

Operating Instructions

Transducer UVATP in AS102 housing

Contents

1	Safety Symbols	2
2	Safety Precautions	2
3	Intended Use.....	3
4	Operating Safety	3
5	Scope of Delivery.....	3
5.1	Description, Type Plates.....	4
6	Technical Specifications	4
6.1	Conformity with Standards	4
6.2	Storage Conditions.....	4
6.3	Operating Conditions	5
6.4	Housing and Connectors	5
6.5	Electrical Data	5
7	Installation.....	6
7.1	Block Diagram	6
7.2	Wiring Diagrams	7
7.2.1	Shielding contact at cable bush	7
7.2.2	Power supply	7
7.2.3	VA Sensor input (separate transducers only)	8
7.2.4	Temperature sensor Pt100	8
7.2.5	Absolute pressure sensor 4 ... 20 mA	8
7.2.6	Analog outputs A1 and A2	9
7.2.7	Relay output.....	9
7.2.8	RS232 Interface.....	10
7.2.9	LCD Display.....	11
7.3	Tips on Electromagnetic Compatibility (EMC)	11
7.4	Connection Cable	12
8	Functional Description	12
9	Settings.....	14
10	Performance Test.....	14
11	Initial Operation.....	14
12	Operation	14
13	Shut-down, Dismantling	14
14	Inspection.....	15
15	Maintenance.....	15
16	Meaning of LEDs	15
17	Calibration	15
18	Troubleshooting.....	16
19	Returns	17
20	Disposal.....	17
21	Declaration of Conformity, Declaration of Incorporation	18

1 Safety Symbols



Warning!

Failure to observe the instructions can result in serious injury and damage to property!



Important notice!

Non-observance can result in serious damage to the equipment or performance restriction!



2 Safety Precautions

Danger to life, risk of injury and damage to material or property.
Read the Operating Instructions carefully before initial operation.
Observe general safety precautions as well as those included in various sections of these Operating Instructions.

Hazard risks:

- non-observance of the Operating and Safety Instructions
- modifications to the device by the customer
- handling the device outside the specified operating conditions
- handling the transducers outside the specified operating conditions
- use of unsuitable power supplies and peripheral devices
- improper use of the device

Prevention of voltage hazards:

- use only the dedicated adapter plug for the mains supply
- make sure that the PC is correctly connected to the mains (earthed safety socket, earthing) when using a USB connection
- when connecting analog outputs or inputs to peripheral devices make sure that these are correctly connected to the mains (earthed safety socket, earthing)

Danger when installing the sensors in pressurized pipelines:

- sensors for use in pressurized pipelines are to be inserted or retracted only in depressurized conditions; non-observance may result in serious injuries to personnel
- when installing or removing under pressure, the appropriate protective equipment must be used, e.g. ball valve and probe guide pieces with chain guard or spindle probe guide pieces



3 Intended Use

- The UVATP transducer is for mass flow or standard flow rate output by measuring the actual flow rate, the operating temperature and the absolute pressure.
- It is designed for industrial application.
- The AS102 is an aluminium housing in protection class IP65.
- The manufacturer is not liable for damage caused by improper use and/or non-compliance with the regulations.
- Do not carry out any structural modifications to the transducers.
- Always follow the instructions on the type plate, especially the information regarding supply voltage.
- The UVATP can be integrated in the AS102 connection housing of measuring tubes VA TP DN ExactFlow II or is available as a separate transducer in AS102 housing.



4 Operating Safety

All steps described below must be carried out by qualified personnel only!

Please read the Operating Instructions carefully before unpacking the equipment!

Safety can only be guaranteed if the equipment is operated in accordance with the regulations. Improper handling can result in serious injury and damage to property.

5 Scope of Delivery

- UVATP integrated in AS102 housing of VA TP DN ExactFlow II measuring tube or as separate transducer in AS102 housing
- LCD display 2x16 digit in the cover
- Operating Instructions, Data Sheet
- CD-ROM with PC configuration software UCOM VTP (optional)
- Interface cable RS232 for PC COM port connection (optional)
- USB adapter in addition to the interface cable RS232 (optional)

Please check that everything listed in the Delivery Note / Technical Data Sheet is included in the delivery.

5.1 Description, Type Plates

Remove the cover to display one of the following type plates:

UVA-Exact / AS102	
S/N. : 64 107	Input : VA DI 100
Type : UVATP	RS 232 : RJ22 plug
Power : 24 VDC	
Output A1 : precision 4 ... 20 mA	
Output A2 : fast 4 ... 20 mA	
Höntzsch GmbH & Co. KG	
D-71334 Waiblingen www.hoentzsch.com	
 	

separate UVATP

VA TP DN 120 ExactFlow II	
S/N. : msvatp40 1090 E 80 °C	PS: 1,2 bar
Type : UVATP	RS 232 : RJ22 plug
Power : 24 VDC	
Output A1 : precision 4 ... 20 mA	
Output A2 : fast 4 ... 20 mA	
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integrated UVATP

S/N.	: ...	: serial number
Type	: UVATP	: for vortex VA measuring tubes, temperature, pressure
Power	: 24 V DC	: supply voltage 24 V direct voltage current
	: 12 V DC	: supply voltage 12 V direct voltage current
Output A1	: precision 4 ... 20 mA	: analog output with high precision current 4 ... 20 mA
	: precision 0 ... 10 V	: analog output with high precision voltage 0 ... 10 V
Output A2	: fast 4 ... 20 mA	: analog output with short time constant current 4 ... 20 mA
	: fast 0 ... 10 V	: analog output with short time constant current 0 ... 10 V
Input	: VADi	: for vortex VA measuring tubes (separate transducers only)
RS232	: RJ22 plug	: for serial PC interface

6 Technical Specifications

6.1 Conformity with Standards

The transducer UVATP is manufactured according to the best available technology, is safe and reliable and comply with the relevant regulations, EU directives and standards.



6.2 Storage Conditions

Storage temperature: -30 to +70 °C



6.3 Operating Conditions

ambient temperature of connection housing in use	: -25 ... +60 °C
protection class	: IP65
mounting attitude	: no restrictions, preferably with cable bush facing down

6.4 Housing and Connectors

Protection class (housing)	: IP65
Material	: aluminium
External dimensions	: L/W/H = 150/100/80 mm
Cable entry point	: nickel-plated brass screwed cable glands for cable diameter 5 ... 10 mm with cable shielding connections
Connections	: 'push in' PCB terminals for wire cross-section 0.14 ... 1.5 mm ² No tools necessary for core connection – simply insert strands (twisted or with end sleeve) into the terminal. To separate strands apply pressure to the terminal release spring using a pen or screwdriver.

6.5 Electrical Data

Supply voltage, mains supply	: 24 V DC (20 ... 27 V DC), power < 5 W
alternatively	12 V DC (10 ... 17 V DC), power < 5 W

The mains supply is electrically isolated from the UVATP inputs and outputs.

Input flow v/VA	: (separate transducers only) for Höntzsch vortex flow sensors as measuring tube (VA Di ...), resolution 0.125 Hz
Input temperature T	: for Pt100 temperature probe in 4-wire-system, acquisition time constant 2 s, resolution 0.1 K
Input pressure p	: for absolute pressure sensors 4 ... 20 mA, 12 ... 36 V in 2-wire-system, acquisition time constant 0.125 s, resolution 1 hPa, initial and terminal value configurable
Analog outputs A1 and A2	: optionally, the analog outputs can be electrically isolated with each other and from the inputs using an additional isolating amplifier
Analog output A1 (precision)	: high precision analog output, update every 0.125 s, time constant 4 s, with frequency hopping > 25 % 2 s, time constant up to 99 s are con- figurable 4 ... 20 mA = 0 ... x kg/h, (NV/t) terminal value x configurable / resistance max. 500 Ohm, alternatively: 0 ... 10 V = 0 ... x kg/h, (NV/t) terminal value x configurable / impedance 1 kOhm

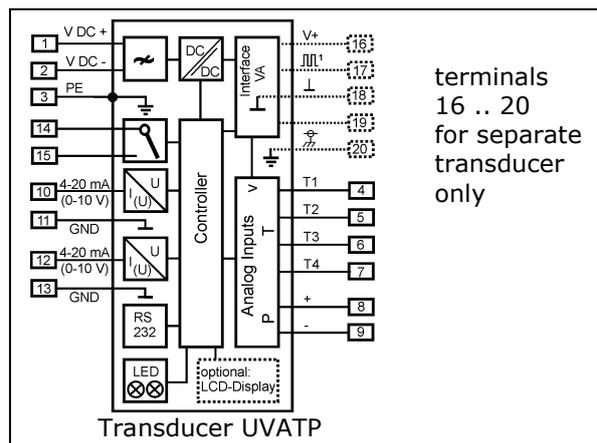
- Analog output A2 (fast)** : analog output with short time constant, update every 0.125 s, optionally 0.065 s, time constant 0.125 s
 4 ... 20 mA = 0 ... x kg/h, (NV/t)
 terminal value x configurable / resistance max. 500 Ohm,
 alternativ:
 0 ... 10 V = 0 ... x kg/h, (NV/t)
 terminal value x configurable / impedance 1 kOhm
- Relay** : (potential-free normally open contact), max. 300 mA / 27 V DC, configurable as limit value m/t (NV/t) or mass pulse (standard flow rate pulse) (see under 8 Functional Description)
- Optional raw signal output** : BNC connector for VA frequency signal without linearization of the Höntzsch vortex flow sensors with level 5 V (TTL signal)
- RS232 interface** : communication with PC programme UCOM VTP (see under 8 Functional Description)
 9600 Baud, 8 Bit, no parity, 2 stop bits, Xon/Xoff
- Connection for LCD display** : flat ribbon cable with 10-pin cable socket
 Do not plug in or out when live!



7 Installation

The current European Specifications for Assembly, the recognised standards of good practice and this Operating Instructions apply.

7.1 Block Diagram





7.2 Wiring Diagrams

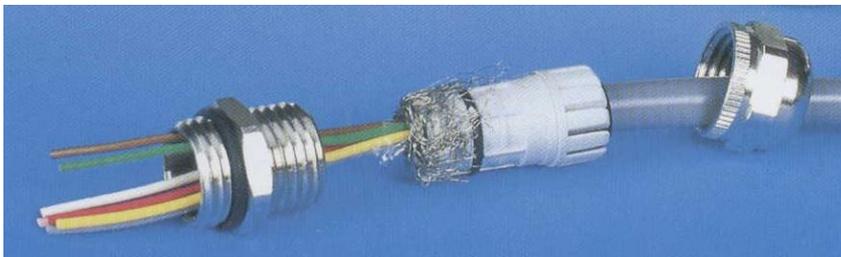
Electrical connection must be carried out according to the appropriate wiring diagram.

Faulty connection can cause damage to persons and destruction of the electronics.

Do not install or wire up the transducer under mains voltage. **Non-compliance can cause damage to persons and destruction of the electronics.**

In this connection and depending on the configuration of the equipment, one of the following wiring diagrams must be taken into account. Wiring diagrams for measuring systems in customer-specific design will be supplied separately.

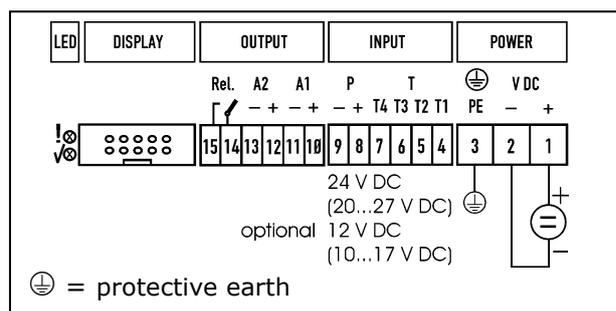
7.2.1 Shielding contact at cable bush



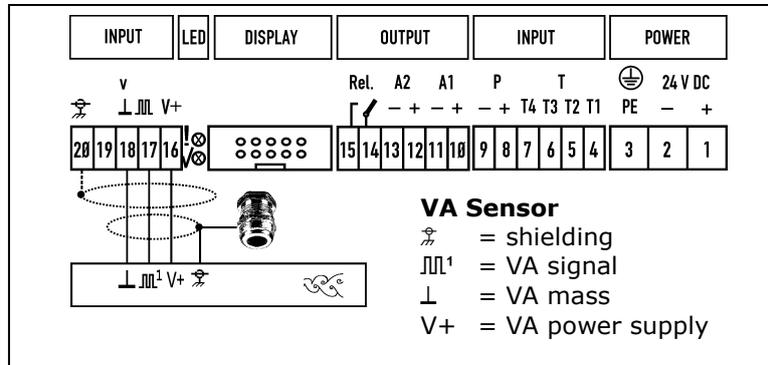
7.2.2 Power supply

Before connecting please check that the power supply is within the specification.

Remove the housing cover of the UVATP to reveal the type plate with all relevant information.

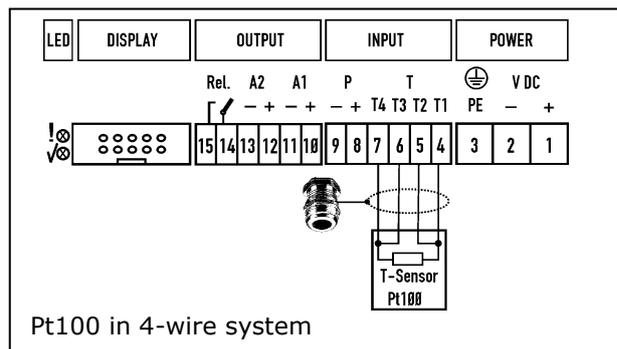


7.2.3 VA Sensor input (separate transducers only)

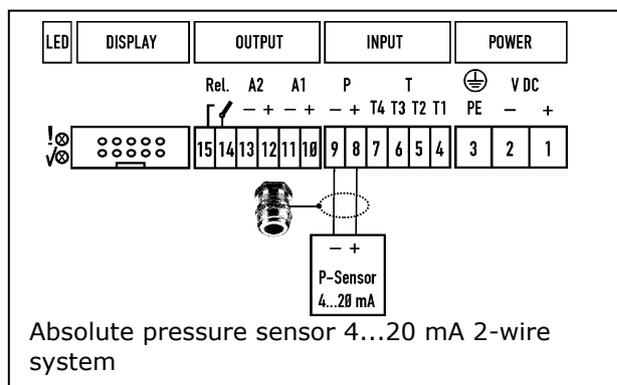


In the case of sensor housings with screwed cable glands, the shielding of the sensor connection cable is connected in the cable glands.

7.2.4 Temperature sensor Pt100

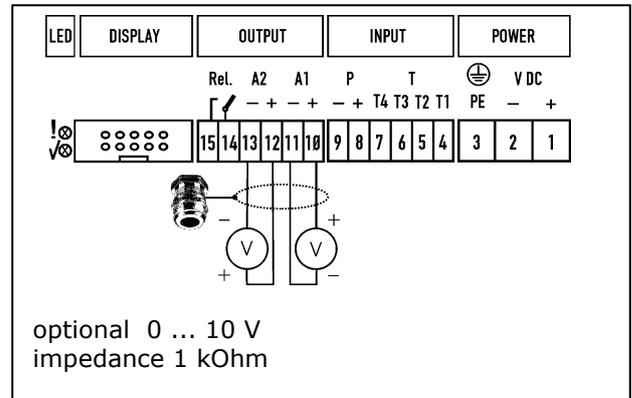
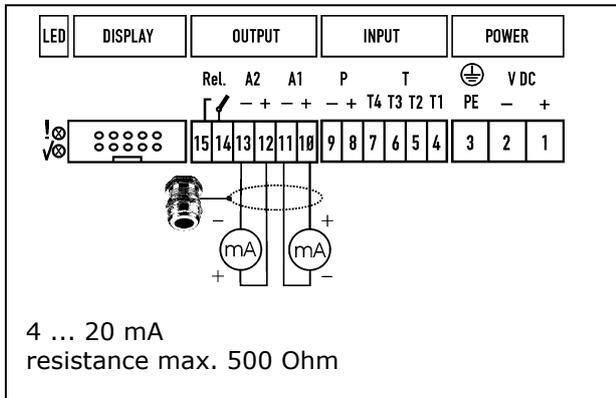


7.2.5 Absolute pressure sensor 4 ... 20 mA



The initial value (4 mA) and the terminal value (20 mA) can be configured with the PC software UCOM VTP via the RS232 interface. Customer-specific programmed values can be found in the accompanying documents.

7.2.6 Analog outputs A1 and A2

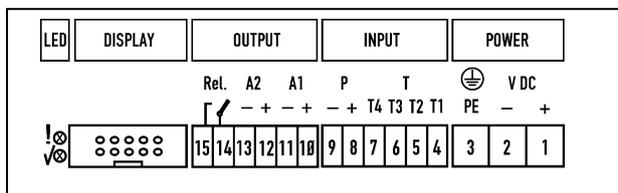


All relevant information can be found on the type plate.

The terminal value of the analog outputs can be configured with the PC software UCOM VTP via the RS232 interface. Customer-specific programmed values can be found in the accompanying documents.

Output signals are electrically isolated from the power supply. Optionally, both 4 ... 20 mA outputs can be isolated with each other and from the inputs using an additional isolating amplifier.

7.2.7 Relay output



The normally open contact is shown in rest position (relay coil off).

The function of the relay output and the corresponding setting parameter can be configured with the PC software UCOM VTP via the RS232 interface. Customer-specific settings can be found in the documentation.

7.2.8 RS232 Interface



Fig. 1: PC connection with RJ22 plug with cover open

The RS232 interface connection is below left next to the connecting terminals.

The RJ22 plug of the PC connecting cable is plugged in to the socket (see Fig. 1). PC connection follows at a COM port or using an optional USB adapter.

7.2.9 LCD Display



Fig. 2: LCD display connection with cover open

The flat ribbon cable with 10-pin connector should not be plugged in or out when live! Risk to persons and equipment!

Visible are the readout potentiometer for the contrast of the LCD display, the reset button for the quantity counter, the ST1 and ST2 jumpers (see under 8 Functional Description).



7.3 Tips on Electromagnetic Compatibility (EMC)

- Keep all connecting cables **as short as possible**.
- With **cable routes longer than 30 m** or with strong electromagnetic disturbance along the cable route between sensor and evaluation unit, the use of a **double-shielded cable** is recommended: to do this lay inner shielding to one side of the evaluation unit and lay outer shielding on both sides over a large area with low-impedance connection on the sensor and evaluation unit or on the control cabinet
- **Do not loop** the cable!
- **Lay free strands** at both ends **on protection potential!**
- **Lay cables as close to ground as possible**, as for example side panels, mounting plates or steel girders.
- When using **frequency converters** there is a risk of **interference by HF transient emissions**. Therefore, decouple the power input of the frequency converter via an interference filter against active transient emissions. This also increases the passive interference resistance of the equipment.
- Use only shielded motor cables with shield support on both sides between **motors** and **converters**.
- **spatially separate cables which emit interference** from measuring lines and evaluation units. If necessary, lay measuring lines in a metallic tubular cable protection.
- Ensure large area and low resistance connection of **metallic parts in control cabinets**, such as subracks with control electronics or subplates.
- Relays, contactors and electro valves in the **same electric circuit**, are to be wired with **spark**

Self diagnosis according to NAMUR NE43 specifications:

For analog output 4 ... 20 mA:

No error : analog output = 4 mA (flow velocity = 0)
 or analog output > 4 mA (flow velocity > 0)

Error : analog output < 3.6 mA

Bei Analogausgang 0 ... 10 V:

No error : analog output = 0 V (flow velocity = 0)
 or analog output > 0 V (flow velocity > 0)

Error : analog output < -0.2 V

Monitoring of power supply, data logging, sensor interface, parameter settings (see under 18 Troubleshooting)

PC serial port RS232

for modification of calibration data and setting parameters.

For this purpose remove cover.

Plug PC connector cable (optional) with RJ22 into the socket in the transducer UVATP (see Fig. 1, see under 7.2.8 RS232 Interface)

Connect other end of cable to PC COM port.

If a USB connection is required, then an optional USB / RS232 interface converter must be inserted.

Changes to the settings can now take place after starting the PC programme UCOM VTP (optional) (see under 9 Settings).

Jumper settings (see Fig. 2 under 7.2.9 LCD Display) and effects on display, analog output and counter

LCD display ExactFlow II – jumper settings

Jumper ST1	Jumper ST2	LCD display 1. row	LCD display 2. row	Analog output (qty. counter)
m/s	A	BV/t	temperature pressure	m/t (m)
m/s	B	m/t	temperature pressure	m/t (m)
m ³ /h	A	BV/t	temperature pressure	NV/t (NV)
m ³ /h	B	NV/t	temperature pressure	NV/t (NV)

While changing the jumper settings the display and the analog output change accordingly.

The number of the analog end value remains but refers to the newly selected unit m/t or NV/t.

If an error occurs, „EEE“ is displayed in row 1. (see under 18 Troubleshooting)

9 Settings

The setting parameters are readable and alterable using the UCOM VTP software.
Die kundenspezifischen Einstellungen dieser Parameter sind im Parameter-Ausdruck dargestellt, der den Lieferdokumenten beiliegt.

For Operating Instructions Software UCOM VTP see document U441.

10 Performance Test

Sensor not connected:
(see under 7.2.2 Power supply)
(see under 7.2.6 Analog outputs A1 and A2)
After connecting the supply voltage the green and yellow LED light up.
The analog output provides a value between 3.4 mA and 3.6 mA with current output or between -0.3 V and -0.2 V with voltage output (see under 8 Functional description)



11 Initial Operation

Sensor connected:
(see under 7.2.2 Power supply)
(see under 7.2.3, 7.2.4 and 7.2.5 Sensor inputs)
(see under 7.2.6 Analog outputs A1 and A2)
After connecting the supply voltage the green LED lights up and the yellow LED is off.
No flow at sensor: the green LED is permanently on; the analog output provides a value of 4 mA with current output and 0 V with voltage output (see under 8 Functional Description)
Flow at sensor: the green LED flashes; the analog output supplies an analog value deviating from zero flow conditions (see above).



12 Operation

(see under 6.3 Operating Conditions)
(see under 6.5 Electrical Data)



13 Shut-down, Dismantling

Before disconnecting the cable, please ensure that the supply voltage is switched off.



14 Inspection

Check the LEDs, (see under 8 Functional Description, self diagnosis)



15 Maintenance

Use only residue-free drying cleaning agents which are compatible with the housing materials.
Any repair work is to be carried out solely by Höntzsch GmbH & Co. KG.

16 Meaning of LEDs

LED green	LED yellow	Description
off	off	no power supply
An	off	power supply ok, no error, no flow
flashing	off	power supply ok, no error, flow detected
on	on	power supply ok, parameter error and/or sensor error, no flow
flashing	on	power supply ok, parameter error, flow detected

17 Calibration

The UVATP has an excellent long-term stability. However, it makes sense to have it calibrated at regular intervals. The time lapse between calibrations depends on the individual operating conditions and the tolerable measurement error. Therefore, as a precautionary measure, shorter calibration cycles are recommended in the beginning. As a general rule and under 'normal' operating conditions we suggest a cycle of approx. 3 - 5 years.

The transducer must be returned to the manufacturer for calibration (see under 19 Returns)

18 Troubleshooting

Fault	Cause	Troubleshooting
green LED does not light up	no power supply	check connecting cable; measure voltage at connecting terminals
	transducer electronics faulty	return to factory
green LED does not flash despite flow	VA sensor cable break or short circuit	check terminals; check cable for continuity and replace if necessary
	transducer electronics or sensor faulty	return to factory
yellow LED lights up, green LED flashes with flow, analog output = error (<3.6 mA or < -0.2V)	parameter error	check parameter with UCOM software; save new checksum (or return to factory)
	temperature probe or connection cable faulty	check terminals; check cable for continuity and replace if necessary or return to factory
	absolute pressure sensor or cable faulty	check terminals; check cable for continuity and replace if necessary or return to factory
	transducer electronics faulty	return to factory
no measured value	sensor contaminated	clean sensor according to instructions
	profile factor set at 0.000	set profile factor at '1.000' with volumetrically calibrated measuring tubes
measured value too low	sensor contaminated	clean sensor according to instructions
	profile factor set too low	set profile factor at '1.000' with volumetrically calibrated measuring tubes
	input/output section too short	change sensor position, improve flow conditions with a flow rectifier
	rotational flow	reposition sensor in flow direction, install flow rectifier
	reduced acoustic coupling in the sensor elements as a result of intense vibration or powerful impact	return sensor to factory for performance test
	burden at current output greater than specified in the Technical Data Sheet resulting in correct output values in the lower range and no longer increasing values at the top end of the measuring range	reduce resistance
	incorrect scaling of analog output	check setting and amend if necessary
measured value too high	profile factor set too high	set profile factor at '1.000' with volumetrically calibrated measuring tubes
	incorrect scaling of analog output	check setting and amend if necessary
	EMC problem	see remark regarding electromagnetic compatibility (EMC) (see under 7.3)

19 Returns

No special measures need to be taken for non-integrated UVATP transducers.

Clean associated sensors or those with integrated transducer thoroughly before returning to the (see cleaning instructions for the sensor). A hazard warning or declaration of harmlessness for substances which have come into contact or infiltrated the sensor, must be submitted with all returns. If adhesion of hazardous substances on the surface of the equipment cannot be ruled out, a detailed description of safety measures to be taken when handling the equipment must be submitted.

20 Disposal

The customer should assume the duty to dispose of the equipment at his own expense and according to statutory provisions (e.g. ElektroG in Germany).

21 Declaration of Conformity, Declaration of Incorporation

We, Höntzsch GmbH & Co. KG
Gottlieb-Daimler-Str. 37
D-71334 Waiblingen

bearing sole responsibility, hereby declare that the product

Transducer UVATP in AS102 Housing

referred to in this declaration, is in conformity with the following standards or normative documents:

Provisions of the Directive	Reference and date of issue
2014/30/EU: Electromagnetic Compatibility	EN 61000-6-4 EN 61000-6-2
2014/68/EU: Pressure Equipment Directive	
2006/42/EC: Safety of Machinery	
Safety requirements for electrical equipment for measurement, control, and laboratory use e	EN 61010



Waiblingen, 19.12.2022

Jürgen Lempp / Managing Director

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Subject to alterations