



## Centipede 2<sup>®</sup> Module™

Temperature Control System

### Instruction Manual for Remote User Communications



Read and understand this manual before operating or servicing this temperature control system. Failure to understand how to safely operate these controllers could result in an accident causing serious injury or death. Only qualified personnel should operate or service these controllers.

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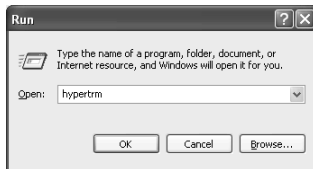
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## Setting Up HyperTerminal Thru Serial port (RS232)

Set up your HyperTerminal location before setting up the HyperTerminal for your system.

### Step 1a: Load HyperTerminal (Windows XP-based PC)

- Start button > All programs > Accessories > Communications > Hyper Terminal  
Or  
Start button > Run ... > type hypertrm > Click OK button
- Go to **Step2**



### Step 1b: Load HyperTerminal (Windows 7-based PC)

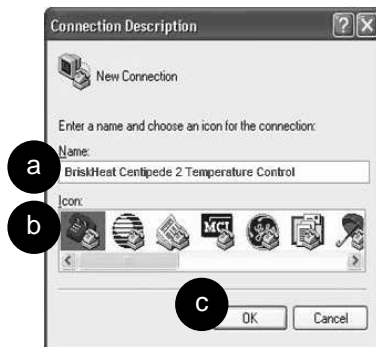
- HyperTerminal was not released in any Windows version after Windows XP/ Windows Server 2003.  
You can download HyperTerminal alternative from **HyperTerminal Private Edition** – This is a commercial terminal emulation program that you can use to communicate with serial COM ports, dial-up modems, and TCP/IP networks.

Website: <http://www.hilgraeve.com/hyperterminal>

- Go to **Step2**

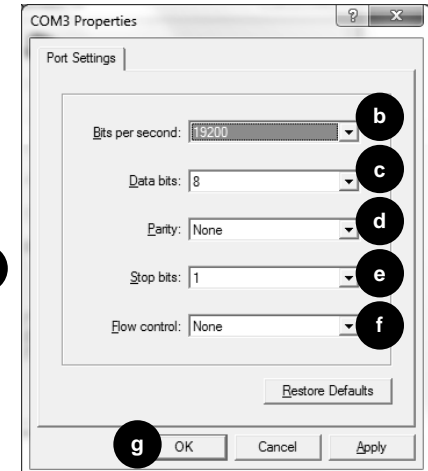
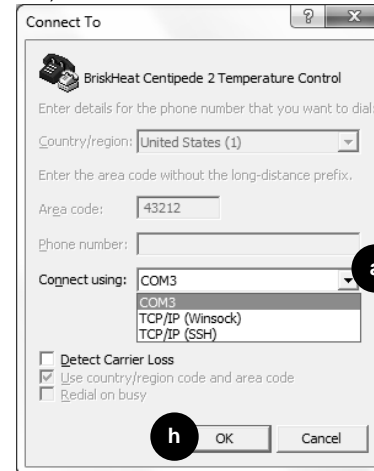
### Step 2: Input Connection Description

- Input a Connection Name: Example: **“BriskHeat Centipede 2 Temperature Control”**
- Select Icon
- Click **OK** button



### Step 3b: Input ‘Connect To’ parameters

- Connect using : **COM3** (Com port can be different depends on computer)
- Bit per second : **19200**
- Data bits : **8**
- Parity : **None**
- Stop bits : **1**
- Flow control : **None**
- Click **OK** button
- Click **OK** button



### Step 4b: HyperTerminal Properties

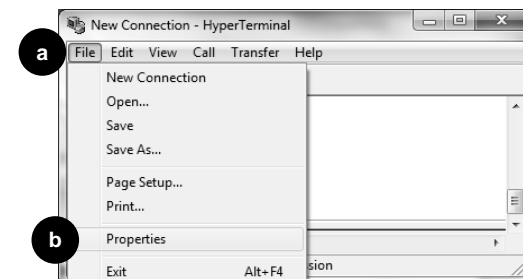
To make characters visible when using HyperTerminal follow steps:

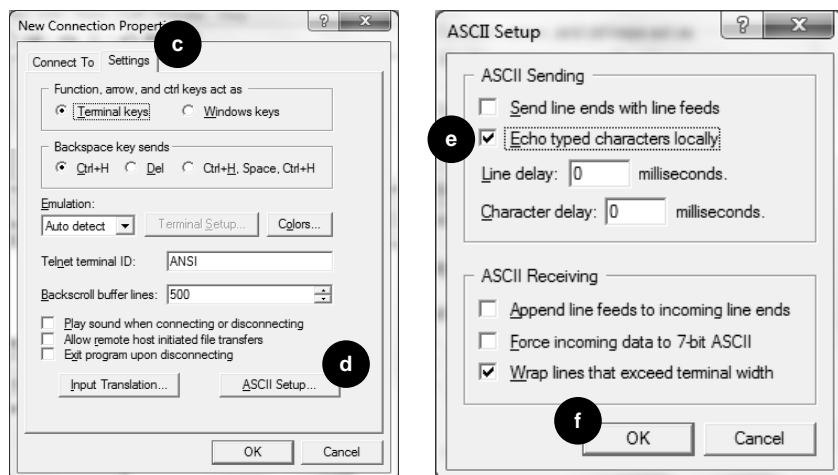
- Select **File**
- Select **Properties**
- Select **Settings** Tab
- Click **ASCII Setup...** button
- Check the box called **“Echo typed characters locally”**
- Click **OK** button

**\*\*Do not change any other parameters in this screen\*\***



Type **bye** to exit to avoid hung-up.





## Log-in Instructions for User Interface

### Screenshot

welcome to Brisk Heat's OEM OI setup

version 1.x.xxx

Please enter password:

1. Type in Login password: **briskheat** (default password)
2. Press [Enter]
3. Retype Login password
4. Press [Enter]
5. List of commands display

## Operating Instructions:

Type a Command and press [Enter] to initiate a command.

\* See Appendix A and B for a list of Register Definitions. Appendix A has a list of register definitions stored on the operator interface. Appendix B has a list of register definitions stored on each temperature control zone.

## User Interface Command List

### '?' Command

Displays list of commands. Type ? and then press [Enter].

### Screenshot

Bye	Ends this telnet session
Reset	Resets the program
Reload	Reloads the default parameters
Show	Shows connection settings
Sm	Shows Enumerated Modules
En	Enumerate Modules (Query Locked Module/Zone ID(s))
IdReset	Resets All Module/Zone ID values to 1-n
IdSet:	Sets Module/Zone ID values nn:ID (nn=phys position (1-n))
IdSetR:	Sets Module/Zone ID values nn:ID:qty (nn=phys position (1-n))
Imon:	Locate Module/Zone ID and blink corresponding LED
Imoff	Discontinue Module/Zone ID locate
Unlatch	One-shot unlatching of all latched heater alarms
LUIOn	Enable RS-232 Local User Interface
LUIOff	Disable RS-232 Local User Interface
ModAddr:	Modbus Address ModAddr:Address (address = 1-255)
Dnsaddress1:	Sets the first dns address. Dnsaddress1:xxx.xxx.xxx.xxx
Dnsaddress2:	Sets the backup dns address. Dnsaddress2:xxx.xxx.xxx.xxx
Password:	Sets the case sensitive password. Password:passwordstring
Ipaddress:	Sets ip address of module. Ipaddress:xxx.xxx.xxx.xxx
Settime:	Sets local time hh:mm:ss mm/dd/yyyy format
Gateway:	Sets gateway address. Gateway:xxx.xxx.xxx.xxx
Netmask:	Sets up the tcpip netmask. Netmask:xxx.xxx.xxx.xxx
Timezone:	0 for utc, offset for local time
Rr:	Reads register RR:register number
Wr:	Write register WR:register,value,additional params
Dump:	Dumps data to screen, optional param is time in seconds
Almlog	Display alarm history
Clrlog	Clear alarm history
resetcal	Reset screen cal to factory default

\* Modbus RTU mode is off when Local User Interface mode is on.

\*\* Modbus RTU mode is on when Local User Interface mode is off.

\*\*\* Use touch screen to change network settings back to Local User Interface mode if necessary.

## Detect and Assign Control Zone IDs

### Enumerate Control Zone IDs

#### 'En' Command

Type **En** and then press [Enter].

Detects all installed zones. All zones get assigned an ID that matches physical location in sequence in the strings. Numbered in sequential order zones 1,2,3,....

After performing the 'En' function, perform the 'Sm' command to confirm that the required zones are detected. See *Detect and View Control Zones*.

*Screenshot:*

*BH> En*

*Enumerating Modules*

Note: Exiting a session (disconnect) without typing the Bye command the system is hung in session and cannot login without power cycle.

### Detect and View Control Zones

#### 'Sm' Command

Type **Sm** and then press [Enter].

Displays all zones with a Zone ID. Verify that the required numbers of zones are detected for your installation.



If there are multiple zones with the same Zone ID or there are missing zones, perform an IDRESET. See *Reset Zone IDs and Settings*.

*Screenshot:*

*BH> sm*

*Enumerated modules*

*1, 2, 3*

### Reset Zone IDs and Settings

#### 'Idreset' Command

Type **Idreset** and then press [Enter].

Resets and auto-assigns all Zone IDs. This function should be performed when there are multiple zones with the same Zone ID (e.g. 1, 1, 2, 2, 3, 3) or when you wish to reset all temperature zone register values.



This function resets all temperature zone register values (set-point, high-limit, etc.) back to its default parameters. See Appendix B for a list of all default module register values.

*Screenshot:*

*BH> sm*

*Enumerated modules*

```
1, 1, 2
BH> idreset
Resetting Module/Zone ID(s)
BH> sm
Enumerated modules
1, 2, 3
```

### Manually Set an Individual Zone ID

#### 'Idset' Command

Type **Idset:X:Y** and then press [Enter].

X = Physical Zone Location

Y = Desired Zone ID #

Set a specific Zone ID number to a single zone.

In the screenshot example below, the user changes the Zone ID of the first zone to 55.

*Screenshot:*

*BH> idset:1:55*

*Setting Module/Zone ID*

*BH> sm*

*Enumerated modules*

*55, 2, 3*

### Manually Set Multiple Zone IDs

#### 'Idsetr' Command

Type **Idsetr:X:Y:Z** and then press [Enter].

X = Physical Zone Location of the First Zone to Change

Y = Desired Zone ID # of First Zone to Change

Z = Number of Zones to Change

Set multiple zone IDs in sequence at one time.

In the screenshot example below, the user changes the Zone ID of the fourth physical zone to 10. The user also requires three zone IDs to be assigned starting with the fourth physical zone. The three zones are re-assigned to the desired sequence: 10, 11, 12.

*Screenshot:*

*BH> idsetr:4:10:3*

*Setting Module/Zone ID*

*BH> sm*

*Enumerated modules*

*1, 2, 3, 10, 11, 12*

## Reload Default Parameters

### 'Reload' Command

Type **Reload** and then press [Enter].

*Screenshot:*

BH> reload

Reloading default parameters

## Program Temperature Control Zones

- Select the Temperature Zone that you would like to program
  - Option 1: Program All Temperature Zones:  
Command: **wr:3,0**
  - Option 2: Program an Individual Zone  
Command: **wr:3,X** (X= zone number)
- Select the Temperature Zone Setting that you would like to program

	Setting	Command	Example
1	Set-Point Temperature	wr:4,5,X00 (X= temperature in °C)	wr:4,5,15000 Programs set-point to 150.00°C
2	High-Limit Temperature	wr:4,6,X00 (X= temperature in °C)	wr:4,6,17000 Programs high-limit to 170.00°C
3	Low-Limit Temperature	wr:4,7,X00 (X= temperature in °C)	wr:4,7,13000 Programs low-limit to 130.00°C
4	Disable / Enable Zone	Disable: wr:4,4,0 Enable: wr:4,4,64	Default setting: Enabled

See Appendix B for a complete list of Control Zone Register Definitions.

### Screenshot of Global Programming

BH> wr:3,0 ← Focus on all zones. Press [Enter]  
 BH> wr:4,5,15000 ← Set-Point 150°C. Press [Enter]  
 BH> wr:4,6,17000 ← High-Temperature Limit 170°C. Press [Enter]  
 BH> wr:4,7,13000 ← Low-Temperature Limit 130°C. Press [Enter]

### Screenshot of Individual Zone, Example: Zone 2

BH> wr:3,2 ← Focus on individual zone. Press [Enter]  
 BH> wr:4,5,14000 ← Set-Point 140°C. Press [Enter]  
 BH> wr:4,6,18000 ← High-Temperature Limit 180°C. Press [Enter]  
 BH> wr:4,7,12000 ← Low-Temperature Limit 120°C. Press [Enter]

## Read / View Status of Temperature Control Zones

- Select the Temperature Zone that you would like to view
  - Command: **wr:3,X** (X= zone number)
- Select the Temperature Zone Setting that you would like to view

	Setting	Command
1	Set-Point Temperature	rr:4,5
2	High-Limit Temperature	rr:4,6
3	Low-Limit Temperature	rr:4,7
4	Zone Config	rr:4,4
5	Duty Cycle	rr:4,12

See Appendix B for a complete list of Control Zone Register Definitions.

### Screenshot Example: Viewing Set-Point of Zone 1

BH> wr:3,1 ← Focus on zone 1. Press [Enter]

BH> rr:4,5 ← View Set-Point (register 5). Press [Enter]  
 150

## Dump Command (Data Logging)

Type **dump** [Enter]

### Screenshot of Dump Command (Data Logging)

BH> dump

Data log every 10 seconds

14:04:40 20140102 Z0001 ST8001 S0050.0C H0060.0C L0040.0C PV0021.7C DC100% HTOK  
 14:04:40 20140102 Z0002 ST8001 S0050.0C H0060.0C L0040.0C PV0023.8C DC100% HTOK  
 14:04:40 20140102 Z0003 ST8001 S0050.0C H0060.0C L0040.0C PV0025.1C DC100% HTOK  
 14:04:50 20140102 Z0001 ST8001 S0050.0C H0060.0C L0040.0C PV0022.1C DC100% HTOK  
 14:04:50 20140102 Z0002 ST8001 S0050.0C H0060.0C L0040.0C PV0024.2C DC100% HTOK  
 14:04:50 20140102 Z0003 ST8001 S0050.0C H0060.0C L0040.0C PV0025.5C DC100% HTOK



- |                           |                       |
|---------------------------|-----------------------|
| a) Time format: hh:mm:ss  | f) High Alarm Limit   |
| b) Date format: yyyyymmdd | g) Low Alarm Limit    |
| c) Zone number            | h) Actual Temperature |
| d) Status                 | i) Duty Cycle         |
| e) Set-point              | j) Heater Status      |

To Exit Dump (Data Logging): Press [Enter] key

## Setting Alarm Relay - Latching Alarm Feature

The Centipede 2<sup>®</sup> has a built in alarm relay with latching alarm feature that is user configurable for your application. Each condition to which latching applies (See Alarm Operation Summary Table) will be individually enabled. The term latching means that when a condition's actuation criteria are met, the alarm, all of its control actions, and outward indicators will remain in their actuated state until the condition is unlatched by user intervention (i.e. If a high temp alarm condition occurs, the individual zone will remain in the non-heating mode until a user unlatches the zone). The alarm unlatch setting can be accessed on the text user interface which will momentarily unlatch all latched alarms. The unlatch function will unlatch all zones simultaneously. Any zones that are considered to be in alarm mode will re-latch.

### Alarm Relay Summary Table

Condition	Control Action	Latch Configuration				Low Temp Timer Configuration		Alarm Relay	LED
		Type	Scope	Storage	Default	Scope	Default		
High Temp	Disable heat	user	Global	Non-volatile	enabled	n/a		Yes	Yes
Low Temp	none	user	Global	Non-volatile	disabled	Global	30min	Yes	Yes

BriskHeat recommends one of the following alarm settings for easy customer set-up:

- BH> wr:10,513 ← Alarm Relay pushes on alarm, No Timeout of Text UI Session, No Latching Enabled
- BH> wr:10,517 ← Alarm Relay pushes on alarm, No Timeout of Text UI Session, High Temp Latch Enable
- BH> wr:10,519 ← Alarm Relay pushes on alarm, No Timeout of Text UI Session, High Temp and Low Temp Latch Enable
- BH> wr:10,512 ← Alarm Relay pushes on normal, No Timeout of Text UI Session, No Latching
- BH> wr:10,516 ← Alarm Relay pushes on normal, No Timeout of Text UI Session, High Temp Latching Enabled
- BH> wr:10,518 ← Alarm Relay pushes on normal, No Timeout of Text UI Session, High and Low Temp Latching Enabled

*\* Refer to appendix C for further settings options for your alarms needs.*

## Understanding the Message Status Codes

### Normal Conditions Status Codes

The following are common codes that will be displayed when a zone is enabled

Zone configuration  
 Heater: **On**  
 Autotune: **Off**  
 Locate Module/Zone: **Off**

### Common Codes

Displayed Status Value	Status Message	Description
8001	STATUS_OK	Current temperature is within alarm limits
8002	STATUS_HIGH	Current temperature is above high alarm limit
8004	STATUS_LOW	Current temperature is below the low alarm limit
8008	STATUS_RTD_SHORT	RTD is shorted
8010	STATUS_RTD_OPEN	RTD is open
8080	STATUS_TRIAC_DRIVER_BAD	Triac driver is not responding
8100/8101	STATUS_NETWORK_COMMS_BAD	Communications channel is bad
8200/8201	STATUS_HEATER_CONFIG_COMM_BAD	Communication failed during heater configuration
8400/8401	STATUS_LINE_CTRL_COMM_BAD	Communication error with heater line module
0000	STATUS_HEATER_DISABLED	Zone is disabled

### Locate Module/Zone ID Mode Enabled Status Codes

The following are common codes that will be displayed when module locator is turned on

Zone configuration  
 Heater: **On**  
 Autotune: **Off**  
 Locate Module/Zone: **On**

### Common Codes

Displayed Status Value	Status Message	Description
9001	STATUS_OK	Current temperature is within alarm limits; Zone Locator is on
9002	STATUS_HIGH	Current temperature is above high alarm limit; Zone Locator is on
9004	STATUS_LOW	Current temperature is below the low alarm limit; Zone Locator is on
9008	STATUS_RTD_SHORT	RTD is shorted; Zone Locator is on
9010	STATUS_RTD_OPEN	RTD is open; Zone Locator is on

*\* See Appendix C for a complete list of status codes.*

## Operator Interface Set-up

### Time and Date Set-up

#### 'Settime' Command

Type **settime:hh:mm:ss mm/dd/yyyy** and then press [Enter].

Sets the local time and date in the following format hh:mm:ss mm/dd/yyyy

(e.g. 08:10:00 07/20/2011)


#### 'Timezone' Command

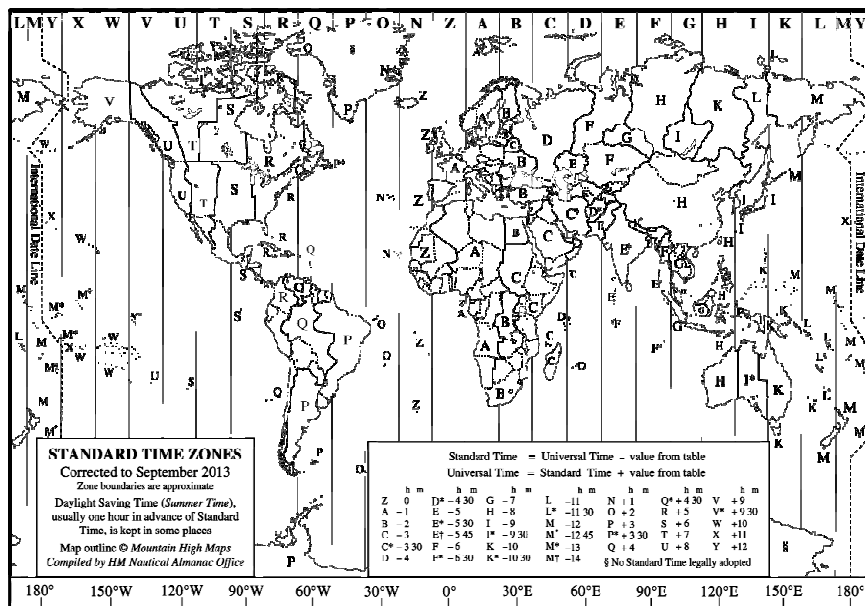
Type **Timezone:XX** and then press [Enter].

**XX** = UCT offset (E.g. -9 is Japan Time Zone)

Sets the UCT / GMT time zone for the location of the system. 0 for UCT (default).

Input your local time zone by using Figure 9.1 below.

 Time and Date parameters are reset if power loss or reset command is initiated.



**Figure 9.1**  
**World Time Zone Chart**

## Password Change

#### 'Password' Command

Type **password: XXXXXX** and then press [Enter].

Allows the user to enter a new password for access to the local user interface.


Default password: **briskheat**

## Communication Mode Set-up

The default communication mode is Com Mode 1: LUIOn


#### 'LUIOn' Command

Type **LUIOn** and then press [Enter].

 Turns on the LUI Communication functionality. This can be confirmed by the Com 1 mode light illuminated.

#### 'LUIOff' Command

Type **LUIOff** and then press [Enter].

 Turns off the LUI Communication functionality. This can be confirmed by the Com 2 mode light illuminated.

You must connect via Telnet over Ethernet to turn on the LUI interface over to RS-232C.

## Modbus RTU Protocol Set-up

The default Modbus address is 0.

#### 'ModAddr' Command

Type **modaddr:XXX** and then press [Enter].

**XXX** = ModBus Address 0 through 255

\* See Appendix A,B,C and D for Setting the ModBus address for the operator interface when communicating using ModBus RTU protocol.

## TCP/IP Set-up

The default TCP/IP settings are generally appropriate for a single Centipede 2® Operator Interface. And Centipede 2® Operator Interface units can only connect 1:1 in others to a single PC directly. Not capable for network connection. All units have single same MAC address

### 'Dnsaddress1' Command

Not used.

### 'Dnsaddress2' Command

Not used.

### 'Ipaddress' Command

Type **Ipaddress:xxx.xxx.xx.xxx** and then press [Enter].

### 'Gateway' Command

Not used.

### 'Netmask' Command

Not used.

## Display Operator Interface Settings and Firmware Version

### 'Show' Command

Type **Show** and then press [Enter].

#### Screenshot

```
BH> show
Version 1.8.xxx
Ip address:      192.168.10.250
Gateway address: 192.168.10.1
Netmask:         255.255.255.0
Dns address1:    192.168.10.104
Dns address2:    64.118.139.51
Modulename:      CENTIPEDE II
Time Zone:       -1
Time:            14:06:47 1/8/2014
```

## Locate Zone ID (Orange LED)

Quickly detect the location of a zone by causing the LED to flash orange. This function does not affect the performance of the zone control. The zone will remain in the flashing position until the user turns it off or selects a different zone.

### 'Lmon' Command

Type **Lmon:X** and then press [Enter].  
X = Zone ID to Locate (e.g. 1 = Zone 1)

Turns on LED of corresponding Zone ID to flashing Orange. See Figures 10.1



**Figure 10.1**  
**Image of flashing orange light on C2MOD-C**

Screenshot:  
BH> lmon:1  
BH>



Flashing orange LED will be time out after 5 minutes then return back to former LED signal.

### 'Lmoff' Command

Type **Lmoff:X** and then press [Enter].  
X = Zone ID to Locate (e.g. 1 = Zone 1)

Turns off LED of corresponding Zone ID to no longer flash orange.

Screenshot:  
BH> lmoff:1  
BH>




## Operator Interface Reset

### 'Reset' Command

Type **Reset** and then press [Enter].

Resets the operator interface. The communications session ends. This is the equivalent as turning the power off to the operator interface and turning it back on.

*Screenshot:*  
welcome to Brisk Heat's OEM OI setup  
Version 1.8.xxx  
Please enter password:


 Time and Date parameters are reset if power loss or reset command is initiated.

## Exit Session

### 'Bye' Command


Type **bye** and then press [Enter].

Ends the current communications session.

 The Centipede 2® continues to operate after exiting the communication session.

*Screenshot:*  
BH>bye

Disconnected

 If Bye command has not given, then communications hang up.

## Appendix A: Centipede 2® Operator Interface Register Definitions

Register Description	Address	Memory	Access	Default	Description
Firmware Revision	0	Flash	R	NA	
Controller Status Word	1	Flash	R	NA	
Modbus Comms Error Register	2	RAM	R/W	0	
Module Focus Address	3	RAM	R/W	0	Jacket Module address
Jacket Command Register	4	RAM	R/W		
Jacket Poll response register	5	RAM	R		
Time1	6	RTC	R/W	Current time	BCD hours, minutes
Time2	7	RTC	R/W	Current time	BCD seconds, month
Time3	8	RTC	R/W	Current time	BCD day, year
Module address	9	EEPROM	R/W	0	Modbus address
Module (controller) Settings	10	EEPROM	R/W	1	Settings
Low Temperature Timer	11	EEPROM	R/W	1800	Low temp timer (secs)
Reserved	12-100				

## Appendix B: Centipede 2® Control Zone Register Definitions

Register Description	Address	Memory	Access	Default	Description
Firmware Revision	0	Flash	R	NA	
Line Processor Revision	1	Flash	R	NA	
Zone Status	2	Ram	R/W	NA	
Sampled Temperature	3	Ram	R	NA	Deg c * 100
Controller Config Register	4	EEPROM	R/W	64	
Temperature Setpoint	5	EEPROM	R/W	0	0.00 C
Temperature Hi Limit alarm	6	EEPROM	R/W	0	0.00 C
Temperature Lo Limit alarm	7	EEPROM	R/W	0	0.00 C
100 Ohm Calibration value hi	8	EEPROM	R	6800	Ohms * 100
100 Ohm Calibration value lo	9	EEPROM	R	6800	Ohms * 100
Reserved	10 - 12	NA	NA	NA	
PID Pg Current value	13	Ram	R	NA	
PID Pd Current value	14	Ram	R	NA	
PID Pi Current value	15	Ram	R	NA	
Current PWM percentage	16	Ram	R	NA	
ADC Raw Data value	17	Ram	R	NA	
Reserved	18 - 100	NA	NA	NA	

## Appendix C: OI Settings Setup: wr:10,"Value"

Register 10 of the Operator Interface is the "Settings" register. The Register consists of 16 bits and the register is defined below. The "Value" is the Decimal equivalent to the Binary for the 16 bits.

Bit Position	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Desired Binary Value	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Value of Each Binary Bit into Decimal (Each Bit Base-2)	0	0	0	0	0	0	512	0	0	0	0	0	0	0	0	1
Sum of Decimal Values	513															
Entered Decimal Value	513															

### Register 10 – Operator Interface Settings Register

Cs15	Cs14	Cs13	Cs12	Cs11	Cs10	Cs9	Cs8
Cs7	Cs6	Cs5	Cs4	Cs3	Cs2	Cs1	Cs0

Bits 15-0 Cs: Controller Settings

- 0: ALARM RELAY CTRL – Actuate/de-actuate (1/0) relay when alarm active
- 1: LOW TEMP LATCH – Set to enable latch of low temperature alarm
- 2: HIGH TEMP LATCH – Set to enable latch of high temperature alarm
- 3: OPEN RTD LATCH – Set to enable latch of open rtd alarm
- 4: SHORT RTD LATCH – Set to enable latch of short rtd alarm
- 5: NOT USED
- 6: NOT USED
- 7: PASSWORD ENABLE – Set to enable GUI password
- 8: TIMER DISPLAY 12 HOURS – Display timer (GUI) in 12 hour mode (AM/PM)
- 9: TEXT UI SESSION TIMEOUT DISABLE – Disables text ui session timeouts
- 14: ALARM LOG CLEAR – Clear alarm history one-shot when set
- 15: UNLATCH ALL ON-SHOT – Set to do a single unlatch of all latched alarms

**Example** "Value" determination\*:

In the above example Cs9 (Bit Pos. 9) is set to 1. This is translated to a decimal value as  $1 * 2^9$ . And similarly Cs0 (Bit Pos.0) is set to 1. This is translated to a decimal value as  $1 * 2^0$ . Other bits, such as Cs2 (Bit Pos. 2), as set to 0. This is translated to a decimal value as  $0 * 2^2$ . The sum of all of the decimal values is the final decimal number to use for the command.

BH> wr:10,513

This command places the Operator Interface Register 10 bits such that Cs9 (Bit Pos. 9) and Cs0 (Bit Pos. 0) are activated. All other bits are inactivated.

*\*Note: Microsoft Windows Operating Systems have a simple Calculator as part of their suite of Accessories. That Calculator software includes a View -> Programmer setting, where one can easily convert from binary to decimal and reverse.*

## Appendix D: Controller Configuration Commands: wr:4,4,"Value"

Value	Bits That are Set
0	OFF of Heating
1	Auto Tune On Start Enabled, High Only Temperature Alarm Enabled
32	High and Low Temperature Alarm Enabled
33	Auto Tune On Start Enabled
64	High Only Temperature Alarm Enabled, Auto Heat on Start up Enabled
65	Auto Tune On Start Enabled, High Only Temperature Alarm Enabled, Auto Heat on Start up Enabled
96	High and Low Temperature Alarm Enabled, Auto Heat on Start up Enabled
97	Auto Tune On Start Enabled, Auto Heat on Start up Enabled

## Appendix E: Understanding the Message Status Codes (Hexidemical to Binary Conversion)

To understand the displayed Status code, you first need to convert the displayed hexadecimal code into the equivalent binary code.

You can use the conversion charts below to easily convert between hexadecimal and binary.

### Hexidecimal to Binary Conversion Chart

#### Status Decoding Example:

Hexidecimal Value	Binary Combination	Hexidecimal Value	Binary Combination
0	0000	8	1000
1	0001	9	1001
2	0010	a	1010
3	0011	b	1011
4	0100	c	1100
5	0101	d	1101
6	0110	e	1110
7	0111	f	1111

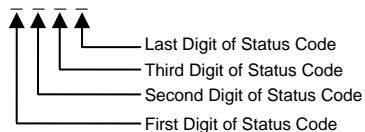
Example: Hex Value of 8401 is displayed is Heater Status Register:

Displayed Hex Value	8				4				0				1			
Converted Binary Value	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Bit Position	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Heater is enabled because bit 15 is set. There is a communication error between the network board and line power board for the zone because bit 10 is set; the heater is within the alarm limits because bit 0 is set.

## Trouble Shooting: Status Register Definitions

Status Code:



Value	First Digit of Status Code	Second Digit of Status Code	Third Digit of Status Code	Last Digit of Status Code
0 or BLANK	No Value	No Value	No Value	Zone is Disabled
1	Blink Id	Status Network Comm Bad	Status Rtd Open	Status Ok
2	Adaptive Tuning Enabled	Status Heater Config Comm Bad	N/A	Status High
3	Adaptive Tuning Enabled, Blink Id	Status Heater Config Comm Bad, Status Network Comm Bad	N/A	Status High, Status Ok
4	Start Jacket Test	Status Line Ctrl Comm Bad	N/A	Status Low
5	Start Jacket Test, Blink Id	Status Line Ctrl Comm Bad, Status Network Comm Bad	N/A	Status Low, Status Ok
6	Start Jacket Test, Adaptive Tuning Enabled,	Status Line Ctrl Comm Bad, Status Heater Config Comm Bad,	N/A	Status Low, Status High,
7	Start Jacket Test, Adaptive Tuning Enabled, Blink Id	Status Line Ctrl Comm Bad, Status Heater Config Comm Bad, Status Network Comm Bad	N/A	Status Low, Status High, Status Ok
8	Enable Heater Control	Calibrate Rtd Circuit	Status Triac Driver Bad	Status Rtd Short
9	Enable Heater Control, Blink Id	Calibrate Rtd Circuit, Status Network Comm Bad	Status Triac Driver Bad, Status Rtd Open	Status Rtd Short, Status Ok
A	Enable Heater Control, Adaptive Tuning Enabled,	Calibrate Rtd Circuit, Status Heater Config Comm Bad,	N/A	Status Rtd Short, Status High,
B	Enable Heater Control, Adaptive Tuning Enabled, Blink Id	Calibrate Rtd Circuit, Status Heater Config Comm Bad, Status Network Comm Bad	N/A	Status Rtd Short, Status High, Status Ok
C	Enable Heater Control, Start Jacket Test,	Calibrate Rtd Circuit, Status Line Ctrl Comm Bad,	N/A	Status Rtd Short, Status Low,
D	Enable Heater Control, Start Jacket Test, Blink Id	Calibrate Rtd Circuit, Status Line Ctrl Comm Bad, Status Network Comm Bad	N/A	Status Rtd Short, Status Low, Status Ok
E	Enable Heater Control, Start Jacket Test, Adaptive Tuning Enabled,	Calibrate Rtd Circuit, Status Line Ctrl Comm Bad, Status Heater Config Comm Bad,	N/A	Status Rtd Short, Status Low, Status High,
F	Enable Heater Control, Start Jacket Test, Adaptive Tuning Enabled, Blink Id	Calibrate Rtd Circuit, Status Line Ctrl Comm Bad, Status Heater Config Comm Bad, Status Network Comm Bad	N/A	Status Rtd Short, Status Low, Status High, Status Ok

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