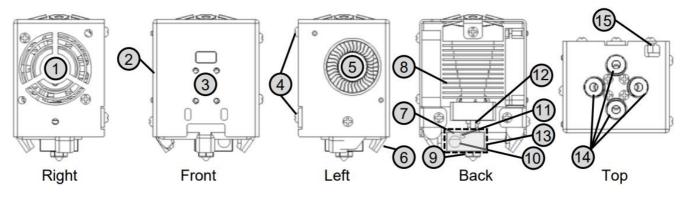# 📖 E4 Hotend user manual

ZONESTAR 4-IN-1-OUT **Non mix color** hot end (referred to as **E4 Hot end**) has 4 input channels and 1 nozzle, when switching color, the previous color filament need to be unloaded (pulled out) from the hot end, and then load the next color filament.

1. Specifications

Item	Parameters	Item	Parameters
Rated Voltage	DC24V/60W Max	Nozzle Diameter	Default 0.4mm[1]
Input Channel	4	Nozzle model	E3D V6
Nozzles Number	1	Filament Diameter	1.75mm
Heater	24V/60W Ø6x25mm	Temperature Sensor	NTC Thermistor 100K B3950
Cooling Fan	4010/5000RPM/24V 0.15A	Extruder Fan	4010/5000RPM/24V 0.15A
Support Filaments	PLA/PLA+/PETG/ABS/ASA etc.	Working Temperature	260℃ Maximus
Wire length	1 meter	Outer Dimensions	50x60x75mm
Net weight	220g	Gross weight	350g

2. Components

The E4 hot end assembly includes the following parts/accessories:

Right   Front   Left   Back   Top

```
1. Cooling Fan       2. Housing          3. Bed leveling sensor install
hole     4. Mounted Screws
5. Extruder Fan      6. fan "duck" prints   7. Heating block
8. Heat sink
9. Nozzle           10. Cartridge heater   11.Temperature sensor
12. Throat
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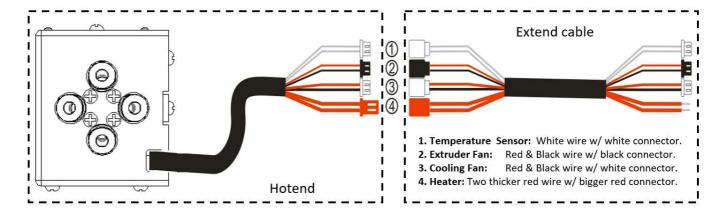
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  13. Silicone sleeve     14. Fittings(Pneumatic Connectors)
  15. Cable
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3. Wire and Terminals

1. **Temperature Sensor:** White wire w/ white connector.
2. **Extruder Fan:** Red & Black wire w/ black connector.
3. **Cooling Fan:** Red & Black wire w/ white connector.
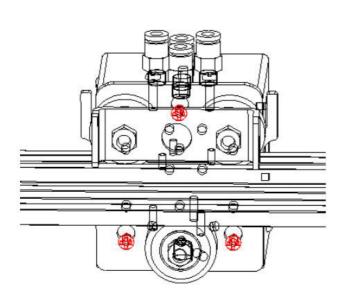4. **Heater:** Two thicker red wire w/ bigger red connector.

4. Installation & wiring

The mounting position of E4 hot end conform to the "ZONESTAR hot end mounting standard" , which can be installed on almost all ZONESTAR 3d printers, including P802, M8, D805S, Z8, Z9, Z10 etc. series of products.

4.1 Installation

Simply remove the 3 screws behind the hot end assembly and install the E4 hotend assembly on the X carrier of the machine.

4.2 Wiring

📢 **Attention**

- **Please watch for to distinguish terminals 3 and 4**, because their terminals color are the same, but the wires color are different.
  If the wires of 3 and 4 are connected reversely, you can see the nozzle temperature displayed on the LCD screen will be much higher than the room temperature after you powered on the machine.
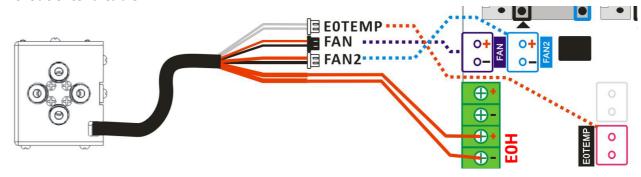- When pluging the terminal, **be careful not to push the metal terminal from the plastic case**.
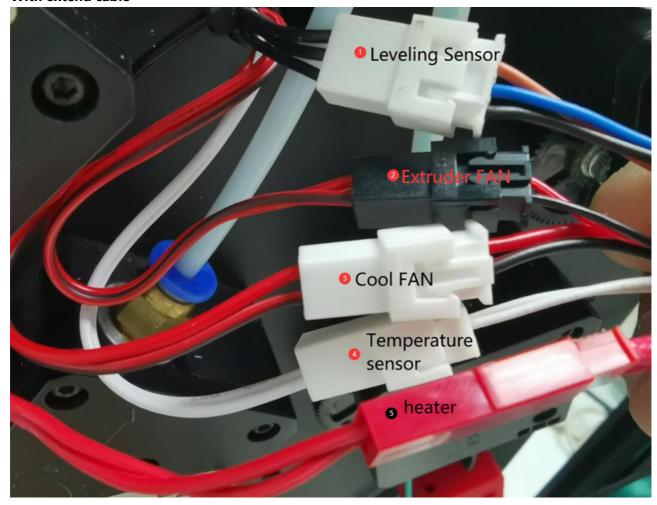
📣 Please note

- **The cooling fan must be turned on** (when the temperature of the hot end is higher than 60°C), otherwise the hot end may be blocked or even damaged.
- By default, the **working voltage** of the fan and heater at the hot end is **DC 24V**.

Please following the define of terminals to connect the hotend to your control board.

- **Without extend cable**
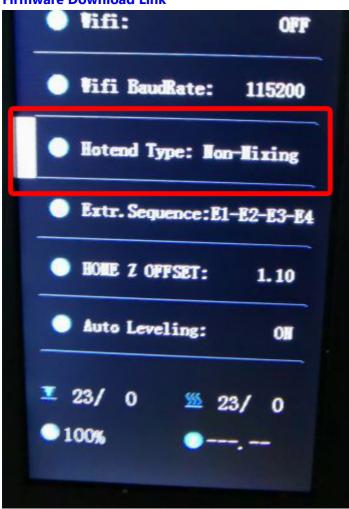

- **With extend cable**

4.3 Set hot end type on LCD MENU: Control>>Configure>>Hotend Type: Non-Mixing

⚠️ If your printer hasn't a 4.3" TFT-LCD screen, ignore this step.

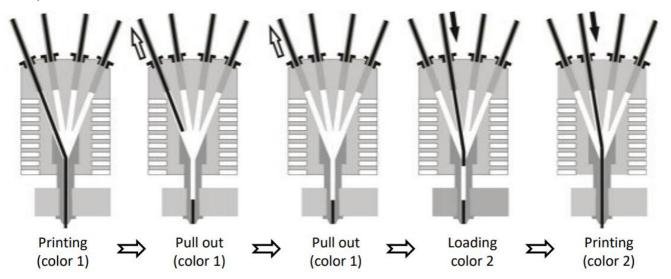⚠️ If you can't see the menu on the LCD screen of your printer, please upgrade to the newest version. 🔗
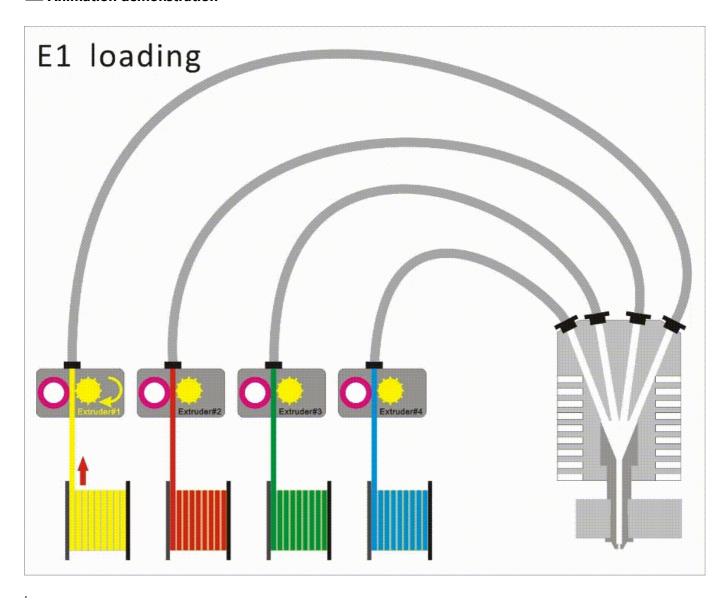**Firmware Download Link**

5. Working principle

4-IN-1-OUT hot end is composed of fitting, heat-sink, heater, nozzle and other components, when printing, extrusion feeder insert one color filaments into the hot end, then the filament is melted and flowed from the nozzle, while need to chang to another color filament, the extruder pull the previous color filament out of the

hot end, and then load another color filament.

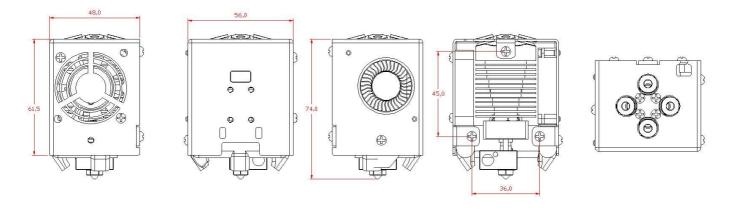| Printing (color 1) | ⇨ | Pull out (color 1) | ⇨ | Pull out (color 1) | ⇨ | Loading color 2 | ⇨ | Printing (color 2) |

🎬 Animation demonstration

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📖 About "Wipe tower"

Because there are still melted filaments of the previous color in the nozzle after a new color filament loaded, so we need to "clean" the nozzle before starting to print the new color filament. Otherwise, the printed initial part will be the previous color but not the new color as we expect. The solution is that to add **"wipe tower"** after switched to a new extruder in slicing software.

About details, please refer to 👉 **Slicing**.

💡 Wipe tower is called "Prime tower" in Cura Slicer and "Prime Pillar" in Simplify3d Slicer.

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6. Dimensions

Unit: mm

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7. Pre-load filaments

7.1 For one color printing

🎬 **How to load Filament - for one color printing**

7.2 For multi colors printing

🎬 **How to load Filament - for multi colors printing**

Before printing, please pre-load the filaments into the appropriate position of the hot end so that the extruder can load smoothly the filaments into and out of the hot end.
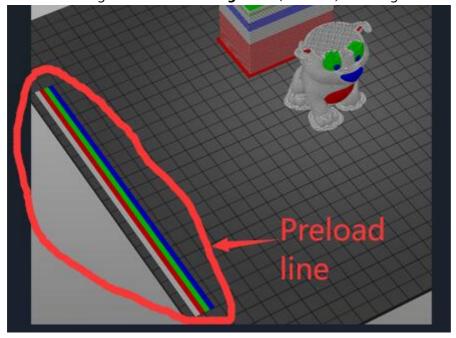
- **Step 1:** Load filaments from the extruder and let the filaments extend about 10mm out of PTFE tubes.
- **Step 2:** Plug the PTFE tubes (with filaments) into the HOTEND.

  📌 **If there is a filament in the hot end, heating and noozle and then pull it out first. Refer to Unload filaments to do it.**

  📌 Cutting the front of filaments into a sharp shape before loading filament.

  📌 If the extruder was not used during printing, donot need to load the filament to the hot end.

📌 Add some gcodes in the **"Start gcode"** (☞ View) of slicing software to print.

📌 Add some gcodes in the **"End gcode"** (☞ View) of slicing software to pull out the last printed filament from the hotend.

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8. Unload filaments

Please follow the steps below to unload the filament from the hotend:

- **Step 1:** Heating the nozzle (190 degree for PLA and 230 degree for ABS).
- **Step 2:** Rotate gear of the extruder to unload the filament.
  🌟 Some 3d printers (e.g. Z9V5Pro) has a "Filament" Menu on LCD screen, please operate the LCD screen and use menu of ***"Prepare>>Filament"*** to preheat the nozzle, choose extruder and unload filaments.

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9. Slicing

User guide (video tutorial) for PrusaSlicer/Cura/Simplify3d slicing software.

- 👍**PrusaSlicer**, please refer to ☞ **here**.
- **Cura slicer**, please refer to ☞ **here**.
- **Simplify3d Slicer**, please refer to ☞ **here**.

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10. Testing gcode

We have uploaded some test files to our Github page, you can download them from **here**.

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11. Troubleshootings

If you encounter problems when using the E4 hot end, please refer to the **troubleshootings guide** first to find a solutions. If the problem still can't be solved, please contact our technical support engineer by email: ✉ support@zonestar3d.com.