

Thermometer Two

(quick and dirty)

This is an adaption of the Thermometer One program (see <http://www.keywild.com/arduino>).

This version of the software supports up to eight LM34 temperature sensors. Each sensor may be toggled on or off using the command '**S#**' where '**#**' is the Arduino's analog pin number (0 to 7). All sensor outputs go on the same tab delimited report line with the Analog pin number ahead of the readings. Example (*Pin, Celsius, Fahrenheit*):

```
A1: 32.38 90.38      A2: 0.00 32.00      A5: 20.00 68.00
```

The status the sensor is indicated by a single line in the status report. A dot "." will be shown in the position of each sensor that is set to false. Otherwise the sensor number is shown. This example shows one valid sensor on pin A1:

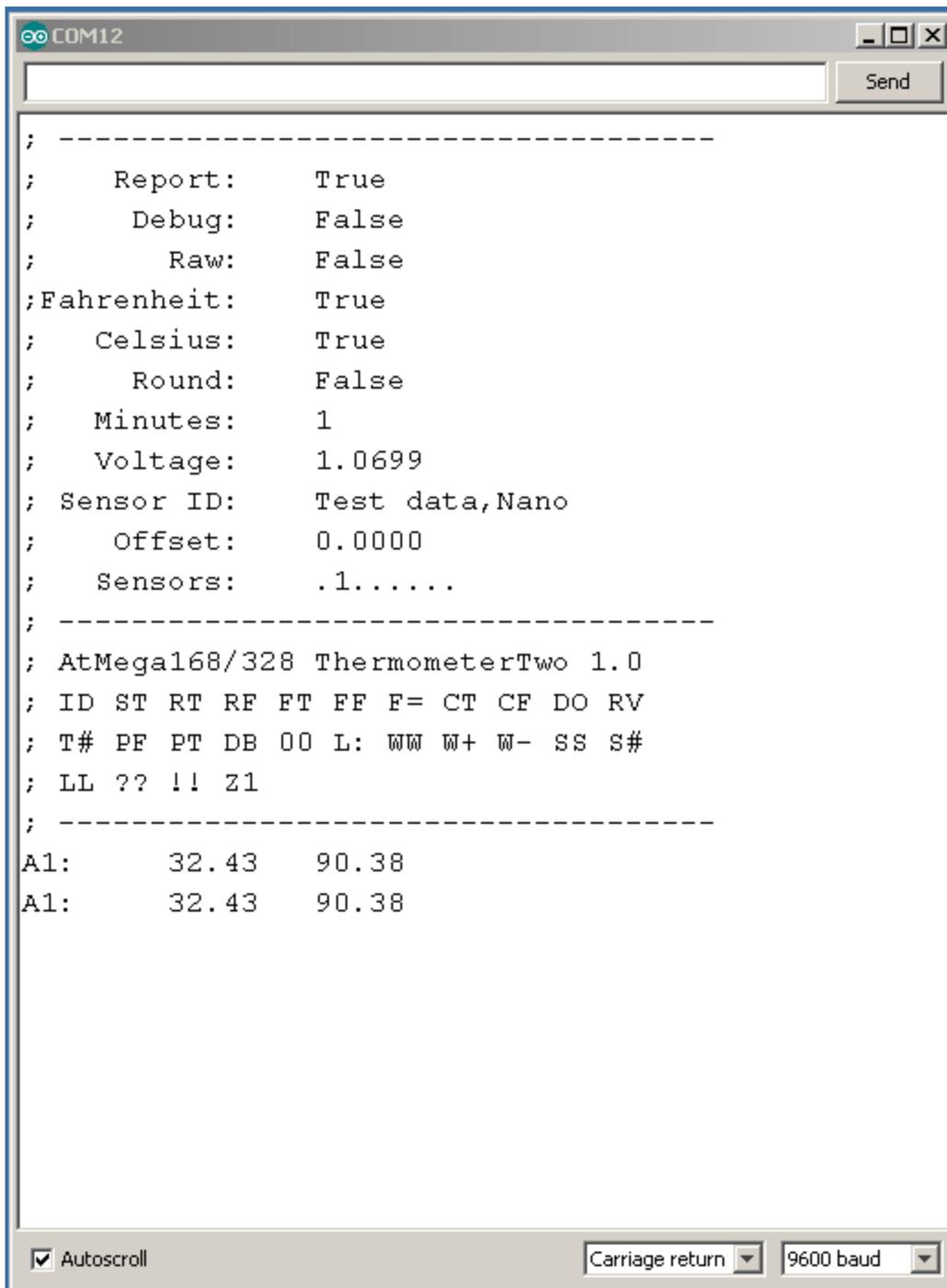
```
; Sensors: .1.....
```

This version of the software also saves the various operation mode flags:

```
boolean ReportMode = true; // True = reporting, False = Command Mode
boolean RtnRawRead  = true; // True = include Raw
boolean RtnCelsius  = true; // True = include Celsius
boolean RtnFahrenh  = true; // True = include Fahrenheit
boolean DeBug       = false; // True = extended reporting for debugging
boolean RoundMode   = true; // True = round output to nearest 1/4 or 1/2
boolean EepromMode  = false; // not used in this program --- for compatibility only
boolean Sensors[8]; // True = Sensor Attached, Report Sensor
```

What this version gives up is the ability to record data in the EEPROM. This restriction is in order to keep the program small enough to run on the ATmega168 (*and the need to come up with a new scheme for storing data from multiple sensors*).

The EEPROM locations used by this program are compatible with those used by the Thermometer One program.



The image shows a terminal window titled "COM12" with a "Send" button at the top right. The window contains a series of text-based configuration parameters and sensor data. The parameters are listed between two dashed lines, and the sensor data is shown at the bottom. The data includes two identical rows of "A1:" followed by two temperature values: 32.43 and 90.38. At the bottom of the window, there are checkboxes for "Autoscroll" (checked) and dropdown menus for "Carriage return" and "9600 baud".

```
; -----  
;   Report:      True  
;   Debug:       False  
;   Raw:         False  
; Fahrenheit:   True  
;   Celsius:    True  
;   Round:      False  
;   Minutes:    1  
;   Voltage:    1.0699  
; Sensor ID:    Test data, Nano  
;   Offset:     0.0000  
;   Sensors:    .1.....  
; -----  
; AtMega168/328 ThermometerTwo 1.0  
; ID ST RT RF FT FF F= CT CF DO RV  
; T# PF PT DB 00 L: WW W+ W- SS S#  
; LL ?? !! Z1  
; -----  
A1:      32.43   90.38  
A1:      32.43   90.38
```

Autoscroll Carriage return 9600 baud

Implemented Commands

Arduino Thermometer Two	
Command	Description
ID	Output ID string
ST	Output Status
RT	Raw=True
RF	Raw=False
FT	Fahrenheit=True
FF	Fahrenheit=False
F=	Enter Current Fahrenheit
CT	Celsius=True
CF	Celsius=False
C=	Enter Current Celsius
D0	New Degree Offset (Fahrenheit)
RV	New Reference Voltage
T1	Report time = 01 minutes
T2	Report time = 02 minutes
T3	Report time = 03 minutes
T4	Report time = 04 minutes
T5	Report time = 05 minutes
T6	Report time = 10 minutes
T7	Report time = 15 minutes
T8	Report time = 20 minutes
T9	Report time = 30 minutes
T0	Report time = 60 minutes
PF	Print mode = False
PT	Print mode = True
DB	Debug mode toggle
00	Rounding mode toggle
L :	New Location
S#	Toggle Sensor on/off
WW	Write Calibration data to EEPROM
W+	Overwrite Backup Calibration data
W-	Restore from Backup Calibration data
LL	List implemented commands
??	List implemented commands
SS	Shutdown (send twice)
!!	Reset (send twice)
Z1	Write default data to EEPROM

	Response 'XX' = not implemented
	Response '??' = not recognized