
Cronus

Release

Notes

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Cronus Hardware Release Notes

Since the release of Cronus Intercom System, a few enhancements and added features have been made to the original unit. This document covers these changes and how to upgrade existing boards, if needed.

Added Features and Enhancements

- Upgraded/New front and rear card
- Hardware Compatibility
- Firmware Compatibility
- Gain Enhancements

Cronus AIO Card New and Old

NOTE: The new Front Card must have either the new AIO rear card or the new MDR rear card. It does not retrofit with any older rear card.

	Old	New
Front Card	9020-7784-000	9020-7784-001
AIO Rear Card	9020-7787-000	9020-7787-001
MDR Rear Card	9020-7800-000	9020-7800-001

New AIO Front Card (9030-7784-001)

With the introduction of the new Cronus front card, a few problems with the old front card have been fixed.

Problems with the old card (9030-7784-000):

- The CODECs get out of sync causing the audio on all 8 ports to be distorted, which was fixed by adding two wires to the existing board. To Rework the Cronus card, see “Codec Synchronization (Rev B to Rev C)” on page 5.
NOTE: If the card you have is 9030-7784-000 Rev C or higher, it has already been modified and does not need to be upgraded.
- When a party line is assigned, “clicking” is heard in the background due to crosstalk between analog input signals and digital UART signals which are assigned next to each other on the backplane connector.
- The analog input/output gain structure of Cronus is not in line with ADAM and Zeus. To upgrade the gain structure, see “Gain Enhancement (Rev C to Rev D)” on page 6.
NOTE: If the card you have is 9030-7784-000 Rev D or higher, it has already been modified and does not need to be upgraded.

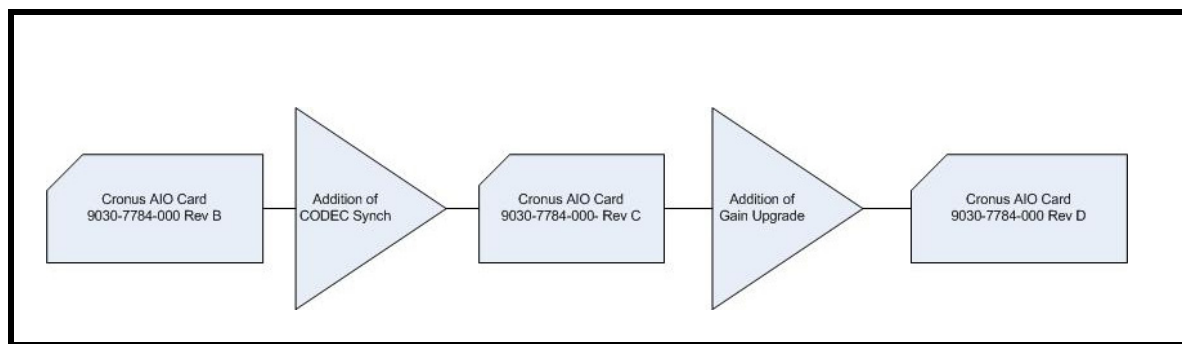


TABLE 1. Revision Progression on the Cronus Front Card 9030-7784-000.

New AIO Front Card (9030-7784-001) Features

- Eliminated the two wire fix used for monitoring CODECs synchronization.
- Fixed the party line noise problem by re-assigning the connector pins to separate the analog audio signals from the digital UART pins.
- Improve the analog input/output gains by changing the value of 16 resistors R13-R20 and R34-R41 from 24k to 220k.
- Assign a ground pin to the AIO FPGA to differentiate between the new board and the old board so the analog gains can be adjusted accordingly.

Comparison between old board -000 and new board -001 gain structure

	MAX Audio Input Level	Input Gain Control Range via AZedit	Output Gain Control Range via AZedit	Max Input Gain	Cross Point Gain	Max Audio Output Level
Cronus Rev-000	+10dBu	-20dB to +20dB	20dB to 12d	Nominal +10dB	-6dB to +6dB	+21dBu
Cronus Rev-001	+20dB	-20dB to +20dB	-20dB to +20dB	Nominal +20dB	-6dB to +6dB	+24dBu
ADAM	+20dB	-20dB to +20dB	-20 to 20dB	Nominal +20dB	-6dB to +6dB	+28dBu
Zeus	+20dB	-20dB to +20dB	-20 to 13dB	Nominal +20dB	-6dB to +6dB	+22dBu

*Compatibility Notes***Hardware Compatibility**

When a new Cronus AIO front card requires the use of a new Cronus AIO rear card (9030-7787-001) or Cronus MDR rear card (9030-7800-001). It will not work with the old board -000 rear card because signals are rerouted to eliminate the Party Line noise.

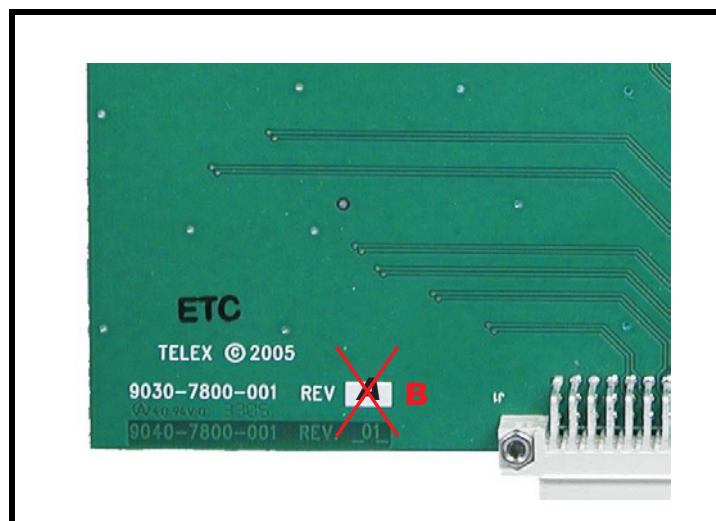
Firmware Compatibility

The new Cronus AIO front card requires firmware release version v1.1.0 or higher. The new firmware is backward compatible, meaning it will work on old AIO cards. BUT, the firmware version v1.0.6 or older will NOT work on the new AIO cards.

WARNING: Both new and old AIO cards can coexist in the same frame providing that the backcard matches the front card. Caution must be made to ensure they are correctly positioned.

Rework Instructions

NOTE: Once you are finished making changes to the boards, the revision must be upped. See example below for the position of the updated revision.



AIO Front Card (9030-7784-000)

Codec Synchronization (Rev B to Rev C)

If you currently have the old Cronus AIO board and need to fix the audio distortion from the CODECs being asynchronous, do the following:

1. Identify test points TP4, TP18, TP19, and TP28 on the front side of the board.
2. Turn the board over to the backside.
3. Using Kynar type jumper wire, connect TP4 to TP18 and TP28 to TP19.
4. Turn the board over to the front side.

5. Using an ohm meter, check for continuity between TP4 and TP18 and continuity between TP28 and TP19.

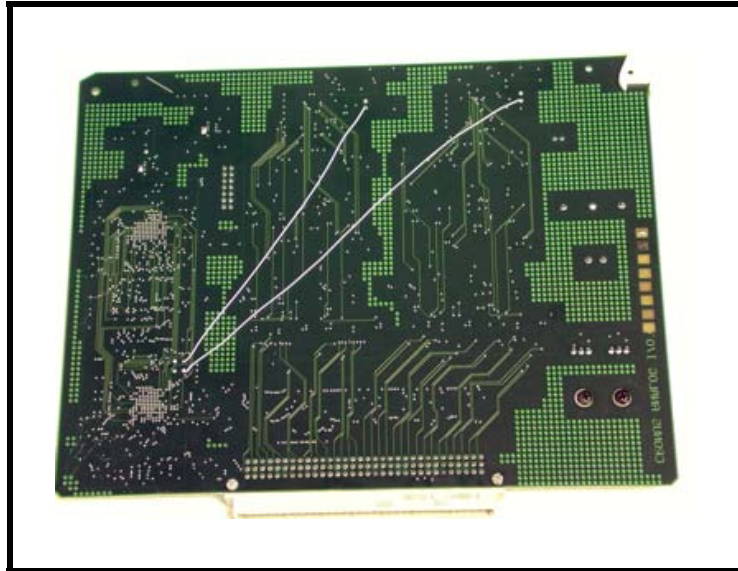


FIGURE 1. Wire Placement on the Cronus Front Card

Gain Enhancement (Rev C to Rev D)

NOTE: You can either send the front card back to factory service for upgrade or replace the current resistors yourself.

To send the board back to the factory for upgrade, send the card via UPS to:

Factory Service
Telex Communications, Inc.
8601 East Cornhusker Hwy
Lincoln, NE 68507 U.S.A.
Attn.: Jim Wilson

NOTE: Include a note stating that the card is needing Gain Structure Upgrades

To Upgrade the Gain Structure yourself, do the following:

1. On the front card, replace the following 16 resistors with a 220k resistor (part number 102506-224)

The resistors that change are the following:

R13, R14, R15, R16, R17, R18, R19, R20, R34, R35, R36, R37, R38, R39, R40, R41

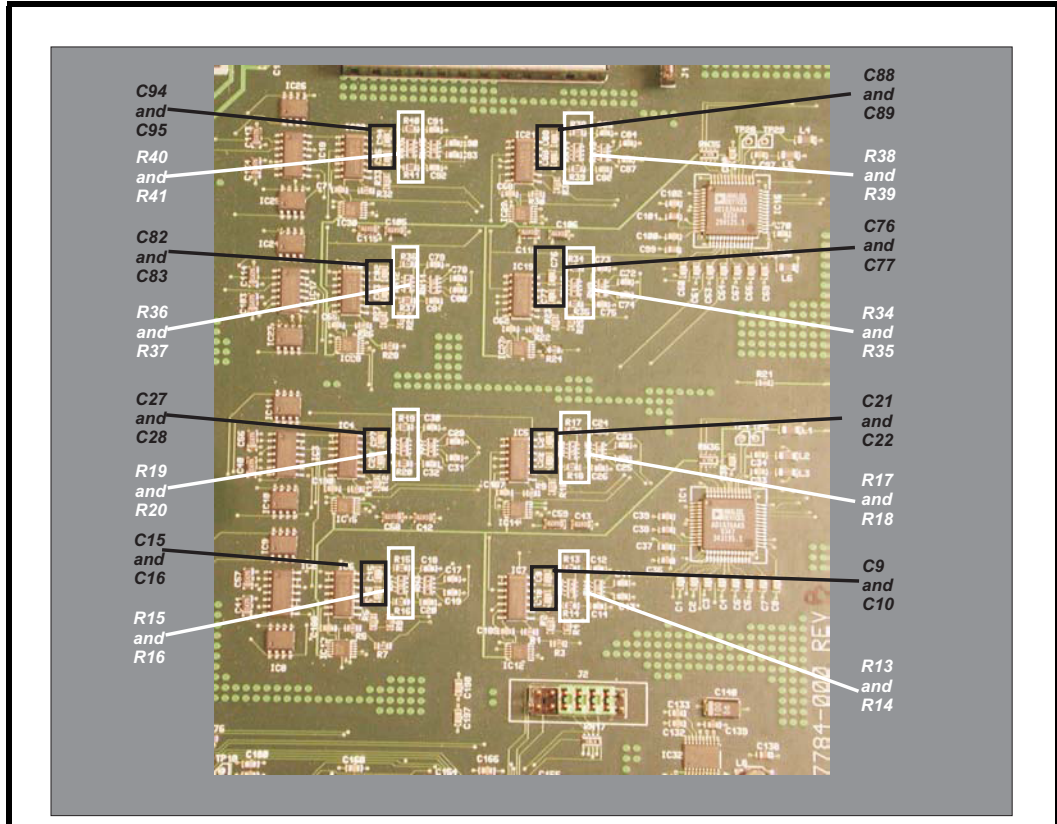


FIGURE 2. Resistors and capacitors that need to change to upgrade the gain amount.

2. On the front card, ground TP7 to connector J3 pin C1 so it will be recognized as the new Rev D card. See figure 3.

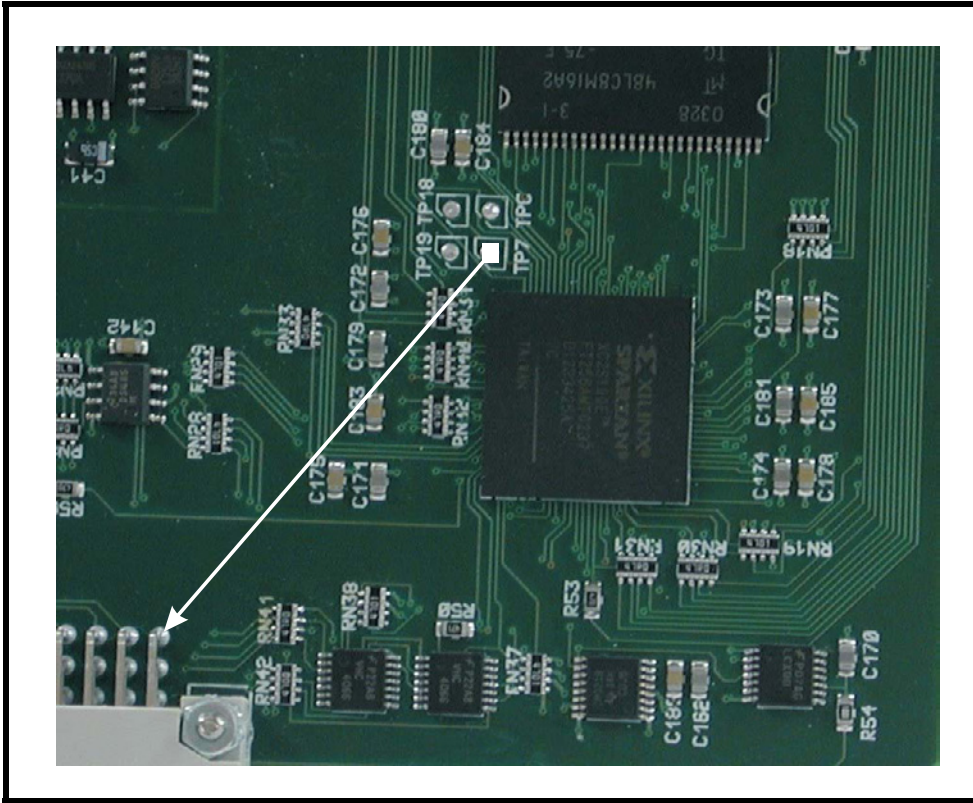


FIGURE 3. TP7 Ground to J3 C1 connector placement

3. On the front card, replace the following 16 capacitors with 12pF capacitor (part number 723411-14). See figure 2.

The capacitors that change are the following:

C9, C10, C15, C16, C21, C22, C27, C28, C76, C77, C82, C83, C88, C89, C94, C95.

AIO Front Card (9030-7784-001)

Frequency Response Enhancement (Rev B to Rev C)

It was noticed that the frequency response starts dropping at 10KHz instead of 20KHz as specified in the User Manual.

To fix the Frequency Response problem, an EC #13-000341 was issued to replace 16 capacitors from 100pF to 12pF (part number 723411-14)

The 16 affected parts are C9, C10, C15, C16, C21, C22, C27, C28, C76, C77, C82, C83, C88, C89, C94 and C95.

The modified AIO front card should have the reference markup changed from 9030-7787-001 Rev B to Rev C. See figure 4.

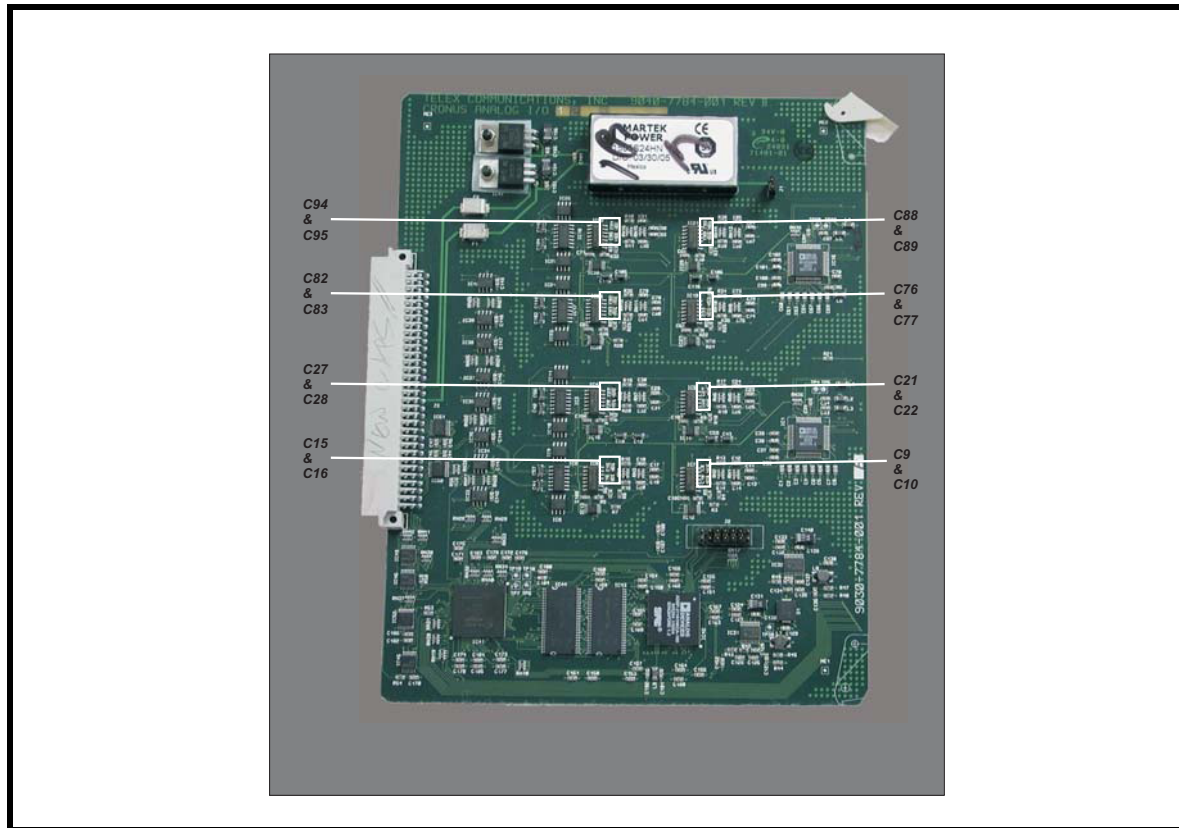


FIGURE 4. New AIO board capacitor placement

AIO Backcard (9030-7787-000, 001) and MDR Backcard (9030-7800-001)

DC Bias Isolation Enhancement (7787 Rev B to Rev C and 7800 Rev A to Rev B)

After changing the design to have an option for analog output gain up to +20dB, the AIO card (9030-7784-001) has exhibited DC bias voltage on the audio output differential pairs of +/- 1.8V.

To fix the DC Bias problem, two ECs were issued to replace the ferrite beads on the audio outputs of the AIO rear cards with DC blocking caps (4.7 uF/16V), part number 102877-070.

EC 46-000351 changes the RJ12 AIO rear card from 9030-7787-001 Rev B to Rev C (See reference A below).

EC 46-000361 changes the MDR Rear Card from 9030-7800-001 Rev A to Rev B (See reference B below).

The 16 affected parts are L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48.

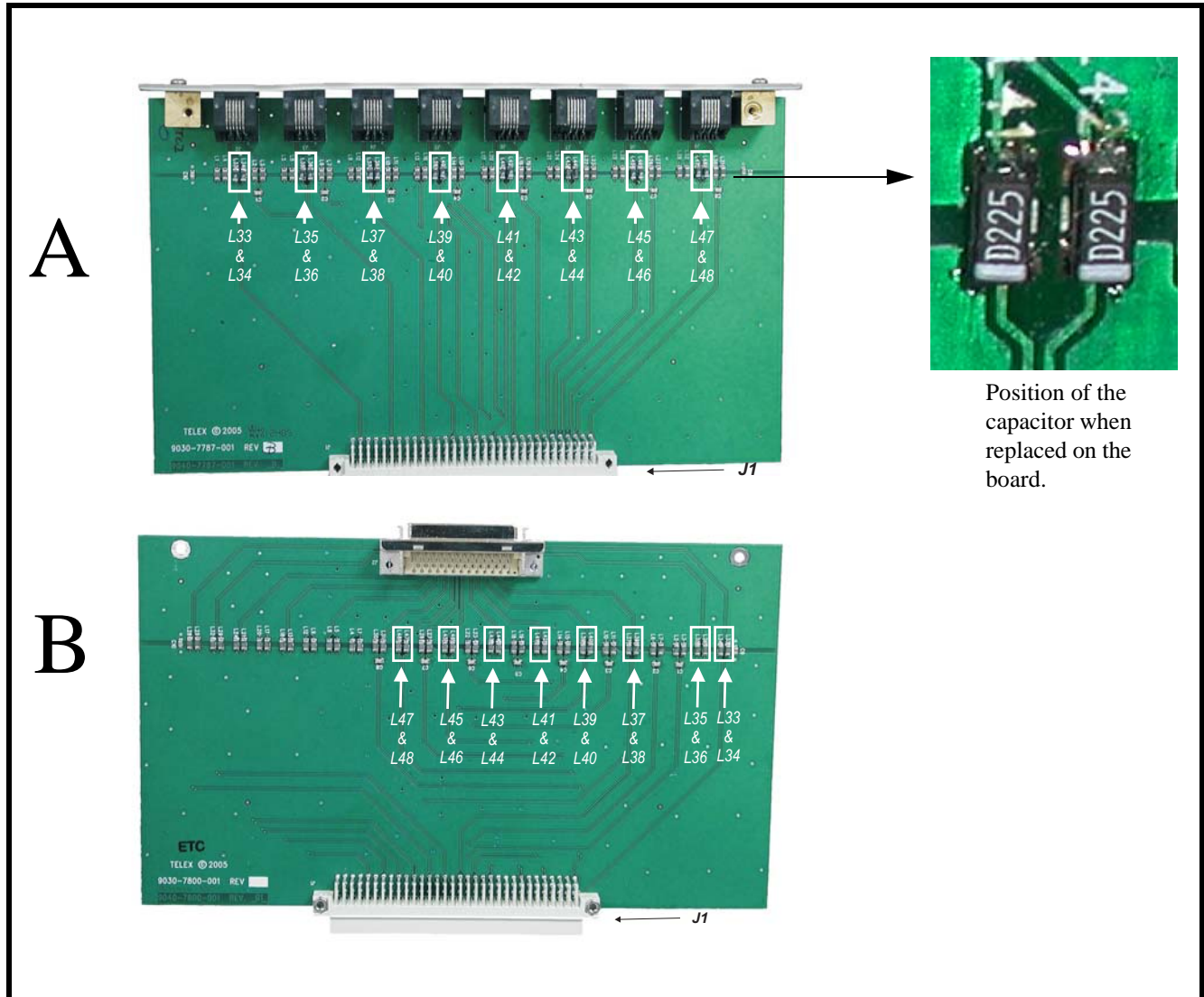


FIGURE 5. Capacitors on the RJ 12 (A) rear card and the MDR (B) rear card.

IMPORTANT: The positive end of the capacitor should point toward J1 connector (see inset of figure above).

Cronus and RVON-I/O

When the RVON-I/O is connected to a Master Controller Backcard in a Cronus Chassis, the RVON-I/O GPO will not drive the Cronus GPI.

NOTE: These instructions also appear in the RVON-I/O release notes. Please see the RVON-I/O Release for complete RVON-I/O board updates for rev escalation from Rev A to Rev B.

The RVON-I/O's voltage drop across the GPO Output resistor is too large for the Cronus photo coupler GPI. The Cronus series resistor to the photo-coupler is also too large. The voltage drops across both resistors prohibit operation.

To fix this issue, change the RVON-I/O GPO Output from 22.1K to 6.19K on the RVON-I/O card and replace four resistors (R11 through R14) from 3 K to 470 Ohms.

NOTE: The Cronus Master Controller backcard will go from **9030-7788-001 Rev A** to **9030-7788-001 Rev B**.

1. On the RVON-I/O card remove **8 resistors (R24 through R431)** and replace with **6.19 K resistors (part number 102515-276)**. See Figure 1 for resistor placement.

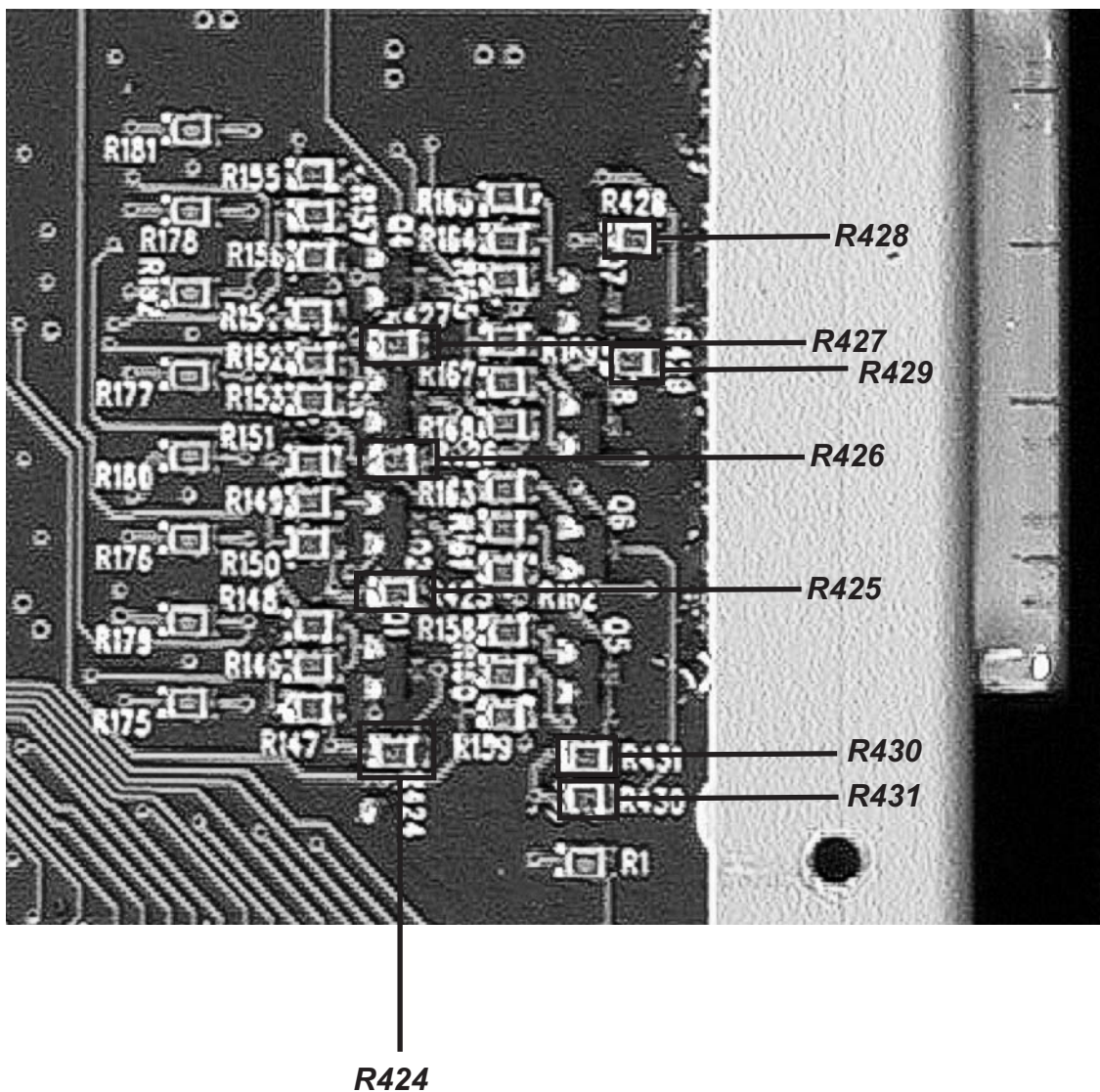


FIGURE 6. Resistor Changes on RVON-I/O (9030-7772-000)

2. On the Cronus MC Back card, remove the **3K resistors (R11 through R14)**.
3. Replace the resistors with 470 Ohm resistors (part number 102513-471).

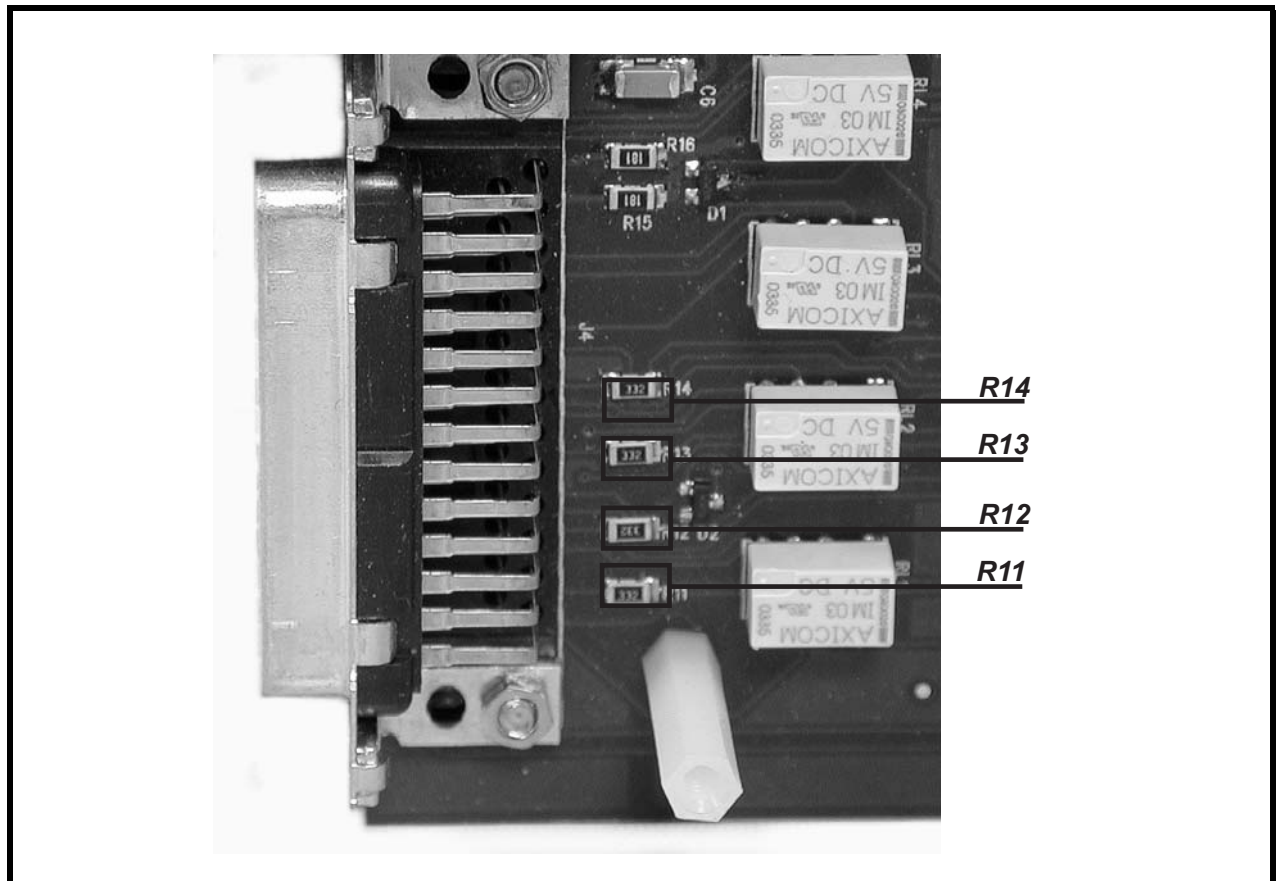


FIGURE 7. Cronus board resistor placement (9030-7788-001)

