CM10TB TEST & REFERENCE BOARD

FOR THE CM10xx ELECTRONIC COMPASS MODULE

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General Description

The CM10TB is a test and reference board made specifically to work with the CM10xx line of electronic compass modules. The board allows a simple way to test and verify module operations.

The CM10TB has a built-in microcontroller that interfaces with the CM10xx module and reads out a valid data packet. This data packet is then re-formatted and output on the boards RS-422 serial port, for display onto any connected serial port terminal program, or for use within a running host application.

Features

• Simple CM10xx module connection
Just plug in any CM10xx electronic compass module

• Easy power connection
Requires a single DC power supply of 6-16VDC (included)

• Standard serial port
Module data is output via a standard 9-pin D-connector (female) using RS-422 protocol

• Complete module output data
Serial port data packet has all module register values, including Compass Direction, Inclination, Pitch, Roll, Yaw

Overview

The CM10TB test board allows easy access to the data registers of the CM line of electronic compass modules for evaluation and testing purposes. The entire data packet of the CM module is output through the test board's serial port, which can be displayed on a terminal program or utilized in a separate application for control purposes.

What's included

The CM10TB package includes:

- CM10TB test board
- DB 9-pin Male/Female serial cable
- 5VDC power adapter
- CM1015 Electronic Compass Module, with male headers
- CM1015 datasheet

What you'll need

You will need a computer with a serial port for communication. A USB-to-Serial port adapter will also work for those computers without built-in serial ports.

You will also need a terminal program that communicates with the computer's serial port.

Setup

•Attach the CM1015 Electronic Compass Module to JP1 of the CM10TB test board. The CM1015 module should have a male header attached to it for plugging into the test board. If the headers are not already attached to the CM1015 module, you will need to solder the header onto the module so it can be plugged into the CM10TB test board.

Note the orientation of the module is with the module over the blank area of the test board, as outlined in Figure 1.

•Connect up the CM10TB to a computer's serial port, using the DB 9-pin cable provided. If your computer does not have a serial port, the CM10TB works fine with a variety of USB-to-Serial adapters.

•Launch a serial port terminal program and setup the communication for 57,600/8-N-1 (57.6Kbaud; 8 data bits; No parity bit; 1 stop bit).

•Attach the provided 5VDC power adapter to the CM10TB at the power input jack.

•Turn power on the test board by switching SW1. LED1 on the test board should light up, indicating OK power. There is also an LED on the CM1015 module. Make sure that the module LED is on and flashing, indicating it is operating properly.

Checking the data

When power is first applied, the test board will output 32 ASCII bytes (00 to 1F) as a reference label. Make sure your terminal program properly displays these bytes on the screen. If you see garbled data, verify that the communication protocol is properly set to 57,600/8–N–1 (57.6Kbaud; 8 data bits; No parity bit; 1 stop bit) and cycle the power.

Press the Return key <CR> on the keyboard and the terminal display will show the values of the CM1015 registers 00 to 1F. Every time a Carriage Return <CR> is sent to the test board, the test board will return all 32 bytes of the test CM module's data registers.

The data output over the serial port is ASCII formatted. This means that the data is formatted for proper display with a terminal program. If the data is to be used for control purposes, then it would be advisable to convert the ASCII data to HEX for easier correlation to the CM10xx datasheet register values.

At the end of each 32 byte packet of register data, a Return <CR> and a Line Feed <LF> command is sent. This properly formats the register data on the terminal display.

For descriptions and explanations of the CM module's 32 byte data packet, please refer to the CM1015 datasheet.

For additional help

If you are having difficulty with the board or have questions about the electronic compass module, please send our technical support department an email at techinfo@unagi.net.

Figure 1 – Board Outline (top view)
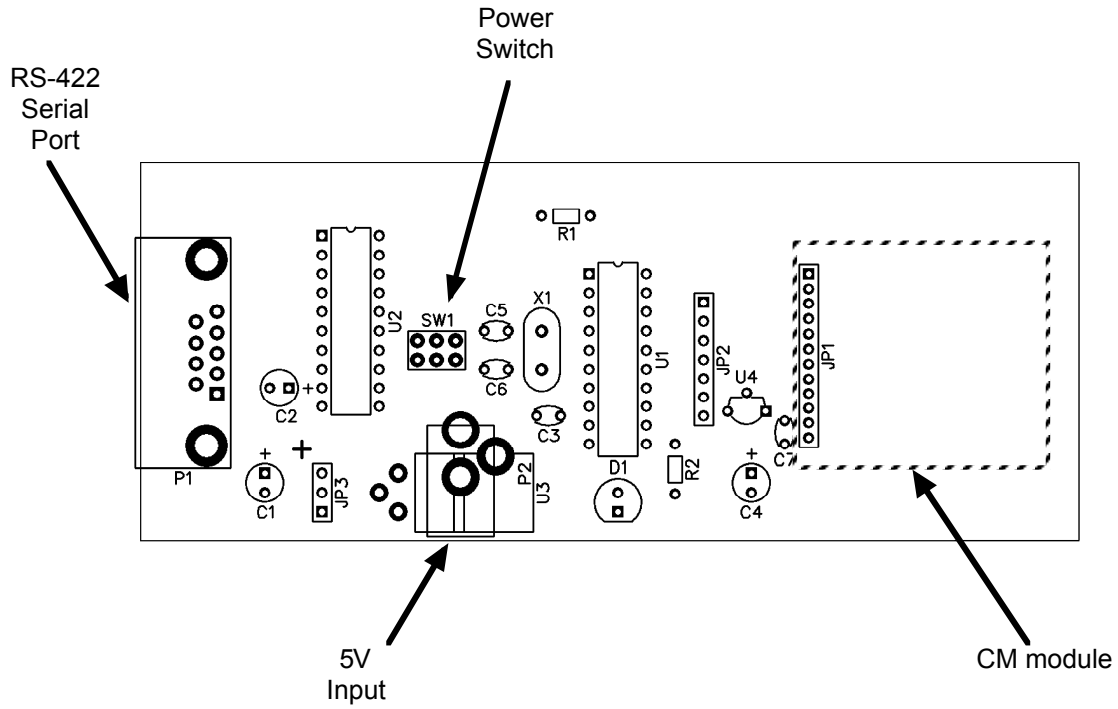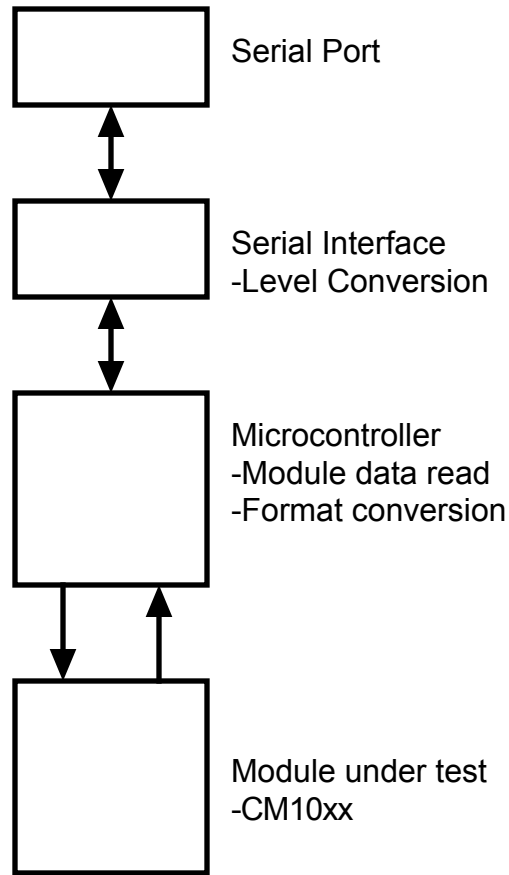
Serial Port

Serial Interface
-Level Conversion

Microcontroller
-Module data read
-Format conversion

Module under test
-CM10xx

Figure 2 – Block Diagram

PIN #	NAME	DIRECTION	FUNCTION
2	TX	OUTPUT	Serial data output from the test board, +/– 5V.
3	RX	INPUT	Serial data input to the test board.
5	GND	POWER	Serial data ground pin.
1,4,6,7,8,9	n/c		no connection

Figure 3 – Serial Port Pinout