



20 years

# ZENITH MINUS MODEL



Only energy production system, with double support pole and wind-bracing.

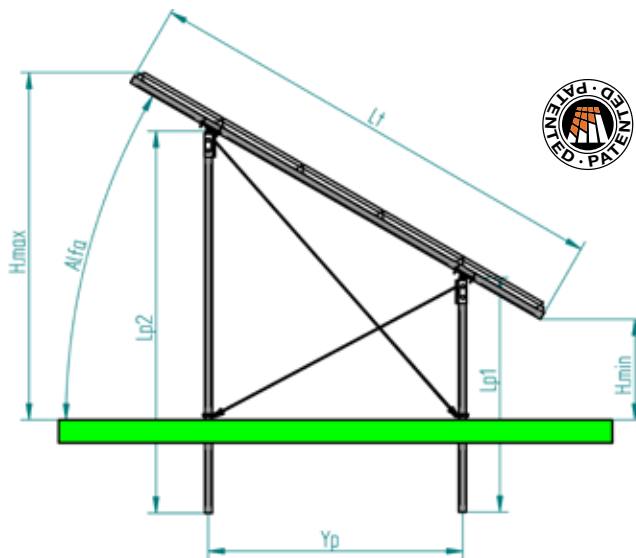
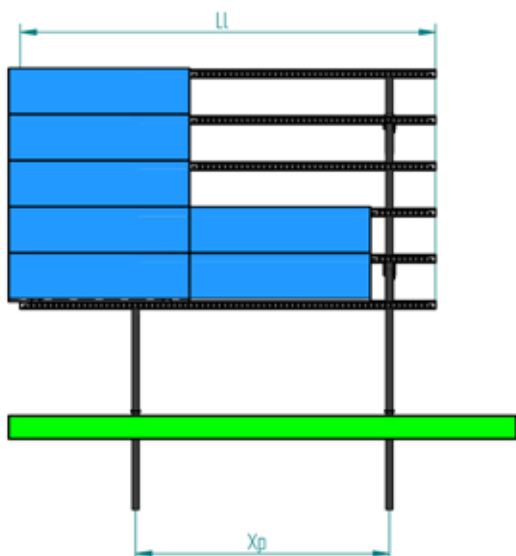
**THE BASE CONFIGURATION INCLUDES:**

**2 TO 3 MODULES IN VERTICAL ARRANGEMENT**

**UP TO 6 MODULES IN HORIZONTAL ARRANGEMENT**

**HMIN max: 1.500 mm**

**HMAX min: 5.000 mm**



**KEY:**

- Alfa** Module tilt angle to horizontal plane;
- Lp1** Overall length of short pole;
- Lp2** Overall length of long pole;
- Lt** Overall length of beam;

- LI** Horizontal beam length;
- Xp** Horizontal center distance of poles;
- Yp** Vertical center distance of poles;
- Hmin** Minimum installation height from ground;
- Hmax** Maximum installation height from ground;

**VALUE TABLE FOR ZENITH-MINUS STANDARD**

Module arrangement	Rows	Columns	Alfa °	h.min mm	h.max mm	Lt mm	LI mm	Xp mm	Yp mm	Modules No.	Starting Watts installed Watt
Horizontal	2	4	0+35	500+1500	500+5000	2200	5000	3000	1500	8	1760+2240
	3	4	0+35	500+1500	500+5000	3200	5000	2750	2100	12	2640+3360
	4	4	0+35	500+1500	500+5000	4200	5000	2500	2800	16	3520+4480
	5	4	0+35	500+1500	500+5000	5200	5000	2250	3500	20	4400+5600
	6	4	0+35	500+1500	500+5000	6200	5000	2000	4100	24	5280+6720
Vertical	2	6	0+35	500+1500	500+5000	1700	5000	4000	1100	12	2640+3360
	3	6	0+35	500+1500	500+5000	2500	5000	2750	1700	18	3960+5040

# COMPRISING PARTS



## KONCRETO POLES AND BEAMS

KONCRETO poles and beams are made with the technique of prestressing that provides **greater strength** and **durability**, according to the experience of Valente SpA, a market leader in the production of reinforced vibrato and prestressed poles. **The concrete is made up with substances (gravel and sand), deriving from natural materials, which are riddled, weighed and washed.** This material gives the concrete a very strong resistance, much more than inert matter produced from grinding rock. The sand and gravel are mixed with cement that acts as "glue" that keeps them

united and gives a **very high resistance to compression. The steel used is highly resistant ( $r=1870 \text{ N/mm}^2$ ) and is formed by plaits that adhere perfectly to concrete.**

### Characteristics of KONCRETO:

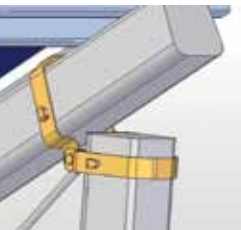
Lack of corrosion over time even if driven in acid soils and in the presence of salt.

Frost resistance.

Resistance to stray eddy currents, as the concrete is not electrically conductive.

- Elasticity and flexibility in case of shock and vibration.
- Structural stability due to the high inertia of the product.

KONCRETO quality is guaranteed through a special certificate from DNV Product Quality, which certifies durability, frost resistance and outstanding mechanical strength.



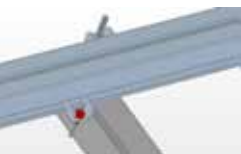
## MAIN JUNCTION

The main hub is made of galvanized steel according to the UNI-EN-ISO 1461, with linking screws in galvanized steel. It consists of two main elements that allow the installation and longitudinal adjustment of the KONCRETO support poles and crossbeams. The joint is via a high-strength screw that allows adjustment from  $10^\circ$  to  $35^\circ$ , respect to the horizontal plane.



## CROSS-MEMBER

The cross-members are made from profiled stress-resistant steel belts. The profile contains a continuous groove for fastening the modules and a continuous place for cross-member attachment in order to provide maximum flexibility in mounting. The choice of the "omega" open profile is aimed at optimizing load distribution, to avoid the stagnation of rain water and provide support for the passage of the cable sheaths. To solve the problem of oxidation and galvanic corrosion of rails in contact with the photovoltaic panels, the steel surface is protected through the **innovative Teknocover** coating.



## FLEXI

The cross-members are secured to the beams through the universal "Flexi" attachment, patented by Valente SpA.



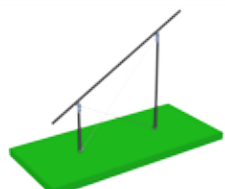
## JOINT PROFILE

The modular structure makes it possible to join continuous sections of strings: the cross-members are joined by linking profiles with an interlocking system that use the same profile of the groove.



## MODULE BRACKETS

The photovoltaic modules are fixed to the frame with brackets made of anodized aluminum, according to current market standards. This solution ensures the fair distribution of the spaces between the modules and allows free thermal expansion without burdening the structures or triggering dangerous residual stress on the modules themselves. It also allows assembly time optimization.



## CROSS-BRACING

To improve the performance of the system support in the event of strong winds and snow overload, each bearing section is stiffened with a cross-bracing system, made of steel wire rope and tensioning system. This solution enables later stress to be discharged directly to the ground thus making the structure very stable without use of additional weights. In addition, there is a significant benefit in the cost of production and installation.

**20 YEAR WARRANTY - CONCRETE POLES WITH DNV CERTIFICATE  
PATENTED STRUCTURES - DISPOSAL OF THE ENTIRE  
STRUCTURE AT END-OF-LIFE - CERTIFICATION EUROCODICE 1**



### **ZENITH MINUS SYSTEM FEATURES:**

- ◆ **NO FOUNDATION OR ANCHOR:** the KONCRETO poles are driven into the any type of soil by vibro-percussion (granular, clayey, sandy).
- ◆ **RELIABILITY** in the event of **OVERLOAD** and **STRESS** in extreme weather conditions, thanks to its engineering properties of KONCRETO concrete poles.
- ◆ **REDUCED INSTALLATION TIME** thanks to the limited number of components and simplicity of connections.
- ◆ **NO MAINTENANCE:** KONCRETO poles are not subject to corrosion over time even if in acid soil and the cross-members, thanks to the protection teknocover, do not oxidize in contact with photovoltaic panels.

Via Galvani 2/4  
35011 Campodarsego (PD)  
Tel. +39 049 556 5855  
Fax +39 049 920 0548  
[info@strukturfotovoltaico.com](mailto:info@strukturfotovoltaico.com)  
[www.strukturfotovoltaico.com](http://www.strukturfotovoltaico.com)

 **STRUKTURE**  
ARCHITETTURE PER IL FOTOVOLTAICO