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A 1-Wire Serial Interface
TEMP08

Figure 1 TEMP08

TEMP08 V2.20 Syntax June 27, 2010

1. Table of Contents

1.1. List of Tables

2. Introduction

This document is intended to clarify syntax variances between recent versions of TEMP08 software. Version 2.20 included with it many improvements in operation of the product. However, it also changed command and output syntax due to requests from some users and also, primarily, to improve efficiencies of the software.

The intended audience for this document is application developers who produce software that issues commands and reads responses from TEMP08.

3. Command Variances

The following table lists the command used by V2.20 software and the corresponding commands used by V2.18 software. V2.18 is used as a comparison basis, however the majority of the comments would equally well apply to most V2.x software versions. V1.x software was last issued in 2004 and is not addressed in this document.

Table 1 Command Syntax

V2.20 Command	V2.18 Command	Function	2.20 Syntax	Comments
N/A	DEB		DEB<on|off>	No longer available with v2.20. Was used to enable/disable debug output.
DEL	N/A	Delete a sensor that was previously installed via the INI command	DEL<sensorid>	This command was not available in V2.18 and some earlier versions. It was restored in V2.19 and later.
DIS	DIS	Display serial numbers of all configured 1-Wire devices	DIS	No command change here but the output is different. See later section for details.
EAD	DAD	Enable on-board ADC voltage display during poll output	EAD<on|off>	In 2.18, the command operated in reverse. Setting DAD on disabled the on-board ADC display.
EEP	EEP	Display and change specific EEPROM memory locations	EEP <start location><cr>	No changes here.
N/A	EIN		EIN<on|off>	No longer required in v2.20.
ERA	ERA	Erase the EEPROM	ERA	No changes here.
ETE	N/A	Enable temperature display for DS2438	ETE<on|off>	ETE is a new command for v2.20.
ETI	DTI	Enable Once-Per-Minute Time Display	ETI<on|off>	In v2.18 the DTI command operated in reverse to the ETI command. “DTI on” disabled the once-per-minute time display.

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EWN	**DWN**	Enable Wind Direction display for DS2450 sensors	EWN<on|off>	In v2.18 the DWN command operated in reverse to the EWN command. “DWN on” disabled the wind direction display.
HLP	**HLP**	Display a list of available commands	HLP	No changes here but the output is different in V2.20.
INI	**INI**	Search for a list of available 1-Wire sensors.	INI	The command syntax is identical, however, there is additional output in V2.20. See later section for details.
INP	**INP**	Display the status of bits 4-7 of all “I” provisioned DS2408’s (See 1WIO sensor for details)	INP	No command syntax difference however, the command will only operate on DS2408 devices that have been previously set up as TYP “I”.
LED	**LED**	Actuate a specific LED on a 1WIO LED unit or equivalent DS2408 LED interface	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)	No command syntax difference, however, in V2.20, the command will only operate on DS2408 devices that have been previously set up as TYP “L”.
MEM	**MEM**	Display and change specific memory locations	MEM <start location><cr>	No changes here.
NOR	**NOR**	Set North for a 1-Wire DS2450-based Weather Station	NOR	No changes here.
RLY	**RLY**	Actuate a specific 1WIO relay	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)	No command syntax difference, however, in V2.20, the command will only operate on DS2408 devices that have been previously set up as TYP “O”.
RST	**RST**	Reset both DS2423 counters for a specific sensor	RST<sensorid>	No changes here.

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SCK	**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	No changes here.
SET	**SET**	Configure all system parameters	SET	The command syntax is the same as previous versions, however, the output includes all provisionable parameters and each entry will cause a DIS output.
SID	**SID**	Show the Serial Number ID for the 1-Wire Devices in all displays	SID <on|off>	Command syntax is the same, however, the output will display the current state prior to requesting the new input.
SPT	**SPT**	Set the polling interval	SPT xx Where xx is a decimal number from 00 to 99. 00 will disable polling.	Command syntax is the same, however, the output will display the current state prior to requesting the new input.
STD	**STD**	Set Temperature Display	STD <F|C>	No changes here.
TIM	**TIM**	Display Time from Real Time Clock	TIM	No changes here.
TMP	**TMP**	Display sensor readings of all connected 1-Wire Devices in either verbose (includes serial numbers) or non-verbose manner	TMP	Command syntax is the same, however, outputs from some sensor types have changed. See later section for details.
TYP	**TYP**	Select the type of DS2408, DS2438 or DS2423 device. See table 2 for valid parameters.	TYP<sensorid>	Command syntax is the same, however, this command now also applies to DS2408 types which can be set to “I”, “O”, or “L” types.
VER	**VER**	Displays the current version of the software loaded	VER	Command syntax remains the same but the output is slightly different. See later

				section.
WDR	**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>	No command syntax changes.
ZZZ	**ZZZ**	Performs a soft reset of TEMP08	ZZZ	No command syntax changes.

3.1. DIS Output Differences

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Here is the DIS output from V2.18:

```
>dis
01 9500000015583512 DS2406 OK P
02 EA00000040543910 DS1820 OK P
03 91000800135B9B10 DS1820 OK P
04 440000001EC34228 DS18B2 OK P
05 3000000002202920 DS2450 OK P
06 590000000007B014 DS2430 OK P
07 21000000032E4E22 DS1822 OK P
08 060000003770D026 DS2438 OK P V
09 DB0000007520A126 DS2438 OK P B
10 F5000000B6435726 DS2438 OK P H
11 D1000000F5868801 DS2401 OK P
12 A400000001042829 DS2408 OK P
13 8E0000000115111D DS2423 OK P L
14 000000000107A829 DS2408 OK P
15 9700000000328329 DS2408 OK P
16 C200000016A78605 DS2405 OK M
17 3D0000000C8C351D DS2423 OK P L
18 BF00000004F3631D DS2423 OK P R
19 140008009214F210 DS1820 OK P
20 2C0000004FD1AB26 DS2438 OK P H

Poll = 01 minutes
Temp disp = F
Serial # disp = On
Wind dirn rev = Off
SUN 08:28:40
```

Here is the DIS output from 2.20:

```
>dis
01 9500000015583512 DS2406 OK P
02 EA00000040543910 DS1820 OK P
03 91000800135B9B10 DS1820 OK P
04 440000001EC34228 DS18B2 OK P
05 3000000002202920 DS2450 OK P
06 590000000007B014 DS2430 OK P
07 21000000032E4E22 DS1822 OK P
08 060000003770D026 DS2438 OK P V
09 DB0000007520A126 DS2438 OK P B
10 F5000000B6435726 DS2438 OK P H
11 D1000000F5868801 DS2401 OK P
12 A400000001042829 DS2408 OK P I
13 8E0000000115111D DS2423 OK P C
14 000000000107A829 DS2408 OK P O
15 9700000000328329 DS2408 OK P L
16 C200000016A78605 DS2405 OK M
17 3D0000000C8C351D DS2423 OK P R
18 BF00000004F3631D DS2423 OK P W
19 140008009214F210 DS1820 OK P
20 2C0000004FD1AB26 DS2438 OK P H

Poll = 01 minutes
Temp disp = F
Serial # disp = On
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
Regular Time Display = Off
Display Wind = Off
SUN 08:19:20
```

As can be seen, there are additional parameters in the display. V2.20 added the DS2438 Temperature Display, OnBoard ADC display, Time Display and Wind Display parameters which were previously not visible.

In addition, some of the TYP parameters have been changed. “L” is no longer a valid setting for DS2423 sensors but is now used to indicate a LED type for DS2408 sensors. The “C” parameter is now used for DS2423 sensors to indicate a Counter type (which is what the Lightning “L” parameter was used for previously). Here are the current parameters in use by the TYP command:

Table 2 TYPe Parameters Used in V2.20

Designation	Description	OW Device
B	Barometric Sensor	DS2438
C	Counter Sensor (use for Lightning counts as well)	DS2423
H	Humidity Sensor	DS2438
I	Input Sensor	DS2408
L	LED Sensor	DS2408
O	Output/Relay Sensor	DS2408
R	Rain Sensor	DS2423
T	Temperature only from DS2438	DS2438
V	Voltage Sensor	DS2438
W	Wind Speed Sensor	DS2423

With the addition of the “I” parameter for DS2408’s, the command EIN is no longer required.

3.2. INI Changes in V2.20

This is one area of code that changed dramatically with V2.20, however few changes were made to the output. The algorithm is now capable of discovering all sensors present on the 1-Wire bus. In previous versions, the algorithm would not discover more than 8 new sensors at a time.

The visible change in using this command is the output of new sensor serial numbers as they are discovered. Here is what it looks like in V2.20:

```
>ini
Reading Sensors...
Found 140008009214F210
Found 2C0000004FD1AB26
01 9500000015583512 DS2406 OK P
02 EA00000040543910 DS1820 OK P
03 91000800135B9B10 DS1820 OK P
04 440000001EC34228 DS18B2 OK P
05 3000000002202920 DS2450 OK P
06 590000000007B014 DS2430 OK P
07 21000000032E4E22 DS1822 OK P
08 060000003770D026 DS2438 OK P V
09 DB0000007520A126 DS2438 OK P B
10 F5000000B6435726 DS2438 OK P H
11 D1000000F5868801 DS2401 OK P
12 A400000001042829 DS2408 OK P I
13 8E0000000115111D DS2423 OK P C
14 000000000107A829 DS2408 OK P O
15 9700000000328329 DS2408 OK P L
16 C200000016A78605 DS2405 OK P
17 3D0000000C8C351D DS2423 OK P R
18 BF00000004F3631D DS2423 OK P W
19 140008009214F210 DS1820 OK M
20 2C0000004FD1AB26 DS2438 OK M H

Poll = 01 minutes
```

```
Temp disp = F
Serial # disp = On
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
Regular Time Display = Off
Display Wind = Off
SUN 08:16:08
>
```

3.3. SET Command Differences

In V2.18 and previous versions, the SET command looked like this (user input is in red):

```
>set
Poll = 01
F or C? f
Serial # disp = on
Wind dirn rev = off
Set Clock (d,h,m,s): 01,08,28,00


Poll = 01 minutes
Temp disp = F
Serial # disp = On
Wind dirn rev = Off
SUN 08:28:00
```

In V2.20, this changed dramatically. The SET command now contains additional parameters and each user input will result in a re-display of all parameters. Here is what SET looks like in V2.20 (user input is in red):

```
>set
Poll = 01
```

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```
01 9500000015583512 DS2406 OK P
02 EA00000040543910 DS1820 OK P
03 91000800135B9B10 DS1820 OK P
04 440000001EC34228 DS18B2 OK P
05 3000000002202920 DS2450 OK P
06 590000000007B014 DS2430 OK P
07 21000000032E4E22 DS1822 OK P
08 060000003770D026 DS2438 OK P V
09 DB0000007520A126 DS2438 OK P B
10 F5000000B6435726 DS2438 OK P H
11 D1000000F5868801 DS2401 OK P
12 A400000001042829 DS2408 OK P I
13 8E0000000115111D DS2423 OK P C
14 000000000107A829 DS2408 OK P O
15 9700000000328329 DS2408 OK P L
16 C200000016A78605 DS2405 OK P
17 3D0000000C8C351D DS2423 OK P R
18 BF00000004F3631D DS2423 OK P W

Poll = 01 minutes
Temp disp = F
Serial # disp = On
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
Regular Time Display = Off
Display Wind = Off
SUN 00:48:05
F or C? f
01 9500000015583512 DS2406 OK P
02 EA00000040543910 DS1820 OK P
03 91000800135B9B10 DS1820 OK P
04 440000001EC34228 DS18B2 OK P
05 3000000002202920 DS2450 OK P
06 590000000007B014 DS2430 OK P
07 21000000032E4E22 DS1822 OK P
08 060000003770D026 DS2438 OK P V
09 DB0000007520A126 DS2438 OK P B
```

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```
10 F5000000B6435726 DS2438 OK P H
11 D1000000F5868801 DS2401 OK P
12 A400000001042829 DS2408 OK P I
13 8E0000000115111D DS2423 OK P C
14 000000000107A829 DS2408 OK P O
15 9700000000328329 DS2408 OK P L
16 C200000016A78605 DS2405 OK P
17 3D0000000C8C351D DS2423 OK P R
18 BF00000004F3631D DS2423 OK P W

Poll = 01 minutes
Temp disp = F
Serial # disp = On
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
Regular Time Display = Off
Display Wind = Off
SUN 00:48:13
Serial # disp =
Serial # disp = On:off
01 9500000015583512 DS2406 OK P
02 EA00000040543910 DS1820 OK P
03 91000800135B9B10 DS1820 OK P
04 440000001EC34228 DS18B2 OK P
05 3000000002202920 DS2450 OK P
06 590000000007B014 DS2430 OK P
07 21000000032E4E22 DS1822 OK P
08 060000003770D026 DS2438 OK P V
09 DB0000007520A126 DS2438 OK P B
10 F5000000B6435726 DS2438 OK P H
11 D1000000F5868801 DS2401 OK P
12 A400000001042829 DS2408 OK P I
13 8E0000000115111D DS2423 OK P C
14 000000000107A829 DS2408 OK P O
15 9700000000328329 DS2408 OK P L
16 C200000016A78605 DS2405 OK P
17 3D0000000C8C351D DS2423 OK P R
```

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```
18 BF00000004F3631D DS2423 OK P W

Poll = 01 minutes
Temp disp = F
Serial # disp = Off
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
Regular Time Display = Off
Display Wind = Off
SUN 00:48:20
Wind dirn rev =
Wind dirn rev = Off:off
01 9500000015583512 DS2406 OK P
02 EA00000040543910 DS1820 OK P
03 91000800135B9B10 DS1820 OK P
04 440000001EC34228 DS18B2 OK P
05 3000000002202920 DS2450 OK P
06 590000000007B014 DS2430 OK P
07 21000000032E4E22 DS1822 OK P
08 060000003770D026 DS2438 OK P V
09 DB0000007520A126 DS2438 OK P B
10 F5000000B6435726 DS2438 OK P H
11 D1000000F5868801 DS2401 OK P
12 A400000001042829 DS2408 OK P I
13 8E0000000115111D DS2423 OK P C
14 000000000107A829 DS2408 OK P O
15 9700000000328329 DS2408 OK P L
16 C200000016A78605 DS2405 OK P
17 3D0000000C8C351D DS2423 OK P R
18 BF00000004F3631D DS2423 OK P W

Poll = 01 minutes
Temp disp = F
Serial # disp = Off
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
```

```
Regular Time Display = Off
Display Wind = Off
SUN 00:48:26
Set Clock (d,h,m,s): 01,08,15,00


Poll = 01 minutes
Temp disp = F
Serial # disp = Off
Wind dirn rev = Off
DS2438 Temp Display = On
OnBoard ADC = On
Regular Time Display = Off
Display Wind = Off
SUN 08:15:00
>
```

3.4. Discrete Parameter setting changes

While SET can be used to change most parameters, all configurable TEMP08 parameters are individually changeable. This function remains the same as previous versions, however command names have changed AND the TEMP08 response to most of the commands has been changed to include the current state of the parameter. The following table illustrates the differences between V2.18 and V2.20.

Table 3 Parameter Settings

V2.20 Command	V2.20 Example	V2.18 Command	V2.18 Example
SPT	>SPT01	SPT	>SPT01
ETE	>ete DS2438 Temp Display = On:on	No equivalent command	
EWN	>ewn Display Wind =	DWN	>dwnon

	Off:off		
ETI	>eti Regular Time Display = Off:off	DTI	>dtion
EAD	>ead OnBoard ADC = Off:on	DAD	>dadon
No equivalent command		EIN	>einon
SID	>sid Serial # disp = Off:on	SID	>sidon
SPT	>spt01	SPT	>spt01
WDR	>wdr Wind dirn rev = On:off	WDR	>wdron

3.5. Poll Output Changes

Some changes were made in the polled sensor display, which can also be triggered by the TMP command.

3.5.1. V2.18 Poll Output:

```
SUN 08:29:01
Reading Sensors...
Humidity #01[F5000000B6435726]=86%
Humidity #02[2C0000004FD1AB26]=86%
Barometer #01[DB0000007520A126]=31.53 inHg
Voltage #01[060000003770D026]=05.01V 05.09V 00mV
Voltage #00=01.13V
Wind Dirn[3000000002202920]=N
Wind Speed[BF00000004F3631D]=00 MPH, Gust = 00
Rain #01[BF00000004F3631D]=02.57 Inch
```

```
Lightning #01[8E0000000115111D]=17150 00241
Lightning #02[3D0000000C8C351D]=09979 14420
Sw #01[9500000015583512]=On
Sw #16[C200000016A78605]=Off
Temp #01[EA00000040543910]=80.16F
Temp #02[91000800135B9B10]=77.32F
Temp #03[440000001EC34228]=77.77F
Temp #04[21000000032E4E22]=77.55F
Temp #05[060000003770D026]=77.10F
Temp #06[DB0000007520A126]=77.45F
Temp #07[F5000000B6435726]=78.67F
Temp #08[140008009214F210]=78.11F
Temp #09[2C0000004FD1AB26]=77.10F
```

3.5.2. V2.20 Poll Output:

```
SUN 08:17:00
Reading Sensors...
Humidity #01[F5000000B6435726]=86%
Humidity #02[2C0000004FD1AB26]=86%
Barometer #01[DB0000007520A126]=31.53 inHg
Voltage #01[060000003770D026]=03.13V 05.09V 00mV
Voltage #00=01.13V
Quad Voltage #01[3000000002202920]=05.05V,05.04V,03.18V,03.10V
Wind Speed[BF00000004F3631D]=00 MPH, Gust = 00
Rain #01[3D0000000C8C351D]=89.56 Inch
Counter #01[8E0000000115111D]=00256 00256
1WIO #01[A400000001042829]=Off,Off,Off,Off
Temp #01[EA00000040543910]=77.55F
Temp #02[91000800135B9B10]=77.55F
Temp #03[440000001EC34228]=78.00F
Temp #04[21000000032E4E22]=77.66F
Temp #05[060000003770D026]=77.10F
Temp #06[DB0000007520A126]=77.55F
Temp #07[F5000000B6435726]=79.35F
Temp #08[140008009214F210]=78.35F
Temp #09[2C0000004FD1AB26]=77.10F
```

3.5.3. Poll Differences

In v2.20, the output from DS2450's in voltage mode has a new header "Quad Voltage". This was done to easily distinguish DS2450 voltages from DS2438 voltages.

In v2.20, the output from DS2423 counters has a new header "Counter". It was previously shown as "Lightning".

In v2.20, there is no longer an output displayed for DS2405, DS2406 and DS2407 switch sensors. This type of functionality is available in the companion 1WSwitch product.

In v2.20, DS2408 input sensors will only be displayed (1WIO #) if they are provisioned as "I" type.

In v2.20, DS2438 temperature readings will only appear if the ETE option is set to on.

A reminder that, since v2.14, errors in Humidity or Barometer readings from DS2438 sensors, will result in a display of the voltages returned from that sensor.

3.6. VER Command Output Changes

```
>ver
TEMP08 v2.20 100601
MidonDesign.com
#4290
>
```

```
>ver
TEMP08 v2.18 090414
MidonDesign.com 4291
>
```

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V2.20 changed the output of the VER command. Parsing on "**`TEMP08 v`**" will still yield the software version, but care should be taken with the remainder of the output since the serial number of the unit is now on a separate line and preceded by the "#" character to distinguish it.

4. TEMP08 Software History

Table 4 TEMP08 Software History

Version	Date	Major Changes from Previous Loads
2.20	Jun 2010	• Removed remainder of DS2405/6 support • Added TYP capability for DS2408 devices • Added the ETE command (ability to enable or disable temperature readings from DS2438's) • Added capability for multiple connected 1WIO Input modules • Renamed some option commands to better line up with usage. • Changed output voltage display syntax for DS2450's • Change character timeout period from one minute to 20 seconds
2.19	May 2010	• Restored the DEL command. • Removed the TOG command - DS2405's are no longer supported.
2.18	Apr 2009	• Added debug voltage output for errors in humidity sensor reading
2.17	Nov 2008	• Fixed humidity bug
2.15	Jun 2008	• Added voltage display from current sensor of DS2438 • Removed comma separator from DS2423 readings to avoid bug in HomeSeer com routines • Removed VER and DEL commands to conserve program space

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Version	Date	Major Changes from Previous Loads
2.12	Nov 2007	• Fixed issue with DS2450 readings. Added CRC check for more reliable operation.
2.11	May 2007	• Added LED command • Added reset of both A and B counters of a DS2423 to the RST command.
2.09	Apr 2007	• Major changes to temperature reading algorithms to fix issues with sub-zero Celsius readings and improve accuracy of Fahrenheit readings • Bug fix for DS2405/6 sensor status changes • Removed DEBug command
2.07	Feb 2007	• Fixed bug DS2405 spurious on/off readings • added ability to display counter A of a DS2423 when used as a "L" counter
2.06	Dec 2006	• Fixed bug with temperature readings at zero Celsius
2.05	Dec 2006	• Added capability to have multiple DS2450 voltage sensors on the 1-Wire bus • Fixed issue - DS2405 PIO input changes were not being displayed
2.04	Jul 2006	• Fixed intermittent problem with first sensor presence detection
2.03	Jan 2006	• Fixed problem where a DS2405 switch would intermittently show a false "off" status.
2.02	Sep 2005	• RLY command now handles up to 20 1WIO units • Real time sensor presence detection via the DIS command • All hidden options now provisionable via discrete commands
1.13	Nov 2004	• Added hidden option 4 for DS2408 input polling (This is the current version that supports legacy RELAY05

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Version	Date	Major Changes from Previous Loads
		products)
1.12	Sep 2004	• Added debounce in missing sensor poll to prevent false "missing" displays.
1.11	Sep 2004	• Added INP command for 1WIO use • Changed method of polling to bypass sensor types not previously detected by the DIS command • Changed temperature conversion algorithm to speed up display • Added third “hidden option” for displaying DS2450 as voltage only • Added default TYPe parameter for DS2423’s on power up. Will now default to “L” if no selection made prior to 1 minute timeout of the Type error message • Added error check for improper use of OFB/ONB commands
1.10	Aug 2004	• final release of new 2408 functionality
1.09	Aug 2004	• Added ONB and OFB commands for DS2406/7 sensors • Added capability to use DS2408 based Relay outputs instead of, and in addition to, RELAY05.
1.08	Aug 2004	• an interim release with a debug setting added
1.07	May 2004	• Fixed an elusive bug - TEMP08 would stop reading sensors and continuously flash the LED red when poll time was set to zero and the TMP command was repeatedly used to obtain sensor readings.
1.06	May 2004	• Added capability for DS2438's to be used as only a temperature sensor • removed verbose Enter Type... description from the TYP command and associated calls.
1.05	April 2004	• Added more error checking for invalid readings on humidity sensors • Added Hidden option for not displaying the once-per minute time • Changed ZZZ to perform a hard reset rather than a soft reset • fixed a minor bug with time display

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Version	Date	Major Changes from Previous Loads
1.04	Feb 2004	• fixed minor bug where only the results of the first sensor of a DS2423 or DS2438 type were being displayed via the polling function
1.03	Nov 2003	• Added recognition of a DS2408 device • fixed CMDONA/OFA function for DS2406's • fixed a small bug in DS18S20 temperature display • added a hidden option to display (or not) the voltage from the secondary on-board ADC
1.02	Oct 2003	• Bug fix - incorrect readings on DS18S20 sensor • Robustness improvements to humidity readings • Added support for AAG TAI8555 sensor • Added display for on-chip voltage sensor
1.00	Aug 2003	Initial Release

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