RF4
Catalogue

Document version: v3.7
The ISAW sensors are robust, high performance, zero-maintenance sensors, ideal for a wide range of applications.

This catalogue lists all RainFlow sensor equipment. For more information about the specifications and operation of the sensors, please refer to the User Guide available at www.isaw-products.com.

The articles and dimensions described in this catalogue may be subject to change.
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The extremely robust and zero-maintenance RainFlow RF4 sensor is an evolving acoustic instrument for the comprehensive measurement of the type, amount, intensity and structure of liquid and solid precipitation.

- Non obstructable, sealed instrument with no mobile parts
- Low-power, omni-directional
- Corrosion free and resistant to the highest winds and the most extreme conditions and environments
- Plug-and-Play, user-configurable intelligent sensor
- Analog outputs and digital communication
- Can be connected to almost any external central unit or peripheral
- Supports SDI-12, Modbus RTU RS485, and IoT compatible (internal processing and memory)
- Swiss made

**Typical applications**

- Meteorology (liquid and solid precipitation, rain and hail, hydrometeors)
- High resolution rain and hail monitoring and warning
- Roadside, railway, airport protection
- Building and infrastructure surveillance and insurance
- Land management (flood warning, soil erosion)
- Agriculture
- Maritime and offshore applications (wind turbines, buoys)
- Mining industry
- Applied scientific research

RAINFLOW ACCESSORIES

- FLARM  Mounting kit for RainFlow RF4 sensor
- TMAST  Tripod mast
- UDONG  USB link dongle
- MOBUS  Modbus adapter
- JUBOX  Junction box for cable extension
- CABEX  Extension cable
The RF4 mounting kit is composed of 1 flat arm fastened to V brackets adaptable to a mast of outer diameter between 22 and 124 mm.

The arm is from 0° to 90° tiltable (compatibility with all possible orientations of mast).

It can also be screwed directly onto a flat surface.

**Note:** All screw threads are M10.

*All dimensions are in mm*
TMAST is a lightweight, robust, cost-effective and universal stainless steel tripod mast that is easily transportable. It allows all the usual ISAW sensor mountings, as well as supporting additional sensors or all other accessories or auxiliary equipment.

The mast is dismountable (3 parts) and equipped with 3 tiltable legs and a lightning rod.

All dimensions are in mm
**UDONG | USB Link accessory**

The USB link dongle (UDONG), provided with the sensors, is a direct physical connection accessory from the sensor to a USB port. It enables the sensor’s power supply and the immediate use of all the software features of the ISAW-TOOLBOX freeware. The USB dongle is generic and can thus be used or interchanged with all ISAW sensors.

*All dimensions are in mm*

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**MOBUS | Modbus Adapter**

The ISAW Modbus RTU RS485 Adapter (MOBUS) enables the power supply and connection of any ISAW sensor to a Modbus network. MOBUS is the recommended accessory to interconnect the sensor through the open serial Modbus RTU (RS-485) protocol based on a master/slave or client/server architecture. The fieldbus environment is the base level group of digital networks in the hierarchy of plant networks.

*All dimensions are in mm*
# JUBOX Junction box for cable extension

Each sensor is delivered with a 3 m cable. Use JUBOX and CABEX to extend this default length.

JUBOX is a simple high quality standard IP68 aluminum enclosure junction box for extending the 3 m factory cable of the ISAW sensor with an extension cable of any length up to typically 200 m. On the outside, the box is pre-equipped with two M12 × 1.5 (E No 121 097 318) brass cable glands, accepting cables diameter between 5 and 6.5 mm. Inside, it is equipped with two 8-pin terminals including a 8-pin screw connector to connect any ISAW sensor with an extension cable or chaining several extension cables.

You can order the JUBOX together with the cable extension CABEX of your desired length (up to 100 m), or use your own extension cable (with possibly only the number of conductors that you intend to use). Just be sure to use a cable with electrical characteristics close to the ones of the original factory cable: **LÜTZ SUPERFLEX ® TRONIC (C) PUR 7×0.25, ref. 117103.**

*All dimensions are in mm*

# CABEX Extension cable

Each sensor is delivered with a 3 m cable. Use JUBOX and CABEX to extend this default length.

CABEX is a 7 × 0.25 mm² cable (**LÜTZ SUPERFLEX ® TRONIC (C) PUR 7×0.25, ref. 117103**) prepared with bootlace ferrules at each conducting wire, both ends, so it is ready to be plugged into the 8-pin screw terminals of the JUBOX, the UDONG USB dongle terminal block or any other terminal of your choice.

Length upon request, max. 100 m.

**Note:** For length > 100 m, use several extension cables and as many junction boxes JUBOX.
The RainFlow RF4 sensor is available in the following configurations:

<table>
<thead>
<tr>
<th>ORDER REF.</th>
<th>Description</th>
<th>Set content</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF4</td>
<td>RainFlow sensor only</td>
<td>1 1 1 1</td>
</tr>
<tr>
<td>RFBRA</td>
<td>RainFlow sensor with mounting kit</td>
<td>1 1 1 1</td>
</tr>
<tr>
<td>RFMAS</td>
<td>RainFlow sensor fastened on a tripod mast</td>
<td>1 1 1 1</td>
</tr>
</tbody>
</table>

**RF4**

![Image of RF4 sensor]

**RFMAS**

![Image of RFMAS sensor]

**RFBRA**

![Image of RFBRA sensor]
Dimensions

<table>
<thead>
<tr>
<th>RF4</th>
<th>RFMAS</th>
</tr>
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<tbody>
<tr>
<td><img src="image1" alt="RF4 Diagram" /></td>
<td><img src="image2" alt="RFMAS Diagram" /></td>
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</table>

<table>
<thead>
<tr>
<th>RFBRA</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="RFBRA Diagram" /></td>
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</table>

**Note**: Factory cable length: 3 m

*All dimensions are in mm*
### PACKAGES CONTENT

<table>
<thead>
<tr>
<th>Item Ref.</th>
<th>Description</th>
<th>Quantity / Set</th>
<th>RF4</th>
<th>RFBRA</th>
<th>RFMAS</th>
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<tbody>
<tr>
<td>RF4</td>
<td>RF4 RainFlow sensor</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>FLARM</td>
<td>Flat arm</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BRA01</td>
<td>Front bracket</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRA02</td>
<td>Back bracket</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRA03</td>
<td>Reduction shim</td>
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<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK02S</td>
<td>Plastic sleeve</td>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SK110</td>
<td>M10 × 110 mm screw</td>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SK070</td>
<td>M10 × 70 mm screw</td>
<td></td>
<td>3</td>
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<td></td>
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<tr>
<td>SK040</td>
<td>M10 × 40 mm screw</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SK012</td>
<td>M10 × 12 mm screw</td>
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<td>2</td>
<td></td>
</tr>
<tr>
<td>SK10N</td>
<td>M10 securing nut</td>
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<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CBTUB</td>
<td>Cable protection tube</td>
<td></td>
<td>1 × 3 m</td>
<td>1 × 3 m</td>
<td>1 × 3 m</td>
</tr>
<tr>
<td>CBTIE</td>
<td>Tie wrap</td>
<td></td>
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<tr>
<td>UDONG</td>
<td>USB dongle</td>
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<tr>
<td>TMAST</td>
<td>Tripod mast (see TMAST Package content)</td>
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### Sensor

![Sensor](image1)

<table>
<thead>
<tr>
<th>Mounting kit</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2" alt="FLARM" /></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Tripod mast</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image6" alt="TMAST" /></td>
</tr>
</tbody>
</table>

### Cable protection

![CBTUB](image7)  
![CBTIE](image8)

<table>
<thead>
<tr>
<th>USB dongle</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image9" alt="UDONG" /></td>
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</tbody>
</table>

### Screw kit

![SK02S](image10)  
![SK110](image11)  
![SK070](image12)  
![SK040](image13)  
![SK012](image14)  
![SK10N](image15)

<table>
<thead>
<tr>
<th>Screw kit</th>
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</thead>
<tbody>
<tr>
<td><img src="image16" alt="SK10N" /></td>
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### TMAST Package content (for RFMAS only)

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<th>Ref.</th>
<th>Description</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>TM01</td>
<td>Leg with inclinable foot</td>
<td>3</td>
</tr>
<tr>
<td>TM02</td>
<td>Base tube</td>
<td>1</td>
</tr>
<tr>
<td>TM03</td>
<td>Mid tube</td>
<td>1</td>
</tr>
<tr>
<td>TM04</td>
<td>Top tube</td>
<td>1</td>
</tr>
<tr>
<td>TM05</td>
<td>Lightning rod</td>
<td>1</td>
</tr>
<tr>
<td>SK025</td>
<td>M10 × 25 mm screw</td>
<td>12</td>
</tr>
<tr>
<td>SK080</td>
<td>M10 × 80 mm screw</td>
<td>9</td>
</tr>
<tr>
<td>SK10N</td>
<td>M10 securing nut</td>
<td>9</td>
</tr>
</tbody>
</table>

### Mast kit

- TM01: Leg with inclinable foot
- TM02: Base tube
- TM03: Mid tube
- TM04: Top tube
- TM05: Lightning rod

### Screw kit

- SK025: M10 × 25 mm screw
- SK080: M10 × 80 mm screw
- SK10N: M10 securing nut
MOUNTING INSTRUCTIONS

- RFBRA
- RFMAS
- TMAST
RFBRA Mounting instructions

- For a MAST OF OUTER DIAMETER $\geq 60$ mm, replace the screws SK040 with SK070.
- For a MAST OF OUTER DIAMETER $\geq 65$ mm, remove the reduction shims (BRA03).
- To fasten the sensor on a FLAT SURFACE, screw the front brackets (BRA01) directly onto the surface.
- The sensor’s cable must be tightly secured to the arm and mast using the provided protection tube (CBTUB) and tie wraps (CBTIE).
- **WARNING:** In case of shortening the factory cable, you will lose the BLACK (POWER GND) wire, because it is an extension of the shield of the cable. Thus, we recommend **never to shorten the factory cable.** Should you be obliged to, you must absolutely treat the shield as the BLACK (POWER GND) conductor, that is, protect the nude shield with a black thermo sleeve, crimp a terminal, and make sure to connect it to the GND of your connected device.
See TMAST Mounting Instructions to assemble the tripod mast (TMAST).

The sensor’s cable must be tightly secured to the arm and mast using the provided protection tube (CBTUB) and tie wraps (CBTIE).

WARNING: In case of shortening the factory cable, you will lose the BLACK (POWER GND) wire, because it is an extension of the shield of the cable. Thus, we recommend never to shorten the factory cable. Should you be obliged to, you must absolutely treat the shield as the BLACK (POWER GND) conductor, that is, protect the nude shield with a black thermo sleeve, crimp a terminal, and make sure to connect it to the GND of your connected device.
TMAST Mounting instructions (for RFMAS only)
MOUNTING EXAMPLES

On a vertical, horizontal (or oblique) cylindrical mast with an outer diameter of 40 mm, use the provided V brackets.

On a vertical, horizontal (or oblique) cylindrical mast with an outer diameter of 25 mm, use the provided V brackets and reduction shims.

On a flat surface, screw the V brackets (or the arm directly) onto the surface.
INTERFACING EXAMPLES