TURNSTILES.us.™

SECURING THE U.S. and the GLOBE

Solar System

Series 5014/5034

www.TURNSTILES.us / www.entrapass.com / 8641 S. Warhawk Road, Conifer, CO 80433 / 303-670-1099

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KC130TM

HIGH EFFICIENCY MULTICRYSTAL
PHOTOVOLTAIC MODULE

LISTED

HIGHLIGHTS OF TURSNTILES PHOTOVOLTAIC MODULES

TURNSTILES' advanced cell processing technology and automated production facilities produce a highly efficient multicrystal photovoltaic module.
The conversion efficiency of the TURNSTILES solar cell is over 16%.
These cells are encapsulated between a tempered glass cover and a pottant with back sheet to provide efficient protection from the severest environmental conditions.
The entire laminate is installed in an anodized aluminum frame to provide structural strength and ease of installation.

APPLICATIONS

- Microwave / Radio repeater stations
- Electrification of villages in remote areas
- Medical facilities in rural areas
- Power source for summer vacation homes
- Emergency communication systems
- Water quality and environmental data monitoring systems
- Navigation lighthouses, and ocean buoys
- Pumping systems for irrigation, rural water supplies and livestock watering
- Aviation obstruction lights
- Cathodic protection systems
- Desalination systems
- Railroad signals
- etc.

QUALIFICATIONS

- **MODULE** : UL 1703 certified
  Hazardous Locations Class I, Div 2, Groups A, B, C and D
- **FACTORY** : ISO9001 and ISO 14001

QUALITY ASSURANCE

TURNSTILES multicrystal photovoltaic modules have passed the following tests.

- Thermal cycling test
- Thermal shock test
- Thermal / Freezing and high humidity cycling test
- Electrical isolation test
- Hail impact test
- Mechanical, wind and twist loading test
- Salt mist test
- Light and water-exposure test
- Field exposure test

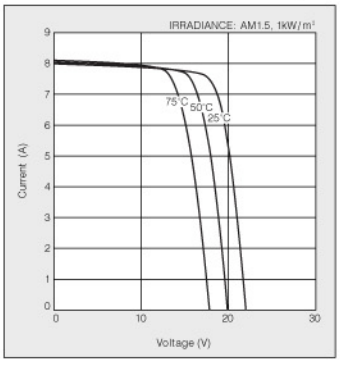
LIMITED WARRANTY

※1 year limited warranty on material and workmanship
※20 years limited warranty on power output: For detail, please refer to "category IV" in Warranty issued by TURNSTILES.

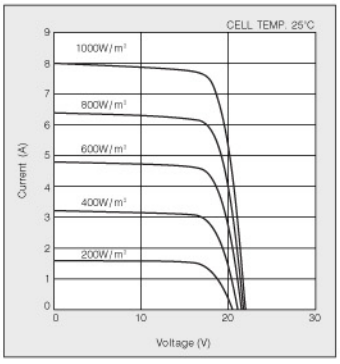
(Long term output warranty shall warrant if PV Module(s) exhibits power output of less than 90% of the original minimum rated power specified at the time of sale within 10 years and less than 80% within 20 years after the date of sale to the Customer. The power output values shall be those measured under TURNSTILES' standard measurement conditions. Regarding the warranty conditions in detail, please refer to Warranty issued by TURNSTILES.)

ELECTRICAL CHARACTERISTICS

Current-Voltage characteristics of Photovoltaic Module KC130TM at various cell temperatures



Current-Voltage characteristics of Photovoltaic Module KC130TM at various irradiance levels



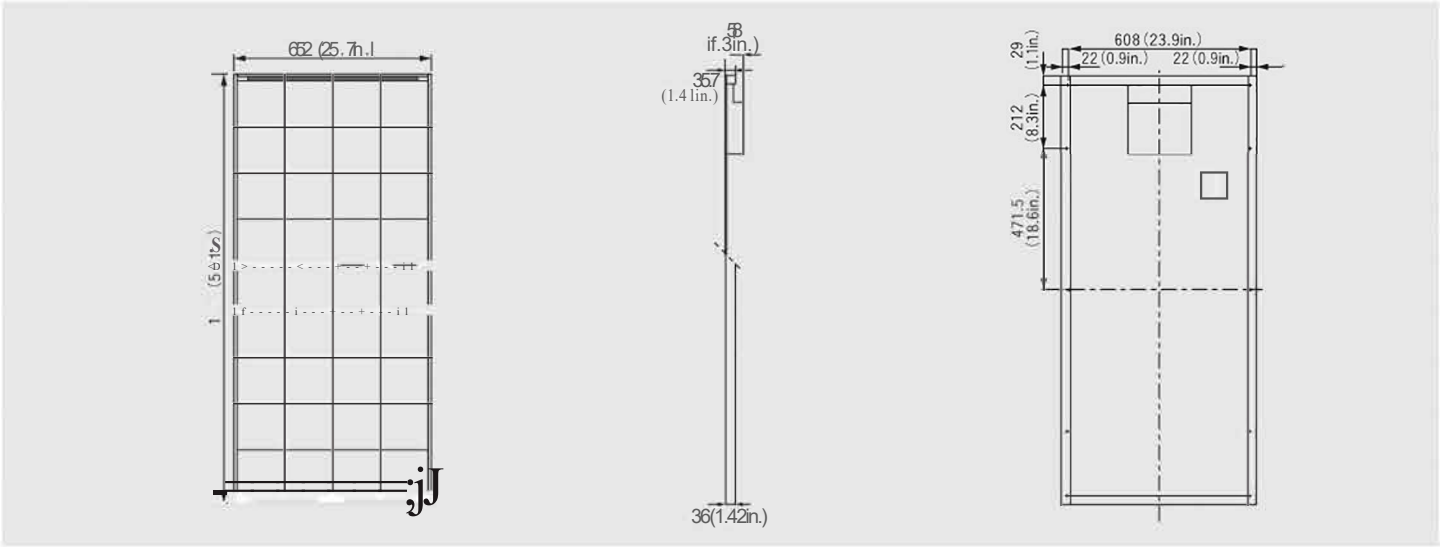
MODEL
KC130TM

SPECIFICATIONS

KC130TM

■ Physical Specifications

Unit: mm (in.)



■ Specifications

■ Electrical Performance under Standard Test Conditions ('STC)	
Maximum Power (Pmax)	130W (+HI'¼/-5%)
Maximum Power Voltage (Vmpp)	17.6V
Maximum Power Current (Impp)	I·..39A
Open Circuit Voltage (Voe)	21.9V
Short Circuit Current (Isc)	8.02A
Max System Voltage	600V
Temperature Coefficient of Voe	—s.21 x10-2 vrc
Temperature Coefficient of Isc	3.18x1Q·3 A/'t

*STC : Irradiance 10CJOW/m2, AM1.S spectrum, module terrpenure 25C

■ Electrical Performance at 800W/m², NOCT, AM1.5	
Maximum Power (Pmax)	92W
Maximum Power Voltage (Vmpp)	15.5V
Maximum Power Current (Impp)	5.94A
Open Circuit Voltage (voe)	19.9V
Short Circuit Current (Isc)	6.47A

NOCT {NOffinal Opera'ing Cell Terrperature) : 47°C

■ Cells	
Number per Module	I 36

■ Module Characteristics	
Length X Width X Depth	1425mm(56.1il)X652ml25. nlx5ml2.3il)
Weight	11.9kg(26.8lbs.)

■ Junction Box Characteristics	
Length X Width X Depth	170flnm(6.7in)X19.6rrm(7.5i X515irm/,2.0in)
IP Code	IP65

■ Reduction of Efficiency under Low Irradlance	
Reduction	I 4.3%

Reduction of efficiency from an irrandiance of 1000W/m' to 200W/m' (module temperature 25°C)

Please contact our office for further information.

PVPoleMount NTS

Series 5014/5034

All PV PoleTops® and most adjustable PV PoleSides™ use installer-friendly SolarMount® HD (heavy duty) or standard SolarMount® rails and, except where noted, SolarMount® bottom mounting clips.

Configurations: PV PoleTops® Single Row

Series 5000

with SolarMount® standard rails far 2.s· (65 mm) Schedule 40 or 80 steel pole, outside dia. 2.815" (73.0 mm)

Series 5001

with SotarMaunt® HD (heavy duty) rails for 3" (80 mm) Schedule 40 or 80 steel pole, outside dia. 3.500" (88. 9 mm)

Series 5002

with SolarMount® HD (heavy duty) rails for 4" (100 mm) Schedule 40 or 80 steel pipe, outside dia. 4.500" (114.3 mm)

Configurations: PV PoleTops® Double Row

Series 5003

with SolarMount® HD (heavy duty) rails far4"(100 mm) Schedule 40 or 80 steel pole, outside dia. 4.500" (114.3 mm)

Series 5014/5034

with SolarMount® HD (heavy duty) rails for 6" (I SO mm) Schedule 40 or 80 steel pole, ouuide dia. 6.625" (168.3 mm)

Design Wind Pressures for PV Pole Tops®

To ensure the structural integrity and to provide the installer with an accurate wind pressure rating, we have thoroughly computer analyzed and laboratory tested our PV PoleTops. The resulting Design Wind Pressures-maximum allowable wind pressure in pounds per square foot (pst)-appear after model numbers on the sizing chart on pages 3-5.

Each rating applies to the mounting pole in addition to the PV PoleTops rack. Where our rating is below 50 psf, it is in most cases because our analysis predicts that the mounting pole will buckle above the rated load.

Your PV panels may carry a lower wind load rating. The manufacturers' rating is typically 50 psf.

The ratings on our sizing chart were calculated based on the following assumptions:

- Manufacturer, model, and quantity of modules as indicated on the sizing chart;
- A tilt angle of 40 degrees from the horizontal for Series 5000 to 5003, 55 degrees for Series 5014/5034;
- A mounting pole of Schedule 40 steel pipe, 5 feet above ground for Series 5000 to 5003, 6 feet for Series 5014/5034;
- Installation performed in accordance with applicable installation instructions.

What Design Wind Pressure is required for your site? Start with the basic wind speed at the site. For this figure, consult a local professional engineer or the building authority with jurisdiction over the site. In the United States, consult basic wind speed information in the building code appropriate to your site, for example, ASCE 7, the California Building Code, the International Building Code, or the Uniform Building Code. These codes also define wind exposure categories.

To determine your wind load, apply your basic wind speed and exposure category to the "Design Wind Pressures" table on this page. For example, if your basic wind speed is 100 miles per hour and your site fits Exposure Category C, you will require a rack with a Design Wind Pressure of 26 psf or greater.

Special terrain can experience extra high wind loads and require further analysis to determine an installation's suitability: canyons or gaps where wind may be funneled at high speed and the upper half of some isolated hills, ridges, and escarpments. (For an example, see the "Special terrain' illustration on this page). TURNSTILES warrants installations on "special terrain" only if a professional engineer or TURNSTILES has determined that the wind loads at the particular site fall within published design load limits.

TURNSTILES can provide additional help. If requirements or conditions at your site deviate significantly from the assumptions listed above, contact our Customer Service Department. We'll input your parameters through our proprietary analysis progran1 to quickly determine your wind load rating. We'll put it in writing.

Design Wind Pressures (psf)

Exposure category	Bask wind speed (mph) 90	/00	110	/20	130
B	14	18	21	25	30
C	21	26	32	38	44
D	26	32	38	46	53

Special **terrain:The** ***upper half of a hill constitutes a special wind*** **zone** ***if the slope (H*** **+L)** ***is*** **greater** ***than 0.1*** **and** ***if*** **distance** ***(D)*** **to** ***similar*** **terrain** ***is*** **greater** ***than two miles*** **or** ***100*** **times the** ***height of*** **the** ***hill (H).*** **Contact** ***a professional*** **engineer or** ***UniRac.***

TURNSTILES' ***ProStar*** is the world's leading mid-range solar controller for both professional and consumer applications. This second generation ProStar:

- Adds new features and protections using highly advanced technology
- Provides longer battery life and improved system performance
- Sets new standards for reliability and self-diagostics

Standard Features:

- Versions available: 15 or 30 amp
  12 / 24 or 48 volt
  negative or positive ground
- Estimated 15 year life
- PWM series battery charging (not shunt)
- 3-position battery select: gel, sealed or flooded
- Very accurate control and measurement
- Jumper to eliminate telecom noise
- Parallel for up to 300 amps
- Temperature compensation
- Tropicalization: conformal coating, stainless-steel fasteners & anodized aluminum heat sink
- No switching or measurement in the grounded leg
- 100% solid state
- Very low voltage drops
- Current compensated low voltage disconnect (LVD)
- LED's indicate battery status and faults
- Capable of 25% overloads
- Remote battery voltage sense terminals

Electronic Protections:

- Short-circuit - solar and load
- Overload - solar and load
- Reverse polarity
- Reverse current at night
- High voltage disconnect
- High temperature disconnect
- Lightning and transient surge protection
- Loads protected from voltage spikes
- Automatic recovery with all protections

PROSTAR™ TECHNICAL SPECIFICATIONS

ProStar Options:

- Digital meter
  - Highly accurate voltage and current display
  - Low self-consumption (1 mA)
  - Includes manual disconnect button
  - Displays 5 different protection functions and disconnect conditions
  - Self-diagnostics (self-test) provides a comprehensive test of the ProStar -
    - Displays 9 different controller status parameters, including temperature
    - Displays detected faults
- Positive ground
- Remote temperature probe

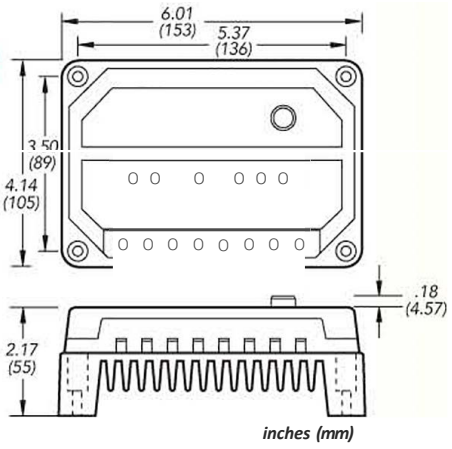
Optimized Battery Charging:

The ProStar has 4 stages of charging to provide increased battery capacity and life.

Mechanical Specifications:

Weight:
12 oz
(0.34 kg)

Wire Size:
#6AWG
(16 mm2)



ProStar Versions:

	PS-15	PS-30	PS15M-48V
Rated Solar Current	15A	30A	15A
Rated Load Current	15A	30A	15A
System Voltage	12/24V	12/24V	48V
Options:			
Digital Meter	yes	yes	standard
Positive Ground	no	yes	yes
Remote Temp. Probe	yes	yes	yes

Battery Voltage Setpoints*

	Gel	Sealed	Flooded
Regulation Voltage	14.0	14.15	14.4
Float	13.7	13.7	13.7
Equalization	n/a	14.35	14.9/15.1
Load Disconnect	11.4	11.4	11.4
Load Reconnect	12.6	12.6	12.6

Note: values are for 12V. Use 2X for 24V and 4X for 48V.

Electrical Specifications:

	12V	24V	48V
Temp. Comp. (mV/°C)*	-30mV	-60mV	- 120mV
Accuracy	40mV	60mV	80mV
Min. voltage to operate	8V	8V	15V
Self-consumption	22mA	25mA	28mA
LVD current coefficient**	-20mV	-40mV	-80mV
Charge algorithm	PWM, constant voltage		
Operating temperature	- 40'C to + 60'C		
Digital Display:			
Operating temperature	- 30'C to + 85'C		
Voltage accuracy	0.5%		
Current accuracy	2.0%		
Self-consumption	1 mA		

* 25·C reference
*' per amp of load

WARRANTY: ***Five year warranty period.***

TURNSTILES D34M-950 Battery

Dimensions: 10 x 6.88 x 7.81
Post Type: SAE & Stud
Description: Blue Top Starting & Deep Cycle Battery
CCA @0F 750 CA @32F
950 Reserve Capacity

The D34M-950 is like no other battery found in today's market. The D34M-950's unique Spiralcell design offers the greatest technology in providing a strong and clean power source that far surpasses any of today's filled lead/ acid batteries. With the D34M-950, you can count on a longer lasting battery life under starting and deep cycle applications. Today's power demands are greater than ever. The D34M-950 can provide all the power needed for today's high-demand applications. The D34M-950 was designed with safety in mind, with its spill-proof case it helps to ensure the safety of the environment, your family and you. Powerful, 2x longer-life, safety, spill-proof, vibration resistance, multi-position installation.