



09:39	ID:221	Monitor
pH	EC	WT
8.01	1.41	26.1
-60 mV	µs/cm	C

**BSB-I**  
pH/EC/Temp Sensor Board

OK



DC 24V

RS485

EC

pH

# ***BSB-I***

pH/EC/Temp Sensor Board

## Manual

[www.pro-leaf.com](http://www.pro-leaf.com)

09 : 39			ID:221			Monitor		
pH			EC			WT		
8.01			1.41			26.1		
-60 mV			ms/cm			°C		

Main Interface

**09:39:** Display the time (hour:minute), and the semicolon flashes once every second.

**ID:221:** The current RS485 address is displayed when a host reads information from it, and is not displayed when it is offline.

**Monitor/Control:** In monitor mode, only measure data. In the control mode, it will control the output dry contact to control fertilizer distribution, which is a reserved function.

**pH:** The current pH value is displayed here, 0-14, 3 significant digits, accuracy  $\pm 0.1$ , the voltage value measured by the sensor is displayed below (the actual voltage value, the corresponding relationship between the voltage value and the DH value is modified during the calibration process, if it is different. If the probe measures the same DH solution, the measured voltage value may be different, and the DH can be calibrated to be the same after calibration).

**EC:** Here displays the current conductivity value, 3 significant digits, the unit is mS/Cm, the range is 0~5.5%, when the EC sensor is not connected, it displays "---".

**WT:** The water temperature is displayed here, with 3 significant figures, and the display range is -20 to 80. The accuracy is  $\pm 1$  degree Celsius within the range of 0 to 40 degrees Celsius. The unit can be modified to Celsius or Fahrenheit. When the EC sensor is not connected, WT will display "" ---".

On the main interface, press and hold the OK button to enter the setting interface, including EC setting, EC calibration, pH calibration and system setting. After entering this interface, press the up and down buttons to switch the cursor at the following highlighted (black) position .

EC Setting			Next		
Temp( <b>C</b> )	At 25	At 27.1			
EC	0.00	0.00			
EC const K:	1.031				
Temp(°C)	>=15	< 15			
TEMPCO	0.0191	0.0183			

EC Setting Interface

**Next:** Page switching. When the cursor is at this position, press the OK button to cycle through these setting interfaces.

**Temp(°C):** In this position, press the OK button, °C will flash in reverse, press the up and down buttons during the flashing process to switch between °C and F, press the OK button to save after selection.

**EC:** Converted to the EC value at the current temperature.

**EC const K:** EC sensor coefficient, with calibration function. When the sensor is put into a solution with a known EC value, the displayed EC value (At 25C) is consistent with the known EC value by modifying the coefficient K, and the calibration is completed. Refer to Note 1 for the modification method.

**EC TEMPCO:** Temperature compensation coefficient, divided into compensations higher than or equal to 15 degrees Celsius and lower than 15 degrees Celsius. Refer to Note 1 for the modification method.

Press Next on the EC setting interface to switch to the EC calibration interface.

EC Calibration		Next
Temp(°C)	At 25	At 27.1
EC	0.00	0.00
EC: K=1.459; Z=0.00		
EC=0	>>Calibrate	
EC=1.413	>>Calibrate	

### EC Calibration Interface

Press Next on the EC calibration interface to switch to the pH calibration interface.

PH Calibration		Next
PH = 7.39	(-23mV)	
PH SEN(mV/PH):	59.1	
Voltage mV@PH7:	000.3	
PH=7	>>Calibrate	
PH=4	>>Calibrate	

### pH Calibration Interface

Press Next on the pH calibration interface to switch to the system setting interface.

System Setting		Next
23-06-07	10: 06: 24	
MODBUS ID:	001	Beleaf
Monitor	FAC-ReSET	
Name:	PHEC meter	
UUID:	1f718b27	

### System Setting Interface

#### EC:

K: Performing calibration will change the cell constant K;  
Z: Zero offset value.

**EC=0:** zero point calibration, refer to Note 2.

**EC=1.413:** The EC value of the calibration solution, the default is 1.413.

**Note:** When calibrating, wait for the EC value to stabilize before starting.

**PH SEN (mV/pH):** The sensitivity of pH, the glass bead pH sensor generally changes 1 in pH, corresponding to a voltage change of 59mV.

**Voltage mV@PH7:** Voltage value at PH=7.

**PH=7 Calibrate:** To calibrate PH=7, change the value of Voltage mV@PH=7.

**PH=4 Calibrate:** Calibrate PH=4, change PH SEN (mV/PH).

**Note:** Modifying the sensitivity, the voltage value of pH=7 is equivalent to the calibration operation, just perform one operation; when calibrating, first calibrate pH=7, when calibrating, you need to put the sensor into the calibration solution, and wait for the pH to stabilize (within 10 seconds The change is less than 0.02pH, and the pH stabilization time is at least 30 seconds).

**23-06-07:** Date, refer to Note 1 for the modification method.

**10:06:24:** Time, refer to Note 1 for the modification method.

**001:** MODBUS communication address, refer to note 1 for modification method;

**Beleaf:** communication protocol format, Beleaf indicates the communication format used under the Beleaf system, which is the default, and can be changed to B2 to indicates compatibility protocol for PHEC-B2.Refer to note 2 for modification method.

**Monitor:** Monitor/control mode switching, in the control mode, the pH and EC values are associated with the dry contact output action (reserved function). Refer to note 2 for modification method.

**FAC-ReSET:** Restore the factory default settings, and restore the calibration values of pH and EC to the default settings. Refer to note 2 for modification method.

**Note 1:** Value modification method: When the cursor is at the value position, press the OK button to enter the number modification, press the up and down buttons to change the value when the number is flashing, press the OK button to switch the changed digit, long press the OK button during the value flashing process to exit modify and save the current modification, and press the OK button when the last digit is modified to exit the modification and save the current modification.

**Note 2:** Calibration operation: NO will appear when you click Calibrate, press the up and down buttons to switch to the YES option, press the OK button under YES to enter the calibration process. Press the OK button under NO or press the OK button for a long time to exit.

Name	pH/EC/Temp Sensor Board
Model	BSB-I
Size	145.3*83*34.4 mm
Protection Level	IP20
Operating Temperature	0 ~ 50°C
Operating Voltage	DC12~24V
Operating Current	≤40mA @24V
EC Measuring Range	0~5ms/cm
EC Accuracy	±5%RD
pH Measuring Range	0~14
pH Accuracy	±0.1
Water Temperature Range	0~50°C
Water Temperature Accuracy	±1°C
Communication Port	RJ12, 6P6C, with DC24V power supply
Communication Parameters	RS485 slave, baud rate of 9600, no parity, 8 data bits and 1 stop bit
Screen	1.7 inch black and white LCD, resolution 128'64, with white backlight
Accessories	pH Sensor*1, EC Sensor*1, 12V/0.5A Power Adapter*1, Expansion Screw Set*2, Hanging Plate*2, Self-tapping screw*2, Splitter*1, RJ12connection cable 1m*1, RJ12 connection cable 5m*1
Note	A maximum of 16 BSB-I Sensors can be connected in the Beleaf system, and sensors can be specified in the nutrient pool.