

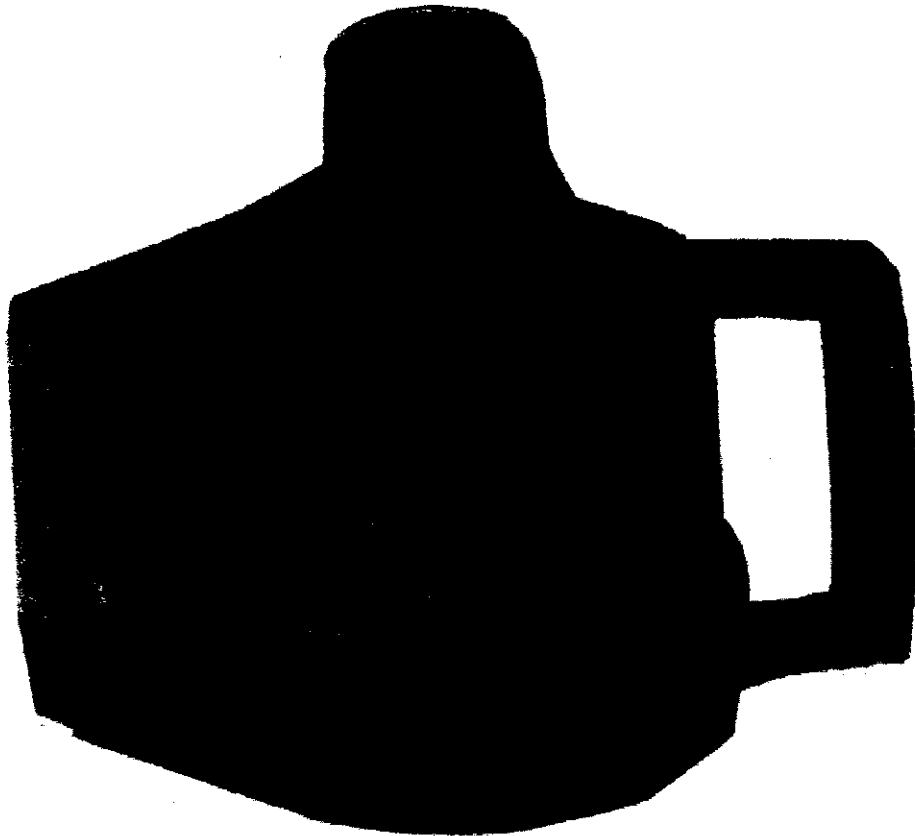
SCANNED

Manual # 498

Plant No.: 2402 004

Machine Type: Laser Level Self
Levelling.

UNIVERSAL



A410S

Operation Manual

Warranty

Statement of Limited Warranty

The A410S Laser is warranted to be free from defects in performance and workmanship for a period of twelve months from date of purchase. The warranty covers all costs of repair or replacement at the manufacturer's option.

LIMITS AND EXCLUSIONS:

The warranty will not apply to any damage resulting from negligence, accident, damage, misuse, repair or storage, or in case of abnormal use.

The warranty is considered void absolutely if any attempt is made to repair, modify or recalibrate the unit whatsoever. In these circumstances the manufacturer reserves the right to charge for costs incurred in repair or replacement of the unit.

Universal is not liable for:

- 1 Freight charges incurred in return of defective unit to manufacturer.
- 2 Loss of income or inconvenience relating to defect in performance of the unit.
- 3 Leasing charges of alternative equipment during repair of a defective unit.

Universal requires that the customer make reasonable attempts to inform Universal Lasers of problems with the product prior to returning the unit for repairs.

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Congratulations! You have just purchased the A410S visible laser level. Although it is very simple to use, we highly recommend that you read this manual before operating the instrument.

1. General Information

1.1 Description

The A410S laser has been specifically designed for contractors and can be used for levelling, vertical alignment, plumbing and squaring. Applications include : levelling, installing suspended ceilings, technical floorings, tiling, partitions, etc.

CAUTION

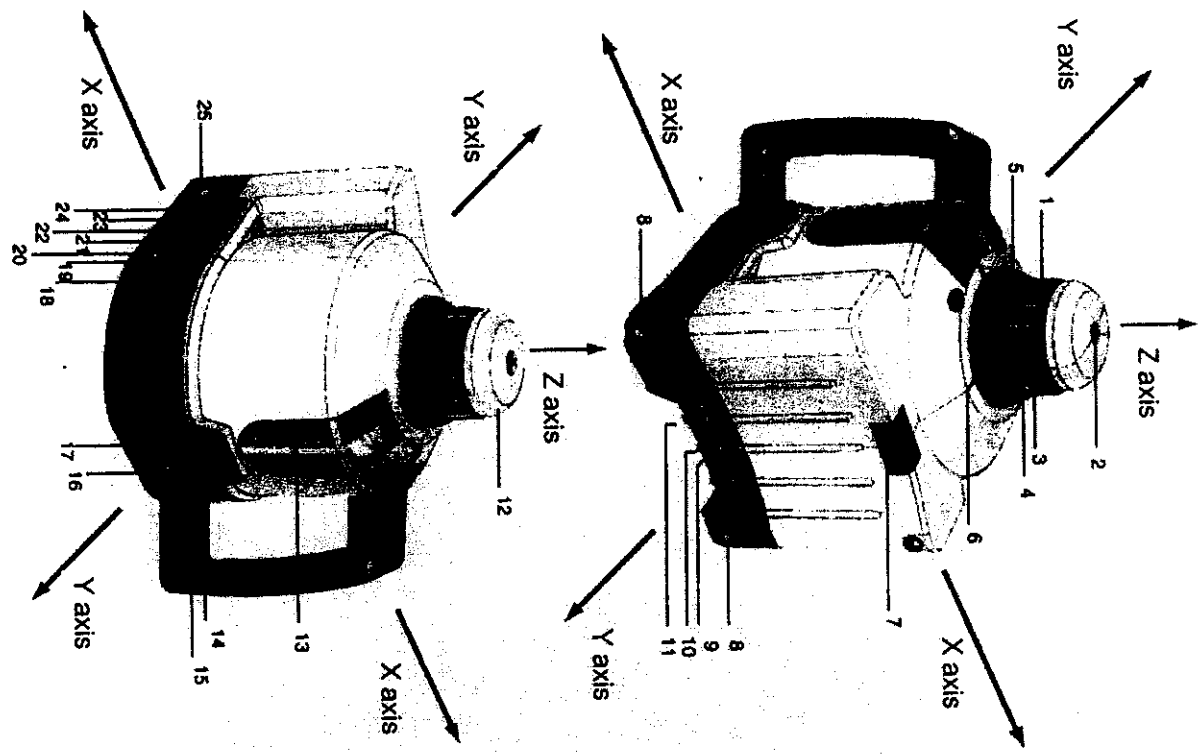
The A410S is a Class IIIa laser and is manufactured to comply with the international rules of safety IEC2385. Although the power of the emission of the beam does not exceed 2 mW in Class IIIa, the following cautions are recommended:

- Do not stare directly at the laser beam
- Do not set up the laser at eye level

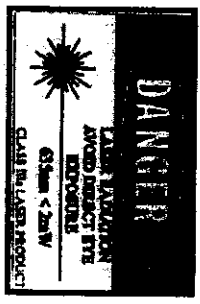
The A410S laser has these advanced features:

- * Automatic self-levelling in both horizontal and vertical modes
- Laser point, laser rotation, laser chalk-line and square shot
- * Scanning capability
- On job calibration via the laser keypad or remote control
- Remote control capability
- Rainproof and dustproof
- Optional : rechargeable battery. A 15-hour charge allows 40 hours of use

1.2 Overview



- 1 Rotating head
- 2 Laser plumb or square loser beam aperture
- 3 Laser beam aperture
- 4 Laser chalk line aperture
- 5 Arrow (align with 90° index mark)
- 6 90° index mark (one of four)
- 7 Retractable foot for vertical setup
- 8 Adjustable feet for vertical setup
- 9 Batteries (rechargeable or alkaline)
- 10 Jack for battery charger (only on rechargeable battery models)
- 11 5/8 - 11" mount
- 12 Top cover
- 13 Vial for vertical setup
- 14 Laser rotation to the left / speed control
- 15 Laser rotation to the right / speed control
- 16 Moving the square shot to the right
- 17 Moving the square shot to the left
- 18 Capture window for remote control
- 19 Manual mode light
- 20 Manual / automatic
- 21 H.I. Alert light
- 22 H.I. Alert (Tilt)
- 23 Battery low light
- 24 On / off
- 25 Calibration screws with cap



2. How to use your A410S Laser

When switching on the laser, the A410S does a self-test. The beam blinks while the laser is self-levelling. After it has levelled, the head will start to rotate.

“Auto/Man” Key (20)

-Auto: Automatic leveling. Default mode when laser is switched on.

-Man: Manual use.

The A410S laser is always in the automatic self-levelling mode (auto) when turned on. Once the instrument has self-levelled, the laser head will start rotating. While levelling, the head does not rotate and the laser beam will blink.

You can choose to have constant rotation by switching to the Manual mode. This way, the beam will rotate even if the instrument is not levelled (necessary when working on inclined planes).

For safety, a red light will blink above the Auto/Manual button to advise the user that the laser is in manual mode.

“H.I.” - Key (22)

H.I.-Alert mode. Will work only when selected. The Tilt function is also known as the H.I. (height of instrument) Alert. This feature stops the laser automatically if the laser is jarred or moved, preventing inaccurate readings. Use this feature only in automatic mode, not in manual.

Push the Tilt key (22) after turning the instrument on. The H.I. Alert feature is available 30 seconds after the instrument has self-levelled.

The red light above the Tilt key will blink when operating in this mode. If the laser is disturbed, the head will stop rotating and the red light will be on continuously. Turn the laser off, wait 5 seconds, and turn it on again (check that the beam is at its original reference).

2.1 Horizontal Setup

- 1 The A410S laser can be used directly on the ground, on the wall mount or on a standard tripod (5/8 - 11).
- 2 Press the On/Off key (24) to switch the laser on. It will start its automatic leveling.
- 3 To select the Manual mode, press key (20).
- 4 To select the H.I.-Alert mode, press key (22). This feature is available 30 seconds after the laser has levelled itself.
- 5 If you wish to move the laser beam to a specific point, briefly press key (14) or (15).
- 6 To adjust the rotation speed, press key (14) or (15) continuously according to the direction you wish. To stop the rotation press once on the opposite key.
- 7 To turn the laser off, press key (24).

2.2 Vertical Setup

- No accessories are need for this position. The A410S can be used directly on the ground. However, it can be used on the wall mount for a better setup.
- 1 Flip up the retractable foot (7). Place the instrument in the vertical position, resting on this foot. Use the adjustable feet (8) to rough level the laser to adjust the top bubble vial (13).
 - 2 Turn the instrument on. Once the instrument is level, the head will start rotating.

2.3 Slope Setup

By selecting manual mode (key 20) you are able to slope the laser between the horizontal and vertical axis.

For accurate adjustment in the X axis, you can use the following keys:

1. On the laser use keys 16 and 17. See section 1.2
2. Remote Control use keys R2 and R3. See section 6.4
3. Sensor use keys C2 and C3. See section 6.1

Press and hold one of the keys above, and beam will then move in the X axis. (Movement will be slow at first, and then speed up). If slope is out of adjustment range, you will need to tilt the laser level manually closer to the required slope range, and then use the adjustment keys listed above.

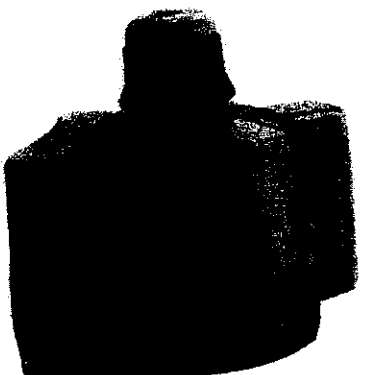
There is no fine adjustment on the Y axis. A suggestion is to use a wall bracket (see section 6.3), and hold on slope using a strong adjustable G clamp.

2.4 Squaring

- 1 Put the laser on the ground and repeat steps 1 to 2 for vertical use.
- 2 Stop the head rotation by pressing key (14) or (15).
- 3 To position the rotating vertical plane perpendicular to a reference line:
 - Coincide the arrow (5) located below the beam aperture with the index (6) located above the retractable foot (there is also an index mark on the foot).
 - Move the laser so that the beam is over the reference point on the ground, keeping the arrow and index aligned.
 - Align the beam projecting from the top of the head with key (16) or (17) to your second reference point. (This beam is 90°, or square, to the other vertical plane beam).
 - Start rotating the head using keys (14) or (15) to change speed or use the chalk line.

It is important to check while you are using the laser that it has not been moved and that your setting is still accurate.

Do not use scanning mode for squaring.



2.5 Rotation Speed

Your laser is equipped with a visible laser diode. It will be necessary from time to time to adjust the rotation speed according to the ambient light conditions (keys 14 and 15). The laser beam is more visible in slow motion.

It is possible to stop the rotation and point the beam manually to view the beam over long distances.

2.6 Using the Laser Chalkline

To use the laser line feature, hold the head and rotate the top cover (12) so that the beam comes out the laser line aperture (4).

You will obtain a precise and stable laser line and be able to work directly on your reference plane.

You can move the line by rotating the head manually or by using the remote control.

The detector will not work with the chalk line feature.

2.7 Scanning

In addition to a rotating point and chalk line, the A410S has a

scanning mode. The chalk line is ideal for viewing at short distances, while the scanning mode allows you to see the beam easier when the laser is further away. The scanning beam length is adjustable.

2.7.1 How to use the scanning feature

Turn the laser on.

The laser should be in "point mode". If it is in "chalk line" mode, hold the head and rotate the top cover until the beam is a point.

Use the laser keypad, the remote control to put the laser in scanning mode.

2.7.2 Using the laser keypad

- 1 To switch to scanning, simultaneously press (K1) and (K2) on laser keypad, (R1) on remote. The scanning will blink until the laser has levelled.
- 2 Press (K1) or (K3) on the keypad, (R4) or (R5) on remote, to aim the scan.
- 3 Press (K2) to increase and (K4) to decrease the length of the scan.
- 4 To turn the scanning off, simultaneously press (K1) and (K2) again.

The square shot cannot be moved left or right when scanning; laser must be in point or chalk line mode.

The other functions of these four keys, for rotation control and moving the square shot, are described on pages 10 and 11 of the owner's manual.

2.7.3 Using the remote control

Turn the laser on with laser keypad.

- 1 To use the scanning mode, press (R1). The laser may blink until it has self-levelled. It will then start scanning.

- 2 Use (R4) or (R5) to aim the scan
- 3 To adjust the scanning length, use (R2) to increase the scan, and (R3) to decrease.
- 4 Press (R1) to turn the scanning off.

The square shot cannot be moved left or right when scanning; laser must be in point or chalk line mode. The other functions of the remote keys, for rotation control and moving the square shot, are described on pages 10 and 11 of the owner's manual.

2.8 Power

2.8.1 Using alkaline batteries (D)

To Install batteries

- 1 To install alkaline batteries in your A410S loser, use a coin to unscrew the battery cap located at the bottom of the instrument.
- 2 Remove the battery pack.
- 3 Insert two alkaline batteries (D) in the pack, matching the polarity ('+' or '-') with those indicated at the bottom of the pack.
- 4 Put the battery back into its place and tighten the screw. Your A410S is ready for use

To replace batteries

- 1 When battery power is low, the laser head will stop rotating, the laser beam will blink, and the low battery light (23) will come on.
- 2 Replace batteries as indicated above.

Always replace the 2 batteries at the same time.

2.8.2 Using rechargeable batteries (optional)

First time use

If your A410S is equipped with a rechargeable battery, you must recharge it for 15 hours before first use.

- 1 Insert the recharger plug into the jack located under the battery pack (1 0).
- 2 Plug the charger into an electrical outlet.
- 3 Charge for 15 hours.

Later recharges

Note that the A410S be charged while working. If electricity is available on the job site, simply plug in the charger and keep on working. You can also remove the battery pack to charge it, and replace with the alkaline battery compartment to keep on working.

For optimum life of the battery, it is recommended to charge the battery after fully discharged.

To assure battery life, it is recommended not to charge over 20 hours. The battery and the charge can be damaged if damp. Always store and charge your instrument in a dry and covered place.

3. Checking and Calibrating your A410S

THIS CHAPTER IS VERY IMPORTANT

Here are a few simple Instructions to check your A410S for calibration. Remember that the laser is a precision instruments and that it is important that you keep it calibrated and in proper condition. The accuracy of your work is completely your responsibility and you should regularly check your Instrument especially prior to important jobs.

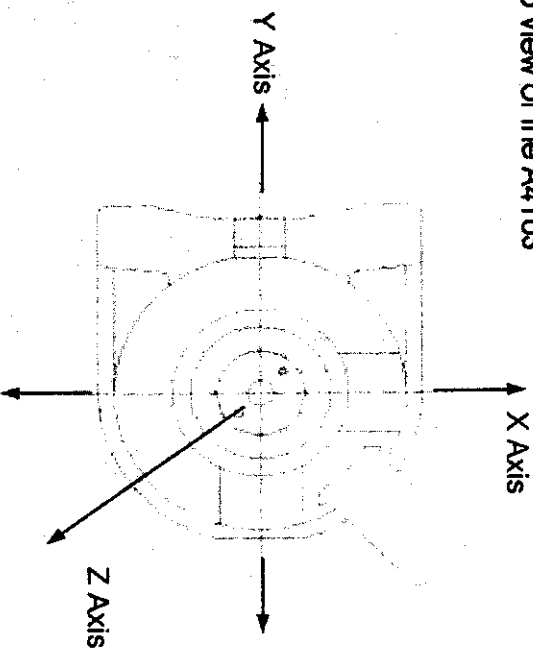
We recommend that calibration be performed by qualified technicians. It is also Important that you check your Instrument regularly.

How to check and calibrate the A410S

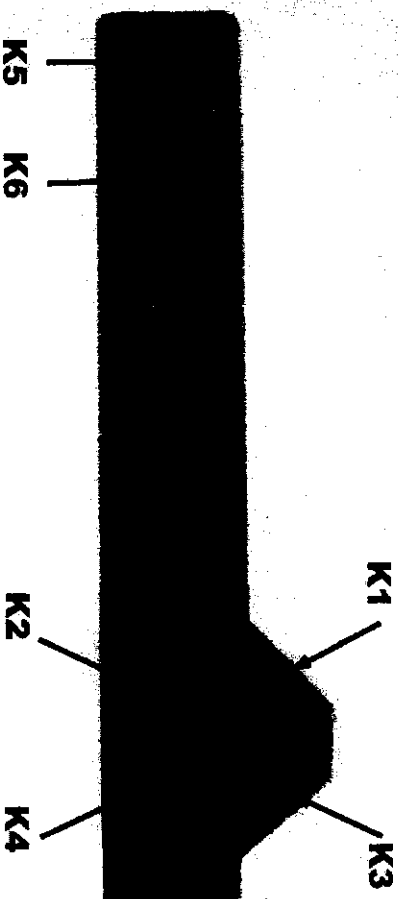
The laser has 3 axes (see X, Y and Z below).

Follow the following directions for checking and calibrating each axis. If the laser needs to be calibrated, follow the instructions or take it to a service

Top View of the A410S



Sketch of A410S touch control switches used for calibration are set out below:



3.1 Horizontal checking(XandY axis)

- 1 Place the laser on a flat surface 30 meters away from a wall or door. Position it so that the "Danger" label (X) is facing the wall.
- 2 Turn the laser on. When A410S is levelled, stop the rotation so that the beam is a point.
- 3 Mark the location of the beam.
- 4 Rotate the laser 180 degrees. After 90 seconds, mark the location of the beam near the first mark.
- 5 Both measurements must be at the same place. At 30 meters, the marks should be no more than 11 mm apart. At 15 meters, the marks should be no more than 5 mm apart.
- 6 If the marks are not close enough, the X axis needs to be calibrated (see instructions below).
- 7 To check the Y axis, turn the laser 90 degrees from Step 4 (Y will face the wall). Repeat the same steps: mark the Y beam, rotate 180 degrees, and mark again. If the marks are more than 11 mm apart at 30 meters, Y axis should be calibrated.

3.1.1 Horizontal Calibration

The laser must be calibrated to bring the beam to the center of the two marks. This is easily done using the loser keypad or the remote control.

3.1.2 X axis calibration

- 1 Turn the laser off before switching to calibration model. Simultaneously press two keys on the laser keypad, (K5) and (K6).
- 2 After few seconds, release the (K5) key.

- 3 The X LED indicator will blink, then the Y LED, Release the (K6) key.
- 4 The X LED will blink rapidly, indicating the laser is ready to be calibrated in the X axis.

If you have not moved the laser, use the X marks made in Step 4 of "Checking".

- 5 Mark the spot that's halfway between the two marks.
- 6 Bring the laser beam up or down to that center spot by using (K2)or (K4) on the laser keypad , (R2) or (R3) on the remote,
7 Next, check the Y axis against this center mark. Turn the laser 90 degrees (Y will face the wall). If the beam is not on the center mark, calibrate Y.

If Y is OK, see "Saving calibration" below.

3.1.3 Y Axis calibration

- 1 To change to Y axis calibration, press (K3) on the laser keypad, (R4) on the remote. The Y LED will blink rapidly, indicating the laser is ready to be calibrated in the Y axis.
- 2 If you have not moved the laser, use the center mark from above. Bring the laser beam up or down to that center spot by using (K2) or (K4) on the laser keypad, (R2) or (R3) the remote control.

3.1.4 Saving the calibration

The laser is now calibrated on X and Y axes. Press (K1) on the keypad, (R5) on remote to save the calibration data. If you don't wish to save the calibration, press the "On/Off" key on the laser (K5).

3.2 Vertical checking

- 1 Place the laser in vertical mode, on a flat surface about 3 meters away from a plumb line (plumb bob hanging on a string, at least 8 feet high). If you need to calibrate, the beam will be easier to see in a darkened room.
- 2 Use the adjustable feet to rough level the laser to adjust the top bubble vial.
- 3 Turn the laser on. Stop the rotation so the beam is a point.
- 4 Hold the laser head and move the beam up and down the plumb line by hand. If the beam is slanted, and not vertical like the plumb line, the z axis needs calibration.

3.2.1 Z axis calibration

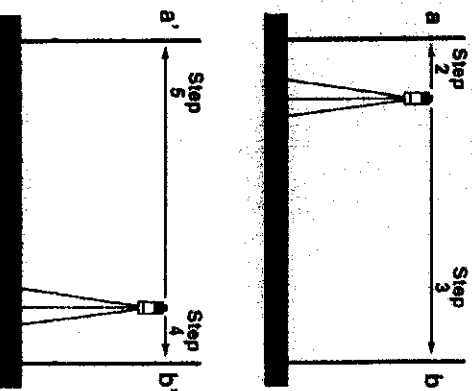
- 1 Turn the laser off before switching to calibration mode. Simultaneously press two keys on the laser Keypad, (K5) and (K6).
- 2 After few seconds, release (K6).
- 3 The X LED indicator will blink, then the Y LED. Release the (K5) key.
- 4 The Z LED will blink rapidly, indicating the laser is ready to be calibrated in the Z Axis.
- 5 Use (K2) or (K4) on laser keypad, (R2) or (R3) on remote control to move the beam until it's vertical, and parallel to the plumb line. Move the laser slightly so that the beam is over the plumb line for the final check.

3.2.2 Saving the calibration

The laser is now calibrated on the Z axis. Press (K1) on keypad, (R5) on remote control to save the calibration data. If you don't wish to save the calibration, press the (K5) key on the laser.

3.3 Cone Error Checking

- 1 Set up the laser about two feet away from one wall (a) or pole and 100 feet from another wall (b) or pole. Turn the laser on.
- 2 After it is level, stop the rotation so that the beam is a point. Mark the location of the middle of the beam on the near wall (a).
- 3 Turn the laser 180° and mark the location of the middle of the beam on the far wall (b).
- 4 Now set up the laser about two feet away from the far wall. After the laser has levelled itself, stop the rotation so that the beam is a point. Carefully line up the previous mark on wall (B).
- 5 Turn the laser 180° and mark the location of the middle of the beam on wall (a'), near the first mark.
- 6 Compare the two marks on the wall. If the difference between a' and b' exceed 3/8" (9 mm), contact your local service centre.



4. Care and Handling

CAUTION

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

- 1 The A410S automatic laser is a precision instrument which must be handled with great care. Avoid shock and vibrations. Always store and transport the laser and accessories in their carrying case.
- 2 Although weather resistant, you must always keep your laser and its accessories dry and clean after using. This will increase the battery life.
- 3 Do not store your laser at temperatures below -20°C or above 80°C , because the electronic components could be damaged.
- 4 Do not store your Instrument in its case if the instrument or the case are wet, to avoid water condensation Inside the instrument.
- 5 To maintain the precision of your laser, check and adjust it regularly.
- 6 Keep the lenses of the apertures (2) and (3) clean. Use a soft cloth and glass cleaner.
- 7 it is recommended to regularly charge the batteries (for rechargeable version only). Nevertheless, make sure to charge them only when they are out of power or becoming so. Recharging batteries that are still useable will shorten their capacity.

5. Warranty

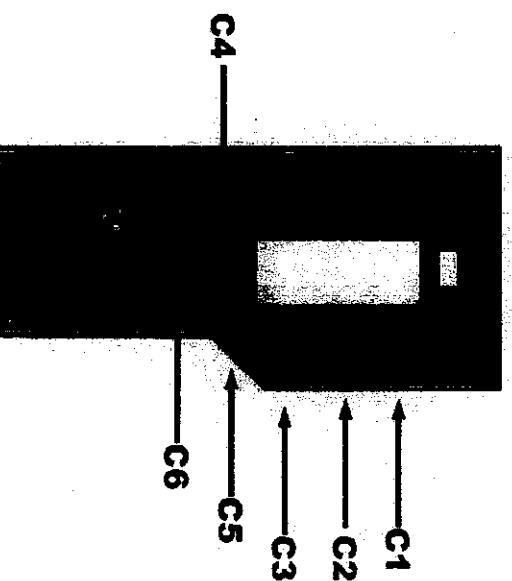
Your A410S laser is guaranteed to be free of manufacturing defects for a period of one year. Any abnormal usage or if the instrument has been subjected to shock will void this warranty. Under no circumstances will the liability of the manufacturer exceed the cost of repairing or replacing the instrument. Disassembling the instrument by other than qualified technicians will void this warranty.

The specifications of this instrument can be modified at any time and can differ from the catalogue and operation manual.

6. Accessories

6.1 LASER DETECTOR

A detector is recommended when it's difficult to see the laser beam (outdoors, in a very bright room, etc.)



Before using the detector, it is very important to set your laser on "laser point" mode (turning the top cover). The receiver cannot detect the beam in laser chalk line mode.

6.1.1 Using the sensor

The new MR80S combines two functions:

- Laser detector
- Remote control

To switch on the MR80S on detector mode, press (C1).

To use the MR80S as a remote control, only press any of the other keys (C2, C3, C4, C5 or C6) key. An arrow on the LCD display indicates that the MR80S is transmitting information to the A410S.

6.1.2 How to use the scanning with the MR80S Use the

MR80S in Remote control mode.

The A410S should be in "point mode" is in Point mode. If laser is in chalk line mode, hold the head and rotate the top cover until the beam is a point.

To start scanning, press key (C6),

To increase Scan, press key (C2),

To decrease Scan, press key (C3),

Use (C4) or (C5) to aim the scan in horizontal.

6.1.3 How to use the MR80S in Remote mode

Do not press (C1) to switch on the detector. Remote functions are available without turning on the detector.

When using the MR80S in remote mode, an arrow will appear on the LCD display. This arrow indicates you that the detector is transmitting information to A410S.

In horizontal mode, press (C2) or (C3) to start minimum rotation in beam or line mode.

Press (C4) or (C5) for rotation control to the left or to the right.

Press (C6) to turn the scanning on or off.

6.1.4 If the A410S is on "Calibration mode"

Press (C2) to move the beam up.

Press (C3) to move the beam down.

Press (C5) to change axis.

Press (C4) to save data.

(for Calibration see Section 3.1)

6.1.5 To change the battery

To replace the battery, slide the cover at the bottom of the detector to the left, take the battery out and replace it with a new one. Position it so that the minus polarity (-) is next to the side wall of the detector.

6.1.7 MR80S Specifications

Operating Distance	More than 500 feet (150 metres)
Capture Window	4 cm
Sound	2 different tones (high, normal) and mute
Displays	LCD (front and back)
Power	Alkaline batteries 9V (LR6 type)
Battery Life	50 hours (Alkaline battery)
Dimensions	145 mm x 70 mm x 25 mm
Weight	300 grams

6.2 Tripods

The laser can be mounted on a 5/8-11" dome or flat head tripod. You can also use a tripod with an elevating column to adjust the height of the laser.

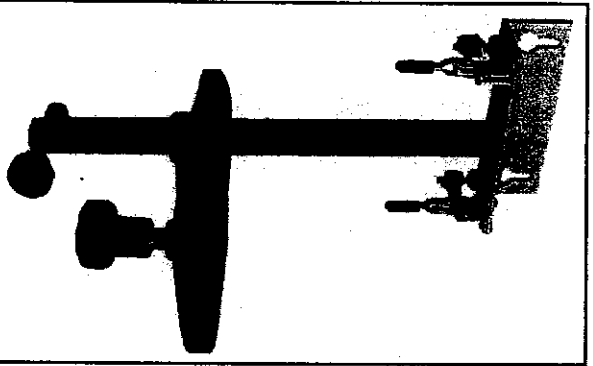
6.3 Mounts

The universal mount can be used as a wall mount and for vertical setups on a tripod. It features sturdy, all metal construction, with a spring-activated mechanism that allows you to easily change height for quick set-ups.

Also, it has a fine adjustment screw on the bottom for precise positions.

-As a wall mount, it can be attached to a grid for suspended ceiling setup.

The can also be used on its side and attached to a tripod (5/8-11") to hold the laser in the vertical position.

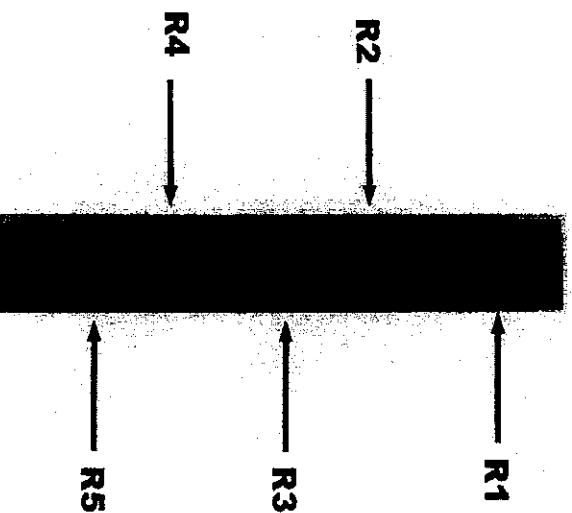


6.4 TL20 Remote Control

The TL20 remote control covers a distance up to 20 metres (65 feet). An optional larger range of 50 metres is also available. It allows you to control your laser speed rotation and move the square shot to the right or left to a desired position. Also, it can be attached to the MR80S detector for easy handling.

A 1.5 volt alkaline battery ensures 50 hours of continuous use. To open the battery compartment, push the tab at the top of the compartment up, in the direction of the arrow (with a screw driver).

- R1 Scanning Mode
- R2 Move Left
- R3 Move Right
- R4 Rotate Clockwise
- R5 Rotate Anti-clockwise



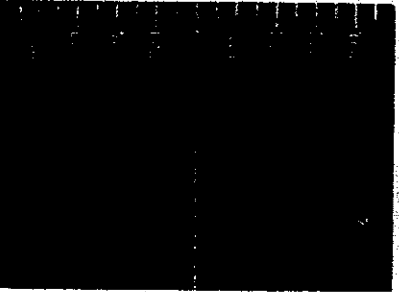
6.5 Laser Glasses

These glasses improve the visibility of the laser beam in bright light conditions.



6.6 Ceiling Target

This red magnetic target improves the visibility of the laser beam in bright conditions. A magnet allows quick attachment to any metallic surface.



7. Technical Specifications

Recommended operating distance	More than 300 metres (1000 feet) dia. with detector
Levelling accuracy	0.015%
Levelling range	±10%
Laser emission	Laser diode Class IIIa, 635 nm maximum 2mW
Power	2 alkaline batteries (D-type) or rechargeable batteries.
Charging time	15 hours
Battery Life (if rechargeable pack supplied)	40 hours with rechargeable batteries, 160 hours with alkaline batteries
Dimensions	15 x 16 x 17 cm
Weight	1.3 kg

Note: We reserves the right to change these specifications without notice.

