OPERATING MANUAL

EchoTherm™

MIC20 REMOTE TERMINAL

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Introduction

Congratulations on your purchase of a Torrey Pines Scientific EchoTherm™ Model MIC20 Remote Terminal. Be sure to read the instructions carefully to insure maximum benefit from the unit.

Warranty

Torrey Pines Scientific warrants this unit to be free from defects in material and workmanship for a period of one year from the date of purchase. If repair or adjustment is necessary within the one year period, and is not the fault of abuse or misuse return the unit prepaid and repair will be made without charge. Out of warranty products will be repaired on a charge basis.

Return of Items

Authorization must be obtained before returning items for repair. When applying for authorization please include data regarding the reason the items are to be returned. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Torrey Pines Scientific will not be liable for damage resulting from careless or insufficient packing. A 15% restocking charge will be made to all unauthorized returns.

Note; We reserve the right to make improvements to design, construction and appearance without notice.

Features

Get and Set all RIC20 and RHB20 parameters without using an external PC

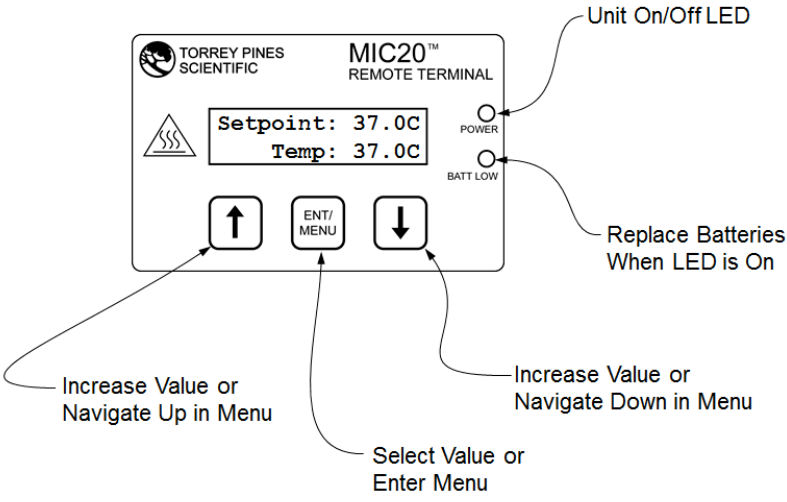
View Options	Current Setpoint Current Temperature Current Timer Value
Temperature	Get Current Set Point Get Current Temperature Change Set Point Set or Clear Idle Mode (Heater Off)
Calibration	Get Current High and Low Calibration Values Set New High and Low Calibration Values Reset High and Low Calibration Values
Event Notification	Set Period for Temperature Broadcasting Enable/Disable Temp and Timer Broadcast Messages
Utility Feature	Get Status Value
ID Functions	Get unit Model and Version, and Serial no Get and Set User Settable Identification
Power Options	Battery operated (six AA batteries) External 9V Power Supply

MIC20 Function

The MIC20 Remote Terminal enables the user to configure and/or display live data from Torrey Pines Scientific products that do not have a built-in LCD and push buttons. Example products are the RIC20 and RHB20 family of temperature control devices. Typically these devices are connected to and controlled by an external controller or PC by sending commands and processing responses over a serial RS232 line. The MIC20 enables the user to perform all of the operations that the controller or PC could, without using the controller or PC.

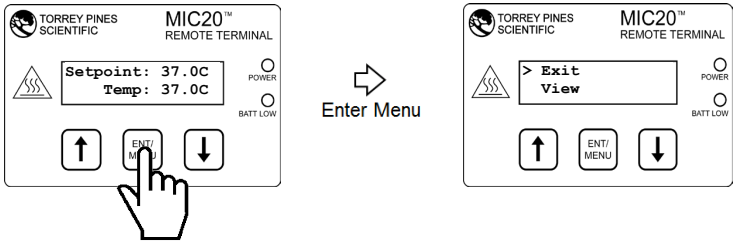
MIC20 Description

The MIC20 Remote Terminal may be powered using six AA batteries (1.5V each) or by plugging in the 9VDC external supply. A straight through RS232 cable is connected from the back of the MIC20 unit to the RS232 connector on the back of the Torrey Pines Scientific temperature control device (examples: RIC20 or RHB20). After turning on the temperature control device then flipping the power switch on the MIC20, the LCD will display the startup screens including the current version followed by live data from temperature control device. The default data displayed is the current set point and the current plate temperatures. The choice of the displayed live data can be set by the user using the "View" menu options. The push buttons on the front membrane enable the user to enter the menu and to perform any of the functions available in the RIC20 or RHB20, for example setting and controlling the timer or performing calibrations.



Normal Operation

The combination of the LCD display and the three push buttons provide an intuitive user interface that enables access to all of the functions available via the RS232 interface of the RIC20 and RHB20 family of temperature control products. Please consult the manual for your specific product for a detailed description of the functions available.



Important Considerations

Products like the RIC20 and the RHB20 have no display or push buttons and are controlled by a remote device like a PC. The design intent of the MIC20 Remote Terminal is to provide a solution for situations when the user would like to monitor the conditions of or change the setting of a RIC20 or RHB20 without using the remote PC. In the case where a RIC20 or RHB20 is being controlled by a PC and the user wishes to temporarily "jump in between the unit and the PC" using the MIC20 to monitor or change something then "get out" and let the PC continue with the control, care must be taken to ensure that the unit will not be left in a state such that PC control is affected.

For example, when the MIC20 is configured to show the Setpoint, Temp, and/or Timer, the MIC20 sends a command to the RIC20 or RHB20 every second then displays the results for these values. If a RIC20 or RHB20 is already internally configured to broadcast the current plate temperature every second (cmd "b00:01"), which is typical if the PC is capturing these events, then the display on the MIC20 may glitch occasionally depending on the serial timing. If the glitching is objectionable, the solution is to use the MIC20 to turn off temperature broadcasting in the RIC20 or RHB20 (Menu/Events/Set Temp BC/Period/00:00). When the MIC20 session is over, the user must reset the broadcast value in the RIC20 or RHB20 to the previous value in order for the PC to continue to control properly.

Menu Map

```
>Exit
>View
        >Exit
        >Show SP:  YES/NO
        >Show Temp: YES/NO
        >Show Timer: YES/NO
>Temperature
        >Exit
        >Get Temp
        >Get Set Point
        >Set New SP
                Current: 25.0C*
                    New: 37.0C*
        >Set/Clr  Idle Mode
>Timer
        >Exit
        >Get Timer
        >Set Timer
                (hr:min:sec)
                  12:34:56*
        >Start/Stop Timer
        >Clear Timer
>Calibration
        >Exit
        >Get Hi Cal Pt
        >Get Lo Cal Pt
        >Set Hi Cal Pt
                Displayed: 85.0C*
                Measured: 85.2C*
        >Set Lo Cal Pt
                Displayed: 35.0C*
                Measured: 34.2C*
        >Reset Hi Pt
        >Reset Lo Pt
        >Reset All Pts
>Events
        >Exit
        >Get Temp BCast
        >Get Events
        >Set Temp BCast
                Period(min:sec)
                00:01*
        >Set Events
                Temp Steady: YES/NO
                Timer:  YES/NO
```

>Utility
    >Exit
    >Get Status
>Unit ID
    >Exit
    >Get Model/Ver
    >Get Serial No
    >Get User Str
    >Edit User Str
        U/D :sel E:shift
        [10Char Max]*
    >Clear User Str

*Values shown are intended to be for example only