# Smart Fieldmeter® Digital
# Model RFP-05M

## Users Manual

S.N.:_____

Congratulations! You purchased the - Smart Fieldmeter® Digital.
Please, read this manual to get the most benefits from this innovative instrument.

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.

**Disclaimer**

- Use of **Smart Fieldmeter® Digital** for cell phone comparison is meaningful only for the models operating in the same broadcast standard. Evaluation of the SAR (specific absorption rate) requires special techniques, see www.fcc.gov.
- **Smart Fieldmeter® Digital** is not intended to be the primary piece of safety or medical safety equipment.
- Use of **Smart Fieldmeter® Digital** for medical and safety related applications must be done by qualified personnel only. Manufacturer doesn't assume any responsibilities for the results and their consequences.

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EMCTD ®

# 1. Applications of Smart Fieldmeter® Digital (SFD)

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

- Field strength measurements around 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 TEM/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.

# 2. Main 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 direct, optically decoupled or fiber optic insulated modem (IM) converters can be used for PC data transfer and instrument control in test system integration with no wires coming out of meter.
- IR remote control allows SFD control and operation from a distance - no hands, no wires.
- 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.
- Graphical display feature allows data plotted on the screen real time.
- User-friendly interface makes instrument operation simple and intuitive.

# 3. Description of Smart Fieldmeter® Digital

## 3.1 Isotropic E probe sensor

• E probe sensor is located in plastic enclosure at the end of the nonmetal handle. This sensor uses 3 dipole antennas positioned normal to each other. Signals from each antenna are combined to allow meter to measure the absolute value of the field regardless of the field direction. Therefore, unit always measures the correct value of the E field strength at any probe orientation.
• Probe can be mounted on the meter with SMA male connector mating the SMA female connector at the top of the meter, or it can be attached to the meter with flexible cable. Then the operator has a freedom of moving the probe while meter is positioned for the best view.
• Meter can also be mounted on plastic tripod; the same can be done with probe. This is beneficial when probe is used with TEM, GTEM cells or RF transmitting antenna.
• Probe handle has black non-slip end, designating the position of operator's hand, producing the minimal disturbance of the probe reading.

## 3.2. Display

• Meter has bright high-resolution 1.5" 128x128 (RGB) color OLED display.
• Dynamic button allocation eliminates guessing and prompts user actions. Six buttons have button allocation defined by the display prompts located near each button, the seventh button <Menu> always brings up the Main Menu screen.
• Displays at the same time: instant, AVG (average) and MAX values. MAXD (maximized display) mode increases the font size to 0.55". This mode can be also turned on automatically - display goes to the MAXD mode after user selectable MaxDTime (if different from 0).
• Auto standby energy saving mode, On Time is user selectable. Pressing the <Menu> in standby mode always brings the unit back to the previous display.
• View Mode allows user control of multiple display and meter parameters, including battery time, voltage, temperature, probe type, log file name, date, etc.
• GRPD button in <Menu> brings graphical display with auto-ranging axes on screen.

## 3.3 Measurement Functions

• E field strength measurement data are displayed in E field strength units (mV/m, V/m) or in S power density units (nW/cm$^2$, uW/cm$^2$, mW/cm$^2$, the **cm²** symbol is shown on display as □), selected by the user. Conversion of the field strength (V/m) into power density (uW/cm$^2$) assumes far field plane waves with impedance 377 Ohm: S=E$^2$/3.77.
• Display Numbers: 3 digits with floating decimal point and automatically displayed units.
• Color bar graph feature with color bar of variable length proportional to the display value. The table below shows the bar color allocation:

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

### 3.4 Auto ranging

• SFD has auto-ranging function that eliminates the need to switch instrument range during the measurements. Due to this feature SFD has one continuous measurement range: 0.01-1000V/m (0.02nW/cm$^2$-249 mW/cm$^2$).
• The actual operational field strength range is defined by the probe used. Please, refer to the Specification of the selected probe.

### 3.5 Auto zero

• Meter has a unique auto-zero function that periodically corrects for any errors induced by temperature variations or components aging. This function is also performed every time when unit is turned on and can be activated by the user at any time too.
• Auto zero function operates even with attached probe in the presence of the strongest RF fields.
• The time interval of automatic auto zeroing is user controlled and can be set from 30 sec. to 9 min. Default value is 8 min. If "zero" value is selected, auto zero function is disabled (useful if relatively strong fields are measured and/or no event should be missed).

### 3.6 Operating Modes

• In all modes of operation SFD measures the RMS (root mean square) value of the field strength (or power density). The differences between various modes of operation are in instrument response time and/or averaging mode parameters.
• Measurements are taken every 10 msec. in all modes.
• SFD has two hardware-controlled modes of operation: Slow and Fast.

| Probe Speed | Meter Reading | Response Time |
|---|---|---|
| Slow | RMS (Root Mean Square) | $T_f$=300 msec. |
| Fast | RMS (Root Mean Square) | $T_s$=30 msec. |

• The default setting is Slow. We recommend it for most applications.
Fast setting allows faster instrument response to time varying fields but increases the probe sensitivity to strong AC fields (power lines, for example).
• SFD has software controlled Average mode, allowing two main applications of Time Averaging or Spatial Averaging.
• Averaging is always performed in power units. For example, for two fields $E_1$ and $E_2$, corresponding to power levels $S_1$ and $S_2$, the averaged values of $E_{av}$ and $S_{av}$ are calculated as follows (noting that $S \sim E^2$): $E_{av}=\sqrt{(E_1^2+E_2^2)}$, $S_{av}=0.5*(S_1+S_2)$.
If Average mode is turned on, the SFD calculates the average value in addition to the current one.
• For user convenience, in NORD screen the primary reading (shown at the display center, larger font) is always the instant reading. Average is shown in small font at the left corner. In MAXD screen the largest font reading (the only one) is either instant or average depending on whether Average mode has been turned on.

• The averaging time (time interval) can be selected by the user with MODE key. The default averaging time is 6 min. The table below summarizes the averaging options:

| MODE key selection | Application | Probe Speed | Description |
|---|---|---|---|
| 30 msec.-30 min. | Time Averaging | Fast | Measurements are taken every 10 msec. and average reading is calculated over and updated at selected time intervals. |
| 300 msec.-30 min. | Time Averaging | Slow | Measurements are taken every 10 msec. and average reading is calculated over and updated at selected time intervals. |
| MAN | Spatial Averaging | Any | Measurements are taken every time when key <MAN> is pressed. Average reading represents the average of all points entered. |

## 3.7 Data Logging

• SFD has data logging capability allowing user to record and store internally the data from multiple measurement sessions. Data are stored on the removable MMC Multimedia® compatible card 32 MB or higher that is one of the most popular and inexpensive flash card available.

• SFD assigns new FileName (from 000 to 999) to store logging data every time when new logging session begins. This eliminates the possibility of accidental data overwriting. User has the option to assign the arbitrary file numbers within the range. Each file can store up to 100,000 data points.

• All logged values are time/date stamped and can be reviewed on the instrument screen or retrieved at a later time from flash card reader onto PC. The data format is simple text format easily importable into Excel spreadsheet for further data analysis, plotting or archiving.

• Logging is enabled through Log Control menu and allows user to select the logging time interval. The logging interval is selected by the same <MODE> key as averaging interval and has the same selection of parameters, see the table above.

• If Averaging mode is turned on prior to Logging activation, then averaged values (see the Operating Modes section) will be logged (instead of current values).

## 3.8 Alarm Function

• SFD has an Alarm function. It has built in 2 KHz buzzer with adjustable operation threshold. It operates on instant value or on average value of the measured signal. Due to its importance Alarm switch (ON/OFF) is always shown on NORD screen. Alarm threshold can be set on Setup/Alarm screen.

## 3.9 Interfaces

• SFD has the following interface to communicate with external devices:

RS232: Serial bidirectional with TTL output. RS232 interface operates through 4-pin 3.5 mm audio jack and allows SFD to communicate with any PC through Insulated Modem IM set of accessories (Optional, plugs into the bottom of the meter): USB and Fiber Optic.

• IM-MU Insulated Modem allows USB battery charging and bidirectional USB control through PC. Due to the internal optical isolation the RF effects of PC onto probe reading are minimized.
• FOLK-02 Fiber Optic Kit consist of modem IM-MF (has fiber optic and USB ports, plugs into meter), IM-PF (has fiber optic and USB ports, plugs into PC) and 10 meter fiber optic cable.
• IR optical receiver for IR remote control. The IR sensor is located behind the blue "eye" on the front panel. The optional IR Remote Control allows hands free operation of the SFD for remote application when user cannot or does not want to be in the proximity of the unit. Examples of such applications are: SFD is mounted in the permanent location (EMC monitoring station), tripod mounting in the EMC chamber or TEM cell, etc.

## 3.10 Design

• SDF has blackened aluminum case for durability and EMC protection.
• There are seven control buttons at the front panel of the meter plus sliding power switch. There are two optically transparent "eyes" located at the front panel:
**Red** - Blinking "heartbeat" LED (1 sec. period) indicates normal operation.
**Blue** -The IR receiver for remote control.
• 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 2.5 mm audio stereo jack, standard 0.7 mm type charger jack and charger status orange LED are located at the bottom of the meter.
• The bottom cover with four screws is user removable - the 2-cell AA primary or rechargeable battery is located in the removable compartment (read more in the Power Supply section).

## 3.11 Power Supply

• Power supply is very important part of every instrument and in many cases it defines the applications for which the instrument fits well. We made SFD power supply very flexible to offer the user a wide range of possible applications and ensure the uninterrupted and reliable operation.
• SFD is powered by standard 2-Cell AA type battery. Both rechargeable NiMHd cells and primary alkaline cells will work. These cells produce different voltages (rechargeable 2.4V nominal, primary 3V) but both will work fine due to internally regulated power supply.
• Rechargeable cells can be charged with supplied DC charger having 5V/1A output and universal worldwide AC 100V-240V input.
• Battery operation reduces the effects of SFD on the RF field being measured. For the same reason - disconnect the charger from SFD when doing the RF field measurements.
• Only rechargeable AA cells should be charged, but in case if user forgets and tries to charge the AA primary cells - nothing bad happens: smart charging circuit will identify the mismatch and charger status LED will indicate the error.
The same error will be indicated in some other cases (see Error Causes below).
• We recommend that in all cases two battery cells are of the same type and preferably have the same condition.

- Battery: DC 2 X AA primary cells or 2 X AA NiMHd rechargeable. Recommended 2500 mA*Hr high quality cell (included).
- Battery replacement: 2-Ce Battery is located under the bottom cover. To replace the battery - remove 4 bottom screws, pull out the battery holder, remove the old cells and replace them with new ones keeping correct polarity **(!)**. Install battery holder into the unit and then secure the bottom cover with 4 screws. Standard Philips #6 screwdriver is required.
- Charging: Charger 5V/1A (included), charging time up to 6 hours (fast) brings the battery to about 80% of capacity, then 3 hours top-off for full charge. Termination of the fast charge - automatic. 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 battery operating time weighted with factor depending on the exact use mode.
- Low Battery Indicator Displayed when battery voltage drops below 2.2V. Minimal operating time after "Low Battery" warning - 30 min.
- Charger Status LED: Normal charging (Fast and Top-off) - ON. Battery is fully charged: Blinking 0.16 sec.-ON, 0.8 sec. -OFF. **Error**: Blinking 0.48 sec. -ON, 0.48 sec.- OFF. No battery: OFF.
- Error Causes: Wrong battery type (not 2 x NiMHd cells are used), Battery cells are defective or too old. Primary cells were used instead of rechargeable. Temperature of the unit is too hot (or too cold).

### 3.12. Tripod Mounting

• There is a standard ¼”-20 nut located at the back of the unit for tripod mounting. This gives the user multiple possibilities to position meter with different E probe sensor orientation or to hold it in hand at a distance to reduce measurement errors caused by the EM effects of operator body.

• Unit is supplied with nonmetallic portable tripod, which can perform all these functions. The simplest way to put meter on tripod – first, arrange the tripod for a desired position, secure the lock, and then attach the unit and tighten ¼”-20 screw. If meter body interferes with screw knob, rotate the unit by 90 degrees to allow knob free rotation.

• Probe also can be mounted on tripod for remote field monitoring. To install probe on tripod use the nylon clip supplied with unit. Remove the stock black screw from the tripod, install the supplied thumbwheel screw and secure the probe in clip with nut.

In order to get an accurate field strength reading – keep all conductive parts (including cables, meter itself, operator hands, etc.) away from the probe.

## 4. Calibration

- Calibration: Every probe is individually calibrated for absolute test levels and frequency correction factors 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.
  Customer can update the probe calibration factors from the memory card at any time.
  SFD supports all current and future probe models.
  We recommend performing the calibration every two years at EMC Test Design NIST/UK NPL traceable EMC lab. Depending on your application a yearly calibration interval may be required.
- Testing in the Field: Field Gauge™ accessory allows instant checking of the system performance by creating stable reference field, to check the probe, meter and interconnecting cable. Field Gauge™ is offered for basic functionality testing and is NOT a substitute of the regular calibration through specified time intervals.

## 5. SFD Standard Set

• SFD comes in hard carrying case with custom foam compartments and includes the RFP-05 Meter with installed 2 x AA rechargeable battery, 5V/1A charger, MMC compatible flash card, together with (or without) the selected probe (PI-01, PI-01V, PI-02, PI-03), 4' SMA/SMA cable, 6" plastic table tripod, probe mounting clip and Users Manual.
If probe is bought together with SFD as a kit, then calibration certificate and Field Gauge™ are included (otherwise, Field Gauge™ can be purchased separately).

## 6. Handling and Maintenance

In spite of the rugged design this instrument requires gentle and responsible handling. Please, use the following practices when using this instrument:

- **Use only when probe and meter are completely dry.**
- Do not immerse into water, neither leave under the rain or snow uncovered. If wet – open the bottom cover, remove and disconnect the battery and allow instrument to dry for 24 hours in dry ventilated place before use.
- Instrument is supplied in hard case with foam insert – use it for storage and transportation.
- **When connecting or disconnecting the probe from the meter apply gentle force. Do not over-tighten the probe connector.**

• Do not try to open the top meter cover or probe enclosure – there are no user serviceable parts inside.
• **Do not use the instrument near AC lines or high voltage sources, because its reading may be offset and there is a safety risk for the operator (!).**
• To clean the meter and probe use soft tissue wetted with water or mild household glass cleaner (weak ammonia solution). Do not use the solvents that may damage the plastic parts of the meter.
• If there is ever a need to clean the probe connector – use cotton swab wetted with alcohol. Let it dry before connecting to the meter.

## 7. Measurement Hints

In order to get the best accuracy of measurements few things should be noted:
• Keep the instrument calibrated. To calibrate the instrument - contact the manufacturer.
• Use tripod – it eliminates the effects of your body and meter on electromagnetic field.
• Battery operation guarantees the minimal effects of SFD on the measured RF field.
• Measurement of RF fields, with charger connected to the meter, is not recommended. Charger connection to the meter may affect the RF environment around the probe due to the presence of conducted and radiated emissions from switching AC/DC converter of the charger and RF interference coming from the AC power line.
• When operated near or inside the large metal objects, like in TEM cell or screen room - use grounded bulkhead connector to feed the probe cable through the metal wall and ground the metal case of the meter (tripod mounting nut). This will eliminate the parasitic effects of stray fields caused by equipment power supplies and AC power lines.
• SFD probes are designed to be immune to the moderate external AC fields of the 50/60 Hz. In harsh environment with strong AC fields we recommend using **Slow** mode of operation (default) and doing the measurements of stronger RF fields (the SFD sensitivity to the stray AC fields in such case will be dramatically reduced).
• Meter is calibrated to display the E field strength in V/m, or W/cm$^2$, that correspond to RMS (Root Mean Square) value of the field strength. For E fields less than 20 V/m (probes PI-01, PI-01V) or 60 V/m (probe PI-03) reading doesn't depend on RF signal shape (sine, square, AM modulated, multi-signal, etc.). For fields substantially higher than listed above, the reading is corrected for sine wave signals, but when dealing with strongly modulated AM signals, or in the multi-signal environment some additional correction may be needed. Contact the manufacturer for more information.
• To connect the serial output of the meter to PC use only Isolated Modem IM (IM-MU for USB only option and FOLK-02 for USB and fiber optic options).
• **Do not connect meter metal case to any AC power lines or ungrounded metal objects due to the risk of electric shock (!).**

# 8. Specification

| | |
|---|---|
| • Reading: | RMS (root mean square) in all modes. |
| • Ranges: | Autorange. One continuous range: 10 mV/m-1000 V/m (0.02nW/cm$^2$-249 mW/cm$^2$). |
| • Resolution: | 0.1% typically (1 unit of the last digit of 3 digit display) |
| • Calibration accuracy: | +/- 0.5 dB (at reference levels). |
| • Linearity deviation: | +/- 0.5 dB. |
| • Probe rotational isotropicity: | +/- 0.5 dB typically, depends on probe model. |
| • Operating modes: | Fast (30 msec.)/Slow (300 msec.) |
| • Averaging type: | Time Averaging, Spatial Averaging (manual data logging). |
| • Averaging time interval: | 30/300 msec.- 30 min. in 11/9 steps. |
| • Data logging: | Internal MMC compatible memory card (32-4096 MB). |
| • Logging time interval: | 30/300 msec.-30 min. in 11/9 steps. |
| • Logging capacity: | Practically unlimited: 1 GB card stores up to 1000 files, 100,000 data points in each. |
| • Auto zeroing | Automatic and/or user activated. Works even at strong EM fields. |
| • Display: | OLED color display with power saving timeout. |
| • PC data link: | Bidirectional RS232 optically decoupled cable or fiber optic. |
| • Remote control: | IR Remote Control. |
| • Design: | Rugged metal hand held enclosure. Probe is mounted on nonmetal handle and can be removed for cable operation at a distance. |
| • Tripod mount: | Standard tripod mount (1/4”-20) for meter, probe clip and nonmetal portable tripod are provided. |
| • Operating temperature: | 5 C° to 40° C, RH 10%-90%, non-condensing. |
| • Temperature error: | <0.08 dB/°C (fields < 2 V/m), <0.05 dB/°C (fields > 2 V/m) |
| • Power: | Two AA cells battery (rechargeable NiMHd or alkaline primary), AC/DC charger 5V/1A. |
| • Battery life: | 25-55 hr., depending on use, standby 1000 hr. Auto standby mode. Low battery indicator. |
| • Dimensions: | Meter (hxwxd) 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: | Every probe is individually calibrated for absolute test levels and linearity at specified frequencies. Probe data are stored on memory card and in SFD non-volatile memory. NIST or UK NPL traceable Calibration Certificate is supplied with each unit. |

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

## 9. Probe Selection Table

| Probe Model | Frequency Range | Field Strength Range | Notes |
|---|---|---|---|
| PI-01 | 0.2 MHz - 3 GHz | 0.2 – 600 V/m | Stocked model. |
| PI-01LF | 50 KHz – 3 GHz | 0.4 – 600 V/m | Built per order. |
| PI-03 | 3 MHz –18 GHz | 0.8 – 800 V/m | Stocked model. |
| PI-03P (Pulsed) | 100 MHz –18 GHz | 70 – 1400 V/m | Stocked model. |
| PI-01V | 800-1900 MHz | 0.4 - 600 V/m | Stocked model. |
| PI-H1 (magnetic) | 500 KHz-50 MHz | 0.05-20 A/m | Stocked model. |

## 10. Accessories Selection Table (For Meter RFP-05)

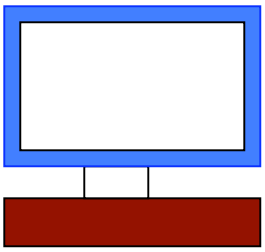
| Name of the Accessory | Description | Notes |
|---|---|---|
| **Probe Cable** | Probe cable, SMA/SMA 4-6 ft. | Standard. |
| **Table Tripod** | 6” Nonmetal tripod | Standard. |
| **IM-MU** | **RF Isolated USB Modem** for battery charging and communication. | Optional. |
| **FOLK-02** | **Fiber Optic Link Kit.** Includes two bidirectional Modems (IM-MF, IM-PF) and 10-meter (30‘) bi-line fiber optic cable. 20 meter and 50 meter cables are available. | Optional. |
| **FC-01** | Portable frequency counter with frequency range 30 MHz- 2.8 GHz. Captures the frequency of RF pulses longer than 250 usec. | Optional. |
| **IR Remote** | IR remote control for SFD control at a distance. | Optional. |
| **Field Gauge** | Allows instant testing of the SFD with probe and interconnecting cable in the field. | Optional. **Standard with broadband kit purchase.** |

# 11. PC Data Streaming Links

**USB Isolated Modem: IM-MU**

IM-MU Modem plugs into meter bottom.

IM-MU Modem shown from two angles.

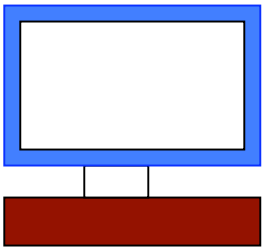


USB cable is plugs into PC USB port.

**Fiber Optic Link Kit: FOLK-02**

Meter is shown with IM-MF Insulated Modem

Fiber Optic Cable 10-20-50 meters



IM-PF Modem is plugged into PC USB port.

# 12. Technical Support

To purchase the additional units, accessories, get technical support or warranty service, buyer should contact the authorized distributor or manufacturer by e-mail (preferred) or phone. The manufacturer e-mail is: exid@emctd.com (check our web site www.emctd.com for the most up to date information).

# 13. Limited Warranty

The manufacturer (EMC Test Design, LLC) warrants the product to be free from defects in material and workmanship under normal use and service for the period of 1 (one) year from the date of purchase. This warranty extends only to the original buyer or end use customer of a manufacturer-authorized distributor.

Manufacturer's warranty obligation is limited, at manufacturer's option, to refund of the purchase price, or free of charge repair or replacement of a defective product, which is returned to an authorized distributor or manufacturer within the warranty period.

Manufacturer authorized distributors have no authority to extend the warranty on behalf of the manufacturer.

To obtain the warranty service, contact your authorized distributor. Buyer pays for the insured shipping of the unit to be returned or serviced. Manufacturer doesn't assume any risk for damage in transit. Following the warranty repair, the product will be returned to the buyer, transportation prepaid.

If manufacturer determines that the failure was caused by misuse, negligence, accident or abnormal condition of operation and handling, manufacturer will provide an estimate of the repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the buyer, transportation prepaid, after customer has paid for the repair and return transportation charges.

The typical examples of product abuse that void the warranty are: broken probe or probe mount connector, damaged battery compartment or meter bottom plate connectors, etc. We will void the warranty if product has been opened (except the bottom battery compartment), altered or repaired by unauthorized personnel.

This warranty is purchaser's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty or merchantability or fitness for a particular purpose.

EMC Test Design shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, whether arising from breach of warranty or based on contract, tort, reliance or any other theory.

The limitations and exclusions of the warranty may not be applicable to every buyer depending on the laws of the land of residence.

Buyer has the rights to return the unit within 14 (fourteen) days from the date of purchase using the insured prepaid carrier, in mint condition in undamaged original package with all accessories and documentation for replacement or refund. In case of refund the restocking fee of $10% will be charged.

**Smart Fieldmeter® Digital. Model RFP-05**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.