

# EMCenter™ Modular RF Platform

## Models 7000-0XX

### Product Manual



## Copyright and Trademark

---

ETS-Lindgren Inc. reserves the right to make changes to any products herein to improve functioning or design. Although the information in this document has been carefully reviewed and is believed to be reliable, ETS-Lindgren Inc. does not assume any liability arising out of the application or use of any product or circuit described herein; nor does it convey any license under its patent rights nor the rights of others. All trademarks are the property of their respective owners.

**© Copyright 2013–2025 by ETS-Lindgren Inc. All Rights Reserved. No part of this document may be copied by any means without written permission from ETS-Lindgren Inc.**

Trademarks used in this document: The *ETS-Lindgren* logo is a registered trademark, and *EMCenter*, *EMSwitch*, *EMPower*, *EMControl*, *EMSense*, *EMSense 10/40*, *EMLink*, *EMField*, *TILE!*, and *EMQuest* are trademarks of ETS-Lindgren Inc.

## Revision Record

---

### MANUAL, EMCENTER | Part #399342, Rev. J

| Revision | Description                                                        | Date      |
|----------|--------------------------------------------------------------------|-----------|
| A        | Initial Release                                                    | JUL, 2013 |
| B        | Updated EMCenter models                                            | JUN, 2014 |
| C        | Updated USB Driver installation instructions                       | NOV, 2016 |
| D        | Updated specifications                                             | APR, 2018 |
| E        | Removed incorrect warranty info                                    | SEP, 2020 |
| F        | Discontinued products removed. Inserted correct interface options. | APR, 2022 |
| G        | Updated format; Added Commands and Errors                          | SEP, 2022 |
| H        | Updated format; Added Commands and Errors                          | FEB, 2024 |
| J        | Remove SCPI commands and errors to separate document               | AUG, 2025 |

## Safety Information

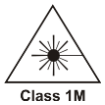
---



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



**Protective Earth Ground (Safety Ground):** Indicates protective earth terminal. You should provide uninterruptible safety earth ground from the main power source to the product input wiring terminals, power cord, or supplied power cord set.



**Laser Warning:** Denotes a laser (class 1M) is part of the operating system of the device.



**Waste Electrical and Electronic Equipment (WEEE) Directive:** (European Union) At end of useful life, this product should be deposited at an appropriate waste disposal facility for recycling and disposal. Do not dispose of with household waste.

## 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.

## Table of Contents

---

|                                                           |           |
|-----------------------------------------------------------|-----------|
| Copyright and Trademark .....                             | ii        |
| Revision Record .....                                     | ii        |
| Safety Information .....                                  | iii       |
| Notes, Cautions, and Warnings .....                       | iii       |
| <b>Table of Contents .....</b>                            | <b>4</b>  |
| <b>Introduction .....</b>                                 | <b>6</b>  |
| Standard Configuration .....                              | 6         |
| EMCenter Platform Models .....                            | 6         |
| EMCenter Plug-In Cards (Optional) .....                   | 9         |
| ETS-Lindgren Product Information Bulletin .....           | 12        |
| <b>Operation .....</b>                                    | <b>13</b> |
| Installation .....                                        | 13        |
| Changing Plug-In Cards .....                              | 13        |
| Updating Software .....                                   | 14        |
| Fiber Optic Maintenance .....                             | 16        |
| <b>Fiber Conditions</b> .....                             | 16        |
| Laser Safety .....                                        | 17        |
| Safety Precautions .....                                  | 17        |
| Safety Features .....                                     | 18        |
| Interlock Usage .....                                     | 18        |
| Systems Interlock .....                                   | 18        |
| Interlock Behaviors .....                                 | 19        |
| Local Interlock – Switch Card .....                       | 20        |
| Manual Control .....                                      | 23        |
| Powering ON/OFF .....                                     | 23        |
| Back Panel .....                                          | 25        |
| Front Panel .....                                         | 27        |
| Touchscreen .....                                         | 28        |
| Remote Control .....                                      | 32        |
| Example: How to Connect EMCenter via Ethernet to PC ..... | 33        |
| SCPI Command Set and Error List .....                     | 33        |
| Using the USB Interface .....                             | 33        |
| Other software .....                                      | 35        |
| <b>Maintenance .....</b>                                  | <b>36</b> |
| Fiber Optic Maintenance .....                             | 37        |

|                                                       |           |
|-------------------------------------------------------|-----------|
| Identify CPU Card.....                                | 37        |
| Software Identification.....                          | 38        |
| Hardware Identification .....                         | 39        |
| Service Procedures .....                              | 39        |
| Contacting ETS-Lindgren.....                          | 39        |
| Replacement and Optional Parts .....                  | 39        |
| Sending a Component for Service .....                 | 40        |
| Calibration Services and Annual Calibration .....     | 40        |
| Upgrade Policies .....                                | 40        |
| <b>Specifications.....</b>                            | <b>41</b> |
| Performance Specifications .....                      | 41        |
| Physical Specifications .....                         | 41        |
| Environmental Specifications .....                    | 41        |
| Power Specifications .....                            | 41        |
| Interface and Cable Specifications .....              | 42        |
| <b>Appendix A: EC Declaration on Conformity .....</b> | <b>43</b> |

## Introduction

---

For flexible configuration of an EMC test facility and fully-automated testing, the ETS-Lindgren EMCenter™ Modular RF Platform provides space for up to seven plug-in cards in a 3U, 19-inch rack mount enclosure. The EMCenter can also be used as a desktop unit.



The slots can contain a user-defined combination of these ETS-Lindgren cards: EMSwitch™, EMPower™, EMGen™, EMControl™, and EMSense™. When installed, each card is automatically recognized, initialized, and ready for use. For more information on the cards, see [EMCenter Plug-In Cards \(Optional\)](#) section.

The EMCenter is configured and controlled using the 7-in widescreen color thin-film transistor (TFT) touchscreen on the front panel. Additionally, the EMCenter may be controlled from a computer using these software products:

- ETS-Lindgren TILE!™ (Totally Integrated Laboratory Environment)
- ETS-Lindgren EMQuest™ Data Acquisition and Analysis Software
- Other test automation software

The EMCenter contains a Vortex-embedded main processor to control all cards and to interface with the user and/or an external computer. The operating system is Linux-based, providing a stable operating environment, fast startup time, and high performance. All embedded software is stored in flash, making it easy to upgrade to new versions and future functionality.

## Standard Configuration

---

Standard configuration may vary by EMCenter model; contact ETS-Lindgren for additional information.

- EMCenter Modular RF Platform
- Cables: Power
- Interlock plug
- Mains lead
- 19-inch mounting brackets

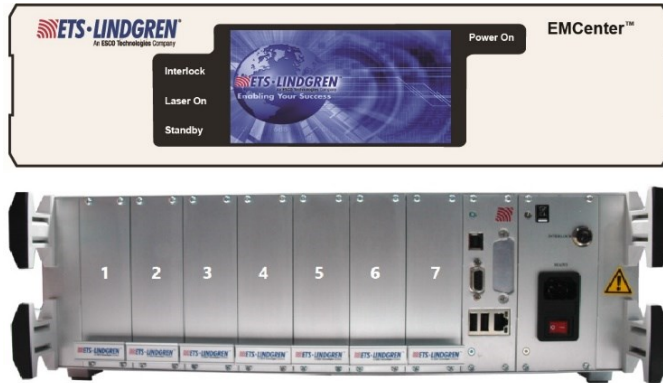
## EMCenter Platform Models

---

The EMCenter is available in the following configurations:

- **Model 7000-001:** 7-slot EMCenter Modular RF Platform
- **Model 7000-010:** 7-slot EMCenter Modular RF Platform with GPIB
- **Model 7000-004:** 2-slot EMCenter Modular RF Platform
- **Model 7000-011:** 2-slot EMCenter Modular RF Platform with GPIB
- **Model 7000-012:** 1-slot EMCenter Modular RF Platform without screen
- **Model 7000-013:** 8-slot EMCenter Modular RF Platform without screen

## 7-Slot and 2-Slot



The 7-slot and 2-slot systems are both 3U high and are standard delivered as a desktop model. They fit within a 19" rack mount enclosure when using the 19" brackets that are supplied.

The main difference between these two models is the amount of slots. The 7-slot has nine slots and the 2-slot Lite has four. Each model has a number of free slots (for custom selectable plug-in cards) and two dedicated slots to standard components. The slots are numbered from left to right (when looking at the back panel).

The dedicated slots are used for the embedded Linux computer (CPU plug-in cards) and power supply plug-in cards. These plug-in cards cannot be placed in any other slot. The power supply plug-in card also has a connection for an external interlock. The processor plug-in card has several interfaces to control the EMCenter such as Ethernet and GPIB (optional).

Both models are controlled by the user through the touchscreen on the front panel or by remote control through a computer.

## 1-Slot

The Single Slot (1-slot) EMCenter provides space for one plug-in card in a table top enclosure. The touchscreen local controls are not included to minimize the cost in this model.

The plug-in card is inserted in the front of the 1-slot EMCenter and can act as a USB device on your computer. A virtual COM-port will appear after installation of the USB driver. Use port settings: 115200,8,N,1 for this port.

The back panel of the 1-slot contains all the cable connections. The power switch and DC-input can be found on this panel. The 1-slot is powered by an external 12V/2A mains AC/DC adapter, which is delivered (as standard) with the system.



Two communication ports are located at the middle of the back panel:

- One (Holaday compatible) serial port with settings: 9600,7,Odd,1
- One USB-B connector.

The interlock connector and a push button to start the LASER are located at the top of the back panel. (Use of the LASER button is only applicable when used with an EMSense 10 sensor.)

## 8-Slot

The EMCenter EM8 Modular Test System forms the heart of many different EMC and RF test systems. The EMCenter has the ability to store up to eight (8) instrument plug-in cards, which can all be controlled and used simultaneously.

The 1 GBIT LAN interface, providing some of the fastest acquisition in the industry, makes the EMCenter EM8 the ideal hardware platform for applications requiring multiple channels and fast measurements, like Automotive mode-stir (reverberation chamber) testing or switching applications.



Read the manual [1788365 EM8](#) for more information on the EMCenter EM8.



## EMCenter Plug-In Cards (Optional)

---

### EMSwitch RF Switch Plug-In Card



The EMSwitch cards (Models 7001-xxx) use a general-purpose multi-channel switch matrix used to switch the RF path of equipment for RF measurement applications, including immunity, emissions, and wireless measurements.

EMSwitch is available with two SPDT coaxial relays, four SPDT coaxial relays, or two SP6T coaxial relays; 40 GHz and 67 GHz options are also available. EMSwitch cards switch RF signals from DC–18 GHz, with powers up to 240 W.



Read the manual [399343 EMSwitch](#) for more information on the differences between the various EMSwitch cards.

## EMPower Meter Plug-In Card and Sensors



The EMPower card (Model 7002-001) occupies one slot in the EMCenter and includes four USB ports, accommodating any combination of up to four EMPower USB RF Power Sensors.

The following EMPower sensors are available:

- **Model 7002-002** — Support RMS measurements for CW signals and covers the 9 kHz to 6 GHz range.
- **Model 7002-003** — Measure RF bursts as short as a few microseconds and covers the 9 kHz to 6 GHz range.
- **Model 7002-004** — Support RMS measurements for CW signals and covers the 80 MHz to 18 GHz range.
- **Model 7002-005** — Measure RF bursts as short as a few microsecond and covers the 80 MHz to 18 GHz range.
- **Model 7002-006:** Burst mode, Fully Compliant with ETSI 300 328 and 301 893, while covering a range of 10 MHz to 6 GHz.
- **Model 7002-009** — True RMS Power Meter for measurements of (non)-sinusoidal signals and covers the range 4 kHz to 6 GHz. This advanced feature eliminates the need for additional signal processing or waveform assumptions, making it a versatile device for a wide range of applications.



Read the manual [399345 EMPower](#) or [1679937 EMPower-006](#) for more information on the functionality of the EMPower card and the differences between the various EMPower sensors.

## EMGen RF Signal Generator

ETS-Lindgren's EMGen RF Signal Generator offers users a convenient and economical solution for signal generation.

The EMGen Module is designed to fit into the EMCenter Modular Test System and provides the user with a signal generator that can be used in different modes across the 4 kHz to 6 GHz frequency range.



Read the manual [1741904 EMGen-003](#) for more information on the functionality of the EMGen card.



## EMControl Positioner Control Plug-In Card

The EMControl (Model 7006-001) is a versatile positioner controller that enables you to synchronize the simultaneous movements of up to two ETS-Lindgren positioning devices (for example, towers or turntables) and the on/off operation of an additional auxiliary device, such as a LISN or EUT.



Read the manual [399348 EMControl](#) for more information on the functionality of the EMControl card.



## EMSense 10 EMF Probe Plug-In Card

The EMSense 10 card provides an interface for ETS-Lindgren Laser-powered electric field probes. Each EMSense 10 card can support one EMSense 10 probe.



Read the manual [1720585 EMSense 10 40](#) for more information on the functionality of the EMSense 10 card and sensors.



## **ETS-Lindgren Product Information Bulletin**

---

See the ETS-Lindgren *Product Information Bulletin* included with your shipment for the following:

- Safety, regulatory, and other product marking information
- Steps to receive your shipment
- Steps to return a component for service
- ETS-Lindgren calibration service
- ETS-Lindgren contact information

## 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.



**CAUTION:** Leave an empty slot or space 1U in height beneath the EMCenter to allow sufficient cooling through the bottom air inlets of the cabinet.

### Changing Plug-In Cards

---



**Note:** Due to the width of some cards, two consecutive empty slots are required for installation. The card will use the track of the first of the two slots.

1. Before installing and inserting a new plug-in card make sure that the EMCenter is turned OFF and disconnect the AC Mains power cord.
2. Determine in which empty slot of the EMCenter you want to install the Plug-in Card. Looking at the back of the EMCenter, the slots are numbered 1 through 7 from left to right.



3. 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.
4. Carefully insert the card into the slot of the EMCenter. Position the plug-in card into the slot and slowly push it, using the lower part of the plug-in card. When it reached the end of the rail, gently push and lock the plug-in card into the backplane socket.

5. Secure the card by tightening the four previous screws using a Pozi type screwdriver head PZ1.
6. Plug the interlock into the connector on the back of the EMCenter.
7. **If applicable:** Connect the desired device(s) to the correct plug-in card.
8. **Optional:** Connect the EMCenter to a computer using Ethernet or GPIB.
9. Re-connect the AC mains power cord and turn ON the EMCenter. It can now be started by tapping the touch screen. The EMCenter will automatically detect the newly installed card.
10. The card installation is complete and the EMCenter is now ready for use. You can control all cards through the [touchscreen](#) or sending [remote commands](#).

## Updating Software

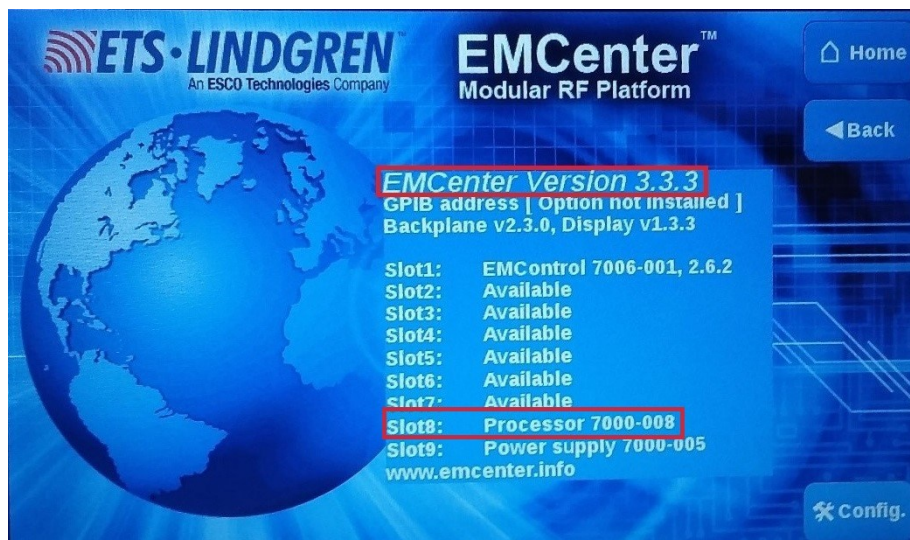
The following section gives a brief set of instructions for updating the EMCenter firmware. For more information, use for the *EMCenter Firmware Update Manual* located on the ETS software portal <https://support.ets-lindgren.com/>.



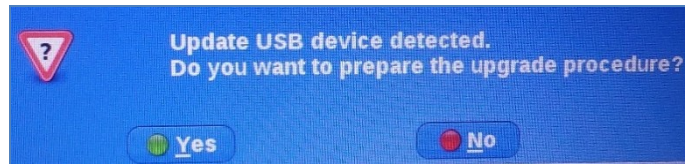
**Note:** Incremental updates were introduced to allow selective updating of the EMCenter cards and system. The updates use the same USB installers for both X86 and ARM, but the version numbers will be different as X86 is now in long-term support. The X86 version will remain at v3.3.X, as new functionality will not be added.



**NOTE:** The last main system update before the incremental system is called the GOLD version. **You must have at least the gold version on your EMCenter or the incremental updates will not work.** The GOLD version for X86 is v3.3.0 and ARM is v3.3.3.



1. Before starting, check on the [info page](#) of the EMCenter for the processor type, and if the EMCenter version is GOLD or higher you can use an incremental USB installer with latest update.
  - The GOLD version for X86 is v3.3.0 and ARM is v3.3.3.
    - STD (X86) = 7000-006
    - GPIB (X86) = 7000-007
    - STD (ARM) = 7000-008
    - GPIB (ARM) = 7000-009
2. Turn ON the EMCenter and wait until it gets to the main screen.
3. Plug in the USB stick with the incremental installer on it. The following box will appear when the USB is detected; click YES to prepare the download.



4. Once you have downloaded the incremental update, you may remove the USB.
5. REBOOT, as sometimes the new incremental update does not appear available until the power cycles completely.



## Fiber Optic Maintenance

---

Fiber optic connectors and cables can be damaged from airborne particles, humidity and moisture, oils from the human body, and debris from the connectors they plug into. Always handle connectors and cables with care, using the following guidelines.



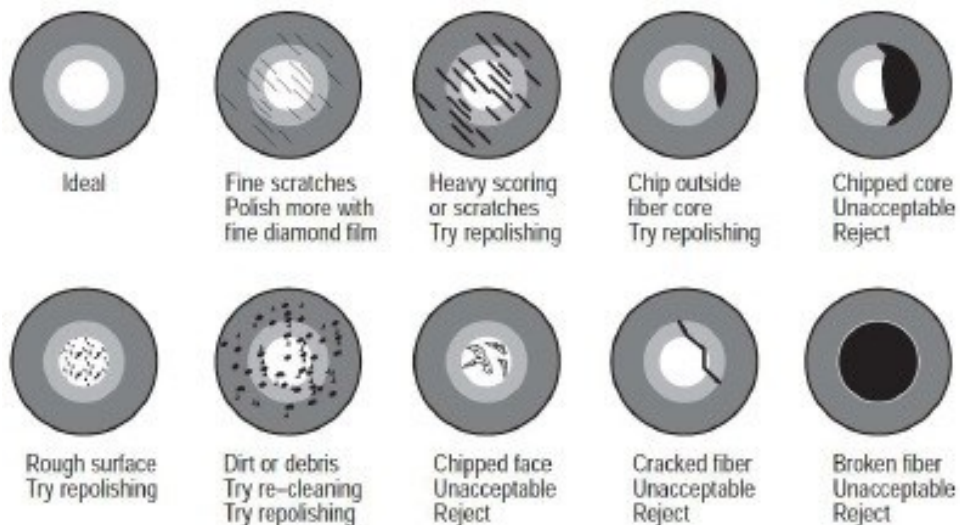
**CAUTION:** Before performing any maintenance, disconnect fiber optic cables from the unit and turn off power.

- When disconnecting fiber optic cables, apply the included dust caps to the ends to maintain their integrity.
- Before connecting fiber optic cables, clean the connector tips and in-line connectors.
- Before attaching in-line connectors, clean them with moisture-free compressed air.
- Failure to perform these tasks may result in damage to the fiber optic connectors or cables.

## Fiber Conditions

---

Use the examples and instructions in the following figure as a guideline for further fiber maintenance. If you have doubts about the condition of the fiber optic cables, please contact your local reseller or ETS-Lindgren for assistance and/or advice.





## Laser Safety

---



**CAUTION:** For additional safety information, see the ETS-Lindgren Product Information Bulletin included with your shipment.

### Safety Precautions

---



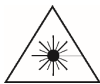
#### **LASER RADIATION AVOID EXPOSURE TO BEAM CLASS 3B LASER PRODUCT**

- **WAVELENGTH 808 nm**
- **OPTICAL POWER 0.5 W**



**CAUTION:** Never look into any of the fiber optic connectors.

- **The laser emits an infrared beam that is invisible to the naked eye.**
- **Direct or even reflected light will cause permanent eye damage.**



**INVISIBLE LASER RADIATION:** Do not stare into beam or view directly with optical instruments.

- **Avoid eye or skin exposure to direct or scattered radiation.**

Some EMCenter™ Modular RF Platform plug-in cards use a high power laser to supply energy to a remote (floating) measuring device. The wavelength of these lasers is approximately 808 nm. These lasers are high-power, infrared lasers and invisible to the human eye. Please read the documentation and safety instructions provided in the separate manual for the specific card.

Exposure to any laser radiation during normal operation is not likely because the EMCenter uses only fiber-coupled lasers. However, for the safety of all employees, please comply with the following rules:

- When the EMCenter is not in use, power off the unit.
- The remote interlock connection should be connected to an emergency master disconnect and in series with the room door or fixture interlocks.
- Connect all fiber cables and install protective covers before switching on the system. Protective covers are identified by the following label:



- Do not attempt to turn on the EMCenter if the fiber optic cables show any sign of damage.

## Safety Features

---

To make the EMCenter as safe as possible, the primary safety system of each plug-in card is designed to work standalone, without any intervention from the EMCenter. Apart from this, the EMCenter has its own safety interlock system, which is connected in series with the interlock system of every installed card.

Additionally, the following safety measures are implemented:

- The EMCenter is equipped with a remote interlock system. For example, this interlock system would prevent inadvertent laser radiation by preventing someone from entering a shielded room and stepping on a fiber.
- To prevent accidental activation of the laser, an Acknowledge button will appear directly after the Laser Start button is pressed. The laser will start only if this button is pressed within a four-second timeframe.
- A visual Laser On indicator warns the operator of laser activity. The Laser On LED on the front panel of EMCenter indicates that at least one laser is active.

## Interlock Usage

---

The EMCenter modular test and measurement system provides in several interlock systems. A common system interlock and local interlocks. These local interlocks can be found on some of the plug-in cards. This section describes how these interlock are intended to be used and describes the behavior of the different plug-in cards to the interlock.

## Systems Interlock

---

Each EMCenter is equipped with a system interlock, provided on a 6,3mm (1/4") stereo jack socket. This socket is located on the power supply plug-in card. Two floating contacts, one on the middle pin and one on the tip of the plug, require shorting for normal operation of the system. The interlock plug can be connected to a switch on the entrance of the test chamber.



Each EMCenter is equipped with a system interlock, provided on a 6,3mm (1/4") stereo jack socket. This socket is located on the power supply plug-in card. Two floating contacts, one on the middle pin and one on the tip of the plug, require shorting for normal operation of the system.

The interlock plug can also be connected to a switch on the entrance of the test chamber. Opening the middle pin and tip of the interlock plug will engage the interlock system and lights the "INTERLOCK"- indication on the front panel.



## Interlock Behaviors

The behavior of plug-in cards to the interlock is different for models. Safety is provided by hardware for mandatory systems, without the intervention of software. The following table clarifies the behavior of the plug-in cards:

| Plug-in Card Modules | Action when the system interlock is engaged | Requirements |
|----------------------|---------------------------------------------|--------------|
|----------------------|---------------------------------------------|--------------|

|                                  |                           |                                                                                        |
|----------------------------------|---------------------------|----------------------------------------------------------------------------------------|
| <b>EMSwitch<br/>(all models)</b> | None                      | Switch card with SPDT SMA or k-type relays are equipped with a local interlock system. |
| <b>EMPower<br/>7001-001</b>      | None                      | All power meters connected to this card remain powered.                                |
| <b>EMGen<br/>7003-001</b>        | RF output is switched off | This is done by software.<br><br><b>Note:</b> Supported by Versions 2.4.8 or higher.   |
| <b>EMLink<br/>7004-001</b>       | Laser(s) are switched off |                                                                                        |
| <b>EMControl<br/>7006-001</b>    | All motion is stopped     | By powering down the optical devices on the card. J1 on the PCB must be left open.     |
| <b>EMSense<br/>7007-001</b>      | None                      | The probe connected to this card remains operational.                                  |
| <b>EMSense<br/>7007-002</b>      | Laser(s) are switched off | J1 on the PCB must be left open.                                                       |
| <b>EMField<br/>7008-100</b>      | DC supply is switched off |                                                                                        |

### Local Interlock – Switch Card

---

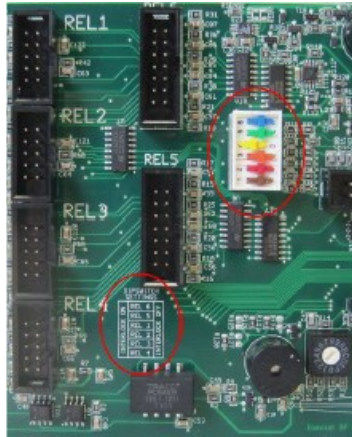
Switch cards with 2 or 4 SPDT SMA or k-type relays are equipped with a local interlock system. The floating contacts of this local interlock are provided on a 3-way Binder connector on the panel of the switch card. For normal operation, the middle pin and one of the outer pins need to be shortened.



This local interlock connection can be connected to the contact (for example a magnetic switch) on the door of the shielding room. By adding a relay (operated by this local interlock) between the signal source and the amplifier, the signal will be switched off as soon as the door of the shielding room is opened.



A dip switch on the PCB of the plug-in card determines which relays are operated by the local interlock system of the switch card. By default only relay 1 is set to be operated by the local interlock (yellow switch for REL 1 is in the left position), but this can be any combination of the relays present on the card.



By moving the corresponding DIP switch to the left position, the interlock for the corresponding relay is enabled. Printed in the silkscreen is a table that describes which DIP switch has to be used for which relay output.

Please note that the outputs REL 1 to 4 are used for SPDT relays and the outputs REL 5 and 6 are used for SP6T relays.

## Manual Control

---



**CAUTION:** Never disconnect the fiber optic cables when one of the lasers is active.



**CAUTION:** Before placing into operation, follow the information provided in Safety Information on page v.



**CAUTION:** Prior to operation, verify that the mains voltage is within the operating range of the equipment.

## Powering ON/OFF

---

### Power ON

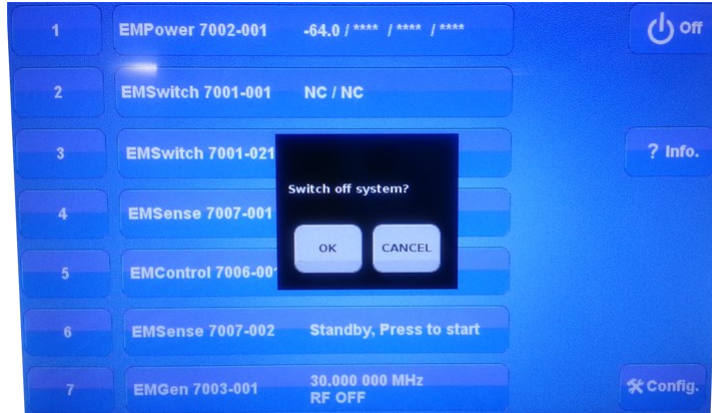


**Note:** Verify all cards are installed correctly in the EMCenter.

1. Plug the power cord from the mains inlet on the back panel of the EMCenter™ Modular RF Platform into a power outlet.
2. Plug the interlock jack into the interlock connector on the back panel of the EMCenter.
3. Turn the power switch located on the back panel of the EMCenter to the on position.
4. Touch anywhere on the EMCenter touchscreen. It will take approximately 20 seconds to boot. The Information screen will flash, and then the Home screen will display.

## Power OFF

1. Press the Off button located on the EMCenter screen in the top right corner.



2. Press OK to switch off the system.
  - a. The touchscreen will turn black and then the standby light located on the front panel of the EMCenter will flash, and then will illuminate steadily.

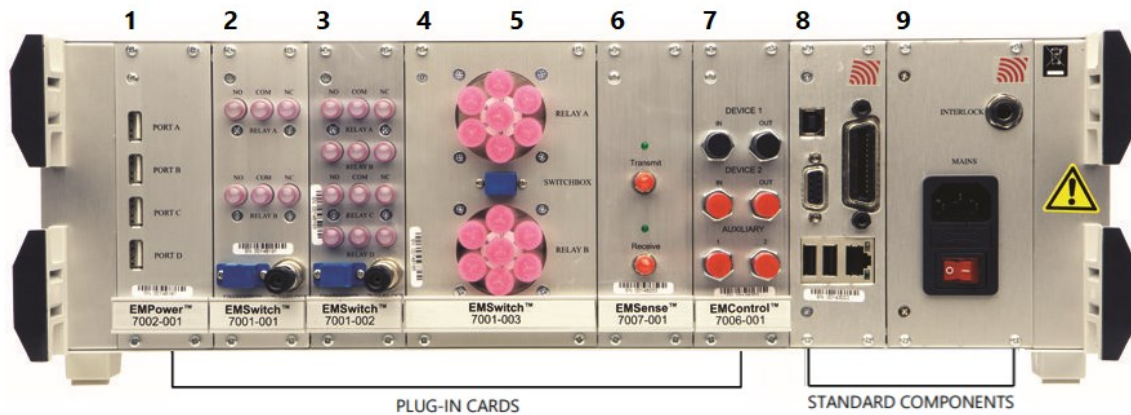


**Note:** When the EMCenter is in standby mode, touch the screen anywhere to reboot.

3. Turn the power switch located on the back panel of the EMCenter to the off position.
4. Remove the power cord from the power connector on the back panel of the EMCenter.
5. Remove the interlock jack from the interlock connector on the back panel of the EMCenter.



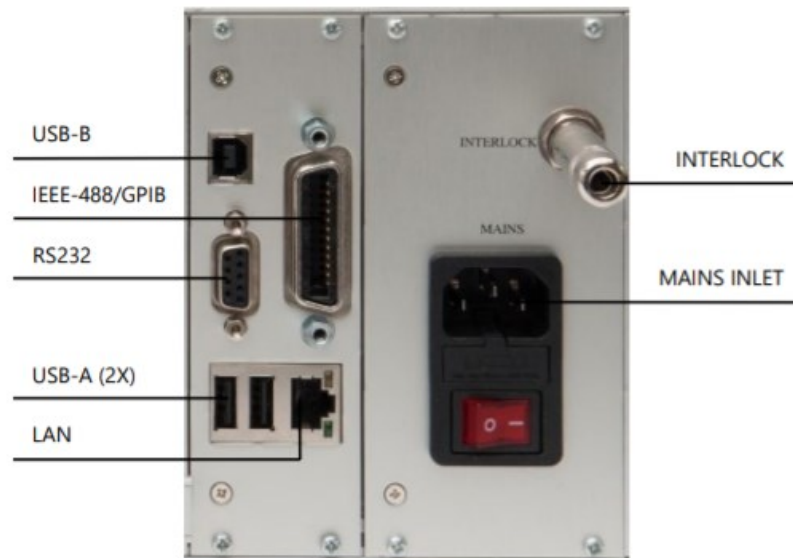
## Back Panel



### Slots 1 – 7 (Plug-In Cards)

Slots 1 – 9 allow you to install a combination of ETS-Lindgren plug-in cards. For more information on the cards, see the section [EMCenter Plug-In Cards \(Optional\)](#).

### Slots 8 – 9 (Standard Components)



**Slot 8** is dedicated to the processor card for the embedded Linux computer. The processor card also provides these connectors:

- **LAN (Ethernet)** – Local Area Network connection is used to remote control the EMCenter.
- **GPIB (IEEE-488)** – IEEE-488.2 interface bus to interface with a computer (optional).

**Slot 9** is dedicated to the power supply card. The power supply card also provides a connection for an external interlock.

- **Interlock** – Safety interlock connection provides two floating contacts that require shorting for the EMCenter to operate. Use the supplied connector (6.3 mm 1/4-in stereo jack) to wire to the emergency switch of your site. Connect the tip and middle pin.
- **Mains Inlet** – Used to connect to the mains power to the EMCenter. This IEC inlet holds a primary fuse. Always use the correct fuse when replacing the fuse. The main power switch is also located on the IEC inlet.

## Front Panel

---



There are four status indicators on the front panel of the EMCenter™ Modular RF Platform arranged around the touchscreen:

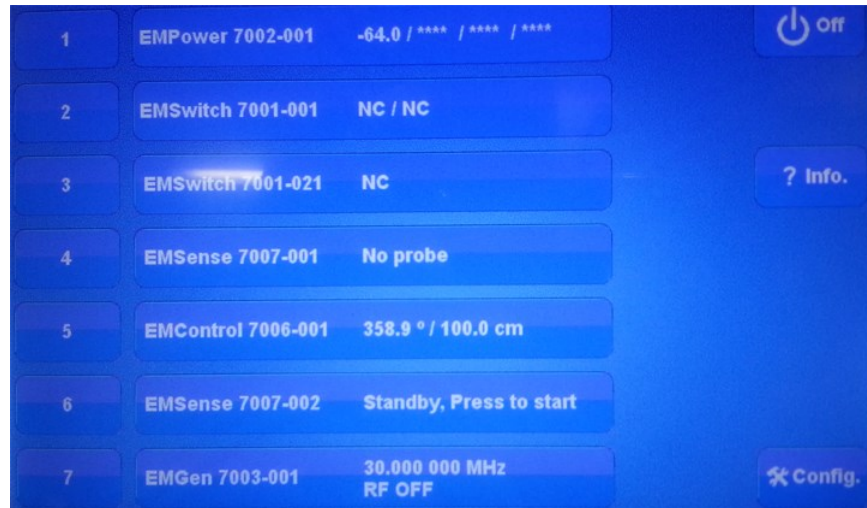
- **Interlock** — Illuminates if the external interlock is open, or if one of the plug-in card interlocks encounters an interlock error.
- **Laser On** — Illuminates if at least one of the lasers in one of the cards is active.
  - **WARNING! For safety reasons, never disconnect the fiber optic cables when one of the LASERS is switched on.**
- **Standby** — Illuminates when the EMCenter is in standby mode.
- **Power On** — Illuminates when the EMCenter is turned on.

## Touchscreen

---

### Home Page

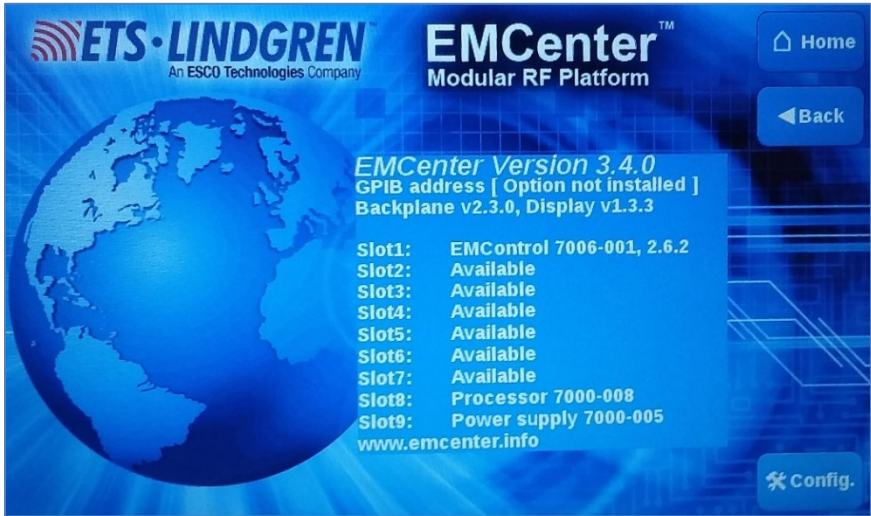
The Home page shows the status of all plug-in cards and has the Config, Info, and OFF buttons.



- **Slot Buttons** – Use to see detailed info of the plug-in card.
- **Status Buttons** – A status box for each slot displays to the right of the slot number. The box displays an overview of the main parameters for each installed card.
  - If no card is installed in a slot, the Status box will display Available.
  - If there is an error, it will over-write the parameters and display the error code in red.
  - To display or change the data and configuration parameters of a card, press the Status box for that card's settings.
- **Control Buttons** – Depending on the card installed, relevant control buttons will appear. These buttons are used to start the card or to control the status of the card. See the specific card manual for more information of these modes.
- **Local Mode** – Local control is disabled once the EMCenter is connected to a computer and has been operated by remote. To regain local control, press **Go to local** in the bottom right of the Home screen.

# Info Page

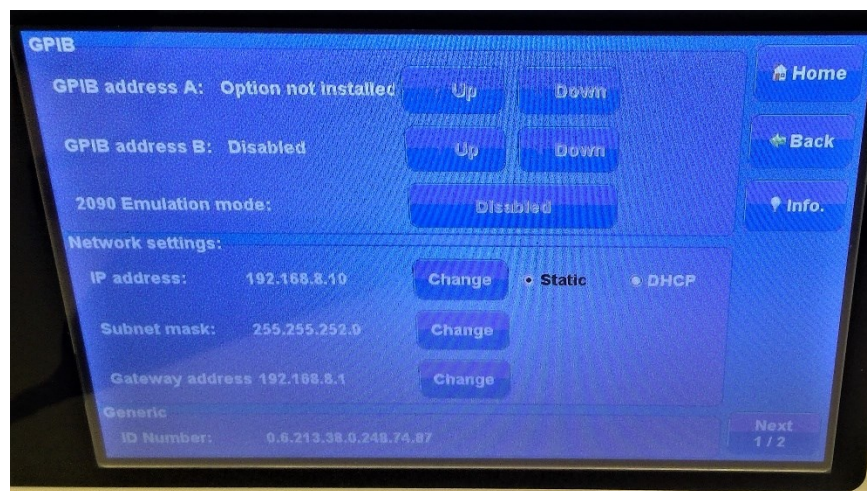
The Info page displays the version number of the EMCenter and the card versions. To access this page, the button is on the right-hand side of the Home screen.



## Config Page 1/2

The first Config page has GPIB address (if applicable) and the network settings to connect remotely. To access this page, the button is on the right-hand side of the Home screen.

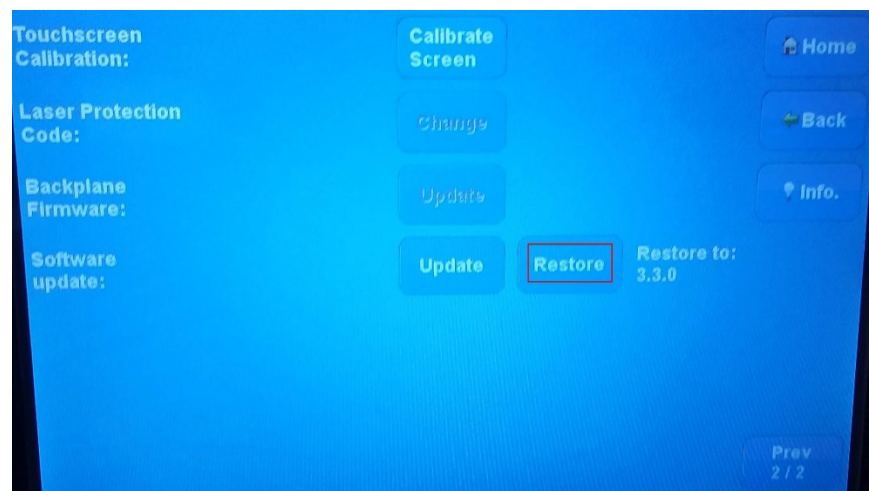
- **GPIB Address** — Press **Up** or **Down** to change the address (if installed).
- **IP Address** — Press **Change** to set a new address.
- **Subnet mask** — Press **Change** to set a new address.
- **Gateway Address** — Press **Change** to set a new address.



## Config Page 2/2

The second Config page has options to update or restore software. To access this page, the button is on the right-hand side of Config page 1/2.

- **Touchscreen Calibration** — Press 'Calibrate Screen' and follow the on-screen instructions.
- **Laser Protection Code** — Press 'Change' to enter a new code.
- **Update** — Press 'Update' for options to install new software updates. See the next section for the [Update page](#) details.
- **Restore** — Press 'Restore' to change the main system firmware to the previous version number shown to the right of the button.



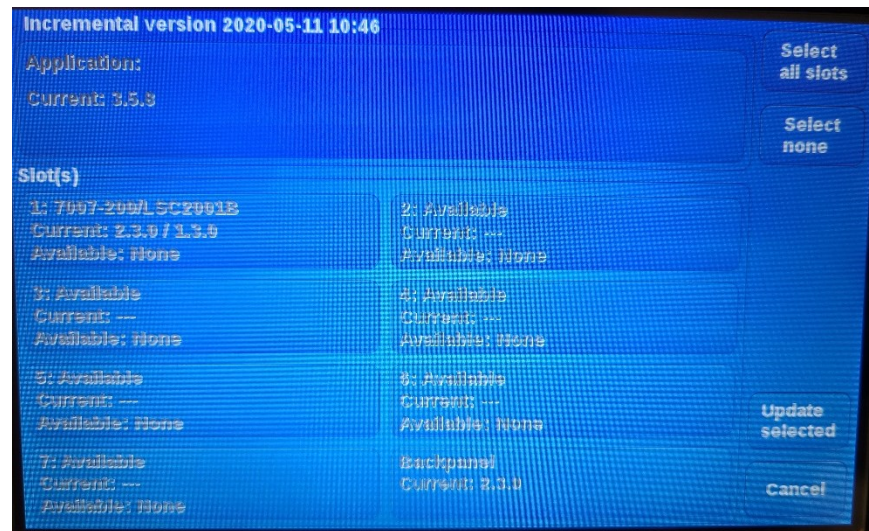


## Update Page

The Update page shows the current versions of the EMCenter, all slots in use, and any active connected sensors. To access this page, the button is on Config page 2/2.

Available updates to select are white, and show the new update version. Any slot NOT selected (greyed out) will NOT be updated. You have to update the system and the card slots separately.

See for more information on installing new updates see the section the [Updating Software](#).



## Remote Control



**Note:** To control a device installed in the EMCenter from a remote computer using the GPIB interface, the IEEE address of the EMCenter must be set correctly.



**Note:** To control a device installed in the EMCenter from a remote computer using the LAN port, the IP address and Subnet Mask of the EMCenter must be set correctly.



**Note:** To control a device installed in the EMCenter from a remote computer using the USB Interface, a USB Driver must be installed on the remote computer. See the section [Using the USB Interface](#) for more information.



## Example: How to Connect EMCenter via Ethernet to PC

---

Refer to the portal document/video [Ethernet Instrument Setup](#) for systematic instructions on how to setup the EMCenter for remote commands via NI MAX.

## SCPI Command Set and Error List

---

The EMCenter SCPI commands and error code list for all cards and connected modules have been moved into the separate document manual called “**801188 SCPI Cmds and Errs.**” See the EMCenter webpage for the document link.

## Using the USB Interface

---

The USB drivers for the ETS-Lindgren EMCenter™ Modular RF Platform and the EMPower™ Power Meters automatically download and install when the EMCenter or EMPower is plugged into a computer that is connected to the Internet and that is installed with one of the following supported Microsoft® Windows® operating systems.

- Windows 7 Client operating system
- Windows 7 Client x64 operating system
- Windows 8 Client operating system
- Windows 10 Client operating system
- Windows 8 Client x64 operating system
- Windows 10 Client x64 operating system

If you use an operating system not listed, please contact ETS- Lindgren.

If your computer is not connected to the Internet, or it is connected but the automatic installation failed or was cancelled, you will need to download the drivers from [www.ets-lindgren.com](http://www.ets-lindgren.com) and manually install them on your computer. See the next section for the steps to download the drivers.

Administrative rights are required to install the USB drivers on your computer.

## Download USB Drivers

The USB drivers are located at [ets-lindgren.com](http://ets-lindgren.com).

1. On the Resources menu, click *Software/Firmware*.

2. In the Software column, click *USB Virtual Comm Port Driver* (the name of the zip file may vary slightly). Save the zip file to the desired location on your computer.
3. Extract the files from the downloaded zip file.

### **If Your Computer Is Installed With Windows 7, 8, Or 10**

1. Follow the Download USB Drivers steps, above.
2. Plug the EMCenter or EMPower into a USB port on the computer.
3. Open the Device Manager.
4. Click Ports (COM & LPT).
5. Click the name of the USB device.
6. Click the Driver tab.
7. Click *Update Driver* to start the software dialog box.
8. Click *Browse my computer* for driver software.
9. Click Browse, navigate to the location on your computer where you extracted the files from the downloaded zip file, and then click the location.
10. Click OK, and then click Next.
11. Click Closed.
12. Reboot the computer.

## To Change the Com Port Assignment

1. Plug the EMCenter or EMPower into a USB port on the computer.
2. Open the Device Manager.
3. Click Ports (COM & LPT).
4. Click the name of the USB device.
5. Click the Port Settings tab.
6. Click Advanced.
7. Click COM Port Number and select the desired COM port.
8. Click OK, and then click OK.

## Other software

---

The EMCenter™ Modular RF Platform may be controlled from a computer using these software products:

- ETS-Lindgren TILE!™ (Totally Integrated Laboratory Environment)
- ETS-Lindgren EMQuest™ Data Acquisition and Analysis Software

## Maintenance

---



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



**WARNING:** Maintenance of the EMCenter is limited to external components such as cables or connectors. If you have any questions concerning maintenance, contact ETS-Lindgren Customer Service.



Clean the exterior of the cabinet using a damp cloth and mild cleaner. Always unplug the unit before cleaning.



To prevent electrical shock, do not remove cover.



Warranty may be void if the housing is opened.



If you have any questions concerning maintenance, contact ETS-Lindgren Customer Service.

## Fiber Optic Maintenance

---

Fiber optic connectors and cables can be damaged from airborne particles, humidity and moisture, oils from the human body, and debris from the connectors they plug into. Always handle connectors and cables with care, using the following guidelines.



**CAUTION:** Before performing any maintenance, disconnect fiber optic cables from the unit and turn off power.

- When disconnecting fiber optic cables, apply the included dust caps to the ends to maintain their integrity.
- Before connecting fiber optic cables, clean the connector tips and in-line connectors.
- Before attaching in-line connectors, clean them with moisture-free compressed air.
- Failure to perform these tasks may result in damage to the fiber optic connectors or cables.

## Identify CPU Card

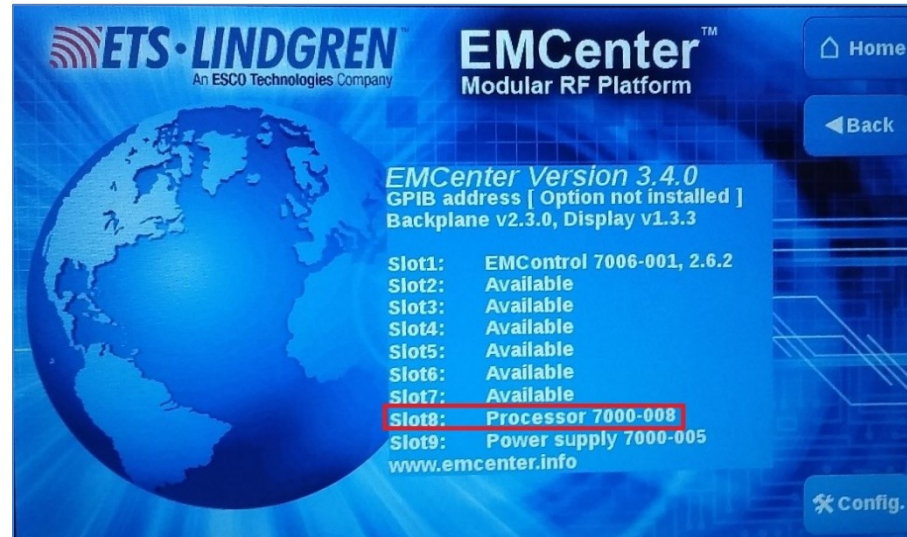
---

There are two types of CPU for the EMCenter: x86 or ARM.

It is important to know which CPU card you are using because the instructions for the GOLD update are dependent upon which chipset you have.

X86 is now in long-term support, so the version numbers will be different from the ARM. The X86 version will remain at v3.3.X, as new functionality will not be added. For example: EMSense10 is not X86 compatible.

## Software Identification



If the CPU is in an EMCenter, then you can look at the info page to identify the CPU. The processor number in slot 8 tells you the CPU type:

- X86
  - EMCENTER PROCESSOR BOARD STD (X86) = 7000-006
  - EMCENTER PROCESSOR BOARD + GPIB (X86) = 7000-007
- ARM
  - EMCENTER PROCESSOR BOARD STD (ARM) = 7000-008
  - EMCENTER PROCESSOR BOARD + GPIB (ARM) = 7000-009

## Hardware Identification

---

If you are just looking at the card without it in an EMCenter, the CPU is easily identifiable by whether it has a 9-pin serial port. As shown in the figures below, the x86 has a 9-pin serial port and the ARM does NOT have a 9-pin serial port.



*x86*



*ARM*

## Service Procedures

---

### Contacting ETS-Lindgren

---



**Note:** Please see [www.ets-lindgren.com](http://www.ets-lindgren.com) for a list of ETS-Lindgren offices, including phone and email contact information.



**Note:** ETS-Lindgren is not responsible for service on equipment that has been configured with software other than what is provided by ETS-Lindgren. Support for such configurations requires a secondary charge from ETS-Lindgren.

### Replacement and Optional Parts

---



**Note:** ETS-Lindgren may substitute a similar part or new part number with the same functionality for another part/part number. Contact ETS-Lindgren for questions about part numbers and ordering parts.

## **Sending a Component for Service**

---

For the steps to return a system or system component to ETS-Lindgren for service, see the *Product Information Bulletin* included with your shipment.

## **Calibration Services and Annual Calibration**

---

See the *Product Information Bulletin* included with your shipment for information on ETS-Lindgren calibration services.

## **Upgrade Policies**

---

Periodically, field probes are upgraded to enhance functionality. Contact ETS-Lindgren Customer Service for the upgrade status of your field probe.



## Specifications

---

### Performance Specifications

---

|                          |                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Slots:</b>            | 2 to 7 modular card slots (depends on model)                                                             |
| <b>Display:</b>          | <ul style="list-style-type: none"><li>• TFT with touchscreen</li><li>• 7.0-in WVGA (800 x 480)</li></ul> |
| <b>Processor:</b>        | 800 MHz ARM A9 CPU                                                                                       |
| <b>Memory:</b>           | 512 MB RAM, 4 GB Flash                                                                                   |
| <b>Operating System:</b> | Linux                                                                                                    |
| <b>Configuration:</b>    | Desktop or 19-in rack mountable                                                                          |

### Physical Specifications

---

|                                         |                     |
|-----------------------------------------|---------------------|
| <b>Height:</b>                          | 3U: 132 mm (5.2 in) |
| <b>Width:</b>                           | 447 mm (17.6 in)    |
| <b>Depth:</b>                           | 350 mm (13.8 in)    |
| <b>Controller Weight (approximate):</b> | 7 kg (15.4 lb)      |

### Environmental Specifications

---

|                           |                             |
|---------------------------|-----------------------------|
| <b>Temperature Range:</b> | 0°C to 40°C (32°F to 104°F) |
| <b>Relative Humidity:</b> | 10% to 90% (non-condensing) |

### Power Specifications

---

|                           |                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supply Voltage:</b>    | 115/230 VAC                                                                                                                                |
| <b>Power Consumption:</b> | <ul style="list-style-type: none"><li>• <b>Standby:</b> &lt; 1.0 W</li><li>• <b>Empty:</b> 33 W</li><li>• <b>Max load:</b> 200 W</li></ul> |
| <b>Fuses:</b>             | 2 A T                                                                                                                                      |

## Interface and Cable Specifications

---

|                    |                                                                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interfaces:</b> | <ul style="list-style-type: none"><li>• Ethernet</li><li>• GPIB (IEEE-488)</li></ul>                                                                                                       |
| <b>Connectors:</b> | <ul style="list-style-type: none"><li>• IEC Inlet</li><li>• Sub D-9</li><li>• USB-A 2.0 (2)</li><li>• USB-B 1.1</li><li>• Ethernet</li><li>• GPIB (IEEE-488)</li><li>• Interlock</li></ul> |
| <b>Cables:</b>     | <ul style="list-style-type: none"><li>• IEC power cord</li></ul>                                                                                                                           |
| <b>Interlock:</b>  | External interlock and interlocked laser outputs                                                                                                                                           |

## Appendix A: EC Declaration on Conformity

---

ETS-Lindgren Inc. declares these products to be in conformity with the following standards and provisions:

**Product Models:** **EMCenter Modular RF Platform**

**Directives:** EMC Directive 2014/30/EU  
Low Voltage Directive 2014/35/EU  
RoHS Directive: 2015/863/EU

**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.

Technical Construction Files are available upon request.