Using T830 Series I Equipment In A T800 Series II Rack Frame

2nd June 2000

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

Applicability

This Technical Note (TN) applies to the following T830 Series I equipment:

- T835 receivers
- T836 transmitters
- T837 exciters
- T838/9 power amplifiers with RF power modules.

Introduction

This TN explains how to convert T830 Series I modules for use in a T800 Series II rack frame. You will need a front panel conversion kit for each module to be changed. Refer to the "Parts Required" section for details of the kits available. You can order these kits from your nearest Tait Dealer or Customer Service Organisation. The instructions in this TN assume the person making the changes to the equipment has good technical knowledge.

This TN replaces TI-RID-457 and we have taken this opportunity to reformat the document into our latest layout. This has resulted in some minor changes to the pagination, text and illustrations. However, to avoid confusion, we have decided to mark only ***significant*** changes to the content and technical procedures with our usual vertical lines in the outer margin of the page.

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, Tait Electronics Ltd, Christchurch, New Zealand.

Note: For information on converting T800 Series II modules for use in a T800 Series I rack frame, refer to the appropriate T800 Series II service manual.

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Parts Required

Choose the Series I to Series II front panel conversion kit(s) you need from the list of available kits in the following table.

Conversion Kit	T800 Module
T800-70-0000	receiver
T800-71-0000	transmitter
T800-72-0000	exciter with rear RF output
T800-73-0000	exciter with front RF output
T800-74-0000	50W PA with rear RF input
T800-75-0000	50W PA with front RF input
T800-76-0000	100W PA with rear RF input
T800-77-0000	100W PA with front RF input

T838/839 Only

1 x 330nH SMD inductor (IPN 056-10330-02)

Tools Required

Tool	Size	
Allen head screwdriver	2mm AF	
flat blade screwdriver	3mm AF	
Pozidriv screwdrivers	No. 1 for M3 screws	No. 2 for M4 screws
Torx screwdrivers	T10 for M3 screws	T20 for M4 screws
spanners	1/4″ AF for D-range locating pins	
	5.5mm AF for M3 nuts[a]	
	6mm AF for SMC connector	
	7mm AF for M4 nuts	
solder		
soldering iron		

a. If you do not have a 5.5mm spanner, you can use long-nosed pliers to carefully grip the M3 nuts on the D-range securing screws and locating pins.

Method

T835, T836 & T837

You must make a number of modifications to convert a Series I T835, T836 or T837 for operation in a Series II rack frame. These changes can be split into two groups, mechanical and electrical, as described below.

Mechanical	These changes involve: • putting on a new front panel because of the differences in height and width between a Series I and Series II panel; • removing the D-range 1[a] locating pins, as the Series II has self-aligning guides which do not accommodate locating pins.
Electrical	These changes involve making sure there is pin compatibility for D-range 1 pin 7 between the Series I module and the Series II rack frame. In Series I pin 7 is allocated to audio 1 for the T836/837, and audio 2 for the T835, but in Series II pin 7 is the serial programming port.

a. D-range 1 is the main D-range connector soldered directly to the main PCB.

The procedure assumes you have already purchased a Series I to Series II front panel conversion kit. If not, you should purchase one from your nearest Tait Dealer or Customer Service Organisation before beginning the procedure.

Step	Action
1.	Remove the Series I front panel from the module: • remove the volume knob (T835 only); • remove the four screws using an Allen head screwdriver; • push the LEDs from the front of the panel to remove them from their grommets.
2.	Remove both covers from the module.
3.	Remove the locating pins (long pins attached to either side of D-range 1) using either a spanner or a pair of pliers. ***Note:*** These pins may be screwed directly into the chassis or secured by nuts inside the chassis.
4.	Replace the locating pins with M3x12 screws, spring washers and M3 nuts. ***Note:*** If you have a chassis with threaded holes, you will need to use only the M3x12 screws and spring washers.

Step	Action
5.	Disconnect pin 7 of D-range 1 so that audio line 1 (T836/837) or audio line 2 (T835) does not interfere with the programming line on the Series II rack frame: • locate D-range 1 pin 7 on the bottom side of the main PCB (the side furthest from the handle) - check the D-range connector for pin numbering; • desolder pin 7 and lift it away from the PCB; • to ensure that pin 7 will no longer make contact with the PCB, place a silicone sleeve over the pin or cut the pin off completely; • ***in the T836/837 only,*** short the pads for pins 6 and 7 (audio lines 2 and 1) together on the PCB with a solder bridge. ***Note:*** If you still require the audio previously available on pin 7, you can access it by hard-wiring it to a second D-range.
6.	Replace both covers.
7.	Fit all parts of the Series II front panel, following Step 1 in reverse order. ***Note:*** If you have difficulty refitting the LEDs, try pushing the body of the LED back into the grommet with a thin screwdriver or spike. Be very careful while doing this as the legs of the LED are very easy to break.

T838/839

Note: This procedure applies to the latest design T838/839 PAs which use RF power modules and are identified by the Series II style product code T83X-X0-0300. We do not recommend converting the earlier model T838 with product code T838-10 for use in Series II systems.

You must make a number of modifications to convert a Series I compatible T838/839 PA for operation in a Series II rack frame. These changes can be split into two groups, mechanical and electrical, as described below.

Mechanical	These changes involve putting on a new front panel because of the differences in height and width between a Series I and Series II panel.
Electrical	These changes involve: • inserting and removing components inside the module to enable cyclic keying; • converting from front RF input to rear RF input.

The procedure assumes you have already purchased a Series I to Series II front panel conversion kit. If not, you should purchase one from your nearest Tait Dealer or Customer Service Organisation before beginning the procedure.

The conversion procedure starts on the following page.

Step	Action
1.	Remove the Series I front panel from the PA as follows: • remove the four screws using an Allen head screwdriver; • push the LEDs from the front of the panel to remove them from their grommets.
2.	Remove the side cover.
3.	Follow the step for whichever module you are going to modify: • T838 - go to Step 4; • T839 - go to Step 5. These modifications will enable the cyclic keying.
4.	**T838** Place *L201 (330nH SMD inductor), as shown in Figure 1. ***Caution:*** **Do not use excessive heat to place the inductor or it will melt.** Remove *R120 (0Ω SMD resistor), as shown in Figure 1. Go to Step 6.
5.	**T839** Place *L211 (330nH SMD inductor), as shown in Figure 1. ***Caution:*** **Do not use excessive heat to place the inductor or it will melt.** Remove *R120 (0Ω SMD resistor), as shown in Figure 1. Continue with Step 6.

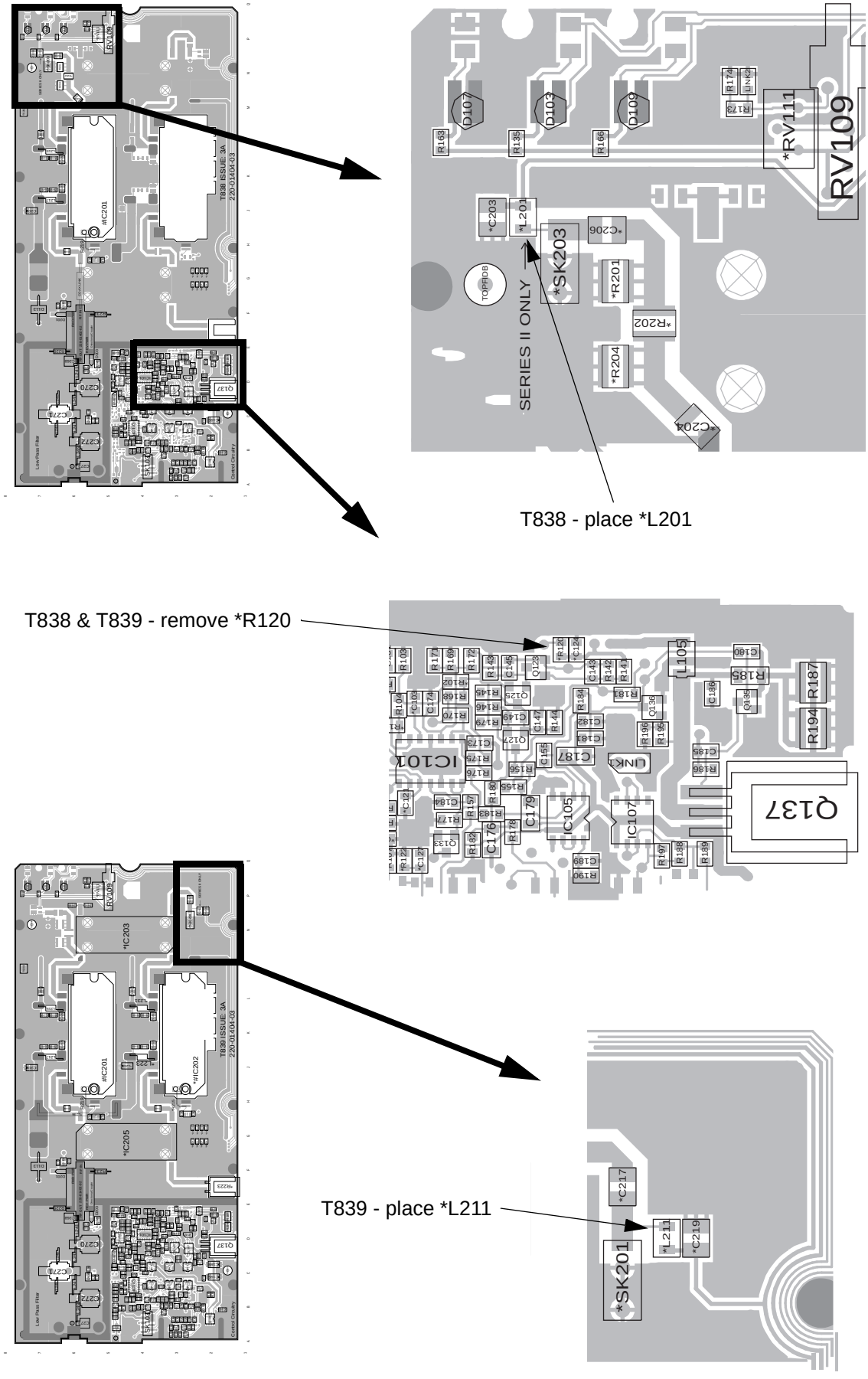
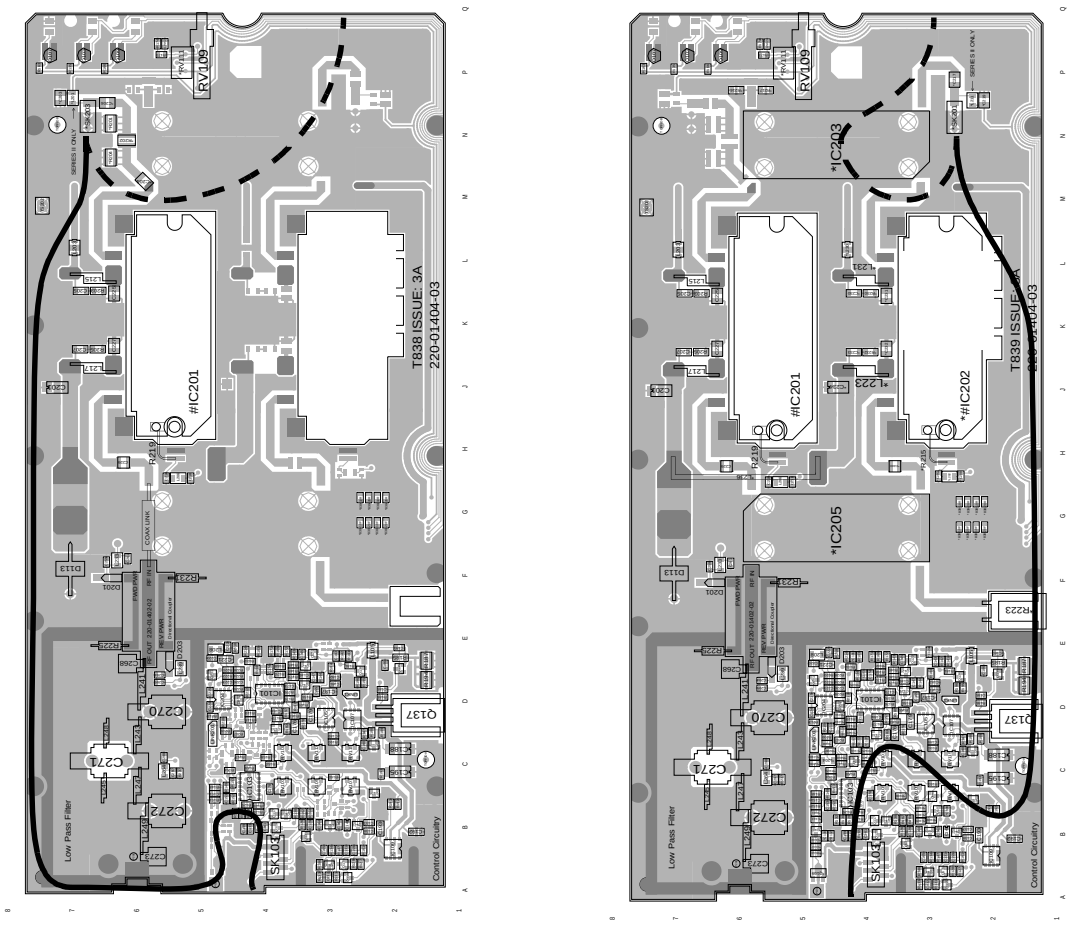


Figure 1 T838/839 Component Changes

Step	Action
6.	**Converting from front panel RF input to rear panel RF input.** Remove the front panel SMC connector and coax. Fit the rear panel BNC connector: • unscrew and remove the blanking plate covering the hole in the rear of the chassis; • carefully feed the coax through this hole and screw the BNC connector in place; • route the coax from the BNC connector around the PCB and connect it to *SK203 (T838) or *SK201 (T839) as shown in Figure 2. ***Note:*** The coax must go down the side of the PCB and ***not*** across it. ***Caution:*** **Do not bend the coax too tightly because you will put too much stress on it.**
7.	Refit the side cover.
8.	Fit all parts of the Series II front panel, following Step 1 in reverse order. ***Note:*** If you have difficulty refitting the LEDs, try pushing the body of the LED back into the grommet with a thin screw-driver or spike. Be very careful while doing this as the legs of the LED are very easy to break.



T838 **T839**

Rear RF input coax

Front RF input coax

Figure 2 T838/839 RF Input Coax Routing

Issuing Authority

This TN was issued by: John Crossland
RSD Documentation Manager

Publication History

Publication Date	Author	Originator
2nd June 2000	D Reynolds	Tech. Issue 1352

Amendment Record

Publication Date	Page	Amendment
2nd June 2000		TI-RID-457 republished as TN-619.
	1	• title changed to indicate TN now applies only to T830 Series I to II conversions • "For Internal Use Only" paragraph added • "Applicability" section added • "Introduction" amended to reflect change to T830 Series I to II conversions • "Subsidiary" changed to "Customer Service Organisation" (here and throughout the TN) • paragraph pertaining to updated TNs added • "Note" about Series II to I conversions added
	2	• "Parts Required" now lists only relevant Series I to II front panel conversion kits • "Parts Required" now includes parts for PA conversions • 6 & 7mm spanners added to "Tools Required" • footnote about pliers added to "Tools Required"
	3	• footnote about D-range 1 added
	4	• "audio line 2 (T835)" added to Step 5 paragraph 1 • Step 5 bullet point 4 now applies only to T836/837
	7	• old Figures 1 & 2 combined into new Figure 1 (technical details are unchanged)
	10	• "Issuing Authority", "Publication History" and "Amendment Record" sections added