Custom Modbus Registers in Acuvim II via AXM-WEB2

What is Modbus?

Modbus is a communication protocol developed by Modicon system. This is a method for transmitting information between electronic devices through a serial line. Modbus is popular in industrial environments because it is publicly released and free of version tax, which means that Modbus is relatively easy to deploy and maintain compared to other standards. During Modbus communication, the device requesting information is called the Modbus master station, and the device providing information is the Modbus slave station. The Modbus standard specifies that there is only one Modbus master station and a maximum of 247 slave stations. Each slave has a unique slave address from 1 to 247.

What is Modbus Holding Registers?

Modbus holding registers are registers that are readable and writable. Each register is 1 word (16 bits, 2 bytes) and has the register number from 40001 to 49999.

What is a function code?

Function code is the second byte sent by the master device, which tells the slave which table to access and whether to read from the table or write to the table.

The table below refers to the common function codes used in Modbus communication.

Function Code	Action	Table Name
01 (01 hex)	Read	Discrete Output Coils
05 (05 hex)	Write single	Discrete Output Coil
15 (0F hex)	Write Multiple	Discrete Output Coils
02 (02 hex)	Read	Discrete Input Contacts
04 (04 hex)	Read	Analog Input Registers
03 (03 hex)	Read	Analog Output Holding Registers
06 (06 hex)	Write single	Analog Output Holding Registers
16 (10 hex)	Write multiple	Analog Output Holding Registers

What are data types?

Modbus holding registers have the 16 bits unsigned word data type. However, in many cases, sensors and other devices generate data in types other than simple unsigned integers. It is common for slave devices to convert these larger data type into registers. For example, a 32-bit floating point value can be split into two registers.

What is Modbus Map?

A Modbus map is a list for an individual slave device that defines what the data is, where the data is stored (data address), and how the data is stored (data types, byte and word ordering). Some devices have fixed Modbus maps defined by the manufacturer, while others allow operators to configure or program custom maps to suit their needs.

Custom Modbus Registers by using AXM-WEB2

Acuvim II meter supports custom read function, which allows users to customize the register blocks in Acuvim II meter to store different parameters such as basic metering, THD, energy etc. It also allows users to select different data types for parameters (i.e. Int, float, etc). There is a total of 64 bytes that users can be used to create their customized register block.

It can be done by using the Modbus RTU/TCP communication via the Modbus Master program such as Accuenergy Utility software(Acuview). However, with the AXM-WEB2 communication module, it can be much easier for users to configure the custom map to fit their needs. Users only need to log into the web interface of the AXM-WEB2, and then they will be able to see the custom read settings under the meter settings tab. Users will need to select the parameter type and each of the parameter types has different data types.