

## Smart Fieldmeter® Digital Specification



### Smart Fieldmeter® Digital (SFD):



Electromagnetic field monitor having flexible and expandable architecture, state of the art design with convenience and simplicity for users on a budget. The presence of powerful data processor with built-in memory and removable data storage card allows operation with multiple probes while probe calibration data are stored in the meter itself with possibility of the field update through user operated MMC Multimedia® compatible card that also offers practically unlimited storage for data logging.

## Features:

- SFD can operate with **multiple probes**, both current and future models. Calibration factors for multiple probes are stored internally and can be updated from MMC compatible card by the user.
- Extremely large SFD dynamic range with **auto-ranging** function offers high accuracy and simple operation without any additional switching.
- Advanced programmable data sampling with **time averaging and spatial averaging** allows monitoring and recording of time variable signals to comply with various RF safety and regulatory standards.
- **Internal data logging** with **removable flash memory card** (MMC compatible) provides programmable and practically unlimited data storage. No PC is needed for data recording - log the data and read it later.
- Unique **auto-zero** function can be operated either automatically or manually even in the presence of the strongest RF fields, thus ensuring the high sensitivity and long term stability.
- **Serial bidirectional data port** with (or without) IR and fiber optic converters can be used for PC data transfer and instrument control in test system integration (Optional).
- **IR remote control** allows SFD control and operation from a distance - no hands, no wires (Optional).
- **Sound alarm** with variable threshold warns if the preset level is exceeded.
- **Portable lightweight design** with detachable isotropic probe and standard battery (**two AA primary or rechargeable cells**) offers flexibility and advantages in the field.
- SFD can display the data both in **field strength and power density units**.
- Bright **color OLED display** can be set do display only the information important to the user. Maximized display mode ensures **good visibility from a distance**.
- **User friendly interface** allows user to select the screen displayed information making operation simple and intuitive.

## Applications:

### **SFD can be used for evaluation and measurements of EM fields for:**

- Safety and regulatory assessment of AM/FM/TV and GSM cellular transmitters.
- Safety and Regulatory assessment of microwave ovens and RF heating equipment.
- Monitoring of the RF radiation from industrial, scientific and medical equipment.
  
- Monitoring of RF fields from GTEM cells and antennas for EMC testing of consumer, industrial, automotive and military products.
- Data logging of RF fields during Electrosmog testing and environmental monitoring in stand alone and remotely controlled testing sites.
- Personal RF field monitoring and protection.

## Specification:

### Design

- SFD has blackened aluminum extrusion case for durability and EMC protection up to 800 V/m.
- Standard tripod mount (1/4"-20) is located at the back of the meter.
- SMA jack for probe connection is located at the top of the meter.
- Flash card connector, PC link 3.5 mm audio type jack and standard 0.7 mm type charger jack are located at the bottom of the meter.
- There are 7 control buttons at the front panel of the meter plus sliding power switch.

### Display

- Meter has bright high resolution 1.5" 128x128 (RGB) color OLED display.
- Dynamic button allocation eliminates guessing and prompts user actions.
- Displays at the same time: instant value, average value and max value.
- Maximized display mode increase the font size to 0.55" for great visibility.
- Auto shut-off energy saving mode, user selectable.
- View Mode for user selectable display fields allows control of multiple display and meter parameters, including battery time, voltage, temperature, probe type and serial number, log file name, date, etc.

### Measurement Functions

- Values: 3-axis, isotropic RMS (Root Mean Square).
- Time Constants: 30 msec (fast)/300 msec (slow), hardware selected.
- Averaging Time: 30 msec-30 min, in 11 steps, software selected.
- Spatial Averaging: Manual (user initiated).
- Bar Graph View: 5 different color bars of variable length.

Blue:	10 - 99.9 mV/m,	0.02-2.49 nW/cm <sup>2</sup> ,	100 - 999 uV
Green:	100 - 999 mV/m,	2.5-249 nW/cm <sup>2</sup> ,	1 - 9.9 mV
Yellow:	1 - 9.99 V/m,	0.25 - 24.9 uW/cm <sup>2</sup> ,	10 - 99.9 mV
Orange:	10 - 99.9 V/m,	0.025 - 2.49 mW/cm <sup>2</sup> ,	100 - 999 mV
Red:	100 - 999 V/m	2.5 - 249 mW/cm <sup>2</sup> ,	1 - 9.99 V

- Units: mV/m, V/m, nW/cm<sup>2</sup>, uW/cm<sup>2</sup>, mW/cm<sup>2</sup>.
- Ranges: One continuous range 0.01-1000V/m (0.02nW/cm<sup>2</sup>-249 mW/cm<sup>2</sup>).
- Display Numbers: 3 digits with floating decimal point and automatically displayed units.
- Resolution: 0.1% of any reading.
- Linearity deviation: +/- 0.5 dB.

#### **Autozero**

- Meter has a unique auto-zero function that periodically corrects for any errors induced by temperature variations or components aging. This function is automatically performed every time when unit is turned on and can be activated by the user at any time too.
- Autozero function operates even with attached probe in the presence of the strongest RF fields.

#### **Alarm Function**

- Built-in: 2 KHz buzzer, adjustable threshold. Operates on instant or on average measured values.

#### **Data Logging**

- Internal Data Logging: Number of points in one data file - up to 100,000.
- Logging Time Interval: 30 msec-30 min, in steps, user selected. Time/Date stamped.
- Number of data files: 999 (practically unlimited for MMC compatible cards >32 MB).
- Data Format: Simple text format readable by Excel or Word.

#### **Interfaces**

- RS232: Serial bidirectional. Optically decoupled and fiber optic cable.
- IR Optical: IR remote control.
- Memory Card: User removable MMC compatible card.

#### **Power Supply**

- Battery: DC 2 X AA primary cells (3V) or 2 X AA NiMHd rechargeable cells (2.4V). Recommended 2500 mA\*Hr high quality cells (included).
- Charging: Charger 5V/1A (included), charging time up to 5-6 hours (fast), 3 hours - top- off. Intelligent charger will not charge primary cells (!).
- Operating Time: **25** hours (display -ON, logging -ON).  
**30** hours (display ON, logging-OFF).  
**55** hours (display -OFF, logging -ON).  
**1000** hours (standby).
- Battery Monitoring: Meter incorporates a unique Battery Time function that displays the battery "equivalent operating time". This time is a real battery

### **Environmental**

- Operating temperature: 5 C° to 40° C, RH 10%-90%, non-condensing.
- Temperature error: <0.05 dB/°C
- Dimensions: Meter (hwxwd) 130x80x30 mm., 5x3.125x1.25 inch, Probe (LxD) 230x58 mm, 9.0x2.25 inch.
- Weight: Meter 340 g., 0.75 lb; Probe 100 g., 0.22 lb.

### **Calibration**

- Calibration: Every probe is individually calibrated for absolute test levels and at specified frequencies. NIST/UK NPL traceable Calibration Certificate is supplied with each probe. Meter reads the probe calibration data from the memory card and stores it in the non-volatile memory.
- Testing in the field: **Field Gauge™** accessory allows instant checking of the system performance in the field by creating stable reference field, to check the probe, meter and interconnecting cable.

### **Accessories (Standard):**

SFD comes in a hard carrying case with custom foam compartments and includes the RFP-05 Meter with installed 2 x AA rechargeable battery, charger, MMC compatible flash card, together with probe 4' SMA/SMA cable, 6" plastic table tripod, probe mounting clip and Users Manual.

**Field Gauge™** is the standard accessory when probe (or multiple probes) were bought together with RFP-05 meter as a Kit.



**Accessories (Optional):**

<b>Name of the Accessory</b>	<b>Description</b>
<b>ODLK-01</b>	<b>Optically Decoupled Link Kit.</b> Includes data cable and TTL/RS232 bidirectional converter with <u>optical Isolator</u> .
<b>FOLK-01</b>	<b>Fiber Optic Link Kit.</b> Includes two bidirectional RS232/Optic converters and 10-meter (30') bi-line <u>fiber optic</u> cable. 20 meter and 50 meter cables are available (requires ODLK-01).
<b>RS232/USB Adapter</b>	Adapter for PC having USB serial port only.
<b>FC-01</b>	Portable frequency counter with frequency range 30 MHz- 2.8 GHz. Captures the frequency of RF pulses longer than 250 usec.
<b>IR Remote</b>	IR remote control for SFD control at a distance.
<b>Field Gauge™</b>	Allows instant testing of the SFD with probe and interconnecting cable in the field. Standard option with broadband kit purchase.

*Note: This Specification may be changed without notice due to continuous improvement of the design and manufacturing process.*

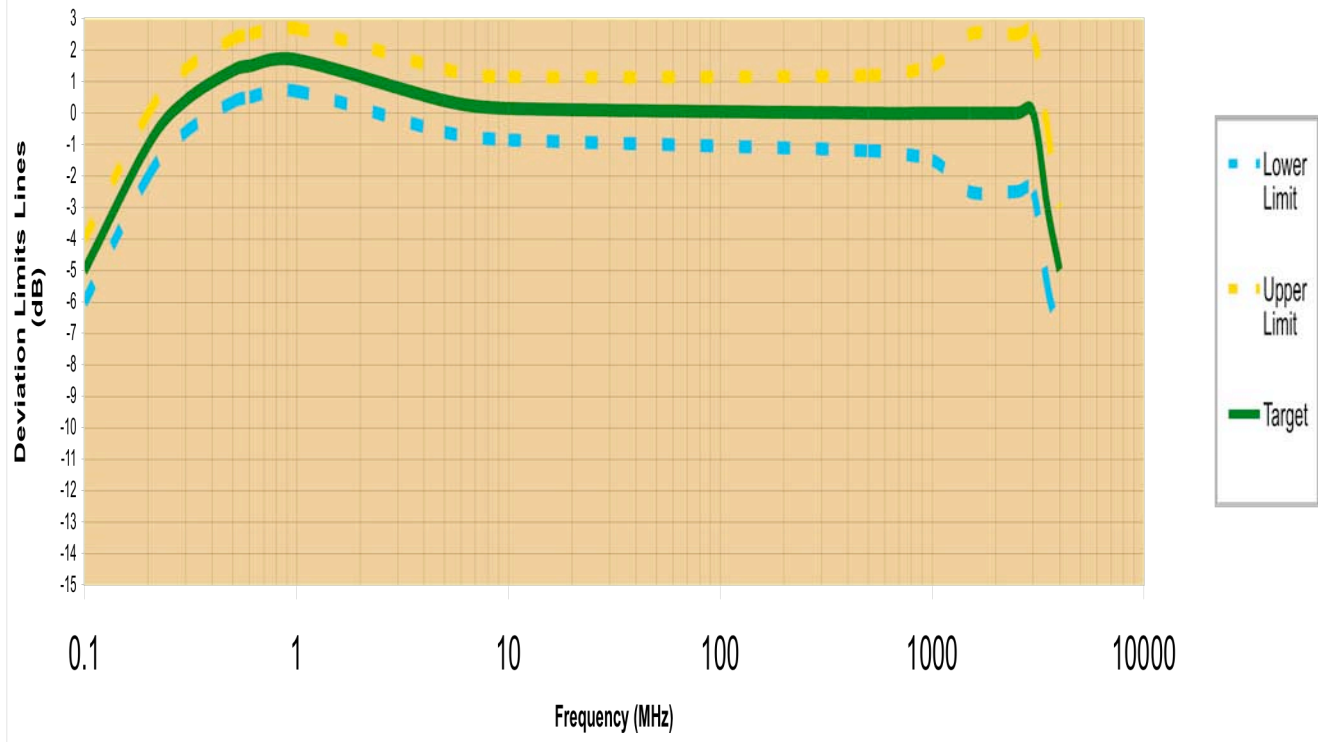


## Probe Selection:

### Probe PI-01

- Probe directivity: Omni directional (Isotropic probe).
- Dynamic range: **0.2-600 V/m (with RFP-05 Meter)**
- Frequency range: **0.2 MHz-3 GHz** (Variant 0.05 MHz-3 GHz).
- Frequency response: +/- 1 dB (2 MHz-2 GHz),  
-3 dB @ 0.2 MHz; -2.5 dB @ 3 GHz.
- Rotational isotropy: +/- 0.5 dB (2 MHz-2.8 GHz).  
+/- 1 dB (0.2 MHz-2 MHz).

Probe PI-01 Typical Frequency Response



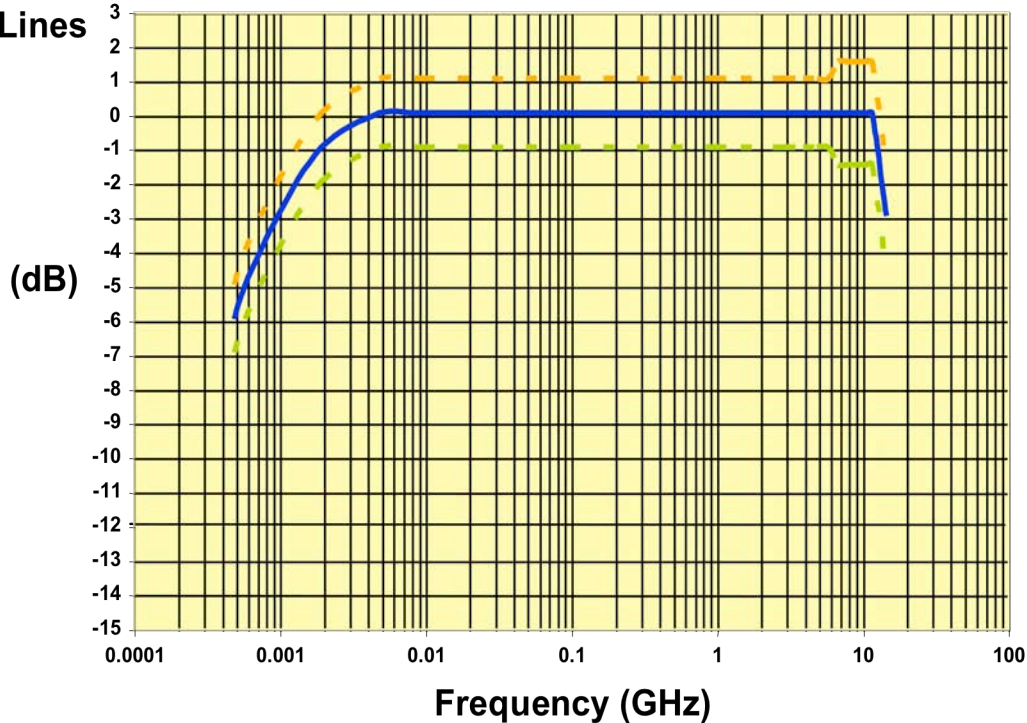


### Probe PI-02

- Probe directivity: Omni directional (Isotropic probe).
- Dynamic range: **0.5-800 V/m (with RFP-05 Meter).**
- Frequency range: **2 MHz-12.5 GHz.**
- Frequency response with correction factors: +/- 1.0 dB (10 MHz–12.5 GHz).
- Frequency response: +/- 1.5 dB (10 MHz–6 GHz), +/- 2.5 dB (6GHz–12 GHz), -3 dB @ 2 MHz; -2.5 dB @ 12.5 GHz.
- Rotational isotropy: +/- 0.5 dB (10 MHz-6 GHz).  
+/- 1.5 dB (6 GHz –12.5 GHz).

## Typical Frequency Response Probe PI-02

Deviation  
Limits  
Lines

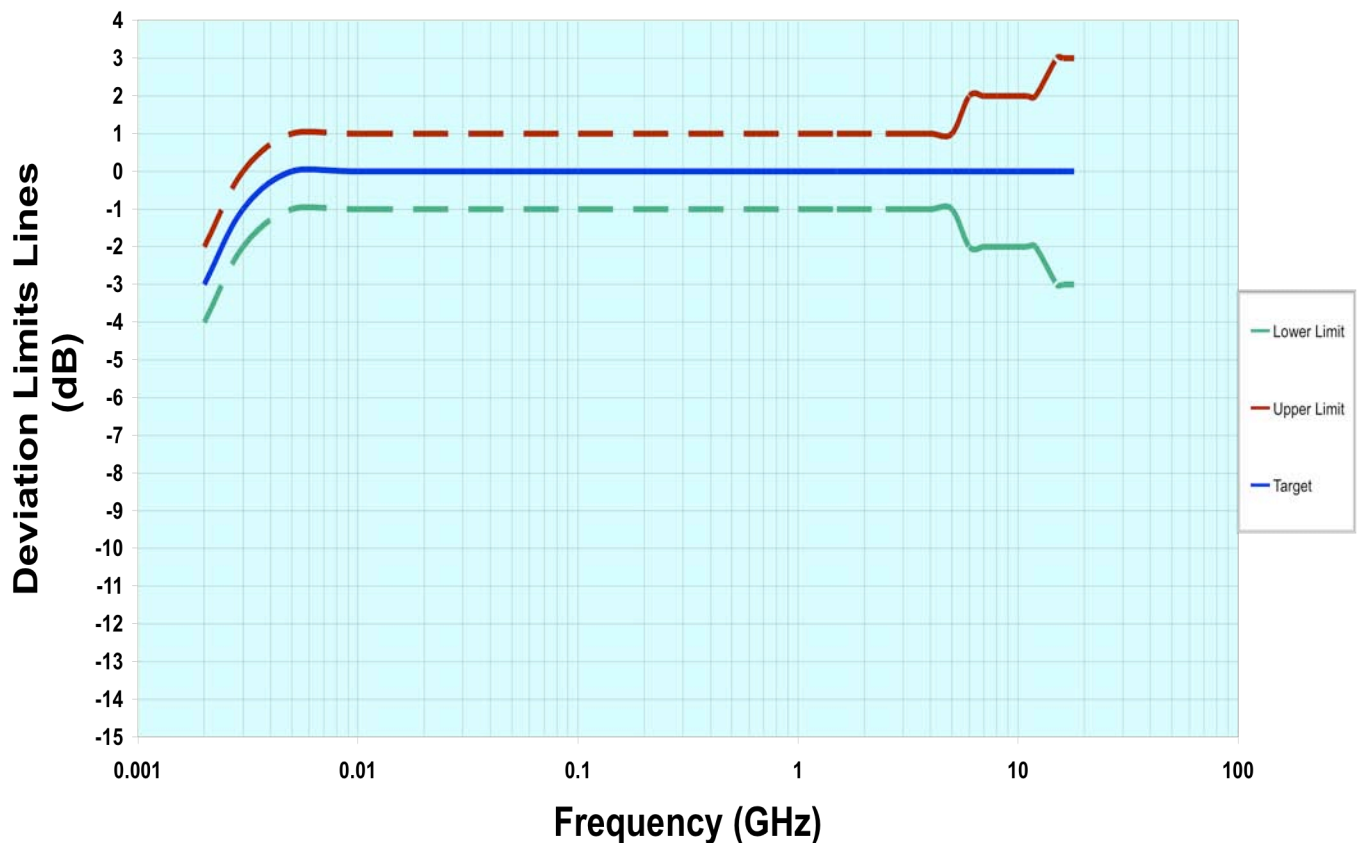




**Probe PI-03**

- Probe directivity: Omni directional (Isotropic probe).
- Dynamic range: **0.8-800 V/m (with RFP-05 Meter).**
- Frequency range: **3 MHz-18 GHz.**
- Frequency response with correction factors: +/- 1.0 dB (10 MHz–12 GHz), +/- 1.5 dB (12 GHz–18 GHz),
- Frequency response: +/- 1.5 dB (10 MHz–6 GHz), +/- 3 dB (6 GHz–12 GHz), -3 dB @ 3 MHz.
- Rotational isotropicity: +/- 0.5 dB (3 MHz-6 GHz).  
+/- 2 dB (6 GHz –18 GHz)

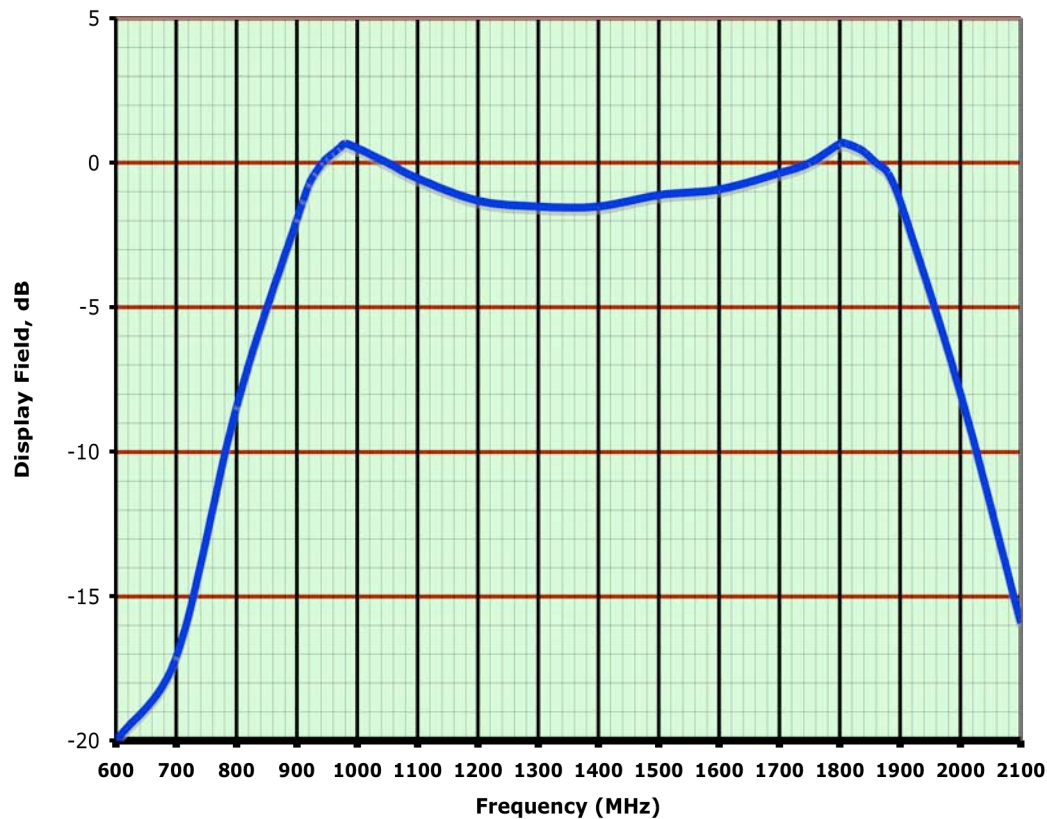
## Typical Frequency Response Probe PI-03



**Probe PI-01V**

- Probe directivity: Omni directional (Isotropic probe).
- Dynamic range: **0.2-500 V/m (with RFP-05 Meter)** .
- Selective Frequency range: **900-1900 MHz.**
- In band response flatness: +/- 1 dB (925-960 MHz),  
+/- 1 dB (1805-1880 MHz),
- Off band attenuation: 3 dB @ 880 MHz, >10 dB @ F<750 MHz,  
3 dB @ 1950 MHz, >10 dB @ F>2050 MHz.
- Rotational isotropy: +/- 0.6 dB.

### Probe PI-01V-900/1900 Typical Frequency Response





**Purchasing the Smart Fieldmeter® Digital**

You may find more information about our products and **Smart Fieldmeter® Digital** from our web site: [www.emctd.com](http://www.emctd.com).

To inquire about **Smart Fieldmeter® Digital** send us e-mail [exid@emctd.com](mailto:exid@emctd.com), or give us a call: **508-292-1833**.

We can arrange the demonstration of **Smart Fieldmeter® Digital** by our distributor in your country.

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