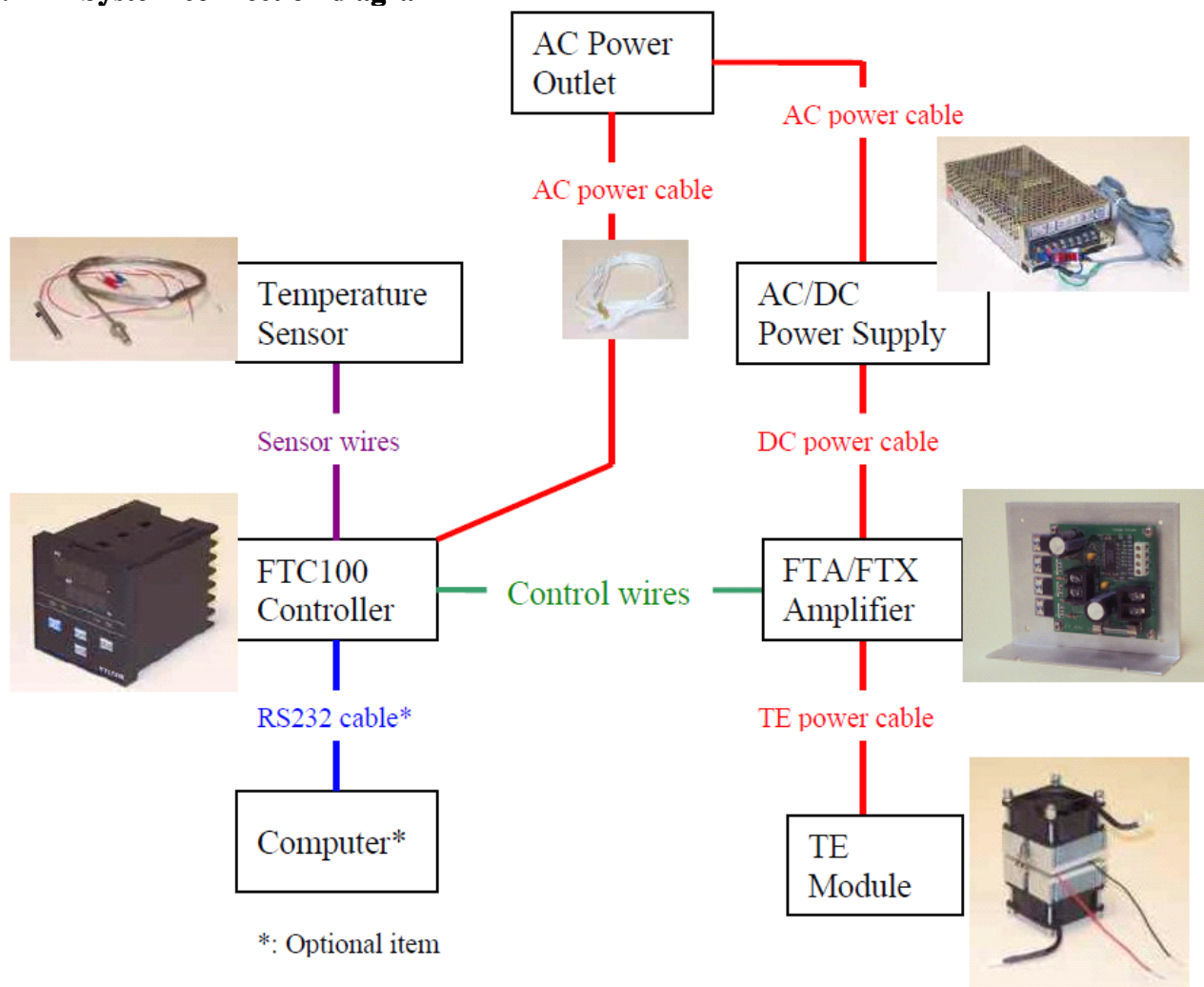


FTC100D & FTX Quick Installation Guide

Accuthermo Technology corp. July 2011

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

I. System connection diagram



SAFTY 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

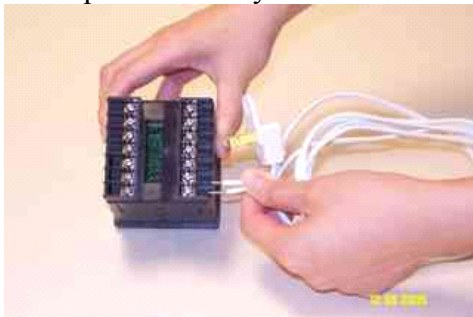
Please make sure you have the following tools/parts/document ready

1. Instruction manual
2. FTC100D Controller
3. FTXxxx TE Amplifier
4. TE Module Assembly
5. Temperature sensor (Thermistor 2252 ohm is the default setting)
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

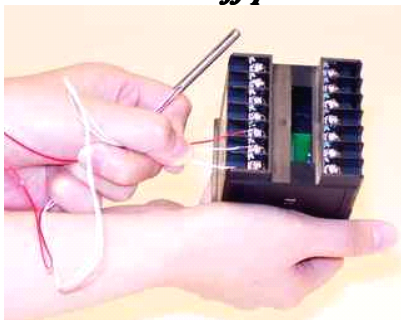
2. Connect the temperature sensor to the controller

For **Thermistor** (2252 Ohm@25C): connect them to #6, #7, no polarity and DIP-switch setting is not required (hardware default setting).

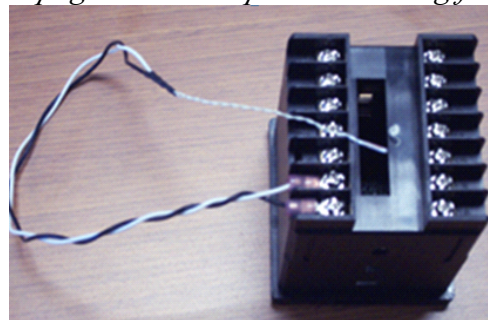
For **RTD**(PT100) 3-wire sensor, connect the same color wires to the #6 & #7. Connect the other wire to the #5. DIP switch setting is required for sensor type change. If 2-wire RTD is used, connect the wires to #5 and #6. Use a small wire shorting #6 & #7.

For **Thermocouple**: connect positive wire on #6, negative wire on #7. DIP switch setting is required for sensor type change.

DIP Switch on/off position: Please read page 5 about Dip Switch setting for sensor type select.



Pic: 3-wire RTD connection



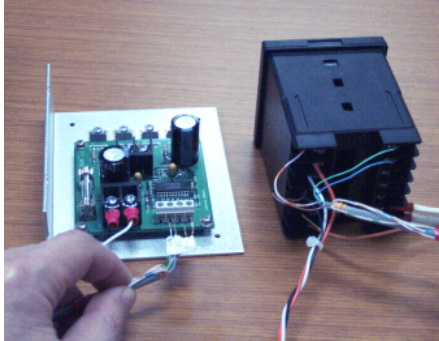
Pic: 2-wire Thermistor connection

3. **Double check your connections** before power up (99% of controller failures were due to wrong connections). 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.

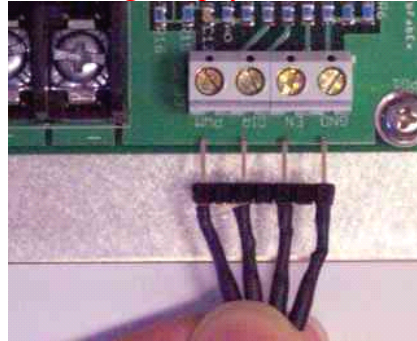
Note: Make sure the AC power lines are connected to the #13 & #14. Wrong connection will definitely damage the controller and is not covered by factory warranty.

4. Connect signal control cable between the controller and amplifier

Make sure the signal lines from controller to H-bridge amplifier are matching



Pic. Connect of control signal cable



Pic. Control signal name defined on PCB

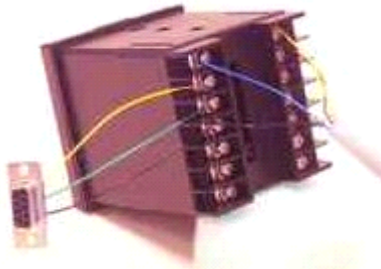
Amp (EN)	–	Controller #1 (Enable)
Amp (GND)	–	Controller #4 (GND)
Amp (PWM)	–	Controller #8 (PWM)
Amp (DIR)	–	Controller #9 (Heat/Cool Direction)

5. Connect RS232 signal to DB9 connector (*optional but is **strongly recommended**)

DB9-Pin#2 – Controller #2(TXD)

DB9-pin#3 – Controller #3(RXD)

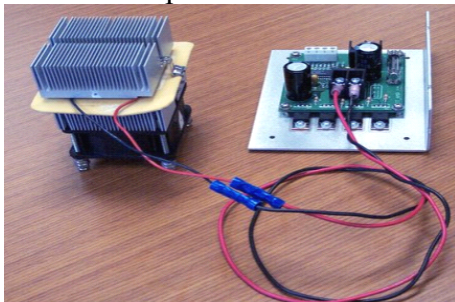
DB9-pin#5 – Controller #4(GND)



Pic: RS232 DB9 connection

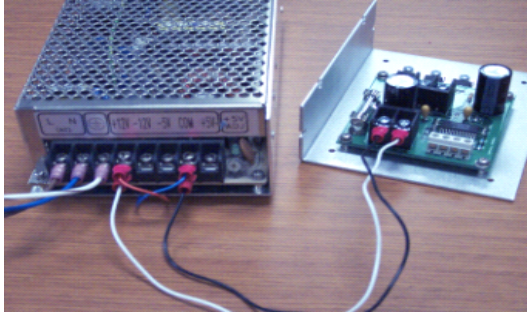
Note: If your computer doesn't have RS232 port (like most of the notebook computers). You can purchase a RS232-to-USB converter. It will work just like a RS232 port.

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. (We recommend to set your SV 2~3 degree different than the ambient temperature.)
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 -50C to 150C
2. RTD good for -50 to 200C
3. T/C good for -50 to 200C

FTC100D DIP Switch Setting Procedure

If you are using the thermistor, there is no need to do anything on this procedure. But if you are using thermocouple or RTD-PT100, you will need to adjust the DIP switch for sensor type (following this procedure). After that you need to set sensor type on the controller (either through the front panel buttons or PC software).


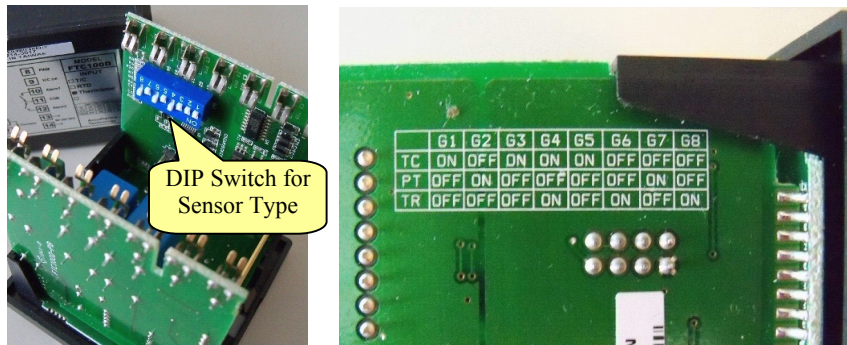


Table 1: DIP-Switch Setting Table Summary

Sensor Type	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
T/C	ON	OFF	ON	ON	ON	OFF	OFF	OFF
PT	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF
TR*	OFF	OFF	OFF	ON	OFF	ON	OFF	ON

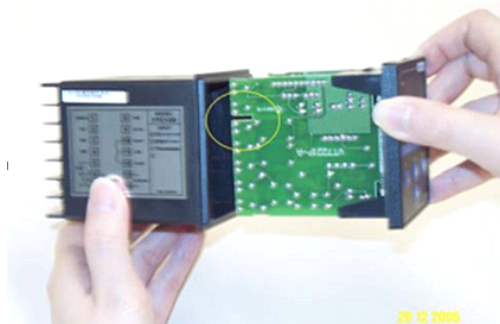
T/C: Thermocouple
PT: RTD/PT100, 2 or 3-wire
TR*: Thermistor (*: Default position)

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



(Note: The switch position also shown at back side of the PCB where the switch is mounted.)

Step 2. Set the **DIP Switch** to the proper position (refer to Table 1).



Step 3. 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 DIP Switch 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) Download the latest version from our website to set up the correct sensor type (recommended method); (2) referring to the "Panel Interface Manual" and set up the correct sensor type.