

Product Manual

Electrode Impedance Checker Manual



© 2004, Noraxon U.S.A. Inc.

No part of this document may be copied, photographed, reproduced, translated, or reduced to any electronic medium or machine readable form without the prior written consent of Noraxon U.S.A. Inc.

Noraxon is a registered trademark of Noraxon U.S.A. Inc. All rights reserved. All other company and product names contained herein may be trademarks or registered trademarks of their respective companies and are sole property of their respected owners.

**Noraxon U.S.A. Inc.
13430 N. Scottsdale Road, Suite 104
Scottsdale, Arizona 85254
Tel: (480) 443-3413
Fax: (480) 443-4327
E-mail: info@noraxon.com
Support E-mail: support@noraxon.com
Web Site: www.noraxon.com**

Table of Contents

Noraxon Electrode Impedance Checker Checklist	4
Unpack All Items and Check Inventory	4
Noraxon Electrode Impedance Checker Setup	5
Low Battery Indicator	6

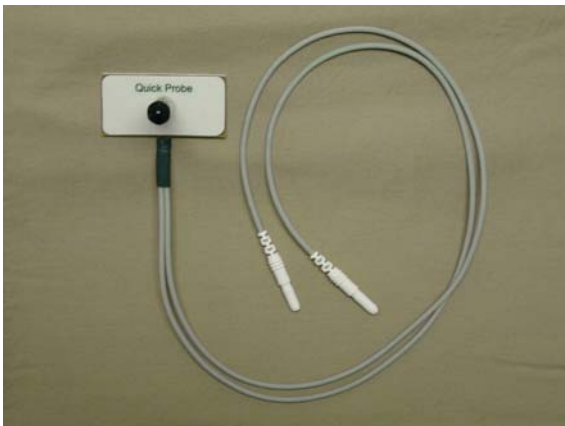
Noraxon Electrode Impedance Checker Checklist

The Noraxon Electrode Impedance Checker allows the user to quickly obtain “Pass-Fail” status of the electrode electrical connection prior to making EMG measurements. The color coded display identifies impedance levels of 2K, 5K, 10K and 50Kohm.

Unpack All Items and Check Inventory

The following items should be included with the Noraxon Electrode Impedance Checker.

1. Electrode Impedance Checker (Part #285)
2. Impedance Checker User Manual (Part #285A) (not shown)
3. Quick Probe Lead Set (Part #285B)
4. Electrode Test Lead Set (Part #CBL13)
(A Set includes 2 leads)
5. 1.5v AAA Battery x 2 (Part #BATT3) (not shown)



3. Quick Probe Lead Set
(Part #285B)

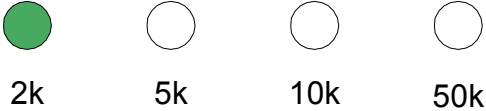
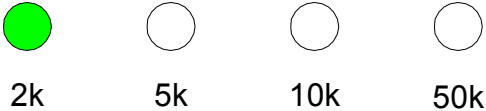
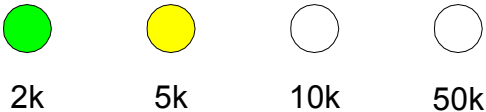




4. Electrode Test Lead Set
(Part #CBL13)

Noraxon Electrode Impedance Checker Setup

The impedance probe allows the user to determine the contact impedance between the skin and the electrode. There are two different cables to measure the impedance depending on the situation: Electrode Test Lead Set (Part #CBL13) and the Quick Probe Lead Set (Part #285B). The Quick Probe Lead Set is easy to use for closely spaced (< 2 cm) Noraxon Dual Electrodes. However, for some electrode types (e.g. Noraxon Singles) or situations (e.g. checking the single reference electrode), the Electrode Test Lead Set needs to be used because the two electrode snaps are widely separated (over 2 cm). To test the reference electrode, one probe wire of the Electrode Test Lead Set should be attached to the reference electrode and the second probe wire attached to any other electrode that was previously tested and found to be acceptable.

The lights on the impedance checker indicate the level of the impedance as shown in the table below. If the impedance is high, then one or both electrodes may need to be removed and the skin prepared thoroughly before applying a new electrode. The normal surface EMG signal bandwidth is between 10-350 Hz. The test stimulus is 50 microamps at 100Hz.

Indicator Lights on Electrode Impedance Checker	Impedance Reading
<p>True Green</p>  <p>2k 5k 10k 50k</p>	<p>Less than 2K ($< 2K \pm 500\text{ohms}$)</p>
<p>Yellow Green</p>  <p>2k 5k 10k 50k</p>	<p>Over 2K and less than 5K ($2K \pm 500\text{ohms} < \text{imp} < 5K \pm 500\text{ohms}$)</p>
 <p>2k 5k 10k 50k</p>	<p>Over 5K and less than 10K ($5K \pm 500\text{ohms} < \text{imp} < 10K \pm 1K\text{ohm}$)</p>
 <p>2k 5k 10k 50k</p>	<p>Over 10K and less than 50K ($10K \pm 1K\text{ohm} < \text{imp} < 50K \pm 1K\text{ohm}$)</p>
 <p>2k 5k 10k 50k</p>	<p>Over 50k ($> 50K \pm 1K\text{ohm}$) Noraxon's "Fail" point</p>



Advisory Note

To perform an impedance measurement, a very small (50 microamp) AC test current is delivered into one electrode, and then passes through the patient/subject before the test current is returned back to the Electrode Impedance Checker through the second electrode. This test current is completely harmless, but in some very sensitive individuals it can be felt as a tingling or burning sensation. This is more likely to be experienced when the measured impedance levels are low (under 10 Kohms).

Therefore, it is advisable to inform the patient/subject that they might experience a slight tingling sensation before making an impedance measurement. Keeping with that line of thought, all impedance measurements should be performed as briefly as possible. The Quick Probe was designed to facilitate making rapid measurements.

Low Battery Indicator

A green light indicates that the power is on and the battery is charged. The Low Battery light will turn red when the battery is low. Pressing the test button for an extended period of time will reduce the life of the battery. It is recommended that the test button only be pressed long enough to take an impedance reading.