

FAST DIGITAL INTEGRATOR FDI2056

THE FIRST OFF-THE-SHELF INSTRUMENT TO QUANTIFY MAGNETIC FIELD TRANSIENTS



Global Market leader for precision magnetometers

The Fast Digital Integrator FDI2056 is the world's fastest and most sensitive voltage integrator. Plug in a sense coil, and for the first time it is possible - even easy - to measure fast, low-level magnetic field disturbances such as eddy currents in a switched magnet.



Speed: Up to 500 000 partial integrals per second



Resolution: Down to 10^{-14} Vs ($0.8 \mu\text{V} \times 12.5 \text{ ns}$)



Trigger sources: External, timer, encoder, software, multichannel



Input voltage: Up to $\pm 100 \text{ V}$



Accuracy and stability in the ppm range



Drift: 10^{-5} Full Scale / minute



Number of channels: Up to 3



Interfaces: Ethernet (IEEE 488.2 compliant) or RS-232



ISO 17025 ACCREDITED

ABOUT METROLAB

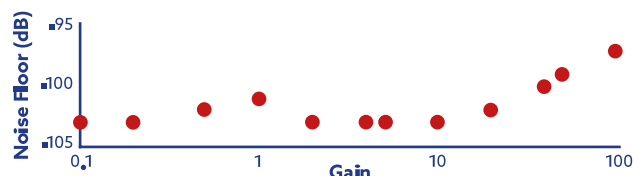
We are the **global market leader** for precision magnetometers.

Established in Switzerland in **1985**, we have won the trust of all the large physics laboratories and all leading players in Magnetic Resonance Imaging, **across the world**.

With Metrolab, you measure magnetic fields with **Swiss precision and quality**.

DIGITIZER

| | | |
|---------------------------------------|---|-----|
| Gain | 0.1, 0.2, 0.4, 0.5, 1.0, 2, 4, 5, 10, 20, 40, 50, 100 | - |
| Dynamic range | $\pm 10 \div \text{Gain}$ | V |
| Input overvoltage protection | $\pm 15 \div \text{Gain}$ | V |
| Max common mode voltage | $12 \div \text{Gain}$ | V |
| Max input bandwidth | 250 @ Gain ≤ 10 , decreasing to 25 @ Gain 100 | KhZ |
| Noise floor (@ 1kHz bandwidth) | | |



| | | |
|----------------------------------|------|------------|
| Input impedance | 100 | k Ω |
| Gain accuracy | 10 | ppm |
| Digitizer resolution | 18 | bit |
| Max sample rate | 500 | kS/s |
| Nonlinearity: Single Tone | -105 | dBc |
| Nonlinearity: Dual Tone | -95 | dB |

INTEGRATOR

| | | |
|---|--------------------------------|-----------------------|
| Timer resolution | 12,5 | ns |
| Time base stability over temperature | ± 0.075 (0 to 60°C) | ppm |
| Time base stability over time | ± 0.7 (1 year) | ppm |
| Drift | 10^{-5} | FS/min ⁽¹⁾ |
| Drift variation | typical < Noise Floor $\div 5$ | Vs/s |

COMMON

| | | |
|---------------------------|--|-------------------|
| Trigger sources | External, timer, encoder, software, multichannel | - |
| Trigger rate | 0.02 to 500k | Hz |
| Encoder input: | | |
| Voltage | 3.3 or 5 | V |
| Current protection | 750 (Hold), 1500 (Trip) | mA |
| Signal type | Single-ended or differential | - |
| Index type | None, or 90° - 270° | - |
| Memory capacity | 1M | PI ⁽²⁾ |

SYSTEM

| | | |
|---|--|-----------------------|
| Industrial computer | Intel x86 architecture, Windows OS, 16 GB RAM, 32 GB Flash drive, Ethernet, USB 2.0 ⁽³⁾ | |
| Number of channels | 1-3 | - |
| Ethernet Interface | VXI-11 (IEEE 488.2), SCPI compliant | - |
| Max transfer rate (Ethernet) | 1000 ⁽³⁾ | PI / s ⁽²⁾ |
| RS-232 Interface | PDI5025 compatibility mode | - |
| Power requirements | 100 - 240 V, 50 - 60 Hz, 80 A inrush current max | - |
| Operating temperature | 0 - 40 | °C |
| Size and weight | 445 x 130 x 245 mm (19"x3U), 7.2 kg max | - |
| Mounting | Horizontal or vertical, optional rack-mount kit | - |
| Recommended calibration interval | 12 | months |

⁽¹⁾FS = Full Scale

⁽²⁾PI = Partial Integral, including timestamp

⁽³⁾Subject to change; contact Metrolab for exact specifications

Specifications are subject to change; for details and up-to-date specifications, see:
www.metrolab.com/products/fast-digital-integrator-fdi2056/

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