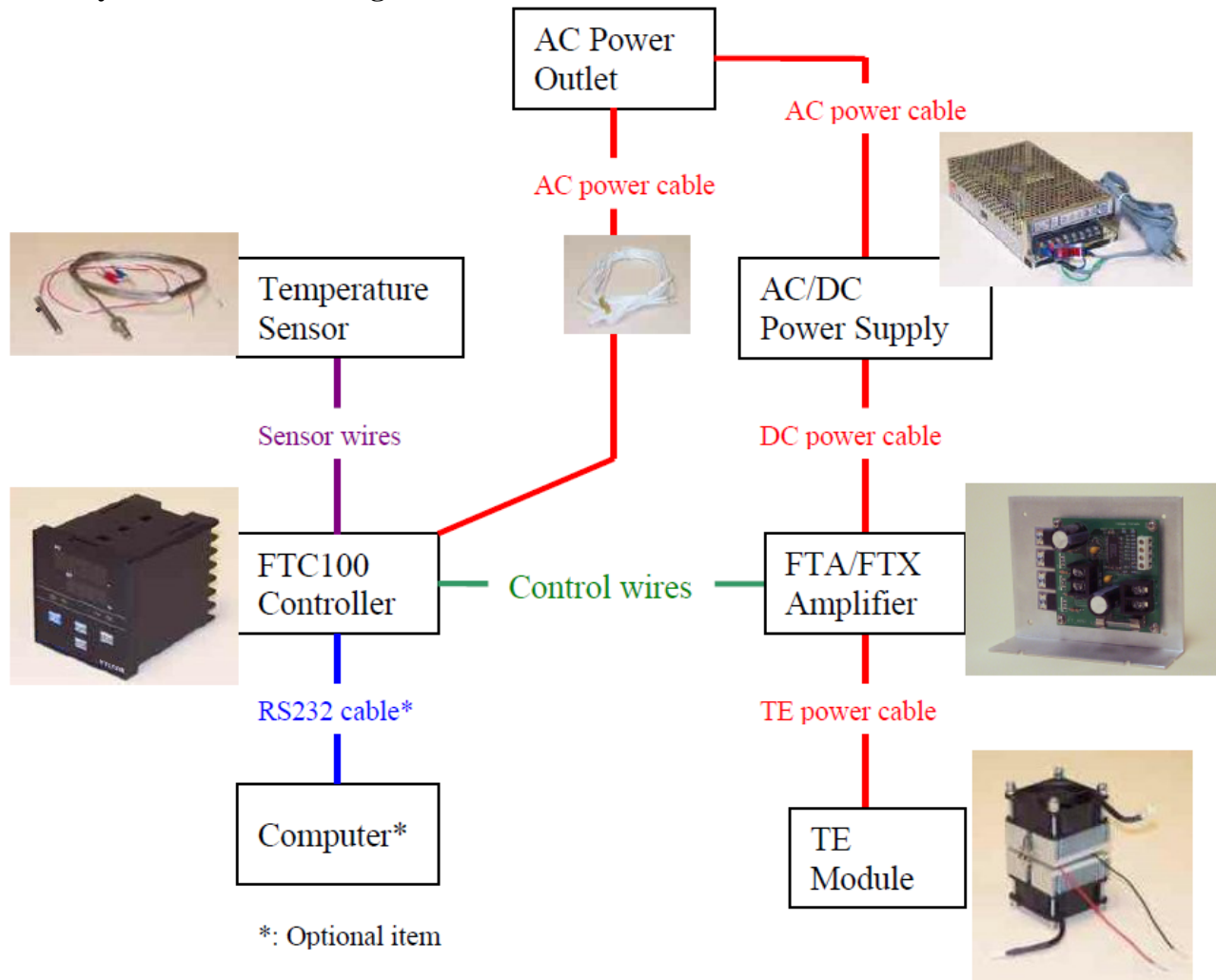


FTC100 & FTA/FTX Quick Installation & Jumper Setting Guide

Accuthermo Technology corp. Oct, 2009

Objective: This document is intended for the user to connect the FTC100 hardware system together.

I. System connection diagram



SAFETY CAUTION: improper handling or connecting may lead to damage the system or cause electric shock. Make sure the assembly surrounding is free from electronic hazard. Take extra care and verify for all your connections.

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Preparation

Please make sure you have the following tools/parts/document ready

1. Instruction manual
2. FTC100 Controller
3. FTA or FTX TE Amplifier
4. TE Module Assembly
5. Temperature sensor (Thermistor 2252 ohm sensor come standard with the kit)
6. AD/DC power supply
7. Computer/software (*optional)
8. Screw drivers
9. Cables
 - a. AC power cable
 - b. Control signal cable
 - c. DC power cable
 - d. TE power cable
 - e. RS232 data cable (*optional but **strongly recommended**)

II. System Assembly

Most of the connection required user to unscrew, plug in the wire and tighten up the screw. Make sure to use a proper screwdriver size and not to over-force when tighten the screws. Always make sure the wires are secured by the screws.

1. Connect AC cable to the controller connector #13 and #14, no polarity. Do not plug AC cable to the power outlet yet.

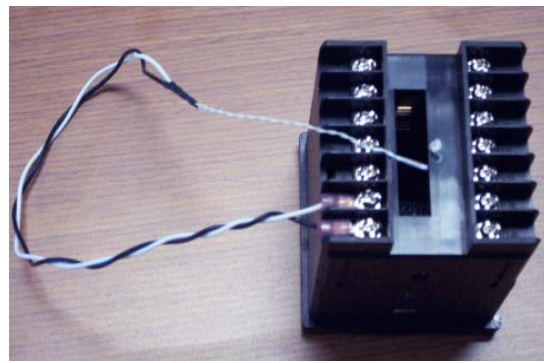


Pic. AC power line connection

2. Connect the temperature sensor to the controller
For **Thermistor** (2252 Ohm@25C): connect them to #6, #7, no polarity and jumper setting is not required (hardware default setting).
For **RTD**(PT100) 3-wire sensor, connect the same color wires to the #6 & #7. Connect the other wire to the #5. Jumper setting is not required (hardware default setting). If 2-wire RTD is used, connect the wires to #5 and #6. Use a small wire shorting #6 & #7.
For **Thermocouple**: connect positive wire on #6, negative wire on #7. Jumper should be configured.
Please read page 5 about **jumpers setting** for sensor type select.

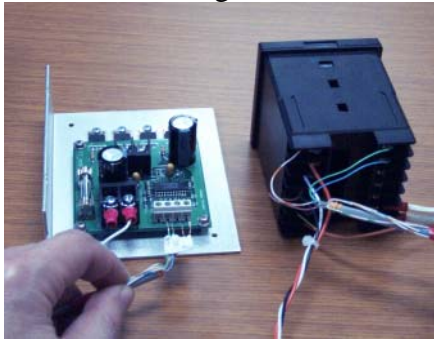


Pic: 3-wire RTD connection

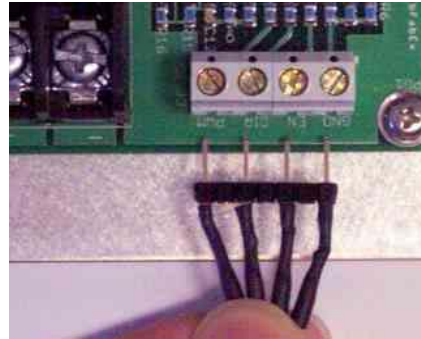


Pic: 2-wire Thermistor connection

3. Power up the controller, refer to the instruction manual and configure to the proper parameters. The panel should display the correct temperature. Unplug the power and continue the following steps.
4. Connect signal control cable between the controller and amplifier
Make sure the signal lines are matching



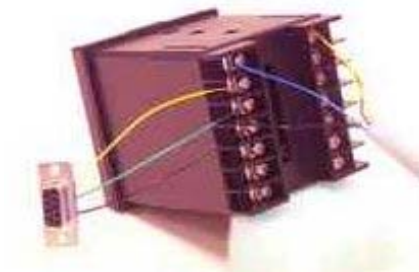
Pic. Connect of control signal cable



Pic. Control signal name defined on PCB

Amp (EN)	–	Controller #1 (Enable)
Amp (GND)	–	Controller #4 (GND)
Amp (PWM)	–	Controller #8 (PWM)
Amp (DIR)	–	Controller #9 (Heat/Cool Direction)

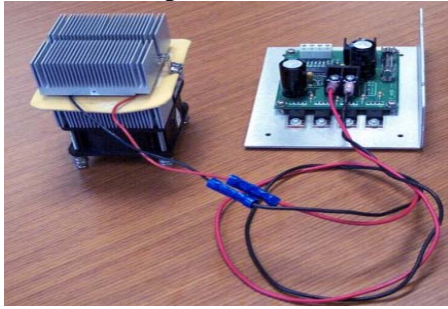
5. Connect RS232 signal to DB9 connector (*optional but is **strongly recommended**)
 DB9-Pin#2 – Controller #2(TXD)
 DB9-pin#3 – Controller #3(RXD)
 DB9-pin#5 – Controller #4(GND)



Pic: RS232 DB9 connection

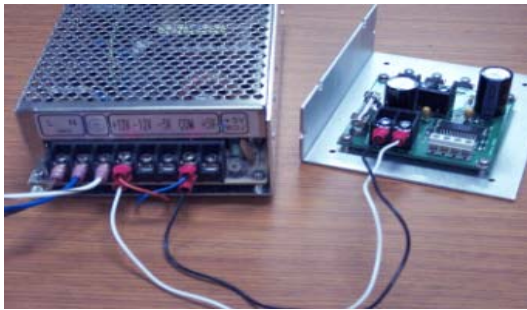
Tip: Accuthermo now offering a Serial-USB cable for those computers only has USB connection. Please go to www.accuthermo.com on the accessory section to check out those cables.

6. Connect TE power cable to the TE module.



Pic. TEC power line connection

7. Connect DC power cable to the amplifier. Make sure polarity connection, wrong connection could cause amplifier damage.



Pic. DC power connection

III. Running the system

1. Double check all connections
2. Plug in the AC power cables for the controller, you should see the panel display light up and the temperature is displayed.



Pic. Power up controller

3. Make sure the temperature setting is in the proper range not to damage the TE module or amplifier.
4. Power up or Plug in the AC power cord of the AC/DC power supply. The controller will start commanding power flow to the TEC assembly.
5. Refer to the “Instruction Manual” for temperature setting and adjustments.

IV. Trouble Shoot

When display shows “oPEn” Error: it means the controller cannot read sensor value properly. It could be the wrong type of sensor selected or the sensor connection problem. Make sure the sensor wires are tightened and the wire polarity is correct.

V. Sensor Temperature Range (optimized value)

1. Thermistor good for -3C to 100C
2. RTD good for -50 to 150C
3. T/C good for -50 to 150C

FTC100 Jumpers Setting Procedure

If you are using the thermistor that come with the kit, there is no need to do anything on this procedure. But if you are using thermocouple, you will need to do two things; one is to set the new jumpers position (following this procedure), the other is to set sensor type on the controller(refer to *LAST STEP* on page 6). If you are using RTD, you only need to set sensor type on the controller; jumper change is not required(refer to *LAST STEP* on page 6).

Step 1. Pull the front panel out slowly (there is no tool needed to pull it out)

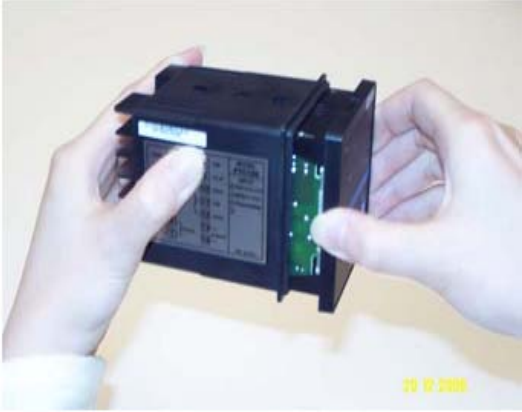
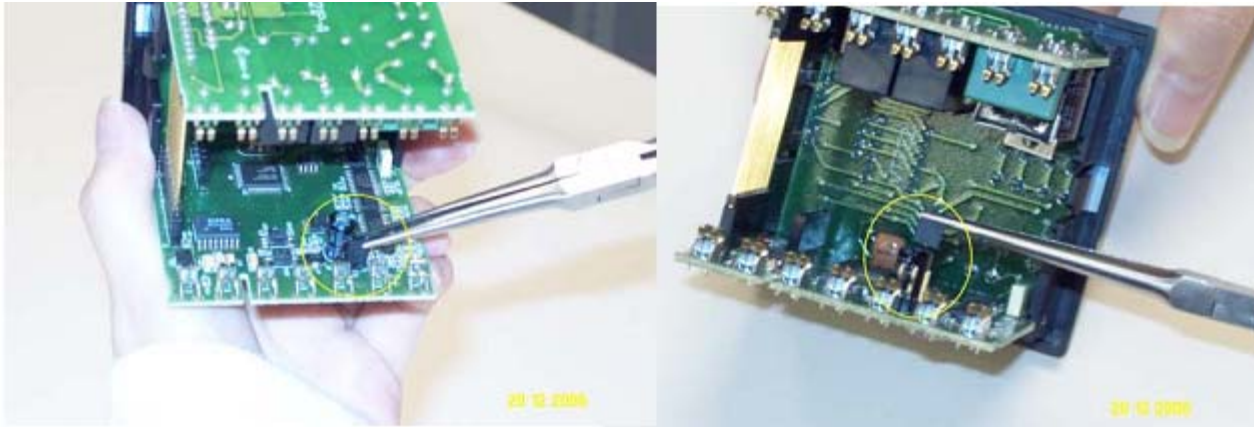


Table 1: Jumper Setting Table Summary

Sensor Type	Primary Jumper	Secondary Jumper
TR++	<i>Default Position</i>	<i>Default Position</i>
RTD++	<i>Same as TR setting</i>	<i>Same as TR setting</i>
T/C	<i>Follow instruction</i>	<i>Follow instruction</i>

TR: Thermistor
RTD: PT100 3-wire prefer
T/C: *Thermocouple*
 ++: Default position, TR and RTD have the same jumpers setting

Step 2. Set the **Primary Jumper** to the proper position. For Thermocouple, plug the jumper on the two right pins. For RTD, set the jumper on the left two pins as shown on the pictures.



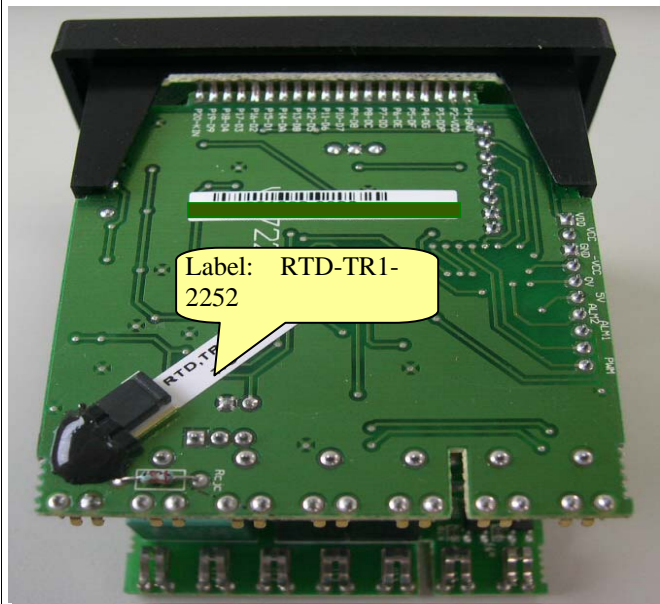
Step 3. If your controller come with the second jumper shown below, please follow the “Secondary Jumper Setting” to set the jumper at the proper position.



Secondary Jumper Setting:

(If you have Thermistor value of 2252 ohm)

This jumper sets the proper current to the sensor. Set the jumper on the TC side if Thermocouple is used. Set the jumper on the RTD-TR1-2252 if other type of sensors is used.

**Secondary Jumper Setting:**

(If you have Thermistor value of 10K ohm)

This jumper sets the proper current to the sensor. Set the jumper on the TC side if Thermocouple is used. Set the jumper on the RTD-TR2-10K if other type of sensors is used.



Step 4. Make sure to follow the slot key on the PCB (as shown on the picture with yellow circle) and push PCB in to the enclosure. Make sure it is closed firmly.

**Last Step!**

The jumper setting steps are for hardware. There is a setting in software also. You'll need to set the correct type of temperature sensor of the controller. There are two ways you can do it: (1) using the application software come with the CD to set up the correct sensor type (recommended method); (2) referring to the "Panel Interface Manual" and set up the correct sensor type.