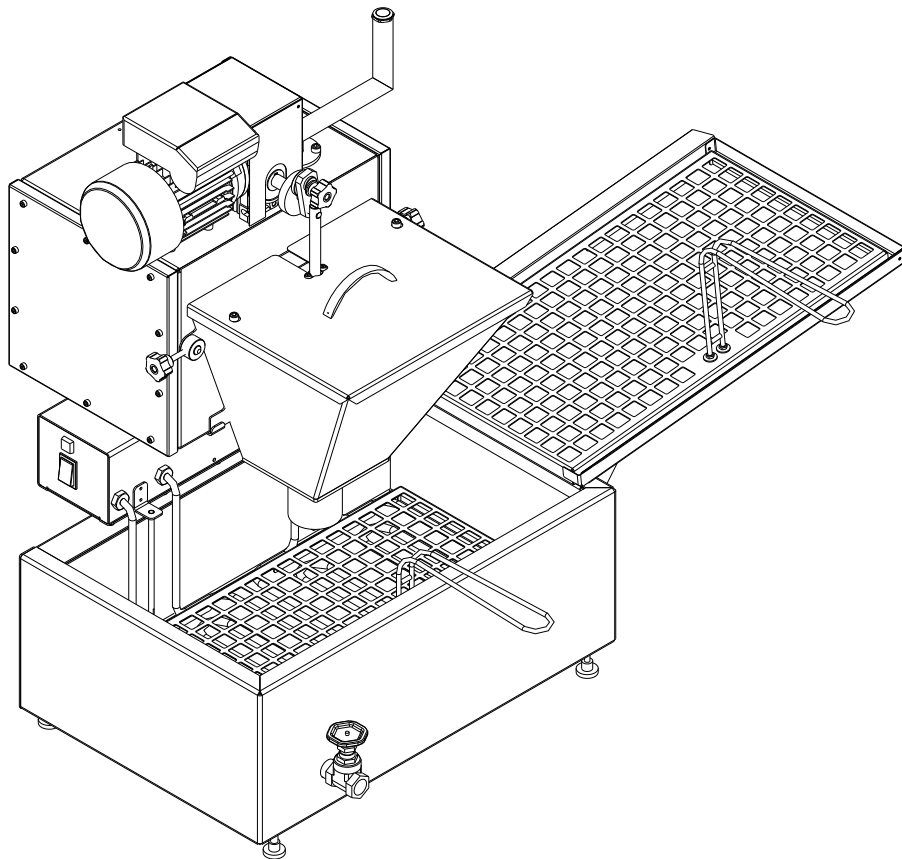




# SEMI-AUTOMATIC DONUT MACHINE

Model MP4

## MANUAL





## **C O N T E N T S:**

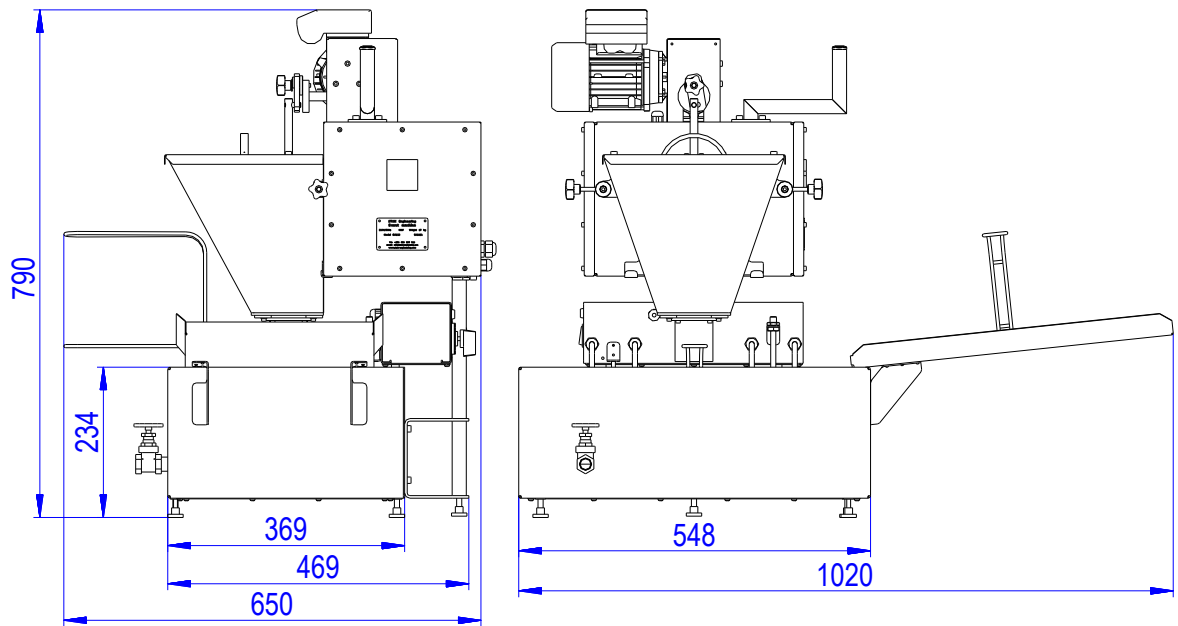
1. Purpose
2. Technical characteristics
3. Description of the machine
4. Putting into operation
5. Dismantling
6. Cleaning
7. Safety
8. Warranty card

### **1. Purpose**

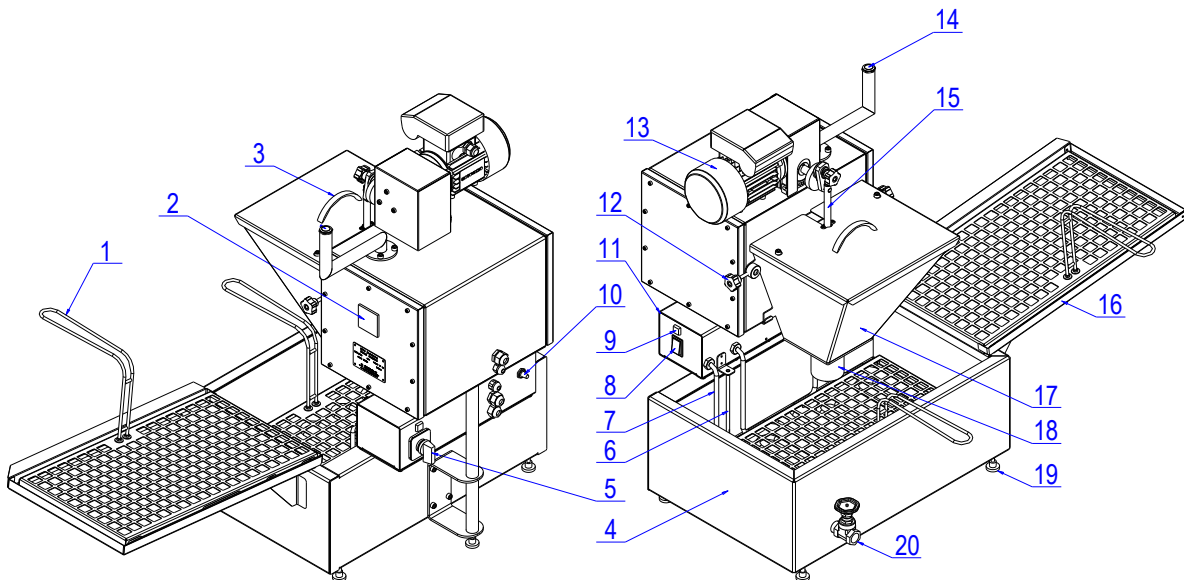
The machine is designed to produce donuts of approximately 20, 30 and 40 grams.

### **2. Technical Characteristics**

Overall dimensions	
- length	1020 mm
- width	673 mm
- height	711 mm
Weight (without oil)	45 kg
Bath capacity	20 l
Dispenser capacity	5 l
Productivity	300 pcs/h
Weight of 1 doughnut for model MP4-1	20 gr
Weight of 1 doughnut for model MP4-2	30 gr
Weight of 1 doughnut for model MP4-3	40 gr
Electric power	4 kW
Thermo regulator	0-200°C
Supply voltage	220V/50Hz



### 3. Description of the machine



The donut machine consists:

- |                           |                               |
|---------------------------|-------------------------------|
| 1 Donut grids 2 pieces    | 11 Electric panel with heater |
| 2 Thermocontroller        | 12 Knob for hopper lock       |
| 3 Cover                   | 13 Motor with gearbox         |
| 4 Bath                    | 14 Turn on the hopper button  |
| 5 Main power switch       | 15 Piston                     |
| 6 Temperature sensor      | 16 Oil drainage tap           |
| 7 Heaters 2x2kW           | 17 Bunker                     |
| 8 Second heater switch    | 18 Nozzle                     |
| 9 Second heater lamp      | 19 Adjustable supports        |
| 10 Fire protection button | 20 Drain tap                  |

## 4. Putting into operation

4.1 Carefully clean the machine.

4.2. Fill the bath tub with oil up to reaching a height of 2-3 cm below the top of the tub.

**WARNING: Fire hazard occurs if the oil level is less than 3 cm. Using old oil can cause ignition.**

4.3. Level the machine.

4.4. Plug in the machine into the electric grid.

Turn on the power switch (pos. 5). Turn on the second heater switch (pos.8). Lamp position 8 should light up.

4.5. Adjust the temperature of the oil via the temperature regulator (pos.2) to 185 ° -190 ° C using the buttons “▲” and “▼”



Upper window (PV) displays real process value , lower window (SV) displays the set value.

When the actual temperature is lower than the set temperature, indicator OP1 stops illuminating.

When this indicator goes out, the machine is ready for operation. The indicator turns off when the operating temperature is 1 degree higher than the set one.

4.6. Once the required oil temperature has been reached, the control light (OP1) goes out and the dispenser can be filled with the prepared dough. If desired, you can switch off the second heater from switch 8 and the first heater will maintain the temperature.

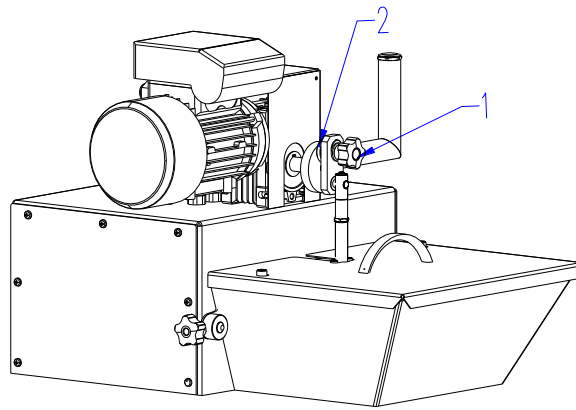
4.7. Prepare the dough in accordance with the technical instructions. The thickness of the dough is very important. When pouring the dough, it should tear. It should be thin enough to pour over, but should also flow thicker than honey.

4.8. The dispenser is switched on by pressing the pos 14 button once. Before dispensing the next donut, adjust the dispenser so that it falls into another spot.

4.9. To regulate the weight of the donuts, adjust the height of the piston rod with part pos.2 (see drawing below). Loosen knob pos.1 and rotate the part of pos.2.

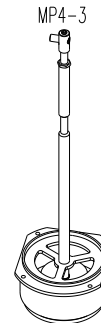
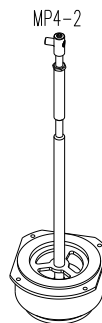
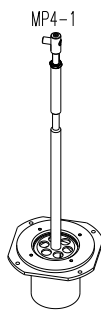
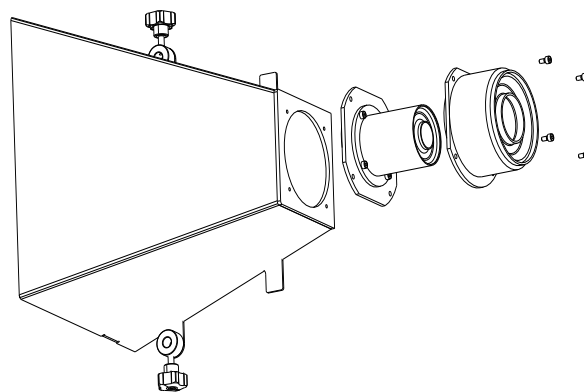
When the height increases, the weight of the donuts increases and the other way around. When finished always re-fasten well the knob pos.1.

Flipping the donuts in the frying bath is done manually. After frying, the donuts are removed from the oil with the tray.



#### 4.10 Changing the size of the donuts.

The overall size of the donuts can be adjusted by switching the piston and nozzle to those for the desired size of donuts - 20, 30 or 40 grams. The nozzle is replaced by unscrewing the four bolts on the bottom of the dispenser. After attaching the desired nozzle, screw on the bolts again.

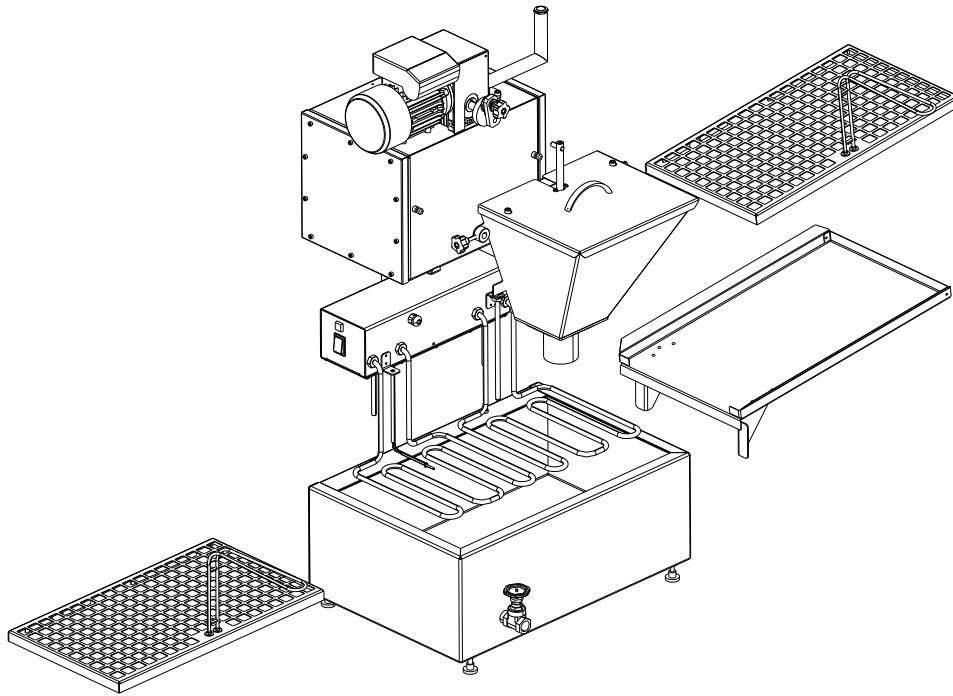


### 5. Dismantling

**WARNING: Dismantling any components must be done when the machine is turned off and unplugged from the electric grid.**

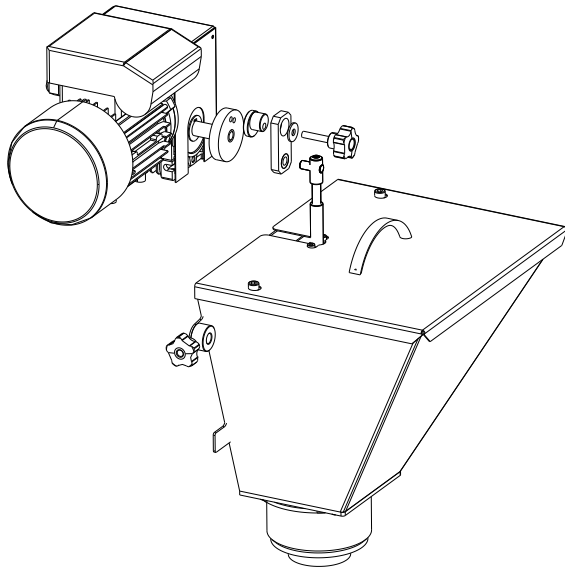
#### 5.1. Dismounting of the dispenser

Loosen the two knobs on both sides of the dispenser. Remove the dispenser gently, remove the plunger, wash and dry.

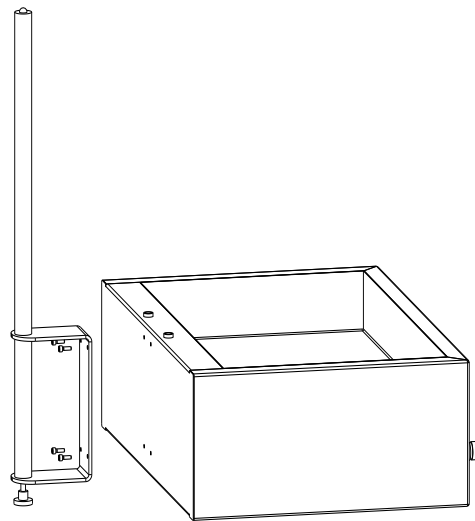


### 5.2. Dismantling the heaters.

Remove the gearbox with motor by lifting it upwards as it exits the vertical axis. Remove the electrical panel with the heating box by lifting it upwards.



Scheme dismantling of the shaft



Scheme disassembly of the column

### 5.3. Fire protection

If, for any reason, the temperature rise above 220 °C, the fire protection will shut off the machine. The cause of this problem has to be determined and only after the temperature has dropped to 150 °C the black protector position 10 is develops and the button below is pressed to turn off the protection that will restore the power to the machine.

## 6. Cleaning the machine and changing the oil

Before use, the machine should be rinsed with water. After use, the machine should be washed thoroughly. Wash the hopper with hot water after dismantling. Do not wash with aluminum-interacting cleaning liquids. Drain the oil from the tub into a metal container if hot and it is advisable to also filter it in the process. The bathtub is washed with degreasing detergent or hot water.

Oil must be changed every 100 hours of operation of the machine or earlier if it begins to form a foam. Oil must also be changed more frequently if it begins to form foam around the donuts during frying.

## 7. Safety

Do not operate the machine with wet dispenser or wet frying bath. Always operate the machine with proper electrical zeroed contact.

Always unplug the machine from the power socket if performing maintenance or repairs.

Repairs are carried out only by personnel with appropriate qualifications.

Always use air filtration and aspiration when operating in closed space.

Do not turn on the machine if the heater is not fully submerged in oil.

Do not allow drain the machine of oil while the heaters are turned on.

Do not clean the machine with a water jet.

## 8. WARRANTY

Name of the article: „**Donut Machine MP4**”

Date of production:

Factory number:

Guarantee conditions: STOK Engineering company guarantees faultless operation of the article 12 months after the date of installation, but not more than 18 months from the date of sale.

The company-producer does not bear any responsibility for faults as a result of incorrect transportation, storing and operation, which do not meet the present instructions.

Date:

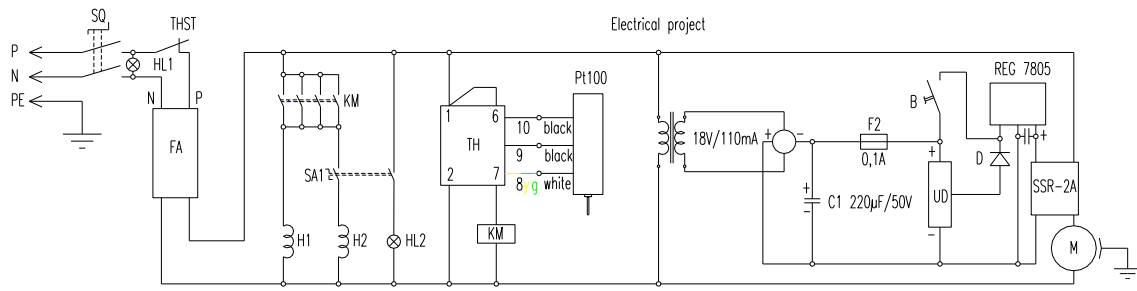
BUYER:.....

VENDOR:.....

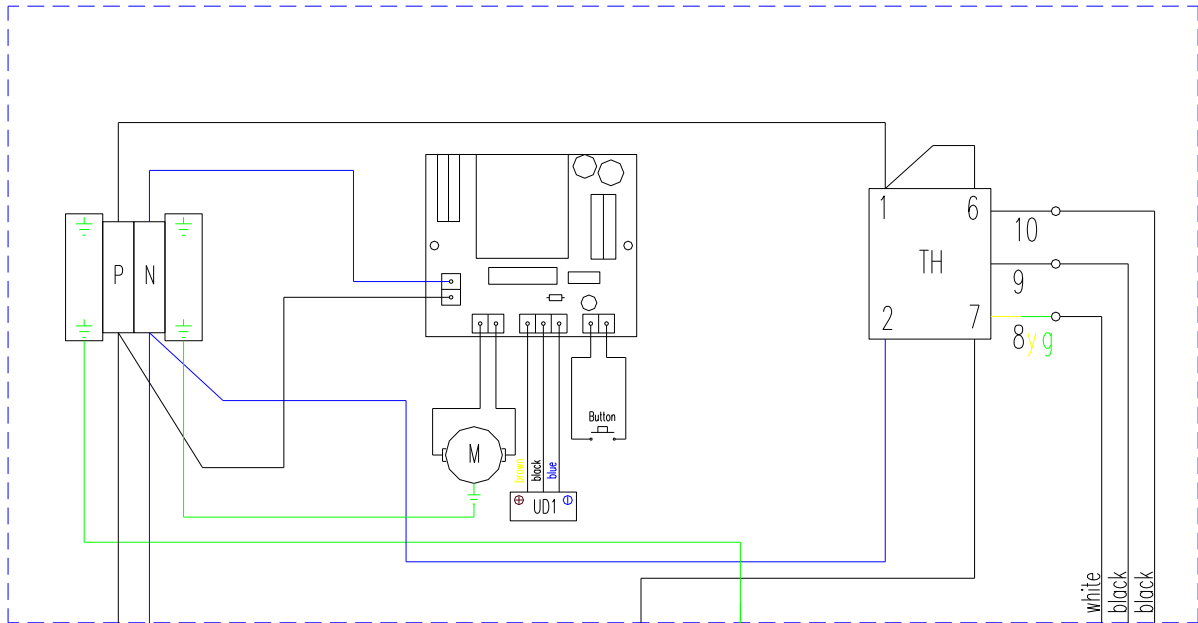
### QUALITY CERTIFICATE

STOK Engineering company declares, that the article “Semi-automatic donut machine” corresponds to the indices of the normative documents of the country, as per the European Directions (73/23, 89/336, 98/37) for products safety and technical specifications, set in the passport of the article.

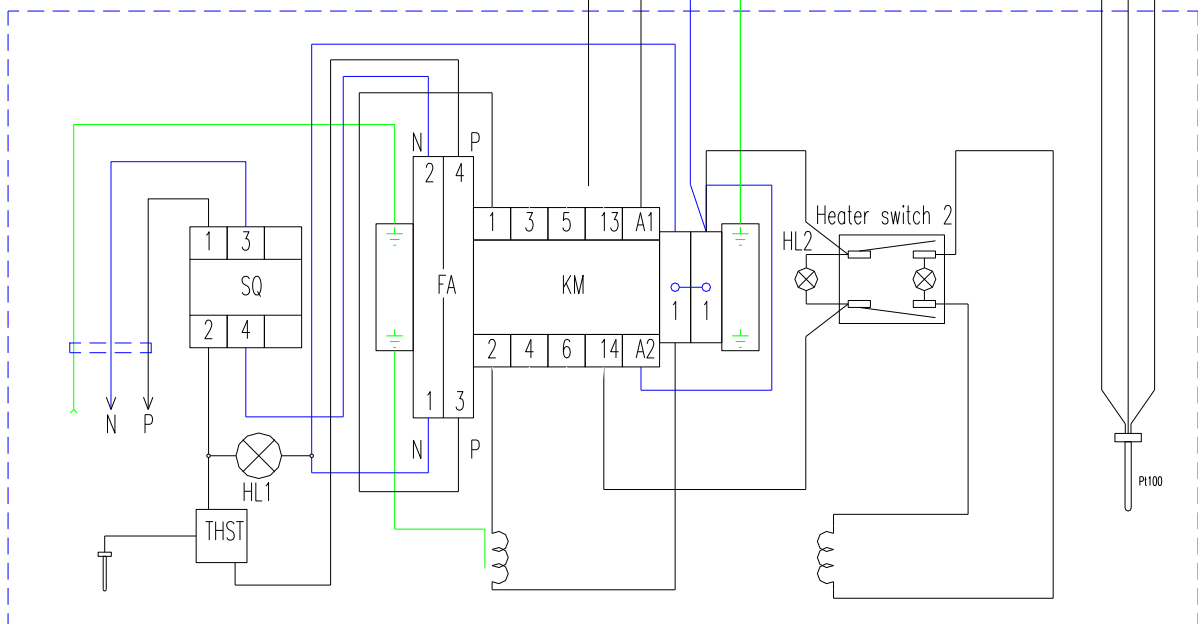
MANAGER:.....



Mounting project MP4  
Upper box



Bottom box







## ARTIFICIAL INTELLIGENCE TEMPERATURE CONTROLLER

### AI-207/208 (V7.8) User Manual

#### I. Main features

- Designed specially for equipments that work in 0 ~ +999℃ , such as light industry, oven, furnace, lab equipment, cooling/heating equipments. Easy to learn and operate and lowest cost.
- Basic panel AI-207/208 is fixed with SSR or relay output modules, no need to add extra output modules.L0 or L3 modules can be added when one or two alarms is needed.
- Universal power supply 100~240VAC.
- Armed with AT and AI PID Intelligent control algorithm function.
- Qualified with ISO9001, CE,and CQC, satisfying European RoHS Standard.

#### II. Model Code Symbol

The type of AI-207/208 is made up of 4 parts:

AI-207	A	G	L0
Part 1 (Series)	Part 2 (Size)	Part 3 (Oupt)	Part 4 (AUX)

**Part 1 stands for Model series**

AI-207, standard artificial intelligence temperature controller 0.5%FS±1℃ accuracy. 1℃ display resolution.

AI-208, temperature controller 0.3%FS±1℃ accuracy. 1℃ or 0.1℃ display resolution.

**Part 2 stands for Front panel dimension**

Size	Front Panel width×height	Cut Out width×height	Depth Behind Mounting Surface
A	96×96mm	92×92mm	100mm
A1	96×96mm	92×92mm	70mm
B	160×80mm	152×76mm	100mm
D	72×72mm	68×68mm	95mm
D1	48×48mm	45×45mm	78.5mm
D2	48×48mm	45×45mm	95mm
E	48×96mm	45×92mm	100mm
E1	48×96mm	45×92mm	70mm
F	96×48mm	92×45mm	100mm
F1	96×48mm	92×45mm	70mm

Part 3 indicates the module installed in OUP socket.

L Relay contact output module (Capacity: 2A/250VAC, normal open)

G SSR voltage output module (30mA/5VDC)

Part 4 indicates Auxiliary alarm output

N (or none) no module installed

L0 Relay contact output module (Capacity: 2A/250VAC, normal open / normal close)

L2 Relay output module omron brand(1A/250VAC)

L3 Dual relay Output module (Capacity: 2A/250VAC, normal open, support AU1 and AU2 alarm output)

Remark: For D1-size instrument, OUP (output module) is SSR mounted with driving voltage 30mA/5VDC. AU1 is also selectable as relay alarm output (NO+NC, 2A/250VAC). D1 is not in modular design.

### III. Technical Specification

#### 1. Input type :

Thermocouple: K, T,E, J, N,Pt100

2. Instrument Input range: K, E, J, N(0~999℃),Pt100 (0~800℃)

3. Measurement accuracy: 0.5%FS±1℃ (AI-207), 0.3%FS±1℃ (AI-208)

#### 4. Control mode:

On-off control mode , or PID control with the function of parameter auto tuning.

5. SSR 5VDC/30mA output: please parallel connect SSR if more than one unit.

6. Relay contact output: 250VAC/2A,OR 30VDC/2A,open normally

7. Alarm function: High Alarm, Lower limit alarm,Deviation High Alarm.

8. Power supply voltage rating: 100-240VAC, -15%, +10% / 50-60Hz.

9. Power consumption: ≤2W.

10. Ambient temperature: -10~+60℃ , Humidity: 0~90RH%









### IV. Basic display status

When powered on, it shows the basic display status, upper window displays real process value (PV) while lower window displays the set value (SV). If the real value overruns measure range(thermocouple breaks for example), upper window will display "orA" and the highest and lowest values, at this time, controller will automatically stop controlling the output.


In controller's face, basically there are four LED lights,OP1,AU1,AU2,RUN which respectively stand for output, first alarm, second alarm, and working condition.

### V. Operation Description


#### 1.Change given Set Value:

In basal display status, if the parameter lock "Loc" isn't locked, we can set setpoint (SV) by pressing , , . Press  key to decrease the value,  key to increase the value, and key to move to the digit expected to modify. Keep pressing or  the speed of decreasing or increasing value get quick.




Press  can decrease the value, press and keep pressing it can make quick decrease





Press  can increase the value, press and keep pressing it can make quick increase



Press  can change the targeted digit number of value

#### 2. AI artificial intelligence control and auto tuning:

When AI artificial intelligence control method is chosen (Ctrl=AI), the PID parameters can be obtained by running auto-tuning. In basal display status, press  for 2 seconds, the "At" parameter will appear. Press  to change the value of "At" from