

# **411D**

## Laser Distance Meter

# Users Manual

July 2008

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## LIMITED WARRANTY AND LIMITATION OF LIABILITY

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is two years and begins on the date of shipment. Parts, product repairs, and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries, or to any product which, in Fluke's opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

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To obtain warranty service, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB Destination). Fluke assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB Destination). If Fluke determines that failure was caused by neglect, misuse, contamination, alteration, accident, or abnormal condition of operation or handling, including overvoltage failures caused by use outside the product's specified rating, or normal wear and tear of mechanical components, Fluke will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping Point).

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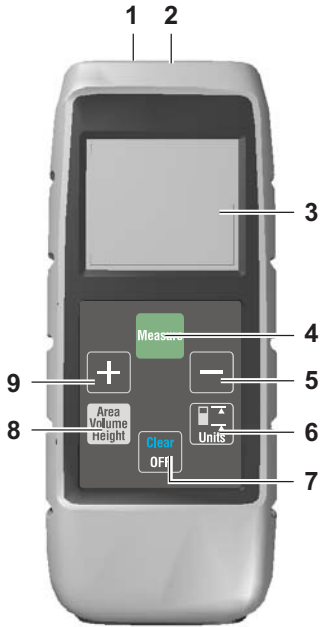
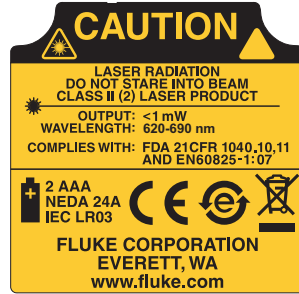
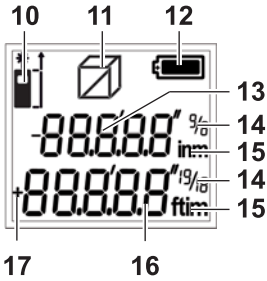
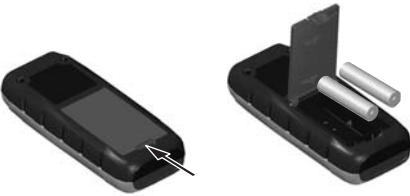
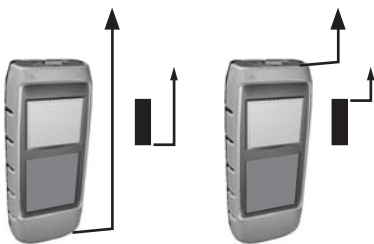
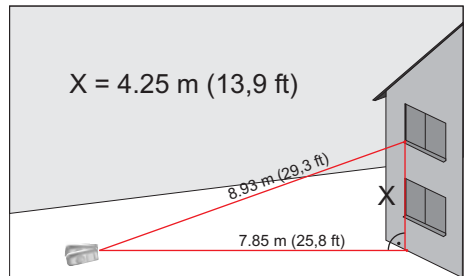
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To register your product online, visit <http://register.fluke.com>

**A****B****C****D****E****F****G**

# Symbols

## Warning notices

The warning notices differ from one another concerning the type of danger through the following signs:

- **Caution** warns against damage to property.
- **Warning** warns against bodily harm.
- **Danger** warns against danger to life.

## Composition of the warning notices

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### Signal words

#### Type and source of the danger!

- Measure to avoid the danger.
- 

## Other symbols

### Notes

*Note* Notes on appropriate handling of laser measuring devices.

## Operation instructions

Composition of the operating instructions:

- Guidance to an operation.

Indication of an outcome, if necessary.

### Schedules

Composition of the non numbered schedules:

- Schedule level 1
- Schedule level 2

Composition of the numbered schedules:

1. Schedule level 1
2. Schedule level 1
  - 2.1 Schedule level 2
  - 2.2 Schedule level 2

## Safety and dangers

- Make sure that the device is not used without instructions.
- Make sure that the device is used exclusively according to the instructions.
- Make sure that the safety settings are not disabled.
- Make sure that indication labels and caution labels are not removed.
- Do not open the device with tools (screwdriver etc.).
- Make sure that the device is not converted or modified.

- Avoid using accessories of other producers that are not recommended by Fluke.
- Make sure that the device is not used carelessly:
  - when working on scaffolds
  - when climbing ladders
  - when measuring near running machines
  - when measuring on open machine parts or installations
- Avoid aiming directly at the sun.
- Avoid blinding other persons intentionally (also in darkness).
- Make sure that the measuring position is secured sufficiently.  
(e.g. in streets, on construction sites, etc.)
- Make sure that the device is in proper and flawless condition.
- Do not use a defective device.

## Correct usage

- measuring of distances
- calculation of functions  
e.g. areas and volumes
- Use the device exclusively in an atmosphere that is permanently inhabitable by humans.

## Foreseeable misuse

- Do not use the device as a laser pointer.
- Do not use the device in explosive or aggressive environments.

## Areas of responsibility

### Area of responsibility of the manufacturer of the original equipment

Fluke Corporation, P.O. Box 9090, Everett, WA (Fluke):

- Fluke is responsible for the safety-related flawless delivery of the device including the operating instruction.

## Area of responsibility of other manufacturers of accessories

- Other manufacturers of accessories for Fluke 411D are responsible for the development, the realization and the communication of safety concepts for their products and their effects in combination with the Fluke product.

## Area of responsibility of the operator

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### Caution

#### Damage to property due to repairing!

- In case of malfunctions, contact the retailer.
- 

The operator is obliged to observe the following:

- He understands the protection information on the device and the operating instruction.
- He is familiar with the customary in-house accident control directives.

## Overview

### Keys

See drawing A:

1. laser emitter
2. receiver lens
3. display
4. on/measure
5. Subtraction
6. measuring plane/unit
7. clear/off
8. area/space volume/Pythagoras
9. Addition

### Display

See drawing D:

10. measuring plane
11. area/space volume/Pythagoras
12. battery symbol
13. 2nd row
14. fractions/exponents
15. units
16. summary row
17. Addition/Subtraction

## Initial operation

### Insert the batteries

See drawing E:

- To ensure a reliable use, use exclusively alkaline batteries.
- Remove battery compartment cover.
- Insert alkaline batteries (2 x AAA) observing the polarity.
- Close the battery compartment cover.

### Changing the batteries

- Change the batteries when the battery symbol is blinking permanently.

## How to use

### Measuring conditions

The quality of the measurement depends on the surfaces to which you are measuring.

### Measurement errors

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### Caution

#### Damage to property due to use of wrong measuring results!

- Avoid measuring errors due to unexpected events during distance measuring.
  - Perform a control measurement.
- 

Measuring errors are possible in case of:

- colorless fluids (e.g. water)
- clean, translucent glass
- styrofoam or similar semi-translucent surfaces
- strongly reflecting targets that deflect the laserbeam
- measurements aimed at moving objects

Causes:

- Strongly reflecting targets deflect the laser beam and cause measuring errors.
- Non-reflecting, dark surfaces increase the measuring time.

### For constantly high-quality measurements

- Perform control measurements periodically.
- Perform control measurements before and after important measurements.

## Switching on/off

- Switch on the device by pressing key **4** briefly.

The device shows the battery symbol until another key is pressed.

- Switch off the device by holding key **7** for several seconds.

If no key is pressed for 180 seconds, the device switches off automatically.

## Delete key

- Undo the most recent action by pressing key **7** briefly.

## Adjusting the measuring plane

See drawing **F**:

Rear measuring plane is the standard setting.

- For measurement from front edge, press key **6** briefly.
- For measurement from rear edge, press key **6** briefly again.

## Adjusting the measuring units

Metric system is the standard setting.

- To change the unit, hold key **6** for several seconds.

With every keypress, the device switches to the next unit.

Possible units:

- ➔ meters with mm display
- ➔ feet inch fractional
  - ➔ summary row up to 1/16 inch
  - ➔ 2nd row up to 1/8 inch
- ➔ inch fractional
  - ➔ summary row up to 1/16 inch
  - ➔ 2nd row up to 1/8 inch

## Measuring

### Measuring individual distances

- Press key **4** briefly.
- Aim active laser at target area.
- Press key **4** briefly.  
The device measures the distance.

The device displays the result immediately.

### Continuous measuring

This function enables distances to be staked out.

- Hold key **4** for several seconds.  
Continuous measuring starts.
- Press key **4** briefly.  
Continuous measuring stops.

The value last measured appears in the summary row.

## Functions

### Add/Subtract

Add:

- Measure the first distance.
- Press key **9** once.  
The device adds the second measuring result to the first measuring result.
- Measure the second distance.

Subtract:

- Measure the first distance.
- Press key **5** once.  
The device subtracts the second measurement result from the first measurement result.
- Measure the second distance.

Repeat if required. The device displays the result in the summary row and the previous value in the second row.

### Area

- Press key **8** once.  
The area symbol appears on the display.
- Press key **4** and measure the first distance. (e.g. length).
- Press key **4** and measure the second distance. (e.g. width).

The device displays the result in the summary row and the respective measured distance to the next measurement in the second row.

### Space volume

- Press key **8** twice.  
The volume symbol appears on the display.
- Press key **4** and measure the first distance (e.g. length).
- Press key **4** and measure the second distance (e.g. width).
- Press key **4** and measure the third distance (e.g. height).

The device displays the result in the summary row and the respective measured distance to the next measurement in the second row.

## Pythagoras

See drawing **G**:

- Press key **8** three times.  
The Pythagoras symbol appears on the display.
- Press key **4** and measure the first distance (diagonal measurement).
- Press key **4** and measure the second distance (horizontal measurement).

The device displays the result in the summary row and the respective measured distance to the next measurement in the second row.

## Troubleshooting

- If the message **Error** does not disappear after switching on the device repeatedly, please contact the retailer.
- If the message **InFo** appears with a number, observe the instructions in the following table.

No.	Cause	Remedy
204	Calculation error	Perform measurement again.
252	Temperature too high	Let the device cool down.
253	Temperature too low	Warm the device up.
255	Reception signal too weak, measuring time too long	Change target surface (e.g. white paper).
256	Input signal too high	Change target surface (e.g. white paper).
257	Measuring error, too much background light	Shadow the target area.
258	Measurement outside of the measuring range	Mind the range.
260	Laser beam interrupted	Repeat the measurement.

## Technical data

Range	0.1 m to 30 m 0.33 ft to 100 ft
Measuring accuracy (2 $\sigma$ )	Typ.: $\pm 3.0$ mm* $\pm 0.12$ in*
Smallest unit displayed	1 mm (1/16 in)
Laser class	2

Laser type	635 nm, < 1 mW
Automatic switch-off	after 180 s
Continuous measuring	yes
Addition/Subtraction	yes
Area	yes
Volume	yes
Pythagoras	yes
Unit switching	yes
Dimension (H x D x W)	118 x 50 x 26 mm 4.65 x 1.97 x 1.02 in
Battery durability (2 x AAA)	up to 3000 measurements
Weight	100 g 3.22 ounce
Temperature range: - Storage - Operation	-25°C to +70°C (-13°F to +158°F) 0°C to +40°C (32°F to +104°F)

\* under favorable conditions (good target surface, room temperature) up to 10 m (33ft). Under unfavorable conditions such as bright sunlight, a very weakly reflecting target surface or large temperature fluctuations, the deviation can rise by  $\pm 0.25$  mm/m ( $\pm 0.01$  in) for distances over 10 m (33 ft).

## Electromagnetic compatibility (EMC)



### Warning

**Possible disturbance of other devices (e.g. safety equipment, medical equipment) due to electromagnetic radiation!**

- Observe the safety instructions of the respective devices.

Despite the compliance with all requirements of the corresponding directives and norms, a disturbance of other devices is possible.

## Laser classification

The Fluke 411D generates a visible laser beam that is emitted from the front of the device.

The device complies with laser class 2 according to:

- IEC60825-1: 2007 Safety of laser products
- EN60825-1: 2007 Safety of laser products

### Laser class 2 products

Do not look into the laser beam and do not unnecessarily aim at other persons. The eye is usually protected by preventive reactions such as the eyelid closure reflex.



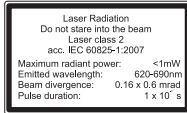
#### Warning

#### Bodily harm due to laser beam!

- ⤴ Do not look directly into the laser beam.
- ⤴ Do not look directly into the laser beam with optical appliances (such as binoculars, telescopes).

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## Labels



## Disposal

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### Caution

#### Damage to property due to inappropriate disposal!

- ⤴ Dispose of the device and the batteries according to the national, country-specific disposal directives.
- ⤴ Protect the device and the batteries from access of unauthorized persons.



*Note Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.*

## Care

- ⤴ Clean the device with a damp, soft cloth.
- ⤴ Do not immerge the device in water.
- ⤴ Do not use aggressive cleaning agents or solvents.



# 416D

Laser Distance Meter

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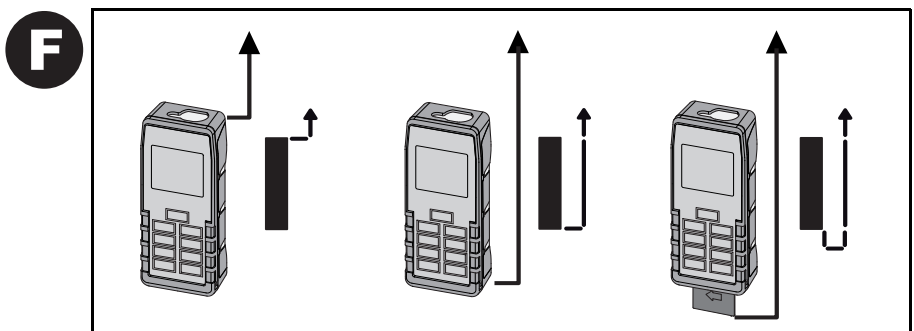
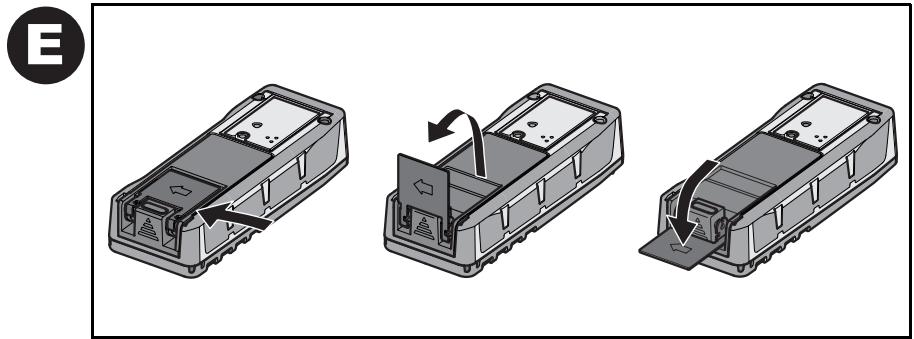
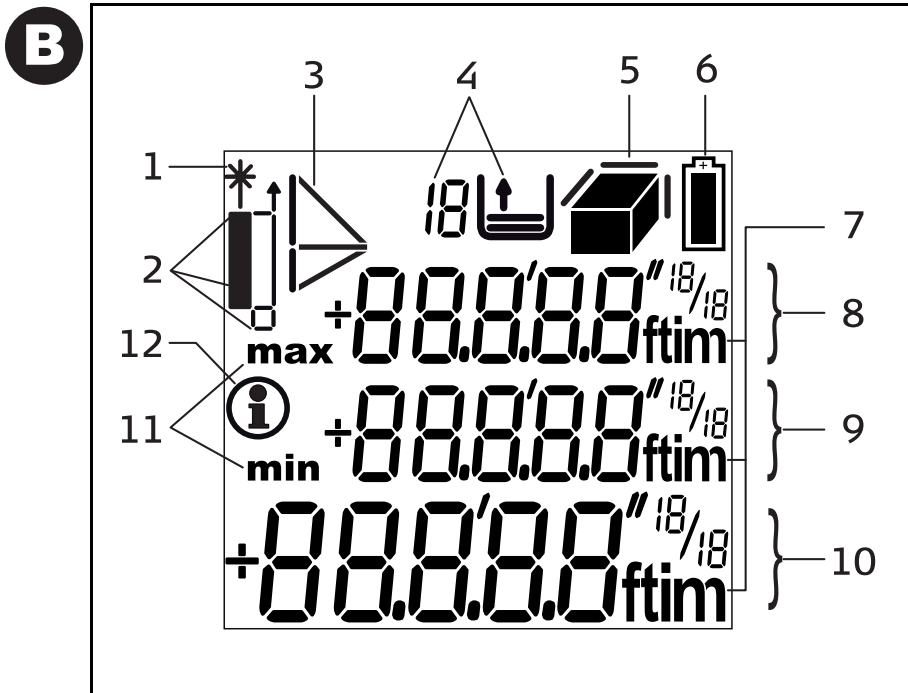
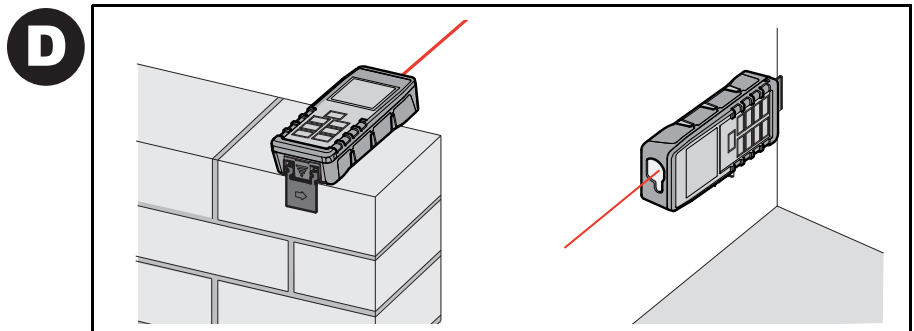
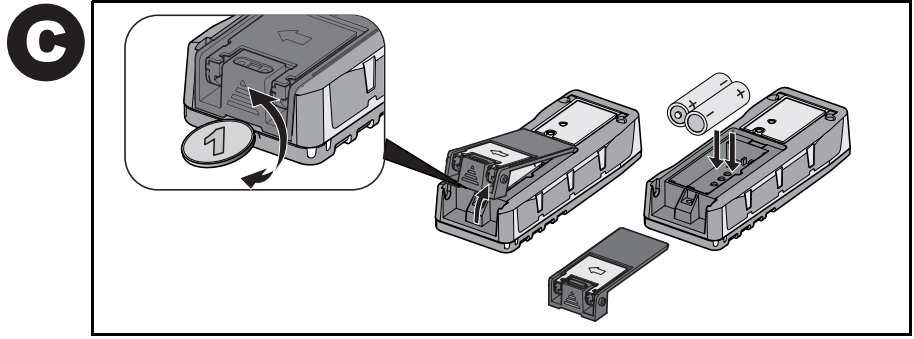
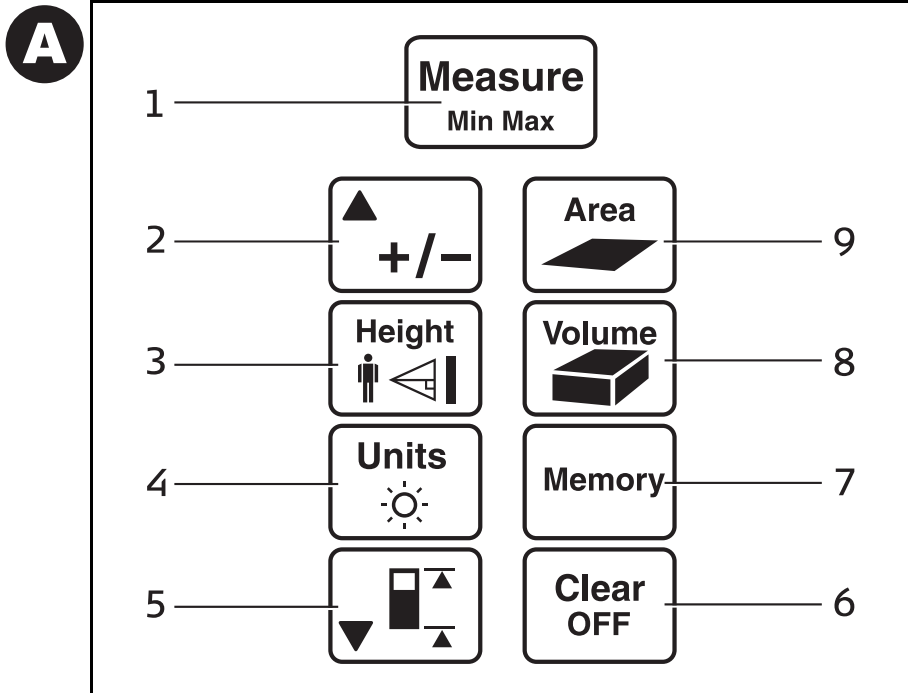
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# Users Manual



The safety instructions and the users manual should be read through carefully before you use the product for the first time. The person responsible for the product should ensure that all users understand these directions and follow them.

## Symbols used in this manual

The symbols used have the following meaning:



### **WARNING:**

Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.



### **CAUTION:**

Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor injury and/or in appreciable material, financial and environmental damage.

**Note:** Important paragraphs which must be adhered to in practice, as they enable the product to be used in a technically correct and efficient manner.

## Intended Use

### Permitted uses

- Measuring distances
- Computing functions, e.g. areas and volumes

## Adverse uses

- Using the instrument without instructions
- Using outside the stated limits
- Deactivation of safety systems and removal of explanatory and hazard labels
- Opening of the equipment by using tools (screwdrivers etc.)
- Carrying out modification or conversion of the product
- Use of accessories from other manufacturers without the express approval of Fluke.
- Deliberate or irresponsible behaviour on scaffolding, when using ladders, when measuring near machines which are running, or near parts of machines or installations which are unprotected
- Aiming directly into the sun
- Deliberate dazzling of third parties; even in the dark
- Inadequate safeguards at the surveying site (e.g. when measuring on roads, construction sites, etc.)

## Limits of use

**Note:** Also see section "Technical data".

The Fluke 416D is designed for use in areas permanently habitable by humans, do not use the product in explosion hazardous areas or in harsh environments.

## Responsibilities

### Responsibilities of the manufacturer of the original equipment Fluke Corporation, P.O. Box 9090 Everett, WA (Fluke):

Fluke is responsible for supplying the product, including the Users Manual and original accessories, in a completely safe condition.

### Responsibilities of the manufacturer of non-Fluke accessories:

The manufacturers of non-Fluke accessories for the Fluke 416D are responsible for developing, implementing and communicating safety concepts for their products. They are also responsible for the effectiveness of these safety concepts in combination with the Fluke equipment.

### Responsibilities of the person in charge of the instrument:

#### **WARNING**

The person responsible for the instrument must ensure that the equipment is used in accordance with the instructions. This person is also accountable for the deployment of personnel and for their training and for the safety of the equipment when in use. The person in charge of the product has the following duties:

- To understand the safety instructions on the product and the instructions in the users manual.
- To be familiar with local safety regulations relating to accident prevention.

- To inform Fluke immediately if the equipment becomes unsafe.

## Overview

### Keypad

See drawing {A}:

- 1 **MEASURE / Min-Max** - button
- 2 **PLUS [+] / MINUS [-]** - button
- 3 **HEIGHT** - button
- 4 **UNITS / ILLUMINATION** - button
- 5 **REFERENCE** - button
- 6 **CLEAR/OFF** - button
- 7 **MEMORY** - button
- 8 **VOLUME** - button
- 9 **AREA** - button


## Display

See drawing {B}

- 1 Laser "ON"
- 2 Reference point (front/rear/end piece)
- 3 Indirect measurement
- 4 Memory
- 5 Area/volume
- 6 Battery status
- 7 Units with exponents (<sup>2/3</sup>)
- 8 Secondary display line 2
- 9 Secondary display line 1
- 10 Primary display
- 11 Min / max display
- 12 Info symbol

## Start up

### Inserting / Replacing Batteries

- 1 Remove battery compartment lid.  
See drawing {C}.
- 2 Insert batteries, observing correct polarity.
- 3 Close the battery compartment.
  - Replace the batteries when the symbol  flashes permanently in the display.

**Note:** Only use alkaline batteries.

**Note:** If the instrument will not be used for a long time, remove the batteries as a protection against corrosion.

## Operation

### Measuring Conditions

#### Range

Range is limited to 60 m (200 ft).

At night or dusk and if the target is in shadow the measuring range without the target plate is increased. Use a target plate to increase the measurement range during daylight, or if the target has poor reflection properties!

#### Target Surfaces



#### CAUTION:

Measuring errors can occur when measuring toward colorless liquids (e.g. water) or dust free glass, Styrofoam or similar semi-permeable surfaces. Aiming at high gloss surfaces may deflect the laser-beam and lead to measurement errors.

### Hazards of Use



#### CAUTION:

Watch out for erroneous distance measurements if the instrument is defective or if it has been dropped or has been misused or modified.

#### Precautions:

Carry out periodic test measurements.

Particularly after the instrument has been subject to

**GB** abnormal use, and before, during and after important measurements.

Make sure the Fluke 416D optic is kept clean and that there is no mechanical damage to the bumpers.

 **CAUTION:**


In using the instrument for distance measurements or for positioning moving objects (e.g. cranes, building equipment, platforms, etc.) unforeseen events may cause erroneous measurements.


**Precautions:**


Only use this product as a measuring sensor, not as a control device. Your system must be configured and operated in such a way, that in case of an erroneous measurement, malfunction of the device or power failure due to installed safety measures (e.g. safety limit switch), it is assured that no damage will occur.

---

## Switching on/off

 1x briefly: the instrument and the laser are switched on.


The display shows the battery symbol  until the next button is pressed.

 Pressing this button for longer switches the instrument off.

The instrument switches off automatically after three minutes of inactivity.

---

## Setting the instrument

 Press long until the desired unit is displayed.

Possible units:

	Distance	Area	Volume
1.	0.000 m	0.000 m <sup>2</sup>	0.000 m <sup>3</sup>
2.	0'0" <sup>1</sup> / <sub>16</sub>	0.00 ft <sup>2</sup>	0.0 ft <sup>3</sup>
3.	0 in <sup>1</sup> / <sub>16</sub>	0.00 ft <sup>2</sup>	0.0 ft <sup>3</sup>
4.	0.00 ft	0.00 ft <sup>2</sup>	0.0 ft <sup>3</sup>


---

## CLEAR

 1x briefly: the last action is cancelled.

---

## Illumination

 1x briefly: the display illumination is switched on or off.

---

## Reference Point

Default reference point is from the rear of the instrument.

The instrument can be set for the following measurements:

- To measure from an edge (see drawing {D}), fold out the stop bracket until it snaps in for the first time. See drawing {E}.
- To measure out of a corner (see drawing {D}), fold out the stop bracket until it snaps in, push

the stop bracket with a little force to the right side; the stop bracket can now be completely unfolded. See drawing {E}.



### CAUTION:

Make sure that when measuring from the unfolded endpiece, the measuring reference point is set to "End piece".



1x briefly: the next measurement is taken from the front edge.



2x briefly: the measurement is taken from the unfolded end piece.

After one measurement, the reference point returns automatically to the default setting (rear reference point).



1x long: the measurements are taken with the front as reference until a new measuring reference point is set.



2x long: the measurements are taken from the unfolded end piece until a new measuring reference point is set.

See drawing {F}.

## Measuring

### Single Distance Measurement



1x briefly: the laser is activated.



1x briefly: a distance measurement is taken.

The result is displayed immediately.

### Continuous measurement

Distances can be measured with this function.



1x long: a "beep" is emitted. A continuous measurement is started.



1x briefly: the continuous measurement is stopped.

The last measured value is displayed in the primary display.

### Minimum-/Maximum-Measuring

This function enables determining the minimum or maximum distance from a specific measuring point, e.g. the determination of room diagonals (maximum value) or horizontal distance (minimum value).


Switching on continuous measurement (see above). The corresponding maximum and minimum values are displayed.




# Functions


## Addition / Subtraction

Distance Measurement.

 1x briefly: the next measurement is added to the previous one.

 2x briefly: the next measurement is subtracted from the previous one.

Repeat this procedure for as many times as required. The result is displayed in the primary display, the previously measured value is displayed in secondary display line 2, the value to be added in secondary display line 1.

 1x briefly: the last step is canceled.

## Area function

 1x briefly: the  symbol is displayed.

 1x briefly: takes first distance measurement (e.g. length)


 1x briefly: takes second distance measurement (e.g. width)

The result of the area measurement is displayed in the primary display, the individually measured values are displayed in secondary display lines 1 and 2.

## Adding and subtracting areas


Calling up the area function and measuring areas.

Press  once/twice.

 1x briefly: takes first distance measurement (e.g. length)


 1x briefly: takes second distance measurement (e.g. width)

The result of the second area measurement, "+" flashes.

 1x briefly: confirms the addition; the added area results are displayed in the primary display.


## Volume function

 2x briefly: the  symbol is displayed.

 1x briefly: takes first distance measurement (e.g. length)

 1x briefly: takes second distance measurement (e.g. width)

The result of the area measurement from the values already measured is displayed in the primary display.

 1x briefly: takes the third distance measurement (e.g. height). The value is displayed in secondary display line 1.

The result of the area measurement is displayed in the primary display, the two previously measured

values in secondary display lines 1 and 2.

## Indirect Measurement

The instrument can measure distances with the Pythagorean method. This procedure facilitates in measuring distances that are difficult to access.

**Note:** Adhere to the prescribed sequence of measurements:

- All target points must be vertical or horizontal on the surface of the wall.
- The best results are achieved when the instrument is rotated around a fixed point (e.g. the stop bracket is fully extended and the instrument is placed against a wall).
- To take the measurement, the minimum/maximum function can be called up. The minimum value is used for measurements that must be at right-angles to the target; the maximum distance is used for all other measurements.


**Note:** Make sure that the first measurement and the distance to be measured are at right angles. Use the minimum/maximum function.

### Indirect measurement - determining a distance using 2 auxilliary measurements


See drawing {G}

 1x briefly: the  symbol is displayed.


The distance to be measured flashes in the symbol.

 1x briefly: takes a measurement of the distance.

The second distance to be measured flashes in the symbol.

 1x briefly: takes a measurement of the horizontal distance.

The result of the function is displayed in the primary display.


If the  button is pressed for a long time while measuring a distance, maximum or minimum continuous measuring is activated.

### Indirect measurement - determining a distance using 3 auxilliary measurements


See drawing {H}

 2x briefly: the  symbol is displayed.

The distance to be measured flashes in the symbol.

 1x briefly: takes a distance measurement.


The second distance to be measured flashes in the symbol.

 1x briefly: takes a horizontal measurement.



The third distance to be measured flashes in the symbol.



 1x briefly: takes a measurement of the distance.

The result of the function is displayed in the primary display.

If the  button is pressed for a long time while measuring a distance, maximum or minimum continuous measuring is activated.

## Memory


 1x briefly: the  symbol and the last measured value are displayed.


Use the  or  buttons to navigate through the last 10 values. The values can also be used in functions.


### Using stored values in functions

Using added distances in area functions (e.g. wall surfaces):



Adding distances (see additions / subtractions)

 Call up area function to e.g. measure the height of a room.

 1x briefly: calls up memory and to search for the correct value.

 1x long: the value is entered into the function and the result of the function (e.g. area) is displayed.

## Switching off the beep


  Press and hold simultaneously for 5 seconds:


The beep is switched off.

To reactivate it, press and hold for 5 seconds.

## Appendix

### Display Notices

All display notices are either displayed with  or "Error". The following errors can be corrected.

	Cause	Correction
204	Calculation error	Repeat procedure
252	Temperature too high	Let device cool down
253	Temperature too low	Warm device up
255	Received signal too weak, time for a measurement too long	Use a target plate
256	Received signal too strong	Use target plate (gray side)
257	Faulty measurement, too much background light	Use target plate (brown side)
258	Outside of the measurement range	Select measurement distance within the range of measurement
Error	Cause	Correction
Error	Hardware error	Should this message remain active after switching the instrument off and on several times, please contact the dealership

## Technical Specifications

Range	0.05 m to 60 m (0.2 ft to 200 ft) *
Measuring accuracy (2 $\sigma$ )	typically $\pm 1.5$ mm (0.06 in)**
Smallest unit displayed	1 mm (1/16 in)
Laser class	2
Laser type	635 nm, < 1 mW
Protection against splashes and dust	IP 54, dust-proof, splash-proof
Autom. power off: Laser Instrument	after 60 s after 180 s
Illumination	✓
Fold-out endpiece	✓
Battery life, Type 2 x AAA	up to 5 000 measurements
Dimension	111 x 43 x 23 mm (5.32 x 1.81 x 1.22 in)
Weight	110 g (3.88 ounces)
Temperature range: Storage  Operation	-25°C to +70°C (-13°F to +158°F) 0°C to +40°C (+32°F to +104°F)
Relative humidity	+35°C; max 85%
Altitude	0 to 3500 m

\* Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties!

\*\* in favorable conditions (good target surface properties, room temperature) up to 10 m (33 ft). In unfavorable conditions, such as intense sunshine, poorly reflecting target surface or high temperature variations, the deviation over distances above 10 m (33 ft) can change by  $\pm 0.25$  mm/m ( $\pm 0.003$  in/ft).

## Electromagnetic Compatibility (EMC)

The term "electromagnetic compatibility" is taken to mean the capability of the product to function smoothly in an environment where electromagnetic radiation and electrostatic discharges are present, and without causing electromagnetic interference to other equipment.



### WARNING

The Fluke 416D conforms to the most stringent requirements of the relevant standards and regulations.

The possibility of the product causing interference in other equipment cannot be fully excluded.

## FCC statement (applic. in U.S.)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



### **WARNING**

Changes or modifications not expressly approved by Fluke for compliance could void the user's authority to operate the equipment.

## Laser classification

The Fluke 416D produces a visible laser beam which emerges from the front of the instrument.

See drawing {K}.

The product is a Class 2 Laser Product in accordance with:

- IEC60825-1 : 2007 "Radiation safety of laser products"

### **Class 2 Laser Products:**

Do not stare into the beam or direct it unnecessarily at other persons. Eye protection is normally afforded by aversion responses including the blink reflex.



### **WARNING**

Looking directly into the laser beam with optical aids (e.g. binoculars, telescopes) can be hazardous.

### **Precautions:**

Do not look directly into the beam with optical aids.

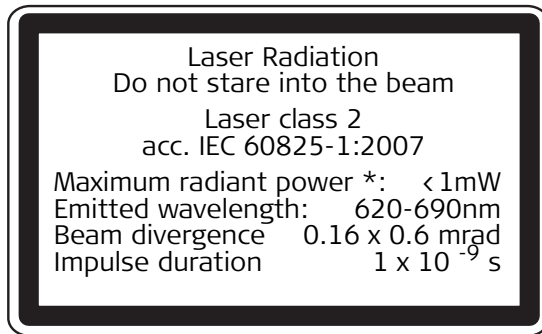
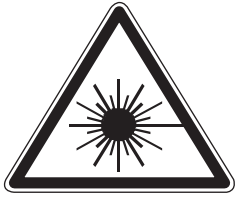


### **CAUTION:**

Looking into the laser beam may be hazardous to the eyes.

### **Precautions:**

Do not stare into beam. Do not look into the laser beam. Make sure the laser is aimed above or below eye level (particularly with fixed installations, in machines, etc.).



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## Care

Wipe off dirt with a damp, soft cloth. Do not immerse the instrument in water. Do not use harsh cleaning agents or solutions.

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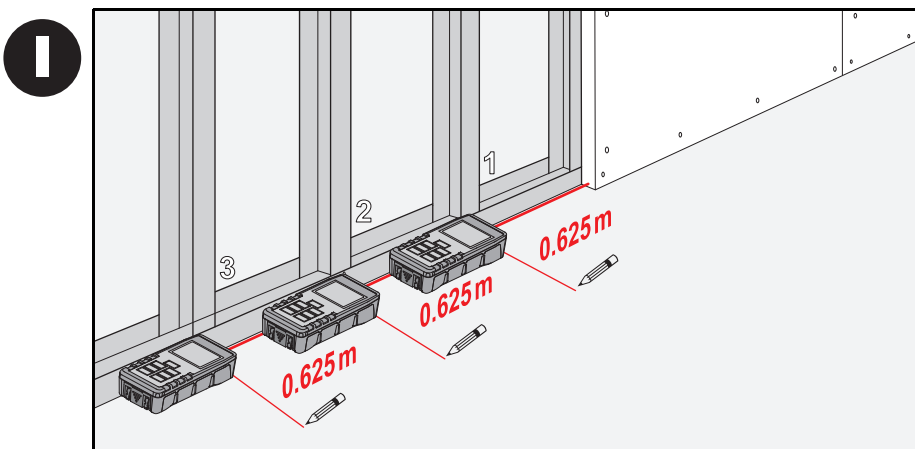
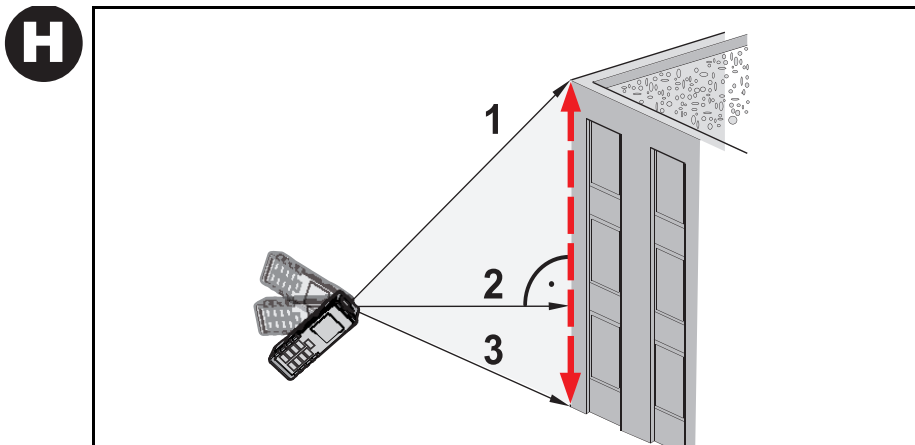
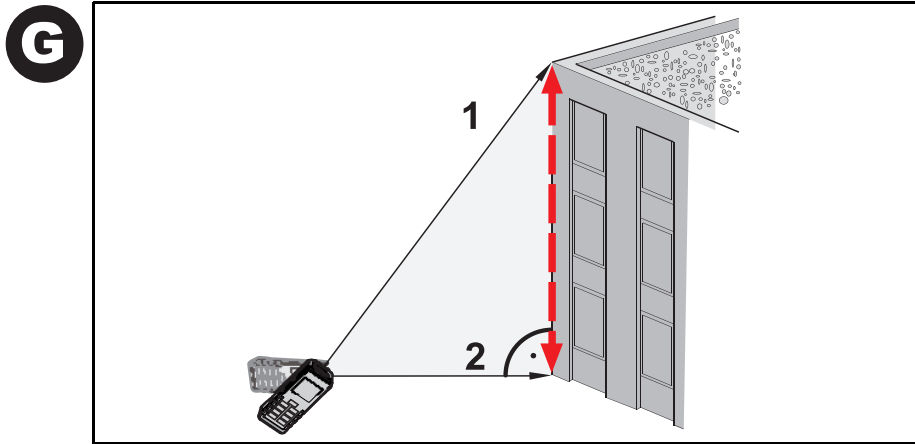
## Disposal



Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.

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**J**

**CAUTION**

LASER RADIATION  
DO NOT STARE INTO BEAM  
CLASS II (2) LASER PRODUCT

OUTPUT: <1 mW  
WAVELENGTH: 620-690 nm

COMPLIES WITH:  
FDA 21CFR 1040.10,11  
AND EN60825-1:07

2 AAA  
NEDA 24A  
IEC LR03

FLUKE CORPORATION  
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