



# Interface detection pipe probe

TSS100 DN 25 SF TRC3 \* MTI 50/2 AGd ExG



- Measurement electronics factory set
- High-resolution measuring signal
- Pressure independent, stable measuring signal
- No moving parts
- PTFE-core
- No commissioning plug & process
- Process pressure PN40
- Process temperature 100 °C
- Insensitive to contamination

## Use

Can be used at oil terminals and at refineries at the exit of the stripping line or in the production plant, as well in storage tanks. For liquid/liquid phase separation of organics to aqueous media.

## Application

The pipe probe manufactured with stainless steel flanges in the standard version as sandwich-structured probe, combined with a PTFE inner body - including the measurement system - is applied as interface pipe probe for interface detection, separation, monitoring or as empty signal.



Serial-no:

TAG-no:

## Model code:

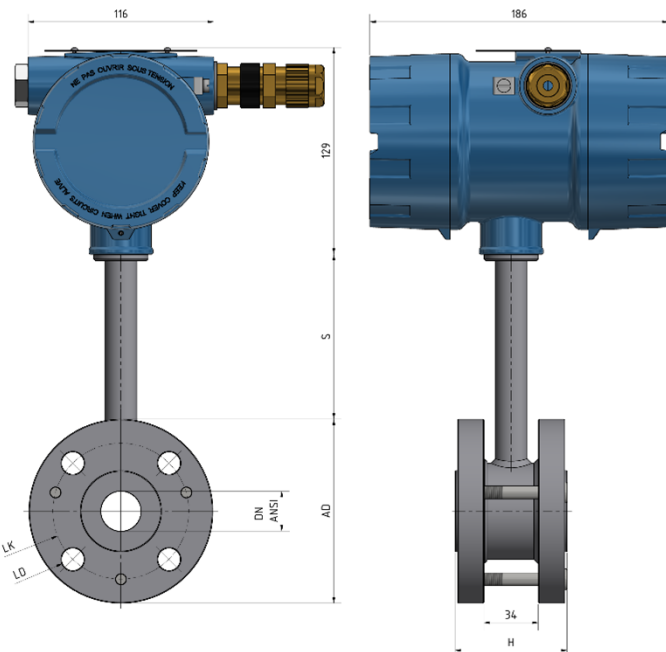
TSS100 DN 25 SF TRC3 \* MTI 50/2 AGd ExG

TSS100	Pipe probe with PTFE measuring electrode in steel flat flange sandwich construction
DN	Flange DN 25 PN40   form B1 to EN 1092-1
SF	Process connection on steel flange
TRC3	PTFE measuring body s= 1.2 mm, stainless steel 1.4404 flange, seal FFKM (Kalrez FDA)
*K	temperature decoupling max. 170 °C
*S	extension for insulated lines, length S = 100 mm (length without K/S = 25 mm)
MTI	Measuring electronics device built in process condition selected MTI 50/2 AEO2
A	Analog measurement technology for interphase detection, product monitoring, full and empty signal
Gd	Measuring electronics protection housing (outdoor) seawater-proof (Offshore), blue RAL 5007, seal: Silicone, (Ex d ia version with cable penetration EX/flameproof), IP68, cable gland brass Exd IP 66 M20 × 1.5, cable clamping range 9.5-16 mm
(F3	Only for phase separation of media with el. conductivity up to 4000 µS/cm, higher measuring frequency)

Probe Ex-protection: SEV 09 ATEX 0133 X (probe/MTI) CE\*\*\*\*

ExG	Gas ATEX II 1/2G Ex ia IIC T6 Ga/Gb
ExdG	Gas ATEX II 1/2G Ex d ia IIC T6 Ga/Gb

\* is used for temperatures >100°C and/or insulated lines



## Technical data

### Temperature range

-20 ... +100 °C medium | -20 ... +60 °C connection head

Cleaning temperature 210 °C max. 10 min pressureless (CIP)

Pressure -0.5 bar to max. 40 bar standard

Measuring principle Impedance

Measuring range DK 1.20 ... > 80

Resolution < 6 Impulses

Conductivity optimum for organic phase

MTI Standard: 0...50 µS/cm / F3: 0...4000 µS/cm

Integration time 40-400 ms / 0-3750 Imp

Use in Ex-Zone II 1/2G Zone 0

Measuring electrode PTFE-layer thickness s = 1.2 mm

Application Interface detection for separation and monitoring

Measuring electronics Round housing MTI 50/2 AEO2

Protection connection head round IP68 to EN 60529

### Wiring

Shielded 2-core cable 0.75 mm<sup>2</sup> twisted CY to all evaluation devices mipromex® Exd, cable length up to 1000 m or max. C= 150 nF / R = 60 Ω/km line resistance

Connection to evaluation unit mipromex® Exd MIQ / MAT / MLS

Article n° 02.29.11.\*\*\*\*\*

Nominal width	AD	DN/ANSI	LD drilling	LK	Mounting height	FLA incl. Gasket
DN 10 PN 10-40	90	10	4 x $\varnothing$ 14	60	70	74
DN 15 PN 10-40	95	15	4 x $\varnothing$ 14	65	70	74
DN 20 PN 10-40	105	20	4 x $\varnothing$ 14	75	70	74
DN 25 PN 10-40	115	25	4 x $\varnothing$ 14	85	70	74
ANSI ½ " 150 lbs	88.9	½ "	4 x $\varnothing$ 15.7	60.5	70	74
ANSI ¾ " 150 lbs	98.6	¾ "	4 x $\varnothing$ 15.7	69.9	70	74
ANSI 1" 300 lbs	123.9	1"	4 x $\varnothing$ 19	88.9	70	74

## Technical data on-site MTI measuring electronics

### Design type

Plug-in electronics angular design; IP 20:

MTI .../... AEO with stainless steel cover for protective housing type Gd

MTI .../... AEE with stainless steel cover for protective housing type

### Installation

Protective housing with mounting holes, plug-in electronics, fastening with 2 screws M4x8

### Performance

Linear conversion of an impedance range into a standardized digital measurement signal

### Use/Display

One-time adjustment of basic capacitance of RF cable as well as clean and dry probe, LED display for fast adjustment

### Dimensions electronics

Round version (AEO): diameter x depth 85 x 51 mm

Square version (AEE): height x width x length 51 x 70 x 77 mm

### Weight

electronics 140 g

### Ex-power supply / connection wiring

Shielded two-wire cable 0.75 mm<sup>2</sup> to all signal conditioning instruments mipromex® max. C = 120 nF / R = 30 Ohm line impedance or cable length up to 200 m

### Transfer signal

Pulse packets, superimposed on the supply current

### Measuring voltage/current

U ~ 14.5 V I ~ 13,5 mA

### Nominal data of the supply voltage

in ignition protection type intrinsic safety **Ex ia IIC**

only for connection to mipromex® type M\*\* \*\*\*\* \* (SEV 09 ATEX 0132) or to a certified intrinsically safe circuit with the following maximum output values:

$U_i \leq 18,9 \text{ V}$   $I_i \leq 49 \text{ mA}$

$P_i \leq 231 \text{ mW}$

$C_i = 60 \text{ nF}$   $L_i = 0 \text{ mH}$



in ignition protection types flameproof enclosure and intrinsic safety

**Ex d ia IIC**

only for connection to mipromex® type M\*\* \*\*\*\* \* (SEV 09 ATEX 0132) with the following maximum output values:

$U \leq 19,3 \text{ V}$   $I \leq 75 \text{ mA}$

Device also available without explosion protection

### Ambient temperature

-20 ... +60 °C

### Storage temperature

-30 ... +80 °C, ideal +20 °C

### Measuring range

10 / 20 / 30 / 50 / 100 / 200 / 300 / 400 / 600 corresponding to 0 up to max. 3750 pulses, special ranges available. The resolution range depends on the probe dimensions and is product specific.

### Norm range for pipe probe TSS\*

MTI 20 / 30 / 50

### Resolution

max. 0.003 pF/Impulses

### Basic adjustment range

Basic calibration range depending on probe and HF cable length, determined by the manufacturer.

MTI .../... 0 to 18, 0 to 545 pF (Depending on standard measuring range)

### Measurement frequency

~ 500 kHz | F3 ~2.8 MHz

### Linearity

Deviation < 0,1 % (without probe)

### Hysteresis

1 measured impulse

### Temperature influence +5 ... 45 °C

Type MTI .../... A\*\*: analog:  $\leq \pm 3$  measuring impulse

### Certificates & reports

ATEX: SEV 09 ATEX 0133 X

Inspection report n°: 08-IK-0395.01 with extension 1

EMC: STS 024 report n° 990102WS

### Conformities

Declaration of conformity on request or visit [aquasant.com](http://aquasant.com)



## Function

The impedance changes as a function of the dielectric constant and the el. conductivity of the organic and aqueous media, plus in partially filled, horizontal installed pipe probes. The measured impedance at the measuring electronics MTI is transformed directly into a normed digital sum signal and transmitted as a pulse train transmitted to the mipromex®.

## Mounting directions

- Installation position of a 3 % slope to vertical, depending on the application (see mounting directions for TSS)
- Installation independent of the flow direction
- Installation between two smooth flanges or flared, loose flanges only with special installation protection gaskets
- Caution! Note flange to flange distance for different nominal widths
- Additional flat gaskets "Gylon" (with appropriate tightening torque)
- Internal installation guidelines always have to be followed and suitable sealing types used.
- Observe internal safety regulations for open tanks
- Installation in pipes with appropriate nominal diameter with flat gasket and tightening torques (see mounting directions for TSS90/ 100)
- The pipe insulation must not enclose the cooling rod
- Ambient temperature: max. allowed temperature in the connection head must not exceed +60 °C, if pipe probe is insulated and measuring electronics is installed detached.
- In case of pipe temperatures >60 °C, the connection electronics MTI must be mounted horizontally or downwards.
- Pressure tests have to be conducted with mounted probe
- Caution! Probe body is only leak-proof when flanged in.

## Disassembly instructions

- Empty tank and flush with nitrogen or water according to operating instructions (observe internal safety regulations)
- Disconnect electrical connections. Dismount probe, lift at the flange. Careful, residual liquid may leak out
- Data sheets for personal safety purpose need to be added with repair shipments to aquasant.

## Electrical directions

- Wiring must comply with the circuit and grounding diagram.
- Connections to MTI clamps 1/2, protected against polarity reversal, suitable for wire cross section 0.5 – 1.5 mm<sup>2</sup>
- The connecting cable has to suit the demands at the measuring circle.
- MTI-housing lid in [Ex ia] zone can be opened under live-line working.
- Output signal of mipromex<sup>®</sup> is a pulse modulated signal  $U_0 \leq 18.9 \text{ V}$

## Basic circuit diagram

Probe connection to evaluation unit mipromex<sup>®</sup>  
 Connection diagram MRM4 Monorack DIN housing

## Certificates

Explosion protection (ATEX)  
 EC-type examination SEV 09 ATEX 0133 X  
 - Ex certification according to the directive 2014/34 EU  
 - Confidential test report no: 08-IK-0395.01

## Conformity

VEZ-EU-KONFORMITÄT-CONFORMITY-Imp

