

ATC351 OPERATION AND TESTS

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AC Applied and module starting up to Low Power Mode

Numbered below are the sequence of events that are expected to happen during this time and can be observed by the FPA LED and the click noise made by internal relays.

- 1. Relay in ADM3 module clicks (FPA Touch Panel lights simultaneously if equipped)
- 2. Relay on ACIN clicks (FPA Power LED comes on simultaneously)
- 3. Relay on ACIN clicks (FPA Power LED goes off simultaneously)
- 4. Relay in ADM3 module clicks (FPA Touch Panel LED goes off simultaneously if equipped)
- 5. ADM3 module is now in Low Power or Standby Mode (Waiting for power button to be pressed)

Low Power Mode to Run Mode Event (Module is waiting for Power Button to be pressed)

- 1. Power button is pressed
- 2. Power Supply relay clicks
- 3. Tuner relay clicks
- 4. FPA lights
- 5. FPA light goes out
- 6. Approximately 2 seconds later, FPA LED, ACIN relay, and tuner relay respond simultaneously
- 7. Light Engine quietly spins up and can be observed if ear is placed against instrument cabinet
- 8. Video or OSD can be observed within 2 -5 seconds after light engine spins up

***Note: If the instrument fails to go through the above sequences, than a suspected problem exists and further diagnosis is needed.**

Run Mode going to Low Power Mode (on/off Button is pressed to turn instrument off)

- 1. Power button is pressed to turn instrument off
- 2."TV is turning off" is displayed on screen
- 3. Screen turns blue
- 4. Power LED goes off
- 5. After approximately 25 Sec. all relays click and ADM3 Module is now in Low Power Mode.

ADM3 Module Power Supply Voltage and Control Signal Test Points

- When the ADM3 Module is suspect, AC is applied to instrument, power supplies and Control signals should be checked at the following locations:
- ***Note: For Voltage and Clock measurements that are accessible with ADM3 top cover removed, please see last page at the end of this document.**
- **1. Accessible from outside ADM3 Module**
 - 1. ADM3 is in Low Power mode (Instrument is off) only the following supply will be present:
 - +5V_STBY @ BP101 pin 6 (Level should be +5VDC)
 - 2. ADM3 is in run mode/instrument is turned on, the following power supply voltages and control signals should be present:
 - +6VS @ BP101 pin 4
 - +13VS @ BP101 pin 10 and 8
 - +5V_STBY @ BP101 pin 6
 - Relay_Drive @ BP101 pin 3 level ~2VDC
 - Run_EN @ BP101 pin 2 level ~2.6VDC
 - Power_Fail @BP101 pin 1 level ~4.5VDC

ADM3 Signal switching Low Power to Run Mode

- **At the time an on command is given (either from IR or Power Button), the sequence of signal switching that must take place before all run supplies are active are as follows:**
 - 1. Relay drive signal is sent to the ACIN to switch relay on ACIN to turn on run supplies
 - 2. Run Supplies turn on TVP9002 and FPGA Banks that are run supply powered
 - 3. Control signals for switched supplies are enabled
 - 4. RUN_EN signal is switched high to turn on +12V to light engine
 - 5. All _EN signals are now active and System is fully awake

ADM3 Module to Instrument Interface

Video: The ADM3 uses LVDS driver to drive the light engine. The below signals are routed through BV190.

- 1. The video is sent to the light engine over a four differential pair (8 bit) data bus.

*** Note: The ADM3 Module must detect that a light engine is present before all 8 data lines will allow transmission of valid data. This can be misleading if troubleshooting an interface issue without a light engine connected.**

- 2. The data is clocked using one differential clock pair.
- 3. The light engine detection is done using I2C
- 4. On-going communication is done over UART using GPIO from TVP9002
- An O-scope can be used to verify above items 2 to 4 are active regardless of the LVDS cable being connected.

ADM3 Module to Instrument Interface (cont.)

Audio:

- 1. The ADM3 audio is connected to the instrument at BA901 and BA902.
- 2. Analog audio is sent to IS101 then to IA901 then out connectors BA901 and BA902
- 3. Digital audio as a digital signal is sent to IS101 then routed through TVP9001 for Lip Sync and back to IS101 converted to analog and sent to IA901 and then connectors BA901 and BA902.
- Audio_EN must be present at And gate IR541. Audio_EN is Anded with 18.432Mhz clock to generate Micronas clock. This allows clock to be turned off in low power mode.

Problem Isolation Check List

- When troubleshooting Instrument issues, isolate the problem first to the sub assembly.
- When troubleshooting ADM3 issues it is always best to isolate the problem to a specific circuit.
- Look for visible damage such as charred or burnt components
- Broken cables
- Check the supplies
- Check the clocks
- Check the control Signals
- Break the circuit into sections looking for the point at which the signal is missing
- Become familiar with commonalities among signal paths such as all digital video inputs meet and are processed through one output path. This helps with narrowing down issues to a single circuit.

Measurements accessible with ADM3 top cover removed

If the top cover is removed from the ADM3 module, each of the regulated supplies can be checked at the following locations:

- 1. In low power mode:
 - +5V_STBY@ LP112
 - +3.3V_STBY@ IP109 pin 5
 - +1.2VS @ IP110 pin 2
- 2. In Run Mode/Instrument is turned on, the following power supply voltages should be present
 - +2.5VS @ IP105 pin 2
 - +3.3VS @ LP105
 - +1.8VS @ IP106 pin 2
 - 1.5VS @ LP106
 - 1.0VS TP110 Emitter
 - +5VS @ IP102 pin 2
 - +5VSW @IP103 pin 4
 - +12VSW @ TP113 Collector