

Technical data

## Litronic WMS II rod sensor P45-GD



Rod sensor P45-GD

## Features

- Evaluation of the complex dielectric in the high frequency stray field
- Freely scalable measuring range
- Material curve switching
- Sensor replacement without recalibration
- Temperature compensation
- Integrated microprocessor with mean value calculation
- Limit value analysis
- Digital measuring value transmission
- Medium contacted parts 1.4571 (optional 2.4819) and PEEK
- Electronics integrated in transmitter head
- Transmitter head multiprotocol: 4-20 mA, HART
- External display in separate housing (accessories)

## Technical data rod sensor P45-GD

Physical principle	Capacitance determination in the high-frequency stray field
Sensor location	Pipeline, tank, etc.
Measuring range	0 bis 100 % moisture content
Number of stray fields	1
Frequency	22 MHz
Capacitance resolution	$100 \cdot 10^{-18}$ F
Cycle of up-date	65,535 ms
Sampling rate	$16 \cdot 10^6$ to $25 \cdot 10^6$
Measuring precision maximally	±0,05 % with correct material curve
Measuring precision measurement of temperature	± 0,5 °C
Measured value transmission – Sensor-display unit	Current loop with 4...20 mA for external display (option)
Measured value transmission – Sensor-PLC or Central computer	Analog: 4...20 mA aktive at 500 Ohm digital: Hart Modem
Valid measurement	3,75 mA to 21,6 mA (NAMUR)
Error display	<3,6 mA to >22 mA (NAMUR)
Signal resolution interface	16 bit
Max. length of connection cable	1000 m (cable type dependent)
Connection	$U_n = 24$ V DC (max. 30 V SELV/PELV), $I = 150$ mA
Medium temperature	-5 °C* to 80 °C
Ambient temperature sensor head	5 °C to 80 °C
Ambient temperature transmitter head	5 °C to 70 °C
Storage temperature	-25 °C to 80 °C
Pressure	-1 bar to 100 bar
Protection class transmitter head	IP 65
Material housing / rod	1.4571 (optional 2.4819)
Material transmitter head	Die-cast aluminium
Housing transmitter head W/H/D	88 mm / 160 mm / 143 mm
Material measuring field/wear protection	PEEK
Measuring field position	Front or side
Rod diameter	45 mm
Rod length	6 to 32" (longer rod lengths upon request)

\*under special conditions

## Accuracy

The measuring range could be adjusted to the requirements of the user from 0 to 100 % in 1 % steps.  
The resolution in crude oil is approx. at 40 parts for 1 % water content.

Measuring range	Resolution	Accuracy
0-1 %	0,025 %	+/- 0,05 %
1-10 %	0,025 %	+/- 0,10 %
10-65 %	0,025 %	+/- 0,50 %
65-90 %	0,025 %	+/- 2,00 %

### Remark

A precondition for exact und reproducible results is a well-mixed emulsion with a constant consistence.

### Certificates

ATEX / UKEX:

EU-type examination certificate number: EPS 21 ATEX 1 140 X  
EPS 22 UKEX 1 159 X

DIN EN IEC 60079-0:2018, 60079-1:2014, EN 60079-11:2012, EN 60079-26:2015, EN 60079-31:2014

#### Gas EX-protection:

 II 1/2 G Ex db/ia IIC T4 Ga/Gb

#### Dust EX-protection:

 II 1/2 D Ex tb/ia IIIC T135°C Da/Db

IECEX:

Certificate number: IECEX EPS 21.0047X

IEC 60079-0:2017 Edition: 7.0, IEC 60079-1:2014-06 Edition: 7.0, IEC 60079-11:2011 Edition: 6.0

IEC 60079-26:2014-10 Edition: 3.0, IEC 60079-31:2013 Edition: 2

#### Gas EX-protection:

Ex db/ia IIC T4 Ga/Gb

#### Dust EX-protection:

Ex tb/ia IIIC T135°C Da/Db

## Further remarks

- The welding process connector for integration in pipe must be provided on site, following the specifications of Liebherr.
- The sensor has been specially designed to measure the water content in binary emulsions.
- For the water in oil measurement, a factory basic calibration will be done.
- A precise technical clarification is absolutely necessary.
- The Liebherr address, the Liebherr Logo, as the manufacturer / distributor must always be read in full, so it is not allowed to paste or cover it.

## Observe special conditions of use

- For the power supply of the sensor use only a power supply for the relevant device category (max. 30V SELV/PELV; max. supply current  $I = 150$  mA).
- Build-up of electrostatic charge on the painted enclosure shall be avoided. High charge generating processes shall be excluded.
- The flameproof joints are not intended to be repaired.
- The cable can only be installed movable if the ambient temperature around is between 5 °C and 70 °C.
- If the cable has to be connected within the potentially explosive area, the cable must have a minimum protection class of IP-6x or another accepted type of protection for that area.
- The allowed sensor head ambient temperature in process is between 5 °C to 80 °C
- The allowed transmitter head ambient temperature in process is between 5 °C to 70 °C

## Litronic WMS PC-SOFTWARE WIO

For commissioning and service of Litronic WMS II sensors.

Features:

- Operation with standard HART modem and PC (MS-Windows 10)
- Parameterization of the sensors
- Diagnostic function with display of measuring parts, water content, media temperature
- Input of media-specific curves (linear or polynomial up to 3rd order) and offset
- Curve switching measurement and data recording in file (for import into Microsoft Excel)

Default language of the software and the online help is German, English, French and Russian.

Note: Translation into other languages is possible at additional costs.

### Liebherr-Mischtechnik GmbH

Im Elchgrund 12, 88427 Bad Schussenried, Germany  
Postbox 145, Phone: +49 7583 949-807  
www.liebherr.com, E-Mail: mt.lmt@liebherr.com