ETS·LINDGREN®
An ESCO Technologies Company

EMCenter™ EM1 Modular Test System

Model 7000-014

User Manual



1807787 Rev A
September, 2026

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NOTES, CAUTIONS, AND WARNINGS

	**Note:** Denotes helpful information intended to provide tips for better use of the product.
	**CAUTION:** Denotes a hazard. Failure to follow instructions could result in minor personal injury and/or property damage. Included text gives proper procedures.
	**WARNING:** Denotes a hazard. Failure to follow instructions could result in **SEVERE** personal injury and/or property damage. Included text gives proper procedures.



See the ETS-Lindgren *Product Information Bulletin* for safety, regulatory, and other product marking information.

SAFETY INFORMATION



Refer to Manual: When product is marked with this symbol, see the instruction manual for additional information. If the instruction manual has been misplaced, download it from www.ets-lindgren.com, or contact ETS-Lindgren Customer Service.



High Voltage: Indicates presence of hazardous voltage. Unsafe practice could result in severe personal injury or death.

INTRODUCTION

The EMCenter 1-slot EM1 is intended to be used in combination with the ETS-Lindgren range of plug-in card instruments like the EMSense laser-powered field probe. The housing of the EM1 has a desktop-friendly form factor, in which a plug-in card instrument can be mounted. The EM1 can be powered by a 12 V DC power supply, or by using a PoE (requiring a PoE type 3 injector) allowing both communication and power to be handled via a single ethernet cable. The EM1 is designed to be stackable and can also be mounted to an installation using the T slots and provided hardware.

Compatible Plug-In Cards

The EMCenter can be scaled using a wide array of available plug-in cards including:

- EMControl™ for turntable or tower positioners
- EMGen™ RF signal generators
- EMSense™ LASER powered E-Field Sensors
- EMSwitch™ for switching one, two, four or six RF signal



Note: EMSwitch SP6T relays use two slots, and therefore are not compatible with the EM1.

Components

The EMCenter is delivered together with the following items:

- 12 V DC mains power supply
- Mains power lead
- Interlock connector (6.35 mm mono jack)

OPERATION

Installation

CAUTION: Before connecting any components, follow the safety information in the ETS-Lindgren Product Information Bulletin included with your shipment.



WARNING: Always unplug the unit before starting maintenance to prevent electrical shock. Maintenance includes removal of the plug-in cards or the top panel.

Changing Plug-In Cards

1. Before installing and inserting a new plug-in card make sure that the EMCenter is turned OFF and disconnect the power cord.
2. Remove the blank panel from the slot by removing the two screws at the top of the blank panel and the two screws at the bottom. Be careful not to lose the screws.
3. Carefully insert the card into the slot of the EMCenter. Position the plug- in card into the slot along the guide rails and slowly push it, using the lower part of the plug-in card. When it reaches the end of the rail, gently push and lock the plug-in card into the backplane socket.
4. Secure the card by tightening the four previous screws using a Pozi type screwdriver head PZ1.
5. Plug the interlock into the connector on the back of the EMCenter.
6. Connect the desired device to the plug-in card.
7. Connect the EMCenter to a computer using Ethernet.
8. Re-connect the power cord and turn ON the EMCenter. The EMCenter will automatically detect the newly installed card.
9. The card installation is complete and the EMCenter is now ready for use. You can control the cards by sending remote commands.

Interface and Cable Setup

Front Panel



Power Switch

• To power ON the EM1, press and hold the power button for one second 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 EM1 is now ready for use.

• To power OFF the EM1, press and hold the power button one second until an audible beep is heard. After a brief pause, the LED ring will initiate flashing, signaling the shutdown process. Once the LED ceases flashing and turns off, the EM1 is fully powered down.

Reset IP addresses to default (10 secs)

• While the EM1 is in normal operation, hold the power button for about 10 seconds. Release the button within two seconds after the two short audible beeps to initiate the reset of the IP addresses to their default values.

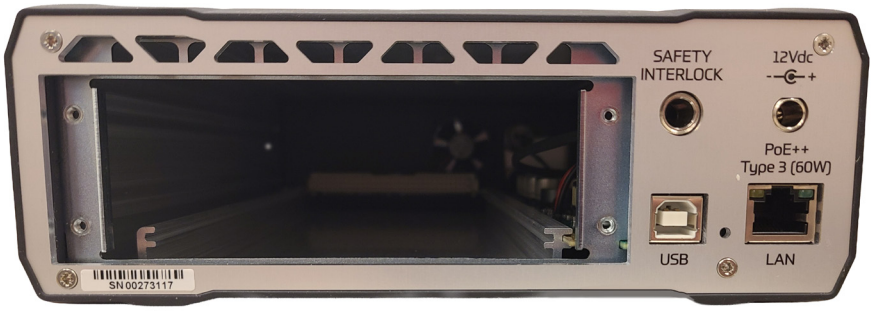
Note: It is important not to continuously press the button, as doing so will prevent the IP address reset.

LASER Button

- To activate the laser, Press and hold the ‘Laser ON’ button on the front of the EM1 until Five loud ‘beep’ sounds are heard.
- Release the ‘Laser ON’ button on the fifth ‘beep,’ the laser source is activated, and the red LED ring around the button lights up.
- To deactivate the laser, press the laser button once, and the laser will be powered off and the red LED ring around the button will turn off.

Note: If an error occurs with the laser plugin card, an audible beep will notify you. To resolve this error, simply press the laser button briefly. This action will clear the error, and the plugin card will stop beeping.

Back Panel



Power Cord

The 12 V DC power jack supplies power to the EM1 unit.

Safety Interlock Plug



Hardware interlock plug needs to be inserted here for plug-in cards that require it.

PoE type 3 LAN port

Used for both powering [LB3.1][LB3.2]and communicating with EM1 and the plug-in card. Ethernet uses the default IP address 192.168.1.200, and port 27531.

USB-B Port

Can be used as an alternative communication method. The plug-in card will present itself as a USB device. Use Serial connection to talk to the COM port with a baud rate of 115200.

Status LED

The pilot light between the USB and LAN ports shows the status of the EM1.



Reset to factory default

Note: In the event of lost credentials or the need for reconfiguration of the EM1, a reset to default settings is possible. Factory Reset includes default IP addresses, default software version, default password. The IP address and password are reset to their factory defaults as follows:

1. Insert a pointed object into the hole of the status LED (on the backside of the EM1 between the USB and LAN ports) to press and hold down the reset button.
2. The status LED will start blinking slowly (1 Hz).
3. After 10 seconds, it will blink faster (4 Hz), indicating that the factory defaults are reset.
4. Release the reset button.

Network Configuration

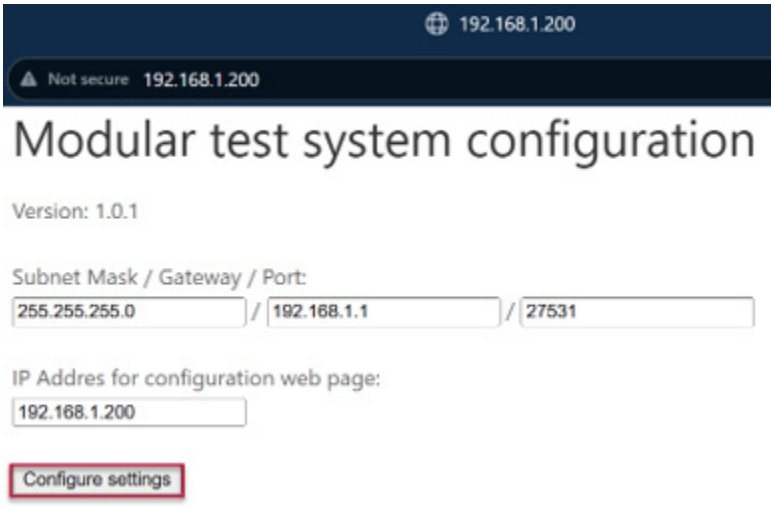
The EM1 is factory configured with a standard static Ethernet address:

Slot number	IP Address	Port Number
EM1 System	192.168.1.200	27531
Gateway	192.168.1.1	
Subnet Mask	255.255.255.0	

Access Web Interface

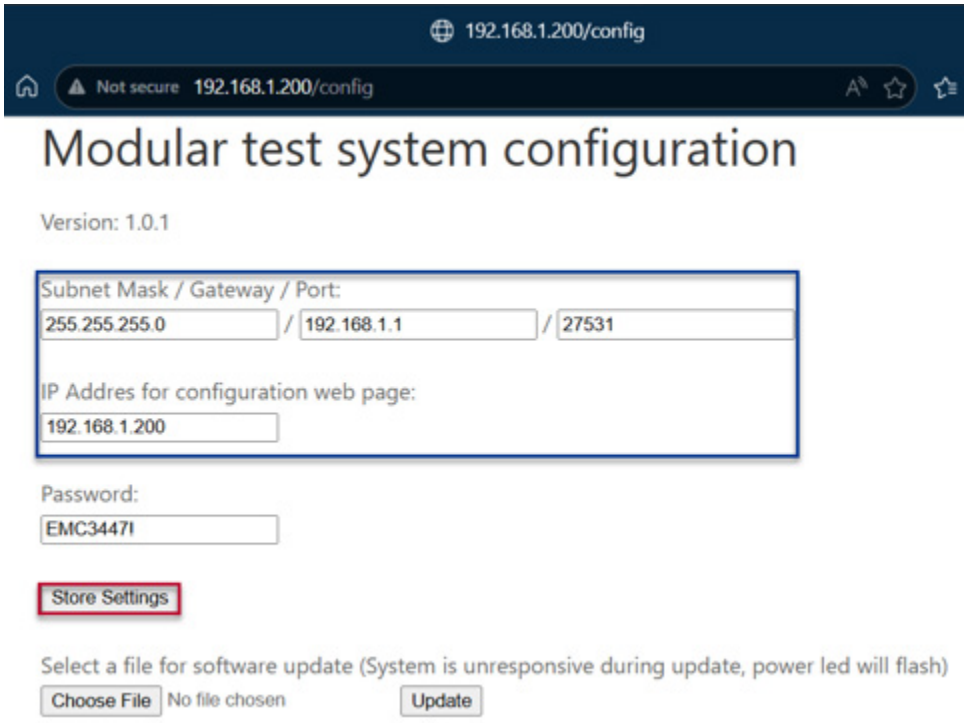
To configure the EM1 for your network configuration please follow the next steps:

1. Connect to EM1:
   - Connect your computer to the EM1 using an Ethernet cable.
   - Ensure that EM1 is powered on.
2. 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 “ipconfig” (Windows) or “ifconfig” (macOS/Linux).
   - Ensure that the IPv4 address is in the range of 192.168.1.x. If not, set an “Error! Reference source not found” in the same subnet.
3. Access EM1 Web Interface:
   - Open a web browser (e.g., Chrome, Firefox, or Safari).
   - In the address bar, type “http://192.168.1.200/” and press Enter.
4. Login to configuration setting of EM1:



   - Enter the username and password when prompted. The default credentials for EM1 are:
   - Username: admin
   - Password: EMC3447!

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



- Update the IPv4 address 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 port 27531). (Verify that the selected port address is not blocked by the router).
- Modify the default password for the configuration page as needed.

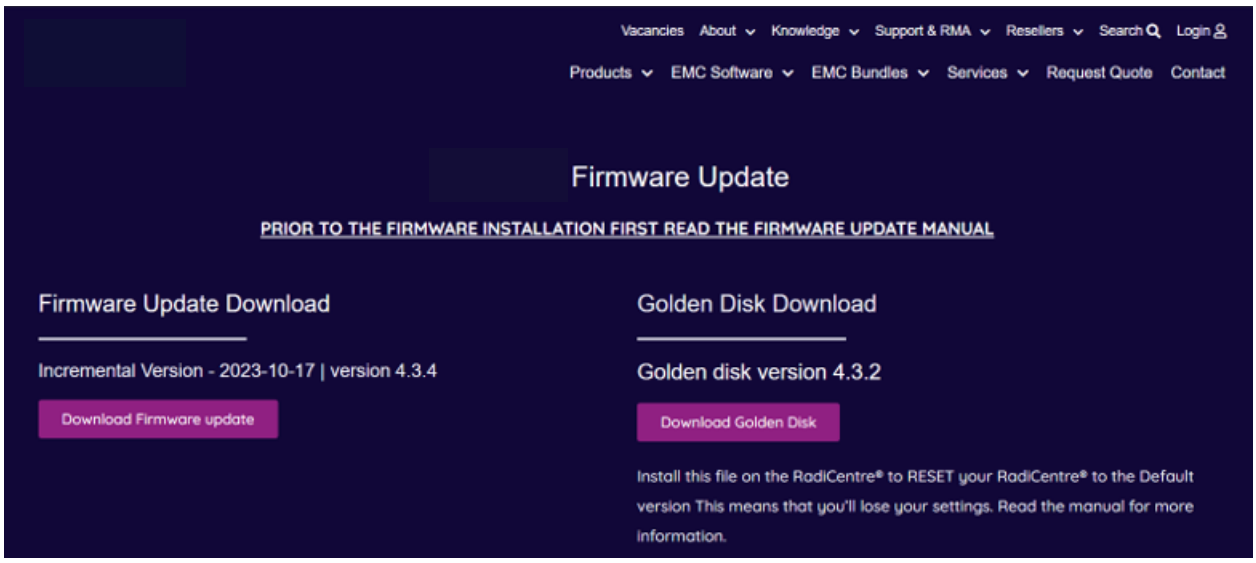
6. Save changes:
   - Once the desired changes have been made, please press the "Store" button. This action will automatically initiate a reboot of the EM1 to apply the modifications.

7. Check changes:

- After rebooting the EM1, 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 EM1 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 EM1 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 communication with your plugin cards. Ensuring the accuracy of settings guarantees smooth integration and effective communication with your chosen software applications.

Update software version

1. Open a browser and go to the webpage www.raditeq.com/softwareupdate and download the firmware update locally on your computer. Open a browser and go to the webpage www.raditeq.com/softwareupdate and download the firmware update locally on your computer.



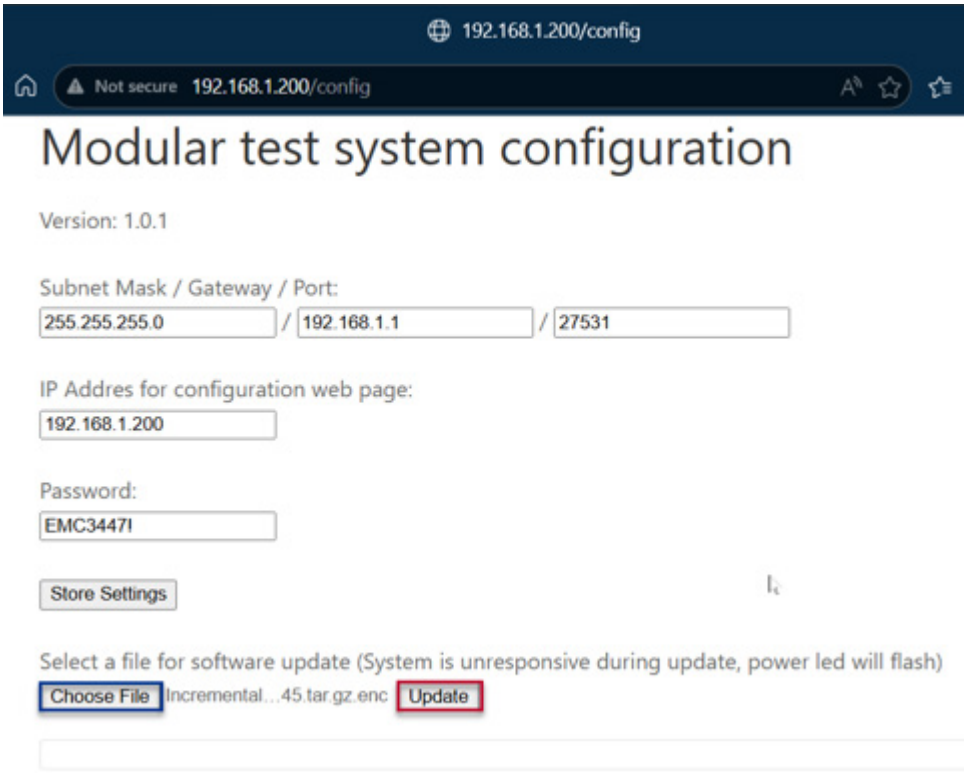
2. In a browser on a PC on the same network as the EMCenter, navigate to the IP address of the EM1 (default 192.168.1.200).

3. Select “Configure settings”.

4. Log in using the username “admin” and the password (default password is “EMC3447!”).

5. On the following page, select “Choose File” and, in the navigation window that opens window, select the downloaded firmware.

6. Select “Update” to start the firmware update. Be aware that the system will be temporarily unresponsive during this update, and the process may take some time.



⚠ CAUTION

CAUTION: Never disconnect the power supply during the update process, as it may result in system bricking.

Remote Control

Commands used for controlling the plug-in cards can be found in the programming manual.



Note: Since the EM1 only has one slot, the prefixes referring to the slot number can be omitted. For example: the 2nd positioner of an EMControl command would be “B:CP?\n” in EM1.



Note: To use the EMCenter remote commands, read the manual document 1801188_EMCenter_SCPICmdsErrs for examples and a full command list.

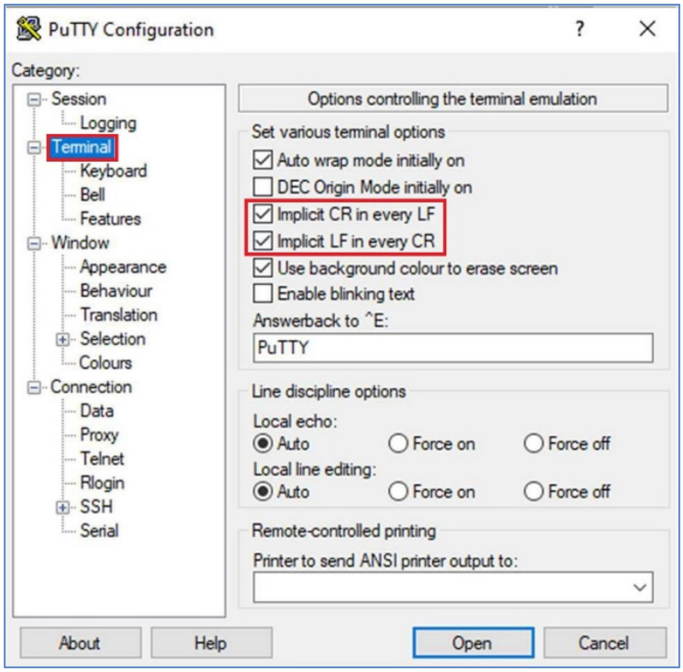
Example of connecting via other software: PuTTY

The provided configuration enables a raw connection without specifying a particular protocol, facilitating direct interaction with the plugin card in an unprocessed manner. This setup allows for the transmission of commands and reception of responses from the plugin card.

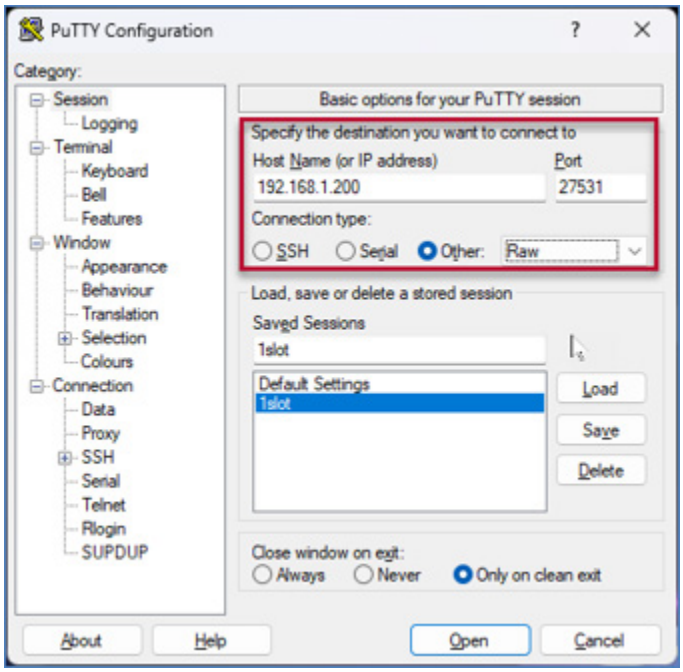
Specifically, each plug-in card supports the command "*IDN?" for retrieving its identification information. When the configuration and connection are correct, issuing this command to the plug-in card will prompt it to return the identifier string (ID) associated with the plug-in card.

If you want to establish a raw connection without specifying a particular protocol in PuTTY, you can follow these steps:

1. Open PuTTY.
2. On the left menu select “Terminal”:
   - Enable “Implicit CR in every LF” and “Implicit LF in every CR” to automatically send a Carriage Return after every Line Feed and vice versa.



3. On the left menu select “Session”:



- Enter the IP address "192.168.1.200" in the "Host Name (or IP address)" field.
- In the "Port" field, enter "27531" as the port number for the default configuration.
- Under "Connection type," choose the "Raw" option.
- Under "Saved Sessions," enter a name for your session in the "Saved Sessions" field (e.g., "1slot").
- Click the "Save" button to save your configuration.

4. Click the "Open" button to start the raw connection.

SPECIFICATIONS

Physical Specifications

Height:	2.82 in (71.5mm)
Width:	7.68 in (195 mm)
Depth:	10.69 in (271.5 mm) (excluding plug-in card)
Weight:	3.09 lb (1.4 kg) (empty)

Environmental Specifications

Temperature Range:	10 °C - 40 °C
Relative Humidity:	10% - 90% (non-condensing)

Power Specifications

Supply Voltage:	12 VDC / PoE type 3 (PoE++)
Power Consumption:	36 W

Interface and Cable Specifications

Interfaces:	USB, LAN
Connectors:	• USB-B • RJ45 • 0.08 in (2.1 mm) barrel jack (12 VDC, centre positive) • 0.25 in (6.35 mm) jack plug (interlock)
Cables Included:	Includes AC/DC power adapter. A country-specific IEC C13 mains cable is supplied based on the destination country.