Introduction

In Synergy Controller Version 5.4.n, the Synergy Nano and Quattro models support Modbus Serial Devices, both RTU and ASCII for inputs (Virtual Modbus Sensors) and outputs (Analog Retransmit).

The ubiquitous Modbus industrial protocol provides connectivity for a plethora of Fail-Safe temperature controllers, vibration sensors, pressure transducers, and general-purpose PLC applications.

The Serial Port setup parameters for the Modbus serial device are set from the RS-232 folder on the COMM screen as shown below.

<table>
<thead>
<tr>
<th>Comm Screen</th>
<th>ALARM</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Comm Screen" /></td>
<td><img src="image.png" alt="ALARM" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comm Mode</th>
<th>Modbus RTU Pass Thru</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate</td>
<td>19200 Baud</td>
</tr>
<tr>
<td>Data Bits</td>
<td>8 Data Bits</td>
</tr>
<tr>
<td>Parity</td>
<td>None</td>
</tr>
<tr>
<td>Flow Control</td>
<td>None</td>
</tr>
</tbody>
</table>

Description: The 'Comm Mode' toggles modes on the User Communications port on some controllers. It can be disabled, used for User Communications, or used for pass-through communications.

Alarm, Multiple Alarms: 0.0 C 0.0 %
Virtual Modbus Sensors

Setup Screen | ALARM
---|---
Back

Wet Bulb Dry Bulb  Virtual Kft  Virtual Pressure
Virtual Modbus Sensors  Virtual Multi-Sensors  Virtual Log10

Alarm, Multiple Alarms  0.0 C  0.0 %

Setup Screen | ALARM
---|---
Back

Virtual Modbus 1  Virtual Modbus 2  Virtual Modbus 3
Virtual Modbus 4  Virtual Modbus 5  Virtual Modbus 6

Alarm, Multiple Alarms  0.0 C  0.0 %

Setup Screen | ALARM
---|---
Back

High Eng. Scale  100.00
Low Eng. Scale  0.00
High Decimal Scale  5.00
Low Decimal Scale  0.00
Slave Address  1
Modbus Function  3-Read Holding Registers
Modbus Register  1
Low Volts Scale  11-Unsigned Int, High Byte
Type  Temperature

Description: Help is not available for this item.
Change

Alarm, Multiple Alarms  Off C  0.0 %
<table>
<thead>
<tr>
<th>Setup Screen</th>
<th>ALARM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Decimal Scale</td>
<td>0.00</td>
</tr>
<tr>
<td>Slave Address</td>
<td>1</td>
</tr>
<tr>
<td>Modbus Function</td>
<td>3 - Read Holding Register</td>
</tr>
<tr>
<td>Modbus Register</td>
<td>1</td>
</tr>
<tr>
<td>Low Volts Scale</td>
<td>11 - Unsigned Int, High Byte</td>
</tr>
</tbody>
</table>

Description: Help is not available for this item.

Alarm, Multiple Alarms: Off C 0.0 %

**Available Options**

- 11 - Unsigned Int, High Byte
- 12 - Unsigned Int, Low Byte
- 21 - Signed Int, High Byte
- 22 - Signed Int, Low Byte
- 31 - Float, High Word, High Byte
- 32 - Float, High Word, Low Byte
- 33 - Float Low Word, High Byte
- 34 - Float Low Word, Low Byte
- 41 - Signed Long, High Word, High Byte
- 42 - Signed Long, High Word, Low Byte
- 43 - Signed Log, Low Word, High Byte
- 44 - Signed Long, Low Word, Low Byte
- 51 - Signed Long, High Word, High Byte
- 52 - Signed Long, High Word, Low Byte
- 53 - Signed Long, Low Word, Low Byte
- 54 - Signed Long, Low Word, Low Byte
- 61 - String

Accept | Cancel
Modbus Outputs

There are two Analog Retransmit Outputs that can control Modbus Serial Devices.
Synergy Controller Modbus RTU wiring example

Add Null Modem here for Synergy Nano
About the Synergy Family
Tidal Engineering’s Synergy Controllers, the ¼ DIN Synergy Nano, Synergy Micro 2 and the Synergy Quattro provide state-of-the-art usability and connectivity for environmental test control and data acquisition. They combine the functions of a chamber controller and a data logger and are designed to improve test efficiency by supporting both factory automation and test and measurement protocols and standards.

Synergy Controller feature highlights includes:

- Color touch screen
- Ethernet, RS-232 and GPIB communications
- Built in 100 MB Data logger with USB drive support
- Data Acquisition, up to 64 T-type thermocouples (Optional)
- Built-in Web Server for remote control; WebTouch Remote ™
- Compatible with Synergy Manager for PC based control, monitoring and programming.
- Built-in FTP Server for factory automation and test and measurement applications

For more information regarding these controllers please see the full Synergy Controller Technical Manual on our website at [http://www.tidaleng.com/synergy.htm](http://www.tidaleng.com/synergy.htm)

About Tidal Engineering
Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems.

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