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TECHNOLOGY GROUP

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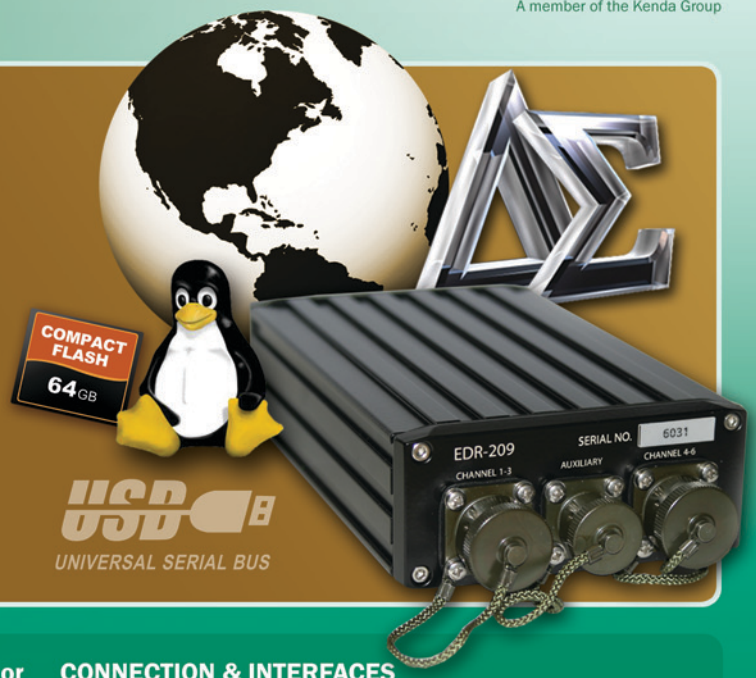
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# EDR-209
## DIGITIZER

EARTH DATA DIVISION
A member of the Kenda Group

- True 24-bit resolution
- 142 dB dynamic range at 100 Hz
- Three or six channel versions
- Sample rates to 3000 Hz
- GPS Timing Accuracy
- Auto calibration
- Extremely low drift
- Full anti-alias protection
- 100dB CMRR
- RS232 / RS485 communication
- Ethernet interface
- USB support
- Internal Mass Storage
- Seedlink




**The EDR-209 is a ruggedized digitizer providing three or six independent channels of extremely high dynamic range at rates of 1 to 3,000 Hz. A selectable conversion word size of up to 32-bits is available for fully representing the high dynamic range.**

### SIGNAL TO NOISE
A signal to noise ratio of typically 142 dB is achieved at a sample rate of 100 Hz falling to 125 dB at 1,000 Hz using a 24-bit word. 150 dB is obtained below 10 Hz when a 32-bit word size is selected.

The signal bandwidth is always d.c. to 0.4 of the selected sample rate (± 0.1 dB) with over 140 dB of rejection above the half sampling frequency negating any requirement for anti-alias filtering.

### SIGNAL INPUTS
Three or six channels of fully differential high resolution inputs are available. Common mode rejection is better than 100dB. One of three sensitivity settings can be selected. Up to ± 20 volts can be accommodated on the least sensitive setting, with one bit representing 100nV on the most sensitive setting. Four additional low resolution channels can be recorded at low sample rate for monitoring external parameters.

### CONVERTERS
The converters use a 7th order Delta Sigma technique developed by Earth Data. In addition to their high dynamic range they are also free from spurious tones and artefacts present in alternative designs.

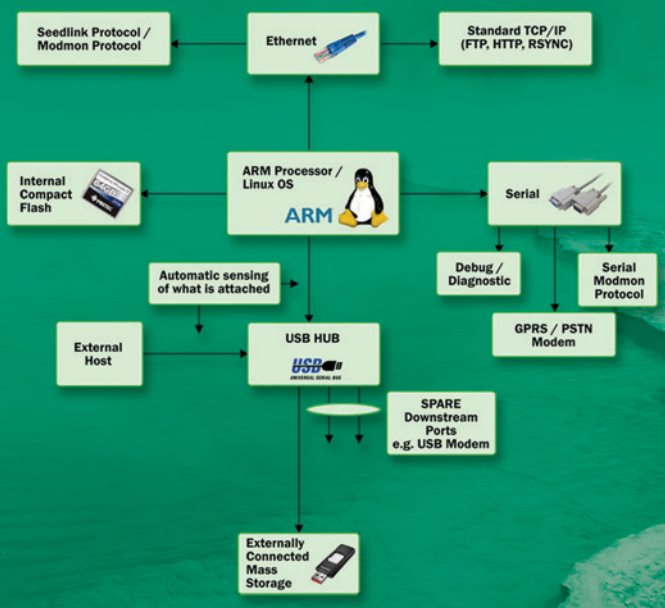
### TIMING
The unit can be operated using one of two GPS modes. Normally the unit is operated with the supplied external antenna, which can be sited up to 20 metres away. In extreme cases a remote GPS unit can be attached, which can be located up to 1km from the EDR-209. Power cycling can be used in both modes for additional power saving. Alternative time sources, such as NTP servers can be used.

### STATUS
Power supply voltage, current and internal temperatures are continuously monitored and reported.

### CONNECTION & INTERFACES
The EDR-209 can be configured and monitored via any standard HTTP web browser, in addition, it can also be configured as a SeedLink server enabling communication with external seismic systems. The internal mass storage media can be employed to store data in Mini-SEED format, or alternatively external mass storage units can be directly connected via USB. The unit supports the FTP and RSYNC protocols should remote users wish to download / synchronize any stored data files.

### ENVIRONMENTAL
The EDR-209 is available in a fully sealed extruded aluminium case. Operating temperature range is -20°C to +60°C.

### EDR-209 DIGITAL INTERFACES




www.earthdata.co.uk

# EDR-209 Specifications

| | |
|---|---|
| **GENERAL** | |
| **No. of channels** | 3 or 6 differential input |
| **Input impedance** | 1 MΩ (any input to ground) |
| **Input CMRR** | Better than -100 dB |
| **Number of gain ranges** | 3 (very low gain; low gain; high gain) |
| **Input sensitivity** | 0.1 µV, 1 µV or 2.5 µV per bit (24-bit word size) |
| **Input range** | ±0.8 V, ±8 V, ±20 V user programmable |
| **Gain accuracy** | Within 0.1 dB after auto-calibration |
| **D.C. offset** | ±5 µV low gain and very low gain; ±1 µV high gain |
| **Offset drift** | ±10 µV/°C |
| **Crosstalk** | Better than -120 dB |
| **A TO D CONVERTERS** | |
| **Number of A to D converters** | 3 or 6 (one per channel) |
| **Type** | Earth Data proprietary Delta Sigma Converter |
| **Sampling frequency** | 192 KHz |
| **Filter type** | Linear pahse |
| **Alias protection** | Spurious in band signals better than -120 dB as a result of any frequency above the passband and any amplitude up to full scale |
| **Primary sample rates** | 1, 2, 4, 5, 10, 20, 25, 40, 50, 75, 100, 120, 125, 150, 200, 250, 300, 375, 500, 600, 750, 1000, 2000, 3000 |
| **Secondary sample rates** | As above (3 channel unit); Sub-division of primary rate (6 channel unit) |
| **RMS to RMS noise** | 150 dB below 10 Hz<br>140 dB below 100 Hz<br>125 dB below 1000 Hz |
| **Analogue response** | d.c. to 0.4 of selected sample rate |
| **Spurious tones** | Nothing above -160 dB (input short circuit) |
| **Intermodulation products** | Less than -120 dB for any two sine wave frequencies within the passband at half full scale amplitude |
| **Timing accuracy** | Better than ±10 µs (GPS locked) |
| **Sensor power** | 12 V ±0.2 V available on input connector. (100 µA current limited) |
| **AUXILIARY INPUT CHANNELS** | |
| **Number of channels** | 4 |
| **Type of conversion** | Multiplexed successive approximation; 16 bit |
| **Input range** | ±10 V |
| **Sampling Rate** | 1 Hz |
| **OUTPUT** | |
| **Available interfaces** | Ethernet TCP/IP; RS232; USB |
| **Internal storage** | FLASH (allows more than 3 hours history at 100 Hz. Expandable by fitting internal COMPACT FLASH |
| **ADDITIONAL FEATURES** | |
| **Digital outputs** | One TTL level output; One open collector to 50 V |
| **GPS** | Internal and/or external options available |
| **ENVIRONMENTAL** | |
| **Housing** | Extruded aluminium |
| **Water proofing** | To IP67 standard (water only) |
| **Operating temperature** | -20 to +60 °C |
| **Storage temperature** | -40 to +80 °C |
| **POWER REQUIREMENTS** | |
| **Supply voltage range** | 10.5 V to 28 V |
| **Power consumption** | 800 mW (no comms 3 channel unit); 1.2 W (ethernet, 3 channel unit); 1.5 W (ethernet and USB. 3 channel unit) |
| **SIZE AND WEIGHT** | |
| **Dimensions** | Length: 180 mm; Width: 108 mm; Depth: 45 mm; |
| **Weight** | 1.2 Kg |

EARTH DATA DIVISION

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