



Thank you for purchasing an Apache Technologies, Inc. product. Your LIGHTNING® 2 Laser Detector is a premium quality tool that has been designed and manufactured to provide years of precise and reliable performance.

This manual is an important part of your purchase as it will familiarize you with the unit and explain the numerous features that have been designed into it. Please read this manual thoroughly before using your detector.

Please contact your Apache dealer or the Apache factory should you have questions regarding specific applications or if you require additional information.

IMPORTANT: Fill out the Warranty Registration Card and return it to Apache Technologies, Inc.

Please record your Laser Detector information below.

MODEL NUMBER: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

PURCHASED FROM: _____

PHONE: _____

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LIGHTNING[®] 2 Laser Detector

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General Description

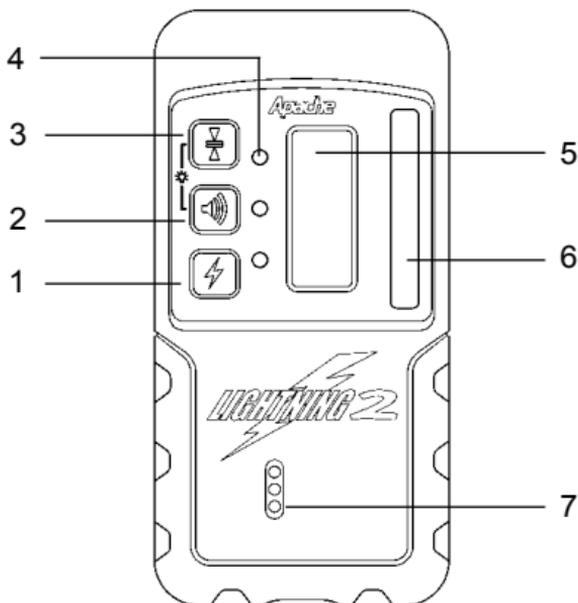
The LIGHTNING 2 high performance laser detector is designed to receive reference elevation information from rotating laser levels. The detector is designed to receive invisible laser beams as well as visible red beams.

The detector includes a Liquid Crystal Display (LCD) on the front and rear for easy visual indication of detector status and grade information. Bright, multi-color LED's on the front provide additional visual indication of grade reference. A beeper emits an audible tone that indicates on-grade, high or low. Accuracy levels are user selectable to meet various job requirements.

The LIGHTNING 2 detectors have been specifically designed for use in harsh, loud construction environments. Impact resistant housings, recessed windows, waterproof design, durable battery contacts, and a high volume beeper are incorporated into every detector. Strobe rejection technology is also included that detects strobe lights and rejects their input on laser reception and detector displays.

A general purpose clamp is designed to mount the detector on various grade rods and staffs. The clamp can be mounted to round, oval, square, and rectangular rods, as well as various sizes of wooden staffs.

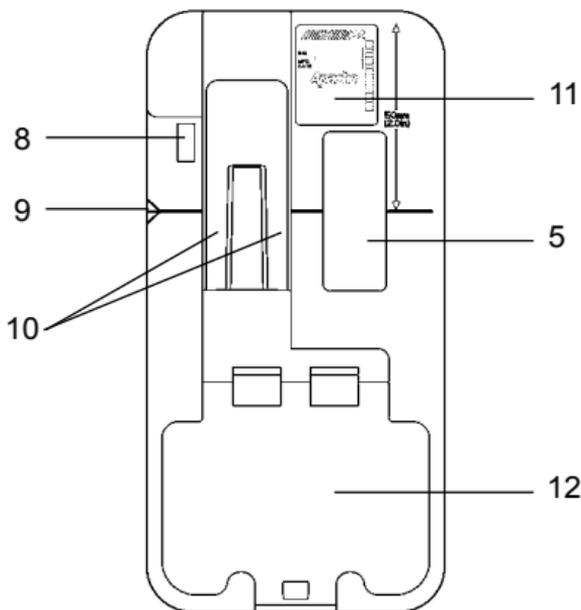
Operation



Front

- 1. Power Switch** - Turns the detector On and Off. Press to turn on. Press and hold for approximately 1 second to turn off.
- 2. Volume Switch** - Selects the volume level. Pressing switch cycles Loud, Off, and Low. Initial setting is Loud. When sound is Off, 1 beep indicates laser is detected.
- 3. Accuracy Switch** - Selects detection accuracy. Pressing switch cycles 3 accuracy options – Fine, Medium, and Coarse. Initial setting is Medium.
- 4. LED's** - Pressing Volume and Accuracy switches at the same time while the detector is on turns the LED's on or off. Five- channel display: Solid Red - High; Flashing Red - High Fine; Flashing Green - On-grade; Flashing Blue - Low Fine; Solid Blue - Low.
- 5. LCD Window** - Front and rear LCD's indicate the detectors position relative to the laser beam and detector settings.

Operation

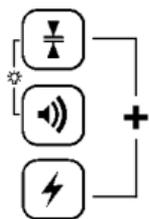


Back

- 6. Reception Window** - Houses the photocells which detect the laser signal. Window must be directed toward laser.
- 7. Beeper Output** - Fast audible signal is detector Too High; solid is On-grade; slow is Too Low.
- 8. Tab Slot** - accepts clamp tab and locks clamp in place.
- 9. Offset Notch** - Used for transferring reference marks. Top of detector is 2" (50 mm) above On-grade.
- 10. Clamp Slots** - Accepts clip-on general purpose clamp.
- 11. Serial Number / ID Label**
- 12. Battery Door** - Sealed battery compartment houses 2 AA or LR6 batteries. To install batteries, use a coin to open door. Insert batteries noting plus (+) and minus (-) terminal diagram.

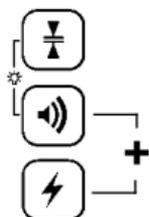
NOTE: Accuracy, Beeper Volume, and LED's On/Off settings are retained when the unit is turned off.

Operation - Special Functions



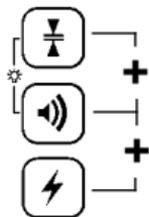
Zero Deadband – Super fine accuracy (0.1mm) used when calibrating lasers.

With the power Off, press the Power and Accuracy switches at the same time to enter the zero deadband. The accuracy symbol with no bars will be displayed confirming zero deadband. Press the accuracy switch or cycle power to return to the standard accuracies.



Line Alert – Special application to signal when the detector moves off on-grade.

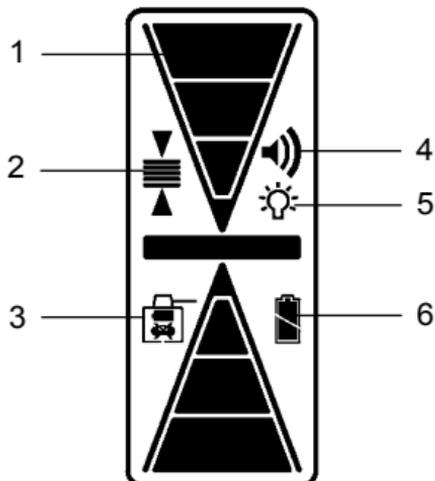
With the power Off, press the Power and Beeper switches at the same time to enter the line alert mode. Beeper symbol will blink to confirm. On-grade will have no sound; off-grade is audible in Loud mode. Cycle power to return to the standard operating mode.



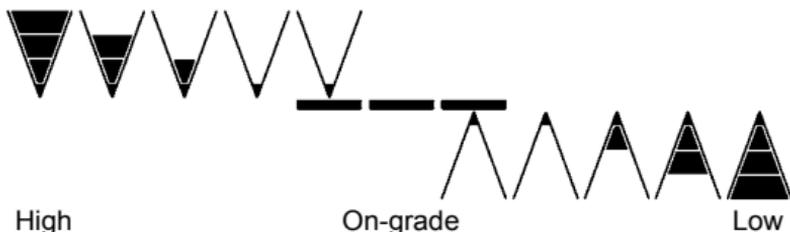
Laser Out of Level (OOL) – Special application used with certain lasers that provide an out of level signal.

With the power On, press the Power, Beeper, and Accuracy switches at the same time. The laser outline symbol will appear indicating OOL enabled. When enabled, a laser speed of 140 RPM \pm 20% will activate the level bubble of the OOL display. Press all 3 switches again to disable.

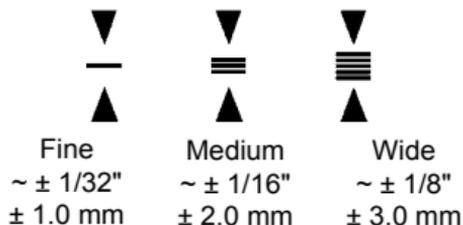
Liquid Crystal Display (LCD)



- Grade Indication Arrows** - 11 individual channels of grade display. Arrow size increases as distance away from on-grade increases.



- Accuracy Indicator** - Indicates 3 accuracy levels - fine, medium, and coarse.



Liquid Crystal Display (LCD)

3. **Laser Out of Level Warning** - Certain laser transmitters can signal out of level warnings by changing their rotation speed (RPM).



When enabled, the laser outline symbol is displayed.

When a laser out of level state is detected, the bubble vial inside the laser transmitter outline will be displayed.



The beeper also indicates out of level by alternating between high and low to give a distinct warning.

4. **Beeper Volume Indicator** - All symbols are on when High. Partial symbol is on when Low. No symbol indicates the beeper is off.



Beeper
High
selected



Beeper
Low
selected

5. **LED's On** - Enables LED grade indicators. Red for High, Green for On-grade, Blue for Low. Five channel indication - solid high or low LED is coarse. Flashing high or low LED is fine - closer to on-grade.



LED's
Enabled

6. **Low Battery Warning** - 3 indications of battery status:



Full-
Batteries
OK

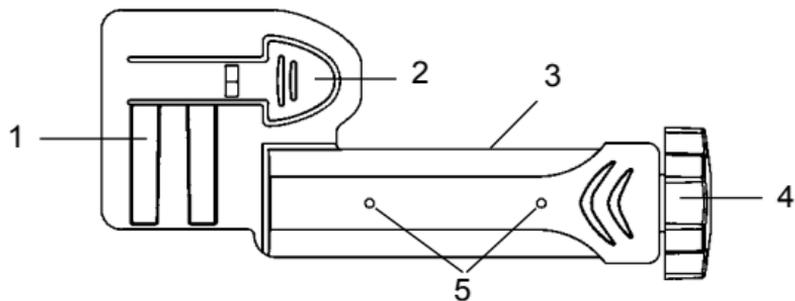


Half-
Initial
Warning



Empty-
Change
Batteries

General Purpose Clamp



1. Dovetail slots - attaches clamp to the back of detector.
2. Clamp lock tab and thumb release - tab for securing and thumb release for removing clamp from detector.
3. Reference Bar - Top of bar is aligned with detector On-grade location and marking notches.
4. Clamping Screw - tightens and loosens the clamp onto rods and staffs by moving the traveling jaw.
5. Bubble Vial Holes - pre-drilled holes for optional bubble vial kit screws.

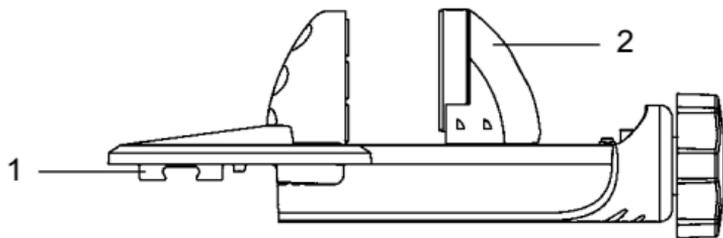
To secure the clamp to the detector, align the two dovetails of the clamp to the grooves on the back of the detector. Slide the clamp down onto the detector. A "click" will ensure the clamp is securely attached.

Turn the clamping screw counterclockwise to open the clamp's jaws.

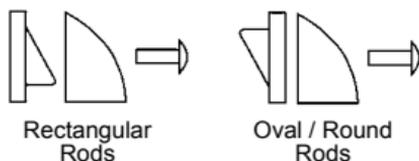
Turn the jaws screw clockwise to tighten the general-purpose clamp onto a rod or staff.

To remove the clamp, depress the thumb release tab and slide the clamp upward.

General Purpose Clamp



1. Dovetail slots - attaches clamp to the back of detector.
2. Traveling jaw - grips tightly to rods and staffs and has a reversible face to adapt to various rods.



The slanted face grips tightly to round and oval rods. The flat face grips tightly to rectangular rods. To change the face of the jaw, remove the screw with a flathead screwdriver, flip the face over, and secure the screw back into the face.

An optional bubble vial aids in keeping grade rods plumb when taking rod readings. The vial is supplied with 2 Phillips-head screws that attach it to the clamp. Holes are pre-drilled on the front of the clamp.



Maintenance and Safety



Detector Cleaning:

Do not wipe dust or dirt off the detector reception or display windows with a dry cloth or other abrasive material as scratching could occur, reducing visibility through these windows. A soft cloth and mild soap and water are effective. The unit may be submerged under water or sprayed with a low pressure hose if necessary. Do not use any other fluids other than water or glass cleaner, as they may attack polymer components.



Transport:

Use the original carton or a laser instrument case to transport the detector.



Storage:

If the detector will not be used for a month or more, it is recommended to remove the batteries from the unit.



Batteries:

It is recommended to use only high quality alkaline batteries.



Intended Uses of Detector:

The laser detector is designed and suitable for detecting a rotating laser beam.



Prohibited Uses:

- Operation without instruction.
- Operation other than the intended uses.
- Opening the detector, except the battery compartment.
- Modification or conversion of the detector.
- Use of accessories from other manufacturers.



Precautions:

- The person in charge of the detector must understand the manual instructions and ensure other users do also.
- Periodically carry out test measurements, particularly after the detector has been subjected to abnormal use.

Specifications

Working Radius:	Up to 1500 ft. (450m) Laser Dependent
Beam Reception Range:	± 45°
Beam Window Height:	2" (50 mm)
Detectable Spectrum:	610nm to 900nm
Beam Sizes Received:	1/8" to 3/4" (4 mm to 19 mm)
Detection Accuracy:	
Zero:	± 0.004" (± 0.1 mm)
Fine:	± 0.039" (~±1/32") (± 1 mm)
Medium:	± 0.079" (~±1/16" (± 2 mm)
Wide:	± 0.118" (~±1/8") (± 3 mm)
Display Channels:	11
Beeper Volumes:	High: 90 dBA Low: 70 dBA Off
Power Supply:	2 x 1.5V "AA" Batteries
Battery Life (alkaline):	70 hours, LED's Off 50 hours, LED's On
Operating Temperature:	-4° F TO +140° F (-20° C to +60° C)
Storage Temperature:	-40° F TO +158° F (-40° C to +70°C)
Automatic Shut-off:	30 minutes / no use
Weight (with batteries):	16 ozs. with clamp (0.45 kg)
Dimensions (HxWxD):	6.4 x 2.9 x 1.14 in. (163 x 74 x 29 mm)

**Specifications subject to change without notice*

Warranty

Apache Technologies, Inc. LIGHTNING 2 laser detectors and detector accessories are warranted to be free of defects in material and workmanship for a period of two years. This warranty period is twenty-four months from the date the product is delivered from the dealer to the purchaser or is put into service by a dealer as a demonstration unit or rental unit. In addition to the basic warranty above, Apache Technologies, Inc. may choose to repair or replace, at its discretion, any detector, in the event of failure for any reason, during the warranty period.

A Warranty Registration Card must be filled out properly and on file with Apache Technologies, Inc. or proof of purchase presented to obtain warranty service.

Any evidence of misuse, alteration, or an attempt to repair products by unauthorized personnel, or use of parts other than those provided by Apache Technologies, Inc. automatically voids the warranty. Competitor purchased and tested units are excluded from this warranty.

The user of the product is expected to follow all operating, maintenance and care instructions.

Apache Technologies liability under this warranty is limited to repairing or replacing any product returned to its factory for that purpose. The foregoing states the entire liability of Apache Technologies, Inc. regarding the purchase and use of its product and they shall not be held responsible for any consequential loss or damage of any kind.

This warranty is in lieu of all other warranties, expressed or implied, and constitutes all of Apache Technologies, Inc. liability with respect to merchandise sold by it.

CE DECLARATION OF CONFORMITY

Application of Council Directive:

89/336/EEC

Manufacturer's Name:

Apache Technologies, Inc.

Manufacturer's Address:

8261 State Route 235
Dayton, OH 45424 USA

European Representative Address:

Apache Technologies Europe GmbH
Langenberger Str. 590
D-45277 Essen, Germany

Model Number(s):

Lightning 2

Equipment Type / Environment:

ITE / residential, commercial, light industrial

Harmonized Standards Applied:

Electromagnetic Compatibility (EMC),
EN 61000-6-1: 2001; EN 61000-4-2: 1995
EN 61000-4-3: 1995; EN 61000-4-8: 1995
EN 61000-6-3: 2001; EN 55011: 1998

We herewith declare, in exclusive responsibility, that the instrument conforms to the above mentioned directive including their amendments up to the date below.

May 2007



Robert G. Conner, President

Notice to Our European Union Customers

For product recycling instructions and more information, please go to: www.trimble.com/environment/summary.html

Recycling in Europe

To recycle Trimble WEEE, call: +31 497 53 2430,
and ask for the "WEEE associate," or
mail a request for recycling instructions to:

Trimble Europe BV
c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL





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