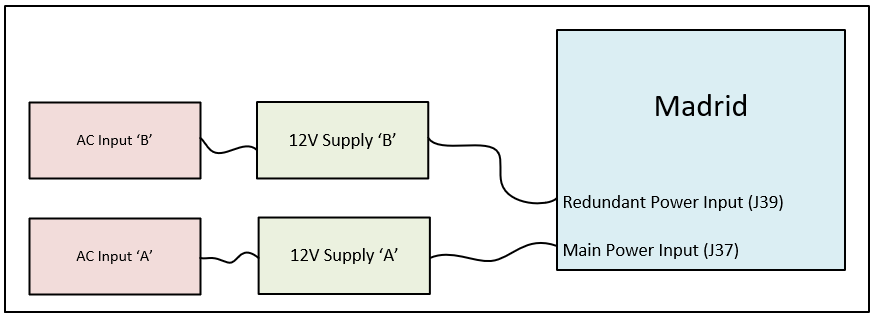
May 5, 2021

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Power Input OR-ing Circuit Test for Madrid (90200-0150), version 0v1:



UUTT

Figure

Referring to Figure 1, the following tests are designed for the instances:

1. The UUT is fully powered off and the external power is applied to both AC-DC converters
   1. Simultaneously, and
   2. Sequentially
2. The UUT is powered on, power is removed then restored while the power supplies are still discharging
   1. Simultaneously, and
   2. Sequentially
3. The UUT is powered by a single AC-DC converter on the Main Power Input (disconnect 12V Supply ‘B’ from the UUT)
   1. Power is applied while the UUT is fully powered off
   2. The UUT is powered on, power is removed then restored while the power supply is still discharging.

Testing with one sample indicates the 12V input power decays to ~500mV 35 seconds after the external AC power is removed, and reaches ~200mV at 65 seconds. For these tests the instrument will be considered fully powered off 120 seconds after external AC power is removed from the AC-DC converter.

In several of the tests the power is requested to be cycled within a range of time, such as,

* + Wait between 3 seconds and 6 seconds then apply power to 12V Supply ‘B’

for a number of loops through the test. The intention is to distribute the delay time through the range. If the test is automated the delay time should be stepped through the time range. If the test is manual the operator is to intentionally vary the delay within the range given.

**Test 1.1 – AC input supplies are powered up simultaneously**:

* Connect 12V Supplies ‘A’ and ‘B’ to the same AC input.
* \*Loop01:
  + Apply AC power – this powers up the two AC-DC converters simultaneously
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response (“0xf8” in the example below).

Note: in manual testing the parameter *i2cbus* has most often come up as ‘1’, but occasionally comes up as ‘0’. It is necessary to enter the appropriate bus when issuing the command. The error message when the incorrect bus is entered is shown highlighted in the screen capture below:

[root@fc26-min ~]#

[root@fc26-min ~]# i2cget -y 1 0x74 0 b

0xf8

[root@fc26-min ~]# i2cget -y 0 0x74 0 b

Error: Read failed

[root@fc26-min ~]# i2cget -y 1 0x74 0 b

0xf8

[root@fc26-min ~]#

* + Shut down linux gracefully using the “poweroff” command.

The command is complete when the string “reboot: Power down” is displayed.

* + Remove AC power
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop01

* Repeat the Loop 100 times

**Test 1.2 – AC input supplies are powered up sequentially**:

* Connect 12V Supplies ‘A’ and ‘B’ to separate AC inputs.
* \*Loop02:
  + Apply AC power to 12V Supply ‘A’
  + In less than 2 second apply power to 12V Supply ‘B’; vary the delay time.
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response.
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop02

* Repeat the Loop 100 times
* \*Loop03:
  + Apply AC power to 12V Supply ‘A’
  + Wait between 2 seconds and 6 seconds then apply power to 12V Supply ‘B’; vary the delay time.
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response.
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop03

* Repeat the Loop 100 times

**Test 2.1 – UUT is powered up, power is removed then restored, simultaneously powered**:

* Connect 12V Supplies ‘A’ and ‘B’ to the same AC input.
* \*Loop04:
  + Apply AC power – this powers up the two AC-DC converters simultaneously
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait between 1 second and 3 seconds for the 12V to partially decay on the UUT, vary the delay time.
  + Apply AC power
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop04

* Repeat the Loop 100 times
* \*Loop05:
  + Apply AC power – this powers up the two AC-DC converters simultaneously
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait between 3 second and 6 seconds for the 12V to partially decay on the UUT, vary the delay time.
  + Apply AC power
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command
  + Remove AC power from both supplies
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop05

* Repeat the Loop 100 times

**Test 2.2 – UUT is powered up, power is removed then restored, sequentially powered**:

* Connect 12V Supplies ‘A’ and ‘B’ to separate AC inputs.
* \*Loop06:
  + Apply AC power to 12V Supply ‘A’ and 12V Supply ‘B’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from 12V Supply ‘A’
  + Wait between 1 second and 3 seconds for the 12V to partially decay, vary the delay time.
  + Apply AC power to 12V Supply ‘A’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop06

* Repeat the Loop 100 times
* \*Loop07:
  + Apply AC power to 12V Supply ‘A’ and 12V Supply ‘B’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from 12V Supply ‘A’
  + Wait between 3 second and 6 seconds for the 12V to partially decay, vary the delay time.
  + Apply AC power to 12V Supply ‘A’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop07

* Repeat the Loop 100 times

**Test 3.1 – Single power input, power is applied while the UUT is fully powered off**:

* Disconnect 12V Supply ‘B’ from the UUT
* Connect 12V Supply ‘A’ to the AC power input
* \*Loop08:
  + Apply AC power to 12V Supply ‘A’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from 12V Supply ‘A’
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop08

* Repeat the Loop 100 times

**Test 3.2 – Single power input, power is removed then restored**:

* Connect 12V Supply ‘A’ to the AC power input
* \*Loop09:
  + Apply AC power to 12V Supply ‘A’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from 12V Supply ‘A’
  + Wait between 1 second and 3 seconds for the 12V to partially decay on the UUT, vary the delay time.
  + Apply AC power to 12V Supply ‘A’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power from both supplies
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop09

* Repeat the Loop 100 times
* \*Loop10:
  + Apply AC power to 12V Supply ‘A’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power
  + Wait between 3 seconds and 6 seconds for the 12V to partially decay on the UUT, vary the delay time.
  + Apply AC power to 12V Supply ‘A’
  + Boot to linux
  + issue command: “i2cget -y *i2cbus* 0x74 0 b” and record the response
  + Shut down linux gracefully using the “poweroff” command.
  + Remove AC power
  + Wait at least 120 seconds for the 12V to decay on the UUT.

\*End Loop10

* Repeat the Loop 100 times