QUARK-ELEC QK-AS08-N2K 3-Axis Compass and Attitude Sensor User Guide
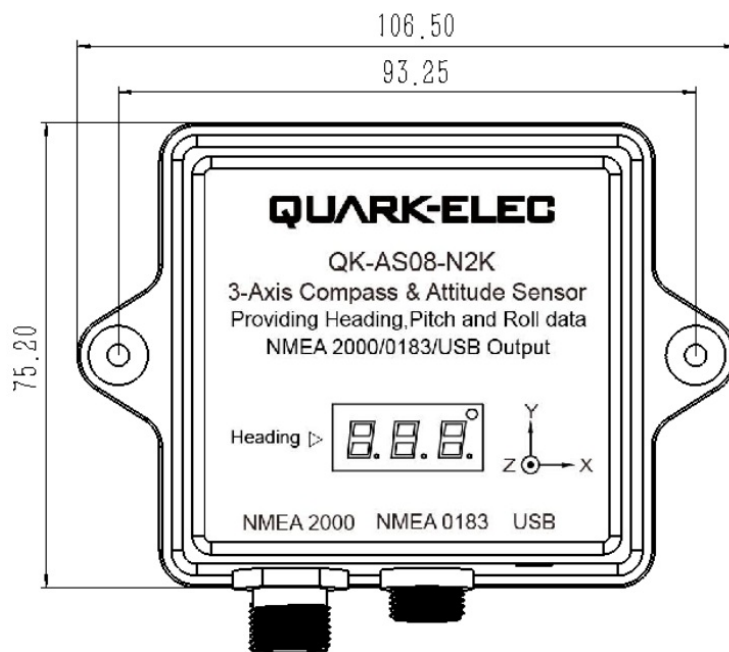
SET-UP GUIDE

QK-AS08-N2K
3-AXIS COMPASS & ATTITUDE SENSOR

PROVIDING HEADING, PITCH & ROLL DATA NMEA 0183, NMEA 2000 & USB OUTPUT UPPER ELECTROMAGNETIC COMPATIBILITY RELIABLE AND PRECISE ATTITUDE INFORMATION

⚠️ This is an overview only. Always familiarize yourself with the product manual and the manuals of any connecting devices before installation. Designed to be connected by an experienced installer.

Contents

INSTALLATION:

The AS08-N2K can be powered by 12V either via NMEA 0183 port or NMEA 2000 backbone. It can be used straight out of the box, no other connections or configuration is generally required.

Location

The AS0N2K is designed to be securely positioned in an indoor environment. The AS08-N2K should be mounted to a dry, sturdy, horizontal surface. The cable can be routed either through the side of the sensor housing or through the mounting surface under the sensor.
For best performance, mount the AS08-N2K:

- As close to the vehicle/boat's center of gravity as possible.
- To accommodate the maximum pitch and roll motions, mount the sensor as near to horizontal as possible.
- Avoid mounting the sensor high above the waterline because doing so also increases pitch and roll acceleration.
- The AS08-N2K does not require a clear view of the sky.

⚠️ Do NOT install near ferrous metals or anything that can create a magnetic field such as magnetized materials, electric motors, electronic equipment, engines, generators, power/ignition cables, and batteries.

Wiring

The AS08-N2K is designed to be used out of the box, for instant heading, rate of turn, pitch, and roll data to other NMEA 0183 devices and NMEA 2000 backbone. The default baud rate has been set as 4800bps, at 1Hz updating frequency on NMEA 0183 port. If needed, the user can use the configuration tool to set up NMEA 0183 output baud rate, data frequency, or disable unnecessary messages. The converted PGN messages are sent out to the NMEA 2000 backbone simultaneously from the N2K port. simultaneously from the N2K port.

The AS08-N2K sensor has the following connections:

- **NMEA 0183 port and power**. A four-core M12 connector can be connected with the provided 2-meter cable. This can be connected to the NMEA 0183 listeners and the power supply. The user can use the configuration tool to set up NMEA 0183 output data type, baud rate, and data frequency.

Wire	Function
Red	12V POWER
Black	GND
Green	NMEA OUTPUT +
Yellow	NMEA OUTPUT –

- **USB port.** The AS08-N2K is supplied with a type C USB connector. The USB cable can be linked directly to a USB port on a PC, supporting data output. The USB port is also used to configure the AS08-N2K and to calibrate (we only provide this function to authorized distributors).
- **NMEA 2000 port.** The AS08-N2K sends the heading, rate of turn, and status PGN messages through the NMEA 2000 bus to all connected devices. The AS08-N2K can be connected to an NMEA 2000 backbone, NMEA 0183 interface, or by connecting both interfaces simultaneously.

Connecting to NMEA 0183 (RS422) devices

The AS08-N2K sends heading, rate of turn, pitch, and roll sentences, in the NMEA 0183-RS422 (differential) protocol.
For RS422 interface devices, these wires need to be connected:

	QK-AS08 wire	The connection needed on the
NMEA 0183	NMEA output+	NMEA Input+ 1*
	NMEA output-	NMEA Input-
POWER	Black: GND	GND (for Power)
	Red: Power	12v—14.4v Power

* [1] Swap NMEA input + and NMEA input – wires if the AS08-N2K does not work. Ensure you check the above

table and your device's documentation carefully before connection.

Connecting to NMEA 0183 (RS232) devices:

Although AS08-N2K sends out NMEA 0183 sentences via differential end RS422 interface, it also supports single end for RS232 interface devices. These wires need to be connected in this case:

	QK-AS08 wire	The connection needed on the
NMEA 0183	NMEA output+	NMEA Input+ 2*
	NMEA output-	NMEA Input-
POWER	Black: GND	GND (for Power)
	Red: Power	12v—14.4v Power

*[2]Swap NMEA input and GND wires if the AS08-N2K does not work.

USING THE OPTIONAL USB OUTPUT

The AS08-N2K can be connected via USB to a Windows PC for:

1. Accessing heading, rate of turn, pitch, and roll data on a PC (NMEA 0183 format). To do this, the 3D model should be set as 'None' and the baud rate on the PC should be 115200bps.
2. Configuring additional settings (using Windows configuration tool)
   a. Filtering of NMEA 0183 output sentences, to eliminate unwanted data.
   b. Adjusting heading data output frequency. The frequency of heading data transfer can be set to 1/2/5/10 per second. 1Hz is the default setting and is generally recommended.
   Please note: changing the setting to 10Hz may cause data overflow in some devices.
   c. Adjusting the baud rate for NMEA 0183 output.
   d. Adjust the brightness level of the LED on the panel. It can be set to be day or night mode or off.
3. The configuration tool can also be used to view the real-time status of the boat. Please note, some computers without a dedicated GPU (Graphics Processing Unit) can't support this function.

The AS08-N2K is suitable not just for the marine market but for anyone wanting real-time information regarding heading, rate of turn, pitch, and roll of an aircraft, vessel, or vehicle. With the configuration tool, you can choose the module as vessel, aircraft, or vehicle.

DATA OUTPUT PROTOCOLS

	NMEA 0183 output
Wire connection	4 wires: 12V, GND, NMEA Out+, NMEA Out-
Signal type	RS-422
Supported messages	Sill-iDG – Heading with deviation & variation. $IIHDM – Heading magnetic. $11ROT — Rate of turn('/minute), '-' indicates bow turns to port. $IIXDR — Transducer measurements: Vessel attitude (pitch and roll). *MR message example: $11X0R,A,15.5,0,AS08_ROLL,A,11.3,D,A508_PITCH,*313 where 'A' indicates transducer type, 'A' is for angle transducer. '15.5' is the roll value, '-' indicates roll to port. '0' indicates the unit of measurement, degree. AS083011 is the name of the transducer and the data type. 'A' indicates transducer type, 'A' is for angle transducer. '11.3' is the pitch value, '-' indicates the bow is below the level horizon. '0' indicates the unit of measurement, degree. AS08_PITCH is the name of the transducer and the data type. '38 is the checksum.
	NMEA 2000 output
Wire connection	5 wires: Data+, Data-, shield, 12V, GND.
Supported messages	PGN 127250 — Vessel Heading, converted from HDG sentences PGN 127251— Rate of Turn, converted from ROT sentences PGN 127257 — Attitude (pitch and roll), converted from XDR sentences.

BEFORE LEAVING HOME:

We recommend pre-installing the configuration software or drivers if needed, as you might not have a CD reader/internet access on site.

Driver and configuration software is only needed for specific features. The AS08-N2K can be used out of the box. Simply connect it with a 12VDC power and it will immediately start working.

Configuration software and instructions are on the included CD and on **www.quark-elec.com**

Disclaimer: This product is designed to aid navigation and should be used to augment normal navigational procedures and practices. It is the user's responsibility to use this product prudently. Neither Quark-elec nor their distributors or dealers accept responsibility or liability either to the product user or their estate for any accident, loss, injury or damage whatsoever arising out of the use or of liability to use this product.

Email: **info@quark-elec.com**

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www.quark-elec.com

Documents / Resources

QUARK-ELEC QK-AS08-N2K 3-Axis Compass and Attitude Sensor [pdf] User Guide
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