

p114 PalB10

10m height lowerable mast
Installation manual and user's guide

User Manual Vers. 00



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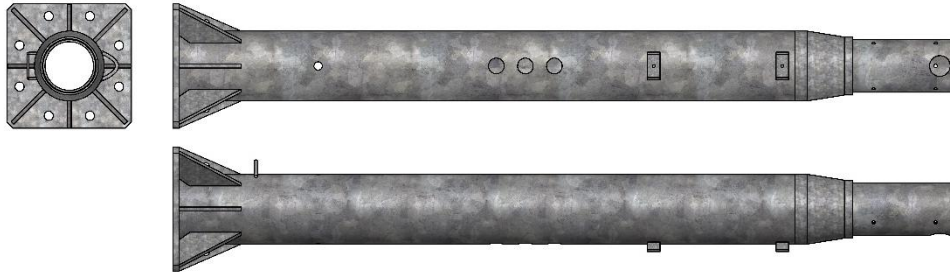
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1 Materials list

1.1 PalB10

PalB10 components:

Element n° 1



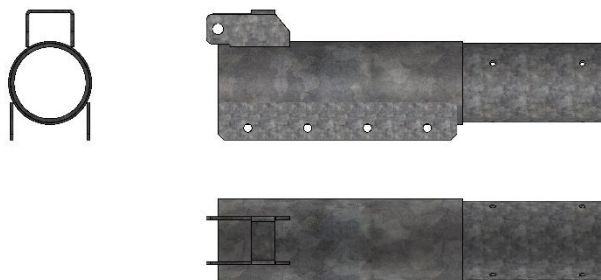
Characteristics: 300x300mmsquared base, 168mm diameter, 1890mm

Element n° 2



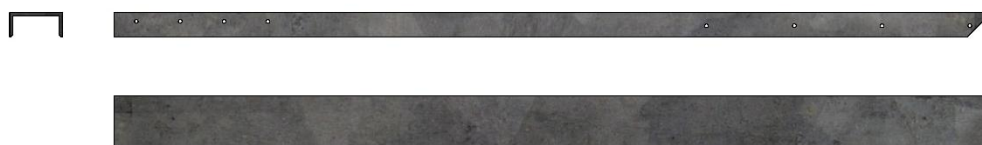
Characteristics: 139mm diameter, 1519mm total height, top part with hook for junction

Element n° 3



Characteristics: 139mm / 132mm diameter, 655mm total height, top part with hook for junction

Element n° 4



Characteristics: profile 120x55x7mm, 1900mm total height

Element n° 5



Characteristics: profile 160x65x7,5mm, 2000mm

Element n° 6



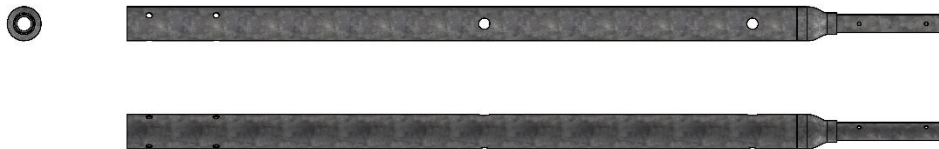
Characteristics: from 139mm to 101,6mm diameter, 1470mm

Element n° 7



Characteristics: from 114,3mm to 60,3mm diameter, 1852mm

Element n° 8



Characteristics: from 76,1mm to 40mm diameter, 1839mm

Element n° 9



Characteristics: 48mm diameter, 2000mm

2 Preparation for installation

2.1 Civil Works (plinth) for PalB10

The PalB10 be installed on an adequate foundation plinth with anchor bolts. In the Annex 1 is represented the plinth to be performed with features suitable for most type of installations.

You should execute works for the digging and burying of plinths made of concrete, joining inspection wells and the sheath of electrical connection between the different parts of the station (meteorological pole, pluviometric pole, nivometric pole, etc.).

In addition to the plinths, to ensure proper maintenance and management of electrical connections, will be used for connecting underground inspection wells (minimum size of 30x30x30cm) with exposed cover (not buried to ensure the inspection) where arrive the sheaths (made with spiral ducts made of plastic) from other elements of the station.

The works must be made "by the rule book" to ensure the adequate support of the mechanical parts of the station according to the type of ground on which you want to install the station.

You should choose a suitable site which has a sufficiently solid ground, so you do not have time failures that can lead to deterioration of the foundations themselves up to possible collapse of the mechanical parts of the station.

Siap+Micros can not therefore be held responsible for any structural failure or malfunction of the station caused by misinterpretation and / or arbitrary choices do not conform to those indicated in this manual.

2.2 PalB10

PalB10 is composed on the whole by 9 elements made of galvanized steel.

The elements insert into each other's and then secured with M10 grub screws with conic shape point, screwed onto relative nuts, welded on the mast itself.

Since the dimensions of the mast and the significant weight of different elements, please be extremely careful handling and installing them. Use suitable tools, like cranes with people racks and/or swinging arms of at least 10m high lift.

Important: during any given installation of an element, check with the levelling gauge that the element itself is perfectly in vertical position, and this kind of setting is made by acting on M10 grub screw.

2.3 Transducers, cables

All the sensors, or different electronic devices, directly attached to the mast or by brackets must be wired putting the cables into the right holes already placed onto the mast and making them getting off at the base of the mast itself, next to the three $\varnothing 38\text{mm}$ holes just below the data logger in the inner of a conduit.

Cables of devices sited on the bracket at 2m height should come out from the upper hole; cables of other devices (sited beyond the junction) should come out from the central hole. Cables coming from the pole base (devices not directly fixed to the pole, power supply 230Vac and LAN cable) should come out from the lower hole.

Pay attention to the cables coming from the devices located beyond the junction, in the mast tilting phase the cable must be long enough not to tear when the mast is come to a complete tilt; leave about a piece of cable 50cm long.

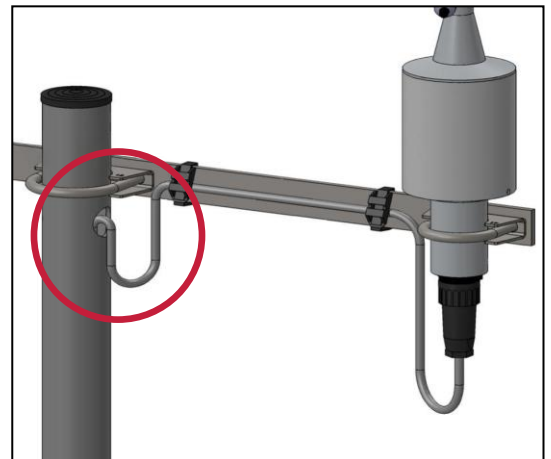
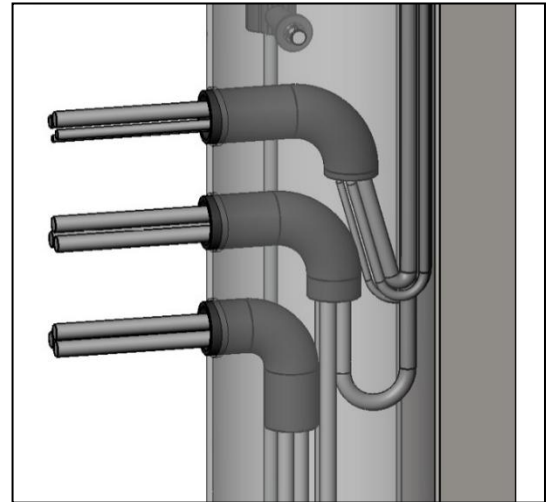
Pay attention to the cables coming from the well at mast base: they must be passed into the conduits and inserted into the first element of the pole; they have to come out from the lower hole $\varnothing 38\text{mm}$ before mast installation.

As shown in the previous picture, insert the conduit into the mast making it bend downwards (that is useful not to create water residual which could freeze and consequently break the conduit).

In the execution of wiring among the devices and the mast, is a good rule, once you do the electric connection, to secure the cable to the mast itself or to the brackets with some straps.

Then, before entering the cables into the fixation points already placed on the mast, is warmly suggested letting the cable be bended in order to avoid accumulation that could drain up in mast base (see the picture by side).

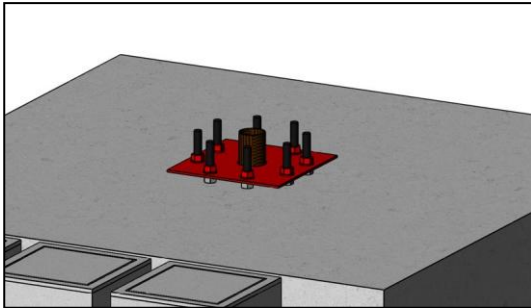
Moreover, in order not to compromise the good working of the electric connections, in the installation's phases please be careful to avoid every act which could damage cables and/or connectors: don't yank and don't pinch the cables, don't leave the connectors at extended and direct contact with water, don't trample them and don't roughly hit them.



3 PalB10 mechanical assembly

Indication of the phases for mechanical assembly of the different parts of the PalB10.

3.1 PalB10 mechanical parts assembly



Materials:

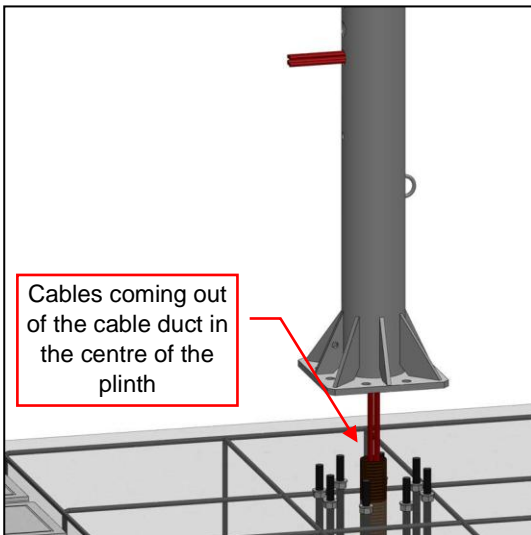
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Tools:

Size 27 wrench for M18 hex head

Activity:

Unscrew the 8 blocking nuts of the upper spacing plate.
Remove the 8 upper washers $\varnothing 18$ and the plate



Materials:

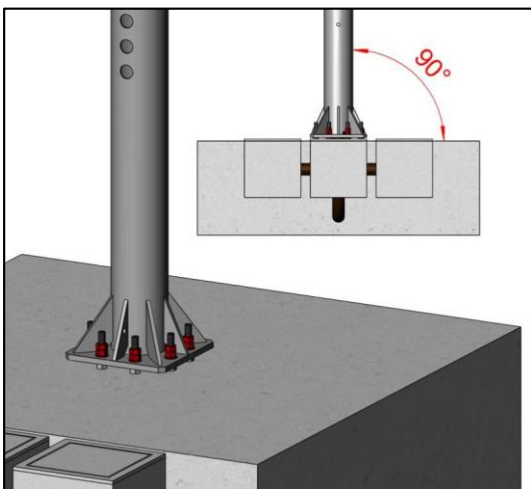
-

Tools:

-

Activity:

Before installing element n° 1, bring the cables coming from the conduit, pass them through the pole and exit them from the first $\varnothing 38\text{mm}$ hole present on the element n°1 (as shown in red in the picture here on the left)



Material:

PalB10 Element n° 1; n° 8 M18 nuts

Tools:

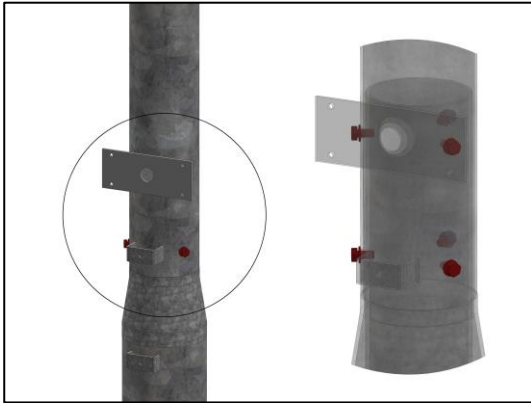
Size 27 wrench for M18 hex socket head; level/bubble level

Activity:

Install the base pole (element n°1) orientating it properly: the side with 3 $\varnothing 38\text{mm}$ holes is the front to be orientated to the South.

Reposition the 8 $\varnothing 18\text{mm}$ washers. With the level check if the element n°1 is perfectly vertical, if not, adjust it through the nuts below the base.

Once done, close tight the upper nuts and screw the remaining 8 M18 nuts



Materials:

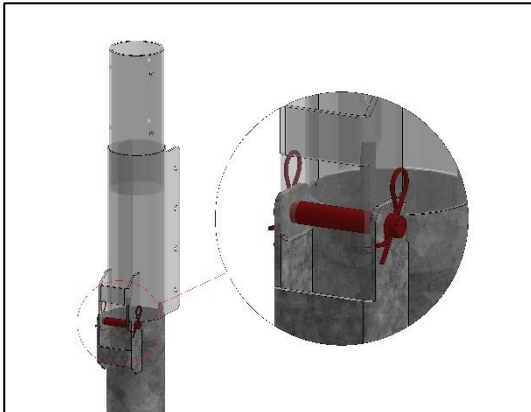
PalB10 Element n° 2; n° 6 hex head screws; n° 6 M10 flat washers

Tools:

17 size wrench for M10 hex head; level/bubble level

Activity:

Insert the element n°2 on the first element. Orientate it to make the $\varnothing 14\text{mm}$ holes would fit the M10 threaded holes of the element n°1. Fix it by screwing the 6 M10 screws and verify the verticality.



Materials:

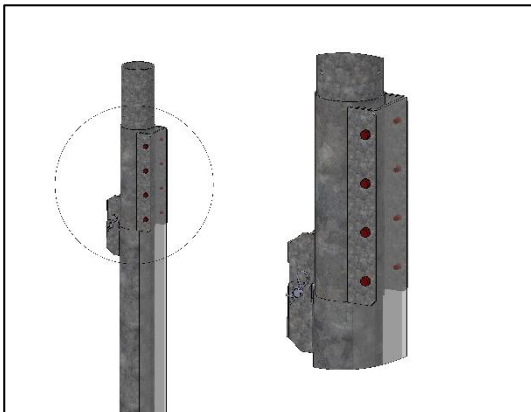
PalB10 Element n° 3; $\varnothing 18 \times 110$ pivot; n°2 pins

Tool:

-

Activity:

Insert element 3 on element 2 (as shown in the picture here on the left), insert the $\varnothing 18$ pivot and fix it by adding the 2 pins on the holes of the pivot



Materials:

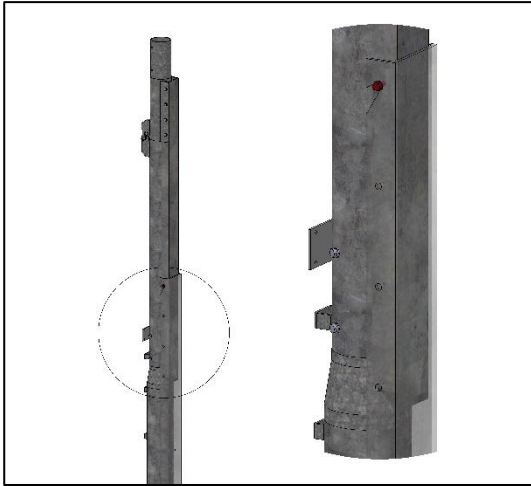
PalB10 Element n°; n° 8 TE M10x20 screws, n° 8 flat washers for M10

Tool:

Size 17 wrench for M10 hex head

Activity:

Fix element n°4 on the 2 welded plates of element n° 3 through the n° 8 TE M10x20 screws and the n° 8 flat washers for M10



Materials:

PalB10Element n° 5; n° 2 hex. head screws M10x35 and n° 2 flat washers for M10

Tools:

Size 17 wrench for M10 hex head

Activity:

Screw the 2 hex Head screws M10x35 and the related 2 washers on the 2 upper holes of element n°4 previously installed. These 2 will be the fixing point. Insert the 2 grooves of element n°5 on the 2 screws to let them sustain the profile.



Materials:

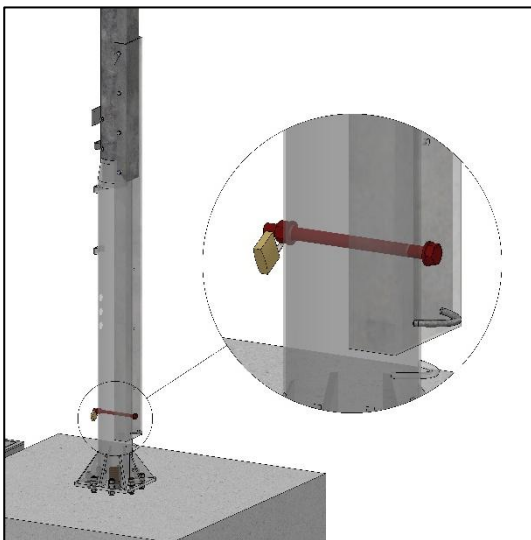
PalB10Element n° 5; n° 6 hex. head screws M10x35 and n° 6 flat washers for M10

Tools:

Size 17 wrench for M10 hex. head

Activity:

Screw the remaining 6 hex. Head M1x35 screws and the related washers on the remaining holes.



Materials:

Hex. Head M16x230 with hole screw, M16 nut and flat washer for M16, safety padlock

Tool:

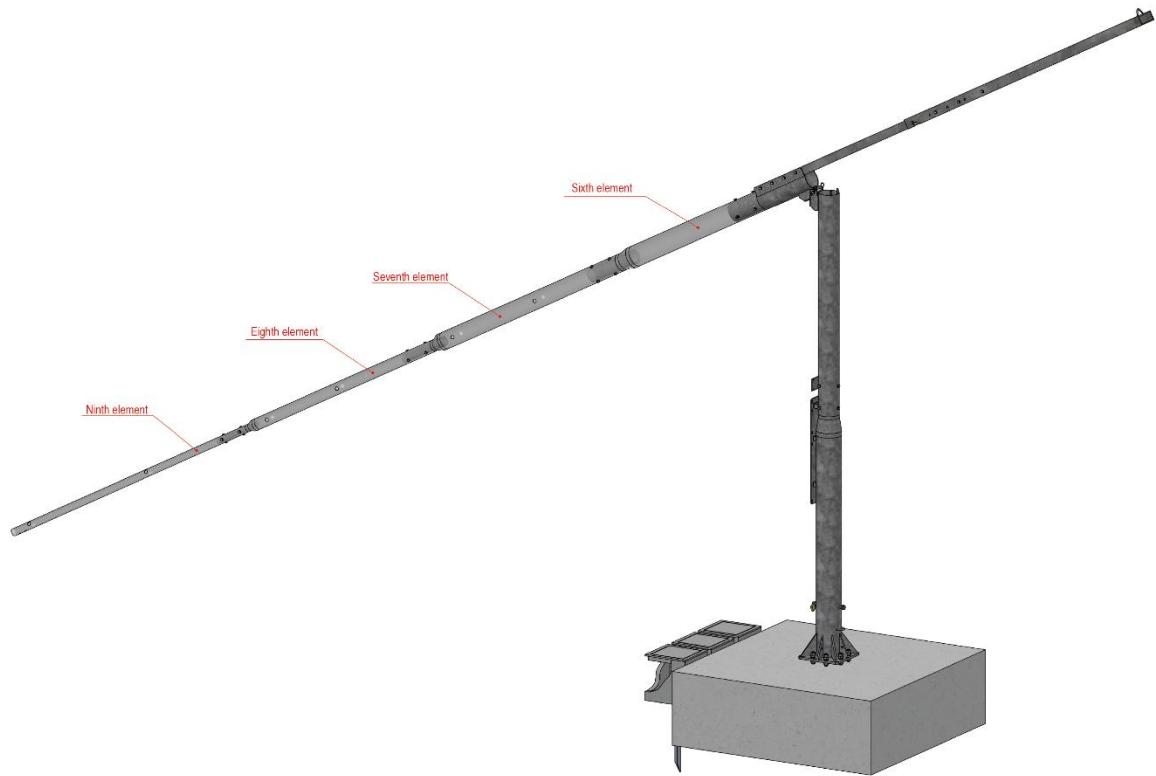
Size 24 wrench for M16 hex. Head

Activity:

To safe the pole knocking down, in the supply there is a screw (M16x230) with hole for the padlock.

Once the pole is assembled, insert the M16x230 screw on the hole at the base of the rocker arm, close with the M16 nut and close everything with the padlock.

The 2 rings welded on the rocker arm and on the pole are necessary to hook a rope (or something similar) as a system to knock down the pole



Materials:

PalB10 elements n° 6,7,8,9; n° 18 hex. Head: M10x20 screws + their m10 flat washers and n° 6 hex. Head M10x14 screws + their M10 flat washers

Tools:

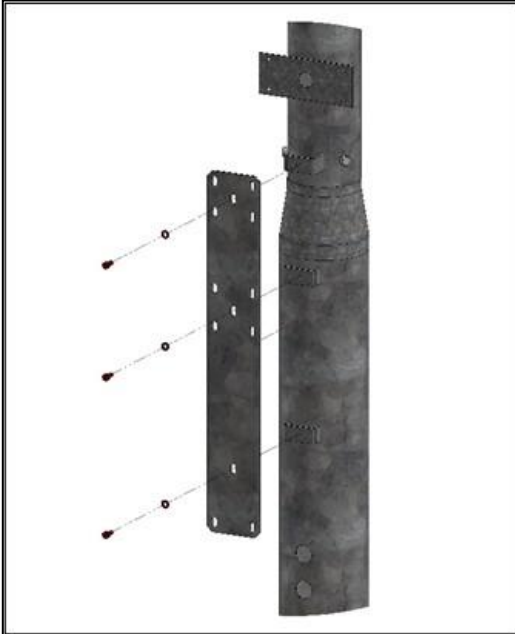
Size 17 wrench for M10 hex head, level/bubble level

Activity:

Insert the elements 6-7-8-9 one inside the other (all of them have circular section with different diameters). For every element, check the verticality adjusting the M10x20 and the M10x14 screws. Once the pole will be vertically positioned, fix the element tightening the screws.

3.2 Datalogger cabinet

Data logger cabinet must be installed at the PalB10 base with its brackets. It's provided with 3 cableglands that allow the cables passing from upper devices and from outer devices (rain gauge, snow level transducer, power supply, earthing, etc...)



Materials:

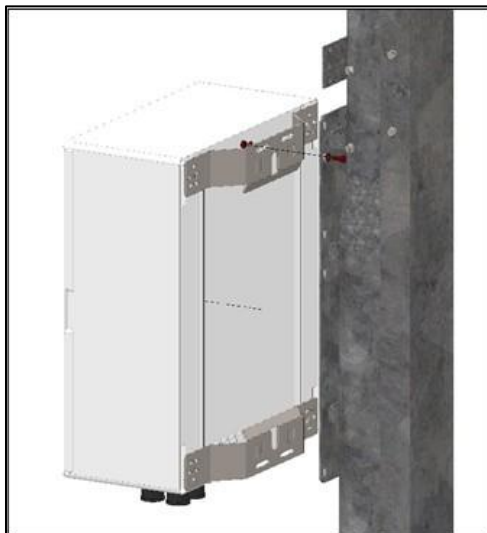
Plate for brackets for datalogger box installation

Tools:

Size 17 wrench for M10 hexagonal screw

Activity:

Mount the plate as shown in the picture, inserting the three fixing screws.



Materials:

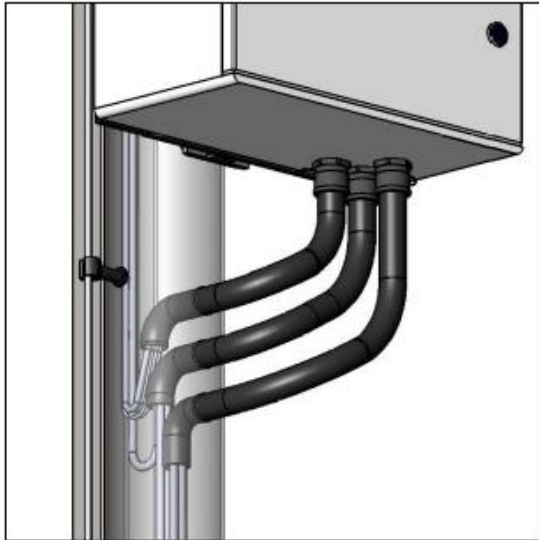
Datalogger cabinet complete with its brackets

Tools:

Size 13 wrench for M8 hex. Head screws

Activity:

Secure data logger cabinet to the plate using n° 4 M8 nuts.



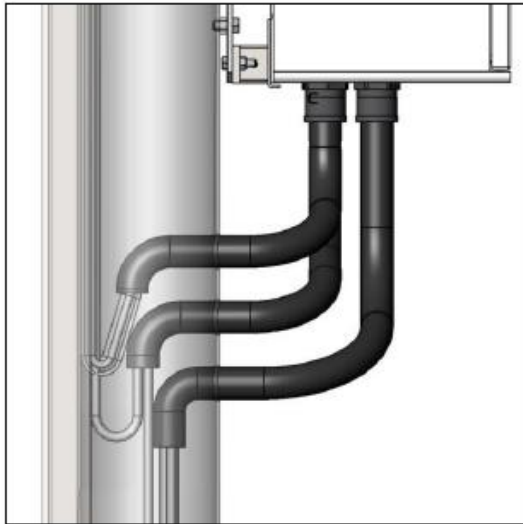
Materials:

Conduits

Tools: -

Activity:

Pass the cables coming out from $\varnothing 38$ holes at the mast base into the conduits and insert them in relative cable glands placed on the bottom of the data logger box. Tight the cable glands lock nut so to firmly secure the conduits



ATTENTION:

To prevent tearing of the cables of the devices installed above the articulation when lowering of the mast, leave an excess cable length inside the pole itself

The conduits must be routed in the mast facing down, in order to let possible condensation drain. The cables shall prolong at least 50 cm. inside the mast

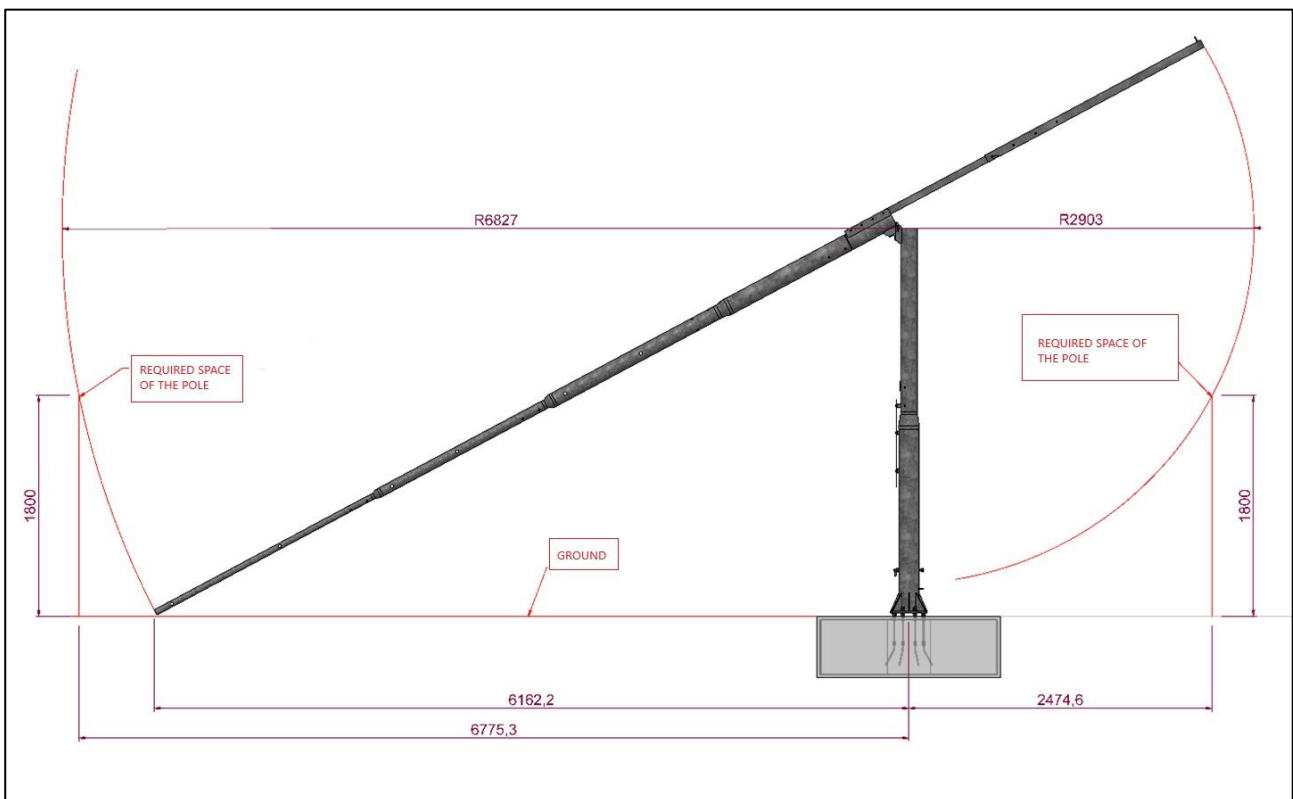
4 PalB10 Tilting

The PALB10 is a pole of 10m height with a junction at 3,2m height that allows the tilting to reach the sensors or the equipment placed at different heights.

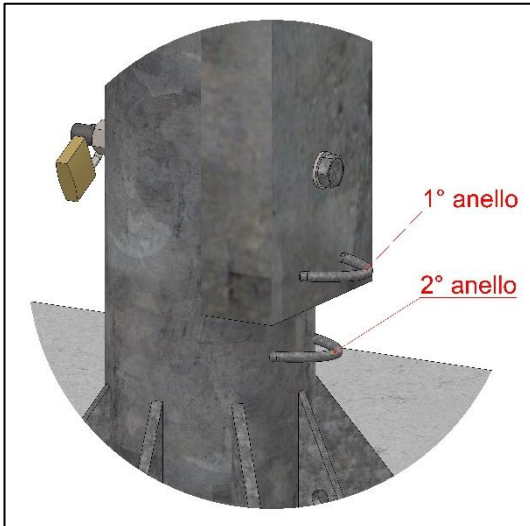
The picture here below represents the scheme of the space/volume/dimension that the pole occupies during the tilting phase.

The picture shows an example of the required distances to be respected during the pole tilting phase with a fence of 1,8m height: in the front side of the pole the minimum distance will be 6,85m, on the back side of the pole the minimum distance will be 2,9m.

ATTENTION: during the tilting phase of the mast pay extreme attention; execute slowly the different operations, keep safe distance from moving parts. Stay away from the path of the upper end mast as well as the path of the mast balance arm.



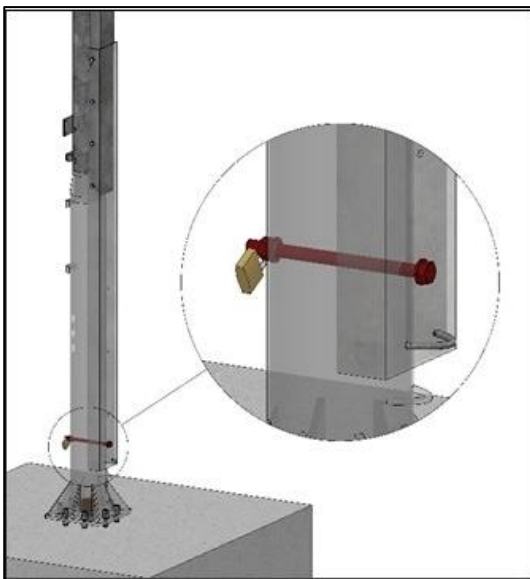
Perform the lowering pole steps according to the instructions below.



Materials rope with snap-hook

Tools: -

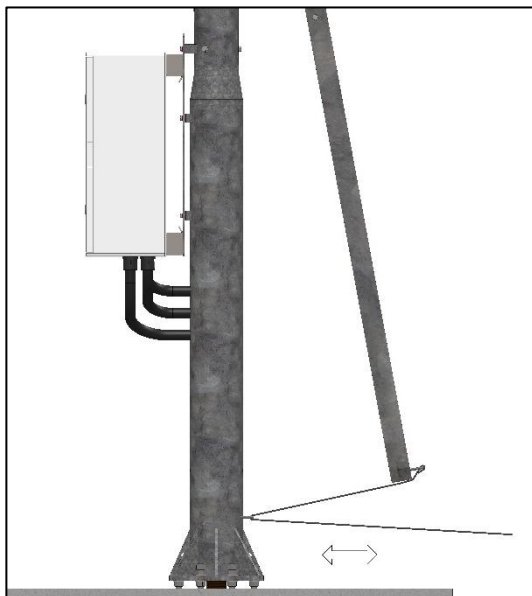
Activity: secure properly the snap-hook on the ring N°1. pass the rope through the ring n°2 tying it strongly at the pole.



Materials: -

Tools: -

Activity: remove the screws already installed on the pole (see previous sections). ATTENTION: from this moment onwards, the pole is standing only thanks to the rope.



Materials: -

Tools: -

Activity: release slowly the rope, till the desired tilting point; ensure the rope in order to block the pole in the desired position and proceed with the maintenance.

To bring back the pole on the vertical position, pull the rope. As soon as the pole reaches again the vertical position, tie the rope strongly on the pole.

Ensure the pole with the dedicated safety screws, then remove the rope.

5 Revisions history

The following table provides a description of the changes made to this document.

Version	Date	Updates
00	10/01/2025	<i>Current version of the document.</i>

All the information content in this document are the current available at the printing phase. Siap+Micros S.p.A. reserve the rights to change the specifications without any advance notice.