



## DEVELOPMENT OF A NEW DATA LOGGER WITH LARGE DYNAMIC-RANGE USING HYBRID SYSTEM OF A/D CONVERTERS

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**ABSTRACT:** A new data logger is developed to use for microtremor measurement. Especially, to know the deep structure, we need to handle microtremors in low frequency range: that is, lower than 1 Hz. In this frequency range, not only power of microtremors is very small, but the sensitivity of sensor is generally critical. A data logger with very low noise and high resolution is required for this purpose. Of course, we can find very expensive systems with high performance in noise and resolution, though, they are not so suitable for the microtremor survey, usually. We, thus, introduce some traditional but new features and complete a new system. Basic performances of the new systems are examined and discuss the applicability to microtremor observations. Consequently, the noise is reduced to about 30 to 36 dB (5 to 6 bits) and the overall dynamic range is more than 170 dB (29 bits).

**Key Words:** Data Logger, S/N (Signal-to-Noise Ratio), Hybrid System, Ripple Noise, 32-bit, Microtremor Observation