

\*This is a temperature controller+timer 2 in 1 unit when process value gets to setting value, the timer will engage automatically and the temperature of the oven will be hold at setting value for a specific period of time

\*Typically, a blower is part of the Oven system, this controller can control blower too.

\*AU1,AU2,AU3,AU4,AU5, five relay outputs for different function

\*Two event inputs can be custom made to accommodate customers need, one practical application would be use the event input to indicate the status of the oven door, whether it is OPEN or Close

\*Cell phone and PC access via internet

\*Remote trouble shooting possible.

\*compare with hard to understand and abstract

parameter from traditional controller, this controller with color display, intuitive operation interface, very much like using a smart phone

2024/09/11 11:24:33

The screenshot displays the MF43HYC-669 Touch Screen Controller interface. The main display shows the current process value (PV) as 403.1 °C and the setpoint value (SV) as 402.0 °C. The motor speed (MV) is 0.0 %. The interface includes buttons for STOP and RUN, and a FAN control button. The Timming section shows 1.0 MIN and 2.0 MIN, and the Time section shows 1 MIN and 2 MIN. The Alarm circuit section shows PV1: 403.1 °C K, PV2: 36.3 °C K, and Overtemp. setting: 500.0 °C. The interface also has Menu and Home page buttons.

#### General features:

- 2 Channel, support two inputs, one for control purpose, one for alarm  
Both inputs are thermocouple as default
- 4.3 inch TFT display, fully touch screen
- Support thermocouple input(K,E,J,N,Wu/Re3-25,S,I,R,B), input field configurable
- Relay/SSR Drive/4-20mA,output optional,specify output when order
- Very easy to configure the controller compare with classic controller
- 100~240Vac supply 50/60HZ
- With USB port, Ethernet port and antenna(for WIFI connection)
- Controller can be connected to internet via Ethernet port or WIFI hotspot
- With Cell phone APP(available on both Android and IOS system), User can remotely access and control the controller from cell phone and PC
- With basic data logging feature, the controller records process value of each channel.
- Access protection for safety reason
- Parameter restore feature, with just one click, all parameters will be restored to factory default, this is a very helpful features especially when customer is not very familiar with the product

- Run/Stop the controller at any time you want(R/S feature)
- PID control mode or ON/OFF control mode configurable(SET P=0) for ON/OFF control mode
- Fahrenheit Celsius display switch

#### Ordering Information

**MF43HYC-669-V-MAX11Y: SSR outputs, 5 relay auxiliary output**  
**MF43HYC-669-M-MAX10Y: Relay outputs, 5 relay auxiliary output**  
**MF43HYC-669-8-MAX12Y: 4-20mA output, 5 relay auxiliary output**

## 1: Main Display Interface

Input sensor type indication

Unit indication

Date indication

Clock

Process value

Setting value

Output bar graphic and digital display from 0%~100%

End

Timming

Time

MIN

MIN

1.0

1

RUN/STOP

Run the process and STOP the process

Blower control section

\*You can run the blower separately anytime you want for a specific period of time, the time range on above screen is 2 minutes, as soon as you hit the "FAN" button, the blower will start to work for 2 minutes, the time range is configurable between '0~9999 minutes'

Alarm circuit

PV1: 403.1 °C K

PV2: 36.3 °C K

Overtemp. setting: 500.0 °C

High limit temperature

If the temperature goes above 500 degree, the over temperature alarm will be triggered, and the entire system can be shut down or not shut down, it's configurable from the controller

High limit protection channel

Control Channel

Alarm Channel

This controller has two inputs, input 1 is for the control loop, with 1 thermocouple connected, input 2 is for alarm purpose, when over temperature happens, the thermocouple from channel 2 will pick up the high temperature and therefore shut down the system. this is a safety feature which is very useful

## 2: How the controller works

2.1. This Controller is ideal for Oven, below is a further elaboration on how the controller works

- 2.1.1) Two separate inputs, TC1 for input 1, the control the temperature of the oven, TC2 for input 2, alarm channel, to monitor the temperature of the oven, make sure the temperature falls at safe range and if any abnormal happens, the cut off the system
- 2.1.2) PID control output, SSR Drive/4-20mA or relay output needs to be specified when order
- 2.1.3) 5 auxiliary relay outputs, AU1, AU2, AU3, AU4, AU5
  - AU1:** when temperature holding finished, the AU1 output will be triggered, the alarm goes off, the alarm can be reset manually or alarm will be canceled after certain period of time (for example 60 seconds, alarm reset delay time configurable)
  - AU2:** Alarm channel alarm output, when over temperature happens, AU2 will be triggered, a buzzer can be connected to AU2, buzzer will make sound when AU2 triggered, operator have to comedown to the site and solve the problem
  - AU3:** Blower control, operator can run the blower any time they want even if the heating is turned off, and the burner will RUN automatically after heating turned on, when temperature holding finished, the blower will run for certain period of time (like 20 minutes, time range is configurable)
  - AU4:** System operation relay, the AU4 relay will pull-in once you hit the RUN button, an AC contactor can be connected to AU4 relay, when AU4 pull-in, the power will be feed to the entire oven and heating started. when over temperature happens, the AU4 relay can be programmed to release to cut off the power supply of the oven and to protect the oven.
  - AU5:** This is deviation alarm output for the control channel, for example, if you have a setting value at 200 degree, the alarm value set as 10 degree, when process goes higher and beyond 210 degree, AU5 alarm will be triggered, when PV > SV + alarm value, AU5 relay pull-in.

**2 event inputs:** Default version do not have event inputs, the event input can be used to indicate certain incidents happens in the system, for example, it can be used to indicate whether the door of the oven is close or open, (needs to be custom made)



SV=350, PV=28.2 (ambient temperature)  
 Temperature holding time=60 minutes  
 Fan delay off time=20 minutes



After PV reach to SV 350 degree, the timer will engage automatically and controller will hold the temperature at 350 degree for 60 minutes, timer counting down started

Blower will run immediately after you hit the RUN button.



Time goes down from 60 minutes all the way to 1.9 MIN and to 0 minute



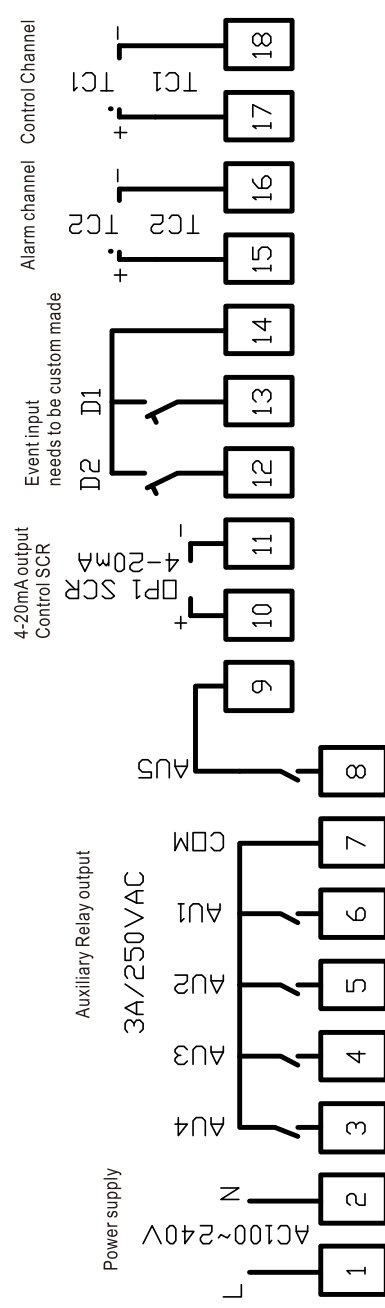
After 60 minutes elapsed, AU1 relay pull-in, program finishing alarm triggered, you can tap on the alarm buzzer sign on the screen the defuse the alarm, or you can configure the alarm to reset automatically after certain period of time, (like 120 seconds), heating will stop and blower continue to work for 20 minutes, the timer for blower will engage and counting down for 20 seconds



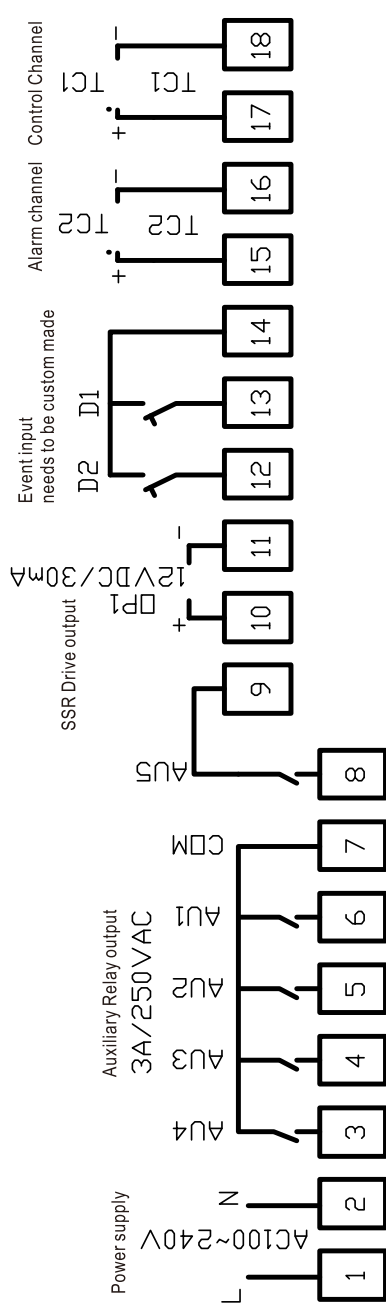
Blower stop working after 20 minutes, entire system stops

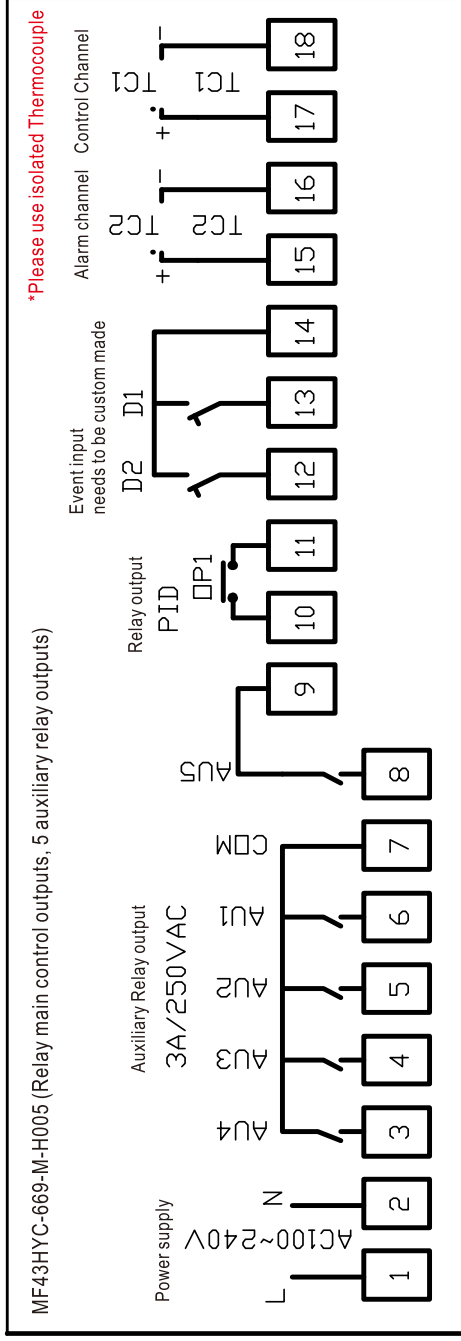
### 3:Wiring diagram

MF43HYC-669-8-H007 (4-20mA control outputs, 5 auxiliary relay outputs)



MF43HYC-669-V-H006 (SSR Drive main control outputs, 5 auxiliary relay outputs)





#### 4:Quick Start Guide

##### 4.1)Home page

Below is the interface you will see after power on. Language selection is on the upper right of the screen, logo in the middle, on the lower right of the screen, you can click the button "Entry System", and that will take you to the main display of this controller. controller available with 3 different languages, Chinese, English and spanish

On the lower left of the controller, you can see the IP address(LAN IP, WIFI IP), Output type, system firmware version



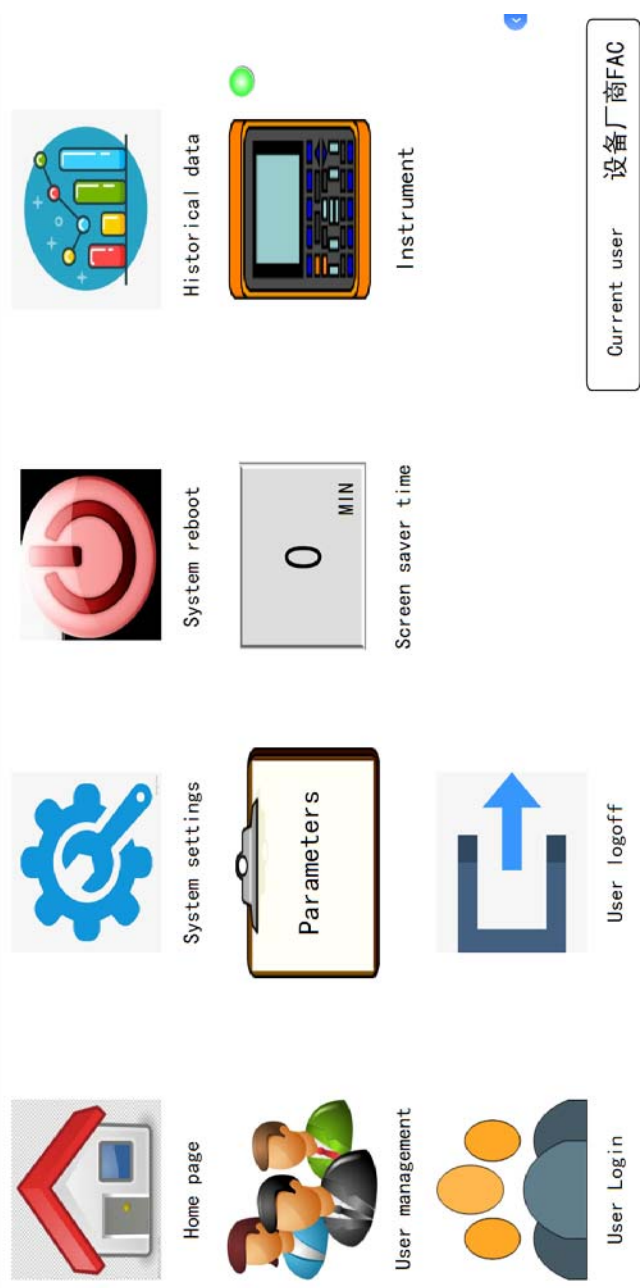
# pidMaxwell

#### System version:

MF43HYC-652A-V-MAX09Y-V1.0.02  
 PN: 7061149029040354352  
 LAN IP: 0 0 0 0  
 WIFI IP: 192 168 3 123  
 SSR output 4 Channel

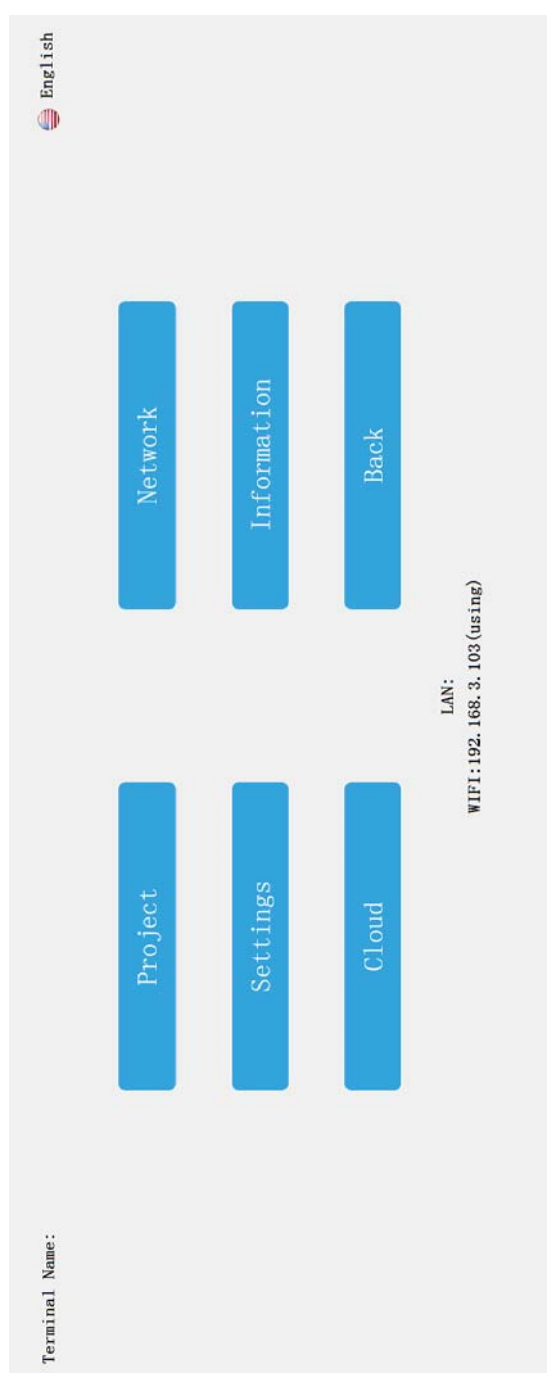


4.2)Navigation page



4.3)System Setting

Press the system setting, you will be directed to below page, where you can configure different aspects of the controller, go to Project, you can download the new firmware from us if we release new updates on the controller.



#### 4.4)Historical data

Tap on the historical data, you will be directed to this page, it's a data logging feature, it records the process value of the different channel, PV1,PV2 and you can also download the recording to your local desktop as a spreadsheet file.

Time	PV1	PV2
2024-09-15 10:10:30	128.8	34.5
2024-09-15 10:09:30	128.7	34.5
2024-09-15 10:08:30	128.8	34.5
2024-09-15 10:07:30	128.6	34.8
2024-09-15 10:06:30	128.7	34.8
2024-09-15 10:05:30	128.7	34.8
2024-09-15 10:04:30	153.8	34.8
2024-09-15 10:03:30	153.8	34.8
2024-09-15 10:02:30	153.8	35.0
2024-09-15 10:01:30	153.8	35.0

Click on the top left corner and enter the time range for the data you want to query.

2024/09/15 10:11:07

Clear data

In the records

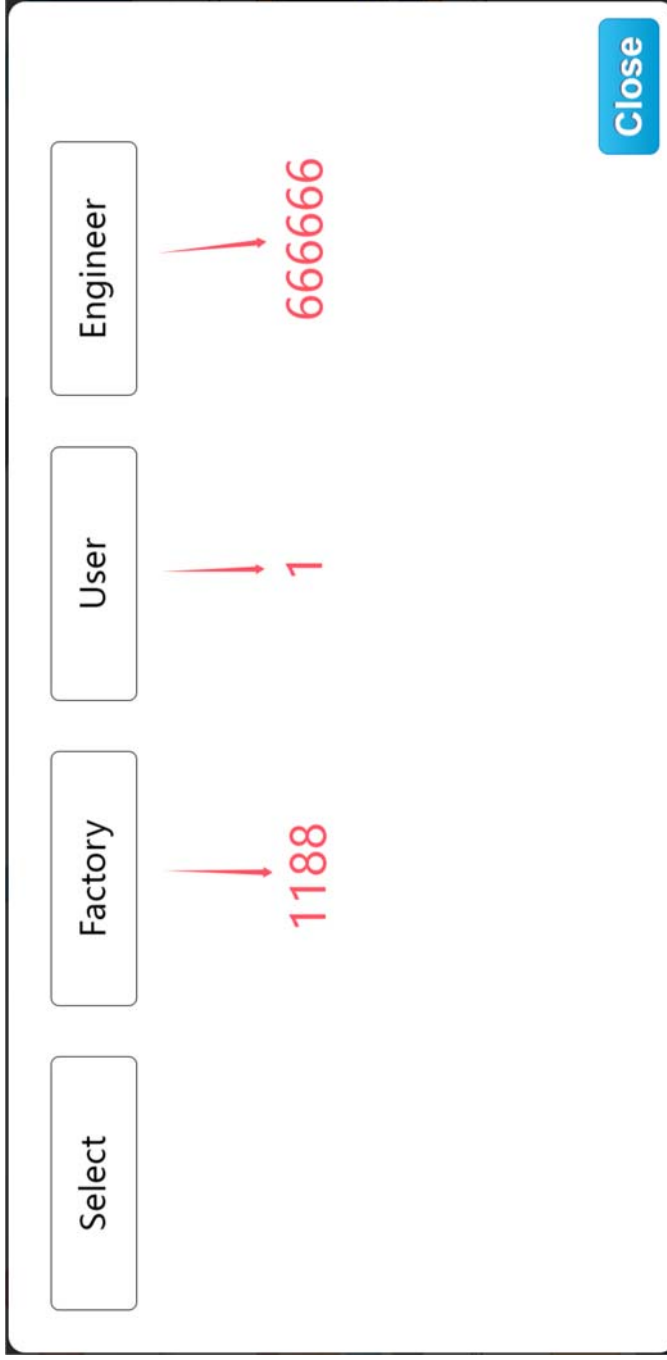
Historical curve

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#### 4.5)User management and user login

User management and user login is where you can configure the access protection, customer can log themselves in as Factory, User, and Engineer. User account has lowest authority, Factory user has medium authority, and Engineer has maximum authority.

Factory password:1188  
 User password:1  
 Engineer password:666666



#### 4.6)Parameter

Tap on the parameter and you will be directed to below interface

**User Parameter**

Proportional band	20.0 °
Integral	210 s
Differential	30 s
Action cycle	20 s
Hysteresis	1.0 °
Scale reset	-5.0 °
Output lower limit	0.0 %
Output higher limit	100.0 %
Output buffer	100.0 %

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Current user:

User Login    User logoff    Parameter restore    Back

PV1 bias	0.0 °
PV2 bias	0.0 °
Overtemp. deviation	10.0 °
Program end alarm delay	0 s
Unit	°C

Auto-tuning

Auto-tuning

Run the heating first before starting the Auto-tuning.

Advanced parameters    Back

**Proportional Band:** P value for PID control, this value should be obtained via auto-tuning

**Integral:** Integral value for PID control, this value should be obtained via auto-tuning

**Differential:** Differential value for PID control, this value should be obtained via auto-tuning

**Action cycle:** Cycle time for control process, 20 seconds for relay output, 2 seconds for SSR Drive output

**Hysteresis:** Hysteresis for ON/OFF control mode

**Scale reset:** overshoot suppression parameter, this value should be obtained via auto-tuning

**Output lower limit:** limit the lower limit of output

**Output higher limit:** limit the higher limit of output

**Output buffer:** this works for 4-20mA, defines the output variation rate

**Auto-tuning:** Auto-tuning switch

**PV1 Bias:** Input offset for channel 1 input(control channel)

**PV2 Bias:** Input offset for Channel 2 input(Alarm channel)

**Over temp.deviation:** Deviation alarm value for alarm 1, for example, if you set the value as 10 degree, when PV > SV+10, the AU5 relay will pull-in

**Program end alarm delay:** Alarm will go off (AU1 relay pull-in) after the program finished, the alarm will cancel after delay time

if you set for example 60 seconds here, the buzzer will sound for 60 seconds and off

Unit: Display unit, choose between C or F

#### 4.7)Advanced Parameter

设备厂商FAC  
Current user:

User Login    User logoff    Parameter restore    Back

LSPL	0.0 °
USPL	1300.0 °
Stop recording temp.	40.0 °
Timing deviation temp.	2.0 °
Input type	K

KMT=6	6 s
OPT=6	6 s
Overheating shutdown plan	Not stop

°C

Engineering parameters    Back

**LSPL**: lower limit for setting value, default is 0, means the user is not able to set the SV lower than 0 degree

**USPL**: Higher limit for setting value, default is 1300, means the user is not able to set the SV higher than 1300

**Stop recording temp**: This controller has a recording feature, where PV1 and PV2 value will be recorded, to save the internal storage, you can define a temperature when recording will stop work when temperature is lower than the specified value, for example , 40 degree, when temperature lower than 40 degree, the recording stop work

**Timing deviation Temp**.: The timer of this controller will engage when PV1 reach to setting value, you can assign deviation here at this parameter, if you want to the timer to engage when PV enter into a certain range, for example, if the SV is 400 degree, and you set this value as 2 degree, the timer will engage when PV reach to 398 degree, which is SV subtract by the deviation value

**Input type**: You can select the sensor type from this parameter

**Overheating shutdown plan**: When over temperature happens, you can either shutdown the system and stop the heating or continue with the normal operation , the choose can be made here

LSPL	0.0 °	KMT=6	6 s	°C
USPL	1300.0 °	OPT=6	6 s	
Stop recording temp.	40.0 °	Overheating shutdown plan	Not stop	
Timing deviation temp.	2.0 °			
Input type	K			

User Login

User logoff

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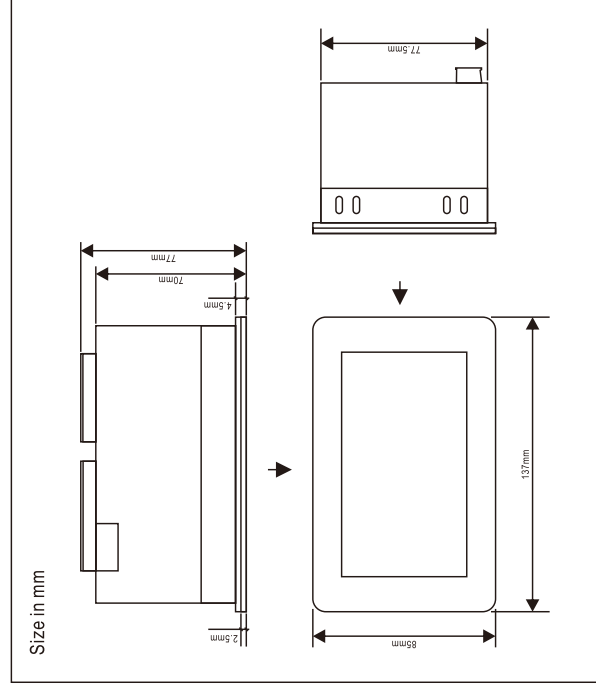
Current user:

Parameter restore

Engineering parameters

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## 5:Size and installation



Please mount the controller based on below drawing, if you mount multiple controller at the same panel Please mount the controller apart from each other with some clearance

