

FSI MCTD 3" DPSK Telemetry Operation

Introduction

This application note contains a detailed description for changing the operation of the MCTD from battery operation to sea cable operation. Please refer to the MCTD 3" Operating Manual for a complete description of the MCTD 3" operating modes, user commands and battery replacement. Refer to the DT-2000 manual to connect the MCTD to the DT-2000 and for operating the Acq2000 software.

Operating Modes

The MCTD is capable of operating in three unique modes, *Autonomous* (internal battery powered), *Sea Cable* (sea cable power) or *Autonomous II* (external battery power for the MCTD and a Sure Fire water sampler).

In Autonomous mode the MCTD runs from the internal 3 V battery pack. In this configuration the MCTD will log data to internal memory. When the cast or deployment is complete the user can download the data using the RS-232 communication port and FSI Acq software. For autonomous mode the MCTD should be configured for 9600 or 19200 baud.

During sea cable operation the DSPK Telemetry Pack transmits the CTD data up a 10K meter cable at 9600 bps. The Acq2000 software allows the user to collect the CTD data from the MCTD. If the MCTD is equipped with a water sampler, Acq2000 will also fire water samples, create a bottle file and mark the CTD data for the bottle position. For sea cable mode the MCTD must be configured for 300 baud.

The MCTD can also run a water sampler in autonomous mode. Therefore no sea cable is required to fire water bottles at known depths. The MCTD can be pre-programmed with various depths to fire water samples. When using this Autonomous II mode, an external battery pack is required to power the CTD and the water sampler. For autonomous mode the MCTD should be configured for 9600 or 19200 baud.

This application note describes the installation of the MCTD DSPK Telemetry Module. For disassembling the MCTD please use the MCTD 3" Operating Manual as a reference.

Sea Cable – DSPK Configuration

When using the DSPK Telemetry Module you must remove the internal battery pack and insert the DSPK Telemetry Module. The following steps explain how to install the telemetry module.

1. Place a small mark (use a marker) on each clamp and MCTD housing to indicate the conductivity cell alignment. *Note: If the conductivity cell is positioned in a different location, the conductivity will lose the accuracy of the calibration. See the FSI AN20004 note about proximity effects of the conductivity cell.*

2. Remove the four nuts that hold the MCTD to the frame and remove the MCTD from the frame.
3. Remove both clamps from the MCTD using a 7/16" nut driver. (Refer to the MCTD 3" Battery Replacement section for detailed instructions for removing the MCTD end cap clamps.
4. Carefully remove the connector end cap from the housing.
5. Disconnect the inline connectors and remove the connector end cap.
6. In the housing you will see a battery pack. Carefully slide the battery pack from the housing and disconnect the inline connector.
7. Remove the sensor end cap from the top of the housing.
8. The DPSK Module will replace the battery. To install the DSPK Module, you must remove the protective cover from the module.
9. Connect the six pin brown connector to the Interconnect PC card at the lower end of the electronics.
10. Route the communication harness through the two slots on the end plates of the module. Figure 1 below illustrates how the module should look before you install the plastic cover over the DPSK module. *Note: If the MCTD is configured with external sensors, you must also route the pie connector wires through the DPSK module.*

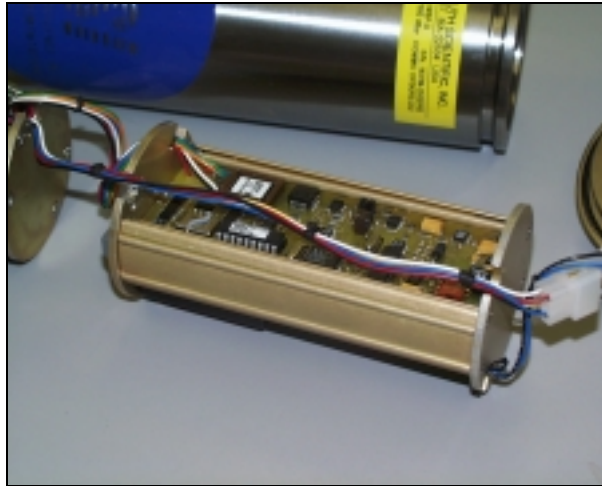


Figure 1 - DPSK Module and Routed Wire Harness

11. Slide the protective cover onto the module. Be sure not to nick or crimp any of the wires against the end plates.
12. Insert the module and electronics in the top end of the housing. Make sure all the connectors come out the other end. Make sure the housing O-ring surfaces are clean and the O-rings are clean before installing. If necessary lubricate the O-rings before installation.
13. Plug in the two inline connectors to the connector end cap as shown in Figure 2 below.
14. Insert the connector end cap onto the lower end of the housing.
15. Next, attach both end cap clamps to the housing. See the MCTD Operating Manual for complete details on the housing clamps.

16. Re-install the MCTD housing in the frame. Use the marks in step one to align the conductivity cell to minimize the proximity effects of the ceramic conductivity cell.



Figure 2 Inline Sea Cable and RS-232 Harness before Final End Cap Assembly



Figure 3 Complete MCTD with DPSK Module

RS-232 Communication Baud Rate Setup

1. Attach the DT-2000 to the MCTD using the two-pin connector located on the bottom of the MCTD. Plug the DT-2000 AC line cord into a 100-240VAC outlet.
2. Attach the Test Cable to the four-pin connector and the DB25 connector to the PC. A DB 9 to 25 pin converter cable may be required.
3. Turn on the power to the DT-2000. You should see the Sea Cable Load light turn on. After about 5 seconds the Data light will begin to blink.

4. Next you must configure the MCTD to operate at 300 bps. To do this run the FSIACq software or a terminal program.
5. If using FSIACq select the file menu "Communications Window".
6. Press the enter key in the Communications Window. If you do not see any data or messages in the screen, the MCTD may be at a different baud rate. Press the Port Setup button and select 300 baud. Press the Ok button. Press the enter key again. If there is still no data, check the DB9 to 25 cable and the test cable connectors. There are only four baud rates for the MCTD, 300, 1200, 9600 and 19200. Normally the MCTD is at 9600 baud but for sea cable operation the baud rate must be at 300 baud so the DT-2000 can communicate with the MCTD using the secondary low speed link.
7. If there is data in the window then you know the baud rate of the MCTD. To change the MCTD baud rate to 300 baud, you will use the SB30 command. But first you must place the MCTD in the OPEN MODE.
8. Type the following command to place the MCTD in OPEN MODE, ***O<cr>. Where <cr> is the enter key.
9. Press the enter key again and you will see the "Open Mode" message.
10. Type SB30<cr> to change the MCTD baud rate to 300 baud.
11. Now since the MCTD baud rate is now at 300 baud you must change the PC's baud rate to 300 baud. Press the Port Setup button and select 300 baud. Then press the Ok button.
12. Now press the enter key and you will see the "Open Mode" message again.
13. To save the new baud rate use the ***E<cr> command.

When changing back to Autonomous operation you should change the baud rate to either 9600 or 19200 baud. This will speed up data downloads and configuration. The commands for these two baud rates are SB96 and SB19 respectfully.

At this point the MCTD is ready for sea cable operation. Please refer to the DT-2000 manual for complete details on connecting the MCTD to the DT-2000 and using the Acq2000 software.