



LFR-ACFFHIMHAKX

LFR SicWave

LEVEL SENSORS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

| Type | Part no. |
|-----------------|----------|
| LFR-ACFFHIMHAKX | 6081910 |

Other models and accessories → www.sick.com/LFR_SicWave

Detailed technical data

Features

| | |
|----------------------------|--|
| Medium | Fluids |
| Measurement | Continuous |
| Probe type | Flange with encapsulated antenna system |
| Frequency band | W-band (within 75 ... 85 GHz) |
| Measuring range | Up to 30 m (98.43 ft) |
| Angle of dispersion | 3° ¹⁾ |
| Process pressure | 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) |
| Process temperature | -40 °C ... +130 °C |
| ATEX approval | ATEX II 1G, 1/2G, 2G Ex ia IIC T6 |
| Type examination | KIWA 20ATEX0039 X |
| RoHS certificate | ✓ |
| HART | ✓ |
| Indication | Installed |
| Control element | Bluetooth Magnet pin operation |

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

Performance

| | |
|---|---|
| Accuracy of sensor element | ≤ 1 mm ¹⁾ |
| Non-repeatability | ≤ 1 mm |
| Digital measurement resolution | < 1 mm |
| Analog measurement resolution | 0.3 µA |
| Digital output temperature drift | ≤ 3 mm / 10 K, max. 10 mm |
| Current output temperature drift | ≤ 0.03% / 10 K relating to the 16 mA span or ≤ 0.3% |

¹⁾ Measurement distance > 0.25 m / 0.8202 ft.

²⁾ 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).

| | |
|---|------------------------|
| Deviation on current output due to digital-analog conversion | < 15 µA |
| Measurement cycle time | Approx. 700 ms |
| Step response time | ≤ 3 s ²⁾ |
| MTBF | 3,37*10 ⁶ h |
| Display | ✓ |

¹⁾ Measurement distance > 0.25 m / 0.8202 ft.

²⁾ 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

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

¹⁾ All connections are polarity protected. All outputs are overload and short-circuit protected.

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

Mechanics

| | |
|-------------------------------|--|
| Process connection | Flange DN 80 PN 40 form C, DIN 2501 / 316L |
| Housing material | Aluminum |
| Housing design | Single-chamber housing |
| Sealing material | PTFE |
| Antenna material | PTFE |
| Second line of defense | Not integrated |

Ambient data

| | |
|--------------------------------------|-------------------|
| Ambient operating temperature | -40 °C ... +80 °C |
| Ambient temperature, storage | -40 °C ... +80 °C |

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 |

Type code

Type code

Certification

| | |
|----|---|
| XX | Without certification |
| AC | ATEX II 1G, 1/2G, 2G Ex ia IIC T6...T1, Ga, Ga/Gb, Gb, EU-type examination no.: KIWA 20ATEX0039 X |
| AE | ATEX II 1/2G, 2G Ex db IIC T6...T1, Ga/Gb, Gb, EU-type examination no.: KIWA 20ATEX0040 X |
| IC | IEC Ex ia IIC T6...T1, Ga, Ga/Gb, Gb, EU-type examination no.: IECEX KIWA 20.0014X |
| IE | IEC Ex db IIC T6...T1, Ga/Gb, Gb, EU-type examination no.: IECEX KIWA 20.0015X |

Antenna version/second line of defense

| | |
|---|---|
| B | With plastic horn antenna |
| T | Thread with integrated horn antenna |
| U | Thread with integrated horn antenna with second line of defense |
| F | Flange with encapsulated antenna system |
| G | Flange with encapsulated antenna system with second line of defense |
| H | Hygiene connection with encapsulated antenna system |

Process connection/Material

| | |
|----|---|
| XX | Without process connection |
| XC | Mounting clamp, length: 170 mm/316L |
| XD | Mounting clamp, length: 300 mm/316L |
| TA | Thread G 3/4 PN20, DIN3852-A/316L |
| TB | Thread 3/4" NPT PN20, ASME B1.20.1/316L |
| TC | Thread G 1 1/2, PN20, DIN3852-A/316L |
| TD | Thread 1 1/2" NPT, PN20, ASME B1.20.1/316L |
| FB | Flange DN 50 PN40 Form C, DIN2501/316/316L |
| FH | Flange DN 80 PN40 Form C, DIN2501/316/316L |
| FL | Flange DN 100 PN16 Form C, DIN2501/316/316L |
| FS | Flange DN 150 PN16 Form C, DIN2501/316/316L |
| GI | Flange 2" 150 lb RF, ASME B16.5/316/316L |
| GM | Flange 3" 150 lb RF, ASME B16.5/316/316L |
| GP | Flange 4" 150 lb RF, ASME B16.5/316/316L |
| CA | Clamp 2" PN16 (Ø 64 mm) DIN32676, ISO2825/316L |
| RA | Milk pipe connection DN50; PN16; DIN11851; 316L |

Material/seal/process temperature

| | |
|---|--|
| C | Antenna material PP, seal PP, process temperature 40...+80 °C |
| I | Antenna material PTFE, seal PTFE, process temperature -40...+130 °C |
| J | Antenna material PTFE, seal PTFE, process temperature -40...+200 °C |
| W | Antenna material PTFE, seal PTFE, process temperature -196...+200 °C |
| A | Antenna material PEEK, seal FKM (SHS FPM 70C3 GLT) and PP, process temperature -40...+130 °C |
| B | Antenna material PEEK, seal FKM (SHS FPM 70C3 GLT) and PP, process temperature -40...+200 °C |

Cable entry/connection

| | |
|---|---|
| B | Round connector, M12x1 pin assignment B |
| M | M20x1.5/cable gland, PA black (Ø 5-9 mm), standard |
| 2 | M20x1.5/cable gland, nickel-plated brass (Ø 5-9 mm) |

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