



a xylem brand

ADCP Advanced Settings Guide

Quick-Start Help to Configure Advanced Settings in the Field and Post Processing for the SonTek-M9 and RS5 Systems



SonTek-M9

This section should be used to understand RiverSurveyor Live (RSL)/ RiverSurveyor Stationary Live (RSSL) setting options based on various challenging conditions many users encounter in the field.

Bad Bottom Track

- 1. Use GPS as a track reference (with a valid compass calibration):
[RSL > Smart Page > System Settings > Track Reference](#)
- 2. Use composite tracks (GPS track used to fill in for bad bottom track samples):
[RSL > Smart Page > Composite Tracks](#)
- 3. Understand bottom conditions – move to a new site.
- 4. Use Stationary method (RSSL).



Stationary method can be used with GPS/GNSS if a tagline is not available!

- 5. Post-processing: Disable samples with bad BT by adding 'Use' column to Samples tab:
[RSL > Samples > Right-click > Debug > Use](#)

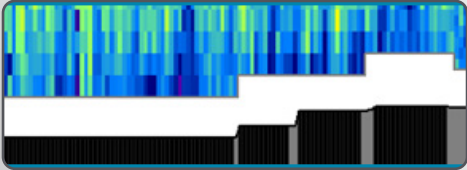
Bad Vertical Beam and/or Bottom Track Depth

- 1. Check that water depth is in range: BT depth goes to 40m; VB depth goes to 80m.



Check that when missing VB depth, BT depth exists (or vice versa) – missing depth values using one reference will be filled by other reference.

- 2. Measurement holds last good depth until new one is measured – decide in the field whether this is a good approximation of the bottom:



- 3. If bottom can be approximated or known from previous measurements, use Stationary with user-input depth. (Note: Velocity will be measured to last good depth):
[RSSL > Station Dialog > User Input Water Depth](#)

User Input Water Depth (m)

0.00

- 4. If bottom can be approximated or known from previous measurements, perform the following:

- a. Use moving boat method (RSL)
- b. Use manual mode (fixed cells). To enable this:
[RSL > System tab > Manual Configuration](#)

Utilities

• BeamCheck

• Update firmware

• SonTek GPS Option

• Loop Method

• SMBA Method

• Manual Configuration

- c. Disable cell screening:
[RSL > Processing Toolbox > Thresholds > Cell Screening](#)

Processing Toolbox

Thresholds

Minimum Beam SNR (dB)

1.0

Cell Screening

☒

Composite Tracks

☐

- d. Export ASCII to get cell velocities.
- e. Use velocities and known depths to manually calculate Q.

Bad Velocity Profiles (Turbulence, Flooding, High Sediment)

- 1. Lower instrument in board as much as possible (eliminates air entrainment and keeps M9 in water).
- 2. Wipe transducers, apply Simple Green or dish soap.
- 3. Add weight to board and/or tether rope to keep system on water.
- 4. Choose lowest frequency by forcing M9 to 1MHz:
[RSL > System tab > Manual Configuration](#)

Manual Configuration

Profiling Mode

IC

Frequency (kHz)

1000

Cell Size (m)

0.25

Cell Count

100

Blanking Distance (m)

0.10

- 5. Choose largest cells possible – least number of cells to cover the full range:

Table 3. Manual Configuration of IC Profiling Mode			
Frequency	Velocity Profiling Range	Blanking Distance	Cell Size Range
1MHz	0.5 – 40m	0.05m	0.2 – 4m
3MHz	0.2 – 5m	0.05m	0.05 – 0.4m

- 6. Use Stationary with longer averaging time – this may allow M9 to get valid depth and velocity profile.



SonTek-RS5

This section should be used as a reference to understand RS5/ RSQ Moving Boat and Stationary settings options based on various challenging conditions many users encounter in the field.

Bad Bottom Track

- 1. Use GPS as a track reference (with a valid compass calibration):
[RSL > Smart Page > System Settings > Track Reference](#)
- 2. Use composite tracks (GPS track used to fill in for bad bottom track samples):
[RSL > Smart Page > Composite Tracks](#)
- 3. Understand bottom conditions – move to a new site.
- 4. Use Stationary method:
[RSQ > New Data Collection > Stationary](#)



Stationary method can be used with GPS/GNSS if a tagline is not available!

- 5. Post-processing – 'Use' tab to disable samples with bad BT:
[RSQ > Samples > Right-click > Select Parameters > General > Use BT](#)

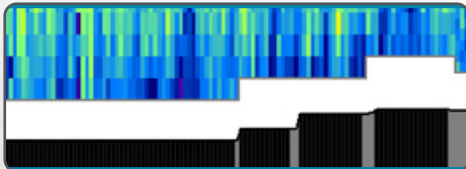
Bad Vertical Beam and/or Bottom Track Depth

- 1. Check that water depth is in range: BT depth goes to 6m.



Check that when missing VB depth, BT depth exists (or vice versa) – missing depth values using one reference will be filled by other reference.

- 2. Measurement holds last good depth until new one is measured – decide in the field whether this is a good approximation of the bottom:



- 3. If bottom can be approximated or known from previous measurements, use Stationary with user-input depth. (Note: Velocity will be measured to last good depth):
[RSQ > Stationary Measurement > Station Dialog > User Input Water Depth](#)

User Input Water Depth (m)

0.00

- 4. If bottom can be approximated or known from previous measurements:

- a. Use moving boat method (RSQ).
- b. Use manual mode (fixed cells). To enable this:
[RSQ > Tools > Settings > General > Show diagnostic parameters ENABLED](#)

- c. To modify manual mode:
[RSQ > Smart Page > Advanced Data Collection > Enable Manual Mode](#)

Advanced Data Collection

Manual Mode

Enabled

Profile Method

PC

Cell Size

0.025 m

Profile Start (m)

0.135

Cell Count

10

- d. Choose PC for shallow sites with slow flow. Choose BB for everything else.
- e. Choose cell size and cell count (do not leave on 'Auto')

Table 6. Manual Mode Settings			
Profile Method	Cell Size	Profile Start	Cell Count
PC	Auto	-	Auto
	0.012 m	0.042 m	1-127
	0.025 m	0.049 m	
	0.05 m	0.059 m	
	0.1 m	0.154 m	
BB	Auto	0.099 m	Auto
	0.05 m	0.107 m	1-127
	0.075 m	0.139 m	
	0.1 m	0.159 m	
	0.2 m	0.244 m	
	0.3 m	0.296 m	

- f. Disable cell screening:
[RSL > Processing Toolbox > Calculation Thresholds \[Ctrl+5\] > Cell Screening](#)

Calculation Thresholds

Minimum Beam SNR (dB)

1

☒ Enable Cell Screening

- g. Export ASCII to get cell velocities.
- h. Use velocities and known depths to manually calculate Q.

Bad Velocity Profiles (Turbulence, Flooding, High Sediment)

- 1. Lower instrument in board as much as possible (eliminates air entrainment and keeps RS5 in water).
- 2. Wipe transducers, apply Simple Green or dish soap.
- 3. Add weight to board and/or tether rope to keep system on water.
- 4. Choose manual mode with largest cell sizes possible and BB pinging (see previous section on how to configure Manual Mode).
- 5. Use Stationary with longer averaging time – this may allow RS5 to get valid depth and velocity profile.