

Sampling Modes

- **Polled** – On command, wake up, take one sample, transmit data, and go to sleep.
- **Autonomous** – At pre-programmed intervals, wake up, sample, stores data in FLASH memory, and go to sleep.
- **Combo** – On command, transmit last Autonomous sampling data.
- **Averaging** – On command, calculate and transmit average of Autonomous sampling data since last request.

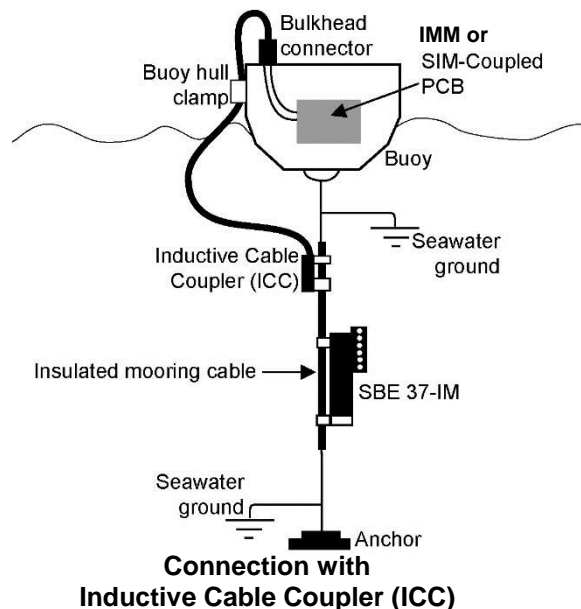
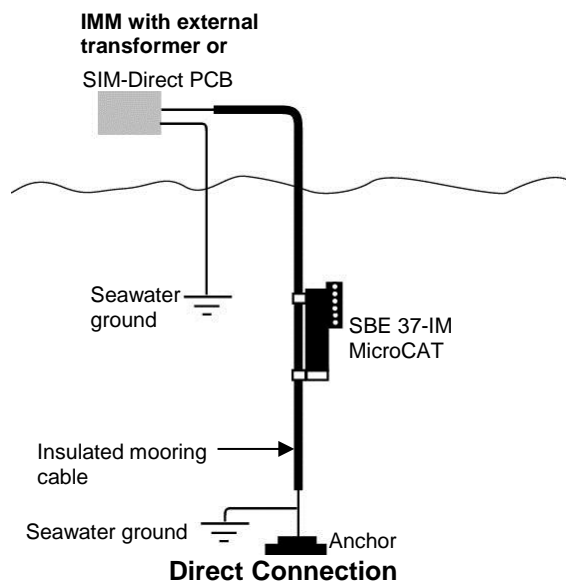
Setup

1. Install AA lithium cells (Note: **IM MicroCATs use a battery pack with a yellow cover plate**):

- Remove modem 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 O-ring mating surfaces in housing with lint-free cloth.
 - Remove battery pack and install cells:* Loosen captured screw in battery pack cover. Use handle to lift battery pack out of housing. Keep handle upright. Unscrew red cover plate from top of battery pack assembly. Roll 2 O-rings on side of battery pack out of grooves. Insert cells into battery pack, and roll 2 O-rings into grooves on side of battery pack. Align pin on battery cover plate PCB with post hole, keep handle upright, and screw red cover plate onto battery pack assembly.
 - Reinstall battery pack and modem end cap:* Align D-shaped opening and notch. Lower battery pack into housing; push gently to mate. Tighten captured screw to secure battery pack in housing. 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 screws.
- Double click on SeatermV2.exe. In Instruments menu, select *SBE 37 IM*. SeatermIM opens.
 - In Communications menu, select *Configure*. In dialog box, input Comm port and baud rate. Set ID to *Automatically get ID* for 1 MicroCAT on line; set ID to *Use fixed ID* for multiple MicroCATs on line. Click OK.
 - SeatermIM 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.
 - Ensure all data has been uploaded from memory, and then send **#iiInitLogging** to make entire memory available for recording. If **#iiInitLogging** is not sent, data will be stored after last recorded sample.
 - Set Date and Time (**#iiDateTime=**).
 - Set up other parameters as desired — see Command Instructions and Command List.

Deployment

- Attach MicroCAT to insulated mooring cable with Sea-Bird mounting brackets. Install (optional) ICC on mooring cable.
- See MicroCAT manual for SIM wiring and configuration; see IMM manual for IMM wiring and configuration.



Data Upload

- Double click on SeatermV2.exe. SeatermV2 opens; in Instruments menu, select *SBE 37 IM*. SeatermIM opens.
- In 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.
- SeatermIM 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.
- If sampling autonomously (logging), command MicroCAT to stop logging by sending **#iiStop**.
- Click Upload menu to upload stored data.
- SeatermIM 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.
- 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 SeatermIM's Communications menu.

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

FUNCTION	CATEGORY	COMMAND	DESCRIPTION
SIM Commands	Power-On	PwrOn	Send wakeup tone to all IMs.
		PwrOff	Send power off command to all IMs. Logging and memory retention unaffected.
		AutoPwrOn=x	x=Y : Send PwrOn to IMs when power applied to SIM. x=N : do not.
	Status	DS	Display SIM firmware version and status.
	Communications	Baud=x	x= baud from SIM to computer (1200, 2400, 4800, or 9600). Default 9600.
		DataNNMax=x	x= timeout that applies to Dataii ; default 1000 milliseconds.
		RelayMax=x	x= timeout that applies to all other commands; default 20 seconds.
EchoOn		Echo characters received from computer.	
	EchoOff	Do not echo characters received from computer.	
MicroCAT Communications Microcontroller Commands (ii = MicroCAT ID)	Global	DateTime=mmddyyhhmmss	Set all real-time clocks: month day year hour minute second.
		ResumeLogging	Simultaneously command all MicroCATs to start logging.
		GData	Command all communication microcontrollers to get average data from acquisition units, hold in buffer, and start next averaging cycle.
		StayOn	Command all MicroCATs to reset counting for 2-minute timeout.
	Get data	!iiData or Dataii	Get data obtained with GData from MicroCAT with ID= ii .
	MicroCAT ID	ID?	Get MicroCAT ID (0-99).
		*ID=ii	Set ID to ii (ii=0-99). Only 1 MicroCAT can be on line. Must be sent twice.
	Firmware	!iiGetHD	Get and display hardware data.
		!iiDS	Display MicroCAT communication microcontroller firmware version.
	MicroCAT Acquisition Microcontroller Commands (ii = MicroCAT ID)	Status	#iiGetCD
#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			Display status.
#iiDC			Display calibration coefficients.
General Setup		#iiDateTime=mmddyyhhmmss	Set real-time clock month day year hour minute second.
		#iiBaudRate=x	x= baud rate (600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 94 115200) for communicating in Serial Mode (through internal RS-232 connector).
		#iiOutputExecutedTag=x	x=Y : output XML Executed and Executing tags. x=N : do not.
		#iiReferencePressure=x	x = reference pressure (decibars) (for MicroCAT without pressure sensor).
		QS	Place MicroCAT in quiescent (sleep) state; for use in Serial mode only.
		Help	Display a list of active commands.
Memory Setup		#iiInitLogging	Initialize logging, setting memory pointer to 0.
		#iiSampleNumber=x	x= sample number for first sample when logging begins.
Autonomous Sampling (logging)		#iiSampleInterval=x	x = interval between samples (6 – 21,600 seconds).
		#iiStartNow	Start logging now. Data stored in FLASH memory.
		#iiStartDateTime=mmddyyhhmmss	Delayed logging start: month day year hour minute second.
		#iiStartLater	Start logging at delayed start time. Data stored in FLASH memory.
		#iiStop	Stop logging or waiting to log.
		#iiGA	Start logging now
		#iiSACG	Output averaged data, in format specified by #iiOutputFormat= . Start new average.
		#iiSARG	Output averaged raw data. Start new average.
		#iiSAC	Output averaged data, in format specified by #iiOutputFormat= . Continue averaging.
		#iiSAR	Output averaged raw data. Continue averaging.
		#iiSS	Output statistics. Continue averaging.

FUNCTION	CATEGORY	COMMAND	DESCRIPTION	
MicroCAT Acquisition Microcontroller Commands (ii = MicroCAT ID)	Polled Sampling (data not stored in FLASH memory unless noted; format specified by #iiOutputFormat = unless noted)	#iiTS	Take sample, output data.	
		#iiTSR	Take sample, output raw data.	
		#iiTSH	Take sample, do not output data.	
		#iiTSS	Take sample, store in FLASH memory , output data.	
		#iiTSN:x	Take x samples and output data.	
		#iiSL	Output last sample.	
		#iiSLT	Output data from last sample, then take new sample.	
		#iiSLTR	Output raw data from last sample, then take new sample.	
		#iiDNx	Upload last x scans from memory; can send while logging.	
		Data Upload	#iiGetSamples:b,e	Upload data from scan b to e . Send #iiStop before sending.
			#iiDDb,e	Upload data from scan b to e . Send #iiStop before sending.
		Output Format Setup	#iiOutputFormat=x	x=0 : output raw decimal data. x=1 : output converted decimal data. <i>Default</i> . x=2 : output converted decimal data, alternate format 1 x=3 : output converted decimal data, alternate format 2 x=4 : output converted decimal data, alternate format 3
			#iiCompatibleMode=x	x=Y : alter the output format for compatibility with older 37 firmware versions x=N : do not alter the output format
			#iiOutputTemp=x	x=Y : Output temperature. x=N : Do not.
	#iiSetTempUnits=x		x=0 : Temperature °C, ITS-90. x=1 : Temperature °F, ITS-90.	
	#iiOutputCond=x		x=Y : Output conductivity. x=N : Do not.	
	#iiSetCondUnits=x		x=0 : Conductivity, specific conductivity S/m. x=1 : Conductivity, specific conductivity mS/cm. x=2 : Conductivity, specific conductivity µS/cm.	
	#iiOutputPress=x		x=Y : Output pressure. x=N : Do not.	
	#iiSetPressUnits=x		x=0 : Pressure decibars. x=1 : Pressure psi (gauge).	
	#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.	
	#iiOutputSC=x		x=Y : Calculate and output specific conductivity. x=N : Do not.	
	#iiUseSCDefault=x		<i>Only applicable if #iiOutputSC=y.</i> x=0 : Do not use default; use #iiSetSCA= . x=1 : Use default value (0.020) for thermal coefficient of conductivity for natural salt ion solutions (specific conductivity calculation).	
	#iiSetSCA=x		<i>Only applicable if #iiOutputSC=y and #iiUseSCDefault=0.</i> x = thermal coefficient of conductivity for natural salt ion solutions (specific conductivity calculation).	
	#iiTxSampleNum=x	x=Y : Output sample number with data from a polled sampling command that stores data in FLASH memory or retrieves last sample from FLASH memory x=N : Do not output sample number.		
	#iiLegacy=x	x=0 : Allow all commands. x=1 : Reset units to °C, S/m, dbar, ml/L, and enable output of temperature, conductivity, pressure, oxygen (disable sound velocity, specific conductivity, sample number). Do not allow user to disable temperature, conductivity, pressure, or oxygen, or change output units. Modify #iiDS response to match output from digital firmware < 2.0.		