HF4
Catalogue

$\mathsf{C}\,\mathsf{E}$

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The ISAW sensors are robust, high performance, zero-maintenance sensors ideal for a wide range of applications.

*This catalogue lists all **HailFlow 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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HAILFLOW SENSOR

HF4	HailFlow

Note: Factory cable length: 5 m

The extremely robust and reliable HailFlow HF4 sensor is a highly specialized acoustic instrument for the detection of hail and the characterisation of hailstone size.

- 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 (hail, solid precipitation, lithometeors)
- High resolution hail monitoring and warning
- Roadside, railway, airport protection
- Building and infrastructure surveillance and insurance
- Agriculture
- Land management
- Maritime and offshore/seashore applications (wind turbines, buoys)
- Applied scientific research

For more information about the sensors and their configuration, please refer to the **User Guide** available on www.isaw-products.com.

HAILFLOW SET: HFBRA

The HailFlow HF4 sensor is available in the following configuration:

HFBRA – HailFlow sensor with mounting kit

HF4 + AVARM
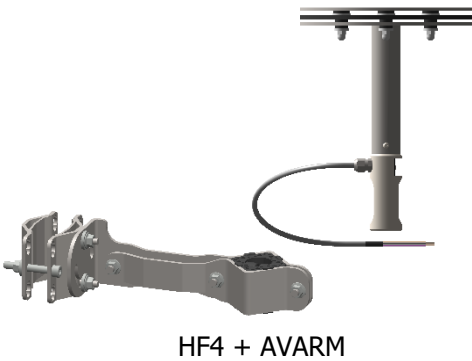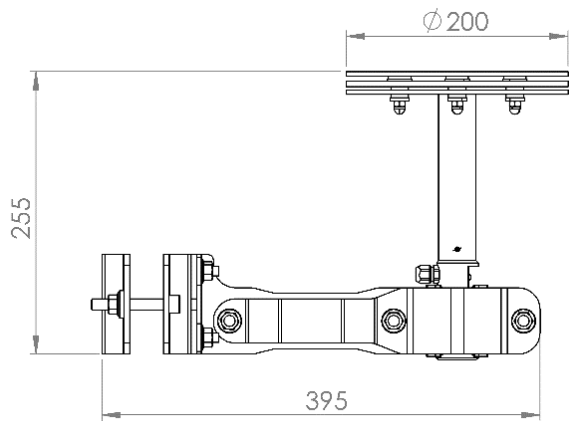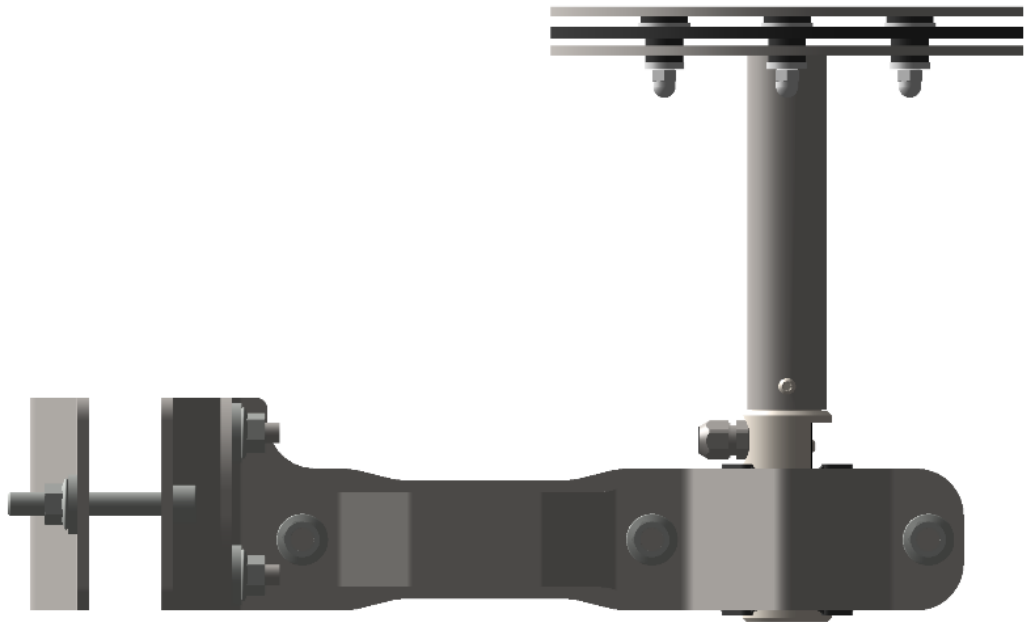
Notes: Factory cable length: 5 m
Each sensor is delivered with an USB Link accessory.

HAILFLOW ACCESSORIES

Available accessories:

| REF.	Description	Can be ordered separately
AVARM	Mounting kit (included in **HFBRA**)	
TMAST	Tripod mast	●
UDONG	USB link accessory (provided with each **HF4** sensor)	
MOBUS	Modbus adapter	●
EXT10	Extension cable, 10 meters	●

AVARM – Fastening (mounting kit)
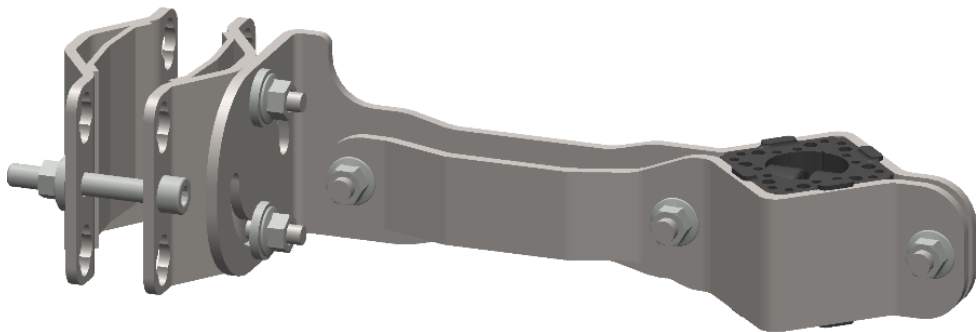
The HF4 standard mounting kit is composed of a fastening arm with elastic coupler, equipped with V brackets adaptable to a mast or structure of outer diameter between 16 and 82 mm. The elastic coupler protects the sensor from the possible parasitic vibrations of the connected structure.

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

It can also be screwed directly onto a flat surface. See mounting examples on page 15.
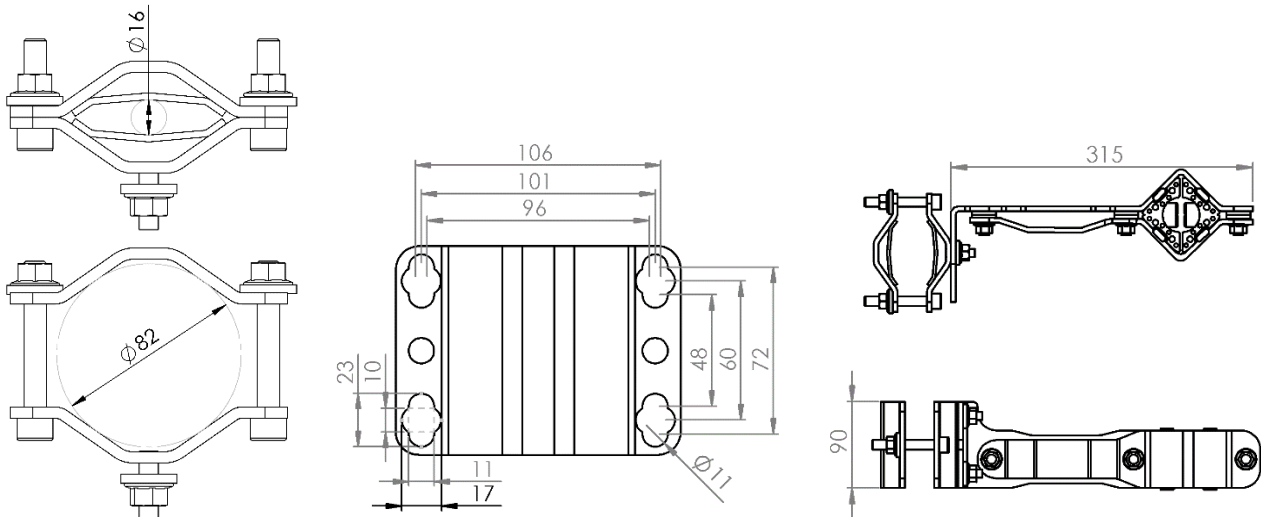
All dimensions are in mm

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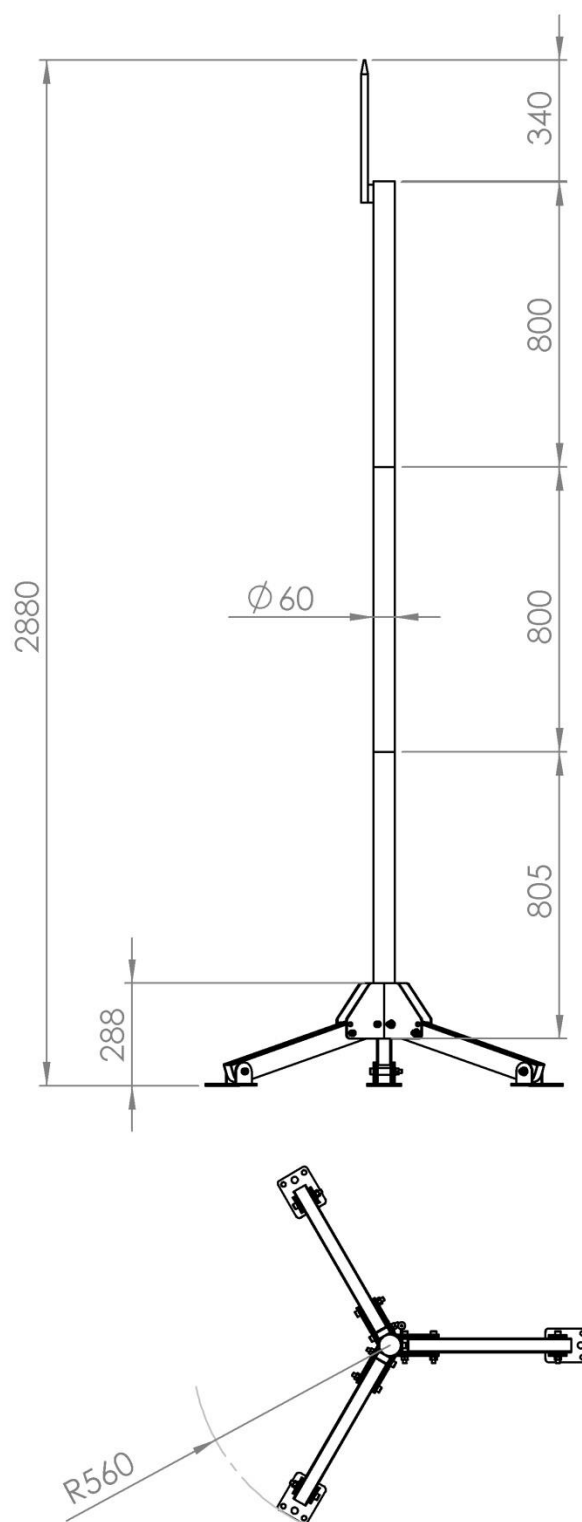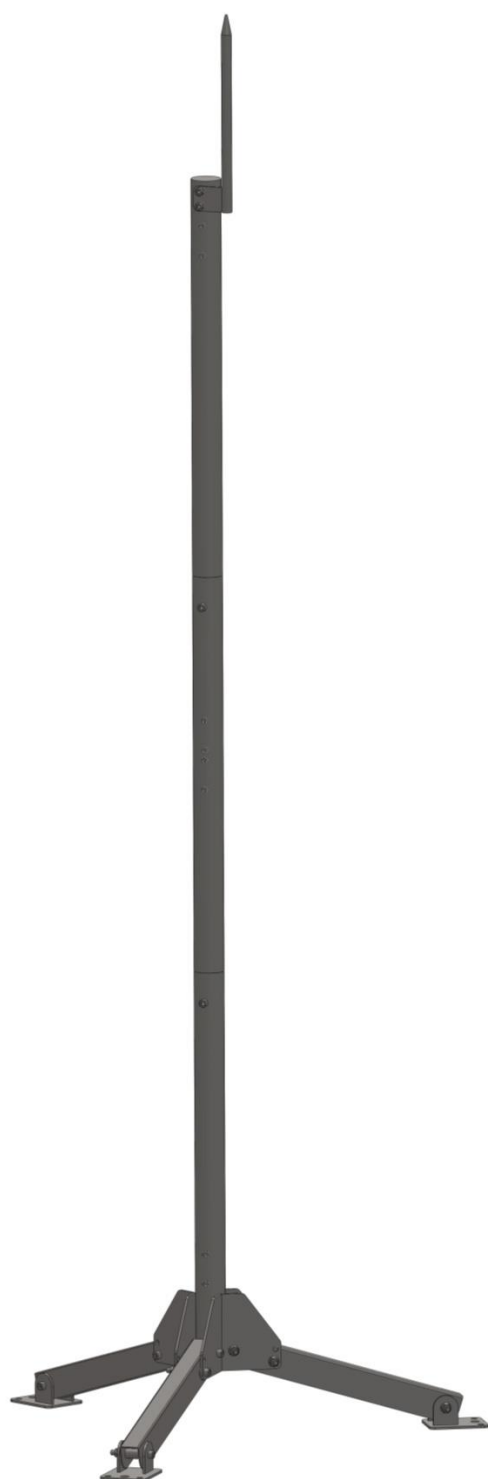
TMAST is a lightweight, robust, cost-effective and universal stainless steel tripod mast that is easily transportable. It allows all the usual ISAW sensor mountings, as well as supporting additional sensors or all other accessories or auxiliary equipment.

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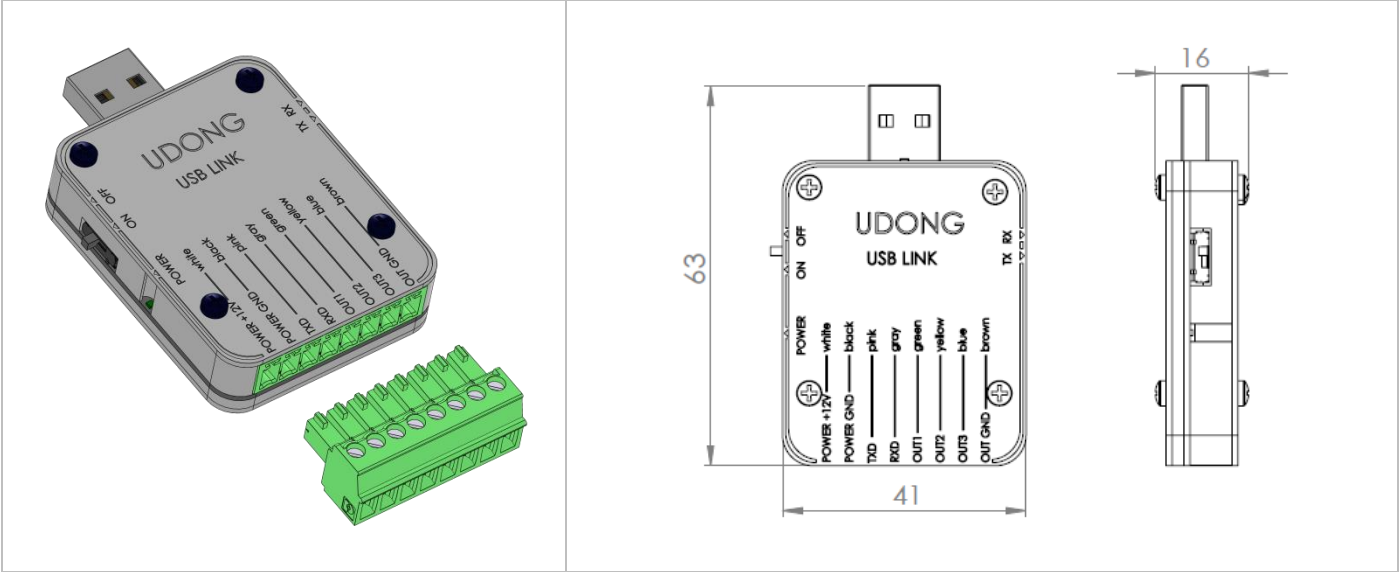
The USB link dongle (UDONG), provided with the sensors, is a direct physical connection accessory from the sensor to a USB port. It enables the sensor's power supply and the immediate use of all the software features of the ISAW-TOOLBOX freeware. The USB dongle is generic and can thus be used or interchanged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

All dimensions are in mm

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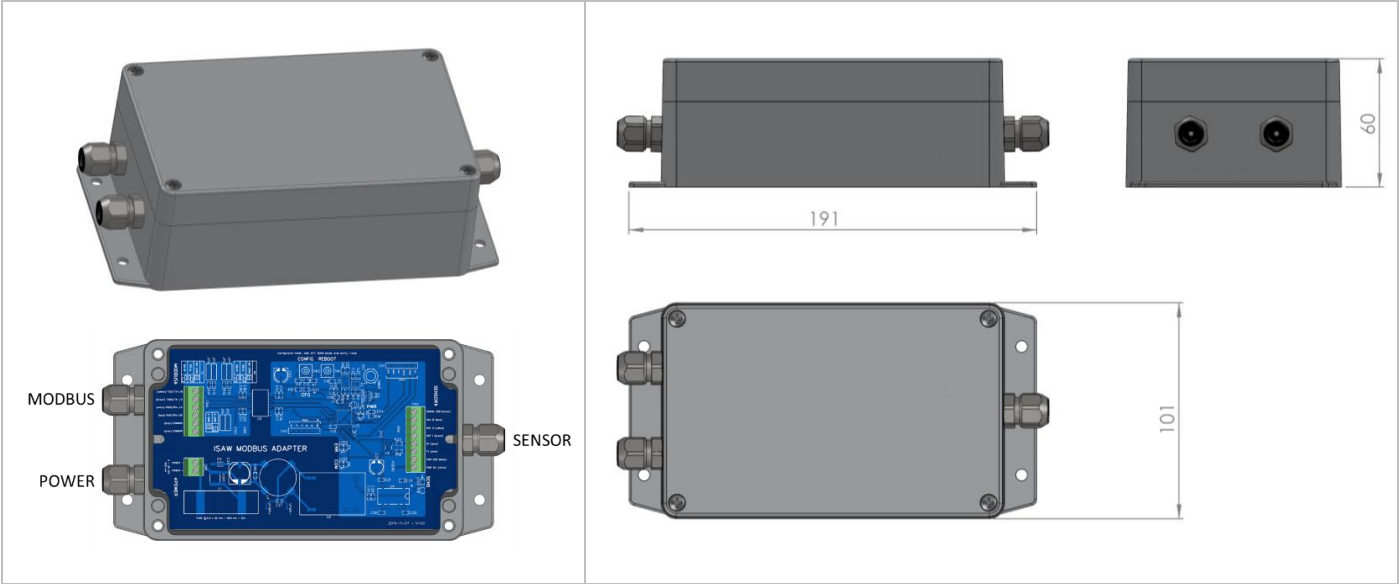
The ISAW Modbus RTU RS485 Adapter (MOBUS) enables the power supply and connection of any ISAW sensor to a Modbus network. MOBUS is the recommended accessory to interconnect the sensor through the open serial Modbus RTU (RS-485) protocol based on a master/slave or client/server architecture. The fieldbus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

All dimensions are in mm

EXT10 – Cable extension, 10 meters
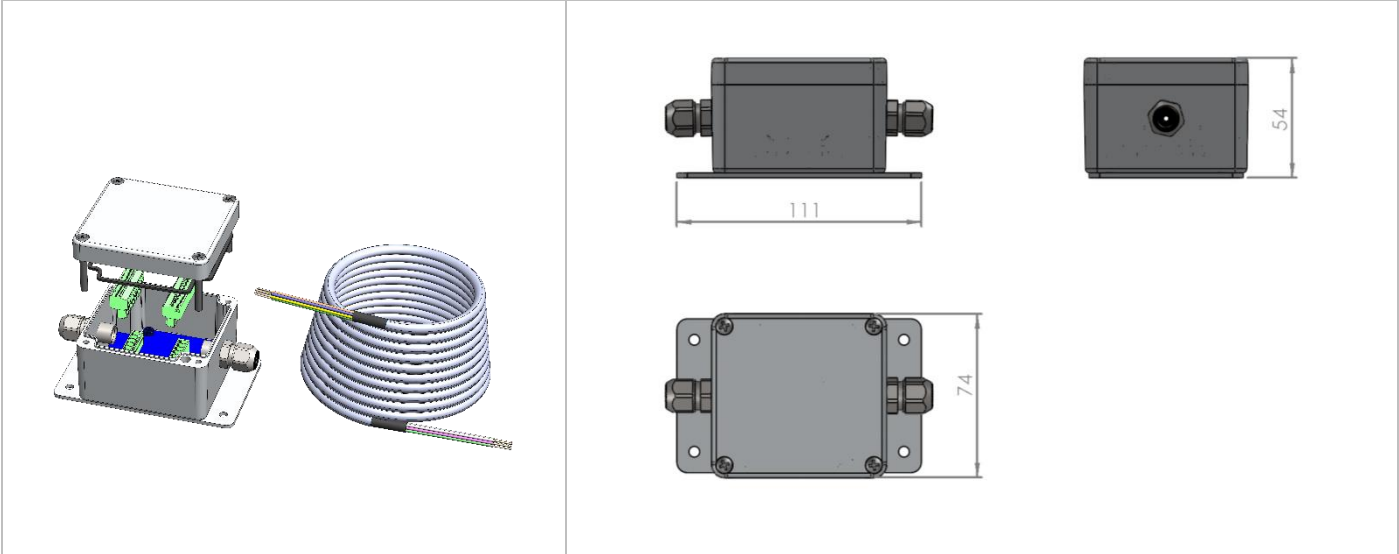
Each sensor is delivered with a 5 m cable (see specifications on page 10). Use one or several EXT10 cable extensions to extend this default length up to typically 200 m.

EXT10 is a 10 meters extension of the sensor cable. It is equipped at one end with an IP68 aluminum enclosure junction box, which contains an 8-pin screw connector to connect any ISAW sensor or chaining several EXT10 extension cables.

All dimensions are in mm

HAILFLOW MOUNTING INSTRUCTIONS

- **HailFlow HF4 cable**

- **HailFlow Sets package content**

- **AVARM Mounting instructions**

- **TMAST Package content**
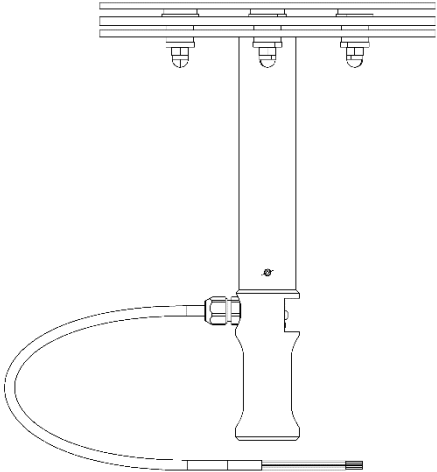
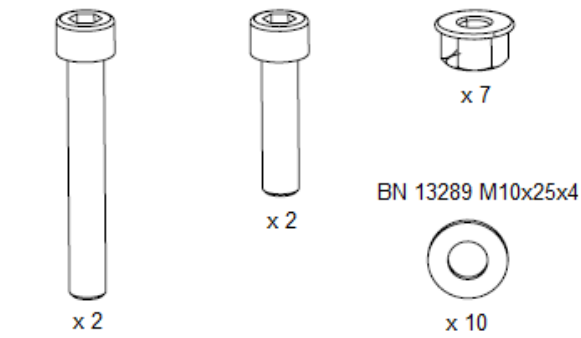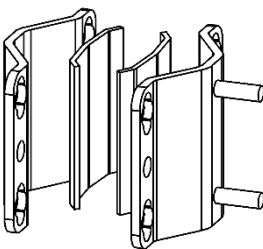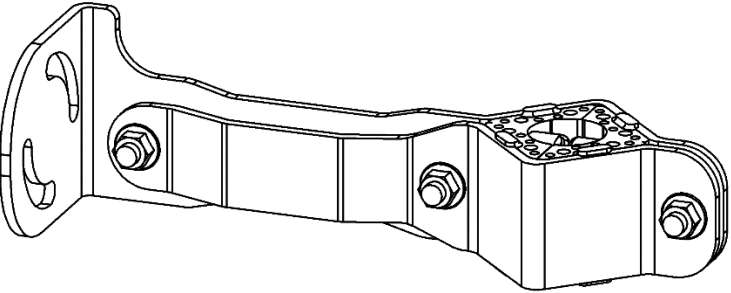- **TMAST Mounting instructions**

HailFlow HF4 cable

Each sensor is delivered with a **5 m cable** prepared with bootlace ferrules at each of its 8 conducting wires, ready to be plugged into the 8-pin screw terminals of the ISAW accessories or any other terminal of your choice.

The cable is a **LÜTZE SUPERFLEX ® TRONIC (C) PUR 7×0.25**, ref. 117103, with 7 conductors AWS 24 / 0.25 mm^2). The 8th conductor (color: BLACK) is a 10 cm length termination welded on the shield.
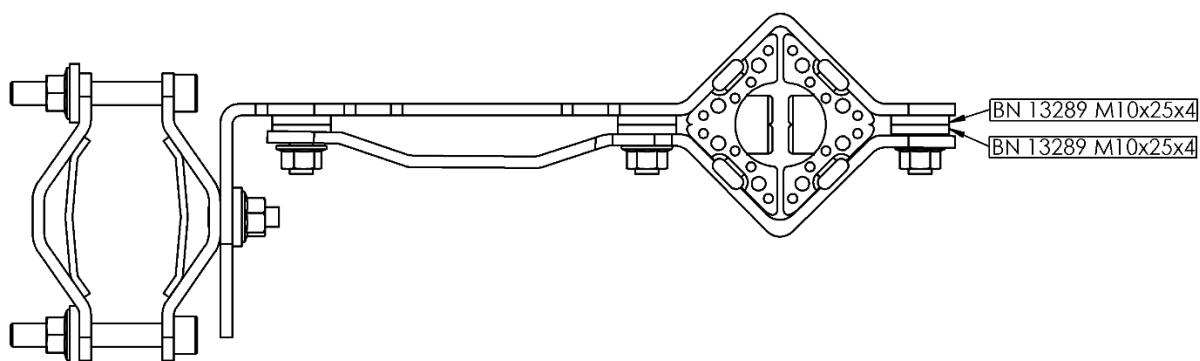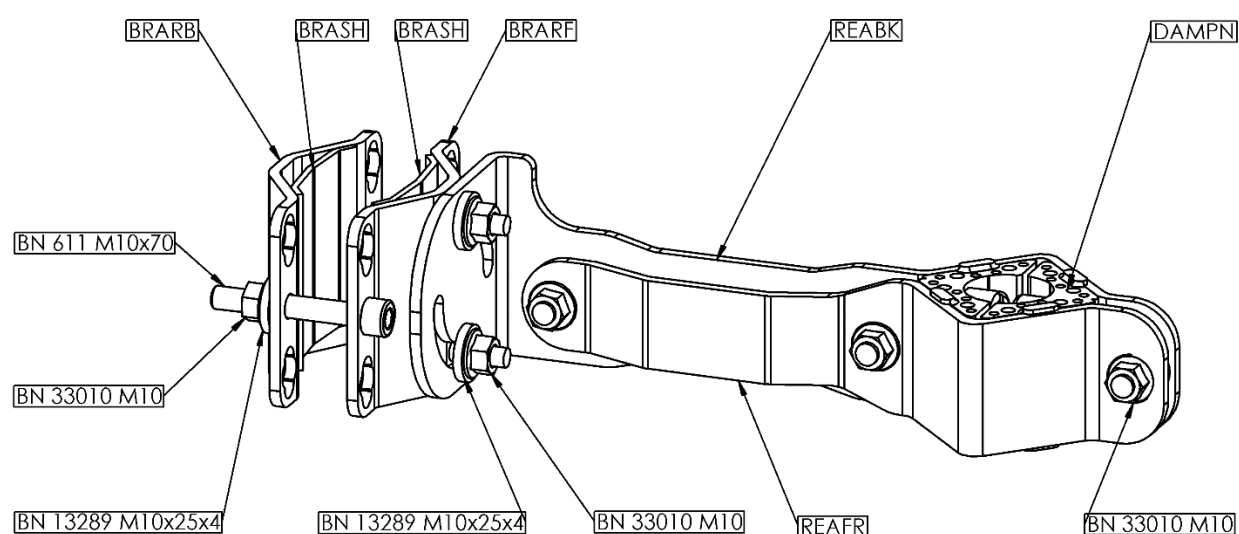
WARNING: It is strongly advised **not to shorten the factory cable**. Should you be obliged to, you must absolutely treat the shield as the BLACK (POWER GND) conductor, that is, protect the nude shield with a black thermo sleeve, crimp a terminal, and make sure to connect it to the GND of your connected device.

HailFlow sets Package content

Item ref.	Description	Quantity
		HFBRA
HF4	HF4 HailFlow sensor	1
UDONG	USB dongle	1
REAFR	Anti-vibration arm front piece	1
REABK	Anti-vibration arm back piece	1
DAMPN	Dampener	2
BRARF	Front bracket	1
BRARB	Back bracket	1
BRASH	Reduction shim	2
BN 611 M10X70	M10 × 70 mm screw	2
BN 610 M10X40	M10 × 40 mm screw	2
BN 13289 M10x25x4	M10 washer 4 mm thick	10
BN 33010 M10	M10 securing nut	7

Sensor

HF4

USB dongle

UDONG

Screw kit

BN 611 M10X70   BN 610 M10X40   BN 33010 M10

x 7

BN 13289 M10x25x4

x 2   x 2   x 10

Anti-vibration arm

REARM

Bracket kit

BRARB + 2xBRASH + BRARF

AVARM Mounting instructions

BRARB · BRASH · BRASH · BRARF · REABK · DAMPN
BN 611 M10x70
BN 33010 M10
BN 13289 M10x25x4 · BN 13289 M10x25x4 · BN 33010 M10 · REAFR · BN 33010 M10
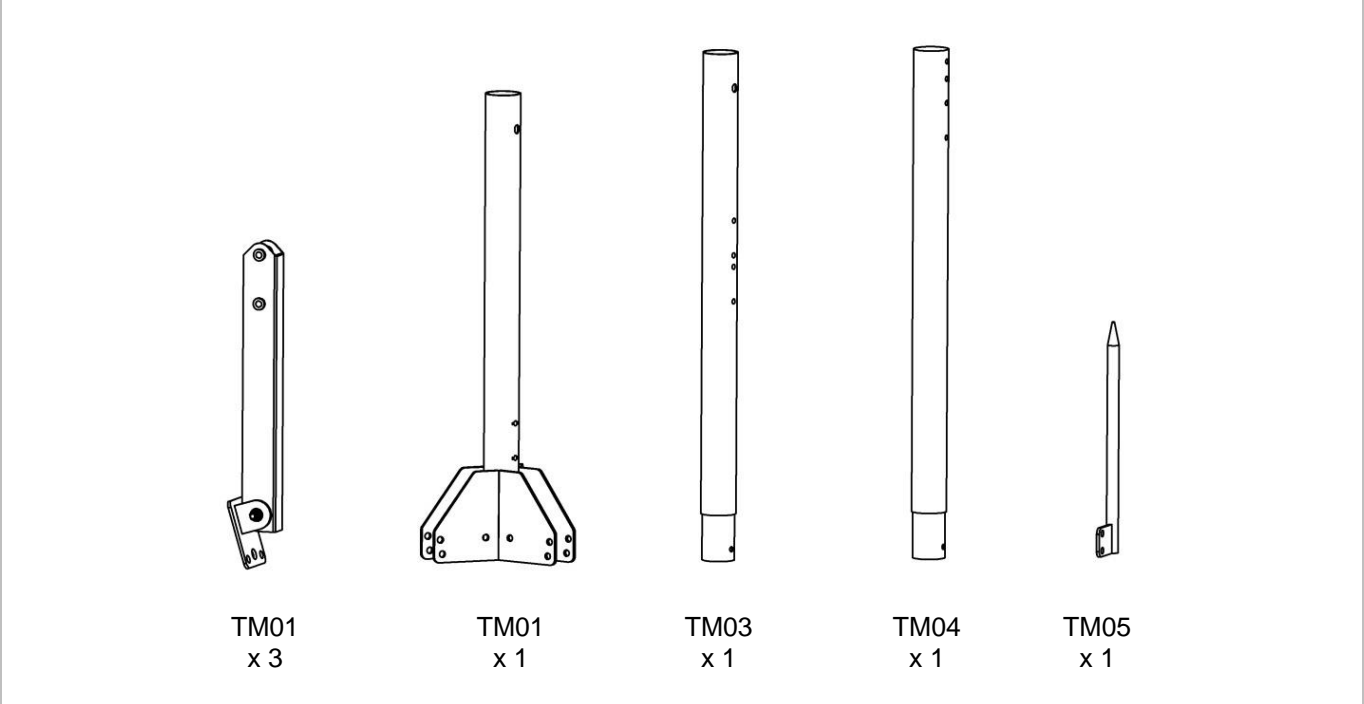

BN 13289 M10x25x4
BN 13289 M10x25x4

- For a **MAST OF OUTER DIAMETER < 60 mm,** replace the screws BN 611 M10X70 with provided BN 610 M10X40.
- For a **MAST OF OUTER DIAMETER ≥ 65 mm**, remove the reduction shims (BRASH).
- To fasten the sensor on a **FLAT SURFACE**, screw the front bracket (BRAFR) directly onto the surface.
- The sensor's cable must be **tightly secured** to the arm and mast using tie wraps.
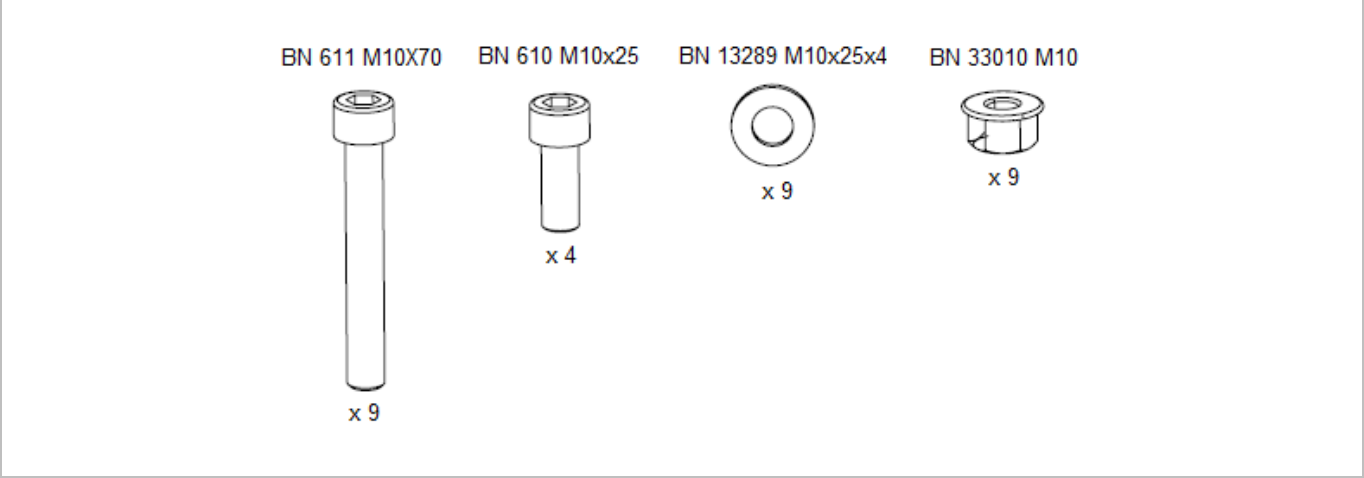
TMAST Package content

Ref.	Description	Quantity
TM01	Leg with inclinable foot	3
TM02	Base tube	1
TM03	Mid tube	1
TM04	Top tube	1
TM05	Lightning rod	1
BN 610 M10x25	M10 × 25 mm screw	4
BN 611 M10x70	M10 × 70 mm screw	9
BN 13289 M10x25x4	M10 washer 4 mm thick	9
BN 33010 M10	M10 securing nut	9

Mast kit

TM01
x 3

TM01
x 1

TM03
x 1

TM04
x 1

TM05
x 1

Screw kit

BN 611 M10X70

BN 610 M10x25

BN 13289 M10x25x4

BN 33010 M10

x 9

x 4

x 9

x 9

x 9

TMAST Mounting instructions

BN 610 M10x25

BN 610 M10x25

BN 33010 M10

BN 611 M10x70

BN 13289 M10x25x4
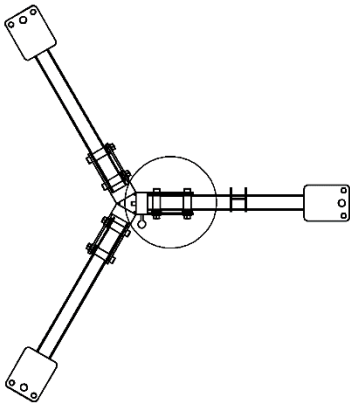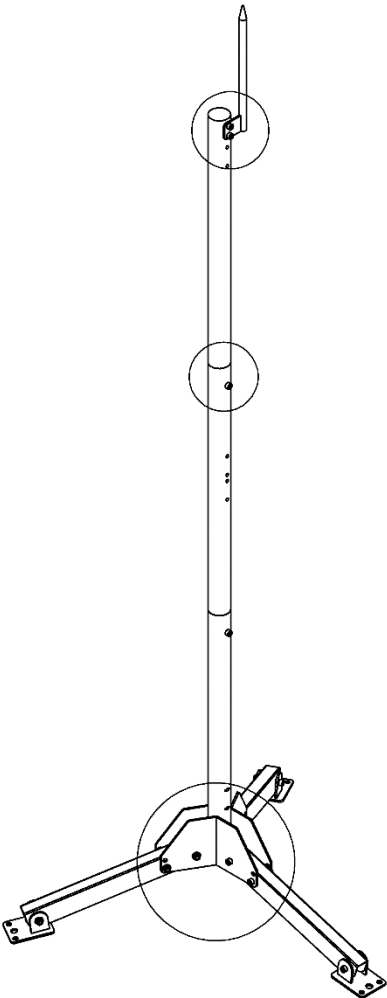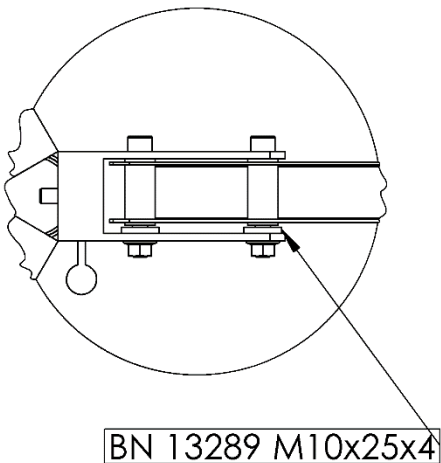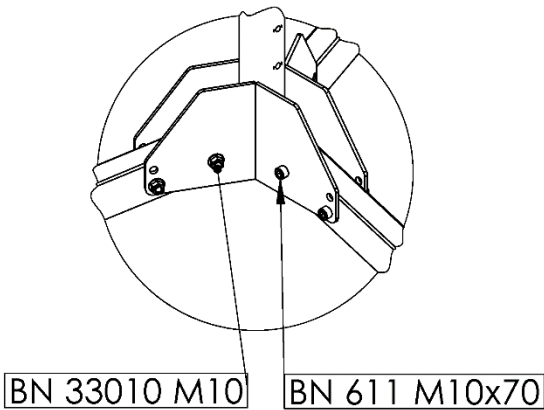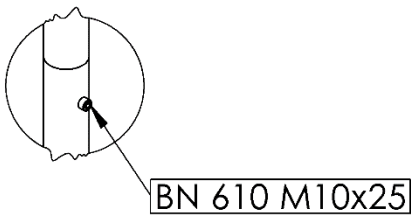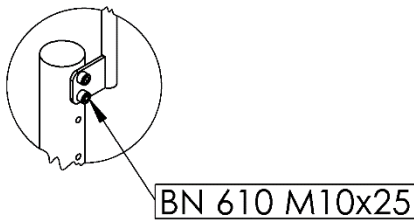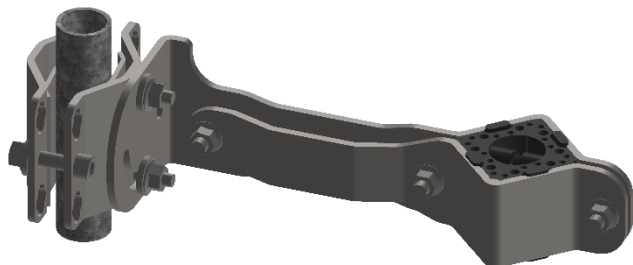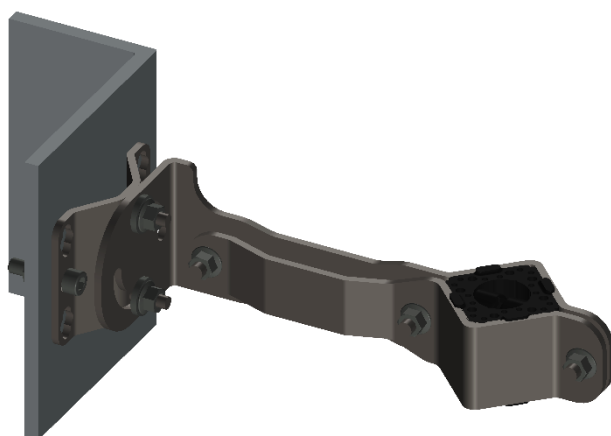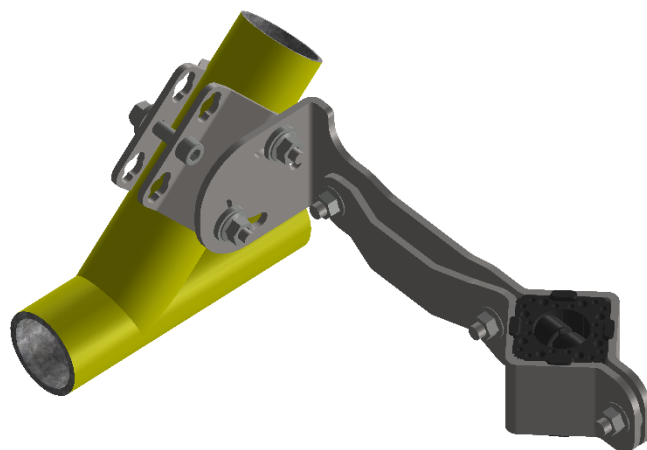
MOUNTING EXAMPLES

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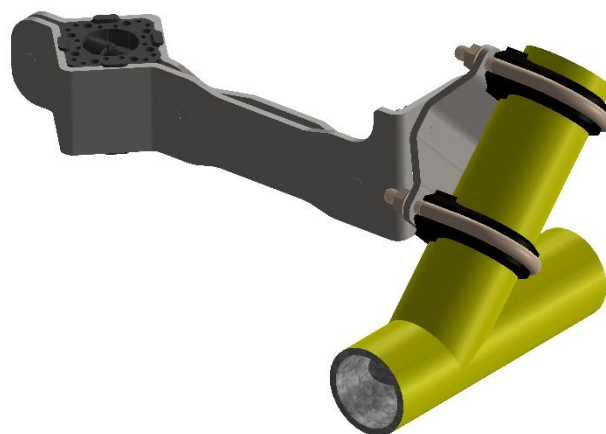

On a vertical, horizontal (or oblique) **cylindrical mast** with an outer diameter of **40 mm**, use the provided V brackets without the reduction shims.

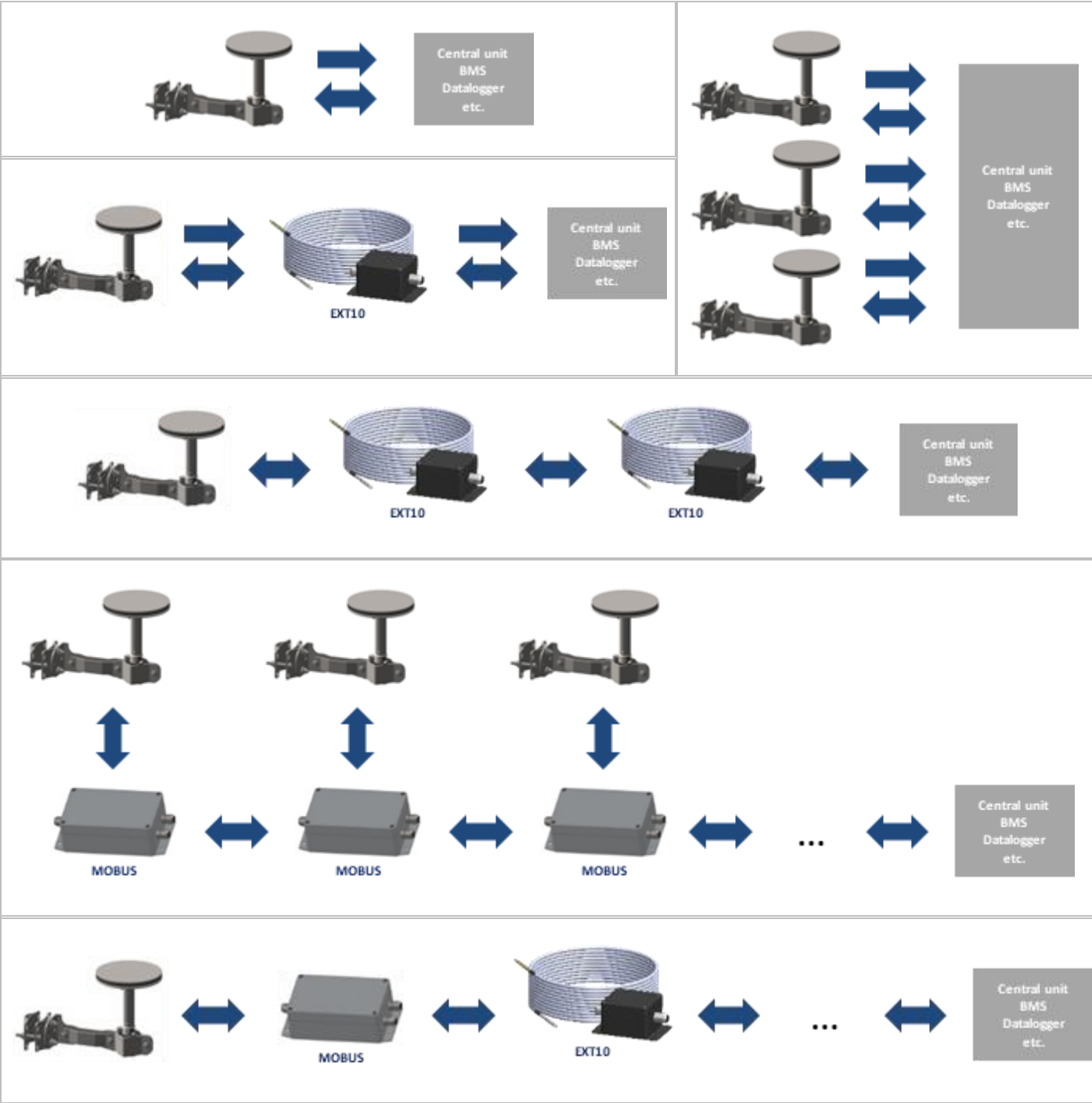On a **flat surface**, screw the front bracket onto the surface.

On an **inclined mast**, turn the arm to position the sensor vertically.

Alternative mounting using standard **U-Bolt** fasteners (not provided).

INTERFACING EXAMPLES

SPARE PARTS

	Item ref.	Short name		Full description	Quantity				
					HFBRA	UDONG	MOBUS	EXT10	TMAST
Sensor	HF4	HailFlow sensor		HailFlow HF4 sensor	1				
Mounting parts	REAFR	Fastening arm front piece		Fastening arm, front piece	1				
Mounting parts	REABK	Fastening arm back piece		Fastening arm, back piece	1				
Mounting parts	DAMPN	Dampener		Elastic coupler for fastening arm	2				
Mounting parts	BRARF	Front bracket		Front bracket for fastening arm	1				
Mounting parts	BRARB	Back bracket		Back bracket for fastening arm	1				
Mounting parts	BRASH	Reduction shim		Reduction shim	2				
Mast	TM01	Leg with inclinable foot		Leg with inclinable foot for supporting structure TMAST					3
Mast	TM02	Base		Base for supporting structure TMAST					1
Mast	TM03	Mid tube		Mid tube for supporting structure TMAST					1
Mast	TM04	Top tube		Top tube for supporting structure TMAST					1
Mast	TM05	Lightning rod		Lightning rod for supporting structure TMAST					1

	Item ref.	Short name		Full description	Quantity				
					HFBRA	UDONG	MOBUS	EXT10	TMAST
Acc.	JUBOX	Junction box		Junction box for cable extension EXT10				1	
Standard	BN 610 M10x12	M10 × 12 mm screw		Hex socket head cap screws fully threaded (DIN 912, ISO 4762), stainless steel A2, M10x12 (e.g., Bossard BN 610 Art. No. 3210794)					
	BN 610 M10x25	M10 × 25 mm screw		Hex socket head cap screws fully threaded (DIN 912, ISO 4762), stainless steel A2, M10x25 (e.g., Bossard BN 610 Art. No. 1233505)					4
	BN 610 M10X40	M10 × 40 mm screw		Hex socket head cap screws fully threaded (DIN 912, ISO 4762), stainless steel A2, M10x40 (e.g., Bossard BN 610 Art. No. 1032860)	2				
	BN 611 M10X70	M10 × 70 mm screw		Hex socket head cap screws partially threaded (DIN 912, ISO 4762), stainless steel A2, M10x70 (e.g., Bossard BN 611 Art. No. 1113356)	2				
	BN 611 M10x110	M10 × 110 mm screw		Hex socket head cap screws partially threaded (DIN 912, ISO 4762), stainless steel A2, M10x110 (e.g., Bossard BN 611 Art. No. 1488759)					
	BN 10342 M10x25x1.5	M10 washer 1.5 mm thick		Flat washers without chamfer, large outside diameter, stainless steel A2, M10/10.5/25/1.54 (e.g., Bossard BN 10342 Art. No. 3061838)					
	BN 13289 M10x25x4	M10 washer 4 mm thick		Flat washers without chamfer, for bolts with heavy duty type spring pins (DIN 7349), A2, M10/10.5/25/4 (e.g., Bossard BN 13289 Art. No. 3062099)	10				
	BN 33010 M10	M10 securing nut		Hex flange nuts (DIN 6923; EN 1661), stainless steel A2, M10 (e.g., Bossard BN 14476 Art. No. 1329359)	7				9
	TERM BLOCK PLUG 8POS STR 5.08MM	Terminal block plug		8 Position Terminal Block Plug, Male Pins 0.200" (5.08mm) 180° Free Hanging (In-Line) (e.g., On Shore Technology Inc. Art. No. OSTV8085150)				2	
	BALL	Calibrated wooden ball		Calibrated wooden ball - boxwood - 2.5 cm	1				