

HIGH TECHNOLOGY BROADBAND

# SERVO VELOCITY

SEISMOMETER VSE-355EI/JE

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## Suitable for Earthquake Monitoring & Warning System

**2m/s & 20m/s<sup>2</sup> (2000Gal) Max. range**

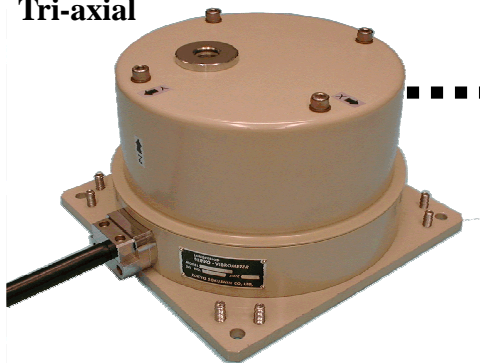
**0.018 to 100Hz Frequency range**

**136 dB Dynamic range**

### Surface mount model

VSE-355EI

Tri-axial



Watertight

### Multiple Outputs

- a) Velocity (L): 2m/s Full (5V/m/s×Tri-axial)
- b) Velocity (H): 0.05m/s Full (200V/m/s×Tri-axial)
- c) Acceleration: 20m/s<sup>2</sup> (2000Gal Full) (5mV/Gal×Tri-axial)

### Bore-hole model for underground installation

VSE-355JE

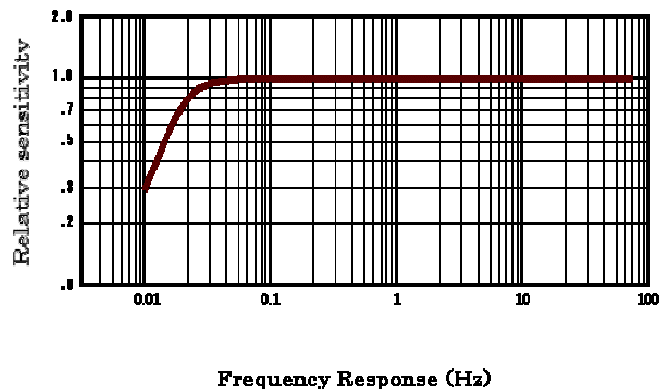
Tri-axial



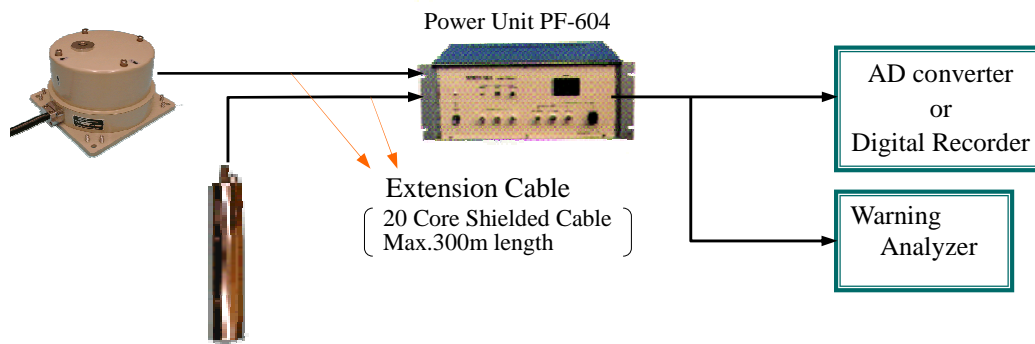
Waterproof

Allowable underground

Installation depth 300m



## Practical Use



## Specifications

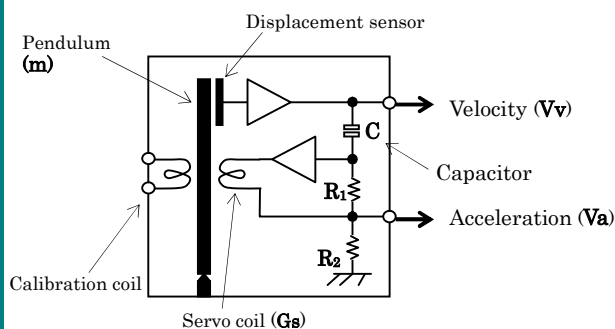
### Seismometer

Model	VSE-355EI (Ground surface type) VSE-355JE (borehole type)	Calibration coil	Sensitivity: 1.5mA/m/s <sup>2</sup> (15μA/Gal) Coil resistance: 550Ω (±20%)
Frequency	0.018 to 100Hz	Power requirements	±15VDC
Mode of operation	Tri-axial	Current consumption	Approximately 90mA
Max. measuring range	±2m/s, ±20m/s <sup>2</sup> (±2000Gal)	Linearity	Less than 0.03%
Output (triple)	Velocity(L): 5V/m/s, (H): 200V/m/s Acceleration: 500mV/m/s <sup>2</sup> (5mV/Gal)	Cross axis sensitivity	0.03G/G
Output resistance	Less than 50 Ohm	Temperature coefficient	Sensitivity: 0.01% / °C Zero shift: 0.05% / °C
Max. output voltage	±10V	Arrester	Voltage 30V, Current 5kV, 100A
Linearity	0.03% of Full scale	Temperature range	-10°C to 50°C
Resolution	10 <sup>-7</sup> m/s <sup>2</sup> (10 <sup>-5</sup> Gal)	Extension cable	20 Core Shielded Cable
Dynamic range	More than 136dB	Allowable shock	30G (Less than 0.15Sec)
Damping ratio	10000% to 20000% (h = 100 to 200)	Dimension	VSE-355EI: 260 × 260 × 159.6 mm VSE-355JE: φ80 × 764.2 mm
		Waterproof case	VSE-355EI: 98kpa VSE-355JE: 3000kpa

### Power Unit

Model	PF-604
Input	Tri-axis (Standard)
Output	Vel.(H), Vel.(L), Acc. of each components
Display	Zero-voltage indication of the elected component
Monitor output	Vel.(L), Vel.(H), Acc of the selected component
Power requirement	AC85 to 132V
Dimension	480 × 150 × 300 mm
Operating temperature	-10°C to 45°C

## Theory



Equation form of Velocity and Acceleration are expressed as:

$$V_v = \frac{m \times R_2}{R_1 \times C \times G_s} \quad [V/cm/sec]$$

$$V_a = \frac{m \times R_2}{G_s} \quad [V/Gal]$$

Readout signal are very steady because m, R, C, and G<sub>s</sub> are steady value.

Not including the factor of displacement sensor of pendulum is important.

The specification may change without notification because of the proved product.