

RPT-110-3PCxxx-K9 REPEATER USER GUIDE

Technical Reference Document

Version 1.2

© May-2019 RTX A/S, Denmark



Trademarks

RTX and the combinations of its logo thereof are trademarks of RTX A/S, Denmark.

Other product names used in this publication are for identification purposes and maybe the trademarks of their respective companies.

Regulatory information United States

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must be used to provide a separation distance of at least 20 cm from all persons.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Regulatory information Canada

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment.

The antenna(s) used for this transmitter must be used to provide a separation distance of at least 20 cm from all persons.

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes:

- Cet appareil ne doit pas causer d'interférences.
- Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

Cet équipement est conforme aux limites d'exposition au rayonnement ISED établies pour un environnement non contrôlé. La ou les antennes utilisées pour cet émetteur doivent être utilisées de manière à assurer une distance de séparation d'au moins 20 cm de toutes les personnes.

Disclaimer

The contents of this document are provided about RTX products. RTX makes no representations with respect to completeness or accuracy of the contents of this publication and reserves the right to make changes to product descriptions, usage, etc., at any time without notice. No license, whether express, implied, to any intellectual property rights are granted by this publication

**Confidentiality**

This document should be regarded as confidential, unauthorized copying is not allowed

© May-2019 RTX A/S, Denmark, All rights reserved

<http://www.rtx.dk>

Contents

1.	Introduction	5
1.1.	Document History	5
1.2.	What is new.....	5
1.3.	Main topics.....	5
2.	Installation of Repeater	6
2.1.	Package – Contents/Damage Inspection.....	6
2.2.	Damage Inspection.....	7
2.3.	Repeaters Mechanics	8
2.4.	Mounting the repeater.....	9
3.	Recommended external DC adapters	10
4.	Repeater registration.....	11
4.1.	Register repeater(s) “Local Automatic”	11
4.2.	Register repeater(s) “Manually”	13
5.	Firmware update	15
6.	LED and button	17



1. Introduction

The RPT-110-3PCxxx-K9 repeater user guide is designed to give a detailed overview on how to install, register and manage RTX repeaters

1.1. Document History

REVISION	AUTHOR	ISSUE DATE	COMMENTS
1.0	HDJ	26-06-2019	
1.1	JSK	15-08-2019	Correct the numbering of contents
1.2	JSK	20-09-2019	Add FCC and IC Regulatory information Correct Mechanics drawing, remove Ethernet connector

1.2. What is new

What new features have been added.

VERSION	FEATURE
V460	

1.3. Main topics

- Installation
- Recommended external DC adapters
- Locate automatic registration
- Manual registration
- Firmware update
- LED indications

2. Installation of Repeater

After planning the network, next is to determine the proper places or location the repeater. The repeater should be mounted as high as possible.

2.1. Package – Contents/Damage Inspection

Before Package Is Opened:

Examine the shipping package for evidence of physical damage or mishandling prior to opening. If there is a proof of mishandling prior to opening, you must report it to the relevant support center of the regional representative or operator.

Contents of Package:

Make sure all relevant components are available in the package before proceeding to the next step. Every shipped repeater package/box contains the following items:

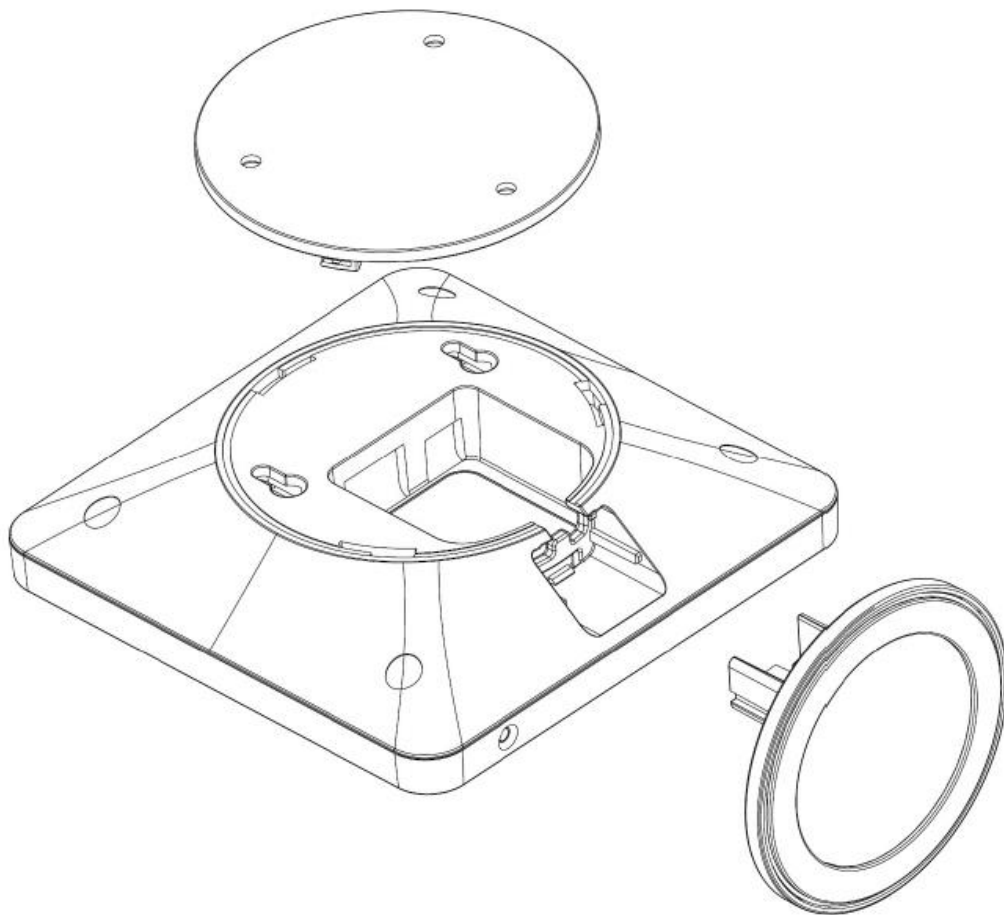
2 x mounting screws and 2 x Anchor

1 x Power supply

1 x Repeater

1 x Table stand

1 x Safetysheet





2.2. Damage Inspection

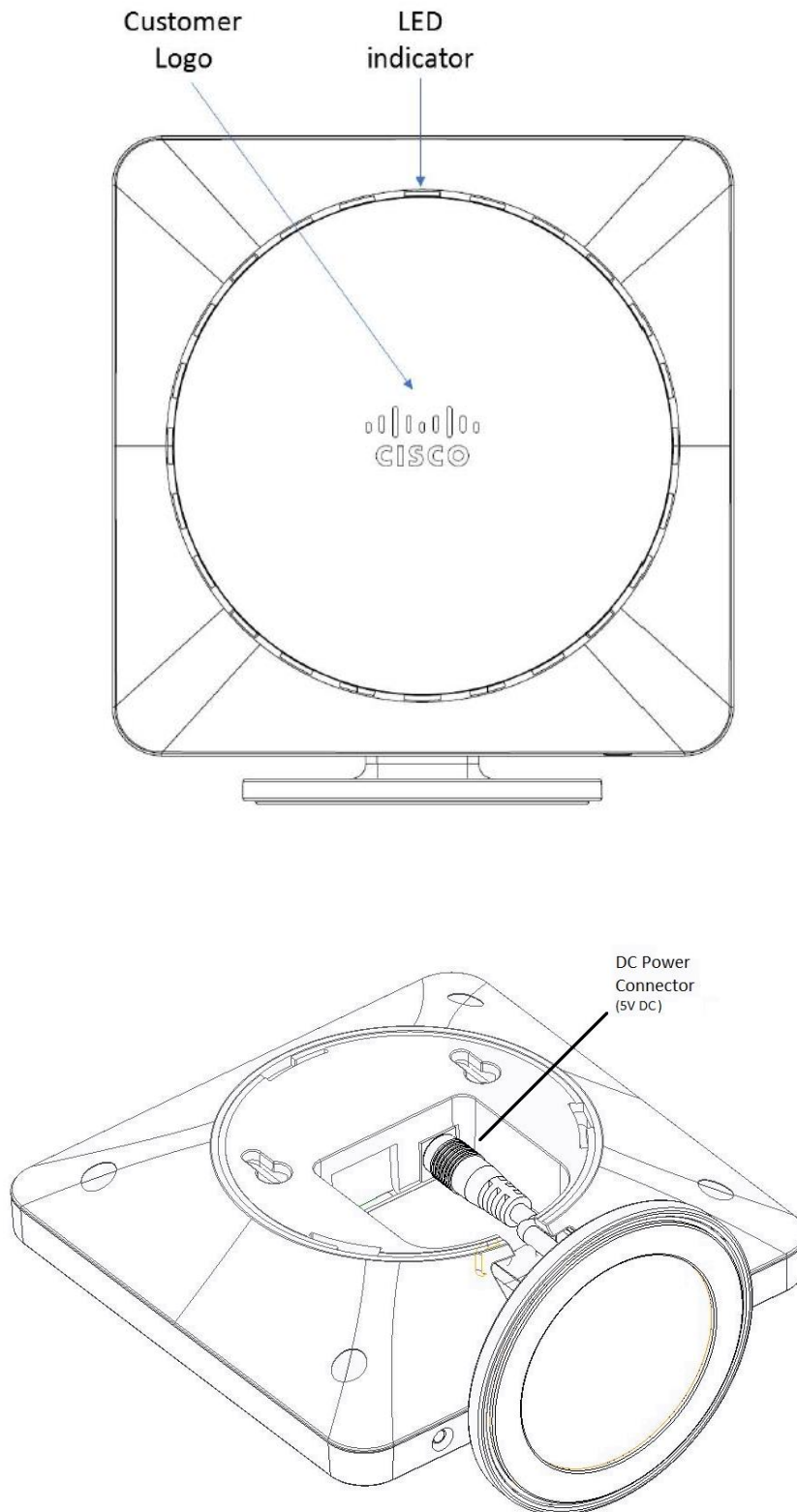
The following are the recommended procedure for you to use for inspection:

1. Examine all relevant components for damage.
2. Make a “defective on arrival – DOA” report or RMA to the operator. Do not move the shipping carton until the operator has examined it. If possible, send pictures of the damage. The operator/regional representative will initiate the necessary procedure to process this RMA. They will guide the network administrator on how to return the damaged package if necessary.
3. If no damage is found, then unwrap all the components and dispose of empty package/carton(s) in accordance with country specific environmental regulations.

2.3. Repeaters Mechanics

The repeaters front end shows an LED indicator that signals different functional states of the repeater.

The indicator is off when the repeater is not powered on.



2.4. Mounting the repeater

There are 2 way to mount the repeater.

1: Use the table stand that is in the box

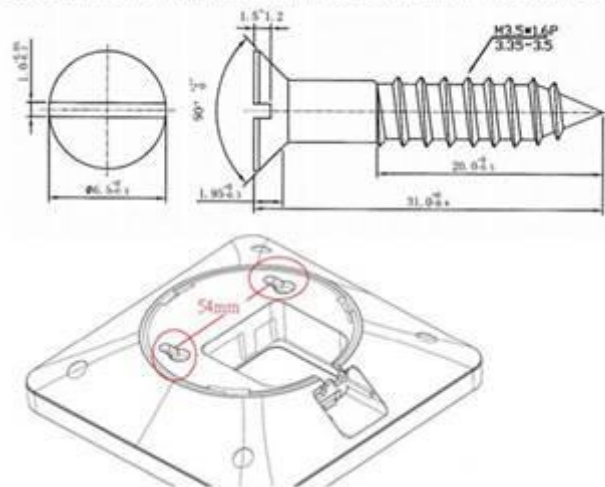
2: Wall mount the repeater using the screws and anchors

Screws: M3,5 x 31mm

Anchors: Length 29,6mm, OD 6,0mm, ID 4,8mm

NOTE: The repeater should be mounted on a wall not higher than 2 meters

Here below are the dimensions for the wall mount screw and distance between 2 screw holes.



3. Recommended external DC adapters

Module number	Specification	Manufacturer	Plug Type
S003GV0500060	SMPS,100-240VAC,5V 600mA with DC Jack	Ten Pao International LTD	EU
S003GB0500060			UK
S003GS0500060			AU
S003GU0500060			US



4. Repeater registration

There are 2 different ways to register RTX repeater's "Local Automatic" and "Manually"

Local Automatic:

In this mode the repeater registers to the base station with best signal strength, this option is only recommended for single cell systems and Multi cell systems where the repeater is only able to sync with one specific base station.

Manually:

Manual registration is used in most cases when adding repeaters to a multi cell system. Manual registration allows to determine what base stations the repeater must connect to.

4.1. Register repeater(s) "Local Automatic"

NOTE: Do not power on the repeaters before they have been added on the base station

NOTE: When adding first repeater the base station(s) will reboot, this is because encryption is being enabled, the same goes if all repeaters is deleted, then the system will reboot to disable encryption.

Step 1: To register repeater(s), navigate to the Repeater page.

Screen shot

Repeaters							
Add Repeater							
Refresh							
Idx	RPN	Name/ IPEI	DECT sync source	DECT sync mode	State	FW Info	FWU Progress

Step 2: Click "Add Repeater" and select "Local Automatic" from the dropdown



Screen shot

Repeater

Name:

DECT sync mode: Local Automatical ▼

Manually

Local Automatical

Step 3: Give the repeater a name and press “save”

Step 4: Power on the repeater(s) and registration will start.

When the LED is steady green the repeater is successfully registered.

Screen shot

Repeaters

[Add Repeater](#)

[Refresh](#)

Idx	RPN	Name/ IPEI	DECT sync source	DECT sync mode	State	FW Info	FWU Progress	
☐	1	RPN09	Repeater 1/ 0298D02668	RPN08 (-26dBm)	Local Automatical	Present@RPN08	39	Off

[Check All](#) / [Uncheck All](#)

With selected:

[Delete Repeater\(s\)](#), [Register Repeater\(s\)](#) [Deregister Repeater\(s\)](#)

PARAMETERS	DESCRIPTION
IDX	System counter
RPN	SINGLE CELL SYSTEM: The base has always RPN00, first repeater will then be RPN01, second repeater RPN02 and third RPN03 (3 repeaters maximum per base) MULTI CELL SYSTEM: Bases are increment by 2^2 in hex, means first base RPN00 second base RPN04 etc., in between RPN01, 02, 03 addressed for repeaters at Primary base and 05, 06, 07 addressed for Secondary base (3 repeaters maximum per base)
NAME/IPIE	Name and IPIE number of the repeater
DECT SYNC MODE	DECT Sync mode – Manually or Automatic
STATE	State of the repeater Enabled/Disabled
FW INFO	Firmware version
FWU PROGRESS	How many percentages of the firmware is loaded / Off if no firmware is being loaded

4.2. Register repeater(s) “Manually”

NOTE: Do not power on the repeaters before they have been added on the base station

NOTE: When adding first repeater the base station(s) will reboot, this is because encryption is being enabled, the same goes if all repeaters is deleted, then the system will reboot to disable encryption.

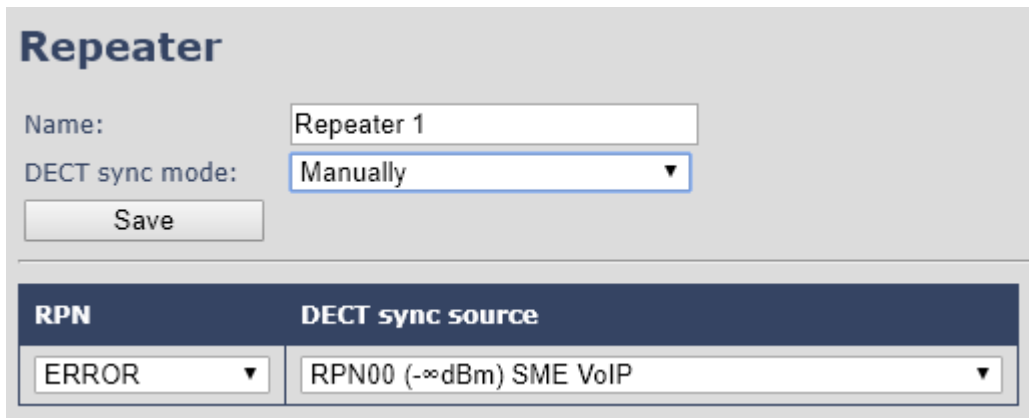
Step 1: To register repeater(s), navigate to the Repeater page.

Screen shot



Step 2: Click “Add Repeater” and select “Manually” from the dropdown

Screen shot



Step 3: Give the repeater a name and press “save”

Step 4: select what base station the repeater needs to register to “DECT sync source” drop down

In this case there are three base stations in the multicell (RPN00, RPN04 and RPN08) and three repeaters can be connected to each base station.

Select the base station the repeater needs to register to.

E.g. RPN04

Screen shot

Repeater

Name:

DECT sync mode:

RPN	DECT sync source
ERROR	RPN00 (-∞dBm) SME VoIP - RPN00 (-∞dBm) SME VoIP - RPN01 (-∞dBm) Repeater - RPN02 (-∞dBm) Repeater - RPN03 (-∞dBm) Repeater - RPN04 (-∞dBm) SME VoIP - RPN05 (-∞dBm) Repeater - RPN06 (-∞dBm) Repeater - RPN07 (-∞dBm) Repeater - RPN08 (-∞dBm) SME VoIP - RPN09 (-∞dBm) Repeater - RPN0A (-∞dBm) Repeater - RPN0B (-∞dBm) Repeater

Step 5: Select the RPN for the repeater.

ERROR: The repeater will choose the first available slot on the selected base station.

RPN x: The repeater connects to RPN x of the chosen base station.

E.g. Base station RPN04 + RPN1 repeater, then the repeater connects to "RPN5"

Screen shot

Repeaters

[Add Repeater](#)

[Refresh](#)

Idx	RPN	Name/ IPEI	DECT sync source	DECT sync mode	State	FW Info	FWU Progress
☐	1	RPN02 Repeater 1/ 0298D02668	RPN00 (-26dBm)	Manually	Present@RPN00	39	Off

[Check All](#) / [Uncheck All](#)

With selected: [Delete Repeater\(s\)](#), [Register Repeater\(s\)](#) [Deregister Repeater\(s\)](#)

5. Firmware update

The repeaters are updated over air.

Step 1: Navigate to Firmware Update page

Step 2: Enter "Firmware Update server address", "Firmware path" and DECT402x firmware version

Screen shot

Firmware Update Settings

Firmware update server address:

Firmware path:

Terminal file path:

Type	Required version	Required branch	Startup picture
Update Base Stations	0	0	
8200	0	0	
8633	0	0	
8632	0	0	
8630	0	0	
8631	0	0	
8930g	0	0	
DECT4024	0	0	

Save/Start Update

PARAMETER	DEFAULT VALUE(S)	DESCRIPTION
FIRMWARE UPDATE SERVER ADDRESS	Empty	IP address or DNS of firmware update files source Valid Inputs: AAA.BBB.CCC.DDD or <URL> Example: firmware.rtx.net or 10.10.104.41
FIRMWARE PATH	Empty	Location of firmware on server (or firmware update server path where firmware update files are located). Example: RTXFWU
TERMINAL FILE PATH	Empty	Location of image (folder where background and start up image are located). Example: Images
REQUIRED VERSION	Empty	Version of firmware to be upgraded (or downgraded) on handset, repeater, or base station. Valid Input(s): 8-bit string length. E.g. 400 Note: Value version 0 will disable firmware upgrade Note: Two handset types will be serial firmware upgraded. First type 8630 then type 8430.
REQUIRED BRANCH	Empty	Branch of firmware to be upgraded (or downgraded) handset, repeater or base station. Valid Input(s): 8-bit string length. E.g. 01

NOTE: Repeater firmware do not follow the normal version numbers.

6. LED and button

Power cycle

The repeater basically has two modes: Subscribed or not subscribed.

When powered up without a registration, the following applies.

Power	Press	Action
OFF	00s < x < XXs	Nothing
ON	00s < x < 05s	Nothing
ON	05s < x < 300s	Search for suitable base and start registration procedure if a suitable is found

When powered up with a registration, the following applies:

Power	Press	Action
OFF	00s < x < XXs	Nothing
ON	00s < x < 60s	Search for source base/repeater
ON	60s < x < XXs	Search for any base/repeater in the system

Button

In the below table the action of the button press is presented.

Button	Press	Action
1	00s < x < 02s	Nothing
1	02s < x < 06s	Delete registration Old registration is deleted, and a new registration procedure is started.
1	18s < x < 60s	Enable or disable repeater monitor beep tone in handset during call.
1	60s < x < XXs	Nothing

LED

LED	Indication	Action
GREEN	Off	Power Off
GREEN	Slow flash	Unlocked, Searching for base station
GREEN	Double flash	Registration/subscription mode and searching for open base station – registering procedure.
GREEN	Steady on	Locked to base station and ready for use - idle
RED	Off	No handset relayed by repeater



RED	<i>n</i> flash	<i>n</i> handset relayed by repeater
RED	Steady on	1. Registration procedure timed out after 5 min. 2: When key is held pressed the LED will light up in 2 sec. to indicate that releasing the key will delete registration, LED turns off after 4 more sec.
RED/GREEN	Flashing Red/Green	Recovery mode – repeater is locked to base station/repeater without repeater mode activated. 1: Sync. Source base station/Repeater not found (Manual mode). 2: Timeout during RPN allocation due to busy base station/Repeater.