Interface bar probe
STM 1200/500 SB T TN ANSI 2" C ExG

- High-resolution measuring signal
- Pressure independent, stable measuring signal
- Full PTFE version
- Indoor application IP65
- Process pressure PN16 / 150 lbs
- Process temperature 80 °C
- Insensitive to contamination

Use
Can be utilized at multipurpose plants, separators, continuous settling tanks, pilot plant or production. For liquid/liquid interface separation of organic to aqueous media.

Application
The bar probe is manufactured in the standard version in full PTFE (stainless steel), the measuring electrode in PTFE with a bar reference electrode, which is applied as an interface-level bar probe. The media to be measured must have constant electrical properties. If the dielectric constant or the el. conductivity changes, a product compensated measuring system has to be used.
Model code:
STM 1200/500 SB T TN ANSI2" C ExG

S  Bar probe
T  Teflon® coated measuring electrode
M  Measuring electronics protection housing (indoor) integrated measuring electronics MTI 100/1 AEE2
  Connection head aluminium, blue powder coated, viton gasket, IP 65 according to EN 60529
  cable connection PM M16 x 1.5 blue, cable clamping range ø 6-8 mm
L  Probe length to lower edge of the flange 1200 mm
EL Measuring probe length 500 mm
SB Bar measuring electrode, ø/diam. = 18 mm, s = 4 mm
T  Wetted probe material Teflon PTFE
TN Continuous interface layer and level detection (analog measuring technique)
ANSI Flange ANSI 2" 150 lbs according to ASTM A-182, ASME B16.5, RF (with raised face); 316L
C  Double seal Chemraz 505, second O-ring FPM (universally applicable)

Probe Ex-protection: SEV 09 ATEX 0133 X CE 1254
ExG  (Gas-) Ex-version (probe/MTI) II 1/2G Ex ia IIC Ga/Gb

Technical data

Temperature range
-20 ... +80 °C medium | -20 ... +60 °C connection head

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

Pressure -1 bar up to max. 16 bar / 150 lbs. standard

Measuring principle Impedance

Measuring range DC 1.4 ... 80 / 0 - 3040 Imp

Resolution up to < 1 mm

Conductivity optimum of the organic phase
MTI standard: 0 ... 200 µS/cm (constant)

Basic capacity Cp: 52.1 pF / Rpx: 1.3 MΩ

Integration time 40 - 400 ms / 0 - 3750 Imp

Use Ex-zone II 1/2G Zone 0

Measuring electrode PTFE-layer thickness
ø 18.0 mm / PTFE s = 4 mm

Application Interface detection continuous, level

Measuring electronics Housing square: MTI 100/1 AEE2

Protection connection head square IP65

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® MIQ / MIL

Article n° 02.29.12.0000 5389
Technical data on-site MTI measuring electronics

Design type
Plug-in electronics with square stainless steel cover in the protective housing, with HF-connection; IP 20

Installation
Protection housing with mounting holes, plug-in electronics insertable, fixed with 2 screws M4x8

Performance
Linear conversion of an impedance range into a normed digital measurement signal

Use/Display
One-time compensation of basic capacity of the HF cable and uncovered dry probe, LED display for quick adjustment

Dimensions
Square version height x width x length 57 x 80 x 175 mm

Weight electronics
140 g

Ex-power supply / connection wiring
Shielded two-wire connection 0.75 mm² twisted CY/EIG to all evaluation devices mipro™ cable length up to 200 m or max. C= 120 nF / R = 30 Ohm line impedance

Transfer signal
Impulse parcel, superimposed on the supply current

Measuring voltage/current
\[ U = 14.5 \text{ V} \quad I = 13.5 \text{ mA} \]

Nominal data of the supply voltage
Rate data Ex ia IIC only for connection to mipro™ type M** **** - or *THK-units

Circuit with the following maximum output values
\[ U_1 \leq 18.9 \text{ V} \quad I_1 \leq 49 \text{ mA} \]
\[ P_1 \leq 231 \text{ mW} \quad C_i = 60 \text{ nF} \quad L_i = 0 \text{ mH} \]

Ambient temperature
-20 ... +60 °C

Storage temperature
-30 ... +80 °C, ideal +20 °C

Measuring range
10 / 20 / 50 / 100 / 200 / 300 respective 0 up to max. 3750 impulses, special ranges available. The resolution range depends on the probe dimensions and is product specific.

Resolution
Max. 0.003 pF/impulses

Norm range for pipe probe with remote MTI housing
Type STK 100/200/300
55 pF, type MTI 300, 50/0 - 16 basic adjustment range depending on probe and HF-cable length, determined by the manufacturer

Basic adjustment range
MTI ...A 0 to 16, 0 to 500 pF

Measurement frequency
- 500 kHz

Linearity
Deviation < 0.1 % (without probe)

Hysteresis
1 measured impulse

Temperature influence
5 – 45 °C
Type MTI ...A analog: < ± 3 measuring impulse

Certification
Gas III 2G Ex ia Gb IIC T6
Dust III 2D Ex iaD 20/21 IP65 T85°C
II 1/2G Ex d ia IIC T6
RL 2014/34/EU
Inspection report n°: 08-1K-0395.01 with extension 1
Unit can be supplied without Ex-protection

Intrinsically safe Ex-connection:
Measuring electronics MTI ... in a protective housing or bar probe type S**; K** ; F*
EMC-tested, STS 024 report n° 990102WS
corresponds to EN 1127-1 : 20011
EN 61000-6-2 2005 EN 61000-6-4 : 2007
EN 60079-0 : 2012 EN 60079-11 : 2012

Measuring system
The measuring loop consists of a probe with remote on-site electronics MTI and the evaluation unit mipro™ 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 mipro™.
Mounting directions

- Installation from top to bottom or bottom to top (length and turbulence dependent)
- During installation the bar probe must be handled carefully. Always hold the probe at the flange and support the measuring electrode.
- Internal installation guidelines always have to be followed and suitable sealing used.
- Observe internal safety regulations for open tanks
- The pipe insulation must not enclose the cooling rod
- Ambient temperature: max. allowed temperature in the connection head must not exceed $+60^\circ C$, if pipe probe is insulated and measuring electronics is remote installed
- Pressure tests have to be conducted with mounted probe

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 $0.2 - 1.5 \text{ mm}^2$
- The connecting cable has to suit the demands at the measuring circle.
- MTI-housing lid in [Ex ie] zone can be opened under live-line working.
- Output signal of mipromex® is a pulse modulated signal $U_C \leq 18.9 \text{ V}$

Basic circuit diagram

Probe connection to evaluation unit mipromex®
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
- Confidential test report no.: 08-1K-0390.01

CE-Mark
The probe fulfills the legal requirements according to the EC-directives. CE 1254