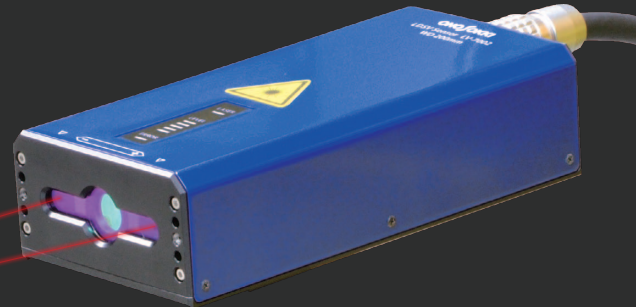


LV-7000 series

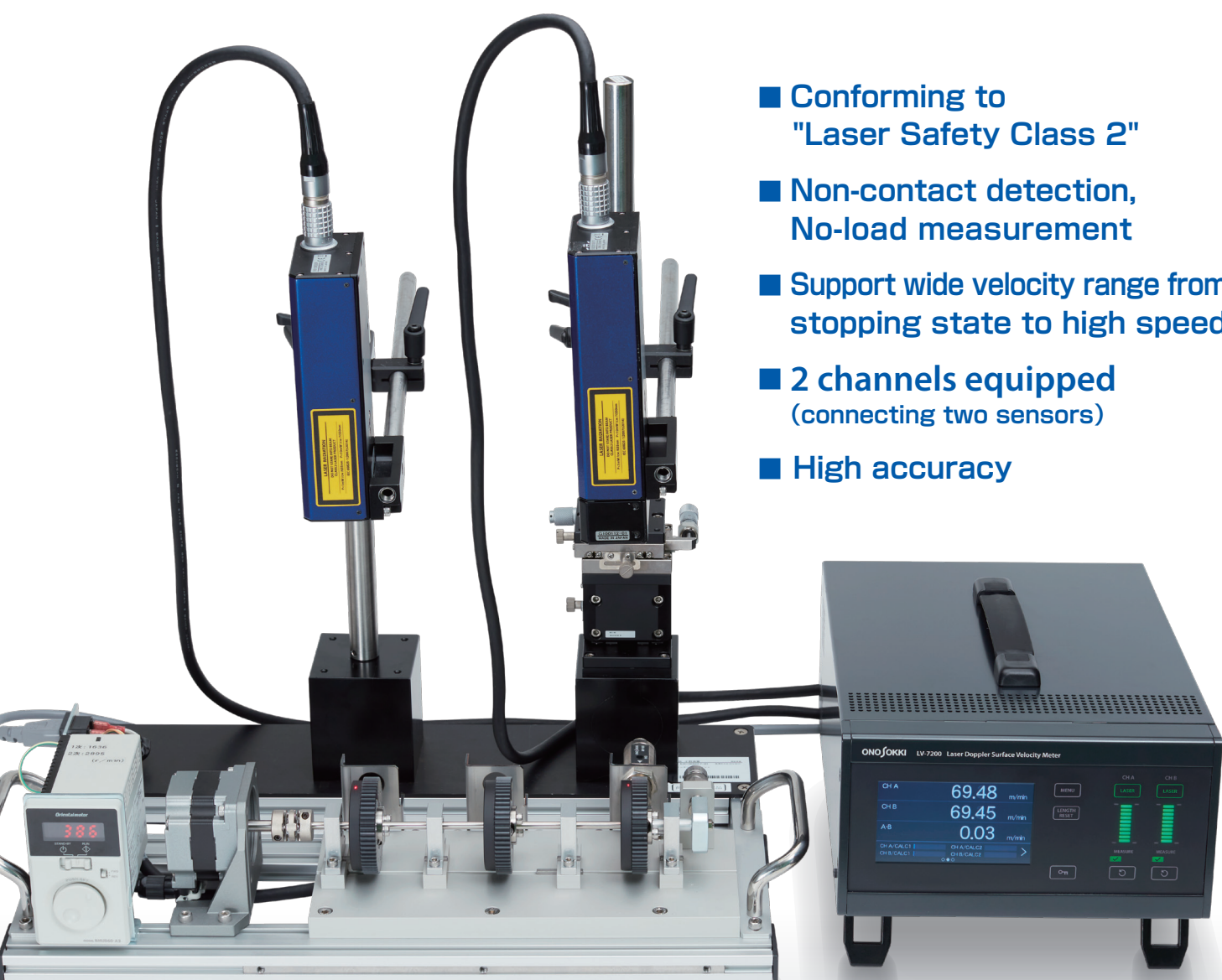
Laser Doppler Surface Velocity Meter

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

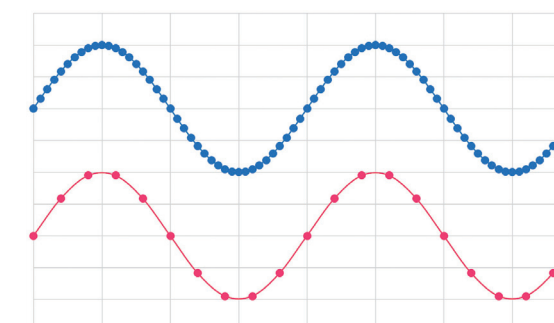


Inter-channel difference measurement



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.

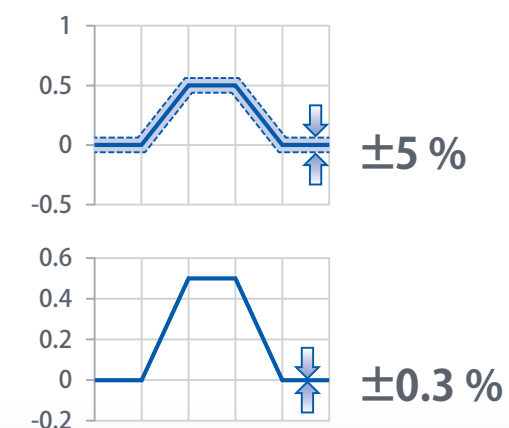
High frequency response



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

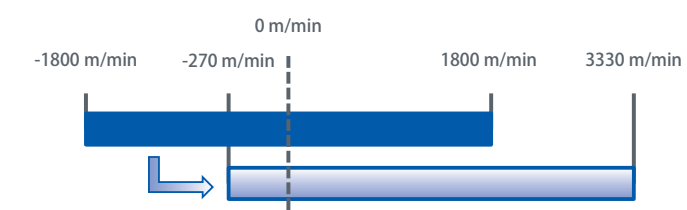
*Approximately 4 times of the LV-7100 (previous model)

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. $\pm 0.3\%$ (LV-7100: Max. $\pm 5.0\%$)
DC offset: $\pm 0.3\%$ (LV-7100: $\pm 5.0\%$)

Additional velocity range (optional)



The maximum detection velocity range is extended by shifting the velocity range to the positive side. The velocity range from -270 to 3,330 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.

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.

Remote reset function

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

Analog output (up to 4 output)

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

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.

Easy to notice measurement condition

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

LV-7002

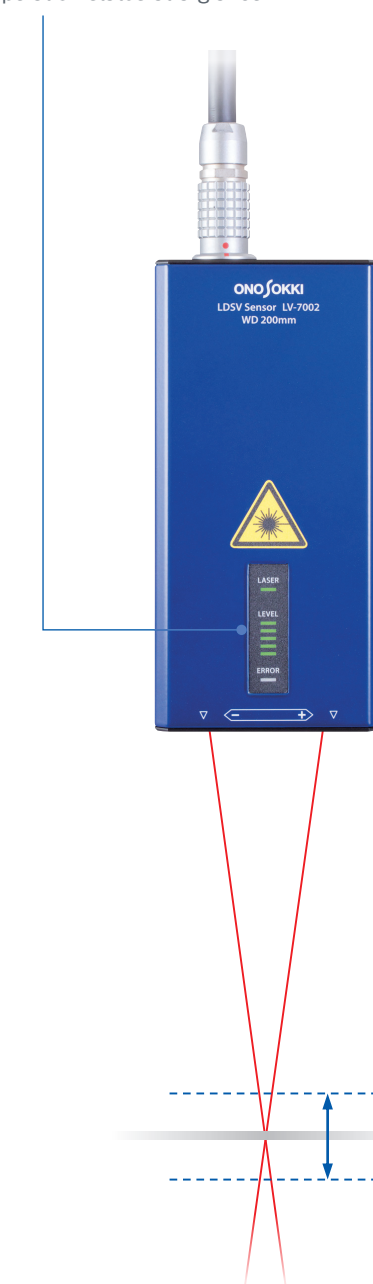
Laser Doppler Surface Velocity Meter Sensor

Indicators

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

High-velocity module for sensor

Detection velocity range : 0 to $\pm 3600\text{m/min}^*$
Max. tracking acceleration: 1600 m/s^2
*Twice of the LV-7100



Detection range (depth of focus) $\pm 10\text{ mm} / \pm 15\text{ mm}^*$

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)



Conforming to "Laser Safety Class 2"

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

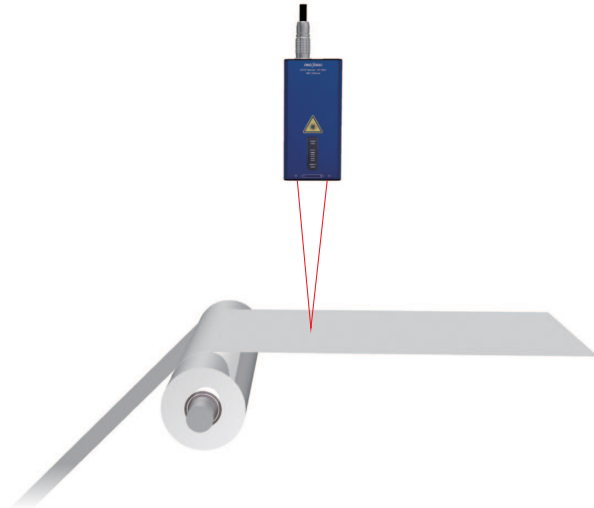
Application examples

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

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

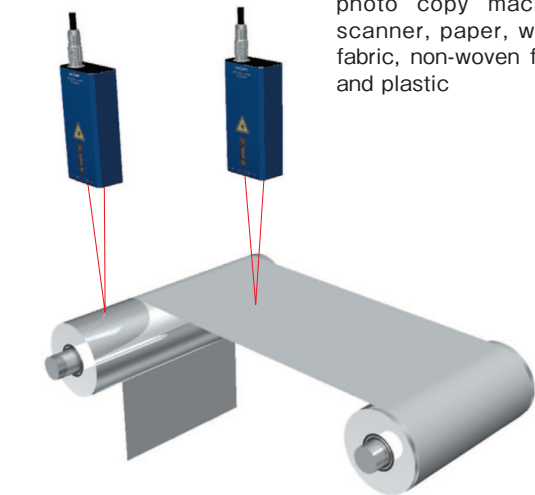
Speed/uneven speed measurement

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



Conveyance slip amount measurement

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

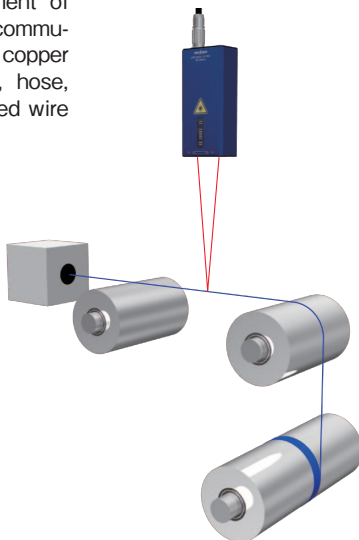


- converting
- high-performance film
- woven fabric, non-woven fabric

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

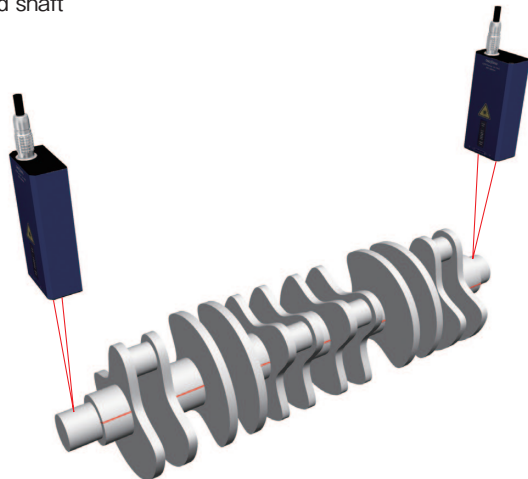
Measurement of winding length

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



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

LV-7200 series Main Unit

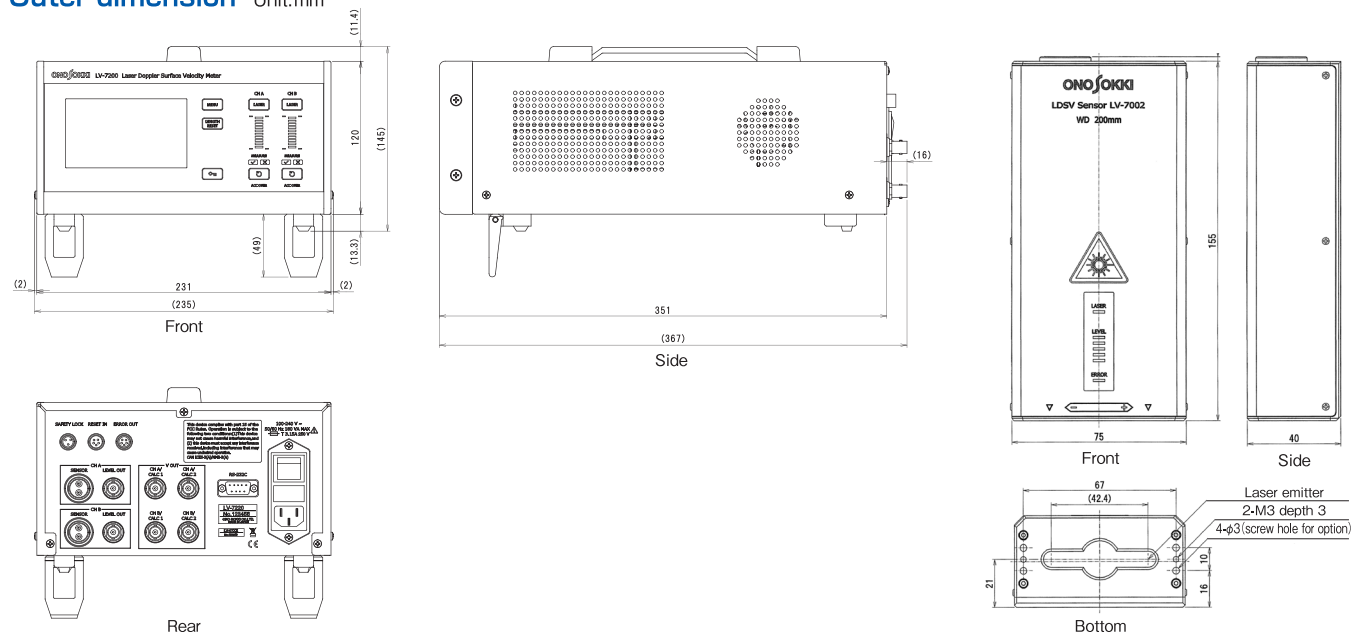
		LV-7210	LV-7220
Number of Sensor Inputs		1 (CH A)	2 (CH A and CH B)
Detection	Polarity	Moving from the left of the front of the sensor to the right: + Moving from the right of the front of the sensor to the left: -	
	Detection velocity range	0 to $\pm 1800\text{ m/min}$ 0 to $\pm 3600\text{ m/min}$ (with the LV-0730 for sensor added)	
	Measurement mode	Standard/ Wide band	
	Cutoff frequency	Standard mode	5 kHz (LPF GAIN $f_c = -3\text{ dB}$)
		Wide band mode	20 kHz (LPF GAIN $f_c = -3\text{ dB}$)
	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	$\pm 10\text{ V}$ (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. $\pm 0.3\%$ (F.S.)	
	DC offset	Within $\pm 0.3\%$ (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 $\mu\text{m/V}$	
	Length detection range	0 to $\pm 10000\text{ m}$	
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 \times H \times D)	231 mm \times 120 mm \times 351 mm (protrusions not included)	
	Weight	Approx. 3.6 kg	Approx. 4 kg
	Operating environment	Temperature range	0 to 40 $^{\circ}\text{C}$
		Humidity range	20 to 80 % (with no condensation)
	Storage environment	Temperature	-10 $^{\circ}\text{C}$ to 50 $^{\circ}\text{C}$
		Humidity range	20 to 80 % (with no condensation)

Conforming standard	Laser safety	FDA 21CFR Part 1040.10(CDRH)
		IEC 60825-1: 2007, 2014
		JIS C 6802 : 2007, 2014
	EMC	FCC (Part15B): 2015
		CANADA EMI standard (ICES-003) : 2016
Safety		EN61326-1
		EN61010-1

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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