

## 新款智能温控器C/CH系统操作说明书（中英文）

非常感谢您使用本公司的产品，该系列产品是采用进口微电脑单片机，并具有PID自整定（自动寻优）功能的智能型温控仪表；使用前请您详细阅读本说明书及注意事项。

### 1. 产品型号说明

C □00  
CH□02 □□□□-□\*□□-□□  
①② ③ ④ ⑤⑥ ⑦⑧

- ① 控制；F:PID 动作及自动计数（逆向动作） D:PID 动作及自动计数（直接动作）  
② 输入方式：  
③ 范转代码；代码输入范围表参考8.10  
④ 第一控制输出（OUT1）(加热测)：M:继电器输出 T:三端双向可控开关 V:电压脉冲 8:电流(4到20 毫安直流)  
G:过零（用于三端双向可控驱动）  
⑤ 第一警报[ALM1]  
⑥ 第二警报[ALM2] N:未设报警 A:上限偏差报警 B:下限偏差报警 C:上、下限偏差报警 D:范围内报警  
E:附待机上限偏差报警 F:附待机下限偏差报警 G:附近待机上下限偏差报警 H:上限输入值报警 J:下限输入值报警  
K:附待机上限输入值报警 L:附待机下限偏差报警  
⑦ 交流功能：N:无交流功能 5:RS-485 (2-线系统)  
⑧ 防水防尘结构：N:无防水/防尘结构 1:防水/防尘结构

### 2. 安装

#### 2.1 安装条件

- ※环境温度低于0度或超过50度 ※过多感应噪音，静电，磁场。 ※水、油、化学品、蒸汽飞溅的地方  
※无腐蚀或易燃气体。 ※环境温度低于45%或超过85%RH ※无热凝聚形成热辐射

#### 2.2 尺寸

| 仪 表 型 号    | 宽×高×深        | 开孔mm  | 仪 表 型 号    | 宽×高×深        | 开孔mm  |
|------------|--------------|-------|------------|--------------|-------|
| C100/CH102 | 48×48×100/70 | 44×44 | C400/CH402 | 48×96×100/70 | 44×92 |
| C410/CH502 | 96×48×100/70 | 92×44 | C700/CH702 | 72×72×100/70 | 68×68 |
| C900/CH902 | 96×96×100/70 | 92×92 |            |              |       |

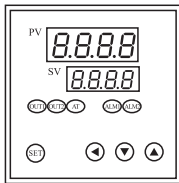
### 3. 警告

#### 3.1 接线注意事项

- (1) 对于热电偶输入的，使用特定的补偿线。  
(2) 对于热电阻输入的，使用低电阻线，并且三个线头间不带电阻差。  
(3) 将输入信号线绕开仪表电源，电气设备电源及负荷线以防止噪音感应。  
(4) 对于电流输入，必须由输入端提供一个250 欧的电阻器(±0.02%±10ppm, 0.25W)。

#### 3.2 仪表接线(注：以仪表要身接线图为准)

#### 4. 面板名称及各部功能



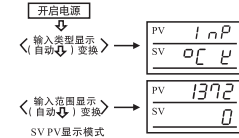
| NO | 面板说明 | 内容说明        |
|----|------|-------------|
| 1  | PV   | 测量值/模式显示值   |
| 2  | SV   | 设定值/模式内容显示值 |
| 3  | OUT1 | 输出1指示灯      |
| 4  | OUT2 | 输出2指示灯      |
| 5  | AT   | PID自动演算指示灯  |
| 6  | ALM1 | 报警1指示灯      |
| 7  | ALM2 | 报警2指示灯      |
| 8  | ▲    | 增加键         |
| 9  | ▼    | 减少键         |
| 10 | ◀    | 位移键         |
| 11 | SET  | 设定，模式键      |

#### 快捷键指南:

- 长按▲ 3 秒以上 AT黄灯开始闪烁，自整定开启，灯灭代表自整定完成。  
长按▼ 5 秒以上 界面出现“P”假如改为 0，则关闭PID 转为位式回差控制。  
长按▲5 秒以上 界面出现“SL1”字符，然后可以快速修改输入传感器类型。

### 5. 操作流程

#### 5.1 开机流程



- ①输入类型代码  
输出的简化显示  
输入类型代码(见表A)

- ②显示输入范围

表 A

| 显示   | 电 热 偶 ( ℃ )     | 电 热 阻 (RTD)  | 电 压 电 流    |
|------|-----------------|--------------|------------|
| 输入类型 | K J R S B E N T | PT 100 CU 50 | 0M mV mA V |

#### 5.2 SV 设定模式

在SV/PV正常显示状态下，按一下“SET”键，使SV显示处于闪烁状态，通过按“<”键，找到所需设定温度的位数，再按上升或下降键，设定到所需温度值，设定完毕后，再次按一“SET”键，使仪表转到SV/PV正常显示状态。

#### 5.3 参数设定模式

此参数用于设定报警，PID常熟等参数。在正常显示状态下，按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键显示下表参数符号：

注意：本机有显示自动回复功能。当操作者进行参数的设定修改等操作而忘记回到主显示模式时，仪表会在30秒后自动返回主显示模式

仪表在使用前或进行参数修改时详细阅读以下内容。下列流程中各项内容如仪表无此功能将不显示此项内容。

| 显示符 | 名 称 | 说 明      | 设定范围                   | 出厂值 | 显示符 | 名 称 | 说 明       | 设定范围                   | 出厂值   |
|-----|-----|----------|------------------------|-----|-----|-----|-----------|------------------------|-------|
|     | PV  | 测量值      | 全量程                    |     | d   | D   | 微分时间（秒）   | 0-3600（秒）<br>当设0时无微分作用 | 60    |
| RL1 | AL1 | 第1组报警设定  | 全量程                    |     | Rr  | AR  | 参考数值（见*2） | AT后自动设定                | 100   |
| RL2 | AL2 | 第2组报警设定  | 全量程                    |     | f   | T   | 工作周期（秒）   | 时间比例周期<br>1~100（秒）     | （见*3） |
| RfU | ATU | 自整定      | 0：关自带定<br>1：开自整定       | 0   | oH  | OH  | 主控制不动作宽带  | 1~100<br>单位与（PV）相同     | 2     |
| P   | P   | 比例带（见*1） | 0~全量程<br>当设0为ON/OFF控制  | 30  | SC  | SC  | PV值修正     | ~200~200<br>单位与（PV）相同  | 0     |
| I   | I   | 积分时间（秒）  | 0~3600（秒）<br>当设0时无积分作用 | 240 | LCU | LCK | 数据锁（见*4）  | 0000~0111              | 1000  |

- \*1.当P≠0时，仪表为PID控制，此时需合理设置‘I、D’各值，在初次使用时可开启‘AT’自整定功能，使控制达到最佳状态。当P=0时，为ON/OFF控制，此时需设定控制回差‘OH’的值。  
\*2.此为PID内部参考数值一般无须认为设置，‘AT’自整定后会自动设置此值。  
\*3.继电器接点输出：20秒，电压脉冲输出/间流控制管驱动用触发器输出/间流控制管输出2秒。  
\*4.设定数据锁（LCK）功能：设定数据锁功能用于防止对某此不常被设定的参数进行误操作。有3级禁锁状态，参数可被每级状态禁锁，参数上锁后不能被设定或改变但可以监视

|            |                       |            |               |
|------------|-----------------------|------------|---------------|
| 当LCK=0000时 | 所有数据都可修改              | 当LCK=0011时 | 除SV外所有数据都不可修改 |
| 当LCK=0001时 | 除SV，AL1，AK2外所有数据都不可修改 | 当LCK=0111时 | 所有数据都不可修改     |

### 6. 错误显示功能

当仪表不能正常工作时，仪表自诊断后会显示讯息提示。

| 讯 息  | 说 明              | 排 除 方 法     | 讯 息  | 说 明              | 排 除 方 法     |
|------|------------------|-------------|------|------------------|-------------|
| Err  | 仪表故障             | 请送检修        | UUUU | 输入断线，极性接反或超出输入范围 | 请检查输入讯号有否错误 |
| oooo | 输入断线，极性接反或超出输入范围 | 请检查输入讯号有否错误 |      |                  |             |

### 7. 仪表工程师参数模式的设置

7.1 在仪表正常通电后，按参数设定模式进入并找到数据锁参数“LCK”，将其代码置为“1000”，再按“SET”键使仪表确认，将“SET”键与“<”键两键同时按住，约3秒后，在PV显示器内显示“Cod”。在“Cod”=0000时，依次按“SET”键可得到并循环显示下列参数：

| 显示符 | 设定值 | 说 明 | 设定范围 | 显示符 | 设定值        | 说 明            | 设定范围           |
|-----|-----|-----|------|-----|------------|----------------|----------------|
| SL1 | 0   | 0   | 0    | 0   | K          | 过程值上限报警        | 第一报警(ALM1)类型选择 |
|     | 0   | 0   | 0    | 1   | J          | 下限偏差报警         |                |
|     | 0   | 0   | 1    | 0   | R          | 带报警（区域内报警）     |                |
|     | 0   | 0   | 1    | 1   | S          | 过程值下限报警        |                |
|     | 0   | 1   | 0    | 0   | B          | 无待机报警功能        | 第一报警待机功能选择     |
|     | 0   | 1   | 0    | 1   | E          | 有待机报警功能        |                |
|     | 0   | 1   | 1    | 0   | N          | 第二组报警功能设定      | 同上             |
|     | 0   | 1   | 1    | 1   | T          | 正动作控制（制冷）      | 主控制正逆动作选择      |
|     | 1   | 0   | 0    | 0   | Pt100      | 逆动作控制（加热）      |                |
|     | 1   | 0   | 0    | 1   | Cu50       | 主控制时间比例输出      | 主控制输出类型选择      |
|     | 1   | 0   | 1    | 0   | 线性电阻       | 0-400Ω         |                |
|     | 1   | 0   | 1    | 1   | 线性电压       | 0-50mV         |                |
|     | 1   | 1   | 0    | 0   | 线性电流       | 4-20mA         |                |
|     | 1   | 1   | 0    | 1   | 线性电压       | 0-5V           |                |
| SL2 | 0   | 0   | 0    | 0   | 略          |                |                |
| SL3 | 0   | 0   | 0    | 0   | 略          |                |                |
| SL4 | 0   | 0   | 0    | 0   | 未设定第一组报警功能 | 第一报警(ALM1)类型选择 |                |
|     | 0   | 0   | 1    | 0   | 上限偏差报警     |                |                |
|     | 0   | 1   | 0    | 0   | 上下限偏差报警    |                |                |

7.2 在“Cod”=0001时，依次按“SET”键可得到并循环显示下列参数：

| 显示符  | 设定值   | 说 明          | 设定范围            | 显示符 | 设定值   | 说 明         | 设定范围            |
|------|-------|--------------|-----------------|-----|-------|-------------|-----------------|
| SLH  | 依定货   | 设定值测量范围上限    | 见上表             | RH1 | 2或2.0 | 第一报警输出不动作带宽 | 0~100或0.0~100.0 |
| SLL  | 依定货   | 设定值测量范围下限    | 见上表             | RH2 | 2或2.0 | 第二报警输出不动作带宽 | 0~100或0.0~100.0 |
| PCdP | 0     | 小数点位数        | 0~3             | dF  | 4     | 数字滤波常数      | 0~100           |
| oH   | 2或2.0 | AT自整定输出不动作带宽 | 0~100或0.0~100.0 |     |       |             |                 |

### 8. 设定类型及具体操作方法

#### 8.1 主控温度设定

在正常显示状态下，按一下“SET”键，使SV显示处于闪烁状态，通过按“<”键，找到所需设定温度的位数，再按上升或下降键，设定到所需温度值，设定完毕后，再次按一下“SET”键，使仪表转到SV/PV正常显示状态。

#### 8.2 自整定的设定

在正常显示状态下，按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键约0.1秒找到字符“RfU”然后在SV显示器设定为“0001”再按住“SET”键三秒钟使仪表转到SV/PV正常显示状态，这时面板上的AT灯处于闪烁状态，那么自整定开始，直至闪烁状态自动消失说明自整定成功，不然中断断电或人为把AT灯熄则自整定无效，自整定二到三次效果更佳。

#### 8.3 位式与回差设定

在正常显示状态下，按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键约0.1秒找到字符“P”然后在SV显示器设定为“0”，这样就变成位式控制，这时程序参数里就多出一个字符“oH”它就是设定回差值大小的。

例：你控制80~100度你就要把主控制温度设定在90，它们的中间值，回差是20，就把程序里面的OH设成20。

#### 8.4 报警设定

本产品有上限报警，上限偏差报警，下限报警，下限偏差报警。

设定上限报警例：主控温度是100度，上限报警温度是110度，在正常显示状态下按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键约0.1秒找到字符“RL1”然后在SV显示器设定为110度，按住“SET”三秒退出，回到正常状态就可以了，如果是上限偏差报警，同样的方法把字符“RL1”设成10就可以了，这就是上限报警和上限偏差报警的区别，下限报警与上限报警操作方法一样。

#### 8.5 报警类型的转换

本仪表的第一路报警和第二路报警都可以自由的设成上限或者下限报警。

按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键约0.1秒找到字符“LCU”，然后在SV显示器设定为“1000”，再按“SET”键使仪表确认，再将“SET”键与“<”键两键同时按住，约3秒后，在PV显示器内显示“Cod”。在“Cod”=0000时，依次按“SET”键约0.1秒找到字符“SL4”就可以设定自己所需要的报警方式。再按“SET”键使仪表确认(请参照仪表工程师参数模式表格)，再将“SET”键与“<”键两键同时按住，约3秒退出参数状态，回到正常显示状态。报警一(SL4)与报警二(SL5)相同。

#### 8.6 输入类型的设定

在正常显示状态下，按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键约0.1秒找到字符“LCU”，然后在SV显示器设定为“1000”，再按“SET”键使仪表确认，将“SET”键与“<”键两键同时按住，约3秒后，在PV显示器内显示“Cod”。在“Cod”=“0000”时，依次按“SET”键约0.1秒找到字符“SL1””就可以设定自己所需要的输入类型。再按“SET”键使仪表确认(请参照仪表工程师参数模式表)格，再将“SET”键与“<”键两键同时按住，约3秒退出参数状态，回到正常显示状态。

#### 8.7 小数点的设定

只有在“T”“PT100”“CU50”三种传感器才有小数点。在正常显示状态下，按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键约0.1秒找到字符“LCU”，然后在SV显示器设定为“1000”，再按“SET”键使仪表确认，再将“SET”键与“<”键两键同时按住，约3秒后，在PV显示器内显示“Cod”。在“Cod”=“0001”时，依次按“SET”键约0.1秒找到字符“PCdP”在SV显示器设定0001，再按“SET”键约0.1秒确定，再按“SET”键与“<”键两键同时按住，约3秒退出参数状态，回到正常显示状态。

#### 8.8 测量温度的上下限设定

在正常显示状态下按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键约0.1秒找到字符“LCU”，然后在SV显示器设定为“1000”，再按“SET”键使仪表确认，将“SET”键与“<”键两键同时按住，约3秒后，在PV显示器内显示“Cod”。在“Cod”=“0001”时，依次按“SET”键约0.1秒找到字符“SLH”在SV显示器设定自己所需的最高温度，同样找到字符“SLL”在SV显示器设定自己所需的最低温度，再按“SET”键约0.1秒确定，再按“SET”键与“<”键两键同时按住，约3秒退出参数状态，回到正常显示状态。

#### 8.9 加热制冷的设定

按住“SET”键三秒后，在PV显示器中显示出参数设定状态，在SV显示器中显示其对应的数值，依次按“SET”键的0.1秒找到字符“LCU”，然后在SV显示器设定为“1000”，再按“SET”键使仪表确认，将“SET”键与“<”键两键同时按住，约3秒后，在PV显示器内显示“Cod”，在“Cod”=“0000”时，依次按“SET”键约0.1秒找到字符“SLB”在SV显示器内设定回热或制冷，再按“SET”键使仪表确认(请参照仪表工程师参数模式表格)，再将“SET”键与“<”键两键再时按住，约3秒退出参数状态，回到正常显示状态。

#### 8.10 代码输入范围表参考

|   | Input type  | Comde  | Input type         | Comde  |                     | Input type         | Comde  |
|---|-------------|--------|--------------------|--------|---------------------|--------------------|--------|
| K | 0 to 200 ℃  | K   01 | 0 to 1800 ℃        | B   01 | Pt100               | -100.0 to +200.0 ℃ | D   05 |
|   | 0 to 400 ℃  | K   02 | 0 to 1820 ℃        | B   02 |                     | 0.0 to 50.0 ℃      | D   06 |
|   | 0 to 600 ℃  | K   03 | 0 to 800 ℃         | E   01 |                     | 0.0 to 100.0 ℃     | D   07 |
|   | 0 to 800 ℃  | K   04 | 0 to 1000 ℃        | E   02 |                     | 0.0 to 200.0 ℃     | D   08 |
|   | 0 to 1000 ℃ | K   05 | 0 to 1200 ℃        | N   01 |                     | 0.0 to 300.0 ℃     | D   09 |
|   | 0 to 1200 ℃ | K   06 | 0 to 1300 ℃        | N   01 |                     | 0.0 to 500.0 ℃     | D   10 |
|   | 0 to 1372 ℃ | K   07 | -199.9 to +400.0 ℃ | T   01 |                     | 0.0 to 400.0 ℃     | D   20 |
|   | 0 to 100 ℃  | K   13 | -199.9 to +100.0 ℃ | T   02 |                     | -199.9 to +649.0 ℃ | P   01 |
|   | 0 to 300 ℃  | K   14 | -199.9 to +200.0 ℃ | T   03 |                     | -199.9 to +200.0 ℃ | P   02 |
|   | 0 to 450 ℃  | K   17 | 0.0 to 350.0 ℃     | T   04 |                     | -100.0 to +450.0 ℃ | P   03 |
| J | 0 to 500 ℃  | K   20 | 0 to 2000 ℃        | W   01 | W5Re/<br>W26Re      | -100.0 to +100.0 ℃ | P   04 |
|   | 0 to 200 ℃  | J   01 | 0 to 2320 ℃        | W   02 |                     | -100.0 to +200.0 ℃ | P   05 |
|   | 0 to 400 ℃  | J   02 | 0 to 1800 ℃        | A   01 |                     | 0.0 to 50.0 ℃      | P   06 |
|   | 0 to 600 ℃  | J   03 | 0 to 1390 ℃        | A   02 |                     | 0.0 to 100.0 ℃     | P   07 |
|   | 0 to 800 ℃  | J   04 | 0 to 1200 ℃        | A   03 |                     | 0.0 to 200.0 ℃     | P   08 |
|   | 0 to 1000 ℃ | J   05 | -199.9 to +600.0 ℃ | U   01 |                     | 0.0 to 200.0 ℃     | P   09 |
|   | 0 to 1200 ℃ | J   06 | -199.9 to +100.0 ℃ | U   02 |                     | 0.0 to 400.0 ℃     | P   10 |
|   | 0 to 450 ℃  | J   10 | 0.0 to 400.0 ℃     | U   03 |                     | 0.0 to 400.0 ℃     | P   20 |
|   | 0 to 500 ℃  | J   20 | 0 to 400 ℃         | L   01 | -1999<br>to<br>9999 | 0 to 5V DC         | 4   01 |
|   | 0 to 1600 ℃ | R   01 | 0 to 800 ℃         | L   02 |                     | 1 to 5V DC         | 5   01 |
| R | 0 to 1769 ℃ | R   02 | -199.9 to +649.0 ℃ | D   01 |                     | 0 to 20mA DC       | 6   01 |
|   | 0 to 1350 ℃ | R   04 | -199.9 to +200.0 ℃ | D   02 | Pt100               | 4 to 20mA DC       | 7   01 |
| S | 0 to 1600 ℃ | S   01 | -100.0 to +50.0 ℃  | D   03 |                     |                    |        |
|   | 0 to 1769 ℃ | S   02 | -100.0 to +100.0 ℃ | D   04 |                     |                    |        |

### 9. 仪表使用注意事项

|   |                                                |
|---|------------------------------------------------|
| 1 | 使用前，仪表需通电预热十五分钟。                               |
| 2 | 信号输入导线不宜过长，用屏蔽线连接较好，若输入信号伴有高频干扰，应使用高频过滤器。      |
| 3 | 仪表避免在有腐蚀性、易燃物质、灰尘大、振动强和强干扰源的环境里工作，否则将会缩短仪表寿命。  |
| 4 | 保存在无直射光线，-10 ~ +70℃温度，60%以下温度的地方，切勿和要机溶剂或油物接触。 |
| 5 | 仪表每间隔一年校准一次。                                   |
| 6 | 若长期存放未使用时，请每三个月通电一次，通电时间一次不少于4个小时。             |

### 10. 仪表的选型

10.1 如何选择尚未作出最佳决定的产品；

10.1.1 应先充分了解您生产或使用的设备对仪表的全部要求，并参照本选型手册提供的产品信息，最终做出对您最有利的决定，然后与我方联系。

10.1.2 如果您是为您的产品配套而挑选仪表，我们乐意同时免费为您提供几套测量控制方案。

10.2 如何在多系列多规格的同种仪表中选择产品；

10.2.1 如果是旧设备改造，您只要将原有设备的用途、型号、生产厂家，原始用仪表的型号、外形尺寸、配接的传感器分度号、仪表控制的对象告知我方即可，我方会在收到您来函后的24小时内作出反应，供您决断。

10.2.2 如果是新设备控制系统选型，您只要将新设备欲达到的目标值告知。根据企业自身发展的需要，选型时从减少劳动强度，操作简单，自动化程度高，适于监控等方面考虑，为将来企业的技术改造作技术储备，以免在短时间内企业改造时造成不必要的设备浪费。世界仪表行业发展趋势是“操作简单化、体积小型化、控制集成化”。了解以上几点后，必须对所选用的产品型号、品种、规格、量程等信号精确表述，传真、电话或E-mail通知我们，以便我方及时生产交付。

### 11. 仪表维修和保存

11.1 仪表自出厂之日起壹年内，因制造质量发生故障由本厂负责保修，因用户使用不当或其他原因而造成损坏的提供有偿服务，由使用引起的其他任何损失，本厂恕不负责。

11.2 仪表应在包装齐全的情况下存放在干燥通风、无腐蚀性气体的场合。

## C/CH Series Temperature Controller User Manual

Before using this product, please carefully read the instructions for the proper use and proper preservation.  
( Please read the operating manual for the proper use of this product before using. )

### Wiring warning

- To prevent instrument damage or failure, the choice of the appropriate fuse protected power cord and input / output lines to prevent the current impact.
- To prevent electric shock or instrument failure, power only after the completion of all the wiring work. Do not use near flammable gases.
- Fire, explosion or damage to the instrument, flammable, explosive gas, vapor emissions places is prohibited. Do not modify the instrument.
- To prevent the accident or instrument failure, non-altered instrument.

## SUMMARY

C/CH □ □ □ Series Intelligent industrial accommodometer/temperature controller is dedicated microprocessor multifunction regulating instruments. It uses a switching power supply and surface mount technology (SMT), and thus the instrument is compact, reliable performance, unique self-diagnostic function, the self-tuning function and intelligent control functions, so that the operator can get good results by a simple operation.Main features:Multiple thermocouple,RTD. analog signal free to enter, free to set the range, the software tune zero full-scale, cold end separate temperature measurement, auto-zeroing amplifier accuracy of better than 0.5% FS. Fuzzy theory combined with conventional PID control fast and smooth, state-of-the-art setting program. Output optional: relay contact, logic level, SCR single-phase, three-phase over zero or phase shift triggerpulse, analog, attach Road definable alarm contact output.

## The main technical indicators

1. Measurement Precision: ± 0.5%FS
2. Cold junction Compensation error: ± 2℃ (0~50 ℃ within the software correction)
3. Resolution:14bit
4. Sampling Period: 0.5 Sectetary
5. Power Supply: AC 85~265V 50Hz
6. Control Mode: industrial–grade expert self–tuning PID technology, compared with the traditional PID control with rapid temperature control, fast response, small overshoot, high precision control
7. Insulation Resistance: >500mΩ (500VDC)
8. Dielectric Strength: 1500VCA/min
9. Powor Sonsumption: < 10VA
10. Occasions Environment:0~50℃, 30~85% RH non–corrosive gases

## Model defined selection

Model Identification

C/CH □ □ □ – □ □ □ □ – □ \* □ □ □  
① ② ③ ④ ⑤ ⑥

① Meter Size (see Table 1)

② Control Mode

F:PID control and automatic speech inverse action

D: PID control automatically play a positive action

③ Input Type and Range (see Table 2)

④ Main Output

N: No output

M: Relay contact output

V: the voltage pulse output (SSR)

8: Current output

T: SCR zero output

G: SCR shift like pulse output

⑤ The First Channel Alarm Type (ALM1)

N: not set alarm

A: upper limit deviation alarm

B: lower limit deviation alarm

C: up and down significant deviation alarm

D: range alarm

E: with standby limit deviation alarm

F: lower limit deviation alarm with standby

G: lower limit deviation alarm with standby

H: upper limit input value alarm

J: lower limit input value alarm

K: upper limit input alarm with standby

L: lower limit input alarm with standby

⑥ Second Channel AiarM Type ALM2 (same as ALM1)

able 1

Unit: mm

| Model      | Surface frame (W × H) | Shape (W × H × D) | Hole size (W × H) |
|------------|-----------------------|-------------------|-------------------|
| C100/CH102 | 48 × 48               | 44 × 44 × 100/70  | 44 × 44           |
| C400/CH402 | 48 × 96               | 44 × 92 × 100/70  | 44 × 92           |
| C700/CH702 | 72 × 72               | 68 × 68 × 100/70  | 68 × 68           |
| C900/CH902 | 96 × 96               | 92 × 92 × 100/70  | 92 × 92           |

Table 2 Input Scope Table

|                    | Input    | MeasureScope  |     | Measure Scope |     | Measure Scope |     |
|--------------------|----------|---------------|-----|---------------|-----|---------------|-----|
|                    |          | Code          |     | Code          |     | Code          |     |
| Thermo Couple      |          | –50–200℃      | K01 | –50–400℃      | K02 | –50–600℃      | K03 |
|                    | K        | –50–800℃      | K04 | –50–1000℃     | K05 | –50–1200℃     | K06 |
|                    |          | –50–1300℃     | K07 | –50–100℃      | K13 | –50–300℃      | K14 |
|                    | J        | –50–200℃      | J01 | –50–400℃      | J02 | –50–600℃      | J03 |
|                    |          | –50–800℃      | J04 | –50–1000℃     | J05 | –50–1200℃     | J06 |
|                    | R#1      | –10–1600℃     | R01 | –10–1700℃     | R02 | –10–1350℃     | R03 |
|                    | S#1      | –10–1600℃     | S01 | –10–1600℃     | S02 |               |     |
|                    | B#1      | 600–1800℃     | B01 | 600–1800℃     | B02 |               |     |
|                    | E        | –50–800℃      | E01 | –50–1000℃     | E02 |               |     |
|                    | N        | –50–1200℃     | N01 | –50–1200℃     | N02 |               |     |
| Thermal Resistance | T#2      | –50–400℃      | T01 | –50–100.0℃    | T02 | –50–200.0℃    | T03 |
|                    |          | –50–350.0℃    | T04 |               |     |               |     |
|                    | Pt100    | –199.9–850.0℃ | D01 | –199.9–200.0℃ | D02 | –199.9–50℃    | D03 |
|                    |          | –199.9–100℃   | D04 | –199.9–200.0℃ | D05 | –199.9–50.0℃  | D06 |
|                    |          | –199.9–100℃   | D07 | –199.9–200.0℃ | D08 | –199.9–300.0℃ | D09 |
|                    |          | –199.9–500℃   | D10 |               |     |               |     |
|                    | Cu50     | –50.0–150℃    | P01 | –50.0–150.0℃  | P02 | –50.0–100.0℃  | P03 |
|                    |          | –50.0–50.0℃   | P04 | –50.0–100.0℃  | P05 | –50.0–50.0℃   | P06 |
|                    |          | –50–150℃      | P07 | –50.0–150℃    | P08 | –50.0–100℃    | P09 |
|                    |          | –50.0–50℃     | P10 |               |     |               |     |
| Standard signal    | 0–5VDC   | 0.0–100.0℃    | 401 |               |     |               |     |
|                    | 1–5VDC   | 0.0–100.0℃    | 601 |               |     |               |     |
|                    | 0–20Ma#3 | 0.0–100.0℃    | 701 |               |     |               |     |
|                    | 4–20Ma#3 | 0.0–100.0℃    | 801 |               |     |               |     |

#1 Can not guarantee the accuracy scope of 0–399℃.

#2 To ensure accuracy in the scope of –199–100℃.

#3 A resistor of 250Ω is needed between the input terminals external

## INSTALLATION

### Precautions

1. Instrumentation installed in the following environments

- Atmospheric Pressure: 86–106kpa
  - Ambient Humidity: 0–50℃
  - Ambient temperature: 45–86% RH
2. Installation should pay attention to the following circumstances
  - Drastic changes in the ambient humidity may cause condensation
  - Corrosive, flammable gas
  - Direct vibration or shock theme structure
  - Water, oil, chemicals, smoke or steam pollution
  - Excessive dust, salt, or metal powders
  - Air conditioning blowing straight
  - Direct sunlight
  - The accumulation of heat radiation

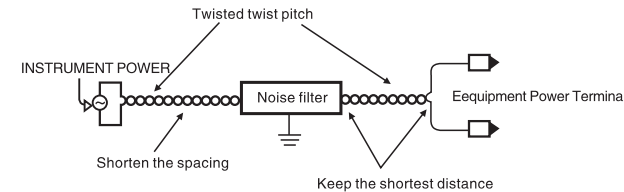
### Installation Process

1. Panel cutout disk played a the rectangular square hole to install the meter.
2. Multiple instrument installation, the distance between the left and right holes should be greater than 25mm, up and down two holes distance should be greater than 30 mm.
3. Embedded in the instrument panel cutout within.
4. Instrument mounting hole into the mounting bracket.
5. Pushed tight mounting bracket to the instrument with the disk is firmly bonded to tighten the screws.

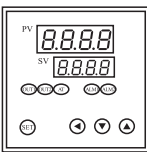
## Wire Connection

### Wiring

- (1) thermocouple input, you should use the corresponding compensation wire.
- (2) RTD input, you should use the same cross-sectional area of the low resistance, the same material, the same length of three wire.
- (3) input signal line should be away from the instrument power cord, power supply and load lines to avoid noise
- (4) The instrument power cord is usually not the power supply line interference, such as interference, noise filter must be used, and using a noise filter should note the following:
  - 1) shorten the power cord plug full twist pitch, the shorter the distance, the better.
  - 2) install a noise filter on the dashboard and grounded to minimize the the short noise filter output eminals, the wiring distance
  - 3) Do not install insurance, and switch the noise filter output, this will reduce the effect of the noise filter
- (5) The power is turned on after 5–6 seconds preparation time meter relay output external connection loop signal use, and with a time delay relay
- (6) Do not over tighten the terminal screws, use the appropriate terminal screw lug.



## Panel Name and Ministries Function

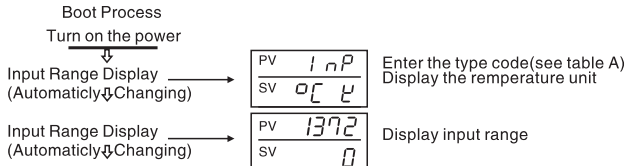


| No | Panel Description | Content Description                     |
|----|-------------------|-----------------------------------------|
| 1  | PV                | Measurement Value / Mode Display Value  |
| 2  | SV                | Settings / Mode Content Displayed Value |
| 3  | OUT1              | Output 1 Indicator                      |
| 4  | OUT2              | Output 2 Indicator                      |
| 5  | AT                | PID Automatic Calculation Indicator     |
| 6  | ALM1              | Alarm 1 Indicator                       |
| 7  | ALM2              | Alarm 2 Indicator                       |
| 8  | △                 | Increase the Key                        |
| 9  | ▽                 | Reduce the Key                          |
| 10 | <                 | Shift Key                               |
| 11 | SET               | Set / Mode Key                          |

Shortcut Key Guide:

Press and hold for more than 3 seconds, the AT yellow light will start flashing, and it will automatically turn on. The light goes out, indicating the completion of self-tuning.  
Press and hold for more than 5 seconds, and the interface will display "P". If it is changed to 0, it will be closed. Convert PID to positional hysteresis control.  
Press and hold for more than 5 seconds, the "SL1" character will appear on the interface, and then you can quickly modify the input sensor type.

## Operational Processes



| Display    | Thermocouple(TC) | ThermolcResistance(RTD) | Voltage and Current |
|------------|------------------|-------------------------|---------------------|
| Input mode | K J R S B E N T  | Pt100 Cu50              | mV mA V             |

Setting Mode:

SV/PV normal display state, click the "SET" button, the SV display is flashing by pressing the "<" button, find the desired set temperature digits, and then click the "SET" button, the meter turn to the SV/PV Normal display state

Parameter Setting Mode:

This parameter is used to set the alarm, PID constants and other parameters. Normal display mode, press and hold the "SET" button for three seconds, the PV display shows the parameter setting mode, display the corresponding values in the "SV" display parameters in the following table, press the "SET" button to display symbols:  
Note: display hte reply teature native When the operator parameter setting modify operation not to return to the main display mode, the instrument will return to the main display mode automatically after 30 seconds, the altered parameters are not saved. Meter read prior to use or modify the parameters, The following processes such as instrument no such function will not display this content.

| Display Character | Name  | Specification                                                       | Setting Range                                          | Factory Default |
|-------------------|-------|---------------------------------------------------------------------|--------------------------------------------------------|-----------------|
|                   | PV/SV | Measured values / settings                                          | Full scale                                             |                 |
| AL1               | AL1   | The first set of alarm settings                                     | Full scale                                             |                 |
| AL2               | AL2   | The second set of alarm settings                                    | Full scale                                             |                 |
| ATU               | ATU   | Self-tuning When the temperature effect is not ideal to use this!!! | 0: off auto-tuning<br>1: self-tuning                   | 0               |
| P                 | P     | Proportional band (see*1)                                           | 0- full scale<br>When set to 0, no position control    | 30              |
| I                 | I     | Integration time (see)                                              | 0- 3600 seconds<br>When set to 0, no integral action   | 240             |
| d                 | D     | Derivative time (seconds)                                           | 0- 3600 seconds<br>When set to 0, no derivative action | 60              |
| Ar                | Ar    | Reference values (see*2)                                            | AT automatically set                                   | 100             |
| f                 | T     | Working period (seconds)                                            | In proportion to the time period of 0-100 seconds      | (see*3)         |
| OH                | OH    | The main control does not work bandwidth                            | 1-100 unit (PV)                                        | 2               |
| SC                | SC    | Measurement error correction                                        | -200-200 unit (PV)                                     | 0               |
| LCK               | LCK   | Data lock (see*4)                                                   | 0000-0111                                              | 1000            |

- \* 1: When ≠ 0, instrumentation for PID control, the need to rationalize the set values of the "LD", the first to open the "AT" self-tuning function, so stat the control to achieve the best when P= 0, ON / OFF control, must be set to control the value of the return difference "OH"
  - \* 2: This is the PID internal reference values ?? are not normally required to man-made, "AT" comes with the set will automatically set this value.
  - \* 3: The relay contact output 20 seconds 2 seconds flip-flop output / gate flow control tube output voltage pulse output / thyristor control tube drive.
  - \* 4: Set data lock (LCK) function
- Set data lock function is used to prevent some often set parameters Ukrainian operation, in the three forbidden lock state parameters for each level state ban lock parameter locked can not be set or changed but monitoring.
- 1、When LCK = 0000, all parameters can be modified
  - 2、When LCK = 0001, the data can not be modified, except SV, AL1, AL2
  - 3、When LCK = 0011, all the data can not be modified, except SV
  - 4、When LCK = 0111, all of the data can not be modified

## ERROR message indicates

| Message | Sprecification                                                       | Exclusion Method                            |
|---------|----------------------------------------------------------------------|---------------------------------------------|
| Err     | Equipment Error                                                      | Please send overhaul                        |
| oooo    | Input the disconnection polarity reversed or exceeds the input range | Please check whether the input signal error |
| uuuu    | Input the disconnection polarity reversed or exceeds the input range | Please check whether the input signal error |

## The instrumentation technical parameters mode settings

After a normal power meter, according to the parameter setting mode to enter the ice to find data lock parameter "LCK" to code "1000", then press the "SET" button and the "two key while holding down for about 30 seconds PV display shows "GOD" =0000 can be obtained, press the "SET" button and cycle through the following parameters:

| Display Character | Settings | Specification                           | Scale Range                                              |
|-------------------|----------|-----------------------------------------|----------------------------------------------------------|
| SL1               | 0 0 0 0  | K                                       | –50–1300℃                                                |
|                   | 0 0 0 1  | J                                       | –50–1200℃                                                |
|                   | 0 0 1 0  | R                                       | –10–1700℃                                                |
|                   | 0 0 1 1  | S                                       | –10–1600℃                                                |
|                   | 0 1 0 0  | B                                       | 600–1800℃                                                |
|                   | 0 1 0 1  | E                                       | –50–1000℃                                                |
|                   | 0 1 1 0  | N                                       | –50–1200℃                                                |
|                   | 0 1 1 1  | T                                       | –50–400℃                                                 |
|                   | 1 0 0 0  | Pt100                                   | –199.9–850.0℃                                            |
|                   | 1 0 0 1  | Cu50                                    | –50.0–150.0℃                                             |
| SL2               | 1 0 1 0  | LINEAR resistance                       | 0–400Ω                                                   |
|                   | 1 0 1 1  | LINEAR voltage                          | 0–50mV                                                   |
|                   | 1 1 0 0  | LINEAR current                          | 4–20mA                                                   |
|                   | 1 1 0 1  | LINEAR voltage                          | 0–5V                                                     |
|                   | 0 0 0 0  | Slightly                                |                                                          |
|                   | 0 0 0 0  | Slightly                                |                                                          |
|                   | 0 0 0 0  | First alarm function is not set         |                                                          |
|                   | 0 0 0 1  | Upper limit deviation akarm             | Type selection of the first alarm (AL1)                  |
|                   | 0 0 1 0  | Upper / lower limit deviation alarm     |                                                          |
|                   | 0 0 1 1  | Process value alarm                     |                                                          |
|                   | 0 1 0 1  | Lower limit deviation alarm             |                                                          |
| SL3               | 0 1 1 0  | With alarm (alarm) region               | First alarm standby type selection                       |
|                   | 0 1 1 1  | Process value lower limit alarm         |                                                          |
|                   | 0 0 0 0  | Standby alarm function                  |                                                          |
|                   | 1 0 0 0  | Standby alarm function                  |                                                          |
|                   | 0 0 0 0  | The second set of alarm function is set | First alarm standby type selection                       |
|                   | 0 0 0 0  | Positive action control (cooling)       | The main control forward / reverse action selection      |
|                   | 0 0 0 1  | The inverse operation control (heating) |                                                          |
|                   | 0 0 0 0  | Master time proportional output         | The main control output type selection                   |
|                   | 0 0 0 1  | Master continuous output (4–20mA)       |                                                          |
|                   | 0 0 0 0  | Incentive alarm                         | Incentive alarm / non-incentive alarm /the first alarm   |
|                   | 0 0 0 1  | Non-incentive alarm                     |                                                          |
|                   | 0 0 0 0  | Incentive alarm                         | Incentive alarm / non-incentive alarm / the second alarm |
|                   | 0 0 1 0  | Non-incentive alarm                     |                                                          |
| SL8               | 0 0 0 0  | Slightly                                |                                                          |
| SL9               | 0 0 0 0  | Slightly                                |                                                          |
| SL10              | 0 0 0 0  | Slightly                                |                                                          |
| SL11              | 0 0 0 0  | Slightly                                |                                                          |

When "COD" =0001, press the "SET" button and cycle through the following parameters:

| Display Character | Factory Default     | Specification                                   | Setting Range      |
|-------------------|---------------------|-------------------------------------------------|--------------------|
| SLH               | According to orders | Set the measuring range ipper limit             | See above table    |
| SLL               | According to orders | Set the measurement range limit                 | See above table    |
| PCdP              | 0                   | Decimal places                                  | 0–3                |
| OH                | 2 or 2.0            | AT comes with no action given output bandwidth  | 0–100 or 0.0–100.0 |
| AH1               | 2 or 2.0            | The first alarm output is not active bandwidth  | 0–100 or 0.0–100.0 |
| AH2               | 2 or 2.0            | The second alarm output is not active bandwidth | 0–100 or 0.0–100.0 |
| dF                | 4                   | Digital filter constant                         | 0–100              |

Instrument maintenance and preservationInstrument since the billing from the date eighteen months the internal factors manufacture quality failure by the company responsible for the comprehensive warranty. Damage due to improper use of the company charge a repair cost of the company meter lifelong maintenance. Instrumentation in complete packaging stored in dry and ventilated place non-corrosive gases.