

# microFET 3™



microFET3 User Guide

Congratulations on becoming the proud owner of the new microFET3 with wireless technology, Hoggan Scientific LLC highly renowned dual function handheld digital muscle tester and inclinometer. The new microFET3 wireless allows muscle and inclinometry testing to be done FREE of cords in conjunction with microFET clinical patient software. This provides freedom and ease of use while performing tests.

Hoggan has been creating innovative solutions for accurate, objective measurement since 1984, with the introduction of the original FET muscle tester. Over the past 20 + years, our product line has expanded to include inclinometers, grip and pinch gauges, and innovative ergonomic measurement instruments.

During that time, Hoggan's products have developed a reputation for innovation, excellent quality, ease of use, and long lasting accuracy and reliability. Our highly satisfied customers include hospitals, universities, clinics and research institutions worldwide. The microFET products are used by organizations as diverse as NASA, the Shands Institute, the US Olympics and professional sports teams.

At Hoggan, we are constantly improving our products to better meet your needs. Besides the addition of the new wireless technology incorporated into the microFET line of products, we've added some important new features to the microFET3. You can now measure forces up to 150 lbs and select the unit of measure to read out in lbs, Newtons, or KGF.

We understand the value of customer feedback. Our customers provide us with many of our best product improvement ideas, as well as interesting new measurement applications. As you have comments and suggestions, we'd love to hear from you. Please e-mail us at [contact@hogganhealth.net](mailto:contact@hogganhealth.net).

In the meantime, we hope you enjoy using your microFET3 with new wireless technology immediately, and for many years to come. For more information on all of our innovative medical, ergonomic and fitness products, please visit us at [www.hogganhealth.net](http://www.hogganhealth.net).

## Table of Contents

	<b>Page</b>
MicroFET3 Wireless Overview	3
What is Included	4
Specifications	4
Care and Cleaning	5
Calibration	5
Transporting microFET3	5
Operating Features	5
On/Off Switch	5
Sleep Mode	5
Reset Button	5
LCD Windows	6
Threshold Button – Muscle Testing	7
Inclinometer Button and Cycle Switch	8
Force Measurement	9
Wireless Radio Frequency – RF Power	9-10
Bluetooth / FET Stick	11
Battery Check	11
Battery Saver/Sleep Mode	12
MicroFET3 Muscle Testing	12-13
MicroFET3 Inclinometry Testing	13-14
Validity Requirements/Repeat Trial Consistency	14-15
Recording and Retrieving Test Data	15-17
Low Batteries	18
Changing Batteries	18
Warranty Information	18-19
Customer Service/Repairs	19
Ordering Replacement Parts	19

## **microFET3 Wireless Overview**

microFET3 is an accurate, portable Combination Force Evaluation and Range of Motion testing system. It is a battery operated, hand held device weighing less than one pound and fits comfortably in the palm of your hand. microFET3 provides you with objective, quantifiable data from the time-tested art of “hands-on” manual muscle and range of motion testing. microFET3 aids in the differential diagnosis, prognosis, and treatment protocols for the neuromuscular and musculoskeletal disorders.

Recessed into the main outer shell is a polycarbonate overlay with clear lenses for the LCD displays (Liquid Crystal Display), and 3 membrane switches. A red switch is located to one side of the unit in proximity to where the thumb or the index finger is positioned during use.

As information from the gauges is processed, it is displayed in two LCD windows. During manual muscle testing, the Peak Force LCD shows the force being applied against the transducer pad during the test, and it displays the highest force reached when the test is concluded. The Duration/Secs LCD shows the duration of the test from the time testing threshold was crossed until the test is concluded.

For inclinometer use the unit is placed on the starting point and an angle is set. The patient moves through the range of motion and the second angle is set. Then by clicking the cycle switch one more time the difference between both angles will appear in the left hand LCD window.

The newly updated microFET3 Wireless with radio frequency technology provides convenience for both you and your patients. The wireless microFET3, when used with HOGGAN microFET clinical software, alleviates the inconvenience of being wired to the computer and provides easier interaction with patients. A wireless instrument allows greater freedom in the exam room or testing area, and eliminates dictating the location of the computer and length of instrument cable so you can move freely during testing.

The microFET3 can also be used as a standalone gauge for capturing individual force measurements for any muscle test and inclinometry test.

## What Is Included:

- microFET3
- Curved transducer pad (Slip-In Dent Ball Retainer Shaft)
- Flat transducer pad (Slip-In Dent Ball Retainer Shaft)
- Digit transducer pad (Slip-In Dent Ball Retainer Shaft)
- Muscle Testing Positions chart
- Inclinometer Testing Position chart
- Upper body test record tablet
- Lower body test record tablet
- (4) Inclinometer testing tablets
- Product Warranty card
- Calibration Certificate
- Carrying Case
- Optional - Bluetooth / FET stick (Included with software when software ordered)

## Specifications:

- WEIGHT: 1 lb.
- POWER SOURCE: 3.7 V (LI-ION Rechargeable Battery)
- CONTROLS: Reset, Muscle Testing Threshold and Inclinometer Testing
- OPERATING TEMPERATURE: (52°- 92° F) (11°- 33° C)
- HUMIDITY: 60- 80% non-condensing
- MUSCLE TESTER RANGE:
  - Low Threshold- .8 lbs. to 150 lbs. in .1 lb. increments (3.6N- 667N Newton Increments)
  - High Threshold- 3 lb. to 150 lbs. in .1 lb. increments (13.3N-667N Newton increments)
- LOAD CELL CAPACITY- 150 lbs.
- INCLINOMETER RESOLUTION- 0.1 degree increments from 0 degrees to 360 degrees.
- ACCURACY: Within 1%
- DATA STORAGE: 30 muscle tests, 21 range of motion angles



## Care and Cleaning

Your microFET3 is built to provide long lasting, reliable service. As with any precision instrument, it should be used with care. It should not be dropped, banged against hard surfaces, or used as a scale.

The microFET3's exterior surface can be cleaned with damp soft cloth. Small amount of household spray cleaner can be used. Any cleaner residue should be removed with soft cloth dampened with clean water. We recommend that you periodically inspect your unit for wear, and proper functioning.

## Calibration

The microFET3 comes with a calibration certificate, ensuring that the unit was properly calibrated at the time of shipment. To ensure continued accuracy and reliability your microFET3 unit should be recalibrated annually, by a properly authorized service technician.

## microFET3 Transporting/Storage

Hoggan Scientific strongly recommends that you store and transport the microFET3 in the hard sided protective carrying case provided.

## Operating Features



**IMAGE A**

## Power On

Pressing the RESET button activates the microFET3 unit. The unit will power-up in the testing mode that was last used. Refer to Image A above.

## Power Off

The unit will turn itself off automatically after 3 minutes of inactivity. This helps to maximize battery life.

## Reset Button

Besides powering on the unit, the RESET button can be used to clear the displays and re-initialize the unit. This may be necessary occasionally. Refer to Image A above for location of RESET Button.

It is not necessary to press reset after each test. The microFET3 automatically begins recording new data when the force threshold is crossed.

## LCD Windows

### Muscle Testing

#### Peak Force

During muscle testing the Peak Force LCD (right LCD Window) numerically shows the actual force being applied to the transducer pad. At test completion, the maximum force value (peak force) is displayed. Refer to Image D below.

#### Duration/Sec.

The Duration/Sec. LCD window (left LCD Window) shows the elapsed time (in tenths of second) from the time the force threshold was crossed until pressure was released. Monitoring test duration is an important element in maintaining consistency between tests. Also displayed in the Duration/Sec. window is the threshold setting (Low or High). Refer to Image B below.

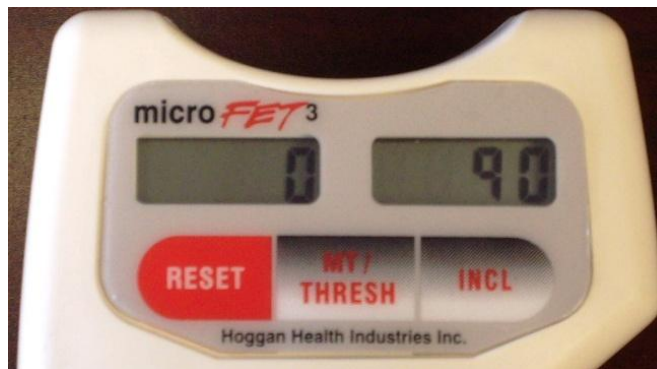


**IMAGE B**

## LCD Windows

### Inclinometer Testing

When the unit is in inclinometer mode for inclinometer testing, numerical readings or data are displayed in both LCD windows during the sequencing of inclinometry testing. Refer to Image C below.



**IMAGE C**

## Muscle Testing/Threshold Button

Pressing the MT/ THRESH button will cause the unit to enter “Muscle Testing” mode. Each successive press of the MT/ THRESH button will alternate the high/low threshold feature

- High: display “H” in the time display and fractional units in the “force” display
- Low: display “L” in the “time” display and fractional units in the “force” display.

High is the most commonly used threshold setting. In the high setting, three pounds of force must be exerted before the microFET3 will begin recording test results. High threshold displays in 0.10 lb. increments during testing. See Image D below to see Threshold setting set to L – Low.



Image D

## Threshold

Threshold refers to the amount of force required before the microFET3 begins recording test data. The threshold level can be set to either High or Low setting, and is displayed in the duration/force window.

### High Threshold

The High Threshold is most commonly used. In the High setting, three pounds of force must be exerted before the microFET3 will begin recording test data. The High threshold allows for easier placement of the unit, and reduces false starts. High threshold displays force in 0.1 lb increments (.44N) during testing. The unit begins recording test data at 3.0 lbs force (12.1N), and records data in 0.1 lb increments up to 150 lbs (.44N increments to 1320N). Pressing Reset does not change the threshold setting

### Low Threshold

The Low threshold setting is designed for more sensitive, lower force readings such as when testing finger and hand muscle weakness. Greater care must be used when positioning the unit while in the Low setting, as the threshold of 0.8 lbs (3.6 N) is easily crossed. The unit begins recording test data at 0.8 lbs (3.6N) and records data in 0.1 lb increments up to 150 lbs (0.8 increments to 1320N) Pressing Reset does not change the threshold setting.



## Inclinometer Button

Pressing the INCL button will put the unit in “inclinometer” mode. Refer to Image C below showing unit in inclinometer mode.



**Image C**

Using a “two button” approach the right display shows the “live” readings until the Inclinometer cycle switch, which is a red button located on the side of the microFET3, is pressed. After the inclinometer cycle switch is pressed the first reading is moved to the left display, and the right display contains the “live” reading. See Image D below for location of the red inclinometer cycle switch.



**Image D**

Pressing the inclinometer cycle switch again “freezes” the data in the right display. Then, press the INCL button. This will subtract the number in the left display from the number in the right display. The final inclinometer reading result or angle is displayed in the left display.

To begin the cycle of a new inclinometer test, press the INCL button again. The unit will zero out both displays to begin the cycle again.

## Force Measurement Settings

To select unit of measure to display force in Pounds, Newtons, or KGF follow these steps:

1. Press and hold the MT/threshold button for five seconds. The display will show units of measure options. “L” = Lbs., “g” = KGF, “n” = Newtons.
2. Press the MT/THRES button to toggle through options. Refer to Image F below where “L” (Lbs.) is selected



**IMAGE F**

3. Press the Reset button to return to test mode.

## Wireless Mode - Power On/Off

To turn on RF or wireless mode for microFET3 for use with software follow these steps:

1. Hold the MT/THRES button down for 5 seconds for the force measurement setting mode.
2. Continue to hold the MT/THRES button down for another 5 seconds to turn on the wireless power.
3. The Peak Force display will show RF (wireless) (left LCD window), and the Duration/Secs (right LCD window) display will show On or Off.
4. Press the MT/THRES to toggle the RF (wireless) power on or off. Toggle On for RF wireless mode to use unit with software. Refer to Image G below.



**IMAGE G**

5. Press the Reset button to return to test mode.
6. When wireless mode or RF is turned on, an indicator dot will be displayed in the left LCD display at the bottom on the left side of the display. See Image H below.



**IMAGE H**

### **Bluetooth / FET Stick**

Included with your microFET3 is a Bluetooth / FET Stick. Refer to Image J below. The FET stick is used in conjunction with software with microFET3. The FET stick is included with software CD disk ordered for the microFET3. Instructions for using the FET stick are included with your software purchase.



**Image J**

### **Battery Check**

The LI-ION battery used for microFET3 will provide 100 hours of operating use in standalone mode, and 9 hours of operating use in wireless mode. Depending on your usage pattern, the life of the battery may vary. To help you identify when the battery will need rechargeable, microFET3 is equipped with "power check" feature to allow you to see remaining battery power.

To conduct power check, follow these three steps:

1. While holding the side red button, press and release the reset button once.
2. "P" for Power will display in the Duration/Secs LCD window, and the level of battery power will display in the Peak Force LCD window. See Image K below.



**IMAGE K**

3. The unit will return to test mode after five seconds.

## **Battery Saver/Sleep Mode**

The microFET3's self activating 'sleep' mode is designed to extend battery life. The microFET3 goes to sleep when the unit has not received any input for three minutes. The unit can be 'awakened' from sleep mode by pressing the Reset button.

NOTE: When using microFET3 RF with FET Stick and software: if the microFET3 has not received any input for 3 minute or crossed the threshold setting, "sleep" mode will activate and signal transmission will stop. Simply press the reset button and the signal will start transmitting again.

## **Testing with MICROFET 3**

### **Manual Muscle Testing**

Muscle testing was designed to identify and objectively document muscle weakness, or impairment, rather than muscle strength. The major advantages of muscle testing using handheld dynamometers compared to the traditional method are the objectivity of the measurements and the consistency of results as measured by both single testers over multiple tests, and across multiple testers.

During manual muscle testing the clinician normally assigns value to the test result (without the microFET3), such as 15, or good fair poor, depending on how much force the clinician estimated that the patient exerted. Problems arise however, in attempting to assign consistent scores based on feel, especially when the patient is retested at later date.

The microFET3 was developed to eliminate the subjective nature of testing by giving clear, accurate, objective, quantified force measurements. The microFET3 increases testing reliability and accuracy. As a result, the microFET3 makes manual muscle a testing more reliable diagnostic practice.

The microFET3 is designed to be used with either the "make" or the "break" form of manual muscle testing.

"Make" testing is performed by the clinician positioning the patient to isolate and contract the muscle, and by carefully placing the device in the proper position and angle to conduct the test. With the "Make" test, the clinician gets into "power position" a stable position that will provide the clinician the maximum ability to resist the force applied by the patient. The clinician instructs the patient to apply force against the device, while the clinician resists. The object of the test is for the patient to exert or "make" the maximum force he is capable of, using only the muscle being tested. "Make" tests typically run for seconds (slow count of 4). Many people find it helpful to start the test by announcing "go" and end the test by stating "relax".

"Break" testing is also performed by carefully positioning the patient and the device. The clinician stabilizes the patient in the isolated position, with one hand, while placing the microFET3 unit in position to exert force against the limb associated with the muscle. The test begins with the clinician gradually applying force and the patient trying to resist. The object of the test is for the clinician to overcome, or "break" the patient's resistance.

Multiple published studies have proven manual muscle testing to provide consistent, reliable results, both across multiple tests by single tester, and across multiple testers. The keys to achieving valid results are proper patient and device positioning, and consistency of the testing methodology used.

Several noted clinicians and researchers have attempted to document muscle testing norms for specific patient populations. For example, see: **Bohannon, Richard W: Reference Values for Extremity Muscle Strength Obtained by Hand Held Dynamometry from Adults aged 20 to 79 Years. Arch Phys Med Rehabil, Vol. 78, January 1997).** The general conclusion from these studies is that norms for healthy adult populations can be determined, within broad ranges, with gender, age, and weight being the strongest predictors of muscle strength. It is important to note, however, that norms are provided with fairly wide standard deviations. Only individuals whose muscle strength falls more than two standard deviations below the norm can conclusively be considered 'impaired'.

However, these conclusions cannot be extended beyond the youngest or oldest ranges of the adult populations tested. For example, research conducted on grade school children determined that developmental differences between individual children were much bigger factor in determining muscle strength than were age or size.

The most relevant norm for Muscle Testing measures is the patient himself; through his/her identification of change from what has been his personal norm, left/right comparisons, and progress tracking over time.

For best results, when using the microFET3, be sure to install the proper attachment for the area of the body being tested: flat round pad for flat, larger surfaces, curved pad for rounded surfaces, and digit pad for fingers and toes. Check to ensure that the unit is properly positioned for maximum surface area contact and direct force application.

The microFET3 is ambidextrous. It can be held in either the left or right hand, or you may switch hands from test to test, depending on stabilization requirements.

For information on positions and manual muscle testing for main muscle groups, refer to the Manual Muscle Testing Positions Wall Chart included with your microFET3. For additional clarification or how to test for additional muscle test positions, refer to manuals such as Daniels and Worthingham.

### **Inclinometer Testing**

An Inclinometer is a device that measures a static angle in relationship to the horizontal or vertical, or in relationship to a determined zero starting point. The MIRCOfET3 Inclinometer is a gauge that uses a sensor to accurately measure to within 1 degrees. When the inclinometer is moved, the sensor will settle to a stable position in 0.1 seconds which means you can click the button to mark the angle as soon as the patient stops moving. This feature makes the measurement process more comfortable for the patient because they do not have to remain in an uncomfortable posture for any significant amount of time. Single inclinometers provide a simple and accurate method of measuring range of motion. One hand holds the inclinometer and the other hand is free to either stabilize or assist the patient through the range of motion.

To ensure you eliminate any unwanted movement, mark your testing positions w/tape or a marker. To test the first position, place the unit on the starting position and set your angle, click (photo 1). Then move the unit to the second position, click (photo 2). Click the side button a third time to get the (PSP) Patient Starting Position value. Write that number on the appropriate recording tablet. One more click will start the process over. While leaving the unit in the second position, click (photo 4). Click the side button a third time to get the (PFP) Patient Finishing Position value. Now subtract the PSP from the PFP and now you have the true ROM.



Photo 1



Photo 2



Photo 3



Photo 4

### Stabilization of Inclinometer

Proper gauge placement and stabilization is critical for accurate measurements. One location that is extremely difficult to locate, especially on obese patients, is the sacral landmark. With a thick adipose layer one may not be able to feel a bony location and the gauge may “rock” on the adipose layer. When this occurs, the pelvis must be stabilized with the free hand over the anterior pelvis for counter pressure while the gauge is pressed firmly into the soft tissue over the sacrum with an attempt to hold the gauge flat as possible against the sacrum. It is important to assure that the inclinometer remains flat against the patient’s body part at all times. If one foot of the inclinometer is not in good contact with the bony landmark, the angle marked will be erroneous and all subsequent calculations will be inaccurate.

### Validity Requirements – Inclinometry Testing

Repeat trial consistency is the main validity criteria for spinal inclinometry. Consistency is based on the cervical, thoracic or lumbar range of motion numbers only. Three consecutive measurements should fall within 5 degrees or 10% (whichever is greater) of the mean (average) of the three measurements in order to meet validity. If the mean is below 50 degrees, then each measurement must fall within 5 degrees of the mean and if the mean is over 50 degrees, then all three measurements must fall within 10% of the mean.

	TRIAL	<u>1</u>	<u>2</u>	<u>3</u>
Example:				
Total ROM at T12.....		110	110	110
Total Hip ROM.....		50	55	60
Total Lumbar ROM.....		60	55	50
Mean Lumbar.....		55 degree		
10%.....		5.5 degree or 6 degrees		
Valid.....		Yes, 50 & 60 are both within 6 degrees of 55.		

If the patient does not meet validity, then instruct the patient that they are failing the validity criteria, which is invalidating the measurements and tell them that they must move further in order to achieve valid results. You may record up to 6 repeat trials and if validity is not met, then invalidate that portion of the evaluation. The test may be performed at a later date.

### **Normative Data- the AMA Guidelines**

Norms for spinal inclinometry were developed and published in the **American Medical Associations Guides to Evaluation of Permanent Impairment**. These norms are very aggressive, i.e., based on a young population and they are not age or sex adjusted. A copy of the AMA Guides can be purchased from the AMA office.

**American Medical Association  
515 North State Street  
Chicago, IL 60610  
1-800-621-8335**

### **Repeat Trial Consistency – Muscle Testing**

The values used for repeat trial consistency, which have been determined from six years testing, is a calculation of the percentage between peak forces of two consecutive exertions. For example:

Consistency		
Trial One:	40.0 lbs.	2.5% - Valid
Trial Two:	39.0	

The criteria used for interpretation of validity is as follows:

Intrinsic Hand Muscles	
VALID	0-15.0 %
EQUIVOCAL	15.1-20.0 %
INVALID	>20.0 %

The criteria used for all other muscles is:

VALID	0-10.0 %
EQUIVOCAL	10.1-15.0 %
INVALID	> 15.0 %



## Recording and Retrieving Test Data

The microFET3 is designed to store and retrieve results for the 30 most recent tests for muscle testing, and 30 most recent test angles for inclinometer testing.

In test mode, results are displayed for the most recent test only. Results for each new test, peak force, and duration, will be displayed as soon as the test is completed, replacing results from the previous test. The same applies for inclinometer tests.

Six test record tablets are included with your MICROFET3. Sheets in the tablets provide space for writing the peak force and the test duration and range of motion data. Additional tablets can be ordered through Hoggan Scientific LLC.

### To retrieve and display saved muscle tests, follow these steps:

1. To put the unit in muscle test data retrieval mode hold down the MT/Threshold button and press and release the Reset button once.

The unit will display the test number and durations in seconds in the Durations/Sec LCD display (left display) and peak force in the peak force LCD display (right display) for the first test or test 1. Refer to Image L below.



**IMAGE L**

In muscle test data retrieval mode, test duration displays: in tenths of seconds for tests of .1 to 9.9 seconds a decimal point appears. In the display in whole seconds for tests of 10 seconds to 99 seconds no decimal point will appear.

2. To scroll through test results, press the MT/Threshold button. The unit will display a new test number representing 2<sup>nd</sup> most recent test, new peak force, and test duration for the 2<sup>nd</sup> test displayed.

Each time you press the MT/Threshold button, the unit will move backward to the previous test, up to total of 30 tests.

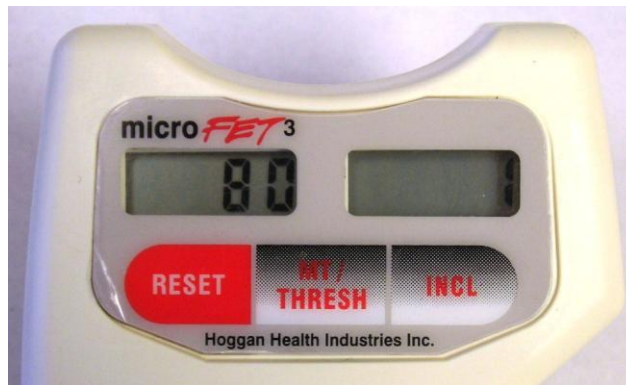
30 tests will be stored as long as the unit has battery power. Turning off the unit, or allowing the unit to go to sleep mode will not affect the stored results. However, the 31<sup>st</sup> test will bump the oldest test. At that point, the oldest test(s) will no longer be retrievable.

3. To return to test mode, press the reset button the unit will display peak force of 0.0, L or H, indicating low or high threshold, and duration/secs of 0.0. You can enter data retrieval mode at any time, by holding down the MT/Threshold button, and then pressing the Reset button. The unit will display the most recent test results.

**To retrieve and display saved inclinometer tests, follow these steps:**

1. To put the unit in inclinometer test data retrieval mode hold down the INCL button and press and release the Reset button once.

The unit will display the angle in the Durations/Sec LCD Window and test number in the peak force LCD display for the first test or test 1. Refer to Image M below.



**IMAGE M**

In inclinometer test data retrieval mode, the angle is displayed in whole angles.

2. To scroll through test results, press the INCL button. The unit will display a new test number representing 2<sup>nd</sup> most recent test, and new angle for the 2<sup>nd</sup> test displayed.

Each time you press the INCL button, the unit will move backward to the previous test, up to total of 30 angle tests saved.

30 tests will be stored as long as the unit has battery power. Turning off the unit, or allowing the unit to go to sleep mode will not affect the stored results. However, the 31st test will bump the oldest test. At that point, the oldest test(s) will no longer be retrievable.

3. To return to test mode, press the reset button the unit will return to the inclinometer test mode. You can enter data retrieval mode at any time, by holding down the INCL button, and then pressing the Reset button. The unit will display the most recent test results.

Included with your microFET3 are (6) test record tablets. Sheets in the tablets provide space for writing the peak force and the test duration and range of motion data. Additional tablets can be ordered through Hoggan Scientific LLC customer service at 800-678-7888.

The microFET3 was designed as standalone gauge for simple measurements. However, with newly incorporated wireless technology, the unit allows you the option to use microFET3, cord free, with Hoggan Scientific clinical testing software to increase your evaluation, documentation and research capability.

## **Low Batteries**

When battery power is getting low, the LCD displays will blink indicating low battery power. Blinking LCD displays indicate that the microFET3's battery power may be low. If LCD displays keeps blinking after pressing Reset, the battery should be recharged.

To avoid testing interruptions due to low battery power, we recommend that you check remaining battery power regularly, and recharge battery when it reach approximately 15% power level. To check battery power, follow the battery check instructions on page 9.

## **Changing Batteries**

MICROFET3 uses (1) 3.7V LI-ION high quality battery. To change the battery, turn the unit over and remove the attachment. Unscrew the 4 Phillips head screws, remove bottom of the unit, replace the battery and re-tighten the screws. If the segment does not light up after installing a new battery, contact Hoggan Customer Service Department at 800-678-7888.

## **Warranty**

### **Product Warranty Information**

The microFET3 is warranted for a period of one year from the time of purchase. If the microFET3 fails to operate because of defect in materials or workmanship at any time within one year of the purchase date, it will be repaired or replaced free of charge by Hoggan Scientific LLC. Extended warranties (additional year or years) are available at an additional nominal fee.

If you wish to purchase and extended warranty after the purchase of your microFET3, there is a 30 grace period to purchase an extended warranty package. Contact Hoggan Scientific for more information.

### **Warranty Registration**

To ensure that your warranty is in force, please complete and mail, or fax your warranty card to Hoggan Scientific LLC at 800-915-3439. Or visit [www.hogganhealth.net](http://www.hogganhealth.net) to register your warranty information online. Please save proof of your original purchase date, such as your sales slip, invoice, credit card voucher, or cancelled check to establish the warranty period.

### **Warranty Repairs**

Before deciding that your microFET3 is inoperable or defective, please review and follow the information in the instruction booklet.

In the unlikely event that your microFET3 becomes inoperable, please contact Hoggan Scientific to arrange to have the equipment repaired or replaced. Hoggan reserves the right to repair or replace the unit with new or refurbished parts or equipment.

Hoggan Scientific's Customer Service Department can be contacted at 800-678-7888, or by email at [contact@hogganhealth.net](mailto:contact@hogganhealth.net).

When Hoggan Scientific Customer Service Representative authorizes return of the product, you will be given Return Merchandise Authorization (RMA) number. Please include the RMA number with your unit.

### **Warranty Exclusions and Limitations**

The microFET3 warranty does not cover damage by negligence, misuse, or accident. Damage or unit failure caused by modifications or repair other than by Hoggan Scientific or its authorized repair agent, or damage to equipment resulting from improper installation or operation is not covered. Any warning or instructional labels or decals must remain on the unit for the warranty to be valid.

This warranty applies to the original purchaser. Some states do not allow the exclusion or limitation of incidental or consequential damages, in which case the exclusions and limitations may not apply. This warranty gives specific legal rights, and may also have other rights, which vary from state to state. To determine the legal rights in your state, consult your local or state consumer affairs office or State Attorney General.

### **Customer Service Repairs**

Customer satisfaction is important to Hoggan Scientific. We are happy to assist with questions, problems or service issues on any Hoggan products you may own. Our business has grown on the basis of excellent product quality and customer satisfaction. Our fulltime customer service representatives are available from 8:30 am to 4:00 pm MST at 800-678-7888 to meet your needs. You can also contact Hoggan Scientific online regarding your customer service issue or calibration by e-mailing us at [contact@hogganhealth.net](mailto:contact@hogganhealth.net).

Any repairs to the microFET2 unit should be completed by qualified service technician.

### **Ordering Replacement Parts**

Hoggan Scientific Products are manufactured to exacting specifications. When replacing worn or damaged parts, use only original 'Hoggan' manufactured parts. The use of substitute or unauthorized parts will void your warranty and may increase the possibility of injury to the user, or cause additional damage to the unit.

When ordering Replacement Parts, please take the unit out of service, and complete the following:

1. Identify the brand, model, and serial number, and note the unit's function.
2. Identify and document the problem and the worn or missing parts.
3. Contact Hoggan Scientific LLC. Replacement parts (attachments) will be shipped directly from Hoggan.

All repair services will be performed at Hoggan Scientific LLC Manufacturing plant.

\*Except for replacing battery, do not attempt to repair the unit on your own. This will void all warranties.

# **HOGGAN**

## **SCIENTIFIC LLC**

3653 West, 1987 South. Bldg 7  
Salt Lake City, Utah 84104  
Ph: 801-572-6500 / Fax: 800-915-3439  
E-mail: [contact@hogganhealth.net](mailto:contact@hogganhealth.net)  
[www.hogganhealth.net](http://www.hogganhealth.net)