414D, 419D, 424D
Laser Distance Meter

Safety Information

2-Year Limited Warranty.
See the Users Manual for the full warranty.

Go to www.fluke.com to register your product, download manuals, and find more information.

To view, print, or download the latest manual supplement visit www.fluke.com/usen/support/manuals.

A **Warning** identifies hazardous conditions and procedures that are dangerous to the user.

⚠⚠ Warning

To prevent eye damage and personal injury:

- **Read all safety information before you use the Product.**
- **Carefully read all instructions.**
- **Use the Product only as specified, or the protection supplied by the Product can be compromised.**
- **Do not use the Product around explosive gas, vapor, or in damp or wet environments.**
- **Do not use the Product if it operates incorrectly.**
- **Do not use the Product if it is damaged.**
- **Disable the Product if it is damaged.**
- **Do not look into the laser. Do not point the laser directly at persons or animals or indirectly off reflective surfaces.**

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ООО «Флюк СИАЙЭС»
125167, г. Москва,
Ленинградский проспект дом 37,
корпус 9, подъезд 4, 1 этаж

- **Do not look directly into the laser with optical tools (for example, binoculars, telescopes, microscopes). Optical tools can focus the laser and be dangerous to the eye.**
- **Do not open the Product. The laser beam is dangerous to eyes. Have the Product repaired only through an approved technical site.**
- **Remove the batteries if the Product is not used for an extended period of time, or if stored in temperatures above 50 °C. If the batteries are not removed, battery leakage can damage the Product.**
- **Replace the batteries when the low battery indicator shows to prevent incorrect measurements.**

Symbols

Symbol	Description	Symbol	Description
	Consult user documentation.		Battery status.
	WARNING. RISK OF DANGER.		Battery or battery compartment.
	WARNING. LASER RADIATION. Risk of eye damage.		Conforms to relevant Australian Safety and EMC standards.
	Conforms to European Union directives.		Conforms to relevant South Korean EMC Standards.
	This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste.		
	Indicates a Class 2 laser. The following text will appear with the symbol on the product label: “IEC/EN 60825-1. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice 50, dated June 24, 2007.” In addition, the following pattern on the label will indicate wavelength and optical power: λ = xxxnm, x.xxmW.		

Specifications

	414D	419D	424D
Distance Measurement			
Typical Measurement Tolerance[1]	±2.0 mm (±0.08 in)[3]	±1.0 mm (± 0.04 in)[3]	
Maximum Measurement Tolerance[2]	±3.0 mm (±0.12 in)[3]	±2.0 mm (±0.08 in)[3]	
Range at target plate	50 m / 165 ft	80 m / 260 ft	100 m / 330 ft
Typical Range[1]	40 m / 130 ft	80 m / 260 ft	
Range at unfavorable condition[4]	35 m / 115 ft	60 m / 200 ft	
Smallest unit displayed	1 mm / 1/16 in	1 mm / 1/32 in	
∅ laser point at distances	6 mm @ 10 m / 30 mm @ 50 m / 60 mm @ 100 m 0.24 in @ 33 ft / 1.2 in @ 164 ft / 2.4 in @ 328 ft		
Tilt measurement			
Measurement tolerance to laser beam[5]	no	no	±0.2 °
Measurement tolerance to case[5]	no	no	±0.2 °
Range	no	no	360 °
Compass accuracy	no	no	8 points (±22.5 °)[6]
General			
Protection class	IP40	IP54	
Automatic laser off	90 seconds		
Automatic power off	180 seconds		
Battery life (2 x AAA) 1.5 V NEDA 24A/IEC LR03	up to 3000 measurements	up to 5000 measurements	
Dimensions (H x W x L)	11.6 cm x 5.3 cm x 3.3 cm (4.6 in x 2.1 in x 1.3 in)	12.7 x 5.6 x 3.3 cm (5.0 in x 2.2 in x 1.3 in)	
Weight (with batteries)	113 g (4 oz)	153 g (5 oz)	158 g (6 oz)
Temperature			
Storage	-25 °C to +70 °C (-13 °F to +158 °F)	-25 °C to +70 °C (-13 °F to +158 °F)	
Operation	0 °C to +40 °C (32 °F to +104 °F)	-10 °C to +50 °C (14 °F to +122 °F)	

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Calibration cycle	Not applicable	Not applicable	Tilt and Compass
Maximum altitude	3500 m		
Maximum relative humidity	85 % at -7 °C to 50 °C (20 °F to 120 °F)		
Safety			
General	IEC 61010-1: Pollution Degree 2		
Laser	IEC 60825-1: Class 2, 635 nm, <1 mW		
Max peak radiant output power	0.95 mW		
Wavelength	635 nm		
Pulse duration	>400 ps		
Pulse repetition frequency	320 MHz		
Beam divergence	0.16 mrad x 0.6 mrad		
EMC			
International	IEC 61326-1: Industrial Electromagnetic Environment CISPR 11: Group 1, Class A		
Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself.			
Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.			
Korea (KCC)	Class A Equipment (Industrial Broadcasting & Communication Equipment)		
Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.			
USA (FCC)	47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.		

[1] Applies for 100 % target reflectivity (white painted wall), low background illumination, 25 °C.
[2] Applies for 10 % to 500 % target reflectivity, high background illumination, −10 °C to +50 °C.
[3] Tolerances apply from 0.05 m to 10 m with a confidence level of 95 %. The maximum tolerance may deteriorate to 0.15 mm/m between 10 m to 30 m and to 0.2 mm/m for distances above 30 m.
[4] Applies for 100 % target reflectivity, background illumination ~ 30,000 lux.
[5] After user calibration. Additional angle related deviation of ±0.01 ° per degree up to ±45 ° in each quadrant. Applies at room temperature. For the whole operating temperature range the maximum deviation increases by ±0.1 °.
[6] After calibration. Do not use the compass for navigation.