



Mosaichydro NTRIP Client

User Manual

Version 1.0.2

20 October 2026

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1. Introduction

MosaicHydro NTRIP Client receives RTK correction data from the internet and passes it to GNSS receivers. It connects to an NTRIP caster, like the well-known Lefebure NTRIP Client, and then shares the corrections in several ways at once:

- **Serial port:** to a receiver plugged into this PC.
- **TCP server:** any number of receivers, tablets or data collectors on your network connect to this PC. NTRIP-only apps can treat this PC as their caster.
- **UDP:** corrections are pushed to fixed addresses, to the whole local network, or to devices that sign up.
- **TCP relay:** for correction services where the base station is a plain TCP server. This PC connects to the base, and receivers on the local network connect to this PC.

It is useful when receivers on a site or vessel network can't reach the internet themselves, or when one internet connection has to serve several receivers.

1.1 Typical setups

You have...	Use	See
A sonar with an embedded INS on a vessel network (e.g. R2Sonic V Plus with SBG INS)	Caster tab + TCP Server tab	Section 14.1 (illustrated)
An NTRIP account and one receiver on a COM port	Caster tab + Serial tab	Section 4, 10
An NTRIP account and several receivers on the network	Caster tab + TCP Server tab	Section 7
A tablet or app that only speaks NTRIP	TCP Server tab, NTRIP caster mode	Section 7.2
A VRS or nearest-base mountpoint	Position (GGA) tab	Section 6
A base station given as "TCP Client, IP and port"	TCP relay	Section 8
Listeners that only accept UDP	UDP Server tab	Section 9

2. Installation and first start

2.1 What you receive

The program is a single file, **MosaicHydro NTRIP Client.exe**. Nothing needs to be installed: Python and all required parts are built in. Copy the file to any folder, for example, a folder on your desktop or C:\Tools\NTRIP, and double-click it.

2.2 Where settings are kept

Settings are saved in **mh_ntrip_config.json** in the same folder as the program. If that folder can't be written to, for example under C:\Program Files, they are saved in %APPDATA%\MosaicHydro NTRIP Client\ instead. Saved setups (Section 13) go into a **profiles** folder beside the settings file.

The program always starts with the last settings used.

2.3 Windows security prompts

- **Windows Firewall:** the first time a server starts (TCP, UDP or relay), Windows asks whether to allow the program. Allow **Private networks**; otherwise receivers on your network can't connect. An isolated instrument network (e.g. a sonar network without internet) is often classed as **Public**: allow that too, or change the adapter's network profile to Private.
- **SmartScreen / antivirus:** a new program that isn't widely known may show "Windows protected your PC". Choose **More info** → **Run anyway**. If your antivirus blocks the file, add an exception for it.

Note: Running the program more than once at the same time with the same ports fails because only one program can use a port. Close the first copy, or give the second copy different ports.

3. The main window

The window has a toolbar at the top and eight tabs below it. You can change settings at any time; they are used the next time you press **Connect**.

3.1 Toolbar

Control	What it does
Connect / Disconnect	Starts or stops everything: the caster connection, the servers, the relay and the serial port. Settings are saved automatically when you connect.
Save settings	Saves the current settings so they load next time. If a named settings file is open (shown in the title bar), that file is updated too.
Save settings as...	Saves the current settings to a new named file, e.g. "Site A.json". See Section 13.
Load settings...	Opens a named settings file. If you are connected, the program asks first and then reconnects with the loaded settings.
Connect on startup	When ticked, the program connects by itself as soon as it opens. Useful for a PC that runs unattended.
Status label (right)	Shows the connection state in colour, with details beside it. See 3.2.

3.2 Connection states

Label	Meaning
STOPPED	Not connected. Press Connect .
CONNECTING	Contacting the caster.
CONNECTED	The caster accepted the request; waiting for the first data.
RECEIVING	Corrections are arriving. This is the normal working state.
RECONNECTING	The connection dropped or went quiet. The program retries by itself, waiting a little longer each time (up to 60 s by default). The reason is shown beside the label.
ERROR	The last attempt failed, e.g. wrong password or unknown mountpoint. The message beside the label says why.
NO CASTER	Running without an NTRIP caster. With the TCP relay on, the text beside it reads “NTRIP relay mode”.
RELAY	No NTRIP caster; the TCP relay is the correction source for the Serial, UDP and TCP server outputs.

3.3 Tabs

Tab	Purpose
Status	Live view: connection, rover position, base station, message types and connected clients.
Caster	The NTRIP caster account and mountpoint.
Position (GGA)	The position sent to the caster, needed by VRS mountpoints.
TCP Server	Receivers that connect to this PC over TCP, NTRIP caster mode, and the TCP relay.
UDP Server	Corrections sent as UDP packets.
Serial	A receiver connected to a COM port of this PC.
Log	Log files and the message log.
About	Version, copyright, contact, disclaimer and credits.

4. Quick start

This example sends corrections from an NTRIP account to a receiver on a COM port and to receivers on the network.

1. On the **Caster** tab, make sure **Use NTRIP caster** is ticked. Enter the caster **Host**, **Port**, **Username** and **Password** from your correction provider.
2. Click **Get sourcetable...**, then double-click the mountpoint you want. (Or type the mountpoint name.)

3. If the mountpoint is a VRS or nearest-base type (“NMEA = yes” in the sourcetable), go to the **Position (GGA)** tab and make sure a position is available. See Section 6.
4. For a receiver on a COM port: on the **Serial** tab tick **Enabled**, pick the **Port** and set the **Baud rate** to match the receiver.
5. For receivers on the network: leave the **TCP Server** tab enabled (port 2102). In each receiver, set a TCP client connection to this PC's IP address, port 2102.
6. Press **Connect**. The label turns green (**RECEIVING**) and the **Status** tab shows the message types arriving.

For a complete, illustrated example with a sonar and its embedded INS, see Section 14.1.

Finding this PC's IP address: open a Command Prompt and type `ipconfig`. Use the “IPv4 Address” of the network adapter the receivers are on, e.g. 192.168.1.20.

5. Caster tab

Setting	Default	Description
Use NTRIP caster	On	Untick to run without a caster, e.g. TCP relay only.
Host	rtk2go.com	Caster address from your provider (name or IP).
Port	2101	Caster port. 2101 is standard; some casters use 80 or 443.
Username / Password	(blank)	Your account. Stored in the settings file in plain text.
Mountpoint	(blank)	The stream to receive. Choose it from the sourcetable or type it.
NTRIP version	1.0	Use 2.0 if your provider asks for it. Most casters accept both.
Use TLS (https)	Off	For casters that require an encrypted connection (usually port 443).
Verify TLS certificate	On	Untick only for casters with self-signed certificates.
Connect timeout (s)	10	How long to wait for the caster to answer.
No-data timeout (s)	30	Reconnect if no data arrives for this long.
Reconnect delay (s)	5	First wait before retrying. Doubles after each failure...
Max reconnect delay (s)	60	...up to this limit.

5.1 Sourcetable browser

Get sourcetable... asks the caster for its list of streams and shows them in a window. Click a column title to sort; when a position is known, the list is sorted by **Dist km** so the nearest stations are on top. Double-click a stream (or select it and click **Select**) to use it.

- **NMEA = yes** means the stream needs your position (GGA) before it sends data. These are usually VRS or nearest-base streams.

- **Auth = B** means a username and password are required.

Note: After a wrong password or an unknown mountpoint, the program waits at least 30 seconds before retrying, so it doesn't get your account blocked.

6. Position (GGA) tab

Some streams (VRS, nearest base, network RTK) only send corrections after they receive the rover's approximate position as an NMEA GGA sentence. This tab decides which position is sent to the caster. For a single fixed base station it is not needed.

GGA source	Position used
auto (default)	The newest valid GGA from the serial receiver or from a network client. If none has arrived, the manual position (if Use manual position is ticked).
serial	Only the receiver on the Serial tab.
network	Only GGA sent by TCP or UDP clients.
manual	Always the manual position below.
none	Never send a position.

Setting	Default	Description
Send interval (s)	10	How often the position is sent. 0 = only once when connecting.
Max GGA age (s)	30	A received GGA older than this is ignored (e.g. the receiver was switched off).
Use manual position	Off	Allows the manual position as a fallback in auto mode.
Latitude / Longitude	0	Decimal degrees. North and East are positive; South and West negative (e.g. -123.12).
Height (m)	0	Approximate height above sea level.

Copy current rover position fills the manual fields with the position currently shown on the Status tab. This is handy for setting a site's position once.

Only valid positions are used: GGA sentences with no fix (quality 0) or a 0,0 position are ignored.

7. TCP Server tab

The TCP server lets any number of devices on your network connect to this PC and receive the corrections. Each device is recognised automatically as a plain TCP client or an NTRIP client.

7.1 TCP server settings

Setting	Default	Description
Enabled	On	Turns the TCP server on or off.
Listen address	0.0.0.0	0.0.0.0 accepts connections on all network adapters. Enter one adapter's IP to limit it to that network.
Port	2102	The port receivers connect to.
Max clients	32	Further connections are refused.
Accept GGA from clients	On	Use GGA sent by clients as the position for the caster (Section 6).
Max backlog (bytes)	262144	A client that can't keep up is disconnected, so it can't slow down the others.

7.2 NTRIP caster mode

With **NTRIP caster mode** enabled, apps and receivers that can only use NTRIP can connect to this PC as if it were a caster. Plain TCP clients keep working at the same time.

Setting	Default	Description
Enabled	On	Answer NTRIP requests (NTRIP 1.0 and 2.0).
Mountpoint	RTCM	The mountpoint name clients must ask for. Any other name returns this PC's sourcetable.
Username / Password	(blank)	If set, clients must log in with them. Blank = no login.

7.3 Connecting a device

Device setting	Enter
Plain TCP client (e.g. receiver "TCP Client" input)	Server IP = this PC's IP, port = 2102
NTRIP client (app, data collector, receiver)	Caster = this PC's IP, port = 2102, mountpoint = RTCM, user/password if set

A device can also send its own NMEA GGA back over the same connection; it is then used for VRS streams when **Accept GGA from clients** is on. Connected devices are listed on the Status tab as "TCP raw", "TCP NTRIP v1" or "TCP NTRIP v2".

8. TCP relay

Some correction services run the base station as a plain TCP server. The receiver is set to **TCP Client** with the base's IP address and port, without NTRIP. If the receiver can't reach the internet itself, the TCP relay solves this: this PC connects to the base, and the receiver connects to this PC instead.

The relay is at the bottom of the **TCP Server** tab.

8.1 Setting up the relay

Example: the provider's instructions say “Protocol: TCP Client, Server IP 142.41.245.88, Server Port 2101”.

1. On the **TCP Server** tab, under **TCP relay**, tick **Enabled**.
2. Enter **Remote server IP / host** = 142.41.245.88 and **Remote port** = 2101.
3. Leave **Local port** at 2104 (or choose another free port).
4. If you don't also need an NTRIP caster, untick **Use NTRIP caster** on the **Caster** tab.
5. Press **Connect**. The label shows **NO CASTER** with “NTRIP relay mode”, and the Status tab lists the **Relay source**.
6. In the receiver, keep the protocol as **TCP Client**, but enter **this PC's IP address** as the Server IP and **2104** as the Server Port.

8.2 Relay settings

Setting	Default	Description
Enabled	Off	Turns the relay on.
Mode	shared	See 8.3.
Remote server IP / host	(blank)	The base station's address from your provider.
Remote port	2101	The base station's port.
Local listen address	0.0.0.0	Network adapters receivers may connect on.
Local port	2104	The port receivers connect to on this PC.
Forward client data upstream	On	Shared mode: data a receiver sends (e.g. GGA) is passed on to the base.
Max clients	16	Further receivers are refused.
No-data timeout (s)	60	Reconnect if the base sends nothing for this long (0 = never).
Also send to Serial / UDP / TCP server	Off	Use the relay as the correction source for the program's other outputs. See 8.4.

8.3 Shared and transparent mode

- **shared** (default): the PC keeps one connection to the base and shares it with every receiver. Best when several receivers use the same base, or when the provider limits the number of connections.
- **transparent**: each receiver gets its own connection to the base, exactly as if it had connected directly. Use this if the service expects one connection per receiver.

8.4 Sending relay data to the other outputs

Tick **Also send to Serial / UDP / TCP server** to use the relay like a caster: the corrections then also go to the receiver on the Serial tab, to the UDP outputs and to the TCP server on port 2102 (including NTRIP caster mode). The label then reads **RELAY**, and the program's position (Section 6) is sent to the base at the GGA interval.

Important: This only works with **Use NTRIP caster** unticked. Mixing two different correction streams would corrupt the data for the receiver, so the program warns you and does not feed the other outputs while the caster is in use.

The Status tab shows the relayed message types and base station whether or not this option is ticked.

9. UDP Server tab

UDP sends the corrections as network packets without a connection. Each packet contains whole RTCM messages, so a lost packet never damages the next one. UDP is off by default.

Setting	Default	Description
Enabled	Off	Turns UDP output on.
Local address / Local port	0.0.0.0 / 2103	Where this PC listens for devices that register.
Accept registrations	On	A device that sends any packet to the local port receives corrections from then on.
Registration timeout (s)	60	A registered device that stays silent longer than this is dropped. Devices should send a packet (ideally their GGA) at least once a minute. Sending BYE unregisters at once.
Accept GGA from clients	On	GGA in a device's packets is used as the position for the caster.
Max datagram (bytes)	1400	Largest packet sent. Keep below 1472 to avoid fragmentation.
Broadcast: Enabled	Off	Send to every device on the local network.
Broadcast address / port	255.255.255.255 / 2103	Use the subnet's broadcast address (e.g. 192.168.1.255) to limit it to one network.
Fixed targets	(none)	One host:port per line, e.g. 192.168.1.60:5000. Each receives every packet.

10. Serial tab

Sends the corrections to a receiver connected to a COM port (USB, RS-232 or Bluetooth serial). The program also reads the receiver's NMEA output to show its fix on the Status tab and to send its position to VRS casters.

Setting	Default	Description
Enabled	Off	Turns the serial output on.
Port	COM1	Choose from the list; click Refresh after plugging in a USB receiver.
Baud rate	115200	Must match the receiver's port setting.
Data bits / Parity / Stop bits	8 / N / 1	Almost always 8-N-1.
Read NMEA from receiver	On	Use the receiver's GGA for the Status tab and the caster position.

If the port disappears (USB cable unplugged), the program keeps trying to reopen it every 5 seconds and carries on as soon as the receiver is back.

Port busy? Only one program can open a COM port. Close other software using the receiver (configuration tools, terminal programs) before connecting.

11. Status tab

11.1 Caster

Field	Meaning
State	Same as the label in the toolbar.
Connected for	Time since the current connection was made.
Connections	Number of successful connections since Connect (more than 1 means it has reconnected).
Received / Data rate	Total data received and the average over the last 10 seconds. Typical RTK streams are 0.5–3 kB/s.
Last data	Seconds since data last arrived. Should stay near 0–1 s.
RTCM frames / CRC errors	Complete RTCM messages received, and damaged ones. CRC errors should stay at 0.

11.2 Rover position (GGA)

The newest position received from the serial receiver or a network client: fix type (e.g. **RTK Fixed**, **RTK Float**, **DGPS**), satellites, HDOP, latitude, longitude, altitude, age of corrections and where it came from.

11.3 Base station / GGA upload

Field	Meaning
Station ID, Latitude, Longitude, Height	The base station's reference position, read from RTCM messages 1005/1006. Height is ellipsoidal.
Baseline	Distance from the base to the rover. RTK accuracy drops as the baseline grows (typically keep it under 20–30 km).
GGA source / GGA sent	Which position is sent to the caster and how long ago it was last sent.
Outputs	Active outputs, e.g. TCP:2102, UDP:2103, COM4, Relay:2104 (receiving).

11.4 RTCM messages

Each message type received, with a description, a count and the seconds since it last arrived. For example 1005 = station position, 1074/1077 = GPS observations (MSM4/MSM7), 1084/1087 = GLONASS, 1094/1097 = Galileo, 1124/1127 = BeiDou. Observation messages normally arrive every second.

11.5 Network clients

Everything connected: TCP clients (raw, NTRIP v1/v2), UDP targets and registered devices, relay source and relay clients, and the serial port, with the data sent to each.

12. Log tab

Setting	Description
Raw corrections file	Saves all received correction data to a file (added to the end). Useful for post-processing or support.
Receiver NMEA file	Saves the NMEA sentences received from the serial receiver.
Application log file	Saves the program's messages (connections, errors) to a text file.
Verbose	Logs more detail, e.g. every GGA received.

Leave a file name blank to turn that log off. Click ... to choose a file. The lower part of the tab shows the program's messages; errors are shown in red and warnings in orange.

13. Saving and loading settings

You can keep several complete setups, for example one per site, survey vessel or correction provider.

1. Set up all tabs for a site.

2. Click **Save settings as...** and give it a name, e.g. "Site A". It is saved in the **profiles** folder by default.
3. To switch later, click **Load settings...** and choose the file. The title bar shows its name, e.g. "MosaicHydro NTRIP Client 1.0.2 - Site A".
 - The file you loaded or saved last is what the program opens with next time.
 - **Save settings** updates that named file as well. Connecting or closing the program never changes a named file.
 - **Connect on startup** is a program-wide choice and is not changed by loading a file.
 - Settings files are plain text (JSON) and can be copied to other PCs. They contain caster passwords, so share them with care.

14. Example setups

14.1 R2Sonic V Plus sonar with an embedded SBG INS

This is the recommended setup for an **R2Sonic V Plus Series** multibeam with an embedded **SBG** INS/GNSS. The INS sits on the sonar network and can't reach the internet. The survey PC is on both the sonar network and the internet, so MosaicHydro NTRIP Client receives the corrections and the INS connects to the PC as a **TCP client** on its **ETH 2** port. The INS sends its own position (GGA) back on the same connection, which VRS and nearest-base mountpoints need.

Item	Value in this example
Survey PC (MosaicHydro NTRIP Client)	10.0.1.102 on the sonar network, plus an internet connection
SBG INS	10.0.1.110, subnet mask 255.0.0.0
Connection	INS ETH 2 → TCP client → PC 10.0.1.102, port 5306
Corrections	NTRIP caster account, mountpoint RTCMIMAX
Not used	UDP, Serial, NTRIP caster mode and TCP relay

Use your own values: the IP addresses, port and mountpoint are those of this example installation. Replace them with the addresses of your PC, INS and correction service.

Part A – MosaicHydro NTRIP Client

Steps 1–3: Caster tab. Tick **Use NTRIP caster** and enter the **Host**, **Port**, **Username** and **Password** from your correction provider (1). Click **Get sourcetable...** (2) and select the **Mountpoint** (3). Leave NTRIP version at **1.0** unless the provider asks for 2.0.

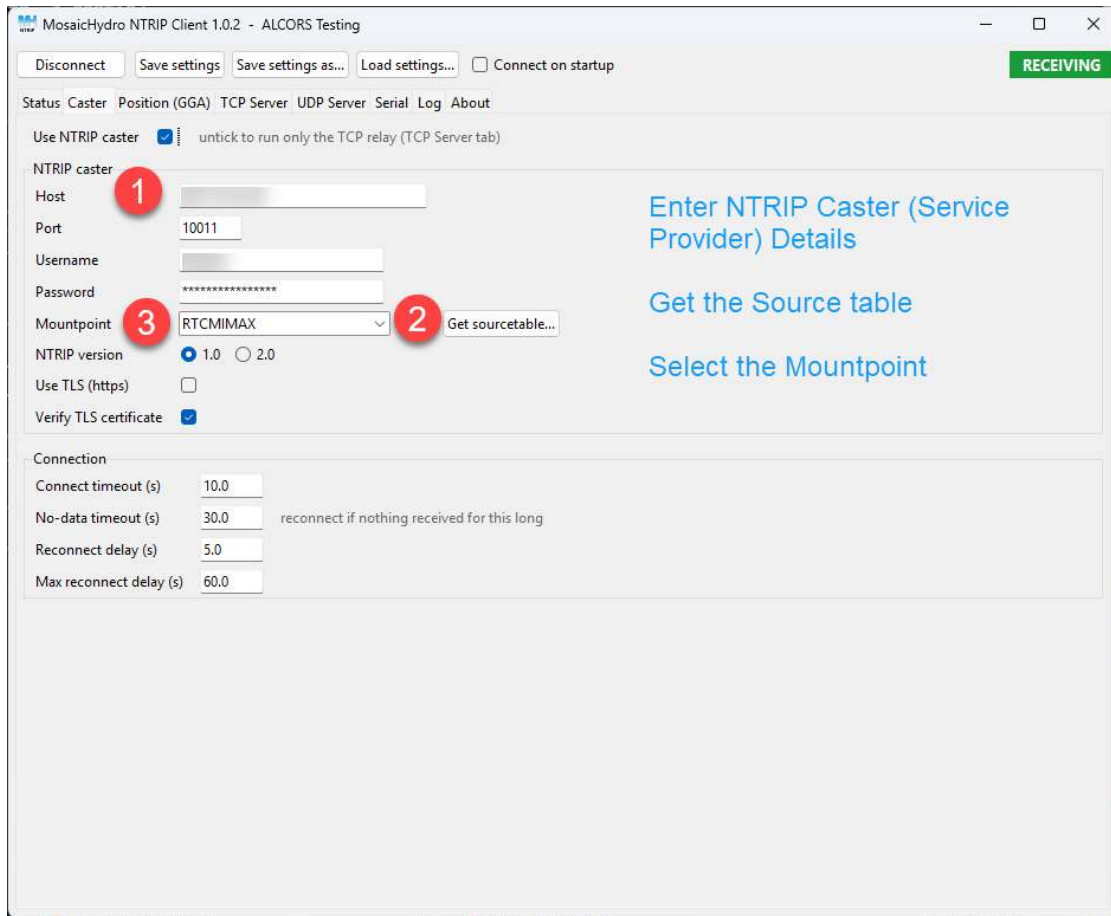


Figure 1 – Caster tab: caster details, sourcetable and mountpoint (steps 1–3)

Step 4: Position (GGA) tab. Set **GGA source** to **auto** (4). The INS/GNSS unit's position is the best choice: once the INS sends its GGA (configured in step 7), it is used automatically. Set **Send interval** to **5 s** to match the INS. A manual position can be entered and ticked as a fallback for the time before the INS has a fix.

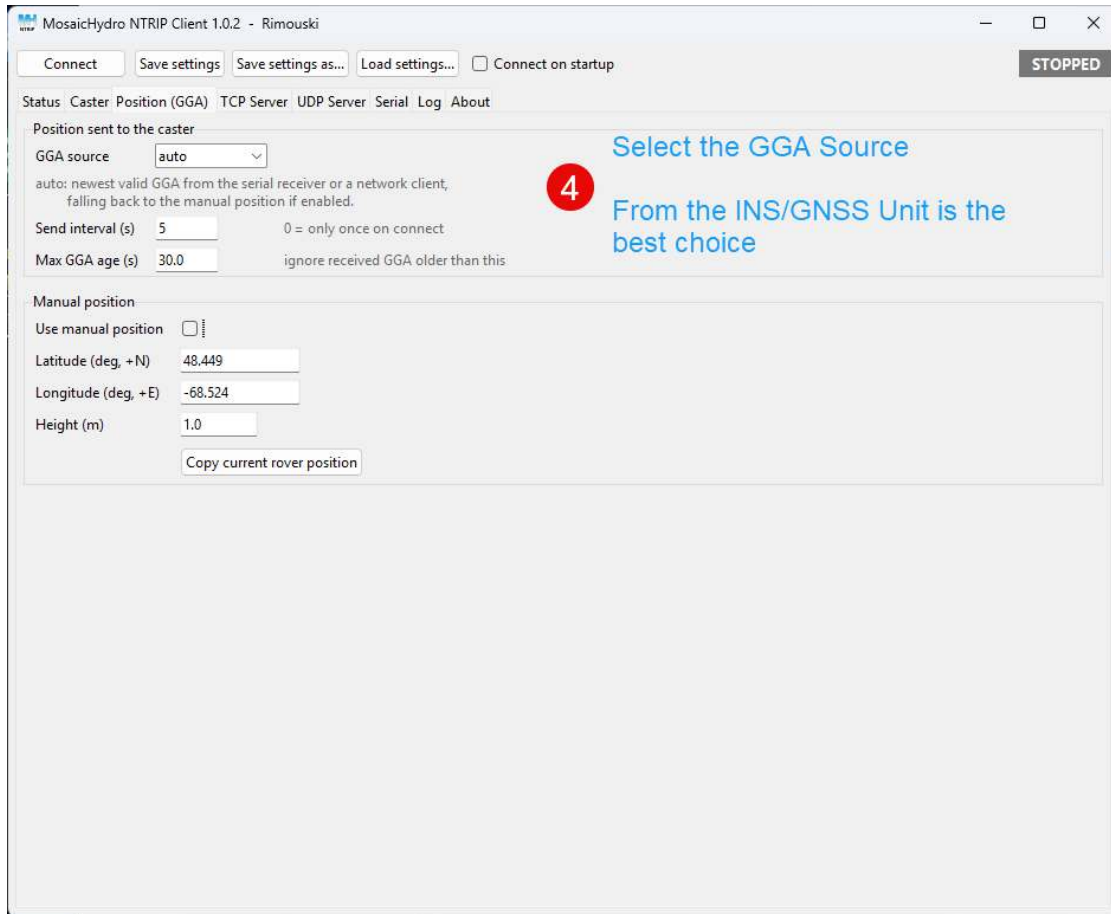


Figure 2 – Position (GGA) tab: GGA source auto, send interval 5 s (step 4)

Step 5: TCP Server tab. Tick **Enabled**. Enter this PC's address on the sonar network as the **Listen address** (10.0.1.102; 0.0.0.0 also works and listens on all adapters) and set **Port** to **5306** (5). Leave **Accept GGA from clients** ticked so the INS passes its position to the caster. **NTRIP caster mode** stays unticked, because the INS connects as a plain TCP client. The TCP relay and the UDP Server tab are not used in this example.

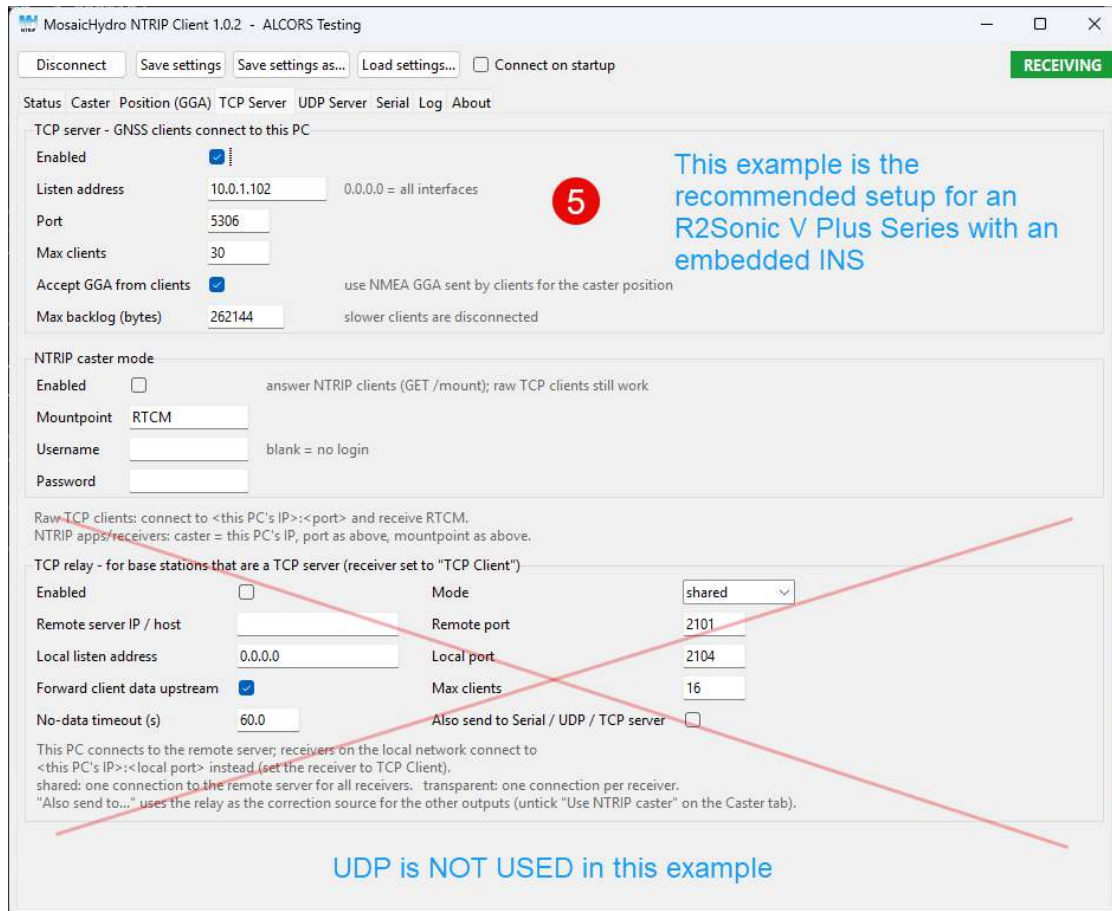


Figure 3 – TCP Server tab: listen address 10.0.1.102, port 5306; relay and UDP not used (step 5)

Part B – SBG INS (Device Settings in the INS web interface)

Step 6: Aiding Assignment. Set **Differential Correction** to **ETH 2** (6). The INS then passes everything it receives on ETH 2 to its internal GNSS receiver as corrections. Click **Save**.

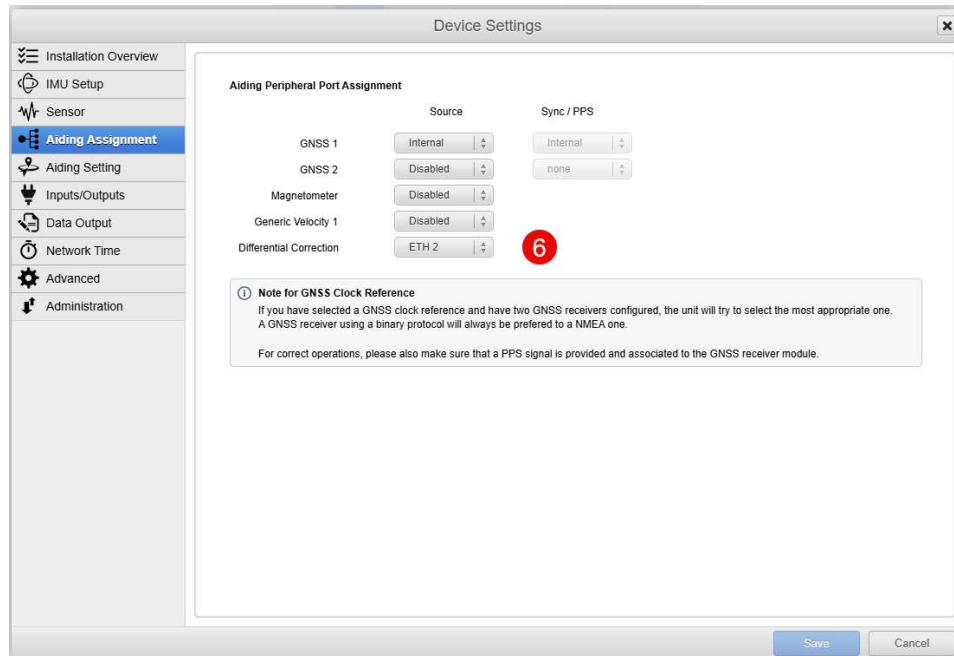


Figure 4 – SBG Aiding Assignment: Differential Correction = ETH 2 (step 6)

Step 7: Aiding Setting → Differential Correction tab. Set **Send GGA** to **5 seconds** (7). The INS then sends its position to MosaicHydro NTRIP Client every 5 s over the same connection. Click **Save**.

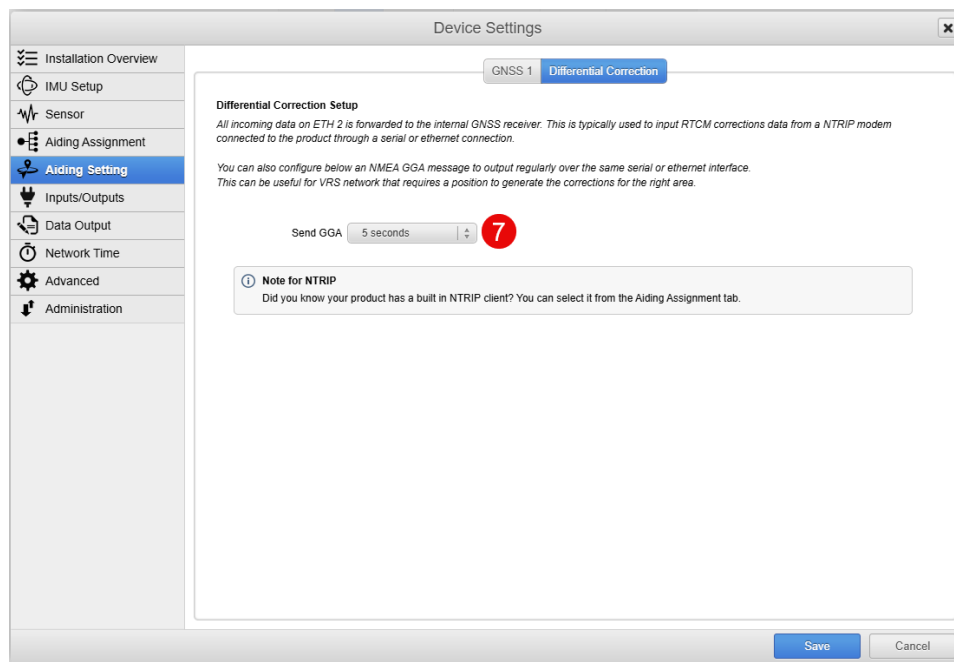


Figure 5 – SBG Aiding Setting: Send GGA every 5 seconds (step 7)

Step 8: Inputs/Outputs → Ethernet tab. For **Eth 2**, set **Protocol** to **TCP Client**, **Server IP** to the PC's address (**10.0.1.102**) and **Server Port** to the TCP server port (**5306**) (8). Click **Save**.

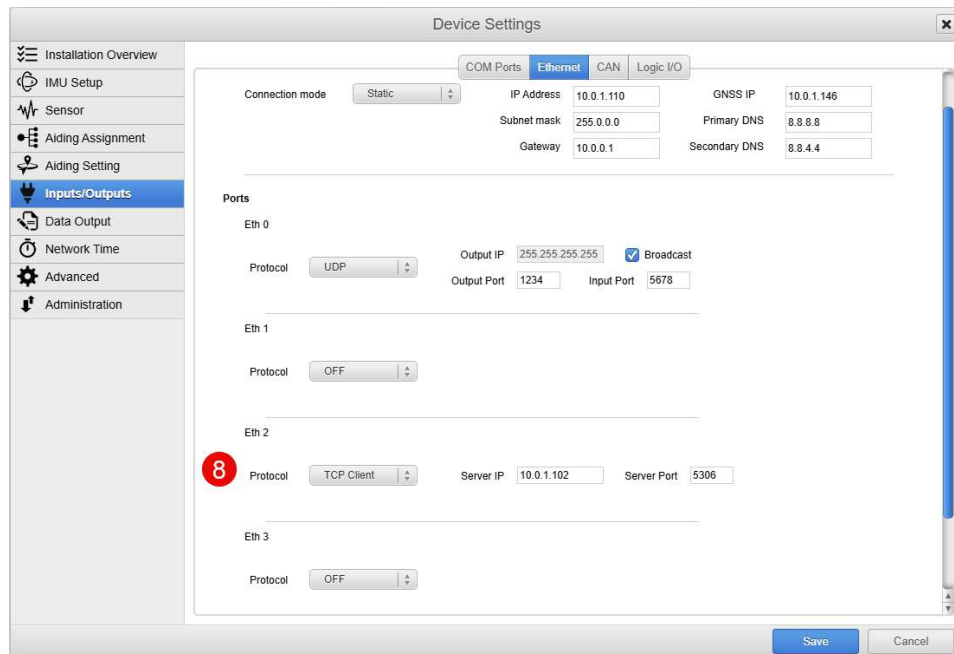


Figure 6 – SBG Ethernet: Eth 2 as TCP Client to 10.0.1.102, port 5306 (step 8)

Step 9: Data Output → Eth 2 tab. Set **Preset selection** to **All disabled** (9), so that no other logs are sent on Eth 2. The port then carries only incoming corrections and outgoing GGA. Click **Save**.

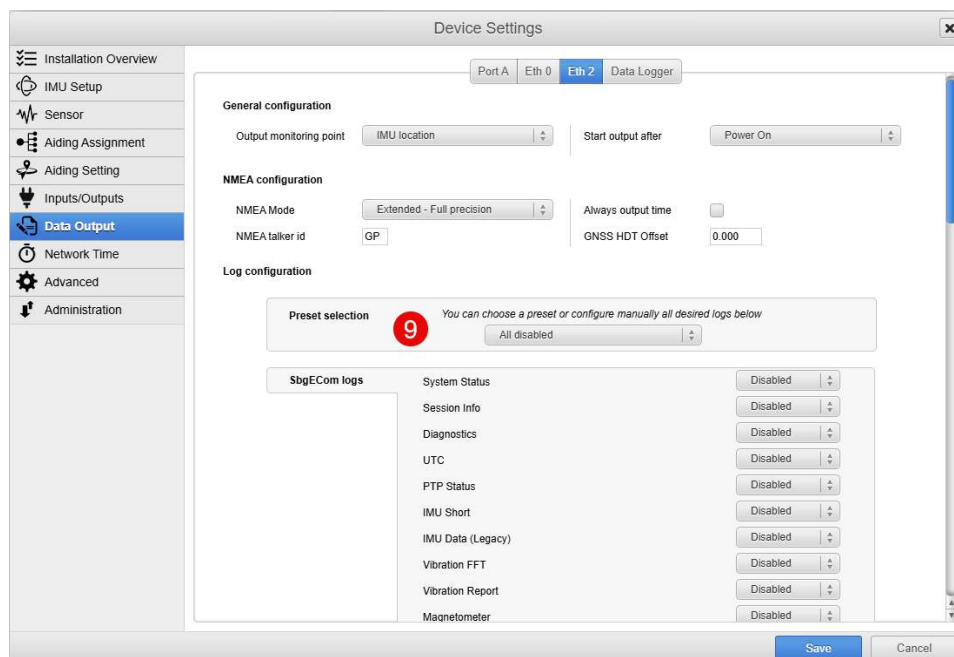


Figure 7 – SBG Data Output: Eth 2 preset All disabled (step 9)

Part C – Start and check

Steps 10–11. In MosaicHydro NTRIP Client, click **Save settings** (10), then **Connect** (11). Tip: use **Save settings as...** to store the setup under a name; the name is shown in the title bar (“ALCORS Testing” in the figures).

Check the **Status** tab:

- The label at the top right shows **RECEIVING**.
- **RTCM messages** lists the correction messages arriving (here 1004, 1006, 1008, 1012, 1032, 1033 and 1230), and **Base station** shows the station ID and position.
- **Network clients** shows the INS (10.0.1.110) as **TCP raw**, with the amount of data sent to it increasing.
- Once the INS has a GNSS fix and sends GGA, the **Rover position** box fills in and **GGA source** changes to the INS's address (tcp 10.0.1.110:...). Until then, the manual position is used if it is ticked, as in Figure 8.

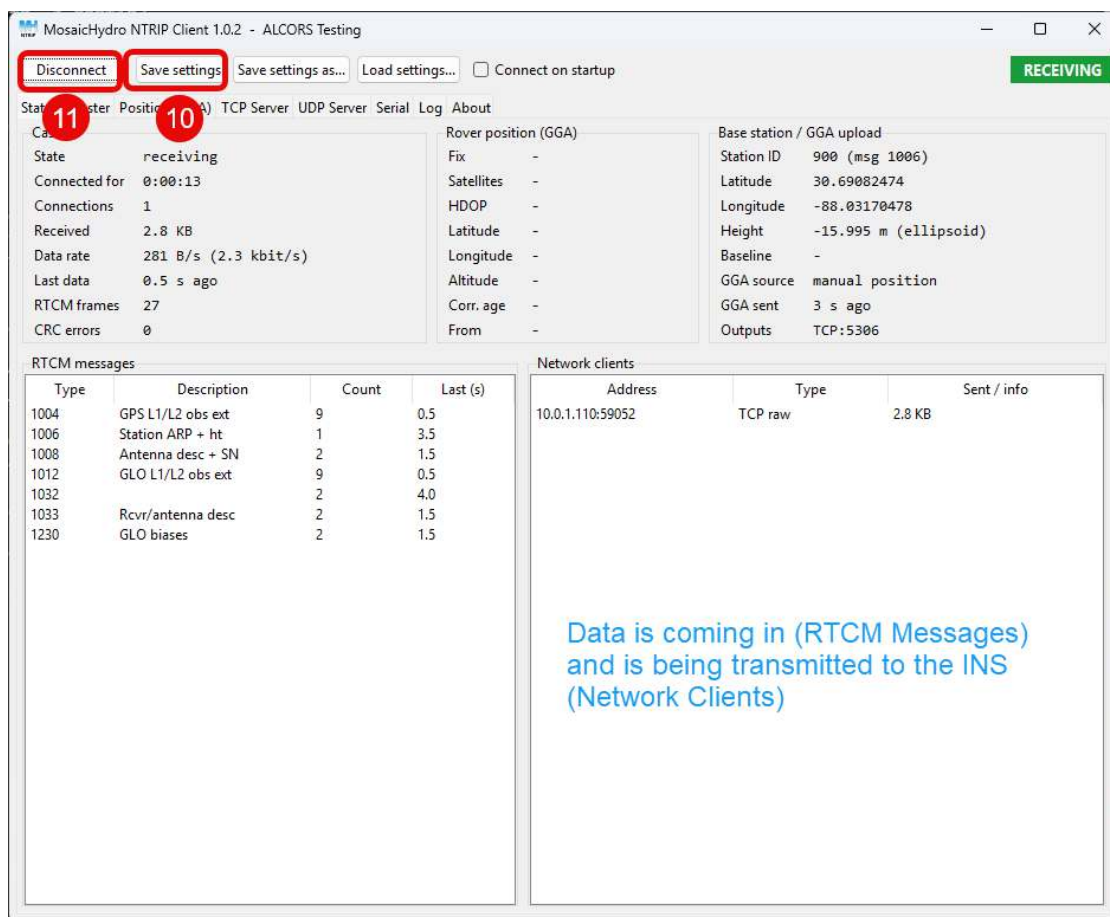


Figure 8 – Status tab: corrections arriving and being sent to the INS (steps 10–11)

Finally, confirm on the INS side. In the SBG web interface, open the **Status** tab: under **Aiding Inputs**, **RTCM** shows **Receiving**, and the **Eth 2** port shows activity. The corrections are reaching the INS's GNSS receiver.

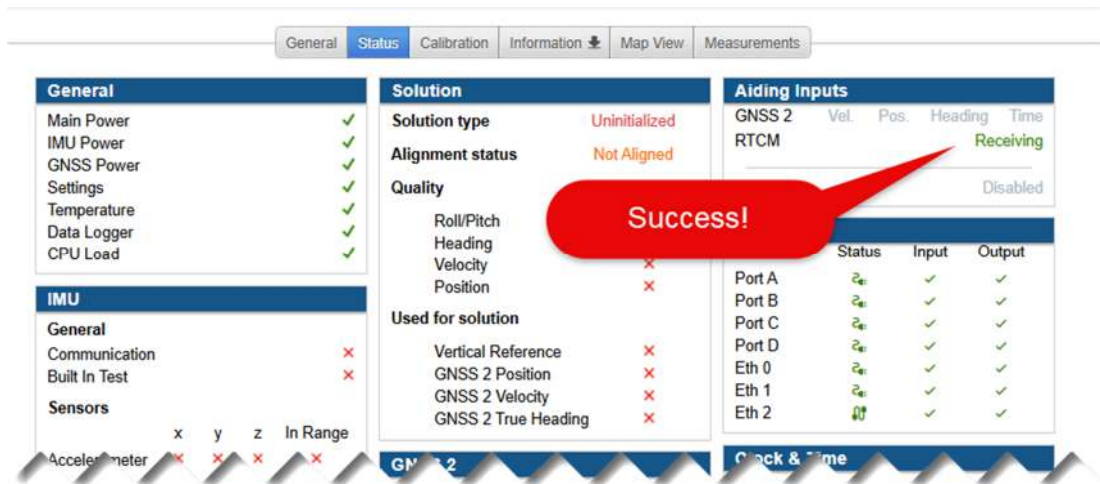


Figure 9 – SBG web interface, Status tab: Aiding Inputs – RTCM Receiving

Windows Firewall: A sonar network without internet is often classed by Windows as a **Public** network. If the INS never appears under Network clients, allow MosaicHydro NTRIP Client on Public networks too, or change that network adapter's profile to Private.

For an unattended survey PC, tick **Connect on startup** (see Section 14.6).

14.2 One receiver on a COM port

Caster tab: account and mountpoint. Serial tab: Enabled, port and baud rate. Optional: turn the TCP server off if nothing else needs it.

14.3 Several receivers on a site network

Caster tab: account and mountpoint. TCP Server tab: enabled on port 2102. Each receiver: TCP client to this PC's IP, port 2102. For a VRS mountpoint, set the GGA source to **auto** and let one receiver send its GGA, or enter a manual position.

14.4 Tablet or data collector using NTRIP

TCP Server tab: NTRIP caster mode enabled, mountpoint RTCM (optionally a username and password). In the app's NTRIP settings: caster = this PC's IP, port 2102, mountpoint RTCM.

14.5 Embedded receiver and a TCP-server base station

TCP relay enabled with the base's IP and port; **Use NTRIP caster** unticked. Receiver: TCP Client to this PC's IP, port 2104. To also feed a receiver on a COM port, tick **Also send to Serial / UDP / TCP server** and set up the Serial tab.

14.6 Unattended PC

Set everything up, tick **Connect on startup**, and put a shortcut to the program in the Windows Startup folder (press Win+R, type `shell:startup`, and paste the shortcut there). The program reconnects by itself after network outages.

15. Troubleshooting

Symptom	Likely cause	What to do
ERROR – authorization failed	Wrong username or password, or account expired.	Check the account with your provider. Usernames and passwords are case-sensitive.
ERROR – mountpoint not offered by caster	Mountpoint misspelt or not available.	Use Get sourcetable... and double-click the stream.
CONNECTED but never RECEIVING	A VRS stream is waiting for a position.	Check the Position (GGA) tab: GGA source, a receiver sending GGA, or a manual position. The Status tab shows “GGA sent”.
RECONNECTING – no data for 30 s	Base offline or internet unstable.	Check the internet connection; try another mountpoint. Increase the No-data timeout for slow links.
Receivers on the network can't connect	Windows Firewall, wrong IP, or a different subnet.	Allow the program in Windows Firewall (Private networks). Check this PC's IP with <code>ipconfig</code> . Make sure the receiver is on the same network.
“Started with problems ... port ... in use”	Another program (or a second copy) already uses the port.	Close the other program or choose another port.
Serial: cannot open COM port	Wrong port, or another program has it open.	Click Refresh and choose the right port; close other software using the receiver.
Rover stays in RTK Float	Long baseline, poor sky view, or missing message types.	Check the baseline on the Status tab and that observation messages for your satellite systems are arriving every second.
CRC errors increasing	Damaged data, usually a poor internet link.	Check the connection quality; try NTRIP 2.0 or another caster port.
Relay: Relay source shows an error	Wrong remote IP/port, or the base is down.	Check the address with the provider; the relay retries automatically.

For support, send the application log file (Log tab) and a description of your setup to tools@mosaichydro.com.

16. Reference

16.1 Default ports

Port	Protocol	Used for
2101	TCP (outgoing)	Usual NTRIP caster port, and the relay's default remote port
2102	TCP	TCP server (plain TCP and NTRIP caster mode)
2103	UDP	UDP output, registrations and broadcast
2104	TCP	TCP relay, local side

16.2 Glossary

Term	Meaning
NTRIP	Networked Transport of RTCM via Internet Protocol, the standard way to deliver GNSS corrections over the internet.
Caster	The internet server that distributes correction streams.
Mountpoint	The name of one correction stream on a caster.
Sourcetable	The caster's list of available mountpoints.
RTCM	The standard format of the correction messages (RTCM 3.x).
GGA	The NMEA sentence that carries a receiver's position and fix quality.
VRS	Virtual Reference Station: a network stream computed for the rover's own position, which is why it needs GGA.
RTK Fixed / Float	Centimetre-level solution (Fixed) or a less accurate, still-converging solution (Float).
Baseline	Distance between the base station and the rover.

17. Disclaimer and credits

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GNSS positions and RTK corrections can be inaccurate, delayed or unavailable. The user is responsible for verifying all results, for complying with the terms of use of any NTRIP caster service, and must not rely on this tool for safety-critical navigation or positioning.

The design is based on the Lefebure NTRIP Client by Lance Lefebure, free and open-source software (www.lefebure.com/software/ntripclient).

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