# Catalogue

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## Handheld Programmer

## Introduction

This programmer is applicable to the parameter setting of NP series module meters intelligent including signal conditioner, intelligent signal isolator, intelligent distributor, intelligent temperature transmitter and intelligent isolated safety barrier. It is in English Version, users can set the functions according to the instructions displayed on the screen, it can also calibrate the input and output of NP series intelligent modules and display the measured value in field.

#### Shape



#### **Keys Instruction**

Keys	Instruction			
ON/OFF	On/Off Keys			
	Menu Choice Keys			
	Cursor Shifting Keys			
0~0. =	Numbers and Symbol Keys			
LAMP	On/Off keys for LCD Background Lamp			
ESC	Cancel or Escape Keys			
ENT	Current data confirmation and Linefeed keys. Press this key for confirmation if the setting is finished, or else the input data is ineffective.			

## **Operation Method**

Connect the intelligent module meter with the programmer by USB Interface Program

Cable, and supply the electricity to the meter.

The programmer automatically reads measured value / output value menu and automatically displays the input signal type and output signal type parameters of measured data and meter after pressing ON/OFF. When the meter is thermocouple and thermo displays the resistance. it measured temperature value and temperature transmitting range; when it is current or voltage input, it displays voltage or current value of the measured port and output current value. There is warning tone for every operation to confirm the correct operation. When choosing operation item, rolling displays the "Operation Help" below the screen.

Automatically read information
(Temperature Transmitter)

14:19:04		07-06-01	
1 <sup>st</sup> channel		2 <sup>nd</sup> channel	
input type:	Pt100	Pt100	
input data:	135.7℃	270.6°C	
output type:	4-20mA	1-5V	
output data:	8.342mA	3.165V	
upper limit:	0 °C	0 °C	
lower limit:	500°C	500°C	
Press SET to enter into parameter setting			

The input type in  $1^{st}$  channel is RTD PT100, the measured range is  $0\sim500^{\circ}$ C, the output signal type is  $4\sim20$ mA, the actual engineering measurement is  $135.7^{\circ}$ C, output 8.342mA DC current.

The input type in  $2^{nd}$  channel is RTD PT100, the measured rang is  $0\sim500^{\circ}$ C, the output signal type is 1-5V, the actual engineering measurement is  $270.6^{\circ}$ C, output 3.165V DC voltage.

When the meter type is single input and double Output, it only displays output type and output data in  $2^{nd}$  channel and no other reading; when the meter type is single input and single output, not any reading in  $2^{nd}$ 

## channel.



Press SET to enter into the main menu

Press SET to enter into the main menu, press , T to enter into the required function, press ENT to enter into the related menu. You can refer to the "Operation Help" below the screen. Separately introduce the detailed operation method of every menu as follows. (This menu can also use number keys 1-7 to the rapid chosen)

## **1.** Parameter setting main menu



Press  $\blacktriangle$ ,  $\checkmark$  to choose the type of the required parameter setting meter, press ENT to enter into the parameter menu. You can refer to "Operation Help" below the screen.

•According to the type of meter, enter into the related item to choose the settings of safety barrier, temperature transmitter, isolator and distributor. If it is intelligent signal conditioner, any function amendment is possible.

•Temperature transmitter means the input signal is module meter with thermo resistance or thermocouple ( including the safety barrier with thermo resistance and thermocouple input); Distributor and isolator means the input signal is the meter with current and voltage (including the safety barrier with current and voltage input)

1.1 Parameter Setting-Temperature Transmitter Setting Menu

Parameter Setting-Temperature Transmitter
channel choose: 1 <sup>st</sup> channel input type : K 1 <sup>st</sup> output type : 4-20mA 2 <sup>nd</sup> output type : 1 - 5 V transmit lower limit: 0°C transmit upper limit: 1000°C
← content ▲▼menu keys

Press  $\blacktriangle$  ,  $\triangledown$  to choose the required amended item, press  $\blacktriangleleft$   $\checkmark$  b to choose the parameter or code. The input signal type are (Thermocouple)  $K_{\times} E_{\times} S_{\times} B_{\times} J_{\times} T_{\times} R_{\times} N_{\times}$ (Thermo resistance)Pt100、Cu100、Cu50、 BA1、BA2、Pt100X (Pt100 little measured range) 、Pt1000、WRE5-26、WRE3-25,the output signal type are 0-10mA, 4-20mA,  $0-5V \le 1-5V \le 0-20$  mA  $\le 0-10V$ . Set the transmitting upper and lower limit by number keys. You can choose 1<sup>st</sup> channel and 2<sup>nd</sup> channel. 2<sup>nd</sup> output type in the 1<sup>st</sup> channel is the output type of the 2<sup>nd</sup> channel. 1<sup>st</sup> output type in the  $2^{nd}$  channel is the output type of the 1<sup>st</sup> channel. When the meter is single input type, 2<sup>nd</sup> channel is ineffective. Press ENT for confirmation and save the setting after all the parameter setting is finished. Return to the above menu if the setting is successful.

-When the safety barrier is thermocouple input, you can only choose thermocouple's scale mark; when it is thermo resistance input, you can only choose thermo resistance's scale mark. Temperature transmitter can choose freely from the scale mark between thermocouple and thermo resistance.

•The setting range for transmitting upper and lower range cannot excess the stipulated range in the technical condition ( e.g. the full measured range of Pt100 is -200-850°C, then the output upper limit cannot excess 850°C and the lower limit cannot excess -200°C).

1.2 Parameter Setting — Distributed Isolator Setting Menu

Parameter Se	tting—Dist	ributed Isolator
Channel Input ty 1 <sup>st</sup> outpu 2nd outp Input lo Input up	choice : pe : t type : ut type : wer limit: per limit:	1 <sup>st</sup> channel 4-20mA 4-20mA 1 - 5 V 3.000mA 21.000mA
<b>∢</b> ► conter	nt <b>⊾</b> ▼m	nenu

Press  $\blacktriangle$   $\checkmark$   $\checkmark$   $\checkmark$  separately choose input, output signal type and set the transmitting upper and lower limit by number keys. The optional input signal type are 0-10mA  $\checkmark$ 4-20mA  $\diamond$  0-5V  $\diamond$  1-5V  $\diamond$  0-20mA  $\diamond$  0-20mV  $\diamond$ 0-50mV  $\diamond$  0-100mV  $\diamond$  0-50KHz  $\diamond$  0-10V  $\diamond$ 0-10K $\Omega$ . The optional output signal type are 0-10mA  $\diamond$  4-20mA  $\diamond$  0-5V  $\diamond$  1-5V  $\diamond$  0-20mA  $\diamond$ 0-10V.

You can choose the  $1^{st}$  channel or the  $2^{nd}$  channel. The  $2^{nd}$  output type in the  $1^{st}$  type is the output type in the  $2^{nd}$  channel, and the  $1^{st}$  output type in the  $2^{nd}$  channel is the output type in the  $1^{st}$  channel. When the meter is single input type, choice in  $2^{nd}$  channel is ineffective.

Input upper and lower limit Refers to when it less to the lower limit or larger than the upper limit, the meter identities input fault and immediately enters into alarm status. Alarm output status is related to the excess measured range in main menu. Please refer to excess measured range setting menu for output status setting at Input signal fault.

After the completion of all parameters

setting, press ENT for confirmation and save the setting. Return to the above menu for successful setting.

1.3 Parameter Setting — setting menu for pressure transmitter

Parameter setting—pressure transmitter
channel choice: 1 <sup>st</sup> channel input type : 4-20mA 1 <sup>st</sup> output type: 4-20mA 2 <sup>nd</sup> output type: 1 - 5 V Display lower limit: 3.000mA Display upper limit: 21.000mA
<►content ▲▼menu

This menu is specialized for LCD meter and not applicable to other meters. The displayed upper and lower limit setting is corresponding to transmitter's measured upper and lower limit. LCD meter can display the engineering measurement on line which is measured by the transmitter in norm working.

Press  $\blacktriangle$ ,  $\blacktriangledown$ ,  $\checkmark$ ,  $\checkmark$  to separately choose input, output signal type and set the displayed upper and lower limit by number keys. The optional input signal type is the same as distributed isolator. The optional output signal type are 0-10mA, 4-20mA, 0-5V, 1-5V, 0-20mA, 0-10V.

After the completion of all parameter setting, press ENT for confirmation and save the setting. Return to the above menu for successful setting.

1.4 Parameter —setting menu for excess measurement range output



NP series intelligent module meters have on-line self-diagnose function. When the in field meter or the circuit occurs fault (excess measured rang, off-line, short-circuit and so on). Intelligent module meters output the related power by settings. It provides users flexible output mode and is applicable to various different industrial control occasions, which includes three output modes for follow, alarm and keep. Follow mode as default mode in factory-leaving.

1.4.1 Definition of the output mode (4-20mA output as example)

## 1.4.1.1 Follow mode

It is used in most industrial controlling place. As long as it's within the output measured range, whether the input value is larger or less than the measured range, the output value always follows the variable of input value. For example, the isolator is 4-20mA input and 4-20mA output, if it is defined as output follow mode, when the input signal is 0mA, it corresponding to 0mA output. The maximum output value cannot excess 22mA of full measured range; when the input is larger than 22mA (e.g. 25mA), then output is fixed in 22mA. The output follow mode with no fault alarm function to input signal.

## 1.4.1.2 Alarm Mode

In some specialized industrial controlling occasions, when the input circuit occurs fault (short-circuit, off-line and excess measured range), the output is automatically adjusted to a certain fixed value for the connected controlled equipment to process the fault. As to the liner signal input (current and voltage), our product can set the upper and lower alarm value of the input signal, and the alarm range setting is within 0-22mA. When the input is less than the lower limit or larger than the upper limit of alarm value, the output automatically adjusted to the preset fixed value. Among it, the lower limit alarm can set the meter with input short-circuit and off-line alarm functions. The upper limit alarm can set the meter with excess measured range alarm function. The fixed output value after alarm can be set by programmer, and the range of this fixed output value is within the range of 0-22mA of the output measured value. For example, the fixed output range of 4-20mA is 0-22mA.

The temperature transmitter is only with the alarm function of input fault, which does not need to set the alarm value of upper and lower limit. The signal input fault including: the short-circuit of thermocouple, off-line fault, three-line wrong connection of the thermo resistance, off-line and other faults.

## 1.4.1.3 Keep mode

It requires that In some certain industrial Controlling occasions, when occurs the input alarm, the output keeps the output value unchanged as before. And the alarm setting method is the same as the above. It can keep unchanged the output value 100ms before the alarm.

Press  $\blacktriangle$   $\checkmark$  to choose the required type, Then press ENT to enter into the setting menu. Press ENT for confirmation and save the setting.

1.5 Parameter setting-setting menu for relay alarm

Parameter settin	g —	-alarm	setting
Alarm mode Alarm valu	: e:	upper 320℃	limit
<⊨content	<b>A</b>	▼menu	

This menu is specialized for meter with alarm setting function. Press  $\blacktriangle$ ,  $\checkmark$  to choose the required amended item, and press  $\triangleleft$ ,  $\triangleright$  to choose the item parameter or code. Set the upper and lower alarm value still by number

keys. The alarm mode can be chosen from upper limit and lower limit. If you choose upper limit alarm mode, then the alarm value is the upper limit alarm value. When it is larger than this value, the meter output----junction signal. The unit of the alarm value can be intelligent chosen by the programmer.

## 2. Main course for input calibration

Main course -	input calibration
20mA input: 20mV input: 70mV input: 100mV input: 400Ωinput: 5V input:	Measured data 0.000mA 0.00mV 0.00mV 0.00mV 0.0Ω 0.000V
$\star$ 1 <sup>st</sup> circuit	input calibration

Before calibration, the meter should be pre-warmed for 30m by electrify. Choose the required item for calibration, connect the input signal wire according to meter type match with the wiring method, and input the standard signal value which is required by calibration item. The meter with thermocouple and millivolt input choose the calibration of  $20mV \ge 70mV \ge 100mV$ . The meter with thermo resistance input choose the calibration of  $400\Omega$ , the meter with current input choose the calibration of 20mA, and the meter with voltage input choose  $5V \ge 10V$  (use  $\nabla$  to choose 10V calibration), but the hardware of the meter cannot used with 5V, it needs to change the circuit. Just for calibration.

If the meter is with double input, first calibrate the 1<sup>st</sup> channel, press  $\blacktriangleleft \ > \ >$  to choose the 2<sup>nd</sup> channel, then calibrate the 2<sup>nd</sup> channel. use  $\blacktriangledown$ ,  $\blacktriangledown$  to choose 10V calibration and input the standard value of this calibration item, press ENT for confirmation to the stable value. A " $\sqrt{}$ " displays after the calibration for a successful calibration.

## 3. Main course for output calibration



The meter should be pre-warmed for 30m by electrify. Connect the input signal wire according to meter type match with the wiring method. Connect the standard meter of more than 0.05% precision with monitor output value in the output port of the meter. Press  $\blacktriangle$ ,  $\checkmark$  to choose calibration item, after the output value being stable, input " output data" item, press ENT for confirmation to the stable value. A " $\sqrt{}$ " displays after the calibration for a successful calibration.

## 4. Main course for manufacture setting

Main course—manufacture setting Countersign Manufacture setting recovery: \*\*\*\*\* Manufacture setting save: \*\*\*\*\*

★press ENT for confirmation after inputting counter sign

Wrong operation in parameter setting may lead to the un-normal working of the meter. Use manufacture setting function to recovery meter's manufacture setting status. Press ENT for confirmation after inputting counter sign.

#### 5. Main course for cold junction calibration

Main course—cold junction calibration Environmental temperature calibration result 25.0℃ 25.0℃ ★input environmental temperature, press ENT for confirmation

Used for cold junction temperature calibration in temperature transmitter with thermocouple input. Input the real environmental temperature in calibration result fence, then press ENT for confirmation. At this time, the environmental temperature will display the confirmed temperature value. A " $\sqrt{}$ " displays after the calibration for a successful calibration.

Inputting  $0^{\circ}$ C means that meter's no temperature compensation has been set.

#### 6. Main course for system setting



Press ▲ 、 ▼ to choose the setting item. Contrast setting: press the left key or the right key to adjust the contrast, then press ENT for confirmation and save the setting.

Date setting: Press the left key or the right key to convert year, month, day and week, press number keys to set the date and week, then press ENT for confirmation.

Clock setting: The keys operation is the same as the date setting.

Clock display : press  $\checkmark$  to set whether display clock when reading measured or output value in menu interface.

Software version : Display meter version, when the programmer connects the

meter, press right key in this setting item to read meter software version any time.

#### 7. Main course for communication setting

Main course—communication setting				
Р	arameter setting			
Meter type :	11			
Meter address:	001			
Communication speed rat	te: 4800bps			
	-			
	menu			

Press  $\blacktriangle$ ,  $\bigtriangledown$ ,  $\checkmark$ ,  $\checkmark$ , and number keys to separately set "meter address" and "communication speed rate". The setting range of the meter address is 0-255. Communication speed rate can be chosen from 2400, 4800, 9600, 19200. After the completion of all parameter setting, press ENT for confirmation and save the setting. Return to the above menu for successful setting.

#### 8. Wiring diagram for calibration

8.1 Wiring diagram for input calibration

8.1.1Wiring diagram for temperature transmitter's input calibration

8.1.1.1 Thermo resistance Input



8.1.1.2 Thermocouple input



Note: Do not need cold junction temperature compensation, set the cold junction temperature as  $0^{\circ}$ C.

8.1.2 Wiring diagram for isolator and distributor input calibration

8.1.2.1 Current and voltage input

1	2			
	+			
	/			
1	2			
- +				
mA				

8.1.2.2 Wiring diagram for signal conditioner input calibration

8.1.2.1 Thermo resistance input



8.1.2. 2 Thermocouple input



Note: Do not need cold junction temperature compensation, set the cold junction temperature as  $0^{\circ}$ C.

8.1.2. 3 current and voltage input



8.1.4 Wiring diagram for Isolated safety barrier calibration

8.1.4.1 Thermo resistance input

1	2		3	4
		R		

Note: Do not need cold junction temperature compensation, set the cold junction temperature as  $0^{\circ}$ C.

8.1.4.2 Thermocouple input



8.1.4.3 Current and voltage input



8.2 Wiring diagram for output calibration

8.2.1 Wiring diagram for temperature transmitter, isolator and distributor output calibration



8.2.2 Wiring diagram for intelligent signal conditioner output calibration



8.2.3 Isolated safety barrier

8.2.3.1 solated safety barrier in test port



8.2.3.2 Isolated safety barrier in operational

port

1	2
-  <sub>mA</sub>	/v +

Note: If you program the intelligent safety barrier in field, please note that the wired line in the dangerous side of the safety barrier should be disconnected before linking to the programmer.

The above wiring diagram is only for C series single channel products, which may be different from that of the real used products. Please be subjected to the wiring diagram on the back of the real meter.

### 9. Programmer accessories:

- 1. One communication cable
- 2. One rechargeable battery
- 3. One power distributor
- 4. One users guide

#### 10. Charging instruction:

Connect the power distributor to the programmer, the indicator shines with 1HZ frequency for battery-charging. The indicator will be off for the full charging.

Note: As this programmer is with battery charging management IC, which has certain static power consumption. So we recommend you charge the battery every half month even the programmer is not for use.