THERMOELECTRIC TEMPERATURE CONTROLLER with MULTIPLE OPERATING FUNCTIONS

THERMOELECTRIC MODULE

Four Amp "H" Bridge 65 watts: Adjustable Output 3.5VDC to 20VDC

HEAT/COOL

Four Amp Load Circuit 65 watts: Adjustable Output 3.5VDC to 20VDC

HEAT/COOL WITH EXTERNAL POWER SUPPLY OPTION

10 AMP LOAD CIRCUIT SUPPLY VOLTAGE UP TO 28VDC: 280 watts

MODEL 5C7-195

$795.00

- **INPUT VOLTAGE: 85 to 260VAC, 50/60 Hz**
- **INTERNAL POWER SUPPLY FOR VARIABLE DC OUTPUT VOLTAGES 3.5VDC to 20VDC**
- **MAXIMUM OUTPUT CURRENT, H Bridge Operation (See Figure 1)**

- **PROPORTIONAL CONTROL WITH AUTOMATIC RESET (PID)**
- **CONTROL AND ALARM SENSOR:**
- **CONTROL OUTPUT IS PULSE WIDTH MODULATED AT 2700Hz**
- **LOAD CIRCUIT IS PC CONFIGURABLE FOR**
  - **TE Module: Internal Power Supply (See Figure 1)**
  - **Heat/Cool: Internal Power Supply (See Figure 2)**
  - **Heat/Cool: 10 Amp External Power Supply**

- **ISOLATED RS232 COMMUNICATION PORT**
- **TEMPERATURE ADJUSTMENT AND RESOLUTION IS 0.1°C.**
- **OPEN OR SHORT SENSOR PROTECTION DISABLES LOAD CIRCUIT**
- **CONTROL TEMPERATURE** RANGE -40°C TO +150°C
  - Temperature Sensor: GUI Select

    TS141 -40°C TO 70°C
    TS91 -20°C TO 85°C
    TS67 -20°C TO 100°C
    TS104 0°C TO 150°C

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GENERAL DESCRIPTION

Model 5C7-195 is a bi-directional controller for Thermoelectric modules. It has an internal power supply and full "H" bridge capable of load currents up to four amperes. Model 5C7-195 may be used as a heat or cool only controller with resistive heaters or TE modules with load currents up to five amperes. Model 5C7-195 may be used in conjunction with an external power supply as a heat only, or cool only controller with load currents up to 10 amps.

The controllers' internal power supply accepts the universal AC voltage range of 85VAC to 260VAC. Electrical isolation is maintained between the AC power input and the DC load circuits.

The H bridge configuration of solid state MOSFET output devices allows for the bi-directional flow of current through the thermoelectric modules.

This controller is PC programmable via an RS232 communication port for direct interface with a compatible PC. The RS232 communications interface has 1500 VAC isolation from all other electronic circuitry minimizing interference from noise or errant signals caused by common ground loops. The easily accessible communications link permits a variety of operational mode configurations. Field selectable parameters or data acquisition in a half duplex mode can be performed. This controller will accept a communications cable length in accordance with RS232 interface specifications.

Once the desired set parameters are established the PC may be disconnected and Model 5C7-195 becomes a stand alone controller. All parameters settings are retained in non-volatile memory.

The controller has a digital display of control functions. The front panel controls may be used to adjust the set temperature, or output voltage when the internal power supply is used, or view actual or alarm temperature.

The user friendly, communications software requires no prior programming experience to establish operation. A command set is provided for qualified personnel to program a software interface and data log information.

The controller is provided in a plastic case suitable for bench top use.

Model 5C7-195 Load Circuit Capability
Internal Power Supply

FIGURE 1
H Bridge

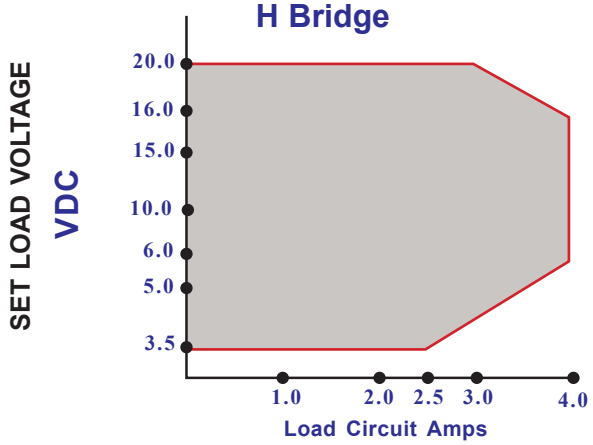
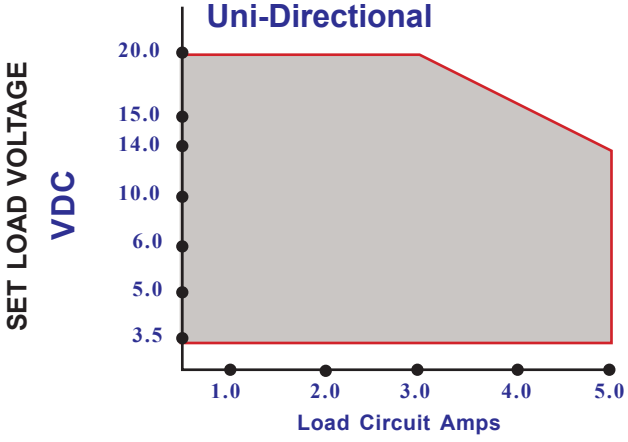
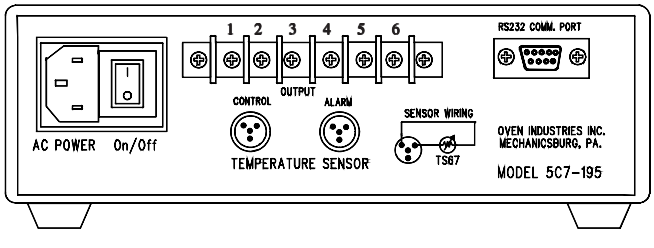
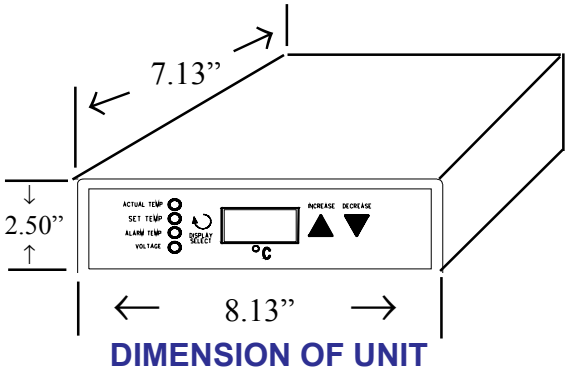


FIGURE 2
Uni-Directional





Back Panel View



DIMENSION OF UNIT

Model 5C7-195
Load Circuit Connections

The operating mode is selected via RS232 communication port and the GUI (Graphical User Innerface) PC Software. The connected load must stay within the safe operating area defined in figure 1 and 2. An external fast acting fuse should be used as additional load circuit protection. Model 5C7-195 may be operated in three different modes.

- **"H" Bridge Internal Power Supply (Figure 1)**
- **Heat or Cool: Internal Power Supply (Figure 2)**
- **Heat or Cool: External Power Supply.**
  An external power supply of 1vdc to 28vdc may be used with a maximum load current of 10 amps.

Figure 1

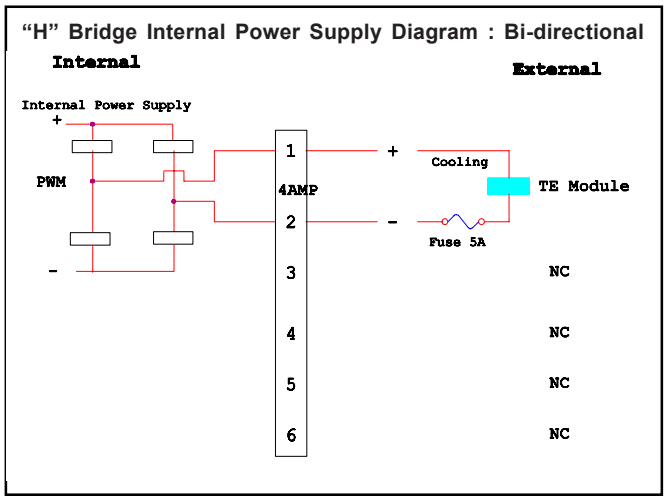


Figure 2

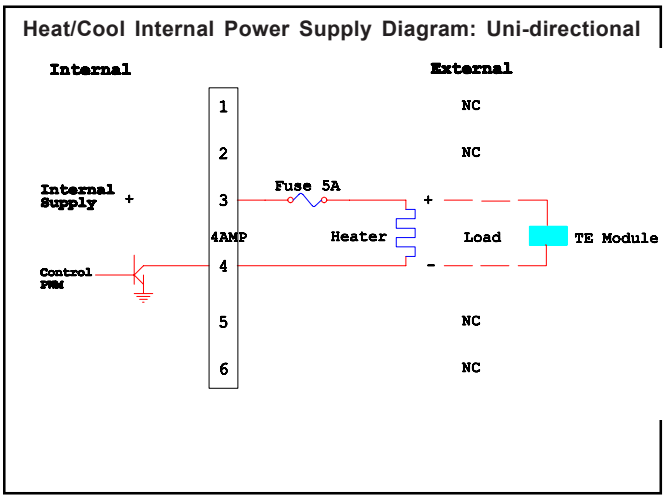
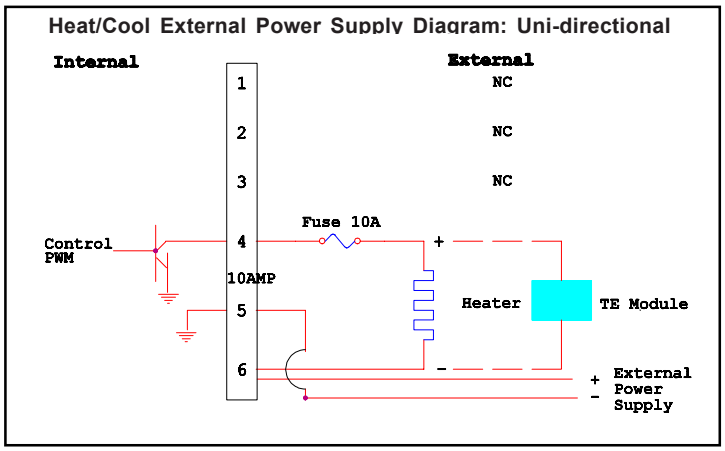


Figure 3



Model 5C7-195 Setup and Operation

Your controller includes an RS232 communication port. A standard computer (DE9P) will connect the controller to the PC. Install the AC line cord into the controller and turn on the AC power. Note the execute command from the label on the software disc. Insert the disc into the PC and use this command to load the PC software. The GUI (below) will be on the PC screen. Select the Com Port and click initialize.

Select the temperature sensor and click send box values. The same temperature sensor is used for both control and alarm sensors. For the trial run select Alarm disable, and H Bridge. Click send box values. Enter output voltage value to the rated voltage of the TE Module. Be sure the TE rated current is within the safe operating area of the controller. (Fig 1) Enter 25 for set temperature, 10 for bandwidth, 0 for integral and derivative gain. Click send box values.

Turn Controller Power Off.

Install TE Module to pin 1 and 2 with a series fuse, maximum value 5 amps. Place sensor into TE module system at the desired control point. Connect sensor to the controller. Check all connections. Turn controller power on.

The control temperature will be indicated on the front panel display. The output voltage will be indicated on this display. By cycling the display and noting the indicators, this voltage may be adjusted up or down from the front panel. The control temperature may also be adjusted from the front panel.

5C7-195 Menu Tree