

## **EU-Type Examination Certificate** **Measuring Instrument Directive**

**Certificate number: DK-0200-MI004-007**

Issued by FORCE Certification A/S Denmark  
EU-notified body number 0200

In accordance with the Danish Safety Technology Authority's statutory order no. 544 of May 28, 2018 which implements the Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID).

**Issued to:**           **Diehl Metering GmbH**  
**Industriestraße 13**  
**91522 Ansbach**  
**Germany**

Type of instrument:    Ultrasonic Flowmeter

Type designation:      SHARKY 475

Valid until:            2029-01-01

Number of pages:      8, including appendix

Date of issue:          2019-11-01

Version:                13

This new version of DK-0200-MI004-007 is issued due to an editorial correction and it replaces all previous versions.

Approved by

Processed by



Michael Møller Nielsen  
Certification Manager



Lars Poder  
Examiner

The conformity markings may only be affixed to the above type approved equipment. The manufacturer's Declaration of Conformity may only be issued and the notified body identification number may only be affixed on the instrument when the production/product assessment module (D or F) of the Directive is fully complied with and controlled by a written inspection agreement with a notified body. This EU-type examination certificate may not be reproduced except in full, without written permission by FORCE Certification A/S.

FORCE Certification references:

TASK No.: 118-36492.09 and ID. No.: 0200-MID-07440

## Appendix to

# EU-Type Examination Certificate

## Measuring Instrument Directive

**Number: DK-0200-MI004-007**

Issued by FORCE Certification A/S, Denmark

EU-notified body number 0200

Version	Issue date	Changes
DK-0200-MI004-007	2007-11-14	Original certificate
DK-0200-MI004-007 rev 1 - 2009	2009-12-07	-
DK-0200-MI004-007 rev 1 - 2010	2010-05-27	-
DK-0200-MI004-007 rev 2 - 2010	2010-11-10	New SW version added
DK-0200-MI004-007 rev 1 - 2011	2011-04-07	New SW version added
DK-0200-MI004-007 rev 2 - 2011	2011-07-15	New SW version added
DK-0200-MI004-007 ver 6	2017-11-01	Administrative extension of the validity period
DK-0200-MI004-007 ver 7	2018-02-22	Administrative extension of the validity period
DK-0200-MI004-007 ver 8	2018-06-01	Administrative extension of the validity period
DK-0200-MI004-007 ver 9	2018-09-01	Administrative extension of the validity period
DK-0200-MI004-007 ver 10	2018-12-01	Administrative extension of the validity period
DK-0200-MI004-007 ver 11	2019-01-01	Meter re-tested according to EN 1434:2015 and now valid for a new 10-year period
DK-0200-MI004-007 ver 12	2019-01-30	Minor editorial correction on page 4
DK-0200-MI004-007 ver 13	2019-01-11	Various editorial changes

### Applied standards and documents:

EN 1434:2015

The instruments/measuring systems shall correspond with the following specifications:

### Type designation:

SHARKY 475

### Description:

The Volume meter SHARKY 475 is an ultrasonic flow meter working after the transmission time difference principle.

The meter consists of a flow sensor with two sound tracks and a transmitter.

**Technical documentation:**

Reference numbers:

- 118-36492.09
- 118-36492.06
- 118-36492.03
- 117-29536.11.03
- 117-29536.10.03
- 117-29536.09.03
- 117-29536.07.02
- 117-29536.06.02

FORCE Certification A/S – File numbers:

- 80.976-224/11
- 80.976-215/11
- 80.976-192/10
- 80.976-171/10
- 80.976-118/09
- 80.976-023/07

**Technical data**

Instrument tested according to: EN 1434:2015

Hardware bundle: 001

Firmware version:

Version	Checksum for metrological part
1.02	Not available
1.04	Not available
1.05	Not available
2.01	Not available
2.03	Not available
2.04	9E32443E39FA9416A711C0EEE755C387

Verification tolerance:  $\pm (2+0,02 q_p/q) \%$ , max.  $\pm 5 \%$

Media temperature:  $\theta_{min} - \theta_{max} 5 \text{ }^\circ\text{C} \dots 200 \text{ }^\circ\text{C}$

Pressure class: PN10, PN16, PN25 & PN40 (bar)

Power supply: 115 – 230 VAC or 3.6 V battery

Environmental class: E2, M1

Accuracy class: 2

Climatic class: -10...55  $^\circ\text{C}$ , condensing, closed

Durability specification: 10 years

**Approved sensor variants**

SIZE	DN50 (2")	DN65 (2½")	DN80 (3")	DN100 (4")	DN125 (5")	DN150 (6")	DN200 (8")
"R" $q_p/q_i$	100	100	100	100	100	100	100
$q_i$ [m <sup>3</sup> /h]	0.3	0.5	0.8	1.2	2	3	5
$q_p$ [m <sup>3</sup> /h]	30	50	80	120	200	300	500
$q_s$ [m <sup>3</sup> /h]	45	72	120	180	280	420	700

SIZE	DN250 (10")	DN300 (12")	DN350 (14")	DN400 (16")	DN500 (20")	DN600 (24")	DN700 (28")
"R" $q_p/q_i$	100	100	100	100	100	100	100
$q_i$ [m <sup>3</sup> /h]	8	11.2	15	19	29.5	43	58
$q_p$ [m <sup>3</sup> /h]	800	1120	1500	1900	2950	4300	5800
$q_s$ [m <sup>3</sup> /h]	1120	1560	2100	2660	4130	6020	8120

SIZE	DN800 (32")	DN900 (36")	DN1000 (40")	DN1200 (48")
"R" $q_p/q_i$	100	100	100	50
$q_i$ [m <sup>3</sup> /h]	76	100	100	200
$q_p$ [m <sup>3</sup> /h]	7600	10000	10000	10000
$q_s$ [m <sup>3</sup> /h]	10640	14000	14000	14000

Tables above describe the maximum specification of flow ranges.

Other dynamic ranges are allowed if "R" is 50, 25 or 10.

## **Verification**

Errors: Maximum permissible errors according to Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID), Annex VI (MI-004).

Procedure: Test points and verification requirements according to EN 1434:2015

The verification is done with water.

### **At least the following three flow rates shall be used for verification:**

$$q_i \leq q \leq 1.1 q_i$$
$$0.1 q_p \leq q \leq 0.11 q_p$$
$$0.9 q_p \leq q \leq 1.0 q_p$$

The meter shall be verified before becoming operational (initial verification).

### **Temperature according to EN 1434-5 Initial verification tests:**

Initial verification at temperatures between 15 °C and 50 °C is approved provided a verification tolerance of max ±1,5 % regardless of flow rate is applied.

### **Verification tolerance, according to DS/EN 1434-5:**

$$\pm(2+0,02 q_p/q) \%, \text{ max. } \pm 5 \%$$

When the verification is done the meter is sealed as described under sealing.

## Sealing

### Verification sealing

Verification sealings are done as shown in Figure 1.

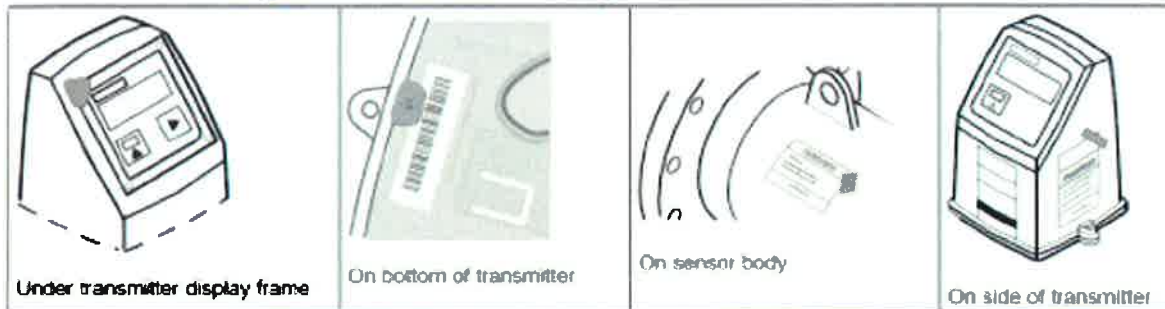


Figure 1: Verification sealing of the SHARKY 475 system after verification.

### Installation sealing

After finishing the installation and electrical connection, the user can seal the flowmeter as shown in Figure 2.

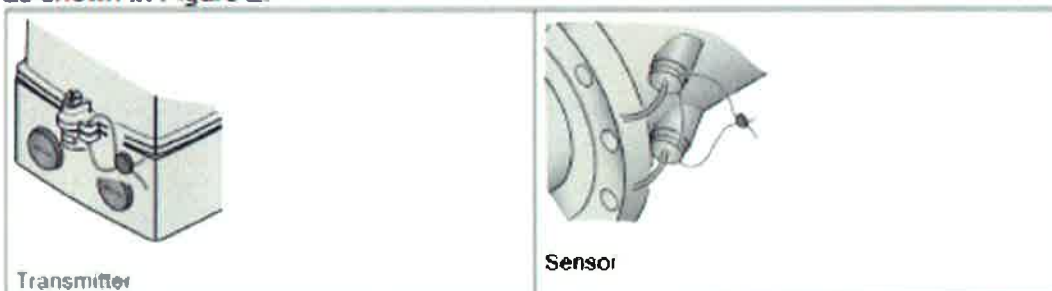


Figure 2: User sealing of the SHARKY 475 system after installation.

## Installation

The flow sensor can be mounted horizontal or vertical.

The signal transmitter can be fitted compact on the sensor or remotely.  
Minimum straight inlet pipe: 10 x pipe diameter, minimum 1 m.

See further recommendations in the manufacturers Operating Instructions.

## Labeling and inscriptions

Manufacturer, type, year  
Serial no.  
EU-Type examination certificate number  
T<sub>max</sub> and P<sub>max</sub>  
Application temperature range  
Power supply  
Accuracy class  
Software version  
Direction of flow  
Mechanical and electromagnetic environment classes.

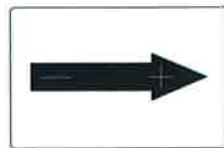
## **Additional transmitter label**

<b>DIEHL</b> Metering	
TYPE SHARKY 475	
Order No :	7ME34532AA302AB0
Serial No :	111111H111
Energie:	115-230V AC 50/60Hz, 2.5VA
IP67	
T Umgebung:	-10°C to +55°C
NO DIRECT SUNLIGHT EXPOSURE	
Firmware version:	2.04
Diehl Metering GmbH, 91522 Ansbach Germany	
Made in France	

## Label examples

### **Transmitter**

<b>DIEHL</b> Metering	
TYPE SHARKY 475 8705584	
System No.:	7ME34131VC324B55
Serial No.:	00000H000
Transmitter:	7ME3453-2AA30-2AB0
Serial No.:	111111H111
Sensor:	FDK:000H000 SN: 22222H222
qp / qi:	200 / 2m <sup>3</sup> /h qs: 280m <sup>3</sup> /h
Impulswert:	10/lp Impulsbreite: 50ms
Kabellänge:	10m
Kal. faktor:	8.88888888
T Umgebung:	-10°C to +55°C
SW/HW V.:	2.04/001 Baujahr: 2019
Checksum:	9E32443E39FA9416A711C0EEE755C387
Zertifikat Nr.:	DK-0200-MI004-007
Genauigkeitsklasse:	2
Energieversorgung:	115-230V AC
Umgebungs-kategorie:	E2, M1
Diehl Metering GmbH, 91522 Ansbach Germany	
Made in France	



### **Sensor**

<b>DIEHL</b> Metering	
TYPE SHARKY 475	
8705584	
Sensor:	FDK:000H000
Serial No.:	22222H222
Nennweite:	DN125 / 5 inch
Prozess Ans.:	EN1092-1, PN16
qp / qi:	200 / 2m <sup>3</sup> /h
qs:	280m <sup>3</sup> /h
Ømin to Ømax:	+5°C to +200°C
Kal. faktor:	8.88888888
T Umgebung:	-10°C to +55°C
MAWP (PS) at +5°C (TS):	16bar
MAWP (PS) at +200°C (TS):	12.4bar
Fluidgruppe:	PEDIG2
System No.:	7ME34131VC324B55
Serial No.:	00000H000
Baujahr:	2019
Sensor-Ausrichtung:	Horizontal
Zertifikat Nr.:	DK-0200-MI004-007
Genauigkeitsklasse:	2
Umgebungs-kategorie:	E2, M1
  0200 0102	
Diehl Metering GmbH, 91522 Ansbach Germany	
Made in France	

## **Informative Annex**

### **Integrated functions not subject to the Measuring Instruments Directive:**

#### Integrated bi-functional Heat/Cooling function

The SHARKY 475 is type tested as Heating, Cooling and as bi-functional Heating/Cooling energy meter according to EN 1434-4:2015.

The integrated bi-functional Heating/Cooling function can therefore be utilized under the operating conditions as described in this certificate.

The Analog output module (4-20mA) is not subject to the MID.