



Technical Note TN-593

T700 Duplex Radios: Replacing 32V inverter circuit with NMA1215S device

15 October 1999

For Internal Use Only: ***This Technical Note must not be distributed beyond Tait Customer Service Organisations without prior approval from Radio Systems Division Customer Support.***

Introduction

If you have any questions about this TN or the procedures it describes, please contact your nearest Tait Dealer or Customer Service Organisation. If necessary, you can get additional technical help from Customer Support, Radio Systems Division, Tait Electronics Ltd, Christchurch, New Zealand.

Equipment Affected

All duplex T700 Radios are affected by this Technical Note.

Reason for Modification

The inverter circuit on the T700 control PCB can fail, especially in hot environments, due to the #631 coil overheating. This is because nearly twice the current is required from the 32V line for the additional Rx synthesiser PCB.

Solution to Prevent Overheating

The initial solution is to remove all unnecessary inverter components from the control PCB and fit the self-contained NMA1215S in its place. The NMA1215S is a 1W 12V to +/- DC-DC inverter.

Part Required

1 x NMA1215S device as available. This can be ordered from RS or Farnell catalogs.

Fitting Instructions

1. Remove the following top side components

| | | | | |
|-------------|-----------|--------------|--------------|---------------|
| C216 (10uF) | C219 (1u) | C221 (3u3) | C233 (10uF) | D205 (IN4531) |
| L1 (100uH) | L4 (#631) | Q205 (BC557) | Q206 (BC337) | |

Note: Do not remove C217 (10 uF)

2. Remove the following bottom side SMD components

| | | | |
|-------------------|-------------|-------------|------------|
| C218 (120pF) | C220 (4N7) | R86 (10R) | R253 (33K) |
| R254 (5K6 or 8K2) | R255 (100K) | R254 (100E) | |

Note: Do not remove C217 (100 nF) or C223 (100 nF)

3. Cut the following pins on NMA1215S as appropriate

- remove Pin 5 completely (0V)
- shorten Pin 4 to 2.5 mm
- shorten Pin 6 to 2.5 mm

4. Fit NMA1215S as appropriate, by soldering the pins in the appropriate places as shown in the pinout diagram supplied with the NMA1215S, and as shown in the table below.

| Pin | Function | Solder to |
|-----|----------|------------------------------|
| 1 | 12V I/P | Former L4/Pin 3 pad |
| 2 | GND | Former L4 can/GND pad |
| 4 | -15V | C222 negative pad (GND) |
| 5 | 0V | not connected |
| 6 | +15V | C222 positive pad (+32V O/P) |

5. Glue the pack to the PCB.
6. Solder the red hookup wire from former Q206/Collector pad to P6/Pin 3 (13.8 vsw).
7. Check the output voltage is 32-33V DC after switch on at SK2/Pin 3.

Area to be modified

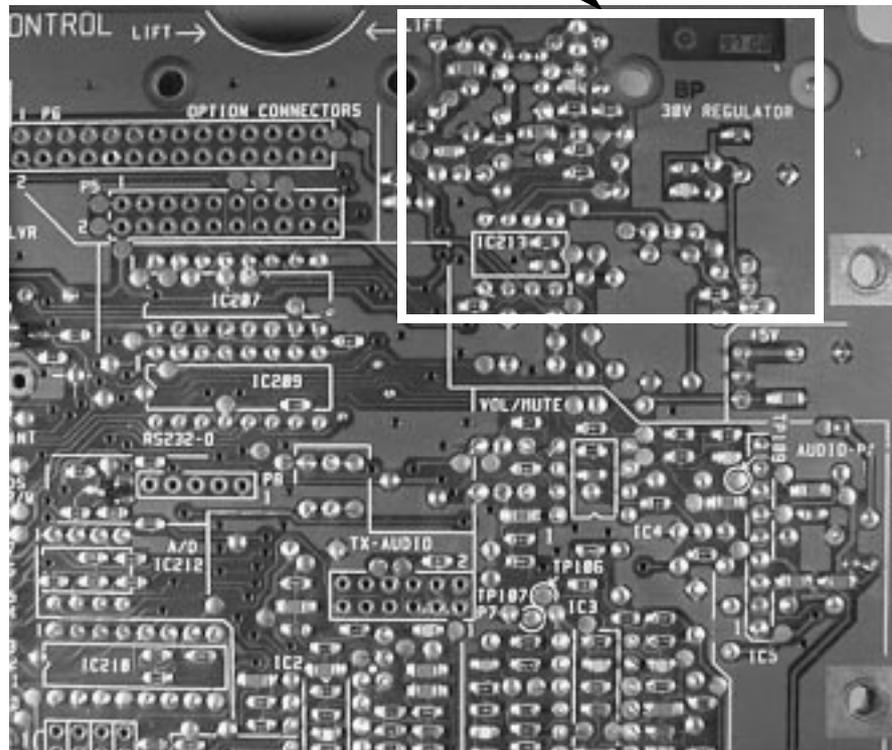


Figure 1 PCB Bottom Side Before Modification

Area after modification

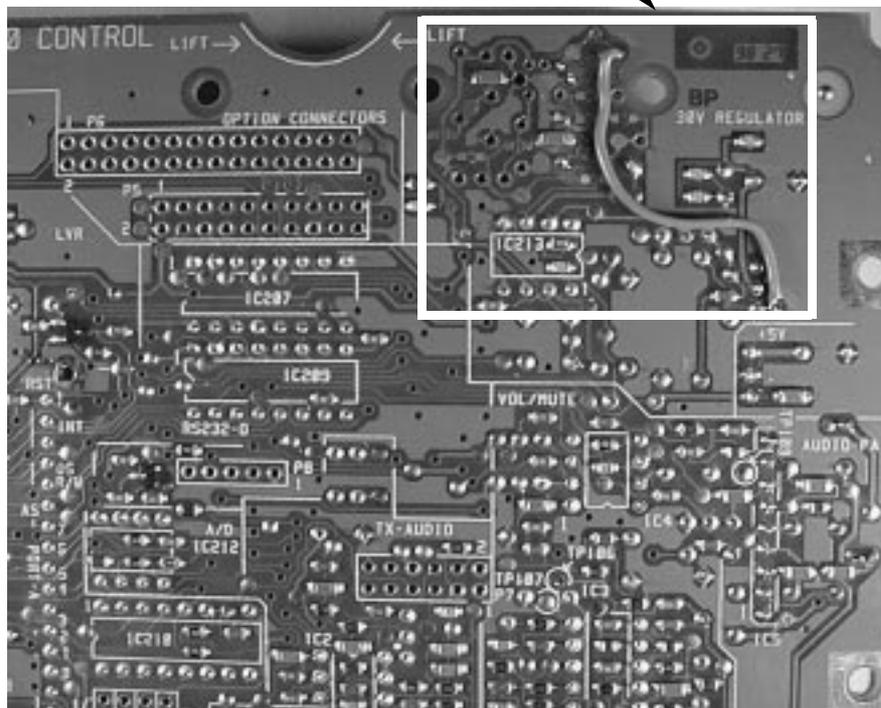


Figure 2 PCB Bottom Side After Modification

Area to be modified

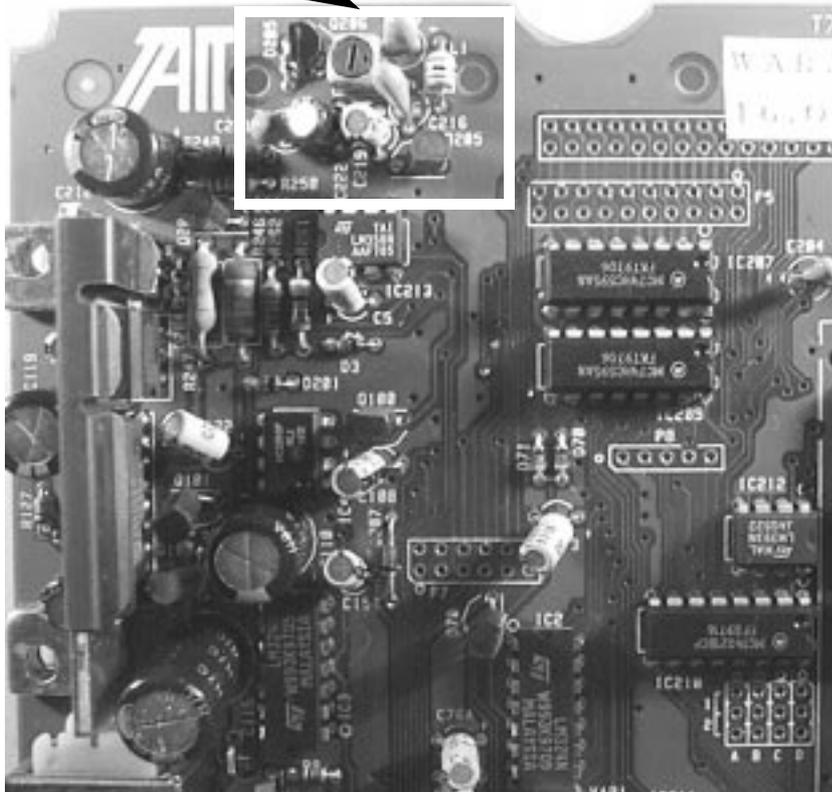


Figure 3 PCB Top Side Before Modification

Area after modification

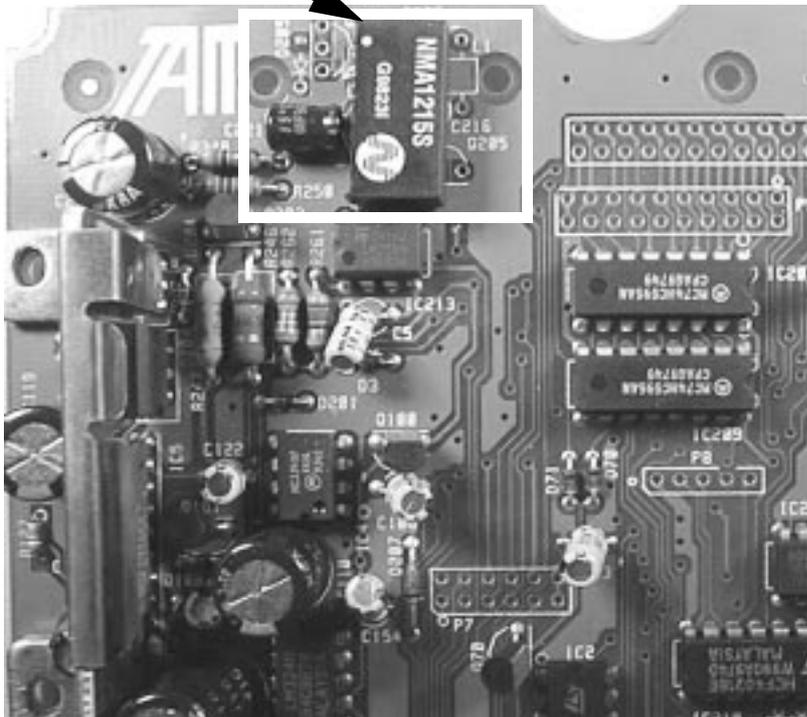


Figure 4 PCB Top Side After Modification

Issuing Authority

This TN was issued by: John Crossland
 RSD Documentation Manager

Publication History

| Publication Date | Author |
|------------------|----------|
| 15 October 1999 | K Wilson |