



The world leader in advanced metrology solutions

TRACKER3 LASER TRACKING SYSTEM

Superior accuracy

API was started as a metrology company and continues in its heritage without apology. API takes seriously its responsibility to ensure users have at their disposal the advantage of sound metrology principles. The heart of this advanced tracker is the unique, on-the-shaft mounting of the laser head unit. API's design houses the complete laser interferometer, position sensing device, and ADM optics in one assembly. As a result, the laser beam exits the tracker head without going through a single bending mirror. The result of this design approach is the minimization of thermally-induced measurement errors, resulting in superior instrument stability and accuracy, known standards.

Ease of use

API understands that our customers constantly cope with the demands of employee turnover and keeping users current in training. To this end, API has implemented several features in the new T3™ to increase its ease of use at the shop floor level and in turn increase productivity. Aspects such as single point calibrations that integrate front sight and back sight measurements together, out of the box included software that may be networked to run multiple instruments at the same time, true one man operation, and a straightforward cabling system all work together to provide a simple, easy to use system that will easily integrate into your operations.

Systems have been reliably deployed in:

- ✓ Machining, welding, & grinding Applications
- ✓ Outdoor Applications
- ✓ Cold Weather Applications
- ✓ Hot Weather Applications

API's T3™ sets a new standard for ease of use, portability, measurement range, and

accuracy in large-scale metrology. Our shop-hardened tracker design, fused with a host of new comprehensive features, delivers the most definitive laser tracker available in the world today. Now you can align, measure, and scan faster and easier than ever before, with unequalled stability and accuracy for superior results.

- ✓ Measure tooling, fixtures, and jigs
- ✓ Error map machine tools and robots
- ✓ Align machines, gear trains, rollers, and transfer lines
- ✓ Measure surface contours
- ✓ Reverse engineer parts

Turbo charge your measurements

API's TurboADM improves ease-of-use on the shop floor and is verifiable thanks to the onboard interferometer. When re-acquiring the beam, the Tracker3™'s "Fast-Switching Technology" transparently resets back to the interferometer with lightning speed ensuring the utmost in data integrity.

User friendly simplicity

Ease of use is of utmost importance for the Tracker3™. With only 2 simple cables to connect the system it is a snap to set up. Add the Ethernet or wireless connection to the computer and you are off and running before most other instruments can be taken out of the box. While other instruments require a lengthy field calibration followed by a backsight verification (as required by the B89 standard), the Tracker3™ can accomplish both with a single measurement.

Robust and durable for any environment

Indoors or out, the Tracker3's™ proven design has been battle hardened by the toughest environments. It is the only tracker to offer Adaptive temperature control which expands the operating range to -10°C to >



45°C (14°F to > 113°F) insuring your job accuracy over wide factory conditions. Completely sealed against particulate matter, the rock solid engineering of Tracker3™ allows it to measure alongside grinding dust, chips, oil electrical noise, and temperature extremes. Further, like its predecessor the II+, the main portions of the T3™ are constructed from machined aluminum parts guaranteeing the most stable and rugged design available.

Fits in places other instruments won't

For any job, large or small the extremely lightweight and portable Tracker3™ is the perfect fit. Mount it sideways, upside-down, or even directly on your part. While other instruments need heavy and expensive tripods with numerous extensions to reach some applications, the Tracker3™ can often find a position the others cant. Weighing only 8.5kg (18.8lbs) and measuring 36cm (14in) in height, it is the most portable tracker available.

Multiple targets

Switch between 0.5" 7/8" or 3/4" SMR (targets) without any adapters. The new Multi-birdbath makes it easy to use the target that fits your application.

Largest measurement volume - Go the distance!

The API Tracker3™ is available in 3 different working ranges starting at 30 meters (98 feet) up to a maximum of an astounding of 120 meters (396 feet)! Also, with a vertical range of +80° to -60° you can measure almost anywhere. Whether you measure hundreds of feet or just a few, the Tracker3™ puts your job in range.

Superior engineering

The Tracker3™ continues API's proven tracker design employing on-the-shaft laser metrology systems. The interferometer (IFM), Absolute Distance Meter (TurboADM), and digital processing electronics are housed in one assembly. With this patented on-the-shaft implementation, the laser beam exits the tracker head without beam steering mirrors or deformable fiber optics. API's design minimizes systematic measurement errors, resulting in superior tracker stability, range and accuracy.

API Laser Tracking Systems have become the standard by which other systems are measured. Today, these systems are deployed globally in multiple industries where large scale metrology and alignment is necessary.

Some of these industries include:

- ✓ Aerospace
- ✓ Ship building
- ✓ Construction
- ✓ Tooling
- ✓ Machine shops

Today, API has customers worldwide using our tracking systems to perform:

- ✓ fixture inspection
- ✓ large assembly measurement
- ✓ machine tool calibration
- ✓ assembly alignment
- ✓ part inspection
- ✓ remote measurement
- ✓ CMM calibration
- ✓ robot calibration
- ✓ reverse engineering
- ✓ fixture building
- ✓ in process inspection
- ✓ tool and die inspection
- ✓ vol. error compensation
- ✓ antenna alignment

Specifications

Max lateral target speed:	> 3.0 meters/sec (120°/sec)
Max acceleration all directions:	> 2 g
IFM Laser:	HeNe 632.8nm Class II (eye safe)
ADM Laser:	IR 1550nm Class I (eye safe)

Range of Measurements

Horizontal:	640°
Vertical:	+ 80° to - 60°
Measuring Dia. (IFM and ADM):	
T3-15	30 meters (98 feet)
T3-40	80 meters (262 feet)
T3-60	> 120 meters (400 feet)*
Angle Resolution:	± 0.018 arc-second
Internal level accuracy:	± 2 arc-second

3-D spatial measuring performance

Resolution:	1 µm
Repeatability:	2.5 ppm (2 sigma)

Absolute Accuracy of a 3D Coordinate

	± 5 ppm (2 sigma)
	25 µm (0.001") at 5 meters (16 feet)

Laser Interferometer Distance Performance

Resolution:	0.08 µm
Accuracy:	better than ±0.5 ppm

ADM Distance Performance

Resolution:	0.1 µm
Accuracy:	better than: ±15µm or 1.5ppm

Environmental

Air Temperature:	-10°C to > 45°C (14°F to > 113°F)
Barometric Pressure:	580 mmHg - 800 mmHg
Relative Humidity:	10-95% Non-condensing
Altitude:	3000 Meters (9843 feet)

Physical Features

Dimensions of Tracker Head:	185mm x 190mm x 360mm (7.3in x 7.5in x 14.2in)
Dimensions of Controller:	110mm x 160mm x 310mm (4.3in x 6.3in x 12.2in)
Weight of Tracker Head:	8.5kg (18.5lbs)
Weight of Controller:	3.2kg (7lbs)
Packing Weight:	23kg (50lbs)

*(with selected targets)