CDM-50 & CDM-75
CABLE DISTANCE METERS
Operating & Instruction Manual
INTRODUCTION

The Cable Distance Meter is a unique, handheld instrument, primarily used for the measurement of the height of overhead cables. The Cable Distance Meters measure up to 6 cables.

The CDM-50 model measures to a height of up to 50 feet (15m). The CDM-75 model has an increased range of up to 75 feet (23m). The unit operates by transmitting an ultra-sonic signal towards the wires, and measuring the time it takes to pick up the echo from that signal. It automatically compensates for the fact that the speed of sound varies with temperature by monitoring the ambient temperature using the internal temperature sensor. The display continuously shows the ambient temperature reading. Because the temperature sensor reacts relatively slowly to large temperature changes, it is necessary to wait up to 10 minutes for the temperature reading to stabilize after taking the meter suddenly from a warm to a cold environment before taking a measurement, e.g. taking the unit from inside a warm vehicle to outside. Isolate the CDM from any hot surface such as sun warmed pavement using a notebook or several sheets of paper.
TO MAKE A MEASUREMENT

1. Select the required measurement units by setting the switch at the back of the unit to display in feet and inches (I) or meters (M).

2. Set the Calibrate switch to the CABLE position.

3. Press the ON key to power on the unit.

4. Position unit directly under the cable(s) to be measured.

5. Press and hold the MEASURE key to take a measurement. The distance to the first cable is shown in the Height Measurement location in the display. If there is more than one cable present, the difference in height between each cable is stored in memory.

6. Press the READ CABLES 1-6 key to display each of the cable height differences stored in memory (Stored Measurements). The unit will automatically turn off 3 minutes after the last key has been pressed.

All measurements are displayed in the format feet.inches followed by fractions of an inch.
Hints & Guidelines
Position the unit on the ground, directly underneath the cable to be measured. Align the unit in the direction of the cable, with the cone pointing towards the cable, as shown.

When taking cable measurements, ensure that there are no walls or buildings within a distance of 7 feet (2m) on either side of the meter, as reflections from these will distort the readings. Also ensure there are no trees or other overhanging objects in the vicinity.

When measuring more than one cable, ensure that none of the cables are outside the sonic beam, as shown in the Performance section of this manual. If the cables are not vertically above one another, this could be the case. In this instance, it will be necessary to take a number of separate readings from different positions.

Water and moisture can cause the Cable Distance Meter to malfunction. Therefore, the meter should not be used in rain or snow. If water does get into the cone, leave it upside down in a dry, warm area.

If the display shows ––– .–––, this indicates a “poor target” and normally happens when the cables are moving due to wind, etc. Wait until the wind dies down to get an accurate reading.

CALIBRATE MODE
The Calibrate mode switch allows the user to periodically check the unit to ensure that it is still operating within specification. For cable distance measurement, this switch should be in the CABLE position. When the switch is put to the WALL position, horizontal measurements to large objects, e.g. walls, can be taken.

When the unit is first used, a horizontal reading to an object, e.g. wall, from a fixed position should be taken. The reading should be entered, together with the date, into the table below. Whenever the unit is to be checked for accuracy, a reading should be taken from the same point, noting the result and date in the table. If the reading is outside of specification, the unit should be returned to HD Electric for calibration.
TROUBLESHOOTING
The following is a list of actions to be taken if the unit is not working properly:

SCREEN IS BLANK
Check to make sure the battery is inserted correctly. Open battery door on the bottom rear of the unit. The battery is inserted with the terminals on the inside. The + and - symbols on the battery should match the corresponding + and - symbols on the inside of the battery compartment.

UNIT DOES NOT MEASURE ALL WIRES
Ensure that horizontal distances between wires are within the sonic beam, as shown in the Performance section of this manual.

INCORRECT READINGS
Ensure the Calibrate mode switch is in correct position, i.e. CABLE for cable height measurement, and WALL for horizontal distance to object measurement. Ensure no walls or similar obstructions are within 7 feet (2m) of either side of the unit, as reflections from these can interfere with correct operation.

SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>Model CDM-50</th>
<th>Model CDM-75</th>
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</thead>
<tbody>
<tr>
<td>1 inch (25mm) Cable Diameter</td>
<td>10’ - 50’ (3m – 15m)</td>
<td>10’ - 75’ (3m – 23m)</td>
</tr>
<tr>
<td>0.5 inch (12mm) Cable Diameter</td>
<td>10’ - 50’ (3m – 15m)</td>
<td>10’ - 50’ (3m – 15m)</td>
</tr>
<tr>
<td>0.25 inch (5.5mm) Cable Diameter</td>
<td>10’ - 40’ (3m – 12m)</td>
<td>N/A</td>
</tr>
<tr>
<td>0.125 inch (2.5mm) Cable Diameter</td>
<td>10’ - 33’ (3m – 10m)</td>
<td>N/A</td>
</tr>
<tr>
<td>No. of wires measured</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.5% ± 2 digits</td>
<td></td>
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<tr>
<td>Resolution (less than 33’)</td>
<td>0.25” (5mm)</td>
<td></td>
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<tr>
<td>Resolution (more than 33’)</td>
<td>0.5” (10mm)</td>
<td></td>
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<tr>
<td>Minimum gap between wires</td>
<td>6” (150mm)</td>
<td></td>
</tr>
<tr>
<td>Operating Temp. Range</td>
<td>14° F to 104° F (-10° C to 40° C)</td>
<td></td>
</tr>
<tr>
<td>Battery Life</td>
<td>50,000 measurements (Long Life Alkaline type)</td>
<td></td>
</tr>
<tr>
<td>Measurement units</td>
<td>Imperial (feet/inches) or metric (meters)</td>
<td></td>
</tr>
<tr>
<td>Auto power off delay</td>
<td>3 minutes</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>8.5” x 4” x 3” (205mm x 100mm x 70mm)</td>
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<tr>
<td>Weight</td>
<td>1.1 lb. (0.5kg)</td>
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PERFORMANCE

CDM-50 Measurement versus Cable Diameter

CDM-75 Measurement versus Cable Diameter
TERMS AND CONDITIONS OF SALE

HD Electric Company is herein referred to either as “HDE” or “Seller” and any customer or person or entity purchasing goods or services (hereinafter collectively referred to as “Goods”) is referred to as the “Buyer”. These Terms and Conditions, any price list or schedule, quote, acknowledgement or invoice from HDE relevant to the sale of the Goods and all documents incorporated by specific reference therein, constitute the complete and exclusive agreement between the parties, and supersede any prior negotiations, understandings or agreements, oral or written, including any terms which are inconsistent or in addition to these Terms and Conditions. The Buyer agrees that all prior negotiations and agreements, oral or written, are superseded and void by these Terms and Conditions and that the goods purchased hereunder are exclusively those goods set forth in the applicable sales order or purchase order. Nothing in these Terms and Conditions will be construed to be an acceptance of any such prior negotiations. The acceptance of Buyer’s order by HDE will be deemed unconditional acceptance of these Terms and Conditions and any other terms added by Buyer will be void. These Terms and Conditions are not subject to alteration, modification, or amendment except in writing. The buyer’s acceptance of any goods is subject to and conditioned on the exclusive acceptance of these Terms and Conditions. The Buyer’s acceptance of any goods from HDE will be deemed acceptance of these Terms and Conditions and the Buyer will be deemed to have accepted the terms of these Terms and Conditions and agrees to be bound thereby.

1. PRICES AND TAXES: Unless a fixed price is quoted, the price at which this order is accepted is subject to adjustment at HDE’s price in effect at the time of order. Any current or future tax or governmental charge (or increase in same) affecting Seller’s costs or production, sale or delivery or which Seller is required to pay or collect in connection with the sale, purchase, delivery, storage, processing, use or consumption of Goods (but excluding any tax on Seller’s net income or profit) shall be for Buyer’s account and shall be added to the purchase price.

2. TERMS OF PAYMENT: Terms are stated on HDE’s invoice in U.S. currency. HDE shall have the right, at its sole discretion, to suspend further performance of this or any other contract or order upon Buyer’s failure to make any payment when due, and HDE may, in its discretion, bring any action against Buyer to enforce or recover any amount due under this contract.

3. INDUCTORY PROVISIONS: Unless otherwise specified by HDE, HDE will exercise due diligence in obtaining all necessary permits, approvals, consents, licenses, operating approvals and certificates for the construction and operation of the Goods. If Buyer’s acts and omissions or those of any other person involved in the project result in the failure of HDE to comply with such permits, approvals, consents, licenses, operating approvals and certificates, HDE will have the right to cease work and to demand that Buyer rectify the situation and pay all costs of delay.

4. CANCELLATIONS AND ABANDONMENTS: In the event of any dispute including, but not limited to, breach of contract, breach of warranty, claims based in tort, negligence, product liability, fraud, marketing, state or federal regulations, any claims regarding the enforceability of this LIMITED WARRANTY, and the waiver of class action trials between Buyer and Seller, either may choose to rescind the dispute by binding arbitration, as described below, instead of in court. THIS MEANS IF EITHER BUYER OR SELLER CHOOSE BINDING ARBITRATION, NEITHER PARTY SHALL HAVE THE RIGHT TO LITIGATE SUCH CLAIM IN COURT OR HAVE A JURY TRIAL. DISCOVERY AND APPEAL RIGHTS ARE LIMITED IN BINDING ARBITRATION. Buyer and Seller agree that the proper venue for Arbitration is not chosen by Buyer or Seller of all actions arising in connection herewith shall be in the state of Illinois and the parties agree to submit to such jurisdiction. No action, regardless of form, arising out of transactions relating to the agreement, may be brought by either party more than two (2) years after the cause of action has accrued. The U.N. Convention on Contracts for the International Sales of Goods shall not apply to this agreement.

16. CLASS ACTION WAIVER: BINDING ARBITRATION MUST BE ON AN INDIVIDUAL BASIS. THIS MEANS NEITHER BUYER NOR SELLER MAY JOIN OR CONSOLIDATE CLAIMS IN ARBITRATION BY OR AGAINST OTHERS, OR LITIGATE IN COURT OR ARBITRATE ANY CLAIMS AS A REPRESENTATIVE OR MEMBER OF A CLASS OR IN A PRIVATE ATTORNEY GENERAL CAPACITY. ADMINISTRATION OF ARBITRATION AGREEMENT WILL BE Administered by the American Arbitration Association (“AAA”). The arbitration will be held at a location determined by AAA or such other location as mutually agreed. In addition to the terms stated above, the following will apply to the binding arbitration: (1) the arbitrator, and not any federal, state or local court or the arbitrator or any federal, state or local court, will have exclusive authority to decide all questions relating to the scope, applicability, enforceability or formation of this Agreement including, any claim that all or any part of this Agreement is void or invalid; (2) the arbitrator shall apply Illinois law consistent with the FAA.

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HD Electric products receive final assembly and shipment from HDE’s production facilities without tax at 1430 Executive Drive, Southaven, MS 38672.