

Pioneer FlowMeter Program

Written by Ben Nabors, Patrick McDonagh

Hardware Used

- PLC: Micro820 [2080-LC20-20QBB]
- Slot 1: 2080-IF2

Inputs

Digital Inputs

Input	Usage
0	Flowmeter Type (On = Modbus)

Analog Inputs

Input	Usage
0	4-20mA Flowmeter
1	4-20mA Pressure

Outputs

Digital Outputs

Output	Usage
0	Analog Flowmeter in use
1	Modbus Flowmeter in use

Configuration

The system can be configured to use either an Analog Flowmeter or a Modbus Flowmeter. The system defaults to the Analog Flowmeter.

To enable the modbus flowmeter do one of the following:

- Jumper 24VDC to Digital Input 0
- Write 1/True to the tag "sw_UseModbusFlowmeter" from SCADA

To enable the analog flowmeter do BOTH of the following:

- Remove the 24VDC jumper from Digital Input 0
- Write 0/False to the tag "sw_UseModbusFlowmeter" from SCADA

When the system is configured to use the Analog Flowmeter, Digital Output 0 will be ON.

When the system is configured to use the Modbus Flowmeter, Digital Output 1 will be ON.

Customizing Modbus Parameters

The system defaults for modbus parameters enable communication with the Flexsim meters. The following tags can be modified to enable communication with different device types:

Tag	Default	Usage
cfg_Flowmeter_ModbusNode	1	Node Address of Flowmeter
cfg_FlowTotalPos_Register	10133	Register of Positive Flow Total
cfg_FlowTotalNeg_Register	10149	Register of Negative Flow Total
cfg_FlowGross_Register	10117	Register of Gross Flow Rate

The serial port is configured as a Master for Modbus RTU over RS485 with baud rate of 9600, 8E1.

SCADA Tags

The following tags would be relevant to read over SCADA:

Tag	Type	Description	Access
val_FlowTotalPos	REAL	Positive Flow Total	R
val_FlowTotalNeg	REAL	Negative Flow Total	R
val_FlowGross	REAL	Gross Flow Rate	R
val_Pressure	REAL	Pressure Reading	R
val_AI00_uA	REAL	uA Reading on AI00	R
val_AI01_uA	REAL	uA Reading on AI01	R
Flow_EU_Max	REAL	EU Max Flow Scaling	RW
Flow_EU_Min	REAL	EU Min Flow Scaling	RW
Pressure_EU_Max	REAL	EU Max Pressure Scaling	RW
Pressure_EU_Min	REAL	EU Min Pressure Scaling	RW
cmd_ClearFlowTotal	BOOL	Clear analog Flow Total Command	RW
sw_UseModbusFlowmeter	BOOL	Use the modbus flowmeter	RW
use_ModbusFlowmeter	BOOL	Status of using Modbus Flowmeter	R