# LB-View User Manual

Revised: Jun 2025

# **Rx Monitoring Services, Inc.**

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#### **STATEMENT OF FAULTLESSNESS:**

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## WARNING

The TCP protocol is inherently unsecure and therefore should be used with care to avoid sensitive information disclosure and unauthorized access. To mitigate the risks associated with weaknesses in the Modbus/TCP protocol, users should set up network segmentation and implement a firewall to block all unauthorized access.

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# **Safety Information**

## **Definitions**

#### • WARNING

This statement is to reinforce the practice of certain conditions may cause physical bodily harm or loss of life.

#### **CAUTION**

This statement is to reinforce the practice of certain conditions may cause physical damage to the Load Bank, Cx Monitor, accessories, equipment or property.

#### NOTE

General information for simplifying the user experience.

## **Abbreviations**

CT's :	Current Transducers
Rope Probes :	Rogowski coil current transducers
Cx:	Power Monitor
Monitor :	Power Monitor (Cx)

Wireless Probes: EWE: Site: Wireless add-on's for power monitor External Wireless Extensions Cx Monitor data set.

# **Symbols**

The following are (IEC) symbols are used on this document or on the power monitor, and their definitions.



This symbol indicates AC or DC volrage or current



This symbol indicates that caution is necessary when operating the device or control close to where the symbol is placed, or to indicate that the current situation needs operator awareness or operator action in order to avoid undesirable consequences.



This symbol indicates DC only voltage or current



This symbol indicates high voltage. It calls your attention to items or operations that could be dangerous to you and other persons operation this equipment. Read the message and follow the instructions carefully.



This symbol indicates AC only voltage or current



This symbol indicates safety ground conductor.



This symbol indicates earth ground conductor.

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#### To avoid electric shock or fire:

Review the entire manual before using the Power Monitor and its accessories and observe all warnings and cautions.

- Before using the power monitor inspect wireless probes, voltage probes, current probes, leads and accessories for mechanical damage or broken plastic and call Rx Monitoring Services Inc. for replacements.
- Wear proper Personal Protective Equipment, including safety glasses and insulated gloves when making connections to power circuits.
- Use only current probes, test leads, and adapters supplied with equipment.
- Remove unnecessary voltage leads or accessories that are not in use.
- Make sure the power monitor is properly connected through the power cord to protective earth ground.
- Do not insert foreign objects into connectors, only use approved accessories.
- Never open the equipment, there are no customer replaceable parts.
- Never use equipment outside or when condensing water is present.
- Use proper lockout procedures on circuits under test.
- Hands, boots and the working area must be dry when making connections to power system.
- Do not operate the equipment or probes around volatile gas or vapor.

## \*\*\*\*\*\* WARNING DO NOT EXCEED CAT RATINGS \*\*\*\*\*\*\*

#### **Voltage Ratings:**

	<b>Power Monitor</b>	: CAT III - 600V	Pollution Degree 2
$\mathbf{\Lambda}$	Rope CT's	: CAT III - 1000V	Pollution Degree 2
7	Clamp CT's	: CAT III - 600V	Pollution Degree 2
¥	Wireless DC	: CAT II - 600V	Pollution Degree 2
	Wireless DCx	: CAT II - 150V	Pollution Degree 2

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# Introduction

LBView and the Rx controller was designed with one function in mind, bringing usability and simplicity to the power testing market.

Throughout this documentation the Cx Monitor<sup>™</sup> will be referred more simply as "Monitor". Throughout this documentation the Intelligent Load Bank will be referred more simply as "LoadBank".

#### Some of the key features:

- Software runs on any Windows 10 / 11 PC as well as tablets
- Up to 250 units in a Ethernet string
- Power Meter Integration
- Switch timings within 500mSec
- Voltage compensation based on power system levels
- Virtual groups within strings with different max power settings
- Automatic scripts with Run / Rewind / Restart
- Keeps running log of all LoadBank commands with time stamped that can be saved for later use
- Remote update of firmware
- Supports Avtron Wireless Gateway
- Software:

The packages used with the Cx Monitor - Live-View<sup>™</sup> and U-View<sup>™</sup> and the iLB Controller are free. On a release cycle of 6-12 months they are written and developed at Rx Monitoring Services, Inc. and are constantly being improved.

#### Minimum PC requirements:

Win 11/10 i3-8130 CPU 4Gbytes Ram 20Mbytes Hard Disk 100Mbyte for supporting Logging WiFi or ethernet port Display: 1920x1080

# LB-View / Rx Contoller Components

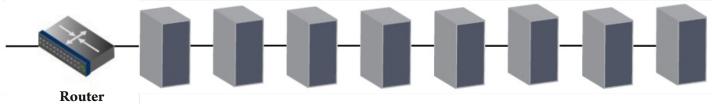


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# Load Bank Networking

LoadBanks communicate with each other using standard Ethernet cords, which can be up to 200 feet.

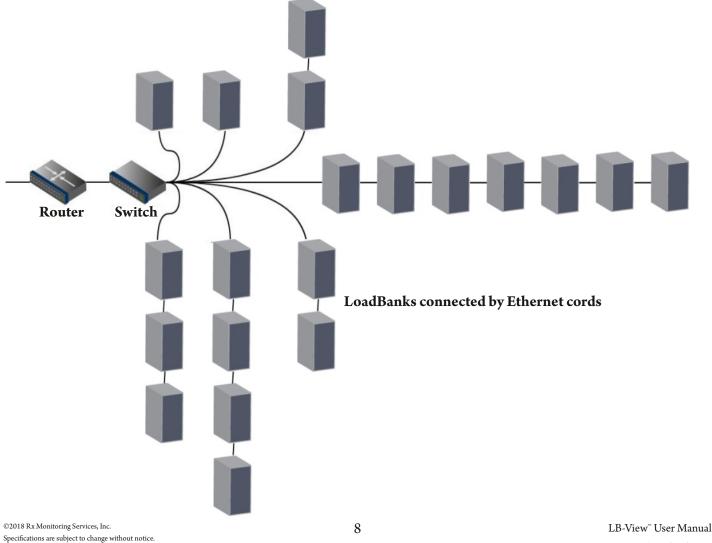
- Each LoadBank with iLB will have a panel with two Ethernet ports In and Out. •
- Loadbanks using Sigma Wireless gateway will need to connect to ethernet switch or wireless •
- Hook up the Router by Ethernet cord from the LAN port (see next page) to the In port on the first LoadBank or • ethernet switch.



LoadBanks connected by Ethernet cords

#### Best practice to avoid latency is to not connect more than 15 LoadBanks to one chain.

For more than 15 LoadBanks or LoadBanks need to be spaced out to other areas, use a Switch.



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# **PC Connection Methods**

To use the LoadBank, an Ethernet or Wi-Fi connection must be established to the device.

#### Power up the router adapters before the LoadBanks (30-40 Seconds)

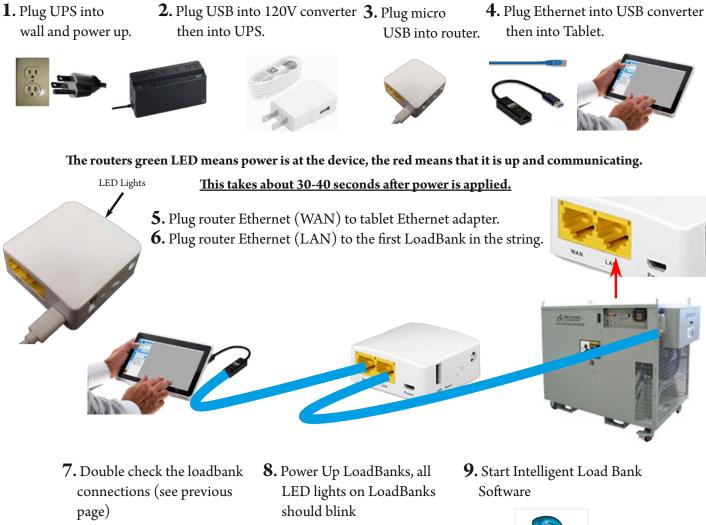
There are 2 different connection types:

- 1. Ethernet through DHCP network.
- 2. Wi-Fi through DHCP network.

Note: Ethernet connection has lower latencies, surrounding noise and signal levels can affect Wi-Fi communication.

Ethernet router wired DHCP network (Tablet)

# To ensure stability of the network we recommend using the USB power from the tablet (Battery backed) or use a UPS that can ride through instability on the 120V line.





To ensure stability of the network we recommend using the USB power from the tablet (Battery backed) or use a UPS that can ride through instability on the 120V line.



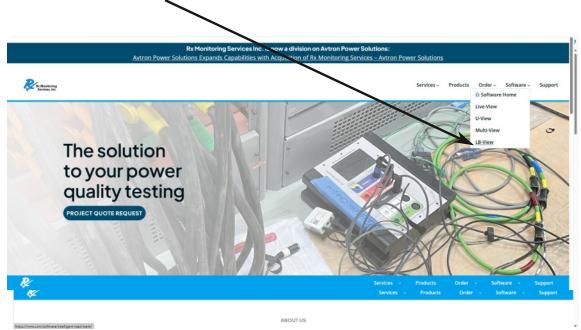
## Best practice is to limit Wi-Fi connections to 50 units. Note: Computer specification could affect latency of switch time.

Some load banks have green LED's that can tell the current state of the remote system. The three states are as follows:

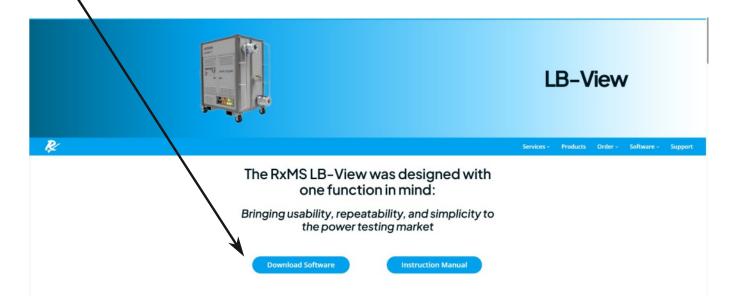
- 1. LED off, No Ethernet IP address available. (Router not powered or Ethernet wires not working)
- 2. LED Blinking,
- 3. LED solid,
- Load bank has IP address, router and cables are working. Software is talking to load bank and ready for commands.
- LPH400 LPH400 / LPH500 LPH500 LPH100 (TOP)

# LB-View Software Installation

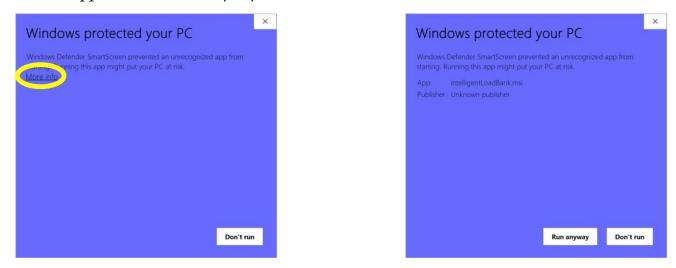
- 1. Go to www.rxms.com
- 2. Go to Software/LB-View



- 3. Scroll down and, click the link for Download Software.
- 4 The program might load and appear as a tab in the bottom left corner. Click on that tab to launch the installation wizard.



5. A warning from Windows might appear, click on More Info and the "Run anyway" button will appear. Click "Run anyway" to start installation wizard.



6. Once wizard starts, click "Next" for each prompt.

🖟 Loadbank Systems 📃 —	□ ×	🞜 Loadbank Systems 🛛 🗌 🗙
Welcome to the Loadbank Systems Setup Wizard	-	Select Installation Folder
The installer will guide you through the steps required to install Loadba on your computer.	nk Systems v1.1.3	The installer will install Loadbank Systems to the following folder. To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse". Eolder: C:\Program Files (x86)\Fx Monitoring Services\Loadbank Syste Browse
WARNING: This computer program is protected by copyright law and in treaties. Unauthorized duplication or distribution of this program, or any result in severe civil or criminal penalties, and will be prosecuted to the possible under the law.	portion of it, may	Disk Cost Install Loadbank Systems for yourself, or for anyone who uses this computer:
Cancel < Back	<u>N</u> ext >	Cancel < Back Next >
Beadbank Systems -	×	Pression Complete Systems − ⊂ X
The installer is ready to install Loadbank Systems on your computer. Click "Next" to start the installation.		Loadbank Systems has been successfully installed. Click "Close" to exit. Please use Windows Update to check for any critical updates to the .NET Framework.
Cancel < <u>B</u> ack	<u>N</u> ext >	Cancel < Back Close

## **LB-View Software**

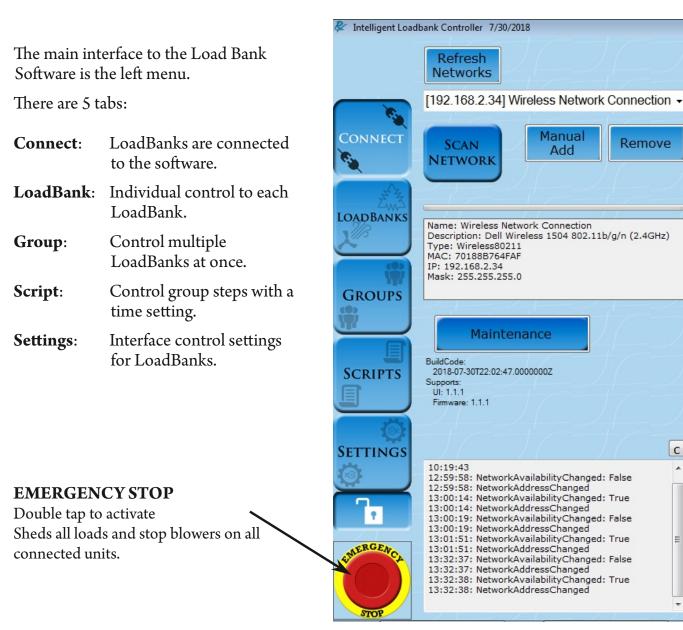
#### **Description:**

The LB-View Software is designed to integrate multiple LoadBank manufactures and sizes within one software platform. The system can control up to 250 different LoadBanks using simple Ethernet wires.

The LoadBanks can be put into virtual Groups with seperate power limits and controlled remotely.

This software can also create Scripts for a LoadBank Group to run automatically.

## Interface



С

## **Connect** Tab

#### Description:

The connect tab controls which LoadBanks are communicating. It also shows which units are currently active. This discovery process will recommend firmware updates of the loadbanks, if needed.

#### How to Use Tab Summary:

Upon startup the software is not

communicating with any Loadbanks.

There are two steps to start attaching units to software.

- 1. Ensure that you have the correct network interface on the loadbank software
- 2. Click Scan Network

# Refresh IPAddress Networks I [192.168.2.34] Wireless Network Connection SCAN Manual Add Remove 2

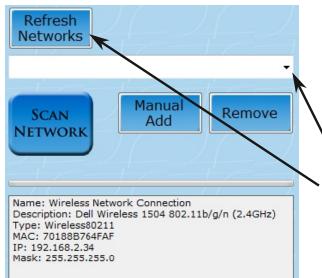
#### The units show up the right table section.

The color states of the units are below.

Green:Load Bank are working correctly.Red:Row Red: Not communicating (!!!192.168.8.xxx) shows in the IP Address.<br/>Model & Serial # Red : That loadbank has a alarm.Yellow:Load Bank needs firmware update, pop-up will ask to update.

	Refresh		IPAddress	MAC	Model	ECode	Version	Grout
	Networks		192.168.8.146	001AB6033DCC	LPH400	EB002_D04	3.0.2.14 09/20/24 17:36:36	
			192.168.8.169	001AB6033DE3	CR922A	EB002_E06	3.0.2.14 09/20/24 17:36:36	
	[192.168.8.224] Ethernet	-	192.168.8.172	001AB6033DE4	CR922A	EB002_E03	3.0.2.14 09/20/24 17:36:36	
<b>S</b>	in the second se		192.168.8.175	001AB6033DE9	CR922A	EB002_E12	3.0.2.14 09/20/24 17:36:36	
ONNECT	SCAN Manual Remov	e	192.168.8.188	001AB6033DF6	LPH400	EB003_B01	3.0.2.6 05/26/21 17:50:07	
	NETWORK Add		192.168.8.190	001AB6033DF8	LPH400	B2_11	3.0.2.14 11/ 4/24 16:34:05	
			192.168.8.193	001AB6033DFB	LPH400	B2_12	3.0.2.14 11/ 4/24 16:34:05	
34			192.168.8.199	001AB6033DFC	LPH400	B2_13	3.0.2.14 11/ 4/24 16:34:05	
ADBANKS	Name: Ethernet	_	192.168.8.197	001AB6033DFE	CR922A	EB002_D13	3.0.2.14 09/20/24 17:36:36	
ADDANKS	Description: Realtek PCIe GbE Family Controller Type: Ethernet		192.168.8.144	001AB6033E03	LPH100	EB003_E01	3.0.2.6 05/26/21 17:50:07	
	MAC: F4EE08F0A79F		192.168.8.148	001AB6033E07	LPH400	B2_47	3.0.2.14 11/ 4/24 16:34:05	
(0)	IP: 192.168.8.224 Mask: 255.255.255.0		192.168.8.152	001AB6033E0B	LPH100	EB003_D10	3.0.1.2 03/14/18 11:04:29	
197			192.168.8.164	001AB6033E17	LPH400	B2_03	3.0.2.14 11/ 4/24 16:34:05	
ROUPS	Locate	7	192.168.8.168	001AB6033E1B	LPH400	EB003_A09	3.0.2.6 05/26/21 17:50:07	
2	Maintenance		192.168.8.179	001AB6033E1C	LPH400	B2_49	3.0.2.14 11/ 4/24 16:34:05	
	BuildCode:	-	192.168.8.171	001AB6033E1E	LPH400	B2_06	3.0.2.14 11/ 4/24 16:34:05	
	2024-11-21T20:35:28.0000000Z		192.168.8.181	001AB6033E27	LPH400	B2_08	3.0.2.14 11/ 4/24 16:34:05	
CRIPTS	Supports: UI: 1.1.18		192.168.8.182	001AB6033E29	LPH400	B2_09	3.0.2.14 11/ 4/24 16:34:05	
CRIPIS	Firmware K64: 1.1.18 Firmware RT1024: 2.0.6		192.168.8.183	001AB6033E2A	LPH400	B2_40	3.0.2.14 11/ 4/24 16:34:05	
	Firmware RT1024-G: 4.0.0		192.168.8.184	001AB6033E2B	LPH400	B2_10	3.0.2.14 11/ 4/24 16:34:05	
			192.168.8.185	001AB6033E2C	LPH100	EB003_D02	3.0.2.6 05/26/21 17:50:07	
0			192.168.8.196	001AB6033E37	CR922A	EB002_E04	3.0.2.14 09/20/24 17:36:36	
TTINGS		С	192.168.8.205	001AB6033E40	LPH400	EB003_C02	3.0.2.6 05/26/21 17:50:07	
5	09:43:16: ScanForDevices() waiting on: 66	^	192.168.8.206	001AB6033E41	LPH400	EB003_C01	3.0.2.6 05/26/21 17:50:07	
LERGENCA	09:43:16: ScanForDevices() waiting on: 57 09:43:16: ScanForDevices() waiting on: 48 09:43:16: ScanForDevices() waiting on: 28 09:43:16: ScanForDevices() waiting on: 28 09:43:16: ScanForDevices() waiting on: 17 09:43:16: ScanForDevices() waiting on: 8 09:43:16: ScanForDevices() waiting on: 8		Export PC Logs	Export LB Logs	-47-	4	Total	Powe 0 k\
STOP	09:43:17: ScanForDevices() waiting on: 5 09:43:18: Discovery finished in 9.127 seconds Found 148 new Loadbanks, for total=148			IC IC			Total Loadbank	ks: 14 onne

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The software will try to acquire the network interface from the PC or Tablet on startup.

If the drop down menu is empty this means there were no valid networks on the PC on startup.

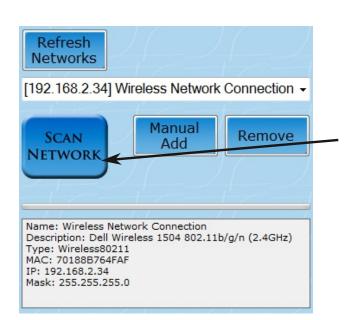
Click **Refresh Networks** to get a updated network list.

Once the list is updated select the one to use. **WiFi and Ethernet are supported.** 

WiFi could have high latency based on the surrounding noise and signal levels.

Wired Ethernet has lower latencies.

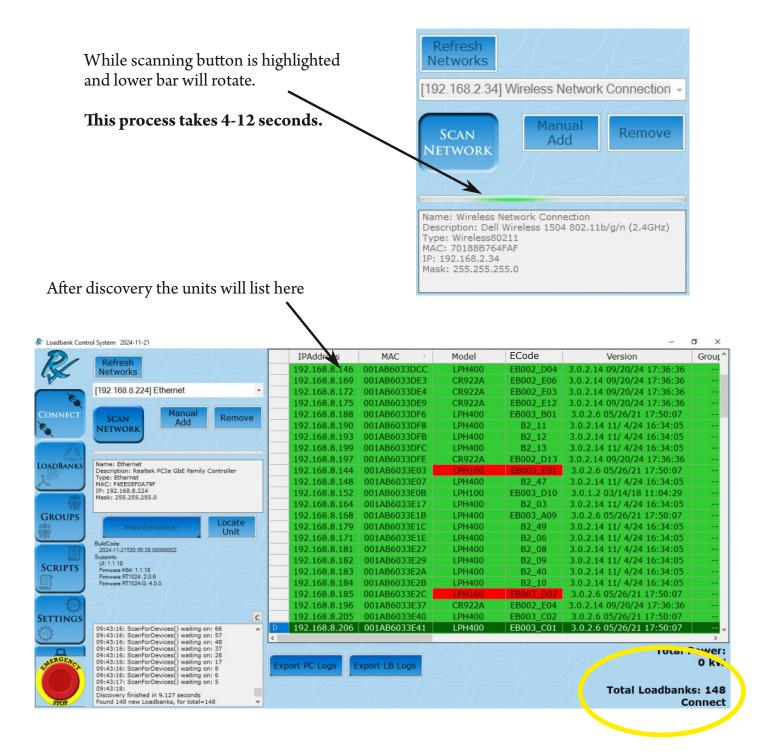
Refresh Networks	IPAddress 🔺 MAC
[192.168.2.15] Local Area Connection	
[192.168.8.186] Wireless Network Connection 2	
[192.168.2.15] Local Area Connection	
NETWORK Add Remove	



Click **Scan Network** to start the connection process.

If not all LoadBanks are present, hit Scan Network again until all LoadBanks are shown

Note: Manual Add and Remove are for debugging purposes only



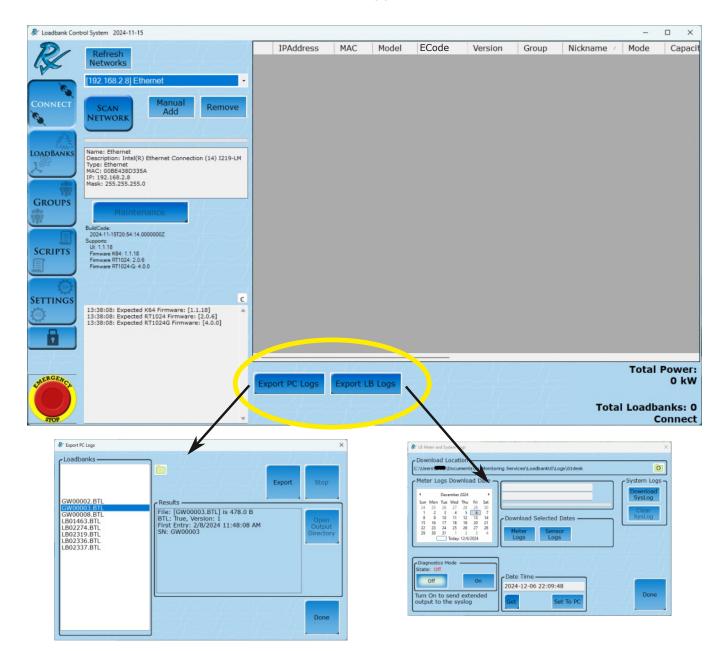
A total loadbank count and total power is given on the bottom right.

## A pop-up may occur asking to update the LoadBank to the newest firmware. The update only takes 30 seconds and must be done to continue using software normally.

#### Two types of logs exist in the iLB platform:

1. On the PC tablet/laptop (logged on the PC with the feature enables in settings)

2. On the loadbank controller board. (If supported)



# Logs are located in: ~\user\Documents\Rx Monitoring Services\LoadbankUI\Trending\Loadbanks

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#### Export PC loadbank Logs

& Export PC Logs Loadbanks 01davedesk.BTL 01desk.BTL CRE.BTI Export Desk02.BTL 1. Highlight the unit Desk03.BTL GW00002.BT Results 2. Click "Export" File: [GW00003.BTL] is 478.0 B BTL: True, Version: 1 First Entry: 2/8/2024 11:48:08 AM SN: GW00003 GW00008.BTL LB01463.BTL 3. Click Open Output Directory B02274.BTL B02319.BTI LB02336.BTL LB02337.BTL to see CSV files Done

#### To get PC logs the feature must be enabled:

The logs need to be enabled in the settings tab to enable function. Each time a loadbank is connected to the controller it will log its values.

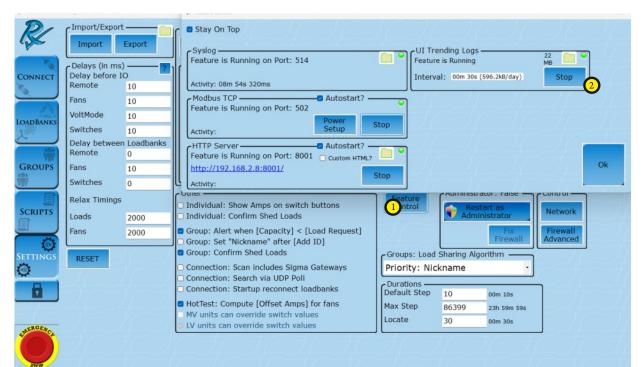
Go to

```
1. Settings (Tab) -> Feature Control -> UI Trending Logs
```

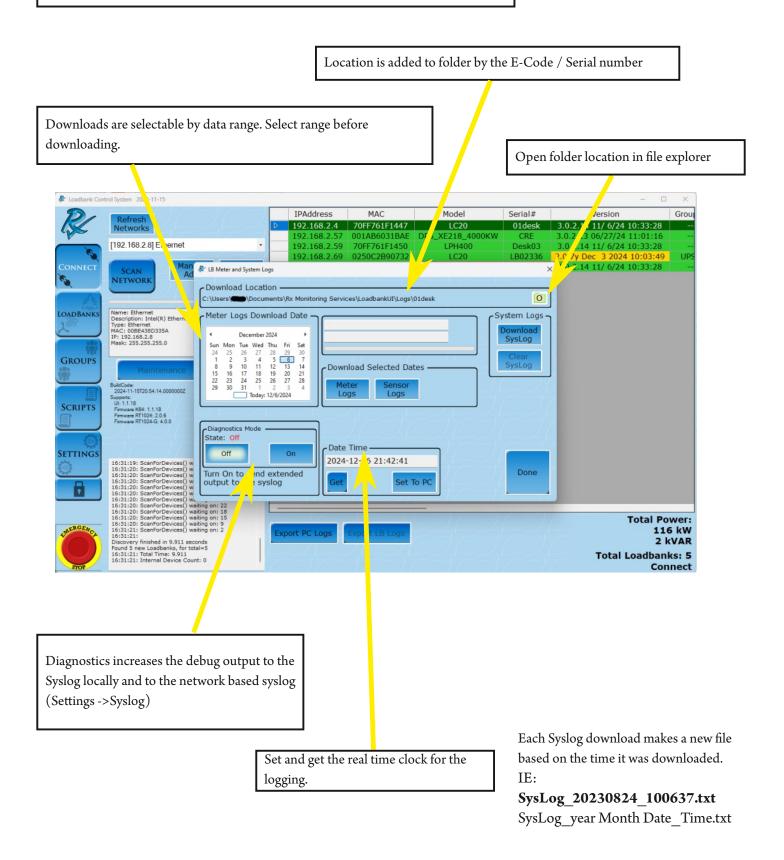
2. Click Start (If not started)

Interval : Time between data points for each loadbank. (Default 30 seconds)

Click on the folder icon to open the writing location User\documents\Rx Monitoring Services\LoadbankUI\Trending Files are stored as "Serial#".BTL



Meter logs are only avalible on the Gen3 Boards (1100-10166-xx)



## Load Banks Tab

#### **Description**:

The Loadbanks tab shows the status of the individual LoadBanks connected and allow users to set nicknames, turn on/off, and apply different load amounts to individual LoadBanks.

#### How to Use Tab Summary:

- Click on a unit from the list to highlight it and show the values from the onboard meter below.
- To apply load to a unit, first tap **Control** (**On**) and **Blowers** (**On**) switches.
- To use load switches click on **Pick Switches** then select switch values in the popup

-	Model	ECode	Group	Nickname	Mode	Capacity (KW/A)	Applied(KW)	Applied(KVAR)	Avg Vrms	Avg Irm
	LC20	01desk			480	500/601	0.00	0.00	475.00	0.00
D	DPS_XE218_4000k	W CRE			13800	4000/167	0.00	0.00	480.00	6.133
Þ	LC20	LB02336			480	500/601	0.00	0.00	41.363	0.00
	LPH400	Desk03			480	400/481	45.00	0.00	483.20	66.44
	LC20	Desk02		ups1	480	500/601	55.00	0.00	480.00	66.15
s <mark>1</mark> amet		State:		Nickna		8 Shed Pick	Load State	)		
BC Volta	ge 480 0 ge 480 62.04	State:		Group Setti		$\mathbf{\vee}$		2		
S 1 varmet BC Voltag CA Voltag	ge 480 0 Ige 480 62.04 Ige 480 62.04	State:	On	Group Setti		Shed Pick		2		
5 1) varnet BC Volta CA Volta A Currer	ge         480         0           ige         480         62.04           ige         480         62.04           int         0         0	State:	On	Group Setti Input Voltage: 480 Volts Applied KW:		Shed Pick Load Switches				
5 5 5 5 5 5 5 5 5 1 7 amet BC Volta CA Volta A Currer B Currer	ge         480         0           ige         480         62.04           ige         480         62.04           int         0         0           int         0         0	State:	On	Group Setti Input Voltage: 480 Volts		Shed Pick			-	
S 1) ramet SC Volta; CA Volta; BC Volta; CA VOLTA;	ge         480         0           ige         480         62.04           ige         480         62.04           int         0         0           int         0         0           int         0         0	State:	On	Group Setti Input Voltage: 480 Volts Applied KW: 0.0 /		Shed Pick Switches		}		
A Currer B Currer B Currer C Currer Power(KV	ge         480         0           age         480         62.04           age         480         62.04           nt         0         0           nt         0         0           nt         0         0           nt         0         0           with         0         0           nt         0         0	State:	On	Group Setti Input Voltage: 480 Volts Applied KW: 0.0 / Applied KVAR:		Shed Pick Load Switches		]		0 / 601 /
S S S S S S S S S S S S S S	ge         480         0           ige         480         62.04           ige         480         62.04           int         0         0           int         0         0           int         0         0           with         0         0           with         0         0           with         0         0	State:	On On Trs On	Group Setti Input Voltage: 480 Volts Applied KW: 0.0 / Applied KVAR:		Shed Pick Switches				sured/Capa 0 / 601 / 0 / 50 0 / 0
S S S S S S S S S S S S S S	ge         480         0           ge         480         52.04           gge         480         52.04           nt         0         0           nt         0         0           nt         0         0           nt         0         0           AR)         0         0           (A)         0         0	6 Blower State:	On On Trs On	Group Setti Input Voltage: 480 Volts Applied KW: 0.0 / Applied KVAR: 0 /		Shed Pick Switches				0 / 601 0 / 50 0 / 0

- 1. Power Values from Onboard Meter
- 2. Nicknames
- 3. Alarms
- 4. Notification Bar
- 5. Control State
- 6. Blowers State
- 7. Volt Mode
- 8. LoadBank Switches

# 9. Locate Unit (LED on the LoadBank will blink for a specified time)

- 10. Switch state indicators
- 11. Switch disabling
- 12. Dashboard / Advanced Commands

Parameter	Nominal	Meter-Feedback
AB Voltage	480	479.33
BC Voltage	480	479.33
CA Voltage	480	479.33
A Current	0	0
B Current	0	0
C Current	0	0
Power(KW)	0	0
Power(KVAR)	0	0
Power(KVA)	0	0
Frequency	60	60
Power Factor	NaN	0

#### 1. Power Values from Onboard Meter

The load bank tab shows the status and the power values of the individual load banks connected.

#### 2. Nickname

Click in the Nickname text box and a keyboard will pop up. Use the keyboard to type out the name and press Enter. The Nickname will appear on the LoadBank list.

Note that once the keyboard is on the screen, user will be able to use computer or laptop keyboard.

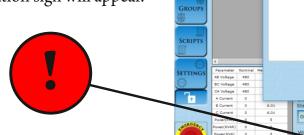
ୡ Intelligent Load	oank Controller 7/30	0/2018									
	Model E	ECode	Group	Nickname	Mode /	Capacity KW/A	Applied(KW)	Applied(KV	AR) Avg Vrms	Avg Irms	Avg KW
	LPH100 E	B003_C12		LoadBank1	480	100/120	0.00	0.00	480.675	0.00	0.00
	LPH100	A12		LoadBank2	480	100/120	0.00	0.00	480.675	0.00	0.00
	LPH100	A13			480	100/120	0.00	0.00	480.675	0.00	0.00
	LPH100	00008			480	100/120	0.00	0.00	480.675	0.00	0.00
CONNECT	LPH100	A09			480	100/120	0.00	0.00	479.325	0.00	0.00
	LPH100 E	B003_C11			480	100/120	0.00	0.00	480.675	0.00	0.00
	LPH100	A04			480	100/120	0.00	0.00	480.675	0.00	0.00
Emile Campa	LPH100	00007			480	100/120	0.00	0.00	480.675	0.00	0.00
Em3	LPH100 E	B003_C10			480	100/120	0.00	0.00	479.325	0.00	0.00
	LPH100 E	B003_C02			480	100/120	0,00	0.00	479.325	0.00	0.00
	LPH100 E	a w	e	r t v		i o p	7 8	9 <- 00	480.675	0.00	0.00
	LPH100							00	480.675	0.00	0.00
197	LPH100 E			mm				00	479.325	0.00	0.00
GROUPS	LPH100 E	а	s a	r g	n j	k I Ci	• 4 5	6 Esc 00	480.675	0.00	0.00
(0)	LPH100							00	479.325	0.00	0.00
STAL D	LPH100 E	z	X C	v b	nı	m _ <-	1 2	3 Enter 00	480.675	0.00	0.00
	<								170 005	~ ~ ~	•
SCRIPTS	Parameter Nor	Caps			E	isc Enter	0				
SCRIPTS	AB Voltage 48	480.0	Þ/	State: 0 2	LoadBa	pk2			10.00 kW 25.00	kW 50.00 k	w
	BC Voltage 48	480.	57		LUauba	nk2 App Switc					
	CA Voltage 48	480.6	57	Off On	Group S	Settings	nes				
<b>1</b>	A Current 0	0 0		Blowers	Input Volt 480 Volt						
SETTINGS	B Current 0	0 0		State: -?-	Applied K		[In Local I	Mode]			
10	C Current 0	0 0			0 / Applied K		lei			Acti	ve/Capacity:
Sec.	Power(KW)	0 0		Off On	0 /					0	/ 120 Amps
AMERGENCA	Power(KVAR)	0 0			Alorma						0 / 100 kW
	Power(KVA) (	0 0	1	Volt Mode	Alarms						0 / 0 kVAR
	Frequency 6	0 60		480 240	OK C	OK	OK		Locate	Total Lo	adbanks: 69
STOP	Power Factor Na	aN O		240					Unit	. otar Ec	Individual
and t			100 million (100 m								Anurviuuai

#### Signals

#### 3. Alarms

Click on the alarm to popup a description.

If there is a problem a red exclamation sign will appear.



& Loadback (

22	Model	Serial#	Group	Nickname	Mode	Capacity (KW/A)	Applied(KW)	Applie	d(KVAR)	Avg Vrms	Avg Irms
$\sim$	LPH100	00050	Temp0		480	25/60	0.00		0.00	480.00	0.00
che -	LPH100	LB01148			480	100/120	0.00		0.00	480.00	6.014
	ECode	🖉 🖉 Alarm Details							×	NaN	NaN
		Alarms: [0x	0000021								
CONNECT											
6		🖃 🕘 (1) Far									
~		UNI	f: [LPH100]	=> LB01148							
OADBANKS											
1											
_											
997											
GROUPS											
000											
NRA C											
SCRIPTS											
	٤.										
() ()											
SETTINGS	Parameter Nominal A8 Voltage 480						146				
6	BC Voltage 480							OK			
~	CA Voltage 450										
7	A Current 0	-					-		-		
	B Current 0	6.01 5	tate: Off	0 /	Loc						
	C Current 0	6.01		Applied KVAR:	Un						
	Power(Km) 0	5	Off On	0/	[Need E	llowers]				Me	asured/Cap
ALRGENC	Power(KVAR) 0										6/120
	Power(KVA) 0	3	olt Mode	Alarms							0/0
	Prequency 60	60	480 22	Tap	for info	Disable				Total Lo	

The Model and Serial # columns will turn RED when the loadbank is in an Alarm state.

	Model	ECode	Group	Nickname	Mode
▶	LPH100	LB01148			480
	VoltSwitcher	VOLT_SWITCHEF	۲		0

#### 4. Notification Box

This area gives "hints" to what is going to happen or a status that is needed.

Control State: Off	Nickname	Apply	5.00 kW	10.00 kW	25.00 kW	50.00 kW
Off On	Group Settings	Switches				
Blowers State: -?-	480 Volts Applied KW:	Cancel	[In Local Mode]			
Off On	0 / Applied KVAR: 0 /					Active/Capacity: 0 / 120 Amps 0 / 100 kW
Volt Mode	Alarms					0 / 0 kVAR
480 240	OKOK			Locate Unit	То	tal Loadbanks: 69 Individual

Control State: On	Nickname	Apply	5.00 kW	10.00 kW	10.00 kW	25.00 kW	50.00 kW
Off On	Group Settings	Switches					
Blowers State: Off	480 Volts Applied KW:	Cancel	[Need Blow	ers]			
Off On	0 / Applied KVAR: 0 /						Active/Capacity: 0 / 120 Amps
Volt Mode	Alarms				1		0 / 100 kW 0 / 0 kVAR
480 240	OROR				Locate Unit	Тс	otal Loadbanks: 69 Individual

#### 5. Control State

By turning the Control State [On], the LoadBank enters Remote Mode which disables local control of LoadBank, thereby making the software/tablet combination the only control system

#### 6. Blowers State

Turns on fans on the LoadBank

#### 7. Voltage Mode Controls (LoadBank dependant)

Be sure not to use 240V Volt Mode with an input voltage over 260Vrms.

Software will attempt to block this with warnings and Group settings will lock this as well.

#### 8. Load Ecode Lies / KW Select

Apply a specific load amount to individual load bank.

Steps to apply load:

- 1. Select to highlight a load bank from the list
- 2. Switch Control State [On]
- 3. Start **Blower**s [On]
- 4. Click Pick Switches
- Click kW values to add to queue (indicated in pink) Or Click Power Tab and enter KW and KVar
- 6. Check the total stated value that will be applied (indicated in **blue**)
- 7. Click Apply Selection

Step, Carego Val Mode One or more of your voltages is abov VoltMod	ve the [260.0] threshold for 240 de.
	_
	ок

Once the load is applied it will show up on the list in this spot.

adbank Contro	ol System 2023-08-23									– 🗆 🗙
	Model	ECode	Group	Nickname	Mode	Capacity (KW/A)	Applied(KW)	Applied(KVAR)	Avg Vrms	Avg Irms
	C LPH100	012345678912345			480	100/120	0.00	0.00	NaN	NaN
5	1 LPH500	CRE			480	500/601	0.00	0.00	240.00	0.00
	OhmsMeter	OHM007	(- <u></u> )		0	0/0	0.00	0.00	389.19	0.00
DBANKS BOUPS		Select Load: [LC20] Settings Input Voltage: 480 Volts Applied KW: 0,0 / 500 Applied KVAR: 0 / 0	Swi			10.00 kW 12 A 30		mps kW kVAR	×	
	C Parameter Nominal I AB Voltage 480	Cancel			0.00 kW 120 A	100.00 kW 100.01 120 A 120		Apply Selection	n	
	AB Voltage 480 BC Voltage 480	240				CU FICK				
	CA Voltage 480	240 Off		Group Settings	5 Loa	ad Switches				
	A Current 0			Input Voltage: 480 Volts	-	(4)				
	B Current 0	DIOV	e: On	Applied KW: 0 /	Loca	ate				
	C Current 0	<u> </u>		Applied KVAR:	Un	it				
1	Power(KW) 0	off	On	0/					Mea	sured/Capaci
GENC.	Code •	0								0 / 601 Am 0 / 500 I
	Power(KVA) 0		Mode	Alarms						0 / 0 kV
	Frequency 60	60 480		Tan	for info	Disable	Advanced			
			240	OK	or into	Switches	Commands		Total Lo	adbanks:

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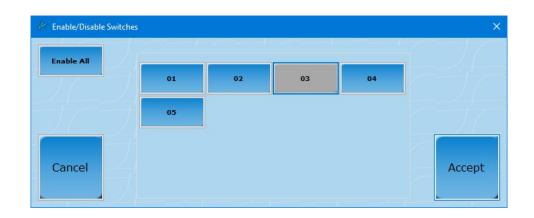
#### **Disable Switches**

Requires a password ("power") each time unless in maintenance mode.

Switch is disabled for all Volt Modes/Tap Positions.

Only disabled for the current use of the loadbank software.

Does not stay with loadbank and if the UI closes for any reason you need to disable it again.





Indicator lights (Switch States) Green - Load Step is Active Gray - Load Step is Inactive Warning - Load Step/Switch is disabled in software

#### Locate Unit

#### Locate Unit

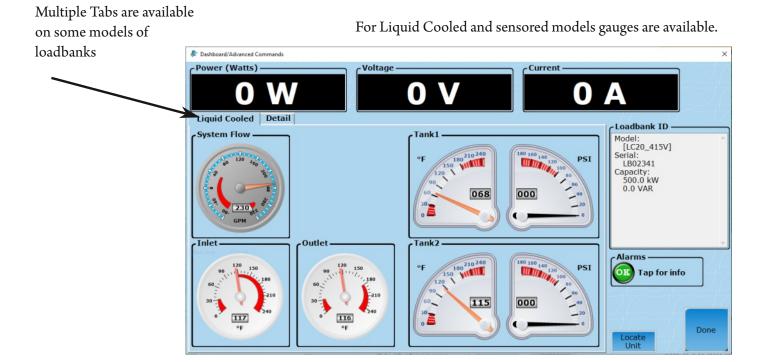
Causes the LED on the selected loadbank to blink rapidly for a period of time. Allows for quick acquisition of desired unit in the field.

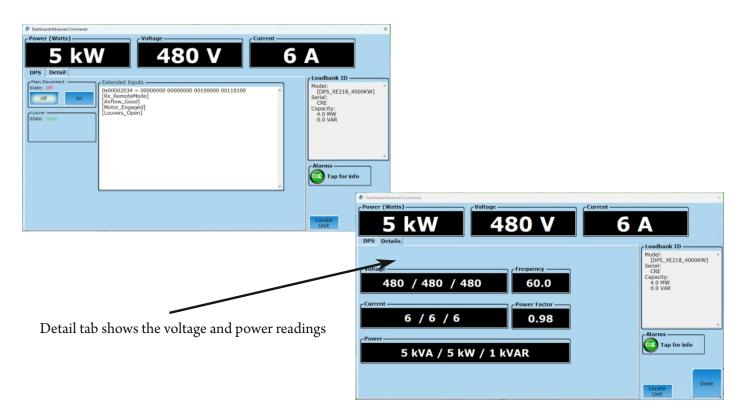


Dashboard / Advanced Commands

#### The Dashboard and Advanced Commands are dependent on loadbank features.

#### Specific commands when available will be displayed on this screen based on model type.





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# **Groups** Tab

#### Description:

The Groups tab is designed to link LoadBanks into groups and remotely control them as a single unit.

#### How to Use Tab Summary:

- Create Groups
- Add specifc LoadBanks or add all LoadBanks to created group
- Change Group Setting to put kW or kVAR max in place
- Pick and Apply Load

#### Note: Moving loadbanks to a group will cause units to shed their load

#### Available LoadBanks:

These are all of the LoadBanks communicating. For available LoadBanks to appear here they need to:

1.) Not currently be in another group

	Multi:	Allows selection of multiple units from the Available section.
	Add All:	Takes all available load banks and adds to highlighted group.
1	Add One:	Takes highlighted unit from Available and puts in highlighted group.
	Add ID:	Add by number will pop up a keyboard input (or scanner)
	Shed One:	Removes highlighted loadbank from group and puts in Available.
	Shed All:	Clears all loadbanks out of group and makes them Available for other groups.
	\	

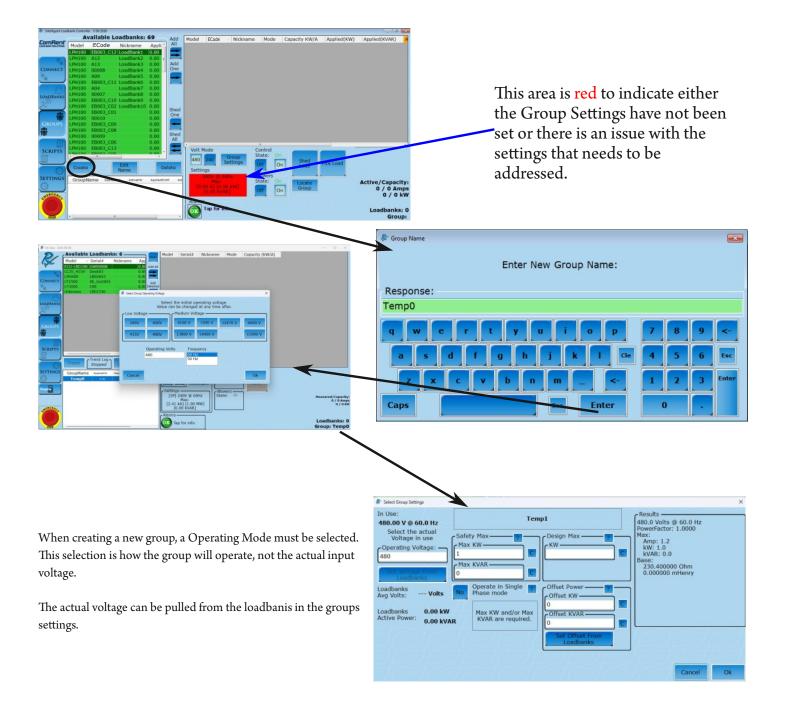
2	Available	Loadbank	s: 144		Model /	ECode	Nickname	Mode	Capacity (KW/A)	Applied(KW)	Applied(KVAR)
	Mode	ECode	<ul> <li>Nickname</li> </ul>	^ Multi	LPH400	EB002_E08		240	400/962	25.00	0.00
	CR922A	EB003 E1		Add All	_PH400	EB002_E11		240	400/962	25.00	0.00
	LPH100	EB003_E09			PH400			240	400/962	25.00	0.00
67	CR922A	EB003_E08	3		PH400	EB002_E10		240	400/962	25.00	0.00
DNNECT	CR3750	EB003_E03	7	Add							
	LPH100	EB003_E00	5	Selected							
$ \longrightarrow $	LPH100	EB003_E0	5								
34	LPH100	EB003_E04	1								
DBANKS	LPH100	EB003_E03		Add ID							
B	LPH100	EB003_E0:		(The second seco							
	LPH100	EB003_D1									
	LPH100	EB003_D1		_							
	LPH100	EB003_D1		Shed Selected							
ROUPS	LPH100	EB003_D1	-								
	LPH100	EB003_D0									
	LPH100	EB003_D0									
	LPH100 LPH100	EB003_D0 EB003_D0		Shed All							
RIPTS	LPHIO	EB003_D0	2 4		<						
	<				Volt Mo	de	Stat	trol <u> </u>			
	0.1		Edit			Grou			Shed protein		
6	Create	Stopped	Name	Delete	480 2	240 Settin		On	Load Pick I	Load	
TINGS	Constant			AppliedKVAR	Setting				J		
intos	GroupNam					240V @ 60H	z State				
	UPS2	0.00	0.00	0.00		Max:			Locate		Measured/Capa 288 / 3,849 A
	UPS1	100.00	119.72	0.00		kA] [1.00 MV	V]    Off	On	Group		120 / 1,600
ERGENC		T			0] [0	.00 kVAR]			J		
					Alarms						
											Loadbanks
	<				OK Ta	p for info					Group: UP

#### Highlight the group to add and remove loadbanks from that group.

Create:Will start a new group.Edit Name:Edit currently highlighted group name.Delete:Removes highlighted group and makes loadbanks available for other groups.

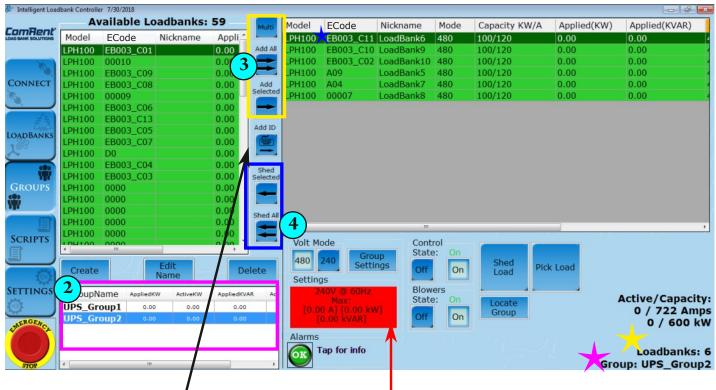
Create a Group

- 1. **Create** a new group
  - Default name will be Temp0
  - Delete and type in the New Group Name using the keyboard on screen or the one with your computer/laptop/tablet
  - Select the Mode the Group will operate in
    - Note: actual input voltage will be selected later



- 2. Highlight a Group from list of Groups in the lower left corner (indicated in pink)
  - The name of the Group selected will be displayed in the right bottom corner (pink star)
- 3. Press Add All to add all available LoadBanks on the network to the Group or select a single LoadBank from the list on the left and press Add One (indicated in yellow)
  - The number of LoadBanks in the Group will be displayed in the right bottom corner (yellow star)
- 4. Press **Shed All** to remove all LoadBanks from the Group or select a single LoadBank from the list on the right and press **Shed One** to remove (indicated in blue)

Note if the LoadBanks within a Group are changed then all applied loads in the Group will be **shed** 



Click the **ADD ID** to pop up a text input sceen (Scanner ready) that can add an available load bank to the group selected.

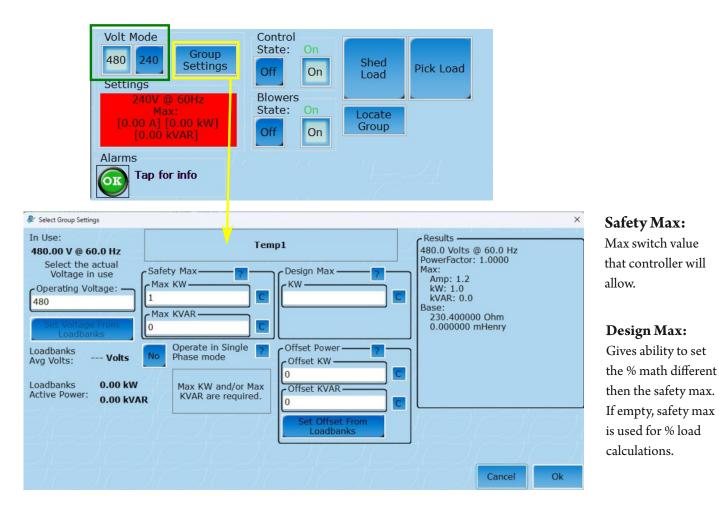
NickName can be added to the Load bank directly after a succesful move to a group. Go to and check **Settings->Group: Add nickname after Add By ID.** 

This area is **RED** to indicate either the Group Settings have not been set or there is an issue with the settings that needs to be addressed.

Issues that can affect group settings are:

- MAX KW is exceeded
- Voltage level is 110% of nominal

- 6. Highlight the Group Name to apply load to a group
- 7. Check **Voltage Mode**, which was established when the Group was created and is LoadBank specific (indicated in green)
  - Changing Volt Mode will shed all load in Group
- 8. Click **Group Settings** (indicated in yellow)
  - Set Input Voltage and Offset, more information below.
    - Incoming voltage cannot exceed VoltMode
  - Fill out the Restrictions section for safety measures by entering Max kW and/or Max kVAR
     Max kVAR is optional but we recommend a minumum of the fan power (if running on internal), but Max kW must be filled out



#### **Operating Voltages:**

Can be set two ways:

- 1. Typed into the Actual Voltage text box.
- 2. Click Set Voltage From Loadbanks to use the averaged voltage from the load banks.

#### **Offset Power:**

Offset power is for subtracting from your safety max during load step calculations.

This can be manually added or pulled from LoadBank current load by using Set Offset From Loadbanks.(Such as fans running on internal power)

> Target = 80% \* (1200kw) - 50Kw Offset Target = 910kW

- 9. Enable **Control** (**On**)
- 10. Enable Blowers (On)

Note: This area is no longer red after inputting Group Settings

#### 11. Click Pick Load

Use percentage buttons on the left or the key pad on the right to enter % Max kW (this percentage entered will be the percentage of kW Max set in Group Settings)
 --OR--

Control State:

Blowers

State:

OK

Off

On

On

Off

Shed

Load

Locate

Group

Pick Load

Active/Capacity:

0 / 722 Amps

Loadbanks: 6

Group: UPS\_Group2

0 / 600 kW

Group

Settinas

• Use key pad on the right to enter with Target kW or Target Amps

Volt Mode

Settings

240

480V @ 60Hz

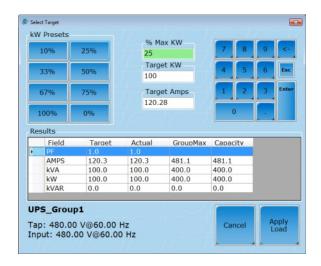
Max:

[850.52 A] [500.00 kW] [500.00 kVAR]

480

Alarm:

• If <u>Max kVAR is entered in Group Settings</u> then loading by Reactive kVAR or Power Factor will be available



#### Group Settings without kVAR Max input

#### & Select Tar . kW Presets % Max KW 75 Target KW 50% 375 67% 75% Reactive 1009 Results Field Target Actual GroupMax Capacity AMPS 451.1 451.1 850.5 721.7 375.0 375.0 707.1 600.0 **kVA** kW 375.0 375.0 500.0 600.0 **kVAR** 0.0 500.0 0.0 0.0 UPS\_Group2 Tap: 480.00 V@60.00 Hz Input: 480.00 V@60.00 Hz Apply Load

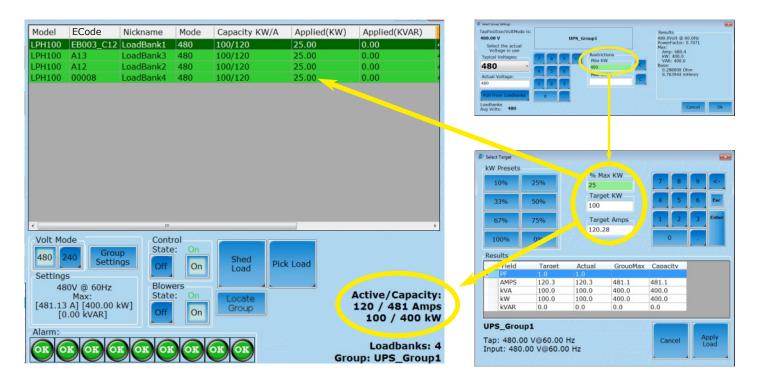
# 12. Click Apply Load



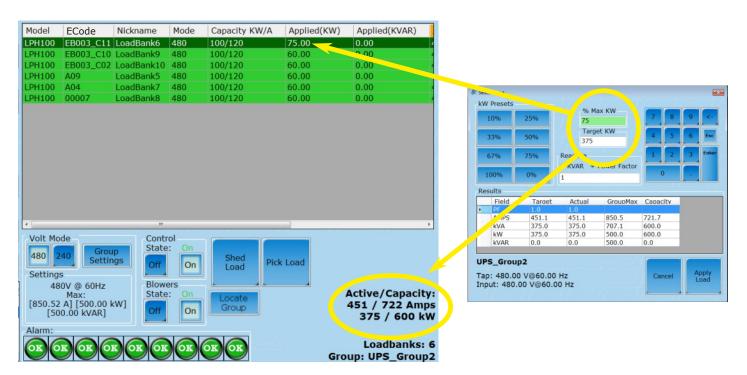
#### Group Settings with kVAR Max input

Max kW is set at 400kW. Target set at 25% of Max kW. Group UPS\_Group1 uses 4 loadbanks.

Reminder: the % of Max kW calculates the percentage of the max kW set in Group Settings



Max kW is set at 500kW. Target set at 75% of Max kW. Group UPS\_Group2 uses 6 loadbanks.



#### How group sharing works (Balanced Mode)

 Setting a target in the group mode uses four settings to calculate the total load applied to each of the Load Banks in the group:

 Safety KW :
 Uses this as the baseline for the total KW the group can use.

 Design Max KW :
 Number used to calculate the load switches in %.

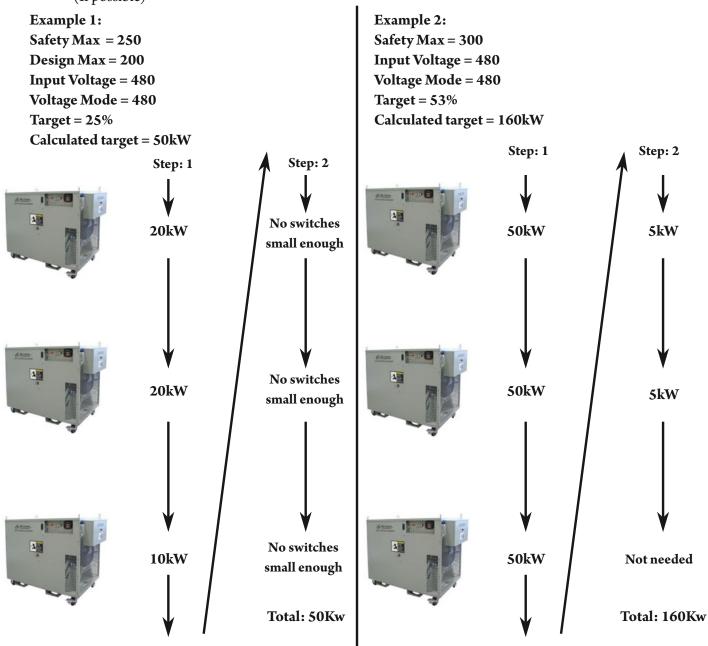
 Input Voltage :
 Select the RMS voltage that the resisters will see (480V, 415, 240, 208)

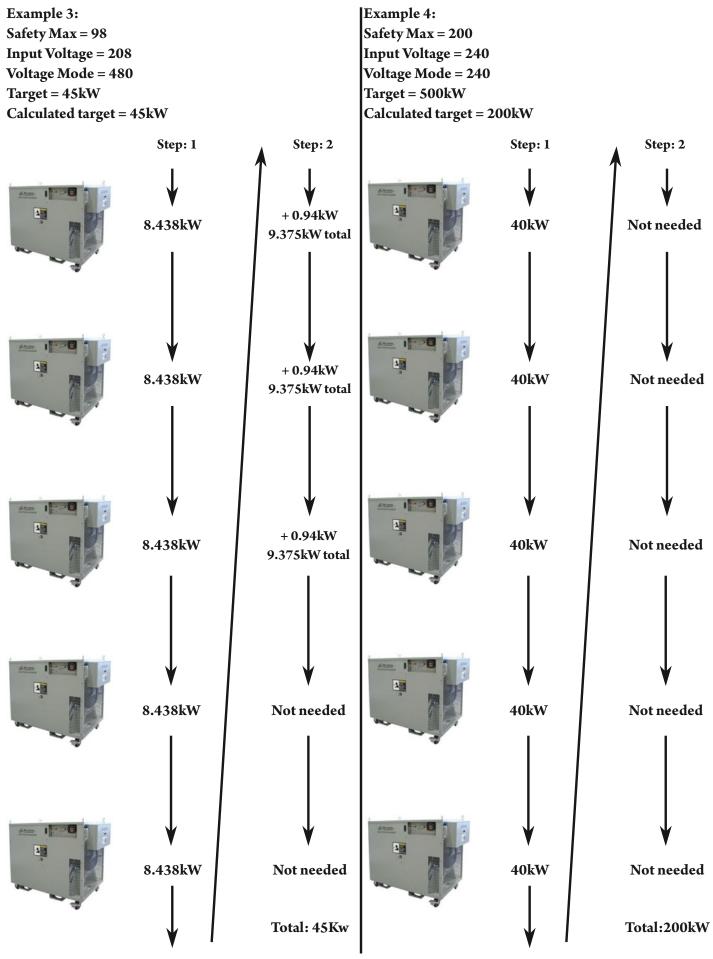
 Voltage Mode :
 Some units have 240/480 resistance that applies.

 Target % / Target KW / Target Amp :
 The number the interface is aiming for taking in the above variables.

#### The algorithm for sharing is simple. It is a two step process ;

- 1. Take all available load banks and evenly distribute load across them.
- 2. Any left over load that needs to be added gets placed to the first available load bank till the KW is satisfied. (If possible)

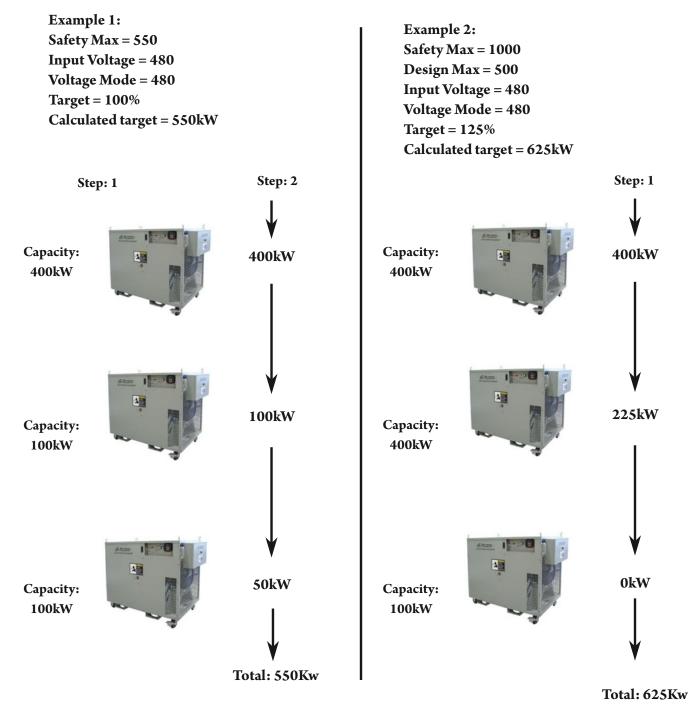




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#### The algorithm for Capacity Mode:

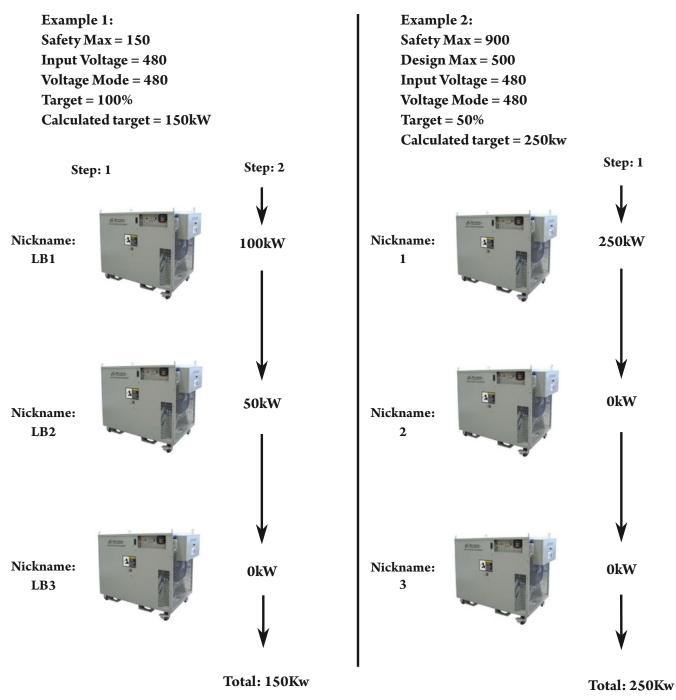
- 1. Inventory all available load banks and sort by size. (Largest to Smallest)
- 2. Add all available load steps starting in order, if no more are available or the target is not met move to the next LoadBank in the list.



Note: LoadBanks do not physically need to be connected in any particular order, changing the software settings will change the sorted order the load is applied.

#### The algorithm for Nickname Mode:

- 1. Inventory all available LoadBanks and sort by nickname. (asciibetical)
- 2. Add all available load steps starting in order, if no more are available or the target is not met move to the next load bank in the list.



Note: LoadBanks do not physically need to be connected in any particular order, changing the software settings will change the sorted order the load is applied.

# Scripts Tab

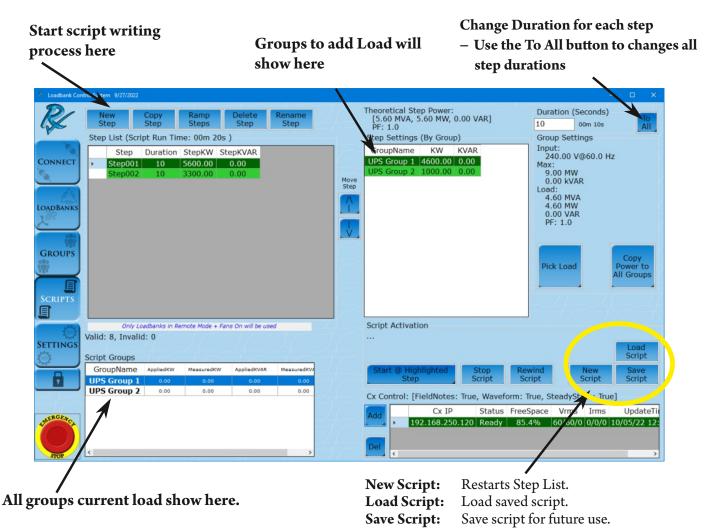
### **Description**:

To control multiple groups with a time slice for each step

#### How to Use Tab Summary:

- Create a New Step
- Set Duration in the top right of the screen for seconds step should occur
- Highlight Group under Step Settings
- Pick Load for Highlighted Group
- If multiple groups, Pick Load for each group separately or hit Copy Power to All Groups
- Add next step by hitting New Step or Copy Step buttons
- Continue process until entire Script is written
- Select starting Step and hit Start @ Highlighted Step
- Script will continue until completed or the Stop Script button is hit
- Save Script for future use

# NOTE: Groups that are not ready for load (ie not in Remote Mode, Blower [Off], or Alarms) will not be taken into account when setting loads in step.



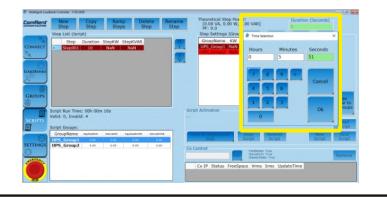
Groups will show up in the Step Settings as red until the load for each group is picked.

ୡ Intelligent Load	dbank Controller 7/30/2018		
	NewCopyRampDeleteRenameStepStepStepStepStep	Theoretical Step Power: [0.00 VA, 0.00 W, 0.00 VAR] PF: 0.0	Duration (Seconds)
CONNECT LOADBANKS GROUPS SCRIPTS SCRIPTS SETTINGS	Step List (Script)         Step Duration StepKW StepKVAR         Step001       10       NaN       NaN         Step001       10       NaN       NaN         Script Run Time: 00h 00m 10s       Valid: 0, Invalid: 4         Script Groups:       GroupName       AppliedKW       ActiveKW         UPS_Group1       0.00       0.00       0.00       0.00	PF: 0.0         Step Settings (Groups)         GroupName         GroupName         WW KVAR         UPS_Group1         NaN         NaN         UPS_Group2         NaN         VIPS_Group2         NaN         Van         Script Activation            Start @ Highlighted         Stop         Rewind         Script         Cx Control         Add         FieldNotes: True         Cx IP Status FreeSpace Vrms Irms Upda	GroupSettings Input: 480.00 V@60.0 Hz Max: 400.00 kW 0.00 kVAR Load: 0.00 VA 0.00 VA PF: NaN Pick Load Copy Power to All Groups Load Script Save Script Remove

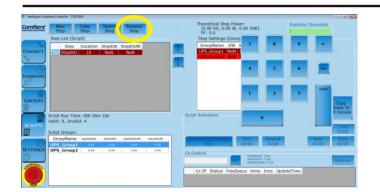
#### Set Duration

Press Duration and use key pad to set duration between 1 second and 1 day (duration must be entered in seconds).

# If duration is being reduced, check the Max Script Duration on settings page.



#### **Rename Step**



Click the Rename Step button, type new step name, and press enter.

🖓 Step Name				×
Enter New Step Name:				
Response:				
Step002				
q w e r t y u i o p	7	8	9	<-
a s d f g h j k l ce	4	5	6	Esc
z x c v b n m _ <-	1	2	3	Enter
Caps Exc Enter	(	)	·	

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				-		-	•				
Intelligent Load	bank Controller 7/30/2	1018									00
ComRent'	New Step	Copy Step	Delete Step	Rename Step	14		Theoretical Step F [0.00 VA, 0.00 PF: 0.0			Duration (Seconds 10	5)
	Step List (Scr	ipt)					Step Settings (G	roups)		GroupSettings	
	Step Step001		StepKW NaN	StepKVAR NaN			GroupName KV UPS_Group1_Na UPS_Group2_N3	N NaN		Input: 480.00 V@60.0 Max: 400.00 kW 0.00 kVAR Load: 0.00 VA 0.00 VA 0.00 VAR PF: NaN	Hz
	Script Run Tim Valid: 0, Invali		n 10s	-47	-1-	Script	Activation			Pick Load	Copy Power to All Groups
SCRIPTS											Load
	Script Groups:	1	1.00								Script
63	GroupName	AppliedKW	AdiveKW	AppliedKVAR	ActiveKVAR	Sta	t @ Highlighted Step	Stop Script	Rewind Script	New Script	Save Script
ETTINGS	UPS_Group1 UPS_Group2	0.00	0.00	0.00	0.00		step	Scipt	Script	Script	Script
	ors_aroup2	3.00	3.00	3.00	4.00			Add FieldNotes Waveform Steady3ta eSpace Vrms	ate: True	teTime	Remove

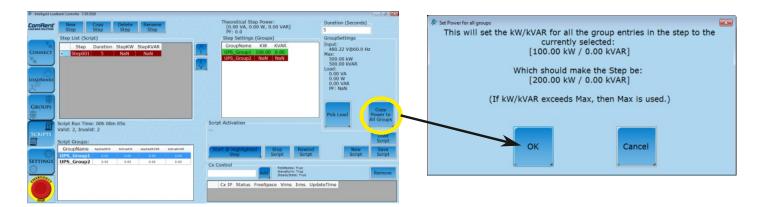
Highlight Group for the Step Settings and click Pick Load

Set % Max KW (based on Group Settings in Groups tab) or Target KW. Or if Group Settings uses Max KVAR then user can enter a KVAR or Power Factor.

33%         50%         Target KW           67%         75%         Reactive           • KVAR         Power Factor	4 5 6 Esc 1 2 3 Enter
	1 2 3 Enter
KVAR      Power Factor	إسالا
100% 0% 0	0
lesults	
Field Target Actual GroupMax C	apacity
PF 1.0 0.0	
AMPS 120.3 0.0 481.1 48	81.1
kVA 100.0 0.0 400.0 40	0.00
kW 100.0 0.0 400.0 40	0.00
kVAR 0.0 0.0 0.0 0.	0

	10%	25%		ax KW	7 8	9 <-	
	10%	23%	50				
33%		50%	Targe 250	et KW	4 5	6 Esc	
67%		75%	Reactive	Power Factor	1 2	3 Enter	
100% 0%			100	Power Pactor	0		
Re	sults						
_	Field	Target	Actual	GroupMax	Capacity		
•	PF	0.9	0.0				
	AMPS	323.9	0.0	850.5	721.7		
	kVA	269.3	0.0	707.1	600.0		
	kW	250.0	0.0	500.0	600.0		
	kVAR	100.0	0.0	500.0	0.0		
	S_Grou	n2		···/		1	

# Instead of picking a load for Group 2, another option is to use the Copy Power to All Groups.



	<b>Ramp Steps</b> require be defined.	e a starting step and an ending step to alrea
🖉 Add Ramp Steps		×
Start Step Settings (Groups)	Each Transition Duration	End Step Settings (Groups)
GroupName KW KVAR	10 00m 10s	GroupName KW KVAR
UPS Group 1         4600         0           UPS Group 2         1000         0	# of Transitions To Make 10 Max: 50	UPS Group 1         2300         0           UPS Group 2         1000         0
	Ramp Run Time: 01m 40s	
	Transitional steps will be inserted into the Script between start and end steps.	
	Start Step: (10s) UPS Group 1 [KW: 4600.00] [KVAR: 4600.00] UPS Group 2 [KW: 1000.00] [KVAR: 1000.00] Step 1: (10s)	
Step Time: 00m 10s 5.60 MW 0.00 kVAR	UPS Group 1 [KW: 4370.00] [KVAR: 0.00] UPS Group 2 [KW: 1000.00] [KVAR: 0.00] Step 2: (10s) UPS Group 1 [KW: 4140.00] [KVAR: 0.00] UPS Group 2 [KW: 1000.00] [KVAR: 0.00] Step 3: (10s)	Step Time: 00m 10s 3.30 MW 0.00 kVAR
Naming Method Start Step Name + Unique •	UPS Group 1 [KW: 3910.00] [KVAR: 0.00] UPS Group 2 [KW: 1000.00] [KVAR: 0.00] Step 4: (10s) UPS Group 1 [KW: 3680.00] [KVAR: 0.00] UPS Group 2 [KW: 1000.00] [KVAR: 0.00] Step 5: (10s) V	Cancel Ok

New steps will be created to fill in the transition from start to end.

Each group will be ramped against itself. *UPS Group 2* will maintain 1000 kW for all steps, while *UPS Group 1* will move by 230 kW each time.

& Loadbank Cont	trol System 9/27/2022	– O X
R	New Step         Copy Step         Ramp Steps         Delete Step         Rename Step	Theoretical Step Power: [5.37 MVA, 5.37 MW, 0.00 VAR] PF: 1.0 Duration (Seconds) 10 00m 10s All
	Step List (Script Run Time: 01m 50s )	Step Settings (By Group) Group Settings
CONNECT	Step Duration StepKW StepKVAR	LIDE Crown 1 4270 00 0 00
CONNECT	Step001         10         5600.00         0.00           > Step001         12         10         5370.00         0.00	UPS Group 2 1000.00 0.00 9.00 Max:
	Step001_12 10 5370.00 0.00 Step001_13 10 5140.00 0.00	Move 0.00 kVAR
15 Mg	Step001_14 10 4910.00 0.00	Step Load: 4.37 MVA
	Step001_15 10 4680.00 0.00	4.37 MW
1/13	Step001_16 10 4450.00 0.00	0.00 VAR PF: 1.0
$\sim$	Step001_17         10         4220.00         0.00           Step001_18         10         3990.00         0.00	V PP: 1.0
W)	Step001_19 10 3760.00 0.00	
GROUPS	Step001_20 10 3530.00 0.00	Сору
105	Step002 10 3300.00 0.00	Pick Load Power to
		All Groups
65	Only Loadbanks in Remote Mode + Fans On will be used	Script Activation
SETTINGS	Valid: 44, Invalid: 0	Load
-	Script Groups	Script
	GroupName AppliedKW MeasuredKW AppliedKVAR MeasuredKVA	Start @ Highlighted Stop Rewind New Save
	UPS Group 1 0.00 0.00 0.00 0.00	Step Script Script Script Script
-41	UPS Group 2 0.00 0.00 0.00 0.00	Cx Control: [FieldNotes: True, Waveform: True, SteadyState: True]
		Cx IP Status FreeSpace Vrms Irms UpdateTit
4MERGENCA		Add 192.168.250.120 Ready 85.4% 60/60/0 0/0/0 10/05/22 01:
STOP	< >	

Groups that are not ready for load - not in Remote Mode, Blower [Off] or Alarms - will not be taken into account when setting load in a step.

\*If not getting expected load go to Group Mode and ensure units are all in working order.\*

# Highlight:

Click on step to select it to change. **Reorder**: Push highlighted step up or down Theoretical Step Power: [5.60 MVA, 5.60 MW, 0.00 VAR] PF: 1.0 Duration (Seconds) Steps Step 10 00m 10s Step Settings (By Group) Step List (Script Run Time: 00m 20s ) Group Settings Group Settings Input: 240.00 V@60.0 Hz Max: 9.00 MW 0.00 KVAR Load: 4.60 MVA 4.60 MVA 0.00 VAR PF: 1.0 GroupName KW KVAR UPS Group 1 4600.00 0.00 Step Duration StepKW StepKVAR KVAR CONNECT Step001 10 5600.00 0.00 Move LOADBANK GROUPS ick Load II Grou SCRIPTS Only Loadbanks in Remote Mode + Fans On will be used Script Activation Valid: 8, Invalid: 0 TTINGS Script Script Groups GroupName AppliedKW MeasuredKW AppliedKVAR MeasuredK **UPS Group 1** UPS Group 2 0.00 0.00 0.00 Cx Control: 111 e, sceadyState: True] 
 Status
 FreeSpace
 Vrms
 Irms
 UpdateTi

 Ready
 85.4%
 60/60/0
 0/0/0
 10/05/22
 12
 Cx IP UpdateTi 192.168.25

Start: Start on highlighted StepStop: Stop current running scriptRewind: Bring highlight to top step

# "Play" symbol appears when script is running

Cx Co	ntrol	: [FieldNotes: True	, Wavef	orm: True, S	teadySta	te: Tru	ie]
Add		Cx IP	Status	FreeSpace	Vrms	Irms	UpdateTii
<u>Aud</u>	•	192.168.250.120	Ready	85.4%	60/60/0	0/0/0	10/05/22 01:
Del							
	<						>

Adding a Cx Monitor to scripting can help with automated data capture.

Cx Monitors are added by their IP Address, which can be found on their front screens.

Each Cx will capture and store a waveform and field note during the steady state AND load step change through out the script.

Note: Cxs will need to be properly installed to corresponding locations before capturing data

# Settings Tab

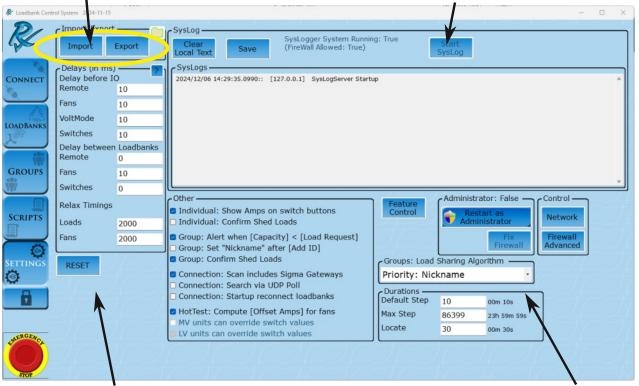
**Import/Export:** Makes it easy to switch computers or tablets keeping groups/ nicknames and settings.

Syslog: Running log of all activities performed

(more on next page)

To operate make sure that the firewall on the PC is open for Syslog events.

FireWall Allowed must = True



Reset: Sets all setting to default

#### **Delay before IO:**

This section gives the ability to delay timings on each loadbank. In Milliseconds up to 6000 (6 seconds)

#### Delay between Loadbanks:

This section gives the ability to slowly start and remove loads in group mode. Adds delays between commands to load banks. In Milliseconds up to 6000 (6 seconds)

**Relax Timings**: Set how long the controller locks out the commands after an action is deployed.

#### Group: Set nickname after Add by ID:

This pops up a second text input after a successful add of a loadbank into a group to modify its nickname. (Scanner ready)

**Group Sharing Algorithm**: Changes the way the controller spreads the load to the loadbanks in a group. See *how group sharing works* section.

**Default Step Duration:** Length in seconds that a step is defaulted to in script page.

**Max Step Duration**: Limit script step to this length in seconds

**Locate:** Set the time period the LED of a LoadBank will flash once the "Locate Unit" or "Locate Group" button is hit.

**Search Via UDP:** Alternate loadbank search method. Allows for use of larger networks. This is unavailable with Sigma Gateway Scans

**Override Switch Values:** Low Voltage and Medium Voltage loadbanks honor switch values set in maintenance mode

The Syslog keeps a running record of all communication from the Load Bank Software to the LoadBanks. The log timestamps the commands so the user can save their testing log and can be used in debugging issues with connectivity occur.

clear Save	(FireW	gger System Running: True all Allowed: True) w SysLog Events SysLog	
ysLogs			
018/08/24 15:08:39.5382:: .00 VAR]	[127.0.0.1]	STEP [] GROUP [UPS_Group1] => Set to [480.00 V@60.0 Hz][260.00 kVA, 260.00 kW,	^
018/08/24 15:08:39.5382:: AR]	[127.0.0.1]	STEP [] GROUP [UPS_Group2] => Set to [480.22 V@60.0 Hz][0.00 VA, 0.00 W, 0.00	
	[127.0.0.1]	STEP [] GROUP [UPS_Group1] => Set to [480.00 V@60.0 Hz][400.00 kVA, 400.00 kW,	
018/08/24 15:08:41.5350:: AR]	[127.0.0.1]	STEP [] GROUP [UPS_Group2] => Set to [480.22 V@60.0 Hz][0.00 VA, 0.00 W, 0.00	
018/08/24 15:08:44.5458:: AR]	[127.0.0.1]	STEP [] GROUP [UPS_Group1] => Set to [480.00 V@60.0 Hz][0.00 VA, 0.00 W, 0.00	
	[127.0.0.1]	STEP [] GROUP [UPS_Group2] => Set to [480.22 V@60.0 Hz][120.11 kVA, 120.11 kW,	
	[127.0.0.1]	STEP [] GROUP [UPS_Group1] => Set to [480.00 V@60.0 Hz][0.00 VA, 0.00 W, 0.00	
	[127.0.0.1]	STEP [] GROUP [UPS_Group2] => Set to [480.22 V@60.0 Hz] [240.23 kVA, 240.23 kW,	-

The Syslog can be saved as a text document to any device (pictured below).

# Please note that the log is saved each day. See tab in feature control for info.

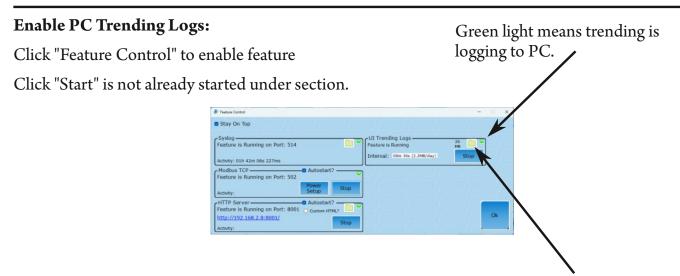
The log shows events in two different ways.

Events about connectivity, firmware updates, and alarms: Date / Time / Connection IP Address / Event that occured

Events derivived from user commands:

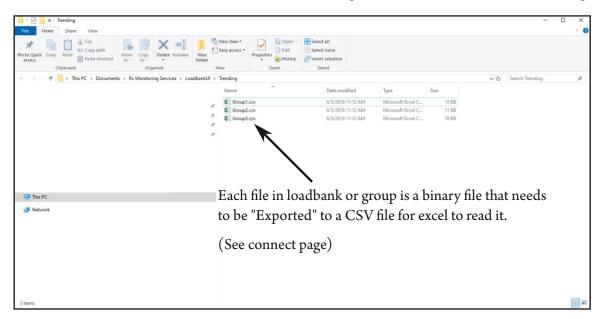
Date / Time / Software IP Address / Tab Event Derived / LB Name or Group Name / LoadBank Settings / Actual load applied

LoadbankUILog_20180904_132356.bt - I	Notepad
<u>File Edit Format View Help</u>	
File         Edit         Format         Yiew         Help           2018/09/04         13:13:42.8981::         2018/09/04         13:13:43.6425::           2018/09/04         13:13:44.3922::         2018/09/04         13:13:44.3922::           2018/09/04         13:13:44.3922::         2018/09/04         13:14:04.2052::           2018/09/04         13:14:04.2055::         2018/09/04         13:14:06.4538::           2018/09/04         13:14:06.4538::         2018/09/04         13:16:43.2053::           2018/09/04         13:16:46.9612::         2018/09/04         13:16:46.9632::           2018/09/04         13:16:46.9538::         2018/09/04         13:17:10.2033::           2018/09/04         13:17:17.20.2033::         2018/09/04         13:17:17.6978:           2018/09/04         13:17:17.4652::         2018/09/04         13:17:17.4652::           2018/09/04         13:19:07.3825::         2018/09/04         13:22:30.8929::           2018/09/04         13:22:30.8929::         2018/09/04         13:22:30.8929::           2018/09/04         13:22:30.8929::         2018/09/04         13:22:30.8929::           2018/09/04         13:22:30.8929::         2018/09/04         13:22:30.8929::           2018/09/04         13:22:30.24953::	<pre>[192.168.2.27] &lt;2&gt; ****** Start ****** [192.168.2.27] &lt;2&gt; Version: 1.0.4 Aug 1 2017 15:40:00 [192.168.2.27] &lt;2&gt; Version: 2 [192.168.2.27] &lt;2&gt; ****** Start ****** [192.168.2.27] &lt;2&gt; ****** Start ****** [192.168.2.27] &lt;2&gt; ****** Start ****** [192.168.2.27] &lt;2&gt; eversion: 1.1.1 Jul 30 2018 10:19:43 [192.168.2.27] &lt;2&gt; eversion: 1.1.1 Jul 30 2018 10:19:43 [192.168.2.27] &lt;2&gt; ALARM - Fan Motor Fail Cleared [192.168.2.27] &lt;2&gt; ALARM - Fan Motor Fail Cleared [192.168.2.27] &lt;3&gt; ALARM - Air Flow Fault Cleared [192.168.2.27] &lt;3&gt; ALARM - Air Flow Fault Cleared [192.168.2.27] &lt;3&gt; ALARM - Air Flow Fault Cleared [192.168.2.27] &lt;5&gt; 240 Mode Change. [192.168.2.27] &lt;5&gt; ALARM - San Motor Fail Set [192.168.2.27] &lt;5&gt; ALARM - San Motor Fail Cleared [192.168.2.27] &lt;5&gt; ALARM - San Motor Fail Set [192.168.2.27] &lt;5&gt; ALARM - San Motor Velon Velon Velon Vall (00.00 kw, 0.00 VAR] [127.0.0.1] GROUP [UPS_GROUP1] =&gt; Set to [480.00 Velon Hz] [0.00 VA, 0.00 W, 0.00 VAR] [127.0.0.1] GROUP [UPS_GROUP1] =&gt; Set to [480.00 Velon Hz] [0.00 VA, 0.00 W, 0.00 VAR] [127.0.0.1] STEP [GROUP (480V] =&gt; Set to [480.00 Velon Hz] [0.00 VA, 0.00 W, 0.00 VAR] [127.0.0.1] STEP [GROUP [UPS_GROUP1] =&gt; Set to [480.00 Velon Hz] [0.00 VA, 0.00 W, 0.00 VAR] [127.0.1] STEP [GROUP [UP</pre>



# Click here to open windown explorer to logs directory or :

 $c:\Users\{currentUser}\Documents\Rx\Monitoring\Services\LoadbankUI\Trending\$ 



Output File Format (CSV) after export using "Export PC Logs" on connect screen.

Imports directly to Microsoft Excel

X							UPS	518.csv - Excel				6		~ (7	? 🗉 -	- 8/X
FIL		ISERT PAGE L				OXIT PDF										77PL
Ê	Cut	Calibri	- 11 - A A	= = = *	Wrap Text	General	Nor	rmal E	Bad	Good	And and a second se	culation	in 💦 🔝	X AutoSum · A	- #k	ĺ.
Paste	* Format Painter	B I <u>U</u> -	🖽 • 🔷 • 🗛 •	=== += += +=	🗉 🔛 Merge & Cer	nter - \$ - % , 50 40 Co	mattional Format as	ck Cell E	Explanatory	Input	Linked Cell No	ote 🗸	Insert Delete Format		& Find & * Select *	
	Clipboard 15		Font 6		anment	is Number is	many mar		Style	s			Cells	Editing	Sect	^
N2	- : 2	X 🗸 fx	0													× 1
	A		В	С	D	E	F	G	Н	1	J	К	L	М	N	0-
1	DateTime		ActiveUnits	GroupName	VoltMode	TapPositionFrequency	RatedVoltage	MaxKW	MaxKVAR	OffsetKW	OffsetKVAR	AppliedKW	ActiveKW	AppliedKVAR	ActiveKVAR	
2	10/17/2	019 10:12	2	UPS1B	480	6	0 48	0 1200	0	4.592014	0	5	4.59201367	0	0	
3																
4																4
5																

## Modbus TCP Server:

The modbus server give the user the ability to set KW through a modbus interface.

This interface presents the attached loadbanks on the modbus interface as one group.

These settings for that group are under the "Power Setup" section.

It also has the ability to read the values from each individual load bank. See "TCP\_MODBUS\_MAP" For register definitions.

# **Enable Modbus TCP Server:**

Click "Feature Control" to enable feature Click "Start" is not already started under section. Green light means Modbus TCP server is running on PC.



Settings are similar to ones needed to define a group.

See group section in manual for explanation of functionality.

K Modbus Power Setup	×
User Assigned ID hurp	
Rated Voltage 4160 Frequency 60	Max Allowed KW  No Max  Max Allowed KVAR  No Max  Max Allowed KVAR
Load Sharing Algo	rithm
Balanced(Defau	ılt) -
4	Cancel Ok

#### NOTE:

The green light needs to be illuminated to ensure that the server is running. If it will not start go back to settings page and click "**Restart as Administrator**" to restart the Intelligent Loadbank Controller with elevated permissions to open ports.

# HTTP Server (Read Only):

The HTTP server give the user the ability to see the connected loadbanks through a web address from the Intelligent Loadbank Controller.

The web address is the computers IP address on port 8001:

http://{PC IP ADDRESS}:8001

# You can locate the PC IP address by going to the connect screen above "Scan Network"

#### **Custom HTML:**

The controller can have the default index.html overridden with a custom HTML web page if desired.

Stay On Top			
Syslog Feature is Running on Port: 514	۰	Trending Logs Feature is Running	•
Activity: 48m 31s 813ms			Stop
Modbus TCP Feature is Running on Port: 502 Activity:	Autostart?     Power     Setup     Stop		
HTTP Server Feature is Running on Port: 8001 http://192.168.8.23:8001	Autostart? Custom HTML?		Ok

**Default Website Option:** Scoll to bottom of page.

**Modbus TCP settings:** Shows settings for the Modbus TCP group settings **Options:** Add or remove columns from the website **Links:** Click on to download or view available files from the controller.



	Tim	C ▲ Not secure http://192.168.8.23:8001           Image: 2023-08-28 09:57:12           Build: 2023-08-24T20:34-50 0000000Z																
Default website:		Watts VAR Amps	Meas 0.0 0.0 0.00	5 V @ 10 ured C: 2.1 0.0 2.1 in Alarm	apacity 1 M 0 53 k	Made	Capacity	Capacity	Capacity	Applied	Applied	Avg	Avg	Avg	Avg	Avg	Switches	Alarm
				Group	Nickname	Mode	(W)	(VAR)	(Amps)	(W)	(VAR)	Vrms	Irms	KW	KVAR	KVA	Switches	Alarm
	•••	OhmsMeter							0			389.13	0.00	0.00	0.00	0.00	0000	
	•					480	400.0 k		481	· · · · · · · · · · · · · · · · · · ·		0.00	0.00	0.00	0.00	0.00	0000	۲
	•		LB01451			480	400.0 k		481			0.00	0.00	0.00	0.00	0.00	0000	۲
	•	LPH400	LB01568	-		480	400.0 k		481			0.00	0.00	0.00	0.00	0.00	0000	۲
	•1	1.PH400	LB01455			480	400.0 k		481			0.00	0.00	0.00	0.00	0.00	0000	۲
	•	LPH500	CRE	÷.		480	500.0 k		601			480.00	0.00	0.00	0.00	0.00	0000	•

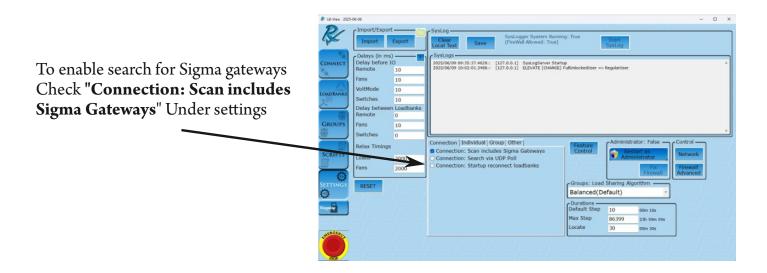
#### NOTE:

The green light needs to be illuminated to ensure that the server is running. If it will not start go back to settings page and click "**Restart as Administrator**" to restart the Intelligent Loadbank Controller with elevated permissions to open ports.

NOTE:

The loadbank controller supports Avtron's Wireless Sigma Gateway. To use the gateway with a LT or Sigma2 loadbank the controller must be on the same IP network as the gateway interface.

The controller only supports a Single loadbank to a wireless gateway.



For usage of the Sigma Wireless Platform see:

https://avtronpower.com/load-banks/load-bank-control/sigma-wireless-gateway/

