Intelligent Light Beam Digital Display Level Controller

Features

- Compatible input 22 kinds of signals
- Thermal resistance: pt100, cu50
- Thermocouple: S/R/B/K/N/E/J/T with automatic cold junction temperature compensation
- Standard signal: 0-10mA/4-20mA/0-5V/1-5V/0-10V
- Linear non-standard signal: within 0-100mV/0-400Ω, any signal can be set according to the input signal and the corresponding range, ready to use

Single chip microcomputer Intelligence:

- The zero point and the magnification can be adjusted manually, and there is no offset for long-term use;
- All parameters can be set freely as required

Alarm control parameters can be set

- Can bring up to four control relay outputs
- The alarm value and hysteresis of each relay can be set separately
- The output mode of each relay can be set freely (upper limit alarm or lower limit alarm)

Product overview

Multiple transmission output

- Transmission output type：0-10mA/4-20mA/0-5V/1-5V/0-20mA
- Transmitter output range can be adjusted freely

Independently adjustable light beam

- The display volume of the light beam can be adjusted independently by parameters

Communication function:

- Serial port: 8 data bits, 1 stop bit, no parity check
- Baud rate: 1200, 2400, 4800, 9600
- Compatible with MODBUS-RTU communication protocol

Notes:

1 Do not misuse documentation.

2 The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.

3 Complete installation, operation, and maintenance information is provided in the instructions of the product.

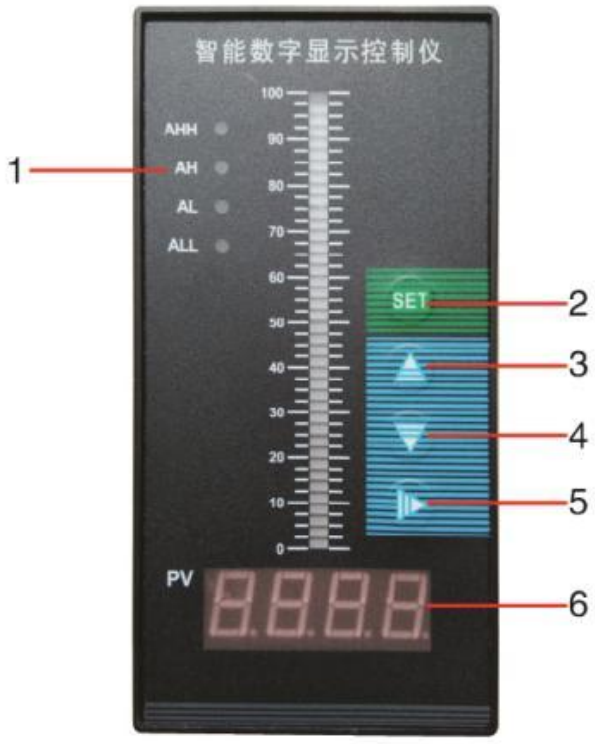
4 Misuse of the product may cause danger or personal injury.

Performance parameters

Measurement range	-1999-9999
Accuracy	0.5%FS±1
Supply voltage	AC220V（±10%），DC24V
Working environment	Temperature 0-50℃, relative humidity≤85%
Power consumption	≤5W

Panel description (take 160*80 panel as an example)

1. Indicator light AH light is on, upper limit relay output; AHH light is on, the top limit relay output;
AL light is on, lower limit relay output;
The ALL light is on, and the lowest limit relay is output.
2. Function keys
3. Plus key
4. Minus key
5. Shift key
6. Measurement and function menu display window



Type Description

Type	Code	Description
————	□□ □□—□□ □□ □□—□□ □□ □	New series
Appearance feature	TC/TS C S	Horizontal/Vertical Horizontal Vertical
Dimensions	1 4 7 8 9	48*48mm 96*48mm(H)48*96mm(V) 72*72mm 160*80(H)80*160(V) 96*96mm
Control effect	01 03 04	Measurement display Double limit alarm Four limit alarm
communication method	0 8	No communication RS-485
Transmit output method	1 2 3 4 5	No Output 4-20mA 0-10mA 1-5V 0-5V
Input type	23	See "input type Selection code “
Alarm mode 1	N H L	No alarm Upper limit control/alarm Lower limit control/alarm H：1wire Upper limit 2H：2wire Upper limit
Alarm mode 2	N H L	No alarm Upper limit control/alarm Lower limit control/alarm H：1wire Upper limit 2H：2wire Upper limit
Power output	P	DC24V Power output

Input type option code (corresponding to the parameter SN)	
Code	Input type and measurement range
00	S（0-1600℃）
01	R（0-1600℃）
02	B（200-1600℃）
03	K（0-1300℃）
04	N（0-1300℃）
05	E（0-800℃）
06	J（0-650℃）
07	T（-200-400℃）
08	PT100（-200-850℃）
09	Cu50（-50-150℃）
10	0-5V（-1999-9999）
11	1-5V（-1999-9999）
12	0-10V（-1999-9999）
13	0-10mA（-1999-9999）
14	0-20mA（-1999-9999）
15	4-20mA（-1999-9999）
16	mV non-standard signal（0-100mV）
17	Resistance non-standard signal（0-100Ω）
18	invalid
19	0-5V prescribing（-1999-9999）
20	1-5V prescribing（-1999-9999）
21	0-10mA prescribing（-1999-9999）
22	4-20mA prescribing（-1999-9999）
23	Full Switch input

Instrument level 1 parameter setting					
parameter	Features	Range	Factory default	Description	MODBUS_RTU Address (hexadecimal)
AH	Upper limit alarm value	-1999-9999	300.0	Show upper limit alarm setting value	100H
DH	Upper limit alarm return difference	0-9999	1.0	Show upper limit alarm return difference value	104H

AL	Lower limit alarm value	-1999-9999	200.0	Show lower limit alarm setting value	108H
DL	Lower limit alarm return difference	0-9999	1.0	Show Lower limit alarm return difference	10CH
AHH	Top limit alarm value	-1999-9999	400.0	Show Top limit alarm value	110H
DHH	Top limit alarm return difference	0-9999	1.0	Show Top limit alarm return difference	114H
ALL	Lowest limit alarm value	-1999-9999	100.0	Show Lowest limit alarm value	118H
DLL	Lowest limit alarm return difference	0-9999	1.0	Show Lowest limit alarm return difference	11CH
PASS	Secondary menu password input	0-9999	0	When input parameter is 555, enter the secondary menu When input parameter is 666, the current parameter is backed up When output parameter is 888, return to factory parameters (If it has been backed up, it will be restored to the backup parameters)	

Instrument secondary parameter setting

When PASS appears in the first-level menu, press the SET button, enter the password 555 in the PV window, and press SET to enter the following menu. Each time you press the minus button, the parameters will be changed in the following order. The parameters will change cyclically, and in order to set the current parameter value, press the SET button to enter. Use the shift button and the plus and minus buttons to change the value, set it and press the SET button again to confirm. If you want to return to the measurement interface, long press for 3 seconds to exit.

para meter	Name	Predetermined area	Description	MODBUS_RTU Address (hexadecimal)
SN	Enter the index number	0-22	Set input index type	200H
DOT	Decimal point	DOT=0	No decimal point	204H

		DOT=1 DOT=2 DOT=3	The decimal point is in the tenth place (display XXX.X) The decimal point is in the hundreds (display XX.XX) The decimal point is in thousands (display X.XXX)	
PUL	Lower limit of measuring range	-999-9999	Set the lower measurement range of the input signal	208H
PUH	Upper limit of measurement range	-999-9999	Set the upper measurement range of the input signal	20CH
PBIA	Show input zero shift	Full scale	Set input zero shift amount	210H
FILT	Filter coefficient	0.100-0.900	The setting cannot exceed 0.900, otherwise the instrument will make an error	214H
K1	Show input range ratio	0-1.999 times	Set display input range magnification ratio	218H
OU-A	Transmission output type	OU-A=0 No transmission output OU-A=1（0-10mA） OU-A=2（4-20mA） OU-A=3（0-20mA） OU-A=4（0-10mA）-Output is determined by OUPH-OUPL OU-A=5（4-20mA）- Output is determined by OUPH-OUPL OU-A=6（0-20mA）- Output is determined by OUPH-OUPL	linear output according to the measured value	21CH
PH	Upper limit alarm type	Thousands place: 0 alarm does not flash, 1 alarm flashes Hundreds place: 0 monitor PV	Normal factory setting is 0001	220H

		Tens place: 0 relay normally closed state 1 relay normally open Units: 0 forbidden alarm 1 high alarm 2 low alarm		
PL	Lower limit alarm type	Same definition as PH	Normal factory setting is 0002	224H
PHH	Top limit alarm type	Same definition as PH	Normal factory setting is 0001	228H
PLL	Lowest limit alarm type	Same definition as PH	Normal factory setting is 0002	22CH
INPH	Non-standard signal input Max value	10-100mV；10-400Ω	Normal factory setting is 100.0	230H
INPL	Non-standard signal input minimum	0-90mV；0-390Ω	Normal factory setting is 0.0	234H
BAUD	Communication baud rate	0-1200bps 1-2400bps 2-4800bps 3-9600bps	Communication speed	238H
ID	mailing address	0-31	Cannot exceed 31	23CH
K2	light beam shows the input range ratio	0.100-9.999	Only with the beam meter has this parameter	240H
OUPH	Transmission output upper limit (valid when OU-A is greater than 3)	-999-9999	Normal factory setting is 500.0	244H
OUPL	Lower limit of transmission output (valid when OU-A is greater than 3)	-999-9999	Normal factory setting is 0.0	248H

Note：MODBUS-RTU address of PV value is 0000H

Application Description

1. The selection of meter and sensor range: The range of all sensors must be consistent with the range of the meter. Otherwise, the meter display is inaccurate. For example: the range of the liquid level transmitter is 0-5 meters , the output is 4-20mA, and the instrument parameter setting:

Enter the secondary menu to set the following parameters:

Parameter	Name	Set value	Description
SN	Signal input type	15	Must be consistent with the output signal of the sensor
DOT	Decimal point position	2	According to accuracy requirements
PUL	Lower limit of measuring range	0.00	The lowest range of the sensor
PUH	Upper limit of measurement range	5.00	The highest range of the sensor

2. Actual application example of the instrument 2: Take the above 0-5 meter transmitter as an example: if it is higher than 4 meters and lower than 1 meter, it will alarm. Long press for 3 seconds to enter the first-level menu, and the parameter settings are as follows:

Parameter	Name	Set value	Description
AH	Upper limit alarm value	4.00	The relay output is: upper limit
DH	Upper limit alarm return difference	0.05	Upper limit alarm point return difference (can be set freely)
AL	Lower limit alarm value	1.00	The relay output is: lower limit
DL	Lower limit alarm return difference	0.05	Lower limit alarm point return difference (can be set freely)

Example 2: Take the above 0-5 meter transmitter as an example. Requirements: Start the pump below 1 meter, and stop the pump above 1 meter. Long press for 3 seconds to enter the first-level menu, and the parameter settings are as follows:

Parameter	Name	Set value	Description
AL	Lower limit alarm value	4.00	Relay output position: upper limit
dL	Lower limit alarm return difference	3.00	Upper limit alarm point return difference (can be set freely)
The top limits are limited to the upper limit when leaving the factory, and the lowest limits have the same function as the lower limit. According to actual requirements, users can choose by themselves			

(Users can change the alarm mode according to their actual situation)

Special feature

1. Light beam adjustable function

When the customer uses the light beam instrument, if the purchased transmitter has a range of 0-8 meters, the actual measurement level is 0-5 meters. This is when the liquid level reaches the upper limit of the range, the light beam will not reach the full state. If you need the light bar 100% display to vary with 0-5 meters, the display also shows the real level value. The parameters can be set as follows

Parameter	Name	Set value	Description
SN	Signal input type	15	Must be consistent with the output signal of the sensor
DOT	Decimal point position	2	According to accuracy requirements
PUL	Lower limit of measuring range	0.00	The lowest range of the sensor
PUH	Upper limit of measurement range	8.00	The highest range of the sensor
K2	The light beam shows the input range ratio	8.00/5.00=1.600	Enlarge the light beam ratio to make it consistent with the actual range

1. Transmitting adjustable function

When the customer uses the transmitter output, under normal circumstances, the customer needs to transmit the full range of the probe to the output. For example, the range of the meter is 0-5 meters, and the transmitter outputs 4-20mA. Under normal circumstances, 0 meters correspond to 4mA output, and 5 meters correspond to output 20mA. But in some special cases, customers want 2 meters to correspond to 4mA and 3 meters to correspond to 20mA, at this time, it can be set as follows:

Parameter	Name	Set value	Description
SN	Signal input type	15	Must be consistent with the output signal of the sensor
DOT	Decimal point position	2	According to accuracy requirements
PUL	Lower limit of measuring range	0.00	The lowest range of the sensor
PUH	Upper limit of measurement range	5.00	The highest range of the sensor
OU-A	Transmission output type	5	Select 4-20mA output, output range is determined feerly

OUPH	Transmission output upper limit	3.00	Transmission output upper limit
OUPL	Transmission output lower limit	2.00	Transmission output lower limit

After this setting, the measured value is less than or equal to 2 meters, the output is 4mA, and the output is greater than or equal to 3 meters, and the output is 20mA, and the output current changes linearly between 2 meters and 3 meters.

Additional information

1. Communication and printing protocol (only with communication instrument)
2. Maintenance and quality assurance: As the long-term stability of the instrument has been taken into account in the design and the instrument does not require special maintenance under normal use. In normal use, the damage problems caused by product quality without accidental factor, will be guaranteed. The products will be replaced and returned within twelve months after they are sold; and users will be provided with related technical services.

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