

## Fluke i50s Current Probe

### Technical Data

The i50s current probe has been designed for use with oscilloscopes for accurate, non-intrusive measurement of ac, dc and complex waveform currents. Using advanced Hall effect technology the i50s can accurately measure current over a frequency range of dc to 50 MHz.

With exceptional immunity to high common mode voltages ( $dv/dt = 5 \text{ kV}/\mu\text{s}$ ) the i50s is ideal for use by electronic design engineers in development and diagnosis of switch mode power supplies, UPS systems, and motor control systems.

#### Electrical specifications

**Nominal current ( $I_n$ ):** 3A and 30A dc or ac rms

**Measuring range (duration < 10 sec):**  $I_{\text{max}} \pm 50 \text{ A pk}$

**Output sensitivity:**

Low range:  $1 \text{ V/A}$  ( $1 \text{ M}\Omega$ )

High range:  $100 \text{ mV/A}$  ( $1 \text{ M}\Omega$ )

**Overall accuracy (dc to 100 Hz at 25 °C):**

$\pm 0.5 \%$  at  $I_n$  typical

$\pm 1.5 \%$  at  $I_{\text{max}}$

**Gain variation (max):**  $\pm 0.04 \%$  of rdg/ $^{\circ}\text{C}$

**Step response:** See Figure 1

**Frequency response:** See Figure 2

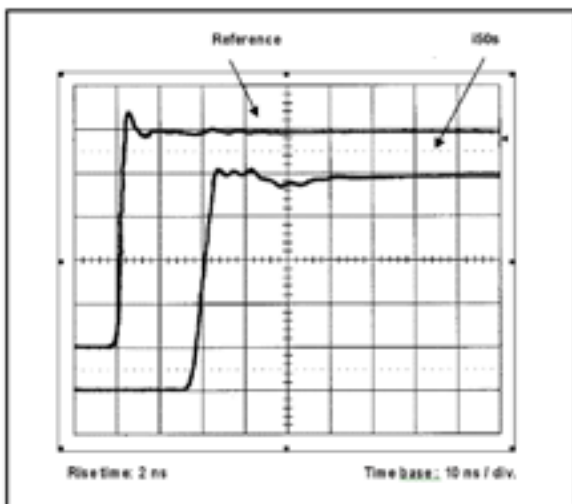


Figure 1. Step response.

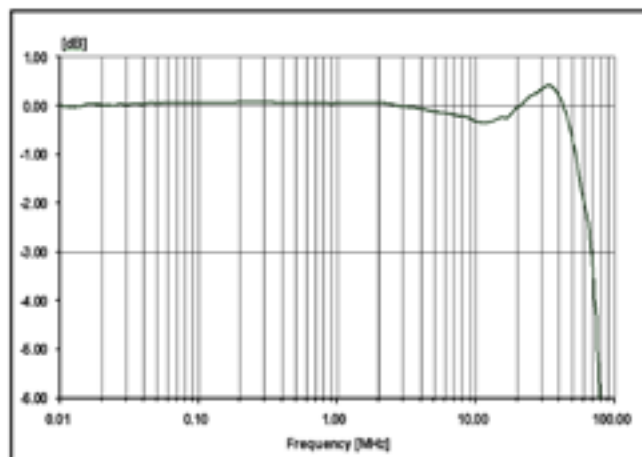


Figure 2. Frequency response.

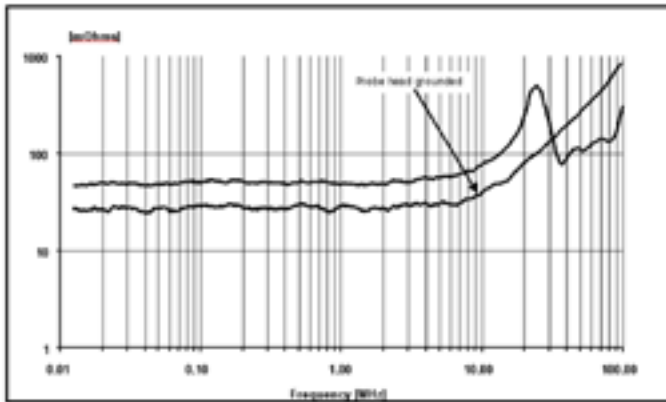


Figure 3. Insertion impedance.

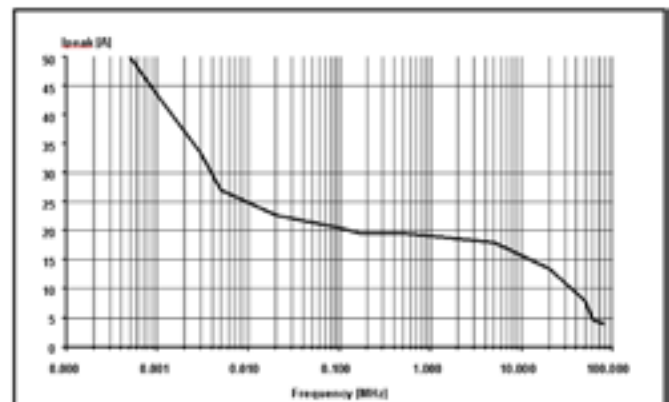


Figure 4. Frequency derating.

**Insertion impedance (ZI):** See Figure 3

< 0.1 Ω up to 10 MHz  
< 0.4 Ω 10 MHz to 50 MHz

**External magnetic field rejection rate:** 60 dB (ac and dc)

**Rejection rate of fast dV/dt at 5 kV/μs:** < 15 mAt (during dV/dt)

**Output noise level (RMS) (measured with a filter at 25 MHz):** 1 mAt

**Output noise level (pk to pk) (measured with a filter at 25 MHz):** 9 mAt

**Dynamic specifications**

**Bandwidth:** DC to 50 MHz(-3 dB)

**Frequency derating (see Figure 4):** 10 A at 10 MHz

**Rise time (10 % to 90 %):** tr < 7ns

**Delay time:** td < 25 ns

**Overshoot:** < 5 % of reading

**General specifications**

**Aperture dimensions:** 5 mm x 5 mm (0.2 in x 0.2 in)

**Max primary conductor temp:** 60 °C (140 °F)

**Dielectric withstand:** 1350 V rms/50 Hz/1 min

**Working voltage:**

300 V rms or dc (CAT I)

150 V rms or dc (CAT II)

**Operating temperature:** 0 °C to + 40 °C (32 °F to 104 °F)

**Storage temperature:** -10 °C to + 60 °C (14 °F to 140 °F)

**Maximum altitude:** 2000 m (6600 ft)

**Maximum relative humidity:** 80 %, 31 °C (87 °F)

**Environment:** indoor use only

**External power supply:** ± 12 V ± 0.5 V

**Current consumption at nominal:** 30 A 550 mA

**Current consumption during demagnetization:** 1.3 A (for 6 sec)

**Output cable length:** 2 m (6.6 ft)

**Dimensions (LxWxH):** 191.1 mm x 28.9 mm x 40.5 mm (7.53 in x 1.14 in x 1.59 in)

**Weight:** 400 g (0.88 lb)

**Safety standards**

EN 61010-1: 2001

EN 61010-2-032: 2002

EN 61010-031: 2002

300 V rms, Category I, Pollution Degree 1

Use of the probe on uninsulated conductors is limited to 300 V ac rms or dc and frequencies below 1 kHz.

**EMC standards**

EN 61326: 1998 +A1, A2 and A3

Optional Bench Power supply PSi50s

**Univeral Bench Power Supply**

**Operating voltage:** 115 V/230 V ac 44 Hz to 66 Hz with manual selector

**Dual outputs:** Supply two i50s current probes ± 12 V dc, 550 mA nominal per channel



*Fluke. Keeping your world up and running.®*

**Fluke Corporation**  
PO Box 9090, Everett, WA USA 98206

**Fluke Europe B.V.**  
PO Box 1186, 5602 BD Eindhoven, The Netherlands

**For more information call:**  
In the U.S.A. (800) 443-5853 or Fax (425) 446-5116  
In Europe/M-East/Africa +31 (0) 40 2675 200 or Fax +31 (0) 40 2675 222  
In Canada (800)-36-FLUKE or Fax (905) 890-6866  
From other countries +1 (425) 446-5500 or Fax +1 (425) 446-5116  
Web access: <http://www.fluke.com>

**Ordering information**  
i50s Current Probe  
PSi50s Bench Power Supply for i50s