



Sound Principles.
Good Advice.

9940 Summers Ridge Road • San Diego, CA 92121-3091 • Phone: +1.858.548.8327 • Fax: +1.858.546.8150 • Email: Inquiry@sontek.com • sontek.com

From Extreme Floods to Devastating Droughts: RS5 Data From Around the World Webinar Participant Q&A's – May 2022

Q1: Can I use RSQ with my M9?

A1: RSQ cannot be used to collect data with the M9 or S5. However, data files (.riv/.rivr) collected using the M9 or S5 can be post-processed in RSQ and multiple transects/files saved into one RSQ measurement session file. To open an M9/S5 data file in RSQ, hit <Shift>+"Open File" button.

Q2: Can you use the RS5 software to open and view RiverSurveyor-M9 data files? If yes, how do you do it?

A2: To open an M9/S5 data file in RSQ, hit <Shift>+"Open File" button.

Q3: Will the M9 be able to use the RSQ software for data collection in the future?

A3: No, there are some barriers to this and integration is not planned. All new ADCPs for discharge applications will use RSQ.

Q4: Have y'all ever used sub-bottom profilers? Would this technology be applicable for fine sediment accumulation with regards to estimating dredging volumes?

A4: Sub-bottom profiles ping at specific frequencies meant to penetrate to a certain depth below the channel bottom. These frequencies are usually low (< 100kHz) and are much lower than the frequencies used in the current SonTek acoustic systems. Our sister brand HYPACK makes specific software for dredging and surveying and has drivers for sub-bottom profilers. Visit <https://www.hypack.com/applications/dredging> for more information.

Q5: Do you make bathymetric maps with this cross-sectional data or is the main goal "flow based"?

A5: Bathymetric maps are commonly produced using ADCPs with the added benefit that the user also gets a velocity map with the same measurement. The HydroSurveyor M9 system interfaces directly with HYPACK (www.hypack.com), a software package meant specifically for bathymetric mapping. While the HydroSurveyor M9 ADCP itself is the same system as the RiverSurveyor M9, the firmware differs slightly in that in HydroSurveyor mode, the instrument allots more pings per sample for the depth measurement. Both modes will still allow you to obtain bathymetry and velocity simultaneously.

Q6: What are the statistical coefficient eg NSCE RMSE etc of RSQ model?

A6: Statistical coefficient with respect to what? Please contact inquiry@sontek.com with more details and we will do our best to answer your question.

Q7: Can the instrument work in icy conditions?

A7: Yes, the RS5 and M9 systems can be used for under-ice measurements in Stationary (mid-section/mean-section mode). For the RS5 an extension cable for the Bluetooth antenna will be required to make sure the antenna stays out of the water and within a clear line of sight to the PC.

Q8: Did you use NRTK correction, and what the difference between this and RTK and PPK?

A8: RSQ is capable of bringing in network/NTRIP RTK corrections directly using the SonTek RTK rover. In this setup, the user requires a rover antenna only, along with a internet connection (cell hot spot, internet, etc.) to be able to access a provider. NRTK is usually a subscription service (free or paid) where the user has access to an already-established base station nearby. If an NRTK network is not nearby or connectivity is unavailable where the measurement occurs, a physical base station (RTK rover and base) is required – this is the full SonTek RTK solution. PPK refers to post-processing of the RTK signal and requires specific output formats to use a PPK correction service – this output format is currently unavailable using the SonTek RTK solution. However, if users opt to use their own RTK antenna, this may be available depending on the



Sound Principles.
Good Advice.

9940 Summers Ridge Road • San Diego, CA 92121-3091 • Phone: +1.858.548.8327 • Fax: +1.858.546.8150 • Email: Inquiry@sontek.com • sontek.com

antenna manufacturer – please inquire with the specific antenna manufacturer you use for more information on this.

Q9: Although you talked about flood events, our organization needs to know if the RS5 is sensitive enough to collect data in clear/clean water?

A9: All ADCPs require acoustic scatterers in the water to get a reflective signal and measure velocity. If there are no scatterers, they cannot measure. That being said, visually clean/clear water in nature usually has enough particles to offer a signal, and the ability for the RS5 to measure will be site-dependent.

Q10: Can I use HYPACK with the RS5?

A10: Currently no. The HydroSurveyor M9 serves as the bathymetric mapping tool interfacing with HYPACK due to its large measuring range.

Q11: Can I get a discount if I trade in my ADCP from another manufacturer?

A11: We do not offer standard discounts for ADCP trade-ins from another manufacturer. However, give us a call or send us an email and there may be something we can offer!

Q12: What are the maximum and minimum depths for your RS5?

A12: The velocity profiling range is 0.1-6m in ideal conditions.

Q13: If I have trouble with one beam during measurement, can I calculate flow only using three?

A13: Yes, the ability to recalculate velocities using a 3-beam solution is available in post-processing in RSQ. It is called “beam switching.”

Q14: Is there stationary software version available?

A14: Yes, it is available in the latest RSQ software version 2.1.

Q15: Do you plan on organizing training sessions in Europe?

A15: Please email us at inquiry@sontek.com to arrange specific regional trainings.

Q16: My connection to the M9 is frequently lost at distances of just over 100 meters. Is this normal?

A16: If you are using a PCM2, the communication frequency is absorbed by water, which means getting the antenna up as high as possible, maintaining a direct line of sight, and not standing in between the antennas on the laptop and M9 is important. There are also power output options (low, medium, high) available through the Utilities software – try setting the power to high to improve communications. Also make sure to check all cables/connections for corrosion. Please contact Technical Support (support@sontek.com) if you still experience issues.

Q17: Can I measure water flow velocity in fully vegetated reclamation channels by employing RS5?

A17: Many types of vegetation attenuate acoustic signals, and the ability for the RS5 to measure in fully vegetated channels will be site-dependent.

Q18: Can I use other company DGPS solutions?

A18: Yes, other GNSS solutions can be integrated into the RS5 as long as they are able to pass along the particular NMEA strings required at the correct frequency and baud rate.

Q19: Is it possible to use water level measurements to estimate flowrate using LiDAR?

A19: This is part of the standard stream gaging method of a stage-discharge rating curve and is a method widely used throughout the USA and many parts of the world. It provides the simplest way to estimate discharge based on the level measurement. However, we have seen that many sites need more complex methods to estimate discharge accurately, especially when there are flood events and other complexities. In these cases, some sites require more advanced techniques like an index velocity rating.



Sound Principles.
Good Advice.

9940 Summers Ridge Road • San Diego, CA 92121-3091 • Phone: +1.858.548.8327 • Fax: +1.858.546.8150 • Email: Inquiry@sontek.com • sontek.com

Q20: What is the pricing for government state agencies (Brazil)?

A20: Pricing can vary country to country due to import duties and taxes. Please contact your local SonTek sales representative or partner for pricing. Email inquiry@sontek.com if you aren't sure who your local contact is.

Q21: Will we see an upgrade on RSL in the near future similar to RSQ?

A21: We will continue to maintain RSL, but it will remain in a similar form for the foreseeable future. Any new ADCP products for discharge measurement will use RSQ.

Q22: Would be correct to assume higher resolution for smaller streams and channels?

A22: The type of acoustics producing higher resolution will depend on many factors, but generally you will achieve higher resolution in smaller stream/channels compared to other instruments.

Q23: What is the RS5 shipped in? Can I ship the complete system in the board bag?

A23: The RS5 is shipped in a Pelican case. It is not recommended to ship the complete system in the board bag.

Q24: Will we provide an extended range option?

A24: No, we have implemented the maximum range possible for the size and frequency of the RS5 based on testing to date.

Q25: Can I buy the RS5 without a compass?

A25: No, the RS5 comes standard with a compass.

Q26: Do I have to buy batteries from SonTek?

A26: No, the RS5 uses a commonly available Lithium Ion cell, size 18650. Important note, the battery must be a size 18650, button top pcb protected type. These are slightly longer than the standard 18650, which will not work in the RS5.

Q27: Can I use the DGNSS antenna for my RS5 for other types of surveys? i.e. topographic

A27: The DGNSS antenna (Geode) can be used for other applications if desired, but does not include hardware that may be needed for these types of surveys.

Q28: Will any of my M9 accessories work with the RS5 (RTK or DGPS)?

A28: No, the accessories are not interchangeable, with the exception of the Hydroboard II, Max and Mini with an adapter.

Q29: What are the flow speed parameters for your various boats? Is there a special board specifically designed for flood events?

A29: The maximum recommended velocity for the RS5/Hydroboard II-Micro is 3.0m/s. Hydroboard II Max is 6.0m/s. Top speed of rQPOD is 1.5m/s.

Q30: Can you mount the RS5 to a boat?

A30: Although no mount is specifically supplied, the RS5 can be mounted to a boat if desired.

Q31: What is the connection distance between PC and instrument? More than 100m?

A31: 100m is the range specification that we have verified with testing. Based on clear line of sight and other site conditions actual range may be more or less. For the best range possible a clear line of sight, high antenna position and dry atmosphere are best.

Q32: How much sediment can the ADCP handle?

A32: Different kinds of sediment affect the acoustic signal in different ways, so the amount and type of sediment will be site specific.



Sound Principles.
Good Advice.

9940 Summers Ridge Road • San Diego, CA 92121-3091 • Phone: +1.858.548.8327 • Fax: +1.858.546.8150 • Email: Inquiry@sontek.com • sontek.com

Q33: I have an M9, so why do I want another ADCP?

A33: The RS5 works in much shallower conditions than the M9, with higher data resolution in shallow water and the hardware is much lighter and quicker to setup. This also provides an alternative to wading devices in cases where agencies observe more stringent safety protocols.

Q34: What is the shallowest depths for your ADCP?

A34: About 10cm

Q35: Do you have tutorials on how to process data?

A35: We do not, but are planning to create more tutorials in the near future. Please email us at inquiry@sontek.com with your specific data processing suggestions.

Q36: If bottom tracking is bad, can you still get a good velocity profile?

A36: Generally speaking, yes, if you have a good ship track source from GNSS.

Q37: What is an “AA” meter?

A37: The AA meter, commonly known as a Price meter, is a mechanical current meter. It has small cups that drive a wheel shaft that creates audible clicks when spinning which correspond to the speed of the flow.