

SBE 38 Digital Oceanographic Thermometer Reference Sheet

(see SBE 38 User's Manual for complete details)

Interface

- **RS-232 (standard)** – one SBE 38 connected to the interface.
- **RS-485 (optional)** – one or more SBE 38s sharing one pair of wires.

Sampling Modes

- **Polled sampling** – SBE 38 takes one sample and transmits data.
- **Continuous sampling** – SBE 38 continuously samples and transmits data. As programmed, SBE 38 begins sampling on power-up or waits for a command to begin sampling. Note that for RS-485 applications with several sensors sharing one pair of wires, the SBE 38 cannot sample continuously.

For both polled and continuous sampling, the SBE 38 averages **NAVG** A/D cycles per sample. It outputs converted (°C) or raw (counts) data, depending on **FORMAT**=. For converted data, number of digits after the decimal place is defined by **DIGITS**=.

Communication Setup Parameters

1. Double click on seaterm.exe.
2. Once main screen appears, in Configure menu select SBE 38. Input in dialog box:
 - Serial Port: COM1 through COM10 are available
 - Baud Rate: 9600 (or other if applicable)
 - Data Bits: 8
 - Parity: No Parity
 - Mode: RS-232 (Full Duplex) or RS-485 (Half Duplex)

Deployment

1. Install I/O cable and locking sleeve.
2. Program SBE 38 for intended deployment (see other side of this sheet for *Command Instructions and List*):
 - A. Establish setup parameters.
 - B. Use **one** of following sequences to start sampling:
 - If **AUTORUN=N**: **GO** to start sampling continuously now, or **TS** or **TH** to take a single sample.
 - If **AUTORUN=Y**: Apply power to start sampling continuously now.
3. Mount SBE 38.

Command Instructions and List

- Input commands to SBE 38 in upper or lower case letters and register commands by pressing the Enter key.
 - SBE 38 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.
- Shown below are the commands. See the Manual for detailed descriptions and examples.

RS-232 Commands

CATEGORY	COMMAND	DESCRIPTION
Status	DS	Display status.
Setup	INTERFACE=x	x=232: RS-232 interface. x=485: RS-485 interface.
	BAUD=x	x= baud rate (1200, 2400, 4800, 9600). Default 9600.
	FORMAT=x	x=C: Output converted data (°C). x=R: Output raw data (counts).
	DIGITS=x	x= digits (0 – 6) to right of decimal point for converted temperature (°C).
	NAVG=x	x= A/D cycles to average per sample (1 – 127).
	AUTORUN=x	x=N: Wait for a command when power applied. x=Y: Start continuous sampling automatically when power applied.
Sampling	GO	Start continuous sampling now.
	STOP	Stop continuous sampling. Press Enter key to get S> prompt before entering command.
	TS	Take 1 sample and transmit data.
	TH	Take 1 sample and hold data in buffer.
	SH	Transmit data that was held in buffer.
	SL	Transmit data from last sample from buffer.
	SLT	Transmit data from last sample from buffer, and then take 1 new sample and hold data in buffer.
Coefficients	DC	Display calibration coefficients.
	CALDATE=S	S=Temperature calibration date.
	A0=F	F=Temperature A0.
	A1=F	F=Temperature A1.
	A2=F	F=Temperature A2.
	A3=F	F=Temperature A3.
	SLOPE=F	F=Temperature slope (default = 1.0).
	OFFSET=F	F=Temperature offset (°C) (default = 0.0).

RS-485 Commands

- See RS-232 Commands above for status, setup, sampling, and coefficients commands.
- If IDREQ=Y, precede all status, setup, sampling, and coefficients commands with #ii (ii = 0 – 99) to direct command to particular SBE 38.
If IDREQ=N, do not precede these commands with #ii (applies only for a system with 1 SBE 38).
- For reliable operation, all commands *may* need to be preceded with two @ characters to clear buffers.
- RS-485 interface cannot accommodate multiple instruments transmitting real-time data at same time. Therefore, do not set AUTORUN=Y (start sampling continuously when power is applied) for system with more than 1 RS-485 instrument on pair of wires. Similarly, do not attempt to send GO command to multiple SBE 38s on pair of wires, as system cannot transmit command to 1 instrument while another instrument is transmitting real-time data.
- If AUTORUN=Y (sample continuously when power is applied), set NAVG= (A/D cycles to average per sample) > 30.

CATEGORY	COMMAND	DESCRIPTION
Global	IDREQ=x	x=Y: Precede commands to individual SBE 38s with #ii, where ii= ID (ii = 0 -99). x=N: Do not precede commands to individual SBE 38s with #ii.
	TXDELAY=x	x= delay after SBE 38 transmits a reply until SBE 38 transmitter is disabled (1 – 500 milliseconds). Default 25 milliseconds.
	RXDELAY=x	x= delay after SBE 38 receives a command until SBE 38 transmitter is enabled (1 – 500 milliseconds). Default 25 milliseconds.
	GDATA or ADATA	Command all SBE 38s to take 1 sample and hold data in SBE 38 buffer until receiving: DATAii; SH, SL, or SLT (if IDREQ=N); or #iiSH, #iiSL, or #iiSLT (if IDREQ=Y).
Get Data	DATAii	Get data obtained with GDATA or ADATA from SBE 38 with ID = ii (ii = 0 -99).
ID (only 1 SBE 38 can be online when sending these commands)	ID?	Display SBE 38 ID (ID = ii, where ii= 0-99) and whether ID is required as a prefix for commands (see IDREQ=).
	*ID=ii	Set SBE 38 ID to ii, where ii= 0-99. This command must be sent twice, because the computer requests verification. If more than one RS-485 instrument is online when sending this command, all instruments online will be set to same ID.