



RFI
TECHNOLOGY SOLUTIONS

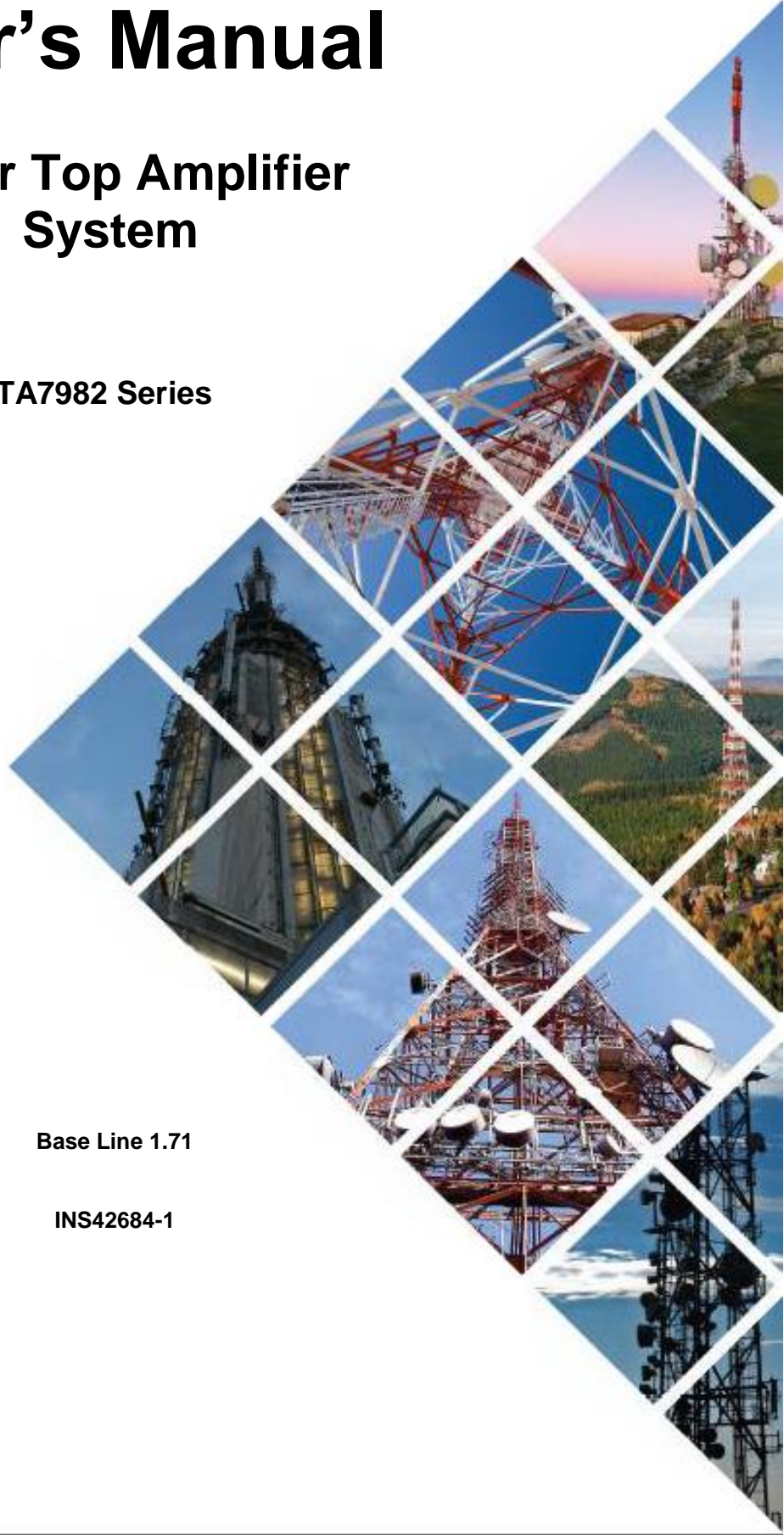
User's Manual

Tower Top Amplifier System

TA7982 Series

Base Line 1.71

INS42684-1



Company Overview

RFI has been serving the needs of the wireless communications market for over 35 years. First founded as a manufacturer of antenna systems, RFI has grown to be a key player in the development, manufacturing and distribution of wireless technology and energy products. Through our extensive network of resellers, systems integrators and retail outlets, RFI is a key supplier to both industry and Government.

Our research and manufacturing facilities have talented people, sophisticated test equipment, state of the art software with class leading manufacturing systems and techniques. Additionally, we have in place a quality management program which is certified to ISO9001, environmental management system certification to ISO14001 and occupational health and safety standard AS4801 giving you complete confidence in everything we do.

RFI's products are truly innovative and as a result we are active around the globe taking our Australian designed and manufactured products to key markets in Asia Pacific, the Americas and EMEA regions via offices 'in-region' in addition to exporting directly to in excess of 50 countries.

One of RFI's key principals is to remain totally customer focused as we recognise our future depends on the success of our customers. We know that to be chosen as your supplier we must add value to your business and to achieve this we will work hard to deliver the best product when and where you need it and back this up with the very best technical support available.

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TABLE OF CONTENTS

1. GENERAL DESCRIPTION	8
2. TTA - ELECTRICAL AND MECHANICAL SPECIFICATIONS	11
3. RMC - ELECTRICAL AND MECHANICAL SPECIFICATIONS	13
4. ORDERING INFORMATION	17
5. INTERCONNECTION DIAGRAMS	18
6. TTA SYSTEM RF OUTPUT CAPACITY EXPANSION.....	21
7. UNPACKING.....	24
8. FIRMWARE LICENSE AGREEMENT.....	25
9. ASSEMBLY OF DUAL TTA MOUNTING KIT	26
10. INSTALLATION.....	28
11. OPERATION	31
12. COMMISSIONING	32
13. MANUAL SETUP AND OPERATION.....	36
13.1 RMC - Rear Panel Switches	37
13.2 Rear Panel Switches and LED Indicators	39
13.3 Front Panel Switches and LED Indicators	41
14. GUI SETUP AND OPERATION	42
14.1 Ethernet Connection Set-up	42
14.2 Log In Page	45
14.3 System Overview	46
14.4 Status Detail Menu	47
14.5 Status Detail – RMC.....	48
14.6 Status Detail - TTA.....	50
14.7 Status Detail – System.....	52
14.8 Status Detail – Communications	54
14.9 History Menu	56
14.10 History – Performance Record.....	57
14.11 Alarm Event Log	59
14.12 Sensitivity Log.....	60
14.13 Sensitivity Chart	61
14.14 Configuration Menu	62
14.15 Configuration – RMC	63
14.16 Configuration – TTA.....	67
14.17 Configuration – Gain Balance (Diversity Receiver and Dual Receiver systems)	69
14.18 Configuration – User Data.....	70
14.19 Configuration – Communications	71
14.20 Maintenance Menu	75
14.21 Maintenance – Access Management	76
14.22 Maintenance – Date & Time	78
14.23 Maintenance – Manager Interface	79
14.24 Maintenance – Configuration Files	81
14.25 Maintenance – Firmware Update.....	83
14.26 Maintenance - Restart	84
14.27 About	85
14.28 Logout.....	86
15. SNMP	87

16. CONNECTORS	91
17. MAINTENANCE, INSPECTION AND REPAIR ADVICE.....	92
18. FREQUENTLY ASKED QUESTIONS (FAQ).....	93
19. SUPPORTING INFORMATION.....	94
20. USER NOTES:.....	95

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TA7982-01xx-12-AC Series

Tower Top Amplifier Unit



Front View

TA7982-02xx-22-AC Series

Dual Tower Top Amplifier Units (c/w Dual TTA Mounting Kit)



Bottom View



Mounted View

Receiver Multicoupler Unit – RX6996-3408-44-xxB

Front View



Rear View



Dual TTA Receiver Multicoupler Units – RX6996-3408-45-xxB

Front View



Rear View



1. General Description

The TA7982 Series are full-featured, high performance systems comprising a Tower Top Amplifier (TTA) and a Receiver Multicoupler/TTA Controller unit (RMC).

The TTA unit features a milled cavity bandpass preselector providing exceptional selectivity (>110dB) and a 30MHz bandwidth (794-824MHz). Redundant quadrature low-noise amplifiers are included to overcome the system's feeder cable losses. An IP-rated milled aluminium housing provides excellent environmental ratings and the housing's small size also provides installation tower loading efficiency. Lightning surge protection is internally fitted to the TTA.

Each TTA amplifier stage is monitored to provide alarm indications in the event of failure, and to initiate automatic change-over between the redundant amplifier paths. The status of these amplifier alarms, in addition to TTA temperature, TTA power supply voltages, and other operational conditions, are sent to the RMC via the "Main" coaxial feeder cable between the TTA and RMC, using an interface signalling protocol. DC power for the TTA is also sourced from this cable.

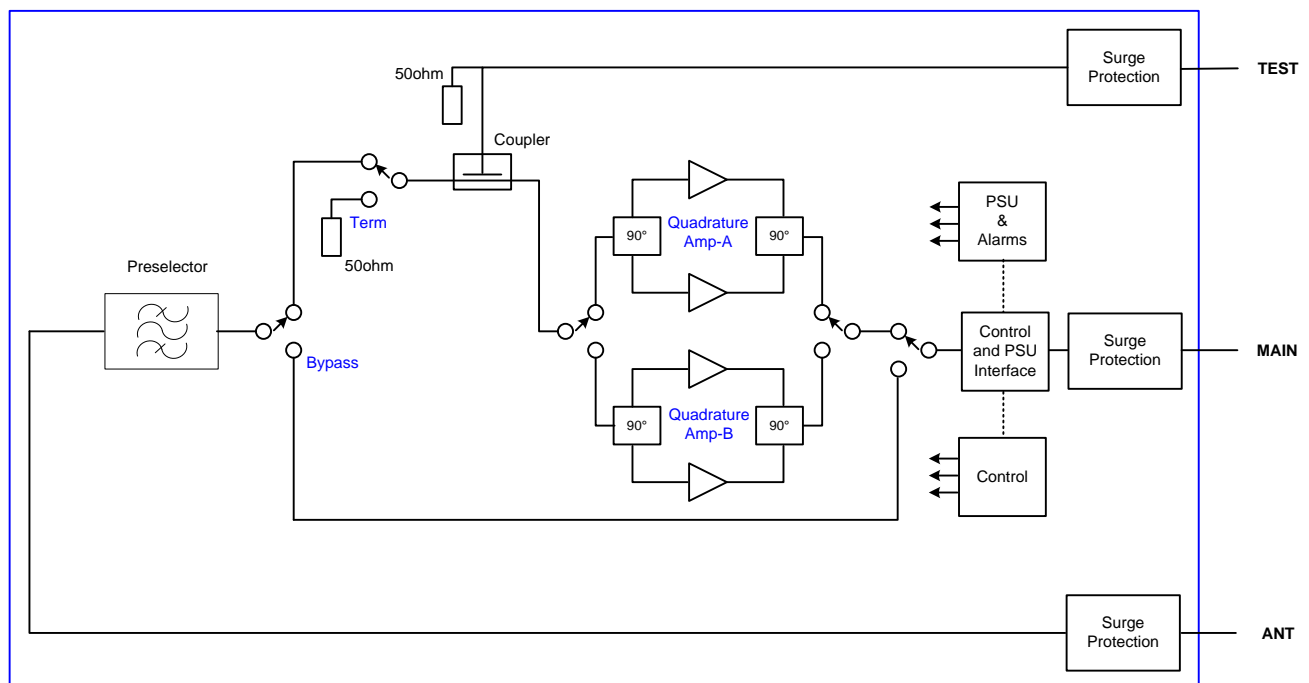


Figure 1 - TTA Block Diagram

The TTA's operating configuration can be controlled using either the user-friendly front panel switches, or via a local (or remote) IP connection using the integral webserver Graphical User Interface (GUI) of the interconnected RMC.

A Test Port is provided on the TTA unit to facilitate TTA system testing from the ground equipment room.

A 30dB coupler in the TTA allows a signal to be injected to test the performance of both amplifier RF paths, and a Test function allows measurements to be compared between a termination and the receive antenna to determine the effective sensitivity of the network's receiver system.

A Bypass capability is also included in the TTA Test Mode to allow both RF amplifiers to be bypassed during system testing. This Bypass feature will time out after the user-configurable time period (factory default is 1 minute) to ensure the system is not inadvertently left in this test mode.

RF path switching between the redundant amplifiers allow the RF signal path to be changed automatically using the auto changeover feature, or manually using the RMC front panel switches or via GUI control. Manual changing between amplifier paths may also be actioned for testing purposes, or for equipment life cycle sharing between the two amplifiers' circuitry. If *Auto Bypass* is selected, and if both amplifiers have failed, the TTA will switch itself into Bypass mode and if *Gain Boost* is selected, the RMC gain will increase to maximum – providing the best available system performance until normal operation can be restored. When in this *Auto Bypass* mode of operation, and if *Auto Restore* is selected, the amplifiers' fault state is continually monitored and if either amplifier's fault clears, the TTA will restore itself to normal operation using that amplifier.

The RMC/TTA Controller (a.k.a. "RMC") provides a power supply and signalling interface to the TTA, monitoring of the TTA's operational status and alarms and receive signal distribution to multiple base station receivers. It includes adjustable gain to overcome the distribution cabling losses within the equipment building.

Configuration of the RMC is provided using rear panel rotary switches and configuration of the RMC/TTA Controller is provided using front panel switches. Rear panel LED indicators show the status of power - and the use of the optional post filter (if used). Front panel LED indicators show the status of power, TTA and RMC Fault status, the selected TTA amplifier path, Term and Bypass modes, and whether the RMC is under Switch or LAN configuration control.

In addition, SNMP V2c (northbound Traps and southbound GET) and Form-C relay outputs are provided for interfacing to a site monitoring or alarm management system.

An extensive set of user-configurable features are available including Test Modes, Auto-Gain, Gain-Boost, Auto-Bypass (Fail-Over) and Auto-Revert. These features enhance the TTA system, giving a network a diverse range of operational capabilities, improved performance, and superior fault-tolerance and resiliency.

The RMC has adjustable attenuators for both Input and Distribution (Output) gain settings, adjustable in 1dB increments. Rear panel CONFIG, INPUT GAIN ATTEN, and DIST. GAIN ATTEN switches provide a simple and convenient method of configuring the RMC for both Input gain, and Distribution gain for the number of base stations connected to the TTA system.

The RMC unit distributes signals to 8 base station receivers (9 in Config Mode 2), and it can be easily field expanded to cater for up to 128 base station receivers using additional 8way RMC Expansion Multicoupler which may be ordered separately as required. Default TTA/RMC configurations are capable of 8 (or 9) and 16 outputs, but other output capacities may be easily ordered to suit system requirements.

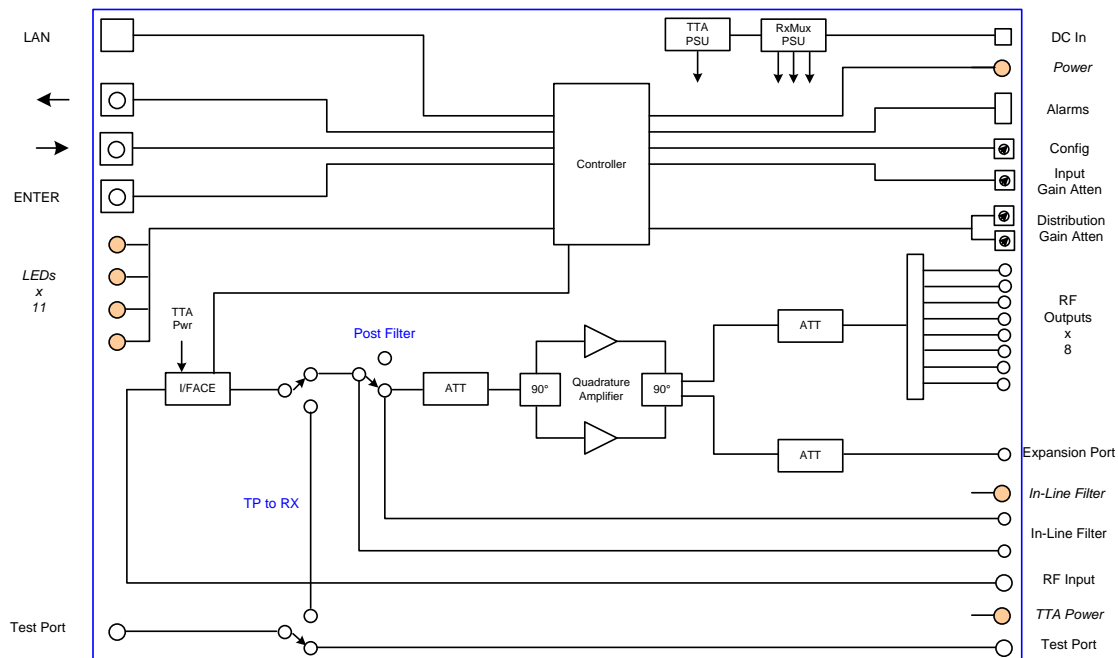


Figure 2 – RMC Block Diagram

A Test Port is provided on the RMC front panel to be used in conjunction with the TTA's Bypass mode to sweep the receive antenna feeder and antenna using a distance-to-fault (DTF) test set.

Diversity Receive and Dual-Receiver Systems

Diversity receive and dual-receiver requirements systems can be implemented for receiver systems by using two TTA units, a Dual TTA Mounting Kit, and two RMC receiver multicouplers.

The Dual TTA Mounting Kit allows two TTA units to be mounted together, maintaining a small and space efficient footprint that greatly minimises installation space requirements, and tower wind and weight loadings.

RFI's unique implementation of this diversity receiver and dual-receiver configuration also provides true full redundancy as the receiver multicoupling subsystem preselector and all active circuitry is fully duplicated - including the (already redundant TTA) quadrature LNAs, the TTA power supply circuitry, the TTA control and configuration circuitry, and the TTA alarm monitoring circuitry. In the equipment room the receiver multicouplers (RMCs) are also duplicated, providing true full redundancy for the TTA equipment room power supply, control and monitoring circuitry – and the RMC LNA, receiver distribution, and associated circuitry.

This innovative architecture approach provides the highest levels of duplication in the RF signal path, fault-tolerance and resiliency, and receiver system availability – while also providing a convenient network migration path.

RFI's TTA/RMC architecture also provides a convenient and future-proof migration path from single receive designs, to the latest diversity receive technologies – minimising spares holdings requirements throughout the network's life, while maximising realisable equipment life-cycles, and a network operator's return-on-investment.

The TTA/RMC system may be configured using the RMC's front and rear panel switches. If desired, an integral web-server Graphical User Interface (GUI) resident in the RMC may also be used to configure the TTA/RMC and to monitor the status of alarms and TTA/RMC operation. This webserver can be accessed locally or remotely via TCP/IP network (or Internet) access.

For software developers, a Command Line Interface (CLI) text-based command set is also available for interfacing to the TTA/RMC using a computer or handheld/mobile device and a Telnet communications session if desired. New features can also be easily implemented via firmware upgrades using the GUI or CLI.

These TTA systems are available in 12VDC, 24VDC, 48VDC or 90-264VAC versions to suit different network or site power systems.

Supporting documents including this User Manual, a Quick Start Guide (QSG), an Application Note, Service Bulletins and SNMP MIB files are also available from RFI's website.

2. TTA - Electrical and Mechanical Specifications

TTA Model Number	TA7982-0100-10-00
Frequency Band	700 / 800MHz
Preselector Included	Yes
Preselector Frequency Range	794–824MHz
Preselector Passband Width	30MHz (reduced passband widths available using RMC post filter)
Preselector Selectivity (High)	>110dB @ 851MHz
Preselector Selectivity (Low)	>110dB @ 776MHz
Type of Amplifier	Quadrature Coupled
Amplifier Switching	Automatic (configurable)
Type of Amplifier Switching	Solid State RF Switch
TTA Gain (input to output of TTA)	25dB +/-1dB
Noise Figure (Amplifier)	<1.5dB (1dB typ.)
Noise Figure (TTA)	<2.7dB typ.
Noise Figure (Complete TTA/Feeder/RMC System)	<3.5dB (includes TTA, 6dB feeder cable, and RMC)
TTA Amplifier IIP3	>+13dBm
Return Loss (All Ports)	>14dB
RF Bypass	Yes (Receiver Multicoupler controlled)
Power Requirements	Power Derived from "Main" port coaxial cable
Operating Temperature Range	-30°C to +60°C / -22°F to 140°F
Operating Temperature Range (with minor performance degradation)	-30°C to +70°C / -22°F to 158°F
Redundancy	Automatic Changeover (configurable)
Fail-Over / Bypass Modes	Yes (Receiver Multicoupler controlled) Gain Boost / Auto-Bypass Fail-Over / Auto-Recover / Bypass
Lightning Protection	20kA IEC 61000-4-5 8/20uS 3kA 10/350uS slow pulse multiple strike
Test Port Included	Yes
Isolation (Coupling) of Test Port	30dB +/- 2dB
50ohm Termination Test	Yes (Receiver Multicoupler controlled)
Type of RF Test Switching	Solid State RF Switch
Bypass Test Mode	Yes (Receiver Multicoupler controlled)
Connectors (All Ports)	N-type (female)
Enclosure	NEMA Weather resistant housing

Table 1

Diversity Receiver/Dual Receiver TTA (Comprises 2 x TTA and 1 x TA7982-TA8996-DK)

TTA Model Number	TA7982-0200-20-00
Frequency Band	700 / 800MHz
Preselector Included	Yes
Preselector Frequency Range	794–824MHz
Preselector Passband Width	30MHz (reduced passband widths available using RMC post filter)
Preselector Selectivity (High)	>110dB @ 851MHz
Preselector Selectivity (Low)	>110dB @ 776MHz
Type of Amplifier	Quadrature Coupled
Amplifier Switching	Automatic (configurable)
Type of Amplifier Switching	Solid State RF Switch
TTA Gain (input to output of TTA)	25dB +/-1dB
Noise Figure (Amplifier)	<1.5dB (1dB typ.)
Noise Figure (TTA)	<2.7dB typ.
Noise Figure (System)	<3.5dB (includes TTA, 6dB feeder, and RMC)
TTA Amplifier IIP3	> +13dBm @ 25dB TTA gain
Return Loss (All Ports)	>14dB
RF Bypass	Yes (Receiver Multicoupler controlled)
Power Requirements	Power Derived from "Main" port coaxial cable
Operating Temperature Range	-30°C to +60°C / -22°F to 140°F
Operating Temperature Range (with minor performance degradation)	-30°C to +70°C / -22°F to 158°F
Redundancy	Automatic Changeover (configurable)
Fail-Over / Bypass Modes	Yes (Receiver Multicoupler controlled) Gain Boost / Auto-Bypass Fail-Over / Auto-Recover / Bypass
Lightning Protection	20kA IEC 61000-4-5 8/20uS multiple strike 3kA 10/350uS slow pulse multiple strike
Test Port Included	Yes
Isolation (Coupling) of Test Port	33dB +/- 2dB
50ohm Termination Test	Yes (Receiver Multicoupler controlled)
Type of RF Test Switching	Solid State RF Switch
Bypass Test Mode	Yes (Receiver Multicoupler controlled)
Connectors (All Ports)	N-type (female)
Enclosure	NEMA Weather resistant housing

Table 2

3. RMC - Electrical and Mechanical Specifications

Receiver Multicoupler Model Number	RX6996-3408-44-xxB
Frequency range	698-960MHz
Number of RF Output Ports	8 (expandable to 128)
Expansion Port	Yes
Net Gain or Loss (RMC In to RMC Out)	0 to +4dB (-19 to +11dB available)
Amplifier Type	Quadrature Coupled
Auto-Gain on Amplifier Fail	Yes
Amplifier Noise Figure	4dB max. (<1.9dB typ.)
Amplifier Output 3 rd Order Intercept Point (3OIP)	>45dB (48dB typ.)
RF Port Return Loss (All Ports)	>14dB
Connectors (to TTA)	N-type (female)
Receiver Connector	BNC-type (female)
Rx-Rx Port Isolation	>20dB
Receive Test Port	Yes
Test Port Input (front of Receiver Multicoupler)	BNC-type (female)
Test Port Output (rear of Receiver Multicoupler)	N-type (female)
Reserve (Input) Gain electronic attenuator	0-15dB in 1dB steps (0.5dB steps in later models)
Distribution Gain electronic attenuator	4dB in 1dB steps (0.5dB steps in later models)
Lightning Protection	Internal SMT surge protection to supplement building entry point protection
Alarms	Form-C contacts (n.o./n.c. 1A 60V) SNMP V2c (Northbound Traps) SNMP V2c (Southbound GET) UDP Manager Messages
Alarm Connector	3pin Phoenix style (locking)
Communications Connector	TCP/IP Ethernet port (RJ45)
Indicators	Front and Rear panel LED's
Power Requirements	12VDC nom. (10VDC to 18VDC floating) 24VDC nom. (18VDC to 36VDC floating) 48VDC nom. (36VDC to 60VDC floating) 90-264VAC 50/60Hz (plug pack on 12VDC model)
DC Current Consumption (including TTA)	2.5A @ 12VDC 1.3A @ 24VDC 650mA @ 48VDC
DC Connector	2pin Phoenix style (locking)
Earthing	M6 stud (on RHS of rear panel) M5 screw (on LHS of rear panel)
Operating Temperature Range	0°C to +50°C / 32°F to 122°F
Mounting	1RU 19inch Rack mount (8way) 2RU 19inch Rack mount (16way)
Dimensions (W x H x D)	19 x 1.75 x 5.9" / 483 x 44.75 x 150mm (8way) 19 x 3.5 x 5.9" / 483 x 89.5 x 150mm (16way)

Table 3

Dual RMC (Comprises 2 x RMC units)

Receiver Multicoupler Model Number	RX6996-3408-45-xxB
Frequency range	698-960MHz
Number of RF Output Ports	2 x 8 (expandable to 128)
Expansion Port	Yes
Net Gain or Loss (RMC In to RMC Out)	0 to +4dB (-19 to +11dB available)
Amplifier Type	Quadrature Coupled
Auto-Gain on Amplifier Fail	Yes
Amplifier Noise Figure	4dB max. (<1.9dB typ.)
Amplifier Output 3 rd Order Intercept Point (3OIP)	>45dB (48dB typ.)
RF Port Return Loss (All Ports)	>14dB
Connectors (to TTA)	N-type (female)
Receiver Connector	BNC-type (female)
Rx-Rx Port Isolation	>20dB
Receive Test Port	Yes
Test Port Input (front of Receiver Multicoupler)	BNC-type (female)
Test Port Output (rear of Receiver Multicoupler)	N-type (female)
Reserve (Input) Gain electronic attenuator	0-15dB in 1dB steps (0.5dB steps in later models)
Distribution Gain electronic attenuator	4dB in 1dB steps (0.5dB steps in later models)
Lightning Protection	Internal SMT surge protection to supplement building entry point protection
Alarms	Form-C contacts (n.o./n.c. 1A 60V) SNMP V2c (Northbound Traps) SNMP V2c (Southbound GET) UDP Manager Messages
Alarm Connector	3pin Phoenix style (locking)
Communications Connector	TCP/IP Ethernet port (RJ45)
Indicators	Front and Rear panel LED's
Power Requirements (varies by model)	12VDC nom. (10VDC to 18VDC floating) 24VDC nom. (18VDC to 36VDC floating) 48VDC nom. (36VDC to 60VDC floating) 90-264VAC 50/60Hz (plug pack on 48VDC model)
DC Current Consumption (including TTAs)	5A @ 12VDC 2.6A @ 24VDC 1.3A @ 48VDC
DC Connector	2pin Phoenix style (locking)
Earthing	M6 stud (on RHS of rear panel) M5 screw (on LHS of rear panel)
Operating Temperature Range	0°C to +50°C / 32°F to 122°F
Mounting	2RU 19inch Rack mount (8way) 4RU 19inch Rack mount (16way)
Dimensions (W x H x D)	19 x 3.5 x 5.9" / 483 x 89.5 x 150mm (2 x 8way) 19 x 7 x 5.9" / 483 x 179 x 150mm (2 x 16way)

Table 4

Expansion Multicoupler - Electrical and Mechanical Specifications

Receiver Multicoupler Model Number	RX0696-3008-31B
Frequency range	60-960MHz
Number of RF Output Ports	8
RF Port Return Loss (All Ports)	>14dB
Connectors	BNC-type (female)
Rx-Rx Port Isolation	>20dB
Power Requirements	None (Passive)
Operating Temperature Range	0°C to +50°C / 32°F to 122°F
Mounting	1RU 19inch Rack mount
Dimensions (W x H x D)	483 x 44.75 x 150mm / 19 x 1.75 x 5.9"

Table 5

Post Filter - Electrical and Mechanical Specifications

Post Filter Model Number	PF7982-10xx-31N
Frequency Band	7/800MHz
Frequency Range	794-824MHz
Bandwidth	xx = 03 = 3MHz, xx = 06 = 6MHz, xx = 10 = 10MHz xx = 15 = 15MHz, xx=18 = 18MHz
RF Port Return Loss (All Ports)	>14dB
Connectors	N-type (female)
Power Requirements	None (Passive)
Operating Temperature Range	-30°C to +60°C / -22°F to +140°F
Mounting	1RU 19inch Rack mount
Dimensions (W x H x D)	483 x 44.75 x 150mm / 19 x 1.75 x 5.9"

Table 6

Mains Power Supply - Electrical and Mechanical Specifications

Plug Pack Power Supply	RXTA0000-3060xx-AC
Input Voltage	90-264VAC 50/60Hz
Input Plug	IEC
Input Cable length	1.5m long
Input Cable Plug Type	xx = US, xx = AU, xx = UK
Output Voltage	12VDC @ 5A (60W)
Output Connector	2pin Phoenix style (locking)
Mounting	Free-standing
Dimensions (W x H x D)	5 x 1.25 x 2" / 125 x 31.5 x 50mm

Plug Pack Power Supply	RXTA0000-3460xx-AC
Input Voltage	90-264VAC 50/60Hz
Input Plug	IEC
Input Cable length	1.5m long
Input Cable Plug Type	xx = US, xx = AU, xx = UK
Output Voltage	48VDC @ 1.25A (60W)
Output Connector	2pin Phoenix style (locking)
Mounting	Free-standing
Dimensions (W x H x D)	5 x 1.25 x 2" / 125 x 31.5 x 50mm

Note: The AC Mains Power Supply models are supplied using a 48VDC RMC and plug pack. Some early models were shipped as 12VDC RMC and plug pack.

Table 7

4. Ordering Information

Ordering Information	
RFI Part Number	Description
TA7982-0100-10-00	Tower Top Amplifier, 794-824MHz
RX6996-3408-44-ACB	8 Port Receiver Multicoupler, 698-960MHz, 36-60VDC complete with RXTA0000-3460US-AC 90-264VAC/48VDC Plug Pack Power Supply
RX6996-3408-44-48B	8 Port Receiver Multicoupler, 698-960MHz, 36-60VDC
RX6996-3408-44-12B	8 Port Receiver Multicoupler, 698-960MHz, 10-18VDC
RX6996-3408-44-24B	8 Port Receiver Multicoupler, 698-960MHz, 18-36VDC
TA7982-0200-20-00	2 x Tower Top Amplifiers, 794-824MHz, complete with Dual TTA Mounting Kit
RX6996-3408-45-ACB	2 x 8 Port Receiver Multicouplers, 698-960MHz, 36-60VDC complete with 2 x RXTA0000-3460US-AC 90-264VAC/48VDC Plug Pack Power Supplies
RX6996-3408-45-48B	2 x 8 Port Receiver Multicouplers, 698-960MHz, 36-60VDC
RX6996-3408-45-12B	2 x 8 Port Receiver Multicouplers, 698-960MHz, 10-18VDC
RX6996-3408-45-24B	2 x 8 Port Receiver Multicouplers, 698-960MHz, 18-36VDC
RX0696-3008-31B	8 Port Expansion Multicoupler, 60-960MHz, BNC Connectors
PF7982-1003-31N	RMC Post Filter, 794-824MHz, 3MHz BW, N Connectors c/w RG142 cables leads for connection to RMC
PF7982-1006-31N	RMC Post Filter, 794-824MHz, 6MHz BW, N Connectors c/w RG142 cables leads for connection to RMC
PF7982-1010-31N	RMC Post Filter, 794-824MHz, 10MHz BW, N Connectors c/w RG142 cables leads for connection to RMC
PF7982-1015-31N	RMC Post Filter, 794-824MHz, 15MHz BW, N Connectors c/w RG142 cables leads for connection to RMC
PF7982-1018-31N	RMC Post Filter, 794-824MHz, 18MHz BW, N Connectors c/w RG142 cables leads for connection to RMC
RXTA0000-3460AU-AC	90-264VAC 50/60Hz 48VDC Plug Pack Power Supply c/w 1.5m IEC cable with AU plug
RXTA0000-3460US-AC	90-264VAC 50/60Hz 48VDC Plug Pack Power Supply c/w 1.5m IEC cable with USA plug
RXTA0000-3460UK-AC	90-264VAC 50/60Hz 48VDC Plug Pack Power Supply c/w 1.5m IEC cable with UK plug
TA7982-TA8996-DK	Dual TTA Mounting Kit

Table 8

5. Interconnection Diagrams

The TA7982 series of TTA systems are designed to be mounted into a wide range of configurations. These Interconnection Diagrams (Figures 3 and 4) show examples.

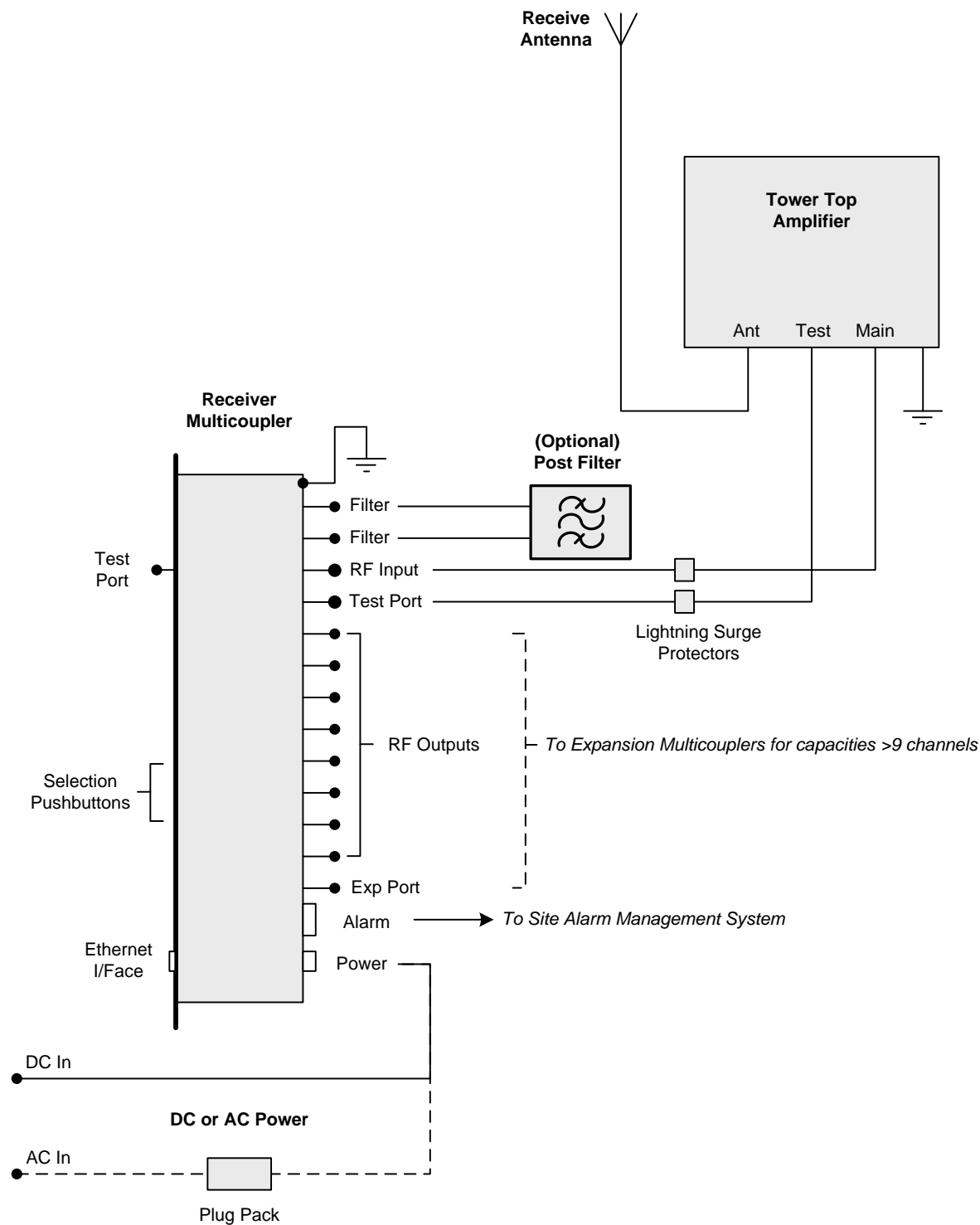


Figure 3a – Typical Configuration (Config Switch position 1 and 2)

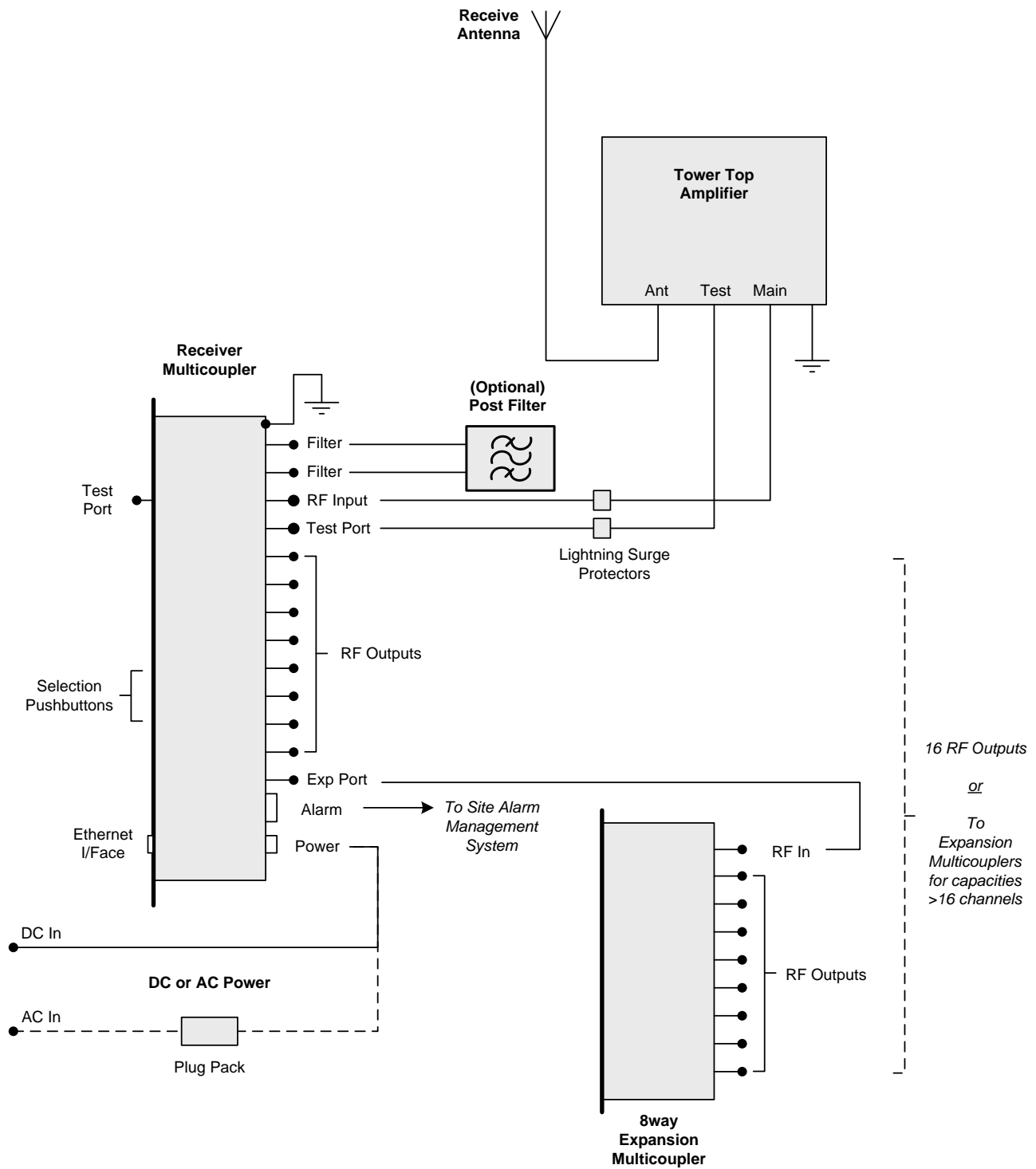


Figure 3b – Typical Configuration (Config Switch position 3, 4 and 5)

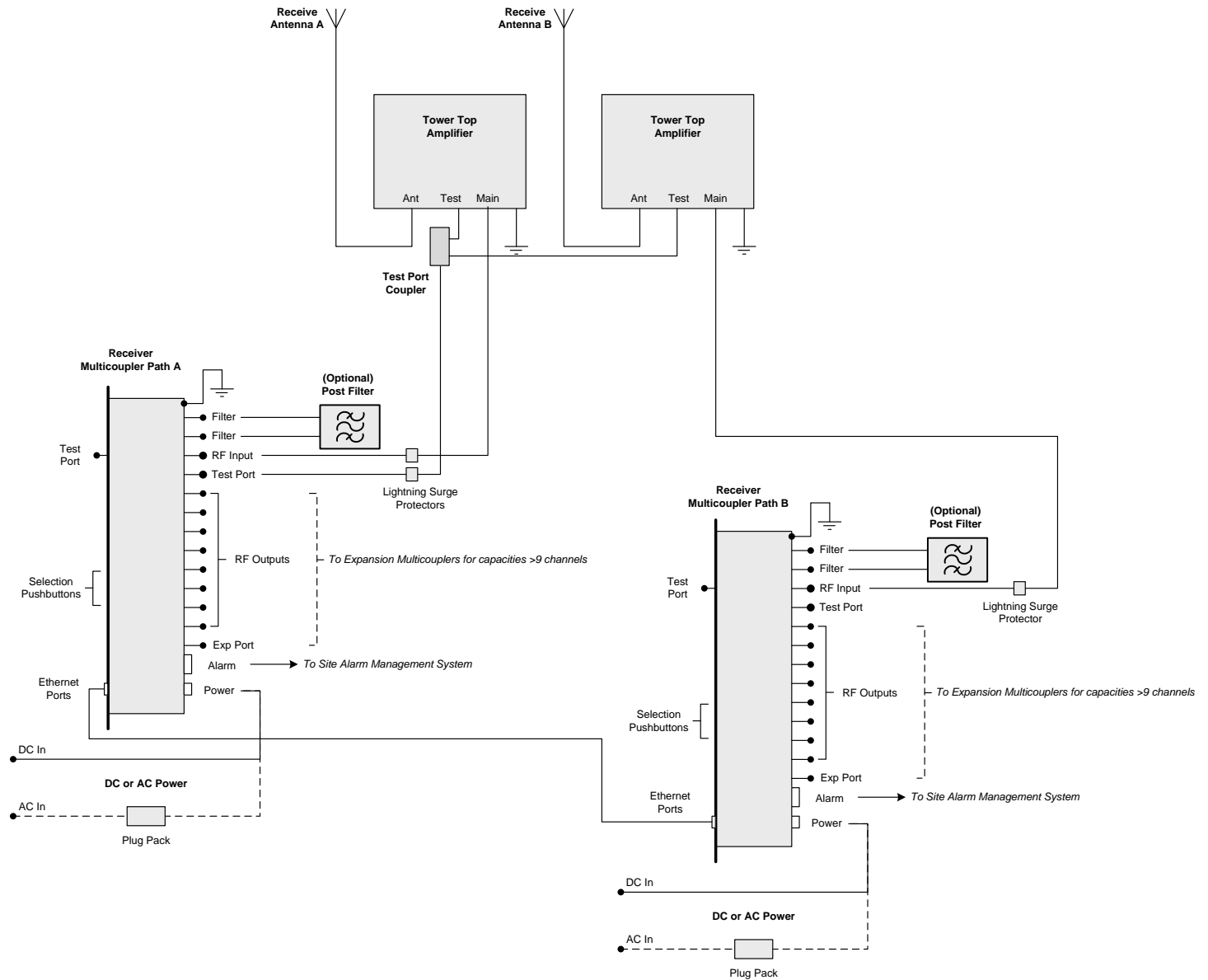


Figure 4 – Typical Configuration (Diversity Receive/Dual Receiver)

6. TTA System RF Output Capacity Expansion

The TTA system RF output capacity may be easily expanded. Channel capacities from 8 through to 128 channels can be easily catered for, with expansions being easily and conveniently implemented on-site - as required by future network expansion.

To optimize site cabling material and installation effort, 8-way Expansion Multicouplers may be “distributed” around a site equipment room, with one (or more) Expansion Multicouplers installed in each 19inch cabinet, with short interconnect cables then being run between that cabinet's Expansion Multicoupler and the base station receivers co-located in that cabinet.

Note: In Diversity Receive/Dual Receiver systems, Expansion Multicouplers are added to both RMCs.

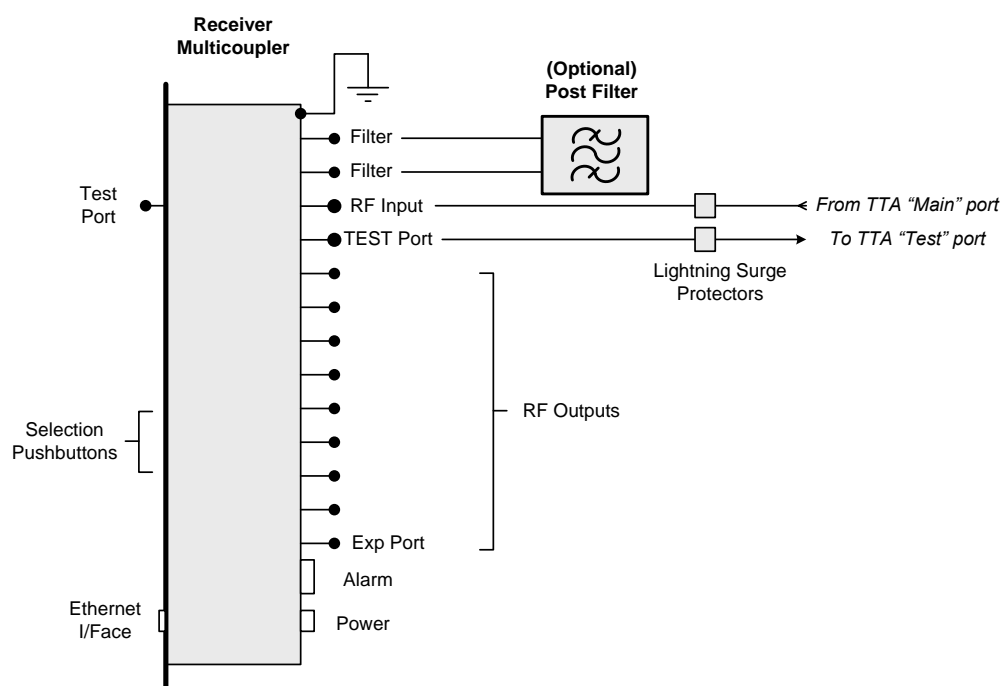


Figure 5 - Receiver Multicoupler (RMC) configuration for up to 8 (or 9) base station receivers

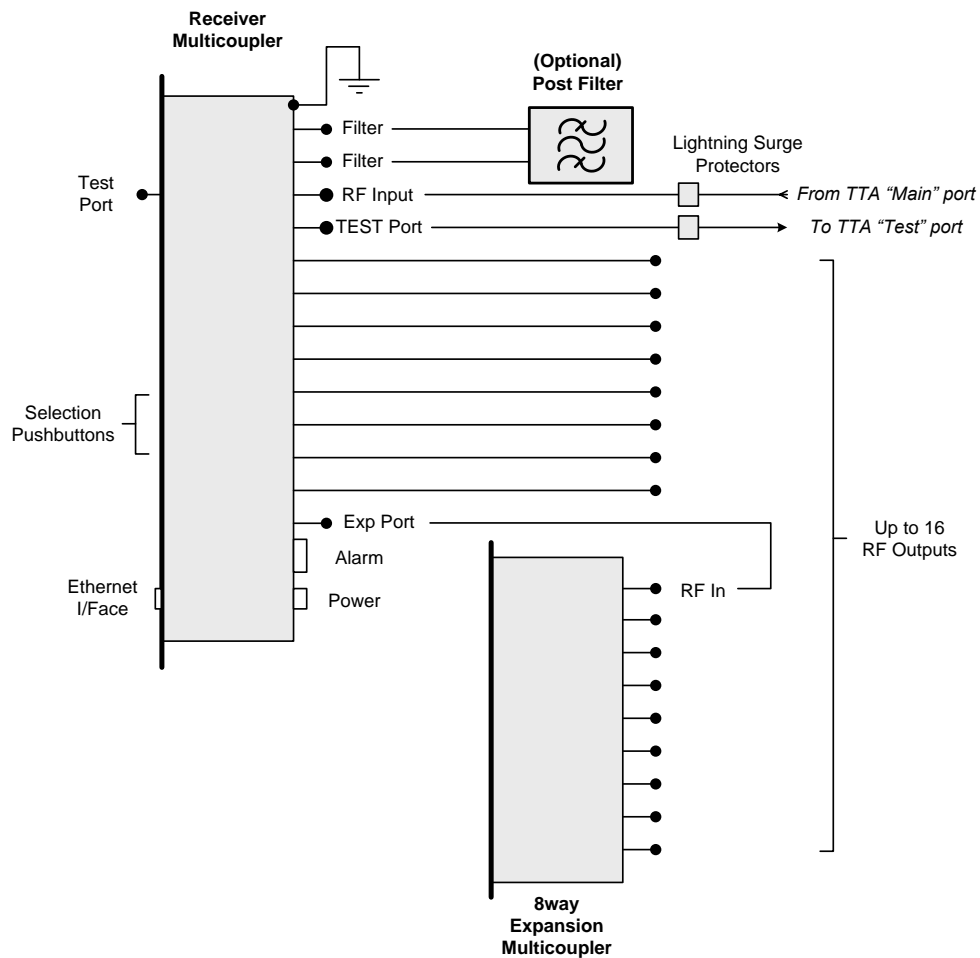


Figure 6 - Receiver Multicoupler (RMC) configuration for up to 16 base station receivers

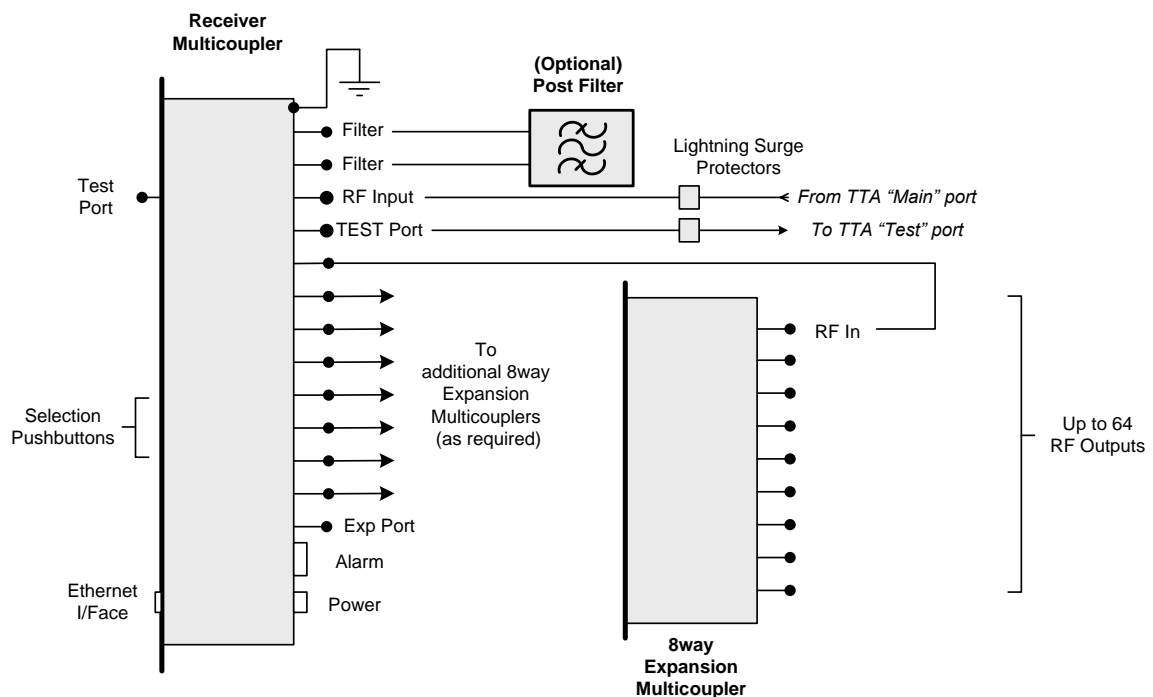


Figure 7 - Receiver Multicoupler (RMC) configuration for up to 64 base station receivers (using multiple 8way Expansion Multicouplers for desired capacity)

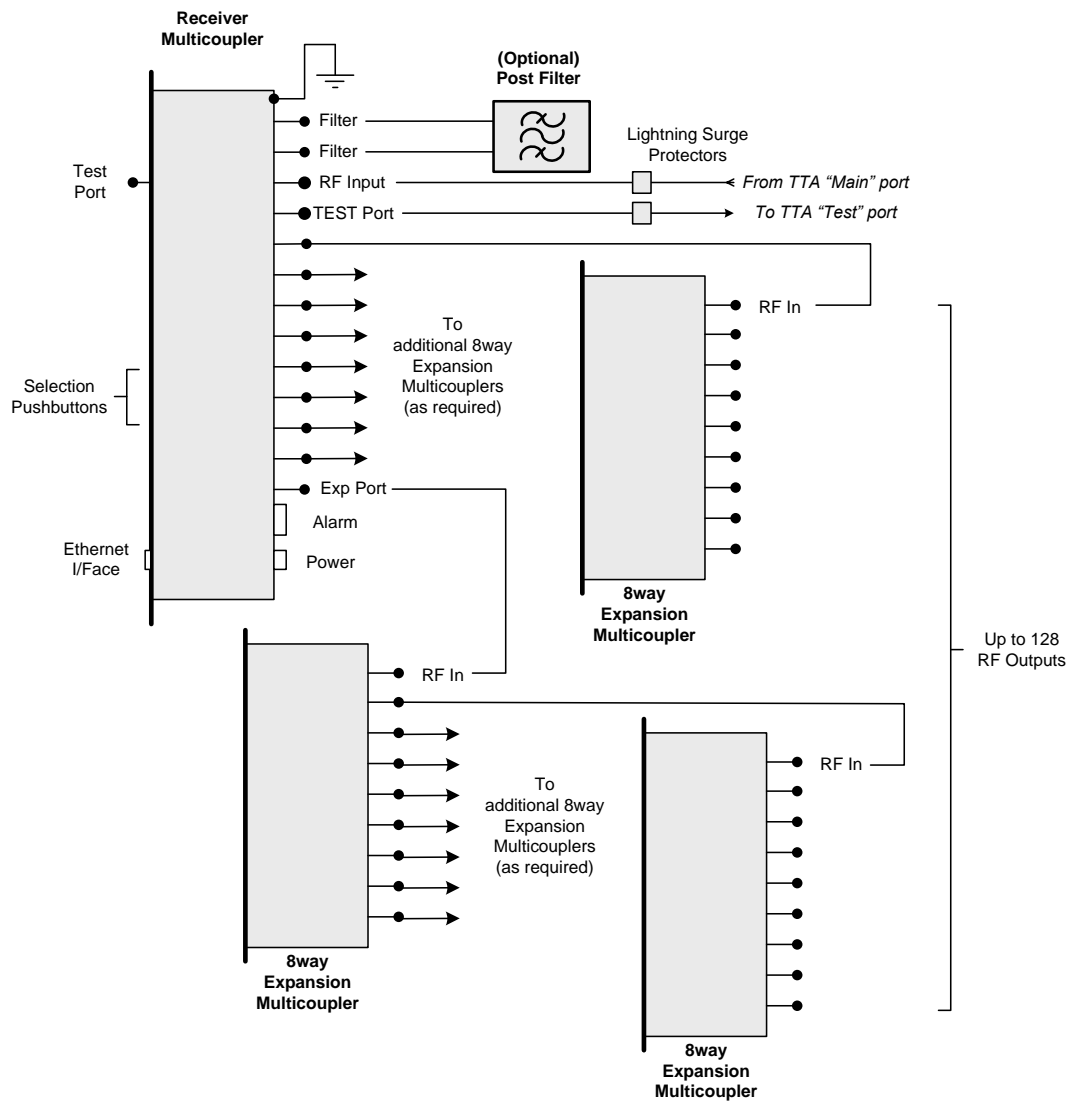


Figure 8 - Receiver Multicoupler (RMC) configuration for up to 128 base station receivers (using multiple 8way Expansion Multicouplers for desired capacity)

Note: In Diversity Receive/Dual Receiver systems, Expansion Multicouplers are added to both RMCs.

7. Unpacking

The TTA and RMC units are packed in custom designed cardboard packaging, together with an AC to DC power pack (if the AC option has been ordered).

Packed with the units will be the Factory Test Sheet (FTS) and Quick Start Guide (QSG). The User's Manual will be included on a USB memory stick.

It is recommended to retain the Factory Test Sheet for future reference.

An Ethernet jumper cable is included in the RMC packaging, provided for your convenience to connect and configure the TTA and RMC via the RMC Graphical User Interface (GUI).

Although the packaging has been designed to provide suitable product protection during shipping, it is important to report any visible damage to the carrier immediately.

It is the customers' responsibility in the event of product damage, to lodge a damage claim with the carrier within a short period of time after receipt of the package. The time window for lodging the claim should be ascertained from the specific carrier as this may vary between carriers (typically 1 to 5 days).

Please dispose of all packaging material responsibly.

8. Firmware License Agreement

This statement must be read in its entirety prior to the loading or use of the Firmware provided by RFI.

Introduction.

By loading any product related Firmware you agree without reserve with all the conditions as detailed in this RFI Firmware License Agreement.

The term "Firmware" for the sake of this statement includes all software or firmware upgrades, either as a new installation, revision, patches or upgrades. Any reference to software, for the purposes of this license agreement, will therefore be included in the term Firmware.

RFI refers to the Australian registered company RF Industries Pty Ltd.

The copyright of all Firmware relating to this product remains the property in whole of RFI and is therefore protected by the respective international copyright or trademark laws.

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9. Assembly of Dual TTA Mounting Kit

This section applies to dual TTA configurations (i.e. Diversity Receiver and Dual-Receiver systems) and overviews the assembly of the two TTA units onto the TTA Diversity Kit

Parts List.

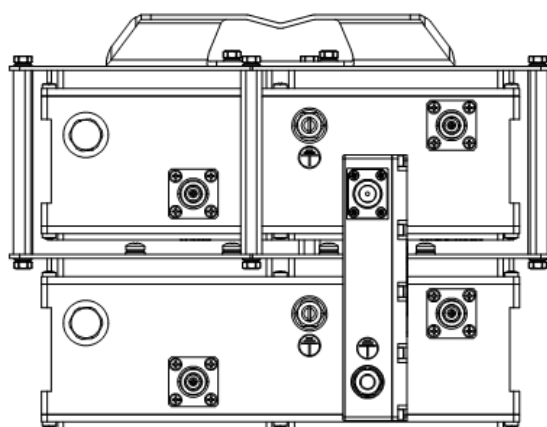
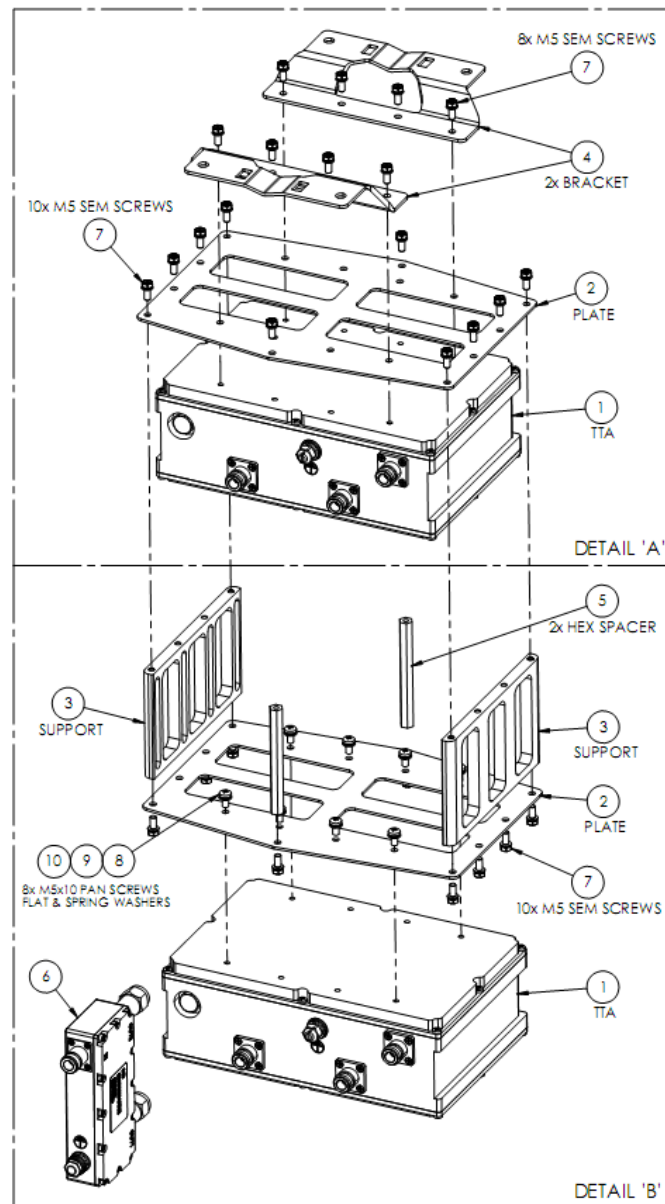
ITEM	PART #	DESCRIPTION	QUANTITY
1	TTA	(Supplied Separately)	2
2	U9459C	Mounting Plate	2
3	U9460C	SIDE SUPPORT	2
4	U9464A	TTA Mounting Bracket	2
5	U9463B	DUAL TTA, HEX SPACER	2
6	SP7496-2403-11	Coupler	1
7	A3399	M5x12 SEM Screw	28
8	A0296	SCREW M5X10 PAN POZ SS (Re-used From TTA)	8
9	A0809	WASHER M5 FLAT SS (Re-used From TTA)	8
10	A0830	WASHER M5 SPRG SS (Re-used From TTA)	8

Assembly Details.

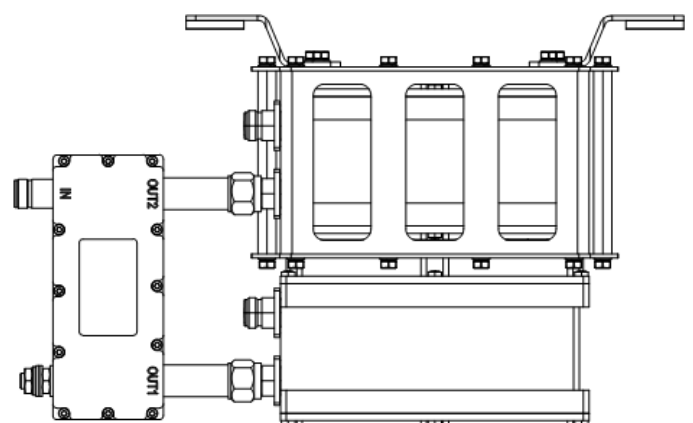
(ASSUMES ALL COMPONENTS HAVE BEEN REMOVED FROM THEIR PACKING BOXES)

NOTE: ONLY NIP UP SCREWS (7) DURING ASSEMBLY TO ALLOW FOR ALIGNMENT OF TTA'S (1) AND SPLITTER (6) AT FINAL ASSEMBLY POINT 7. BEFORE TIGHTENING.

1. REMOVE MOUNTING BRACKETS (4) FROM BOTH TTA'S (1) - RETAIN EIGHT SCREWS, WASHERS & SPRING WASHERS (8) (9) (10) & TWO BRACKETS (4) DISCARD THE OTHER TWO BRACKETS, SCREWS & WASHERS.
2. FIT PLATES (2) TO THE NON TEXT SIDE OF EACH TTA (1), ONE PLATE (2) PER TTA.
NOTE: a) FOR ONE TTA USE EIGHT SCREWS & WASHERS (8) (9) (10) TO FIT PLATE (2) REFER DETAIL 'B'.
b) FOR THE OTHER TTA FIT PLATE (2) & TWO BRACKETS (4) USING FOUR SCREWS (7) REFER DETAIL 'A'.
3. PLACE TTA (1) WITH ONLY THE FITTED PLATE (2) ON A FLAT SURFACE, WITH PLATE (2) FACING UP, DETAIL 'B'.
4. FIT SIDE SUPPORTS (3) TO PLATE (2), WITH SUPPORTS (3) ROUNDED EDGES FACING OUT, USING EIGHT SCREWS (7).
5. FIT HEX SPACERS (5) TO PLATE (2) USING TWO SCREWS (7).
6. LOWER TTA/BACKET ASSEMBLY SHOWN IN DETAIL 'A' ONTO SUPPORT (3) & HEX SPACERS (5) AND FIX BOTH TOGETHER USING TEN SCREWS (7).
7. ATTACH SPLITTER (6) TO TEST PORT OF EACH TTA. SEE DETAILS 'C' & 'D'.
8. ALIGN TTA'S AND SPLITTER AND TIGHTEN ALL SCREWS.



DETAIL 'C'



DETAIL 'D'

10. Installation

WARNING: Power should not be applied to electrical equipment during Installation, and cabling connection/disconnection activities.

Apply power only when all installation and cabling activities have been completed.

Note: All installation works and practices should be carried out by qualified personnel and in compliance to Recommended industry standards.

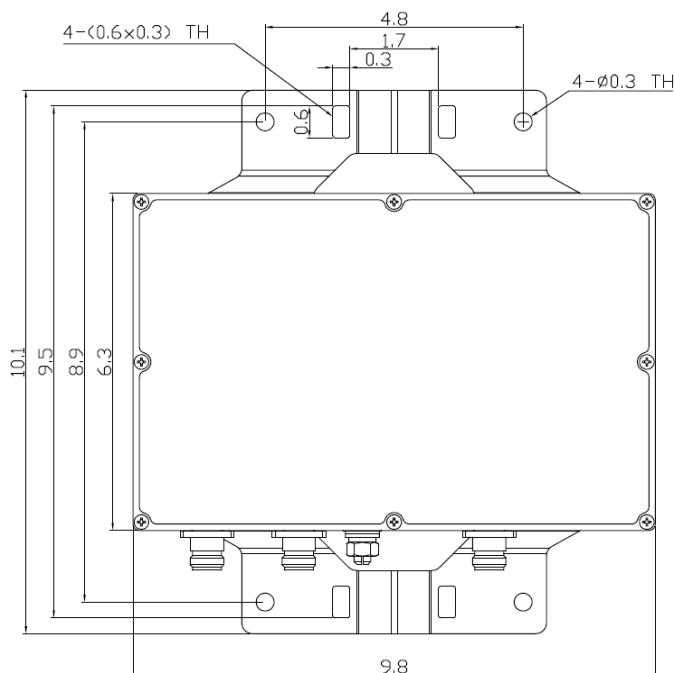
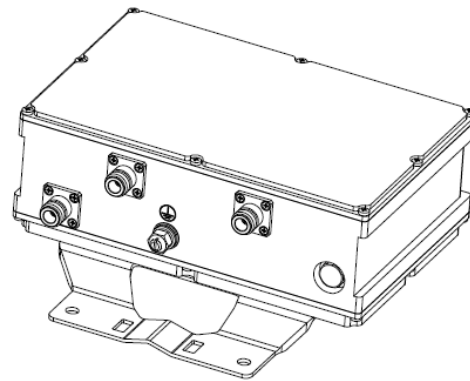
TTA Installation

The use of appropriate TTA mounting hardware that suits the installation's specific tower or mast installation scenario is important.

The TTA is provided with a general purpose stainless steel mounting bracket that enables the TTA to be installed onto many antenna booms, mounting head frames, poles, masts, tower spaces, or flat surfaces (such as building parapets or walls).

To cater for the variety of installation locations and structures, any required hose clamps, bolts, U-bolts or other hardware items required to complete those installations must be supplied by the customer or their installation contractor.

The TTA must always be installed with the connectors facing downwards to optimize environmental sealing and to prevent water ingress.



After connecting the system coaxial feeder cables to the TTA, it is recommended to wrap connectors tightly with sealing tape. Starting wrapping 2-3 inches away from the connector, wrapping towards the connector, and finish by completely covering the connector body – making sure that the sealing tape overlaps the connector and the round body of the associated TTA's bulkhead connector.

An M8 stud is provided on the TTA to allow an earthing strap to be fitted between the TTA and an appropriate grounding point on the tower (or other mounting structure).

Both flat and lock washers are supplied on this stud to ensure the earthing strap can be secured for optimum connection integrity.

Figure 9 – TTA Mechanical Details

Note: All dimensions in inches.

Lightning Protection

Lightning Protection and grounding of the system is important. Lightning suppressors are fitted internally in the TTA, but corresponding lightning protectors must be fitted to the "Main" and "Test" coaxial feeder cables at the equipment building entry point.

Note: The Lightning Surge Protectors used on the coaxial feeder cable between the TTA “Main” port and the RMC RF Input port must be a DC-Pass style that is compatible with AISG signalling.

AISG signalling is widely used in the telecommunications industry, and a choice of protectors are available that meet these requirements.

RFI recommends the Polyphaser 109-0501W-A and 109-0501W-B for use with its TTA systems. For consistency, RFI recommends this style of lightning protector be fitted to both the “Main” and “Test” coaxial feeder cables.



109-0501W-A / 109-0501W-B series

The body of each lightning protector must be connected to the Entry Point Ground Bus (refer Figure 9) with a earthing cable or strap.

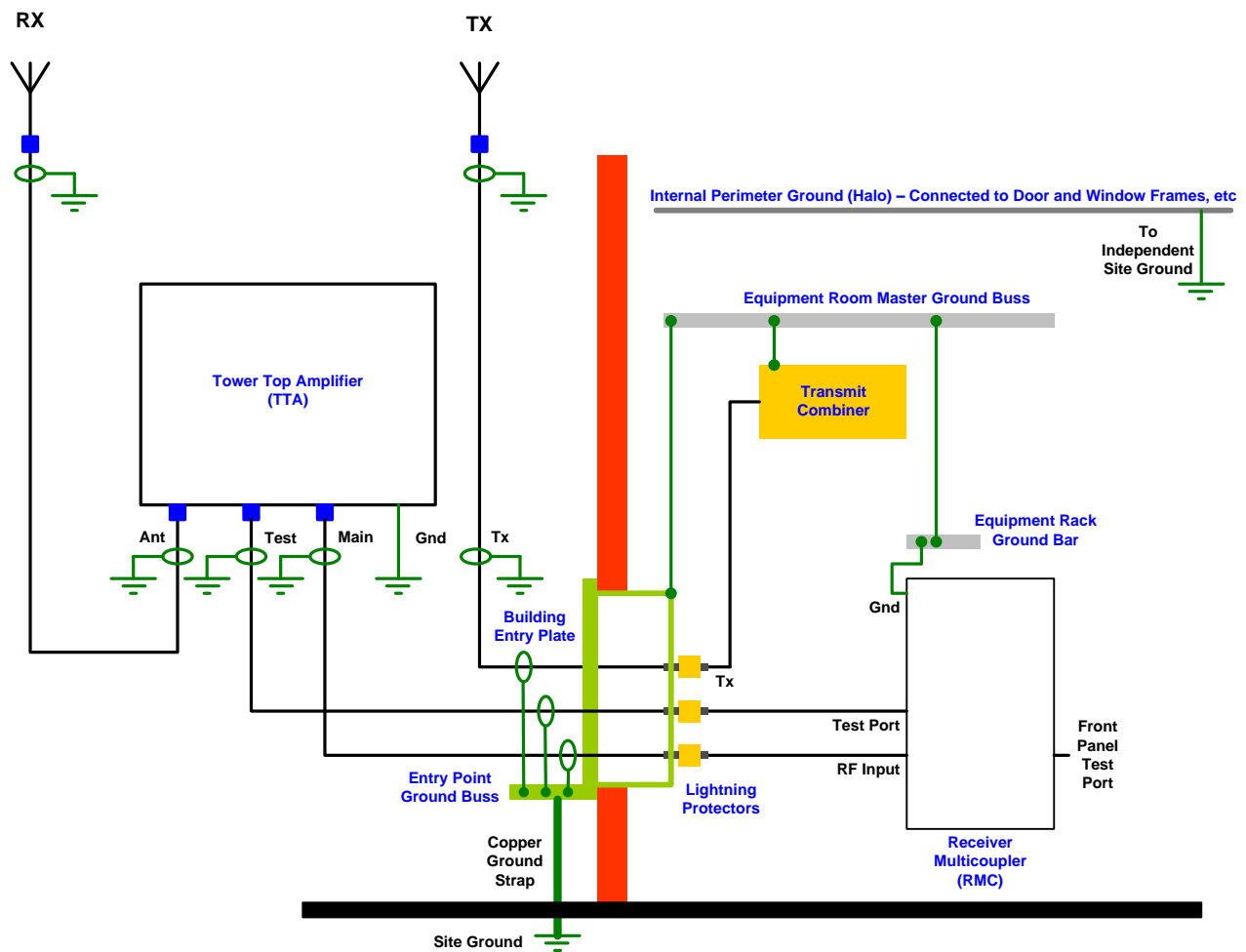
RMC Installation

The RMC is designed to be installed into standard 19inch rack mount frames or cabinet spaces. Install the unit using four screws that match the 19in racking, ensuring nylon washers are used under the head of the screws to protect the RMC front panel.

An M6 stud and M5 screw are located on the rear of the RMC for earthing to the Equipment Rack Ground Bar with an earthing strap or cable. The Equipment Rack Ground Bar should then be tied back to the Entry Point Ground Bus via the Equipment Room master ground Buss (refer Figure 5).

Connect the base station receivers to the RF Output ports on the rear of the RMC using high quality coaxial cable (solid or double-shielded jacket type). Unused RMC RF Outputs need not be terminated, however, any unused EXP PORT should be terminated with 50ohms until connected to an Expansion Multicoupler..

For the RMC power supply, a cable from the DC source should be terminated into the supplied 2-pin plug, observing the correct polarity, and then plugged into the polarized 2-pin Phoenix (F) socket on the rear of the RMC. For AC Mains versions, an AC-to-DC plug pack is provided with a pre-terminated 2-Pin plug. This should be fitted into the power socket on the rear of the RMC.



WARNING

Failure to correctly ground the TTA System may result in equipment failure caused by electrical surge

Figure 10 – TTA System Installation

Installation Summary

Lightning surge protection, cable and equipment grounding, and the appropriate torqueing of connectors and the sealing of terminations are all important facets of any system installation. Careful attention should be given in these areas.

The type of interconnecting coaxial feeder cables that may be used between the TTA and the RMC may vary, but generally their type will be determined by their length (and resulting insertion loss) and associated jumper/tail requirements.

Always follow standards and engineering best practices for equipment installation.

In Diversity Receiver and Dual Receiver system installations, lightning surge protection and cable and equipment grounding should be applied to both sets of equipment.

11. Operation

A USB memory stick is provided with the RMC and contains copies of the QSG (Quick Start Guide), the TTA Series User's Manual and Service Bulletins.

The TTA and RMC can be configured using the RMC front and rear panel switches, or via the integral RMC Web Browser GUI.

In addition to using the integral Web Browser GUI, the TTA and RMC can also be communicated with via the CLI (Command Line Interface) using plain text format via a Telnet IP session. For information on the CLI format please contact the RFI Technical Support team.

When the TTA has been installed and connected to the RMC via the coaxial feeder cables and suitable lightning surge protectors (refer Figure 9), the power source to the RMC may be connected and switched on.

Check that the green "Power" LED light on the RMC front panel is illuminated.

All of the RMC front panel LEDs will flash on shortly afterwards, and the remaining illuminated LEDs will reflect the current state of the TTA and RMC (and any current alarms).

The TTA System is now ready for configuration and/or operation.

12. Commissioning

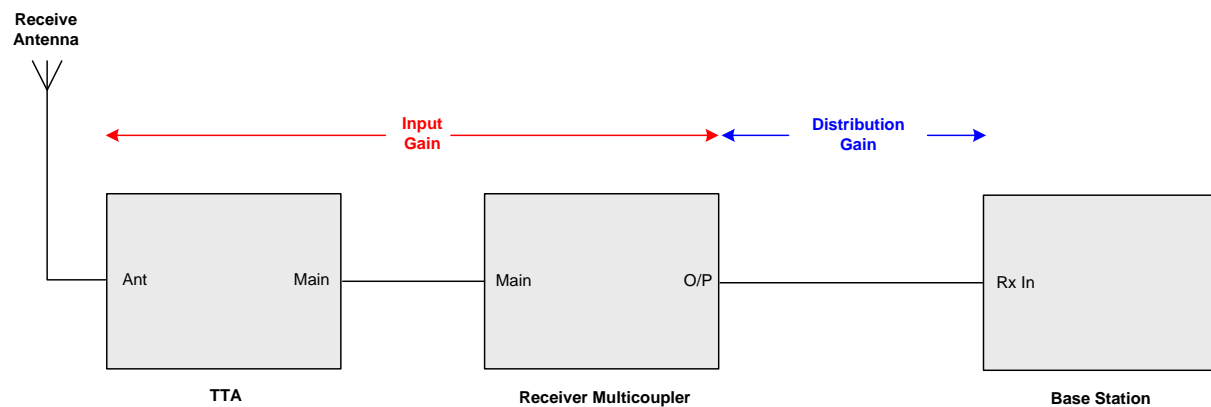
It is important that the TTA system is commissioned correctly to ensure that the best system performance is achieved. An appropriate commissioning process that is designed to standardize the testing and performance evaluation of these systems, and which includes nominating the values that attenuators in the RMC should be configured to, should be followed.

Note: The RMC features an “Auto” configuration feature to simplify the commissioning of the TTA/RMC system. Please refer to section 13.15 of this manual for further information on using the Auto configuration feature.

Configuration of TTA/RMC System

The Input Gain is the nett gain value of the system between the TTA antenna input, and the RMC receiver output ports. It includes the TTA gain, TTA-to-RMC coaxial cable feeder loss, and overcoming the RMC output divider losses.

The Distribution Gain overcomes the coaxial cable losses between the RMC and the Base Station receiver input.



Using an example Input Gain of 15dB for a 700/800MHz system, the Input Gain Attenuator switch position (or optionally accessed with the webserver GUI) should be set as per the following table;

Required Input Gain	“Main” TTA to RMC Feeder Insertion Loss	Input Gain Attenuator Setting	
		x 10	x 1
15 dB	0 dB	0	6
15 dB	1 dB	0	5
15 dB	2 dB	0	4
15 dB	3 dB	0	3
15 dB	4 dB	0	2
15 dB	5 dB	0	1
15 dB	6 dB	0	0

Table 9

For example for the recommended Input Gain of 15dB, and if the "Main" TTA to RMC coaxial feeder cable has an insertion loss of 3dB, then the Input Gain Attenuator switch should be set to position 03.

Example:

TTA Gain	25dB
<i>Internal Circuitry (loss)</i>	<i>- 4dB</i>
TTA to RMC Feeder Insertion Loss	- 3dB
<i>Input Gain Attenuator setting "03"</i>	<i>- 3dB</i>
Input Gain	15dB

This initial Input Gain Attenuator value may be adjusted as a result of optimising the system installation.

Example:

TTA Gain	25dB
<i>Internal Circuitry (loss)</i>	<i>- 4dB</i>
TTA to RMC Feeder Insertion Loss	- 3dB
<i>Input Gain Attenuator setting "05"</i>	<i>- 5dB</i>
Input Gain	13dB

Post TTA Filter

If a Post TTA Filter is connected to the FILTER connectors on the rear of the RMC, and is switched to be 'in-line' (i.e. Filter LED 'on'), the insertion loss of the filter should be included in determining the Input Gain Attenuator switch setting. Simply add the Post TTA Filter's insertion loss value to the main feeder cable loss and use the total loss together with the above table to determine the correct switch setting.

For example if the Post TTA Filter insertion loss is 2.5dB (including interconnecting cables) and the feeder loss is 2.5dB, the sum is 5dB. The above table indicates the switches should be set to '01'.

Example:

TTA Gain	25dB
<i>Internal Circuitry (loss)</i>	<i>- 4dB</i>
TTA to RMC Feeder Insertion Loss	- 5dB
<i>Input Gain Attenuator setting "01"</i>	<i>- 1dB</i>
Input Gain	15dB

The Distribution Gain of the RMC overcomes the distribution cabling losses between the RMC RF Outputs and the connected base station receivers.

This switch is set to provide a value between 0 and 4 to provide distribution gain compensation as per the following table;

Distribution Cable Loss	DIST GAIN ATTEN Switch position
0 dB	4
1 dB	3
2 dB	2
3 dB	1
4 dB	0

Table 10

Note on Attenuator Settings:

The RMC unit contains digital attenuators for setting the Input Gain and the Distribution Gain. Both the Input Gain and Distribution Gain must be configured as part of the RMC/TTA system's commissioning.

The correct adjustment of these attenuators maintains protection of the base station receivers against high level signals – while obtaining the best system sensitivity possible.

In 700/800MHz TTA system models, Input Gain is shipped from the factory with a default setting of switch position 3. For an Input Gain of 15dB, this assumes a 3dB "Main" coaxial feeder cable insertion loss. Distribution Gain is also shipped with a default switch position 3, which assumes a distribution cable insertion loss of 1dB.

The values selected may be determined by the RMC rear panel switches (factory default), or via the integral webserver GUI that may be accessed using a computer and a web browser.

Note: The same gain adjustment process is used for both sides of a dual TTA system.

Configuration of Gain Balance in dual TTA Systems

The configuration of Gain Balance in dual TTA systems can be performed as follows;

RF Path "A" (RxA)

1. In the Configuration – TTA screen select the *Terminate* check box in the *Test Mode* line.
2. Connect a Signal Generator to the RMC front panel BNC connector *TEST* port.
3. Inject a signal at a test frequency within the frequency passband of the TTA (i.e. at a level of -60dBm) and measure the level of that frequency at one of the RxA's Receiver Multicoupler (RMC) unit's RF output ports. Alternatively, this signal level could also be read as Rx RSSI Level from a Base Station operating on the Signal Generator's frequency.
4. Record the measured signal level value.

RF Path "B" (RxB)

5. Measure the level of that frequency at one of the RxB's Receiver Multicoupler (RMC) unit's RF output ports.
6. Adjust the *Input Gain* setting of RxB's TTA unit until this measured level closely matches the value recorded for RF Path "A" (RxA) in step 4.

The values achieved for both RxA and RxB RF paths should be as closely matched as possible for optimum dual TTA system operation.

TTA Test Port

The TTA uses a non-directional coupler to inject test signals into the receive system from the RMC front panel Test Port. The coupler has a value of 30dB (typ.). The insertion loss of the Test Port coaxial feeder cable must also be taken into account.

Measuring Static System Sensitivity (SSS)

To measure the Static System Sensitivity the signal level into the first amplifier must be known. To do this, use one of the Test Modes of the TTA system.

- a) Place the TTA into the *Term Mode*.
- b) Inject a test signal into the RMC Test Port on the test base station receiver frequency. Adjust the test signal level until the nominated system SINAD or BER is indicated by the test receive frequency's associated base station.

The Static System Sensitivity (SSS) is calculated using the formula;

$$SSS \text{ (dBm)} = \text{Injected level into RMC Test Port (dBm)} - \text{TTA Test Port Feeder Loss} - \text{TP Coupler (i.e. 30dB)}$$

Example

If the TTA Test Port Feeder cable is 3/8" and has 3.62dB of loss per 30m and is 60m long, then the TTA Test Port feeder loss is 7.24dB. This derives an adjustment value of 37.2dB ($3.62 \times 2 + 30\text{dB} = 37.2\text{dB}$). If the injected signal into the RMC front panel Test Port was required to be at -86.8dBm to achieve the nominated system performance BER, the actual Static System Sensitivity (SSS) would be -124dBm.

Measuring Effective Receiver Sensitivity (ERS)

To measure the Effective Receiver Sensitivity the receive antenna must now be connected.

- c) Disable the *Term Mode*.
- d) Re-adjust the test signal level until the nominated system SINAD or BER is again indicated by the test receive frequency's associated base station.

The Effective Receive Sensitivity (ERS) is calculated using the formula;

$$ERS \text{ (dBm)} = \text{Injected level into RMC Test Port (dBm)} - \text{TTA Test Port Feeder Loss} - \text{TP Coupler (30dB)}$$

Example

If the injected signal into the RMC front panel Test Port is now required to be at -83.8dBm to achieve the nominated system performance BER, for the same adjustment value of 37.2dB, the actual Effective Receive System Sensitivity (SSS) would be -121dBm.

Degradation

The degradation within the receiver system is the difference between the measured SSS and ERS values. In the above examples, this is Degradation = 3dB.

History – Performance Record

The RMC allows the parameters determined in the SSS and ERS testing to be saved in the History – Performance Record screen in the GUI.

The Performance Record provide a convenient and easy to use method for storing the parameters and measured results of the SSS and ERS process, against a selected date. This data is stored in non-volatile memory within the RMC.

If you do not wish to use the Performance Record feature in the GUI, please ensure you record all site equipment details and measurements and store them in a secure place for later reference.

13. Manual Setup and Operation

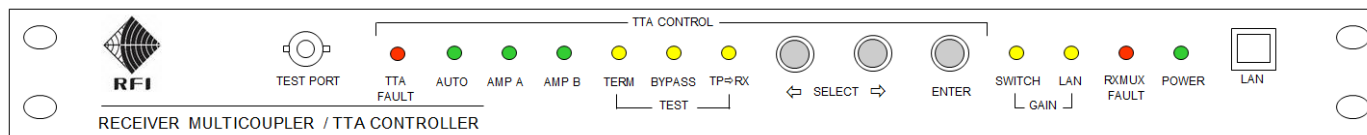


Figure 11 – RMC Front Panel Layout

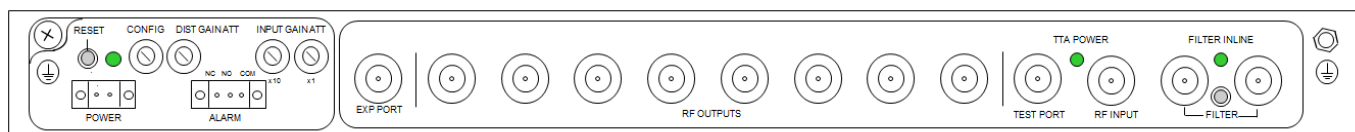


Figure 12 – RMC Rear Panel Layout

13.1 RMC - Rear Panel Switches

INPUT GAIN ATTEN switch

The Input Gain Atten switch configures the receiver system's Input Gain. This value is the attenuator value required to achieve the desired input gain – with the gain of the TTA, the loss of the receive coaxial feeder cable, and the RMC input circuitry taken into account.

The input gain attenuator should be set based on the following table;

Required Input Gain	"Main" TTA to RMC Feeder Insertion Loss	Input Gain Attenuator Setting	
		x 10	x 1
15 dB	0 dB	0	6
15 dB	1 dB	0	5
15 dB	2 dB	0	4
15 dB	3 dB	0	3
15 dB	4 dB	0	2
15 dB	5 dB	0	1
15 dB	6 dB	0	0

Table 11

If an invalid setting is selected (i.e. 16 to 98), the maximum attenuator value will be used, and the front panel "SWITCH" LED will flash. If 99 is selected on the Input Gain Atten switches during the Power Up sequence, the RMC will be forced into Switch control mode.

For a nominated "TTA to RMC Feeder Insertion Loss", an Input Gain Attenuator setting above the value shown in the above table will result in a corresponding decrease in the system's Input Gain.

Example:

TTA Gain	25dB
<i>Internal Circuitry (loss)</i>	<i>- 4dB</i>
TTA to RMC Feeder Insertion Loss	- 3dB
<i>Input Gain Attenuator setting "03"</i>	<i>- 3dB</i>
Input Gain	15dB

This initial Input Gain Attenuator setting may be adjusted as a result of site performance optimisation.

Example:

TTA Gain	25dB
<i>Internal Circuitry (loss)</i>	<i>- 4dB</i>
TTA to RMC Feeder Insertion Loss	- 3dB
<i>Input Gain Attenuator setting "05"</i>	<i>- 5dB</i>
Input Gain	13dB

Post TTA Filter

If a Post TTA Filter is connected to the FILTER connectors on the rear of the RMC, and is switched to be 'in-line' (i.e. Filter LED 'on'), the insertion loss of the filter should be included in determining the Input Gain Attenuator switch setting. Simply add the Post TTA Filter's insertion loss value to the main feeder cable loss and use the total loss together with the above table to determine the correct switch setting.

For example if the Post TTA Filter insertion loss is 2.5dB (including interconnecting cables) and the feeder loss is 2.5dB, the sum is 5dB. The above table indicates the switches should be set to '01'.

Example:

TTA Gain	25dB
<i>Internal Circuitry (loss)</i>	<i>- 4dB</i>
TTA to RMC Feeder Insertion Loss	- 5dB
<i>Input Gain Attenuator setting "01"</i>	<i>- 1dB</i>
Input Gain	15dB

CONFIG switch

The Config switch reflects the number of RMC RF outputs that are being used in the system. By setting the Config switch, the RMC will configure its internal digital attenuators to enable the Distribution Gain to be correctly set with the Distribution Gain Attenuator switch.

CONFIG Switch position	Operating Mode
1	Up to 8 RF Outputs available Expansion Port is internally terminated
2	Up to 9 RF Outputs available Expansion Port configured as an additional RF Output
3	Up to 16 RF Outputs available Expansion Port configured for an 8way Expansion Deck to be connected
4	Up to 64 RF Outputs available Expansion Port internally terminated 8way Expansion Multicoupler connected to each of 8 RF Outputs as required
5	Up to 128 RF Outputs available Expansion Port configured for an 8way Expansion Deck to be connected 8way Expansion Multicoupler connected to each of 16 RF Outputs as required

Table 12

DIST GAIN ATTEN switch

The Distribution Gain of the RMC overcomes the distribution cabling losses between the RMC RF Outputs and the connected base station receivers.

This switch is set to provide a value between 0 and 4 to provide distribution cabling losses compensation as per the following table;

Distribution Cable Loss	DIST GAIN ATTEN Switch position
0 dB	4
1 dB	3
2 dB	2
3 dB	1
4 dB	0

Table 13

Note: The same CONFIG switch and gain adjustment process is used for both sides of a dual TTA system.

13.2 Rear Panel Switches and LED Indicators

RESET switch

The RESET switch has two modes of use;

1. To reset the RMC back to the Factory Default settings. This will also reset of all the RF Configuration settings and the TCP/IP address parameters.

To perform a Factory Default Reset, simply switch the RMC off by removing the DC power cable connector. Press the factory RESET button on the rear of the RMC, reconnect the DC power while continuing to hold the RESET button down for up to 10 seconds. When the green power LED light starts flashing, the reset has started and the reset button may be released.

Note: This will cause the IP address, subnet and gateway addresses and all other configuration data to be reset back to factory default address.

2. To reset the RF Configurations only, without disconnecting the power source, simply press and hold down the factory reset button until the green "Power" LED light starts flashing. The RESET button may then be released.

Factory Default settings

IP Address / Access Details

DHCP - Disabled
IP Address - 192.168.1.200
Subnet Mask - 255.255.255.0
Gateway - 192.168.1.254
Level 1 User Name: user
Level 1 Password: user
Level 2 User Name: admin
Level 2 Password: admin

RF Configuration Settings (RMC)

Auto Mode – Enabled
Gain Control – Switch
Hardware Configuration In Use – 1
Input Gain AUTO Mode – Disabled
Distribution Gain AUTO Mode - Disabled
Config Switch Setting - 1
Input Gain Switch Setting – 03
Distribution Gain Switch Setting – 3
Post Filter – Disabled
Alarm Delay – 5 seconds

RF Configuration Settings (TTA)

Amplifier Mode – Auto
TTA Alarm Mode
Gain Boost - Disabled
Auto Bypass - Disabled
Auto Recover - Disabled
Test Mode
Terminate – Disabled
Bypass – Disabled
TP to RX - Disabled
Test Mode Timeout – 1 Minute
Bypass with Timeout Off – (as per current setting, does not default)

At the completion of either of the 2 reset options, you will need to wait a short time for the RMC to complete its initialization sequence.

IN-LINE FILTER switch

The in-line filter switch activates the rear panel filter ports and allows the inclusion of a TTA post filter into the system.

The use of a post filter can provide two benefits in a receiver system;

1. To increase receive system selectivity (i.e. improve out-of-band rejection) beyond that already provided by the >110dB provided by the existing TTA preselector, and
2. To reduce the TTA's 794-824MHz passband to a narrower bandwidth to reject unwanted signals or to improve the immunity of the receiver system to noise and/or interference.

When not enabled, the filter ports are bypassed internally within the RMC. When enabled, all RF signals are routed via these ports - prior to distribution to the RMC RF Outputs.

To enable the filter, press the recessed pushbutton switch located behind the lower hole between the filter BNC connectors, or select it in the *Configure – RMC* GUI page.

IN-LINE FILTER LED indicator

When enabled, the green LED indicator between the in-line filter ports will be lit.

TTA POWER indicator

When the TTA is powered, the green LED indicator between the RF Input and TEST ports will be lit.

POWER ON LED indicator

When the RMC is powered, the green LED indicator above the power connector will be lit.

13.3 Front Panel Switches and LED Indicators

SELECT and ENTER switches

The two SELECT switches on the front panel of the RMC determine the TTA/RMC function to be modified.

To operate, press either button and one of the front panel LEDs will flash. Using either of the Select switches, scroll left or right until the desired function's corresponding LED is flashing.

Press the ENTER switch to toggle the selected state of that function. Using this method, valid combinations of the various TTA and RMC functions can be selected.

When first pressed, either SELECT switch will flash the corresponding LED for the function that was last selected – allowing the last modification to be easily and quickly restored if required.

Note: The last configuration of features will be remembered and restored in the event of a power interruption. The original default configuration is applied during either of the two reset button initiated reset modes.

TTA FAULT LED indicator

When lit, a fault condition is current in the TTA unit.

AUTO LED indicator

When lit, the selection of TTA RF path ("A" or "B") is set to "AUTO" and is controlled and automatically maintained by the RMC determined by any alarm condition being monitored from either Amplifier A or Amplifier B.

AMP A / AMP B LED indicator

When lit, these LEDs indicate which TTA RF path is selected and active.

TERM LED indicator

When lit, this LED indicates when the Term switch is active, and the termination is switched into circuit in the TTA.

BYPASS LED indicator

When lit, this LED indicates when the Bypass switches are active, and the RF signal path is bypassing both RF AMP A and RF AMP B.

SWITCH LED indicator

When lit, this LED indicates that the gain of the RMC is currently controlled by the rear panel switches.

LAN LED indicator

When lit, this LED indicates that the gain of the RMC is currently controlled by the GUI settings.

RMC FAULT LED indicator

When lit, a fault condition is current in the RMC unit.

POWER LED indicator

When lit, power is applied to the RMC.

14. GUI Setup and Operation

14.1 Ethernet Connection Set-up

Web Browser GUI (Graphical User Interface)

The RMC utilizes an on board Graphical User Interface (GUI) web server to provide configuration and status monitoring using a web browser and a computer. This can be accessed either locally by connecting to the RMC with a short Ethernet jumper cable from a laptop/notebook directly to the RMC or remotely via a TCP/IP network. The TTA is accessible via the RMC GUI.

A standard Ethernet CAT5e jumper cable terminated with RJ45 connectors at either end is provided for convenience in the packing box with the RMC. Plug one end of this Ethernet jumper cable into the RMC and the other end into your computer Ethernet socket.

The following web browsers are compatible with the RMC GUI;

- Internet Explorer 8
- Firefox V3.6
- Chrome V9
- Safari V5.

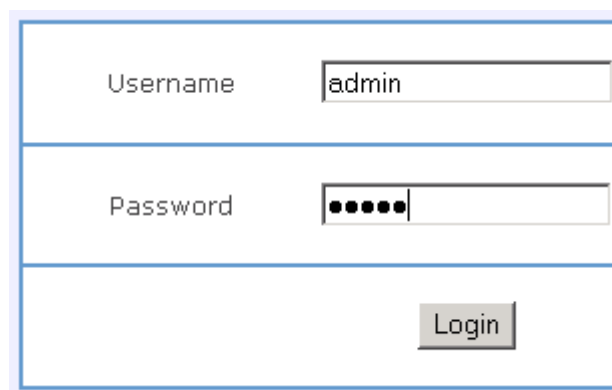
NOTE: The History Chart screen may not display correctly due to documented issues with Internet Explorer™ Version 10. The use of an alternate web browser is recommended.

IP Address

Initiate your web browser and type in the address field the following default address;

<http://192.168.1.200> (RMC factory default address)

Connectivity to the RMC is successful when the following “Log In” page appears.



The screenshot shows a login form with a light blue border. It contains three sections: a 'Username' field with the text 'admin' entered, a 'Password' field with six black dots for masking, and a 'Login' button at the bottom right.

Should the web browser be unable to open this session, it may be necessary to set the IP address of your computer to an address in the same IP range (i.e. 192.168.1.180).

This is done for example in Windows XP™ in the following manner;

1. Select "Start" from status menu
2. Single click – "Control Panel"
3. Double click – " Network Connections"
4. Double click - "Local Area Connection"
5. In Local Area Connections Status box, single click the "Properties" button.
6. When the Local Area Connection Properties box opens, select only the "Internet Protocol (TCP/IP)" choice.
7. Click "Properties" button.
8. Click "Use the following IP address.
9. Enter next to *IP address* 192.168.1.180
10. Enter next to *Subnet mask* 255.255.255.0
11. Enter next to *Default gateway* 192.168.1.254
12. Click "OK" to initiate changes.

This is done for example in Windows 7™ in the following manner;

1. Select "Start" from status menu
2. Single click – "Control Panel"
3. Single click – " Network and Sharing Center"
4. Single click - "Change Adapter Settings" on the left hand side menu
5. Single Click – "Local Area Connection" box
6. Single Click – "Change Settings of this Connection"
6. When the Local Area Connection Properties box opens, select only the "Internet Protocol 4 (TCP/IPv4)" choice.
7. Click "Properties" button.
8. Click "Use the following IP address".
9. Enter next to *IP address* 192.168.1.180
10. Enter next to *Subnet mask* 255.255.255.0
11. Enter next to *Default gateway* 192.168.1.254
12. Click "OK" to initiate changes.

Should you still be unable to successfully connect to the RMC via the default IP address then the IP address may have already been changed. If there is no possibility of recovering the changed IP address, then it will be necessary to reset the RMC to the factory default settings.

Reset to factory default Ethernet addressing.

To reset the RMC back to the Factory Default settings will mean a complete reset of all RF settings and the IP address parameters. To perform a Factory Reset, simply switch the RMC off by removing the DC power cable connector. Press the factory RESET button on the rear of the RMC, reconnect the DC power while continuing to hold the RESET button down for up to 30 seconds. When the green power LED light starts flashing, the reset has started and the reset button may be released.

Note: This will cause the IP address, subnet and gateway addresses and all other configuration data to be reset back to factory defaults.

Should you wish to only reset the RF configuration simply press the factory reset button for 10 seconds without disconnecting the power source.

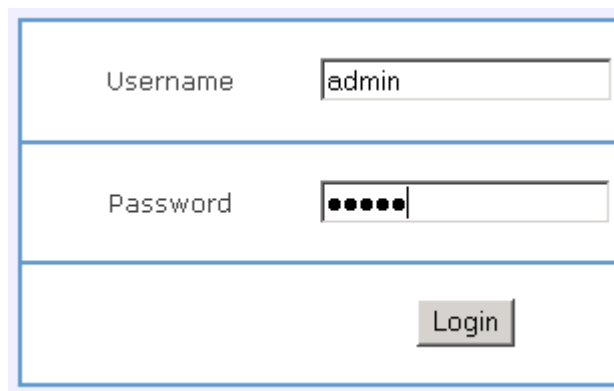
RF Configuration Settings (RMC)

Auto Mode – Enabled
Gain Control – Switch
Hardware Configuration In Use – 1
Input Gain AUTO Mode – Disabled
Distribution Gain AUTO Mode - Disabled
Config Switch Setting - 1
Input Gain Switch Setting – 03
Distribution Gain Switch Setting – 3
Post Filter – Disabled
Alarm Delay – 5 seconds

RF Configuration Settings (TTA)

Amplifier Mode – Auto
TTA Alarm Mode
Gain Boost - Disabled
Auto Bypass - Disabled
Auto Recover - Disabled
Test Mode
Terminate – Disabled
Bypass – Disabled
TP to RX - Disabled
Test Mode Timeout – 1 Minute
Bypass with Timeout Off – (as per current setting, does not default)

14.2 Log In Page



The screenshot shows a login form with a light blue border. It contains three sections: a 'Username' field with the text 'admin' entered, a 'Password' field with seven black dots representing masked characters, and a 'Login' button located at the bottom right of the form.

The default User Name is “admin” and Password is “admin”. This default user name and password provides complete and unrestricted access to the RMC (level 2). Once logged in, this can be changed via the User Management screen under the Maintenance menu tab.

User Name and Password Levels

Level 1: User name and password access via the web browser GUI interface displays only status screens.

Level 2: User name and password access via the web browser GUI interface displays status, and allows editing of the configuration and maintenance screens.

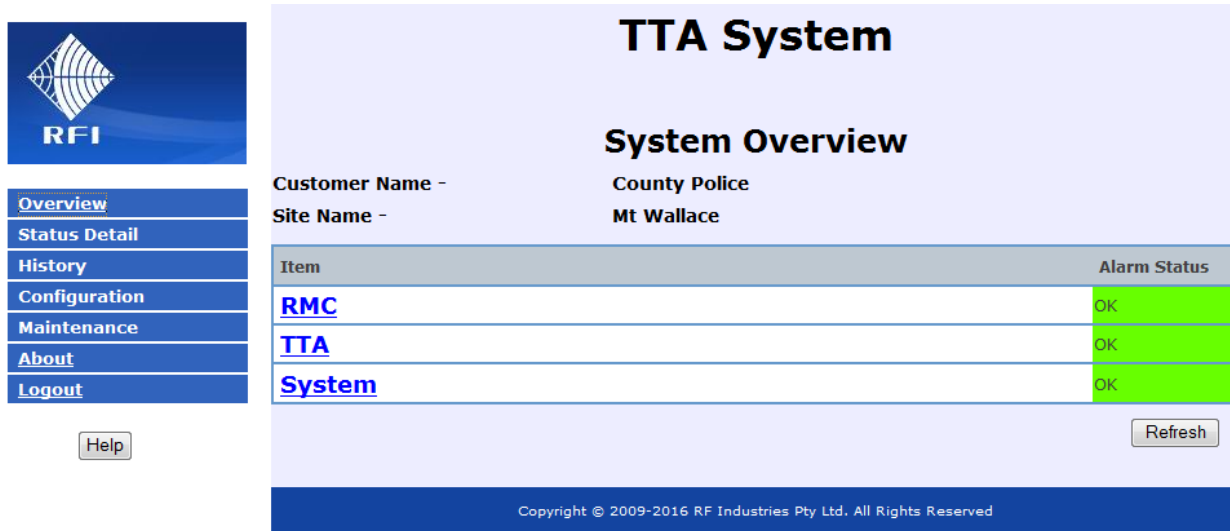
Once the correct User Name and Password is entered the GUI will open to the first page of the GUI.

GUI Page Headers

The first page that appears in the GUI is the “System Overview” page.

This page is headed with the name of the product and the model reference. The “Customer Name” and “Site Name” will display either the factory default fields (as “Not Defined”) or the names allocated to each under the “Configuration – User Data” menu item which allows the user to define the customer name and respective site name.

14.3 System Overview



Item	Alarm Status
RMC	OK
TTA	OK
System	OK

This page displays an overview of the system status.

For the System, the overall summary alarm status is displayed, for the TTA, the RMC and the overall System.

Item:

The group of parameters relevant to each item title.

Alarm Status:

The “Fail” or “OK” summary status for the Group.

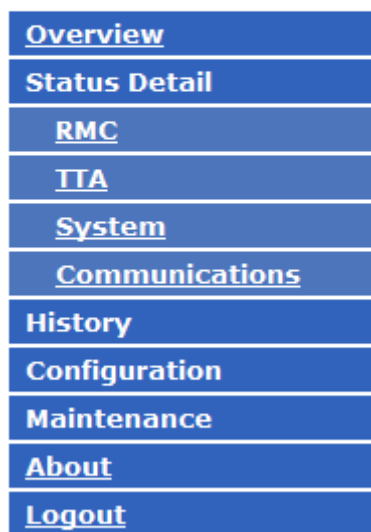
The “Refresh” button reloads the page, updating the status information.

Clicking the Item will navigate to that nominated item's details page.


14.4 Status Detail Menu

The “Status Detail” menu allows all of the System’s parameters to be viewed.

Selecting each indented topic under “Status Detail” will display that item as a separate display page.



14.5 Status Detail – RMC



Status - RMC

Customer Name - County Police

Site Name - Mt Wallace

Status

	Status
Amplifier	OK
Temperature	OK
Power	OK
TTA Power Feed	OK
Post Filter	DISABLED
Gain control	SWITCHES
Auto Gain (Amplifier fault)	INACTIVE

Settings

	Switch	LAN	In Use
Hardware Configuration	1	5	1
Input Gain Attenuator	3 dB	0 dB	3 dB
Distribution Gain Attenuator	3 dB	0 dB	3 dB

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The RMC “Status Detail” page reports the current status of the RMC settings. The current alarm status is shown in the background color ... i.e. green = OK, red = Alarm. Yellow indicates which configuration medium has control of the current system operation ... i.e. the Switches on the rear panel, or the LAN (webserver GUI).

Status

Amplifier:

Indicates if one or both sides of the quadrature amplifier have a fault.

Temperature:

Indicates if the RMC operating temperature is within acceptable limits.

Power:

Indicates if the RMC power supply voltages are within tolerances.

TTA Power Feed:

Indicates if the TTA power supply voltage is within of tolerances.

Post Filter:

Indicates if the TTA Post Filter is selected.

Gain Control:

Indicates if the Input and Distribution Gain settings are being determined by the rear panel switches (Switch), or the Ethernet (LAN) settings.

Auto Gain:

Indicates if the Auto Gain feature has been activated by a fault condition in one side of the RMC quadrature amplifier. When a fault is detected on one side of the quadrature amplifier, the Distribution Gain of the RMC is automatically increased to compensate by the lower gain that the quadrature amplifier will deliver in this fault state. This feature ensures the optimum system performance can be maintained for subscribers until the fault condition is rectified.

Settings**Hardware Configuration:**

Indicates the setting of the Hardware Configuration, on both the rear panel CONFIG switch (Switch) and the Ethernet (LAN) settings, and which is being presently used (In Use).

Input Gain Attenuator:

Indicates the setting of the Input Gain Attenuator, on both the rear panel INPUT GAIN ATTEN switch (Switch) and the Ethernet (LAN) settings, and which is being presently used (In Use).


Distribution Gain Attenuator:

Indicates the setting of the Distribution Gain Attenuator, on both the rear panel DIST GAIN ATTEN switch (Switch) and the Ethernet (LAN) settings, and which is being presently used (In Use).

Refresh:

Click this button to manually trigger one measurement and status update cycle.

14.6 Status Detail - TTA



- [Overview](#)
- [Status Detail](#)
- [RMC](#)
- [TTA](#)
- [System](#)
- [Communications](#)
- [History](#)
- [Configuration](#)
- [Maintenance](#)
- [About](#)
- [Logout](#)

Status - TTA

Customer Name -
Site Name -

County Police
Mt Wallace

Status

	Status
Comms	OK
Power	OK
Amp-A	OK
Amp-B	OK
Temperature	OK

Mode

Operating Mode	Setting	Status
Auto	SELECTED	
Amp-A	AUTO	ON
Amp-B	AUTO	OFF

Test Mode	Setting
Terminate	OFF
Bypass	OFF
TP -> RX	OFF

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The TTA “Status Detail” page reports the current status of the TTA settings. The current alarm status is shown in the background color – green = OK, red = Alarm.

Status

Comms:

Indicates that signalling communications are present between the TTA and the RMC.

Power:

Indicates that the TTA power supply voltages are within tolerances.

Amp-A:

Indicates if Quadrature Amplifier A has a fault.

Amp-B:

Indicates if Quadrature Amplifier B has a fault.

Temperature:

Indicates if the TTA operating temperature is within acceptable limits.

Mode**Auto:**

Indicates if the "Auto" TTA quadrature amplifier change-over function is active. When "SELECTED", the RMC will monitor the alarm status of the TTA quadrature amplifiers and will automatically initiate a change in TTA amplifier path should one path experience a failure.

Amp-A:

Setting indicates the operational mode of TTA quadrature amplifier "A" RF path. When in "AUTO", the RMC will allocate TTA Amp A as the active TTA RF path - unless it has a fault condition (see "Auto" above). *Status* indicates its current operating condition. If *Bypass (with Timeout Off)* has been selected in the *Configuration – TTA* screen both amplifiers will be bypassed and this field will display "BYPASS", and the corresponding Status will be "OFF".

Amp-B:

Setting indicates the operational mode of TTA quadrature amplifier "B" RF path. When in "AUTO", the RMC will allocate TTA Amp B as the backup TTA RF path – unless it has a fault condition (see "Auto" above). *Status* indicates its current operating condition. If *Bypass (with Timeout Off)* has been selected in the *Configuration – TTA* screen both amplifiers will be bypassed and this field will display "BYPASS", and the corresponding Status will be "OFF".

Terminate:

Indicates the state of the Term test mode switch in the TTA. When "on", the input to the TTA (and therefore the receive system) is switched to a 50ohm termination. When "off", the system is in its normal operating mode, with the input to the TTA is connected through to the Rx antenna (via the TTA preselector). This feature is used for determining the Static System Sensitivity as part of the system's commissioning process.

Bypass:

Indicates the state of the Bypass switch in the TTA. When "on", the Bypass mode is selected, and the TTA preselector output is connected through to the RMC until the selected timeout period expires (the TTA amplifiers and Test mode switch have been bypassed). When "off", the system is in its normal operating mode, with the output of the TTA preselector connected to the selected quadrature amplifier RF path. If *Bypass (with Timeout Off)* has been selected in the *Configuration – TTA* screen then the selected Test Mode timeout period does not apply, the TTA will remain in the Bypass Mode, and this field will display "BYPASS".


Test Port to Rx Input:

Indicates the state of the Test switch in the RMC. When "on", the RMC front panel Test Port is connected to the rear RMC RF Input port. This allows monitoring of the TTA input to the RMC for system measurement and fault finding purposes. When "off", the system is in its normal operating mode, with the rear RMC RF INPUT port connected to the RF Outputs ports via the RMC quadrature amplifier.

Refresh:

Click this button to manually trigger one measurement and status update cycle.

14.7 Status Detail – System



[Overview](#)
[Status Detail](#)
[RMC](#)
[TTA](#)
[System](#)
[Communications](#)
[History](#)
[Configuration](#)
[Maintenance](#)
[About](#)
[Logout](#)

Status - System

Customer Name -
Site Name -

County Police
Mt Wallace

Settings

Setting	Value
RMC	
Model	RX6996-3408-44-12B
Firmware Version	V1.6_RC1
GUI Version	1.5
Hardware Revision	0
Serial Number	16088042
Date (mm/dd/yy), Time (hh:mm:ss)	2/7/2017, 16:52:42
TTA	
Model	TA7982-0100-10-00
Firmware Version	6.2
Hardware Revision	5.0
Serial Number	13040010

Alarm Summary

Alarm	Status
RMC	OK
TTA	OK
Alarm Relay	OK

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This System “Status Detail” page reports the current system settings and alarm summary. The current alarm status is shown in the background color – green = OK, red = Alarm.

RMC

Model:

The model designator of this RMC unit.

Firmware Version:

The version of the firmware.

GUI Version:

The version of the GUI.

Hardware Revision:

The hardware revision status of the unit. Future hardware revision levels may add additional capabilities.

Serial Number:

The serial number of this unit.

Date, Time:

The date and time as maintained by the on-board real time clock. Refreshing the page will update this setting.

TTA**Model:**

The model designator of the connected TTA unit.

Firmware Version:

The version of the firmware in this TTA.

Hardware Revision:

The hardware revision status of this TTA. Future hardware revision levels may add additional capabilities.

Serial Number:

The serial number of this TTA.

Alarms**RMC:**

Indicates an alarm condition is present within the RMC.

TTA:

Indicates an alarm condition is present within the TTA.


Alarm Relay:

Indicates the state of the Alarm Relay on the rear panel of the RMC. A "FAIL" indicates an alarm condition is present within the RMC or the TTA and that the Alarm Relay is activated.

Refresh:

Reloads the page, updating the status information.

14.8 Status Detail – Communications



Overview

Status Detail

RMC

TTA

System

Communications

History

Configuration

Maintenance

About

Logout

Help

Status - Communications

Customer Name -

County Police

Site Name -

Mt Wallace

Ethernet

Setting	Stored Value	Currently In Use
MAC Address	00:50:C2:97:EF:82	
DHCP	Disabled	Disabled
IP Address	192.168.1.235	192.168.1.235
Subnet Mask	255.255.255.0	255.255.255.0
Gateway	192.168.1.254	192.168.1.254
Port 23 Command Line Interface	Enabled	

Email

Setting	Stored Value
Send Status Change Messages	Disabled
SMTP Server IP Address	209.173.141.248
SMTP Server Listening Port	25
From Email Address	noreply@localhost
Destination Email Address(es)	john@workshop.com.au

SNMP

Setting	Stored Value	
Send Alarm Notifications (Traps)	Disabled	
SNMP GET Requests (Port 161)	Enabled	
	Primary	Secondary
SNMP Manager IP Address	0.0.0.0	0.0.0.0
SNMP Manager Listening Port	162	162

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This Communications "Status Detail" page reports the current Communications settings.

Ethernet

MAC Address:

The physical MAC address of the unit.

DHCP:

If the stored value is enabled, the unit will attempt to get its IP Address, Subnet Mask and Gateway settings from a DHCP server. If a DHCP server cannot be found, the stored settings will be used and the Currently In Use status will show as disabled.

If disabled, the stored values will be used unconditionally.

IP Address:

The Stored and Currently In Use IP address values.

Subnet Mask:

The Stored and Currently In Use network address mask values.

Gateway:

The Stored and Currently In Use gateway address values.

Port 23 Command Line Interface:

Indicates if Port 23 is enabled or disabled for Command Line Interface use. Disabling this port when not in use is recommended for optimum cyber security.

Email**Send Status Change Messages:**

Indicates if *System Status Change messages* will be sent via email.

SMTP Server IP Address:

The IP address that email messages will be sent to.

SMTP Server Listening Port:

The port number used by the SMTP server.

From Email Address:

The email address that this unit will appear as in email messages.

Destination Email Address(es):

The email address(es) that this unit will send email messages to. (up to 4 addresses may be used)

SNMP**Send Alarm Notifications (Traps):**

Indicates if sending SNMP Traps are enabled or disabled.

SNMP GET Requests (Port 161):

Indicates if Port 161 is enabled or disabled for SNMP GET requests. Disabling this port when not in use is recommended for optimum cyber security.

SNMP Manager IP Address:

The IP address that SNMP notifications (Traps) will be sent to. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

SNMP Manager Listening Port:

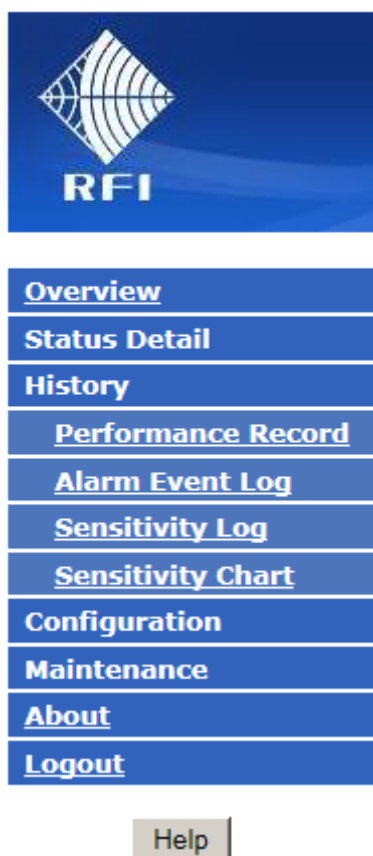
The port number used by the SNMP Manager. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

Note: SNMP MIB files for the RMC are available from RFI and the www.rfiwireless.com.au website.


14.9 History Menu

The “History” menu allows the TTA and RMC’s logged data to be viewed.

Selecting each indented topic under “History” will display that item as a separate display page.



14.10 History – Performance Record



- Overview
- Status Detail
- History
- Performance Record**
- Alarm Event Log
- Sensitivity Log
- Sensitivity Chart
- Configuration
- Maintenance
- About
- Logout

Help

History - Performance Record

Customer Name -

Police

Site Name -

Mt Carrie

Setting	Value
Test Cable Loss	<input type="text" value="4.0"/> dB
TTA Coupling Loss	30dB <input type="checkbox"/> Diversity/Dual Receiver
Total Test Loss	35.5dB
Static System Sensitivity	<input type="text"/> dBm
Measured at	<input type="text" value="810.00000"/> MHz
Effective Receiver Sensitivity (ERS)	<input type="text"/> dBm
Measured at	<input type="text" value="810.00000"/> MHz

Defaults

Discard Changes

Save

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This page saves the Performance Records for the TTA System.

Setting

Test Cable Loss:

The Test Cable coaxial feeder insertion loss for the system. The user should enter this value dependent on the installed Test Cable type and installed length.

TTA Coupling Loss:

The value for the TTA Test Port coupler. For the single TTA configurations this is 30dB +/-2dB. When selected for Diversity Receiver and Dual-Receiver dual-TTA configurations this is 33dB +/-2dB. The correct TTA Coupling Loss is selected using the check box.

Total Test Loss:

The sum of the above two values. 1.5dB is added for the internal insertion loss between the RMC's front and rear Test Ports. A signal injected at the RMC front panel Test Port will be injected into the front of the currently selected TTA RF amplifier path with this value of attenuation.

Static System Sensitivity:

Static System Sensitivity (SSS) measures the sensitivity of the receive system with the receive antenna disconnected (i.e. in Terminated mode). This is measured as part of the system's commissioning or regular performance checks and the value measured is entered by the user into this field.

Measured at:

The user enters the test frequency on which this measurement was performed.

Effective Receiver Sensitivity:

Effective Receiver Sensitivity (ERS) measures the sensitivity of the receive system with the receive antenna connected (i.e. not in Terminated mode). This is measured as part of the system's commissioning or regular performance checks and the value measured is entered by the user into this field.

Measured at:

The user enters the test frequency on which this measurement was performed.

Note: A log of all Sensitivity Tests is kept in the RMC non-volatile memory. Previous test results can be viewed or downloaded, allowing any change in the system to be seen, assisting in network performance (i.e. degradation) assessment and fault finding analysis.

Defaults:

Clicking this sets all of the descriptions and values to the RMC default settings;

Test Cable Loss – 5.0 dB
TTA Coupling Loss – 30dB **Diversity/Dual Receiver** - Unchecked
Static System Sensitivity – Blank
 Measured at – Blank
Effective Receiver Sensitivity – Blank
 Measured at – Blank


Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed. Note that if invalid values are being displayed after a Save attempt, these values may not match the current system configuration. In this case, just select the Performance Record menu item again to re-display the current configuration.

Save:

This save the values entered.

14.11 Alarm Event Log



[Overview](#)
[Status Detail](#)
[History](#)
[Performance Record](#)
[Alarm Event Log](#)
[Sensitivity Log](#)
[Sensitivity Chart](#)
[Configuration](#)
[Maintenance](#)
[About](#)
[Logout](#)

Help

History - Alarm Event Log

Customer Name - County Police
Site Name - Mt Wallace

Select Period
1 Week

Download View

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This page allows logged data to be downloaded, saved or displayed for a alarms in the current Alarm Event Log. Data is provided in a CSV file format for ease of import and manipulation.

Select Period:

Select the past period for which logged data will be displayed.

Download:

Use this button to open a “File Download” or “Save As” dialog for saving the CSV data file.

View:

Opens a new window in which the data records will be displayed.

Due to the potential size of some data logs, using View is not recommended for displaying a large amount of data.

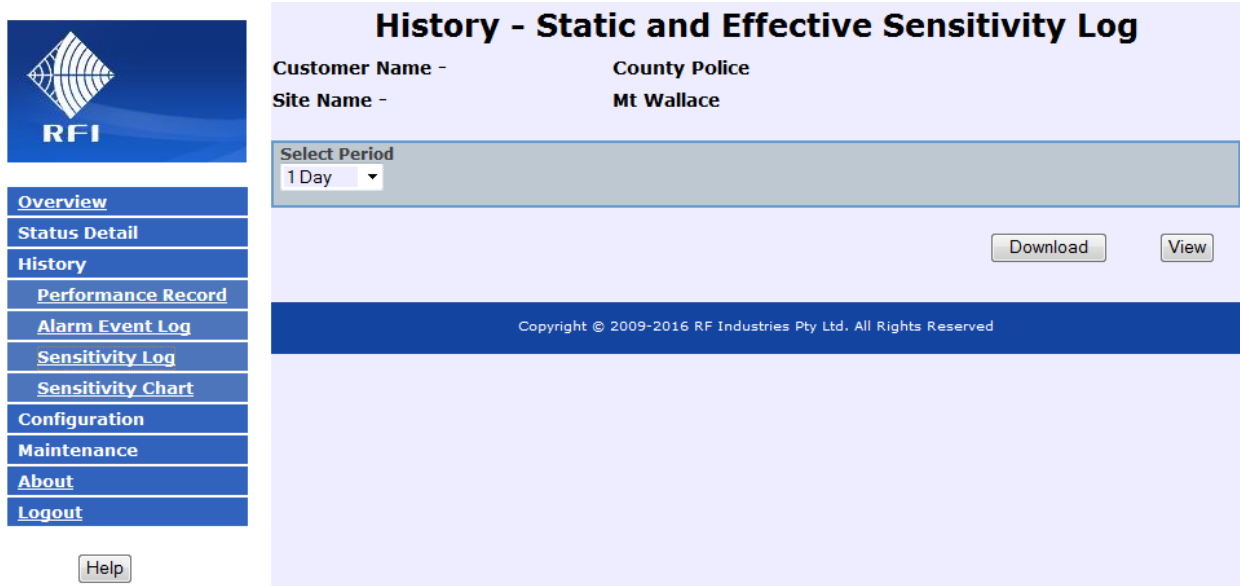
```

Date,Time,System Summary,Status Register,Alarm Description, Fault Condition
4/03/16, 13:41:49, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=OFF, Status Value = 0, No Alarm, STATUS = OK
4/03/16, 13:41:44, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=ON; Test_Mode=OFF, Status Value = 0, No Alarm, STATUS = OK
4/03/16, 13:41:41, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=OFF, Status Value = 0, No Alarm, STATUS = OK
4/03/16, 13:41:32, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=ON, Status Value = 0, No Alarm, STATUS = OK
4/03/16, 13:38:22, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=OFF, Status Value = 0, No Alarm, STATUS = OK
4/03/16, 13:38:18, TTA_Amp_A=---; TTA_Amp_B=---; Bypass_Mode=---; Test_Mode=---, Status Value = 1001, TTA Feed, STATUS = FAIL
4/03/16, 13:34:36, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=OFF, Status Value = 0, No Alarm, STATUS = OK
4/03/16, 13:34:35, TTA_Amp_A=---; TTA_Amp_B=---; Bypass_Mode=---; Test_Mode=---, Status Value = 1, TTA Feed, STATUS = FAIL
4/03/16, 13:34:33, TTA_Amp_A=---; TTA_Amp_B=---; Bypass_Mode=---; Test_Mode=---, Status Value = 1001, TTA Feed, STATUS = FAIL
4/03/16, 9:56:37, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=OFF, Status Value = 0, No Alarm, STATUS = OK
4/03/16, 9:56:36, TTA_Amp_A=---; TTA_Amp_B=---; Bypass_Mode=---; Test_Mode=---, Status Value = 1, TTA Feed, STATUS = FAIL
4/03/16, 9:56:35, TTA_Amp_A=---; TTA_Amp_B=---; Bypass_Mode=---; Test_Mode=---, Status Value = 1001, TTA Feed, STATUS = FAIL
4/03/16, 9:56:33, TTA_Amp_A=---; TTA_Amp_B=---; Bypass_Mode=---; Test_Mode=---, Status Value = 1, TTA Feed, STATUS = FAIL
4/03/16, 9:56:32, TTA_Amp_A=---; TTA_Amp_B=---; Bypass_Mode=---; Test_Mode=---, Status Value = 1001, TTA Feed, STATUS = FAIL
3/03/16, 15:00:08, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=OFF, Status Value = 8000, System Restart; No Alarm, STATUS = OK
22/01/16, 3:00:12, TTA_Amp_A=ON; TTA_Amp_B=OFF; Bypass_Mode=OFF; Test_Mode=OFF, Status Value = 8000, System Restart; No Alarm, STATUS = OK

```

Example Alarm Event log opened in “View”

14.12 Sensitivity Log



This page allows logged data to be downloaded, saved or displayed for a alarms in the current Sensitivity Log. Data is provided in a CSV file format for ease of import and manipulation.

Select Period:

Select the past period for which logged data will be displayed.

Download:

Use this button to open a "File Download" or "Save As" dialog for saving the CSV data file.

View:

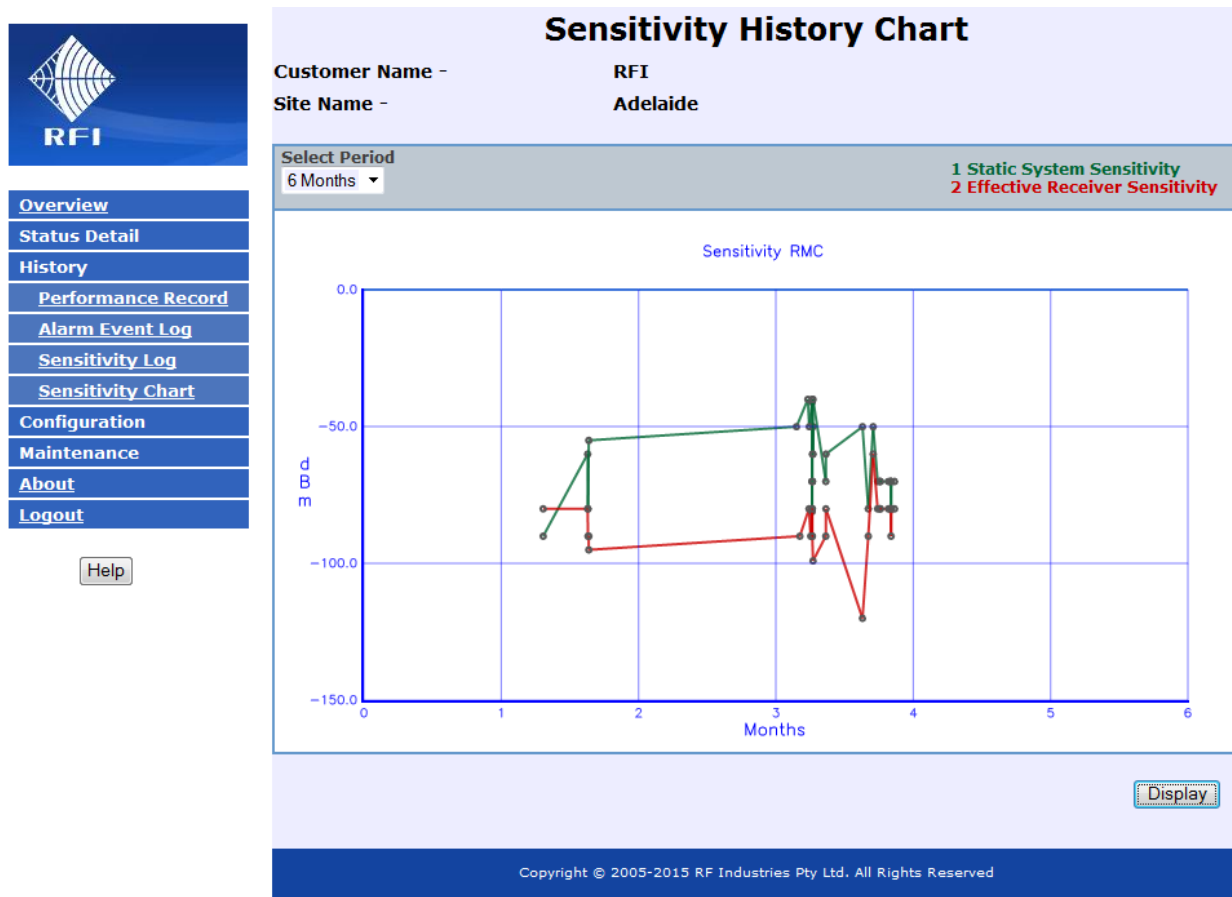
Opens a new window in which the data records will be displayed.

Due to the potential size of some data logs, using View is not recommended for displaying a large amount of data.

```
Date,Time,Static System Sensitivity, Effective Receiver Sensitivity, Unit
28/01/16, 10:00:27, -90.0, -80.0, dBm
18/01/16, 17:26:43, -60.0, -80.0, dBm
18/01/16, 15:03:53, -80.0, -90.0, dBm
18/01/16, 11:03:54, -, -90.0, dBm
18/01/16, 11:02:23, -55.0, -95.0, dBm
```

Example Sensitivity log opened in "View"

14.13 Sensitivity Chart



This page displays the logged Sensitivity Log values for a nominated period.

Select Alarm Module:

Select the Alarm Module from which you desire to display.

Select Input:

Select the Alarm Input that you desire to display.

Select Period:

Select the past period for which logged data will be displayed.

Display:

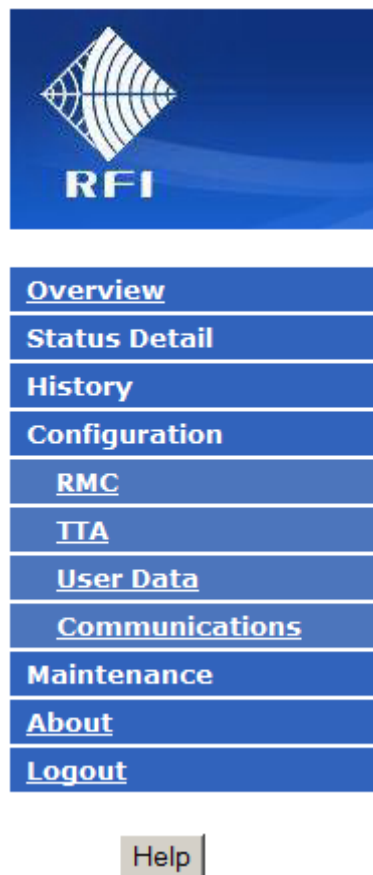
This will refresh the display using the selected settings. Some delay may be experienced while data collates.

NOTE: The History Chart screen may not display correctly due to documented issues with Internet Explorer™ Version 10. The use of an alternate web browser is recommended.

14.14 Configuration Menu


The “Configuration” menu allows all of the RMC and TTA’s configurable parameters to be programmed.

Selecting each indented topic under “Configuration” will display that item as a separate display page.



Note: The Configuration menu and screens are only visible from the Administrator (i.e. Level 1) login level, and are not visible from the User (i.e. Level 2) login level.

14.15 Configuration – RMC



Configuration - RMC

Customer Name - County Police
Site Name - Mt Wallace

[Overview](#)
[Status Detail](#)
[History](#)
[Configuration](#)
[RMC](#)
[TTA](#)
[User Data](#)
[Communications](#)
[Maintenance](#)
[About](#)
[Logout](#)

General

Setting	Value
Alarm Delay	<input type="text" value="5"/> Seconds
Post Filter	<input type="radio"/> IN <input checked="" type="radio"/> OUT
Settings Control	<input checked="" type="radio"/> SWITCHES <input type="radio"/> LAN
Hardware Configuration	1 5 - Up to 128 RF Outputs. See Help for details. ▾
Input Gain Attenuator	<input type="text" value="3"/> dB <input type="checkbox"/> AUTO <input type="text" value="0"/> dB
Distribution Gain Attenuator	<input type="text" value="3"/> dB <input type="checkbox"/> AUTO <input type="text" value="0"/> dB

Auto Input & Distribution Attenuation

Setting	Value
TTA Gain	<input type="text" value="25.0"/> dB
Input Gain	<input type="text" value="15"/> dB
Rx Cable Loss	<input type="text" value="3.0"/> dB
Post Filter Loss	<input type="text" value="2.0"/> dB
Distribution Cable Loss	<input type="text" value="1.0"/> dB

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The RMC “Configuration” page allows the configuration of the RMC settings.

Setting

Alarm Delay:

This setting defines the length of time (in seconds) for which an alarm must be continuously present or restored before the alarm relay status changes.

Post Filter:

Switches the external Post Filter In or Out of the RF signal path.

Settings Control:

Selects whether the unit's Gain settings are controlled through the rear panel Switches, or the LAN configured settings.

For the following three settings, the current rear panel switch settings are displayed for information only and cannot be changed via the GUI. They must be manually changed via the switches themselves.

The block of settings for the currently selected control mode are highlighted.

Hardware Configuration:

This selects the installed hardware configuration in accordance with the following table;

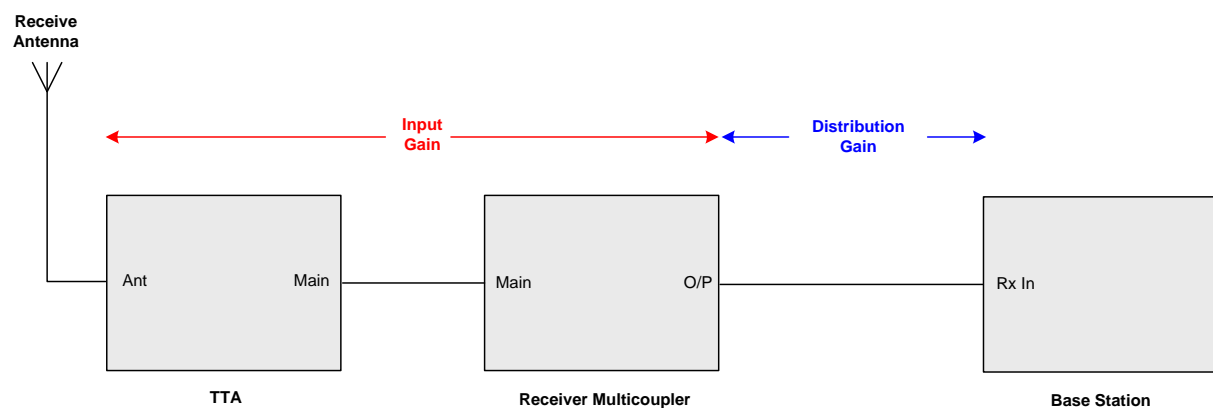
CONFIG Switch position	Operating Mode
1	Up to 8 RF Outputs available Expansion Port is internally terminated
2	Up to 9 RF Outputs available Expansion Port configured as an additional RF Output
3	Up to 16 RF Outputs available Expansion Port configured for an 8way Expansion Multicoupler to be connected
4	Up to 64 RF Outputs available Expansion Port internally terminated 8way Expansion Multicouplers connected to each of the 8 RF Outputs as required
5	Up to 128 RF Outputs available Expansion Port configured for an 8way Expansion Multicoupler to be connected 8way Expansion Multicouplers connected to each of 16 RF Outputs as required

Table 14

Configuration of TTA/RMC System

The Input Gain is the nett gain value of the system between the TTA antenna input, and the RMC receiver output ports. It includes the TTA gain, TTA-to-RMC coaxial cable feeder loss, and overcoming the RMC output divider losses.

The Distribution Gain overcomes the coaxial cable losses between the RMC and the Base Station receiver input.



Input Gain Attenuator:

This value configures the Input Gain Attenuator setting and is determined by the required Input Gain and Main coaxial feeder insertion loss value. Settings are as per the following table;

Required Input Gain	"Main" TTA to RMC Feeder Insertion Loss	Input Gain Attenuator Setting	
		x 10	x 1
15 dB	0 dB	0	6
15 dB	1 dB	0	5
15 dB	2 dB	0	4
15 dB	3 dB	0	3
15 dB	4 dB	0	2
15 dB	5 dB	0	1
15 dB	6 dB	0	0

Table 15

If *AUTO* is selected, and *Apply* clicked, the Input Gain Attenuator setting will be automatically determined by an inbuilt algorithm, based on the field values defined in the *Auto Input & Distribution Attenuation* fields on this screen.

Distribution Gain Attenuator:

This value configures the Distribution Gain Attenuator setting and determines the distribution gain of the RMC that overcomes the insertion loss of the distribution cabling between the RMC and the base station receiver. Settings are as per the following table;

Distribution Cable Loss	DIST GAIN ATTEN Switch position
0 dB	4
1 dB	3
2 dB	2
3 dB	1
4 dB	0

Table 16

If *AUTO* is selected, and *Apply* clicked, the Distribution Gain Attenuator setting will be automatically determined by an inbuilt algorithm, based on the field values defined in the *Auto Input & Distribution Attenuation* fields on this screen

Setting

TTA Gain:

The TTA Gain shown in the Factory Test Report supplied with the TTA unit.

Input Gain:

The overall gain of the TTA sub-system (which includes the TTA gain, the Main coaxial feeder insertion loss, and the RMC Input Attenuator).

Rx Cable Loss:

The estimated or actual insertion loss for the coaxial feeder cable between the TTA "Main" and RMC "RF Input" ports (including jumper cables, etc, if fitted).

Post Filter Loss:

The insertion loss for the in-line Post Filter (including coaxial cables) if fitted.

Distribution Cable Loss:

The estimated or actual insertion loss for the coaxial cables between the RMC "RF Output" ports and the Base Station receiver ports.

Defaults:

Clicking this sets all of the descriptions and values to the RMC default settings;

Gain Control – Switch
Hardware Configuration In Use – 1
Input Gain AUTO Mode – Disabled
Distribution Gain AUTO Mode - Disabled
Config Switch Setting - 1
Input Gain Switch Setting – 03
Distribution Gain Switch Setting – 3
Post Filter – Disabled
Test Modes – All OFF
Alarm Delay – 5 seconds

Discard Changes:


Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after a Save attempt, these values may not match the current system configuration. In this case, just select the Configure/User Data menu item again to re-display the current configuration.

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

14.16 Configuration – TTA



Configuration - TTA

Customer Name - County Police

Site Name - Mt Wallace

Setting	Value
Amplifier Mode	<input checked="" type="radio"/> AUTO <input type="radio"/> AMP-A <input type="radio"/> AMP-B
TTA Alarm Mode	<input type="checkbox"/> GAIN BOOST <input type="checkbox"/> AUTO BYPASS <input type="checkbox"/> AUTO RECOVER
Test Mode	<input type="checkbox"/> TERMINATE <input type="checkbox"/> BYPASS <input type="checkbox"/> TP to RX
Test Mode Timeout	<input type="text" value="1"/> Minutes <input checked="" type="checkbox"/> BYPASS WITH TIMEOUT OFF

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The TTA “Configuration” allows the configuration of the TTA settings.

Setting

Amplifier Mode:

This setting defines which amplifier path is being used in the TTA (Amp-A or Amp-B).

Auto

If AUTO is selected, Amp-A is used unless it has a fault condition, at which time the RMC will acknowledge the alarm state and action a change-over to Amp-B automatically.

Amp-A

Selecting this forces the TTA to use Amplifier A.

Amp-B

Selecting this forces the TTA to use Amplifier B.

TTA Alarm Mode:

These settings define how the TTA configures itself during an alarm state.

Gain Boost

If selected, Gain Boost configures the RMC to maximum gain when the TTA is in the Bypass mode as a result of both amplifiers failing. This boosted RMC gain assists the recovery of some of the system gain performance normally provided by the TTA amplifiers.

Auto Bypass

If selected, Auto Bypass configures the TTA to bypass the amplifiers if they have both failed. This provides continued system operation – but at a reduced level of (gain) performance.

Auto Recover

Auto Recover makes the TTA continue to monitor both failed amplifiers and revert out of bypass and back into normal operation if either or both amplifiers' fault clears.

Test Mode:

Places the TTA system into the selected Test Mode(s).

Terminate

This is the *Term Mode*. When selected, the input to the selected TTA RF path is switched from the receive antenna (via the TTA preselector) to a 50ohm termination. Refer Figure 1.

Bypass

This is the *Bypass Mode*. When selected, the RF signal path is switched to bypass the TTA RF amplifiers, with only the TTA preselector between the receive antenna and the RMC. Refer Figure 1. This mode is used when both Amp-A and Amp-B are faulty, and facilitates continued receive system operation – although at a degraded performance level. This mode may also be used to confirm RF amplifier operation and gain if desired.

TP to RX

This is the *Test Port Mode*. When selected, the RMC front panel Test Port is switched through to the “Main” RF Input port on the rear of the RMC. This allows the output of the TTA to be monitored if desired.

Test Mode Timeout:

The period of time after which the TTA/RMC will automatically return from its Test Mode configuration back to normal operation when a Test Mode is selected (unless Bypass and Bypass with TimeOut Off are selected). This setting prevents the system being inadvertently left in Test Mode.

Bypass with Timeout Off:

When selected, the TTA is placed into Bypass Mode (see above) but the Test Mode Timeout period does not apply and the TTA will remain in the Bypass state until this field is de-selected. This mode may be used for prolonged testing activities, or to operate the site without the TTA amplification if desired.

Defaults:

Clicking this sets all of the descriptions and values to the TTA default settings;

Amplifier Mode – AUTO
TTA Alarm Modes – All OFF
Test Modes – All OFF
Test Mode Timeout – 1 minute

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

14.17 Configuration – Gain Balance (Diversity Receiver and Dual Receiver systems)

The configuration of Gain Balance in TTA02 systems can be performed as follows;

RF Path “A” (RxA)

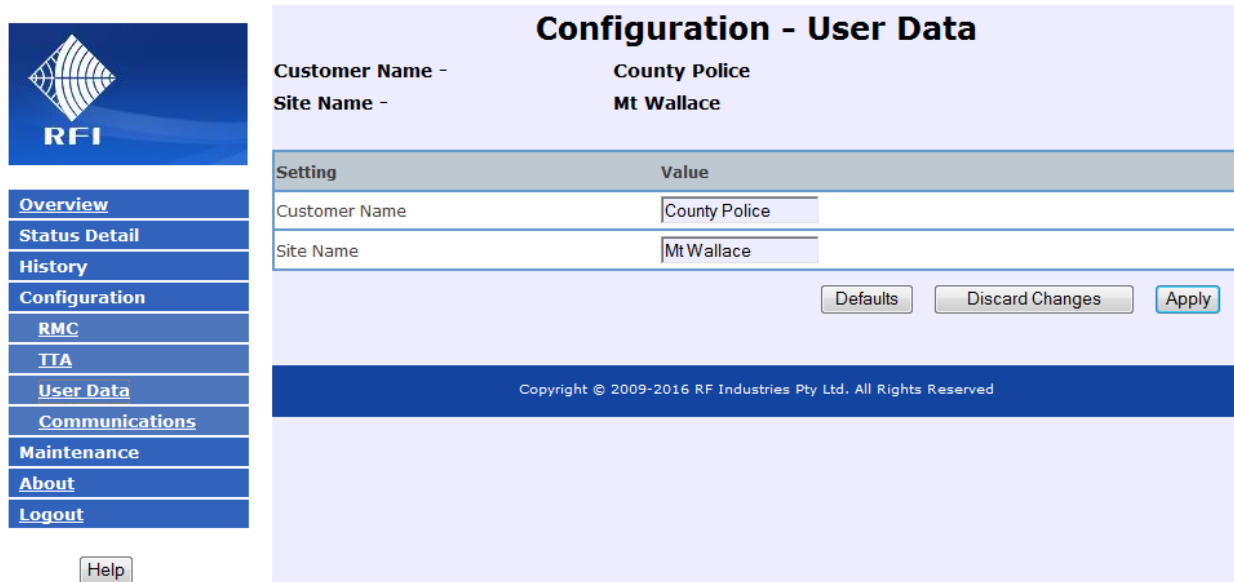
1. In the Configuration – TTA screen select the *Terminate* check box in the *Test Mode* line.
2. Connect a Signal Generator to the RMC front panel BNC connector *TEST* port.
3. Inject a signal at a test frequency within the frequency passband of the TTA (i.e. at a level of -60dBm) and measure the level of that frequency at one of the RxA's Receiver Multicoupler (RMC) unit's RF output ports. Alternatively, this signal level could also be read as Rx RSSI Level from a Base Station operating on the Signal Generator's frequency.
4. Record the measured signal level value. The actual value measured here in step 4 is not critical, only that it is recorded for comparison in step 6 below.

RF Path “B” (RxB)

5. Measure the level of that frequency at one of the RxB's Receiver Multicoupler (RMC) unit's RF output ports.
6. Adjust the *Input Gain* setting of RxB's TTA unit until this measured level closely matches the value recorded for RF Path “A” (RxA) in step 4.

This values achieved for both RxA and RxB RF paths should be as closely matched as possible for optimum dual-TTA system operation.

14.18 Configuration – User Data



Setting	Value
Customer Name	County Police
Site Name	Mt Wallace

Defaults Discard Changes Apply

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On this page you can enter descriptive texts for the Customer Name and Site Name

Setting

Customer Name:

The descriptive text used to describe this systems user.

Site name:

The descriptive text used to describe this systems location.

Defaults:

Clicking this sets all of the descriptions to the predefined product default settings.

Discard Changes:


Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after a Save attempt, these values may not match the current system configuration. In this case, just select the Configure/User Data menu item again to re-display the current configuration.

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

14.19 Configuration – Communications



RFI

[Overview](#)
[Status Detail](#)
[History](#)
[Configuration](#)
[RMC](#)
[TTA](#)
[User Data](#)
[Communications](#)
[Maintenance](#)
[About](#)
[Logout](#)

[Help](#)

Configuration - Communications

Customer Name - County Police
Site Name - Mt Wallace

Ethernet

Setting	Value
DHCP	<input type="checkbox"/> Enabled
IP Address	192.168.1.235
Subnet Mask	255.255.255.0
Gateway	192.168.1.254

NOTE: After saving new values for any of the **above** settings, the system must be restarted to activate them. The Restart option is under the Maintenance menu.

Setting	Value
Port 23 Command Line Interface	<input checked="" type="checkbox"/> Enabled

Email

Setting	Value	
Send Status Change Messages	<input type="checkbox"/> Enable	Test Email
SMTP Server Address	209.173.141.248	
SMTP Server Listening Port	25	
SMTP Server Login Username	rfiASMalarms	
SMTP Server Login Password <input type="checkbox"/> Reveal	
From Email Address	noreply@localhost	
Destination Email Addresses	john@workshop.com.au	

SNMP

Setting	Value	
Send Alarm Notifications (Traps)	<input type="checkbox"/> Enabled	Test SNMP
SNMP GET Requests (Port 161)	<input checked="" type="checkbox"/> Enabled	
SNMP Community String		
	Primary	Secondary
SNMP Manager IP Address	0.0.0.0	0.0.0.0
SNMP Manager Listening Port	162	162

[Defaults](#)
[Discard Changes](#)
[Apply](#)

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On this page you can change the RMC, Email (SMTP) and SNMP TCPIP addresses and parameters.

Ethernet

Setting

DHCP:

If enabled, the unit will attempt to get its IP Address, Subnet Mask and Gateway settings from a DHCP server. If no DHCP server is found, the configured settings will be used. If not enabled, the configured settings will always be used.

IP Address:

The IP address for this unit.

Subnet Mask:

The network address mask to be used.

Gateway:

The address of the network gateway to be used.

Port 23 Command Line Interface:

Selects if Port 23 is enabled or disabled for Command Line Interface use. Disabling this port when not in use is recommended for optimum cyber security.

Email

Send Status Change messages:

Selects if *Status Change messages* are to be sent via email.

Detailed channel status messages:

Selects if *Detailed channel status messages* are to be sent by email.

SMTP Server IP Address:

Sets the IP address that email messages will be sent to. This must be the IP address of the email server that will send the email. DNS look-up is not supported, so the email server name (i.e. "smtp.live.com") is not a valid entry.

SMTP Server Listening Port:

Sets the port number used by the SMTP server. Commonly this will be Port 25, 2525 or 587. The IP connection to the ASM must support access to the required IP Port. Email service providers can provide their email server Listening Port address if it is not already known.

SMTP Server Login Username:

When the email service being used to handle emails required login authentication, enter the account Username in this field. The entry should be the same as would otherwise be used if logging into that email service directly (i.e. "scott@gmail.com" for Gmail™ or "rfiASMalarms" for Jango™).

SMTP Server Login Password:

When the email service being used to handle emails required login authentication, enter the account Password in this field. The entry should be the same as would otherwise be used if logging into that email service directly (i.e. "scott123!" for Gmail™ or "rfiASMalarms" for Jango™). Ticking the *Reveal* box will display the password entered.

From Email Address:

Sets the email address that this unit will appear as in email messages. This must be a name in a valid email address format (i.e. xxxx@yyyyy.com etc).

Destination Email Address(es):

Sets the email address(es) that this unit will send email messages to. (up to 4 addresses may be used)

Note: Access to certain email addresses may be restricted by the SMTP Server being used. Emails to outside email addresses are generally not allowed by organisations' own email servers. At this time, this SMTP Email Alarms feature does not support the SSH authentication or encryption requirements that some email servers may require.

SNMP**Test SNMP**

Sends a Test SNMP trap that will appear as a "Test Message", not a fault condition, that may be used to confirm the correct configuration of the SNMP parameters and communications to the SNMP Manager server.

Send Alarm Notifications (Traps):

Selects if sending SNMP Traps are enabled or disabled.

SNMP GET Requests (Port 161):

Selects if Port 161 is enabled or disabled for SNMP Get Requests use. Disabling this port when not in use is recommended for optimum cyber security.

SNMP Community String:

Sets the Community String that will be used in SNMP messages. This can be any case-sensitive string of up to 16 characters in length.

SNMP Manager IP Address:

Selects the IP address that SNMP notifications (Traps) will be sent to. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

SNMP Manager Listening Port:

Selects the port number used by the SNMP Manager. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

Note: SNMP MIB files for the RMC are available from RFI.

Note: Refer to the *SNMP* section of this manual for further information on using SNMP with these products.

Defaults:

Clicking this button enters the factory default values for the Communications settings, which are:

DHCP	Disabled
IP Address	192.168.1.200
Subnet Mask	255.255.255.0
Gateway	192.168.1.254
Port 23 Command Line Interface	Disabled
Send Alarm Notifications	Not Selected
SNMP GET Requests (Port 161)	Disabled
SNMP Community String	public
SNMP Manager IP Address	0,0,0,0
SNMP Manager Listening Port	162

Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after a Save attempt, these values may not match the current repeater configuration. In this case, just select the Configure/Communications menu item again to re-display the current configuration.

Save:

This will attempt to save the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Unlike the other configuration pages, this will not Activate (or “apply”) the Ethernet settings if they have been changed. Ethernet changes can only be activated by restarting the RMC unit, either by cycling the power, or through the Maintenance/Restart menu item.


14.20 Maintenance Menu

The “Maintenance” menu allows all of the RMC’s interface and system-wide formatting parameters to be viewed.

Selecting each indented topic under “Maintenance” will display that item as a separate display page.



14.21 Maintenance – Access Management




Maintenance - Access Management

Customer Name - County Police
Site Name - Mt Wallace

Access level	UserName	Password	Confirm Password	Password Strength
View Status only	<input type="text" value="user"/>	<input type="password" value="...."/>	<input type="password" value="...."/>	(8) very weak
View Status and Modify Settings	<input type="text" value="admin"/>	<input type="password" value="....."/>	<input type="password" value="....."/>	(14) very weak

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This page is used for managing access to the RMC. There are two levels of access available:

Access Level

View Status only:

This is the “User” (i.e. Level 1) login level. Logging in at this level allows a user to view Status pages. Users logged in with these credentials will not be able to change any Configuration settings.

View Status and Modify Settings:

This is the “Administrator” (i.e. Level 2) login level. Logging in at this level allows a user to have access to the Configuration and Maintenance settings as well as the Status pages.

Note: User Names and Passwords may contain up to 16 characters each. Passwords are case sensitive, but User Names are not. Passwords are strength tested, as they are entered, so that appropriate security is maintained. Passwords must meet a Password Strength value of at least 50 to be accepted.

Access level	UserName	Password	Confirm Password	Password Strength
View Status only	<input type="text" value="user"/>	<input type="password" value="....."/>	<input type="password"/>	(74) strong
View Status and Modify Settings	<input type="text" value="admin"/>	<input type="password" value="....."/>	<input type="password"/>	(6) very weak

Tips for strong passwords:

Make your password 8 characters or more in length.
Use mixed case letters (upper and lower case).
Make more than one digit a number.
Use special characters (!, @, #, \$, %, ^, &, *, ?, ~, _).

Discard Changes:


Click this button to restore the values to those present when the page was last redisplayed.

Note that if invalid values are being displayed after a Save attempt, these values may not match the current unit configuration. In this case, just click on the Maintenance/User Management menu item to re-display the current configuration.

Apply:

This will save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

14.22 Maintenance – Date & Time



Setting	Value
Date Format	<input type="radio"/> mm/dd/yy <input checked="" type="radio"/> dd/mm/yy
Date (dd/mm/yy)	9 / 11 / 16
Time (hh:mm:ss)	12 : 41 : 44

Discard Changes Apply

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Overview
Status Detail
History
Configuration
Maintenance
Access Management
Date & Time
Manager Interface
Configuration Files
Firmware Update
Restart
About
Logout

Help

The internally maintained real time clock Date and Time values may be adjusted using these fields.

Setting

Date Format:

Two styles of date format can be selected to cater for international format preferences.

Date:

Enter the current date in the displayed mm/dd/yy or dd/mm/yy format.

Time:

Enter the current time in the displayed hh:mm:ss format.


Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

Apply:

This will save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

14.23 Maintenance – Manager Interface



- [Overview](#)
- [Status Detail](#)
- [History](#)
- [Configuration](#)
- [Maintenance](#)
- [Access Management](#)
- [Date & Time](#)
- [Manager Interface](#)
- [Configuration Files](#)
- [Firmware Update](#)
- [Restart](#)
- [About](#)
- [Logout](#)

Maintenance - Manager Interface

Customer Name - RFI

Site Name - Adelaide

Setting	Value
Auto Status Packets	<input type="checkbox"/> Enabled
Manager	Primary Secondary
Manager Address	192.168.1.10 192.168.1.10
Manager TCP Port	9123 9123
Manager UDP Port	9124 9124
Manager Use TCP for Status Packets	<input type="checkbox"/> Enabled

[Defaults](#)
[Discard Changes](#)
[Apply](#)

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The configuration and status of multiple RMC/TTA systems may be remotely managed by a PC based Manager application. Normally the Manager application will control the settings on this page, but, using this page it is possible to manually configure (or override) these settings.

Setting

Auto Status Packets:

This controls the automatic sending of Status Change packets to the Manager application. If enabled, any change in alarm status results in a Status Change packet. This setting will be ignored if the Manager Address is set to "0.0.0.0".

Auto Traffic Packets:

This controls the automatic sending of Tx Traffic data packets to the Manager application. If enabled, any change in detected Tx carrier presence results in a Traffic packet. In addition, if any Tx carrier remains ON or OFF for "Max Traffic Period" seconds, a STILL-ON or STILL-OFF Traffic packet is sent. This setting will be ignored if the Manager Address is set to "0.0.0.0".

Max Traffic Period:

This controls the automatic sending of the STILL-ON and STILL-OFF traffic data packets as detailed above.

Manager Address:

The IP address for the Manager application. If a Manager application is not being used this should be 0.0.0.0.

Manager TCP Port:

The port number for TCP communications to the Manager application. Both a primary and a secondary address is provided if Manager Messages are desired to be sent to two applications/destinations.

Manager UDP Port:

The port number for UDP communications to the Manager application. Both a primary and a secondary address is provided if Manager Messages are desired to be sent to two applications/destinations.

Manager Use TCP for Status Packets:

The default communications protocol for Status change and Traffic data packets is UDP. If TCP is required for Status packets, this setting should be enabled.

Note: This option should only be activated if essential for networking reasons. The UDP protocol is strongly preferred, as the protocol and processing overheads are significantly lower and packets can be sent at a higher rate. Note also that Traffic data packets will always use UDP protocol.

Defaults:

Clicking this button enters the factory default values for the Communications settings, which are:

Auto Status Packets	Disabled
Auto Traffic Packets	Disabled
Max Traffic Period	60
Manager Address	0.0.0.0
Manager TCP Port	9123
Manager UDP Port	9124
Manager Use TCP for Status Packets	Disabled

Discard Changes:

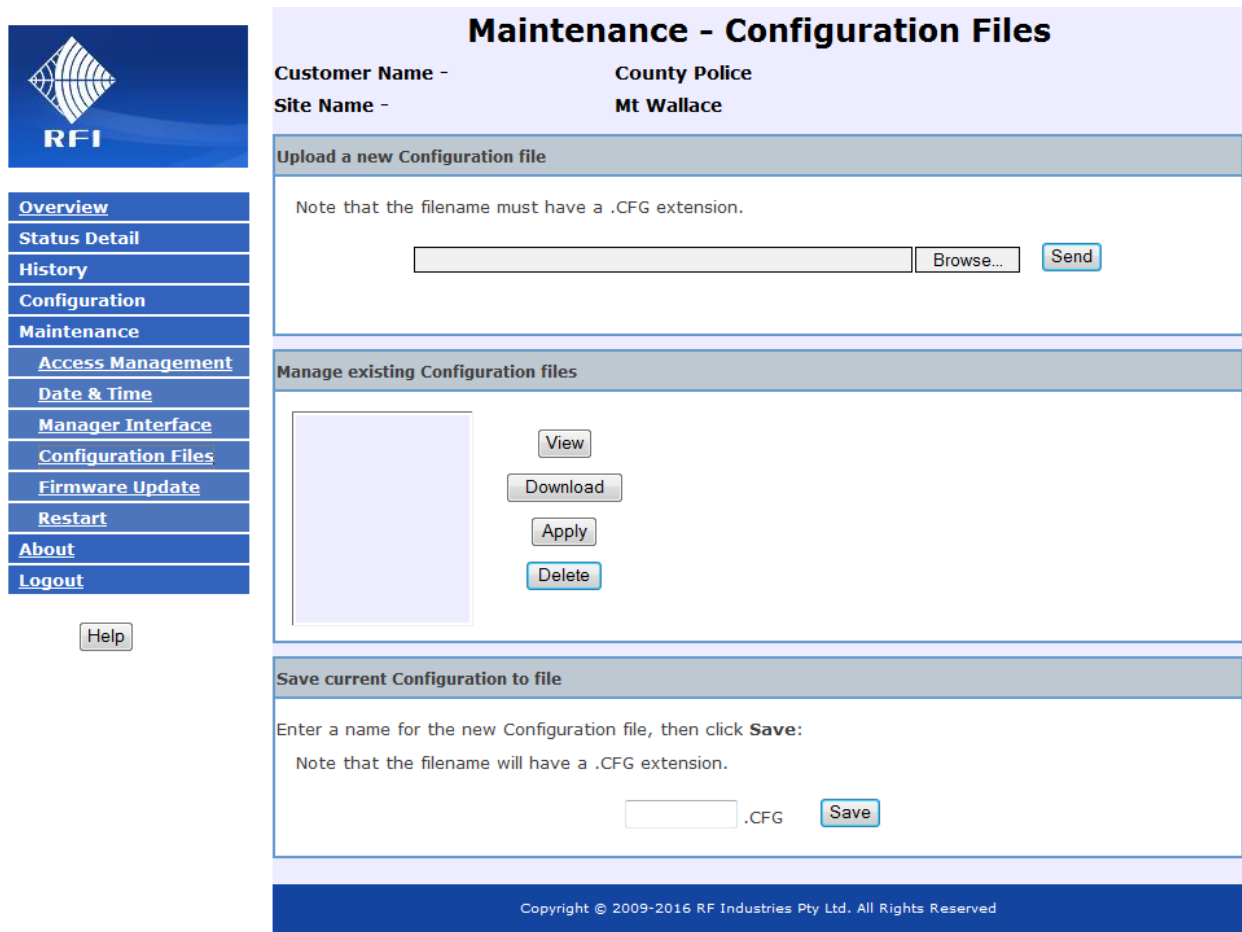
Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after a Save attempt, these values may not match the current unit configuration. In this case, just select the Maintenance/Manager Interface menu item again to re-display the current configuration.

Apply:

This will save the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

14.24 Maintenance – Configuration Files



Maintenance - Configuration Files

Customer Name - County Police
Site Name - Mt Wallace

Upload a new Configuration file

Note that the filename must have a .CFG extension.

Manage existing Configuration files

Save current Configuration to file

Enter a name for the new Configuration file, then click **Save**:
Note that the filename will have a .CFG extension.

.CFG

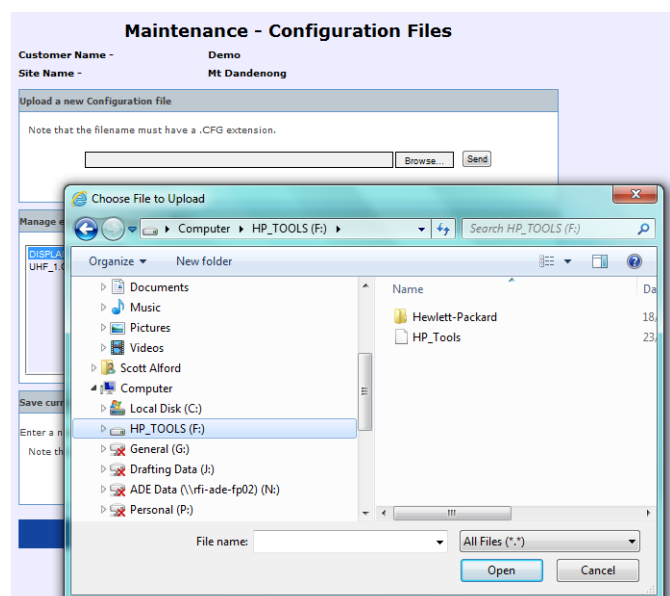
Copyright © 2009-2016 RF Industries Pty Ltd. All Rights Reserved

Configurations for the RMC/TTA system may be stored in a list within the RMC and loaded or saved to a nominated computer drive if desired.

Upload a new Configuration file:

Click "Browse" to locate the desired RMC/TTA Configuration file from a chosen drive/directory location. Once the desired drive/directory/name has been selected from the popup box, click "Send" to upload the nominated Configuration file to the list of existing Configuration files.

Note: This Configuration file must be highlighted in the Configuration list and the "Apply" button clicked to activate this uploaded Configuration in the RMC.

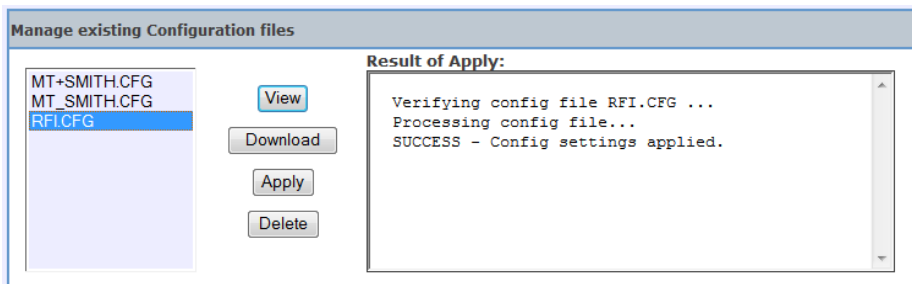


Manage existing Configuration files:

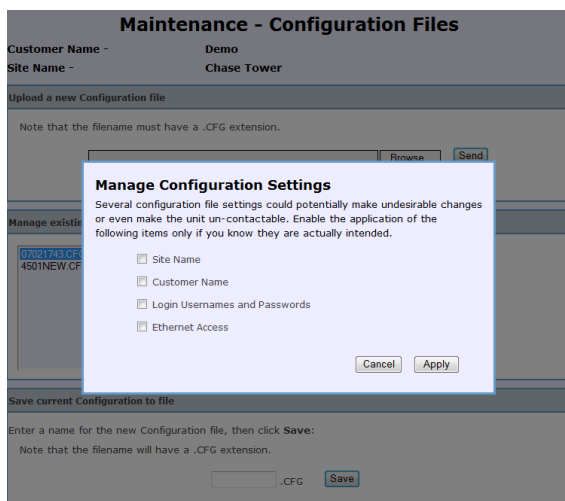
VIEW: To view the text contents of highlighted Configuration in the web browser.

DOWNLOAD: To save the highlighted Configuration file to a nominated computer drive/directory.

APPLY: Activates the highlighted Configuration in the RMC/TTA.



A progress and completion message will appear in a “Results of Apply” text box (refer above example).



When the *Apply* button is clicked, the screen at left will appear. Select any of the site-specific fields from the configuration file that you do want to have applied to the RMC/TTA, and then click *Apply*.

Follow the prompts and the selected configuration file, with the selected site-specific data fields' contents, will be applied into the RMC/TTA. In this manner, one common configuration file can be applied to multiple ASMs, with the site-specific data fields not used from the configuration file contents, but then edited individually.

This new feature can save significant programming configuration time across an RMC/TTA fleet.

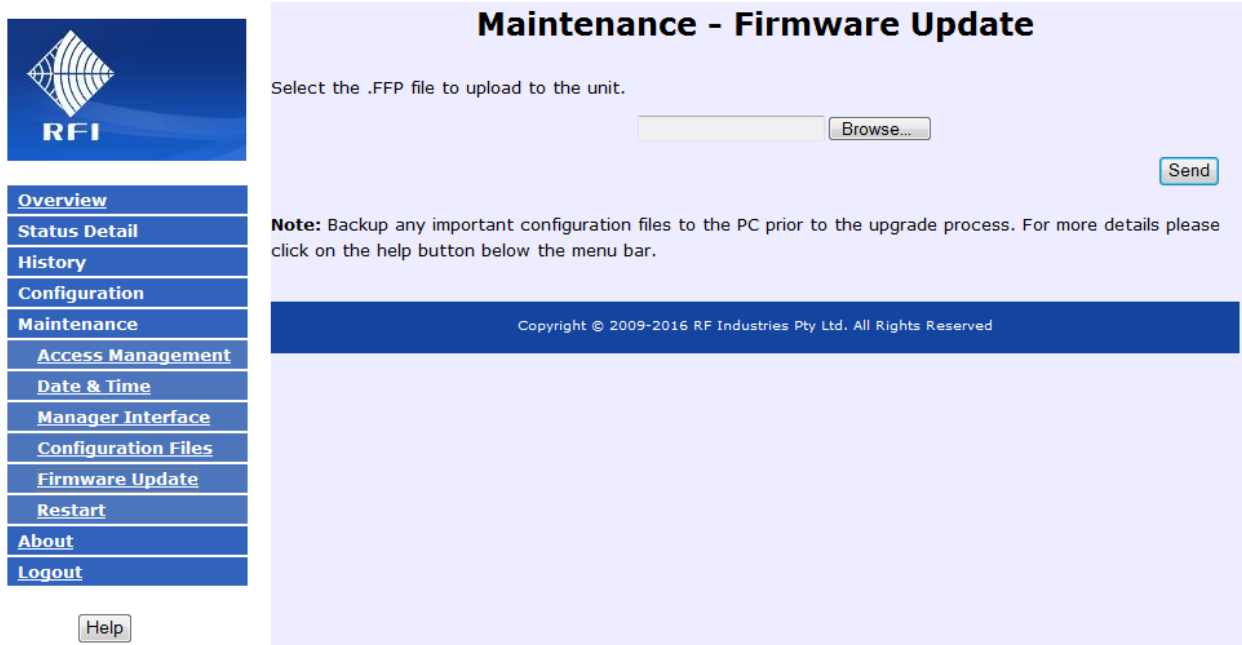
DELETE: To delete the highlighted Configuration file from the list.

Save current configuration to file:

Enter a file name and click “Save” to save the current RMC/TTA configuration to the list of stored RMC/TTA configurations. If “Save” is clicked without entering a filename, the a time/date based filename will be automatically nominated.

Note: The stored RMC/TTA configurations list is capable of holding many different Configurations. For practical management, it is recommended to limit the number of Configurations kept in this list to less than 10.

14.25 Maintenance – Firmware Update



This page is used for uploading firmware updates to the RMC.

Firmware upgrades are normally supplied using a “FFP” file extension (Firmware & File system Package).

Browse:

Enter the file path or Browse to nominate the system firmware update file location.

Send:

Once the update file's location has been nominated, click the Send button to start the update file download process. Depending on the speed of the connection, it can take several minutes for the file upload to complete and be confirmed.

After waiting for about a minute, re-display the System Status page to confirm that the update completed successfully. If the update process is interrupted or unsuccessful for any reason, the unit will restart with the previous firmware.

Note: You may need to clear your browser's cache to view changed pages. If you happen to get a connection timeout message, do not click the retry button. Instead, wait for a minute or so and then re-display the System Status page to confirm that the update actually completed satisfactorily.

14.26 Maintenance - Restart



The screenshot shows a web interface for the RFI TA7982 Series. On the left is a navigation menu with the RFI logo at the top, followed by links: Overview, Status Detail, History, Configuration, Maintenance (highlighted), Access Management, Date & Time, Manager Interface, Configuration Files, Firmware Update, Restart, About, and Logout. Below the menu is a 'Help' button. The main content area has a title 'Maintenance - Restart' and text stating: 'This will restart the unit with the currently saved settings. After restarting, close this browser tab or window, wait for about 1 minute, then re-enter the unit's IP address to return to the login page.' A 'Restart' button is located on the right. At the bottom of the main area is a copyright notice: 'Copyright © 2009-2016 RF Industries Pty Ltd. All Rights Reserved'.

Restart:

Clicking on this selection will initiate an RMC system “Restart”.

Note: The unit will normally only need to be restarted to activate new Communications settings. If restarted, an RMC may take up to one minute to reboot and re-initialize itself before it becomes available for a “Log in” and a web browser new session.

14.27 About



- [Overview](#)
- [Status Detail](#)
- [History](#)
- [Configuration](#)
- [Maintenance](#)
- [About](#)
- [Logout](#)

[Help](#)

TTA System

This RFI TTA System includes a Tower Top Amplifier (TTA) and a Receiver Multicoupler (RMC) unit. The TTA includes a high-selectivity preselector, low noise quadrature amplifier (with redundancy and auto-changeover in some models), a Bypass mode, and a Test function for use as part of a maintenance procedure.

The Receiver Multicoupler (RMC) provides active signal distribution from the TTA to multiple base station receivers. Its internal gain may be adjusted to overcome signal distribution losses, optimising overall receive system performance.

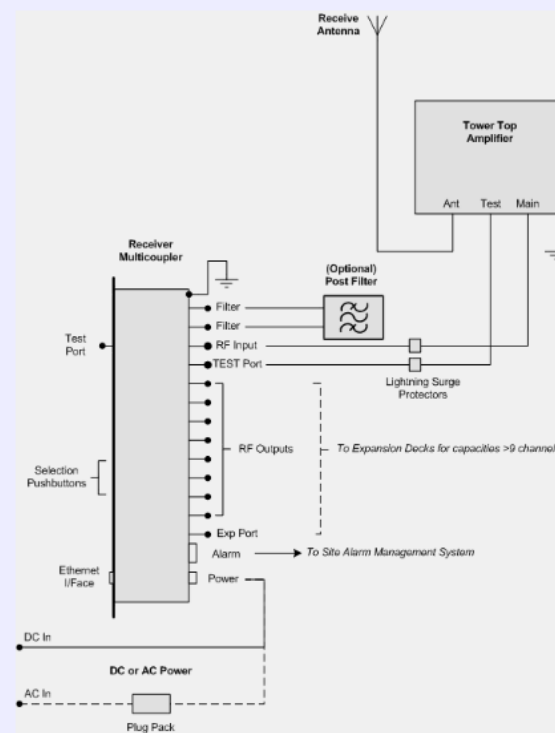
A TTA controller is integrated within the RMC. The TTA and RMC operating configuration, alarm status, and monitoring are accessible via the RMC switches and LED indicators, integral webserver Graphical User Interface (GUI), or text-based Command Line Interface (CLI) protocol.

The RMC design includes a low-noise quadrature amplifier circuit featuring excellent IP3 performance that caters for a broad dynamic range of input signal levels. The quadrature amplifier's inherent amplifier stage redundancy provides high reliability, and the built in "auto-gain" feature optimises system performance in the unlikely event of a failure in either of the quadrature amplifier stages. A Test Port is provided on the RMC front panel to facilitate Rx system testing using the "Test" function.

In a typical installation the RF signal input to the RMC will be sourced from a receive antenna via an RFI Tower Top Amplifier (TTA) that suits the receive frequencies required at the site. An optional post-filter may also be connected to the rear of the RMC to provide additional selectivity or sub-band filtering to supplement the TTA preselector.

Optional Expansion Multicouplers are available to expand the RMC/TTA RF output port capacity up to 128 ports if required and Form-C (changeover) alarm relay contacts are also provided on the rear of the RMC for connection to a site monitoring system if required. DC power supply operation is standard, with an external plug pack power supply available for AC operation.

The following block diagram provides an overview of the typical RMC/TTA system interfaces;



For further information or help with this product contact your nearest RFI sales Office or through the following:

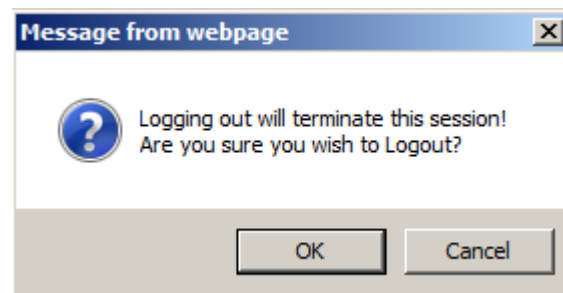
Region	USA	EMEA	ASIA PACIFIC
Sales email	webmaster@rfi.com.au	sales@rfi.com.au	webmaster@rfi.com.au
Tech Support	support@rfi.com.au	support@rfi.com.au	support@rfi.com.au
Telephone International	+1 (330) 488 0706	+44 1869 255 772	+61 7 3821 9400
Telephone Local	330 488 0706	01869 255 772	1300 000 RFI
Fax International	+1 (330) 488 0705		+61 2 9830 0844
Web	rfiamerica.com	rfiamea.com	rfi.com.au

This site is best viewed with a minimum of Internet Explorer 8, Firefox Version 3.6, Chrome Version 9 or Safari Version 5.

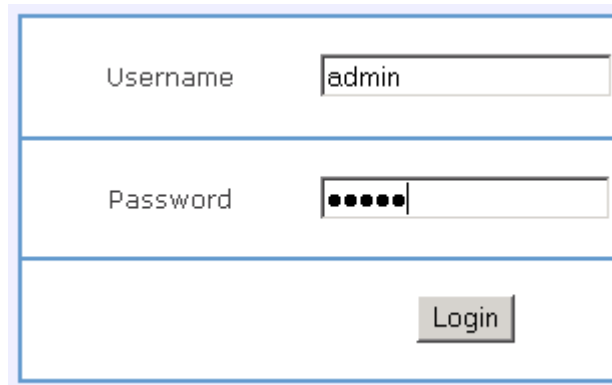
Copyright © 2009-2016 RFI Industries Pty Ltd. All Rights Reserved

14.28 Logout

Clicking on this selection will present the “Log out” message box.



If “OK” is selected, the user will be logged out of the current webserver session and the original “Log in” screen will be presented, ready for a new session.....

A screenshot of a login form with a light blue border. It contains three sections: a "Username" label followed by a text input field containing "admin"; a "Password" label followed by a password input field with seven dots; and a "Login" button at the bottom right.

15. SNMP

Description

The following SNMP V2c functionality is supported by the RMC/TTA products using baseline 1.61 firmware.

SNMP Traps

Any single SNMP trap generated by the RMC/TTA includes the following OIDs and associated variables;

OID	Variable	Syntax(Type)	Description
.1.3.6.1.4.1.32327.2.2.3.1.2.1	rmcAlarmCustName	String	Customer Name
.1.3.6.1.4.1.32327.2.2.3.1.2.2	rmcAlarmSiteName	String	Site Name
.1.3.6.1.4.1.32327.2.2.3.1.2.3	rmcAlarmStatusString	String	Summary status string for RMC and TTA
.1.3.6.1.4.1.32327.2.2.3.1.2.4	rmcAlarmStatusBits	Integer	Alarm status register bit value
.1.3.6.1.4.1.32327.2.2.3.1.2.5	rmcAlarmDescription	String	Description for the specific alarm
.1.3.6.1.4.1.32327.2.2.3.1.2.6	rmcAlarmState	Integer	Alarm fault condition, 1 = OK and 2 = Fail
.1.3.6.1.4.1.32327.2.2.3.1.2.7	rmcAlarmDateTime	Date and Time	The time when the trap was sent by the RMC
.1.3.6.1.4.1.32327.2.2.3.1.2.8	rmcAlarmType	Integer	Unique number for each type of alarm (Alarm ID)
.1.3.6.1.4.1.32327.2.2.3.1.2.9	rmcAlarmModel	Integer	RMC model number, 1 for RMC, others for future models

The RMC/TTA has the following types of traps;

Alarm ID	Alarm String	Alarm Description
0	Test Alarm string	SNMP trap for testing only
1	MUX_Alarm	MUX power related alarms
2	MUX_Temp	MUX temperature alarm
3	TTA_Feed	MUX to TTA communication and power related alarms
4	TTA_Alarm	TTA internal power alarms
5	TTA_Temp	TTA internal temperature alarm
6	NO_Alarms	RMC mode changes

TEST SNMP Message

.iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0: TimeTicks: 22 hours, 6 minutes, 50 seconds.:

.iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0: Object ID: .1.3.6.1.4.1.32327.2.2.3.1.6.0.1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmCustName.0: RFI:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmSiteName.0: Adelaide:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusString.0: Test Status:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusBits.0: INTEGER: 0:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDescription.0: Test Alarm string:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmState.0: INTEGER: 1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDateTime.0: 2016-3-4,13: 6: 48.1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmType.0: INTEGER: 0:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmModel.0: INTEGER: 1:

TTA Feed Fault:

.iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0: TimeTicks: 22 hours, 34 minutes, 36 seconds.:

.iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0: Object ID: .1.3.6.1.4.1.32327.2.2.3.1.6.0.1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmCustName.0: RFI:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmSiteName.0: Adelaide:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusString.0: TTA_Amp_A=--, TTA_Amp_B=--, Bypass_Mode=--, Test_Mode=--:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusBits.0: INTEGER: 4097:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDescription.0: TTA_Feed:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmState.0: INTEGER: 2:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDateTime.0: 2016-3-4,13: 34: 33.9:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmType.0: INTEGER: 3:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmModel.0: INTEGER: 1:

TTA Feed OK:

.iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0: TimeTicks: 22 hours, 38 minutes, 24 seconds.:

.iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0: Object ID: .1.3.6.1.4.1.32327.2.2.3.1.6.0.1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmCustName.0: RFI:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmSiteName.0: Adelaide:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusString.0: TTA_Amp_A=ON, TTA_Amp_B=OFF, Bypass_Mode=OFF, Test_Mode=OFF:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusBits.0: INTEGER: 0:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDescription.0: TTA_Feed:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmState.0: INTEGER: 1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDateTime.0: 2016-3-4,13: 38: 22.6:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmType.0: INTEGER: 3:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmModel.0: INTEGER: 1:

MODE Change BYPASS ON

.iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0: TimeTicks: 22 hours, 41 minutes, 46 seconds.:

.iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0: Object ID: .1.3.6.1.4.1.32327.2.2.3.1.6.0.1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmCustName.0: RFI:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmSiteName.0: Adelaide:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusString.0: TTA_Amp_A=ON, TTA_Amp_B=OFF, Bypass_Mode=ON, Test_Mode=OFF:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusBits.0: INTEGER: 0:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDescription.0: NO_Alarms:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmState.0: INTEGER: 1:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDateTime.0: 2016-3-4,13: 41: 44.8:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmType.0: INTEGER: 6:

.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmModel.0: INTEGER: 1:

MODE Change BYPASS OFF

```
.iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0: TimeTicks: 22 hours, 41 minutes, 51 seconds.:
.iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0: Object ID: .1.3.6.1.4.1.32327.2.2.3.1.6.0.1:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmCustName.0: RFI:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmSiteName.0: Adelaide:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusString.0: TTA_Amp_A=ON,
TTA_Amp_B=OFF, Bypass_Mode=OFF, Test_Mode=OFF:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmStatusBits.0: INTEGER: 0:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDescription.0: NO_Alarms:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmState.0: INTEGER: 1:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmDateTime.0: 2016-3-4,13: 41: 49.8:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmType.0: INTEGER: 6:
.iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiRMCPProduct.rmcAlarmMIB.rmcAlarmEntry.rmcAlarmModel.0: INTEGER: 1:
```

SNMP GET#

The SNMP GET# command is able to read individual OIDs and associated variables from the RMC/TTA as shown in the example below;

Sent GET request to 192.168.1.232 : 161

rmcAlarmCustName.0	RFI
Sent GET request to 192.168.1.232 : 161	
rmcAlarmSiteName.0	Adelaide
Sent GET request to 192.168.1.232 : 161	
rmcAlarmStatusString.0	TTA_Amp_A=ON, TTA_Amp_B=OFF, Bypass_Mode=OFF, Test_Mode=OFF

A SNMP WALK will read all the OIDs and associated variables as shown in the example below,

Sent GET request to 192.168.1.232 : 161

rmcAlarmCustName.0	RFI
rmcAlarmSiteName.0	Adelaide
rmcAlarmStatusString.0	TTA_Amp_A=ON, TTA_Amp_B=OFF, Bypass_Mode=OFF, Test_Mode=OFF
rmcAlarmStatusBits.0	0
rmcAlarmDescription.0	NO_Alarms
rmcAlarmState.0	okay(1)
rmcAlarmDateTime.0	2016-3-4,12:59:1.7
rmcAlarmType.0	0
rmcAlarmModel.0	1

16. Connectors

RMC DC Power connector (Phoenix 2-pin) pin-out:

The pin numbers on the polarized Phoenix 2-pin connector on the rear of the RMC are illustrated below.

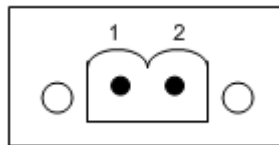


Figure 163 – DC Power Pinout

Pin Function Table:

Pin	Function
1	DC Power Input -ve
2	DC Power Input +ve

Table 17

RMC Alarm connector (Phoenix 3-pin) pin-out:

The pin numbers on the polarized Phoenix 3-pin connector on the rear of the RMC are illustrated below.

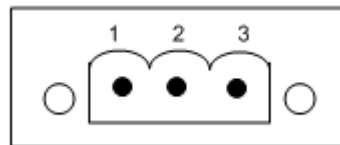


Figure 14 – Alarm Pinout

Pin Function Table:

Pin	Function
1	Fault – Closed when an alarm is present
2	Fault – Open when an alarm is present
3	Common

Table 18

17. Maintenance, Inspection and Repair Advice

No special maintenance program is required for the TTA or RMC. Testing and inspection of the TTA system may be included in a Periodic Maintenance Inspection (PMI) program if desired.

Firmware upgrades may periodically be made available and may be uploaded for the TTA or RMC via the RMC GUI or CLI if desired.

Checking that the RF connectors on all coaxial cables are correctly torqued (as per manufacturers' recommendations) is considered good practice.

All other connectors (power, alarm, etc) must be firmly located and pushed into their corresponding mating sockets, with fastening screws tightened securely.

Neither the TTA nor the RMC are considered field repairable. Should it be considered that any unit may be faulty through diagnosis, they should be replaced - or returned to RFI for repair.

18. Frequently Asked Questions (FAQ)

Q – How many base stations can be connected to a TA7982 TTA system?

A – Up to 128. Models offering RF outputs for 8 (or 9 in Mode #2) or 16 RF outputs are set up. 8way Expansion Decks can easily be added to increase this configuration up to a maximum of 128 channels.

Q – Can the system be expanded?

A – Yes. The TA7982 Series TTA systems can be easily and conveniently upgraded in the field by adding additional 8way Expansion Decks as and when required by network capacity expansion on a site-by-site basis.

Q – Can a Post Filter be added to the system?

A – Yes. An in-line Post Filter can be easily connected to the receiver multicoupler to facilitate additional selectivity, or to narrow the TTA's inherent passband for customised designs. This post filter is connected to the two "Filter" ports on the rear of the receiver multicoupler, and switched into the RF path using the "filter inline" switch located between these two ports – or via the webserver GUI. A LED indicator next to the switch is on when the post filter is switched into the RF path. The GUI also shows the post filter's in-line status.

Q – Which system power supply voltages are catered for?

A – Models are available to cater for 90-264VAC, +12VDC (+11-16VDC negative ground), 24VDC (18-36VDC floating ground) and 48VDC (36-60VDC floating ground). The availability of these models ensures compatibility with the different Mains, UPS, Solar and other power system types commonly deployed in networks.

Q – Does the TTA System provide alarm outputs?

A – Yes. The receiver multicoupler has a separate Alarm connector that provides Form-C relay outputs for connection to an external Site Monitoring system. The GUI also provides alarm status information, and the Command Line Interface (CLI) could provide alarm polling capability for embedded and custom software applications. Future firmware can be easily flash uploaded (locally or remotely) and will include IP Manager Messages, SNMP, and SMTP Email Alarm Messages.

Q – Is performance History available?

A – Yes. Receive System performance can be measured and the results stored in the RMCs non-volatile memory for future review. This feature allows a long term record of system performance to be conveniently viewed, and allows ongoing system performance to be analyzed to show degradation or other customer-impacting trends.

Q – Is SNMP supported?

A – Yes. The APM can report alarms via SNMP v2c northbound alarm traps, and can be polled by a southbound GET# command. The GET# command will respond with a *Status – System - Alarm Summary* status.

Q – Are Dual-Receiver systems supported?

A – Yes. RFI offers an innovative mounting kit that allows two TTAs to be mounted together in a compact installation, capable of sharing a common TEST coaxial feeder cable, and using two separate RMCs. This configuration optimises cabling and installation costs and provides true full redundancy in the receiver systems - with associated high levels resistance to system outages, fault-tolerance, and resulting excellent system availability performance. This unique TTA/RMC architecture solution requires only a single mounting location on the tower and significantly minimises the dual systems's wind and weight loading impact on the tower.

Q – Are Diversity Receive systems supported?

A – Yes. Like our Dual-Receiver system solution, RFI's dual TTA mounting kit also provides a Diversity Receive solution, providing the same installation, fault-tolerance and system availability benefits for communications systems deployments using receiver diversity. RFI's unique TTA/RMC architecture also provides a convenient migration path from single receive designs to the latest diversity receive technologies – minimising spares holdings throughout the network's life, while maximising realised equipment life-cycles and a network operator's return-on-investment.

Q – Are new features planned?

A – Yes. Like other RFI products, there is a robust product development roadmap planned for the TTA system products. New features and capabilities will be released to enable system enhancements to be added to a system – continuing to add value customers. Firmware updates can be easily and conveniently uploaded into the units via the GUI. Please check the RFI web site on a regular basis for firmware updates.

19. Supporting Information

For Marketing Sheets, User Manuals, Firmware Upgrade files, SNMP MIB files, Service Bulletins or additional information on the RFI range of TTA and RMC products please visit:

<http://www.rfiwireless.com.au>

Test Drive the RMC GUI (including the TTA) by visiting the RFI TTA on-line demonstration unit:

<http://203.46.35.189>

Level 1:	Username:	user
	Password:	user
Level 2:	Username:	admin
	Password:	admin

Please note that this unit is not connected to a "live" network and may be test driven and configured without impact on any user. Demonstration units may be also be off-line periodically. If you cannot connect to this unit please contact your nearest RFI Sales office so we can ensure it is available for your test drive.

Additional information is available from the RFI website <http://www.rfiwireless.com.au>

Contact Information

If you would like more information on the TTA/RMC products and their applications, please contact your nearest RFI Sales Office. For more information on RFI products, please visit us at <http://www.rfiwireless.com.au>

20. User Notes:



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