

Procedure

- ❑ Follow instructions in **Basics** section
- ❑ Connect 3.5mm test cable to both the Checker and to Operator jack of your monitor.
- ❑ Depress and keep pressed the "Wriststrap" button. Your monitor should indicate good connection.
- ❑ While keeping Pass button, depress and keep pressed Body Voltage "High" button.
- ❑ Your monitor should provide indication of excessive body voltage in each polarity -- positive and negative. If you ordered Checker for WS Aware with a single terminal for both operators (model CTC061-D), please see special addendum. When Body Voltage Low button is depressed, no Body Voltage indication should be present in the monitor.

Limited Warranty

Credence Technologies, Inc. warrants Workstation Monitor Checker to be free from defects in materials and workmanship under normal use and service for a period of one (1) year from date of purchase directly from Credence Technologies, Inc., or from its authorized distributors. This warranty extends only to the original purchaser. This warranty shall not apply to any product or part of it which has been subjected to misuse, neglect, accident or abnormal conditions of operation. Except to the extent precluded by applicable state law, Credence Technologies will have no liability for any consequential, incidental, or special damages.

In the event of failure of a product covered by this warranty, Credence Technologies, Inc. will repair a product returned to authorized distributor or, only if it was purchased directly from Credence Technologies, Inc., to the manufacturer; provided the warrantor's examination discloses to the company's satisfaction that the product was defective and is qualified for to a warranty claim. Credence Technologies may, at its option, replace the product or its components with new or factory-refurbished parts or as whole in lieu of repair. With regard to a product returned within one year of its purchase, said repair or replacement will be made without charge. If the failure has been caused by misuse, neglect, accident or abnormal conditions of operation, repairs will be billed at a nominal cost. Warranty does not cover transportation costs.

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Workstation Monitor Checker

Model CTE701A



User's Guide



Credence Technologies, Inc.

Thank you for purchasing Workstation Monitor Checker. With it, you will always know whether your workstation monitors and ground monitors operate within your specification parameters.

Workstation Monitor Checker model CTE701 is designed to verify proper operation of your dual wriststrap monitors, workstation monitors and ground monitors. Checker simulates proper resistances and signals so that you can see whether the response of your monitors complies with your specification.

Though the Checker has been designed to work mostly with Credence Technologies' monitors, such as WS Aware®, Ground Master®, Iron Man Plus, Ground Man and Ground Man Plus, it is also able to verify the performance of most workstation and ground monitors on the market.

Checker presents certain loads and signals to the monitor that simulate specific parameters of ground connections and wriststraps. Please note that not all monitors have the same features.

What is included

Each workstation monitor Checker includes:

Workstation Monitor Checker model CTA701A	1ea.
9V Alkaline Battery	1ea.
Battery comes already installed in the Checker.	
Ground Cable (banana to alligator clip)	1ea.
Ground Monitor Cable (banana to pin)	1ea.
3.5mm Male-to-Male cable	1ea.
This User's Guide	1ea.

Wriststraps

The Checker verifies proper operation of monitors of dual wriststraps, i.e. the wriststraps that use two connections to an operator.

Setup

The Checker applies resistance of a certain value across the wriststrap terminal input in order to simulate a wriststrap. In critical environments where the wriststrap monitor is used the electrical resistance of an operator is specified to be 10MOhms max. A good quality dual wriststrap has a 1MOhm resistor in each half. It is up to the user whether to account for these resistors or not. In case you account for these resistors, then your limit would be:

$$10\text{MOhms} + 1\text{MOhm} + 1\text{MOhm} = 12\text{MOhms.}$$

Limit is set by dip switch #10.

	Switch Position
Resistance, MOhms	10
12	0
10	1

Checker by default provides selected resistance plus 1MOhm, i.e. for 12MOhms limit, it would provide 13MOhms, for 10MOhms limit it would provide 11MOhms. When the Pass button is pressed, the Checker provides resistance 1MOhm less than the limit, i.e. 11 and 9 MOhms accordingly.

Procedure

- Follow instructions in **Basics** section
- Connect 3.5mm test cable to both the Checker and to Operator jack of your monitor. At this point the monitor should indicate failure.
- Depress the "Wriststrap" button. Your monitor should indicate good connection.

Body Voltage

Quality wriststrap monitors can detect excessive voltage that an operator may develop as a result of movement-caused tribocharge and touching energized objects. To test this ability of the monitor, first set the body voltage threshold by depressing the Body Voltage button and turning the blue potentiometer while measuring the voltage on the tip of the 3.5mm plug vs. ground. Red and green LEDs alternatively blink indicating positive and negative voltage applied automatically. Your wriststrap monitor must react to both polarities of excessive voltage on the operator.

Keep in mind that the voltage applied directly to the terminal of the monitor is 1/2 of the voltage on the operator due to 1M resistors in the wriststrap. Set Body Voltage on the Checker slightly higher than your monitor is calibrated for. For example, if your monitor is calibrated to 2.5V body voltage, depress Wriststrap and Body Voltage High buttons simultaneously and set your Checker to 1.35V which is slightly higher than 1/2 of 2.5V. Your Checker can be set up to 5V.

depress EMI "High" button. In Ground Master you should see green light indicating good ground connection and blinking red light indicating presence of EMI. In WS Aware the ground light should be pulsed yellow light or continuous yellow (older models). Release "High" EMI button and depress "Low" EMI button while keeping "Pass" Metal Ground button depressed. No EMI indication should be present on the monitor. For other monitor use these monitors' User's Guides for information on their proper operation and indication.

Dissipative (Soft) Grounds

This test verifies proper operation of soft (dissipative) ground monitoring such as of mats, dissipative plastics, etc.

Setup

Ground Resistance

Setup switches allow you to set the parameters in accordance with your specification. Dissipative ground resistance setting is done using switches 1...4.

	Switch Position			
Monitor Alarm Threshold	1	2	3	4
1000 MOhms	0	0	0	1
200 MOhms	0	0	1	1
100 MOhms	0	1	1	1
10 MOhms	1	1	1	1

All other switch positions are unused for this purpose.

Pressing "Soft Ground" push-button switch will result in load with slightly lower resistance than the alarm threshold.

Procedure

When measuring dissipative grounds, allow some time -- up to 30 seconds -- for the monitor to react properly -- often a delay is built into indication of failure of soft ground to allow for noise rejection.

- Follow instructions in **Basics** section
- Plug banana end of red cable of the Checker into the Ground Under Test jack of the Checker
- Plug the thin tip of red cable into soft ground terminal of your monitor. Make sure that the contact is good.
- Ground monitor shall indicate failure (typically, red light on the monitor). A momentary "blink" of pass light on the monitor (typically green) when the button is depressed is acceptable.
- Depress "Soft Ground" button on your Checker. Ground monitor shall indicate good ground (typically green light). Allow up to 30 seconds for alarm to trigger for some monitors.
- After release of "Soft Ground" button the ground monitor shall indicate failure. Allow up to 30 seconds for alarm to trigger for some monitors.

Quick Tour of your Checker

Checker uses 9V alkaline battery. Make sure that a fresh battery is installed prior to performing any test. If you are not planning to use your Checker for a long time, please remove the battery from the device.



Basics

For all tests make sure that:

- Monitor under test itself is properly grounded and is operational.
- Disconnect all wires from the monitor under test that go to the monitored grounds. Leave ground connection of the monitor itself connected to a known good ground
- Connect banana end of the black grounding cable of the Checker into the Reference Ground jack of the Checker and the alligator clip end of this cable to a ground terminal of the monitor under test.
- Turn the Checker on.

Metal Ground

This test verifies proper operation of your monitor on metal ground monitoring as well as EMI detection.

Settings

Ground Resistance

Setup switches allow you to set the parameters in accordance to your specification. Metal ground impedance setting is done using dip switches 5...8.

Resistance, Ohms	Switch Position			
	5	6	7	8
1	1	1	1	1
2	0	1	1	1
3	1	0	1	1
4	0	0	1	1
5	1	1	0	1
6	0	1	0	1
7	1	0	0	1
8	0	0	0	1
9	1	1	1	0
10	0	1	1	0
11	1	0	1	0
12	0	0	1	0
13	1	1	0	0
14	0	1	0	0
15	1	0	0	0
16	0	0	0	0

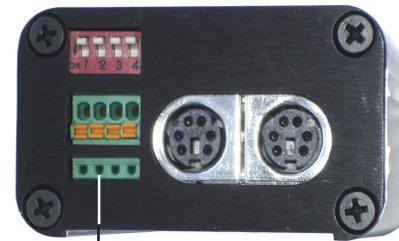
Pressing a "Fail" push-button switch will result in resistance that is 1 Ohm higher than set above, pressing the "Pass" push-button switch will result in resistance that is 1 Ohm less. For example, if your factory is using 10 Ohms as specification for ground impedance, then the monitor set to 10 Ohms should pass at 9 Ohms and fail at 11 Ohms.

EMI

The checker provides high frequency signal to test EMI detection threshold. EMI level is set using dip switch 9. The checker provides two different levels of high frequency signal -- "elevated" and "normal." In position 1 the EMI level is "elevated," in position 0 the level is "normal." Pressing "High" push button switch will result in high signal level within its range, pressing "Low" push button will result in low signal within its range. Note that internal EMI generator drive may be insufficient to drive extremely low load, such as 0 or 1 Ohm.

Procedure -- Metal Grounds

- Follow instructions in **Basics** section
- Plug banana end of red cable of the Checker into the Ground Under Test jack of the Checker
- Plug the thin tip of red cable into the ground terminal of your monitor. Make sure that the contact is good.
- Depress the "Fail" button on the Checker. Ground monitor shall indicate failure (typically, red light on the monitor). A momentary "blink" of pass light on the monitor (typically green) when the button is depressed is acceptable.
- Depress the "Pass" Metal Ground button on the Checker. Ground monitor shall indicate good ground (typically green light on the monitor).
- While keeping the "Pass" Metal Ground button pressed, simultaneously



G1, G2
WS Aware CTC061



Ground Master CTC065-3

Insert test pin into opening for the wire -- do not use screw as contact point

Places of contact for metal grounds test for WS Aware and Ground Master monitors. In other monitors it may vary. In all cases disconnect monitor from monitored tool and bench grounds for the test.