1696955 EMCenter Firmware Update Manual





Copyright, Revision Record, and Symbols

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 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 2013–2024 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, and *EMCenter*, *EMSwitch*, *EMPower*, *EMGen*, *EMControl*, *EMSense*, and *EMField* are registered trademarks of ETS-Lindgren Inc.

Revision	Description	Date
А	Initial Release.	DEC 6, 2018
в	Updated software link and added appendix of current firmware versions.	SEP 4, 2019
С	Updated software link and current version appendix.	MAR 6, 2020
D	Update for EMSense 10.	APR 15, 2020
Е	Update for EMGen.	JUL 15, 2020
F	Update for EMSense 10 and EMGen.	MAY 10, 2021
G	Update for EMGen.	JUN 10, 2021
н	Update for EMSense.	AUG 16, 2021
J	Update for EMSense 10.	SEP 15, 2021
к	Update for EMControl and EMSense.	NOV 12, 2021
L	Update for EMSense 10 and EMSwitch.	MAY 19, 2022
М	Add EMSense 40, Update for EMSense 10. New ARM System Gold update 4.1.6 (X86 deprecated).	JAN 18, 2023
N	Move all X86 instructions into the end section appendix. New Incremental needed for Gold 4.1.6 update.	MAR 23, 2023

Revision Record MANUAL, EMCenter_Firmware_Update | Part # 1696955, Rev. T

0	Fixed link for 4.1.6 Gold update download. New EMCenter System updates, Gold 4.3.2 and INC 4.3.4.	DEC 5, 2023
Р	Update for EMGen and EMPower.	JUL 15, 2024
R	Update for EMSense10/40 plug-in card and probes.	AUG 15, 2024
S	Update for EMControl and EMSense.	SEP 10, 2024
Т	Update for EMCenter System with INC 4.4.4.	SEP 30, 2024

NOTE: Indicates helpful information intended to provide tips and extended knowledge for better use of the product.



CAUTION: Denotes a risk. Failure to follow instructions could result in needing to start the procedure over from the beginning, or minor computer memory loss.



WARNING: Denotes a danger. Failure to follow instructions could result in SEVERE damage to the computer's memory or loss of files.

Table of Contents

Сору	right, I	Revi	ision Record, and Symbols	2
Table	of Co	nter	nts	4
1.	Introd	duct	tion	6
	1.1.	Ider	ntify CPU Card	6
	1.1	.1.	Software identification	6
	1.1	.2.	Hardware identification	7
	1.2.	Vers	sion Info Page	. 8
	1.3.	Mos	st Current Version Numbers List	8
2.	Incre	mer	ntal update process	11
	2.1.	Crea	ate Latest Incremental USB	11
	2.1	.1.	Download Incremental Firmware	11
	2.1	.2.	Change the Extension	11
	2.1	.3.	Copy onto USB	12
	2.2.	Inst	all Latest Incremental Update	12
3.	Lates	t Go	old v4.3.2 ARM update process	17
	3.1.	Crea	ate Gold v4.3.2 Version USB	17
	3.1	.1.	Download the Firmware	17
	3.1	.2.	Change the Extension to 7-zip	18
	3.1	.3.	Download and Install 7-Zip File Manager	18
	3.1	.4.	Extract the image from 7z file	19
	3.1	.5.	Download and Install Win32 Disk Imager	20
	3.1	.6.	Burn onto the USB	20
	3.2.	Inst	all Gold v4.3.2 Version Update	23
4.	Gold	v4. 1	I.6 ARM update process	28
	4.1.	Crea	ate Gold v4.1.6 USB	28
	4.1	.1.	Download the Firmware	28
	4.1	.2.	Change the Extension to 7-zip	29
	4.1	.3.	Download and Install 7-Zip File Manager	29
	4.1	.4.	Extract the image from 7z file	30
	4.1	.5.	Download and Install Win32 Disk Imager	31
	4.1	.6.	Burn onto the USB	31
	4.2.	Inst	all Gold v4.1.6 Update	33
5.	Resto	ore I	Previous Version and Reset Config Settings	40

5.1.	Res	tore Card	40
5.2.	Res	tore System	40
5.3.	Res	et Network Settings	. 41
5.4.	Res	et Touchscreen Calibration	. 41
DEP	REC	CATED X86 Gold v3.3.X	42
6.1.	*DE	PRECATED* Create Gold v3.3.X USB	43
6.1	.1.	Download the Firmware	43
6.1	.2.	Change the Extension to 7-zip	. 44
6.1	.3.	Download and Install 7-Zip File Manager	. 44
6.1	.4.	Extract the image from 7z file	45
6.1	.5.	Download and Install Win32 Disk Imager	46
6.1	.6.	Burn onto the USB	46
6.2.	*DE	PRECATED* Install X86 Gold v3.3.X Update	48
6.3.	*DE	PRECATED* Create Incremental USB	54
6.3	8.1.	Download Incremental Firmware	54
6.3	8.2.	Change the Extension	54
6.3	8.3.	Copy onto USB	55
6.4.	*DE	PRECATED* Install Incremental Update	55
6.5.	*DE	PRECATED* List of Version Numbers for X86 Final Update	. 56
	5.1. 5.2. 5.3. *DEP 6.1. 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.	5.1. Res 5.2. Res 5.3. Res 5.4. Res * DEPREC 6.1. *DE 6.1.1. 6.1.2. 6.1.3. 6.1.4. 6.1.5. 6.1.6. 6.2. *DE 6.3. *DE 6.3.1. 6.3.2. 6.3.3. 6.4. *DE 6.5. *DE	 5.1. Restore Card

1. Introduction

The following EMCenter document describes how to create the latest various version update keys for ARM, how to use the key to update the firmware, and how to restore a previous version of firmware. Use the EMCenter info page to find the version numbers.

As of 2023, the X86 EMCenter processor has been deprecated and will no longer receive any firmware updates. Information of the old X86 update process has been moved to the end of the document as an appendix section ***DEPRECATED* X86 Gold v3.3.X.**



CAUTION: If you are unsure of any step, please ask for help before you begin by emailing <u>software.support@ets-lindgren.com</u> or <u>Michael.Christopher@ets-lindgren.com</u>.



NOTE: The **ARM** EMCenter firmware updates **MUST** be updated in the following order to get the latest version:

- 1. Gold v.3.3.3 (Section 6.1)
- 2. Gold v.4.1.6 (Section 4.1)
- 3. Gold 4.3.2 (<u>Section 3.1</u>)
- 4. Latest incremental (Section 2.1)
- 5. Compare info page to current versions list (Section 1.3)

1.1. 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 depend upon which chipset you have.

The X86 version is now fully deprecated and will remain at v3.3.16 since it will no longer receive any firmware updates. See the *Most Current Version Numbers* <u>section 1.3</u> to see which modules ARM are compatible.

1.1.1. Software identification

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

• EMCENTER PROCESSOR BOARD STD (X86) = 7000-006

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



NOTE: As seen below, all versions 3.4.0 and above will be an ARM Processor. If the EMCenter version number is below 3.3.16 then it may be an x86.





NOTE: This image is only a representation of the EMCenter Info page and does not reflect the latest version number. See the <u>section 1.3</u> for the list of most current version numbers.

1.1.2. 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.



Figure 1: x86



Figure 2: ARM

1.2. Version Info Page

The Info page displays the version number of the EMCenter and the card versions.





NOTE: This image is only a representation of the EMCenter Info page and does not always reflect the latest version number. See the next <u>section 1.3</u> for the list of most current version numbers.

1.3. Most Current Version Numbers List

The table below shows the most current incremental version number for each EMCenter part as of *INC_2024_09_26*; see **section 2.1** for the incremental firmware download link.



CAUTION: As of 2023, there is a new Gold version for ARM only machines. The X86 EMCenter processor has been deprecated and will no longer receive any firmware updates.



NOTE: The ARM EMCenter firmware updates **MUST** be updated in the following order to get the latest version:

- 1. Gold v.3.3.3 (Section 6.1)
- 2. Gold v.4.1.6 (Section 4.1)
- 3. Gold 4.3.2 (<u>Section 3.1</u>)
- 4. Latest incremental (Section 2.1)
- 5. Compare info page to current versions list (Section 1.3)



NOTE: Be aware that versions below will vary depending on the hardware version. It is highly recommended that you keep updating beyond the numbers listed below until there are no more updates available.

If any EMCenter part is not updating in the expected way, its hardware model may not be compatible with the latest updates. Please email **software.support@ets-lindgren.com** with an image of your EMCenter info page and the attempted incremental link for further instruction.

Hardware Name	Part number(s)	Version #
EMCenter Processor CPU - ARM	7000-008, -009	4.4.4
EMCenter, Backplane	7000-008, -009	2.3.0
EMCenter, Display	7000-008, -009	1.3.3 *
EMSwitch Card	7001-001, -002,-003, -004*, -005, -011, -012, -013, -015, -021, -022	4.3.3
EMSwitch Card (50 GHz)	7001-023, -024, -025 ** ARM only	4.3.3
EMSwitch Card (67 GHz)	7001-026, -027 ** ARM only	4.3.3
EMPower Card	7002-001	5.3.3
EMPower Probe	7002-002, -004	2.6.1

EMPower Probe	7002-003, -005	2.60
EMPower Sensor ETSI	7002-006, -008	3.72
EMGen Card	7003-001	2.6.4
EMGen Card	7003-002 ** ARM only	1.2.0
EMGen Card	7003-003 ** ARM only	1.3.1
EMControl Card	7006-001	2.9.3
EMSense Card, Battery	7007-001	2.9.3
EMSense Card, Laser	7007-002	2.9.3
EMSense 10 Card	7007-200 **ARM only NOTE: EMSense 10 card will NOT update	2.8.9
	unless the probe is connected, and the LASER is ON.	
EMSense 10 Probe (ISO & HS)	unless the probe is connected, and the LASER is ON. 7007-201, -202 **ARM only NOTE: EMSense 10 probe will NOT update unless the probe is connected, and the LASER is ON.	2.10.1
EMSense 10 Probe (ISO & HS) EMSense 40 Probe	unless the probe is connected, and the LASER is ON. 7007-201, -202 **ARM only NOTE: EMSense 10 probe will NOT update unless the probe is connected, and the LASER is ON. 7007-203 **ARM only NOTE: EMSense 40 probe will NOT update unless the probe is connected, and the LASER is ON.	2.10.1
EMSense 10 Probe (ISO & HS) EMSense 40 Probe	unless the probe is connected, and the LASER is ON. 7007-201, -202 **ARM only NOTE: EMSense 10 probe will NOT update unless the probe is connected, and the LASER is ON. 7007-203 **ARM only NOTE: EMSense 40 probe will NOT update unless the probe is connected, and the LASER is ON. 7008-100	2.10.1 2.10.1 1.2.4
EMSense 10 Probe (ISO & HS) EMSense 40 Probe EMField, Supply card EMField, Amplifier board	unless the probe is connected, and the LASER is ON. 7007-201, -202 **ARM only NOTE: EMSense 10 probe will NOT update unless the probe is connected, and the LASER is ON. 7007-203 **ARM only NOTE: EMSense 40 probe will NOT update unless the probe is connected, and the LASER is ON. 7008-100 7008-001, -002, -003, -004, -005, -006, -007, -008	2.10.1 2.10.1 2.10.1 1.2.4 2.0.10

2. Incremental update process

This section describes how to create an Incremental version *INC_2024_09_26* update USB and how to install the Incremental version into the ARM EMCenter.



NOTE: If your ARM CPU is less than system version **v4.3.2**, please go to **section 3** to install the latest Gold ARM update before you can use this latest incremental.



NOTE: The ARM EMCenter firmware updates **MUST** be updated in the following order to get the latest version:

- 1. Gold v.3.3.3 (Section 6.1)
- 2. Gold v.4.1.6 (Section 4.1)
- 3. Gold 4.3.2 (<u>Section 3.1</u>)
- 4. Latest incremental (Section 2.1)
- 5. Compare info page to current versions list (Section 1.3)

2.1. Create Latest Incremental USB

2.1.1. Download Incremental Firmware

To get the latest version of the EMCenter incremental loader, copy the following link into your internet browser (works best with <u>**Chrome**</u>) and save the file to your computer in a known location:

http://www.etslindgren.com/WinCalFTP/vendorAndThirdparty/Incremental_202409260939 _28c98353b17d6df7cb69bb7774839a09a3377a61.tar.gz.zip



NOTE: This is a large file, so try to use a fast internet connection and plan up to 30 minutes to get the file. Pay attention to what directory you save the download into because you will need that information in following steps.

2.1.2. Change the Extension

EXTRACT ALL from the .ZIP file to obtain an .ENC file.



CAUTION: The incremental file MUST be .ENC for the upload to work properly. Some browsers (such as Edge) download the wrong file type; we suggest using <u>Chrome</u>. If the file inside the .ZIP folder is NOT an .ENC file (such as a .GZ file), please try downloading with a different browser.

2.1.3. Copy onto USB

Insert the USB into your computer and pay attention to which driver letter it is using. Copy the .ENC incremental file onto the FAT32 USB using the Windows File Explorer.

Once the Windows File Explorer has finished copying the program onto the USB, you can close the program and eject the USB out of your laptop.

2.2. Install Latest Incremental Update

GPIB		
GPIB address A: 7	1 Up 4 Down	[] Home
GPIB address B: Disabled	Up Down	
2090 Emulation mode:	Disabled	
Network settings:		
IP address: 192.168.9.253	Change • Static • DHCP	
Subnet mask: 255.255.252.0	Change	
Gateway address: 192.168.8.1	Change	
Generic ID Number: 0.192.8.154.135.41.	.74.87	Next 1/2

1. Take a picture of the CONFIG page that has the GPIB and Network settings:



CAUTION: Updating the EMCenter replaces the entire contents of the "hard drive" of the EMCenter. Therefore, the TCP/IP network and/or GPIB address settings are completely reset to default.

- 2. Unplug unrelated USB, hard drives, or memory cards to prevent confusion and accidental deletion of data.
- 3. Turn ON the EMCenter and wait until it gets to the main screen.



WARNING: During the following process, it is critical that you do NOT unplug, power down, or restart the EMCenter until specifically instructed to do so later in the instructions. Losing power during these steps can seriously damage the EMCenter.

4. 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.



- a. Once you have downloaded the incremental update, you may remove the USB.
- b. REBOOT, sometimes the new incremental update does not appear available until the power cycles completely.
- 5. Available updates to select are white and show the new update version. Any slot NOT selected (greyed out) will NOT be updated. You must update the system and the card slots separately.



c. Once you have updated the system first, reboot. The slot updates will now be available by going to the second Config page. Selected slots will be highlighted white, and then press the **Update Selected** button.





NOTE: Some updates will NOT show unless the Plug-in card is connected to the reciprocating instrument and that instrument is ON. For example, the EMSense 10 card will NOT update unless the probe is connected, and the LASER is ON.

	Incremental version 2020-03	3-25 11:52
	Application:	
	Current: 3.5.5	
	Siot(s)	
	보: 7005-001 Current: 2,5.3 Available: None	2: 7007-200/-201 Current: 2.0.7 / 1.2.7 / 2.1.0 Available: 2.3.0 / 1.3.0 / 2.3.0
SFR ON	3: Available Current: Available: None	4: Available Current: Available: Hone
	5: Available Current: Available: none	0: Available Currens Available: iJone
	7: Available Current: Available: Hone	Backpanel Currenc 2.3.0

6. Once you select what to update, if applicable tap UPDATE SELECTED. The following screen is the final confirmation before the update happens. Select PROGRAM if you wish to proceed with the update.



7. The info screen should now have the newly installed EMCenter version and the processor in slot 8 will have a ", 1" or a ", 2" after the model number.



3. Latest Gold v4.3.2 ARM update process

This section describes how to create the latest **Gold update** USB for an ARM EMCenter.



NOTE: You must have at least the **Gold v4.1.6** version on your EMCenter or the **latest GOLD v4.3.2** version update will **not** work. **This update will only work with ARM processors as the X86 is now deprecated.**



NOTE: The ARM EMCenter firmware updates **MUST** be updated in the following order to get the latest version:

- 1. Gold v.3.3.3 (Section 6.1)
- 2. Gold v.4.1.6 (Section 4.1)
- 3. Gold 4.3.2 (Section 3.1)
- 4. Latest incremental (Section 2.1)
- 5. Compare info page to current versions list (Section 1.3)



WARNING: It is imperative that you read this entire section ALL the way through before you begin. Mistakes could potentially crash your computer or the EMCenter.



CAUTION: This process has only been tested on Windows PCs. If you need a new Gold USB created and do NOT have Window PC to create it yourself, please contact ETS-Lindgren for further assistance.

3.1. Create Gold v4.3.2 Version USB

3.1.1. Download the Firmware

To get the latest version of the EMCenter firmware, copy the following link into your internet browser (works best with <u>Chrome</u>) and save the file to your computer:

http://www.etslindgren.com/WinCalFTP/vendorAndThirdparty/EMCenter_4.3.2.zip



NOTE: This is a large file, so try to use a fast internet connection and plan up to an hour to get the file.



CAUTION: The download pop-up bar will ask you to open OR save; you must SAVE the .ZIP download to a known location. If you try to OPEN it, then you will get a compressed zip error message.

3.1.2. Change the Extension to 7-zip

Go to the location in you saved the file in and change the extension to be .7z.

A warning will appear asking for confirmation of the change in the file name extension; click YES.





Note: The file is downloaded as a .ZIP file, because .7z files will not download directly. Even though the extension says .ZIP, the file is really a 7-zip file and must be renamed with a .7z extension to be usable.

3.1.3. Download and Install 7-Zip File Manager

Once you fix the file extension, you will need to extract an image from the .7z file. To do this, you need to install a free program for your computer called 7-Zip.

Go to the website <u>https://www.7-zip.org/download.html</u> and download the most current version of the .EXE for Windows.

7 ZIP	Download 2	7-Zip 23.(Download 01 (2023-06-20):	
	Link	Туре	System	Description
Home 7z Format	Download	.exe	64-bit Windows x64	
LZMA SDK	<u>Download</u>	.exe	32-bit Windows x86	7-Zip for Windows
Download FAO	Download	.exe	64-bit Windows arm64	

Run the 7zXXXX.exe file and select INSTALL.

🖬 7-Zip 23.01 (x64) Setup	×
Destination folder:	
C:\Program Files\7-Zip\	
Install	Cancel

3.1.4. Extract the image from 7z file

Once 7-Zip is downloaded, search for and open the program called 7-Zip File Manager. Then navigate to the .7z file and double click the file to open it.

C:\Users\Ijburris\Downloads\						
<u>F</u> ile <u>E</u> dit <u>V</u> iew F <u>a</u> vor	rites <u>T</u> ools <u>H</u> elp					
🕂 🗕 🗸	🕩 🔿 🗙 i					
Add Extract Test	Copy Move Delete Info					
C:\Users\ljburris\Downloads\						
Name	Size Modified	Created				
🔊 desktop.ini	282 2022-10-25 13:04	2022-10-25				
EMCenter_4.3.2.7z	321 639 599 2023-11-07 10:01	2023-11-07				

As shown below, the .7z file will contain one file with an installer .IMG; Extract that .IMG to a known location on your computer and select OK.

C:\Users\Ijburris\Downloads\EMCenter_4.3.2.7z\							
<u>F</u> ile <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp							
-+ - ▼ → ★ i							
Add Extract Test Copy Move Delete Info							
C:\Users\ljburris\Downloads\EMCenter_4.3.2.7z							
Name Size Packed Size Modified							
installer_4_3_2.img	1 520 435 2	321 639 463	2023-11-01 13:00				

Сору		_		×
Copy to: C:\Users\ jburris\Downloads\			~	
Files: 1 (1520435200bytes) C:\Users\ljburris\Downloads\EMCenter_4.3.2.7z\ installer_4_3_2.img	ОК		Cancel	

3.1.5. Download and Install Win32 Disk Imager

Please use the link below to download a program called Win32 Disk Imager using the default settings. This program writes the new firmware for the EMCenter onto the USB. This download can take a few minutes.

http://sourceforge.net/projects/win32diskimager/files/latest/download



3.1.6. Burn onto the USB

Insert the USB into your computer and pay attention to which driver letter it is using. If any files are still on the USB, they will be completely erased before the USB is turned into the update key.

📚 Win32 Disk Imager - 1.0	—		×
Image File C:/Users/ljburris/Downloads/installer_4_3_2.img	2	Devic [D:\]	e T
Hash None Generate Copy			
Read Only Allocated Partitions Progress			
Cancel Read Write Ve	erify Only	Ex	it

To start, run the program **Win32DiskImager.exe**. Use the image above for the following steps:

- a. Click the blue folder to select the image to be burned (BLUE box) and select the .IMG file that you extracted with the 7z program (GREEN box).
- b. Select the disk drive letter (YELLOW box) of the USB key that will be overwritten.



WARNING: This next step can COMPLETELY ERASE the drive you select. There is NO RECOVERY. If you are not sure what to do, please email <u>software.support@ets-lindgren.com</u> before proceeding.

c. Click the Write button (RED box). You will get a last warning about the finality of this process, and then select YES to continue. This process will take a few minutes.





WARNING: If ANY popup asks you to "format the drive," you MUST select CANCEL and X out of the box. Formatting the disk will corrupt the firmware and you will have to Burn the firmware again with a new USB. Repeat this if any of the following popups appear until you get to part D.

	Locatio	n is not available	Х
Microsoft Windows	\otimes	D\\ is not accessible.	
You need to format the disk in drive D: before you can use it.		The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is not corrupted.	
Do you want to format it?			
Format disk Cancel		ОК	
	Locatio	n is not available	×
Microsoft Windows	\mathbf{X}	E:\ is not accessible.	
Microsoft Windows Xou need to format the disk in drive E: before	8	E:\ is not accessible. The volume does not contain a recognized file system.	
Microsoft Windows You need to format the disk in drive E: before you can use it.	8	E:\ is not accessible. The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is not corrupted.	
Microsoft Windows X You need to format the disk in drive E: before you can use it. Do you want to format it?	8	E:\ is not accessible. The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is not corrupted.	

d. Once the process is done, a popup will inform you that the "Write was successful." Select OK, close all the windows using the X in the right-hand corner, and eject the USB out of your laptop.

👒 Win32 Disk Ima	ger - 1.0	_		\times
Image File C:/Users/Ijburris/Dov	vnloads/installer_4_3_2.im	g 📔	vic vic	e •
Hash	Somplete - 1.0	×		
None Gener	Write Succe	essful.		
Read Only Allocat	ОК			
Cancel F	tead Write	Verify Only	Ex	it
Done.			06:44/0	6:44



Note: This USB is now only formatted to work on the EMCenter and will throw a format error any time you try to use it on a PC.

3.2. Install Gold v4.3.2 Version Update



WARNING: This update will completely overwrite the processor and you will not be able to go back to your previous version with Restore System mentioned in section 5.2.

8. Take a picture of the CONFIG page that has the GPIB and Network settings:

GPIB GPIB address A: 7	1 Up	A Home
GPIB address B: Disabled	מעניגל קנ	
2090 Emulation mode:	Disabled	
Network settings:		
IP address: 192.168.9.253	Change • Static • DHCP	
Subnet mask: 255.255.252.0	Change	
Gateway address: 192.168.8.1	Change	
Generic ID Number: 0.192.8.154.135.41.	.74.87	Next 1/2



CAUTION: Updating the EMCenter replaces the entire contents of the "hard drive" of the EMCenter. Therefore, the TCP/IP network and/or GPIB address settings are completely reset to default.

- 9. Turn OFF the EMCenter and let it completely power down. Turn off the AC or unplug the mains power on the back to make sure it is powered down completely.
- 10. Unplug unrelated USB, hard drives, or memory cards to prevent confusion and accidental deletion of data.
- 11. Insert the USB installer key with the main firmware on it into one of the CPUs USB ports on the back of the EMCenter.



NOTE: A typical issue is that one USB port is functional, and the other is not; therefore, if the key does not register on the 1st port, then try the 2nd port.

- 12. Turn ON the EMCenter to start the update. The system will automatically install the firmware from the USB disk on to the EMCenter.
 - a. There will be a few seconds delay where the screen is just black, and then the screen will look like below:

543979] usb 1-1.1.5: new full-speed USB device number 8 using ci_hdrc 66667501 ftdi_sio 1-1.1.5: Number of endpoints 2 66765611 usb 1-1.1.5: Number of endpoints 2 66775281 usb 1-1.1.5: Number of endpoints 2 66775281 usb 1-1.1.5: Endpoint 1 MaxPacketSize 64 7.6689561 usb 1-1.1.5: Endpoint 2 MaxPacketSize 64 7.6689561 usb 1-1.1.5: Fill USB Serial Device converter now attached to ttyUSB3 7.6695631 sci 0-0:0:0: Direct-Access General UDisk 5.00 PQ: 0 ANSI: 2 7.6695631 sci 0-0:0:0: Isdal 15769600 512-byte logical blocks: (8.07 GB/7.51 GiB) 17.819981 sd 0-0:0:0: Isdal Mrite Protect is off 17.819981 sd 0-0:0:0: Isdal No Caching mode page found 17.8224191 sd 0:0:0:0: Isdal Assuning drive cache: write through 17.822491 sd 0:0:0:0: Isdal Assuning drive cache: write through 17.8294921 sd 0:0:0:0: Isdal Assuning drive cache: write through 17.809981 sd 0:0:0:0: Isdal Assuning drive cache: write through 17.8099981 sd 0:0:0:0: Isdal Assuning drive cache: write through 17.900511 sd 0:0:0:
Please mates monetagess

b. Next you should see the installation progress bar:



c. Then finally the kernel will start installing and the black text at the bottom will slowly move upward.





CAUTION: If the screen ever has the text fade and the screen stays frozen for longer than 7 minutes, turn off the EMCenter and restart it with the update USB still inserted. Let the update run again until the screen follows the same process as step 5 and ends with the step 6 screen.

13. **DO NOT turn off the EMCenter until you see the following screen.** Once you switch OFF the EMCenter, you can remove the USB installer.



14. The first time you boot the EMCenter after updating, it will automatically run the touchscreen calibration sequence.



15. Go to the Config page and double check that the Network settings are still the same as your original picture before the update in step 1.

GPIB				
GPIB address A: 7	🕆 Up	4 Down		[] Home
GPIB address B: Disabled	Up .			
2090 Emulation mode:	Dis	abled		
Network settings:				
IP address: 192.168.9.253	Change	• Static	• DHCP	
Subnet mask: 255.255.252.0	Change			
Gateway address: 192.168.8.1	Change			
Generic ID Number: 0.192.8.154.135.41.	74.87			Next 1/2

16. The info screen should now have the new GOLD EMCenter version as 4.3.2 and the processor in slot 8 will have a ", 1" or a ", 2" after the model number.



4. Gold v4.1.6 ARM update process

This section describes how to create a **Gold v4.1.6** version update USB for an ARM EMCenter.



NOTE: You must have at least the **Gold v3.3.X** version on your EMCenter or the **Gold v4.1.6** version update will **not** work. **This update will only work with ARM processors as the X86 is now deprecated.**



NOTE: The ARM EMCenter firmware updates **MUST** be updated in the following order to get the latest version:

- 1. Gold v.3.3.3 (Section 6.1)
- 2. Gold v.4.1.6 (Section 4.1)
- 3. Gold 4.3.2 (Section 3.1)
- 4. Latest incremental (Section 2.1)
- 5. Compare info page to current versions list (Section 1.3)



WARNING: It is imperative that you read this entire section ALL the way through before you begin. Mistakes could potentially crash your computer or the EMCenter.



CAUTION: This process has only been tested on Windows PCs. If you need a Gold v4.1.6 USB created and do NOT have Window PC to create it yourself, please contact ETS-Lindgren for further assistance.

4.1. Create Gold v4.1.6 USB

4.1.1. Download the Firmware

To get the latest version of the EMCenter firmware, copy the following link into your internet browser (works best with <u>Chrome</u>) and save the file to your computer:

http://www.etslindgren.com/WinCalFTP/vendorAndThirdparty/emcenter_4.1.6.zip



NOTE: This is a large file, so try to use a fast internet connection and plan up to an hour to get the file.



CAUTION: The download pop-up bar will ask you to open OR save; you must SAVE the .ZIP download to a known location. If you try to OPEN it, then you will get a compressed zip error message.

4.1.2. Change the Extension to 7-zip

Go to the location in you saved the file in and change the extension to be .7z.

A warning will appear asking for confirmation of the change in the file name extension; click YES.





Note: The file is downloaded as a .ZIP file, because .7z files will not download directly. Even though the extension says .ZIP, the file is really a 7-zip file and must be renamed with a .7z extension to be usable.

4.1.3. Download and Install 7-Zip File Manager

Once you fix the file extension, you will need to extract an image from the .7z file. To do this, you need to install a free program for your computer called 7-Zip.

Go to the website <u>https://www.7-zip.org/download.html</u> and download the most current version of the .EXE for Windows.

7 ZIP	Download Download 7-Zip 23.01 (2023-06-20):						
	Link	Туре	System	Description			
Home 7z Format	<u>Download</u>	.exe	64-bit Windows x64				
LZMA SDK	Download	.exe	32-bit Windows x86	7-Zip for Windows			
Download FAQ	<u>Download</u>	.exe	64-bit Windows arm64				

Run the 7zXXXX.exe file and select INSTALL.

😰 7-Zip 23.01 (x64) Setup	×
Destination folde	er:	
C:\Program File	s\7-Zip\	
	Install	Cancel

4.1.4. Extract the image from 7z file

Once 7-Zip is downloaded, search for and open the program called 7-Zip File Manager. Then navigate to the .7z file and double click the file to open it.

C:\Users\Ijburris\Downloads\								
<u>F</u> ile <u>E</u> dit <u>V</u> iew F <u>a</u> vo	rites <u>T</u> ools <u>H</u> elp							
🕂 🗕 🗸	🕪 🔿 🗙 i							
Add Extract Test	Copy Move Delete Info							
🤌 🕂 C:\Users\Ijburri	s\Downloads\							
Name	Size Modified							
emcenter_4.1.6.7z	135 079 369 2023-11-14 10:10							

As shown below, the .7z file will contain one file with an installer .IMG; Extract that .IMG to a known location on your computer and select OK.

C:\Users\Ijburris\Downloads\emcenter_4.1.6.7z\								
<u>F</u> ile <u></u>	<u>dit V</u> iev	w F <u>a</u> vo	orites]	ools <u>F</u>	<u>l</u> elp			
÷	-	\checkmark	•	-	×	ī		
Add	Extract	Test	Сору	Move	Delete	Info		
] ه] C:\User	s\ljburr	is\Dowr	nloads\e	mcenter	_4.1.6.7	z∖	
Name				Size	Packe	d Size	Modified	
💿 Ins	taller_4_1	_6.img	179	357 696	135 0	79 233	2023-01-1	12

Сору	_		×
Copy to: C:\Users\Ijburris\Downloads\ Files: 1 (179 357 696 bytes)		~	
C:\Users\Ijburris\Downloads\emcenter_4.1.6.7z\ Installer_4_1_6.img			
ок		Cancel	

4.1.5. Download and Install Win32 Disk Imager

Please use the link below to download a program called Win32 Disk Imager using the default settings. This program writes the new firmware for the EMCenter onto the USB. This download can take a few minutes.

http://sourceforge.net/projects/win32diskimager/files/latest/download



4.1.6. Burn onto the USB

Insert the USB into your computer and pay attention to which driver letter it is using. If any files are still on the USB, they will be completely erased before the USB is turned into the update key.

👒 Win32 Disk Imager - 1.0	_		×
Image File C:/Users/ljburris/Downloads/Installer_4_1_6.img			Device [D:\] ▼
Hash None Generate Copy			
Read Only Allocated Partitions Progress			
Cancel Read Write	/erify Or	ıly	Exit

To start, run the program **Win32DiskImager.exe**. Use the image above for the following steps:

- a. Click the blue folder to select the image to be burned (BLUE box) and select the .IMG file that you extracted with the 7z program (GREEN box).
- b. Select the disk drive letter (YELLOW box) of the USB key that will be overwritten.



WARNING: This next step can COMPLETELY ERASE the drive you select. There is NO RECOVERY. If you are not sure what to do, please email <u>software.support@ets-lindgren.com</u> before proceeding.

c. Click the Write button (RED box). You will get a last warning about the finality of this process, and then select YES to continue. This process will take a few minutes.





WARNING: If ANY popup asks you to "format the drive," you MUST select CANCEL and X out of the box. Formatting the disk will corrupt the firmware and you will have to Burn the firmware again with a new USB. Repeat this if any of the following popups appear until you get to part D.

	Location is not available	×
Microsoft Windows	D:\ is not accessible.	
You need to format the disk in drive D: before you can use it.	The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is corrupted.	not
Do you want to format it?		
Format disk Cancel	0	K
	Location is not available	×
Microsoft Windows	E:\ is not accessible.	
You need to format the disk in drive E: before		
you can use it.	The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is r corrupted.	lot
you can use it. Do you want to format it?	The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is r corrupted.	not

d. Once the process is done, a popup will inform you that the "Write was successful." Select OK, close all the windows using the X in the right-hand corner, and eject the USB out of your laptop.

👒 Win32 Disk Imager -	1.0	—		\times
Image File			-	ce
C:/Users/ljburris/Downloa	ds/Installer_4_1_6.img		در 🖻	(j 👻
Hash	Complete - 1.0	×		
None Genera	Write Success	ful.		
Read Only Allocate Progress	ОК			
Cancel Read	Write	/erify Only	Ð	kit
Done.			00:51/0	0:51

4.2. Install Gold v4.1.6 Update



WARNING: This update will completely overwrite the processor and you will not be able to go back to your previous version with Restore System mentioned in section 5.2.

1. Take a picture of the CONFIG page that has the GPIB and Network settings:

GPIB address A: Option not installed	Üp	Down	🏦 Home
GPIB address B: Disabled	Üμ	nvod	🗢 Back
2090 Emulation mode:	Dis	sibled	🕈 Info.
Network settings:			
IP address: 192.168.8.10	Change	• Static • DHCP	
Subnet mask: 255.255.252.0	Change		
Gateway address 192.168.8.1			
Generic ID Number: 0.6.213.38.0.248.74			Next 1/2



CAUTION: Updating the EMCenter replaces the entire contents of the "hard drive" of the EMCenter. Therefore, the TCP/IP network and/or GPIB address settings are completely reset to default.

- 2. Turn OFF the EMCenter and let it completely power down. Turn off the AC or unplug the mains power on the back to make sure it is powered down completely.
- 3. Unplug unrelated USB, hard drives, or memory cards to prevent confusion and accidental deletion of data.
- 4. Insert the USB installer key with the main firmware on it into one of the CPUs USB ports on the back of the EMCenter.



NOTE: A typical issue is that one USB port is functional, and the other is not; therefore, if the key does not register on the 1st port, then try the 2nd port.

- 5. Turn ON the EMCenter to start the update. The system will automatically install the firmware from the USB disk on to the EMCenter.
 - a. There will be a few seconds delay where the screen is just black, and then the screen will look like below:

5439791 usb 1-1.1.5: new full-speed USB device number 8 using ci_hdrc 6667501 ftdi_sio 1-1.1.5: new full-speed USB Serial Device converter detected .6795611 usb 1-1.1.5: Detected FT232RL .6740821 usb 1-1.1.5: Endpoint 1 MaxPacketSize 64 2.6808681 usb 1-1.1.5: Endpoint 1 MaxPacketSize 64 2.6808681 usb 1-1.1.5: Endpoint 2 MaxPacketSize 64 2.6809561 usb 1-1.1.5: Findpoint 2 MaxPacketSize 64 2.7.810951 sd 0:0:0:0: Isdal Mice Caches usite through 2.822471 sd 0:0:0:0: Isdal Mice Caching mode page found 2.8809621 sd 0:0:0:0: Isdal Assuming drive cache: write through 2.8809621 sd 0:0:0:0: Isdal Assuming drive cache: write through 2.8809621 sd 0:0:0:0: Isdal Assuming drive cache: write through 2.8809621 sd 0:0:0:0: Isdal Assuming drive cache: write through 2.8809521 sd 0:0:0:0: Isdal Assuming drive cache: write through 2.8909511 sd 0:0:0:0: Isdal Assuming drive cache: write through 2.9509511 EXT3-fs (sda2): using internal journal 2.9509512 EXT3-fs (sda2): mounted filesystem with ordered data mode 2.9509512 EXT3-fs (sda2): mounted filesystem with ordered data mode 2.9509512 EX
Trans Marri Montright

b. Next you should see the installation progress bar:



c. Then finally the kernel will start installing and the black text at the bottom will slowly move upward.





CAUTION: If the screen ever has the text fades from white to blank blue and the screen stays frozen for longer than 10 minutes, turn OFF the EMCenter and restart it with the update USB still inserted.







The v4.1.6 update may need to run until the screen freezes and reboot up to 3 times before the update shows the screen shown in step 6.

6. **DO NOT turn off the EMCenter until you see the following screen.** Once you switch OFF the EMCenter, you can remove the USB installer.



7. The first time you boot the EMCenter after updating, it will automatically run the touchscreen calibration sequence.



8. Go to the Config page and double check that the Network settings are still the same as your original picture before the update in step 1.

PIB address A: Option not installed	Up	Down	A Hom
GPIB address B: Disabled	Up	Down	Back
2090 Emulation mode:	Dist	doled	🕈 Info.
Network settings: IP address: 192.168.8.10	Change	• Static • DHCF	
Network settings: IP address: 192.168,8.10 Subnet mask: 255,255.252.0	Change Change	• Static • DHCP	
Network settings: IP address: 192.168,8.10 Subnet mask: 255,255.252.0 Gateway address 192.168.8.1	Change Change Change	• Static • DHCP	

9. The info screen should now have the EMCenter version as 4.1.6 and the processor in slot 8 will have a ", 1" or a ", 2" after the model number.

THE SECTION OF THE SE	EMCenter TM Modular RF Platform	△ Home
EA Ba	ACenter Version 4.1.6 IB address [Option not instailed] ckplane v2.3.0, Display v1.3.3	
	bt1: EMSense 7007-001, 2.7.1 bt2: Available bt3: EMSense 7007-001, 2.7.1 bt4: EMSwitch 7001-021/B, 4.3.2 bt5: EMControl 7006-001, 2.7.1 bt6: Available ot6: Available ot7: Available	
SI	ot8: Processor 7000-008, 1 ot9: Power supply rood-oos ww.emcenter.info	* Setup

5. Restore Previous Version and Reset Config Settings

5.1. Restore Card

From the home page, select the slot number of the card you wish to restore. Next to software version, there is an option to Restore Embedded Software:

Slot number:	1	Port		A Home
Device number:	1.128.254.133.23.0.0.187			Gack
Device name:	EMControl 7006-001	Customize device name	Restore default device name	1 info.
Device type:	EMControl 7006-001			
Software version:	2.6.3	Restore Embe	dded software	
Additional	information:			

5.2. Restore System

From the home page, go to the second Config Page. Next to the software update, there is an option to Restore with the previous version number installed:



5.3. Reset Network Settings

NOTE: The firmware updates have a known side effect of resetting the network settings and the touchscreen calibration.

Go to the Config page and double check that the Network settings are still the same as your original picture before the update.



5.4. Reset Touchscreen Calibration

Only reset the touchscreen calibration as needed. To recalibrate, go to the second Config page and select Calibrate Screen. You can also send the command CALIBRATE\n over the Ethernet, GPIB, or USB command channel using NI MAX to start a touchscreen calibration process.

Touchscreen Calibration:	Calibrate Screen	A Home
Laser Protection Code:	Change	Back
Backplane Firmware:	Update	P Info.
Software update:	Update Restore	

6. *DEPRECATED* X86 Gold v3.3.X



CAUTION: The X86 EMCenter processor has been deprecated and will no longer receive any firmware updates beyond the *INC_2020_04_07* update.

This section describes how to create a **GOLD v3.3.X** version update USB and how to install the Gold v3.3.X version onto the EMCenter. The Gold **v3.3.X** version for **X86** will update to **3.3.0** and **ARM** will update to **3.3.3**.

This section also describes how to create an Incremental version update USB and how to install the Incremental version into the X86 EMCenter. At the end of the section will be the list that shows the final incremental version number for each EMCenter part as of *INC_2020_04_07*.



CAUTION: If any EMCenter part is not updated in the expected way, its hardware model may not be compatible with the latest updates. Please email <u>software.support@ets-lindgren.com</u> with an image of your EMCenter info page and the attempted incremental link for further instruction.

6.1. *DEPRECATED* Create Gold v3.3.X USB



NOTE: If your version number is greater than is v3.3.0 for X86 or v3.3.3 for ARM, then you do NOT need to create a Gold update USB.



NOTE: The ARM EMCenter firmware updates **MUST** be updated in the following order to get the latest version:

- 1. Gold v.3.3.3 (<u>Section 6.1</u>)
- 2. Gold v.4.1.6 (Section 4.1)
- 3. Gold 4.3.2 (<u>Section 3.1</u>)
- 4. Latest incremental (Section 2.1)
- 5. Compare info page to current versions list (Section 1.3)



WARNING: It is imperative that you read this entire section ALL the way through before you begin. Mistakes could potentially crash your computer or the EMCenter.



CAUTION: This process has only been tested on Windows PCs. If you need a Gold v3.3.X USB created and do NOT have Window PC to create it yourself, please contact ETS-Lindgren for further assistance.

6.1.1. Download the Firmware

To get the latest version of the EMCenter firmware, copy the following link into your internet browser (works best with **<u>Chrome</u>**) and save the file to your computer:

http://www.etslindgren.com/WinCalFTP/vendorAndThirdparty/emcenter_3.3.3.zip



NOTE: This is a large file, so try to use a fast internet connection and plan up to an hour to get the file.



CAUTION: The download pop-up bar will ask you to open OR save; you must SAVE the .ZIP download to a known location. If you try to OPEN it, then you will get a compressed zip error message.

6.1.2. Change the Extension to 7-zip

Go to the location in you saved the file in and change the extension to be .7z.

A warning will appear asking for confirmation of the change in the file name extension; click YES.

Rename	2
	If you change a file name extension, the file might become unusable. Are you sure you want to change it?
	Yes No



Note: The file is downloaded as a .ZIP file, because .7z files will not download directly. Even though the extension says .ZIP, the file is really a 7-zip file and must be renamed with a .7z extension to be usable.

6.1.3. Download and Install 7-Zip File Manager

Once you fix the file extension, you will need to extract an image from the .7z file. To do this, you need to install a free program for your computer called 7-Zip.

Go to the website <u>https://www.7-zip.org/download.html</u> and download the most current version of the .EXE for Windows.

Download 7-Zip 18.05 (2018-04-30) for Windows:				
Home	Link	Туре	Windows	
7z Format	Download	.exe	32-bit x86	7-Zip for 32-bit Windows
LZMA SDK Download	Download	.exe	64-bit x64	7-Zip for 64-bit Windows

Run the 7zXXXX.exe file and select INSTALL.

2 7-Zip 19.00 Setup	×
Destination folder:	
C:\Program Files (x86)\7-Zip\	
Install	ancel

6.1.4. Extract the image from 7z file

Once 7-Zip is downloaded, search for and open the program called 7-Zip File Manager. Then navigate to the .7z file and double click the file to open it.

C:\Users\ljburris\Downloads\					
File Edit View Favo	rites Tools H	elp			
🕂 🗖 🗸	••	🗙 i			
Add Extract Test	Copy Move	Delete Info			
C:\Users\Ijburris\Downloads\					
Name	Size	Modified	Created	Comment	Folders
emcenter_3.3.3.7z	582 <mark>8</mark> 03 302	2019-12-18	2019-12-18		

As shown below, the .7z file will contain one file with an installer .IMG; Extract that .IMG to a known location on your computer and select OK.





6.1.5. Download and Install Win32 Disk Imager

Please use the link below to download a program called Win32 Disk Imager using the default settings. This program writes the new firmware for the EMCenter onto the USB. This download can take a few minutes.



http://sourceforge.net/projects/win32diskimager/files/latest/download

6.1.6. Burn onto the USB

Insert the USB into your computer and pay attention to which driver letter it is using. If any files are still on the USB, they will be completely erased before the USB is turned into the update key.

👒 Win32 Disk Imager - 1.0	—		×
Image File C:/Users/Ijburris/Downloads/installer_3_3_3.img		2	Device [D:\] ▼
Hash None Generate Copy			
Read Only Allocated Partitions			
Progress			
Cancel Read Write V	erify Onl	у	Exit

To start, run the program **Win32DiskImager.exe**. Use the image above for the following steps:

- a. Click the blue folder to select the image to be burned (BLUE box) and select the .IMG file that you extracted with the 7z program (GREEN box).
- b. Select the disk drive letter (YELLOW box) of the USB key that will be overwritten.



WARNING: This next step can COMPLETELY ERASE the drive you select. There is NO RECOVERY. If you are not sure what to do, please email <u>software.support@ets-lindgren.com</u> before proceeding.

c. Click the Write button (RED box). You will get a last warning about the finality of this process, and then select YES to continue. This process will take a few minutes.





WARNING: If a popup asks you to "format the drive," you MUST select CANCEL. Formatting the disk will corrupt the firmware and you will have to Burn the firmware again with a new USB. d. Once the process is done, a popup will inform you that the "Write was successful." Select OK, close all the windows using the X in the right-hand corner, and eject the USB out of your laptop.

Image File Device C:/Users/ljburris/Downloads/installer_3_3_3.img Image File Image File Hash Image Complete - 1.0 Image File Image File Hash Image Complete - 1.0 Image File Image File None Generation Image Write Successful. Image File Read Only Allocate OK Image File Image File Progress Image Complete - 1.0 Image File Image File Cancel Read Write Verify Only Exit	👒 Win32 Disk Imager - 1.0 —	
Hash Complete - 1.0 X None Genera Write Successful. Read Only Allocate OK Progress Cancel Read Write Verify Only Exit	Image File C:/Users/ljburris/Downloads/installer_3_3_3.img	Device
Read Only Allocate OK Progress OK Cancel Read Write Verify Only Exit	Hash Complete - 1.0 X	
Cancel Read Write Verify Only Exit	Read Only Allocate OK OK	
Dono 03:17/03:17	Cancel Read Write Verify	Only Exit

6.2. *DEPRECATED* Install X86 Gold v3.3.X Update

NOTE: You will need a USB keyboard to access the BIOS settings.

1. Take a picture of the CONFIG page that has the GPIB and Network settings:





CAUTION: Updating the EMCenter replaces the entire contents of the "hard drive" of the EMCenter. Therefore, the Config Page settings are completely reset to default.

- 2. Turn OFF the EMCenter and let it completely power down. Turn off the AC or unplug the mains power on the back to make sure it is powered down completely.
- 3. Unplug unrelated USB, hard drives, or memory cards to prevent confusion and accidental deletion of data.
- 4. Insert the USB installer key with the main firmware on it into one of the CPUs USB ports on the back of the EMCenter.



NOTE: A typical issue is that one USB port is functional, and the other is not; therefore, if the key does not register on the 1st port, then try the 2nd port.

- 5. Plug in a USB keyboard. Turn ON the EMCenter while repeatedly pressing the DEL key to take you to the BIOS.
- 6. Navigating the BIOS: To go forward in the directory or select a choice, use the ENTER key. To go back up to the main menu of the directory, use the ESC key.
- 7. Go to the Main menu and make sure the System Time and System Date are set to the current time and date.



CAUTION: A typical error can occur if the EMCenter date/time does not match the connected computer's date/time.

				BIOS SE	TUP UTILITY
Ma	in Ad	lvanced	PCIPnP	Boot	Security
S	ystem Ov	erview			
	Processo Vortex86 Speed	r DX A9121 :800MHz			
	System Size Speed	Memory :256MB :266MH	z		
	System System	n Time n Date		(15: Tue	44:20] 12/05/2017]

8. Go to the Advanced menu, then IDE Configuration, and set the Hard Disk Delay to Disabled.

B	IOS SETUP UTILITY
Advanced Management	
IDE Configuration	
OnBoard PCI IDE Controller	[Primary]
 Primary IDE Master Primary IDE Slave 	[Hard Disk] [Not Detected]
Hard Disk Write Protect IDE Detect Time Out (Sec) ATA(PI) 80Pin Cable Detection IDE Operate Mode PCI IDE BusMaster Primary IDE Pin Select Hard Disk Delay Standard IDE Compatible	[Disabled] [35] n [Host & Device] [Legacy Mode] [Enabled] [Parallel IDE] [Disabled] [Disabled]

9. Go to the PCIPnP menu and set IRQ11 to Reserved.



10. While still under the PCIPnP menu, go to PCI Configuration and change ALL the settings on that page to match the picture below:

BIO PCIPnP	DS SETUP UTILITY
PCI Configuration	
PCI LPC Control Pad Driving PCI Adr/Dat Pad Driving PCI Clock0 Pad Driving PCI Clock1 Pad Driving PCI Clock2 Pad Driving PCI Space Write Lock PCI Prefetch Read PCI Read Write Length PCI Master Burst Write Length PCI Master Max Cycle Length PCI Master Max Cycle Length PCI LPC Control Pad Driving SB PCI Adr/Dat Pad Driving SB PCI LPC Adr/Dat Pad Slew Rate	(8mA) [8mA] [8mA] [8mA] [8mA] [Disabled] [Enabled] [4 DWORD] [Max 2] [16 PCI Clocks] [8mA] [8mA] [6mA] [Fast]

- a. Set Space Write Lock to Disabled.
- b. Set Prefetch Read to Enabled.
- c. Set Read Write Length to 4 DWORD.

- d. Set Master Burst Write Length to Max 2.
- e. Set Master Max Cycle Length to 16 PCI Clocks.
- f. Set LPC Adr/Dat Pad Slew Rate and Control Pad Slew Rate to Fast.
- g. Set the rest to 8mA: LPC Control Pad Driving, Adr/Dat Pad Driving, Clock0 Pad Driving, Clock1 Pad Driving, Clock2 Pad Driving, LPC Control Pad Driving SB, and Adr/Dat Pad Driving SB.
- 11. Go to the Chipset menu, then South Bridge, then Serial Port Configuration and change ALL the settings on that page to match the picture below:

	BIOS SETUP UTILITY	ł Chipset
Serial/Parallel Port Co		
SB Serial Port1 Port Type IRQ Select Baud Rate SB Serial Port2 Port Type IRQ Select Baud Rate SB Serial Port3 IRQ Select Baud Rate SB Serial Port4 IRQ Select Baud Rate	[3F8] [RS232] [IRQ4] [115200 BPS] [2F0] [RS232] [IRQ3] [115200 BPS] [3E8] [IRQ4] [115200 BPS] [2E0] [IRQ3] [115200 BPS] [2E0] [IRQ3] [115200 BPS]	IRQ3 IRQ4 IRQ5 IRQ6 IRQ7 IRQ9 IRQ10 IRQ11 IRQ12 IRQ14 +-

- a. Set the IRQ Select of Ports 1 and 3 to IRQ4.
- b. Set the IRQ Select of Ports 2 and 4 to IRQ3.
- c. Set all the Baud Rates to 115200 BPS.
- 12. Go to the Boot settings and make sure that the USB is set to be the first boot device. This step MUST be done, or the update will not work.



- 13. Hit F10 to save and continue booting the EMCenter. The system will automatically install the firmware from the USB disk on to the EMCenter.
 - a. The update is slow and may take a few minutes.
 - b. If the key was made correctly and the BIOS settings were set correctly, then the following screen is shown.
- 14. DO NOT turn off the EMCenter until you see the following screen. Once you switch OFF the EMCenter, you can remove the USB installer.



15. Go to the Config page and double check that the Network settings are still the same as your original picture before the update in step 1.

PIB address A: Option not installed	Up	Down	A Hom
GPIB address B: Disabled	Up	Down	# Back
2090 Emulation mode:	Dist	bled	🕈 Info.
	的现在分词 化化合金 化合金 化合金 化合金 化合金		
Network settings: IP address: 192.168.8.10	Change	• Static • DHCP	
Network settings: IP address: 192.168.8.10 Subnet mask: 255.255.252.0	Change Change	• Static • DHCP	
Network settings: IP address: 192.168.8.10 Subnet mask: 255,255.252.0 Cateway address 192.168.8.1	Change Change Change	• Static • DHCP	

16. The info screen should now have the EMCenter version as 3.3.0.



6.3. *DEPRECATED* Create Incremental USB



CAUTION: This incremental is for the deprecated X86 final update. If you have an ARM EMCenter, please go to section 2.1 for the correct incremental download.

6.3.1. Download Incremental Firmware

To get the latest version of the EMCenter incremental loader, copy the following link into your internet browser (works best with <u>**Chrome**</u>) and save the file to your computer in a known location:

http://www.ets-

lindgren.com/WinCalFTP/vendorAndThirdparty/Incremental_202004071424 0adb892b61e5daa8ef0a251b0fc34d29eb9f41cd.tar.gz.zip



NOTE: This is a large file, so try to use a fast internet connection and plan up to 30 minutes to get the file. Pay attention to what directory you save the download into because you will need that information in following steps.

6.3.2. Change the Extension

EXTRACT ALL from the .ZIP file to obtain an .ENC file.



CAUTION: The incremental file MUST be .ENC for the upload to work properly. Some browsers (such as Edge) download the wrong file type; we suggest using <u>Chrome</u>. If the file inside the .ZIP folder is NOT an .ENC file (such as a .GZ file), please try downloading with a different browser.

6.3.3. Copy onto USB

Insert the USB into your computer and pay attention to which driver letter it is using. Copy the .ENC incremental file onto the FAT32 USB using the Windows File Explorer.

Once the Windows File Explorer has finished copying the program onto the USB, you can close the program and eject the USB out of your laptop.

6.4. *DEPRECATED* Install Incremental Update

1. Take a picture of the CONFIG page that has the GPIB and Network settings:

GPIB				Automa
GPIB address A:	7	1 Up 🕴 Down		[] Home
GPIB address B:	Disabled	קט קט		
2090 Emulation mo	ode:	Disabled		
Network settings:				
IP address:	192.168.9.253	Change • Static •	DHCP	
Subnet mask:	255.255.252.0	Change		
Gateway address	: 192.168.8.1	Change		
Generic ID Number:	0.192.8.154.135.41.74	1.87		Next 1/2



CAUTION: Updating the EMCenter replaces the entire contents of the "hard drive" of the EMCenter. Therefore, the TCP/IP network and/or GPIB address settings are completely reset to default.

- 2. Unplug unrelated USB, hard drives, or memory cards to prevent confusion and accidental deletion of data.
- 3. Turn ON the EMCenter and wait until it gets to the main screen.



WARNING: During the following process, it is critical that you do NOT unplug, power down, or restart the EMCenter until specifically instructed to do so later in the instructions. Losing power during these steps can seriously damage the EMCenter.

4. 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.



- d. Once you have downloaded the incremental update, you may remove the USB.
- e. REBOOT, sometimes the new incremental update does not appear available until the power cycles completely.

6.5. *DEPRECATED* List of Version Numbers for X86 Final Update

The table below shows the final incremental version numbers compatible as of *INC_2020_04_07*; see section 6.3 for the final incremental firmware download link.



CAUTION: The X86 EMCenter processor has been deprecated and will no longer receive any firmware updates.



CAUTION: If any EMCenter part is not updated in the expected way, its hardware model may not be compatible with the latest updates. Please email <u>software.support@ets-lindgren.com</u> with an image of your EMCenter info page and the attempted incremental link for further instruction.

Hardware Name	Part number(s)	Version #
EMCenter Processor CPU - X86	7000-006, -007 ** Deprecated, no longer receiving updates * *	3.3.16
EMCenter, Backplane	7000-006, -007	2.3.0
EMCenter, Display	7000-006, -007	1.3.3
EMSwitch Card	7001-001, -002,-003, -004, -005, -011, -012, -013, - 015, -021, -022	4.3.1
EMPower Card	7002-001	5.3.2
EMPower Probe	7002-002, -003, -004, -005	2.60
EMPower Sensor ETSI	7002-006	3.69
EMGen Card	7003-001	2.6.4
EMControl Card	7006-001	2.6.3
EMSense Card, Battery	7007-001	2.6.3
EMSense Card, Laser	7007-002	2.6.3
EMField, Supply card	7008-100	1.2.4
EMField, Amplifier board	7008-001, -002, -003, -004, -005, -006, -007, -008	2.0.10
EMField, Back panel	7008-001, -002, -003, -004, -005, -006, -007, -008	2.4.1