

STANLEY®

3 - Beam Self-Leveling Cross Line Laser

CL90i



77-021

Please read these instructions before operating the product



Self-Leveling

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1. Safety
2. Product Description
3. Specifications
4. Operating Instructions
5. Calibration
6. Maintenance and Care
7. Warranty



User Safety

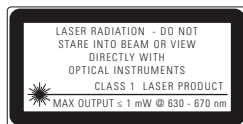
Carefully read the Safety Instructions and User Manual before using this product. The person responsible for the instrument must ensure that all users understand and adhere to these instructions.

Retain this manual for future reference.

IMPORTANT: The following labels are on your laser tool for your convenience and safety. They indicate where the laser light is emitted by the level. **ALWAYS BE AWARE** of their location when using the level.



EN 60825-1



DO NOT remove any warning label(s) on the housing. This instrument must only be used for leveling and layout tasks as outlined in this manual.

ALWAYS make sure that any bystanders in the vicinity of use are made aware of the dangers of looking directly into the laser tool.

DO NOT use in combination with other optical instruments. Do not modify the instrument, or make manipulations or use in other applications than those described in the manual.

DO NOT look into the beam with optical aids, such as magnifiers, binoculars or Telescopes.

DO NOT stare into the laser beam or direct it towards other persons. Make sure the instrument is not set at eye level. Eye protection is normally afforded by natural aversion responses such as the blink reflex.

DO NOT direct the laser beam at other persons.

ALWAYS turn the laser tool "OFF" when not in use. Leaving the laser tool "ON" increases the risk of someone inadvertently staring into the laser beam.

DO NOT operate the laser tool in combustible areas such as in the presence of flammable liquids, gases or dust.

DO NOT disassemble the laser tool. There are no user serviceable parts inside. Disassembling the laser will void all warranties on the product. Do not modify the product in any way. Modifying the laser tool may result in hazardous laser radiation exposure.

DO NOT use this instrument in areas where a risk of explosion is present.

NOTE: Since the laser beam is of the focused type, ensure you check the beam's path over a relatively long distance and take all necessary precautions to ensure the beam cannot interfere with other persons.



Battery Safety

WARNING: Batteries can explode or leak and can cause injury or fire. To reduce this risk:

ALWAYS follow all instructions and warnings on the battery label and package.

DO NOT short any battery terminals

DO NOT charge alkaline batteries.

DO NOT mix old and new batteries. Replace all of them at the same time with new batteries of the same brand and type.

DO NOT mix battery chemistries.

DO NOT dispose of batteries in fire.

ALWAYS keep batteries out of reach of children.

ALWAYS remove batteries if the device will not be used for several months.

NOTE: Ensure that the correct batteries as recommended are used.

NOTE: Ensure the batteries are inserted in the correct manner, with the correct polarity.

End of Life

DO NOT dispose of this product with household waste.

ALWAYS dispose of batteries per local code.



PLEASE RECYCLE in line with local provisions for the collection and disposal of electrical and electronic waste under the WEEE Directive.

Declaration of Conformity

The Stanley Works declares that the CE Mark has been applied to this product in accordance with the CE Marking Directive 93/68/EEC.

This product conforms with EN60825-1:2007.

For further details please refer to www.stanleyworks.com.



EN 60825-1



ROHS Compliant

Product Description

Package Contents

1. Laser Unit
2. Universal Mounting Bracket
3. Laser Target
4. Carrying Case
5. Batteries (3 x AA)
6. User Manual

Laser Unit



1. Keyboard
2. Window for Cross Beam Laser
3. Quick Calibration Access Hole
4. Window for 90° Vertical Reference Beam Laser
5. Quick Calibration Access Hole



6. Battery Compartment Cover



7. Transport Lock
8. Laser Warning Label

Universal Mounting Bracket



1. Keyhole Slots
2. Alignment Holes for Laser Unit
3. 5/8 - 11 Thread Mount

Specifications

Leveling Accuracy:	≤ 3 mm / 9 m (≤ 1/8 in / 30 ft)
Square Beam Accuracy:	≤ 1.5 mm / 3 m (≤ 1/16 in / 10 ft)
Horizontal / Vertical Accuracy	≤ 1.5 mm / 3 m (≤ 1/16 in / 10 ft)
Working Range:	Self-Leveling to ± 5°
Working Distance:	≤ 10 m (≤ 30 ft)
with Laser Detector:	≤ 30 m (≤ 100 ft)
Laser Class:	Class 1
Laser Wavelength:	635 nm ± 5 nm
Operating Time:	15 h
Power Voltage:	4,5 V
Power Supply:	3 x AA Batteries (Alkaline)
IP Rating:	IP54
Operating Temperature Range:	-10° C to +40° C (+14° F to +104° F)
Storage Temperature Range:	-20° C to +60° C (-4° F to +140° F)
Weight (without Base and Batteries):	490 g (17,3 oz)
Size:	Ø 86 mm × 147,5 mm (Ø 3 3/8 in × 5 3/4 in)

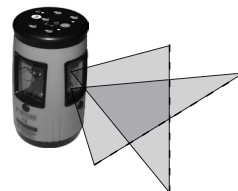
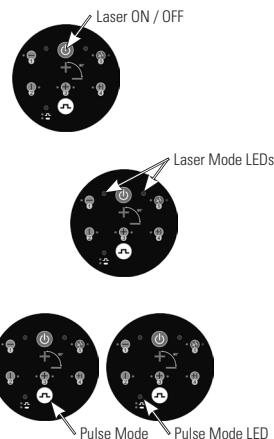


Battery Installation / Removal

1. Turn laser unit to back. Open battery compartment cover by pressing and sliding out.
2. Install / Remove batteries. Orient batteries correctly when placing into laser unit.
3. Close and lock battery compartment cover by sliding in until securely closed.

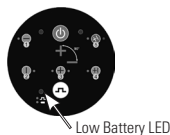


Laser Unit



1. Transport lock in locked position. Self-leveling function is disabled.
2. Transport lock in unlocked position. Self-leveling function is enabled.
3. Press power key to power laser ON. Press and hold for 3 seconds to power laser OFF. Press power key to toggle through available laser modes - horizontal only, vertical only, both horizontal and vertical, horizontal and vertical with 90° vertical reference beam, all on with self-leveling disabled.
4. Laser mode LEDs light red and / or green to indicate current laser mode. LED code is shown on keyboard.
5. Power key is functional in both the locked and unlocked switch position.
6. Press pulse mode key to toggle between pulse mode ON and OFF. Indicator LED lights green when on. Pulse mode allows use with a laser detector.
7. Laser beam(s) blink to indicate the laser unit is out of the working range for laser modes 1 - 4 when self-leveling function is enabled. Reposition laser unit to be more level.





8. Low battery LED blinks red to indicate when battery power is low. Replace batteries.

Universal Mounting Bracket

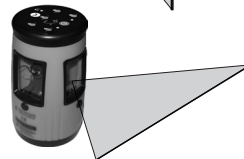


1. Laser unit fits into mounting bracket. Pins in laser unit fit into alignment holes in bracket.
2. 5/8 - 11 thread mount available for optional accessories.
3. Key hole slot for wall hanging or for use with optional accessories.

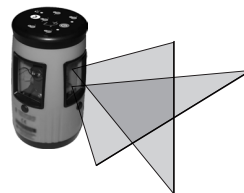
Applications



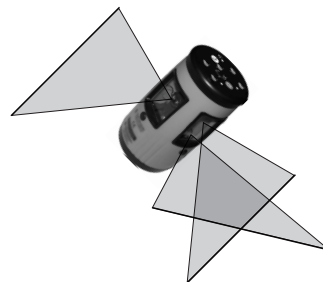
1. **Plumb:**
Using the vertical laser beam, establish a vertical reference plane. Position the desired object(s) until they are aligned with the vertical reference plane to ensure object(s) are plumb.



2. **Level:**
Using the horizontal laser beam, establish a horizontal reference plane. Position the desired object(s) until they are aligned with the horizontal reference plane to ensure object(s) are level.



3. **Square:**
Using either the vertical and horizontal laser beams with or without the 90° vertical reference laser beam, establish a point where the vertical and horizontal beams cross. Position the desired object(s) until they are aligned with both the vertical and horizontal laser beams to ensure object(s) are square.



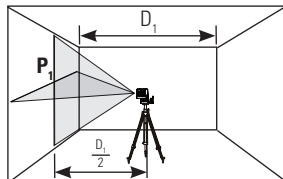
4. **Pulse Mode:**
Setting laser unit to pulse mode allows use of optional laser detectors.
5. **Manual Mode:**
Disables self-leveling function and allows laser unit to project a rigid laser beam in any orientation.



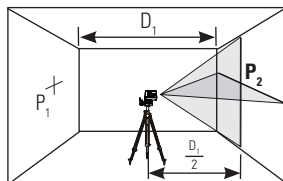
NOTE: The laser unit has been calibrated at the time of manufacturing. Periodically check the accuracy of the laser unit to ensure that the calibrated specifications are maintained.

Level Beam Accuracy

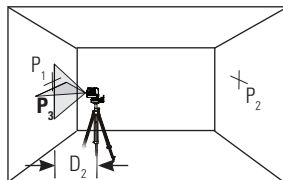
1. Place laser unit as shown with laser ON. Mark point P_1 at cross.



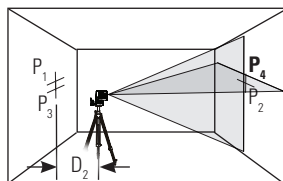
2. Rotate laser unit 180° and mark point P_2 at cross.



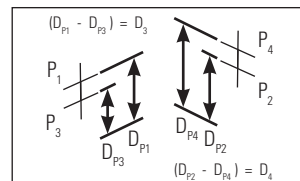
3. Move laser unit close to wall and mark point P_3 at cross.



4. Rotate laser unit 180° and mark point P_4 at cross.



5. Measure the vertical distance from the floor to each point. Calculate the difference between distances D_{P1} and D_{P3} to get D_3 and distances D_{P2} and D_{P4} to get D_4 .



6. Calculate the maximum allowed offset distance and compare to the difference of D_3 and D_4 as shown in the equation. If the sum is not less than or equal to the calculated maximum offset distance the unit must be returned to your Stanley Distributor.

Maximum Offset Distance:

$$\begin{aligned} &= 0,33 \frac{\text{mm}}{\text{m}} \times (D_1, \text{m} - (2 \times D_2, \text{m})) \\ \text{Max} &= 0,004 \frac{\text{in}}{\text{ft}} \times (D_1, \text{ft} - (2 \times D_2, \text{ft})) \end{aligned}$$

Compare:

$$D_3 - D_4 \leq \pm \text{Max}$$

Example: $D_1 = 10 \text{ m}$, $D_2 = 0,5 \text{ m}$

$$D_{P1} = 30,75 \text{ mm}, D_{P2} = 29 \text{ mm}, D_{P3} = 30 \text{ mm}, D_{P4} = 29,75 \text{ mm}$$

$$D_3 = (30,75 \text{ mm} - 30 \text{ mm}) = 0,75 \text{ mm}$$

$$D_4 = (29 \text{ mm} - 29,75 \text{ mm}) = -0,75 \text{ mm}$$

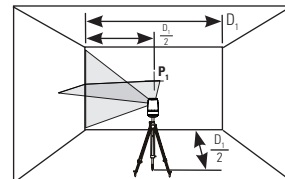
$$0,33 \frac{\text{mm}}{\text{m}} \times (10 \text{ m} - (2 \times 0,5 \text{ m})) = 2,97 \text{ mm} \text{ (maximum allowed offset distance)}$$

$$(0,75 \text{ mm}) - (-0,75 \text{ mm}) = 1,5 \text{ mm}$$

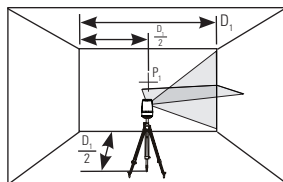
$$1,5 \text{ mm} \leq 2,97 \text{ mm} \text{ (TRUE, unit is within calibration)}$$

Horizontal Beam Accuracy

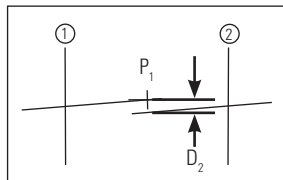
1. Place laser unit as shown with laser ON. Aim vertical beam to first corner or reference point. Measure out half of the distance D_1 and mark point P_1 .



2. Rotate laser unit to other corner or reference point.



3. Measure the vertical distances between P_1 and the horizontal beam from the 2nd location.



4. Calculate the maximum allowed offset distance and compare to D_2 . If D_2 is not less than or equal to the calculated maximum offset distance the unit must be returned to your Stanley Distributor.

Maximum Offset Distance:

$$\begin{aligned} \text{Max} &= 0,5 \frac{\text{mm}}{\text{m}} \times D_1 \text{ m} \\ &= 0,006 \frac{\text{in}}{\text{ft}} \times D_1 \text{ ft} \end{aligned}$$

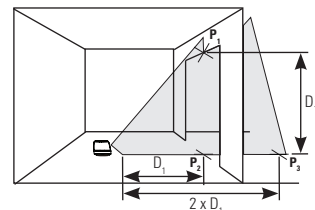
Compare:

$$D_2 \leq \text{Max}$$

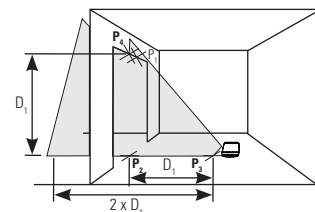
Example: $D_1 = 5 \text{ m}$, $D_2 = 1 \text{ mm}$
 $0,5 \frac{\text{mm}}{\text{m}} \times 5 \text{ m} = 2,5 \text{ mm}$ (maximum allowed offset distance)
 $1 \text{ mm} \leq 2,5 \text{ mm}$ (**TRUE**, unit is within calibration)

Vertical Beam Accuracy

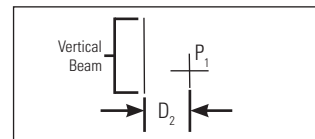
1. Measure the height of a door jamb or reference point to get distance D_1 . Place laser unit as shown with laser ON. Aim vertical beam towards door jamb or reference point. Mark points P_1 , P_2 , and P_3 as shown.



2. Move laser unit to opposite side of door jamb or reference point and align vertical beam with P_1 and P_2 .



3. Measure the horizontal distances between P_1 and the vertical beam from the 2nd location.



4. Calculate the maximum allowed offset distance and compare to D_2 . If D_2 is not less than or equal to the calculated maximum offset distance the unit must be returned to your Stanley Distributor.

Maximum Offset Distance:

$$\begin{aligned} \text{Max} &= 1 \frac{\text{mm}}{\text{m}} \times D_1 \text{ m} \\ &= 0,012 \frac{\text{in}}{\text{ft}} \times D_1 \text{ ft} \end{aligned}$$

Compare:

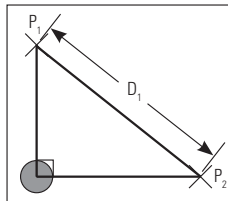
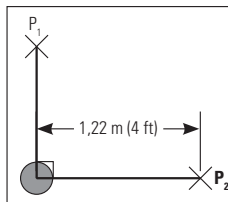
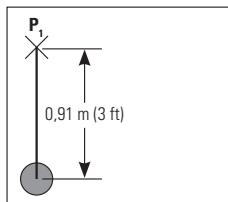
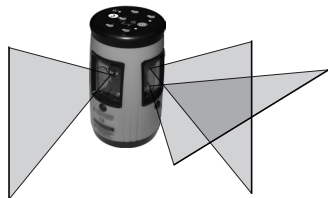
$$D_2 \leq \text{Max}$$

Example: $D_1 = 2 \text{ m}$, $D_2 = 1 \text{ mm}$
 $1 \frac{\text{mm}}{\text{m}} \times 2 \text{ m} = 2 \text{ mm}$ (maximum allowed offset distance)
 $1 \text{ mm} \leq 2 \text{ mm}$ (**TRUE**, unit is within calibration)

90° Vertical Beam Accuracy

You will need at least 1,5 m² (16 ft²) of floor space and possibly an assistant for this check.

1. Place the laser unit (without its mounting bracket) on a level floor, and turn on all beams (mode 4).
2. Measure exactly 0,91 m (3 ft) out from the center of the laser unit along the vertical beam of the laser cross. To easily reference the center of the laser unit start the first measurement against the outer base of the laser unit, measure out 0,91 m (3 ft), and then subtract 4,3 cm (1,69 in). Mark this point P_1 .
3. Measure exactly 1,22 m (4 ft) out from the center of the instrument along the at 90° vertical reference beam, and mark this point P_2 .
4. Measure from point A to point B; this distance D_1 should equal 1,52 m \pm 1.2 mm (5 ft \pm 3/64 in). If not, the unit must be returned to your Stanley Distributor.
5. Repeat steps 1 through 4, as needed, to recheck the measurements.



Maintenance and Care

Laser unit is not waterproof. **DO NOT** allow to get wet. Damage to internal circuits may result.

DO NOT leave laser unit in direct sunlight or expose it to high temperatures. The housing and some internal parts are made of plastic and may become deformed at high temperatures.

DO NOT store the laser unit in a cold environment. Moisture may form on interior parts when warming up. This moisture could fog up laser windows and cause corrosion of internal circuit boards.

When working in dusty locations, some dirt may collect on the laser window. Remove any moisture or dirt with a soft, dry cloth.

DO NOT use aggressive cleaning agents or solvents.

Store the laser unit in its case when not in use. If storing for extended time, remove batteries before storage to prevent possible damage to the instrument.



One Year Warranty

Stanley Tools warrants its electronic measuring tools against deficiencies in materials and/or workmanship for one year from date of purchase.

Deficient products will be repaired or replaced, at Stanley Tools' option, if sent together with proof of purchase to:

Stanley UK Sales Limited
Gowerton Road
Brackmills, Northampton NN4 7BW

This Warranty does not cover deficiencies caused by accidental damage, wear and tear, use other than in accordance with the manufacturer's instructions or repair or alteration of this product not authorised by Stanley Tools.

Repair or replacement under this Warranty does not affect the expiry date of the Warranty.

To the extent permitted by law, Stanley Tools shall not be liable under this Warranty for indirect or consequential loss resulting from deficiencies in this product.

This Warranty may not be varied without the authorisation of Stanley Tools.

This Warranty does not affect the statutory rights of consumer purchasers of this product.

This Warranty shall be governed by and construed in accordance with the laws of England and Stanley Tools and the purchaser each irrevocably agrees to submit to the exclusive jurisdiction of the courts of England over any claim or matter arising under or in connection with this Warranty.

IMPORTANT NOTE: The customer is responsible for the correct use and care of the instrument. Moreover, the customer is completely responsible for periodically checking the accuracy of the laser unit, and therefore for the calibration of the instrument.

Calibration and care are not covered by warranty.

Subject to change without notice



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