ABB RF Modem User Manual
RF Modem
The RF modem (ACC-RFMODEM) is an optional accessory for Hoverguard ™ and the GLA133 series analyzer. It enables real-time monitoring of the GLA133 output over an extended range. It sends data from the analyzer to a control laptop or tablet over long distances (several km), even when Wi-Fi connectivity is lost.

License Requirements
A license from the relevant government authority is required to operate the modem from the country in which the modem will be used. This license specifies the allowed frequencies and power levels, which vary from country to country.

Modem pair has selectable frequency and power settings that make it usable in most countries. Refer to Satel’s user guide for setting the parameters: https://www.satelusa.com/wp-content/uploads/2020/07/SATELLINE_M3_TR1_v.5.5.pdf
## Standard Components

### Table 1: Standard Components

<table>
<thead>
<tr>
<th>Part</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio Receiver</td>
<td>Receiver Modem connected to a device with the Radio Receiver Cable. It uses a rechargeable battery, so no power connection is necessary after being charged.</td>
</tr>
<tr>
<td>Radio Transmitter</td>
<td>Transmitter Modem that attaches to the analyzer and receives data and power with the Radio Transmitter Cable.</td>
</tr>
<tr>
<td>Radio Transmitter Cable</td>
<td>Cable needed to interface the modem to the analyzer.</td>
</tr>
<tr>
<td>Antenna QTY:2</td>
<td>Antenna needed for Radio Transmitter and Receiver.</td>
</tr>
<tr>
<td>Radio Receiver Cable</td>
<td>Interface &amp; programming cable for Radio Receiver.</td>
</tr>
<tr>
<td>Radio Receiver Power supply</td>
<td>Power supply to recharge the battery in the Radio Receiver.</td>
</tr>
<tr>
<td>Installation Hook</td>
<td>Bracket to attach Radio Receiver to another mountable surface.</td>
</tr>
<tr>
<td>Belt Plate</td>
<td>Plate used to attach the Radio Receiver to a belt.</td>
</tr>
<tr>
<td>Velcro strip Qty: 2</td>
<td>Used to attach the Radio Transmitter to the analyzer.</td>
</tr>
</tbody>
</table>
Setup

Receiver Setup
To setup the receiver:

1. Connect one antenna, the radio receiver cable, and the radio receiver power supply to the radio receiver. (Figure 1)
2. Plug the radio receiver power supply into an outlet to charge the radio receiver battery.
3. Plug the other end of the radio receiver cable into the USB port of the device being used to view the output.

The radio receiver comes with optional mounting brackets. The installation hook can be used to mount the radio receiver to another assembly, or the belt plate can connect the radio receiver to a belt for mobile use.

When using the RF modem, there should be no object between the two antennas. These antennas should see each other during flight to avoid any data stream interruption.

Figure 1: Radio Receiver Connection
Transmitter Setup
To setup the radio transmitter:

1. Connect the other antenna and the radio transmitter cable to the radio transmitter. (Figure 2)

![Figure 2: Transmitter Connection](image)

2. Assemble the radio transmitter to the analyzer using the Velcro strips. (Figure 3)

![Figure 3: Transmitter Attachment](image)

**NOTE**

Confirm that the antenna extends out further than the analyzer.
3. Connect the other end of the radio transmitter cable into COM2 on the analyzer. (Figure 4)

Figure 4: Analyzer Connection
Set up HoverGuard™ Serial Data Stream

HoverGuard™ can send real-time data from the UAV to the MobileGuard™ application via RF modem to serial connections.

To set up the serial data stream in MobileGuard™, perform the following:

1. Enable Instrument Data Logging to allow the application to log the incoming serial stream:
   a. Navigate to General Settings > Analyzer Settings.
   b. Expand the Analyzer Settings category.
   c. Check the Instrument Data Logging box to enable Instrument Data Logging.
   d. Click Save: The setting displays true, as shown in Figure 5.

![Figure 5: Instrument Data Logging Enabled](image)

2. Set the Serial parameters appropriate for your setup. Figure 6 shows an example of serial settings to use with an external RF modem.
   a. Navigate to General Settings > Analyzer Serial Data Streaming

![Figure 6: Analyzer Serial Data Streaming](image)
3. To allow the MobileGuard™ application to acknowledge whether the analyzer software is actively running: Type `ps -A | grep icos` in the analyzer SSH ICOS Query field, then click Save. (Figure 7)
   a. Navigate to General Settings > Analyzer Settings

   ![Analyzer SSH ICOS Query](image)

   **Figure 7: Analyzer SSH ICOS Query**

4. Use the Analyzer SSH Stop command to remotely stop the analyzer software. Select the command shown in Figure 8, then click Save.

   ![Analyzer SSH Stop Command](image)

   **Figure 8: SSH Stop Command**

5. For the modems to communicate to render the appropriate data on the map, verify the HoverGuard™ instrument type has the correctly mapped data parameters:
   a. Navigate to the Instruments and Alarms screen.
   b. Click the Edit icon.
   c. Use Table 2 to verify the proper mapping of data columns.

   **Table 2: Verify HoverGuard™ Instrument Type Parameters**

<table>
<thead>
<tr>
<th>CSV Name</th>
<th>Data Column</th>
<th>Data Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude (degrees)</td>
<td>latitude</td>
<td>COMMON_PARAMETER</td>
</tr>
<tr>
<td>Longitude (degrees)</td>
<td>longitude</td>
<td>COMMON_PARAMETER</td>
</tr>
<tr>
<td>GPS Fix Status</td>
<td>gpsFixStatus</td>
<td>COMMON_PARAMETER</td>
</tr>
<tr>
<td>Altitude (m)</td>
<td>elevation</td>
<td>COMMON_PARAMETER</td>
</tr>
<tr>
<td>Vehicle Heading (degrees)</td>
<td>course</td>
<td>COMMON_PARAMETER</td>
</tr>
<tr>
<td>WindSpeed3D (m/s)</td>
<td>windSpeed</td>
<td>COMMON_PARAMETER</td>
</tr>
<tr>
<td>WindDirection (degree)</td>
<td>windDirection</td>
<td>COMMON_PARAMETER</td>
</tr>
<tr>
<td>Temperature (C)</td>
<td>temperature</td>
<td>COMMON_PARAMETER</td>
</tr>
</tbody>
</table>

   If parameters require changing, click the Edit icon in the parameter row and change as needed.
6. For MobileGuard™ application to properly log the serial stream from the analyzer, disable the Checksum as follows:
   a. Connect to the analyzer through VNC (default password: lgrvnc).
   b. Log into the analyzer:
      i. Default username: lgr
      ii. Password: 3456789
   c. Navigate to the Serial Logger tab (Figure 9): Setup > Serial Logger.
   d. Select OUTPUT tab.

![Figure 9: Serial Logger Tab](image)

   e. Set Append checksum to OFF.
   f. Click Save.