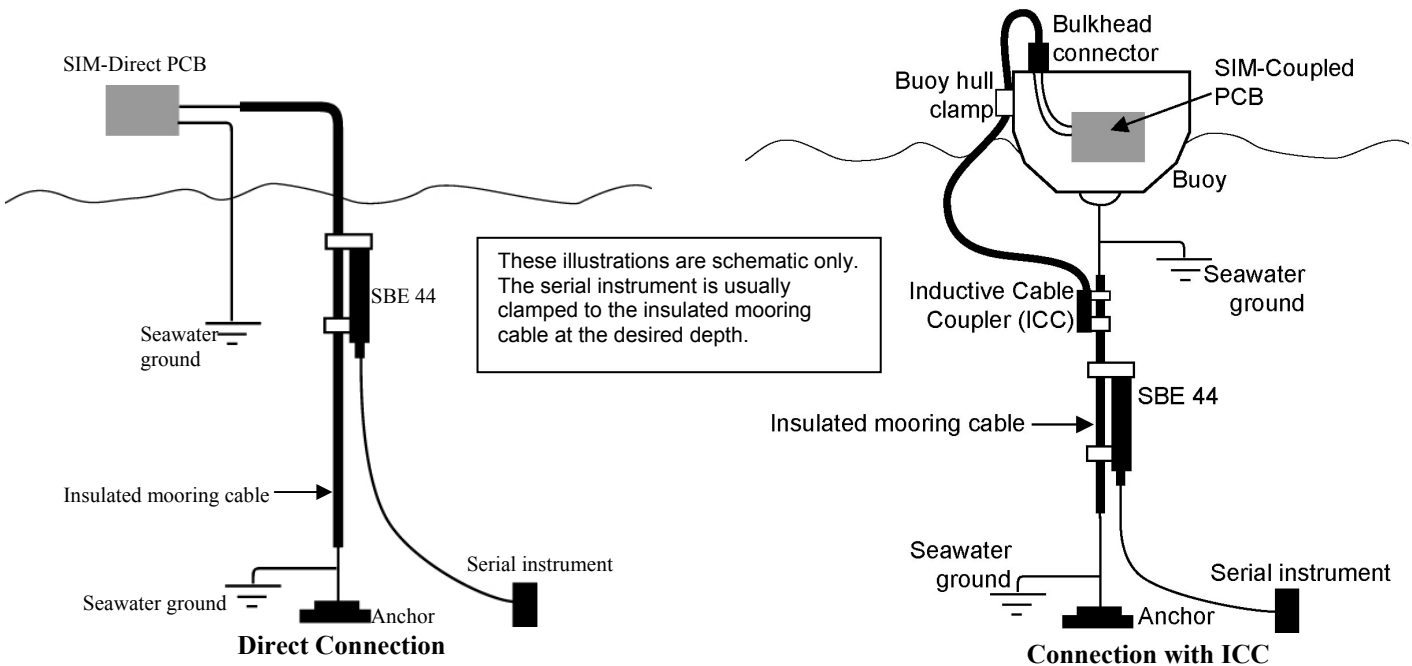


# SBE 44 Underwater Inductive Modem (UIM) Reference Sheet

(see SBE 44 User's Manual for complete details)

## Deployment

- Batteries:
  - 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 dry O-ring mating surfaces in housing with lint-free cloth.
  - Remove battery pack and install batteries:* 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 batteries 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 flat Phillips-head screws to secure.
- Attach UIM to insulated mooring cable with Sea-Bird mounting brackets. Install (optional) ICC on mooring cable.
- SIM wiring and configuration:
  - Power – Normal Setting:* Power common to JP1 pin 1, 7-25 VDC to JP1 pin 2, jumper on J3.
  - Interface – Connect I/O cable to JP2 and to computer serial port.*  
RS-232: jumper J1 pins 2 and 3, jumper J2 pins 2 and 3, no jumper on J4.  
RS-485: jumper J1 pins 1 and 2, jumper J2 pins 1 and 2, jumper J4.
  - Inductive Cable Connection – With ICC:* ICC to JP4; *Without ICC:* mooring cable and seawater ground to JP4.
  - Deployed Operation – Jumper J5; Instrument Setup and Lab Testing – No jumper on J5.*
- UIM Interface PCB (part number 10219) configuration:
  - Standard:* Sea-Bird recommends that you remove the J1 and J2 jumpers.
  - Optional Control Signal* (pin 5 on I/O connector):  
5 Volt logic: jumper J1 pins 1 and 2  
Open Collector logic: jumper J1 pins 2 and 3
  - Optional Switched Power Out* (pin 4 on I/O connector):  
Power from UIM battery pack: jumper J2 pins 1 and 2  
Power from external voltage (pin 6 on I/O connector): jumper J2 pins 2 and 3



## Communication Setup Parameters

Double click on SeaTerm.exe. Once main screen appears, in Configure menu select SBE 44. Input:

Comm Port: COM1 through COM10 are available

Baud Rate: 1200, 2400, 4800, or 9600

Data Bits: 8

Parity: None

Mode: Inductive Modem

Modem/RS-485 ID: *Pre-deployment testing:* Automatically get ID; *Deployment with multiple UIMs:* Prompt ID

## Command Instructions and List

- Commands that include **ii** are directed to a particular UIM; **ii** = UIM ID (0 – 99).
- If new command is not received within **!iiTimeOut** after completion of a command, UIM returns to quiescent (sleep) state.
- If in quiescent (sleep) state, re-establish communications by clicking Connect on Toolbar or sending **PwrOn** to get S> prompt.
- If system does not return S> prompt after executing a command, press Enter key to get S> prompt.
- UIM sends ?CMD 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.

Function	Category	Command	Description
SIM Command	-	<b>PwrOn</b>	Send wakeup tone to IMs.
		<b>PwrOff</b>	Send power off command to IMs, turn off transmitter. IMs enter quiescent (sleep) state. Data in UIM buffer erased.
		<b>DS</b>	Display SIM firmware version and status.
		<b>Baud=x</b>	x= baud from SIM to computer (1200, 2400, 4800, or 9600). Default 9600.
		<b>DataNNMax=x</b>	x= timeout for <b>Dataii</b> (0 -32767 msec). If no reply received within x msec, control returned to computer and other commands can be sent. Default 1000 msec.
		<b>RelayMax=x</b>	x= timeout for all other commands. If no reply received within x sec, control returned to computer and other commands can be sent. Default 20 sec.
		<b>BinaryGap=x</b>	x= termination timeout (0-65535 msec) for binary response commands ( <b>BiiCmdString</b> ). Gap of x since last byte received acts as termination character. Bytes sent after gap ignored; control returned to computer, other commands can be sent. Default 1000 msec. Set <b>BinaryGap</b> < <b>!iiRTermMax</b> .
		<b>EchoOn</b>	Echo characters received from computer (default).
		<b>EchoOff</b>	Do not echo characters received from computer.
		<b>AutoPwrOn=x</b>	x=Y (default): Send <b>PwrOn</b> to IMs when power applied to SIM; wakes all IMs. x=N: Do not send <b>PwrOn</b> to IMs when power applied to SIM.
ID Command	UIM ID Only 1 UIM can be on line.	<b>ID?</b>	Display UIM ID.
		<b>*ID=ii</b>	Set UIM ID to ii. Computer responds by requesting verification.
UIM and Sensor Command	UIM Status	<b>!iiDS</b>	Display firmware version and system setup.
		<b>!ii*EETest</b>	Test UIM EEPROM as a troubleshooting tool; resets all parameters to default values.
	UIM General Setup	<b>!iiBaud=x</b>	x= baud between UIM and sensor (300, 600, 1200, 2400, 4800, 9600, or 19200). Default 9600.
		<b>!iiRelayTermChar=x</b>	x= decimal value of command termination character for Send Command String and Get Data. Default is carriage return and line feed (x=CRLF). If x=NONE, UIM appends nothing.
		<b>!iiTermChar=x</b>	x= decimal value of sensor reply termination character. If x=NONE, termination character checking disabled. Default 62 ('>').
		<b>!iiTimeOut=x</b>	x= UIM timeout (30 – 1800 sec). If no commands/replies received for x, UIM enters quiescent (sleep) state. Data in UIM buffer erased. Default 120 sec.
	Relay Commands: Relay Setup	<b>!iiRStartWait=x</b>	x= command transmission delay (after setting control line or switched power) (0 – 32767 msec). Default 0 msec.
		<b>!iiRTermMax=x</b>	x= termination timeout for sensor reply (0 – 32767 msec). Gap of x after 2 characters received acts as termination character. Default 1000 msec.
		<b>!iiRTotalMax=x</b>	x= total time allowed for sensor reply (0 – 600 sec). Default 15 sec.
	Relay Commands: Send Command String	<b>#iiCmdString</b>	Command UIM to send character string to sensor. Character string can be any command recognized by sensor. Response sent through UIM to SIM and computer/controller.
		<b>BiiCmdString</b>	Command UIM to send character string to sensor. Character string can be any command recognized by sensor that requests <i>binary</i> response. Response sent through UIM to SIM and computer/controller.
	Relay Commands: Send Character	<b>!iiSendCharW=x</b>	Command UIM to send character defined by decimal x to sensor. Can be any command recognized by sensor. Response sent through UIM to SIM and computer/controller.
		<b>!iiSendChar=x</b>	Command UIM to send character defined by decimal x to sensor. Can be any command recognized by sensor. <b>UIM does not accept any response from sensor.</b>
	Relay Commands: Send Break	<b>!iiBreakLen=x</b>	x= break character length (0 – 32750 msec). Default 1000 msec.
		<b>!iiSendBreak</b>	Command UIM to send break character to sensor. Response sent through UIM to SIM and computer/controller.
	Get Data Commands: Get Data Setup Set up controls for GData or !iiGData. Reply held in UIM buffer.	<b>!iiGStartWait=x</b>	x= command transmission delay (after setting control line or switched power) (0–32767 msec). Default 0.
		<b>!iiGTermMax=x</b>	x= termination timeout for sensor reply (0 – 32767 msec). Gap of x after 2 characters received acts as termination character. Default 1000 msec.
		<b>!iiGTotalMax=x</b>	x= total time allowed for sensor reply (0 – 600 sec). Default 30 sec.
		<b>!iiIncGDataDelay=x</b>	x=Y: In <b>Dataii</b> reply, include number of 0.1 sec ticks received while waiting for <b>GData</b> or <b>!iiGData</b> reply. x=N: Do not include number of ticks.
		<b>!iiGDataStr=S</b>	S= character string sent to sensor in response to <b>GData</b> or <b>!iiGData</b> . Can be any command recognized by sensor.
	Get Data Commands: Get Data	<b>GData</b>	Command all UIMs to get data from sensors. Each UIM holds data in buffer until receiving <b>Dataii</b> .
		<b>!iiGData</b>	Command UIM ii to get data from sensor. UIM holds data in buffer until receiving <b>Dataii</b> .
		<b>Dataii</b>	Get data obtained with <b>GData</b> or <b>!iiGData</b> from buffer of UIM ii. Data sent to SIM and computer/controller.