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LIGHTNING™ Laser System
LIGHTNING NX™ Laser System

Thank you for purchasing an Apache Technologies, Inc. product. Your LIGHTNING™ Laser System is a premium quality tool that has been designed and manufactured to provide years of precise and reliable performance. The system has been specifically designed for use in harsh construction environments.

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 LIGHTNING Laser System.

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

Please record your product information below. This will assist you if there are any questions regarding warranty or service.

PRODUCT: _____

SERIAL NUMBERS: _____

DATE OF PURCHASE: _____

PURCHASED FROM: _____

PHONE: _____

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LIGHTNING Laser System - Exterior

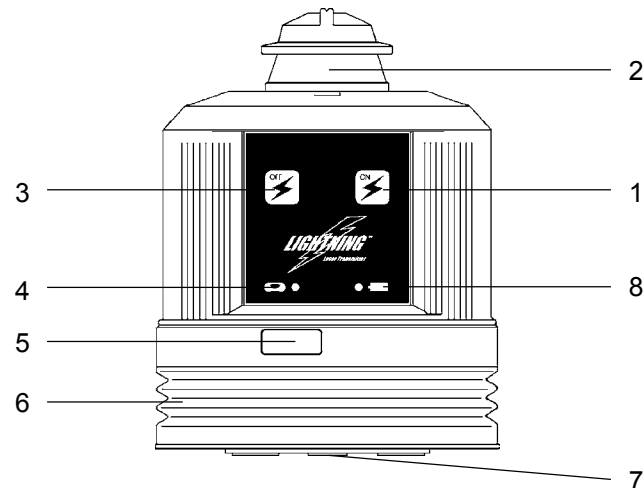
System Description

The Apache LIGHTNING Laser System is a one-man leveling tool that allows one person to take accurate, horizontal self-leveled elevation measurements up to 1000 feet away from the transmitter. The hand held or rod mounted laser detector reads the invisible laser signal as it is rotated in a 360° plane from the LIGHTNING Laser. The detector indicates the Hi / Low / On-Grade elevation via a visual display on front and rear LCD's and also with audible tones.

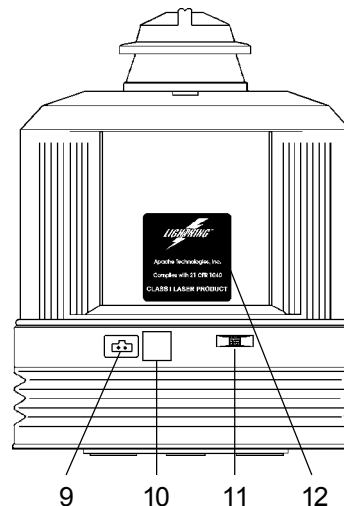
The Apache LIGHTNING Laser System is designed for all general construction and agricultural leveling tasks. Set the transmitter up on a central location to provide a continuous elevation reference. This reference can be used by multiple persons for a variety of leveling applications with additional laser detectors.

Controls and Displays

1. **Power On / Reset / Height of Instrument (HI) Alert Switch** - Turns the laser on, resets Out of Level, and disables HI alert.
2. **Rotor Housing and Beam Exit Window** - Provides environmental protection for rotor and beam aperture.
3. **Power Off Switch** - Turns the laser off.
4. **Out Of Level Warning / HI Indicator** - LED blinks green when leveling, solid green when leveled, blinks red when height of instrument is disturbed, and alternates red and green when the Height of instrument is disabled.
5. **Calibration Port Plug** - Access to fine adjustment keys.
6. **Leveling Base** - Waterproof and dustproof leveling boot.



7. **Mounting Base** - Attaches to standard 5/8" x 11 tripod.
8. **Battery / Charging Status Indicator** - Green and red LED indicate battery and charging status.



9. **Battery Recharging Jack** - Used with 110 V and 12 V auto charger to recharge internal NiCad batteries.
10. **Serial Number Label**.
11. **Rear Infrared Remote Reception Window** - Receives signals from IR remote control on NX model.
12. **Identification / Classification Label** - Class I laser product.

LIGHTNING Laser System

Operation



The LIGHTNING laser system consists of the laser transmitter, laser detector, rod clamp, 110V charger, 12V auto lighter charger, operators manual and carrying case. To operate, remove the laser from the case. Set the laser on a smooth stable surface or attach to a rough leveled tripod. Press the ON power switch. The unit does not require any additional leveling processes. (Assure the batteries are charged. The battery status indicator LED will blink red if charging is required. Refer to the "Battery Status / Charging" section on page 16.) The laser will level and begin to rotate.

Remove the Laser Detector from the case. Open the battery door with a coin or key. Install the batteries as shown noting the plus (+) and minus (-) terminal diagram on label on the inside of the battery housing. Close the battery door.

Press the ON switch to activate the detector. Select the desired accuracy by pressing the accuracy switch. The clamp may be attached to a grade rod or staff by adjusting the traveling jaw knob. The clamp is designed to fit on square, round, and oval rods. For elevations, read the rod at the reference indicator on the clamp or mark a surface using the 2" offset on the top of the detector. The detector is on-grade when a solid bar is displayed and/or a continuous audible tone is emitted. The volume can be controlled by depressing the volume control switch.

Refer to page 17 for detailed detector operating instructions.

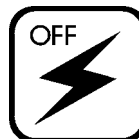
LIGHTNING Laser System

Operation



If the laser is disturbed during operation, the laser will stop rotating and the level indicator LED will blink green while the laser is automatically leveling. When the laser has leveled itself, the beam will begin to rotate again and the level indicator LED will be solid green.

If the laser receives a bump that may change the height of the instrument, it will stop rotating and the level indicator will blink orange. The laser will not auto-level. To relevel the laser, press the ON switch and the laser will begin to automatically relevel itself. Check your reference elevation to assure the laser elevation has not changed.



To turn the laser off, press the off switch. To turn the detector off, press the power switch.

Height of Instrument (HI) Alert

There is an option to turn off or disable the Height of Instrument (HI) alert. When the laser is turned on, the HI alert is always "On". To turn the HI alert "Off", press and hold the "ON" switch for 2 seconds, then release. The HI alert "Off" will be indicated by the level bubble out of level warning LED alternating red and green. To turn the HI alert back on, turn the laser off, then back on in the normal manner.



NOTE: When the HI is disabled, the laser will not shut off if the height of the instrument changes. Please use special care to ensure the original setup is not disturbed. Check the work frequently.

LIGHTNING Laser Transmitter

Specifications

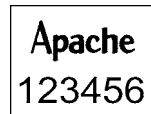
Automatic Self-Leveling Range:	± 4°
Compensation Method:	Electronic
Accuracy:	± 5 arc seconds, ± 1/32" per 100 feet
Beam Type:	Infrared Diode, 780 nm
Power Supply:	NiCad Rechargeable Batteries
Battery Life:	16 Hours
Recharge Time:	4 Hours
Rotation Speed:	400 RPM
Operating Radius:	1000 feet with LIGHTNING or CYCLONE Detector
Weight, Laser:	3.3 Lbs.
Dimensions, Laser (HxWxD):	6.75 x 5.31 x 4.12 in.
Weight, System:	9.5 Lbs.
Dimensions, System (HxWxD):	15.5 x 18.75 x 7.0 in.
Operating Temperature:	-4°F to +122°F (20°C to +50°C)
Storage Temperature:	-40°F to +158°F (-40°C to +70°C)

Safety / Identification Labels

Certification / Identification Label
(placed on back of laser)



Serial Number Label
(placed on back of laser)



LIGHTNING NX System - Interior/Exterior

System Description

The Apache LIGHTNING NX Laser System is a visible beam system that is used for both interior and exterior applications. The laser is self-leveling in both the horizontal and vertical planes and also has a plumb beam. Applications include installing and aligning building elements such as walls, suspended ceilings, partitions, access floors, tiles, counters, and more. The system includes the laser transmitter, infrared remote control, vertical bracket, wall mount, two magnetic ceiling targets, 110V charger, 12V auto lighter charger, operators manual and carrying case.

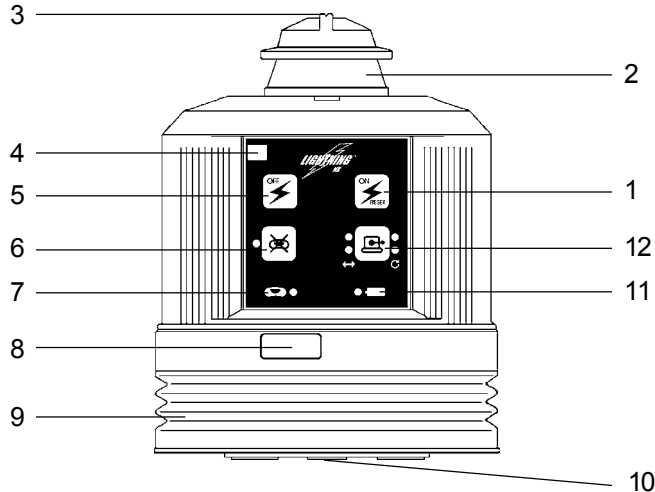
The LIGHTNING NX laser system is also suitable for outside general construction leveling applications when used with a hand held detector such as the CYCLONE, LIGHTNING, or THUNDER.

Controls and Displays

1. **Power On / Reset / Height of Instrument (HI) Alert Switch** - Turns the laser on, resets Out of Level, and disables HI alert.
2. **Rotor Housing and Beam Exit Window** - Provides environmental protection for rotor and beam aperture.
3. **X-axis Sight** - Aligns x-axis; y-axis is perpendicular.
4. **Infrared Remote Control Reception Window** - Receives signals from the IR remote control.
5. **Power Off Switch** - Turns the laser off.
6. **Auto / Manual Leveling Switch** - Turns automatic leveling off for manual slope applications.

LIGHTNING NX Laser

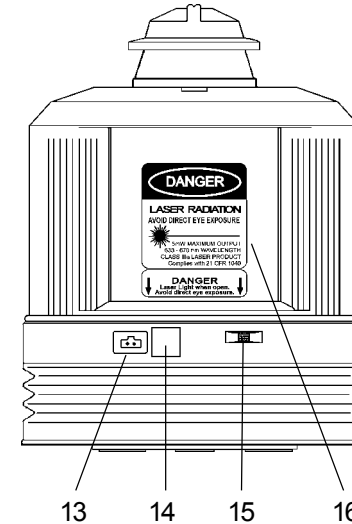
Controls and Displays



7. **Out Of Level Warning / HI Indicator** - LED blinks green when leveling, solid green when leveled, blinks red when height of instrument is disturbed, and alternates red and green when the Height of instrument is disabled.
8. **Calibration Port Plug** - Access to fine adjustments keys.
9. **Leveling Base** - Waterproof and dustproof leveling boot.
10. **Mounting Base** - Attaches to standard 5/8" x 11 tripod, vertical mount, and wall bracket.
11. **Battery / Charging Status Indicator** - Green and red LED indicate battery and charging status.
12. **Rotation / Line Sweep Selection Control** - Selects operation mode between rotation speeds and line sweep angles.

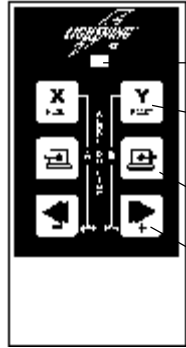
LIGHTNING NX Laser

Controls and Displays



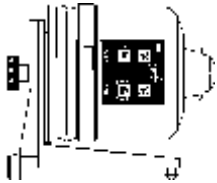
13. **Battery Recharging Jack** - Used with 110 V and 12 V auto charger to recharge internal NiCad batteries.
14. **Serial Number Label.**
15. **Rear Infrared Remote Reception Window** - Receives signals from IR remote control.
16. **Identification / Classification Label** - Class IIIa Laser product.

LIGHTNING NX Laser Components

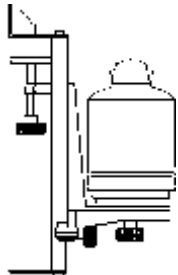


Remote Control

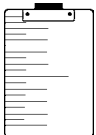
1. Emission/ Operation Indicator.
2. X and Y axis slope and line switch / Auto leveling reset switches.
3. Rotation and Line Sweep Selectors.
4. Left / Right line switches and Plus / Minus slope switches.



Vertical Bracket - Allows the laser to auto-level in the vertical plane on a flat floor or tripod for line applications, 90° layouts, and point transfer.



Wall Bracket / Ceiling Mount - Allows the laser to be wall mounted by clamping to wall molding or angles or secured by nails or screws using the slip-in keyhole slots. Attach the vertical bracket to the wall mount unit by sliding the point of the bracket inside the top slot of the wall mount. When the desired height is achieved, align the wall mount screw to the slot in the vertical bracket and tighten.



Magnetic Ceiling Targets - Red graduated grid target highlights the laser's visible beam giving a constant reference for acoustic ceiling installation.

LIGHTNING NX Laser System

Operation

Remove the laser transmitter from the case. Set the transmitter on a flat stable surface, wall mount, or attach to a rough leveled tripod. Press the ON power switch. The unit does not require any additional leveling processes. (Assure the batteries are charged. The battery status indicator LED will blink red if charging is required. Refer to the "Battery Status / Charging" section on page 16.) The laser beam and level indicator LED will blink green while the unit is leveling. The laser beam will begin rotating and the level indicator LED will be solid green when leveling is complete.



HORIZONTAL OPERATION - Initially the laser is rotating at its higher speed. Horizontal modes are selected by pressing the rotation switch which cycles through the various rotation speed and line sweep options. Pressing the switch once rotates the laser at 100 RPM. Pressing again generates a line sweep of 60°, 30°, 5°, and 2° respectively. Pressing again selects no rotation or a stopped beam. LED's on the side of the switch indicate



whether the rotation mode or the line sweep mode or stopped mode is selected. The horizontal operation modes may also be selected by using the rotation switches on the remote control. The left rotation switch on the remote display cycles the operation modes as does the rotation switch on the laser - 300 RPM, 100 RPM, 60°, 30°, 5°, 2° and stopped. The right rotation switch cycles in the opposite sequence.

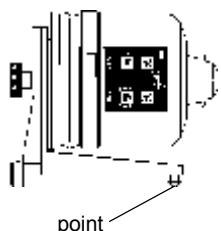


The line sweep location is positioned by pressing the left or right arrow switches on the remote control until the sweep is in the desired area. The arrow switches initially move the beam slowly and increase as the switch is continually pressed.

LIGHTNING NX Laser System

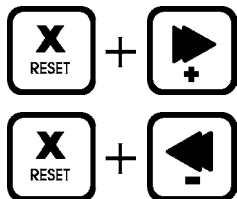
Operation

There is an option to turn off or disable the Height of Instrument (HI) alert. When the laser is turned on, the HI alert is always "On". To turn the HI alert "Off", press and hold the "ON" switch for 2 seconds, then release. The HI alert "Off" will be indicated by the leveling out of level warning LED alternating red and green. To turn the HI alert back on, turn the laser off, then back on in the normal manner.



VERTICAL OPERATION - The Lightning NX laser must be attached to the included vertical bracket to operate in the vertical mode. The laser is attached to the base of the vertical bracket with the 5/8 x 11 screw. Ensure the point of the vertical bracket is on the right side of the laser when facing the keypad as illustrated. This will allow the laser to auto level in the vertical mode.

Turn the laser on and move the laser spot directly below the laser to establish the first point. The spot is rotated vertically with the left or right arrow switches on the remote control. Use the same arrow switches to rotate the laser spot to the second point.



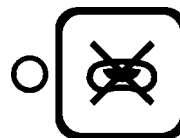
To align the second point in the horizontal plane, the spot can be moved to the right by pressing the remote 'X' switch and the right arrow switch simultaneously. The line can be moved to the left by pressing the 'X' switch and the left arrow switch simultaneously.

Directional diagrams are located on the laser for easy viewing. Rotation speed and line sweep can be set from the laser or remote control in the same manner as in the horizontal operation mode.

LIGHTNING NX Laser System

Operation

SLOPE OPERATION - The Lightning NX laser is capable of sloping the laser plane in 2 axes referenced X and Y. The X axis is defined by the direction of the rear sight notch and fore sight notch that are located on top of the rotor housing. The Y axis is perpendicular to the X axis. Labels on the laser housing also identify the X and Y axis.



When the laser is turned on, it is in automatic leveling mode, the Height of Instrument alert is enabled, and the auto / manual leveling switch LED is green. To activate the slope mode, the auto / manual leveling switch must be set to manual. To change to manual, press the switch once. The auto / manual mode switch LED will then blink red. This confirms that the laser is in the manual mode.



NOTE: In the manual mode and in the HI disabled mode the out of level warning LED and the laser shut-off function are disabled. The laser will not shut off if it is disturbed or the height of the instrument changes. Please use special care to ensure the original setup is not disturbed. Check the work frequently.

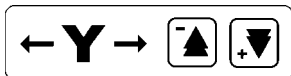
To slope the laser plane in the X axis, select no rotation with the rotation switch. Move the laser spot in line with the X axis with the left or right arrow switches on the remote control.

LIGHTNING NX Laser System

Operation



SLOPE OPERATION - Pressing the X switch and the right arrow (+) switch simultaneously on the remote control will cause the laser to move upward in the X axis as indicated on the label. Pressing the X switch and the left arrow (-) switch simultaneously will cause the laser to move downward in the X axis as indicated on the label. The X axis directional label is located on the top side of the laser housing.



Pressing the Y switch and the right arrow (+) switch simultaneously on the remote control will cause the laser to move downward in the Y axis as indicated on the label. Pressing the Y switch and the left arrow (-) switch simultaneously will cause the laser to move upward in the Y axis as indicated on the label. The Y axis directional label is located on the top side of the laser housing.

Rotation speed and line sweep can be set from the laser or remote control in the same manner as in the horizontal operation mode.

To turn the manual mode off, press the auto / manual leveling switch. If the out of level indicator is flashing green, the laser is automatically leveling to horizontal. If the out of level indicator is flashing red, press the ON switch on the laser or the ON/RESET switch on the remote control.

LIGHTNING NX Laser Transmitter

Specifications

Self-Leveling Range:	± 4°
Compensation Method:	Electronic
Accuracy:	± 5 arc seconds, ± 1/32" per 100 feet
Beam Type:	Visible Diode, 635 nm
Power Supply:	NiCad Rechargeable Batteries
Battery Life:	16 Hours
Recharge Time:	4 Hours
Rotation Speeds:	100, 300, 0 RPM
Line Sweep Angles:	60°, 30°, 5°, and 2°
Operating Radius with detector:	750 feet with CYCLONE Detector
Weight, Laser:	3.3 Lbs.
Dimensions, Laser (HxWxD):	6.75 x 5.31 x 4.12 in.
Weight, System:	11.75 Lbs.
Dimensions, System (HxWxD):	15.5 x 18.75 x 7.0 in.
Operating Temperature:	-4°F to +122°F (20°C to +50°C)
Storage Temperature:	-40°F to +158°F (-40°C to +70°C)

Safety Labels Required on this Product

Certification / Identification Label
(placed on back of laser)



Aperture Label
(placed directly underneath beam exit window)



Non-interlocking Protective Housing Label
(placed on lower back of laser)



LIGHTNING & LIGHTNING NX Laser Systems

Operation - Battery Status / Charging



The Lightning laser systems have internal NiCad batteries. The batteries will operate the laser for approximately 16 hours of continuous use. Recharge time from a drained state is 4 hours.

The charging system is also capable of quick charging. A 1 hour recharge will allow for 4 to 6 hours of operation.

To charge the batteries, insert the charging plug into the recharge jack of the laser and plug the wall charger into a 110V wall outlet. The systems are also equipped with a 12V auto cigarette lighter charger. To use, insert the charging plug into the recharge jack of the laser and plug this charger into an appropriate source.

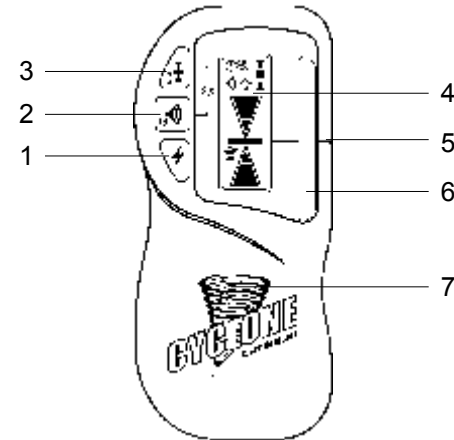
When charging, the battery status indicator LED is solid green. When charging is complete, the battery status indicator LED blinks green. This indicates charging is complete and a trickle charge is in effect which prevents overcharging.

When the laser is in use, a low battery condition is indicated when the battery status LED blinks red slowly. When this begins, there are 20 to 30 minutes of operating time remaining. When the battery status LED blinks red rapidly, there are only about 2 minutes remaining before the laser shuts off.

The NiCads have no memory effect, even if the user operates the instrument for a short time and recharges again.

CYCLONE™ Detector Model 64

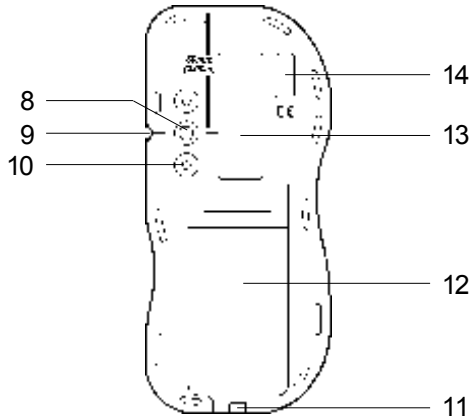
Controls and Displays



- 1. Power Switch** - press once to turn On. Unit beeps and LCD's turn on to confirm power is on. Press and hold for 2 seconds to turn off. Unit beeps and LCD's turn off.
- 2. Beeper Switch** - selects the sound level. Pressing switch cycles Loud, Off, and Low.
- 3. Accuracy Switch** - selects detection accuracy. Pressing switch cycles through 4 accuracy options. Refer to details on page 21.
- 4. Liquid Crystal Display (LCD)** - front LCD indicates the detectors position relative to the laser beam and other detector settings. Refer to details on page 20.
- 5. On-Grade Mark** - aligned with the laser on-grade reading. Top of detector is 2" (50 mm) above mark. Mark is located next to the photocells for error free marking.
- 6. Laser Reception Window** - photocells located behind window which detect the laser beam. Must be directed toward laser.
- 7. Beeper Output** - Fast audible signal is detector too High; solid is On-Grade; slow is detector too Low.

CYCLONE Laser Detector

Controls and Displays - Rear View



8. **Captive Screw Thread** - detector thread insert accepts the rod clamp screw to secure detector to the clamp.
9. **Offset Notch** - Used for transferring reference marks. Top of detector is 2" (50 mm) above "On-Grade".
10. **Clamp Guides** - 2 dimples help align rod clamp.
11. **Battery Door Latch** - Use a coin to open and install or replace batteries. Insert batteries noting plus (+) and minus (-) terminal diagram on the label inside the battery compartment.
12. **Battery Door** - waterproof compartment houses 2 x "AA" alkaline batteries.
13. **Rear LCD** - functions the same as the front LCD.
14. **Serial Number Label**

CYCLONE Laser Detector

Secondary Switch Functions



LCD Backlighting - Pressing the Beeper and Accuracy switches together turns the LCD backlight on. Pressing both switches again turns the backlight off.



The **Power** switch functions as a "shift" key. When the unit is on, pressing and holding this switch enables the secondary switch functions. These functions change the automatic shut-off time and access the industrial alignment modes.



Automatic Shut Off - With the unit On, press and hold the Power switch and press the Beeper switch to change the auto shut off time. Choices are 30 minutes (.5hr) or 24 hours (24h). The selection will be indicated by the clock and time symbols on the LCD. A selection change will also be indicated by a short beep.

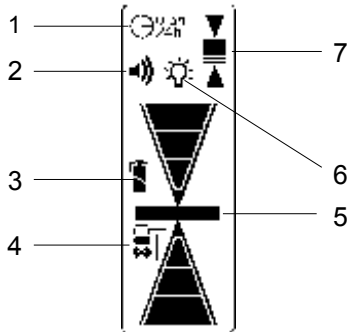
To completely disable automatic shut off, hold both switches for 2 seconds until the unit beeps and all LCD symbols are displayed, then release. The time symbols on the LCD will then turn off to confirm that the automatic shut-off is disabled. To exit this mode, reset to 30 minutes or 24 hours, or turn the power off. When the unit is turned back on, it will revert to the 30 minute or 24 hour auto shut off.



Industrial Alignment - With the unit On, press and hold the Power switch and press the Accuracy switch to change from the normal operating accuracies to the industrial alignment accuracies. The unit will beep once and the "zero" deadband will be entered and displayed by a flashing top and bottom arrow on the accuracy indicators on the LCD. While in this mode, pressing the accuracy switch will change between the 3 industrial accuracy selections. Refer to the LCD section for details. Press and hold the power switch and then press the accuracy switch again to exit the industrial alignment mode. The accuracy indicators will remain solid to confirm normal operating modes. The unit will always power up in the normal operating mode.

CYCLONE Laser Detector

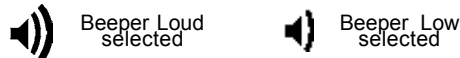
Liquid Crystal Display



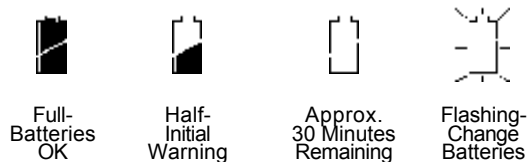
1. Automatic Shut-Off - clock and number indicate a 30 minute or 24 hour shut-off is selected. No symbol indicates that auto shut-off is disabled.



2. Beeper Volume Indicator - All symbols are on when loud. Partial symbol is on when low. No symbol indicates the beeper is off.



3. Low Battery Warning - 4 indications of battery status:

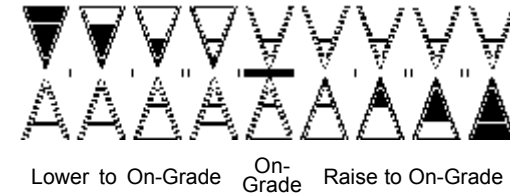


4. Laser Out of Level Indication - Refer to the Special Functions section on page 22 for a description of this feature.

CYCLONE Laser Detector

Liquid Crystal Display

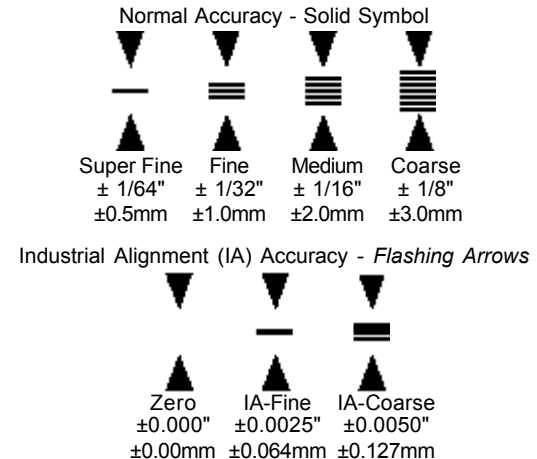
5. Multichannel Grade Indication - 9 individual displays or channels indicate grade location. Horizontal bar indicates on-grade. Arrow size increases as distance away from on-grade increases. Up arrow indicates detector is low. Down arrow indicates detector is high.



6. LCD Backlight - bulb symbol indicates the LCD backlight is on.



7. Detection Accuracy Indicator:



CYCLONE Laser Detector

Special Switch Functions



Laser Out of Level Warning - This function is used with lasers that communicate to the detector that the laser is out of level. The lasers change their normal rotating speed (RPM) to a different speed when they are out of level. When enabled, the detector senses this RPM change and displays the laser out of level symbol on the LCD. The beeper of the detector also alternates between high and low to give a distinct warning sound.



Out of Level
Warning

To enable the out of level warning, turn the power on. With the power on, press all three switches - the power switch, the beeper switch, and the accuracy switch - at the same time. When the laser symbol with the battery and level bubble appear, the function is enabled. When the outline of the laser only appears, the function is disabled. Press all three switches again to cycle the function.

Out of Level
Enabled



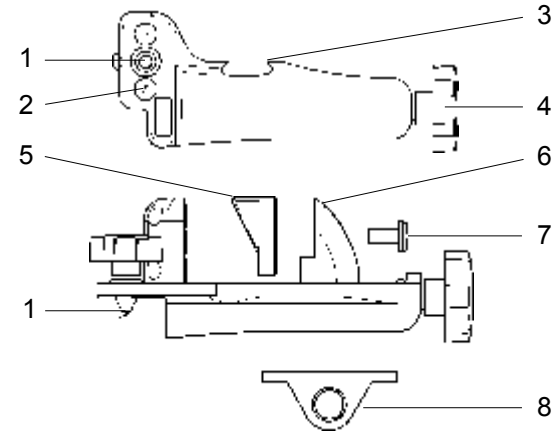
Out of Level
Disabled

Off Grade Alert Mode - This function used for special applications. It is designed to audibly alert the user when the detector moves from the on-grade position. In this mode, the on-grade deadband does not activate the beeper - there is no sound. When moved out of the on-grade zone, the beeper does sound in the loud mode and function otherwise as normal. All other detector functions operate as usual. To enable this mode, press the Power switch and the Beeper switch at the same time to turn the unit on. The beeper symbol will flash to indicate that the grade alert mode is enabled.

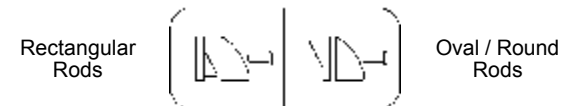
To exit the grade alert mode, simply press the beeper switch or turn the power off. When the unit is turned back on using the Power switch only, it will be in the normal operating mode.

CYCLONE Laser Detector

Rod Clamp - Model 62



- 1. Captive Rod Clamp Screw** - attaches to the back of detector.
- 2. Alignment Points** - help secure and align rod clamp to detector.
- 3. Reference Indicators** - points are aligned with the detector's on-grade location for accurate grade rod readings.
- 4. Clamping Screw Knob** - Secures clamp to rods and staffs by moving the traveling jaw.
- 5. Reversible Face** - slanted face is used to tightly grip round and oval rods; flat face is used to grip rectangular and square rods.



- 6. Traveling Jaw** - moving jaw grips tightly to rods.
- 7. Flathead Screw** - holds reversible face in place. Remove with flathead screwdriver to change face selection.
- 8. Optional Bubble Vial Kit** - aids in keeping grade rods plumb

CYCLONE Laser Detector

Specifications

Working Radius:	3 ft. - 1000 ft. (1 m - 300 m)
	Laser dependent
Detection Height:	2" (50 mm)
Accuracy:	Normal Mode
	Super Fine $\pm 1/64$ " ± 0.020 " (± 0.50 mm)
	Fine $\pm 1/32$ " ± 0.040 " (± 1.00 mm)
	Medium $\pm 1/16$ " ± 0.080 " (± 2.00 mm)
	Coarse $\pm 1/8$ " ± 0.120 " (± 3.00 mm)
	Industrial Alignment Mode
	Zero ± 0.0000 " (± 0.000 mm)
	Fine ± 0.0025 " (± 0.064 mm)
	Coarse ± 0.0050 " (± 0.127 mm)
Reception Angle:	$\pm 45^\circ$
Detectable Spectrum:	610 nm to 900 nm
Beeper Volumes:	Loud 110 dBA
	Low 90 dBA
LCD Backlighting	Yes, front and rear
Power Supply:	2 x 1.5 Volt "AA" batteries
Battery Life:	90+ hours continuous use
Automatic Shut Off	Selectable - 30 minutes, 24 hours, Off
Weight:	10 oz. (280 g) without clamp
	16 oz. (450 g) with clamp
Dimensions:	6.4" x 2.9" x 1.2"
	(163 x 74 x 30 mm) without clamp
Operating Temp:	-4°F to +140°F (-20C to 60C)
Storage Temp:	-40°F to +158°F (-40C to 70C)

Laser Safety



The LIGHTNING Laser System is a Class I laser (Invisible beam). This laser complies with all applicable portions of Title 21 of the Code of Federal Regulations; Department of Health and Human Services; Food and Drug Administration; Center for Devices; Bureau of Radiological Health. This is the safest classification available. A Class I certification means there is NO danger of injury when used in accordance with the instructions in this manual.



The LIGHTNING NX Laser System as a Class IIIa laser (Visible beam). This laser complies with all applicable portions of Title 21 of the Code of Federal Regulations; Department of Health and Human Services; Food and Drug Administration; Center for Devices; Bureau of Radiological Health.



WARNING There is a risk of fire, electric shock or physical harm if you attempt to disassemble or repair the instrument yourself. Service is only to be carried out by Apache Technologies, Inc. or its authorized dealer service center. **Laser beams can cause eye injury if used incorrectly.** Never attempt to repair the instrument yourself. **Risk of fire or electric shock.** Do not use a damaged or wet charging cable.



CAUTION Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

Do not stare into laser beam or view directly with optical instruments.

Maintenance and Care

The user of this product is expected to follow all operating and safety instructions and perform periodic checks of the product's performance. The manufacturer or its representatives assume no responsibility for results of the use of this product including any direct, indirect, consequential damage, and loss of profits. Check your work frequently.

Your LIGHTNING Laser System was shipped in a sealed, moisture resistant enclosure, protected by a field tested foam padded case. If the unit is transported from job to job inside its factory-provided case and normal instrument precautions are followed, the system will provide many years of service.

Do not wipe dust or dirt off the laser lighthouse or detector windows with a dry cloth as scratching could occur, possibly damaging these surfaces. Use only a good quality glass cleaner with a soft cloth on all external optical components. If these surfaces have hardened concrete or other materials on them, take the system to your Authorized Service Center for cleaning or replacement.

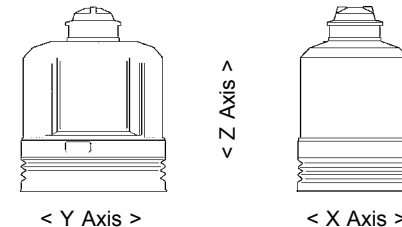
If the system will not be used for a 30 day period or greater, it is recommended to remove the batteries from the detector.

Periodically wipe off any accumulated dust or dirt from the laser's outer surface. Clean dust and debris from the detector beeper opening and battery housing. The detector may be submersed under water if necessary.

Calibration

With any precision instrument it is recommended to check calibration on a regular basis (at the beginning of each job or if the unit has been dropped). If the system is going to be used extensively at temperatures less than 32°F (0°C) or greater than 100°F (37°C) it is recommended to check and, if necessary, adjust the unit when operating under these conditions.

When the transmitter is properly calibrated, it will emit a horizontal level plane, so that if the unit were turned 180° or 90° from an original position, the reading would always be within $\pm 1/16"$ per 100' from the original position. A calibration error exists when the laser reference coming out of one side of the unit is above true level, and the reference coming out the opposite side is below true level.



To check calibration, follow these steps:

1. Choose a location for the transmitter that provides a clear path towards a solid surface, building or wall located 100' (30m) away.
2. Set up the laser on a tripod which has been roughly leveled with a hand level or other stable surface.
3. The horizontal axis are the X-axis and the Y-axis as illustrated in the diagram. Aim the unit initially so one end of the X axis is pointed towards the wall and turn the laser on.
4. Set the CYCLONE detector to the industrial alignment "zero" deadband accuracy. Refer to page 19.
5. Place the laser detector on the wall and slowly slide the unit up or down to achieve an "On-Grade" reading. "On-Grade" is when the High arrow and Low arrow are toggled or equally intermittently displayed.

Calibration

6. At this instant, precisely mark center at the marking notch or scribe a line along the top of the detector. Note the reading X1.
7. Rotate the laser 180° so that the opposite end of the X-axis is transmitting towards the wall. Repeat steps 4 and 5. Note the second reading X2.
8. The distance between these two marks, if any, determines the calibration error. If the marks are less than 1/8" apart, the X axis is in calibration. If the marks are greater than 1/8" apart, consult the factory or your authorized Apache dealer.
9. Turn the unit 90° and check the Y-axis by repeating steps 4 - 8.
10. If either the X or Y axis marks are greater than 1/8" apart from each other, the axis needs to be recalibrated. Consult the factory or your authorized Apache dealer.
11. The Z-axis must be checked by the factory or your Apache dealer.

Troubleshooting

If none of the following techniques return your system to normal operation, take the system to your local Apache Dealer or Authorized Service Center for evaluation or repair.

Problem: Laser out-of-level indicator does not shut off.

Solution: Check to see that the unit is mounted to a stable, non-vibratory surface that is within $\pm 4^\circ$ of level to enable automatic leveling. Press the On switch if the height of the instrument has moved.

Problem: No signal is received at CYCLONE Detector.

Solution: Check to see that power is on at the laser and it is rotating. Check to see that power is on at the detector and that the batteries are good by confirming that the battery symbol display is not on.

Problem: Laser and detector only work at short distances.

Solution: Check lighthouse windows for heavy dust or moisture. Clean with glass cleaner and a soft cloth.

Warranty

All Apache Technologies rotating laser products are warranted to be free of defects in material and workmanship for a period of two years. Apache Technologies CYCLONE detectors are warranted to be free of defects in material and workmanship for a period of three years. This warranty period is 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 CYCLONE detector, in the event of failure for any reason, during the warranty period.

Please return the included warranty card as this will expedite any warranty service that may be required. Please retain your warranty information and proof of purchase. If a warranty card is not on file, proof of purchase must accompany your request for warranty repair.

Any evidence of abuse, misuse, alteration, accident or negligent use or an attempt to repair products by unauthorized personnel or with parts other than those provided by Apache Technologies automatically voids the warranty.

The user of the product is expected to follow all operating instructions, periodically checking the instrument and the work as it progresses.

Apache Technologies liability under this warranty is limited to repairing or replacing any product returned to an authorized service center for that purpose. The foregoing states the entire liability of Apache Technologies 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 liability with respect to merchandise sold by it.