

Sampling Modes

- **Polled** – On command, wake up, take one sample, transmit data, and go to sleep.
- **Autonomous** – At pre-programmed intervals, wake up, sample, store 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.

Installation of new AA Lithium Cells (4)

1. Wipe outside of titanium end cap and housing dry, being careful to remove any water at seam between them. Using a wrench on end cap's wrench flats, unscrew end cap. Pull end cap and attached electronics out of housing. Remove any water from end cap O-rings and mating surfaces inside housing with a lint-free cloth or tissue.
2. Push out old cells and replace with new. Replace desiccant.
3. 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. Fit end cap into housing. Screw end cap into housing.

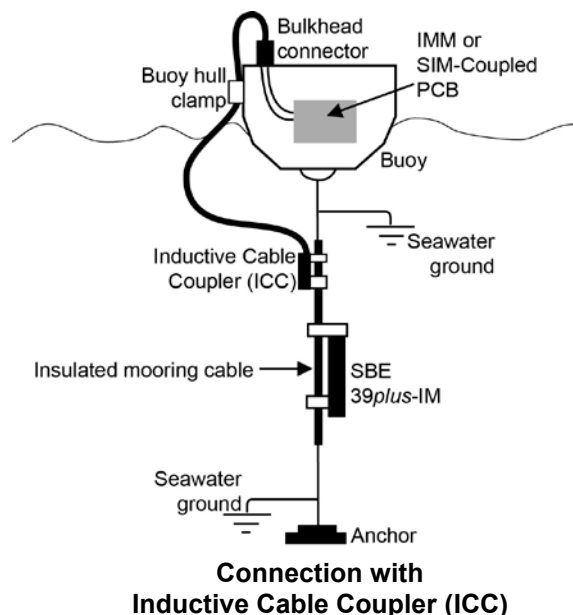
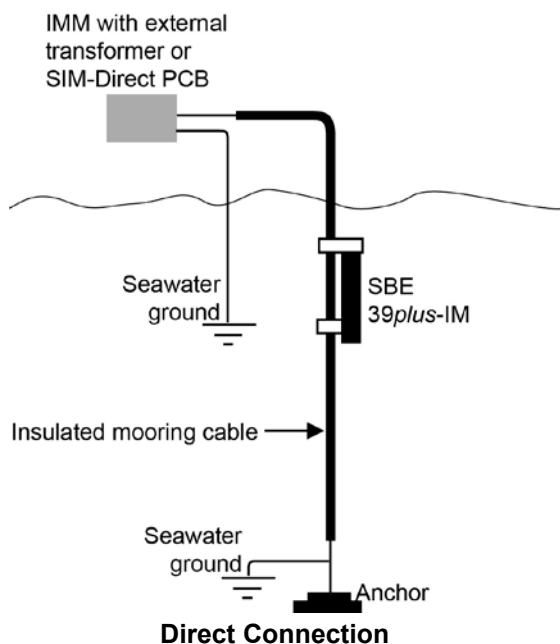
Setup via Inductive Modem (IM) Interface *

1. Double click on SeatermV2.exe. In Instruments menu, select *SBE 39plus IM*. SeatermIM opens.
2. In Communications menu, select *Configure*. In dialog box, input Comm port and baud rate. Set ID to *Automatically get ID* for 1 IM instrument on line; set ID to *Use fixed ID* for multiple IM instruments on line. Click OK.
3. SeatermIM automatically connects to 39plus-IM. As it connects, it sends **#iiGetHD** and displays response, and then fills Send Commands window with list of commands for your 39plus-IM.
4. 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.
5. Set Date and Time (**#iiDateTime=**).
6. Set up other parameters as desired — see Command Instructions and Command List.

* Alternatively, do setup by connecting to internal USB connector and selecting *SBE 39plus IM USB* in SeatermV2's Instruments menu.

Deployment

1. Attach 39plus-IM to insulated mooring cable with Sea-Bird mounting brackets. Install (optional) ICC on mooring cable.
2. See 39plus-IM manual for SIM wiring and configuration; see IMM manual for IMM wiring and configuration.



Data Upload via USB interface (see manual for upload via IM interface)

1. Open housing (see *Installation of new AA Lithium Cells* above). Connect USB cable to USB connector below battery pack; connect to computer.
2. Double click on SeatermV2.exe. SeatermV2 opens; in Instruments menu, select *SBE 39plus IM USB*. SeatermUSB – SBE 39plus opens.
3. SeatermUSB – SBE 39plus automatically connects to 39plus-IM.
4. Click Upload button to upload stored data. Make selections in Upload Data dialog box, and click Upload. SeatermUSB – SBE 39plus uploads a .xml file, and then creates a .asc file that is compatible with Plot39 for plotting the data.
5. If desired, click Convert XML Data button to convert .xml data to a .cnv data file that can be processed with SBE Data Processing.
6. Process file and review data to ensure all data has been uploaded.

Command Instructions and List (see manual for complete listing and detailed descriptions)

- **ii** in commands (!**ii** or #**ii** prefix, etc.) is the 39plus-IM ID (1 – 99).
- Input commands in upper or lower case letters and register commands by pressing Enter key.
- 39plus-IM sends an error message if invalid command is entered.
- If new command is not received within 2 minutes after completion of a command, 39plus-IM returns to quiescent (sleep) state.
- If in quiescent (sleep) state, re-establish communications by pressing Enter key or entering **PwrOn**.

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

Function	Category	Command	Description	
Remote SIM	-	-	See 39plus-IM manual for SIM commands.	
39plus-IM Integrated IMM Commands	ID and Group Number	ID?	Get ID (0-99).	
		*ID=ii	Set ID to ii (0-99). Only 1 IM can be on line when setting ID or all will have same ID.	
		!iiSetGroupNumber=x	x = 39plus-IM group number (0-9). Group 0 is group of all instruments with integrated IMM.	
	Status	!iiGetCD	Display integrated IMM configuration data.	
		!iiGetHD	Display integrated IMM hardware data.	
		!iiGetSD	Display integrated IMM status data.	
	Testing	!iiTestCableCoupler	Test cable coupler in integrated IMM.	
	Get data	!iiSetGDataStr=x	x = string sent to acquisition microcontroller when GData received by integrated IMM.	
		GData	Send command defined by !iiSetGDataStr= . Data held in buffer.	
		!iiData or Dataii or !iiGetReply	Get data in buffer, obtained with GData .	
39plus-IM Acquisition Microcontroller Commands	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.	
		#iiHelp	Display list of currently available commands.	
		#iiDS	Get and display status and configuration data.	
	#iiDC	Get and display calibration coefficients.		
	General Setup	#iiDateTime=x	x =mmddyyhhmmss (real-time clock month day year hour minute second).	
		#iiOutputExecutedTag=x	x=Y : Display XML Executing and Executed tags. <i>Default.</i> x=N : Do not.	
	Memory Setup	#iiInitLogging	Initialize logging to make entire memory available for recording.	
		#iiSampleNumber=x	x = sample number for last sample in memory. #iiSampleNumber=0 equivalent to #iiInitLogging .	
	Output Format Setup	#iiOutputFormat=x	x=0 : output raw decimal data. x=1 : output converted decimal data. <i>Default.</i> x=2 : output converted XML decimal data.	
		#iiFormat=x	x=0 or 1 : Date and time format dd mmm yyyy, hh:mm:ss if #iiOutputFormat=0 or 1 . <i>Default.</i> x=2 : Date and time format hh:mm:ss , mm-dd-yyyy if #iiOutputFormat=0 or 1 .	
		#iiOutputTemp=x	x=Y : Output temperature. <i>Default.</i> x=N : Do not.	
		#iiSetTempUnits=x	x=0 : Temperature °C, ITS-90. <i>Default.</i> x=1 : Temperature °F, ITS-90.	
		#iiOutputPress=x	x=Y : Output pressure. <i>Default.</i> x=N : Do not.	
		#iiSetPressUnits=x	x=0 : Pressure dbar. <i>Default.</i> x=1 : Pressure psi.	
		#iiTxSampleNum=x	x=Y : Output sample number with data from !iiData , Dataii , or !iiGetReply . <i>Default.</i> x=N : Do not.	
		#iiSetCoastal=x	x=0 : Set units to °C and dbar, enable temperature and pressure, disable sample number. x=1 : Set units to °C and psi, enable temperature and pressure, disable sample number.	
		#iiLegacy=x	x=0 : Allow all commands. <i>Default.</i> x=1 : Set units to °C and dbar, enable temperature and pressure, disable sample number. Do not allow user to change those settings.	
		Autonomous Sampling (Logging)	#iiSampleInterval=x	x = interval (5 - 21600 sec) between samples.
	#iiStartNow		Start logging now.	
	#iiResumeLogging or #iiStartInterval		Start logging in #iiSampleInterval sec.	
	#iiStartDateTime=x		x =mmddyyhhmmss (delayed logging start month day year hour minute second).	
	#iiStartLater		Start logging at delayed start time.	
	#iiGetAvgRestart		Get and transmit average data, (re)start logging in (#iiSampleInterval /2) sec, start next averaging cycle.	
	#iiGetAvg		Get and transmit average data and start next averaging cycle. Do not reset logging time base.	
	#iiSS		Get and transmit raw statistics – number of samples in average, and maximum, minimum, delta, and average for temperature, pressure, and pressure temperature. Continue averaging.	
	#iiGetLastRestart		Get and transmit last data, and (re)start logging in (#iiSampleInterval /2) sec.	
	#iiGetLast		Get and transmit last data. Do not reset logging time base.	
	#iiGetNew		Get (take) and transmit new sample. Data not stored in FLASH memory.	
	#iiDNx		Upload last x scans (1-250) from memory. Do not need to send #iiStop before sending #iiDNx .	
	#iiStop		Stop logging or waiting to log.	
	Polled Sampling		#iiTS	Take sample, transmit data.
			#iiTSR	Take sample, transmit raw data.
#iiTSS		Take sample, store in FLASH memory , transmit data, turn power off.		
#iiTSSon		Take sample, store in FLASH memory , transmit data.		
#iiTSN:x		Take x samples (1–1000), transmit data.		
#iiSL		Transmit data from last sample.		
	#iiSLT	Transmit data from last sample, then take new sample.		
Data Upload	#GetSamples:b,e	Upload data from scan b to e . Send #iiStop before sending.		
Testing	#iiTT	Measure temperature for 100 samples, output converted data.		
	#iiTP	Measure pressure for 100 samples, output converted data.		
	#iiTTR	Measure temperature for 100 samples, output raw data.		
	#iiTPR	Measure pressure for 100 samples, output raw data.		