FLEX·CABLE

Engineered Solutions

Lunch Box

Micro & Milli Ohm Meter

Product Manual

CONECTIVIDAD INDUSTRIAL Y ARNESES

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Engineered Solutions

In today's world of rapid growth and high technology, where a product can be here today and gone tomorrow; service, quality and technology are the key assets which separate the few from the many. For more than 55 years, Flex-Cable has developed these assets in order to be recognized as a leader in Resistance Welding Cable technology.

The Flex-Cable team has strived to set high standards and then go beyond them. The results? Operating at a world-class level of engineering and manufacturing capacity that allows for:

- Increased quality
- Increased flexibility
- Superior customer service
- Leading innovation
- Decreased cost
- Minimize lead time

This manual covers the specifications and operations of both the Micro Ohm Cable Tester (Part # MOCT-7550) and the Milli Ohm Cable Tester (Part # MOCT-7660).

Descriptions

Micro-Ohm Meter

The Micro Ohm Cable Tester (MOCT7550) measures from 3 to 2000 micro ohms and can be used to measure the resistance of secondary weld circuit components. These include kickless cables, water cooled jumpers, laminated shunts, air cooled jumpers, weld gun castings, weld tips joints, weld transformers, oxidation in joints, connectors, or any component that can increase in resistance. This Meter is a tool that can be used for both preventive maintenance and for troubleshooting the secondary welding circuit.

WARNING: ALL PRIMARY POWER MUST BE TURNED OFF AND DISCONNECTED BEFORE USING THIS METER ON SECONDARY COMPONENTS!

Milli-Ohm Meter

The Milli Ohm Cable Tester (MOCT7600) measures from 0.3 to 200 milli ohms and can be used to measure the resistance of primary (440 volt) weld circuit components. These include the primary supply cable, circuit breakers, crimped lugs, bolted joints or any component that can increase in resistance.

WARNING: ALL PRIMARY POWER MUST BE TURNED OFF AND DISCONNECTED BEFORE USING THIS METER ON PRIMARY COMPONENTS! ADDITIONALLY, ANY CAPACITORS OR POWER STORAGE DEVICES MUST BE DISCONNECTED OR DISCHARGED BEFORE USING THIS METER!

Common

Both meters use a 4-wire Kelvin probe system. Each probe passes test current through the outer points of the probe and the voltage is sensed by the center pin. With this method, errors caused by the resistance of the leads and the contact resistance are eliminated. A stable 2.5 Amp Current source is incorporated into the meter providing high accuracy measurements to be displayed on a large 3 ½ digit LCD display.

An automatic power On/Off is incorporated in the meter to provide optimum battery life. Indicators on the LCD display warn of low battery voltage levels.

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Specifications

Measuring Range	
MOCT7550	3 - 1999
MOCT7600	0.3 - 199
Accuracy	
Relative accuracy	<1% of F.S.
Absolute accuracy	<2% of F.S.
Measuring Current	2.5 Amps
Power Supply	
Measuring Current & Display	1) ea. 12 Volt
Display	
Type	LCD
Digits	3 1/2
Height	0.7” (18mm)
Est. Battery Life	
Current on	1.25 hour
Number of checks (10 sec.)	450
Dimensions	
Length	8 1/4”
Width	7”
Depth	3 3/4”

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Operation

Connect both meter cables to the connectors on the right side of the box. Press one probe to each end of the component being tested. The meter senses the component being tested and turns itself on. If the sample under test is totally open the meter will not turn itself on.

After the meter is turned on the current source circuit is activated to maintain 2.5 amps. When the current is stable at 2.5 amps the "Display Hold" indicator goes off and resistance readings are displayed. If the sample under test has a resistance greater than the capacity of the meter, the "Display Hold" indicator will stay on and no numbers will be displayed.

When a stable reading is displayed the probes can be removed. (Note: Holding the probes tightly against the component being tested will aid in stabilizing the reading). Remove the probes quickly so as not to bounce the probes. The display hole indicator will come on and the display will hold the last reading momentarily.

After the hold period, the meter will automatically turn off and the display will go blank.

NOTE: DO NOT PLACE THE PROBES ON A CIRCUIT THAT HAS VOLTAGE ON IT. THIS COULD CAUSE PERMANENT DAMAGE TO THE INPUT CIRCUITRY.

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Maintenance

Battery - 12 Volt Rechargeable

When the word “BAT” is displayed this indicates that the “12 Volt” battery voltage is running low and will soon need to be recharged.

To recharge the “12Volt” battery, plug the 18 Volt power supply into the battery connector. The LED will come on and stay on until battery is charged, about 6 hours. When the LED light goes off the charging unit goes to a lower voltage to maintain the charge.

Battery - Replacement “C”

When the word “BAT” is displayed this indicates that the battery voltage is running low and will soon need to be replaced.

Replace old batteries with new “C” size batteries using the alignment stickers as a guide.

Using your Meter

The Flex-Cable Micro Ohm Meter may be used to measure the resistance of very high conductivity conductors such as copper cables, laminated shunts and copper buss bars.

Because of its capability of detecting increases in resistance of these items, the meter may be used for trouble-shooting problems with secondary welding circuits. An increase in resistance is one criterion that has been used effectively to eliminate downtime attributed to cables. Use procedures are as follows:

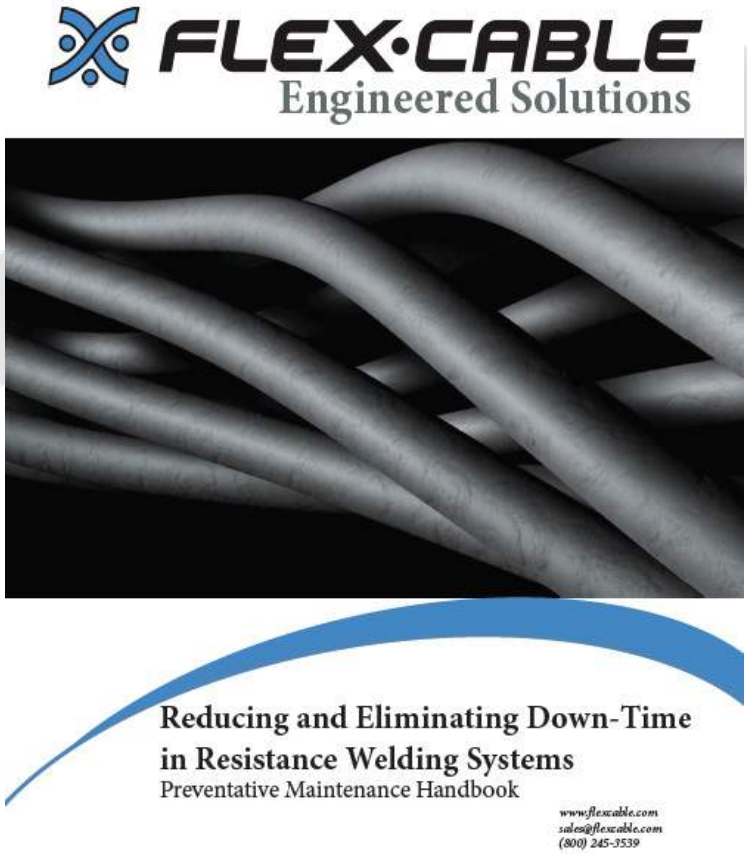
NOTE: FOR MORE INFORMATION ON TROUBLE-SHOOTING AND PREVENTATIVE MAINTENANCE PROGRAMS, PLEASE CONTACT YOUR SALES REPRESENTATIVE

Preventative Maintenance

1) Monitor cable resistance in the secondary weld circuit on a periodic basis.

2) When the resistance has reached a level that would result in a defective weld, the cable should be changed. The resistance level at which you change the cable should be determined on a case by case or plant by plant basis because of the multitude of factors effecting cable life, weld schedules, inspection intervals, etc.

For More information see Reducing & Eliminating Down-Time in Resistance Welding Systems.



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Trouble-Shooting Problems

1. Take a 'base' resistance reading when all components are known to be good i.e. new, clean, well-tightened connections. The complete secondary circuit can be measured at the gun from tip to tip; separate components can be measured without removing them from the secondary circuit. This resistance reading should be recorded and stored for when a problem arises.

2. When a problem arises, take another resistance reading and compare this reading with a 'base' reading. If it is significantly high enough to have caused the problem, proceed to the next step. If it is not high enough, than the problem may not lie within the secondary weld loop.

3. If you get a high resistance reading from the complete loop, you must then take resistance reading for each component that could be causing the problem. The components do not need to be taken out of the circuit and indeed should not be taken out of the circuit as the problem may be a loose bolt and this would not be found if components are removed. Note: More stable readings will be obtained if the area where the probe is placed is cleaned with an abrasive cleansing pad prior to the readings being taken.

4. Once the problem causing component is found, take the appropriate actions to remedy the problem.

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Replacement Parts & Accessories

Description	Part Number
Micro Ohm Meter	MOCT7550
Milli Ohm Meter	MOCT7600
Carrying Strap	250-7878-36
Lead & Probe Assemblies (Pair 4ft)	250-7253-48
Probe Leads (Pair 4ft)	600-8023-48
Probe Leads (Pair 6ft)	600-8023-72
Probe Leads (Custom Length)	Please Call
Probes (Pair)	250-7702-00
Shrink Tube (Pair for Leads)	250-0301-00
Clamping Probe & Lead (Single 6ft)	250-2519-72
Pistol Probes & Leads (Pair 4ft)	250-7478-48
Pistol Probe Leads (Pair 4ft)	250-7783-48
Pistol Probe Leads (Custom Length)	Please Call
Rechargeable 12 Volt Battery/Charger	250-7274-12
Replacement Charger	250-7324-18

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Flex-Cable's Other Product Lines

Flex-Cable doesn't just make products, we solve problems in the manufacturing sector for all customers.

Custom Cables

- Rectangular Connectors
- Military Connectors
- Circular Connectors
- Custom Assemblies
- Private Label Over-Molding
- I/O Fan Out Cables

Motion Control Cables

- Servo Motor Cables
- Servo Motor Extension Cables
- Servo Motor Box Mount Cables
- Servo Motor Purge Cables
- Resistive Brake Module Cables
- Stand-Alone Encoder Cables
- Break-Out Boards
- Transition Cables
- Feedback Cables

Robot Dress

- Components (Clamps, Brackets, etc)
- Retract Dress Systems
- Static Dress Systems
- Universal Dress Systems
- MIG Assemblies
- Cables & Hose Protection
- Custom Umbilicals
- Robot Bypass Box

Bus Bars

- Solid Bus Bar w/ PEM Studs
- Round Cable to Flexible Bus Bar
- Round to Flat to Round Wire
- Flexible Bus Bar
- Round Cable
- Solid to Flexible Bus Bar
- Shielded Bus Bar
- Aluminum Bus Bar
- Jumpers

Furnace Products

- Carbon Arc Cables
- Induction Furnace Cables
- Induction Heating Cables
- Low Impedance Cables
- Air Cooled Cables
- Copper Repair & Rebuild Services

Injection Molding

- Custom Molded Plastic Parts
- Plating Options Available
- Finishing Options Available
- Short Run & Prototype Molds
- Multi-Component Capability

Copper Stamping and Fabrication

- Hybrid/Electric Vehicle Specialty
- Simple Blankings
- Complex Stamping Dies
- High Production Capability
- Non-Ferrous Specialty
- Plasma Cutting

Metal Fabrication

- Sheet Metal Fabrication
- Welding Services
- Milling & Drilling
- Turning
- Custom Machining
- Plating Options Available

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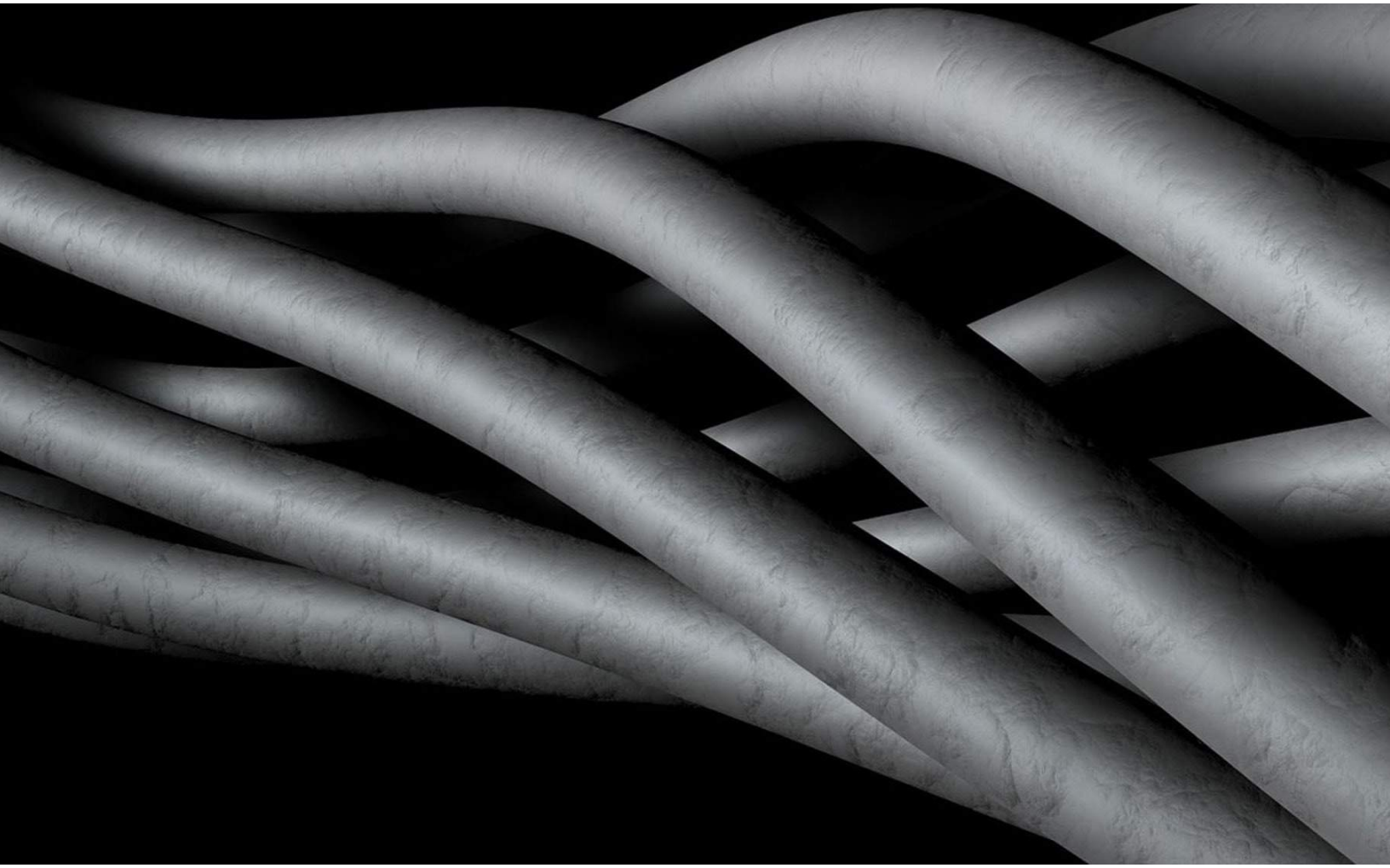

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