RoIP Desktop User terminal

RDU101

PRODUCT MANUAL

Revision: RDU101_MNL_EN100408

® THIESEN HARDWARE SOFTWARE DESIGN GMBH
Im Tiegel 9
36367 Wartenberg
Telefon +49 (0) 66 41 – 979-0 Fax: -299
www.thiesen.com/pmr
pmr@thiesen.com

Table of Contents

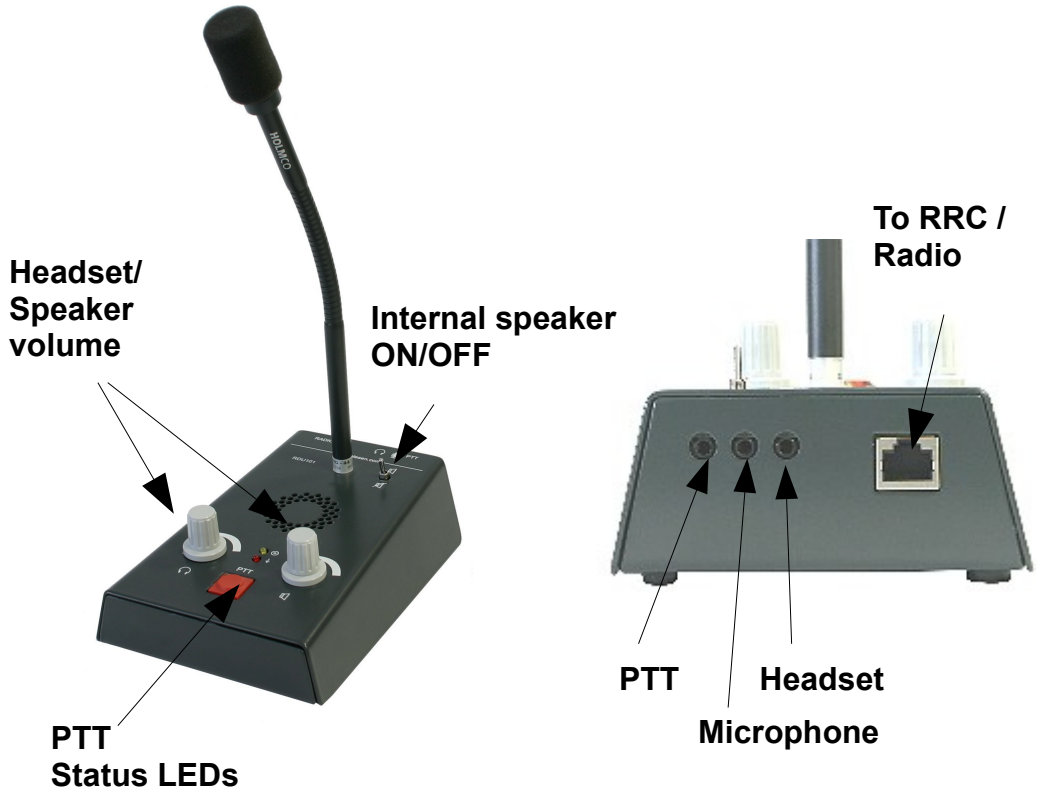
1. Introduction

The RDU-101 was specifically designed for seamless interoperation with the RRC101-IP-B RoIP adaptor. In combination with the RRC, the RDU provides excellent voice-quality and usability. The RDU can also be connected directly to a radio transceiver via its rear-panel RJ45 connector.

The RDU provides individual volume control for speaker and headset. The internal speaker can be switched off. A noise-compensated goose-neck microphone with wind-protection and a voice-optimised speaker ensure excellent voice-quality. Three status LEDs indicate Power (yellow), Active Receive (Red), PTT Active (green).

External PTT (e.g. for the FTM 2410 foot-switch), microphone and headset and radio control are provided via the 3.5mm rear-panel connectors. The rear-panel RJ45 provides an 8-pin RRC or Radio interconnect. Power-supply is via the rear-panel RJ45 from RRC or radio.

The unit is both physically and mechanically designed and manufactured to withstand continued use in operations over a long life-span. Up to three RDU's can be used in parallel via the MAB 4 multi-connect box enabling simultaneous use of one radio by three users.



2. Connecting the RDU

Figure 1 Connecting the RDU to an RRC101-IP-B/19 AUDIO

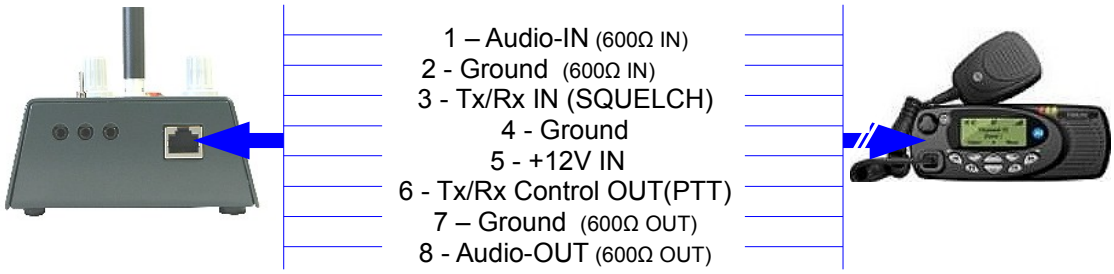


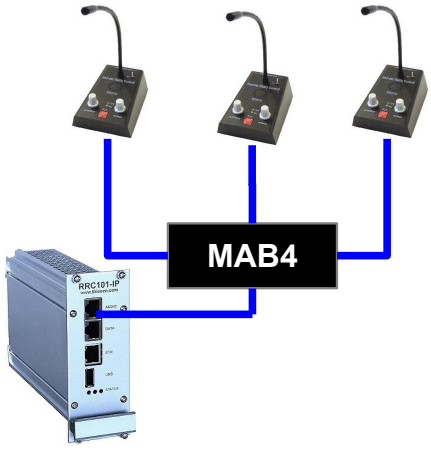
Figure 2 PIN allocation for connecting the RDU directly to a radio

2.1 12V Power Supply

The RDU receives its +12Vpower supply either from the connected RRC or radio transceiver. Multiple RDU's can receive their power-supply from the MAB 4 interconnect box. If required, a special option external power-supply connector can be installed as a factory option.

2.2 Combining multiple RDU's

Up to 3 RDU's can be used in parallel with one radio or RRC by using the Multi-Access Box 4. The MAB 4 provides 4 RJ45 connectors, one for the RRC or radio interconnect and three for three separate RDU's. The MAB 4 includes a power-supply to provide both RDU's and RRC with the 12V required. The RDU's work in true parallel fashion. To avoid conflicting communications, each unit signals an existing AUDIO connection with a steady PTT indicator (green LED).



3. Hardware and accessories

3.1 RDU and options

Order Number	Description
RDU101	RoIP Desktop User terminal
Options	**Requires RRC101-IP in appropriate HW/FW configuration**
BOS (Germany)	RRC101-IP with Call 1+ 2, configured via RRC web browser interface
Channel-select	Allows to select 3 channels in conjunction with the RRC
Squelch On/Off	Allows to turn SQUELCH on and off

Thiesen can provide special options for your specific applications. Inquires are most welcome, please contact us at pmr@thiesen.com. Our product development team will gladly assist you.

3.2 RDU Accessories

Order Number	Description
MAB4	Multi-Access Box 4, allows parallel operation of up to three RDU's
SNT18	Switched power supply, 13.2 V/1.5 A (18 W), for RRC101-IP and RDU
FTM 2410	PTT-Foot switch for RDU101, 3.5mm TRS jack, 2.3m cable

4. Specifications

General

Voltage / Current	+12Vdc / 430mA via RRC101-IP or Radio interconnect
Status indicators	3 LEDS: Power (yellow), Active Receive (Red), PTT Active (green)
Dimensions RRC101-IP-B	90mm (W) x 60mm (H) x 165mm (D) (w/o microphone)
2W Audio Amplifier	

Audio In

Input impedance / capacitance	2.5 kΩ / 24pF (Optional 600Ω)
Input voltage	40mV – 1.0V (variable), 400mV factory pre-set
Frequency response (flatness)	
Signal-to-noise ratio (SNR)	Better than 60dB

Audio Out

Output impedance	100Ω, nominal 35Ω (Optional 600Ω)
Output voltage	80mV – 1V (variable), 400mV factory pre-set

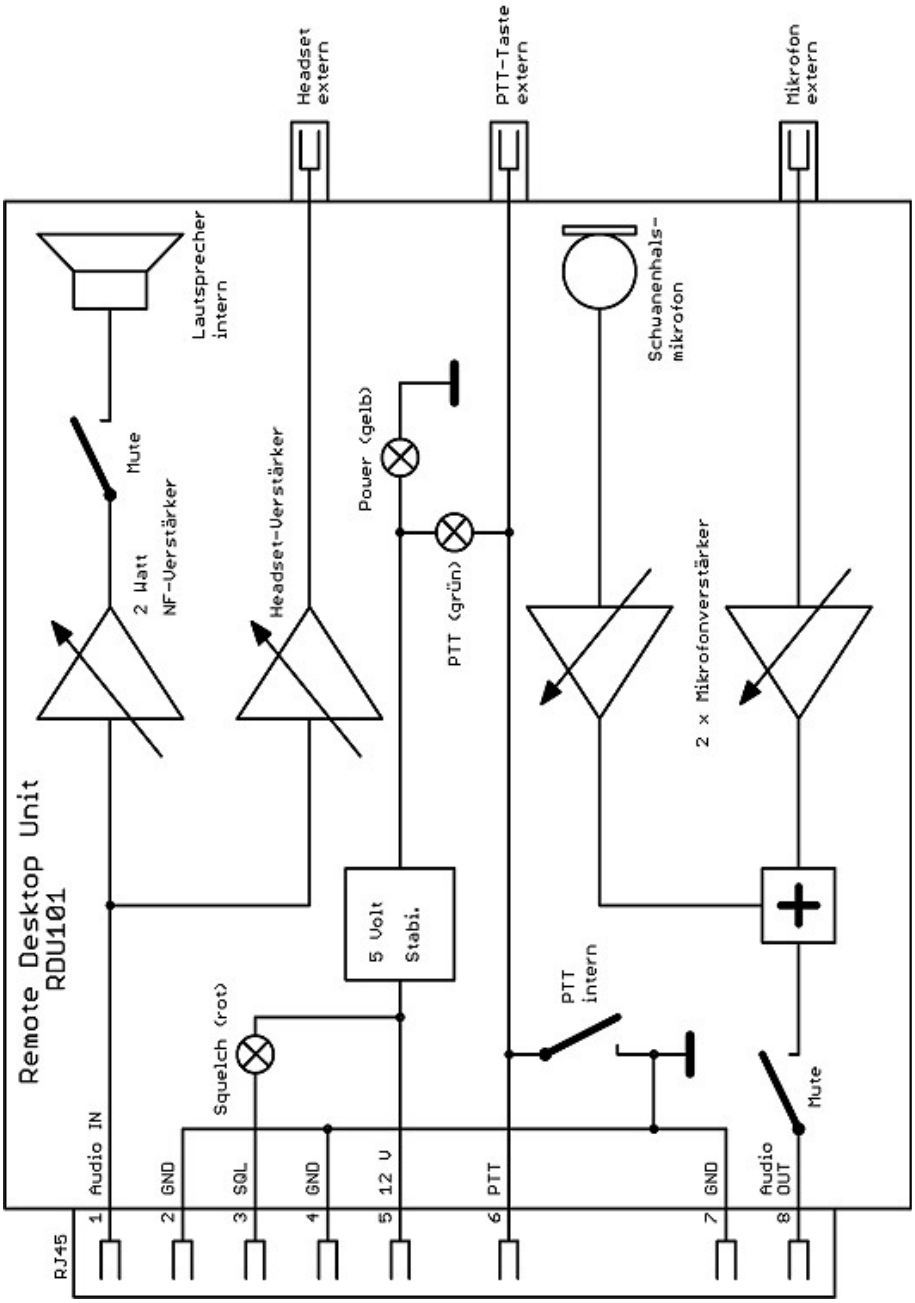
External Audio/PTT

Microphone	3.5mm
Headset/Headphone	3.5mm
External PTT Control	3.5mm (e.g. foot-switch)

Direct Radio interconnect RJ45

Pin		Pin		Pin	
1	Audio IN (600Ω Opt. IN)	4	Ground	7	Ground (600Ω Opt. OUT)
2	Ground (600Ω Opt. IN)	5	+12V IN	8	Audio OUT (600Ω Opt. OUT)
3	Squelch IN	6	PTT OUT		

5. Block diagram



6. Hardware settings and adjustments

6.1 Level control and pre-sets

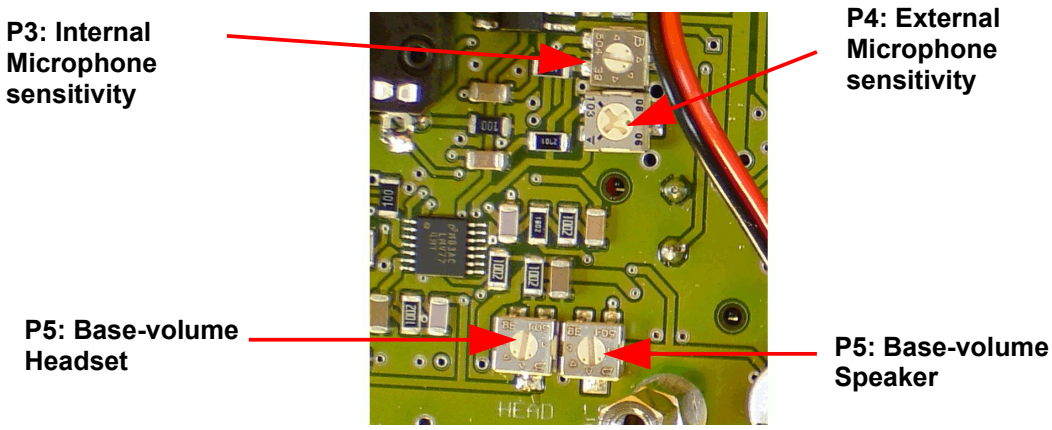
The RDU has four individual adjustments (trimmers) that control the base-levels for the internal speaker, audio amplifiers. In most cases, these settings do not need to be altered. When using a direct connect to a radio transceiver, it is advised to adjust the audio levels on the radio (400mV) rather than adjusting the internal potentiometers on the RDU board. If required, levels can be adjusted as follows:

P3: Sensitivity of the RDU microphone, adjusts amplification for both internal and external microphone

P4: Sensitivity of the external microphone (headset microphone)

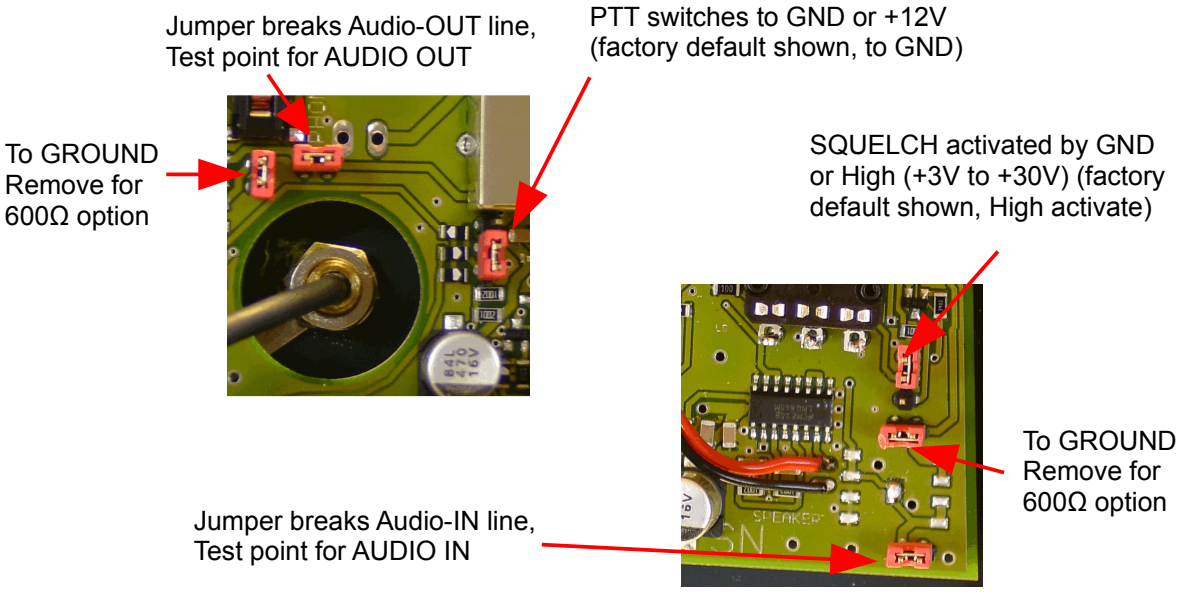
P5: Sets base-volume of the internal speaker

P5: Sets the base-volume of the external speaker



Safety Note: These settings are only accessible within the device. Ensure all safety measures are adhered to before opening the unit.

6.2 Jumper settings



7. General safety notices

Please read all applicable instructions and user manuals prior to installing and operating the device.

The installation, connection, maintenance and otherwise handling of mains power supply, electrical wiring, telecommunications wiring and apparatus and general electronics and electrics, radio transmitting and receiving devices and installations must be executed in accordance with national and international rules and regulations and is only to be executed by qualified personnel.

The following general safety notices must be adhered to:

- **Always disconnect mains power supply and any external wiring prior to opening the device**
- **All installation, maintenance, repair and associated work is to be done by qualified personnel only**
- **Ensure appropriate safety measures in regards to RF-radiation when executing maintenance or repair in the vicinity of radio transmitters**
- **Ensure all covers and safety features are properly installed before connecting the unit to power supply and mains and other wiring**
- Regularly check leads and external wiring. Replace faulty wiring immediately by appropriately qualified personnel
- Regulated and required checks and routine maintenance as specified by applicable national and international regulations must be executed (e.g. VDE 0701, 0702 Germany).
- Specifically ensure that all potentially hazardous voltages are removed and/or discharged before using tools in the vicinity of electrical or electronic components, wiring and/or circuit boards.
- **Important Safety Note:** Capacitors can hold a hazardous charge even after all external voltages have been disconnected. Ensure that capacitors are discharged through safe and appropriate means. DO NOT discharge the capacitor by short-circuiting!
- All specifications regarding voltages, currents, temperature and environment MUST BE adhered to as exceeding the limits for even a short period can damage components beyond repair and may even lead to injury
- The instruments, devices, assemblies, components and otherwise are to be used and operated solely for the intended use as described in this manual.
- Should you have questions or concerns, please do contact Thiesen Hardware- & Software-Design GmbH or the dealer you purchased this unit from

8. Support & Sales

Factory & Headquarters Thiesen, Germany

International: +49 66 41 / 9 79-0

Within Germany: 0 66 41 / 9 79-0

pmr@thiesen.com

9. Return and recycling

Please refer to applicable legislation for your area or contact your authorised dealer and/or distributor.

10. Acronyms and definitions

101 — 1 0 1
- 1 — Unit/Device Revision (1 = default, first generation)
- 0 — Software Revision (0 = Standard, X = customised)
- 1 — Number of channels

AC	**A**lternating **C**urrent
BOS	Governmental Agencies and Organisations for Security and Safety (Germany)
DC	**D**irect **C**urrent
GPIO	**G**eneral **P**urpose **I**nput **O**utput,
I/O	**I**nput/**O**utput
IN	Input
IP	**I**nternet Protocol → Internet/Intranet
ISDN	**I**ntegrated **S**ervices **D**igital **N**etwork → Digital Telecommunications standard
MAB	**M**ulti-**A**ccess **B**ox
LF	**L**ow **F**requency (baseband)
OUT	Output
PMR	**P**rivate **M**obile **R**adio also **P**rofessional **M**obil **R**adio
PTT	**P**ush **T**o **T**alk (enables RF on transmitter)
Radio	Radio Transceiver
RoIP	**R**adio **o**ver **I**nternet **P**rotocol
RRC	**R**emote **R**adio **C**ontrol
RDU	**R**emote **D**esktop **U**nit
RxD	Receive data RS232
SCL	Clock I2C-Bus
SDA	Data I2C-Bus
SSH	**S**ecure **Sh**ell
TETRA	**Te**rrestrial **T**runked **Ra**dio
TxD	Transmit data RS232
Tx/Rx	Transmit/Receive
VoIP	**V**oice **o**ver **I**nternet Protocol

11. Certifications

11.1 EC Conformity Declaration

The company:

Thiesen Hardware- & Software-Design GmbH
Im Tiegel 9
36367 Wartenberg

declares, that the devices Remote Radio Control over IP (RRC101-IP) and Remote Desktop Unit (RDU101) comply with the following standards and regulations:

DIN / EN 55022	Radiated Emissions up to 1 GHz Conducted Emissions
EN / IEC 61000	Conducted Susceptibility BURST, SURGE, ESD

11.2 RoHS Conformity Declaration, EC

2002/95/EG/RoHS (Restrictions of Hazardous Substances)

The company:

Thiesen Hardware- & Software-Design GmbH
Im Tiegel 9
36367 Wartenberg

declares, that the devices Remote Radio Control over IP (RRC101-IP) and Remote Desktop Unit (RDU101) is manufactures comply with the Directive *2002/95/EC (RoHS)*.

Important Note: Adaptation, alteration and improper installation and use of the devices that is not specifically agreed to in writing by senior management of Thiesen Hardware- & Software-Design GmbH voids the above declarations. Installation, operation and maintenance of products and devices must be in accordance with applicable safety guidelines and regulations and the information provided in the user manual and applicable documentation provided.

This declaration is given in responsible representation of the manufacturer Thiesen Hardware- & Software-Design GmbH by:

Wartenberg, 10.06.2008 Jürgen Thiesen, Managing Director

12. Disclaimer

The information in this document is subject to change without notice and does not represent a commitment on the part of the vendor. Images and diagrams in the manual may resemble but not exactly match the actual product and software. No warranty or representation, either expressed or implied, is made with respect to the quality, accuracy or fitness for any particular purpose of this document. The manufacturer reserves the right to make changes to the content of this document and/or the products associated with it at any time without obligation to notify any person or organisation of such changes. In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages arising out of the use or inability to use this product or documentation, even if advised of the possibility of such damages.

13. Revision Control

Revision	Author	Description
090916	RPB	Created English RDU Manual

Configuration Worksheet

The worksheet can be used to submit the details of your device(s) for support or other purposes.

Client

Contact

Telephone

e-mail

Unit

Ser.No.		
Type	□ RDU101	
Options	□ BOS Option, Call 1 and Call 2	
	□ 600 Ω Audio Symmetric In/Out	

HW Configuration

	Tx / Rx Control Out	□ Active GND	
		□ Active +12 V	
	Tx / Rx Control In	□ Active GND	
		□ Active +1.5V to +30V	
	Audio Level IN		mV
	Audio Level OUT		mV

Comments