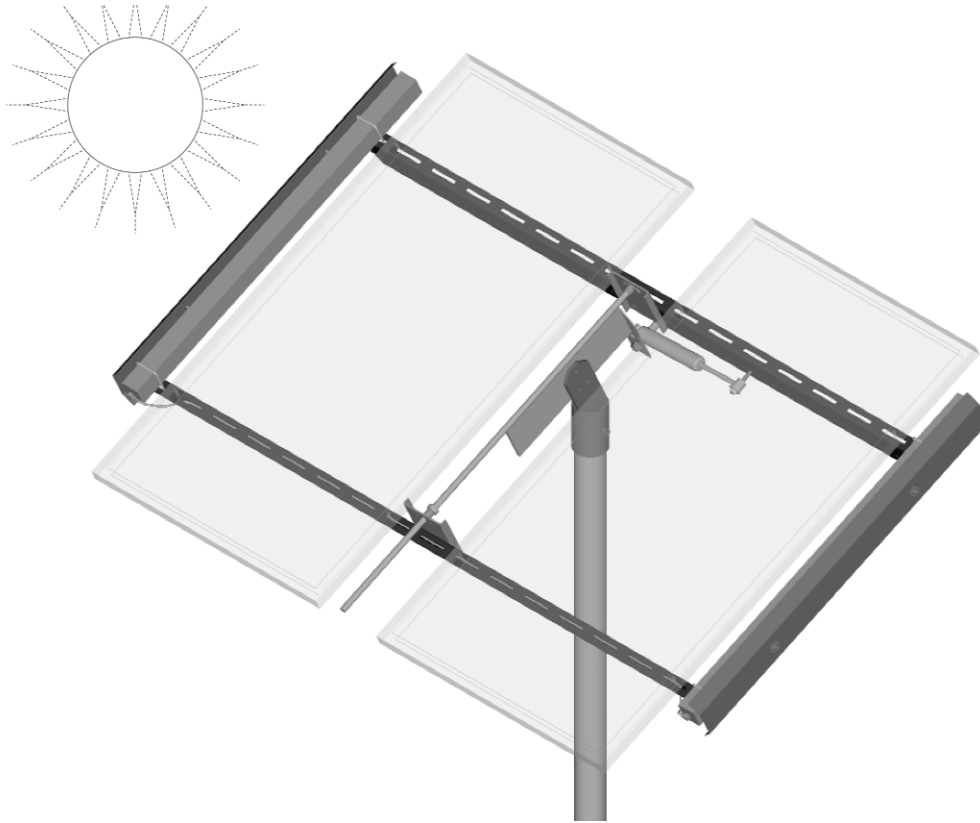


**Passive Tracking Rack for Two PV Modules****More PV Power with TRACKER 200**<sup>™</sup>

Tracker 200 equipped PV modules produce more power for your equipment earlier, longer and later each day. In the case of a water pumping system, using a Tracker 200 can increase your daily water production by up to 50%.

**Facing the PV Facts**

It's an unfortunate fact of PV life. The greater the angle away from the sun, the less power is produced by your modules. PV modules produce maximum power only when directly facing the sun.

So, with fixed racks, maximum power is produced only once a day – when the sun is directly overhead. The rest of the day – virtually all day – your PV modules operate less efficiently – and your equipment also operates less efficiently.

If you're pumping water, it's even worse. Your pump doesn't just operate inefficiently. At lower PV power levels, it may not operate at all. With fixed racks, hours per day of potential water production may be lost entirely, simply because your PV modules can't find the sun that powers them.

**The TRACKER 200<sup>™</sup> Difference**

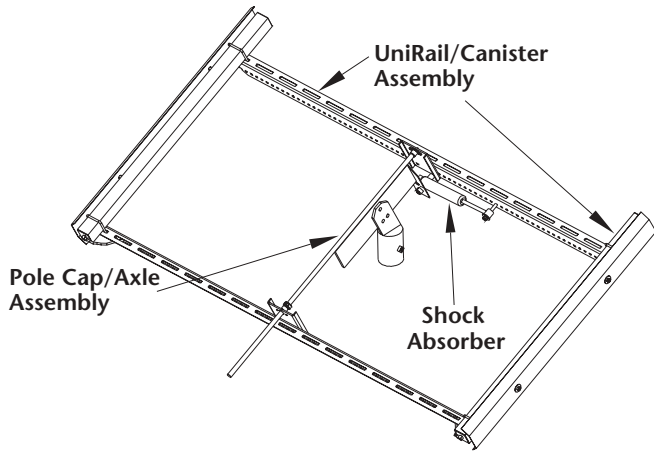
By comparison, the Tracker 200 points your PV modules at the sun from shortly after sunrise until just before sunset. With a Tracker 200, your PV modules produce high levels of power throughout the daylight hours.

This means your pumps "turn on" and get to higher output levels earlier in the day. And they stay on and keep working later in the day. The result is many added hours of high volume water production.

*(See inside for details) ►*



# TRACKER 200™ System Description



## Pole Cap/Axle Assembly

The Pole Cap/Axle Assembly sits on top of the mounting pole (not supplied) in a fixed position after adjustment of azimuth and tilt angle.

## UniRail/Canister Assembly

The UniRail/Canister Assembly supports the PV modules and rotates on the Axle, with wind dampening provided by the Shock Absorber.

# TRACKER 200™ Operation

## Sunrise

At sunrise, the Tracker 200 faces west – where it last “saw” the sun on the previous day. The shaded eastern canister remains cool, while the unshaded western canister is heated by the rising sun. The sun’s heat causes the freon in the western canister to boil. The resulting pressure forces the remaining liquid freon through the crossover tube into the eastern canister.

## Mid-Morning

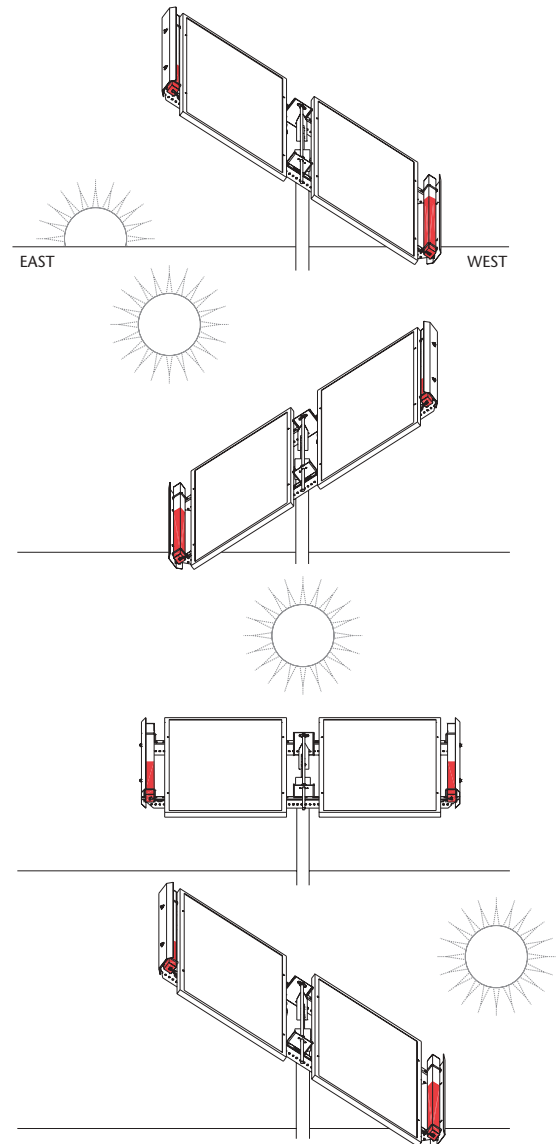
The movement of the liquid freon decreases the weight of the western canister and increases the weight of the eastern canister, thus rotating the Tracker 200 and its PV modules towards the sun. The Tracker 200 stabilizes facing the sun when the shadow plates shade each canister equally, thus equalizing their temperature and the ratio of freon liquid and gas between them.

## Solar Noon

Once the Tracker 200 reaches equilibrium, it rotates slowly and continuously to face the sun as it moves across the sky, and your PV modules produce the maximum possible power based on available sunlight.

## Sunset

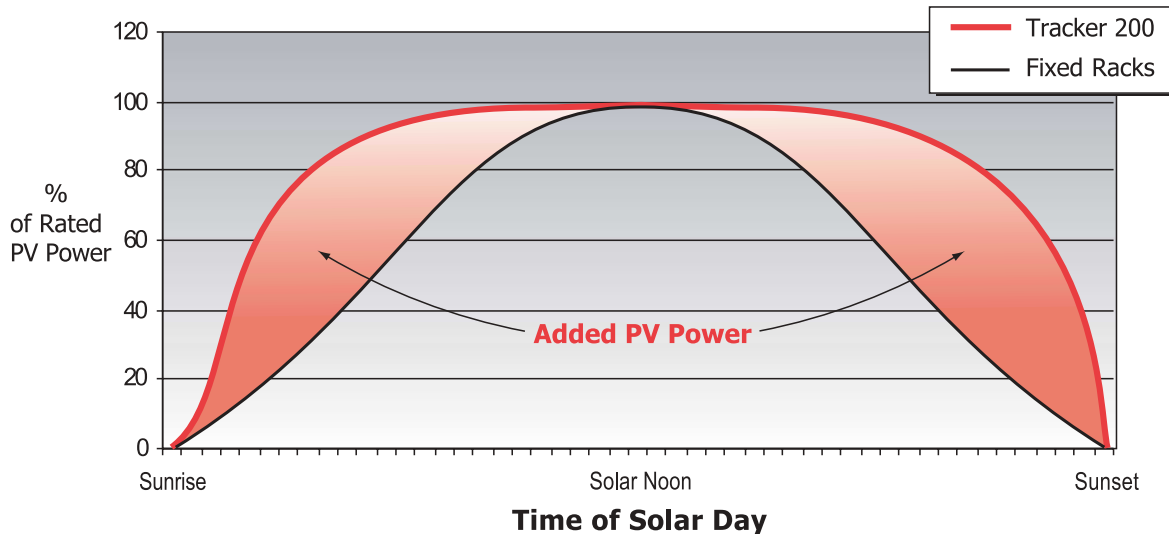
At sunset, the Tracker 200 faces west, and is positioned for “wake up” on the following morning when the sun reappears in the east.



# TRACKER 200™

## TRACKER 200™ Maximizes PV Output

Simulated Performance Comparison of  
Tracker 200 vs. Fixed PV Mounts



The graph compares simulated PV power output performance in two scenarios. Both assume a clear, sunny day with light winds.\*

The upper red line shows the rapid rise in power output that occurs because the Tracker 200 faces your PV modules towards the sun in the morning. They maintain their high output throughout the day as the Tracker 200 follows the sun across the sky.

By comparison, the lower black line shows the output of fixed rack mounted modules.

The large area between the lines represents the increased power output of your PV modules. By using the Tracker 200, you get high output from your modules for most of the daylight hours, not just the few hours around midday.

## TRACKER 200™ Features & Benefits

### Rapid Morning "Wake-Up"

The Tracker 200 is designed to "wake up" fast, so that your PV modules face the sun early in the day.

The Tracker 200 uses lightweight aluminum UniRails to mount your modules. It's balanced by design, and requires no heavy counterweights. Less weight means less inertia to overcome for morning "wake-up" to begin.

Also, the large shadow plate reflects more of the sun's early morning radiant heat onto the west-facing canister.

Thus, the Tracker 200 rapidly turns to the east so that the PV modules reach high power output levels as early in the day as possible.

\* The Tracker 200 operates best in clear, bright weather conditions with light winds. Tracking accuracy is reduced during cloudy, overcast and/or windy periods.

### Designed for Buffeting Winds

The Tracker 200 is fitted with a shock absorber to dampen wind impact and maintain sun tracking in light wind conditions.\* The Tracker 200 is designed to withstand maximum wind loads of 50 lbs per sq. ft., the same standard used by all major PV module manufacturers.

### Quick Field Assembly

The Tracker 200 arrives in one UPS shippable box containing only three major subassemblies and assembly hardware. You'll probably have your modules mounted on the Tracker 200, and on the pole in less than an hour.

### Minimum Maintenance

The Tracker 200 requires minimal servicing. Simply lubricate the bearings twice a year. No electrical parts to fail.

# TRACKER 200™ Selection Chart

Tracker 200™ Model Number	Module (2 per Tracker 200™)
T200/44	Siemens SM 46/50/55
T200/60	ASE 50 Astropower AP 65/75 BP Solar 270/275, 585, 590, SX 55/60/65/75/80/85 Photowatt PWX 500, PW 750 Siemens SP65/70/75
T200/68	Astropower 110/120 Evergreen – All Models, EC 47 thru EC 110 Kyocera – All Models, KC 35 thru KC 120 Photowatt PW 1000 Siemens SM 100/110, SR 50/90/100 SunWize OEM 85/115
T200/80	ASE 100 Astropower AP 150 BP Solar 2150, 3160, 4160, 5170, SX 110/120/150 Mitsubishi 120 Siemens SP 130/140/150 Sharp 165 (Schott-SACP 165) UniSolar US 64
T200/96	BP Solar MSX 120

Call UniRac or your PV dealer for any PV module not shown. Prices and specifications subject to change without notice.

## Tracker 200™ Components

- Axle/Gimbal Assembly (1) – Grade 5 zinc-plated steel
- UniRail Assemblies (2) – 5052-H32 aluminum with oil impregnated brass bearings
- Canisters (2) – Freon-filled, flat black finished steel with copper connecting tube
- Shadow Plates (2) – 5052-H32 aluminum
- Custom wind-dampening Shock Absorber (1)
- Stainless steel fasteners throughout, including module mounting hardware
- Mounting Pole (Not Supplied) – 2 1/2" Schedule 40 pipe or rigid electrical conduit

## 10 Year Limited Warranty

UniRac, Inc. warrants to the original owner at the original installation site that the Tracker 200 shall be free from defects in material and workmanship for a period of ten (10) years from date of shipment from its plant, except for bearings and shock absorbers, which shall be free from defects in material and workmanship for a period of three (3) years.

If within such period(s) the Tracker 200 shall be reasonably proven to be defective, then UniRac shall repair or replace the defective Tracker 200, or part thereof, at UniRac's sole option. Such repair or replacement shall fulfill all UniRac's liability with respect to this warranty.

This warranty shall be void if installation and maintenance of the Tracker 200 are not performed in accordance with UniRac's Installation and Maintenance Instructions, or if the Tracker 200 has been modified, repaired or reworked in a manner not authorized by UniRac in writing, or if the Tracker 200 is installed in an environment for which it was not designed. UniRac shall not be liable for consequential, contingent, or incidental damages arising out of use of the Tracker 200.



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