LeddarTech®

LEDDARVU

8-SEGMENT SOLID-STATE LiDAR SENSOR MODULES

LEDDARVU

MULTI-OBJECT, WIDE-BEAM OPTICAL DETECTION AND RANGING OVER EIGHT SEGMENTS.

THE SMALL, AFFORDABLE, VERSATILE LiDAR

LeddarVu solid-state LiDAR sensors offer affordable detection and ranging performance in a small, robust form factor over distances up to 185 m.

Leveraging LeddarTech's unique expertise in LiDAR detection and ranging, every LeddarVu sensor contains our proprietary Leddar technology. The patented Leddar signal processing algorithms efficiently acquire, sequence and digitally process light signals, significantly improving solid-state LiDAR sensitivity, immunity to ambient light and performance in inclement weather.

This unique built-in processing ability allows for rapid delivery of accurate measurements, and extends range and measurement capabilities. Additionally, it provides superior lateral discrimination, as well as the critical capability to detect and track multiple objects simultaneously in the sensor's field of view (FOV).

VU8 CONFIGURATIONS

Weighing only 128.5 grams or less, LeddarVu Vu8 modules use a fixed light source, which significantly increases the sensor's robustness and cost-efficiency as compared to any scanning LiDAR solution.
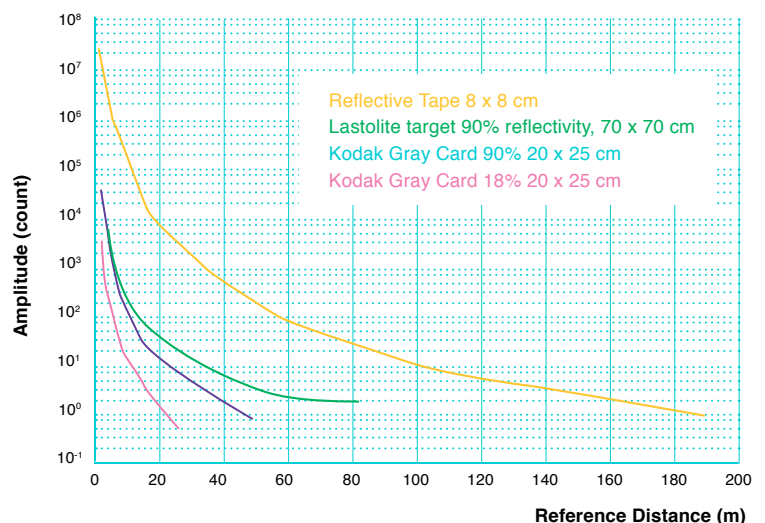
The Vu8 leverages powerful laser illumination (class 1, eye-safe) and a wide FOV separated into eight distinct detection segments within a single sensor, resulting in rapid, continuous and accurate detection and ranging of objects—including lateral discrimination—along the entire length of the wide beam, without any moving parts.

The Vu8 source assembly consists of a 905 nm laser emitter combined with diffractive optics, providing a wide illumination beam that is available in various horizontal FOV configurations from 20 to 100 degrees (each available in different vertical FOVs). The receiver assembly includes eight independent detection elements with simultaneous multi-object measurement capabilities supported by powerful Leddar signal processing algorithms.

INTEGRATION AND INTERFACES

All Vu8 modules come with a software development kit, the Leddar Enabler SDK, which provides a user-friendly application programming interface (API) with .NET and C libraries complete with code examples and sample code for Windows and Linux. Two interface configurations are available: SPI or USB-CAN-Serial (UART/RS-485).
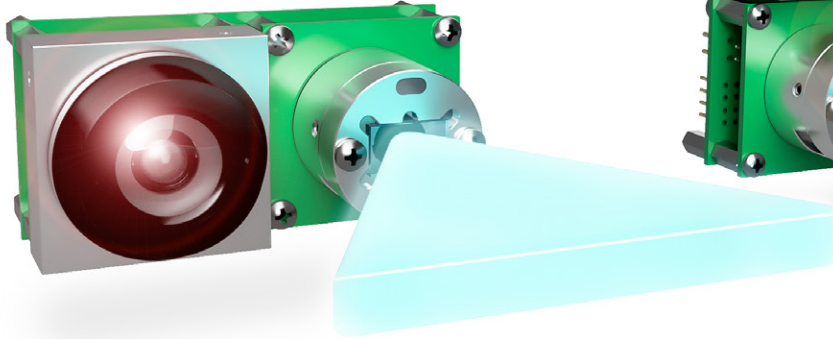
AMPLITUDE VS. DISTANCE

Reflective Tape 8 x 8 cm
Lastolite target 90% reflectivity, 70 x 70 cm
Kodak Gray Card 90% 20 x 25 cm
Kodak Gray Card 18% 20 x 25 cm

Amplitude (count)
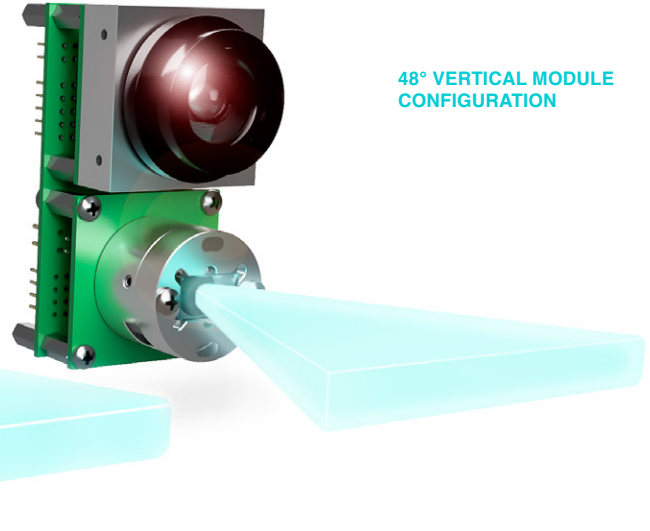
Reference Distance (m)

The chart above displays the detection amplitude of a 20° x 0.3° sensor for four reference objects (photographic gray cards and reflective tape) of varying size and reflectivity.

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LeddarVu solid-state LiDAR platform offers various sensor configurations for flexible integration into your application.

CONFIGURATIONS		Vu8 - Narrow FOV		Vu8 - Medium FOV		Vu8 - Wide FOV	
Horizontal FOV		20°	20°	48°	48°	100°	100°
Vertical FOV		0.3°	3°	0.3°	3°	0.3°	3°
Dimensions (H x W x D)		70 mm x 35.2 mm x 67.5 mm		70 mm x 35.2 mm x 45.8 mm		73 mm x 40 mm x 65 mm	
Weight (for SPI carrier model)		110.3 g		107.6 g		128.5 g	
Range[4]	Retro-Reflector[1]	185 m	121 m	118 m	85 m	61 m	34 m
	White Target[2]	60 m	34 m	31 m	19 m	12 m	9 m
	Gray Target[3]	38 m	22 m	18 m	13 m	7 m	6 m

1. Retro-reflector reference target corresponds to a 5 cm x 7 cm band of retro-reflective tape
2. White reference target corresponds to a 20 cm x 25 cm Kodak Gray Card with 90% reflectivity
3. Gray reference target corresponds to a 20 cm x 25 cm Kodak Gray Card with 18% reflectivity
4. Data refresh rates used to achieve the ranges are:
   - Narrow FOV: 0.543 Hz;
   - Medium FOV: 1.085 Hz;
   - Wide FOV: 2.17 Hz.

CHARACTERISTICS

- **Number of segments** 8
- **Wavelength** 905 nm
- **Power supply** 12 VDC ± 0.6 VDC
- **Interface options** 1) SPI   2) USB, CAN, serial (UART/RS-485)
- **Ocular safety** Fulfills the requirements of
  IEC 60825-1:2014 (Third Edition); Class 1 laser product

SYSTEM PERFORMANCE

- **Accuracy** 5 cm
- **Data refresh rate[5]** Up to 100 Hz
- **Operating temperature range** -40 °C to +85 °C
- **Distance precision** 6 mm
- **Distance resolution** 10 mm
- **Power consumption** 2 W

OPTIONAL ACCESSORIES

- **SPI to USB cable**
- **LeddarVU 12 V power supply**
- **Starter kit, which includes mounting brackets, screws, power supply and cables**

[5] *Depends on configuration*

45.8 mm

65 mm

Ø 31 mm

70 mm

36 mm

17 mm

32.5 mm
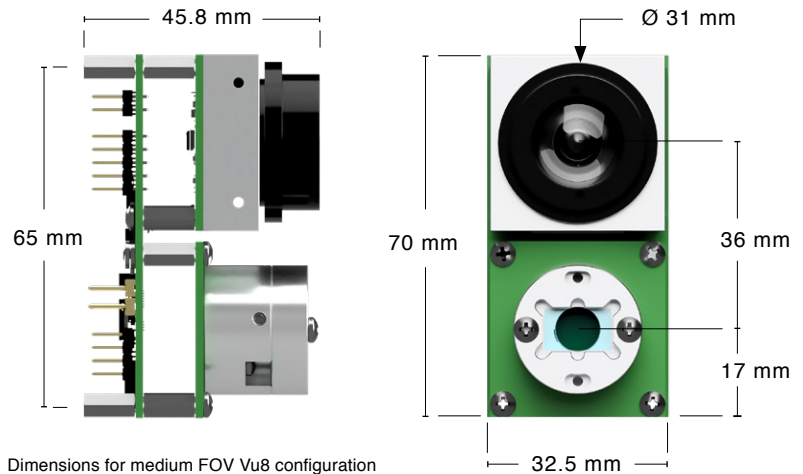
Dimensions for medium FOV Vu8 configuration

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THE SMALL, AFFORDABLE, VERSATILE SOLID-STATE LiDAR PROVIDING PRECISE MULTI-OBJECT, WIDE-BEAM OPTICAL DETECTION AND RANGING OVER EIGHT SEGMENTS.

OVERVIEW

✓ Vu8 Module Features

- Detection range up to 185 meters (607 feet)
- Compact and lightweight
- Multiple independent segments with simultaneous acquisition and lateral discrimination capabilities
- Rapid refresh rate up to 100 Hz

✓ LeddarVu Benefits

- Small, flexible form factor
- Fixed beam, no moving parts
- Proven reliability, even in harsh conditions
- Immune to ambient light
- Best cost/performance ratio

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