SBE 37-SIP-IDO (RS-232) MicroCAT Reference Sheet
(see SBE 37-SIP-IDO MicroCAT User's Manual for complete details)

Sampling Modes

- **Autonomous sampling** – There are three types of Autonomous sampling.
  - Continuous sampling **(1, 2, 3, or 4 seconds)** – Pump runs continuously. MicroCAT samples continuously at 1 Hz (1 sample/second), stores data in FLASH memory, and transmits data. MicroCAT does not go to sleep between samples. Interval of 2, 3, or 4 seconds provides no power savings over a 1-second interval (MicroCAT still samples at 1 Hz), but less memory is used (data is stored to memory and transmitted at specified interval).
  - Fast Interval sampling **(5 to 179 seconds)** – Pump runs continuously. At pre-programmed intervals (5 – 179 seconds), sample, store data in FLASH memory, and transmit data.
  - Slow Interval sampling **(≥ 180 seconds)** – At pre-programmed intervals, wake up, run pump, sample, store data in FLASH memory, transmit data, and go to sleep.
- **Polled sampling** – On command, run pump, take 1 sample, and transmit data. Polled sampling is useful for integrating MicroCAT with satellite, radio, or wire telemetry equipment.
- **Serial Line Sync** - In response to a pulse on serial line, wake up, run pump for 1 second, sample, transmit data, store data in FLASH memory, and go to sleep. Easy method for synchronizing MicroCAT sampling with other instruments such as Acoustic Doppler Current Profilers (ADCPs) or current meters, without drawing on their battery or memory resources.

Setup

1. Install cable connector, aligning raised bump on connector side with large pin on MicroCAT. Connect to computer serial port and power supply (9-24 VDC).
2. Double click on SeatermV2.exe. SeatermV2 opens; in the Instruments menu, select *SBE 37 RS232*. Seaterm232 opens.
3. In Seaterm232's Communications menu, select Configure. Select Comm port and baud rate (factory set to 9600), and click OK.
4. Seaterm232 automatically connects to MicroCAT. As it connects, it sends **GetHD** and displays response, and then fills Send Commands window with list of commands for your MicroCAT.
5. Ensure all data has been uploaded from memory, and then send **InitLogging** to make entire memory available for recording. If **InitLogging** is not sent, data will be stored after last recorded sample.
6. Set Date and Time (**DateTime=**).
7. Establish setup and operating parameters.

Deployment

1. Wiring to MicroCAT:
   A. Install cable connector: For standard connector, align raised bump on side of connector with large pin on MicroCAT.
   B. Install locking sleeve.
   C. Connect cable connector to computer serial port, and connect red and black wires to power supply (9 - 24 VDC).
2. Mount MicroCAT, using optional 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.**
3. Program MicroCAT for intended deployment (see other side of this sheet for *Command Instructions and List*). Use one of following sequences to initiate logging:
   - **Start** to start autonomous sampling (logging) now, taking a sample every **SampleInterval=** seconds.
   - **SyncMode=Y** to place MicroCAT in serial line sync mode, so that a simple pulse on RS-232 line will initiate sample.
4. Mount MicroCAT, using optional 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.
2. Double click on SeatermV2.exe. SeatermV2 opens; in Instruments menu, select *SBE 37 RS232*. Seaterm232 opens.
3. In Seaterm232's Communications menu, select Configure. Select Comm port and baud rate (factory set to 9600), and click OK.
4. Seaterm232 automatically connects to MicroCAT. As it connects, it sends **GetHD** 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 **Stop**.
6. Click Upload menu to upload stored data.
7. Seaterm232 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.

Command Instructions and List

- Input commands in upper or lower case letters and register commands by pressing Enter key.
- If in quiescent (sleep) state, re-establish communications by clicking Connect in Communications menu or pressing Enter key.
- If a new command is not received within 2 minutes after completion of a command, MicroCAT returns to quiescent (sleep) state.
- MicroCAT sends an error message if invalid command is entered.

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

CATEGORY	COMMAND	DESCRIPTION
Status	**GetCD**	Get and display configuration data.
	GetSD	Get and display status data.
	GetCC	Get and display calibration coefficients.
	GetEC	Get and display event counter data.
	ResetEC	Reset event counter.
	GetHD	Get and display hardware data.
	DS	Get and display status.
	DC	Get and display calibration coefficients.
General Setup	**DateTime= mmddyyyyhhmmss**	Set real-time clock month, day, year, hour, minute, second.
	BaudRate=x	**x**= baud rate (600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200). Default 9600.
	RS232ForceOn=x	**x=Y**: RS-232 transceiver always enables Tx. Use this setting if providing 3-wire interface (power, ground, transmit) and setting **AutoRun=Y** (to start sampling when power applied). **x=N**: RS-232 transceiver enables Tx only when Rx is valid. *Default*.
	OutputExecutedTag=x	**x=Y**: Output XML Executed and Executing tags. **x=N**: Do not.
	ReferencePressure=x	**x** = reference pressure (decibars) (used when MicroCAT has no pressure sensor).
	QS	Quit session and place MicroCAT in quiescent (sleep) state. Logging and memory not affected.
Pump Setup	**MinCondFreq=**	**x**= minimum conductivity frequency (Hz) to enable pump turn-on for sampling.
	AdaptivePumpControl=x	**x=Y**: Use *Adaptive Pump Control* methodology to calculate pump run time. **x=N**: Do not use *Adaptive Pump Control*, run pump for 3.5 sec before sampling (for testing)..
	PumpOn	Turn pump on, for testing.
	PumpOff	Turn pump off, if turned on with **PumpOn**.
Memory Setup	**StoreData=x**	**x=Y**: Store data to FLASH memory when sampling. **x=N**: Do not.
	InitLogging	Initialize logging to make entire memory available for recording.
	SampleNumber=x	**x**= sample number for last sample in memory. **SampleNumber=0** equivalent to **InitLogging**.
Output Format Setup	**OutputFormat=x**	**x=0**: Output raw decimal data. **x=2**: Output converted decimal data in XML. **x=1**: Output converted decimal data.
	OutputTime=x	**x=Y**: Output date and time. **x=N**: Do not.
	OutputSal=x	**x=Y**: Output salinity (psu). **x=N**: Do not.
	OutputSV=x	**x=Y**: Output sound velocity (m/sec). **x=N**: Do not.
	OutputDepth=x	**x=Y**: Output depth (m). **x=N**: Do not.
	Latitude=x	**x**= latitude (degrees) to use in depth calculation.
Autonomous Sampling (Logging)	**SampleInterval=x**	**x** = interval between samples (1 - 21600 seconds).
	AutoRun=x	**x=Y**: When power applied, automatically sample as defined by **SampleInterval=** and **SyncMode=**. **x=N**: When power applied, do not begin to automatically sample.
	Start	Start sampling.
	Stop	Stop logging. Press Enter key before entering **Stop**. Must send **Stop** before uploading data.
Serial Line Sync	**SyncMode=x**	**x=Y:** Enable serial line sync. If **AutoRun=N** and a simple pulse is transmitted, or **AutoRun=Y** and power is applied, MicroCAT runs pump, takes sample, transmits data, store data in memory (if **StoreData=Y**), and goes to sleep. Pump operation is dependent on setting for **MinCondFreq=** and **AdaptivePumpControl=**, and temperature and pressure of previous sample. **x=N:** Disable serial line synchronization.
Polled Sampling	**TS**	Take sample, store data in buffer, output data.
	TSR	Take sample, store data in buffer, output data in raw decimal format.
	TPS	Run pump, take sample, store data in buffer, output data.
	TPSH	Run pump, take sample, store data in buffer, do not output data.
	TPSS	Run pump, take sample, store data in buffer and in FLASH memory, output data.
	TSn:x	Do not pump. Take **x** samples, output data.
	TPSn:x	Run pump continuously while taking **x** samples and outputting data.
	SL	Output last sample stored in buffer.
	SLTP	Output last sample stored in buffer, then run pump, take new sample, and store data in buffer.
Data Upload	**GetSamples:b,e**	Upload scan **b** to scan **e**, in format defined by **OutputFormat=**. Send **Stop** before sending.
	DDb,e	Upload scan **b** to scan **e**, in converted decimal form (**OutputFormat=1**) (regardless of user setup for **OutputFormat=**). Send **Stop** before sending.
Calibration Coefficients	*See manual.*	
Hardware Configuration	*See manual.*	