



# LFR-XXFFHIMHZKX

LFR SicWave

LEVEL SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

Type	part no.
LFR-XXFFHIMHZKX	6081471

Other models and accessories → [www.sick.com/LFR\\_SicWave](http://www.sick.com/LFR_SicWave)

## Detailed technical data

## Features

<b>Medium</b>	Fluids
<b>Measurement</b>	Continuous
<b>Probe type</b>	Flange with encapsulated antenna system
<b>Frequency band</b>	W-band (within 75 ... 85 GHz)
<b>Measuring range</b>	Up to 30 m (98.43 ft)
<b>Angle of dispersion</b>	3° <sup>1)</sup>
<b>Process pressure</b>	In combination with process temperature -196 °C ... +200 °C, -1 bar ... 25 bar (-100 kPa ... 2,500 kPa / -14.5 psig ... 362.6 psig) are possible: -1 bar ... 16 bar (-100 kPa ... 1,600 kPa / -14.5 psig ... 232 psig)
<b>Process temperature</b>	-40 °C ... +130 °C
<b>RoHS certificate</b>	✓
<b>HART</b>	✓
<b>Display</b>	Installed
<b>Control element</b>	Bluetooth Magnet pin operation
<b>Bluetooth</b>	✓

<sup>1)</sup> Outside the specified aperture angle, the level of the radar signal energy is lowered by 50% (-3 dB).

## Performance

<b>Accuracy of sensor element</b>	≤ 1 mm <sup>1)</sup>
<b>Non-repeatability</b>	≤ 1 mm
<b>Digital measurement resolution</b>	< 1 mm
<b>Analog measurement resolution</b>	0.3 µA
<b>Digital output temperature drift</b>	≤ 3 mm / 10 K, max. 10 mm

<sup>1)</sup> Measurement distance > 0.25 m / 0.8202 ft.<sup>2)</sup> Time span after abrupt change to the measurement distance by max. 2 m for bulk material applications until the output signal has assumed 90% of its steady-state value for the first time (IEC 61298-2).

<b>Current output temperature drift</b>	≤ 0.03% / 10 K relating to the 16 mA span or ≤ 0.3%
<b>Deviation on current output due to digital-analog conversion</b>	< 15 µA
<b>Measurement cycle time</b>	Approx. 700 ms
<b>Step response time</b>	≤ 3 s <sup>2)</sup>
<b>MTBF</b>	3,37*10 <sup>6</sup> h
<b>Display</b>	✓

<sup>1)</sup> Measurement distance > 0.25 m / 0.8202 ft.

<sup>2)</sup> Time span after abrupt change to the measurement distance by max. 2 m for bulk material applications until the output signal has assumed 90% of its steady-state value for the first time (IEC 61298-2).

## Electronics

<b>Communication interface</b>	HART
<b>Supply voltage</b>	12 V DC ... 35 V DC, 18 V DC ... 35 V DC with illumination switched on <sup>1)</sup>
<b>Protection class</b>	III (IEC 61010-1)
<b>Connection type</b>	M20 x 1.5 / cable gland PA black (ø 5 mm - 9 mm)
<b>Output signal</b>	4 mA ... 20 mA / HART <sup>2)</sup>
<b>Contamination rating</b>	4
<b>Enclosure rating</b>	IP66 / IP68 / IP69
<b>EMC</b>	EN 61326-1
<b>Start-up current</b>	< 3.6 mA
<b>Overvoltage category</b>	III (IEC 61010-1)
<b>Short-circuit protection</b>	✓

<sup>1)</sup> All connections are polarity protected. All outputs are overload and short-circuit protected.

<sup>2)</sup> Range of the output signal: 3.8 mA ... 20.5 mA / HART (factory setting); fault current < 3.6 mA or 22 mA.

## Mechanics

<b>Process connection</b>	Flange DN 80 PN 40 form C, DIN 2501 / 316L
<b>Housing material</b>	Stainless steel (electropolished)
<b>Housing design</b>	Single-chamber housing
<b>Sealing material</b>	PTFE
<b>Antenna material</b>	PTFE
<b>Second line of defense</b>	Not integrated

## Ambient data

<b>Ambient operating temperature</b>	-40 °C ... +80 °C
<b>Ambient temperature, storage</b>	-40 °C ... +80 °C

## Certificates

<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>China RoHS</b>	✓
<b>FDA certificate</b>	✓
<b>cCSAus certificate</b>	✓

Food contact material manufacturer declaration	✓
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Classifications

ECLASS 5.0	27200505
ECLASS 5.1.4	27200505
ECLASS 6.0	27200505
ECLASS 6.2	27200505
ECLASS 7.0	27200505
ECLASS 8.0	27200505
ECLASS 8.1	27200505
ECLASS 9.0	27200505
ECLASS 10.0	27270807
ECLASS 11.0	27270807
ECLASS 12.0	27274501
ETIM 5.0	EC001447
ETIM 6.0	EC001447
ETIM 7.0	EC001447
ETIM 8.0	EC001447
UNSPSC 16.0901	41111950

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)