Converter NMEA 0183 to AD-10S NTA-115

Technical Documentation

(115-2-27012011)

St. Petersburg
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1. Purpose

The device NTA-115 is intended for conversion data about heading in NMEA 0183 format to signal AD-10S. It used for connection various digital navigation equipment to Furuno's radars and other Furuno's equipment.

NTA-115 has embedded emulator of gyrocompass for easy device's installation and testing.

2. Delivery Set

1. Converter NTA-115   1 piece
2. Operation manual   1 piece

3. Specifications

Supply voltage: 8..40 VDC
Maximum power consumption: 2 W

Input interfaces: RS-232, RS-422/485
Output interface: AD-10S

Mass: not over 0.3 kg
Overall dimensions: 135 x 66 x 21
Operating temperature: -20..+55 °C
Storage temperature: -55..+70 °C

Input NMEA-sentences: HDT, OSD, VHW, HDG
Input data: heading value

4. Installation and Connection

Install the NTA-115 converter according to the outline drawing:
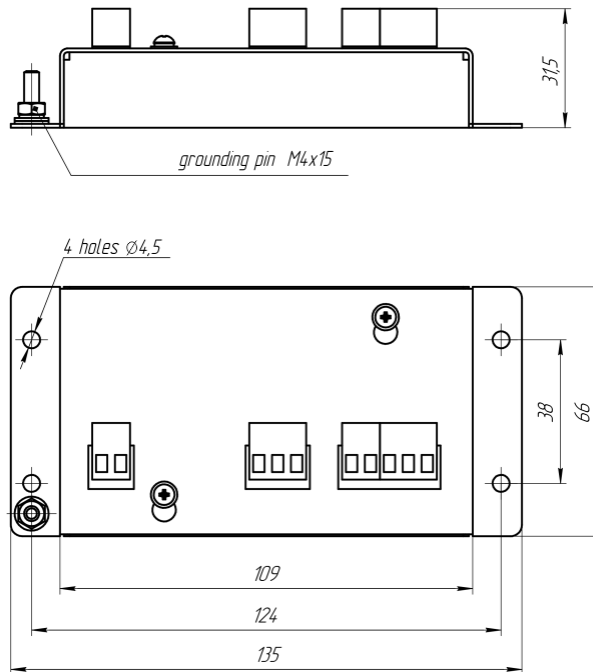
Take coupling cables from external devices and connect them according to the diagram:
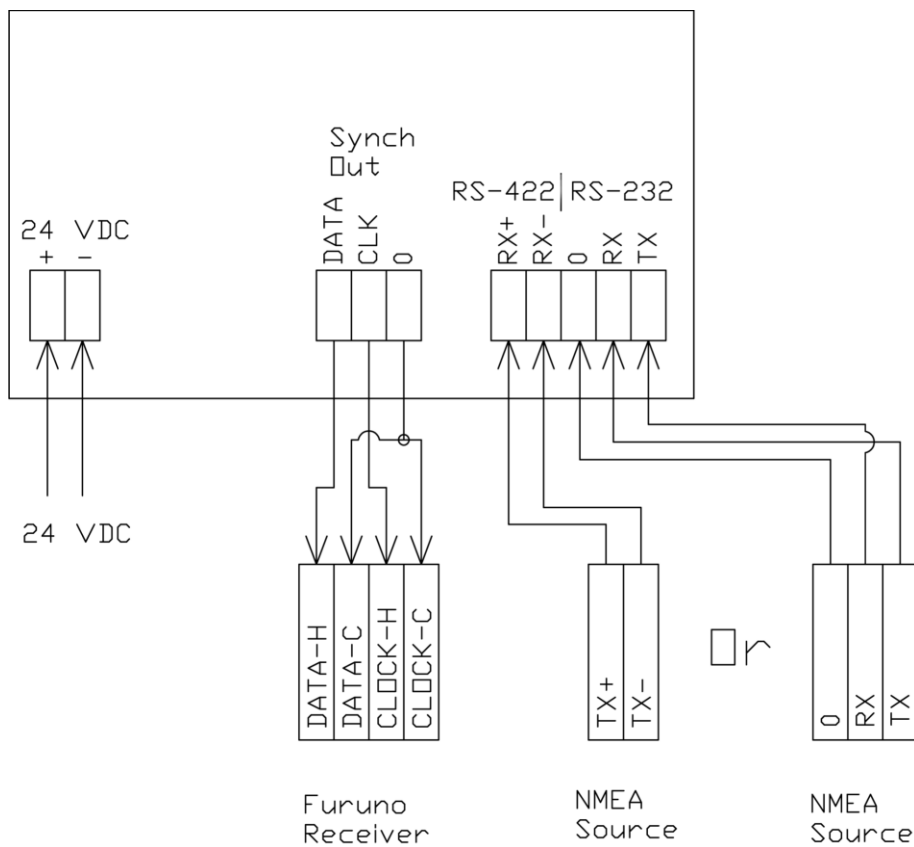
5. Principle of operation

The converter receives the heading data via RS-232 or RS-422/485 serial ports as NMEA lines of HDT, OSD, VHW formats. On the instant any of the specified NMEA lines is received, the converter reads the heading value and generates the output in the form of synchronous serial code. The cycle of synchrosignal is 50 μs. During the synchronous signal output the receipt via the serial port is switched off (to match the output timing diagram). The data repeating the input are sent to the RS-232 interface output (thus, the device operates as RS-232 transponder).

The device features isolation of RS-232/422 port and synchronous serial output. The converter power supply is isolated with reverse polarity power supply protection (diode) and overvoltage protection (voltage limiter with fuse).

The NTA-115 features several settings of serial port and synchronous output parameters. The settings are adjusted with DIP-switches (description of positions see below.)

6. Setting of device

Device setting procedure

The device setting consists in selection of input channel (RS-232/RS-422), setting parameters of input and output interfaces.

It is recommended to perform device setting in the following sequence:

I. Establishing communication with receiver.

1. To match the device with the receiver switch on device test mode (DIP-switches SW1.9-SW1.10 in position [00]).

2. Set output signal parameters (DIP-switches SW1.6-SW1.8) according to technical documents of the receiver (AD-10S signal, e.g. that of radar).

3. Check data import by device-receiver (if no data received, check the connection and parameters of output signal).

II. Establishing communication with NMEA-signal source.

4. Select the necessary interface (RS-232/RS-422) with jumper JP2.

5. Set parameters of input interface by setting transfer rate and parity (DIP-switches SW1.1-SW1.5).

6. To check the input signal setting, switch the device from test mode to operation mode (mode «Furuno», DIP-switches SW1.9-SW1.10 [10]). If no data input the receiver, check connection of the device and input signal settings.

Setting of input signal

Select interface RS-232 or RS-422

The necessary interface of data receipt is selected with jumper JP2.

Jumper JP2 position	Interface - NMEA data source
1-2	RS-422/485 (inputs RX+/RX-/0)
2-3	RS-232 (outputs RX/0)

Parameters of input signal are set by DIP-switches SW1.1-S1.5.

The jumper JP1 (in inserted position) connects resistor-terminator 120 Ohm at the RS-422 input (between RX+ and RX-). When using RS-422 interface, in most cases, jumper JP1 should be inserted (when pear-to-peer connection or when converter is a terminal device in a chain of devices.)

DIP-switch SW1

Purpose of switches

Type of setting	switch
Data transfer rate (input signal)	SW1.1
	SW1.2
	SW1.3
Parity (input signal)	SW1.4
	SW1.5
Information output sequence	SW1.6

(output signal)	
Signal level at outputs DATA and CLOCK at rest (output signal)	SW1.7
Synchronization type (clock) (output signal)	SW1.8
Format of output data	SW1.9
(output signal)	SW1.10

0 - DIP-switch in position OFF;

1 - DIP-switch in position ON.

Default position of DIP-switches

Device dip-switches when delivered from the manufacturer are set in the following position:

Parameter	Value	Switch	Position
Data receipt rate	4800 bit/s	SW1.1	1
		SW1.2	1
		SW1.3	1
Parity	none	SW1.4	1
		SW1.5	1
Information output sequence	MSB	SW1.6	1
Signal level at outputs DATA and CLOCK at rest	Low level	SW1.7	1
Synchronization type (clock)	negative-going slope	SW1.8	1
Output data format	AD-10S format	SW1.9	1
		SW1.10	0

JP2 jumper – position 1-2 (input interface RS-422/485)

Setting parameters of serial interface RS-232 (RS-422/485)

Rate (bit/s)	SW1.1	SW1.2	SW1.3
4800	1	1	1
9600	1	1	0
19200	1	0	1
38400	1	0	0
57600	0	1	1
76800	0	1	0
115200	0	0	1
230400	0	0	0

Parity	SW1.4	SW1.5
none	1	1
even	1	0
odd	0	1

Note! number of stop bits always equals 1.

Setting of output interface

Data output sequence	SW1.6
Least significant bit first (LSB)	0
Most significant bit first (MSB)	1

Signal level at outputs DATA and CLOCK at rest	SW1.7
high	0
low	1

Synchronization type (clock)	SW1.8
Data acquisition with positive-going slope	0
Data acquisition with negative-going slope	1

Format of output data	SW1.9	SW.10
Furuno (demo mode)*	0	0
Furuno (operating mode)	1	0
12-bit code	0	1
10-bit code	1	1

* - in demo mode the device transfers data in AD-10S format – no NMEA-data receipt. For this purpose, the heading value varies periodically from 0 to 360 degrees.

Note! Switches S1.1-S1.5 change settings of input signal (NMEA 0183). Switches S1.6-S1.10 change settings of output signal (AD-10S).

7. Warranty

The manufacturer guarantees the unit NTA-115 complies with this manual provided that the operation, transportation and storage conditions are adhered to during the warranty period.

The unit's warranty period expires 24 months from the date of its shipping from the manufacturer's storehouse.

Within the warranty period, the owner is entitled for a free repair, or a replacement of a separate part, provided that the malfunction occurred through the manufacturer's fault.

Warranty repair is provided if the unit is submitted with the manufacturer's label and a legible serial number available on it, as well as this operating manual.

The manufacturer is not responsible and cannot guarantee the unit's operation:

1. After the warranty period is over;
2. In case of the failure to observe the unit's operation, transportation, storage and installation rules and conditions;
3. If the unit is in an unmarketable condition, or has a damaged body, and other causes beyond the manufacturer's control;
4. If self-made electrical devices were used.
5. If there was an attempt to repair the unit by a person who is not an authorized representative of the manufacturer.

If the owner loses this operating manual or the manufacturer's label with a serial number, the manufacturer shall not provide their copies, and the owner shall be divested of the right for a free repair during the warranty period.

Upon the warranty expiry, the manufacturer shall facilitate the repair of the unit at the owner's expense.

Note: in case of warranty repair, the unit's disassembling from the installation site and its delivery to the manufacturer's service center are done at the owner's expense.

Visit the manufacturer's website www.unicont.com (section "support/warranty") to find:

− forms to fill in claims,
− full warranty description;
− full description of the warranty service rendering procedure.

The manufacturer service center's address and contact details:
NPK MSA LLC.
Bld. 26E Kibalchich Str., Saint Petersburg, 192174, Russia
tel.: + 7 (812) 622 23 10, +7 (812) 622 23 11
fax: +7 (812) 362 76 36
e-mail: service@unicont.com

8. DATE OF PACKING

Converter NMEA 0183 to AD-10S	NTA-115	№
name of article	designation	serial number

Packed _____*NPK MSA LLC, Russia.*_____
Manufacturer

according to the requirements of the current technical documentation.

post	signature	clarification of signature

year, month, day

9. ACCEPTANCE DETAILS

Converter NMEA 0183 to AD-10S	NTA-115	№
name of article	designation	serial number

was manufactured and accepted in accordance with the regulatory requirements of the state standards and applicable technical documentation, and is suitable for operation.

Quality control representative

Stamp _____
here   signature   clarification of signature

year, month, day

10. DATE OF COMMISSIONING

Converter NMEA 0183 to AD-10S	NTA-115	№
name of article	designation	serial number

The unit has been put into operation.

Date of installation: _____

Place of installation: _____

Person in charge of installation: _____