

LC-8300



Compact & High-Sensitive GPS Speedometer LC-8300

High-sensitive receiver

Allows the GPS/GLONASS antenna to be installed inside a vehicle for measurement*

Less than half the volume of previous models

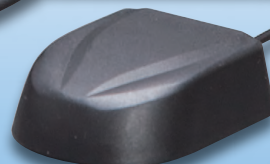
Can be easily used in vehicles

Data logging without a PC

Convenient and easy to use



*Measurement may not be possible depending on the vehicle shape and environmental conditions.



ONOSOKKI

The LC-8300 was developed for high sensitivity, small size, and data recording in the main unit.

The high sensitive receiver allows the GPS/GLONASS antenna to be installed inside a vehicle*, while the small size makes installation simple.

Data is stored in the main unit, eliminating the need for a permanent connection to a PC.

Main features of LC-8300

Speed interpolation is possible via vehicle speed pulses and CAN

If satellite signals cannot be captured, speed interpolation will be made by selecting from IMU, pulse and CAN.

1. Speed interpolation by inertial navigation system using IMU.
2. Speed interpolation based on the frequency of input pulses.
3. Speed interpolation using signals from CAN.



Speed data is obtained from the vehicle

Small size means easy installation

The volume of the main unit is just 30% that of previous models. Since an inertial measurement unit (IMU) is integrated, the number of installed units is reduced. Even in vehicles with limited space, such as two-wheel vehicles and construction vehicles, the unit is easy to install for optimum operation.

Previous models

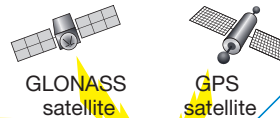


70% reduction in volume

High sensitivity enhances measurement

The highly sensitive GPS receiver and support for GLONASS satellites ensure stable measurement in adverse conditions that previous models cannot cope with. Measurement is possible even if the antenna is installed on the dashboard of a vehicle*, supporting a wide range of applications including coasting tests and data collection in poor conditions for capturing satellite signals.

*1: Measurement may not be possible depending on the vehicle shape and environmental conditions.



Information

Types of satellites

GPS, short for Global Positioning System, is a positioning system using satellites launched by the U.S.. GLONASS is a positioning system using satellites launched by Russia. Other positioning systems include GALILEO being developed by the EU and Michibiki launched by Japan.

Easy to operate

The touch panel display improves visibility and ease of operation. Test results can be checked on a large screen.



Easy-to-view large screen with Japanese/English display

Small size
High sensitivity
Easy operation
Interpolation function
High functionality
Testing and logging functions
Useful software
Various measurement items



Pulse×1
Analog×4
CAN×64

Speed,
distance
and other data

All data can be stored in

High precision and high functionality

Accuracy of ± 0.2 km/h (speed) and $\pm 0.2\%$ (distance).

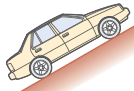
Measurement of more than 80 channels*2 with analog, pulse and CAN inputs are available as standard.

*2: Including optional measurements

LC-0825
IMU data output function (option)



LC-0826
Vertical direction measurement function (option)



Expandable measurement items optionally

LC-8300 can measure vehicle speed, distance, latitude and longitude as standard measurement items. By adding optional IMU data output function and vertical direction measurement function, the tri-axial acceleration/angle/angular velocity, gradient and vertical direction speed can be measured and recorded.

Testing and logging functions
Useful software

All data can be stored in USB flash memory



Measurement and logging can be performed on the main unit

Data can be stored in:

- USB flash memory (the above photo)
 - Internal storage memory*3
- Stand Alone Test mode includes:
- Starting acceleration test*4
 - Passing acceleration test*4
 - Brake test (MFDD)*5
 - Brake test (ABS)*5
 - Fade recovery brake test*5
 - Coasting test*6
 - Interval measurement test (horizontal/vertical)

*1: When data is stored in the internal storage memory, downloading to a PC may take time depending on the amount of data.

*4: Requires optional hardware acceleration test function.

*5: Requires optional hardware brake test function.

*6: Requires optional hardware coasting test function.



Measurement and calculation using running performance software

The LC-8000 series application software can be used. This PC software is based on the data logging method for vehicle testing of the LC series. Graphs and paths that cannot be rendered on the main unit are supported.

Information

Ono Sokki's sites

Ono Sokki has three development and manufacturing sites, and 10 sales offices in Japan. We also have offices in the U.S., China, India and Thailand. Visit our website for details.

* Measurement may not be possible depending on the vehicle shape and environmental conditions.

Compact & High-Sensitive GPS Speedometer LC-8300

Configuration



LC-0088
GPS/GLONASS antenna

LC-0853
USB flash memory



Front view

Rear view

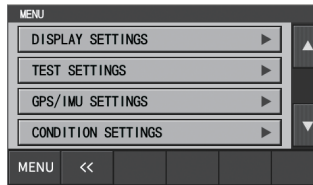
LC-8300
Compact & High-Sensitive GPS Speedometer
(with built-in IMU)



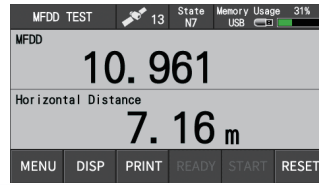
LC-0087
Compact IMU (option)

The external compact IMU is an accessory of the optional IMU output function, which measures speed, acceleration and angular velocity with the external compact IMU set as the measurement zero point. The IMU output function is not available on the internal IMU.

Display example of touch panels



Display example of menu



Display example of
brake test result

TIMES	V0 (km/h)	Time (s)	Distance (m)	MFDD
5	127.4	2.23	74.04	17.009
6	135.3	1.88	62.85	21.252
7	107.5	0.61	15.02	17.058
8	107.5	2.50	28.62	15.070

Display example of
fade recovery test result

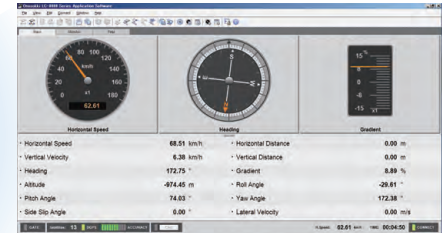


LC-0089
Touch panel display unit

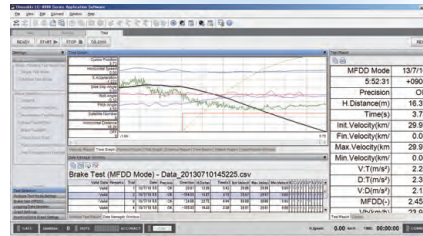


PC

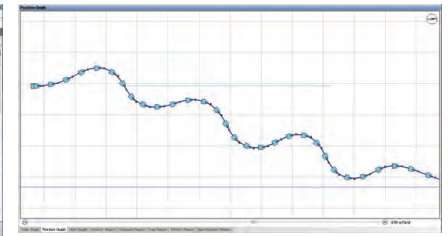
Display example of PC screen



Main screen



Test screen



Traveled path screen

Specification

Measurement accuracy	Horizontal speed	Measurement range/accuracy	0.1 to 500.0 km/h, ± 0.2 km/h or less (Horizontal speed 30 km/h or more, 7 satellites or more)
	Horizontal distance	Accuracy	± 0.2 % (Forward distance 300 m, horizontal speed 30 km/h or more, 7 satellites or more)
Standard measurement item	Horizontal speed (km/h), Horizontal distance (m), Time (s), UTC time, Number of satellites, HDOP (Horizontal dilution of precision), Heading ($^{\circ}$), North velocity (km/h), East velocity (km/h), North distance (m), East distance (m), Travelling distance (m), Latitude (dms), Longitude (dms), Altitude (m)		
Option measurement item	Lateral distance (m), Vertical velocity (km/h), Vertical distance (m), VDOP (Vertical dilution of precision), Drift amount (m), Roll angle ($^{\circ}$), Pitch angle ($^{\circ}$), Yaw angle ($^{\circ}$), X acceleration (m/s^2), Y acceleration (m/s^2), Z acceleration (m/s^2), X angular velocity ($^{\circ}/s$), Y angular velocity ($^{\circ}/s$), Z angular velocity ($^{\circ}/s$), Gradient (%)		
Update (output) frequency	100 Hz		
General specification	Main unit	Power supply/requirement	DC 9 to 28 V (non-isolation), AC 100 to 240 V (using AC adapter; option)/ Maximum 12 VA (input DC power, when supplied peripherals are connected.)
		Operating/ storage temperature range	0 to 50 $^{\circ}C$ / -10 to 60 $^{\circ}C$ (Humidity 20 to 80 % RH, with no condensation)
	Display unit	Outer dimensions/weight	Approx. 170 x 120 x 40 mm (not including protruded section)/ Approx. 0.75 kg
		Outer dimensions/weight	Approx. 132 x 86 x 31 mm (not including protruded section)/ Approx. 0.5 kg
	Remote	Outer dimensions/weight	Approx. 120 x 50 x 20 mm (not including protruded section)/ Approx. 0.08 kg
Antenna	Outer dimensions/weight	Approx. 66 x 50 x 22 mm (antenna part)/ Approx. 0.1 kg	
Output	Speed analog output	Range	0 to 10 V SI unit: 0 to 10 V / 0 to 500.0 km/h Mile unit: 0 to 10 V / 0 to 250.0 mile/h
		Load resistance	10 k Ω or more
	Distance pulse output	Resolution	SI unit: Selectable from 10, 5, 1 mm/pulse Mile unit: Selectable from 16.0934, 8.0467, 1.6093 mm/pulse
		Output delay time	10 ms or less
		Output signal	Square wave pulse output Hi: 5 V \pm 0.5 V, Lo: 0.5 V or less
Remarks	Load resistance	Duty 50 % \pm 10% Load 10 k Ω or more	
Input	Voltage input	Number of channels	4
		Resolution	16-bit
	Pulse input	Range	± 20 V
		Cut-off frequency	50 Hz
		Others	This function uses voltage values as measurement starting/stopping triggers. CH1: starting trigger, CH2: stopping trigger
Remarks	Number of channels	1	
Input coupling	AC or DC		
Function	Pulse count/ Frequency/ Duty		
Input waveform	AC select: sine wave, DC select: square wave		
Remarks	Input by the optional cable from the AUX connector on the side panel.		

*7: Option

*8: PC operating environment

CPU: Intel[®] Core[™] 2 Duo / 2 GHz or more, OS: Windows[®] XP(SP3) 32-bit / 7 [32-bit / 64-bit] (Although the software can be run on Windows[®] XP, we do not recommend it as it is no longer supported by Microsoft[®]. Consult Ono Sokki for operation on Windows[®] 8), Memory: 1.0 GB or more, 80 GB or more free HDD space and an XGA (1024 x 768) or higher display is required. USB: USB2.0 (High Speed) 1 port or more.

CAN	Common item	Baud rate	125 k, 250 k, 500 k, 1000 k bps
	Input	Protocol	Conforming to CAN Ver. 2.0B
Output ^{*7}		Input port	2 (port A, port B)
	Other function	Number of data	32-ch/ 1 port (maximum 64-ch)
Test function		Others	CAN input needs to be selected on port B.
	Accessory	Output update period	Selectable from OFF/1 Hz/2 Hz/5 Hz/10 Hz/20 Hz/100 Hz
Option		Standard output item	Horizontal speed (km/h), Speed unit, Horizontal distance (m), UTC time, Number of satellites, Start/Stop/Reset trigger, GATE state, Inner state, Accuracy state, HDOP (Horizontal dilution of precision), Heading ($^{\circ}$), Latitude (dms), Longitude (dms), Altitude (m)
	Remarks	Option output item	Vertical velocity (km/h), Vertical distance (m), VDOP (Vertical dilution of precision), Drift amount (m), Roll angle ($^{\circ}$), Pitch angle ($^{\circ}$), Yaw angle ($^{\circ}$), X acceleration (m/s^2), Y acceleration (m/s^2), Z acceleration (m/s^2), X angular velocity ($^{\circ}/s$), Y angular velocity ($^{\circ}/s$), Z angular velocity ($^{\circ}/s$), Gradient (%)
Test function		Others	When the output function is activated, the CAN input function for port B side is not available.
	Accessory	Standard test function on the main unit	Normal measurement, Interval measurement test
Option		Optional test function on the main unit	Starting acceleration test, Passing acceleration test, Brake test (MFDD), Brake test (ABS), Fade recovery test, Coasting test
	Remarks	Standard function for PC application ^{*8}	Standard function (Setting for the main unit, Measurement value display on PC, Transfer to OS-2000 function, etc.)
Option		Optional function for PC application ^{*8}	Acceleration/deceleration test, Fuel consumption test, Orbit display
	Remarks	Touch panel display unit (with 3.0 m cable) x1	USB flash memory x1
Option		Remote box (with 2.0 m cable) x1	Software installation CD for PC x1
	Remarks	GPS/GLONASS antenna x1	Instruction manual x1
Option		Power cable for cigarette lighter socket (3.0 m) x1	Constructing case x1
	Remarks	Pin jack - BNC cable (2.0 m) x2	Mount adapter for display unit x1
Option		USB cable for PC connection (1.5 m) x1	Base plate for mount adapter x1
	Remarks	CAN branch cable (0.35 m) x1	
Option		<Main unit side>	LC-0864: Tape switch
	Remarks	LC-0082: Power supply cable (for battery)	DPJ-414: Digital printer
Option		LC-0824: km/mile switch function	PW-C0725-W1-U: AC adapter for printer
	Remarks	LC-0825: IMU data output function (with compact IMU (LC-0087))	CX-050B: Recording paper
Option		LC-0826: Vertical direction measurement function	PS-P20018A: AC adapter unit for the main unit
	Remarks	LC-0827: Hardware acceleration test function	AC adapter cable (2m): One piece is included at the time of purchase.
Option		LC-0828: Hardware brake test function	VM1072-VM1700 <for Japan>
	Remarks	LC-0829: Hardware coasting test function	VM0600-VM0299A <for North America>
Option		LC-0854: CAN output function	VM0307C-VM0308 <for Europe>
	Remarks	LC-0861: Terminal resistor adapter	VM0721-VM0749 <for China>
Option		LC-0863: CAN-OBDD2 cable	
	Remarks	<PC side>	
Option		LC-0831: Acceleration/deceleration test software	LC-0833: Orbit display software
	Remarks	LC-0832: Fuel consumption test software	

Example 1 Useful for logging data in poor conditions for capturing satellite signals

OS-2000 series



Measurement data from the LC series can be loaded in the CSV file format to the OS-2000 series time-series data analysis tool to display and analyze the data. Video files*9 and wave form can be reproduced at the same time.

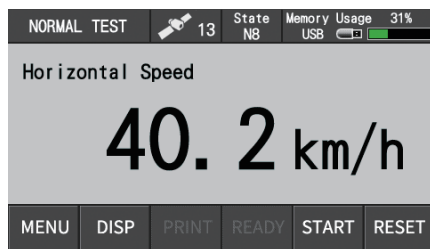
Output data in CSV format

Data can be read to Microsoft® Excel files.

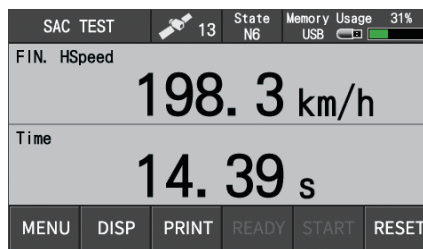


*9: The LC-8300 cannot record videos.

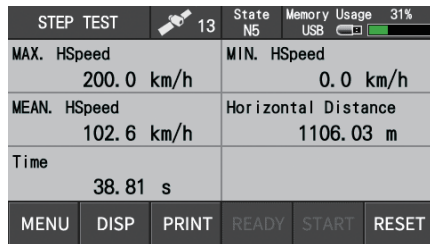
Example 2 Useful for testing and inspection of vehicles



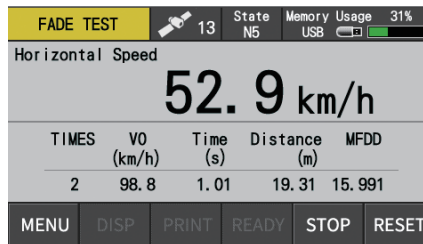
Easy-to-view single-line display.



2 or 4 data items can be displayed.



Maximum and minimum speeds, etc. are listed in interval measurement.



Real-time speed and last test result are displayed in the fade recovery test (part of optional hardware brake test function).

Velocity (km/h)	Distance (m)	Time (s)	d-Time (s)	Acc (m/s ²)
40.0	0.00	0.00	---	---
50.0	2.44	0.19	0.19	14.56
60.0	5.21	0.37	0.18	15.59
70.0	8.31	0.54	0.17	16.36

Display example of speed-based report. Ascending and descending orders are automatically selected according to the optional test function.

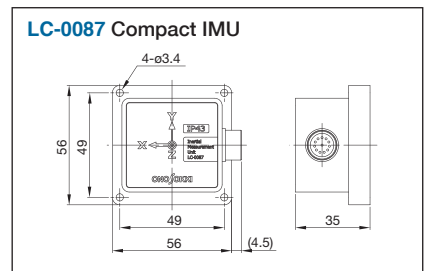
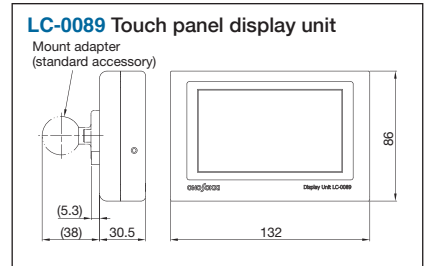
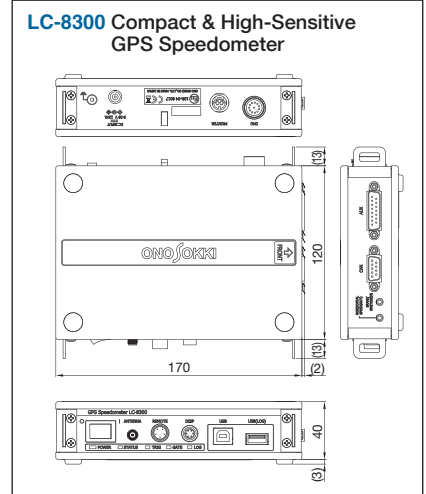
2015/4/21 9:00:0
Acceleration Test - Passing Mode -

Velocity (km/h)	Distance (m)	Time (s)	d-Time (s)	ACC (m/s ²)
20.0	0.00	0.00	---	---
30.0	1.72	0.25	0.25	11.50
40.0	3.78	0.46	0.21	13.26
50.0	6.17	0.65	0.19	14.58
60.0	8.95	0.83	0.18	15.59
70.0	12.04	1.00	0.17	16.36
80.0	15.40	1.16	0.16	16.90
90.0	19.44	1.33	0.17	17.25

Test results can be output to the optional printer. Automatic printing after testing is also possible.

Outer dimensions

(Unit: mm)



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*Outer appearance and specifications are subject to change without prior notice.
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