

AST-02, AST-03, AST-03T ACTIVE SOLAR TRACKER

Precision Active Sun Tracking System for Solar Instrumentation



The Middleton Solar AST-02/3/3T is an active sun tracking system for solar instruments used to measure direct and diffuse irradiance. The AST-02 has a single elevation shaft. The AST-03 has two coaxial elevation shafts mechanically locked together, and the AST-03T version has two coaxial elevation shafts that are controlled separately to facilitate shade/un-shade and alignment testing.

Performance Specification

tracking accuracy	active (sunshine) = 0.02° passive (no sunshine) = 0.15°
angular velocity	9°/sec. (max.)
rotation	vertical/pan/azimuth axis = $\pm 250^\circ$ (0° = true North/South) horizontal/elevation axis = +100°, -15° (0° = horiz, 90° = vert)
torque	AST-02 = 12Nm AST-03/3T = 12 x 2 = 24 Nm
payload	AST-02 = 10kg balanced AST-03/3T = 20kg balanced

AUTOMATIC SETUP, ACTIVE SUN TRACKING, DURABLE, AFFORDABLE

Swaps between real-time active tracking, and automatic passive tracking, depending on sun strength.

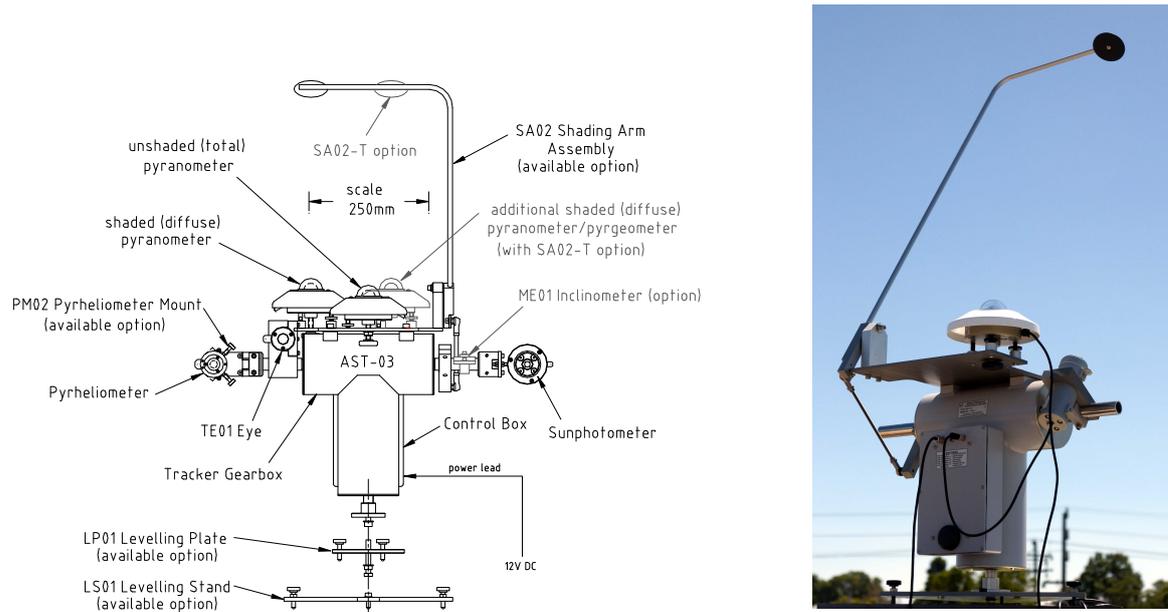
Ideal for mounting pyrhemometers, sunphotometers, diffuse pyranometers, shaded pyrgeometers.

Locks onto clear sun using a high-contrast Eye and smart positioning algorithm.

Very low DC power requirement; ideal for remote solar powered sites.

Fully autonomous operation; no external computer required.

Middleton Solar AST-02, AST-03, AST-03T Active Solar Tracker Detailed Specification



Eye has durable hardened glass window and an interface cable with connectors at both ends.
Four M8 threaded holes on gearbox top for fitting available options such as the SA02/T

General Specification

drive mechanism	direct harmonic gearing, zero backlash
motor	stepping motor (AST-02/3 = 2, AST-03T = 3)
elevation shaft	Ø25 x 130mm (AST-02 = 1, AST-03/3T = 2)
active tracking	quadrant Eye, real-time closed-loop control
active sunshine threshold	automatically varies with solar zenith angle
operating temperature	-30 to +60°C
power requirement	12V DC nominal (11-16VDC) AST-02 & AST-03 <10W continuous; AST-03T <20W
power lead	2-core, 6m, with connector at Tracker end
control method	in-built computer controller & firmware; GPS receiver
user interface	status indicator LED; internal USB port
elevation control (AST-03T only)	3 x TTL inputs: 4 standard offsets; 3 user defined
shaft coordination (AST-03T only)	MEMS Inclinatorometers on both elevation shafts
construction	marine grade aluminium & SS; O-rings & lip seals
sealing	IP 65, all-weather
weight (standard configuration)	AST-02 = 10Kg; AST-03/3T = 12kg
shipping size & weight	47x43x28cm; AST-02 = 12kg; AST-03/3T = 14kg
standard configuration	Tracker Gearbox & Control Box, and TE01 Eye
available options	LP01 Levelling Plate TA01 Extended Elevation Shaft, 150mm PM02 Pyr heliometer Mount (single) PM04 Pyr. Mount (dual) ME01 Elevation Inclinatorometer SA02 Shadearm Assembly; SA02-T, two shade disks Status Output Lead (TTL or RS232) Serial Data Port (USB) & Lead Extended cable length, up to 25m Extended temperature range, -40 to +80°C
note: AST-02 can accommodate either SA02/T or PM02/4; use AST-03/3T type if both SA02/T and PM02/4 are required.	