![SonTek xylem logo]

Getting started with the SonTek-RS5

This quick reference guide will help you get started with the SonTek-RS5 system. For detailed instructions, refer to the User Manual on the included USB drive or through the Manual button in the RSQ software. We highly recommend reviewing it. The PDF is searchable, and the table of contents offers clickable links for easy navigation.

What's in the Case?

RS5 Standard System

Bottom

Top

RS5 Max GNSS System

DGNSS (Top)

RTK (Bottom)

RS5 Standard System		
A	RS5	
B	Li-Ion rechargeable batteries	
C	Li-Ion Battery Charger to USB	
D	Charger adapter for wall outlet	
E	Radio antenna extension cable	
F	SonTek BLE5 Bluetooth dongle(1), USB extension cable(2), stainless steel clip(3) and radio antennas (4)	
G	USB flash drive, software and manual	
Max DGNSS Components (Add-on)		
H	DGNSS smart antenna with separate charger	
I	RS5 to DGNSS antenna cable (DB9)	
Max RTK Components (Add-on)		
J, K	RTK rover and base (with battery compartment) antennas	
L, M	Puck and pole attachment for base station	
N	RTK rover to RS5 cable	
O	RTK rover bolt attachment for HB Micro boat	
P	HB Micro GNSS Stand Extension bracket for radio antenna	
Q	Tripod and GNSS base tripod (optional)	

Windows Software Installation

Install the RSQ software from the included USB drive or download and install from https://www.ysi.com/customer-support/software-firmware-downloads.

Hardware Set-up
- Charge both included Lithium-Ion batteries (B) by connecting the battery charger (C) to the AC/DC power supply (D) via the USB connector.
- Install a charged battery into the RS5 (A) with the positive terminal facing down into the compartment. LED light will start flashing white quickly then red to indicate system is powered on and in Stand-by mode ready for connection.
- Connect supplied antenna cable (E) to radio antenna (F4), and antenna cable to RS5 connector labeled with a Bluetooth icon.
- Mount radio antenna on antenna mast.
- If equipped with GNSS, mount GNSS antenna (H or J)on antenna mast and then connect to RS5 using supplied RS5-GNSS cable (I or N)

Software Set-up and Connection
- Open RSQ software
- First time only –specify data directory to save measurements. Click on **Tools** icon and then choose **Settings**.

- Click on the [folder] icon to the right of the blank field **Data storage location** and choose where you want to save measurement files.
- Click on the **Connect** button

- Next choose a connection type. **SonTek BLE Dongle** when using the supplied USB radio, OR **Internal PC BLE**, if connecting with a computer's built in Bluetooth radio (no dongle required).

### SonTek BLE Dongle (provided USB radio)

- Connect USB radio to USB right angle extension cable (F2), connect cable to a USB port on PC, attach USB radio to stainless steel clip (F3) using the included 3M dual lock adhesive patches. Clip USB radio to the top of PC screen with the antenna (F4) in a vertical orientation (see figure below); the light will start blinking green indicating the radio is powered and change to blinking blue once successfully connected to an RS5.

⚠️

If using Geode DGNSS antenna, be sure to charge the antenna separately and power it on by pressing the button. One short press. A long press of the power button will reset the Geode to factory defaults, and it will need to be reconfigured using the Geode Connect App.

If using SonTek RTK, insert a separate RS5 battery into the base station (if used) and power it on by pressing the button. The rover is powered directly through the RS5 and does not require extra power.

- Select **SonTek BLE Dongle** from the drop-down menu.
- Enter your RS5 serial number in the format RS5#######. Or **Scan for devices**.
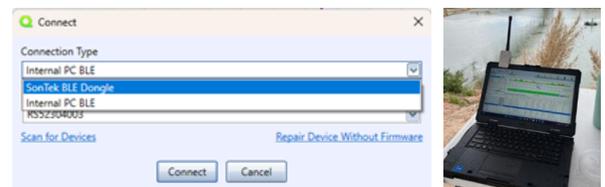
- Click **Connect**.

SonTek BLE Dongle radio connection status icons:

Icon	Status	Icon	Status
	Excellent (>-70 dBm)		Attempting to reconnect
	Good (-70 to -85 dBm)		Disconnected
	Poor (<85 dBm)		

Internal PC BLE
Minimum system requirements: Windows 10 or later.

⚠ **NOTE:** This option is not meant to replace the USB dongle, but provides an additional method to connect depending on needs. Range and reliability will be highly dependent on a PC's Bluetooth adapter and capabilities. For the longest range and most reliable connection, use the included USB radio dongle.

• Select **Internal PC BLE** from the drop-down menu then Scan for Devices. It may take several seconds to find an RS5 for the first time. If you use a new computer or new RS5 you must first **Scan for Devices**.
• Click **connect**.
• **While using Internal PC BLE, signal strength is not currently available**.

Internal PC BLE connection status icon:

You are now connected.

• Next, click **Moving Boat** or **Stationary:**

• Step through the Smart Page section by section to complete the configuration of your system and site information. Once complete you can save as a template so that you don't have to re-enter configuration and site data each time you visit the site.

The system is now ready to be put in the water and make a measurement!

📶 **Important Considerations**

Setup the entire system: RS5, boat, cables, etc. exactly how you will use them during the measurement before performing the compass calibration. If you make changes to the system setup after the compass calibration, i.e., move the RS5 ADCP up or down in the clamp (a transducer depth change), you MUST recalibrate the compass.

For the longest range, most reliable radio connection, use the included USB radio, with the USB extension cable and clip the radio and antenna onto the top of your PC screen. **Always with the antenna in a vertical orientation to maximize range and reliability** (see photo example on page 2).

Another option is to use Internal PC BLE. If you have issues connecting using Internal PC BLE, navigate to Bluetooth settings on your PC and forget all previously connected Bluetooth devices, toggle off/on Bluetooth and try **Scan for Devices** again.

If using GNSS or the loop moving bed test method, **you MUST calibrate the system's compass AND enter the magnetic declination**. It is good practice to always calibrate the compass. The magnetic declination for your site can be found here:

https://www.ngdc.noaa.gov/geomag/calculators/magcalc.shtml

If accessed from a phone or if you allow your browser to access your location (at the site) it will automatically find your magnetic declination. Otherwise, enter your latitude and longitude or a street address to find your latitude and longitude and then magnetic declination.

Transducer depth must be accurately measured and entered. If incorrect, your discharge measurement will be biased either high or low, because the cross-sectional area will be calculated incorrectly.

Transducer depth is defined as the distance that the vertical beam (center) transducer is submerged below the water surface.
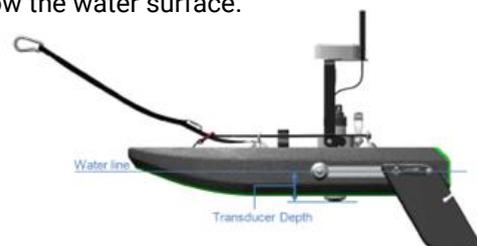
Transducer depth = boat draft + RS5 extending below boat

SonTek Technical Support

Have a field emergency? We're here to help! SonTek Technical Support is available 24 hours a day, 7 days a week!

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Xylem |ˈzīləm|

1) the tissue in plants that brings water and nutrients upward from the roots.
2) a leading global water solutions company.

Xylem is a leading global water solutions company dedicated to advancing sustainable impact and empowering the people who make water work every day. Xylem connects diverse capabilities and innovative technologies to provide tailored solutions across the entire water cycle. From moving, treating and measuring water to optimizing and maintaining water systems, Xylem collaborates with customers to solve their most critical challenges. Together, through partnerships with utilities, industrial manufacturers, building operators, and communities, we are building a more water-secure world.

For more information on how Xylem can help you, visit xylem.com.

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