Modbus

Modbus Devices

Unlike some of the other drivers (like Allen Bradley, Siemens) Modbus is a standard and not specific to a brand of device. Modbus is a protocol used for connecting to many types of devices. This is a huge benefit, but can lead to a lot of confusion because different device manufacturers may design their devices differently, and the documentation for the different manufacturers varies wildly in quality and availability. The main idea behind the Modbus standard is that you should have a regular pattern for tags inside the device, and use the same connection methods.

Our generic Modbus driver allows the Ignition OPC-UA server to communicate with any device that supports the Modbus TCP protocol or the RTU over TCP protocol. Because of this, the Modbus driver can connect directly to any devices that support Ethernet communications, even if they use the older RTU standard. If you're not sure which connection type to use, it's probably not RTU. However, it's not difficult to just try both and see which works.

Connecting to a Device

The Connecting to Modbus Device section contains step-by-step instructions on how to connect to a Modbus device. It is important to only add one Modbus device connection to Ignition for each IP address, regardless of how many devices are using that IP address. When communicating to multiple Modbus devices on the same IP address where each has a unique unit ID, either include the unit ID in the Modbus specific address or set it in the address mapping for the device.

It's easy to get connected to a Modbus device, but figuring out the addressing can be time consuming. Even with poor (or missing) device documentation, it's just a little bit of trial and error to get your addressing set.

Modbus Addresses

Getting access to your Modbus tags can be confusing because of all the different options available in the device connection. For example, you could have 0/1 based addressing or reversed word order that isn't clearly documented in the device instructions. It's helpful to manually create a few Tags in Ignition and change your connection settings until your values are correct.

One important setting to note is the **Max Holding Registers Per Request**. This setting can cause all of your test tags to go to bad quality when only one is bad. Change this setting (under the Advanced properties) to 1 while you are testing, and set it back when you are done. If you leave it at 1, this will cause a huge strain on your system after you have added hundreds or thousands of tags from your device.

Manually Addressing

Manually creating Tags in Ignition is pretty easy. If you want to look at Holding Register 1 (a common address in Modbus), the OPC Item Path is "[devicename]HR1". It's that simple! Try setting up HR0, HR1, and HR2 while you are testing to help figure out your conneciton settings.

Address Mapping

Creating an Address Map in Ignition for your device allows you to drag and drop tags just like any of the browseable device connections (like an Allen Bradley Controllogix). You can even import and export your maps to make it quick and easy to set up many devices. Once you have your mapping set up, just drag your Tags into Ignition and start designing. Make sure to test a few tag values when you get the Address Mapping set up. Modbus devices cannot verify that your mapping is correct, it just creates a list of tags for you.

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