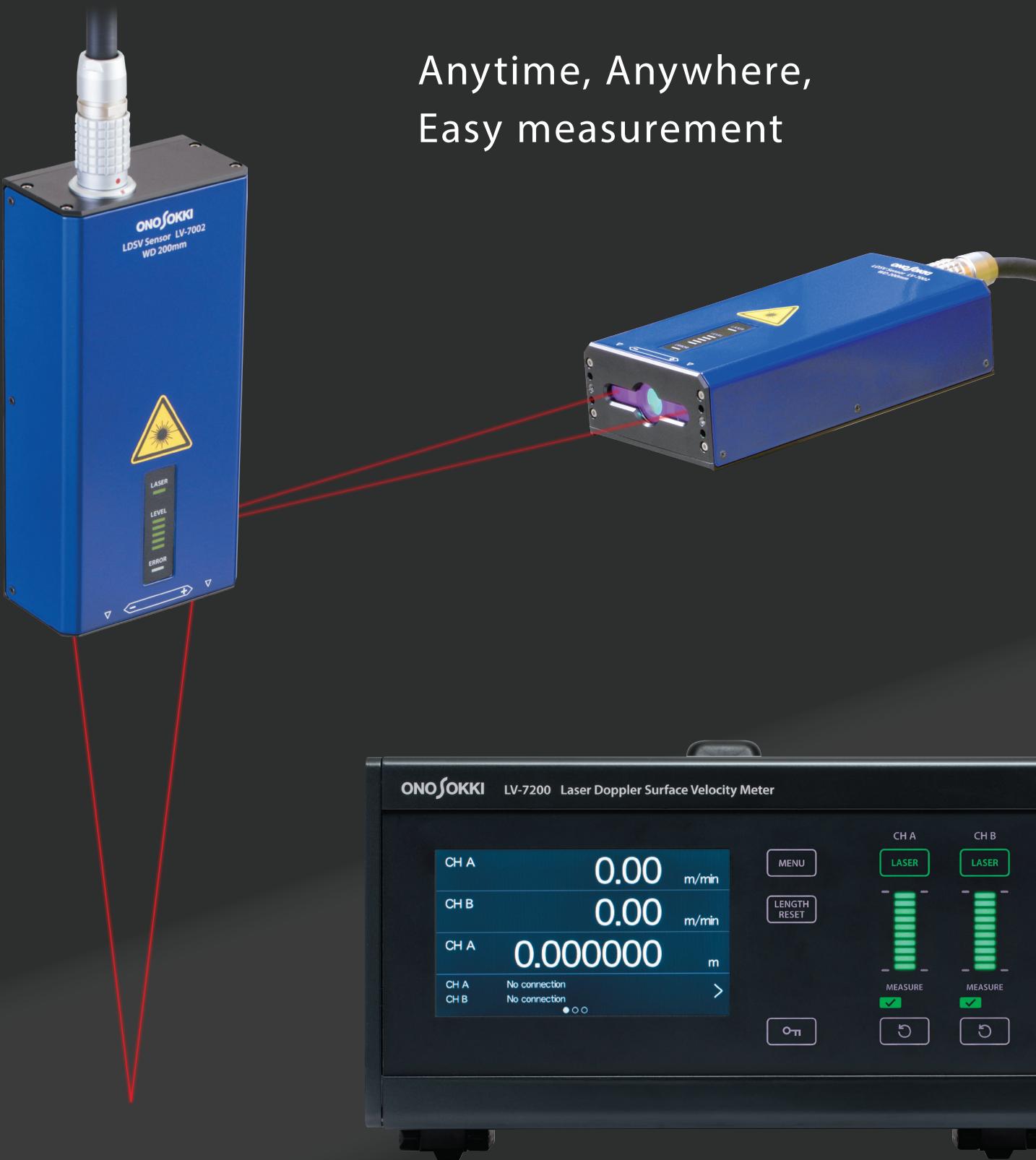


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LV-7000 series

Laser Doppler Surface Velocity Meter

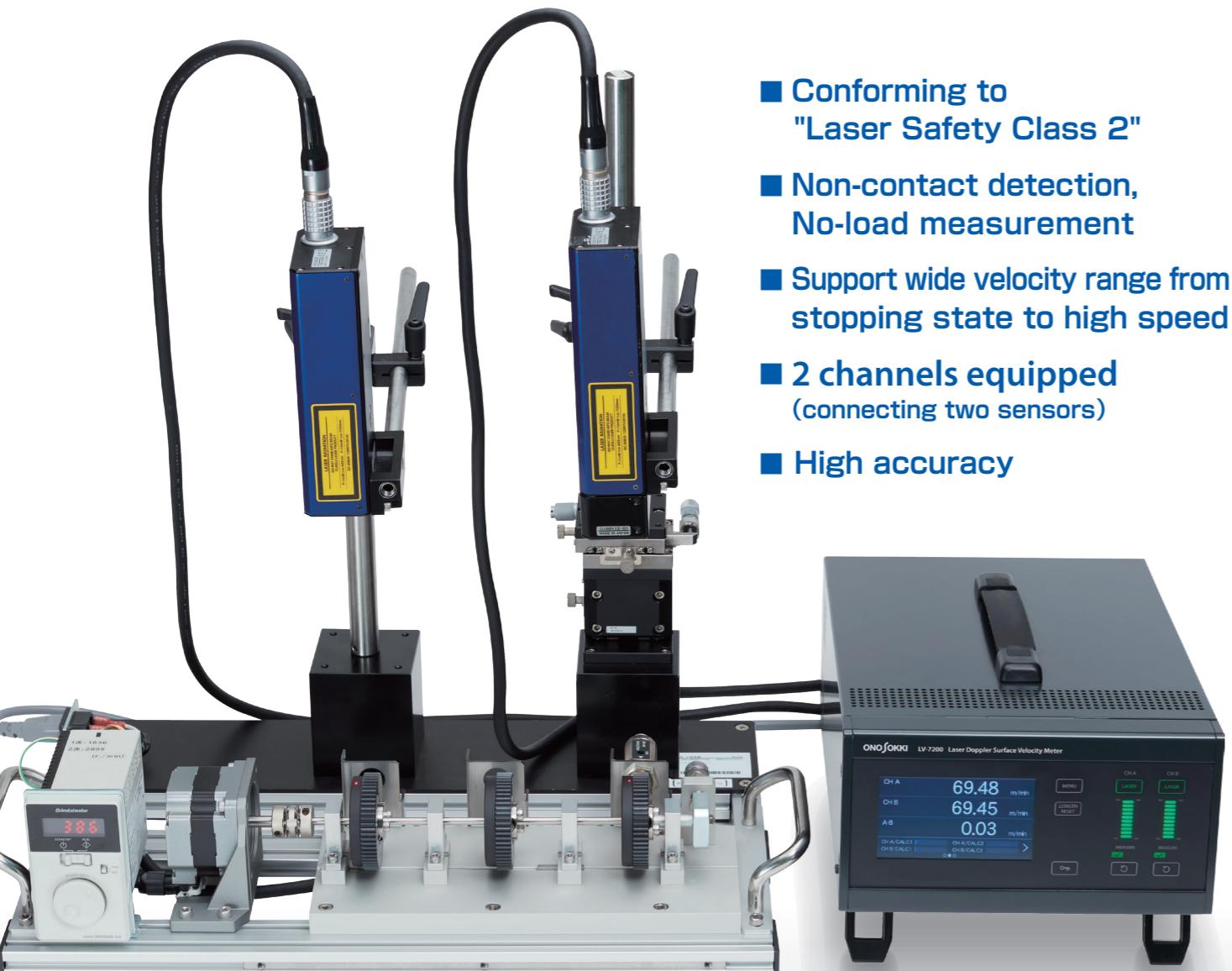
Anytime, Anywhere,
Easy measurement



LV-7000 series

Laser Doppler Surface Velocity Meter

The LV-7000 series detects speed, uneven speed, distance, length of moving object or rotating object without contact.



- Conforming to "Laser Safety Class 2"
- Non-contact detection, No-load measurement
- Support wide velocity range from stopping state to high speed
- 2 channels equipped (connecting two sensors)
- High accuracy

Laser Doppler Surface Velocity Meter LV-7000 series



Main unit
LV-7210/7220

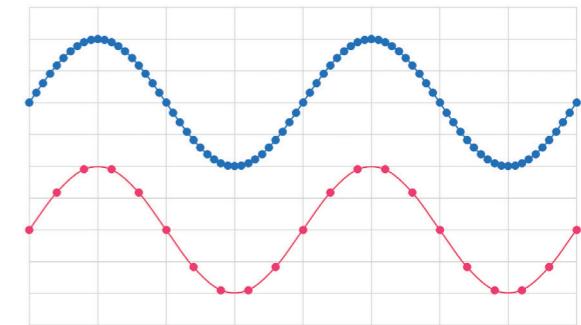
Sensor
LV-7002

Inter-channel difference measurement



By connecting two sensors to one main unit, it enables to calculate and output difference in velocity/length between the two points. It measures the slip measurement between the roller and conveyed object in real time.

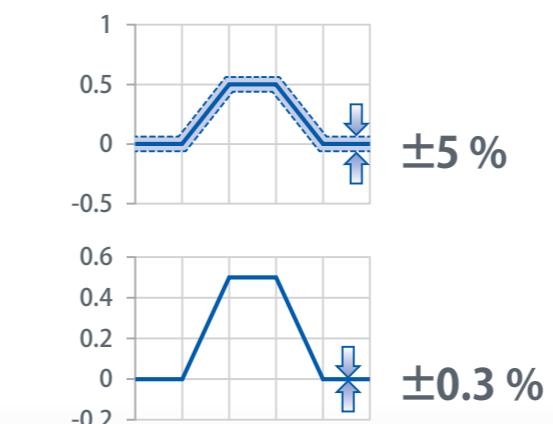
High frequency response



Provides the wide band mode that improves the frequency response up to 20 kHz*. The minute velocity changes are detected instantly.

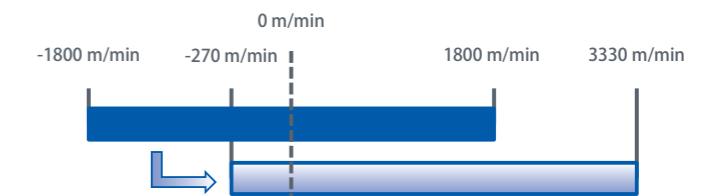
*Approximately 4 times of the LV-7100 (previous model)

Analog output



Up to four types of analog output (two types for each channel) can be selected from velocity, distance, velocity difference, and distance difference.
Linearity: Max. ±0.3% (LV-7100: Max.±5.0%)
DC offset: ±0.3% (LV-7100: ±5.0%)

Additional velocity range (optional)



The maximum detection velocity range is extended by shifting the velocity range to the positive side. The velocity range from -540 to 6,660 m/min can be measured.

* It can be further extend to -540 to 6,660 m/min when high-velocity module for sensor mounted.

LV-7210/7220

Laser Doppler Surface Velocity Meter

Main Unit

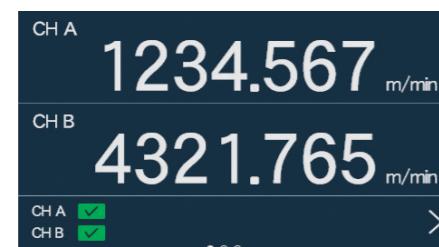
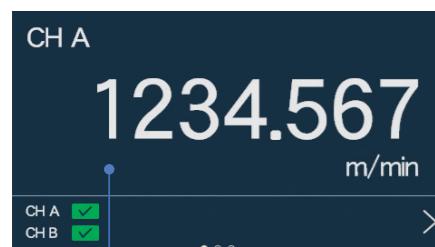
User-friendly operability

The touch-button enables easy handling for the frequently used operation in measurement. The advanced settings can be also operated with the LCD touch panel.



Remote reset function

You can reset the measured distance/length value remotely by connecting a PLC etc. to this RESET IN terminal.



Flexible screen layout

The display mode can be selected between 1,2 and 3 lines according to the purposes. Flexibly used in the scene such as reading from a distance, comparing data, etc.

RS-232C communication

You can control the LV-7200 main unit from the PC or PLC connected via RS-232C communication, such as changing setting, reading velocity/distance (length) data.



Analog output (up to 4 output)

Outputs a voltage corresponding to velocity, distance, velocity difference, and distance difference at $\pm 10V$.

Easy to notice measurement condition

Outputs a signal when it cannot be detected (sensitivity error occurs, excessive acceleration occurs).

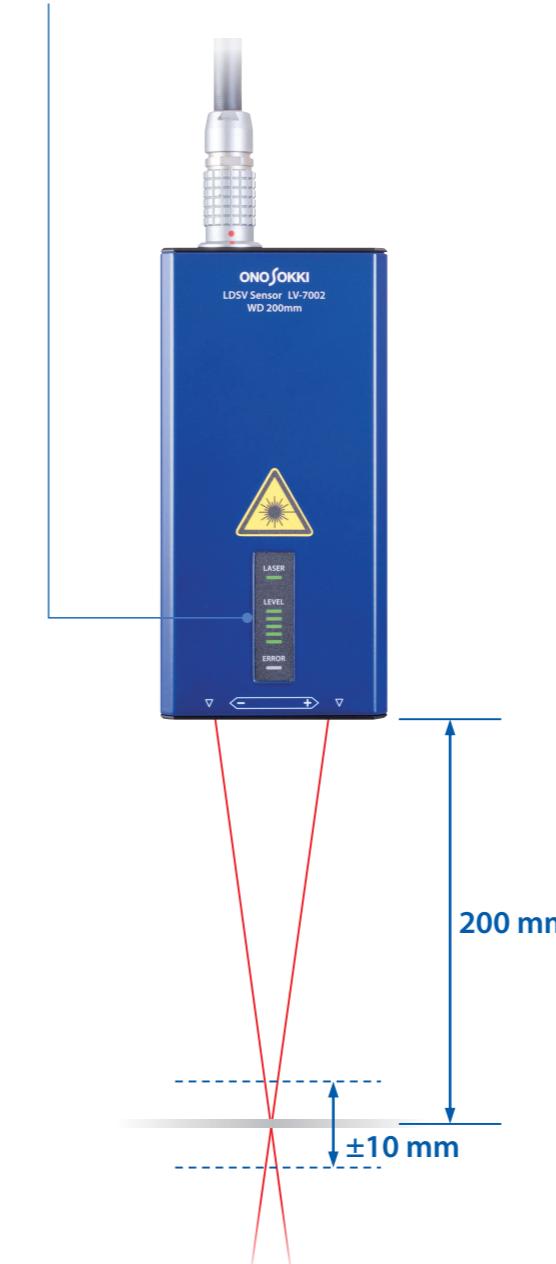
LV-7002

Laser Doppler Surface Velocity Meter

Sensor

Indicators

Three indicators are centrally designed on the sensor. Enables to capture the detection status and sensor operation status at a glance.



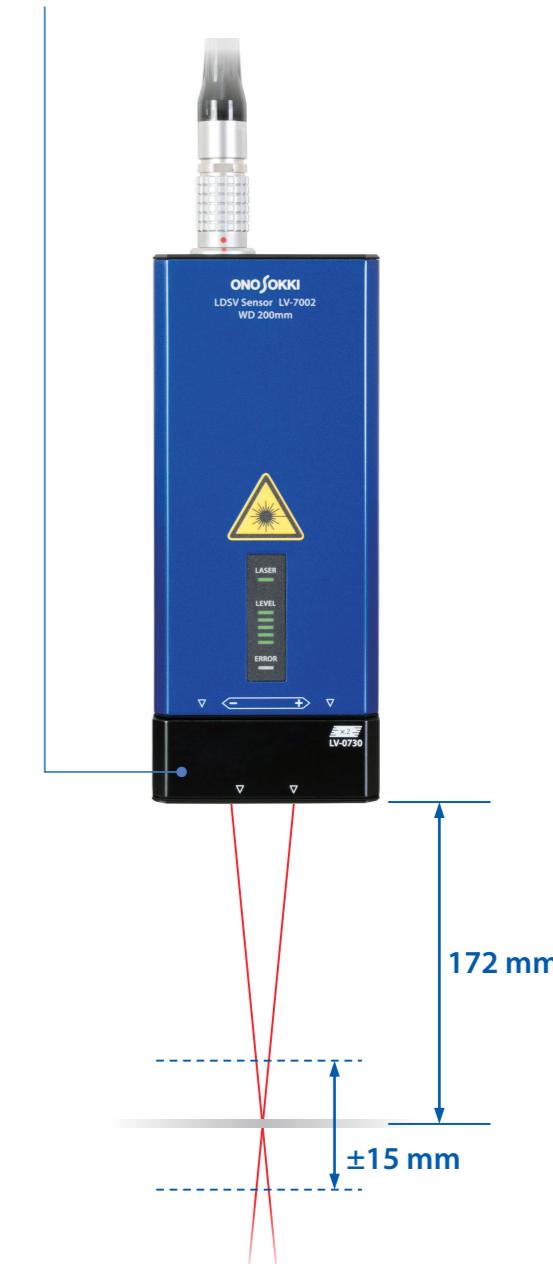
Detection range (depth of focus) ± 10 mm / ± 15 mm*

Even if the laser focal point is slightly away from the detection position it can be measured as long as it is within the detection range. (*when the LV-0730 mounted)

High-velocity module for sensor

Detection velocity range : 0 to ± 3600 m/min*
Max. tracking acceleration: 1600 m/s²

*Twice of the LV-7100



Conforming to "Laser Safety Class 2"

No protection glasses required. You can directly check the focal point and detection position of the laser beam.

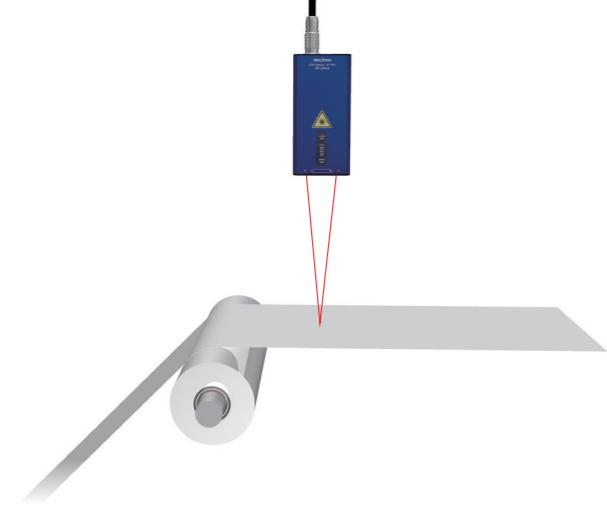
Application examples

- printing machine, photo copy machine, OA equipment
- conveyor, belt
- building material, sheet

- transmission system, pulley
- pick-up line, cutting machine
- tire, roller

Speed/uneven speed measurement

Speed/uneven speed measurement of paper, film, rubber, woven fabric, non-woven fabric, and plastic

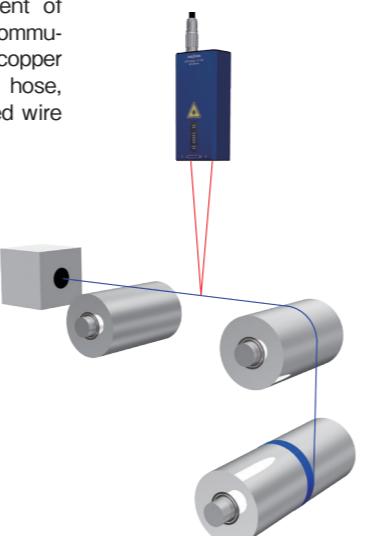


- converting
- high-performance film
- woven fabric, non-woven fabric

- plastic, rubber, resin
- wire, steel wire, thread
- paper, fiber

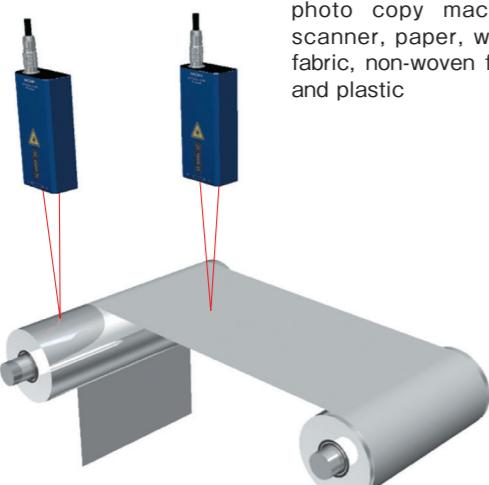
Measurement of winding length

Length measurement of thread, wire for communication facility, copper wire for elevator, hose, harness and coated wire material



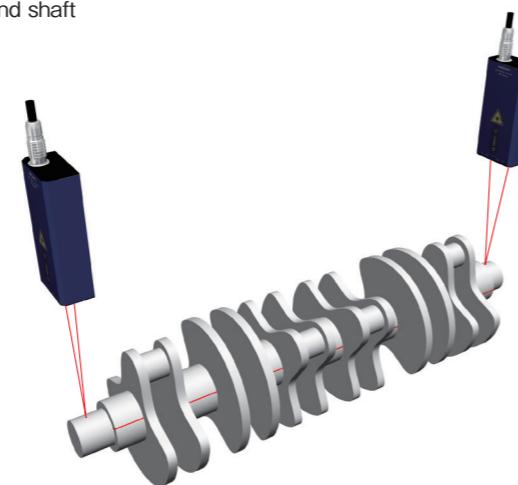
Conveyance slip amount measurement

Slip amount measurement on conveyance of printer, photo copy machine, scanner, paper, woven fabric, non-woven fabric and plastic



Torsion/torsion vibration measurement

Torsion or torsion vibration measurement of transmission power train, drive-train, rotation shaft, turbine, forging crank and shaft



Specification

LV-7002 Sensor and LV-0730 High-velocity module

	LV-7002	LV-7002+LV-0730
Laser beam	Laser safety class Class2 Measuring laser beam $\lambda=1550$ nm Less than 10 mW Guide laser beam $\lambda= 635$ nm Less than 1 mW Laser spot diameter 2 mm × 1 mm, ellipse	
Detection distance	Detection distance (center) *from the bottom surface of the sensor 200 mm 172 mm	
	±4 mm Distance accuracy: within ±0.2 % (of reading)	±15 mm Distance accuracy: within ±5.0 % (of reading)
Sensor	Detection range (depth) ±10 mm Distance accuracy: within ±5.0 % (of reading)	±1600 m/s ² Distance accuracy: within ±5.0 % (of reading)
	Scale factor (reflected automatically at power-on) Approx. 7.5 μ m	Approx. 15 μ m
	Detection velocity range 0 to ±1800 m/min	0 to ±3600 m/min
Outer dimensions	Maximum tracking acceleration 800 m/s ²	1600 m/s ²
	(W×H×D) 75 mm × 40 mm × 155 mm	76 mm × 40 mm × 183 mm
	Weight of the main unit (not including option/ cable) Approx. 750 g	Approx. 900 g

LV-7200 series Main Unit

	LV-7210	LV-7220
Number of Sensor Inputs	1 (CH A)	2 (CH A and CH B)
Detection	Polarity Moving from the left of the front of the sensor to the right: + Moving from the right of the front of the sensor to the left: -	
	Detection velocity range 0 to ±1800 m/min 0 to ±3600 m/min (with the LV-0730 for sensor added)	
	Measurement mode Standard/ Wide band	
	Cutoff frequency Standard mode 5 kHz (LPF GAIN fc = -3 dB) Wide band mode 20 kHz (LPF GAIN fc = -3 dB)	
	Maximum tracking acceleration Standard mode 800 m/s ² , 1600 m/s ² *with the LV-0730 for sensor added Wide band mode No upper limit	
Voltage output	Number of output terminals 2	4
	Output terminal shape BNC (receptacle)	
	Output voltage ±10 V (20 V p-p)	
	Output impedance 50 Ω or less	
	Output item CH A velocity, CH A length	CH A,B velocity, CH A,B length, A-B velocity, A-B length
Velocity voltage output	Voltage range 180(m/min)/V, 50 (m/min)/V, 10(m/min)/V, 1 (m/min)/V 360(m/min)/V, 100 (m/min)/V, 20(m/min)/V, 2(m/min)/V (when LV-0730 installed)	
	Linearity Max. ±0.3 % (F.S.)	
	DC offset Within ±0.3 % (F.S.)	
	Low-pass filter Standard mode Off: 5 kHz, 1 kHz, 100 Hz Wide band mode Off: 20 kHz, 5 kHz, 1 kHz, 100 Hz	
Length voltage output	Voltage range 1000 m/V, 100 m/V, 1 m/V, 100 mm/V, 10 mm/V, 1 mm/V, 100 μ m/V	
	Length detection range 0 to ±10000 m	
LCD display	Type 4.3-inch LCD (touch panel)	
	Number of display digits 7 digits + polarity (1 digit)	
	Number of display lines Selected 1 or 2 lines	Selected from 1 to 3 lines
Digital output	Standard RS-232C	
	Connector D-sub 9-pin	
General specifications	Power supply Input voltage 100-240 VAC, 50/60 Hz Power consumption Less than 180 VA	
	Outside dimensions (W×H×D) 231 mm × 120 mm × 351 mm (protrusions not included)	
	Weight Approx. 3.6 kg	Approx. 4 kg
	Operating environment Temperature range 0 to 40 °C Humidity range 20 to 80 % (with no condensation)	
	Storage environment Temperature -10 °C to 50 °C Humidity range 20 to 80 % (with no condensation)	

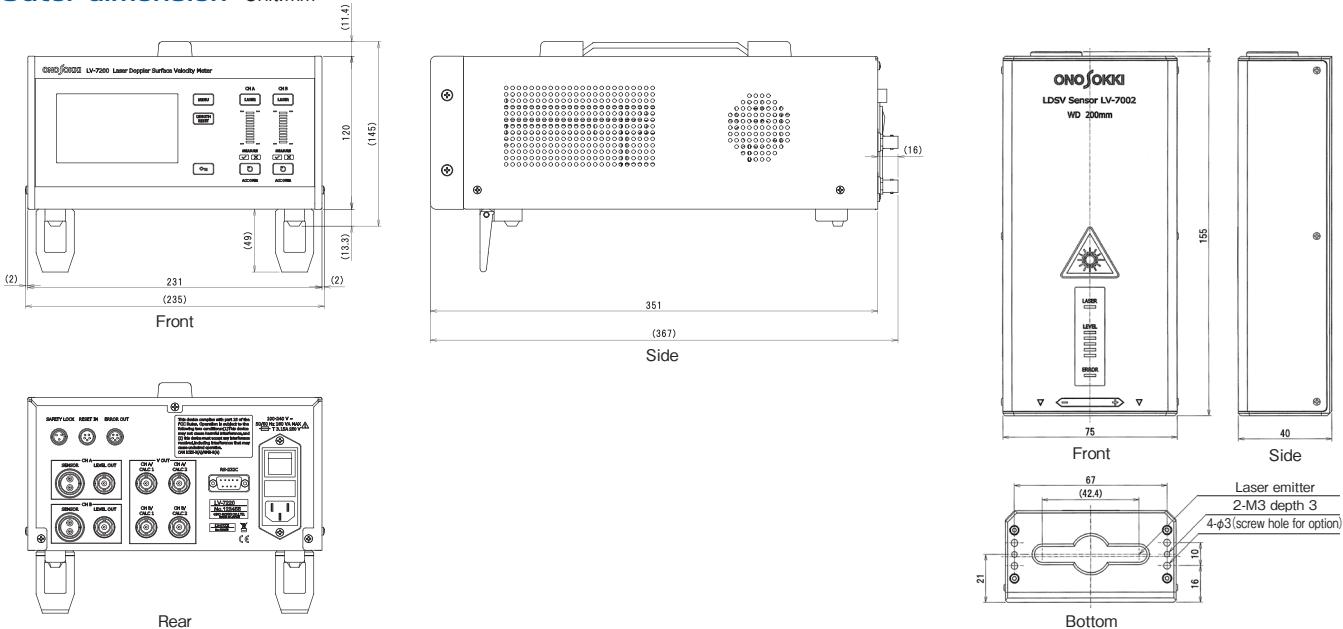
Conforming standard	Laser safty	IEC 60825-1:2007:2014 EN 60825-1:2007:2014/A11:2021		
	FDA (CDRH) 21CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed.3., as described in Laser Notice No. 56			
	CE marking	Low voltage Directive	2014/35/EU	EN 61010-1, EN 60825-1
		EMC Directive	2014/30/EU	EN 61326-1
		RoHS Directive	2011/65/EU	EN IEC 63000

Option

Model name	Product name	Description
LV-0703	Sensor cable	Cable length 3 m
LV-0705	Sensor cable	Cable length 5 m
LV-0730	High-Velocity Module for Sensor	
LV-0732	Additional Velocity Range	Velocity range: -270 to 3330 m/min
LV-0740	Channel modification	
LV-0752	90-Degree Beam Bending Mirror	
LV-0762	Sensor Suspension Adapter	
LV-0773	RESET IN Cable	One side open
LV-0774	ERROR OUT Cable	
LV-0793	Storage Trunk	Common for LV-7210, LV-7220
LV-0015	XY-axis fine-control stage	Stage face: 60×60 mm, travelling amount: ±6.5 mm
LV-0016	Z-axis fine-control stage	Stage face: 60×60 mm, travelling amount: 0 to 13 mm
LV-0030	Large magnet stand	
LV-0018A	Steel plate	

Outer dimension

Unit:mm



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