

# Calculate the Heat Index with a ScriptBasic Program



## Overview

This example uses a ScriptBasic program to calculate the heat index. These calculations are too complicated to use Action Math Rules but are easily accomplished with ScriptBasic. For more DXM Controller information, refer to the appropriate instruction manual.

- DXM Configuration Tool Instruction Manual (p/n [158447](#))
- DXM100-Bx Wireless Controller Instruction Manual (p/n [190037](#))

The finished ScriptBasic program and the XML configuration file for this technical note are available. Items required for this application include:

Model	Description
DXM1xx-Bx	DXM Wireless Controller
	DXM Configuration Tool software
M12FTH3Q	Temperature and relative humidity via RS-485 Modbus (Set to Device ID 8)
K50LGRYNQ or similar	K50 NPN Light for visual indicators of threshold

## Install the Monitoring Hardware

1. Wire the M12FTH3Q Temperature/Relative Humidity sensor to the DXM Controller using the master RS-485 port (pins M+/M-).
2. Wire the K50 light to 24 V power (brown wire).
3. Wire the K50 light to the three NMOS outputs on the DXM Controller (N1=black, N2=white, and N3=blue).

## Configure the Application

Use the DXM Configuration Tool software to create a configuration file for the DXM Controller.

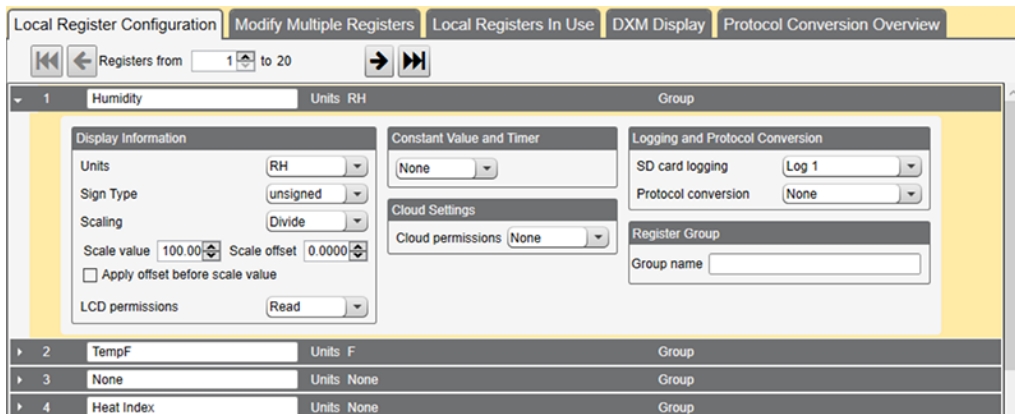
Using the logging capability allows a history to be saved on the processor's SD card. Which registers are saved on the SD card log is determined by the settings in the **Local Registers** screen. Use the **Settings > Logging** screen to define how often registers are saved.

1. On the **Local Registers > Local Register Configuration** screen, define the Local Registers.

Local Register	Signal Name	Description
1	Humidity	Humidity register value read from Temp/Humidity sensor; Modbus device 8
2	TempF	Temperature register value read from Temp/Humidity sensor; Modbus device 8
4	Heat Index	Calculated heat index from ScriptBasic program
10	LightA	Threshold 'A' determined by ScriptBasic with user-defined parameters
11	LightB	Threshold 'B' determined by ScriptBasic with user-defined parameters
12	LightC	Threshold 'C' determined by ScriptBasic with user-defined parameters

The parameters define the units, scaling, and LCD permissions based on the data read from the temp/humidity device.

2. Verify these registers are configured to log to a specific log file. (LOG1 for this example.)



3. On the **Settings > Logging** screen, Data Log 1 is named HumidityLog.txt. This example sets the log rate to once per minute with a maximum file size of 100k bytes.

## ScriptBasic Program for Calculating Heat Index

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There two heat index calculation functions within the ScriptBasic program. SimpleHeatIndexEq is used when the heat index calculation is below 80. HeatIndexEq is used after the heat index is above 80 degrees.

The main run loop:

1. Reads humidity and temp data from sensor, Modbus device ID 8.
2. Runs the simple heat index calculation function
3. Runs the expanded heat index calculation function
4. Uses the expanded head index calculation if the heat index calculation is above 80
5. Writes Temp/Humidity values and the calculated head index back to the processor local registers to view on the LCD

View the calculation of heat index and the temp and humidity on the DXM LCD and on the console output (printed by the ScriptBasic program). To view the console output, connect the DXM Configuration Tool to the DXM Controller then go to the **Device > View Serial Activity** menu.