

SBE 37-SM (RS-485) MicroCAT Reference Sheet

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

System Setup

1. Install batteries:
 - A. *Remove I/O connector end cap:* Wipe dry housing/end cap seam. Remove 2 flat Phillips-head screws from end cap. Pull end cap out. Disconnect Molex connector connecting end cap to battery pack. Wipe dry O-ring mating surfaces in housing with lint-free cloth.
 - B. *Remove battery pack and install batteries:* Remove large screw/washer from upper PCB. Lift battery pack out of housing, using handle. Remove 2 small screws/washers from upper PCB. Lift upper PCB off brass sleeve. Insert batteries onto lower PCB. Press upper PCB onto batteries, mating plugs and aligning screw holes. Refasten with two small screws/washers.
 - C. *Reinstall battery pack and I/O connector end cap:* Align D-shaped opening and notch. Lower battery pack into housing; push gently to mate. Reinstall large screw/washer in upper PCB. Remove water from O-rings and mating surfaces with lint-free cloth. Inspect O-rings and mating surfaces for dirt, nicks, and cuts. Clean as necessary. Apply light coat of O-ring lubricant to O-ring and mating surfaces. Plug Molex connector together. Fit end cap into housing. Reinstall 2 flat Phillips-head screws to secure.
2. Install I/O cable connector, aligning raised bump on connector side with large pin on MicroCAT. Connect to computer serial port.
3. Double click on SeaTerm.exe.
4. Once main screen appears, in Configure menu select SBE 37.
 - A. Com Settings tab
 - Serial Port: COM1 through COM10 are available.
 - Baud Rate: 9600 (or other if applicable).
 - Data Bits: 8
 - Parity: None
 - Mode: RS-485 (half duplex)
 - Modem/RS485 ID: Automatically get ID if 1 MicroCAT on RS-485 line; Prompt ID if multiple MicroCATs on line
 - B. Upload Settings tab — define data upload for when you use Upload button on Toolbar
 - C. Header Information tab — define header information included with uploaded data
5. In Configure menu, select Header Form to customize header if desired.
6. Click Connect on Toolbar. SEATERM should return an **S>** prompt.
7. Set Date and Time — see Command Instructions and List on other side.
8. Set up other parameters if desired — see Command Instructions and Command List. User-selectable sampling modes include:
 - **Autonomous** – At pre-programmed intervals, MicroCAT wakes up, samples, stores data in memory, and powers off.
 - **Polled** – On command, MicroCAT takes 1 sample and sends data to computer. Useful for integrating with satellite, radio, or wire telemetry equipment.
 - **Serial Line Sync** - MicroCAT wakes up, samples, stores data in memory, and powers off in response to pulse on serial line.

Deployment

1. Wiring to MicroCAT – deploy with dummy plug or I/O cable connector installed:
 - Install dummy plug, aligning raised bump on side of connector with large pin on MicroCAT. Install locking sleeve. **OR**
 - Install I/O cable connector, aligning raised bump on side of connector with large pin on MicroCAT. Install locking sleeve. Connect I/O cable connector to computer serial port.
2. Anti-foul cups: Remove protective plugs and verify cups contain anti-foul cylinders. Leave protective plugs off for deployment.
3. Attach MicroCAT to mooring line with Sea-Bird mounting brackets.

Data Uploading

1. If in Autonomous sampling mode, command MicroCAT to stop logging by sending **#iiSTOP** command.
2. Connect I/O cable from MicroCAT to computer.
3. Double click on SeaTerm.exe. Click Connect on Toolbar. SEATERM should return an **S>** prompt.
4. Click Upload on Toolbar to upload stored data.
5. Click Convert on Toolbar to convert uploaded .asc to .cnv file for use by data processing software (SBE Data Processing or SEASOFT-DOS).
6. 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 **?CMD** if invalid command is entered.
- If system does not return **S>** prompt after executing a command, press Enter key to get **S>** prompt.
- If new command is not received within 2 minutes after completion of a command, MicroCAT returns to quiescent (sleep) mode.
- If in quiescent (sleep) mode, re-establish communications by pressing Connect on Toolbar or Enter key to get **S>** prompt.
- For reliable operation, all commands *may* need to be preceded with two @ characters to clear communication microcontroller receive buffers.
Example (status command for MicroCAT 01): **S>@@#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

FUNCTION	CATEGORY	COMMAND	DESCRIPTION
Communication Microcontroller Commands	Global Commands	ADATA	Command all MicroCATs to get average data from acquisition units and start next averaging cycle. Communication microcontrollers hold averaged data in buffer until receiving DATAii .
		GDATA	Command all MicroCATs to take one sample and turn power off . Communication microcontrollers hold data in buffer until receiving DATAii . Data not stored in FLASH memory.
		STARTSAMPLE	Command all MicroCATs to take one sample and leave power on . Communication microcontrollers hold data in buffer until receiving DATAii . Data not stored in FLASH memory. Send command once before using GSAMPLE .
		GSAMPLE	Command all MicroCATs to get last sample, then take new sample. Communication microcontrollers hold last sample data in buffer until receiving DATAii . Data not stored in FLASH memory.
		MMDDYY=mmddy	Set clock month, day, and year. Must follow with HHMMSS= .
		DDMMYY=ddmmy	Set clock day, month, and year. Must follow with HHMMSS= .
		HHMMSS=hmmss	Set clock hour, minute, and second.
	PWROFF	Enter quiescent (sleep) mode. Main power turned off; logging and memory unaffected.	
	Get Data Command	DATAii	Get data obtained with GDATA , ADATA , STARTSAMPLE , or GSAMPLE from MicroCAT with ID=ii.
	MicroCAT ID Commands	ID?	Get MicroCAT ID (ID = ii, where ii= 0-99).
		*ID=ii	Set MicroCAT ID to ii, where ii= 0-99. Command must be sent twice.
	Miscellaneous Commands (ii = MicroCAT ID)	!iiDS	Display communication microcontroller status for MicroCAT with ID=ii.
		!iiBAUD=x	x= baud rate (1200, 2400, 4800, or 9600).
		!iiSYNCMODE=x	x=Y: Enable serial line sync mode. x=N: disable serial line sync mode.
			!ii*EETEST
Acquisition Microcontroller Commands	Status	#iiDS	Display status.
	Setup	#iiMMDDYY=mmddy	Set clock month, day, year. Follow with #iiHHMMSS= or it will not set date.
		#iiDDMMYY=ddmmy	Set clock day, month, year. Follow with #iiHHMMSS= or it will not set date.
		#iiHHMMSS=hmmss	Set clock hour, minute, second.
		#iiFORMAT=x	x=1: output converted data, date dd mmm yyyy x=2: output converted data, date mm-dd-yyyy
		#iiSTORETIME=x	x=Y: store date and time with each sample. x=N: do not.
		#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.
		#iiOUTPUTDEPTH=x	x=Y: calculate and output depth (m). x=N: do not.
		#iiOUTPUTDENSITY=x	x=Y: calculate and output density sigma (kg/m ³). x=N: do not.
		#iiLATITUDE=x	x= latitude (degrees) to use in depth calculation.
		#iiREFPRESS=x	x= reference pressure (gauge) in decibars (used for conductivity, salinity, and sound velocity calculations when MicroCAT does not have pressure sensor).
		#iiQS	Enter quiescent (sleep) mode. Main power turned off; logging and memory unaffected.
	Logging	#iiINTERVAL=x	x= interval (seconds) between samples (5 to 32767).
		#iiSAMPLENUM=x	x= sample number (after uploading data, set to 0 to clear memory).
		#iiSTARTNOW	Start logging now. Data stored in FLASH memory.
		#iiSTARTMMDDYY=mmddy	Delayed logging start: month, day, year. Must follow with #iiSTARTHHMMSS=.
		#iiSTARTDDMMYY=ddmmy	Delayed logging start: day, month, year. Must follow with #iiSTARTHHMMSS=.
		#iiSTARTHHMMSS=hmmss	Delayed logging start: hour, minute, second.
		#iiSTARTLATER	Start logging at delayed logging start time. Data stored in FLASH memory.
		#iiSTOP	Stop logging or waiting to start logging. Send this command before uploading data.
		#iiGA	Start averaging data. First sample taken after delay of (#iiINTERVAL/2) seconds.
		#iiSACG	Output averaged data, converted. Start new average.
		#iiSARG	Output averaged data, raw. Start new average.
		#iiSAC	Output averaged data, converted. Continue averaging.
		#iiSAR	Output averaged data, raw. Continue averaging.
		Operating	#iiTS
	#iiTSR		Take sample, output raw data, leave power on.
	#iiTSS		Take sample, store in FLASH memory, output converted data, turn power off.
	#iiTSSTX		Take sample, store in FLASH memory, output converted data, leave power on.
	#iiSL		Output last sample taken with Operating or Logging Command, leave power on.
	#iiSLT		Output last sample, then take new sample, leave power on.
	Data Upload	#iiDDb,e	Upload data from scan b to scan e. Send #iiSTOP before sending this command.
	Coefficients	#iiDC	Display calibration coefficients.