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Quark-elec QK-A026

Quark-elec QK-A026 Wireless AIS+GPS Receiver User Manual

Model: QK-A026 (Part Number: 8541746105)

1. Introduction

The QK-A026 is a sophisticated device designed to merge AIS (Automatic Identification System), GPS, and NMEA (National Marine Electronics Association) data. This receiver allows for wireless viewing of critical marine navigation data anywhere on your vessel, and can also connect to a chart plotter or other compatible devices.

With its integrated GPS, the A026 provides not only the positions of other vessels but also your own precise location relative to them and the coastline, enhancing situational awareness and safety.

2. Key Features

- Two independent receivers monitoring AIS channels (161.975MHz & 162.025MHz) and decoding both channels simultaneously.
- Sensitivity down to -105 dBm@30% PER.
- Receiving range of up to 22 nautical miles.
- USB powered (USB 2.0, <270mA@5.0V). For optimal performance, use a low noise 5.0V USB power source or a QK-A013.
- NMEA-0183 message output available through WiFi, USB, and RS422 interfaces.
- Built-in GPS for providing accurate position data.
- Combines NMEA input (4.8kpbs only), GPS, and AIS messages, outputting them as a seamless data stream.
- BNC connector for a 50 Ohm VHF antenna.
- Powered SMA connector for a 50 Ohm GPS antenna.
- Supports both Ad Hoc and Station operating modes for WiFi connectivity.
- Internal WiFi access point allows connection of up to 4 devices simultaneously.
- Plug & play connectivity with various chart plotters and PCs.
- Compatible with Windows, Mac, Linux, Android, and iOS operating systems. (Note: Initial configuration must be completed using Windows software.)
- Connects to NMEA 0183 and is compatible with RS422 output devices. NMEA 0183-RS232 devices can connect using the Garmin Bridge (QK-AS03).
- This device does not come pre-loaded with map data. OpenCPN is advised for map data. Some applications may charge for map usage.

3. Product Overview



Figure 1: The QK-A026 Wireless AIS+GPS Receiver. This image displays the compact black unit with various connection points. On the left, there are two antenna ports: a BNC connector labeled "AIS ANT" and an SMA connector labeled "GPS ANT". The top right features a WiFi antenna. The front panel clearly shows the model name "QK-A026 Wireless AIS+GPS Receiver" along with key features like "AIS dual channel", "Built-in GPS receiver", "NMEA0183/USB/WiFi output", and "Multiplexing additional NMEA0183 input". An LED indicator is visible near the WiFi antenna. On the right side, a green terminal block provides connections for "NMEA IN+", "NMEA IN-", "NMEA OUT-", and "NMEA OUT+". The "WiFi/USB OUT" label indicates the data output methods.

4. Setup and Installation

4.1. Power Supply

The QK-A026 is powered via USB (5.0V). Ensure you use a stable, low-noise 5.0V USB power source. A dedicated power supply like the QK-A013 is recommended for optimal performance and to avoid potential interference.

4.2. Antenna Connections

- **AIS Antenna:** Connect a 50 Ohm VHF antenna to the BNC connector labeled "AIS ANT".
- **GPS Antenna:** Connect a 50 Ohm GPS antenna to the powered SMA connector labeled "GPS ANT".
- **WiFi Antenna:** Attach the provided WiFi antenna to the designated connector on the device.

4.3. Data Connections

- **USB Connection:** Connect the device to a PC or compatible device using a USB cable for data output and power.
- **NMEA 0183 (RS422) Connection:** Use the green terminal block for NMEA 0183 input and output. Connect NMEA IN+ and IN- for receiving data from other devices, and NMEA OUT+ and OUT- for sending data to chart plotters or other NMEA 0183 compatible equipment.
- **WiFi Connection:** The device creates an internal WiFi access point. Connect your wireless devices (smartphones, tablets, laptops) to this network to receive data wirelessly.

4.4. Initial Configuration

Initial configuration of the QK-A026 must be performed using Windows software. Refer to the driver and application notes available on the Quark-elec website or included on the CD in the package for detailed instructions on software installation and configuration.

For NMEA 0183-RS232 devices, a Garmin Bridge (QK-AS03) may be required to ensure compatibility with the QK-A026's RS422 output.

5. Operating Instructions

5.1. Data Reception and Multiplexing

Once powered and connected, the QK-A026 simultaneously receives AIS data on both channels (161.975MHz and

162.025MHz). The built-in GPS provides position data. The device then multiplexes (combines) the received AIS messages, GPS data, and any NMEA 0183 input (at 4.8kpbs) into a single, seamless data stream.

5.2. WiFi Operation Modes

- **Ad Hoc Mode:** The QK-A026 acts as its own WiFi network, allowing direct connection of up to 4 devices. This is ideal for standalone use on a vessel.
- **Station Mode:** The QK-A026 can connect to an existing WiFi network (e.g., your boat's router), allowing its data to be accessed by any device on that network.

5.3. Software Compatibility

The QK-A026 is compatible with a wide range of navigation software and operating systems, including Windows, Mac, Linux, Android, and iOS. Popular applications like OpenCPN, Boating HD, and most other plotter applications can integrate with the NMEA output. Remember that map data is not included and may require separate acquisition or subscription.

6. Maintenance

- **Cleaning:** Keep the device clean and dry. Use a soft, dry cloth to wipe the exterior. Avoid using harsh chemicals or abrasive cleaners.
- **Connections:** Periodically check all cable connections (USB, antennas, NMEA terminal block) to ensure they are secure and free from corrosion.
- **Firmware Updates:** Check the Quark-elec website for any available firmware updates. Follow the instructions provided with the update carefully. Note that some updates may require specific procedures, potentially involving accessing the internal board.
- **Storage:** If storing the device for an extended period, ensure it is kept in a cool, dry place, away from direct sunlight and extreme temperatures.

7. Troubleshooting

7.1. No GPS Signal

- Ensure the GPS antenna is securely connected to the "GPS ANT" SMA port.
- Verify that the GPS function is enabled within the configuration tool software. There might be different versions of the configuration tool; ensure you are using the latest one that allows GPS function enablement.
- Check the GPS antenna for damage or obstruction.

7.2. No AIS Targets Received

- Confirm the AIS antenna is properly connected to the "AIS ANT" BNC port.
- Ensure the AIS antenna is correctly installed and has a clear line of sight.
- Verify that the device is powered on and the LED indicator is functioning as expected.
- Check for local AIS traffic. In areas with low traffic, it may appear as if no targets are being received.

7.3. WiFi Connectivity Issues

- Ensure the WiFi antenna is securely attached.
- Verify the device is in the correct WiFi operating mode (Ad Hoc or Station) for your setup.
- Check that your connecting device (phone, tablet, PC) is connected to the correct WiFi network broadcast by the QK-A026 or the network it is joined to in Station mode.
- Some iOS devices may experience connectivity challenges; ensure your device's software is up to date and consult

Quark-elec support if issues persist.

7.4. Data Output Problems (USB/NMEA)

- For USB, ensure the correct drivers are installed on your computer. Drivers are available on the Quark-elec website.
- For NMEA, double-check the wiring to the terminal block (IN+/-, OUT+/-).
- Verify the baud rate settings in your receiving software match the device's output settings (typically 38400 for AIS, 4800 for NMEA input).
- If using an RS232 device, confirm the Garmin Bridge (QK-AS03) is correctly installed and configured.

8. Specifications

Attribute	Value
Model Number	8541746105
Item Package Dimensions L x W x H	7 x 3.8 x 2.1 inches
Package Weight	0.25 Kilograms
Brand Name	Quark-elec
Manufacturer	Quark-elec
Included Components	Wi-Fi Antenna
Vehicle Service Type	Boat
Special Feature	Advanced Wireless Connectivity and Multi-Device Support
Connectivity Technology	Wi-Fi
Map Type	Nautical
Mounting Type	Dashboard Mount, Panel Mount
Operating System Compatibility	Mac OS, Android (also Windows, Linux, iOS)
Human Interface Input	Buttons
First Available Date	August 6, 2018

9. Warranty Information

The Quark-elec QK-A026 comes with a manufacturer's warranty of**1 year from the purchase date**. Please retain your proof of purchase for warranty claims. For detailed warranty terms and conditions, refer to the documentation provided with your product or visit the official Quark-elec website.

10. Technical Support

For any technical questions, setup assistance, or troubleshooting beyond what is covered in this manual, please contact Quark-elec directly. You can message them or email via their official website. They are available to assist with specific setup configurations and technical inquiries.

Driver and application notes for the QK-A026 can be downloaded from the Quark-elec website. It is recommended to

check for the latest versions to ensure optimal performance and compatibility.

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