

Sierra Radio Systems

Digital Compass

Reference Manual

Version 1.0

Contents

- Digital compass board
- RS485 power injector

For more information, go to the Sierra Radio Systems web site at www.sierraradio.net or www.hamstack.com

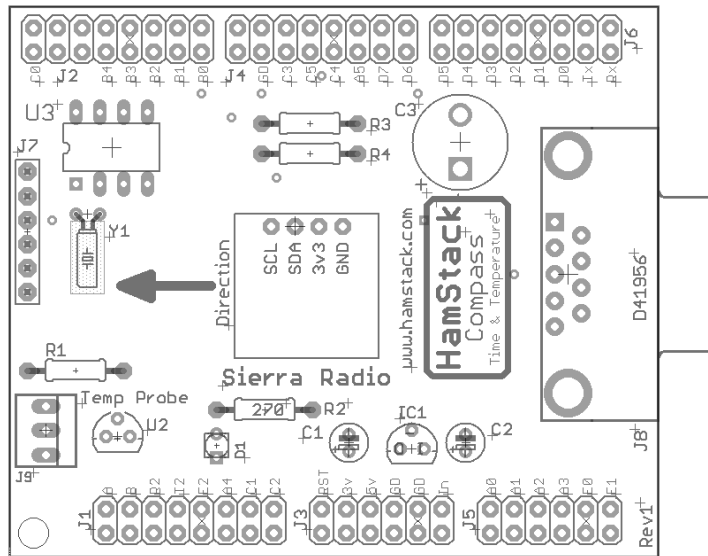
Assembly

The HamStack and StationStack boards are easy to assemble. There is no particular assembly sequence required. Follow the parts placement diagram and insert the components and solder them in place. If there are special assembly instructions or configuration steps required, they are included in each section.

The HamStack Getting Started guide book provides more detailed suggestions for board assembly. While the instructions are written for the HamStack CPU board in particular, the sequence of assembly and tips to make the whole process go faster and smoother are generally applicable to all boards. Start with IC sockets, then resistors, then capacitors, etc...

The Getting Started guide can be downloaded from the HamStack web site.

Digital Compass Board



Overview

The digital compass board is designed to integrate a Honeywell 2-axis magnetometer with built-in controller to a HamStack CPU board. In addition to the compass, the board features additional convenient devices and connections.

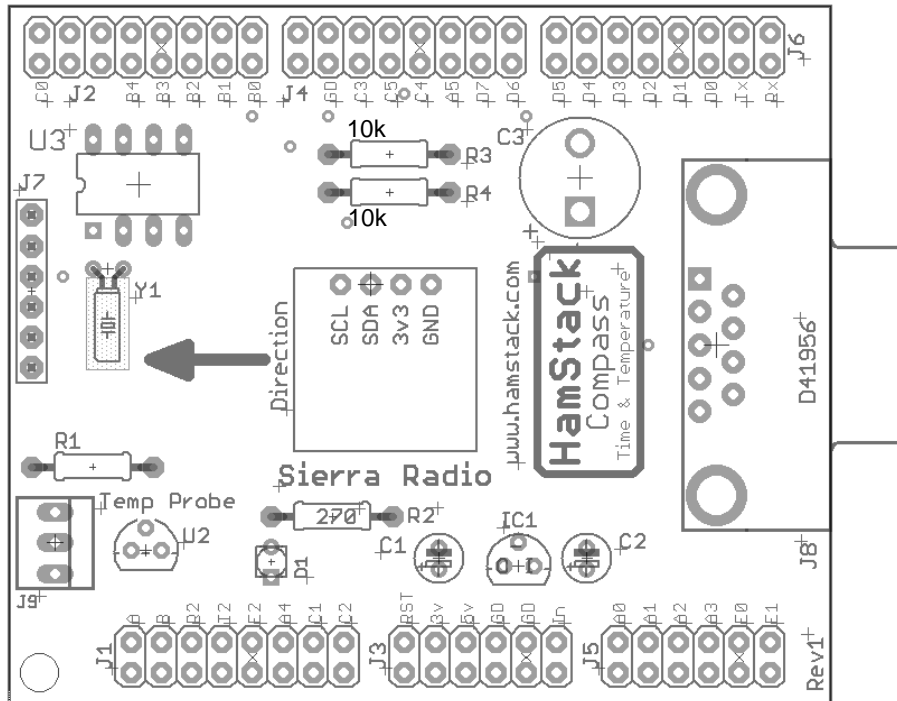
Features

- Digital compass module with a 2-axis magnetometer, built-in controller and I2C interface
- DS1307 real time clock / calendar chip
- A OneWire temperature probe jack with pull up resistor and power
- DB9 connector RS232 signals routed from the HamStack CPU

When building this board, you can choose to assemble all or part of the board to customize it for your specific project.

Digital Compass Board

Parts Placement



❑ Assembly Tip

Install components that are necessary for sub-circuits for your project needs as follows...

Basic components required for any configuration

- C1 10 UF electrolytic capacitor
- C2 10 UF electrolytic capacitor
- D1 LED
- IC1 78L05
- J1 2x8 Stacking header or male header pointing down
- J2 2x8 Stacking header or male header pointing down
- J3 2x6 Stacking header or male header pointing down
- J4 2x8 Stacking header or male header pointing down
- J5 2x7 Stacking header or male header pointing down
- J6 2x8 Stacking header or male header pointing down
- J7 2x6 Stacking header
- R2 270

Components required for RS232 interface

- J8 DB9 Female connector

Components required for digital compass

- R3 10k
- R4 10k
- U1 Digital compass module

Components required for clock / calendar

- R3 10k
- R4 10k
- SOC 8 pin DIP socket
- U3 DS1307
- Y1 32 kHz crystal

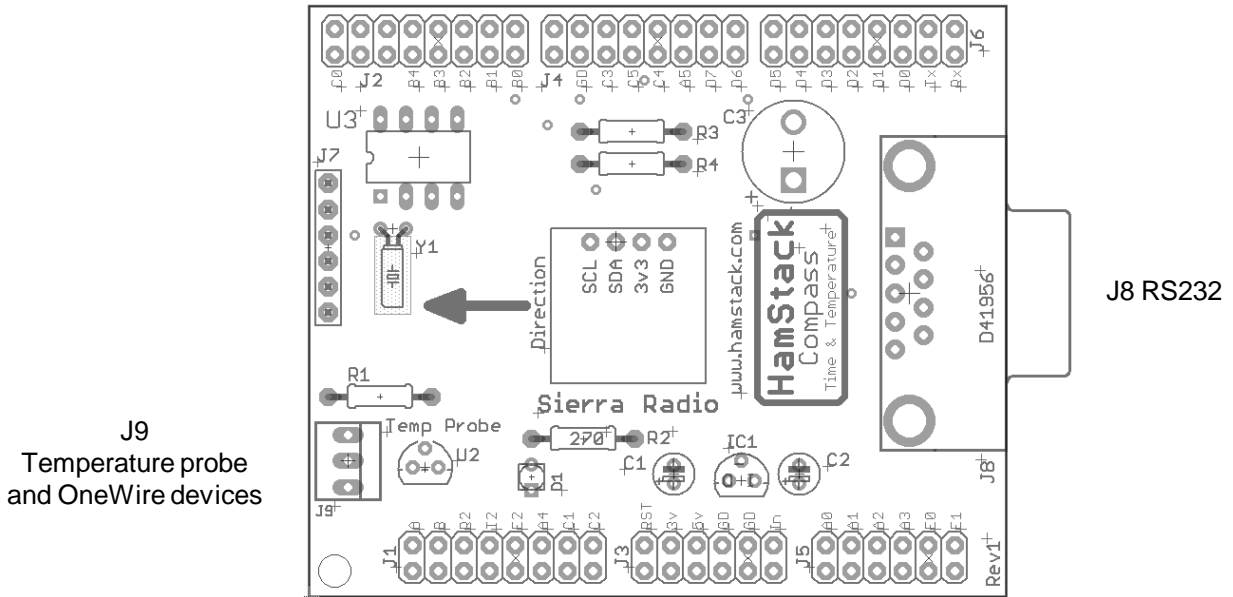
Components required for temperature probe and other OneWire devices

- J9 3 pin connector
- R1 4.7k
- U2 DS18B20 *Optional

A DS18B20 can be installed on the PCB or left off the board and connected by wire through the 3 pin J9 connector.

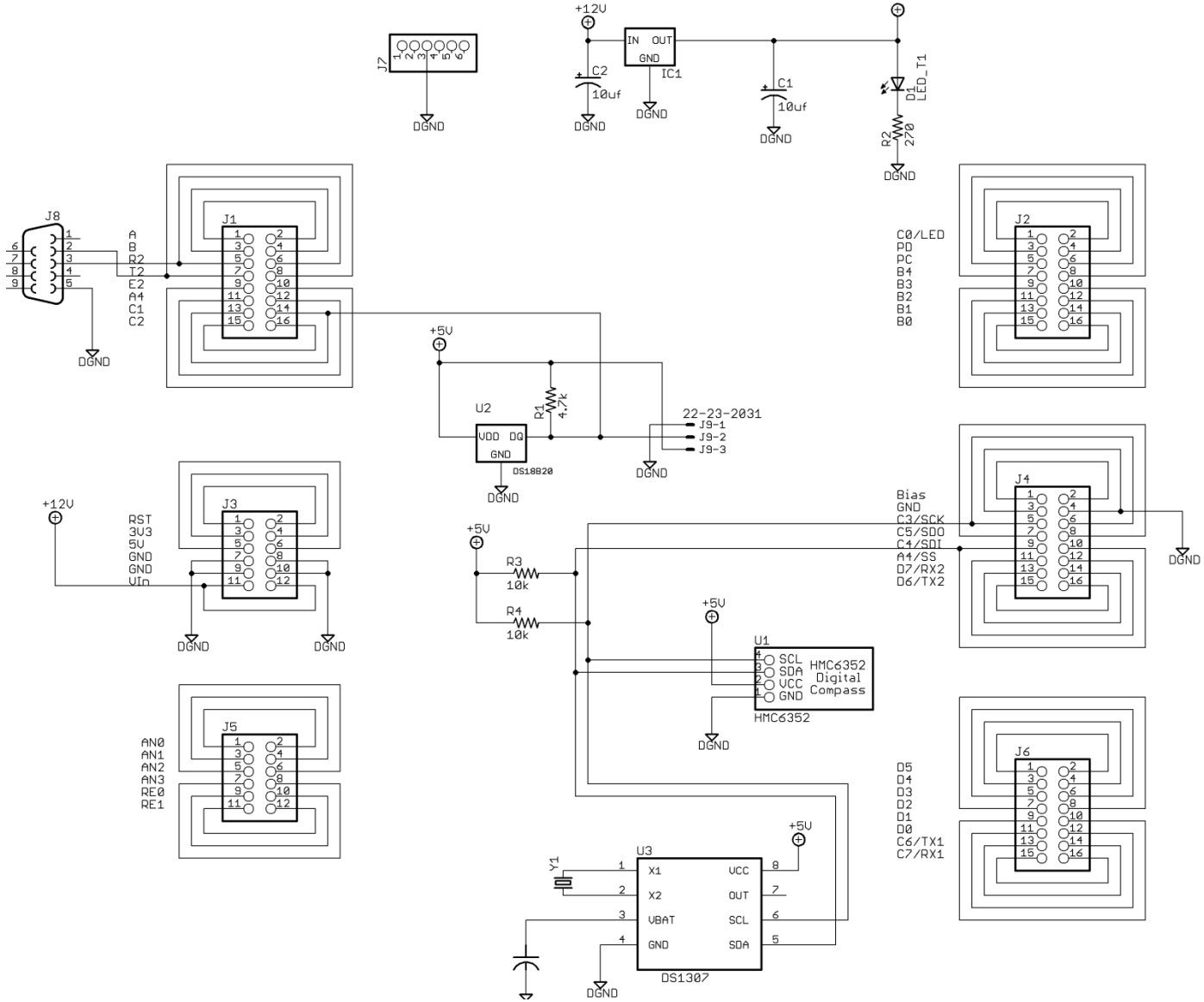
Digital Compass Board

Connections

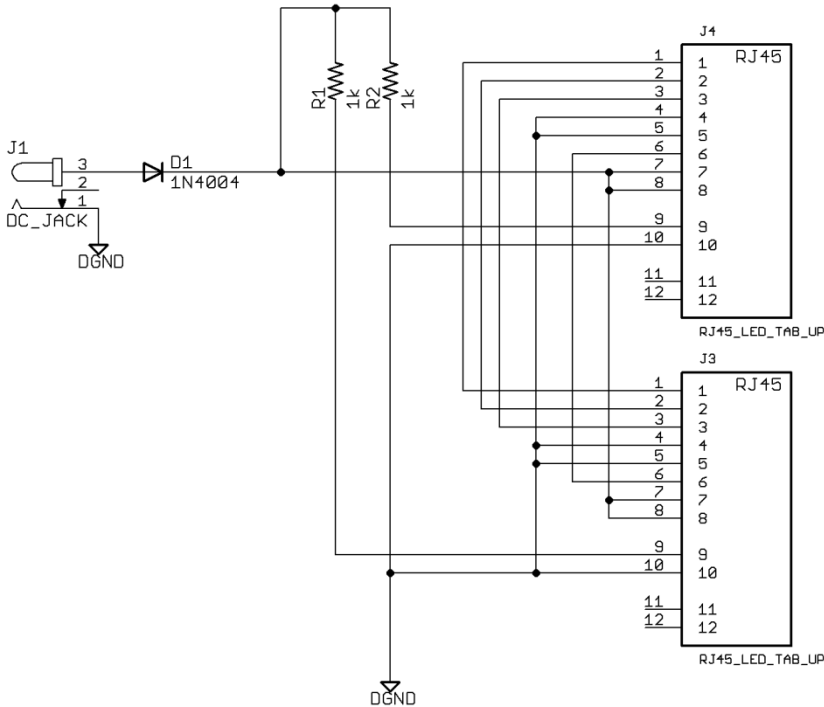


- | | | |
|----|------------|--|
| J8 | DB9 Female | RS232 IO. Pin 2 data out, pin 3 data in, pin 5 ground
Requires MAX232 RS232 chip to be installed on the CPU board |
| J9 | OneWire | Pin 1 Ground
Pin 2 Data, connects to PORTC.1
Pin 3 +5v out |

Digital Compass Board Schematic

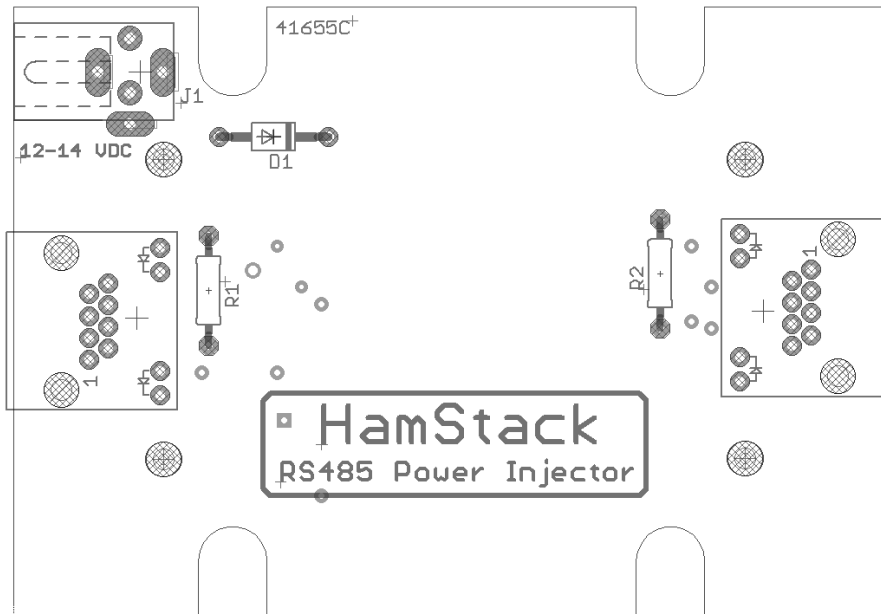


RS485 Power Injector



RJ45 Network Connector

Pin	Signal
1	RS485-A
2	RS485-B
3	Reserved
4	Ground
5	Ground
6	Reserved
7	+12 VDC
8	+12 VDC



- D1 1N4004
- J1 2.1mm DC coaxial connector, positive center pin
- J2, J3 RJ45
- R1, R2 1k resistor