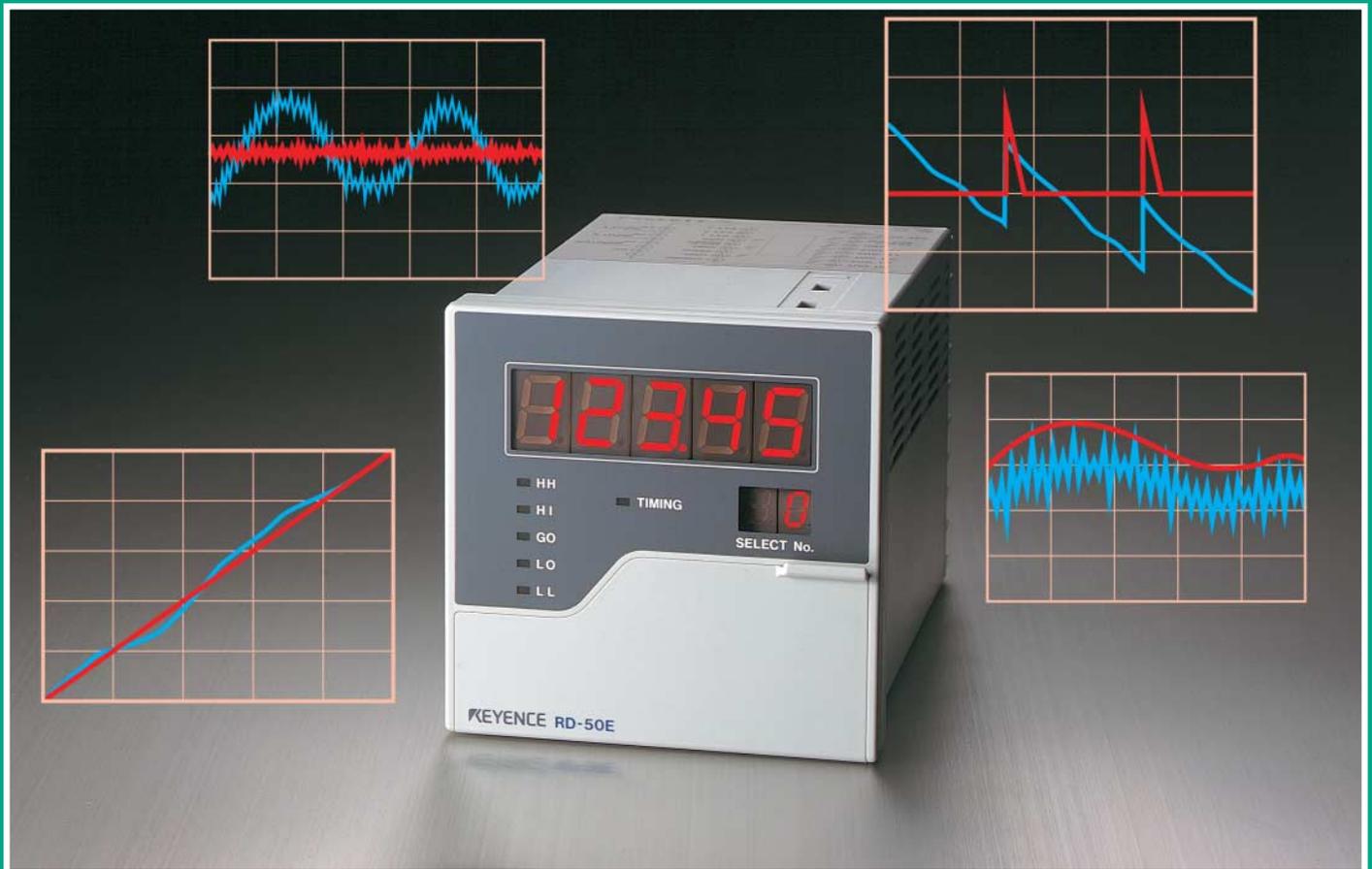


## Analog Sensor Controller RD Series

**Six unique and useful functions give the RD superior flexibility and ease-of-use to expand analog sensor applications.**



### Features

**❑ Six unique functions including a linearizer, high-/low-pass filters... and more**

These six useful and convenient functions eliminate noise interference or other undesired components, ignore analog signal components with frequencies above or below a specified level, and linearizes the analog input signal for increased accuracy.

**❑ High-speed sampling rate of 2,000 c/s**

Ensures accurate measurement even on high-speed lines.

**❑ Easy-to-read three-color LED display**

Displays green when the measurement value is within the tolerance limits, orange or red when it is not. Large LED characters allow you to easily read measured values and to differentiate between acceptable and unacceptable products even from a long distance.

**❑ Quick and easy setting of tolerance and other values**

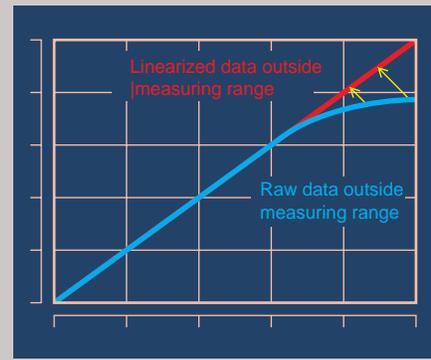
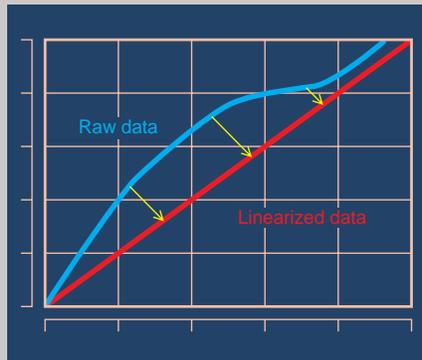
All settings can be performed quickly and easily using the RD's ten operation keys.

## A high- and low-pass filter combined with the linearizer function give the analog sensor signal unparalleled accuracy



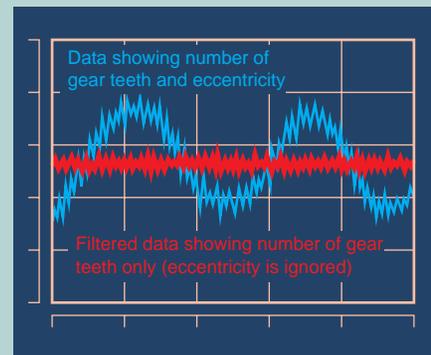
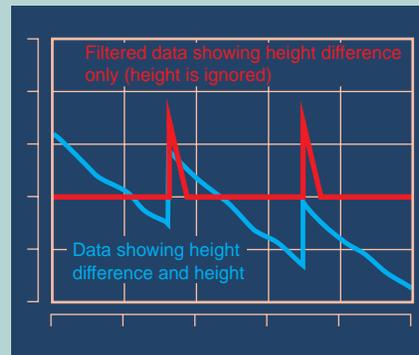
### Linearizer function

The RD series provides up to 32-point calibration for analog signals input from the sensor, enabling the input signal can be precisely regulated. And up to four sets of correction values can be stored.



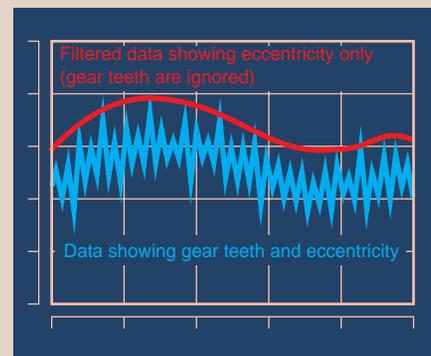
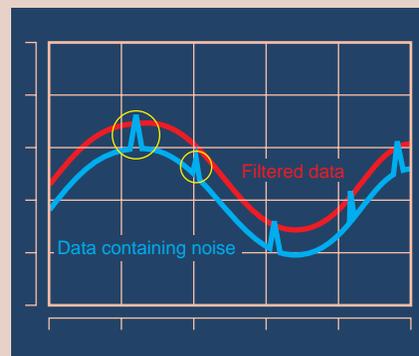
### High-pass filter

By removing the low-frequency components of the analog input signal, gradual changes in the signal are ignored, allowing only sporadic fluctuations to be detected.



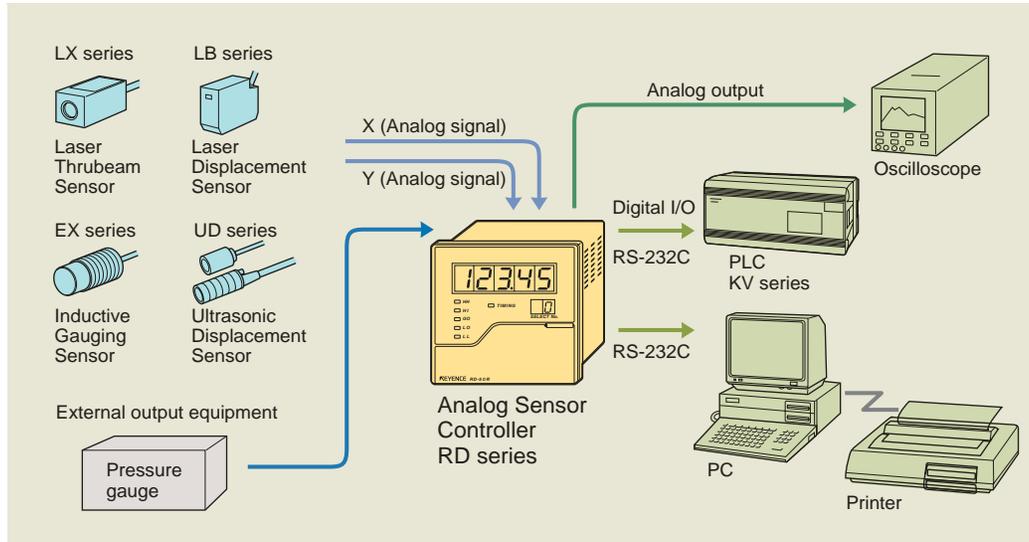
### Low-pass filter

By removing the high-frequency components of the analog input signal, high-frequency fluctuations in the signal are ignored, allowing only gradual changes to be detected.



## The RD series can be used with a wide range of system configurations

### System configuration



### Convenient features

#### Analog voltage output

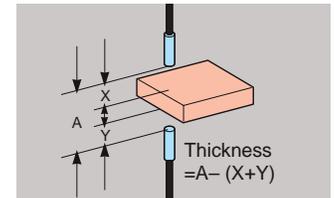
The analog voltage output can be adjusted to a level suitable for external equipment using the span and/or shift function.

#### Digits/decimal point

To make it easier to read the values on the display, the last digit on the main display can be deleted, or the decimal point can be shifted to a different position.

#### Selectable input range and calculation of two-channel analog input values

The input range can be switched to  $\pm 5$  VDC,  $\pm 10$  VDC, or 4 to 20 mA. The RD series has "X + Y" and "X - Y" functions, which are excellent for measuring target thickness or height difference.



#### Five-level tolerance settings

Five tolerance levels (HH, HI, GO, LO, and LL) can be set, and up to eight sets of tolerances can be stored. The current set of tolerances can be easily switched to another set, using an external signal, during target changeover. In addition, the current tolerance values can be displayed with a single touch. The hysteresis for the tolerances can also be set.

#### RS-232C interface (RD-50R)

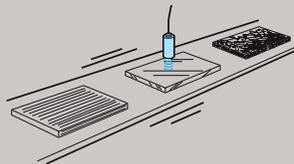
The RS-232C serial port is convenient for transmitting measured values to a PLC or PC, or to remotely operate the RD-50R.

... and more

#### Application

Useful when linearity for a target cannot be obtained, or when intentionally performing measurements beyond the specified measuring range.

#### Linearizer function

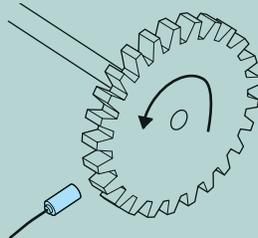


Correcting measurement data for targets of different materials

#### Application

Useful for measuring height difference of targets on a vibrating line, or for measuring the number of teeth on a gear with eccentricity.

#### High-pass filter

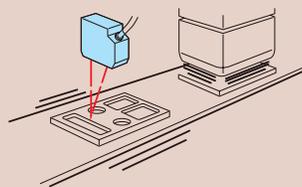


Counting number of teeth on a gear with eccentricity

#### Application

Useful for removing noise from sensor data, for measuring targets on a vibrating line, or for measuring the eccentricity of a gear.

#### Low-pass filter



Measurement of target thickness on pressing line or other vibrating lines

### Offset and auto-zero functions

The offset value (reference value) can be set to the desired value. After the offset value is stored, pressing the auto-zero key will display the measured value as the actual dimensions of the current target. With the RD, tolerance limits can also be set to the actual allowable dimensions.

#### Application

Actual target dimensions can be displayed, making visual checks easier. This results in increased efficiency for setting or checking.

### Automatic peak/bottom detection function

The RD will detect if the input value falls below the peak value or rises above the bottom value by a specified margin.

#### Application

Useful for detecting a camshaft position or for targets with eccentricity.

### Auto-peak/auto-bottom function

Without the normally required synchronous signal, the latest peak or bottom value is always retained.

#### Application

Useful for controlling the peak or bottom values of all products in each lot, or of all products manufactured each day.

## Specifications

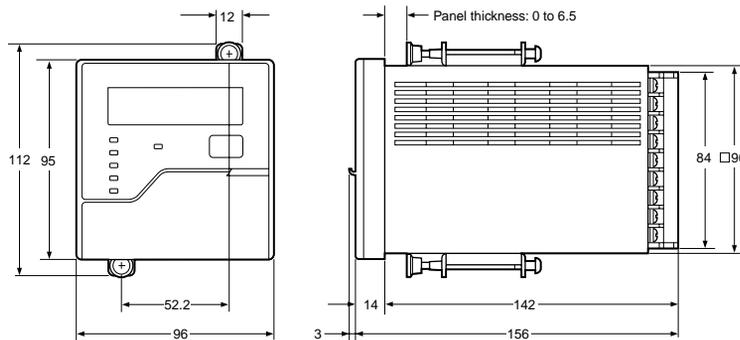
Model		RD-50E	RD-50R
Measurement function		DC voltage measurement, DC current measurement	
Measuring range		±5 VDC, ±10 VDC, 4 to 20 mA DC (selectable)	
Display range		-19999 to +39999	
Measuring accuracy		±0.03% of F.S. (at ±5 VDC range) ±0.03% of F.S. (at ±10 VDC range) ±0.05% of F.S. (at 4 to 20 mA DC range)	
Input	Impedance	1 MΩ (for voltage input), 350 Ω (for current input)	
	System	Single-ended	
	Number of inputs	2	
Sampling rate		2000 c/s	
Display rate		20 c/s	
Control input	Synchronous	NPN open-collector or non-voltage contact signal	
	Hold-reset		
	Auto-zero		
	External setting		
Control output	Tolerance setting	8 programs selectable (4 levels per program)	
	Signal	5 x NPN open-collector (HH, HI, GO, LO, LL) : 100 mA (40 V max.)	
	Response time	1 ms (when average number 1)	
	Off-delay time	60 ms (ON/OFF selectable)	
Analog voltage output	Voltage	±10 VDC	
	Impedance	100 Ω	
	Response time	1 ms (when average number 1) <sup>1.</sup>	
Interface		Control input by NPN open-collector or non-voltage contact signal	Data output and control input through RS-232C
Power supply		24 VDC±10%, Ripple (p-p): 10%	
Current consumption		270 mA max.	
Ambient temperature		0 to +50°C	
Relative humidity		35 to 85%	
Vibration		10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively	
Weight		Approx. 700 g (excluding fittings)	

1. Requires 1.5 ms every second during self-compensation sequence to prevent temperature fluctuation.

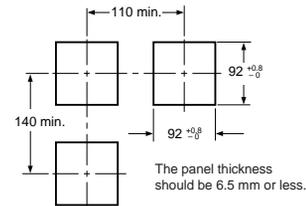
## Dimensions

Unit: mm

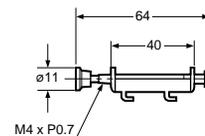
### RD-50E/RD-50R



### Panel cutout



### Mounting bracket



Visit our website for other Keyence products at [www.keyence.com](http://www.keyence.com)

Specifications are subject to change without notice.

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