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A 1-Wire Serial Interface

TEMP08

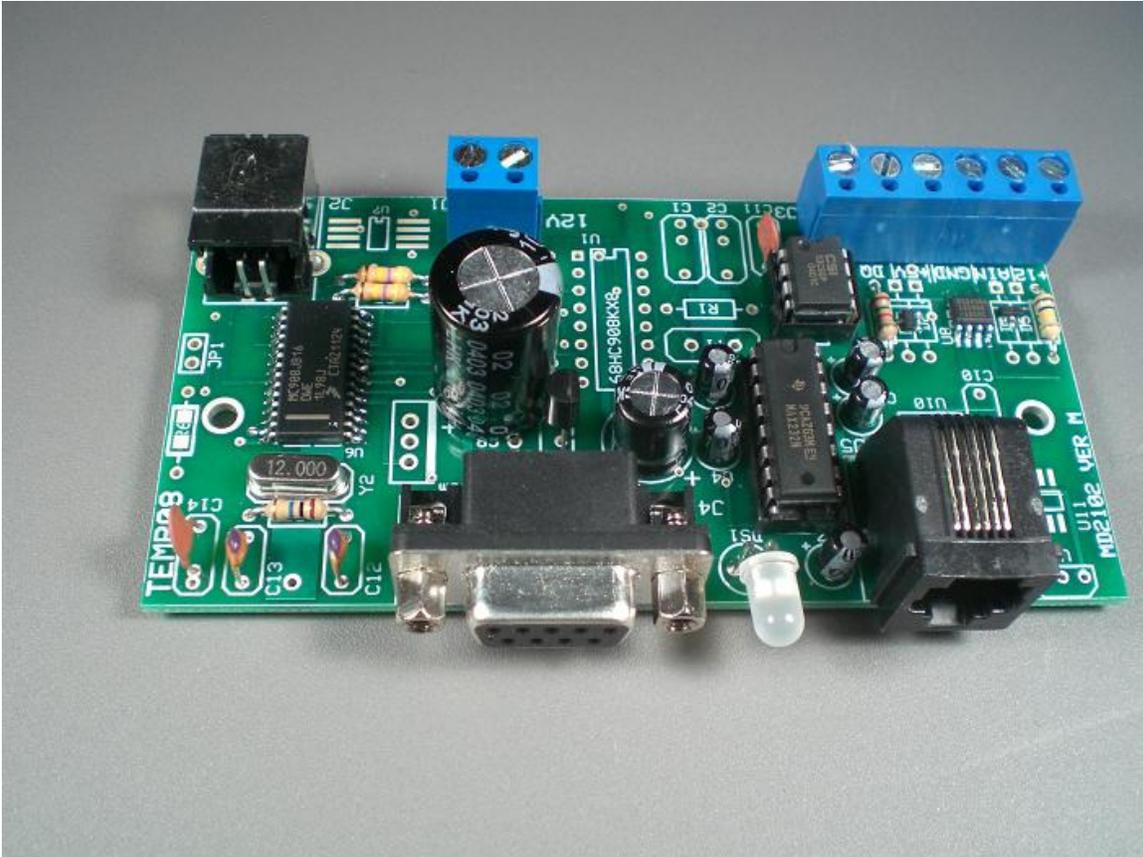


Figure 1 TEMP08

TEMP08 User Guide Version 4.0x
November 27, 2014

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2. Introduction

Thank you for your purchase of the TEMP08 1-Wire Serial Interface. The following instructions will assist you in configuring and operating the product.

TEMP08 is a stand-alone 1-Wire™ interface providing standard serial commands to control the Dallas/Maxim 1-Wire bus and the devices used on it. Sensors can be polled on a regular basis (from 1 to 99 minutes), or manually interrogated.

In a typical application, TEMP08 is connected to a serial port on a PC. Serial interface software is then used to gather the data received from TEMP08 and process it. Many users have interfaced TEMP08 into the [HomeSeer](#) product, which can be used to automate lights, HVAC, sprinklers, and other devices, based on the sensor readings from TEMP08.

The TEMP08 can provide a serial interface for the following 1-Wire devices:

- Multiple DS2438-based Humidity Sensors
- Multiple DS2438 based Barometric Sensors of the Bray-Jennings design
- Multiple DS2438 general purpose sensors for analog voltage input
- Multiple DS2438-based Solar sensors
- Multiple DS18S20, DS18S20-PAR, DS18B20, DS1822, DS1920 temperature sensors as well as, temperature readings from any DS2438
- Multiple DS2450 voltage sensors
- Multiple DS2423 based rain gauges
- Multiple DS2423 general purpose counters (for use with Lightning sensors and other types of counter inputs)
- Multiple DS2401 or DS1990 1-Wire serial numbers (only presence will be reported)
- Up to 20 1WIO relay interface modules (available from Midon Design) or equivalent DS2408 based relay module
- Up to 10 1WIO LED modules (available from Midon Design)
- Up to 20 1WIO Input modules (available from Midon Design) or equivalent DS2408 based input module
- One DS2450 based Weather Station for wind speed and wind direction

For more information on these sensors, please refer to the [Midon Design 1-Wire Application Guide](#) available on our website.

TEMP08 has the following features:

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- On-board DS2438 voltage and temperature sensor
- Jumper-less provisioning - all configuration settings are stored in non-volatile memory
- Up to 60 1-Wire are sensors supported
- Simple instruction set with a Help (**HLP**) prompt for recalling command names
- Easy to delete sensors, if they are no longer required, using the **DEL** command
- 1-Wire bus errors, such as shorted wires, are flagged when they occur
- Support for software serial flow control (Control-S, Control-Q) to permit inspection of long lists without scrolling beyond your terminal's page length
- Continuous poll for presence of sensors. TEMP08 will notify you when any sensor is connected or disconnected, providing that they have been previously recognized by TEMP08 via the **INI** command. This may be useful for locating intermittent 1-Wire bus problems or identifying which sensor is which.
- Manual Poll of sensor readings. While TEMP08 is normally used for regular (from 1 to 99 minute intervals) polling of sensor readings, it may also be used manually to take sensor readings on command from the serial interface.

3. Installation

To complete this project, you will need to connect a 12 to 16 Volt (AC or DC) transformer to the terminal J1 (see Figure 3 or 4 for the location of J1). If you intend to power 1WIO relay units from the 12V output of TEMP08, the transformer needs to supply at least 350mA (250mA for 1WIO and 100mA for TEMP08) per 1WIO relay unit, up to a maximum of 800mA, or 2 1WIO relay units. Beyond that, supplemental powering will need to be provided for the off-board units. Otherwise, any 12 to 20 Volt adapters capable of at least 100mA will do.

ALTERNATIVELY, to power this project, you could to connect a 5Volt DC power supply via a standard USB A to B cable to the connector J2 (see Figure 3 or 4 for the location of J2). Make sure that the power supply can provide at least 50mA of current. Do not use both J2 and J1 powering – only one can be used. If you choose to use 5VDC from J2, then the J3 12Volt power output will not be available.

If you are using a sensor network of 1-Wire devices, connect them now to connector J3.

If you are using DS18S20 or DS18B20 temperature sensors, only 2 pins of each sensor needs to be connected, however a connection is required between the VDD and GND pins of the sensor if you are using parasitic powering. If +5VDC

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local power is being used to power the sensor, connect the VDD terminal to it. See Figure 2 for device connections.

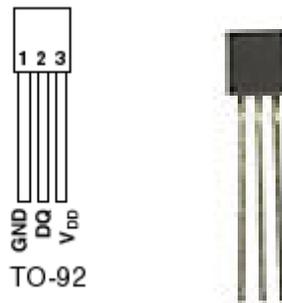


Figure 2 DS18S20/DS18B20 Pin-out

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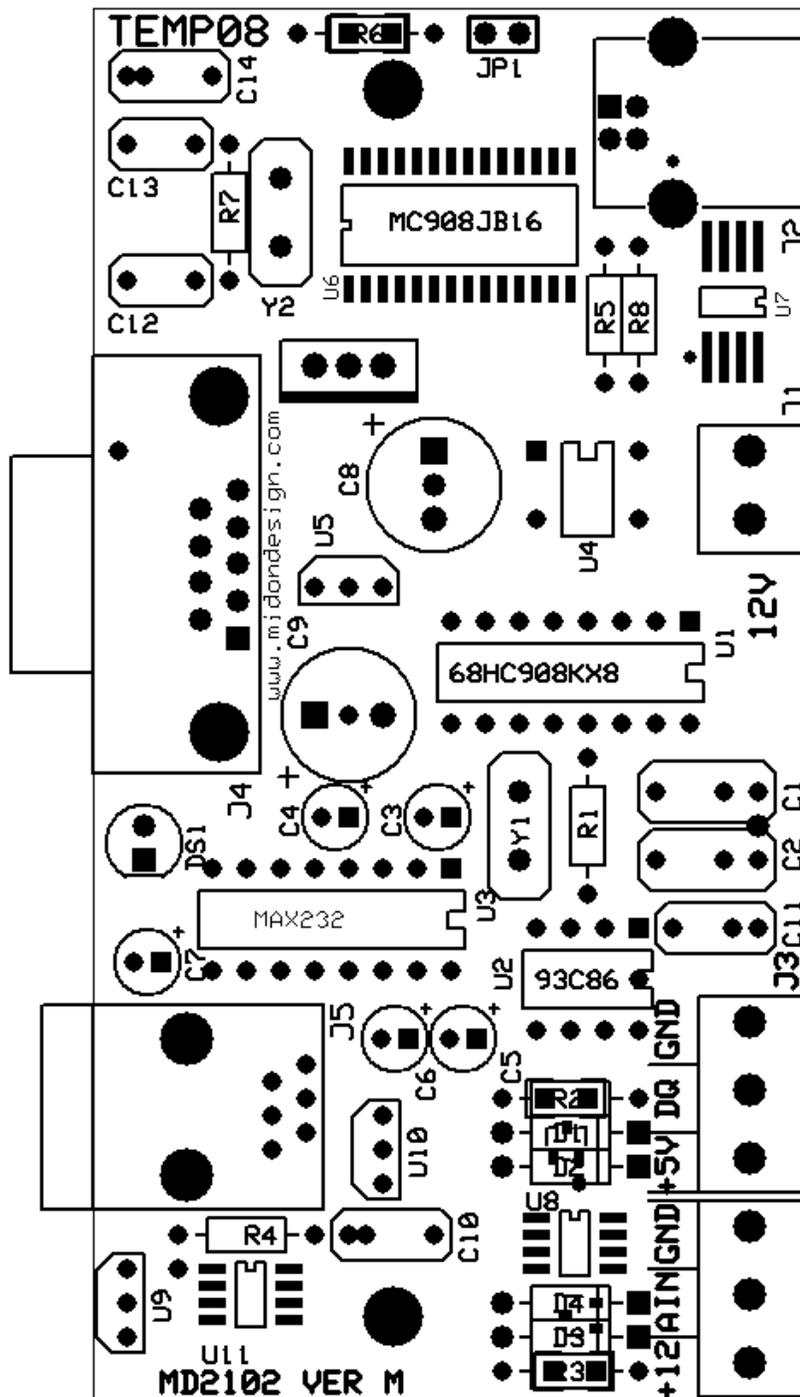


Figure 3 TEMP08 Parts Placement

4. Using the TEMP08

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Connect up a straight-through serial cable between TEMP08's J4 connector and your PC. Open up HyperTerminal (or equivalent terminal emulator program) on your PC. Configure it to 9600 BPS, No parity, 8 bits, 1 start bit and NO hardware handshaking (very important!). Power up the TEMP08 and configure the unit for the devices that you have connected.

We recommend that you next use the **ERA** command **for first time use**, to erase the EEPROM. This will remove any previous information that may have been stored in the EEPROM. Next use the **INI** command to search for any 1-Wire devices connected to the 1-Wire bus. If you get any error messages, it is most likely a result of a bad connection to the devices. Verify them. Typically, a "OW bus error" message indicates that a sensor has been installed in reverse, or that there is a short on the bus.

The **INI** command is used to search for any new sensors that are present on the 1-Wire bus. Upon completion, the serial number of any new sensor is stored in permanent memory on the TEMP08 and that sensor is available for interrogation by the polling process.

Note: an ERA command is not required every time that an INI command is issued. It should only be required for first time use.

If a DS2408, DS2423 or DS2438 is detected by the **INI** command, you may get an error message that requests you to input the unit **TYPE**. See the table 2 for details for the valid inputs. If nothing is entered for 1 minute in this field for a DS2423, then the sensor **TYPE** will default to "C" (Counter). A DS2438 will default to "V" (Voltage) if the same timeout occurs. A DS2408 will remain as an unknown type, until you manually configure it.

Now would be a good time to set the clock using the **SCK** command. Follow the prompts and input the correct time in 24 hour format (for example, 2PM is 14:00).

Now program the configuration by using the **SET** command. Just type **SET** and the program will prompt you for the required option settings.

To verify that your setup is working properly, you should next use the **TMP** command to perform an immediate sensor reading. The output of the **TMP** command should look like the sample below (the exact output will depend on what type of sensors and how many you have installed).

```
>
WED 21:51:13
Reading Sensors...
Humidity #01[9F00000037555326]=60%
Barometer #01[A900000037621A26]=28.21 inHg
Voltage #01[020000002B2CB326]=02.60V 05.03V 00mV
Wind Dirn[9F00000001087320]= NNW
Wind Speed[8E00000001562C1D]=00 MPH, Gust = 00
```

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```
Rain #01[8E00000001562C1D]=003.32 Inch  
Counter #01[D4000000045C621D]=00000029 00024592  
lWIO Status #01 [A400000001042829] = On,Off,On,Off  
Temp #01[9900080049199310]=79.80F  
Temp #02[5C00080009242E10]=75.80F  
Temp #03[9F000000037555326]=79.00F  
Temp #04[A9000000037621A26]=78.77F  
Temp #05[21000000032E4E22]=76.66F  
Temp #06[020000002B2CB326]=76.10F  
>
```

If there are no apparent errors, you are ready to use TEMP08. Enjoy!

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5. TEMP08 Commands

These commands are valid for v4.0x versions of TEMP08 software.

Table 1 TEMP08 Command List

Command	Description	Syntax
DEL	Delete a sensor that was previously installed via the INI command	DEL<sensorid> Note 1
DIS	Display serial numbers of all configured 1-Wire devices	DIS
ERA	Erase the EEPROM	ERA
ETE	Enable Temperature displays from DS2438 devices	ETE<on off>
ETI	Enable Once-Per-Minute Time Display	ETI<on off>
EWN	Enable Wind Direction display for DS2450 sensors	EWN<on off>
FAC	Restore to factory settings. Erase the EEPROM, reset the clock to 00:00, and perform an INI function. USE WITH CAUTION.	FAC
HLP	Display a list of available commands	HLP
INI	Search for a list of available 1-Wire sensors.	INI
INP	Display the status of bits 4-7 of all connected DS2408's (See 1WIO sensor for details) configured as TYPE "I"	INP
LED	Actuate a specific LED on a 1WIO LED unit or equivalent DS2408 LED interface configured as TYPE "L"	LED <LED number> <on off> Where <LED number> = 01 to 80 or A for All (the leading zero is required for LED numbers less than 10)

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Command	Description	Syntax
NOR	Set North for a DS2450-based Weather Station	NOR
RLY	Actuate a specific 1WIO relay, or bits 0 to 3 of any connected DS2408 configured as TYPE "O"	RLY <relay number> <on off> Where <relay number> = 01 to 80 or A for All (the leading zero is required for relay numbers less than 10)
RST	Reset both DS2423 counters	RST<sensorid>
SCK	Set Clock	SCK dd, hh, mm, ss<cr> dd = 01 to 07 (Sunday = 01) hh = 00 to 23 mm = 00 to 59 ss = 00 to 59 Note 2
SET	Configure all system parameters	SET
SID	Show the Serial Number ID for the 1-Wire Devices	SID <on off>
SPT	Set the polling interval	SPT xx Where xx is a decimal number from 00 to 99. 00 will disable polling.
STD	Set Temperature Display type	STD <F C>
TIM	Display Time from Real Time Clock	TIM
TMP	Display sensor readings of all connected 1-Wire Devices in either verbose (includes serial numbers) or non-verbose manner	TMP
TYP	Select the type of DS2408, DS2438 or DS2423 device. See table 2 for valid parameters.	TYP<sensorid>
VER	Displays the current version of the software loaded	VER
WDR	Wind Direction Reverse (in case your Wind Direction PCB is installed upside down, or in case you want to show the FROM direction instead of the TO direction).	WDR <on off>

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Command	Description	Syntax
ZZZ	Performs a soft reset of TEMP08	ZZZ

Notes

1. The *<sensorid>* parameter in some commands above refers to the sensor number as shown via the DIS command. See the DIS command explanation below.
2. Most commands do not require a Carriage Return (enter) following the parameter or command input. One exception is the SCK command. Commands requiring a sensor number input will require a CR if the sensor number is only a single digit.
3. Command parameters are shown in angled brackets "*< >*". Where only certain options are permitted, they are indicated with a vertical pipe character "*|*".

5.1. Using the SET Command

The SET command has multiple parameters. All parameters are also adjustable via discrete commands.

Update Interval

This parameter determines the time between sensor readings. Set this parameter to **00** to stop polling. Enter the time in decimal minutes. Use the **SPT** command to adjust only this parameter.

Temp Display

This parameter determines how temperature readings are displayed. Enter F for Fahrenheit or C for Celsius. Use the **STD** command to adjust only this parameter.

Serial # Display

Set this to On if you want TEMP08 to display the 1-wire ID of all sensors during the DIS display or poll display. Use the **SID** command to adjust only this parameter.

Wind Dirn Reverse (Wind Direction Reverse)

This parameter is normally set to Off. Set this to On if you accidentally installed the wind direction PCB upside down in your weather station OR if you want to display wind direction as the FROM direction instead of the TO direction. Use the **WDR** command to adjust only this parameter.

DS2438 Temp Display

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This option will determine if DS2438's are queried for their temperature display. DS2438's are used for many other sensor types and there are times when displaying their temperature may not be desired. If this is the case, the display of these temperatures can be suppressed by setting this option off. Use the **ETD** command to adjust only this parameter.

Regular Time Display

This option, when set to on, will provide a once-per-minute time display output from TEMP08. Set the option to Off to suppress this time display. Use the **ETI** command to adjust only this parameter.

Display Wind

This option is used to enable or disable Wind Direction conversion from the **first** connected DS2450 sensor. DS2450's are used in older versions of weather stations for wind direction sensing. Set the option to On to enable this display of wind direction. Use the **EWN** command to adjust only this parameter.

Set Clock

Enter the current time here as Day of week (01 = Sunday) followed by Hour, Minutes, and lastly, Seconds. Use the **SCK** command to adjust the clock at any time. Time is entered and displayed in 24 hour (military) format.

5.2. The DISplay Output

Sample DIS Output

```
TEMP08 v4.04 2014-11-26
MidonDesign.com
01 3000000002202920 DS2450 OK P
02 91000800135B9B10 DS1820 OK P
03 440000001EC34228 DS18B2 OK P
04 590000000007B014 DS2430 OK P
05 21000000032E4E22 DS1822 OK P
06 060000003770D026 DS2438 OK P B
07 D1000000F5868801 DS2401 OK P
08 A400000001042829 DS2408 OK P ?
09 000000000107A829 DS2408 OK P ?
10 9700000000328329 DS2408 OK P ?
11 C200000016A78605 DS2405 OK P
12 3D0000000C8C351D DS2423 OK P C
13 DB0000007520A126 DS2438 OK P V
14 F5000000B6435726 DS2438 OK P V
```

```
Sensors = 14
Poll interval = 01 minutes
Temp disp = F
```

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```
Serial # disp = On
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
Regular Time Display = Off
Display Wind = On
SUN 00:00:59
>
```

5.2.1. DIS output explanations

Sensor numbers do not necessarily match up with the output from the regular sensor output readings. **This is intentional.** The sensor numbers in the **DIS** output are the memory locator and are used by the **DEL** and **RST** commands. The sensor numbers in the scan output are sequential numbers for each type of sensor.

The Sensor numbers from the **DIS** display are also used for displaying when a sensor is removed or added to the 1-Wire bus. For instance:

```
>MON 09:52:34
Missing Sensor #04 [9900080049199310]
```

Would indicate that the 4th sensor in the **DIS** display was disconnected.

```
>MON 09:57:01
Restored Sensor #04 [9900080049199310]
```

Would indicate that the 4th sensor in the **DIS** display had been re-connected.

In the remainder of the **DIS** display, an OK will be displayed following the sensor type to indicate that the Cyclic Redundancy Counter (CRC) checksum of the sensor's serial number is good. If the serial number has a bad CRC, an **NG** will be displayed. The checksum is validated during the output of the sensor display.

Following the CRC status, a **P** or **M** will be displayed to show the connectivity of the sensor. A **P** is displayed is the sensor is present, and an **M** when it is missing from the 1-Wire bus.

Letters following the **P** or **M** for DS2408, DS2423 and DS2438 sensors indicate the **TYPE** of sensor equipped. This is a one-time manual input and will be set following first discovery of the sensor via the INI command, and also following a power-up of the TEMP08 for the DS2423 sensors that do not have built-in battery backup. DS2408's need to manually set whenever power is removed from those sensors. DS2438's are set once and do not lose their setting even if power is removed. Any of these sensor types that have not been designated via the **TYPE** command will have a question mark ("?) displayed to indicate that the setting is still required.

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The letters designate the sensor type per the following table.

Table 2 Sensor Type Descriptions

Designation	Description	1-Wire Device
B	Barometric Sensor	DS2438
C	Generic Counter Sensor	DS2423
H	Humidity Sensor	DS2438
I	Input 1WIO	DS2408
L	LED 1WIO	DS2408
O	Output (Relay) 1WIO	DS2408
R	Rain Sensor	DS2423
T	Temperature only from DS2438	DS2438
V	Voltage Sensor	DS2438
W	Wind Speed Sensor	DS2423
?	TYPE has not been set	Any

Following a display of the sensors installed, the output of the **DIS** display then shows the TEMP08 settings that you entered via the **SET** command.

5.3. TMP Output Display

The **TMP** output and polled output displays are identical. An example is shown below.

```
>
WED 21:51:13
Reading Sensors...
Humidity #01[9F00000037555326]=60%
Barometer #01[A900000037621A26]=28.21 inHg
Voltage #01[020000002B2CB326]=02.60V 05.03V 01mV
Voltage #02[0100000001096420]= 02.50V,03.00V,01.02V,05.01V
Wind Dirn[9F00000001087320]= NNW
Wind Speed[8E00000001562C1D]=00 MPH, Gust = 00
```

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```
Rain #01[8E00000001562C1D]=003.32 Inch  
Counter #01[D4000000045C621D]=00000029 00024592  
1WIO Status #01 [A400000001042829] = On,Off,On,Off  
Temp #01[9900080049199310]=79.80F  
Temp #02[5C00080009242E10]=75.80F  
Temp #03[9F000000037555326]=79.00F  
Temp #04[A9000000037621A26]=78.77F  
Temp #05[21000000032E4E22]=???  
Temp #06[020000002B2CB326]=76.10F  
>
```

The output starts with a time reading, followed by humidity, barometer, voltage, wind direction, wind speed, counter readings, 1WIO input status, and ends with all temperature sensors. All DS2438 temperature readings will be displayed in addition to the other temperature sensors, only if the ETD option has been set to On.

Note that in the example above, Temperature sensor #5 shows “???” which indicates that this sensor was not detected during the poll.

Humidity readings are displayed in percent Relative Humidity.

Barometric pressure sensors are displayed in Inches of Mercury.

The first voltage reading displayed for a DS2438 Voltage sensor is always the external voltage from the DS2438 input. This is followed by the VDD (supply) voltage and lastly by the voltage from the on-board current sensor. Changing a humidity or barometric sensor type to a voltage type may be useful for troubleshooting problems with a sensor.

Voltage readings for any DS2450 sensors are displayed after any DS2438 voltage sensors. All four channels of voltage input for DS2450’s are displayed, A channel first, ending with D channel.

Wind direction is expressed via the 16 cardinal points of the compass:

```
N  
NNE  
NE  
ENE  
E  
ESE  
SE  
SSE  
S  
SSW  
SW  
WSW  
W  
WNW
```

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NW
NNW

In order for these cardinal points to line up to correct North, you must initialize the TEMP08 first by manually (physically) setting the Wind vane to point to North and then use the **NOR** command to save that direction in memory.

Wind speed is shown as an average of the speed over the previous polling interval. The Gust speed is the maximum speed in any 1-minute period of any polling interval. If the polling interval is set to one minute via the **SPT** command, then the gust speed will not be displayed.

Rain is displayed in Inches and assumes that your rain gauge counter is calibrated to count once for every 0.01 inch of rain. Rainfall is measured from the time of the last reset (**RST** command) of the rain gauge.

General-purpose counters are used for many things. Both A and B counters of the connected DS2423 sensor are displayed. Counts are based on the number of counts stored in the DS2423 since the last reset (**RST** command) of the counter.

The 1WIO status displays the current input status of connected DS2408's configured via the **TYP** command to be of the "I" type.

5.4. Missing Sensor Display

TEMP08 continuously polls for the presence of all sensors that have been **INI'd** (initialized), in other words, for sensors that are known to TEMP08. If any of the sensors are detected as missing, the following display will result:

```
>MON 09:52:34  
Missing Sensor #04 [9900080049199310]
```

When the sensor is re-connected, the display will look like this:

```
>MON 09:57:01  
Restored Sensor #04 [9900080049199310]
```

Polling of sensors is done sequentially and very fast (milliseconds per sensor). The more sensors that are equipped, however, the more time it will take for TEMP08 to recognize a missing or re-added sensor.

It is normal to experience missing sensors from time to time due to noise on the 1-Wire bus. If any particular sensor shows very high disconnect readings, you might want to check the wiring for that particular sensor.

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5.5. Discrete Option Commands

5.5.1. Once Per Minute Time Display (ETI)

Another option is to enable or disable the once-per-minute time display. The command **ETI on** enables the display.

5.5.2. Temperature Display from DS2438 (ETE)

Another option is to enable or disable the temperature display resulting from the on-chip temperature sensors present on DS2438 devices. If enabled, this temperature will be included in the normal poll or TMP display. If disabled the temperature display is suppressed. The command **ETE on** enables the display.

5.5.3. Display Wind from DS2450 (EWN)

If enabled (**EWN on**), the first connected DS2450 will be assumed to be a Weather Station wind direction sensor and other DS2450's will be displayed as voltages. If disabled (**EWN off**), only voltages will be displayed from all DS2450's. The command **EWN on** will enable the display of wind direction.

With **EWN** set to **on**, the polled output (or TMP output) will look like this:

```
Wind Dirn[9F00000001087320]= NNW
```

With **EWN** set to **off**, the polled output will look like this:

```
Voltage #01[05300000CD2C1220]=02.60V 05.03V 1.38V 4.25V
```

5.5.4. Wind Direction Reverse (WDR)

This parameter is normally set to Off. Set this to On if you accidentally installed the wind direction PCB upside down in your weather station OR if you want to display wind direction as the FROM direction instead of the TO direction.

5.5.5. Set Poll Time (SPT)

This parameter determines the time between sensor readings. Set this parameter to **00** to stop polling. Enter the time in decimal minutes from 00 to 99. Leading zeros are required here!

5.5.6. Set Temperature Display (STD)

This parameter determines how temperature readings are displayed. Enter F for Fahrenheit or C for Celsius.

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5.5.7. Serial Number Display (SID)

Set this to On if you want TEMP08 to display the 1-wire ID of all sensors during the DIS display or poll display.

5.6. Set North Command (NOR)

This command is used to calibrate physical North against the electronic North of the DS2450-based sensor. To use this command, align your physical weather vane to point North then enter the **NOR** command. You will be asked to confirm, do so, and the new North position will then be stored in permanent memory.

5.7. Delete Command (DEL)

The DEL command is used to removed unwanted sensors from the permanent memory of TEMP08. The sensor number from the DIS display is used to identify which sensor is to be deleted. Deleting a sensor does not change the sensor number of any other sensors in the DIS display, however, it may change the sensor number shown during the polling process. For example, if you have 3 DS2438 voltage sensors and delete the second one, the third one will now show as Voltage #02 instead of Voltage #03 during a polling display.

5.8. Erase EEPROM command (ERA)

Hopefully, you will never need to use this command, however, if you wish to completely delete ALL sensors stored in permanent memory, then this command will do that.

After issuing the **ERA** command you will be prompted to confirm the operation. Entering anything other than "Y" will abort the process.

No other data will be erased during this process. All sensor configuration (**TYPE** settings), North pointer, and all options will remain the same.

5.9. Reset Counter Command (RST)

The **RST** command is used to reset the counters of any connected DS2423 counter sensor. Both the A and B counters of the DS2423 will be reset during this process.

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5.10. Display Time Command (TIM)

You may find it useful to display the time independent of any normal time display, such as prior to a polling cycle. The **TIM** command will accomplish that.

5.11. DS2408 Sensor Usage

5.11.1. Relay Sensors

TEMP08 has the ability to actuate relay modules based on the DS2408 port expander chip from Dallas/Maxim. One such module is the Midon Design 1WIO.

TEMP08 supports up to 20 1WIO relay modules (MD2083) and the **RLY** command input then actuates those relays (numbered from 01 to 80). Relay numbers 01 to 04 are for the first connected 1WIO module, relay numbers 05 to 08 are for the second, and so on. Note that the leading zero for the relay number is required. These sensors must be set to type **O**, via the **TYP** command, to be used as relay modules.

5.11.2. LED Sensors

The **LED** command works the same way as the **RLY** command except that there are 8 LED's per 1WIO acted on instead of 4 relays per 1WIO. Up to 10 1WIO LED units are supported for a total of 80 LED's. These sensors must be set to type **L**, via the **TYP** command, to be used as LED modules.

The **RLYA<on|off>** command will affect all connected 1WIO relays.

Use the **LEDA<on|off>** command to affect all connected 1WIO LED's.

5.11.3. Input Sensors

TEMP08 also supports up to 20 connected 1WIO input sensors, which use the DS2408 inputs to determine external status. The **INP** command can be used to determine the status of these inputs at any time, provided that the sensor is set to type **I** via the **TYP** command. The status is also displayed during the normal poll cycle.

On power-up, ALL connected DS2408's are treated as LED types and are set to Off. Manual setup of the DS2408 via the **TYP** command is required after power has been lost to the DS2408's or TEMP08.

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6. Software

6.1. Software Change History

Table 3 TEMP08 Software History

Version	Date	Major Changes from Previous Loads
4.0x	11/26/2014	<ul style="list-style-type: none">Final production version of software

6.2. Upgrading TEMP08 Software

Midon Design strives to continue to add value to the TEMP08 product and, as a result, we release new features to the TEMP08 software from time to time. Upgrading TEMP08 is easy. Software updates can be downloaded from our web pages. In order to upgrade your unit, a PC equipped with Windows XP is required. If you have access to such a PC, contact Midon Design for more detailed instructions and special software to do the upgrade. No additional hardware is required.

7. Trouble-Shooting Problems with TEMP08

The most common problems associated with using TEMP08 are listed in the following table. If these instructions do not result in better results with your TEMP08, please feel free to contact Midon Design at support@midondesign.com. We would be more than happy to assist you.

Table 4 Common TEMP08 Problems and Resolutions

Problem	Possible Causes
I cannot display TEMP08 output on my PC	Ensure that you are connected with the proper settings (9600 bps, no parity) and that you are using a straight-through, not a null-modem, serial cable
I cannot see what I type on Hyperterm	This is normal for Hyperterm versions that come pre-packaged with Windows. Upgrade to a commercial version of Hyperterm or use different terminal emulator software, such as Teraterm .

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Problem	Possible Causes
I added a new sensor and now all I get is "OW Bus Error" messages	Your sensor is probable reversed on the 1-Wire bus, OR, there is a short on the bus. Check your wiring.
I was able to add a new sensor but all I get is "???" readings from it.	Check your 1-Wire bus wiring. You may need to add a 100 ohm resistor in series with a new leg of the bus that you added.
I removed a sensor from my wiring and now all I get is "???" readings from it.	Delete the sensor (use the DEL command).
I added a DS2405 (or 2406 or 2407) sensor and I cannot see the state change when I change the input to it.	DS2405, 6 & 7 sensors are not supported by TEMP08. Consider using the 1WSwitch product for these sensors.
I tried to add a bunch of sensors via the INI command and only some of them showed up.	Check your wiring.
I have a MD2088 LED display and LED's 5 to 8 turn on by themselves and will not turn off	Make sure that your sensor is set to the L type, not I type, via the TYP command.
I have connected 1WIO modules and the relays or LED's do not work with the RLY or LED commands.	Make sure that your sensor is set to the appropriate O or L type via the TYP command.
I get "OW Bus Error" messages every time the LED flashes red.	There is a short on your 1-Wire bus, OR (hopefully not) the bus was damaged accidentally. This could be a fatal error requiring a replacement of the TEMP08. If disconnecting all sensors from your TEMP08 still results in this error message, you unit is likely damaged. Contact Midon Design for support.
The LED is flashing but nothing is shown on the terminal output (Hyperterm or equivalent)	While it is possible that you may have damaged the MAX232 RS232 interface, it is likely that you have a terminal emulator setting incorrect. Check your settings.

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8. Error Messages

Table 5 TEMP08 Error Messages

Message	Description
? Entry error	You have made a syntax error in entering a command or a parameter
Not installed	TEMP08 could not communicate to the device that you were trying to access. Check your 1-Wire bus wiring, or make sure that you are specifying the correct sensor number.
Try again	This error is specific to the NOR, LED and RLY commands and indicates that TEMP08 could not write to the DS2450 or DS2408. Check your wiring.
OW bus error	Common to any 1-wire bus read operation. This error indicates that something is preventing the bus from changing state. Typical causes include shorts on the bus, or a reversed sensor.
? Input Timeout	You entered a command but a parameter was not entered within 1 minute.

Table 6 Reset Type Messages

Reset Type (hex)	Cause of Reset
02	Low voltage – the power supply fell below spec
04	Monitor Mode reset entry – should never be seen
08	Illegal Address – something in the software caused access to an illegal address. Contact Midon Design
10	Illegal Op Code reset – something in the code happened. If this was not the result of a ZZZ command, contact Midon Design
20	Watchdog timeout. The software was busied out with something. If this occurs, contact Midon Design
40	User reset – you issued a ZZZ command
80	Power on reset – a normal entry

Binary combinations of the types above are possible and normal. For example, a power up reset will usually result in a type 82 message (Power on reset plus low voltage reset) and a ZZZ reset will result in a type 50 message.

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9. Schematic

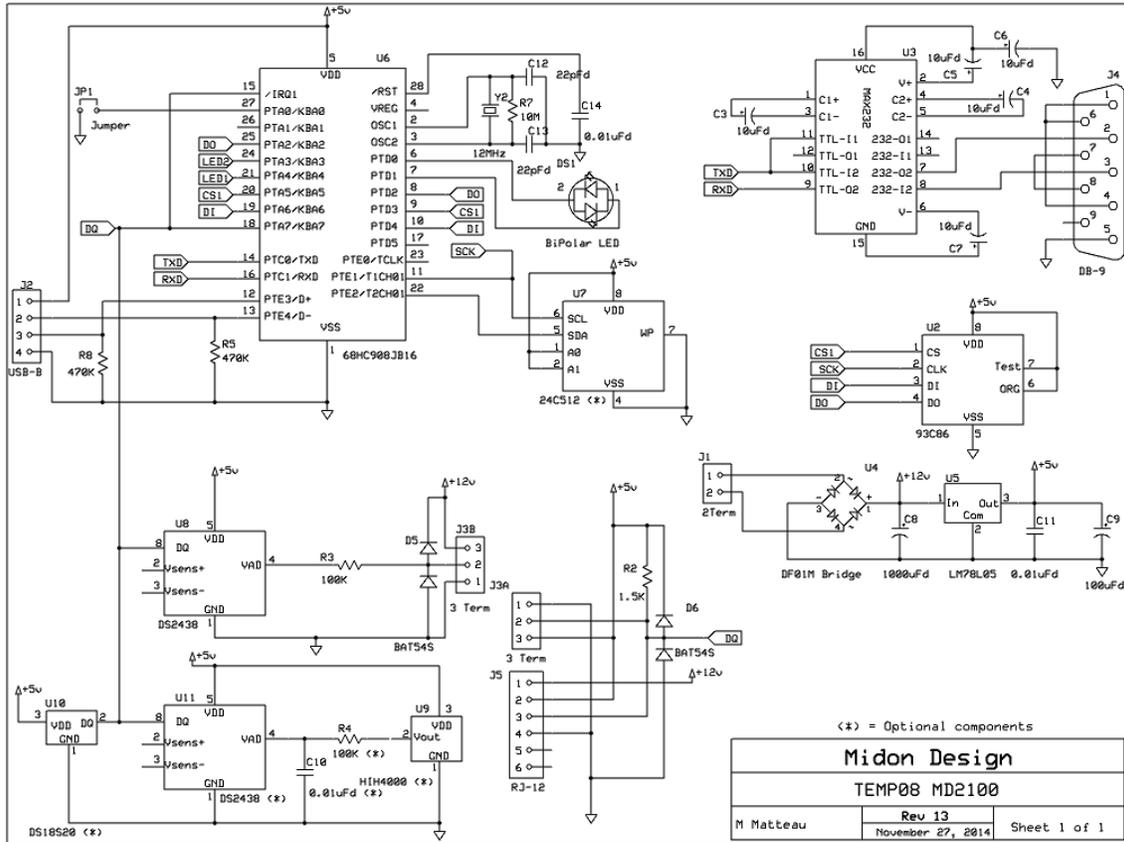


Figure 4 TEMP08 Schematic

Note that not all components are used. The “*” indicates optional components that are typically not connected.

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10. Conclusion

Your comments are appreciated. If you would like to submit feature requests or product recommendations, please e-mail us.

11. Legal Disclaimer

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