

MN5020HS Evaluation Kit User Guide



1 Evaluation Kit Introduction

The MN5020HS Evaluation Kit is designed to allow the user to quickly evaluate the Micro Modular Technologies MN5020HS Smart GPS Antenna Module. The MN5020HS Evaluation Kit implements the necessary circuitry to attach an MN5020HS Smart GPS Antenna Module to a PC-compatible computer.

Primary power is supplied through the USB connector from the PC.

The MN5020HS Evaluation Kit software is supplied on a CD ROM. This software is installed onto a personal computer and allows the user to control the MN5020HS Smart GPS Antenna Module as well as display and record the receiver output message data.

1.1 Document Applicability

This document applies to the MN5020HS Evaluation Kit (MN5020HS-EVK).

1.2 Kit Identification

The version of the Evaluation Kit can be identified as follows: There is a MN5020HS Smart GPS Antenna Module in the center of the board and there are three LED indicator lights on the front edge.

2 Description of the Evaluation Kit

The MN5020HS Evaluation Kit features a USB translator from the logic levels utilized by the MN5020HS Smart GPS Antenna Module.

In addition, the MN5020HS Evaluation Kit includes internal DC regulators which are used to provide the necessary power to the MN5020HS itself, as well as the ancillary circuitry on the MN5020HS evaluation board.

The MN5020HS Smart GPS Antenna Module includes a Real Time Clock (RTC) chip internally which provides the receiver with precise time allowing it to execute a Hot Start (assuming that ephemeris and position data is current). The user can therefore evaluate the Hot Start capability of the MN5020HS.

2.1 Supplied Equipment

The MN5020HS Evaluation Kit contains the following items:

1. MN5020HS Smart GPS Antenna Module installed on the evaluation board which includes a USB interface, power regulators, and switches.
2. MN5020HS Evaluation Kit CD which contains the following:
 - a. Evaluation Software for operation of the MN5020HS Evaluation Kit
 - b. Documentation for the MN5020HS Evaluation Kit in PDF format.
3. USB cable

2.2 Additional Required Equipment

The MN5020HS Evaluation Kit requires the following customer-supplied items at a minimum for testing the MN5020HS Smart GPS Antenna Module: PC-compatible desktop or laptop (preferred) equipped with the Windows XP operating system, one available USB port and a CD ROM drive.

3 Detailed Interface Description

3.1 Indicator Lights

Three indicator lights are provided on the faceplate to provide visual status of the MN5020HS evaluation board.

1. The leftmost light is the PWR light, which illuminates when DC power is active within the MN5020HS evaluation board.
2. The middle light is the DATA light, which flashes to indicate the MN5020HS evaluation board is sending serial data to the host computer. Note that this light will not flash unless the USB cable is connected to a computer and an application program has opened the COM port.
3. The rightmost light is the 1PPS light, which flashes at a 1 Hz rate driven by the 1PPS signal from the MN5020HS Smart GPS Antenna Module. It is synchronized when the receiver has a valid fix.

3.2 USB Serial Port

The USB Serial Port supports communications between the MN5020HS evaluation board and the PC-compatible computer. Communications on this port use the National Marine Electronics Association (NMEA)-0183 format or the SiRF binary protocol for data and command messages. The configuration (protocol, port speed, etc.) can be changed by user commands.

3.3 Power Switch

The left (toggle) switch on the face of the MN5020HS evaluation board is the power switch which controls power to the evaluation board. If the switch is in the lower position, power is turned off to the evaluation board. Note that the switch does not interrupt the DC power, but places the onboard regulators into shutdown mode. Therefore, there is a very small amount of leakage current drawn from the DC power source.

3.4 On-Off Button

The right (pushbutton) switch toggles the state of the GPS module between the On and Hibernate states. In the Hibernate state, RAM remains powered up and the RTC continues running but the receiver itself does not operate, thus reducing power consumption.

4 Configuring the Evaluation Kit

As shipped, the MN5020HS Evaluation Kit is useable without having to reconfigure internal options.

4.1 Jumpers

The J1 jumper block is used to connect the BOOT pin to logic high so the module's flash memory can be re-programmed if necessary. Leave the shunt off for normal operation.

The J3 jumper block is unused

The J4 jumper block provides access to the 1PPS output signal. The upper pin(viewed from the front) is the 1PPS signal, and the lower pin is ground.

The J5 jumper block provides power to the VBATT (main power) pin of the MN5020HS GPS Smart Antenna Module. A shunt should normally be installed.

5 Setup and Initial Checkout of the MN5020HS Evaluation Kit

Follow this procedure to initially check out the proper operation of the software and MN5020HS Evaluation Kit hardware.

1. On the CD supplied with the Evaluation Kit, go to the “USB Driver” folder and run the program “CDM 2.04.06.exe”. This will install the driver for the USB interface chip.
The link for the latest version of this driver is: <http://www.ftdichip.com/Drivers/VCP.htm> .
Choose the driver for the FT232R chip.
2. Connect the supplied USB cable from the MN5020HS evaluation board to a USB port of the host PC. The USB driver will provide a virtual COM port. You may use Windows’ Device Manager to identify the COM port number assigned on your particular PC.
3. Place the MN5020HS evaluation board where it has a clear and unobstructed view of the open sky.
4. Start up the MN5020HS evaluation program on the host computer and enable the connection. Please refer to the SiRFdemo documentation for details.
5. Turn on the power switch of the MN5020HS evaluation board and verify the power LED glows green.
6. The MN5020HS evaluation program should indicate communication with the MN5020HS evaluation board, and after a short delay of a minute or so display current time and position.
7. Allow the receiver to operate for approximately 15 minutes to collect current almanac data from the GPS satellites.

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6 Evaluation Board Layout

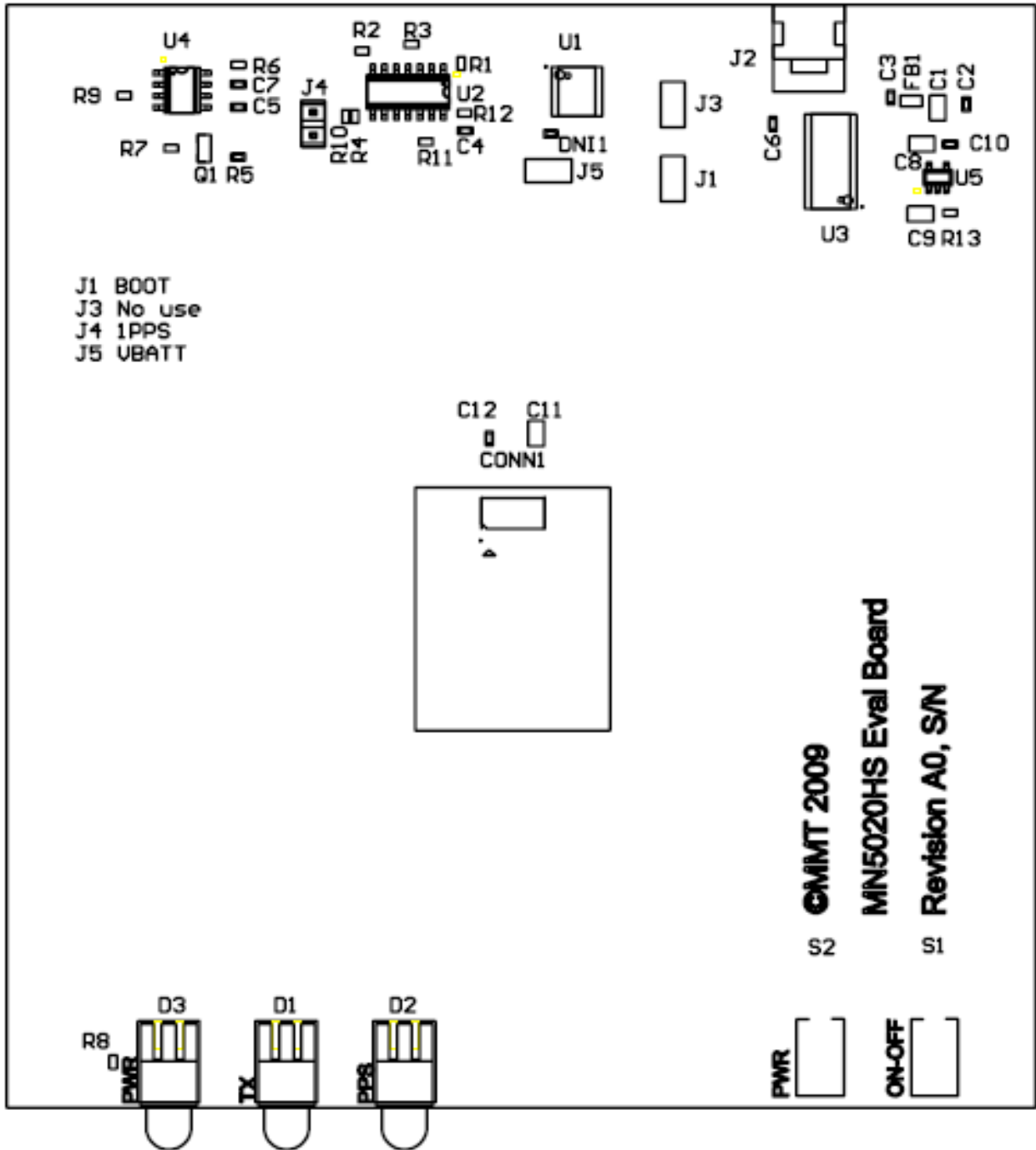


Figure 1 – MN5020HS Evaluation Board Layout

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7 Evaluation Board Schematic

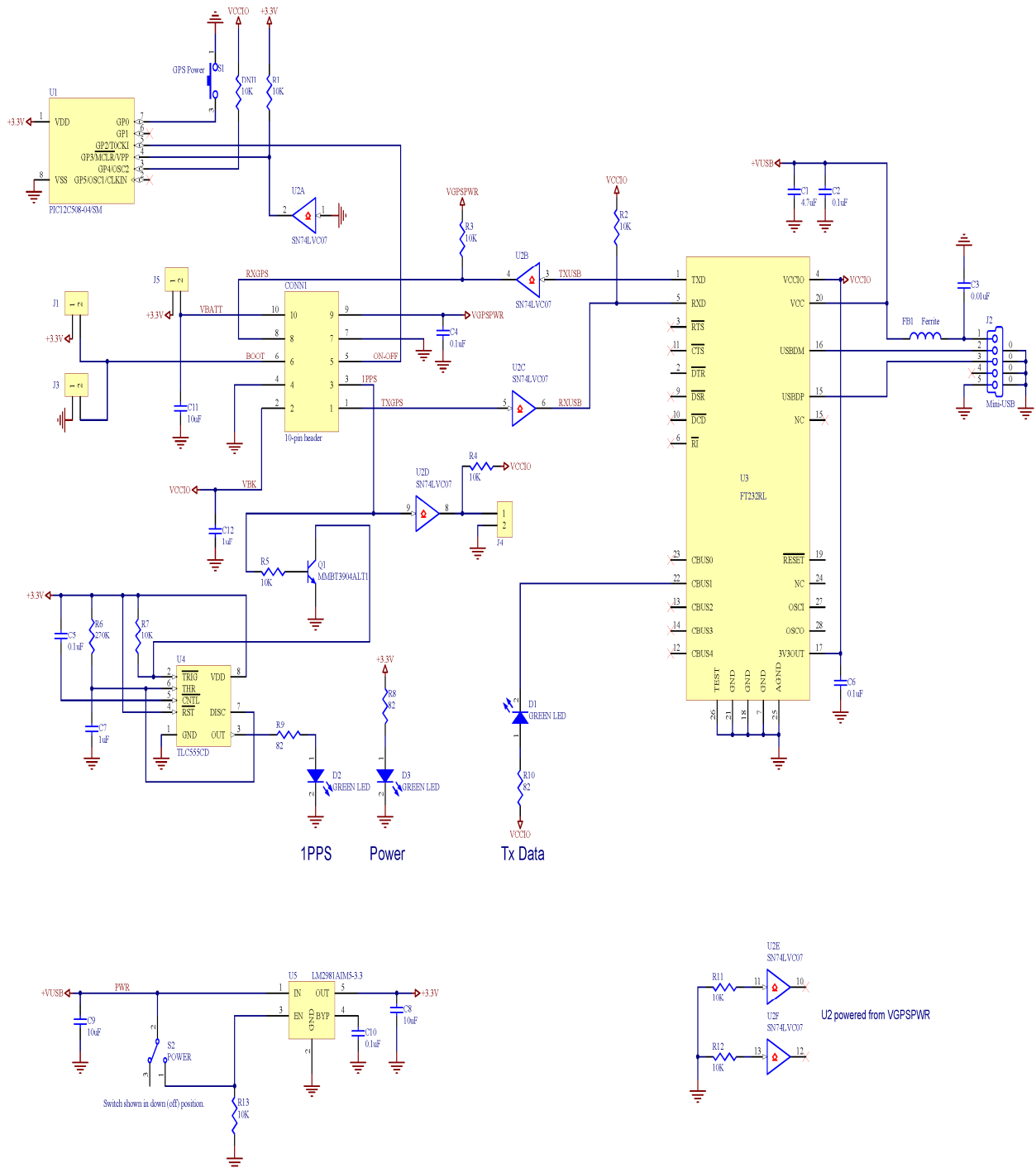


Figure 2 – MN5020HS Evaluation Board Schematic

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8 Notices

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