90560 UCTDv4 Operating notes and Commands – FW v3.07

Communication summary

Communication is available through the RS232 serial port accessed inside the pressure housing and through Bluetooth. Bluetooth communications uses an antenna located inside the white dome on the rear endcap.

The RS232 port is made active by sending a character, removing or replacing the magnetic plug.

Bluetooth is made active by two means. Replacing the magnet plug causes the UCTD to awaken and stay awake as long as commands are received, timing out in 2 minutes. If the UCTD is set to wait for a pressure threshold to begin a cast the UCTD will activate Bluetooth when the magnetic plug is removed. If a Bluetooth connection is made the UCTD will enter "command" mode. If the pressure threshold is exceeded then Bluetooth will be deactivated and a cast will begin.

Discovering the UCTD

Activate the UCTD Bluetooth by either replacing the magnetic plug or connecting to the RS-232 port and typing "enablebluetooth" at the "S>" prompt. Double click on the Bluetooth manager icon in the right hand tray in the Windows XP taskbar. Click on "Add Bluetooth Device" to start the Bluetooth Setup Wizard and click "next". Wait for the connection manager to discover the UCTD device (SBE <8 digit serial num.>). Select the device, click "next", enter 'default' as the passkey and click "next" again. Select COM0 as the service to access and click "next". For quick access, the UCTD com port has benn added to "My Bluetooth Places". Note that each UCTD will have a unique com port assigned to it and it alone.

Operating Modes

The UCTD has 3 operating modes: *command, waiting, and logging*. In command mode the UCTD will respond to commands for set up and data transfer.

In waiting mode the UCTD has received the command "setwaiton" and has a pressure threshold set. When the magnetic plug is removed the UCTD will active its sensors and Bluetooth, waiting for the measured pressure to exceed the threshold which causes a transition to logging mode or for a Bluetooth connection which causes a transition to command mode.

In logging mode the UCTD collects a number of seconds of data, set by the command "setstopseconds=NNN" or if the command "setstopseconds=0" is received the UCTD will log until the memory is full or the magnetic switch is inserted.

Figures 1 and 2 are flow charts showing the UCTD operation when the magnetic plug is inserted and removed.

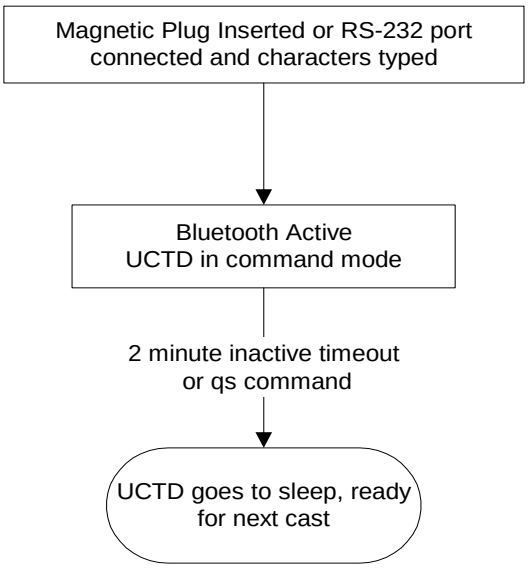


FIGURE 1 UCTD OPERATION WHEN MAGNETIC PLUG IS INSERTED

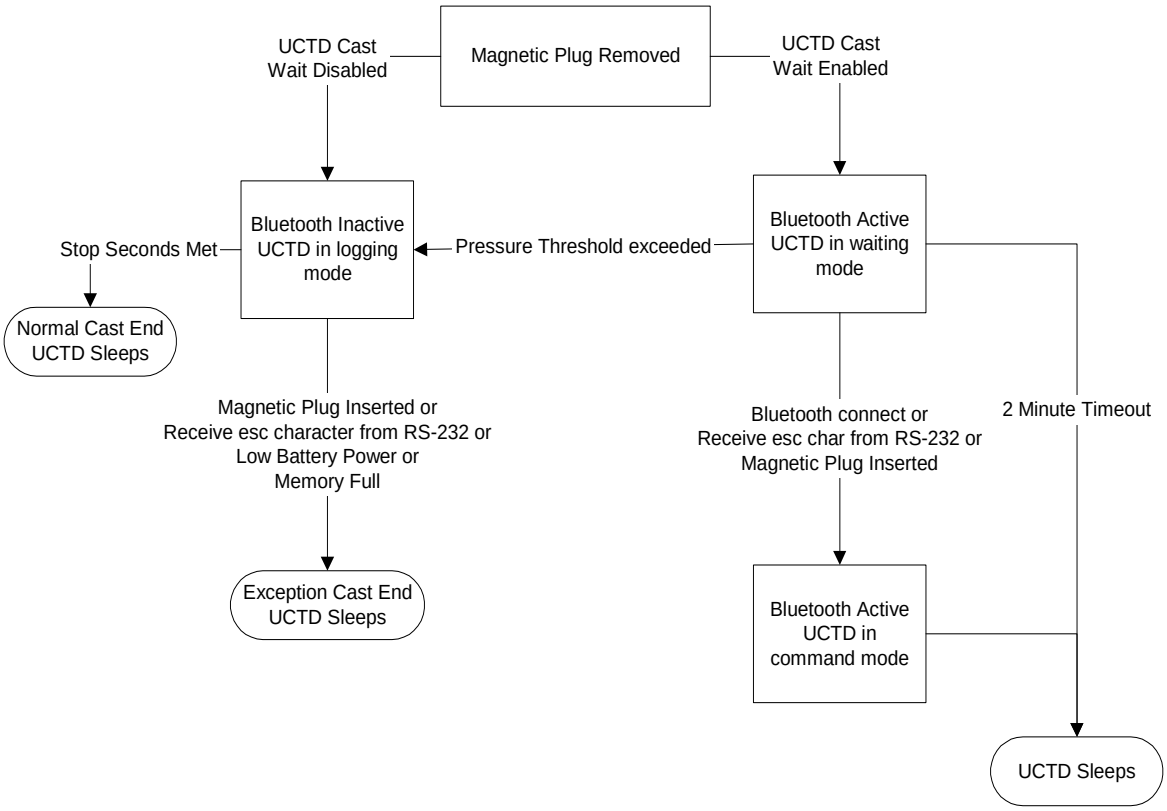


FIGURE 2 UCTD OPERATION WHEN MAGNETIC PLUG IS REMOVED

DEPLOYMENT

The UCTD is prepared for deployment by initializing memory with the “initlogging” command and fully charging the batteries. The UCTD terminates a cast on time, the termination time may be set via the “setstopseconds=NNN” command. Each cast is time stamped, the date and time are set by the “datetime=MMDDYYYYHHMMSS” command. Setting the termination time to 0 causes the UCTD to run until the memory is full or battery power is consumed (~8 hours depending on ambient temperature).

A cast is started by pulling the magnetic plug and waiting 5 seconds for the UCTD to initialize.

Replacing the magnetic plug causes the UCTD to wake and activate Bluetooth for 2 minutes. If no communication has occurred within 2 minutes the UCTD goes back to sleep.

The next cast may be started by pulling the magnetic plug. **Note that the UCTD must be asleep to respond to the magnetic switch.** The UCTD goes to sleep after 2 minutes of inactivity or in response to the “qs” command.

DATA UPLOAD

Data is stored as casts. The “getheaders” command displays cast headers for all casts, the format is cast number, date and time of cast, number of scans, reason for end of cast. A minimum cast size to retrieve can be specified using the format “getheaders=MINSIZE”. A single cast header can be retrieved using the command “gh=NN”.

A single cast may be retrieved by the “getcast=NN” command where NN is the cast number. The UCTD responds by streaming the scan number, conductivity, temperature and pressure in siemens/meter, degrees C, and decibars. The terminal program captures the data stream and stores it to disk.

BINARY DATA UPLOAD

The UCTD can transmit data in binary blocks. Block size can be 1024, 4096 or 16384 bytes, smaller block sizes are more appropriate for short casts. The last 4 bytes of each block is a CRC. The host terminal program requests binary upload parameters and then a cast with the GCB=NNN command. The UCTD transmits the first block, waits for an ACK or a NAK, transmits the next block or retransmits the last block as appropriate. Blocks are sent until the entire cast has been transmitted or an ESC character is received.

COMMAND SUMMARY

Verbose commands are immediately followed by a short cut if available.

getcd dcal	Displays the UCTDs calibration coefficients
gethd	Displays the hardware data (board revisions, firmware revision etc.)
getsd ds	Displays UCTD status
getcast=NN gc=NN	Streams conductivity, temperature, pressure from cast NN
getcastbinary=NN gcb=NN	Transfers cast NN in binary blocks with CRC
getheaders gh	Displays cast headers for all casts
getheaders=<MINSIZE>	Only display headers greater than value <MINSIZE>
gh=NN	Get header for a particular cast
datetime=MMDDYYYYHHMMSS	
setechooff sef	Set UCTD command echo off
setechoon seo	Set UCTD command echo on
setwaiton swo	Causes UCTD to wait until pressure exceeds threshold to log cast
setwaitoff swf	Causes UCTD to log cast immediately after magnet plug is pulled
setpressurethreshold=NN.N	Sets pressure threshold for UCTD to exit wait mode
dv	Streams battery voltage and pressure temperature voltage, escape halts
ttr	Streams raw temperature A/D measurement, escape halts
ttc	Streams temperature measurement in degrees C, escape halts
tpr	Streams raw pressure A/D measurement, escape halts

tpc	Streams pressure measurement in decibars, escape halts
tcr	Streams raw conductivity frequency, escape halts
tcc	Streams conductivity measurement in siemens/meter, escape halts
tsr	Displays 1 sample of temperature, conductivity, and pressure in raw units
tsc	Displays 1 sample of temp, cond, and pressure in scientific units
qs	Powers down the UCTD
initializelogging initlogging	erases memory and resets the cast counter
setreplyformat=N	0 = text, 1 = XML
setstopseconds=NNN	cast terminates at NNN seconds, 0 causes no stop. Max val is 1000.
disablebluetooth	turns off bluetooth
enablebluetooth	turns on bluetooth
sendbt=SSSSS	sends string SSSSS to Bluetooth transceiver
poffset=N.NN	offset value for pressure sensor in decibars