

DN100 Evaluation Meter Data Sheet

12 April 2013

Table 1: Revision list

| date | comment | author |
|------------|------------------------|----------------|
| 2013-03-15 | First release | Carl Carlander |
| 2013-04-12 | Review (this document) | Carl Carlander |
| | | |

This document describes the DN100 evaluation flow meter unit. This unit is a complete flow measurement evaluation system comprising of;

- a brass flow meter body with an integrated electronic housing,
- four D-Flow standard 4 MHz ultrasonic transducers,
- an electronic evaluation board housing the D-Flow UFO2 ASIC,
- PC software and PC USB interface.

Our intention with this evaluation flow meter is to offer a quick way for customers to evaluate our technology in their applications. It can be used for evaluation tests and early decision making. When customers engage in developing their own flow meter based on the D-Flow technology the evaluation meter can serve as design inspiration or as a first prototype. The complete design documentation of the evaluation flow meter is made available in the D-Flow engineering kits.

Flow Meter Body

The flow meter body is machined in brass and shown in figure 1. The electronic housing is integrated into the flow body.

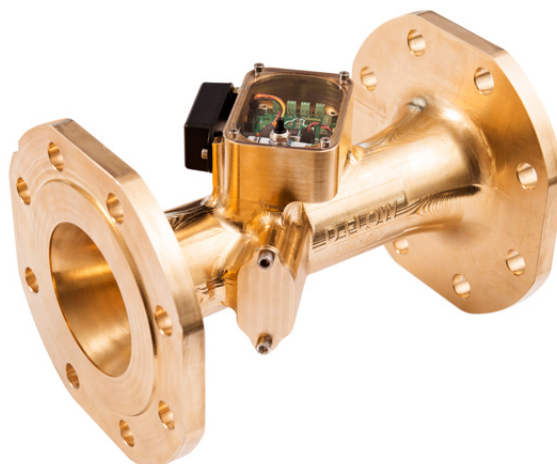


Figure 1: The DN100 evaluation flow meter

The DN100 evaluation flow meter body houses four D-Flow 4 MHz ultrasonic transducers. They are mounted in a diagonal 2-path configuration. The transducers are directly acoustically communicating from opposite sides of flow path. The sound paths are in this case side by side and tilted compared to the flow path through the body. The transducers are directly electrically connected to the UFO2 ASIC. The design is illustrated in figure 2.

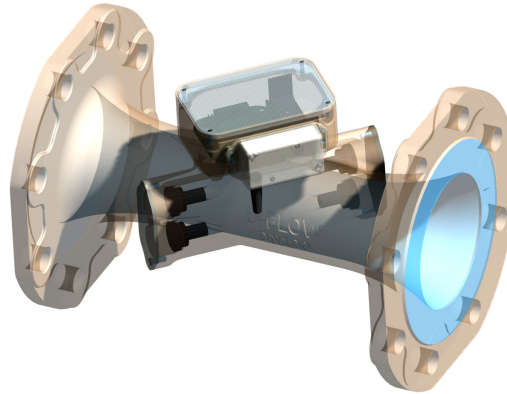


Figure 2: A 3-D illustration of the DN100 evaluation flow meter

This design is symmetrical and bi-directional. The calibration is however performed in the direction indicated by an arrow on the meter body.

The diameter at the in- and outlet sections is 100 mm. This diameter is internally reduced to 60 mm in order to increase the flow velocity. The body connects to the piping with DN100 flanges.

Ultrasonic transducers

The flow meter is fitted with four D-Flow standard 4 MHz PEEK transducers. The transducers are mounted with o-ring seals. Before the meter is delivered it is calibrated in the D-Flow flow lab with these exact transducer.

Electronics

The flow meter is equipped with the D-Flow evaluation electronic board which is based on the D-Flow UFO2 ASIC. Figure 3 shows the electronic housing with the electronic board and battery.

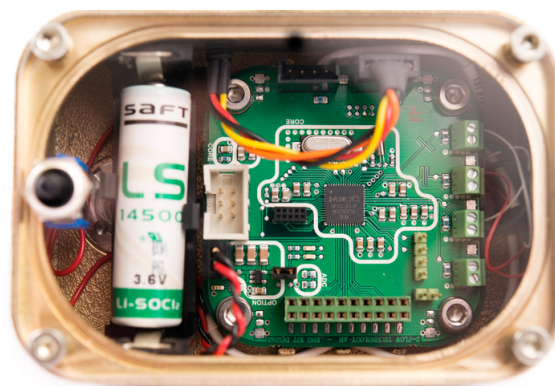


Figure 3: The electronic housing with the D-Flow evaluation electronic board

When the flow meter is delivered everything is fully operational, the UFO2 is flashed with the evaluation software and calibration results are downloaded.

The evaluation unit runs on a 3.6V Li AA battery. This is mounted in a holder inside the casing for easy replacement.

The evaluation board has interfaces to four ultrasonic transducers, temperature sensors and different power supply options. An application specific board can be made much smaller. The core of the electronics sits in the central part around the UFO2 ASIC encircled by a white line. This can be seen in figure 3.

PC software and PC interface

The flow meter is shipped with a complete USB PC interface (The PC is not included). Through this interface the meter can be re-configured, re-calibrated and operated. In order to support the use of the flow meter a special PC controller software *D-Flow Demo Controller Software* is also supplied. With this software you can easily operate, store measurement results, re-configure and re-calibrate the flow meter. The manual *demo_controller_user_guide* describes this software.