

RC232 Deployment Tool (DT) User Manual

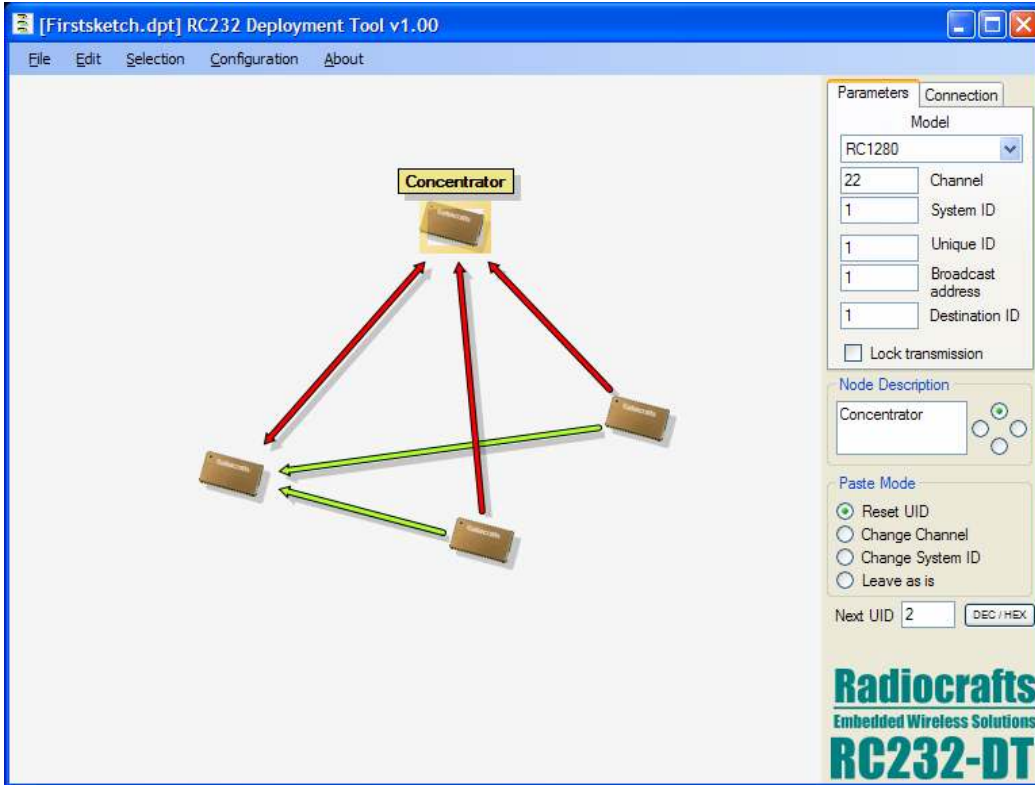


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Installation Guide

RC232-DT deployment tool (DT) is a part of Radiocrafts' RCTools PC suite tailored for use with Radiocrafts' RF Modules. For full installation procedure please read the RCTools Installation Guide available at www.radiocrafts.com.

The DT can work with multiple modules and requires access to the modules UARTs via one or more available COM-ports together with access to the individual modules CONFIG-pin. Typically UART-access is obtained via an UART-to-RS232 or UART-to-USB converter. The Demo Boards (DB) from Radiocrafts contains onboard level shifter for direct plug-in to a PC and further access to the related COM-port.

Screen Settings

It is recommended to run the application with screen size at least 1024x768 and font resolution 96dpi.

Introduction

RC232 Deployment Tool, DT, enables you to easily configure any number of modules with the commands crucial for communication between modules in point-to-multipoint networks. The commands are explained in detail in the RC232 User Manual. For complete configuration of all parameters available in Radiocrafts modules outside those mentioned in this document and for controlling test modes and sending messages, please check the Configuration and Communication Tool, CCT.

Setup

Physically connect the DB, or your own hardware with the Radiocrafts module, to the COM-port. If you are using the module on your own hardware, make sure to include the UART to RS232 or UART to USB converter. Start the program and the main window will look similar to what is shown in Figure 1. To be able to enter numbers in the Parameters window the proper module Model has to be selected manually from the menu or loaded from the connected module.

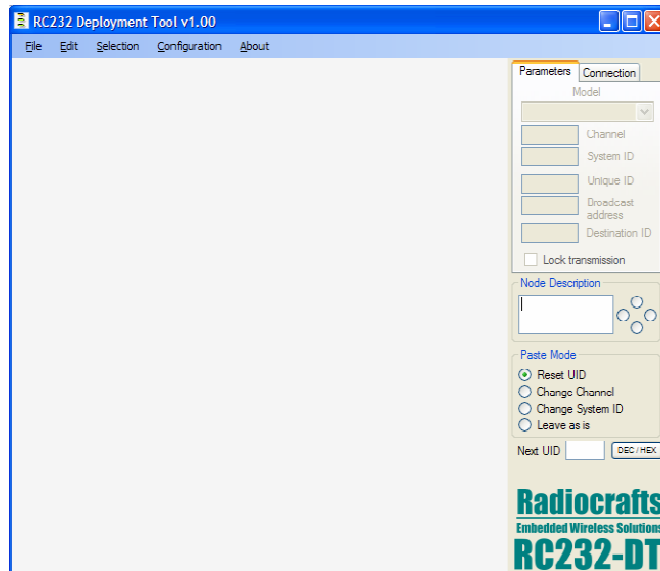


Figure 1. Main window

RC232 addressing and broadcast feature

To understand the strengths of the RC232 protocol embedded in the Radiocrafts modules, the below screenshot should be studied as it shows how three modules can be configured to send point-to-point for data collection or for point-to-multipoint (broadcast) to several modules.

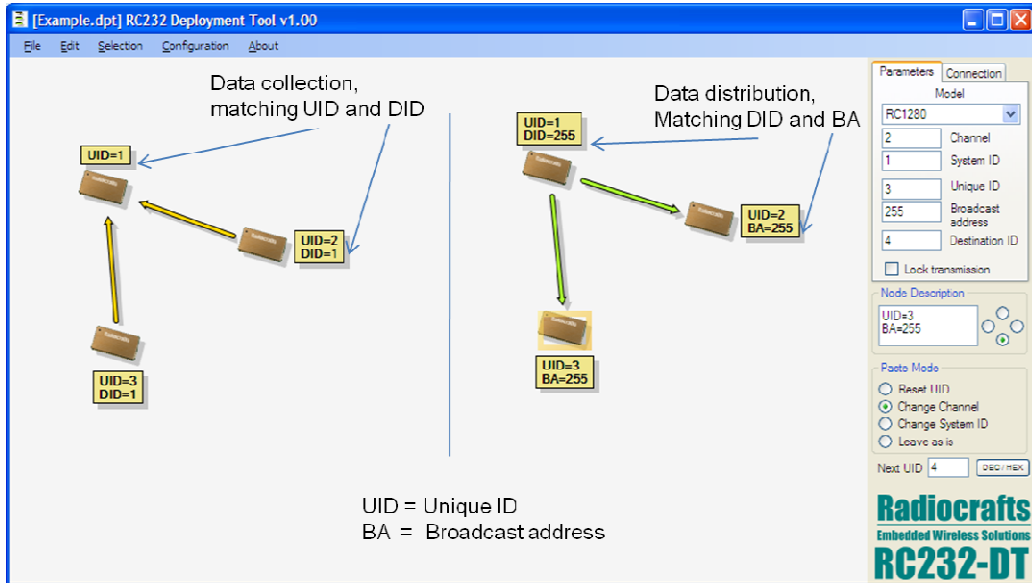


Figure 2. RC232 addressing and broadcast example

Toolbar and Panel Descriptions

The DT-screen is divided in 3 parts, the Upper Toolbar, Right Panel and the Network Window where the modules forming a network are placed and connected.

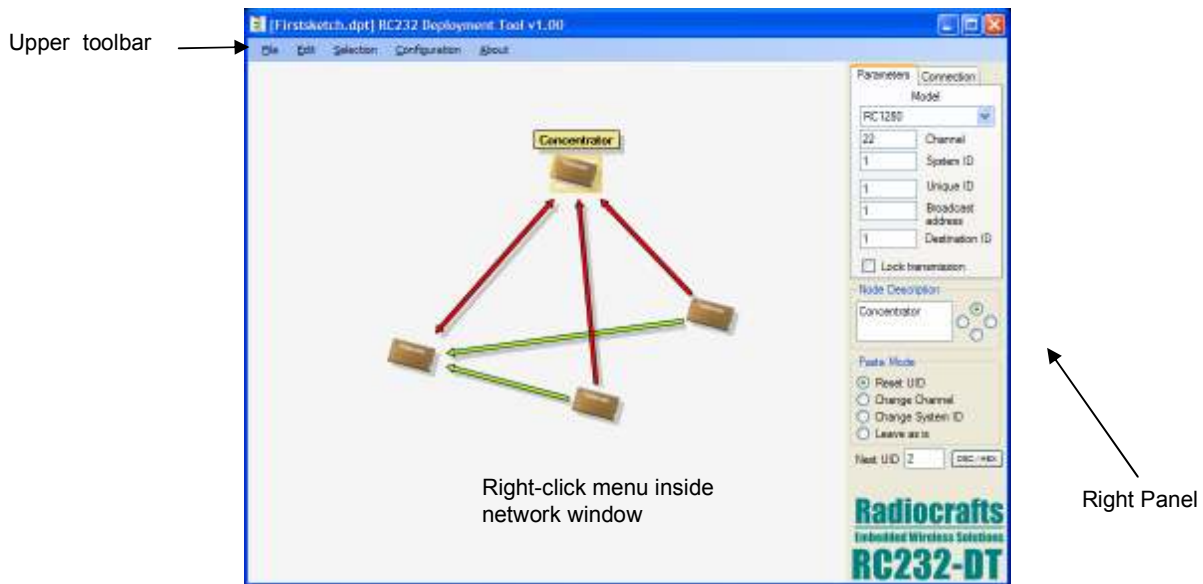
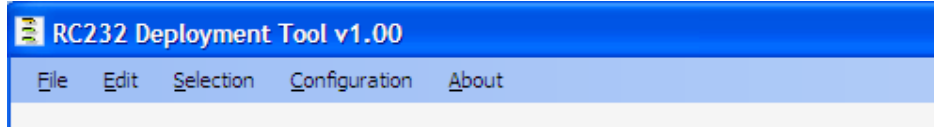


Figure 2. Main window with toolbars

Upper Toolbar Description



File

New	creates a new project
Open	opens a saved project
Save	save the project with a current name
Save as...	save the project with new name
Dump to a Text File	write a text file with all the modules listed with its configuration parameters
Exit	exit the application

Edit

Undo	un-does last action in network window (does not undo changes in modules parameters)
Redo	re-does last undo
Cut	cut selected elements
Copy	copy selected elements
Paste	paste cut / copied elements using a selected paste mode (see "Paste Mode" under Right Panel Description)
Remove	remove selected items (Ctrl + del)
Assign Unknown UID	for selected items, assign UID automatically. Only modules with UID = -1 are reassigned. Modules pasted with "Reset UID" ticked will be assigned UID= -1
Assign All UID	for selected items, assigns unique ID automatically. Starting UID is the one typed in "Next UID" box
Arrange	arrange selected modules in square / horizontal / vertical arrangements. Press Alt + a without moving the mouse to toggle between the different arrangements

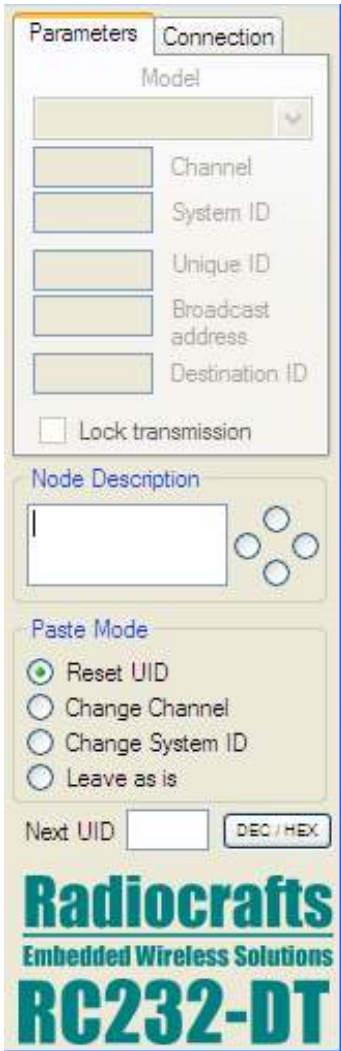
Selection

Select All	select all elements in design
Select None	deselect all elements in design
Invert Selection	invert selection
Select Invalid	selects all modules which configuration is not complete

Configuration

Show markers	toggle between show / hide markers indicating that configuration settings have been transferred to the module
Reset markers	reset configuration markers

Right Panel Description



Parameters:

Model	When one or more modules are selected in the Network window this roll-down menu allows the user to specify Model whereafter the proper master file is loaded into the program
Channel	channel, restricted 1 – maximum channel (from master file)
System ID	SID, see RC232 User Manual for definition
Unique ID	UID, see RC232 User Manual for definition
Broadcast Address	BA, see RC232 User Manual for definition
Destination ID	DID, see RC232 User Manual for definition
Lock Transmission	do not show transmission arrows as if the selected module do not transmit or receive. The module still needs to have all the defined parameters specified

All 5 parameters crucial for communication, Channel, SID, UID, BA and DID, accepts both decimal and hexadecimal entries. Use the “Dec/Hex” toggle switch (see below) for selecting in which format the parameters are displayed and converted. Parameters may be set to -1 with interpretation “undefined”.

Connection

- Port name
- Baud rate

Used when loading / sending configuration data. Before connecting, select the proper settings for your serial port:

- name of an available communication port (COMx)
- baud rate used to communicate with the module

Node Description

Text	text of description label. Set on Enter
Alignment	align labels on up / down / left / right side of the item. Shortcut keys: Ctrl + arrows

Paste Mode

Reset UID	changes UID to -1 for all pasted modules. All Pasted modules are still selected after paste for which Assign All Unknown UID (Ctrl + 1) can be performed
Change channel	automatic resolve channels so pasted systems do not collide (Ctrl + 2)
Change system ID	automatic resolve SID so pasted systems do not Collide (Ctrl + 3)
Leave as is	do not change anything (Ctrl + 4). Note: causes Numerous bindings

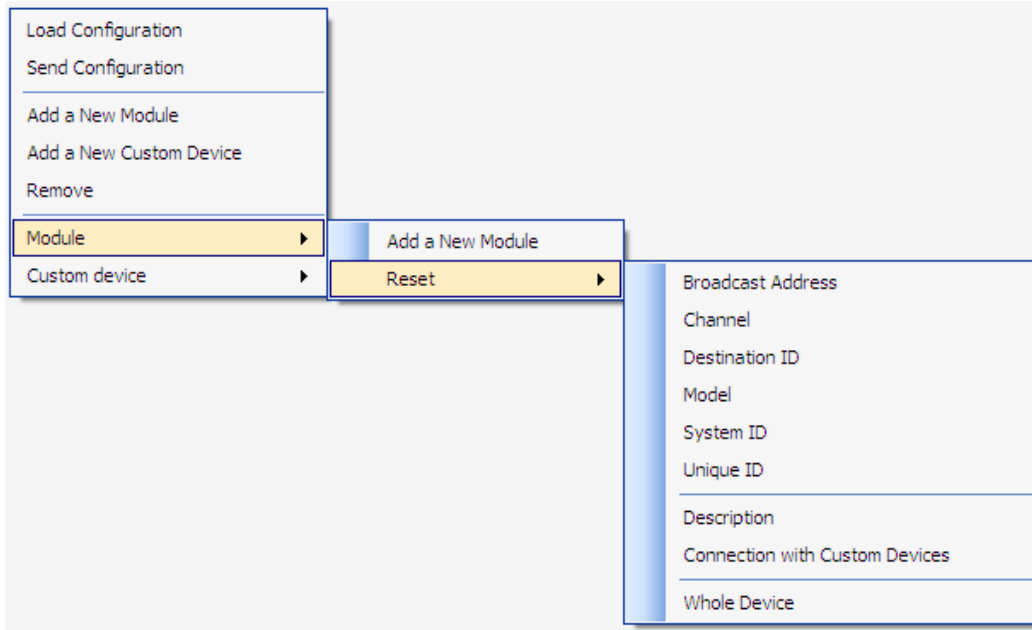
Next UID

Next UID used when auto-assigning UID

Dec / hex

Toggles between decimal or hexadecimal display parameters

Right-click Menu in Network Window



Load Configuration	load configuration from module connected to the port
Send Configuration	send configuration to a module connected to a port specified in connection tab. Connection marker will change (must be enabled)

When sending or loading Configuration, the following window pops up:



Figure 4. Waiting for prompt

The CONFIG pin on the module must then be pulled low. On Radiocrafts Demo Board this is done by pressing the CONFIG button. Program will wait 15 seconds for a prompt sign, which is sent from the module when configuration mode is entered. If you use an RTS-line to control the CONFIG line into the module, the program asserts RTS low automatically. If you use RTS line for some other purpose, you can disable this feature with the RTS Lock button. When the configuration is loaded, you can see the modules name and Parameter settings.

Add a New Module	add a new empty module (Ctrl + insert)
Add a New Custom Device	add a new custom device, type is the same as last added of same
Remove	remove selected items
Module	Add a New Module – as above
Reset	
Unique ID	set to -1 (applies also for all other Resets of parameters)
Description	empty description field
Connection with Custom Devices	clear connection with custom devices
Whole Device	reset all but connection with custom devices

Custom Device

Add a New	Actuator – add a new actuator (same applies for other devices)
Reset	as in Module → Reset
Whole Device	reset all connections

Miscellaneous

Connecting with custom devices

Select custom device that you want to connect with and Ctrl+left-click item you want to connect to. Connection marker will appear. Repeat to erase connection.

Auto-connecting modules

Select source modules (transmitting modules) and Ctrl+left-click on a target module (receiving module). Unique ID of a target device is copied to source device(s). Connection is seen only when modules has all the other configuration Parameters entered. Connection is created for modules that have the same model name, system ID, unique ID and channel.

It is possible to do “aggressive connection” (Ctrl + Alt), then source modules get Model, SID and channel from destination module.

Connecting different models

Some modules can connect even though they have different model names (RC1280, RC1280HP). Auto-connection is not implemented for those, connections have to be manually entered.

Auto-assign UID by clicking

When clicking a module holding alt key a new UID is assigned form Next UID box.

Markers on modules in Network Window

Modules can have square markers with following interpretation:

Red	configuration is invalid
Orange	configuration lacks Unique ID or Destination ID

Other

To select multiple items hold shift key while left-click next module.

Custom devices are for visualization purposes only and do not influence configuration or performance of modules.

Document Revision History

Document Revision	Changes
1.0	New Revision

Disclaimer

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Trademarks

RC232™ is a trademark of Radiocrafts AS. The RC232™ Embedded RF Protocol is used in a range of products from Radiocrafts. The protocol handles host communication, data buffering, error check, addressing and broadcasting. It supports point-to-point, point-to-multipoint and peer-to-peer network topologies.

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Contact Information

Web site: www.radiocrafts.com

Address:

Radiocrafts AS
Sandakerveien 64
NO-0484 OSLO
NORWAY

Tel: +47 4000 5195

Fax: +47 22 71 29 15

E-mails: radiocrafts@radiocrafts.com
sales@radiocrafts.com
support@radiocrafts.com