SBE 37-SIP (RS-485) MicroCAT Reference Sheet
(see SBE 37-SIP [RS-485] MicroCAT User's Manual for complete details)

Note: *ii* in commands is MicroCAT's user-assigned ID (0 – 99). For example, #01gethd sends gethd to MicroCAT with ID=01.

Setup

1. Install I/O cable connector. Connect to computer serial port and power supply (9-24 VDC).
2. Double click on SeatermV2.exe. SeatermV2 opens; in Instruments menu, select *SBE 37 RS485*. Seaterm485 opens.
3. In Seaterm485's Communications menu, select *Configure*. In dialog box, select Comm port and baud rate (factory set to 9600). Set ID to *Automatically get ID* for 1 MicroCAT on line; set ID to *Use fixed ID* for multiple MicroCATs on line. Click OK.
4. Seaterm485 should automatically connect to MicroCAT. As it connects, it sends **#iiGetHD** and displays response, and then fills Send Commands window with list of commands for your MicroCAT.
5. Program MicroCAT for intended deployment (see other side of this sheet for command list):
   A. Ensure all data has been uploaded from memory, and then send **#iiInitLogging** to make entire memory available for recording.
   B. Set date and time (**#iiDateTime=** or **DateTime=**).
   C. Set up other parameters as desired. User-selectable sampling modes include:
      - **Autonomous** – At pre-programmed intervals, MicroCAT wakes up, runs pump for 1 sec, samples, stores data in memory, and goes to sleep.
      - **Polled** – On command, MicroCAT runs pump for 1 sec, takes 1 sample, and sends data to computer. Useful for integrating with satellite, radio, or wire telemetry equipment.
      - **Serial Line Sync** - In response to simple pulse (or single character) on serial line, MicroCAT wakes up, runs pump for 1 sec, samples, stores data in memory, transmits data (if **#iiTxSyncMode=Y**), and goes to sleep.
   D. For autonomous sampling, use one of following sequences to start logging:
      - **#iiStartNow** to start logging now, taking a sample every **#iiSampleInterval=** seconds.
      - **#iiStartDateTime=** and **#iiStartLater** to start logging at specified date and time, taking a sample every **#iiSampleInterval=** seconds.

Deployment

1. Wiring – Install cable and locking sleeve. Connect cable to computer serial port and power supply (9-24 VDC).
2. Mount MicroCAT, using Sea-Bird mounting hardware or customer-supplied mounting hardware. **MicroCAT is intended for deployment with connector at bottom for proper operation – see manual for details.**

Data Upload

1. Connect cable from MicroCAT to computer and power supply.
2. Double click on SeatermV2.exe. SeatermV2 opens; in Instruments menu, select *SBE 37 RS485*. Seaterm485 opens.
3. In Seaterm485's Communications menu, select *Configure*. In dialog box, select Comm port and baud rate (factory set to 9600). Set ID to *Automatically get ID* for 1 MicroCAT on line; set ID to *Use fixed ID* for multiple MicroCATs on line. Click OK.
4. Seaterm485 automatically connects to MicroCAT. As it connects, it sends **#iiGetHD** and displays response, and then fills Send Commands window with list of commands for your MicroCAT.
5. If sampling autonomously (logging), command MicroCAT to stop logging by sending **#iiStop**.
6. Click Upload menu to upload stored data. Seaterm485 prompts you for upload file name and other upload options.
7. When upload completed, Seaterm485 prompts you to run SBE Data Processing to convert uploaded .hex file to .cnv file for use by other modules in data processing software. Process file and review data to ensure all data has been uploaded.
8. Process file and review data in Sea-Bird data processing software to ensure all data has been uploaded.

Command Instructions

- Input commands in upper or lower case letters, and register commands by pressing Enter key.
- MicroCAT sends an error message if invalid command is entered.
- If new command is not received within 2 minutes after completion of a command, MicroCAT returns to quiescent (sleep) state.
- If in quiescent (sleep) state, re-establish communications by selecting *Connect* in Seaterm485's Communications menu, sending two @ characters, or pressing any key.
- For reliable operation, all commands *may* need to be preceded with two @ characters.
  Example (status command for MicroCAT 01):   @@#01DS

Shown on page 2 are the commands used most commonly in the field. See the Manual for complete listing and detailed descriptions.

Command List

CATEGORY	COMMAND	DESCRIPTION
ID	**ID?**	Get MicroCAT ID.
	*ID=ii	Set MicroCAT ID to **ii**, where **ii**= 0-99. Command must be sent twice.
Global	**DateTime= mmddyyyyhhmmss**	Set clock month, day, year, hour, minute, second for all MicroCATs online.
	GData	Command **all** MicroCATs online to run pump and take 1 sample. MicroCATs hold data in buffer until receiving **Dataii**. Data not stored in FLASH memory.
	PwrOff	Command **all** MicroCATs online to enter quiescent (sleep) state. Main power turned off, but data logging and memory retention unaffected.
Get Data	**Dataii**	Get data obtained with **GData** from MicroCAT with ID=ii..
Status	**#iiGetCD**	Get and display configuration data.
	#iiGetSD	Get and display status data.
	#iiGetCC	Get and display calibration coefficients.
	#iiGetEC	Get and display event counter data.
	#iiResetEC	Reset event counter.
	#iiGetHD	Get and display hardware data.
	#iiDS or **!iiDS**	Get and display status and configuration data.
	#iiDC	Get and display calibration coefficients.
General Setup	**#iiBaudRate=x**	**x**= baud rate (600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200). Default 9600. Must be sent twice.
	#iiRxDelay=x	**x**= delay after MicroCAT receives command until transmitter enabled (1 - 500 msec). Default 25 msec.
	#iiTxDelay=x	**x**= delay after MicroCAT transmits reply until transmitter disabled (1 - 500 msec). Default 25 msec.
	#iiDateTime= mmddyyyyhhmmss	Set clock month, day, year, hour, minute, second.
	#iiOutputExecutedTag=x	**x=Y**: output XML Executed and Executing tags.　　　　　　　　　　**x=N**: Do not.
	#iiReferencePressure=x	**x**= reference pressure (gauge) in dbar (used when MicroCAT has no pressure sensor).
Pump Setup	**#iiMinCondFreq=**	**x**= minimum conductivity frequency (Hz) to enable pump turn-on for autonomous or serial line sync mode sampling.
	#iiPumpOn	Turn pump on for testing or to remove sediment.
	#iiPumpOff	Turn pump off, if turned on with **#iiPumpOn**.
Memory Setup	**#iiInitLogging**	Initialize logging to make entire memory available for recording. Must be sent twice.
	#iiSampleNumber=x	**x**= sample number for last sample in memory. **#iiSampleNumber=0** equivalent to **#iiInitLogging**. Must be sent twice.
Output Format Setup	**#iiOutputFormat=x**	**x=0**: output raw decimal data.　　　　　　　　**x=2**: output converted decimal data in XML. **x=1**: output converted decimal data.　　　　**x=3**: output converted decimal data, alternate format.
	#iiOutputSal=x	**x=Y**: calculate and output salinity (psu).　　　　　　　　　　　　**x=N**: Do not.
	#iiOutputSV=x	**x=Y**: calculate and output sound velocity (m/sec).　　　　　　　**x=N**: Do not.
	#iiOutputDensity=x	**x=Y**: calculate and output local density.　　　　　　　　　　　　**x=N**: Do not.
	#iiOutputDepth=x	**x=Y**: calculate and output depth (m)　　　　　　　　　　　　　　**x=N**: Do not.
	#iiLatitude=x	**x**= latitude (degrees) to use in depth calculation.
Autonomous Sampling (Logging)	**#iiSampleInterval=x**	**x** = interval between samples (6 – 21,600 sec). When commanded to start sampling with **#iiStartNow** or **#iiStartLater**, at **x** sec intervals MicroCAT runs pump, takes sample, stores data in FLASH memory, and goes to sleep.
	#iiStartNow	Start logging now.
	#iiStartDateTime= mmddyyyyhhmmss	Delayed logging start: month, day, year, hour, minute, second.
	#iiStartLater	Start logging at delayed logging start time.
	#iiStop	Stop logging or waiting to start logging. Send **#iiStop** before uploading data.
Polled Sampling	**#iiTS**	Run pump, take sample, store data in buffer, output data.
	#iiTSR	Run pump, take sample, store data in buffer, output raw decimal data (regardless of **#iiOutputFormat=**).
	#iiTSH	Run pump, take sample, store data in buffer, do not output data.
	#iiTSS	Run pump, take sample, store data in buffer and in FLASH memory, output data.
	#iiTSN:x	Run pump continuously while taking **x** samples and outputting data.
	#iiSL	Output last sample stored in buffer.
	#iiSLT	Output last sample stored in buffer, then run pump, take new sample, and store data in buffer.
Serial Line Sync	**#iiSyncMode=x**	**x=Y**: Enable serial line sync mode.　　　　　　**x=N**: Disable serial line sync mode.
	#iiTxSyncMode=x	**x=Y**: Transmit real-time data in serial line sync mode.　　　　　**x=N**: Do not.
Data Upload	**#iiGetSamples:b,e**	Upload scan **b** to **e**, in format defined by **#iiOutputFormat=**.
	#iiDDb,e	Upload scan **b** to **e**, in alternate converted decimal form (**#iiOutputFormat=3**) (regardless of setting for **#iiOutputFormat=**).
Calibration Coefficients	*See manual*	