Pro *Series*

raditeq
Product Manual

RadiCentre®
Modular Test System

Models:

CTR2008B

www.raditeq.com

RadiCentre® product manual

This product manual pertains to the RadiCentre® Ultra system.
Models: CTR2008B **Made by Raditeq.**

Read this manual carefully before operating the product and make sure all the safety instructions are strictly followed.

Please contact your local reseller if you have any questions.

Supplier Information

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Publish date: 23/01/2024

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WARNINGS & PRECAUTIONS

Read the contents of this product manual carefully and become familiar with the safety markings, the product instructions and the handling of the system. Please refer to the applicable product manual(s) for further information regarding the operation and control of the product(s).

This product requires a protective earth connection. The mains power source for the equipment must supply an uninterrupted safety ground to the IEC input connector(s).

To make the product as safe as possible, this plug-in card has its own safety interlock system that is designed to work with the RadiCentre® series.

Only Raditeq qualified maintenance personnel is allowed to perform maintenance and/or repair service on the equipment.

For optimal security of compatible plug-in cards for the RadiCentre®, a safety interlock system is integrated. This system is designed to activate in the event of any disruption to the hardware interlock connection, provided it is properly installed. This feature ensures a reliably secure operational environment.

This product® contains materials that can be recycled and reused to minimize material waste. At the 'end-of-life', specialized companies can dismantle the discarded system to collect the reusable and recyclable materials. If your product is at its 'end-of-life', please return it to your local reseller or to Raditeq for recycling.

Please make sure that (at least) one slot of 1U height is kept empty below the RadiCentre®, to ensure enough cooling of the system through the bottom air inlets of the cabinet. The temperature of the bottom inlet cooling air must not exceed +45°C. Additionally, the outlet air temperature should not exceed 20°C higher than the inlet temperature."

Position the product in such a fashion that power cables are easily accessible or connect the equipment to a mains network that can be easily disconnected from the mains.

For cleaning, use a clean, dry cloth (or a damp cloth where needed) and wipe the surface of equipment.

This product contains no hazardous substances as described in the RoHS Directive (2011/65/EU).

Introduction

Introducing the RadiCentre® Ultra, a Modular Test System designed to streamline and enhance your testing processes. Whether you require a straightforward setup with one or two instruments or a more intricate configuration with multiple integrated measurement instruments, the RadiCentre® Ultra is your versatile and efficient solution for fast test and measurement requirements.

The Modular Test System features eight slots for plug-in cards, offering the flexibility to tailor your testing setup according to specific needs. The system facilitates seamless communication through a high-speed Ethernet connection, supporting data transfer speeds of up to 1 Gbps. This ensures not only rapid but also reliable data transfer for efficient testing procedures.

This manual provides information for the seamless integration and operation of the RadiCentre® Ultra. It equips you with essential details to effortlessly configure the network settings of the RadiCentre®. Additionally, the guide offers instructions on how to control and integrate the RadiCentre® with Radimation or any other test software package, ensuring a streamlined setup and operational process.

Related products

RadiMation® Automated EMC/RF Test Software

RadiMation ® is the EMC software package from Raditeq. RadiMation is used for remote control and automated RF and EMC testing. In combination with the RadiCentre® the software really shines brightest and enables the user fully automated and effective EMC and RF testing. Plug-in cards and modules are sold separately.

RadiSense® Ultra - Pulsed Electric Field Probe

Lorem ipsum

RadiSense® 10 Electric field probe

The RadiSense® 10 Electric field probe is currently the most accurate electric field probe available on the market. This probe operated from the RadiCentre® can measure up to 10 GHz.

The RadiCentre® Ultra
Product characteristics

Flexible
Facilitating efficient and entirely automated testing, the RadiCentre® Ultra modular test system incorporates eight versatile plug-in card slots. Users have the flexibility to configure these slots with any combination of diverse Raditeq plug-in card instruments according to their preferences. The array of available plug-in card instruments can be combined as desired, offering the capability for multifunctional combinations to address various applications.

Easy to use
Upon insertion into the backplane and start the RadiCentre®, every plug-in card is automatically recognized, initialized, and prepared for immediate use. Users can configure and control the functionality of each plug-in card instrument through a direct Ethernet socket connection.

Space Efficient
The RadiCentre® Ultra achieves space efficiency by enabling users to configure up to eight plug-in cards through the integration of the processor directly into the system. This simplification is apparent in the straightforward connectivity, as only an Ethernet cable is needed to communicate with the plug-in cards in the RadiCentre®. This enhancement not only improves overall efficiency and convenience but also, with the Ethernet connection supporting up to 1 Gbps, contributes to further optimizing the system's efficiency.

Hardware & Software
The RadiCentre® system is equipped with a robust embedded processor designed to oversee plug-in cards and establish connection with an external computer through ethernet. The embedded software is stored in flash memory, facilitating seamless system upgrades with new versions and additional features for enhanced functionality. The internal firmware can be seamlessly upgraded in the field through an Ethernet connection, facilitating effortless maintenance and minimizing downtime.

Components
The system is delivered with the following items:

- RadiCentre® Ultra
- Interlock connector: ¼" stereo jack
- 1.5m Ethernet cable for communication
- Mains power lead
- Set of 19" mounting brackets
- USB stick containing the (digital) user manual and quick start guide.

The Control of the RadiCentre®
POWER button

The RadiCentre® Ultra front panel is equipped with a power button that serves multiple functions:.
- • Power ON
- • Power OFF
- • IP reset
- • Factory reset

Below is a description outlining the diverse functions and capabilities of this power button.

Power ON

To power on the RadiCentre®, press and hold the power button until the LED ring around the button lights up in white. After a brief moment, the LED ring will begin flashing, indicating the booting process. Once the LED stops flashing and continues to burn steadily, the RadiCentre® is now ready for use.

Power OFF

To power down the RadiCentre®, press and hold the power button until an audible beep is heard. After a brief pause, the LED ring will initiate flashing, signalling the shut-down process. Once the LED ceases flashing and turns off, the RadiCentre® is fully powered down.

IP addresses reset

To reset the IP addresses to default, follow these steps:
1. Power on the system.
2. After it has started up and is in normal operation, hold the power button for about 10 seconds.
3. Release the button immediately upon hearing two short audible beeps.
4. It is important not to continuously press the button, as doing so will prevent the IP address reset.
5. Releasing the button within two seconds after the two beeps will initiate the reset of the IP addresses to their default values."

Please take note that when resetting the IP address, it is necessary to hold the button for an extended duration in comparison to the process of powering it off.

Factory reset

In the event of lost credentials or the need for reconfiguration of the RadiCentre®, a reset to default settings is possible. Factory Reset includes default IP address, default software version, default password.

To perform a factory reset, follow these steps:
1. Begin by shutting down the RadiCentre®.
2. Turn off the mains power, wait for 20 seconds, and then turn the power back on.
3. Hold the power button for approximately 30 seconds.
4. Release the button immediately after hearing two short audible beeps.
5. It's crucial not to keep pressing the button, as this will prevent the factory reset.
6. Releasing the button within two seconds after the two beeps will execute the factory reset.

Please be aware that, unlike the IP reset, you should power off the unit before initiating this sequence.

How to turn on a LASER card

When the RadiCentre® is equipped with plug-in cards, including one or multiple plug-in cards containing lasers, the LASER ON button takes on a critical role. Its primary function is to activate the lasers safely simultaneously on all installed plug-in cards.

Turn laser 'ON'

To maintain safety standards, initiating the laser power in the plug-in cards follows a two-step process: entering a designated 'laser code' and manually activating the lasers.

To activate the laser(s) in the RadiCentre®, follow these steps:

1.   Press the 'Laser ON' button on the front of the RadiCentre® and hold it.
2.   Five loud 'beep' sounds should be heard.
3.   On the fifth 'beep,' the laser source is activated, and the red LED ring around the button lights up.
4.   Release the 'Laser ON' button.

This means that:

• If the activation process is to be interrupted, release the 'Start' button (before the fifth 'beep'). The laser will not be activated.
• If the activation process is interrupted (and released 'Start' button by accident), the laser will not be activated.
• The user is warned by an audible warning when the start button is pressed by accident (i.e., without the intention to activate the laser).

Turn lasers 'OFF'.

To deactivate the lasers, press the laser-on button once, and all lasers will be powered off.

Clear error

If an error occurs with one of the laser plug-in cards, an audible beep will notify you. To resolve this error, simply press the laser ON button briefly. This action will clear the error, and the plug-in card will stop beeping.

Installation

Mains

Plug the power supply cable into the mains inlet of the RadiCentre®, power the system by toggling the mains switch located beneath the mains inlet.

Interlock plug

The RadiCentre® Ultra uses a hardware interlock plug (6,3mm ¼" stereo jack) which can be used as a safety interlock. The hardware interlock plug provides two floating contacts which require connection for certain plugin cards to operate. By default, the supplied interlock plug is shorted and must be inserted into the interlock input at the back side of the RadiCentre®. When a safety interlock is required in your system, please cut the RED wire, and connect the open ends to your interlock system.

Interlock Plug

Ethernet

The RadiCentre® Ultra exclusively communicates via an Ethernet connection. Therefore, an Ethernet cable must be connected to the rear of the RadiCentre® and your network for proper functionality.

Plug-in card installation

Follow the steps below for the correct installation of the Raditeq plug-in card into the RadiCentre®. Note: Ensure that the RadiCentre® is turned off before installing a new plug-in card.

- Step 1: Choose an empty slot in the RadiCentre® for the plug-in card installation. Remove the blind panel from the slot by unscrewing the four (4) screws (two at the top and two at the bottom).

- Step 2: Insert the plug-in card into the rail of the empty slot. Position it and gently push it using the lower part until it reaches the end of the rail. Secure the plug-in card into the backplane socket.

- Step 3: Once the plug-in card is correctly inserted, secure it by tightening the four screws at the top and bottom. For connecting the panels to the RadiCentre®, use a Pozi screwdriver, size PZ1.

- Step 4: After installing the plug-in card, Switch the ON/OFF button to the ON position. Start the RadiCentre® using the power button on the front.

Network Configuration of RadiCentre®

The RadiCentre® is factory configured with standard static Ethernet addresses. The factory configured addresses are listed below:

RadiCentre® Slot number	IP Adress:	Port number
Webpage address for configuration of the communication addresses of the RadiCentre®	192.168.1.200	80
RadiCentre® Slot number 1	192.168.1.201	27531
RadiCentre® Slot number 2	192.168.1.202	27531
RadiCentre® Slot number 3	192.168.1.203	27531
RadiCentre® Slot number 4	192.168.1.204	27531
RadiCentre® Slot number 5	192.168.1.205	27531
RadiCentre® Slot number 6	192.168.1.206	27531
RadiCentre® Slot number 7	192.168.1.207	27531
RadiCentre® Slot number 8	192.168.1.208	27531
Default subnet address	255.255.255.0	-

To configure the RadiCentre® for your network configuration please follow the next steps.

Connect to RadiCentre®:
- Connect your computer to the RadiCentre® using an Ethernet cable.
- Ensure that RadiCentre® is powered on.

Find Your Computer's IP Address:
- Check your computer's IP address to ensure it's in the same subnet . Open a command prompt (Windows) or terminal (macOS/Linux) and type ip-config (Windows) or ifconfig (macOS/Linux).
- Ensure that the IPv4 address is in the range of 192.168.1.x. If not, set a Static IP address in the same subnet.

Access RadiCentre® Web Interface:
- Open a web browser (e.g., Chrome, Firefox, or Safari).
- In the address bar, type http://192.168.1.200 (port 80) and press Enter.

Login to RadiCentre®:
Enter the user name and password when prompted. The default credentials for the RadiCentre®:
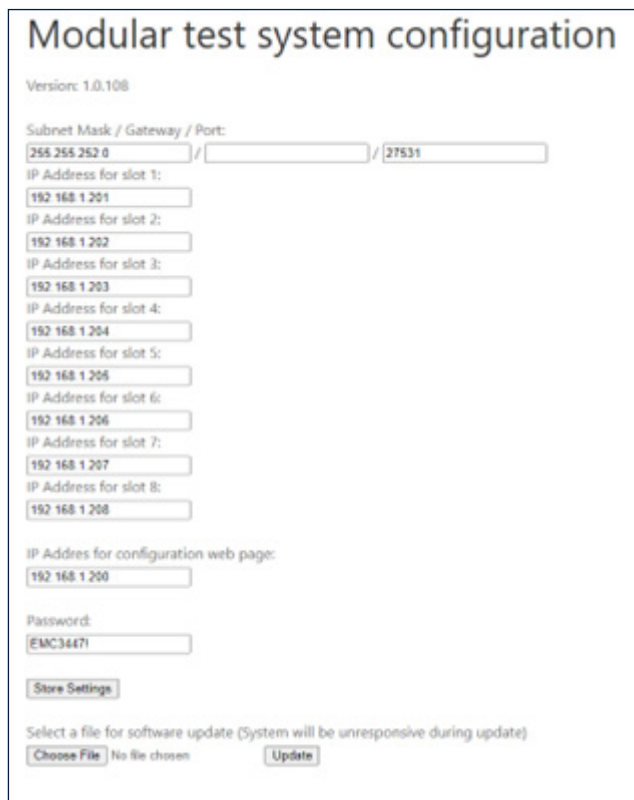User name: admin
Password: EMC3447!

Configuration Page:
Once logged in on the configuration page the following settings can be updated as needed.

- Update all IPv4 addresses, both in the slots and on the configuration page, to be within the range of your network.
- Modify the subnet mask as needed (default 255.255.255.0).
- Update the Port setting as needed (default port27531). (Verify that the selected port address is not blocked by the router).
- Modify the default password for the configuration page as needed.

Store changes
Once the desired changes have been made, please press the "Store" button. This action will automatically initiate a reboot of the RadiCentre® to apply the modifications.

Check changes
After rebooting the RadiCentre®, reload the configuration page by refreshing it.

If the IP address of the configuration page has changed, navigate to the newly assigned IP address to access.
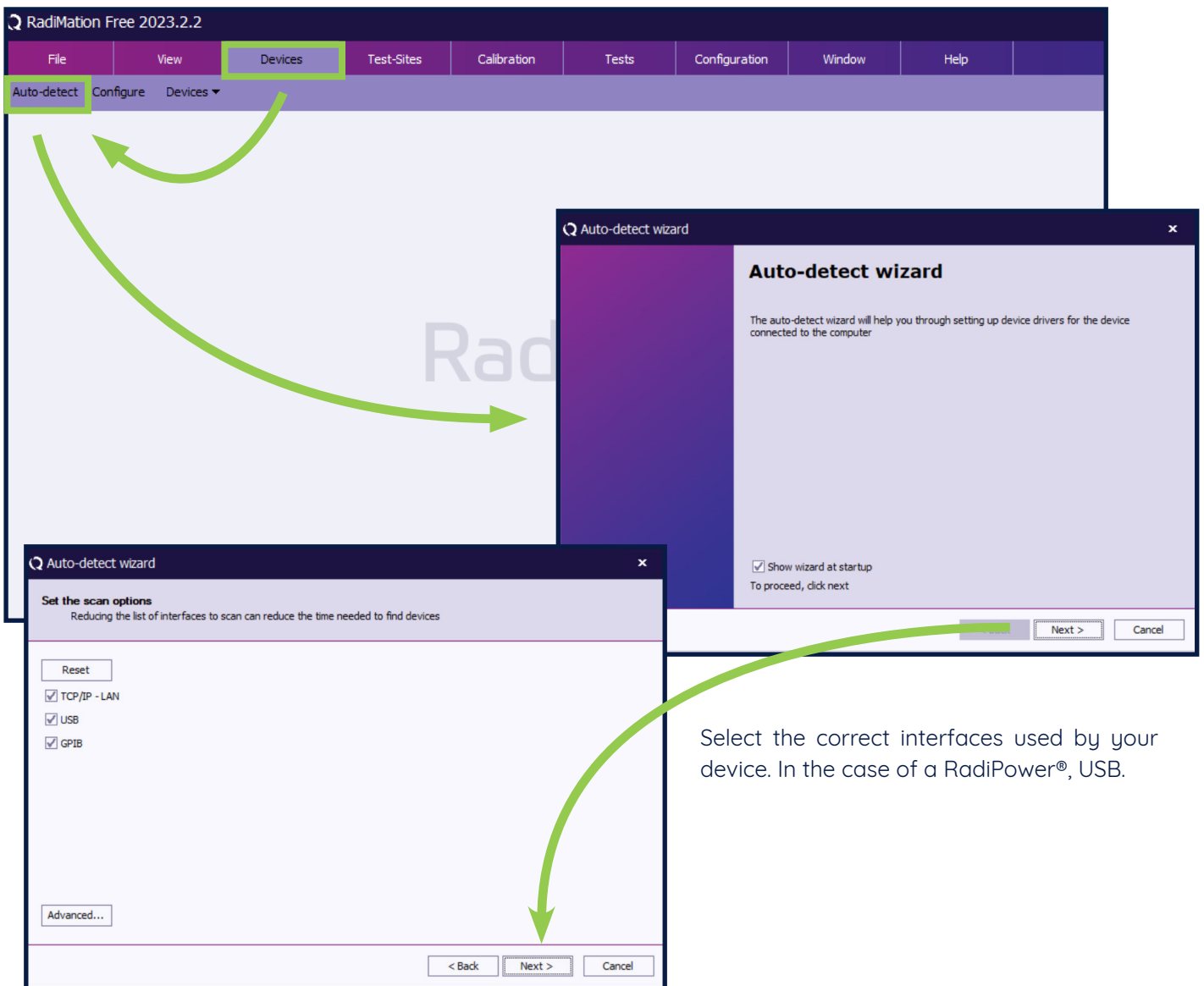
If the RadiCentre® is configured for your Local Area Network (LAN), disconnect it from your computer and connect it to your LAN. You should now be able to access the RadiCentre® configuration page at the redefined address through your local area network. Do not forget to change your computer's IP address. Verify the correctness of all settings to ensure a seamless connection. before proceeding with connecting your RadiCentre® to RadiMation® or another software program for communication with your plugin cards. Ensuring the accuracy of settings guarantees smooth integration and effective communication with your chosen software applications.

Software Configuration

In order to control the RadiCentre® Ultra from a computer, the RadiMation® EMC software package can be used. RadiMation® from Raditeq is sold separately. **A free-ware version of RadiMation® is available on:** https://www.raditeq.com/automated-emc-software/radimation-free/.
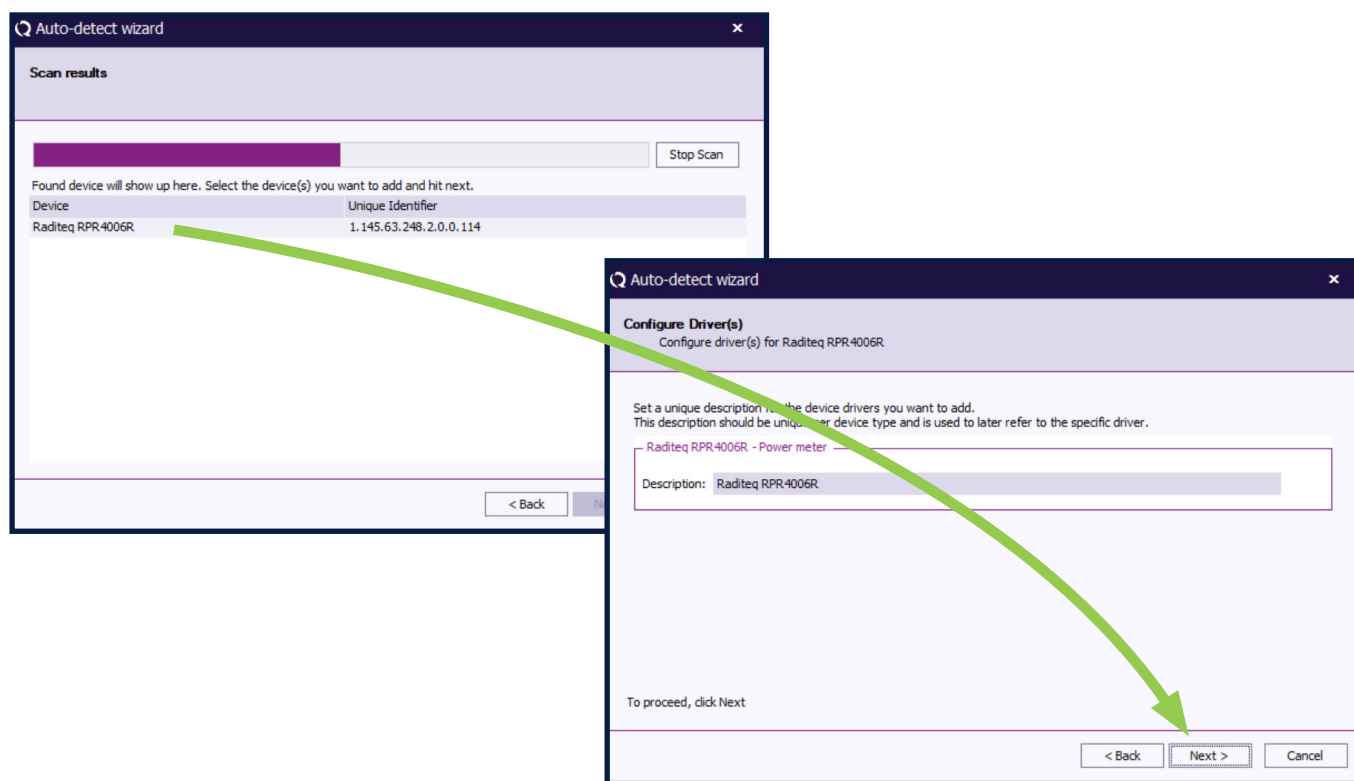
RadiMation comes (after version 2022.2) with an Auto Detect feature. This makes it possible to automatically detect Raditeq (and other hardware) and configure it.

The Auto detect start when you first download and install RadiMation. Or click Devices -> Auto-detect.

Select the correct interfaces used by your device. In the case of a RadiPower®, USB.

After Click the all setting on and press continue till the auto detect wizard completes and select (all) Devices to be added to your configuration. For more information and a instructional video go to:

https://www.raditeq.com/radimation-auto-detect-feature/

Manual Software configuration and control

The RadiCentre® Ultra relies on an ethernet connection. Please consult Network configuration of RadiCentre® chapter for guidance on configuring the network settings of the RadiCentre®.

Connecting the RadiCentre with RadiMation
### IP address

To manage a plug-in card within the RadiCentre® from a computer, it is essential to properly configure the network address of the RadiCentre®. Each device within the RadiCentre® is assigned its own unique IP address, and this can be configured through the configuration page of the RadiCentre®. To determine the slot number of a specific device, examine the back panel of the RadiCentre®. The slots are numbered from left to right, with Slot 1 being the leftmost and Slot 8 being the rightmost. Ensure accurate configuration by identifying the correct slot number when facing the back panel.

Software configuration and control

1. In RadiMation, navigate to "Devices" and then select "Configure."
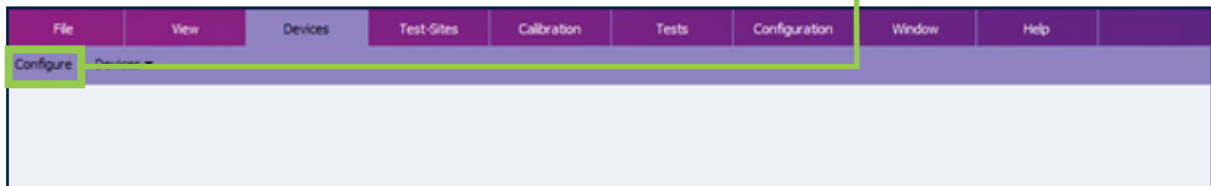
2. Choose your desired device driver type, such as "Field Sensor."
3. Click on "+ Add Field Sensor."
4. Search for the specific device driver you need.
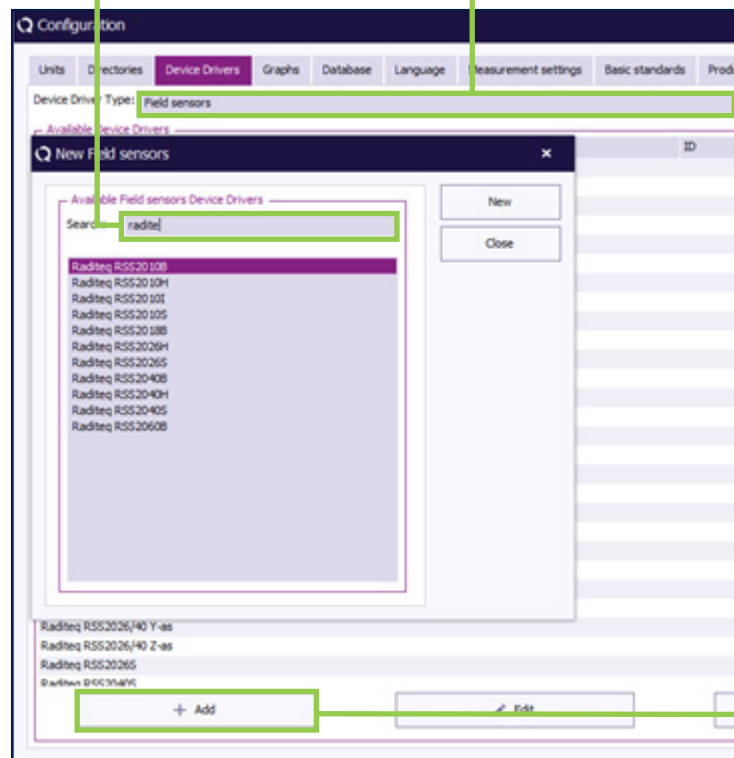
5. Provide a description for the device driver configuration.

6. Press "OK" to confirm and save the configuration.

7. Describe the device driver configuration, then press "OK" to save the settings.
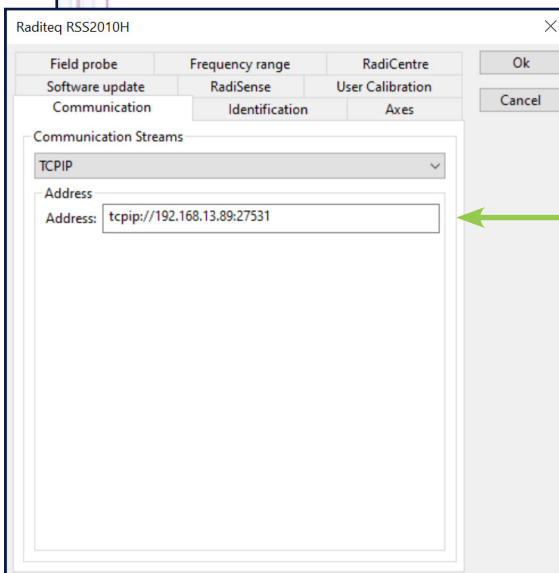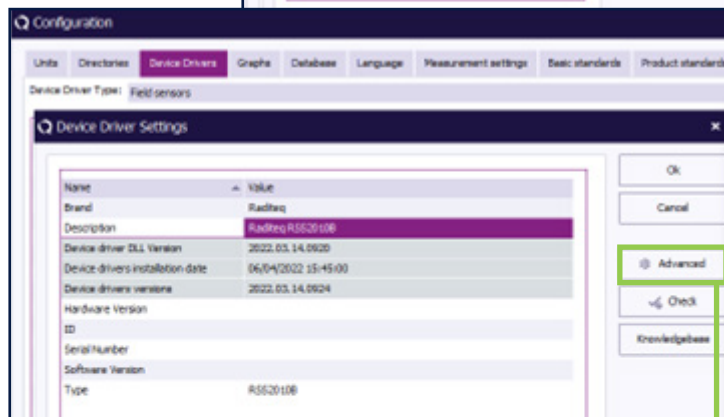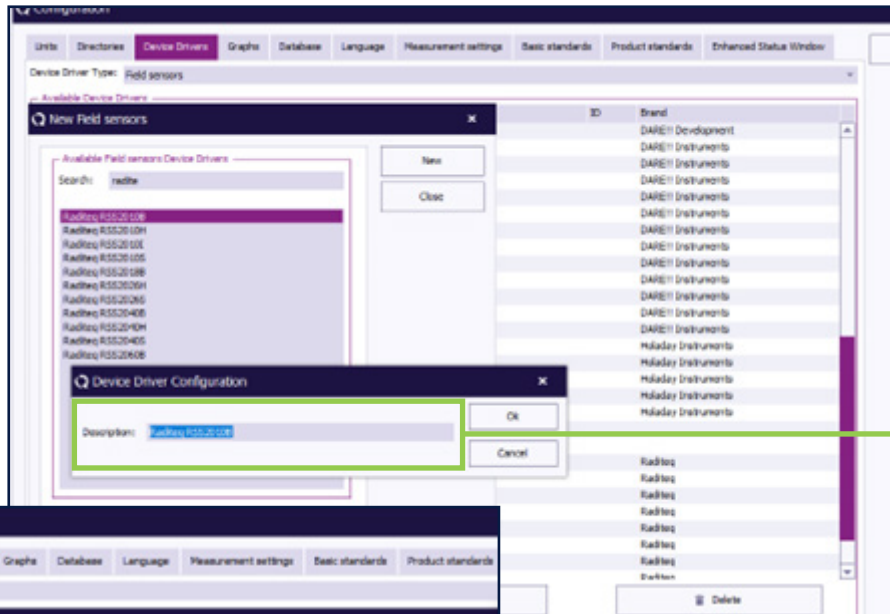
8. Navigate to the "Advanced" section in the device driver settings to configure the connection.

9. Navigate to the RadiCentre® menu.

10. Select communication type "RadiCentre-multislot Ultra."

11. In the "Communication" section of the menu, enter the IP address associated with the specific plug-in card. E.g., tcpip://192.168.1.201:27531 (default ip address slot 1).

12. The address is formed by combining the protocol with the plugin card address. The address of the plugin card is a combination of the IP address of the plugin card and the associated port number. the default port number is 27531 ->
Press "OK" to confirm the changes.
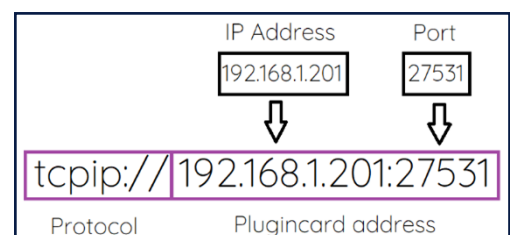
Control of the RadiCentre® Ultra

The RadiCentre® Ultra operates as a transparent device, eliminating the need for specific or general commands to control the plug-in cards. Direct communication with the corresponding plug-in card is established by configuring the correct slot IP address and port number. As a result, there is no requirement for specific prefixes or additional commands. For detailed information on commands related to designated plug-in cards, please refer to the Raditeq Programming manual.

Connect with other software

To implement Radicentre® in a different software package, a direct connection to the configured IP address and port is necessary. An example utilized with PuTTy:

If you want to establish a raw connection without specifying a particular protocol in PuTTY, you can follow these steps::
1. Open PuTTY.
2. In the PuTTY Configuration window, on the left, select under "Terminal" the options implicit CR in every LF and implicit LF in every CR. By enabling these options, PuTTY will automatically send a Carriage Return after every Line Feed and vice versa (Figure 8).
3. In the PuTTY Configuration window, ensure that the "Session" category is selected on the left.
4. Enter the IP address "192.168.1.201" in the "Host Name (or IP address)" field (Figure 7).
5. In the "Port" field, enter "27531" as the port number for the default configuration.
6. Under "Connection type," choose the "Raw" option.
7. Under "Saved Sessions," enter a name for your session in the "Saved Sessions" field (e.g., "RadiCentre Slot 1").
8. Click the "Save" button to save your configuration.
9. Click the "Open" button to start the raw connection.

The provided configuration enables a raw connection without specifying a particular protocol, facilitating direct interaction with the plug-in card in an unprocessed manner. This setup allows for the transmission of commands and reception of responses from the plug-in card. Specifically, each plug-in card supports the command "*IDN?" for retrieving its identification information. When the configuration and connection are correct, issuing this command to the plug-in card will prompt it to return the identifier string (ID) associated with the plug-in card.
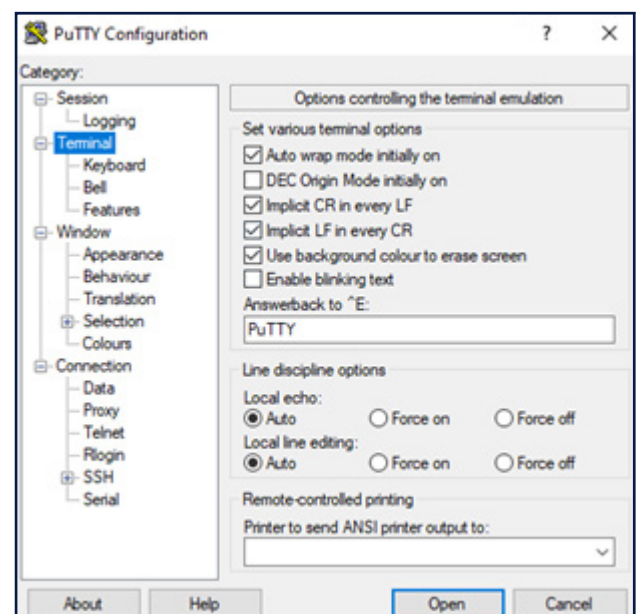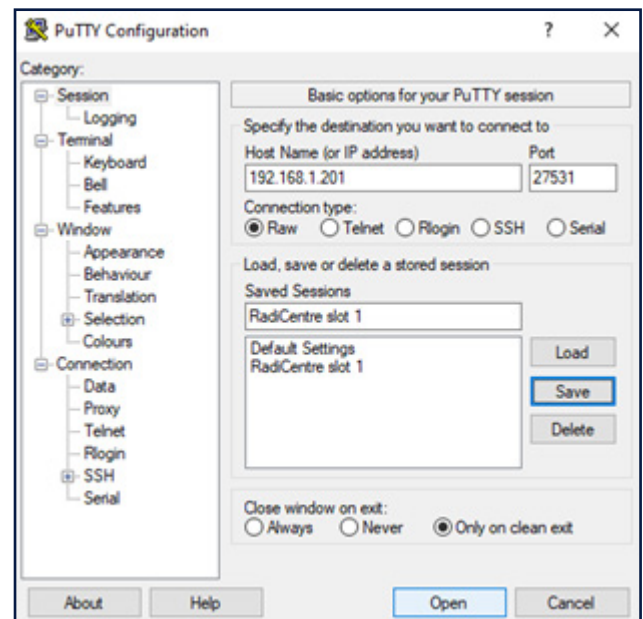
Technical support

Software Updates:
Periodically check for software updates on www.raditeq.com/softwareupdate. Follow the instructions to update the RadiCentre® Ultra.

Check current firmware version:
Log in to your RadiCentre® web interface using a web browser: Open a web browser on your computer or device.

Enter the IP Address:
In the address bar of your web browser, enter the IP address of your RadiCentre®. Default RadiCentre® IP
    addresses 192.168.1.200.

Enter Username and Password:
Once you enter the RadiCentre®'s IP address, you will be prompted to enter the username and password.
    Default:
    Username: admin
    Password: EMC3447!
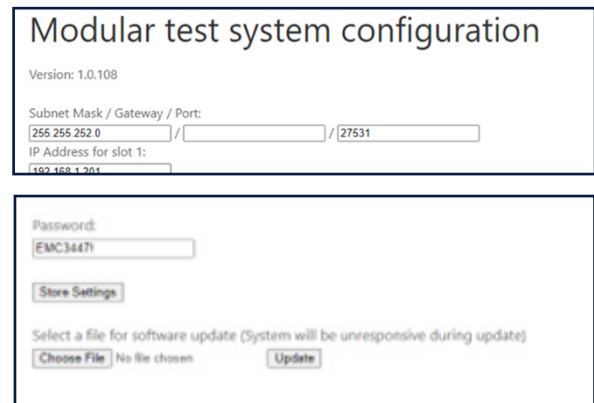
Configuration page
The current software version is located at the top of the configuration page.

Update software version
Download the required software version from www. raditeq.com/softwareupdate and save locally on your computer On the configuration page, locate the option to upload the software update file at the bottom. Choose the appropriate file and initiate the update process by clicking the update button. Be aware that the system will be temporarily unresponsive during this update, and the process may take some time.

Important! Avoid unplugging the RadiCentre® from the power supply during the update process, as it may result in system bricking.

Modular test system configuration

Version: 1.0.108

Subnet Mask / Gateway / Port:
255.255.252.0 / | | / 27531
IP Address for slot 1:
192.168.1.201

Password:
EMC3447!

Store Settings

Select a file for software update (System will be unresponsive during update)
Choose File | No file chosen   Update

RadiCentre Ultra Specifications

Performance	RadiCentre® Pro CTR2008A
Number of slots in plug-in cards	8
Backplane	Intelligent versatile backplane
Model	Desktop or 19" rack mountable
Dimensions	
Height	132 mm (3U)
Depth	312 mm excluding rear panel
Widht	19" (rack mountable)
Weight	Approx. 7 kg (empty)
Environmental conditions	
Temperature range	10 °C - 40 °C
Relative humidity	5% - 95% (non-condensing)
Power consumption	
Supply voltage	115 VAC / 230 VAC
Power consumption, standby	< 3 W
Power consumption, empty	33 W
Power consumption, maximum load	225 W
Interfaces & cables	
Interface	1 Gbit LAN
Connectors	6,35mm jack plug (Interlock) ,RJ45 ,C14 IEC C14 – female
Saftey	
Interlock	6,35mm jack plug connection to safty system disables Interlock & Interlocked laser outputs when triggered.
Plug-in cards*	
RadiSense	The LASER powered range of E-Field Sensors
RadiLink	The analogue optic fibre link
RadiField	Integrated EMC Immunity Test Solution
RadiPower	The range of power meters
RadiGen	The range of RF signal generators
RadiSwitch	To switch one, two, four or six RF signals
Safety	
Warranty (1)	3 Years

1) Standard 1 year warranty. An additional two (2) years warranty will be added after product registration. Registration can be done at: https://www.raditeq.com/product-registration

*) Sold separately

Warranty Conditions

Raditeq B.V. offers a standard warranty term of three (3) years on their products, calculated from the shipping date, under the condition that the product is registered on www.raditeq.com. For registration of the product, the customer should provide the product model, serial number and the responsible reseller (if applicable). If the product is not registered, a limited warranty term of one (1) year will be applicable.

Return Material Authorization (RMA) & Warranty repair

If a defect occurs to our product within the warranty term, a Return Material Authorization (RMA) 'Warranty Repair' request can be issued using the RMA link at www.raditeq.com/support. Upon receipt of the request, an RMA number will be provided. Please do not send the product without this RMA number! The defective product should be shipped to our service department at the following address:

Raditeq B.V. – Service Department
Vijzelmolenlaan 3
3447GX WOERDEN
The Netherlands

There will be no charge for repair services (materials or labour) within the (extended) warranty term.
These warranty terms are not applicable to:

- Normal wear and tear
- Fibre optic cables
- Products that have been improperly used
- Products that have been used outside their specified range
- Products that have been improperly installed and/or maintained
- Products that have been modified without approval of Raditeq
- Calibration and/or re-calibration of the product

Repair services on products that are not covered by the Raditeq warranty will be charged to the customer.

Repairs outside warranty

If a defect is not covered under warranty, an RMA fixed-repair can be ordered on the RMA link: www.raditeq.com/support If a re-calibration is needed after repair, this calibration should be ordered separately. The calibration will be performed at the ISO17025 accredited calibration laboratories of DARE!! Calibrations, based on the applicable service code / prices.

Warranty after repair

For repairs outside the original warranty period, a limited warranty of six months is applicable on the performed repair. Shipping conditions are the same as with repairs that are covered within the original warranty period.

Shipping

The customer will need to arrange shipping and cover for the costs (like e.g. transportation costs, duties, taxes) for sending the defect product the service department of Raditeq in The Netherlands. Raditeq will arrange the courier and cover for the costs for the return shipment after repair.

EU Declaration of Conformity

We

Raditeq B.V.

of

Vijzelmolenlaan 3
NL-3447GX Woerden
The Netherlands

declare under our sole responsibility that the

Product:	**RadiCentre®**
models:	CTR2008B

are in accordance with the European directives:

EMC Directive 2014/30/EU

Low Voltage Directive 2014/35/EU

RoHS Directive: 2015/863/EU

per the provisions of the applicable requirements of the following harmonized standards:

Emission:	EN 61326-1:2013, Class A1 Electrical equipment for measurement, control and laboratory use.
Immunity:	EN 61326-1:2013, Industrial level, performance criteria A Electrical equipment for measurement, control and laboratory use.
Safety:	EN 61010-1:2010, Safety requirements for electrical equipment for measurement, control, and laboratory use.
RoHs	EN 63000:2018, Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

The technical construction files are maintained at the address specified above.

Date of issue:	Publish date: 23/01/2024
Place of issue:	Woerden, the Netherlands
Authorized by:	P.W.J. Dijkstra
Title of authority:	Director

Declaration of Conformity

In accordance with UK Government Guidance

1. **Product Model / Type:**
    a. Product: The RadiCentre® - Modular Control/Test System
    b. Model: CTR2008B
    d. Specifications: 9-Inch device

2. **Manufacturer:**
    a. Name: Raditeq B.V.
    b. Address: **Vijzelmolenlaan 3 | NL-3447GX Woerden | The Netherlands**

3. This declaration is issued under the sole responsibility of the product manufacturer.

4. The object of the declaration described above is in conformity with the relevant UK Statutory Instruments and their amendments:

2008	**No 1597**	The supply of Machinery (Safety) Regulations 2008
2016	**No 1101**	The Electrical Equipment Safety Regulations 2016
2016	**No 1091**	The Electromagnetic Compatibility Regulations 2016
2012	**No 3032**	The Restriction of the Use of Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

5. We hereby declare that the product described above, to which this declaration of conformity refers to, is in conformity with the essential requirements of the following standards:

Reference & Date	Title
2014/30/EU	**EMC Directive**
2014/35/EU	**Low Voltage Directive**
2015/863/EU	**RoHS Directive**

6. **Additional Information:**
    The technical documentation for the machinery is available from:

    Name: Raditeq B.V.
    Address: Vijzelmolenlaan 3 | 3447 GX Woerden | The Netherlands

    Place of issue: Woerden, The Netherlands
    Date of Issue: 01/03/2023
    Name: P.W.J. Dijkstra
    Function: Director