VN-100/200 Development Board

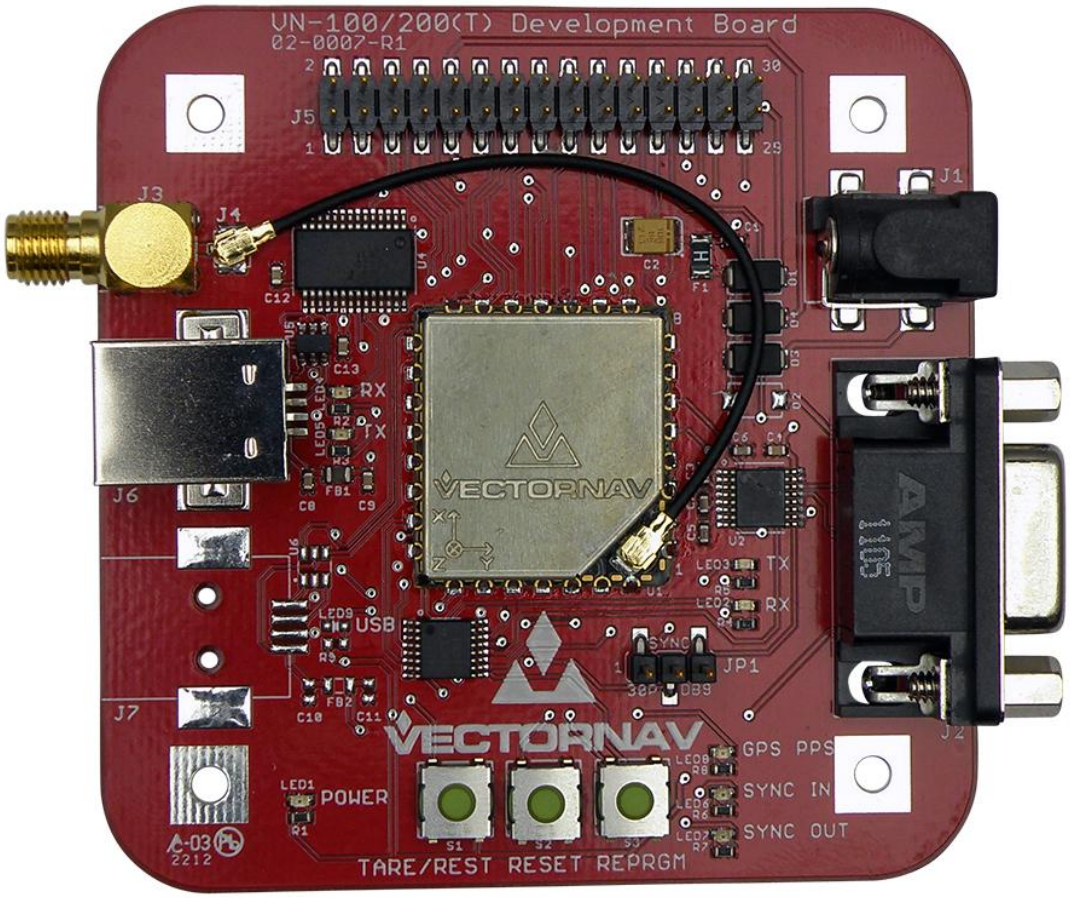
User Manual

Introduction

The VN-100 DEV is a development board for the VN-100 attitude and heading reference module. It is designed to provide easy access to the module for development purposes. USB and RS-232 interfaces are provided, along with a header that includes full prototyping access to the VN-100.

The board can be powered by the USB host computer, a 5V barrel adapter, or through the 30-pin header. A red LED indicates the power status of the board.

Figure 1 – Development Board



Board configuration

Connectors

USB

The USB jack is a USB-B port. When connected to a PC the VN-100 DEV board will power up and a RED power LED will be illuminated. A FTDI FT232R USB interface IC is used to connect the serial port #1 of the VectorNav sensor to the USB port. Drivers for the USB to UART must be installed for proper operation of this port. These are supplied with the documentation for the board or they can be downloaded at www.vectornav.com.

DB-9

The DB-9 port provides a RS-232 logic level interface to serial port #2 of the VectorNav sensor. The RS-232 line driver supports speeds up to 1 Mbit. The RS-232 interface requires the VN-100 DEV board to be powered to function properly. The power can be supplied thru the USB port or thru the 5V power jack.

Power Jack

This is a standard 5V power jack. This powers the board when using the RS-232 interface. Diodes are present to isolate the between the 5V barrel jack, USB connector and 30-pin header. The input power should never exceed 6V.

Indicator lights

Power LED

Turns bright red when power is supplied to the board.

USB LED

Lights green when data is transferred across the TX and RX lines on the USB.

RS-232 LED

Lights green when data is transferred across TX and RX lines of the RS-232 serial interface.

GPS PPS

Lights yellow when a positive polarity pulse is received on the GPS PPS line.

SyncIn LED

Lights yellow when a positive polarity pulse is received on the SyncIn line.

SyncOut LED

Lights yellow when a positive polarity pulse is received on the SyncOut line.

Push Buttons

REPRGM

This button is only used to enable the VN-100 boot mode. Pressing this switch during power-up, or reset of the VN-100 module will set the VN-100 into boot mode.

RESET

This button is used for re-setting the VN-100. Pressing the button at any time while the board is running will reset the VN-100 module.

TARE/RESTORE

This button is normally used to tare the VN-100. During power on or device reset, if this button is pressed it will cause the module to restore its default factory settings. Because of this, this button cannot be used for tare until at least 0.5 seconds after a power on or reset.

Jumpers

SYNC – JP1

This jumper selects which source is routed to the SyncIn pin on the VectorNav sensor. Shorting the center pin with the right pin labeled DB9 will connect the SyncIn pin on the sensor to pin 1 & 6 on the DB-9. Shorting the center pin with the left pin labeled 30P will connect the SyncIn pin to pin 25 on the 30-pin header.

J5 – 30-Pin Header

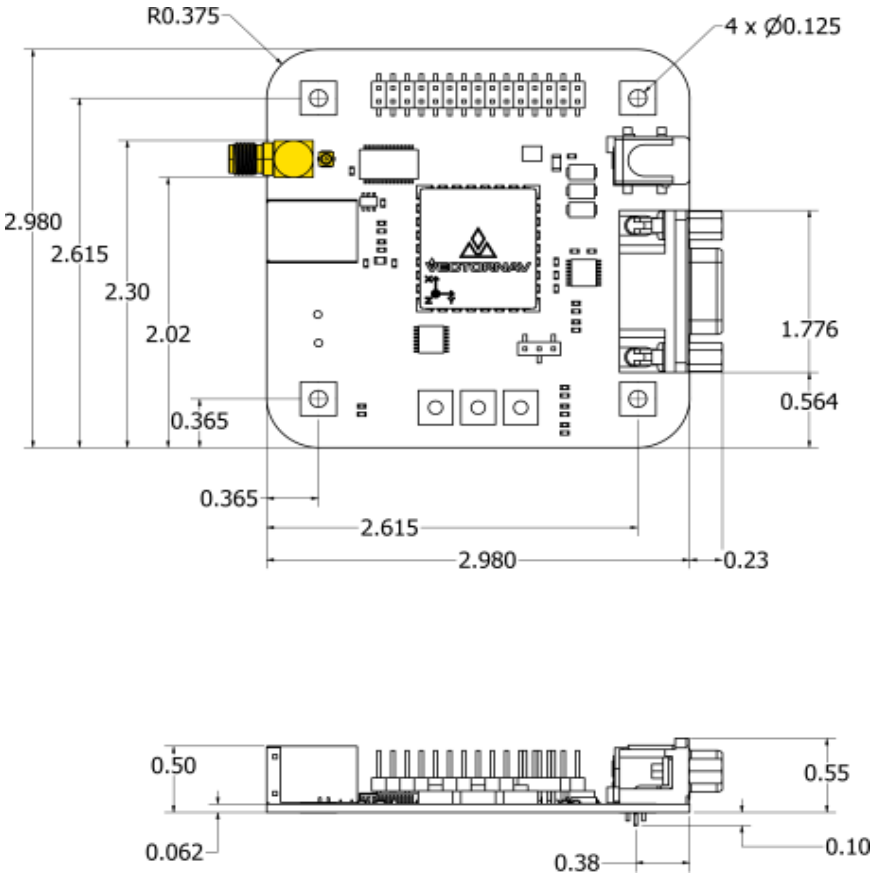
The J5 header provides a complete interface to all the pins on the VectorNav sensor. Each pin is directly mapped to the corresponding pin on the sensor.

J5 – 30-Pin Header

Pin #	Pin Name	Description
1	GND	Ground.
2	GND	Ground.
3	GND	Ground.
4	GND	Ground.
5	TX2	Serial UART #2 data output. (sensor)
6	RX2	Serial UART #2 data input. (sensor)
7	TARE/RESTORE	Normally used to zero (tare) the attitude. To tare, pulse high for at least 1 µs. During power on or device reset, holding this pin high will cause the module to restore its default factory settings. Because of this, the pin cannot be used for tare until at least 5 ms after a power on or reset. Internally held low with 10k resistor.
8	NC	Not used.
9	SYNC_OUT	Time synchronization output signal. See Synchronization Control in sensor manual for more details.
10	VIN	3.2 - 5.5V input.
11	ENABLE	Leave high for normal operation. Pull low to enter sleep mode. Internally pulled high with pull-up resistor.
12	TX1	Serial UART #1 data output. (sensor)
13	RX1	Serial UART #1 data input. (sensor)
14	RESV	Reserved for future use. Leave pin floating.
15	SYNC_IN_2	Reserved for future use. For backwards compatibility with older hardware revisions this pin can be configured in software to operate as the time synchronization input signal. For new designs it is recommended that SYNC_IN (pin 22) is used instead. See Synchronization Control in sensor manual for more details.
16	SPI_SCK	SPI clock.
17	SPI_MOSI	SPI input.
18	GND	Ground.
19	SPI_MISO	SPI output.
20	REPRGM	Used to reprogram the module. Must be left floating or set to low for normal operation. Pull high on startup to set the chip in reprogram mode. Internally held low with 10k resistor.
21	NRST	Microcontroller reset line. Pull low for > 20µs to reset MCU. Internally pulled high with 10k.
22	SYNC_IN	Time synchronization input signal. See Synchronization Control in sensor manual for more details.
23	SPI_CS	SPI slave select.
*24	GPS_PPS	GPS time pulse. One pulse per second, synchronized at rising edge. Pulse width is 100ms.
*25	VBAT	Optional GPS RTC battery backup. 1.4V – 3.6V input.
26	RESV	Reserved for future use.
27	RESV	Reserved for future use.
28	GND	Ground.
*29	GPS_RF	Optional GPS RF input for passive antenna. The surface mount IPX (U.FL) connector should be used with an active GPS antenna.
30	GND	Ground.

Pins with (*) are reserved for future use on the VN-100 sensor

Mechanical Drawings



Highlighted Components only installed with VN-200

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