aquasant

TECHNICAL DOCUMENTATION

Level switch bar probe

ST3Md 425/100 SB RT3 GS A DN50 V ExG

- High-resolution measuring signal
- Pressure independent, stable measuring signal
- FEP version
- Process pressure PN40 / 300 lbs
- Process temperature 80 °C
- Insensitive to contamination

Use

Can be utilized at multipurpose plants, reactors, fermenters, pilot plant or production. For the detection of liquid organic to aqueous media.

Application

The bar probe is manufactured in the standard version in FEP, which is applied as a liquid detection-level bar probe. The media to be measured can have variable electrical properties. If the dielectric constant or the electrical conductivity changes, the medium is reliably detected via the hysteresis even if the probe is (organic) dirty.

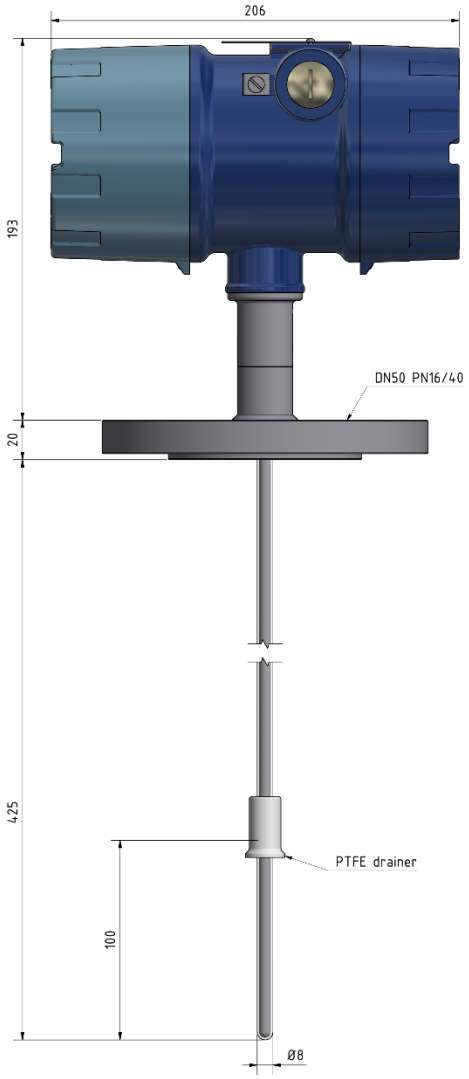
Model code:

ST3Md 425/100 SB RT3 GS A DN50 V ExG

S	I	bar probe
T3	I	FEP coated measuring electrode
Md	I	measuring electronics protection housing (aluminum; compression resistant), seal: Silicone integrated measuring electronics MTI ../. AEO2 paint: SPU acc. ISO 12944-2 cat. C5-I/M, Polyurethane, thickness: 120µm; cable gland PM M20 × 1.5, cable clamping range 8-11mm, IP 68 to EN 60529
L	I	total length L = 425 mm
EL	I	measuring electrode length: EL = 100 mm
SB	I	bar measuring electrode, ø 8 mm, s = 1 mm
RT3	I	wetted probe material stainless steel (flange), FEP
GS	I	foam detection
A	I	drip ring ø = 20 mm PTFE
DN	I	flange DN50 PN40, form B1 DIN EN 1092-1; 316L
V	I	seal O-ring FKM (Viton®)

Probe Ex-protection: SEV 09 ATEX 0133 X CE***

ExG	I	(Gas-) Ex-version (probe/MTI) II 1/2G Ex ia IIC Ga/Gb



Technical data

Temperature range
–20 ... +80 °C medium I –20 ... +60 °C connection head

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

Pressure -1 bar up to max. 16 bar standard

Measuring principle Impedance

Measuring range DC 1.4 ... 80

Resolution up to < 1 mm

Integration time 40 - 400 ms / 0 - 3750 Imp

Use Ex-zone II 1/2G Zone 0

Measuring electrode FEP-layer thickness
ø 8 / s = 1 mm (Depending on the meas. electrode length and application)

Application level switch full / empty

Measuring electronics Housing square: MTI 20/2 AEO2K

Protection connection head square IP68

Wiring
Shielded 2-core cable 0.75 mm² twisted CY/EIG to all evaluation devices mipromex®, cable length up to 200 m or max.
C = 120 nF / R = 30 Ohm line impedance

Connection to evaluation unit mipromex® MAT / MLS

Article n° 02.29.12.13351

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
elektronics 140 g

Ex-power supply / connection wiring
Shielded two-wire cable 0.75 mm² 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 V $I_i \leq$ 49 mA
$P_i \leq$ 231 mW
$C_i =$ 60 nF $L_i =$ 0 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 ≤ 19.3 V I ≤ 75 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: < ± 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

Measuring system
The measuring loop consists of a probe with remote on-site electronics MTI and the evaluation unit mipromex® in a non Ex-zone. The cable length is for an Ex ia application max. 200 m.

Function
The impedance changes as a function of the dielectric constant and the el. conductivity of the organic and aqueous media, as well as depending on the immersion depth of the active measuring electrode. The detected impedance at the measuring electronics MTI is transformed directly into a normed digital sum signal and transmitted as a pulse train to the mipromex®

Mounting directions

- The company's internal safety regulations and assembly guidelines must be observed
- Installation inside nozzles (angle: 0-45°) or for bar probe without angle from top to bottom (depending on length and turbulence)
- The bar probe must be handled with care during installation; the probe must always be held by the flange and housing and the measuring electrode supported
- Use gasket types corresponding to the flange
- The tank insulation must not enclose the connection head
- Ambient temperature: max. permissible temperature in the connection head must not exceed +60 ° C
- The pressure test must be carried out with the probe installed

Maintenance

- The probe is maintenance-free.
- If the probe is dirty, it must be removed and carefully cleaned with a suitable solvent. Attention, electrostatic charge!
- Then install the probe again and check the 0-point [Menu 3.1.3.] on the mipromex® and save.

Disassembly instructions

- The company's internal safety regulations and assembly guidelines must be observed
- Empty the container and flush with nitrogen or water as per
- Disconnect electrical connections. Remove probe, lift on flange. The active measuring electrode must be supported.
- When returning repairs, the probe must be cleaned, and the safety data sheets for personal protection enclosed

Electrical directions

- Wiring must comply with the circuit and grounding diagram.
- Connections to MTI clamps K1(+)/K2(-), protected against polarity reversal, suitable for wire cross section 0.2–1.5 mm^2
- The connecting cable must 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® is a pulse modulated signal U_0 ≤18.9 V

Basic circuit diagram

Probe connection to evaluation unit mipromexR
Connection diagram MRM2 Monorack DIN
housing

Certificates

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

Conformity

VEZ-EU-KONFORMITÄT-CONFORMITY_probes-imp

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