

**SIMPLWINDOWS  
NAME:**

Modbus Single Analog Holding Register Poll

**CATEGORY:**

HVAC

**VERSION:**

1.0

**SUMMARY:**

Polls a single analog holding register on a Modbus system

**GENERAL NOTES:**

Modbus is a generic communications protocol. It allows a group of addressable "points" to be accessed by the Crestron system. There are digital points, which have two states - on and off. There are also analog points, which allow 16 bit numbers to be accessed. Some points are read only, while others are read/write.

Modbus supports two different command formats - RTU and ASCII. This module uses the RTU format. You must be sure that the Modbus device is also set for RTU mode.

Modbus does not specify a communications medium or format, so for information on baud rate, parity, etc., as well as cabling information, you must consult the documentation that comes with the Modbus system. The Modbus device that was tested at Crestron was an Automated Logic Portal, and all connection information below is for that device only.

Each device on a Modbus system is uniquely addressed using it's slave address, and it's point number. This module has a single parameter field for the slave address (SLAVE-ADDRESS-HEX). This parameter needs to be entered as a 2 digit hex number with no suffix. So for slave 1, enter 01. This module has two parameter fields which specify the point number. By using two bytes (high byte and low byte) it allows a larger addressing range. These parameters also need to be entered as 2 digit hex numbers with no suffix. The point numbers are also offset by one. So if you want to access point number 2, you would enter 00 for the POINT-NUMBER-HIGH-HEX and enter 01 for the POINT-NUMBER-LOW-HEX parameters.

The Modbus system does not do real time updating. Therefore we must poll each point for the current setting. This module has a POLL input for this purpose. The polling sequence should be constructed by using an Oscillator with a high time of .1s and a low time of .9s driving the clock input of a Ring counter. Each output of the ring counter should drive separate POLL inputs on the Crestron Modbus modules. So if there are ten Modbus points that are being monitored/controlled, there would be ten Crestron Modbus modules in the program, and the Ring Counter would have ten outputs, so that each point could be polled in turn. See the demo program on the Crestron FTP site for an example of this implementation.

This module must be used in conjunction with the Modbus Processor module. The serial output of this module will be sent to the Modbus processor module for formatting. Also, the serial input to this module must come from the Modbus Processor module.

This module provides an analog signal for the numerical value of the point, as well as a digital output which indicates when a negative sign should be lit. This digital signal could be sent to a legend button on a touchpanel to implement the negative sign.

This module uses Modbus function code 03, which is designated for reading the contents of Output Registers, or Holding Registers.

**CRESTRON  
HARDWARE  
REQUIRED:** CNMSX,  
CNXCOM,  
ST-COM

**SETUP OF CRESTRON  
HARDWARE:** The port should be set as follows:

Baud Rate - 9600  
Parity - None  
Data Bits - 8  
Stop Bits - 1

**VENDOR FIRMWARE:** None

**VENDOR SETUP:** The Automated logic system must be in RTU mode. Use the Diagnostic Port connector for communications.

**CABLE DIAGRAM:** CNSP-124

## CONTROL:

<b>POLL</b>	D	Pulse this input to poll the desired point
<b>FROM-MODBUS- PROCESSOR\$</b>	S	Serial signal routed from the Crestron Modbus Processor module
<b>SLAVE-ADDRESS- HEX</b>	P	Two digit hex representation of the slave address. For slave 1, enter 01
<b>POINT-NUMBER- HIGH-HEX</b>	P	Two digit hex representation of the most significant byte of the 16 bit point address
<b>POINT-NUMBER- LOW-HEX</b>	P	Two digit hex representation of the least significant byte of the 16 bit point address

## FEEDBACK:

<b>VALUE-AN</b>	A	Analog value indicating the current value of the desired point. Should be routed to a digital panel meter on a touchpanel
<b>NEGATIVE</b>	D	High when there is a negative value. Should be routed to a legend button on a touchpanel
<b>TO-MODBUS- PROCESSOR\$</b>	S	Serial signal routed to the Crestron Modbus Processor module

**OPS USED FOR TESTING:** 5.12.01x

**COMPILER USED FOR TESTING:** SimplWindows Version 1.51.08

**SAMPLE PROGRAM:** Modbus Demo Program

**REVISION HISTORY:** None