QUARK-ELEC

QK-AS00 Manual

NMEA 2000 to NMEA 0183 Mini Gateway

Compatible with a wide range of NMEA 0183 devices

Supports the majority of NMEA 2000 PGNs

Designed in UK

Features

- Converts the most common NMEA 2000 PGNs into NMEA 0183 sentences
- NMEA 0183 outputs data in 0183 sentences or raw data in PCDIN format
- Galvanic Opto-isolation on NMEA 2000 CAN bus connection
- Compatible with a wide range of NMEA 0183 devices
- NMEA 0183 output baud rate set to 38400bps to reduce the amount of possible data overflow
- Pre-fitted N2K cable for a quick and easy installation

Contents

Figure 1: Example setup

1. Introduction

The AS00 is intended for use in a marine environment. It provides an easy way to link NMEA 2000 devices to an older NMEA 0183 listener device (e.g., chart plotter or voyage data recorder). It features an NMEA 2000 to NMEA 0183 converter with a wide support of message types.

The AS00 has an NMEA 2000 input and an NMEA 0183 output port. It supports the conversion of most NMEA 2000 PGNs and is compatible with a wide range of NMEA 0183 listener devices on the market. This includes devices using the RS422 (differential terminals) or RS232 (single terminal) communication protocol.

Thanks to its small size it can be easily installed behind instrument panels, making this device the ideal solution for vessels with limited available space for marine instruments, or on boats where multiple

converters are required. It is also recommended for marine electronics engineers or technicians, who require direct access to a vessel's NMEA 2000 network data, for testing or investigative purposes.

Please refer to the Conversion List chapter for details of supported (and non-supported) conversions.

If you need a NMEA 0183 to NMEA 2000 small size converter, please choose [QK-AS01 NMEA 0183 to NMEA 2000 Mini Gateway](#).

2. Mounting

The AS00 is aimed at the commercial, leisure and fishing boat markets.

It is not waterproof so should be mounted in a dry place such as behind the instrument panel on a flat surface.
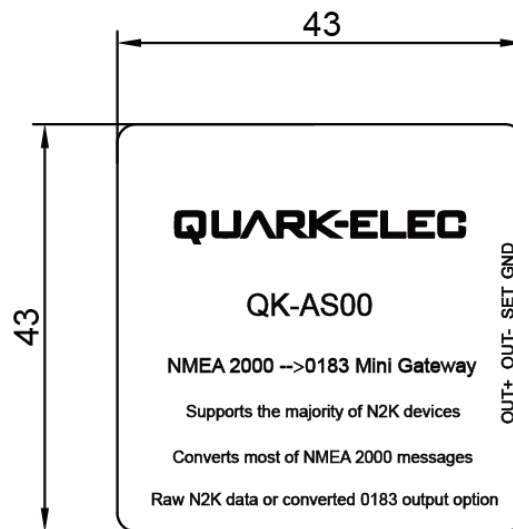

Figure 2: AS00 Dimension in mm

3. Connecting

⚠ **Disconnect all power sources before connecting your equipment!**

3.1. Connecting to the NMEA 2000 network

The AS00 is pre-fitted with a five-core screened cable for the NMEA 2000 connection, fitted with a male micro-fit connector. Simply connect the cable to the NMEA 2000 network backbone or using a T-piece connector.

Figure 3: Pin NMEA 2000 male micro-fit connection

The main communication channel of an NMEA 2000 network is an NMEA 2000 backbone to which NMEA 2000 devices are connected. The NMEA 2000 backbone must be powered from a stable 12V DC

power supply and always requires two termination resistors.

Please note the AS00 is powered by the NMEA 2000 network.

3.2. Connecting to a NMEA 0183 Device

The AS00 comes with a 4-way terminal block. Two of these terminals, labelled as 'OUT+' and 'OUT-', represent the NMEA 0183 output port and can be used to connect the AS00 to an NMEA 0183 listener device (e.g., a VDR's or a chart plotter's NMEA 0183 input). Please ensure the NMEA 0183 listener device is connected to the right terminals, as connecting it to the wrong terminals will damage both the AS00 and the other device.

NMEA 2000 networks operate with a high data rate of 250kbps. To reduce the amount of data loss caused by data overflow when converting data from a high-speed network to a lower speed connection, the AS00's NMEA 0183 output baud rate is set to 38400bps. Please ensure your NMEA 0183 listener device input's baud rate can be set to 38400bps, otherwise it will not be able to communicate with and receive data from the AS00 gateway. Please read your listener device's manual or contact the manufacturer for more details.

Although the AS00's NMEA 0183 interface is based on the RS422 communication protocol (differential ends), it also supports NMEA0183-RS232 interface devices (single end). The following tables provide the wiring information for each type.

	QK-AS00 terminal	RS422 device terminals
NMEA 0183 Output	NMEA OUT+	NMEA input+ *[1]
	NMEA OUT-	NMEA input-

*[1] Swap NMEA + and NMEA- wires if the connection does not work.

	QK-AS00 terminal	RS232 device terminals
NMEA 0183 Output	NMEA OUT+	GND *[2]
	NMEA OUT-	NMEA input

*[2] Swap NMEA input and GND / NMEA output and GND wires if the connection does not work.

The AS00 also offers the choice to output NMEA 0183 data in NMEA 0183 standard format or raw data format. By short connecting the SET and the GND terminals of the unit, the AS00 will output data in NMEA 0183 standard data format. If SET and GND terminals are left un-connected, the AS00 will output data in raw data format.

4. Configuration

The AS00 is a plug and play device, no initial configuration is required before connecting it to an NMEA 0183 device or to the NMEA 2000 network. By default, the AS00's output baud rate is set to 38.4kbps. As the NMEA 2000 network uses a significantly higher data rate (250kbps), while the default NMEA 0183 port runs at 38.4bps, data overflow on the NMEA 0183 output port cannot be completely avoided.

If there are multiple NMEA 2000 devices connected to the backbone, please be aware of the possibility of data overflow.

4.1. NMEA 0183 output sentence format

The AS00 can be helpful for the boat owners or the trained technician to directly access the boat's NMEA 2000 network data and perform any diagnostic or analytical work accordingly. In this case, viewing raw NMEA 2000 data in PCDIN format might be required. This can be achieved by short connecting the AS00's GND and SET terminals. Please ensure your device is disconnected from the NMEA 2000 network (powered off) before short connecting / disconnecting the GND and SET terminals.

5. Conversion Lists

The following tables list the supported NMEA 2000 PGN's (parameter group numbers) and NMEA 0183 sentences. It is important to check the table to confirm that the AS00 will convert the NMEA 2000 PGNs to the required NMEA 0183 sentences.

5.1. AS00 NMEA 2000 to NMEA 0183 conversions

The following NMEA 2000 to NMEA 0183 conversions are currently supported.

NMEA 2000 PGNs	Converted to NMEA 0183 sentence	Function
128267	DBT	Depth Below Transducer
128267	DPT	Depth
126992, 129025, 129029	GGA	Global Positioning System Fix Data
126992, 129025	GLL	Geographic Position Latitude/Longitude
129539	GSA	GNSS DOP and Active Satellites
129540	GSV	GNSS Satellites in View
127250	HDG	Heading, Deviation & Variation
127250	HDM	Heading, Magnetic
127250	HDT	Heading, True
130311	MTW	Water Temperature
130306	MWD	Wind Direction & Speed
130306	MWV	Wind Speed and Angle (True or relative)
129283,129284	RMB	Recommended Minimum Navigation Information
126992, 127258, 129025, 12902	RMC*	Recommended Minimum Specific GNSS Data
127251	ROT	Rate Of Turn
127488	RPM	Revolutions
127245	RSA	Rudder Sensor Angle
127250, 128259	VHW	Water Speed and Heading
128275	VLW	Dual Ground/Water Distance
129026	VTG*	Course Over Ground and Ground Speed
130306	VWR	Relative (Apparent) Wind Speed and Angle
129283	XTE	Cross Track Error, Measured
126992	ZDA	Time & Date
129038	VDM/VDO	AIS Message 1,2,3
129793	VDM/VDO	AIS Message 4
129794	VDM/VDO	AIS Message 5
129798	VDM/VDO	AIS Message 9
129802	VDM/VDO	AIS Message 14
129039	VDM/VDO	AIS Message 18
129040	VDM/VDO	AIS Message 19
129041	VDM/VDO	AIS Message 21
129809. 129810	VDM/VDO	AIS Message 24

V1.00

6. Specification

Item	Specification
DC supply	12.0 to 15.0 V
Average supply current	20mA
Maximum supply current	27mA
NMEA data format	ITU/ NMEA 2000 and 0183 format
NMEA 0183 port baud rate	38400bps baud by default
NMEA 2000 port baud rate	250kbps
LEN	1
Cable Length NMEA 2000	1.0m
Operating Temperature	-20°C to +55°C
Storage Temperature	-30°C to +70°C
Recommended Humidity	0 - 93% RH

7. Limited Warranty and Notices

Quark-elec warrants this product to be free from defects in materials and manufacture for one year from the date of purchase. Quark-elec will, at its sole discretion, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts and labour. The customer is, however, responsible for any transportation costs incurred in returning the unit to Quark-elec. This warranty does not cover failures due to abuse, misuse, accident or unauthorized alteration or repairs. A returns number must be given before any unit is sent back for repair.

The above does not affect the statutory rights of the consumer.

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 products user or their estate for any accident, loss, injury, or damage whatsoever arising out of the use or of liability to use this product.

Quark- products may be upgraded from time to time and future versions may therefore not correspond exactly with this manual. The manufacturer of this product disclaims any liability for consequences arising from omissions or inaccuracies in this manual and any other documentation provided with this product.

Document history

Issue	Date	Changes / Comments
1.0	03-03-2022	Initial release

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