

## Loadsensing G7

# Vibration Meter

Worldsensing's Vibration Meter is a wireless sensor that automates data collection for continuous, long-term vibration monitoring. It features a triaxial accelerometer and an edge algorithm that responds to anomalies: it detects when thresholds for vibration-based parameters are exceeded.

## Key features



### FLEXIBLE CONFIGURATION OPTIONS

Up to four operational modes let the Vibration Meter adapt acquisition parameters, processing logic, and reported variables to specific scenarios. Configurable locally via the Worldsensing App or remotely through CMT Edge or Cloud, it delivers key indicators required by each application:

- Particle peak velocity and frequency (PPV)
- Peak Ground Acceleration (PGA)
- Resonant frequencies of structural elements (PSA)
- Weighted effective acceleration for human comfort (MTVV)



### TWO PRODUCT VARIANTS FOR EXTENDED APPLICATION COVERAGE

The Vibration-XHP suits standard vibration monitoring, while the Vibration-IR extends amplitude (up to 200 mm/s) and frequency range (up to 315 Hz) for demanding PPV applications such as blasting.



### FAST RESPONSE WHEN NEEDED

The Vibration Meter's Alert Mode ensures rapid response when vibration exceeds a defined threshold, instantly sending triggered data and temporarily increasing reporting frequency to capture all critical events.



### WIRELESS, AUTONOMOUS AND LOW-POWER

Rugged and IP68-rated, the device operates with minimal maintenance, offering up to 1.5 years of battery life and a radio range of up to 15 km to the nearest gateway.



### INDUSTRY COMPLIANT

The Vibration Meter ensures measurement quality and compatibility across comfort, structural integrity, and seismic engineering applications.



## Operational modes

The Vibration Meter offers multiple operational modes to address a diverse range of vibration monitoring applications. Each mode is designed to extract key parameters for specific scenarios, enabling accurate assessment of structural behavior, ground response, and human comfort.



### MTVV | MAXIMUM TRANSIENT VIBRATION VALUE

Evaluates human comfort inside buildings affected by vibration from construction, mining activities, or infrastructure operation. Based on ISO 2631-2.

#### Applications

- Used to assess human comfort in urban settings
- Ideal for monitoring construction, traffic, or industrial vibrations affecting occupants



### PPV | PARTICLE PEAK VELOCITY

Processes vibration in terms of velocity, providing PPV and predominant frequency, key indicators in geotechnical monitoring. Use the Vibration-IR for extended frequency range.

#### Applications

- Applied in construction, mining, and blasting projects to ensure infrastructure protection and regulatory compliance by quantifying vibration intensity and frequency



### PGA | PEAK GROUND ACCELERATION

Analyzes vibration acceleration to determine PGA, a core metric in assessing seismic intensity. Used in earthquake engineering for structural analysis. Frequency band and resolution can be adjusted via sampling rate to suit each scenario.

#### Applications

- Designed for earthquake monitoring and post-event assessment of critical assets, supporting faster response and regional seismic analysis



### PSA | POWER SPECTRUM AVERAGE

Identifies predominant structural frequencies by averaging multiple vibration observations. Ideal for assessing the health of elements such as cables, pillars, or other structural components of a bridge. Triggered acquisition and delayed start help capture resonance while excluding transient noise.

#### Applications

- Used to track the resonance frequency of bridges, buildings, and stay cables
- Detect changes in structural stiffness and integrity over time to help prevent failures

## Advanced configuration options

| Feature                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                  | Configuration options |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Transmission threshold  | The device will send the most relevant events in the series that are above the transmission threshold for every set reporting period $t$ . <ul style="list-style-type: none"><li>• PGA, PPV, 4 maximum events</li><li>• MTVV, 9 maximum events</li></ul>                                                                                                                                                                                     | Threshold value       |
| Alert threshold         | Any value exceeding the alert threshold will trigger an alert state in which: <ul style="list-style-type: none"><li>• It sends a triggered message with the threshold breach values</li><li>• The reporting period is automatically changed to a <math>t_a</math> of 2 min</li><li>• Relevant events exceeding the transmission threshold will be sent within this new reporting period</li><li>• Only for PGA, PPV and MTVV modes</li></ul> | Threshold value       |
| Raw data storage        | Raw data for values are stored in internal device memory if feature is activated and conditions are met. Retrievable by local connection                                                                                                                                                                                                                                                                                                     | Enabled/disabled      |
| Heartbeat functionality | Provides a data point in a reporting period with no events above the transmission threshold                                                                                                                                                                                                                                                                                                                                                  | Enabled by default    |

## TECHNICAL SPECIFICATIONS

### GENERAL

|                                          |                                                                                                                     |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Primary sensor                           | 3-axis MEMS accelerometer                                                                                           |
| Secondary sensor                         | Temperature sensor<br>Relative humidity sensor                                                                      |
| Power source                             | 3.6 VD-size user-replaceable, high energy density batteries                                                         |
| Operating temperature                    | -40 °C to 80 °C (-40 °F to 175 °F)                                                                                  |
| Reporting formats                        | <ul style="list-style-type: none"> <li>Periodic mode</li> <li>Alert mode (for MTVV, PPV, PGA modes only)</li> </ul> |
| Reporting period                         | Selectable from:<br>30 s.<br>1, 2, 5, 10, 15, 30 min,<br>1, 2, 4, 6, 12, 24 h                                       |
| Time synchronization discipline by radio | Better than ± 30 seconds                                                                                            |
| Device configuration                     | <ul style="list-style-type: none"> <li>Worldsensing App</li> <li>CMT Cloud</li> <li>CMT Edge</li> </ul>             |

### ACCELEROMETER

|                         |                                                                                                                     |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|
| Original sampling rate  | 4k Hz                                                                                                               |
| Original frequency band | DC - 1000 Hz                                                                                                        |
| Noise floor             | <ul style="list-style-type: none"> <li>22.5 µg/√Hz for Vibration-XHP</li> <li>75 µg/√Hz for Vibration-IR</li> </ul> |
| Accuracy                | Within the 5% between 4 and 100 Hz                                                                                  |

### TEMPERATURE SENSOR

|            |               |
|------------|---------------|
| Range      | -40° to 80 °C |
| Accuracy   | ± 0.2 °C      |
| Resolution | 0.1 °C        |

### HUMIDITY SENSOR

|             |                                                                                                                                                         |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor type | Humidity sensor to detect lack of sealing/locking of the enclosure. Statistics of the relative humidity measurements transmitted in the health messages |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

### PPV-BASED MODE SPECIFICATIONS

|                                |                                                                                                                                                                                   |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reported parameters            | <ul style="list-style-type: none"> <li>Timestamp</li> <li>PPV<sub>XYZ</sub> (mm/s)</li> <li>f<sub>XYZ</sub> (Hz)</li> <li>T (°C)</li> <li>PVS (mm/s)</li> <li>Duration</li> </ul> |
| Internal resolution (velocity) | 0.00154 mm/s @4 Hz                                                                                                                                                                |
| Output resolution (PPV)        | 0.01 mm/s                                                                                                                                                                         |
| Velocity accuracy              | See calibration sheet                                                                                                                                                             |
| Frequency output resolution    | 0.5 Hz                                                                                                                                                                            |
| Frequency accuracy             | 1% (2% along the full temperature range)                                                                                                                                          |

### VELOCITY AND FREQUENCY RANGES (CONFIGURABLE)

|                                        | Vibration-XHP                                                                                                                                                                                                                 | Vibration-IR                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Ranges                                 | 0-30 mm/s -<br>1-100 Hz<br>0-60 mm/s -<br>1-100 Hz<br>0-120 mm/s -<br>1-100 Hz<br>0-50 mm/s -<br>1-250 Hz                                                                                                                     | 0-120 mm/s -<br>1-250 Hz<br>0-200 mm/s -<br>1-250 Hz<br>0-200 mm/s -<br>1-315 Hz |
| Sampling rate (sps)                    | 1000 Hz (derived from 4 kHz)<br>2000 Hz for the 1-315 Hz config                                                                                                                                                               |                                                                                  |
| Analysis time                          | Configurable from:<br>10, 15, 30, 60, 75, 150, 300 s                                                                                                                                                                          |                                                                                  |
| Predominant frequency determination    | Configurable from: <ul style="list-style-type: none"> <li>Flat</li> <li>BS 7385-2</li> <li>ABNT-NBR-9653</li> <li>DIN 4150-3</li> <li>IN-1226</li> <li>Circulaire ICPE de 1986</li> <li>SBR-A</li> <li>USBM-RI8507</li> </ul> |                                                                                  |
| Transmission and alert threshold steps | 0.01 mm/s                                                                                                                                                                                                                     |                                                                                  |
| Reported raw data                      | Velocity in x, y, z at 1000 (Hz)                                                                                                                                                                                              |                                                                                  |

### MTVV-BASED MODE SPECIFICATIONS

|                       |                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Reported parameters   | <ul style="list-style-type: none"> <li>Timestamp</li> <li>L<sub>AW</sub>-X,Y,Z (dBm)</li> <li>T (°C)</li> <li>Duration</li> </ul> |
| Acceleration range    | ± 2 g                                                                                                                             |
| L <sub>AW</sub> range | <100 dB                                                                                                                           |

| Internal acceleration resolution       | 3.9 µg                                                                                                                                                                                                                                                                              |                                 |                       |        |              |        |              |        |              |        |               |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------|--------|--------------|--------|--------------|--------|--------------|--------|---------------|
| L <sub>AW</sub> output resolution      | 0.05 dB                                                                                                                                                                                                                                                                             |                                 |                       |        |              |        |              |        |              |        |               |
| MTVV computation                       | Running RMS method (ISO 2631-1)                                                                                                                                                                                                                                                     |                                 |                       |        |              |        |              |        |              |        |               |
| Frequency weighting                    | W <sub>m</sub> (ISO 2631-2)                                                                                                                                                                                                                                                         |                                 |                       |        |              |        |              |        |              |        |               |
| Transmission and alert threshold steps | 0.05 dB                                                                                                                                                                                                                                                                             |                                 |                       |        |              |        |              |        |              |        |               |
| Reported raw data                      | Weighted (W <sub>m</sub> ) acceleration in x,y, z at 1000 (Hz)                                                                                                                                                                                                                      |                                 |                       |        |              |        |              |        |              |        |               |
| PGA-BASED MODE SPECIFICATIONS          |                                                                                                                                                                                                                                                                                     |                                 |                       |        |              |        |              |        |              |        |               |
| Reported parameters                    | <ul style="list-style-type: none"><li>• Timestamp</li><li>• PGA<sub>XYZ</sub> (mg)</li><li>• f<sub>XYZ</sub> (Hz)</li><li>• RMS vector (mg)</li><li>• T (°C)</li></ul>                                                                                                              |                                 |                       |        |              |        |              |        |              |        |               |
| Raw acceleration range                 | ± 2 g                                                                                                                                                                                                                                                                               |                                 |                       |        |              |        |              |        |              |        |               |
| Internal acceleration resolution       | 3.9 µg                                                                                                                                                                                                                                                                              |                                 |                       |        |              |        |              |        |              |        |               |
| Output resolution                      | 0.1 mg                                                                                                                                                                                                                                                                              |                                 |                       |        |              |        |              |        |              |        |               |
| Sampling rate (sps)                    | Configurable from: <ul style="list-style-type: none"><li>• BAND 1: 62.5 Hz</li><li>• BAND 2: 125 Hz</li><li>• BAND 3: 250 Hz</li><li>• BAND 4: 500 Hz</li></ul>                                                                                                                     |                                 |                       |        |              |        |              |        |              |        |               |
| Band specifications                    | <table><tr><th>Low corner frequency/Resolution</th><th>High corner Frequency</th></tr><tr><td>Band 1</td><td>0.02 Hz15 Hz</td></tr><tr><td>Band 2</td><td>0.03 Hz30 Hz</td></tr><tr><td>Band 3</td><td>0.06 Hz60 Hz</td></tr><tr><td>Band 4</td><td>0.12 Hz125 Hz</td></tr></table> | Low corner frequency/Resolution | High corner Frequency | Band 1 | 0.02 Hz15 Hz | Band 2 | 0.03 Hz30 Hz | Band 3 | 0.06 Hz60 Hz | Band 4 | 0.12 Hz125 Hz |
| Low corner frequency/Resolution        | High corner Frequency                                                                                                                                                                                                                                                               |                                 |                       |        |              |        |              |        |              |        |               |
| Band 1                                 | 0.02 Hz15 Hz                                                                                                                                                                                                                                                                        |                                 |                       |        |              |        |              |        |              |        |               |
| Band 2                                 | 0.03 Hz30 Hz                                                                                                                                                                                                                                                                        |                                 |                       |        |              |        |              |        |              |        |               |
| Band 3                                 | 0.06 Hz60 Hz                                                                                                                                                                                                                                                                        |                                 |                       |        |              |        |              |        |              |        |               |
| Band 4                                 | 0.12 Hz125 Hz                                                                                                                                                                                                                                                                       |                                 |                       |        |              |        |              |        |              |        |               |
| Transmission and alert threshold steps | 1 mg                                                                                                                                                                                                                                                                                |                                 |                       |        |              |        |              |        |              |        |               |
| Reported raw data                      | Raw acceleration in x,z,y in windows of 2048 samples                                                                                                                                                                                                                                |                                 |                       |        |              |        |              |        |              |        |               |
| PSA-BASED MODE SPECIFICATIONS          |                                                                                                                                                                                                                                                                                     |                                 |                       |        |              |        |              |        |              |        |               |
| Reported parameters                    | <ul style="list-style-type: none"><li>• PGA (vector) (mg)</li><li>• f<sub>XYZ</sub> (Hz) {1st to 5th}</li><li>• RMS<sub>XYZ</sub> (mg)</li><li>• T (°C)</li><li>• PGA timestamp</li></ul>                                                                                           |                                 |                       |        |              |        |              |        |              |        |               |
| Raw acceleration range                 | ± 2 g                                                                                                                                                                                                                                                                               |                                 |                       |        |              |        |              |        |              |        |               |

| Internal acceleration resolution          | 3.9 µg                                                                                                                                                                                                                                                                               |                                  |                       |        |              |        |              |        |              |        |               |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------|--------|--------------|--------|--------------|--------|--------------|--------|---------------|
| Sampling rate (sps)                       | Configurable from: <ul style="list-style-type: none"><li>• BAND 1: 62.5 Hz</li><li>• BAND 2: 125 Hz</li><li>• BAND 3: 250 Hz</li><li>• BAND 4: 500 Hz</li></ul>                                                                                                                      |                                  |                       |        |              |        |              |        |              |        |               |
| Band specifications                       | <table><tr><th>Low corner frequency/ resolution</th><th>High corner Frequency</th></tr><tr><td>Band 1</td><td>0.02 Hz15 Hz</td></tr><tr><td>Band 2</td><td>0.03 Hz30 Hz</td></tr><tr><td>Band 3</td><td>0.06 Hz60 Hz</td></tr><tr><td>Band 4</td><td>0.12 Hz125 Hz</td></tr></table> | Low corner frequency/ resolution | High corner Frequency | Band 1 | 0.02 Hz15 Hz | Band 2 | 0.03 Hz30 Hz | Band 3 | 0.06 Hz60 Hz | Band 4 | 0.12 Hz125 Hz |
| Low corner frequency/ resolution          | High corner Frequency                                                                                                                                                                                                                                                                |                                  |                       |        |              |        |              |        |              |        |               |
| Band 1                                    | 0.02 Hz15 Hz                                                                                                                                                                                                                                                                         |                                  |                       |        |              |        |              |        |              |        |               |
| Band 2                                    | 0.03 Hz30 Hz                                                                                                                                                                                                                                                                         |                                  |                       |        |              |        |              |        |              |        |               |
| Band 3                                    | 0.06 Hz60 Hz                                                                                                                                                                                                                                                                         |                                  |                       |        |              |        |              |        |              |        |               |
| Band 4                                    | 0.12 Hz125 Hz                                                                                                                                                                                                                                                                        |                                  |                       |        |              |        |              |        |              |        |               |
| Energy weighting                          | On/Off                                                                                                                                                                                                                                                                               |                                  |                       |        |              |        |              |        |              |        |               |
| Acquisition modes                         | <ul style="list-style-type: none"><li>• Periodic</li><li>• Always on</li></ul>                                                                                                                                                                                                       |                                  |                       |        |              |        |              |        |              |        |               |
| Periodic acquisition mode specifications  |                                                                                                                                                                                                                                                                                      |                                  |                       |        |              |        |              |        |              |        |               |
| Number of windows                         | 1 to 512                                                                                                                                                                                                                                                                             |                                  |                       |        |              |        |              |        |              |        |               |
| Always on acquisition mode specifications |                                                                                                                                                                                                                                                                                      |                                  |                       |        |              |        |              |        |              |        |               |
| Delay                                     | Off / On (1–15 seconds)                                                                                                                                                                                                                                                              |                                  |                       |        |              |        |              |        |              |        |               |
| Transmission threshold step               | 1 mg                                                                                                                                                                                                                                                                                 |                                  |                       |        |              |        |              |        |              |        |               |
| Reported raw data                         | PSD amplitudes 1024 datapoints                                                                                                                                                                                                                                                       |                                  |                       |        |              |        |              |        |              |        |               |
| MEMORY                                    |                                                                                                                                                                                                                                                                                      |                                  |                       |        |              |        |              |        |              |        |               |
| Memory structure                          | Circular buffer                                                                                                                                                                                                                                                                      |                                  |                       |        |              |        |              |        |              |        |               |
| Maximum memory records                    | 150 000                                                                                                                                                                                                                                                                              |                                  |                       |        |              |        |              |        |              |        |               |
| Local maximum waveform records            | <ul style="list-style-type: none"><li>• &gt;500 for MTVV, PPV, PGA modes</li><li>• &gt;1 000 for PSA mode</li></ul>                                                                                                                                                                  |                                  |                       |        |              |        |              |        |              |        |               |

| MECHANICAL                   |                                                                                        |                  |
|------------------------------|----------------------------------------------------------------------------------------|------------------|
| Device variants              | Vibration-XHP                                                                          | Vibration-IR     |
| Overall dimensions (WxLxH)   | 203x100x61 mm<br>With straight antenna<br><br>122x100x122 mm<br>With L-antenna         | 106x100x61 mm    |
| Weight (excluding batteries) | 475 g                                                                                  | 463 g            |
| Antenna                      | External antenna<br>Includes elbow connector                                           | Internal antenna |
| Vibration resistance         | Vibration test according to level C.2, on sleeper, EN 50125-3:2003 (Vibration-IR only) |                  |

|                                |                                                                 |
|--------------------------------|-----------------------------------------------------------------|
| Weather protection             | IP68 (at 2 m for 2 h)                                           |
| Impact resistance <sup>1</sup> | 1 m drop onto concrete (20 000 g shock)                         |
| Mounting options               | Clearance holes for M4 hexagon socket head cap screws in bottom |
| Communication port             | Internal USB-C                                                  |
| Box material                   | Aluminum alloy                                                  |
| Lid material                   | Polycarbonate                                                   |
| Battery holder                 | 1 x D-size battery holder                                       |

| BATTERY LIFE ESTIMATIONS |                  |                                   |                                                   |
|--------------------------|------------------|-----------------------------------|---------------------------------------------------|
| Operational mode         | Reporting period | Radio config: SF8@20dBm SF9@14dBm | Acquisition parameters Considerations             |
| PPV                      | 1 min            | 6 months                          | Analysis time 60s, Alert mode disabled            |
|                          | 5 min            | 7 months                          | Analysis time 60s, One alert activation per day   |
|                          | 30 min           | 1.8 years                         | Analysis time 60s, One alert activation per day   |
| MTVV                     | 1 min            | 7 months                          | Alert mode disabled                               |
|                          | 5 min            | 8 months                          | One alert activation per day                      |
|                          | 30 min           | 1.9 years                         | One alert activation per day                      |
| PGA                      | 1 min            | 3 months                          | sps=250Hz, Alert mode disabled                    |
|                          | 5 min            | 1 year                            | sps=250Hz, One alert activation per day           |
|                          | 30 min           | 2.1 years                         | sps=250Hz, One alert activation per day           |
| PSA                      | 10 min           | 5.1 years                         | sps=250Hz, Periodic with 5 windows                |
|                          | 30 min           | 2.5 years                         | sps=250Hz, Always on without trigger              |
|                          | 30 min           | 8.3 years                         | sps=250Hz, Always with trigger (5 windows per RP) |

| RADIO SPECIFICATIONS         |                                                                                                                                                                                                                               |              |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Radio band                   | ISM sub 1GHz                                                                                                                                                                                                                  |              |
| Operating frequency bands    | Adjustable                                                                                                                                                                                                                    |              |
| Bidirectional communications | <ul style="list-style-type: none"><li>• Remote reporting period adjustment</li><li>• Clock synchronization</li><li>• Remote configuration of operational modes</li><li>• Remote switching between operational modes</li></ul> |              |
| Maximum link budget          | 151 dB / 157 dB                                                                                                                                                                                                               |              |
| Configuration                | WS LoRa / LoRAWAN                                                                                                                                                                                                             |              |
| RADIO RANGE <sup>2</sup>     |                                                                                                                                                                                                                               |              |
|                              | Vibration-XHP                                                                                                                                                                                                                 | Vibration-IR |
| Open sight                   | 15 km                                                                                                                                                                                                                         | 15 km        |
| City street                  | 4 km                                                                                                                                                                                                                          | 2 km         |
| Manhole in a city street     | 2 km                                                                                                                                                                                                                          | 1 km         |
| Straight tunnel              | 4 km                                                                                                                                                                                                                          | 2 km         |
| Curved tunnel                | 1 km                                                                                                                                                                                                                          | 1 km         |

| CERTIFICATIONS <sup>3</sup> |                     |
|-----------------------------|---------------------|
| North America               | FCC, ISED           |
| Latin America               | MTC, SUBTEL, ANATEL |
| Europe and Middle East      | CE, UKCA            |
| Asia and Australia          | ACMA                |

<sup>1</sup> The Vibration Meter has good impact resistance. However it should be treated carefully like any precision instrument.

<sup>2</sup> The distances have been tested by Worldsensing and have been accomplished in actual projects using the standard antenna. However, radio range depends on the environment so these distances are only indicative. Consult with us for your application.

<sup>3</sup> Reach out to us for more information on product certifications.

#### ACCESSORIES<sup>4</sup>

|                           |                                                                                                                                                                                                                                                                                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LS-ACC-G7-VP              | Mounting plate for medium-size nodes for magnetic fix to structures. Attachment option: LS-ACC-MAG                                                                                                                                                                                                  |
| LS-ACC-IN15-HP            | Versatile plate for horizontal surface mounting recommended for both horizontal and vertical mounting. Attachment option: anchor rods or glue. Includes a threaded hole available for installing a monitoring prism or a button head screw for precise leveling                                     |
| LS-ACC-IN-HPTM            | Horizontal surface mounting plate for track monitoring. Attachment option: glue                                                                                                                                                                                                                     |
| LS-ACC-IN15DP             | Versatile double plate for horizontal surface mounting; suitable for applications that need to eliminate the need to open the casing during installation. Attachment option: glue. Includes a threaded hole available for installing a monitoring prism or a button head screw for precise leveling |
| LS-ACC-ANT-LORA           | Mount bracket. Enables LoRa antenna mounting with extension with clamps/rods                                                                                                                                                                                                                        |
| LS-ACC-ANC-H <sup>5</sup> | Kit of 3 anchor rods for injection MB. 110 mm length. Nuts and washers included                                                                                                                                                                                                                     |
| LS-ACC-MAG <sup>6</sup>   | Kit of 3 magnets. Ø 32 mm, strength approx. 30 kg, screws included                                                                                                                                                                                                                                  |
| WS-ACC-CELL-1D            | Saft LSH20 D-size spiral cell 3.6 V                                                                                                                                                                                                                                                                 |
| LS-ACC-ANTE-G7            | Antenna cable extension RP-SMA(M)/RP-SMA(F) 2.5 m. Only compatible with LSG7ACL-BXLH-VIB                                                                                                                                                                                                            |
| WS-ACC-G7-USBC            | 1 m USB-C to USB-C cable for G7 Edge devices                                                                                                                                                                                                                                                        |

<sup>4</sup> Other mounting brackets and accessories available upon request.

<sup>5</sup> The kit can be used to fix the following mounting kits: LS-ACC-IN15-HP, LS-ACC-IN15-VP, LS-ACC-LAS-AP, LS-ACC-LAS-SB.

<sup>6</sup> The kit of 3 magnets can be used to fix the LS-ACC-IN15-VP mounting plate. Only available in Europe.

#### GENERAL DISCLAIMER:

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