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FURUNO

FURUNO GNSS Receiver Evaluation kit

Model: VN-86x/VN-87x

Startup Manual

(Document No. SE15-710-005-01)

FURUNO ELECTRIC CO., LTD.

www.furuno.com

IMPORTANT NOTICE

This product is intended to evaluate the functions and the performance of our GNSS receiver in an environment in which the temperature (25°C) and vibration (0 m/s^2). Also, any reliability test has not been conducted. Therefore, the functions and the performance are not guaranteed at user's operating condition or environment. In that case, please guarantee the functions and the performance of this product under user's own responsibility.

The Global Positioning System (GPS) is operated by the U.S.DoD and is subject to U.S Government Selective Availability (SA) policy, thus FURUNO is not liable for the degradation by SA. User is expected to be familiar with the System and make full use of it with their own responsibility.

FURUNO ELECTRIC CO., LTD. reserves the right to make changes to its products and specifications without notice.

Revision History

Version	Contents Change	Date
0	Initial Release	2016.03.10
1	Changed the baud rate for VN-860/870 in Chapter 6.	2017.08.16

Table of contents

1 Outline

The document describes the VN-86x (VN-860, VN-861 and VN-862)(*1) and VN-87x (VN-870, VN-871 and VN-872)(*1) startup manual.

(*1) VN-86x and VN-87x are the evaluation kits built in FURUNO GNSS module (GN-86, GV-86, GT-86, GN-87, GV-87 and GT-87). The differences of these evaluation kits are as follow table.

Type	Module	Note
VN-860	GN-86 (1.57542GHz band GNSS Module)	
VN-861	GV-86 (1.57542GHz band GNSS + Dead Reckoning Module)	Built in gyro sensor and accelerometer
VN-862	GT-86 (1.57542GHz band GNSS Timing Module)	
VN-870	GN-87 (GPS & GLONASS Multi GNSS Module)	
VN-871	GV-87 (GPS & GLONASS Multi GNSS + Dead Reckoning Module)	Built in gyro sensor and accelerometer
VN-872	GT-87 (GPS & GLONASS Multi GNSS Timing Module)	

2 Component List

The component lists of these evaluation kits are as follows.

Type	Antenna	USB cable	CAR I/F cable	CD-ROM(*2)
VN-860	GPS antenna	Attached	-	Attached
VN-861			Attached	
VN-862			-	
VN-870	GPS/GLONASS antenna		-	
VN-871			Attached	
VN-872			-	

(*2) CD-ROM is as follows.
- Communication software
- Documentations

3 Overview

	Name	Type	Description
(1)	RF connector	SMA-J	Please use the attached antenna.
(2)	CLK	SMA-J	Clock is output from the connector. (*5)
(3)	Power switch	Toggle switch	Main power ON/OFF switch
(4)	USB Port	Type B	USB port for power supply and communication between the evaluation kit and PC of customer side
(5)	PPS output	SMA-J	PPS is output from the connector.
(6)	CAR I/F Connector (*3)(*4)	Molex 53254-0370 3 pin	This connector is for inputting speed pulse and reverse signal Matching Housing: Molex 51065-0300 3 pin Matching Pin contact: 50212-8000

(*3) VN-861 and VN-871 can only use this connector.
(*4) See the chapter 4 for the details.
(*5) VN-862 and VN-872 can only output clock.

4 CAR I/F

This chapter describes about the pin assignment of CAR I/F connector and the electrical specifications of the speed pulse and the reverse signal. When the signals are distributed and used, it is necessary to be careful since a signal level decrease may occur by the influence of other circuits.

4.1 CAR I/F

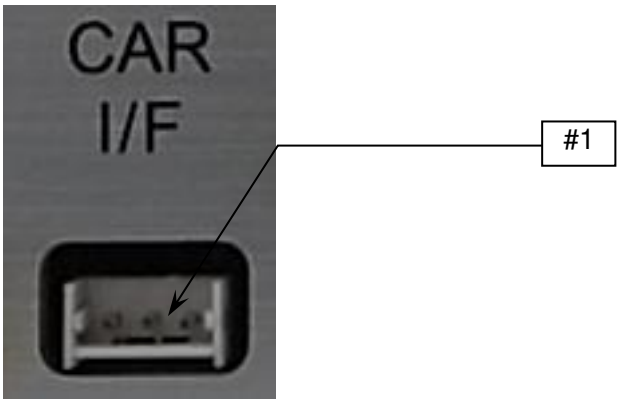

Figure 4-1 CAR I/F

Table 4-1 Pin assignment of CAR I/F port

Pin #	Name	I/O	Description	Note
1	SPEED	I	Speed pulse	
2	BACK	I	Reverse signal input L:Forward H:Reverse	
3	GND	-	Ground	

4.2 Speed Pulse

Table 4-2 Electric characteristics of Speed pulse

Item	Symbol	Unit	Min	Typ	Max	Condition
High level amplitude	V_H	V	4	-	13.5	Refer to Figure 4-2
Low level amplitude	V_L	V	-0.3	-	1	
Frequency	f	Hz	DC	-	2000	
Duty cycle	-	%	25	50	75	

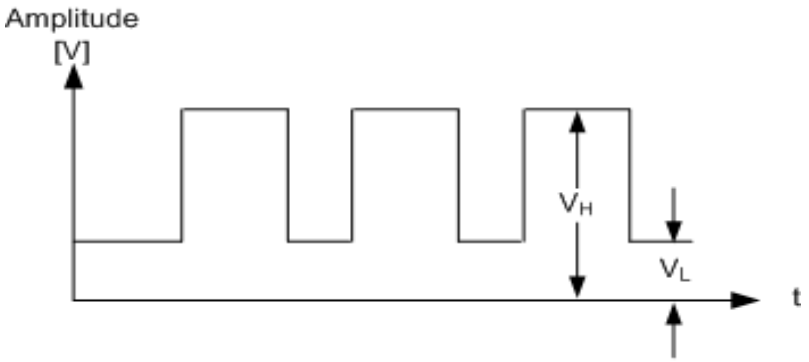

Figure 4-2 Waveform of Speed pulse

4.3 Reverse Signal

Table 4-3 DC characteristics of Forward/ Reverse signal

Item	Symbol	Unit	Min	Typ	Max	Condition
High level amplitude	V_{bH}	V	4	-	13.5	
Low level amplitude	V_{bL}	V	-0.3	-	1	

5 How to Function

① Install the GNSS Conductor into a PC.
② Connect the attached antenna to the RF Connector.
③ Switch the evaluation kit off.
④ Connect the evaluation kit and the PC via USB-cable.
⑤ Confirm the connection status between the evaluation kit and PC from the device manager.
⑥ Install the device driver, if "Found New Hardware Wizard" appears.
⑦ Switch the evaluation kit on.
⑧ Operate the evaluation kit with the communication software (GNSS Conductor).

6 Communication Setting

The default communication setting is as follows.

Baud rate	9600 [bps] (VN-860/870) 115200 [bps] (VN-861/871) 38400 [bps] (VN-862/872)
COM Port	COM port number connecting the evaluation kit
Data length	8 bit
Parity	None
Stop bit	1 bit