

1. General

These instructions are intended for trained specialised personnel. Consequently, basic work steps are not listed.



The tamper-evident seal on the flow sensor must not be broken! A damaged seal will result in immediate invalidation of the factory warranty and verification. The cables supplied with the meter must neither be shortened, extended nor changed in any other way.



Observe the instructions for the use of flow sensors! The installation must only be carried out by a specialist installation or electrical company. The personnel must be trained in the installation and handling of electrical equipment and be cognisant of the Low Voltage Directive.



The relevant ESD (electrostatic discharge) rules must be observed.

No responsibility is accepted for damage (especially to the electronics), resulting from non-observation of the rules.

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- Medium: Water without additives.
 - The temperature range is dependent on the variant and nominal size (see type plate).

Further details about the variants and the applicable standard EN 1434 can be found in the data sheet. These must be observed without fail.

You can find the datasheet under www.diehl.com/metering.

The HYDRO SET software is used for readout/parameterisation and is obtainable online under: www.diehl.com/metering.

2. Installation



Do not stand in the immediate vicinity of electrical consumers and cables.



The unit you have purchased contains electronic components which could be destroyed by electric or magnetic fields.

For this reason, neither the device itself nor the incoming and outgoing cables must be installed in the immediate vicinity of heavy electrical loads or their power cables (e.g. switches, electric motors).

The precise separation depends on the voltage level and the current intensity of these consumers.

In case of doubt consult an expert.

- The flow sensor must not be fitted in either a hot or cold branch of the system. Ensure that the flow sensor is mounted in the installation position corresponding to the temperature of the medium (see "6. Temperature loads" at page 15 and **Fig. I**).
- The flow sensor must be installed so that the flow direction matches the arrow direction on the sensor.
- Calming sections are not necessary before and after the flow sensor, but calming sections of 3...5 DN are recommended before the meter



Installation in both horizontal and vertical pipe sections is possible, however must never be such that air bubbles can collect in the meter (see **Fig. II**).

The flow sensor must always be filled with liquid.

- We recommend installing the flow sensor in a tilted position (approximately 45 °).



It is recommended that shut-off valves are fitted upstream and downstream of the flow sensor to simplify its demounting.

When demounting, an open-ended spanner must be used on the bottom of the sensor (see **Fig. III**).

3. Power supply

3.1 Battery

In the standard version, a 3.0 VDC lithium battery is integrated that has up to 12 years life (configuration dependent).

- The battery must not be recharged or short-circuited.
- Ambient temperatures below 35 °C have a positive effect on battery lifetime.



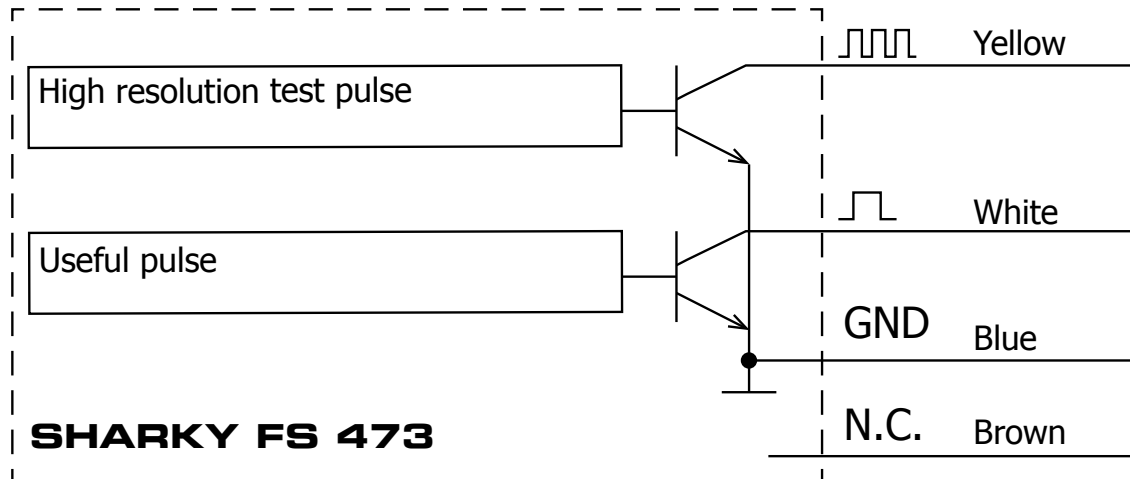
Used batteries must be disposed of at suitable waste collection points! Caution: Risk of explosion if battery is replaced by an incorrect type.

3.2 External voltage supply (e.g. via meter electronics)

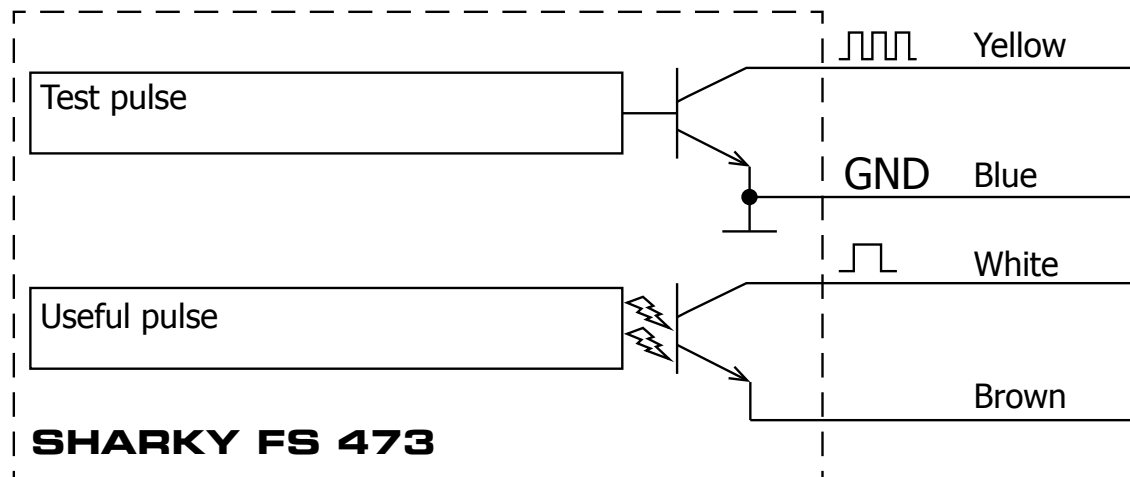
- Power supply 3.0 ... 5.5 VDC
- Power consumption < 100 mAh per year
- Pulse current < 10 mA

4. Connection diagram

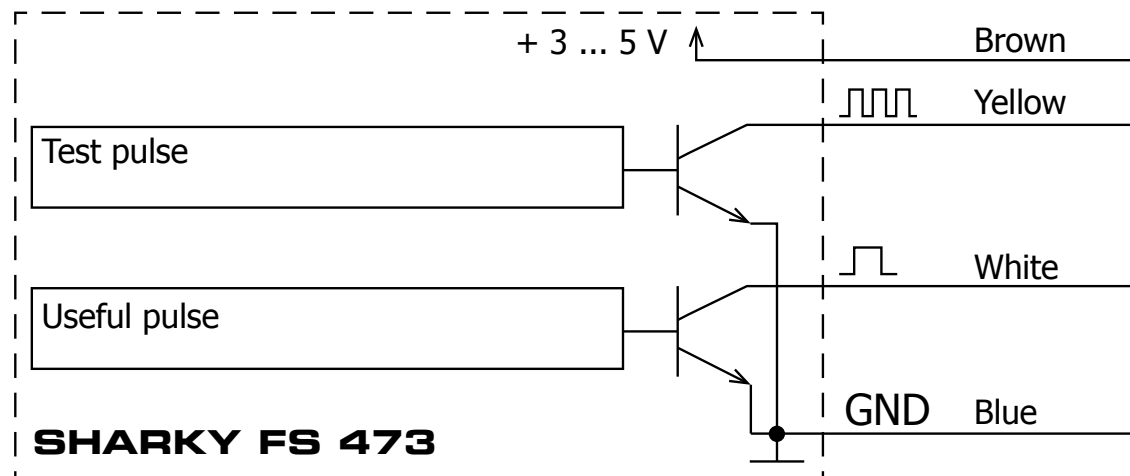
4.1 Battery operation



4.2 Galvanically isolated useful pulse



4.3 External power supply 3.0 – 5.5 V



5. Communication

The flow sensor has two pulse outputs for connection to a heat meter.

- Useful pulse
- Test pulse (high resolution for testing laboratories)

The electrical data of the useful pulse are defined as:

Designation	Value
External power supply	UC < 30 V
Output current	< 20 mA with a residual voltage of < 0.5 V
Open Collector (Drain)	
Cable length to the partial unit energy meter	< 10 m
Output frequency battery supplied	< 20 Hz
Output frequency with external power supply	< 150 Hz
Useful pulse value	10 ml ... 5000 l (dependent on the rated value and power supply)
Pulse duration	1 – 250 ms \pm 10 %; Pulse duration < Pulse pause
Potential-free contact (optional)	

6. Temperature loads

Operating / ambient conditions

- Standard: 5 ... 55 °C; IP 54; 93 % rel. humidity
- Sealed: 5 ... 55 °C; IP 68; 93 % rel. humidity

Media temperatures

Configuration	Temperature range
Heat - battery supplied	5 ... 90 °C / 5 ... 105 °C ¹⁾
Heat - externally supplied	q _p 0.6 ... 2.5 m ³ /h: 5 ... 130 °C q _p 3.5 ... 60 m ³ /h: 5 ... 150 °C
Cold - battery supplied	5 ... 90 °C / 5 ... 105 °C ¹⁾
Cold - externally supplied	5 ... 120 °C

¹⁾ Only in riser / downpipe or in horizontal, tilted installation position



Note that in heat applications, the water temperature must be greater than the ambient temperature.
Once commissioned, avoid frost at the meter.

Use unsealed flow sensors:

- at water temperatures permanently above ambient temperatures

Use sealed flow sensors:

- For cold applications or $T_{\text{water}} < T_{\text{ambient}}$
- If permanent condensation is expected

7. Declaration of Conformity for devices according to MID

Diehl Metering GmbH hereby declares that these products conform to the essential requirements of the following directives:

- EMC Directive (2004/108/EC)
- R&TTE Directive (1999/5/EC)
- MID Directive (2004/22/EC)
- DE-07-MI004-PTB022 DE-09-MI004-PTB011
- EC type examination certificate

The signed declaration of conformity is displayed on Page 9.

Further information is available under www.diehl.com/metering