.	Hi
ACT2 Press: ENT ↓	Alarm 2 (ACT2) PS: 1. There are 5 alarms output standard. 2. Press ENT to save the value and go to the next parameter.	
ACT3 Press: ENT ↓	Alarm 3 (ACT3)	
ACT4 Press: ENT ↓	Alarm 4 (ACT4)	
ACT5 Press: ENT ↓	Alarm 5 (ACT5) Press $\uparrow$ $\downarrow$ to modify alarm value that is $\geq$ (Hi) or $<$ (Lo) or (ERROR) for alarm action. Error status: ioFL, -ioFL, doFL, -doFL, AdEr, and input signal is under -12.5% of input range.	
HYS1 Press: ENT ↓	Hysteresis 1 (HYS1) Press $\leftarrow$ $\uparrow$ $\downarrow$ to modify the value, when alarm runs lower or higher display value (depends on alarm action). Alarm setpoint $\pm$ this value (0~999) will turn off the alarm.	00000
HYS2 Press: ENT ↓	Hysteresis 2 (HYS2) PS: 1. There are 5 alarms output standard. 2. Press ENT to save the value and go to the next parameter.	
HYS3 Press: ENT ↓	Hysteresis 3 (HYS3)	
HYS4 Press: ENT ↓	Hysteresis 4 (HYS4)	
HYS5 Press: ENT ↓	Hysteresis 5 (HYS5)	

Display	Descriptions	Default
<b>Alarm Run Delay Setting</b>		
dEL1 Press: ENT ↓	Delay Time 1 (dEL1)	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 5 alarms output standard. 2. Press ENT to save the value and go to the next parameter.
dEL2 Press: ENT ↓	Delay Time 2 (dEL2)	
dEL3 Press: ENT ↓	Delay Time 3 (dEL3)	
dEL4 Press: ENT ↓	Delay Time 4 (dEL4)	
dEL5 Press: ENT ↓	Delay Time 5 (dEL5)	
Sb Press: ENT ↓	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.	00000
Sdt Press: ENT ↓	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.)	00000
<b>A/O Setting Group Procedures</b>		
roP Press: ENT ↓	A/O Setting Page (AoP)	The following steps are only available for analog output.
PolAr Press: ENT ↓	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
AnLo Press: ENT ↓	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
AnHi Press: ENT ↓	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.	99999

<b>Error Code of Self-Diagnosis</b>	
Display	Descriptions
ioFL	Input signal is over 120% of input range.
-ioFL	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.

Remark: 1. There are 3 parameter groups of "System Setting Group(SYS)", "Alarm Setting Group(roP)", "Analog Output Setting Group (AoP)" for modification.  
2. Press  $\leftarrow$  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.