



MLA 900

Conductivity measurement
in light oil products





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Safety measurement ...

Light oil products such as aviation fuel need to be moved as quickly as possible and in large quantities. Hence, these liquids are pumped at very high flow rates through pipelines and filters. This can cause electrostatic charging of the product. This effect is also increased, if the product is high in purity. The electrostatic charge can even be great enough to cause sparks, which could easily ignite a flammable gas/air mixture and cause an explosion.

In order to prevent ignition from occurring, the conductivity of such liquids can be artificially raised by adding antistatic additives which dissipate the charge to the walls of the pipeline or vessel. The conductivity of the liquid is therefore a determining safety parameter which needs to be monitored. In addition, the conductivity is strongly temperature-dependent. In the range of -20 °C to $+40\text{ °C}$ the conductivity changes by a factor of 4. Therefore, temperature is also an important parameter in

the determination of the quantity of antistatic agent to be added.

The conductivity can change depending on the ion absorption on the walls of the pipeline and on the level of contamination and condensation in the fuel. Due to these reasons, it cannot be insured that the amount of antistatic additive originally added to the fuel, still provides the necessary level of safety after several pumping and filling routines. The conductivity of the liquid has to be checked again after transport has been made, but in any case before start pumping.

Conductivity and temperature are important parameters for safe and economical handling of a potentially static fluid.

....with MLA 900

Using the special measuring instrument MLA 900, conductivity and temperature can both be measured simultaneously in a liquid. The values are immediately shown on the large display. The instrument is com-

compact, portable and approved for use in explosion-hazardous areas. The MLA 900 provides a determination of the actual conductivity anytime and anywhere, quickly and safely.

Product features

- For aviation fuel, light oil products and other industrial liquids
- Integrated temperature measurement
- Function and status monitoring
- ASTM standard test method D2624
- Portable field instrument designed according to DIN 51412
- Explosion protection according to ATEX II 1 / 2 G EEx ia IIB T6
- Antistatic case for mobile use
- Large dual display for both conductivity and temperature
- Battery powered for up to 1000 hours operation

Display unit

The display unit is housed in a rugged sheet steel enclosure. It also includes, two large LCD displays for conductivity and temperature, protective cover with automatic, optically controlled on/off function, power supply via built-in Ex-safe battery which can be easily exchanged.

Instrument components

The conductivity instrument MLA 900 is comprised of a measuring probe and the display unit which are interconnected by a cable. The maximum length of the cable is 24 meters.

Measuring probe

Features rugged construction of chrome-plated brass with a completely encapsulated pre-amplifier electronics. The outer electrode (cylindrical) can be unscrewed for cleaning purposes.

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Measuring principle

The conductivity is measured using two large concentric submersion electrodes. A precisely controlled DC current flows between the two electrodes when they are submerged in the liquid. The current flowing is dependant on the conductivity of the liquid. After electronic evaluation, it is digitally displayed in conductivity units of pS/m. The low operating voltage minimizes any interferences

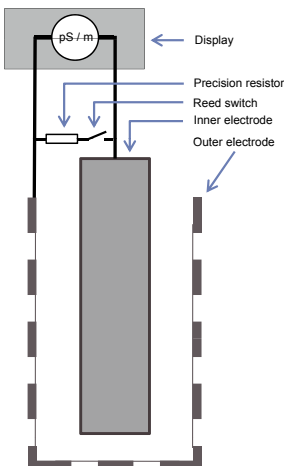
caused by de-ionization between the measuring electrodes. The temperature measurement is made using a very accurate temperature sensor together with an exact reference voltage source. The temperature sensor is thermally isolated from the mass of the submersible unit, which provides a very short response time.

Interconnecting cable

Easy mounting and exchangeability are the features of the interconnecting cable using the safety plug connectors on the measuring probe and the display unit. There is also a meter marking on the cable. Various cable lengths are available up to 24 meters.

Calibration test very easy

To test the display accuracy (calibration) the measuring probe will be held on a magnet which is mounted sideways the instrument housing. The magnet switches a reed contact and on the display is shown the exact maximum of 1000pS/m which is simulated by a high accurate precision resistor. Therefore a time-consuming calibration with liquids is not necessary. This calibration test provides the maximum of measuring reliability why the instrument MLA 900 is listed as a standard measuring method in the actual ASTM 2624.



Technical Data	MLA 900
Measuring specifications	
Electrical conductivity	
Measuring range	0 ... 1999 pS/m
Measuring tolerance	±2 % of display value ±2 pS/m at the zero point
Temperature	
Measuring range	-20 ... 60 °C
Measuring tolerance	±0.5 °C in the range of -20 ... 0 °C and 40 ... 60 °C ±0,2 °C in the range of 0 ... 40 °C
Electronics	
Displays	2 LCDs for conductivity and temperature, digit size: 18 mm
Power supply	Zn/MnO ₂ - battery 9 V (intrinsically safe)
Interconnecting cable	
Available cable lengths	2 m; 10 m; 17 m; special lengths on request
Maximum length	24 m
Environmental conditions	
Operational temperature	-20 ... +60 °C
Storage temperature	-20 ... +70 °C
Relative humidity	90 % relative humidity
Barometric pressure	800 ... 1200 hPa
Dimensions (HxWxD in mm)	
Display unit / Carrying case	267 x 163 x 108 mm / 405 x 240 x 125 mm
Probe	37 x 151 mm
Weight	
Instrument in carrying case	5,7 kg
Probe	0,5 kg
Cable	2 m : 0,1 kg; 10 m : 0,5 kg; 17 m : 0,8 kg

PROCESS MEASUREMENT

GROUP

Due to years of experience in the field of automatization we offer together with the group any kind of automatic systems like filling stations, palletizers, conveyors and compact storage systems. In combination with our level measuring technique it's possible to design and produce belt conveyors, turn tables and shiploading systems with telescopic belts tailored on customers request. And of course worldwide.



COMPETENCE

We offer our customers our comprehensive know how obtained over decades in different applications. Our strength is to combine standards and special solutions to meet customer specifications and to find the best solution for a turn key project.



WORLDWIDE

Where ever you are, our global network of representatives and subsidiaries is able to supply qualified support when you need it. We deliver the equipment for your measuring tasks, provide documentation and training. Fast and competent support, short delivery times and a high level of delivery reliability – that's Instruments staff is known for.



COMPANY

continues in developing, production and distribution of measuring technique "Type MAIHAK" and develops new ideas. Customers are our most important partners. If our partner is satisfied only than he is able to be successful. And we are also successful with him. Satisfaction of our customers is our success.



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