5 – HOW TO SETUP BIDIRECTIONAL FLOW MEASUREMENT

5.1 Introduction

Some flow meters are capable to measure bidirectional (forward and reverse) flow. In UNIFLOW-200 one stream can measure flow in one direction only (no forward and reverse counters are defined inside one stream).

This document describes how to setup bidirectional flow measurement in UNIFLOW-200. It describes on the example of ultrasonic meter, but the same solution can be applied to any bidirectional flow meter.

The setup is shown as it is done in UNISetup program, part of the U200ToolBox software suit.

Similar setup can be accomplished via UNIFLOW-200 keypad and display.
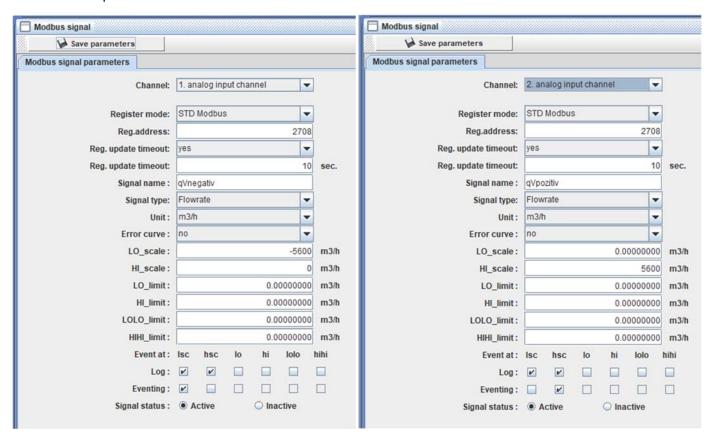
5.2 Firmware compatibility

To implement and use features, procedures described in this document firmware version required:

230210 or higher.

5.3 Input signal setup

We assume that the flow rate is read from ultrasonic meter via serial port, with Modbus messaging.

Setup two Modbus signals based on the same Modbus register (register 2708 in the example, which means ultrasonic meter is polled through com port 2 of Uniflow-200), one signal for the negative range of flow and the second for the positive.

Modbus 1 signal set for the range low scale: -5600 m3/h, high scale: 0 m3/h. For high scale (hsc) mark the Log tick box only, do not mark the Eventing tick box.

Modbus 2 signal set for the range low scale: 0 m3/h, high scale: 5600 m3/h. For low scale (lsc) mark the Log tick box only, do not mark the Eventing tick box.

Setup the input signals for pressure and temperature measurement.

5.4   Stream setup

Two streams shall be allocated for one flow meter for the bidirectional flow measurement, one stream for the negative flow direction and one stream for the positive flow direction.

Let's define stream 1 for negative flow direction and stream 2 for positive flow direction.

Select the fluid and set the properties calculation methods as desired. Select also the flow meter. The fluid and flow meter selection obviously shall be identical in the two streams.
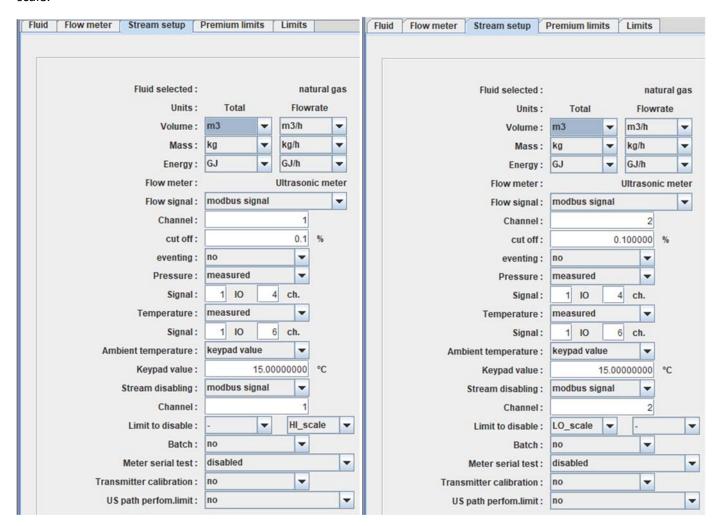
On the stream setup page for the stream measuring the negative flow direction (stream 1 in the example) set Modbus signal channel measuring the negative flow direction (channel 1 in the example) as flow signal.

For the stream measuring the positive flow direction (stream 2 in the example) set Modbus signal channel measuring the positive flow direction (channel 2 in the example) as flow signal.

On the stream measuring the negative flow direction (stream 1 in the example) set the stream disabling to Modbus signal channel measuring the negative flow direction (channel 1 in the example) and the limit to disable set to HI scale.

On the stream measuring the positive flow direction (stream 2 in the example) set the stream disabling to Modbus signal channel measuring the positive flow direction (channel 2 in the example) and the limit to disable set to LO scale.

With this settings stream 1 calculation and totalization will be disabled when the Modbus signal channel 1 will be higher than the high scale, 0 m3/h (i.e., in the positive flow range), and stream 2 calculation and totalization will be disabled when the Modbus signal channel 2 will be lower than the low scale, 0 m3/h (i.e., in the negative range).

No "fault state" alarm will be raised for the stream being disabled.