

## FSM - Field Strength Meter (IEC60118-4)

The FSM is a cost effective and simple solution for measuring, setting up and commissioning an induction loop system to the requirements of IEC60118-4. The meter is an ergonomically designed hand held instrument for measuring loop system performance. There are three calibrated operational modes for the assessment of Background Noise, Field Strength and Frequency Response as required to ensure correct function of the loop system. The meter also doubles as a loop listener, with a headphone output to listen to the signal in the loop.

The meter is supplied in a soft case and full operating instructions including a guide to commissioning. The Ampetronic FSM can be used to monitor, set up or commission any induction loop system regardless of the manufacturer or type.



### Features

- Simple assessment of any system to IEC60118-4
- Three modes of operation for three test types
  - A-Weighted background noise
  - Broad band mode (50Hz - 8kHz)
  - Frequency response (100Hz, 1kHz, 5kHz)
- True RMS detection calibrated to 400mA/m = 0dB
- Wide viewing angle LED display
- Colour coded LEDs for simple readout
- Resolution to 1dB
- Head phone output with volume control
- Ergonomic, rugged, light weight construction
- Soft carry case
- 5 year warranty

### Applications include

- Accurate set-up and commissioning
- System monitoring and maintenance
- Site surveys
- Certification to IEC60118-4
- Assessment of frequency losses due to metal
- Assessment of loop coverage and overspill
- Assessment of background noise

### Operational modes



#### Background Noise

To determine the level of the background magnetic field present in the intended location for the loop system. Also used to measure low level signals to assess overspill outside a loop system.

- A-Weighted filter
- True RMS detection referenced to 400mA/m
- Scale -42 to -12dB
- Audio (headphone) output is post filter for monitoring



#### Field Strength

A broad band measurement to measure field strength delivered by the system.

- Broad band measurement 50Hz to 8kHz
- True RMS detection referenced to 400 mA/m
- Scale -22 to +8dB with 1dB intervals from -3 to +6dB
- Suitable for use with sine wave, pink noise, or combination signals (provided), or any other real signals



#### Frequency Response



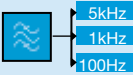



Third octave filters for measuring performance across the required frequency spectrum as required by IEC60118-4.

Used to confirm adequate power at high frequencies as required for good intelligibility. Used to assess frequency dependent loss due to metal structures, and to optimise frequency compensation.

- Third octave bands at 100Hz, 1kHz and 5kHz
- True RMS detection
- Scale resolution to 1dB
- For use with pink noise only (signal provided)
- Audio (headphone) output is post filter

# Commissioning Procedure

The FSM allows a complete test of an induction loop system to be performed with a simple six or seven step procedure as shown in the table below. Using the FSM with recommended test signals, all aspects of an installation can be examined and adjusted to meet the requirements. A Certificate of Conformity (template included) is provided to record test results from this procedure, and to certify that the installation meets the requirements of IEC 60118-4.

Step	Audio Input	FSM settings	Adjustments	Performance requirements	
1	Volume of use	SYSTEM OFF	METER off	n/a	Determine test area Sketch Layout
2	Background Noise	SYSTEM OFF		Sources of magnetic noise	<-22dB essential <-32dB acceptable
3	Field Strength (1)	Track: 1 COMBINATION*		Loop current	-3 to +3dB peaks
4	Frequency Response	Track: 2 PINK NOISE		MLC / tone control	-3 to +3dB peaks compared to 1kHz
5	Field Strength (2)	Track: 1 COMBINATION*		Loop current	-3 to +3dB peaks
6	Overspill (if required)	Track: 1 COMBINATION		n/a	<-42dB (OFF SCALE)
7	System use	ACTUAL SIGNALS		Input gain	-9 to 0dB peaks Subjective - >OK

\* Other signals may be used with revised performance requirements: PINK NOISE -9 to -3dB, 1kHz SINE -3 to +3dB

## Accessories

- **Soft carry pouch**
- **User guide/handbook**
- **Commissioning Certificate (template)**
- **Batteries**

3 different test signals can be downloaded from [www.ampetronic.co/signals](http://www.ampetronic.co/signals) to enable the set up of any induction loop system.

### Test Signals Tracklist

- 1) Combination: Pink noise with 1kHz sine wave bursts (2 mins)
- 2) Pink noise (2 mins)
- 3) Sine wave (1 min)

## Accessories

- Set of cables to easily interface audio inputs to loop systems  
Order code SCC

### Standards Compliance

The FSM field strength meter and loop receiver is CE marked to all relevant safety and EMC standards

### Magnetic field measurement

**Coil orientation:** Vertical when unit held upright  
**Reference level:** 400mA/m (In Field strength mode)  
**Frequency response**  
 50Hz to 8kHz ±0.25dB  
 30Hz to 10kHz -3dB  
**Gain stability:** Better than 0.5dB over all conditions

### Outputs

**Display:**  
 Flying spot LED bar graph with wide viewing angle  
 Colour coded (green for -3dB to +3dB)  
**Audio (headphone):**  
 16Ω min (32Ω per side)  
 3.5mm stereo jack connector

### Power

**Battery:** 2 x AA alkaline (supplied)  
**Battery monitor:** Battery OK when LED illuminated  
**Battery life:** Up to 100hrs use, dependent on use pattern

### Physical

**Dimension:** 84 x 27 x 140mm (meter only)  
**Weight:** 150g excluding batteries  
**Operating environment:**  
 -10 to +45°C  
 10 to 85% RH

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