

Application Note: 3041

City Multi Central Controller Energy Apportionment Guide

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Required Components

Hardware & Controls

(×1)
[AE-200A](#)



Central controller for
apportioning energy

(×1 ~ 4)
[AE-50A](#) or [EW-50A](#)



Central controller(s) for
controlling indoor units

(×1 ~ 20)
[PAC-YG60MCA-J](#)



Pulse Input controller for
receiving meter readings

(×3)
Third-party
Current Transducers



Used for measuring
electricity usage

(×1)
Third-party
Electricity Meter



Used for monitoring
electricity usage

(×1)
Third-party
Network HUB



Used for interlocking
central controllers together

Required Components

Energy Apportionment License

Instructions

- 1) Click on the following link to download the central controller [License Form](#).
- 2) Fill out the License Form and e-mail it to your local distributor with a PO. Be sure to include the serial number of each additional AE-50 or EW-50 Expansion Controller as well.

Fig 1. License Form

Email Form		License Form AE-200A, AE-50A, and EW-50A					
Submitted By:					Date:		
Registered By: Mitsubishi Electric Trane HVAC US					Date:		
PROJECT INFORMATION							
Project Name:					Industry Type:		
Project Address:							
Installer:					Install Date:		
Owner/Developer:							
Consultant/Engineer:							
Purchase Order:					Date:		
PLEASE USE PAGE 2 OF THIS DOCUMENT TO ATTACH A COPY OF THE P.O. USED TO PURCHASE THE LICENSE FROM MITSUBISHI ELECTRIC TRANE US LLC.							
EQUIPMENT INFORMATION				SITE CONTACT INFORMATION			
Component	Quantity	Distributor		Contractor		Site Contact	
Outdoor Unit(s)		Company					
Indoor Units		Name					
Centralized Controllers		Telephone					
Remote Controllers		E-mail					
OPTIONAL SOFTWARE LICENSES (PER CENTRAL CONTROLLER – AE-200A, AE-50A, and EW-50A)							
Go to "Registration of Optional Functions". Select the desired optional function and enter in the license number as provided table below. The function status change from "Not Available" to "Available."							
Centralized Controller Details	Master Controller	Expansion Controller (EW-50A cannot have expansion controllers. Please fill out additional forms for multiple EW-50A master controllers.)				Expansion Controller for AE-200 (no M-NET) or AE-200 (Billing/Charge)	
Model	☐ AE-200A ☐ EW-50A	☐ AE-50A ☐ EW-50A	☐ AE-50A ☐ EW-50A	☐ AE-50A ☐ EW-50A	☐ AE-50A ☐ EW-50A		
Name							
Serial Number							
Software Version							
LICENSE PURCHASED							
Licensed Purchased	License Unlock Codes (To be completed by Mitsubishi Electric Trane HVAC US)						
LIC-BACnet Master	☐						
LIC-BACnet Expansion	☐						
LIC-Charge Master	☐						
LIC-Charge Expansion	☐						
LIC-PWeb Master	☐						
LIC-PWeb Expansion	☐						

Specifications are subject to change without notice.

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Required Components

Initial Setting Tool and Charge Calculation Tool

Instructions

- 1) [Click here](#) to open the Central Controller page scroll down to the **Software** section.
- 2) Click on the icon titled **AE-200A AE-50 EW-50 Initial and BACnet Setting Tool** and select **Install** in the pop-up window.
- 3) Click on the icon titled **AE-200 AE-50 EW-50 Charge Calculation Tool** and select **Install** in the pop-up window.
- 4) Extract both files and follow the on-screen installation instructions.

Important Note:

As of 11-23-2021, the latest central controller firmware is **7.95 (1.07)**, the latest Initial Setting Tool software version is **7.90**, and the latest Charge Calculation Tool software version is **1.20**.

Service

[Top^](#)


AE-200 AE-50
EW-50 Service
Handbook



Java 8 Notice



AE-200 AE-50
EW-50 Technical
Manual

Software

1

2

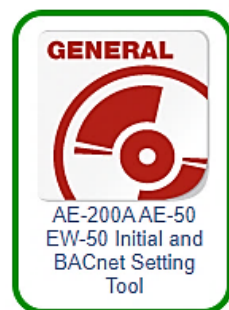
3

[Top^](#)


AE-200 AE-50
EW-50 Update
Tool



AE-200 FW0795



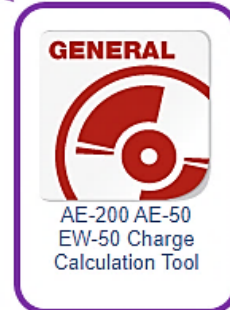
AE-200A AE-50
EW-50 Initial and
BACnet Setting
Tool



BACnet
ONLINE/OFFLINE
Confirmation Tool



AE-200 AE-50
EW-50 License
Form



AE-200 AE-50
EW-50 Charge
Calculation Tool

Submittals

[Top^](#)


AE-200A Submittal



LIC-
BACnet_
Submittal



LIC-PWeb
Submittal



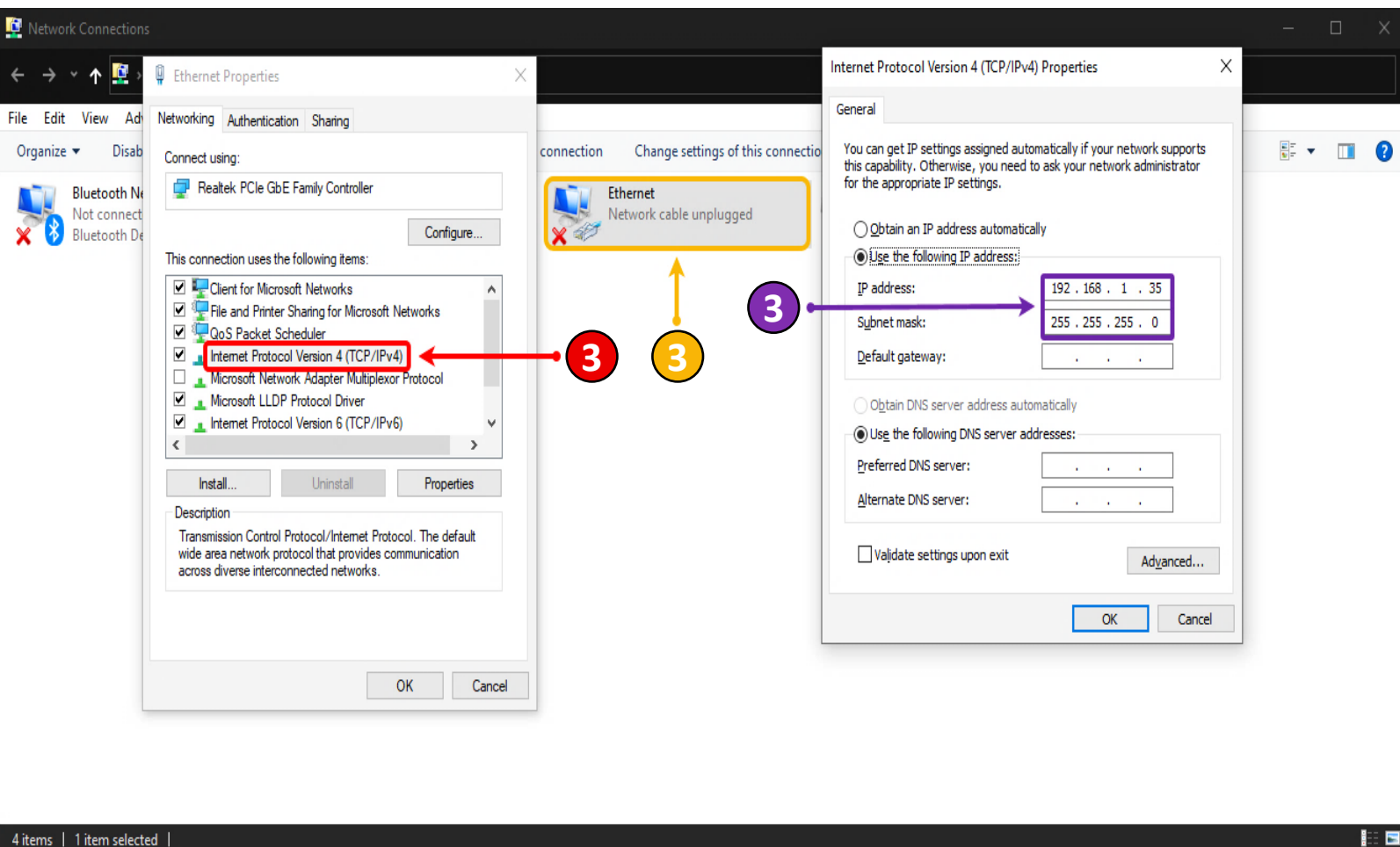
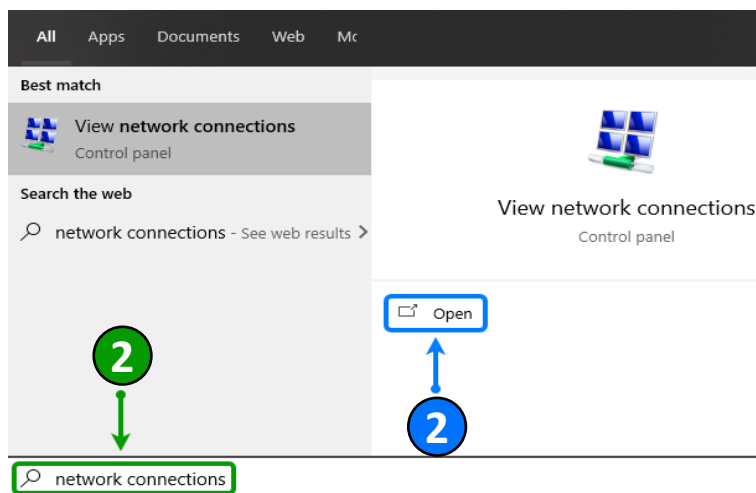
LIC-Charge
Submittal

Initial Setup

Connect to the Central Controller

Instructions

- 1) Connect an ethernet cable to your laptop and to the **LAN1 port** on the central controller.
- 2) Press the Windows key  + S, type **Network Connections** and select **Open**.
- 3) Double-click the **Ethernet** icon, double-click the **IPv4 icon**, and type in an **IP address** that is within range of your central controller. For example, if the central controller's IP address is left at the default setting of 192.168.1.1, then you can set your laptop's IP address to 192.168.1.15 to communicate with it. Then click on any empty spot in the **Subnet mask line** beneath it to automatically fill the empty spaces with 255.255.255.0 as shown below. Press **OK** once finished and continue to the next page for further instructions.



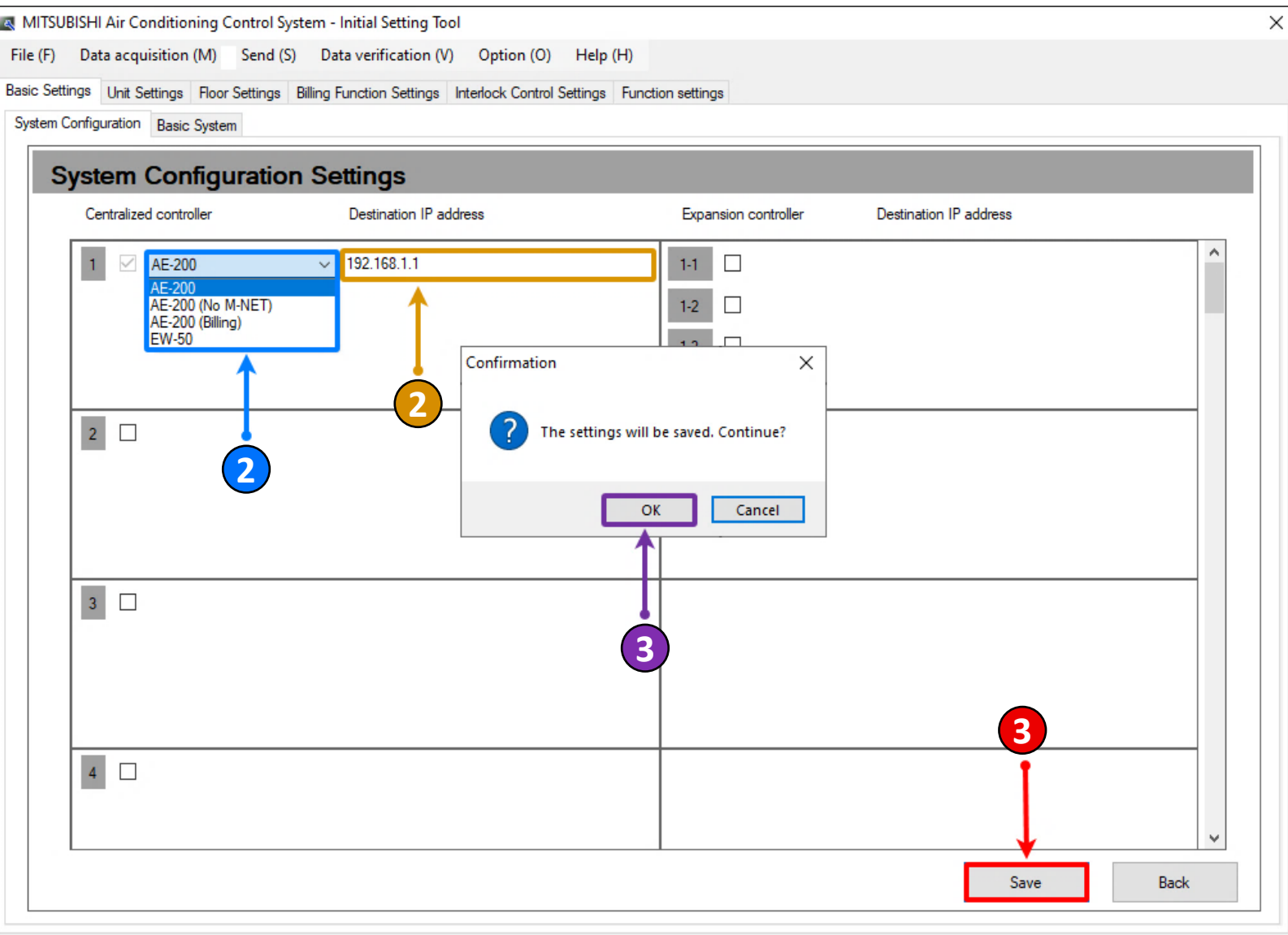
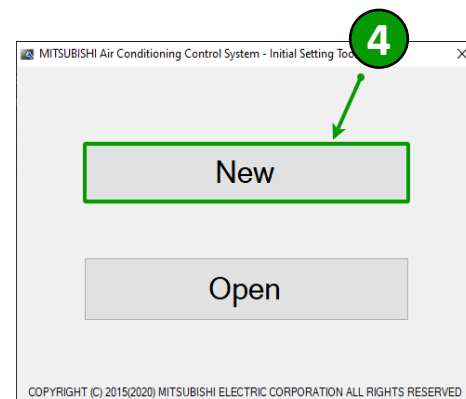
Initial Setup

Acquire the default Network Settings – Page 1

Instructions

- 1) Double-click the  icon to open the Initial Setting Tool program and select **New** as shown to the right.
 - Click [here](#) for instructions on downloading and installing IST.
 - Select **Open** to use an existing file.
- 2) Use the **drop-down menu** to select your central controller type and type in the **LAN1 IP Address** (default is **192.168.1.1**).
- 3) Click **Save** and then click **OK** to save your settings before moving on.

Important Note: **ALWAYS** save the settings after making changes.

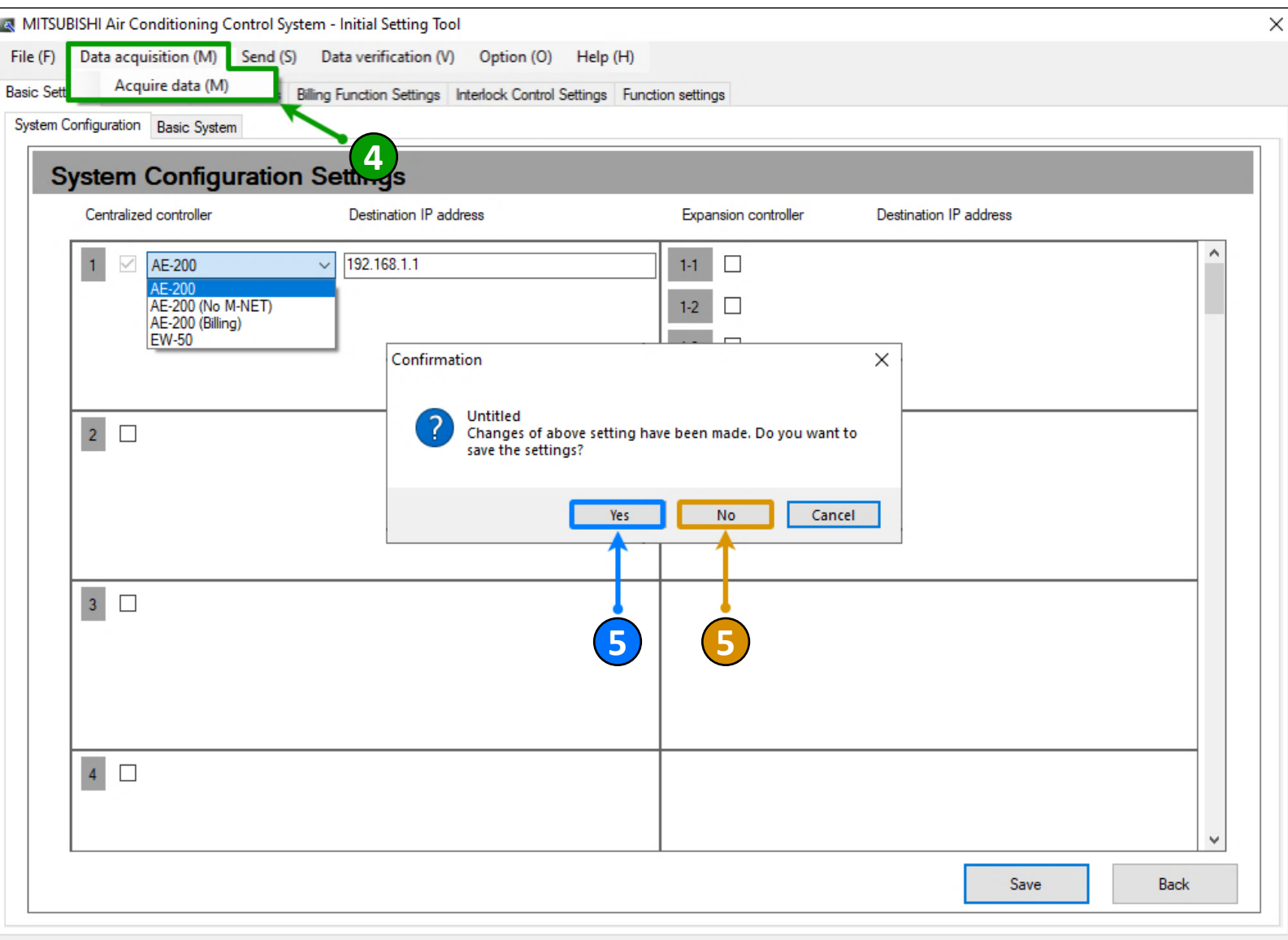


Initial Setup

Acquire the default Network Settings – Page 2

Instructions

- 4) Click on the **Data Acquisition** drop-down and select **Acquire data**.
- 5) Choose one of the following options in the confirmation window that pops up:
 - Select **Yes** to save and export the current settings as a DAT file that can be used to automatically load the settings later as noted in Step 1) on the previous page.
 - Select **No** to continue as is. This is only recommended if you have already saved a file.
- 6) Type in the ID (**initial**) and Password (**init**) in all lowercase letters and click **OK**.
- 7) Click **OK** again once the data acquisition is complete and continue to the next page.

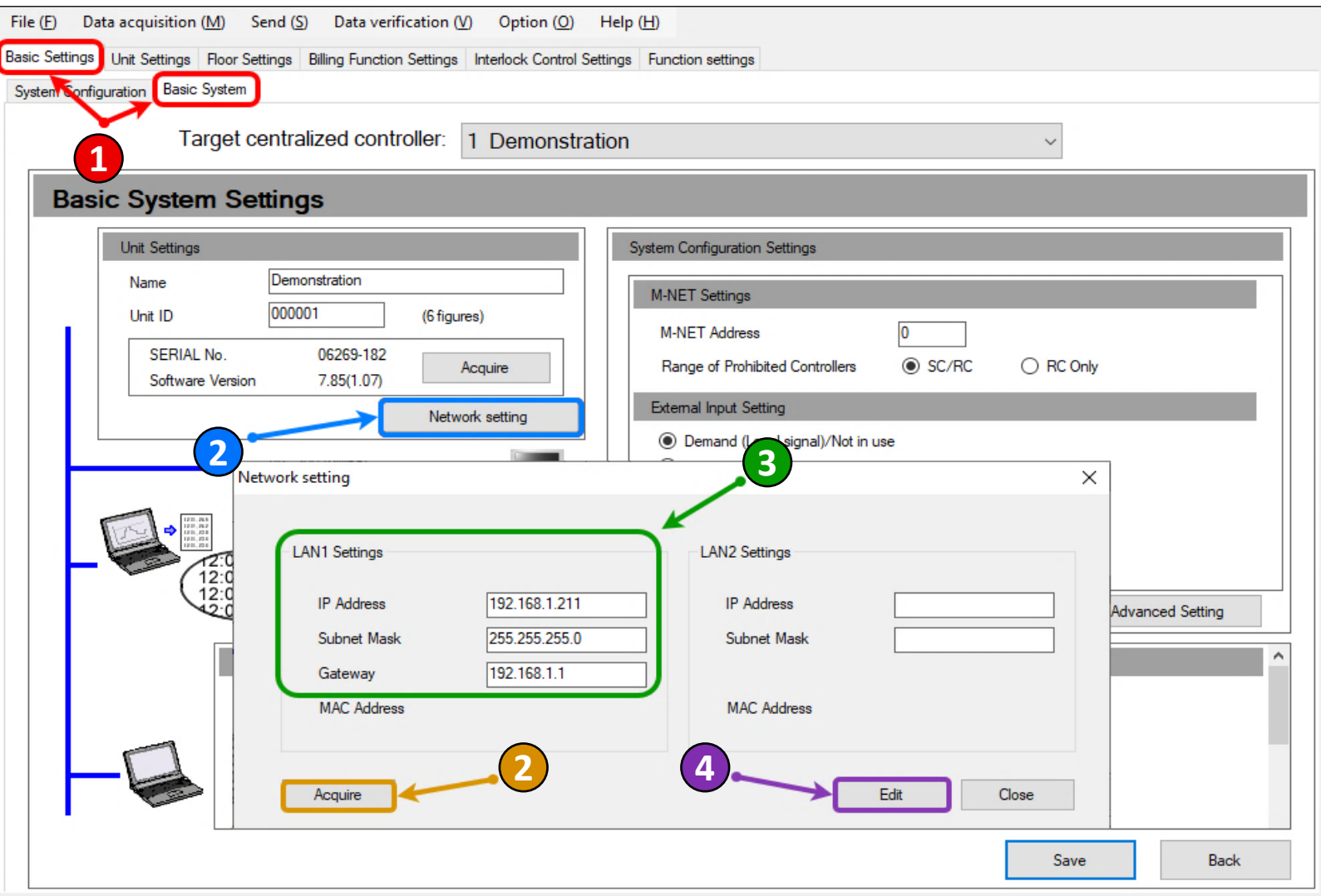


Initial Setup

Configure the new Network Settings

Instructions

- 1) Click on **Basic Settings** and select the **Basic System** tab.
- 2) Click **Network setting** and then click **Acquire** to view the controller's current settings.
- 3) Enter a unique **LAN1 IP Address** for each central controller. Since most network gateways have the same default IP address of 192.168.1.1 as the central controllers do, each central controller must be given a unique IP address in order to communicate with the gateway. For example, if the gateway's IP address is 192.168.1.1, then the last digit of the central controller's IP address must be set to anywhere between 2~254 (i.e., 192.168.1.211). Enter the **Subnet Mask**. The default is 255.255.255.0. Enter the **Gateway IP Address** of the gateway that the controller will be connecting to.
- 4) Click **Edit** to change the settings and then click **Acquire** to confirm they were changed.



File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings Billing Function Settings Interlock Control Settings Function settings

System Configuration Basic System

Target centralized controller: 1 Demonstration

Basic System Settings

Unit Settings

Name: Demonstration

Unit ID: 000001 (6 figures)

SERIAL No.: 06269-182

Software Version: 7.85(1.07)

Acquire

System Configuration Settings

M-NET Settings

M-NET Address: 0

Range of Prohibited Controllers: ☒ SC/RC ☐ RC Only

External Input Setting

☒ Demand (Line signal)/Not in use

Network setting

LAN1 Settings

IP Address: 192.168.1.211

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.1

MAC Address

Acquire

LAN2 Settings

IP Address

Subnet Mask

MAC Address

Edit

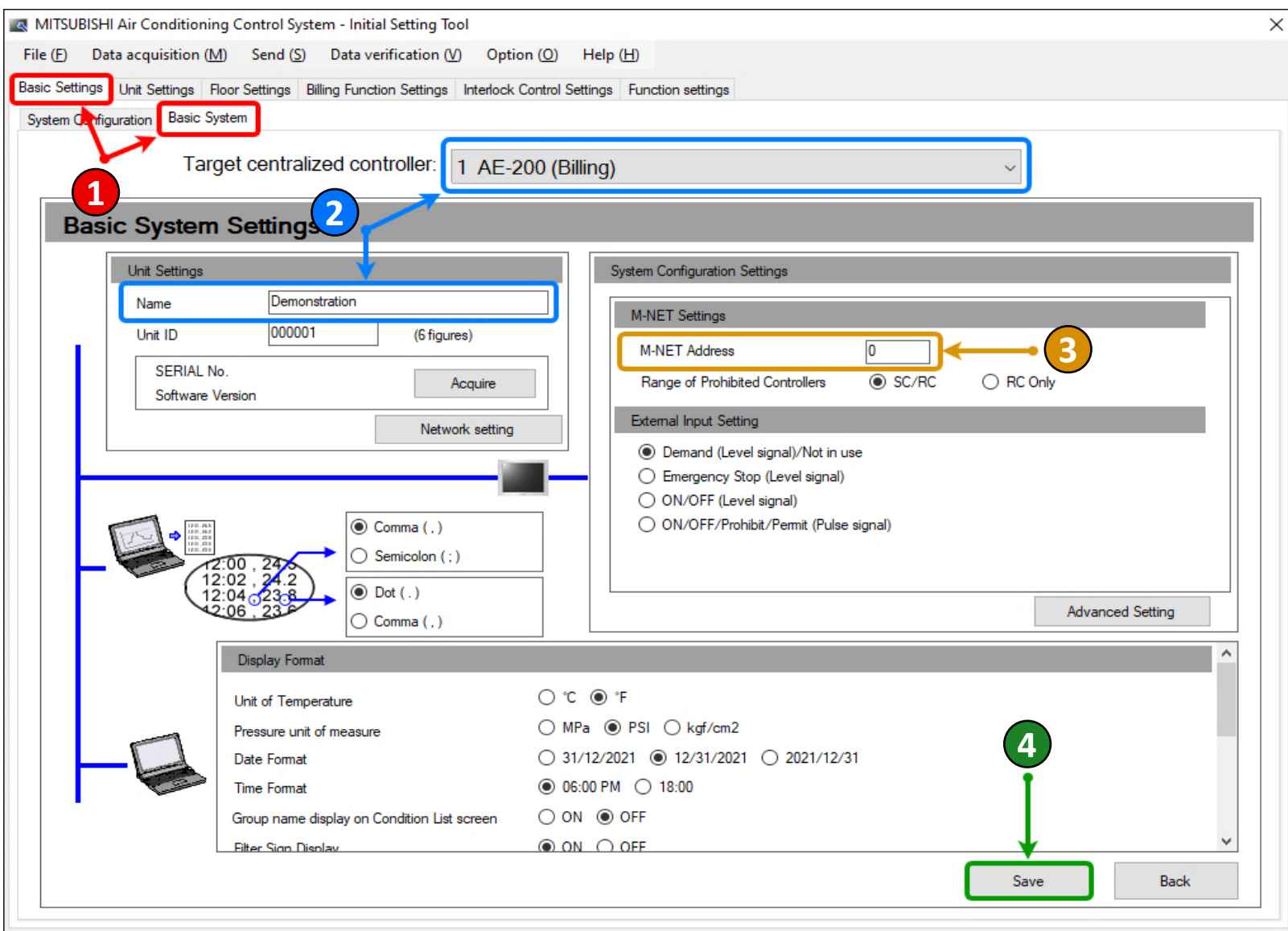
Save Back

Initial Setup

Enter a Name and M-Net Address

Instructions

- 1) Click on **Basic Settings** and select the **Basic System** tab.
- 2) Enter a **name** for the central controller to be displayed in the main **drop-down menu**.
- 3) Set the expansion controller's **M-Net Address** to **201~250**.
 - The AE-200 (Billing) M-Net address **must** be left at **0** as shown in the image below.
 - Do not use the same M-Net address for more than one central controller.
- 4) Click **Save** and then click **OK** to save your settings before moving on.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings Billing Function Settings Interlock Control Settings Function settings

System Configuration Basic System

Target centralized controller: 1 AE-200 (Billing)

Basic System Settings

Unit Settings

Name: Demonstration

Unit ID: 000001 (6 figures)

SERIAL No. Acquire

Software Version Network setting

System Configuration Settings

M-NET Settings

M-NET Address: 0

Range of Prohibited Controllers: ☒ SC/RC ☐ RC Only

External Input Setting

☒ Demand (Level signal)/Not in use

☐ Emergency Stop (Level signal)

☐ ON/OFF (Level signal)

☐ ON/OFF/Prohibit/Permit (Pulse signal)

Advanced Setting

Display Format

Unit of Temperature: ☐ °C ☒ °F

Pressure unit of measure: ☐ MPa ☒ PSI ☐ kgf/cm2

Date Format: ☐ 31/12/2021 ☒ 12/31/2021 ☐ 2021/12/31

Time Format: ☒ 06:00 PM ☐ 18:00

Group name display on Condition List screen: ☐ ON ☒ OFF

Filter Sign Display: ☒ ON ☐ OFF

Save Back

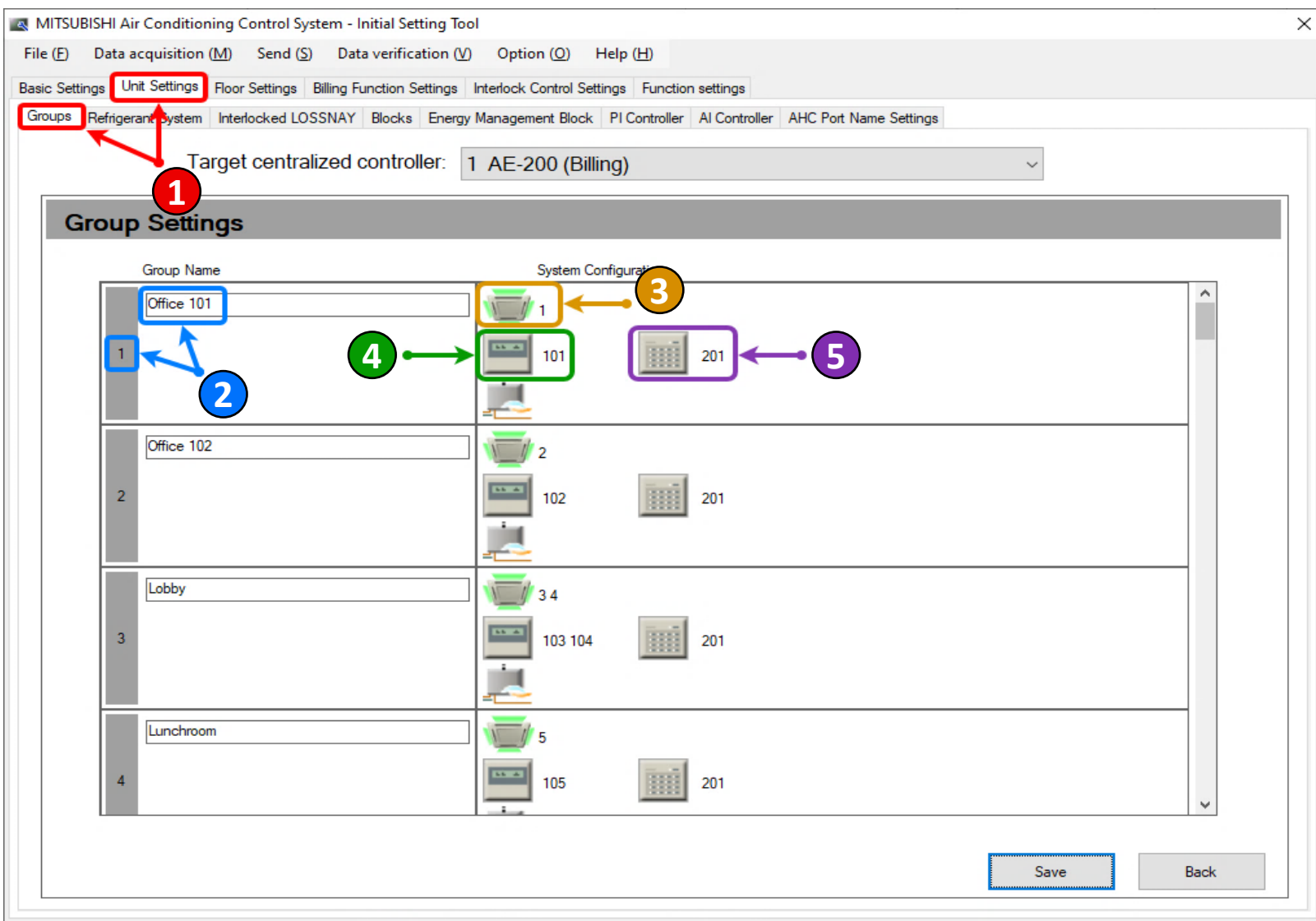
Initial Setup

Set up the Indoor Unit Groups

Instructions

- 1) Click on **Unit Settings** and select the **Groups** tab.
- 2) Type in the **Group Name** for each **Group Number**.
- 3) Click on the  icon and select an **indoor unit address** between **01~50** for each group.
Note that you can add up to 16 indoor units per group.
- 4) If connecting a **Smart ME** controller ([PAR-U01MEDU-K](#)) then click on the  icon and select an address that matches the indoor unit's address + 100. See below for reference.
- 5) Click on the  icon and select the **M-Net address** of the central controller that you're currently connected to. Leave this blank if the central controller's M-Net address is 0.

Important: Do not setup groups on the AE-200 (Billing) being used for energy apportionment.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings **Unit Settings** Floor Settings Billing Function Settings Interlock Control Settings Function settings

Groups Refrigerant system Interlocked LOSSNAY Blocks Energy Management Block PI Controller AI Controller AHC Port Name Settings

Target centralized controller: 1 AE-200 (Billing)

Group Number	Group Name	System Configuration
1	Office 101	 1  101  201
2	Office 102	 2  102  201
3	Lobby	 3 4  103 104  201
4	Lunchroom	 5  105  201

Save Back

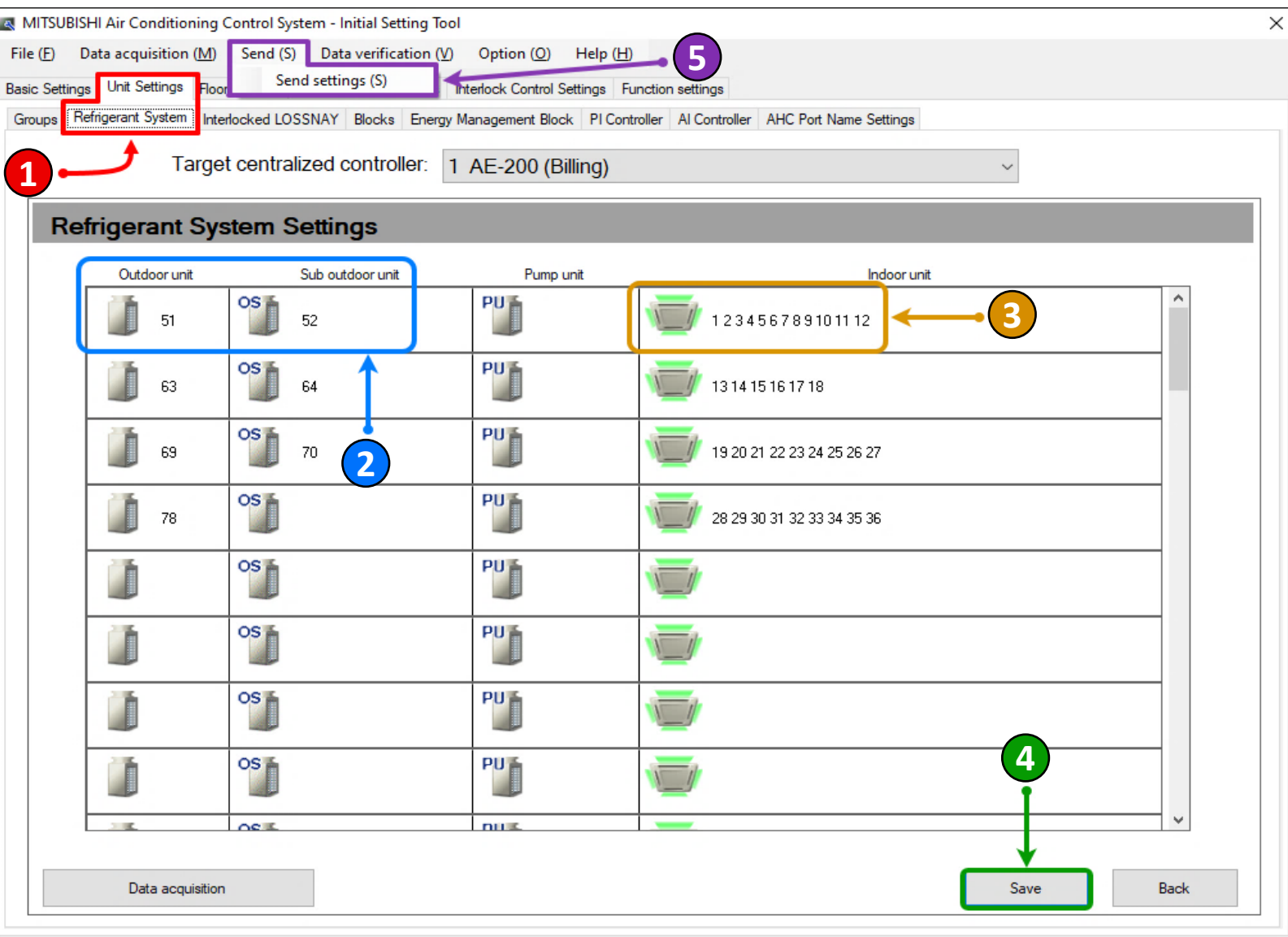
Initial Setup

Register the Central Controller Settings

Instructions

- 1) Click on **Unit Settings** and select the **Refrigerant System** tab.
- 2) Click on the  or the  icon and select the **Main** or **Sub Outdoor Unit Address**.
- 3) Click on the  icon and select the corresponding **Indoor Unit Addresses**.
- 4) Click **Save** and then click **OK** in the pop-up window to save the current settings.
- 5) Click on **Send** and select **Send Settings** to register the settings to the central controller.

Important: Repeat the steps listed on pages 5-11 to complete the initial setup for each additional central controller. Do not proceed to the next page until the IP Address, M-Net Address, Group, and Refrigerant System settings have been set on all central controllers.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Send settings (S) Interlock Control Settings Function settings

Groups Refrigerant System Interlocked LOSSNAY Blocks Energy Management Block PI Controller AI Controller AHC Port Name Settings

1 Target centralized controller: 1 AE-200 (Billing)

Refrigerant System Settings

Outdoor unit	Sub outdoor unit	Pump unit	Indoor unit
 51	 52		 1 2 3 4 5 6 7 8 9 10 11 12
 63	 64		 13 14 15 16 17 18
 69	 70		 19 20 21 22 23 24 25 26 27
 78			 28 29 30 31 32 33 34 35 36
			
			
			
			

Data acquisition Save Back

Initial Setup (Touchscreen)

Activate the Energy Apportionment Function

Instructions

- 1) Touch the  icon at the top right corner of the screen, then enter the Username (**initial**) and Password (**init**) in all lowercase letters, then touch **Login**.
- 2) Touch the **Unit Info.** Tab.
- 3) Set System Exp to **Expand**.
- 4) Set AE-200 Apportion to **Use**.
- 5) Set AE-200 M-NET to **Do not use**.
- 6) Touch **Save Settings**.



Login / Panel cleaning

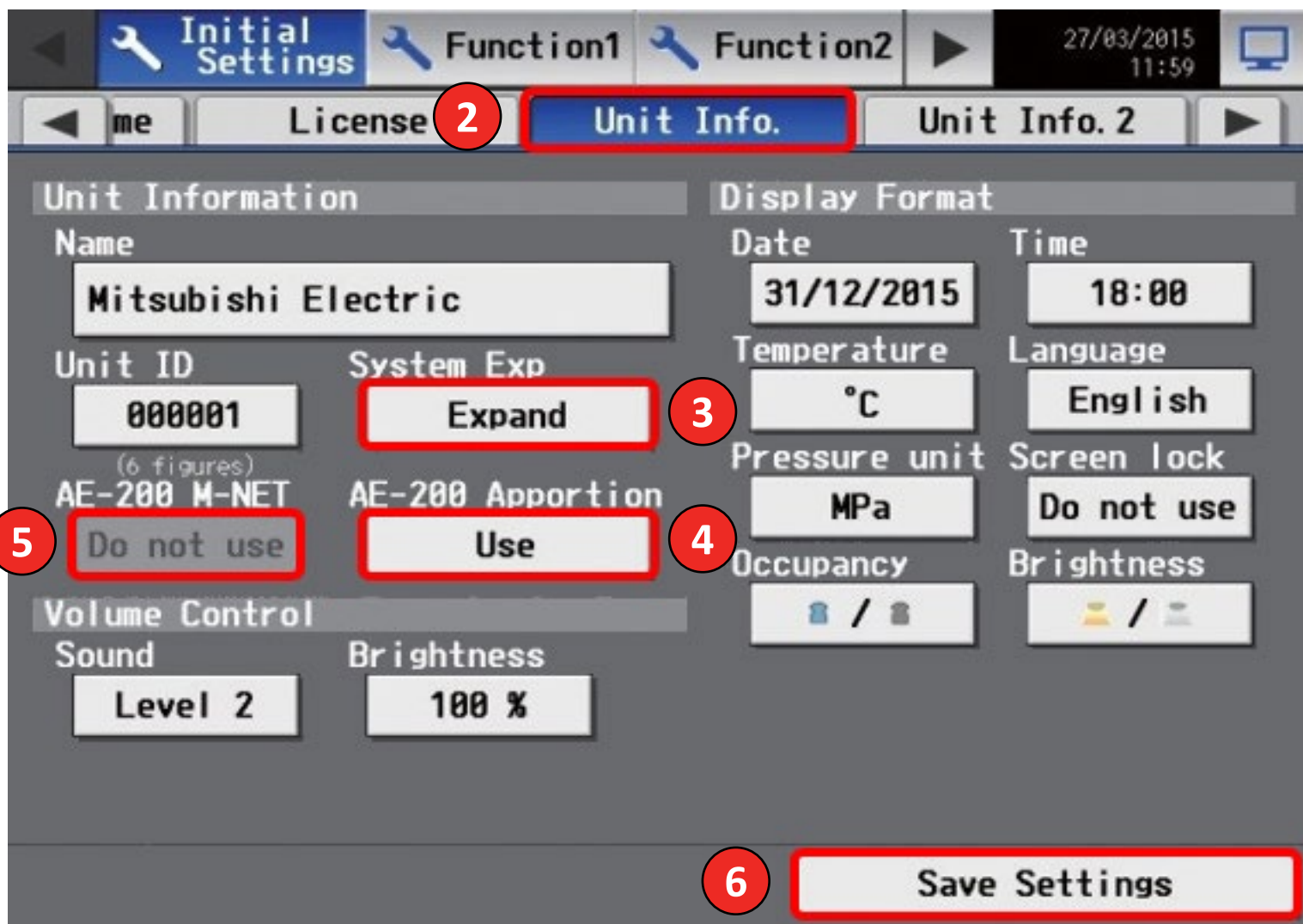
1

User name

Password

AE-200A
Serial No.XXXXX-XXX Ver.X.XX (X.XX)

Login Cancel



Initial Settings Function1 Function2 27/03/2015 11:59

me License 2 Unit Info. Unit Info. 2

Unit Information

Name Mitsubishi Electric

Unit ID 000001 (6 figures)

System Exp 3 Expand

AE-200 M-NET 5 Do not use

AE-200 Apportion 4 Use

Volume Control

Sound Level 2

Brightness 100 %

Display Format

Date 31/12/2015

Time 18:00

Temperature °C

Language English

Pressure unit MPa

Screen lock Do not use

Occupancy /

Brightness /

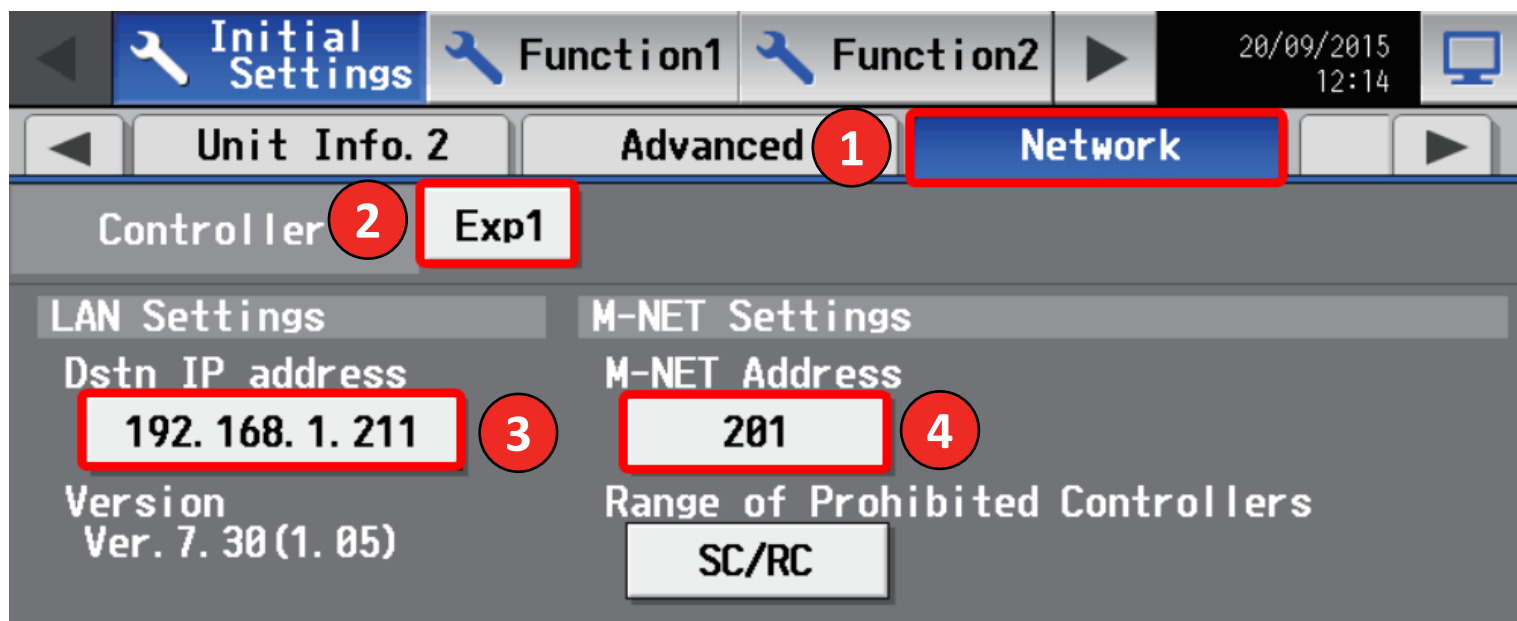
6 Save Settings

Initial Setup (Touchscreen)

Add the Expansion Controllers

Instructions

- 1) Scroll to the right and select the **Network** tab
- 2) Select the AE-50 or EW-50 **Expansion Controller**
(default selections will be displayed as Exp1, Exp2, Exp3, and Exp4)
- 3) Enter the expansion controller's **LAN1 IP Address** that was set on [Page 8](#).
- 4) Enter the expansion controller's **M-Net Address (201~250)** that was set on [Page 9](#).
- 5) Scroll down to Page 2/2 and set Communication Error to **Detect** the AE200's IP address.
(set the Communication Error for all other IP addresses to Do not detect)
- 6) Touch **Save Settings** and then touch  to return to the main screen.



Initial Settings Function1 Function2 20/09/2015 12:14

Unit Info. 2 Advanced **1** **Network**

Controller **2** **Exp1**

LAN Settings M-NET Settings

Dstn IP address **3** **192.168.1.211** M-NET Address **4** **201**

Version Ver. 7.30(1.05) Range of Prohibited Controllers SC/RC



Communication error detection

	IP Address	Communication error
1	192.168.1.212	5 Detect
2	192.168.1.213	Do not detect

2/2 **6** **Save Settings**

Initial Setup

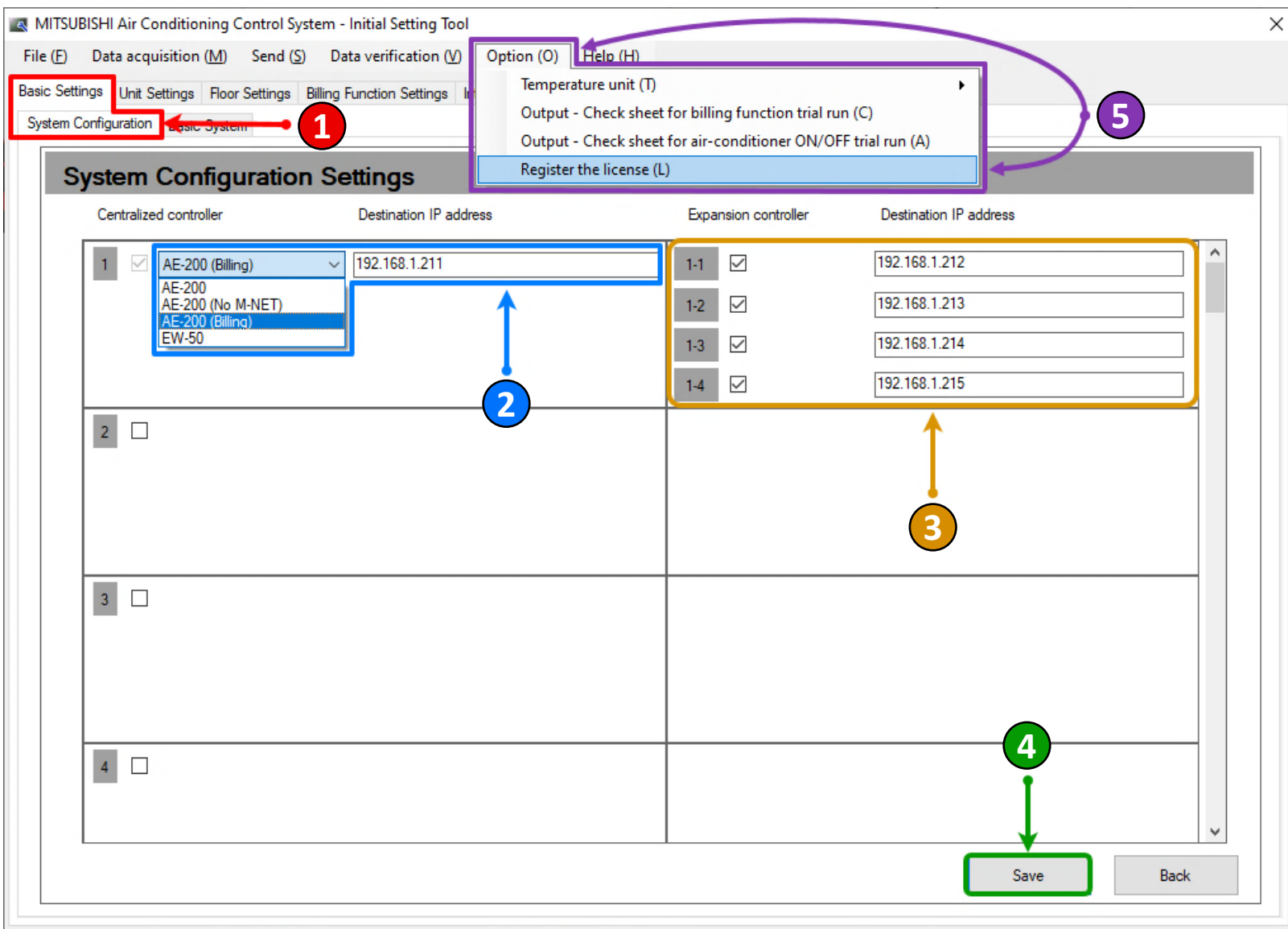
Register the Charge License – Page 1

Instructions

- 1) Click on **Basic Settings** and select the **System Configuration** tab.
- 2) Select **AE-200 (Billing)** and type in the AE-200 **IP address**.
- 3) Check a box for each expansion controller being used and type in the **IP address** for each.
- 4) Click on **Save** and then click **OK** in the pop-up window to save your settings.
- 5) Click on **Option** and select **Register the License**.

Notes

- The option for a fourth expansion controller will appear once AE-200 (Billing) is selected.
- Systems exceeding 200 units will require an additional AE-200 master controller.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings Billing Function Settings System Configuration

System Configuration Settings

Centralized controller	Destination IP address	Expansion controller	Destination IP address
1 ☒ AE-200 (Billing) AE-200 AE-200 (No M-NET) AE-200 (Billing) EW-50	192.168.1.211	1-1 ☒ 1-2 ☒ 1-3 ☒ 1-4 ☒	192.168.1.212 192.168.1.213 192.168.1.214 192.168.1.215
2 ☐			
3 ☐			
4 ☐			

Save Back

Initial Setup

Register the Charge License – Page 2

Instructions

- 1) Click on **Collective Data Acquisition** to acquire the license information for all controllers.
- 2) Type in the AE-200 (Billing) **(b)Charge License Number**.
- 3) Select an expansion controller from the **drop-down menu** and type in its license number.
To determine which License Number should be entered when using more than one expansion controller, match the **SERIAL No.** of the currently selected controller with the serial number that was entered in the License Form.

Repeat this step for each additional expansion controller being used.

- 4) Click on **Collective Registration** to simultaneously register all Licenses. Once finished, the Current Status of each controller will change from **Not Available** to **Available**.

Register the license

Target centralized controller:

SERIAL No. 06269-182

Software Version 7.85(1.07)

Optional Function

1 AE-200 (Billing)

1 AE-200 (Billing)

1-1 Expansion #1

Optional Function	Current Status	Registration of License Number
(b)Charge	Not available	TYPE - LIC - ENSE - NUM - BER - HERE
(c)Tenant/Personal Web	Not available	ONLY - NUM - BERS - AND - LET - TERS
(d)Maintenance Tool	Not available	- - - - -
(e)Maintenance Tool Advanced	Available	- - - - -
(f)PLC for General Equipments	Not available	- - - - -
(h)Interlock control	Available	- - - - -
(j)Outdoor Unit Status Monitor	Available	- - - - -

Data acquisition

Collective data acquisition

Import license CSV file

Register

Collective registration

Close

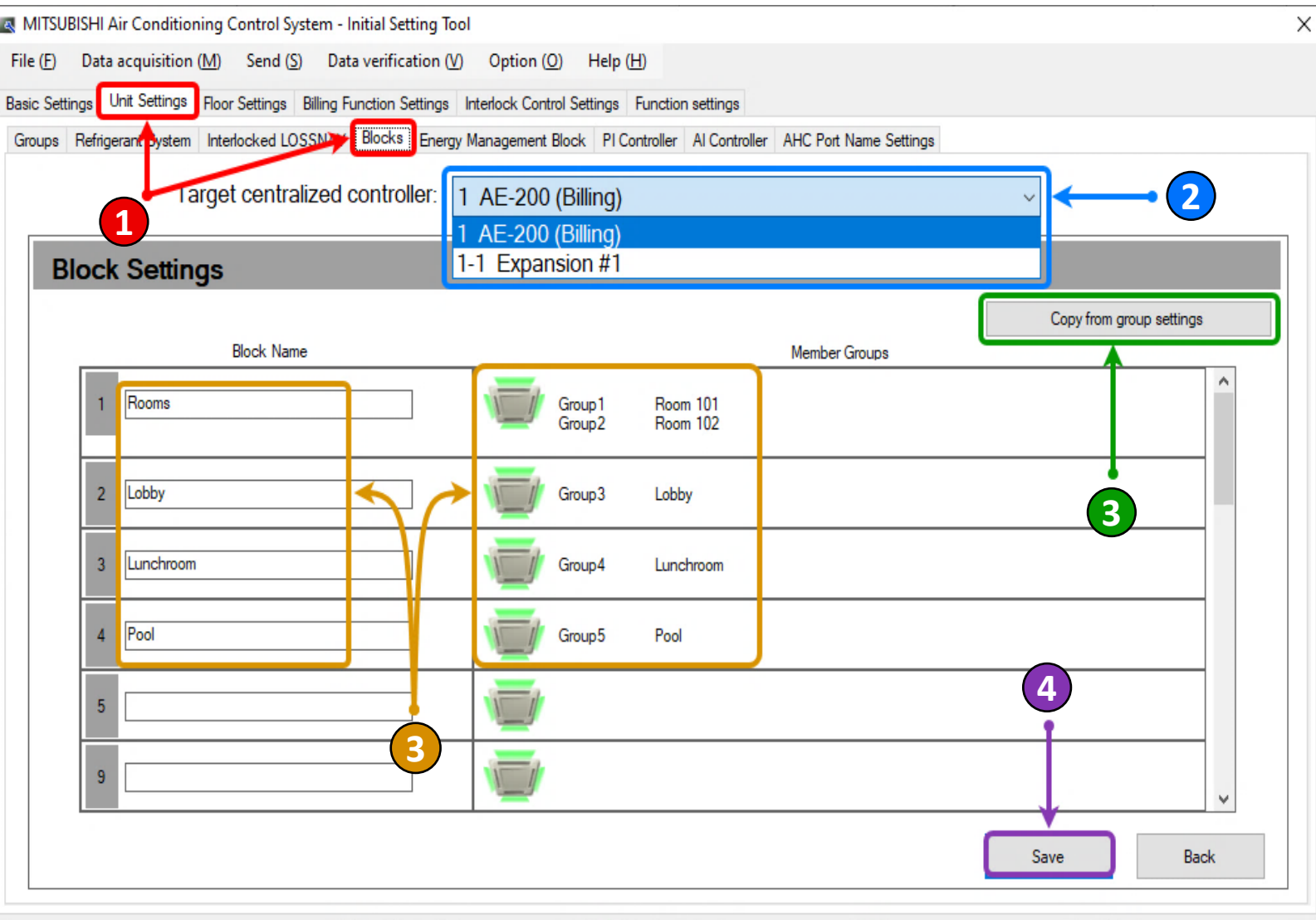
Indoor Unit Settings

Set up the Indoor Unit Blocks

Instructions

- 1) Click on **Unit Settings** and select the **Blocks** tab.
- 2) Open the **drop-down menu** and select a **central controller**.
- 3) Enter the **Block Name** and perform either of the following steps on each central controller.
 - Click on the  icon to *manually* add the **indoor units** to their respective blocks.
 - Click on **Copy from Group Settings** to *automatically* add each indoor unit to its own individual block. The blocks can still be customized after performing this action.
- 4) Click on **Save** and then click **OK** once all central controller blocks have been configured.

Important: Make sure that all blocks have been setup on all central controllers before proceeding, as these blocks will be used to set up the energy blocks on the next page.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings **Unit Settings** Floor Settings Billing Function Settings Interlock Control Settings Function settings

Groups Refrigerant system Interlocked LOSSN **Blocks** Energy Management Block PI Controller AI Controller AHC Port Name Settings

Target centralized controller: 1 AE-200 (Billing) 1 AE-200 (Billing) 1-1 Expansion #1

Block Settings

	Block Name	Member Groups
1	Rooms	 Group1 Room 101  Group2 Room 102
2	Lobby	 Group3 Lobby
3	Lunchroom	 Group4 Lunchroom
4	Pool	 Group5 Pool
5		
9		

Copy from group settings

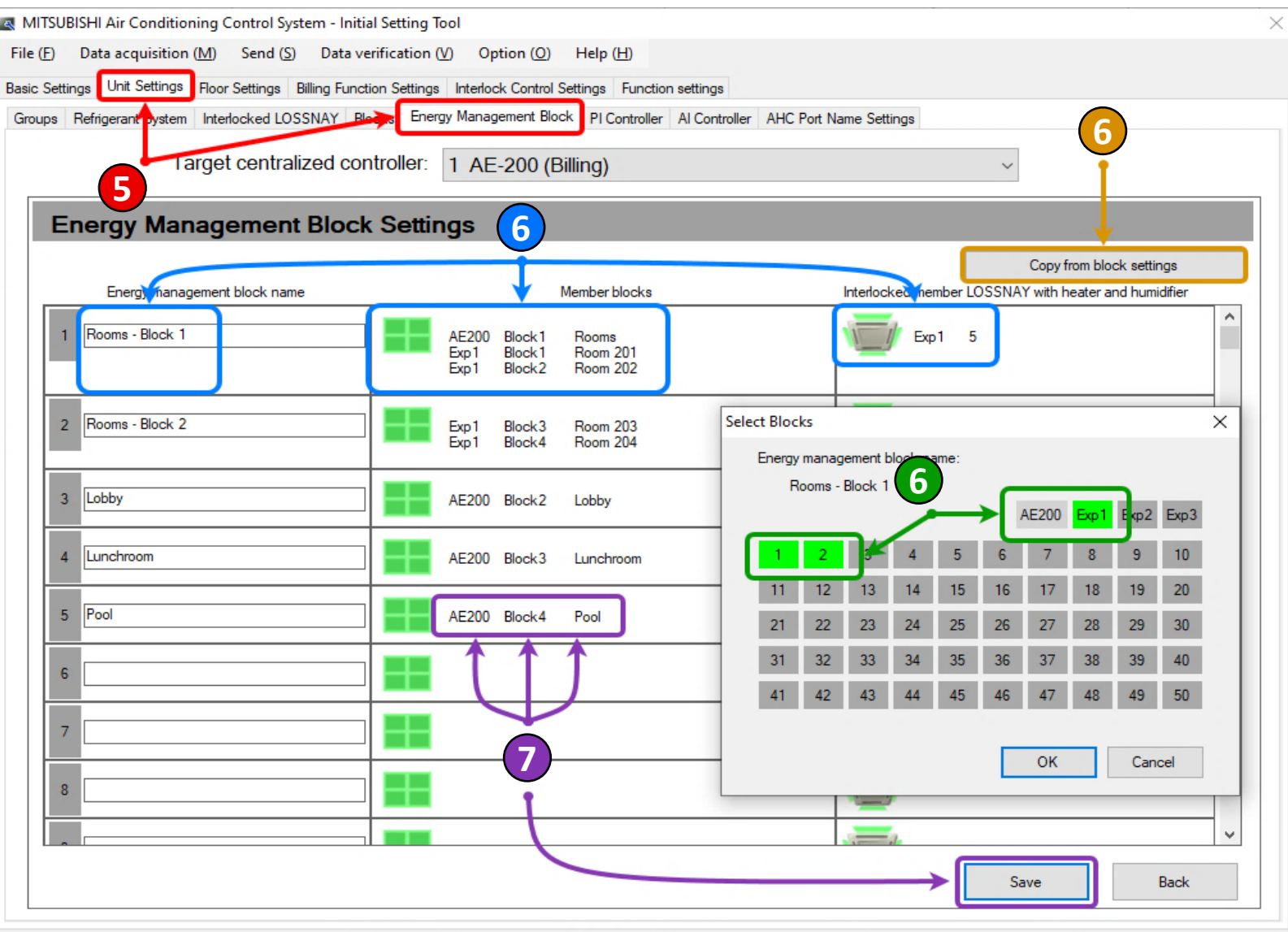
Save Back

Indoor Unit Settings

Set up the Energy Management Blocks

Instructions

- 5) Click on **Unit Settings** and select the **Energy Management Block** tab.
- 6) Enter the Energy Management **Block Name** and perform either of the following steps.
 - Click on the  or  icon to *manually* add the indoor unit blocks that were setup on the previous page to the Energy Management **Member Blocks**. The central controller selection will be in the **block selection window** instead of the usual drop-down menu.
 - Click on **Copy from Block Settings** to *automatically* add each indoor unit block that was setup on the previous page to its own individual Member Block. Note that the Member Blocks can still be customized after performing this action.
- 7) Verify that each **Member Block** has been setup correctly and **Save** the settings.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings **Unit Settings** Floor Settings Billing Function Settings Interlock Control Settings Function settings

Groups Refrigerant system Interlocked LOSSNAY Blocks **Energy Management Block** PI Controller AI Controller AHC Port Name Settings

Target centralized controller: 1 AE-200 (Billing)

Energy Management Block Settings

Energy management block name	Member blocks	Interlocked member LOSSNAY with heater and humidifier
1 Rooms - Block 1	 AE200 Block1 Rooms Exp1 Block1 Room 201 Exp1 Block2 Room 202	 Exp1 5
2 Rooms - Block 2	 Exp1 Block3 Room 203 Exp1 Block4 Room 204	
3 Lobby	 AE200 Block2 Lobby	
4 Lunchroom	 AE200 Block3 Lunchroom	
5 Pool	 AE200 Block4 Pool	
6		
7		
8		

Copy from block settings

Select Blocks

Energy management block name: Rooms - Block 1

AE200	Exp1	Exp2	Exp3
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50		

OK Cancel

Save Back

Indoor Unit Settings

Register the PI Controller(s)

Instructions

- 1) Click on **Unit Settings** and select the **PI Controller** tab.
- 2) Open the **drop-down menu** and select a **Central Controller**.
- 3) Click on the  icon and select an available **address** for the PI Controller.
- 4) Enter the **Metering Device Name** of each channel being used.
- 5) Enter the **Pulse Weight** and select a form of measurement from the **drop-down menu**.

Notes

- The OC and OS must be on the same PI input if apportioning the outdoor unit(s).
- A maximum of 20 PI Controllers can be added to an AE-200 system.

MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings **Unit Settings** Floor Settings Billing Function Settings Interlock Control Settings Function settings

Groups Refrigerant System Interlocked LOSSNAY Blocks Energy Management Block **PI Controller** AI Controller AHC Port Name Settings

Target centralized controller: 1 AE-200 (Billing) 

PI Controller Settings

PI Controller address	Metering device name	Pulse Weight	
1  49	Ch1 1st Floor Rooms	1.00	kWh
	Ch2 2nd Floor Rooms	1.00	kWh
	Ch3 Lobby	1.00	kWh
	Ch4 Lunchroom	1.00	kWh
2 	Ch1		--
	Ch2		--
	Ch3		--
	Ch4		--
3 	Ch1		--
	Ch2		--

Save Back

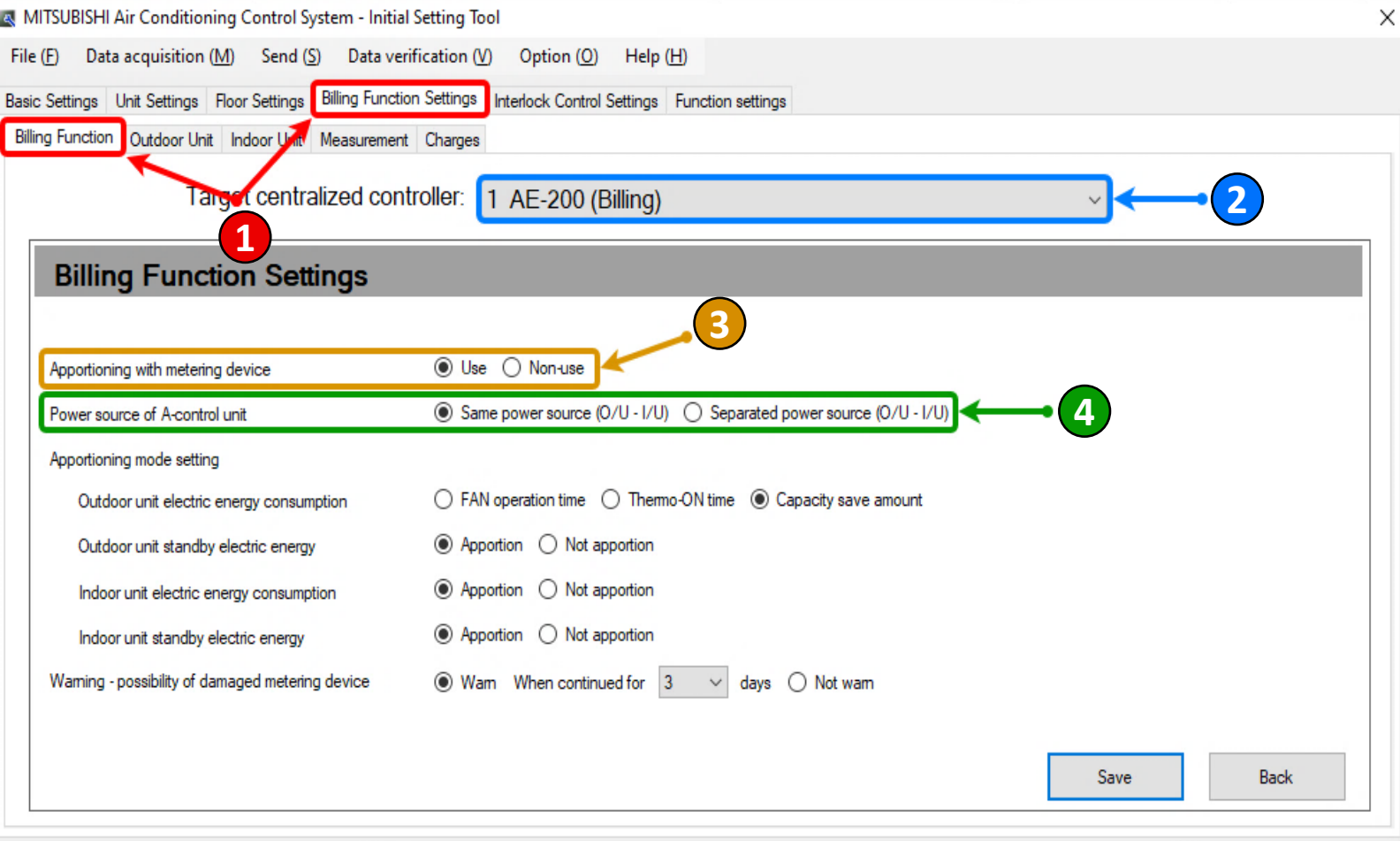
Billing Function Settings

General Settings – Page 1

Instructions

- 1) Click on **Billing Function Settings** and select the **Billing Function** tab.
- 2) Open the **drop-down menu** and select a **central controller**.
- 3) **Apportioning With Metering Device**: Select **Use** for each applicable central controller.
- 4) **Power Source of A-Control Unit**: Choose a setting based on the descriptions below and continue to the next page when finished.
 - **Separate Power Source**: Select this option if apportioning a City Multi system, or an M&P-Series systems where the indoor unit has its own power source.
 - **Same Power Source**: Select this option if apportioning an M&P-Series system where the indoor unit is powered by the outdoor unit.

See the [Energy Apportionment Instruction Book](#) for more details on these settings.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings **Billing Function Settings** Interlock Control Settings Function settings

Billing Function Outdoor Unit Indoor Unit Measurement Charges

Target centralized controller: 1 AE-200 (Billing)

Billing Function Settings

Apportioning with metering device ☒ Use ☐ Non-use

Power source of A-control unit ☒ Same power source (O/U - I/U) ☐ Separated power source (O/U - I/U)

Apportioning mode setting

Outdoor unit electric energy consumption ☐ FAN operation time ☐ Thermo-ON time ☒ Capacity save amount

Outdoor unit standby electric energy ☒ Apportion ☐ Not apportion

Indoor unit electric energy consumption ☒ Apportion ☐ Not apportion

Indoor unit standby electric energy ☒ Apportion ☐ Not apportion

Warning - possibility of damaged metering device ☒ Warn When continued for 3 days ☐ Not warn

Save Back

Billing Function Settings

General Settings – Page 2

Instructions

5) **Apportioning Mode Setting:** Choose your settings based on the following descriptions.

Outdoor Unit Electric Energy Consumption:

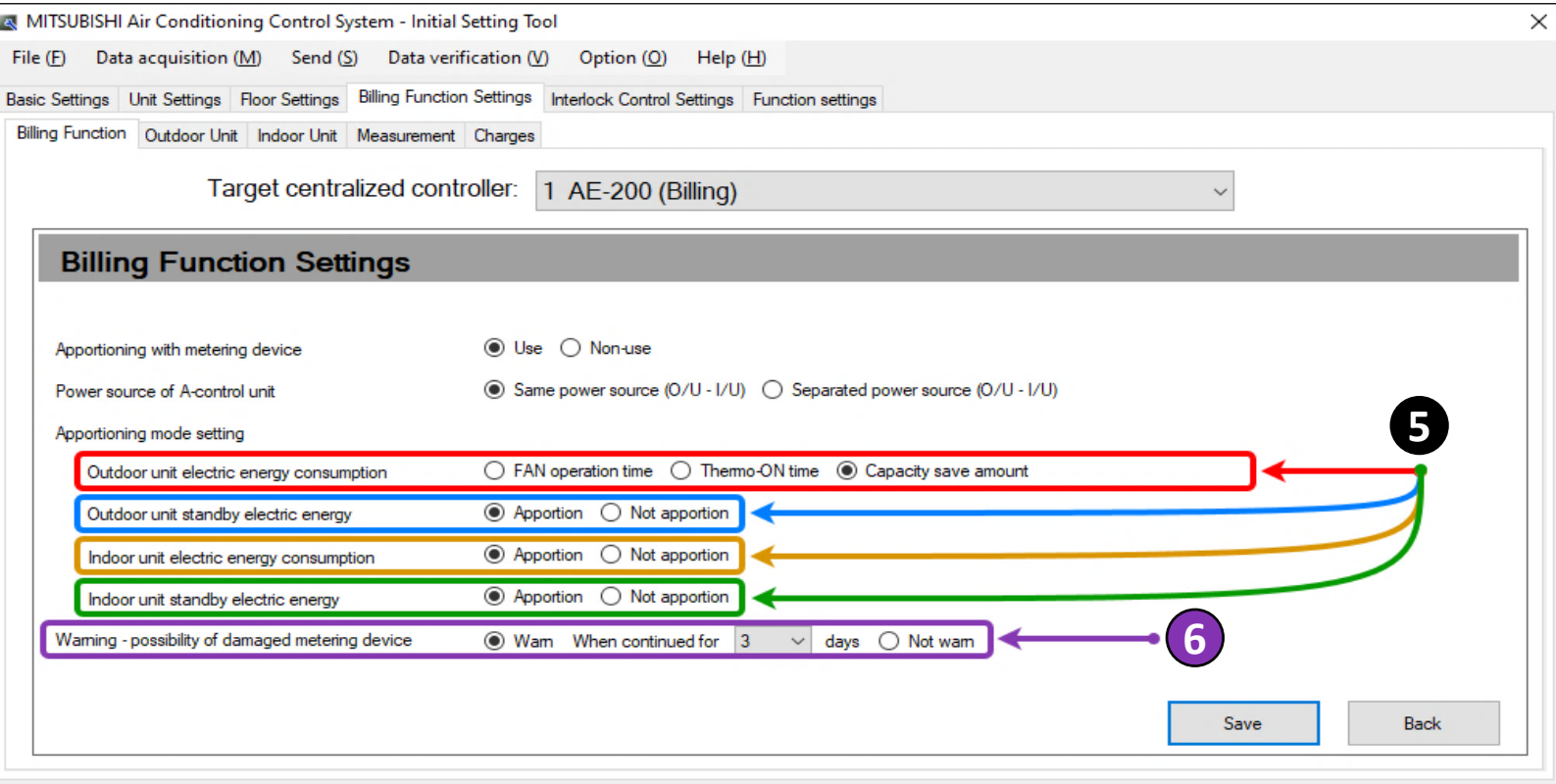
- Capacity Save Amount: (*preferred method*) Apportions energy based on the indoor unit's capacity coefficient and LEV position throughout the cooling or heating process.
- Fan Operation Time: Apportions energy by multiplying the indoor unit's capacity coefficient by the total fan run time.
- Thermo-ON Time: Apportions energy by multiplying the indoor unit's capacity coefficient by the amount of time it has spent actively cooling or heating the space.

Outdoor Unit Standby Electric Energy: Choose whether you want to apportion energy usage during standby or not (**Apportion recommended**).

Indoor Unit Electric Energy Consumption: Choose whether you want to apportion energy usage for the indoor units or not (**Apportion recommended**).

Indoor Unit Standby Electric Energy: Choose whether you want to apportion energy usage during standby or not (**Apportion recommended**).

6) **Warning – Possibility of Damaged Metering Device:** Choose whether you want to receive an alarm or not when the system stops receiving inputs (**Warn recommended**).



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings Billing Function Settings Interlock Control Settings Function settings

Billing Function Outdoor Unit Indoor Unit Measurement Charges

Target centralized controller: 1 AE-200 (Billing)

Billing Function Settings

Apportioning with metering device ☒ Use ☐ Non-use

Power source of A-control unit ☒ Same power source (O/U - I/U) ☐ Separated power source (O/U - I/U)

Apportioning mode setting

Outdoor unit electric energy consumption ☐ FAN operation time ☐ Thermo-ON time ☒ Capacity save amount

Outdoor unit standby electric energy ☒ Apportion ☐ Not apportion

Indoor unit electric energy consumption ☒ Apportion ☐ Not apportion

Indoor unit standby electric energy ☒ Apportion ☐ Not apportion

Warning - possibility of damaged metering device ☒ Warn When continued for 3 days ☐ Not warn

Save Back

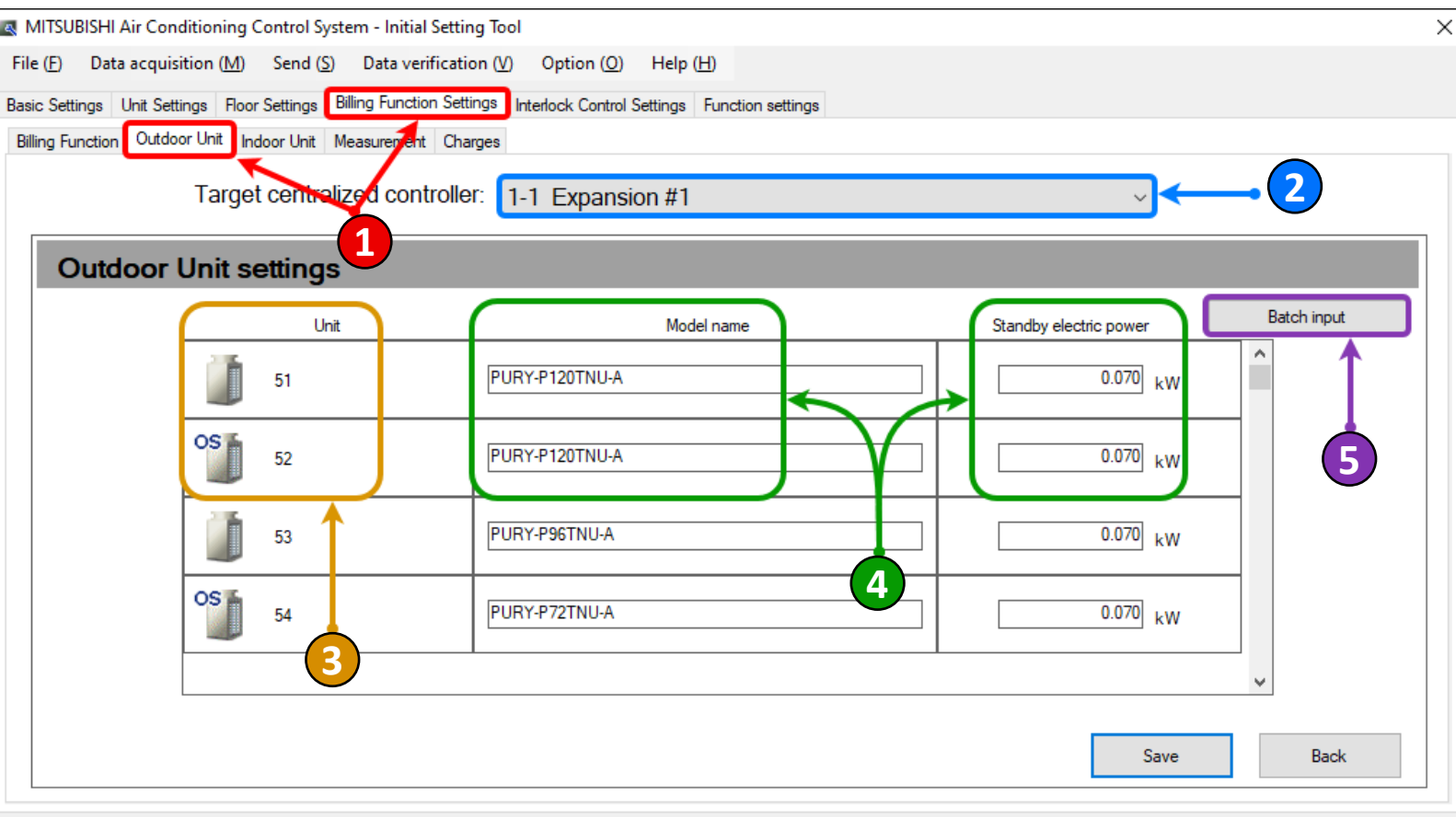
Billing Function Settings

Outdoor Unit Settings

Instructions

- 1) Click on **Billing Function Settings** and select the **Outdoor Unit** tab.
- 2) Open the **drop-down menu** and select a **central controller**.
- 3) Verify that the correct **Outdoor Unit Address** is being displayed for all units. If any addresses are incorrect, then repeat the steps listed on [Page 11](#) to correct them.
- 4) Enter each outdoor unit's **Model Name** and **Standby Electric Power value**.
 - The default value for single-compressor modules is **0.070 kW**.
 - The default value for dual-compressor modules is **0.140 kW**.
- 5) Click on **Batch Input** to enter a Model Name for multiple outdoor units at the same time.

Important: The *Indoor Unit Standby Electric Energy* setting from [Page 20](#) must be set to *Apportion* in order to configure the settings below.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings **Billing Function Settings** Interlock Control Settings Function settings

Billing Function **Outdoor Unit** Indoor Unit Measurement Charges

Target centralized controller: 1-1 Expansion #1

Outdoor Unit settings

Unit	Model name	Standby electric power
51	PURY-P120TNU-A	0.070 kW
52	PURY-P120TNU-A	0.070 kW
53	PURY-P96TNU-A	0.070 kW
54	PURY-P72TNU-A	0.070 kW

Batch input

Save Back

Billing Function Settings

Indoor Unit Settings

Instructions

- 1) Click on **Billing Function Settings** and select the **Indoor Unit** tab.
- 2) Open the **drop-down menu** and select a **central controller**.
- 3) Verify that the correct **Indoor Unit Address** is being displayed for all units. If any addresses are incorrect, then repeat the steps listed on [Page 11](#) to correct them.
- 4) Click on **Unit Info** to select each indoor unit's Model Name, Cooling Capacity, Fan Power Consumption, and Standby Electric Power. Select the Unit Type, Model Type, and Model Name as shown in the image to the right. If you do not know or cannot find your Model Name, then you must enter the information manually. This information can be found in the **Specifications** section of any Indoor Unit Service Manual at http://meus1.mylinkdrive.com/USA/R2_Series.
- 5) Click on **Batch Input** to enter a Model Name for multiple indoor units at the same time.

4 Select the indoor unit type, model type, and model name.

Unit type
Air-conditioner

Model type
PLFY-P-VBM-E

Model name
PLFY-P32VBM-E

Power supply frequency
☐ 50 Hz
 ☒ 60 Hz

OK Cancel

Important: The *Indoor Unit Standby Electric Energy* setting from [Page 20](#) must be set to *Apportion* in order to configure the settings below.

MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings **Billing Function Settings** Interlock Control Settings Function settings

Billing Function Outdoor Unit **Indoor Unit** Measurement Charges

Target centralized controller: 1-1 Expansion #1

Indoor Unit Settings

Indoor unit	Model name	Cooling capacity	Fan power consumption	Standby electric power	Batch input
1	PKFY-P24NKMU-E2	7.000 kW	0.070 kW	0.005 kW	Unit info.
2	PKFY-P30NKMU-E2	8.800 kW	0.070 kW	0.005 kW	Unit info.
3	PV FY-P36NAMU-E	10.600 kW	0.340 kW	0.005 kW	Unit info.

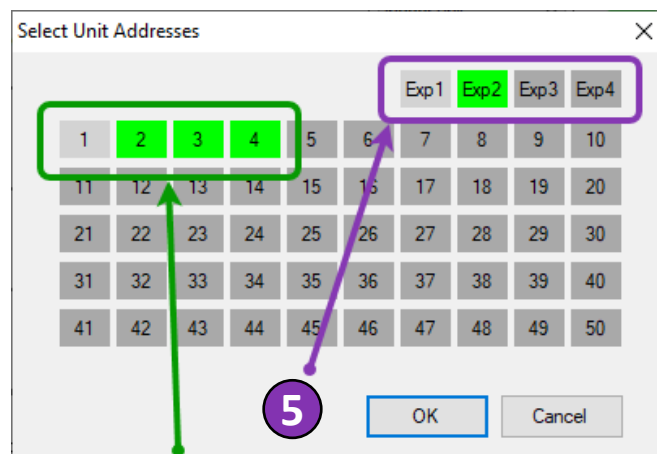
Save Back

Billing Function Settings

Measurement Settings

Instructions

- 1) Click on **Billing Function Settings** and select the **Measurement** tab.
- 2) Verify that the correct **PI Controller Address** and **Metering Device Name** is being displayed. If either are incorrect, then repeat the steps listed on [Page 18](#) to correct them.
- 3) Open the **drop-down menu** and select **Indoor Unit** or **Outdoor Unit** as your **Unit Type**.
- 4) Click on the  icon and select the **Indoor Unit** or **Outdoor Unit address** that corresponds to each of the electricity meter's channels.
- 5) Select **Exp2**, **Exp3**, or **Exp4** to repeat the steps above on any additional expansion controllers. Save the settings and proceed to the next page if there are no other expansion controllers.



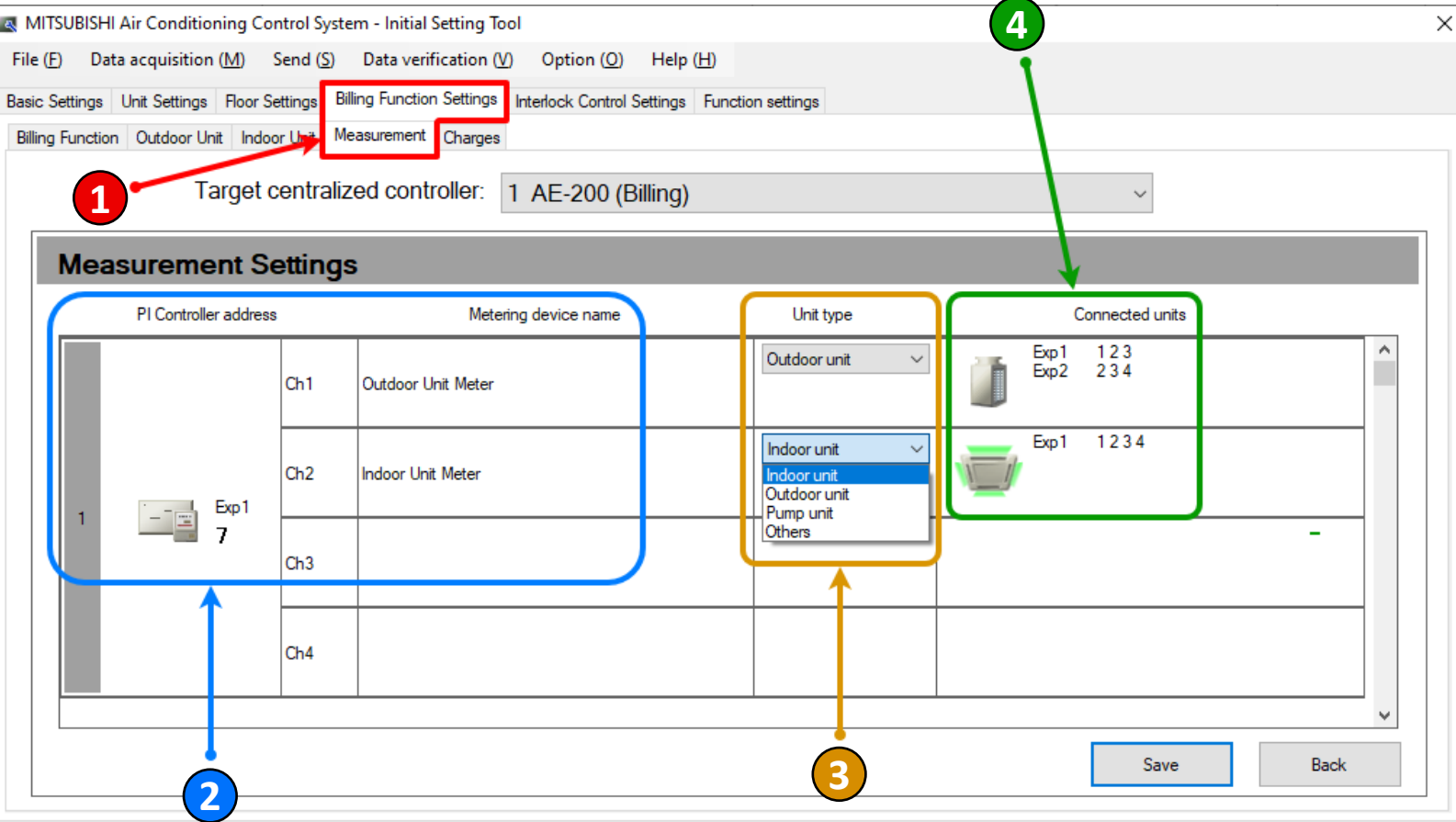
Select Unit Addresses

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Exp1 Exp2 Exp3 Exp4

5 OK Cancel

4



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings **Billing Function Settings** Interlock Control Settings Function settings

Billing Function Outdoor Unit Indoor Unit **Measurement** Charges

1 Target centralized controller: 1 AE-200 (Billing)

Measurement Settings

PI Controller address	Metering device name	Unit type	Connected units
1	Ch1 Outdoor Unit Meter	Outdoor unit	Exp1 1 2 3 Exp2 2 3 4
	Ch2 Indoor Unit Meter	Indoor unit	Exp1 1 2 3 4
	Ch3	Outdoor unit	
	Ch4	Pump unit	
		Others	

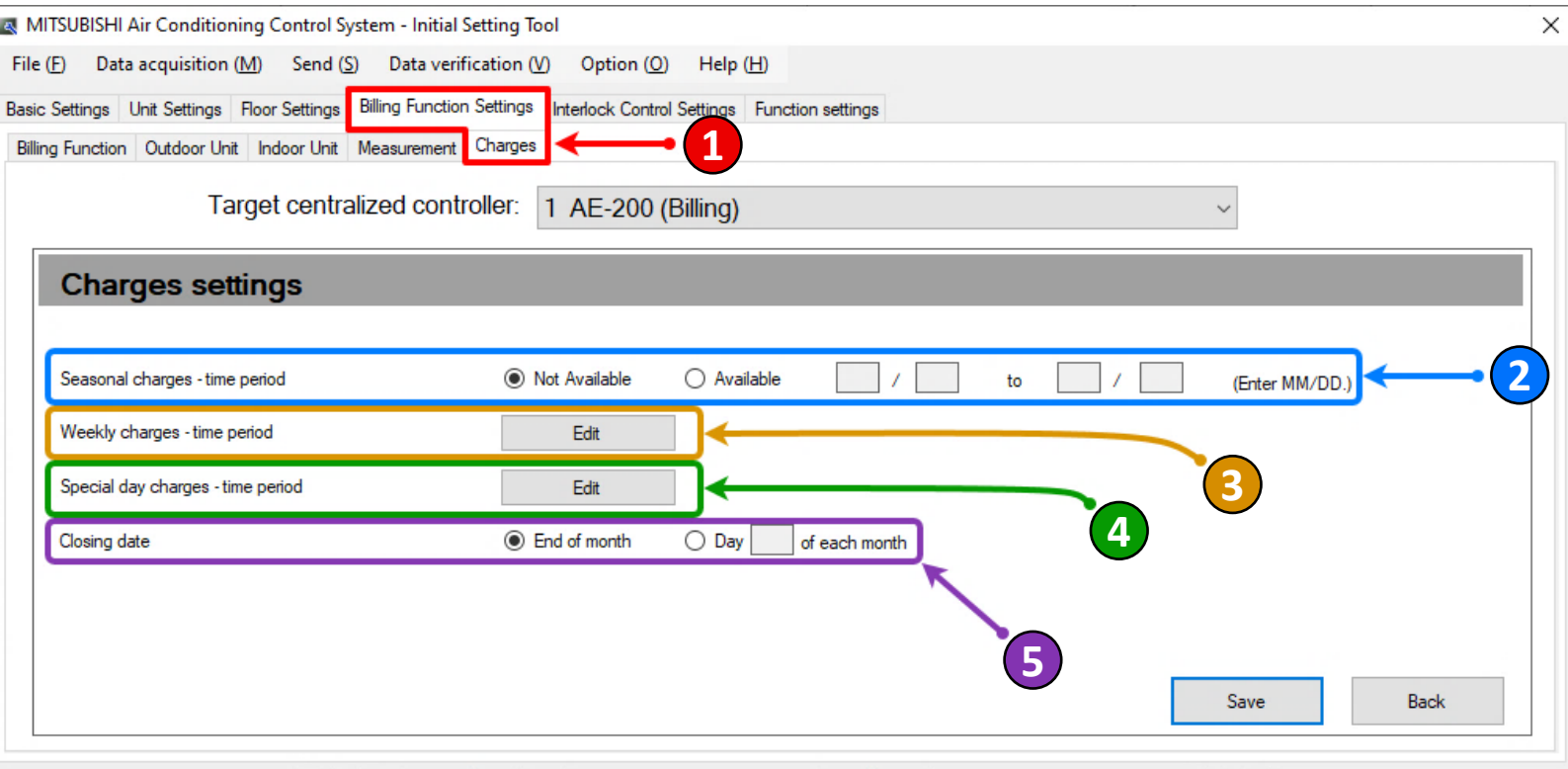
2 3 Save Back

Billing Function Settings

Charge Settings

Instructions

- 1) Click on **Billing Function Settings** and select the **Charges** tab.
- 2) **Seasonal Charges**: If applicable, set a time period for season-specific charges.
- 3) **Weekly Charges**: Click on **Edit** to configure the Normal and Seasonal charge settings.
Here you can create unique pricing patterns for each day of the week.
 - Unit prices are set in the Charge Calculation Tool which is covered in the [next section](#).
 - Each schedule can have up to five price changes per day.
 - The Normal settings are configured separately from the Seasonal settings.
- 4) **Special Day Charges**: Click on **Edit** to configure the charge settings for special days.
 - This setting will override all Normal and Seasonal charge settings.
 - Up to five unique pricing patterns can be created, allowing you to select a specific pattern for each type of special day. For example, you could use Pattern A for special events, while using Pattern B for holidays, and Pattern C for scheduled maintenance.
- 5) **Closing Date**: Select a day for the billing cycle to end, or leave it at End of Month.
 - You cannot select the 29th, 30th, or 31st as the closing dates.
 - This Closing Date must match the Closing Date set in the Charge Calculation Tool.



MITSUBISHI Air Conditioning Control System - Initial Setting Tool

File (F) Data acquisition (M) Send (S) Data verification (V) Option (O) Help (H)

Basic Settings Unit Settings Floor Settings **Billing Function Settings** Interlock Control Settings Function settings

Billing Function Outdoor Unit Indoor Unit Measurement **Charges**

Target centralized controller: 1 AE-200 (Billing)

Charges settings

Seasonal charges - time period ☒ Not Available ☐ Available / to / (Enter MM/DD.)

Weekly charges - time period

Special day charges - time period

Closing date ☒ End of month ☐ Day of each month

Charge Calculation Tool

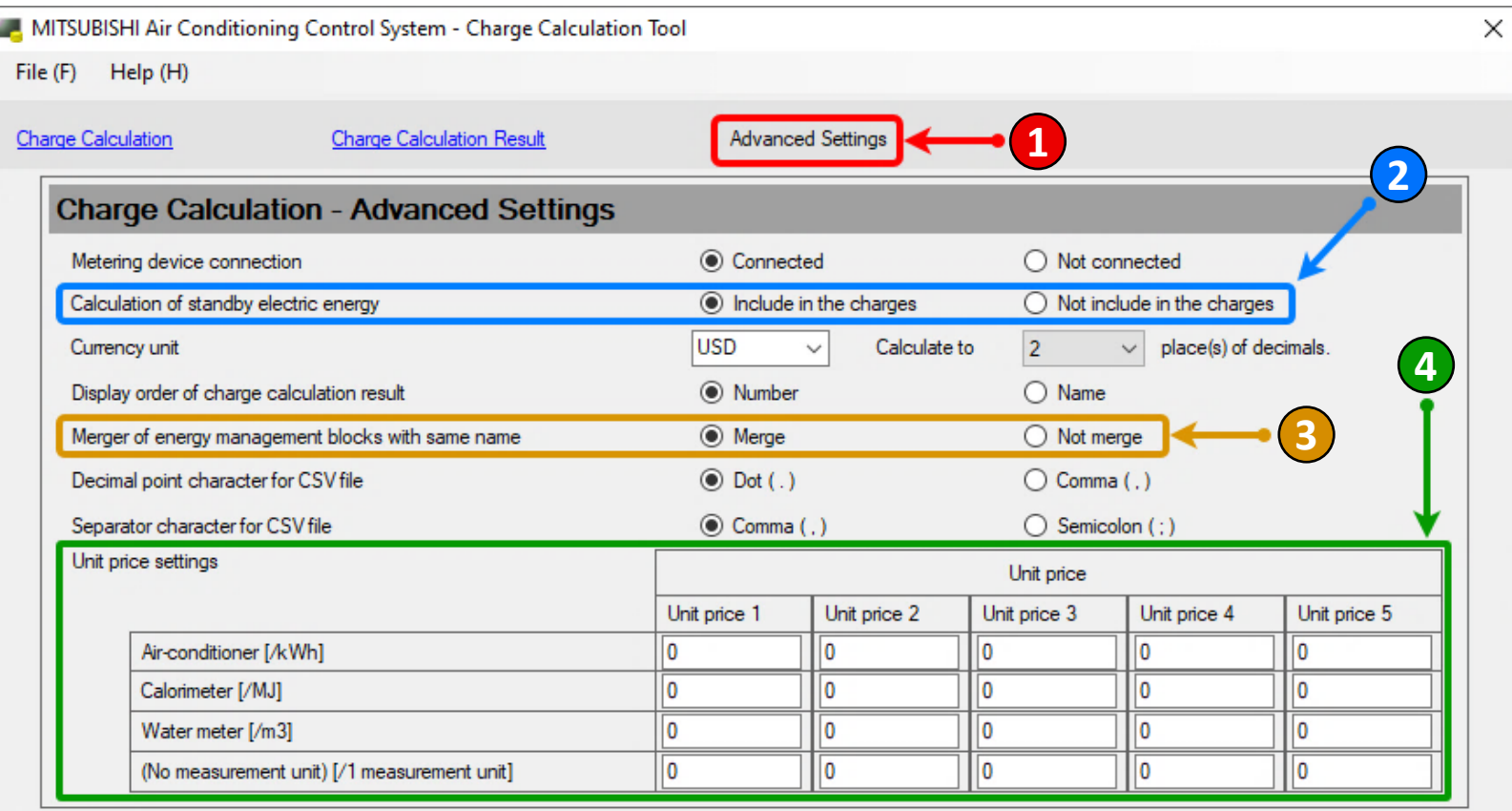
Advanced Settings – Page 1

Instructions

Begin by double-clicking the  icon to open the Charge Calculation Tool.

- 1) Select **Advanced Settings** and enter a new password. If the password is lost, then you must uninstall and reinstall the Charge Calculation Tool in order to create another one.
- 2) **Calculation of Standby Electric Energy**: Choose whether or not you want to include standby energy usage in the calculation (***Include recommended***). Make sure that this selection matches the settings made on [Page 20](#).
- 3) **Merger of Energy Management Blocks with Same Name**: Choose whether or not you want to merge energy management blocks together when they have the same name. This setting is designed for cases where multiple central controllers are being used to apportion energy usage for the same zones.
- 4) **Unit Price Settings**: Enter the appropriate kWh value for each Unit Price setting, and make sure that the values correspond to the patterns set on the previous page.

Important: The *Metering Device Connection* setting must be set to *Connected* in order to use the energy apportionment function.



MITSUBISHI Air Conditioning Control System - Charge Calculation Tool

File (F) Help (H)

Charge Calculation Charge Calculation Result **Advanced Settings**

Charge Calculation - Advanced Settings

Metering device connection ☒ Connected ☐ Not connected

Calculation of standby electric energy ☒ Include in the charges ☐ Not include in the charges

Currency unit USD Calculate to 2 place(s) of decimals.

Display order of charge calculation result ☒ Number ☐ Name

Merger of energy management blocks with same name ☒ Merge ☐ Not merge

Decimal point character for CSV file ☒ Dot (.) ☐ Comma (,)

Separator character for CSV file ☒ Comma (,) ☐ Semicolon (;)

Unit price settings

	Unit price				
	Unit price 1	Unit price 2	Unit price 3	Unit price 4	Unit price 5
Air-conditioner [kWh]	0	0	0	0	0
Calorimeter [MJ]	0	0	0	0	0
Water meter [m3]	0	0	0	0	0
(No measurement unit) [1 measurement unit]	0	0	0	0	0

Charge Calculation Tool

Advanced Settings – Page 2

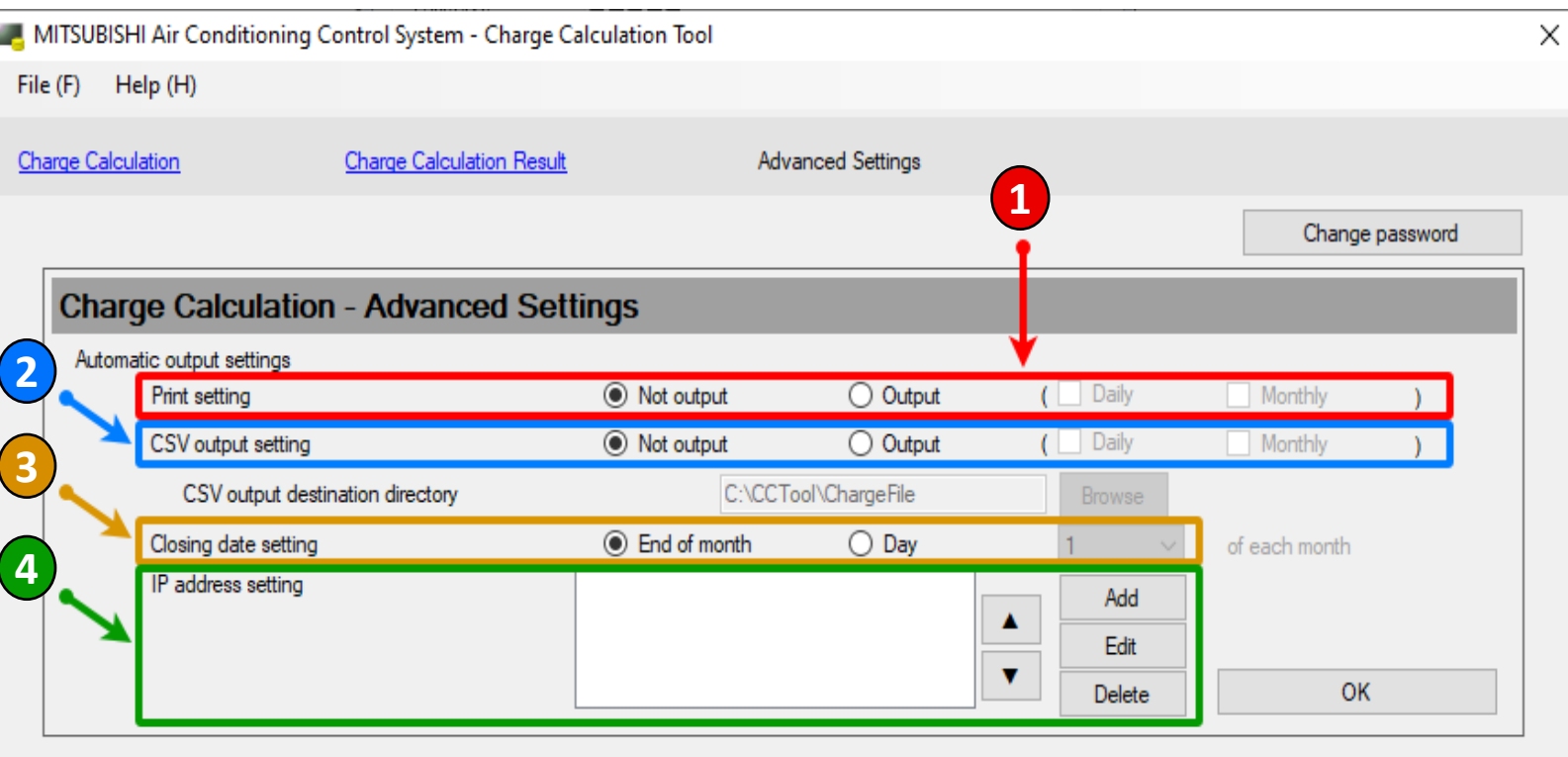
Instructions

Automatic Output Settings

- 1) **Print Setting**: Choose whether you want to print a daily and/or monthly report (*optional*).
- 2) **CSV Output Setting**: Choose whether you want to output a daily and/or monthly report as a CSV file, then click on **Browse** to select the folder that it will be saved to.
- 3) **Closing Date Setting**: Select the setting that matches your selection from [Page 24](#).
- 4) **IP Address Setting**: Click on **Add** and enter the main AE-200 (Billing) IP address. Enter the ID (**initial**) and Password (**init**), then click on **Check Communication** and press **OK**.

Notes

- If the **Print** or **CSV Output** is set to **Daily**, the system will output the results at 5 AM every day; and if set to **Monthly**, the system will output the results at 5 AM on the **Closing Date**. Select both options if you would like to receive a daily and monthly report.
- All of the following conditions must be met in order to receive automatic outputs:
 - The PC user must be logged in, and not in a standby screen
 - The Charge Calculation Tool must be open
 - The PC must be connected to the AE-200 (Billing) central controller
 - The printer must be turned on if using the Print setting.



MITSUBISHI Air Conditioning Control System - Charge Calculation Tool

File (F) Help (H)

[Charge Calculation](#) [Charge Calculation Result](#) **Advanced Settings**

Change password

Charge Calculation - Advanced Settings

Automatic output settings

Print setting ☒ Not output ☐ Output (☐ Daily ☐ Monthly)

CSV output setting ☒ Not output ☐ Output (☐ Daily ☐ Monthly)

CSV output destination directory C:\CCTool\ChargeFile Browse

Closing date setting ☒ End of month ☐ Day 1 of each month

IP address setting

Add Edit Delete

OK

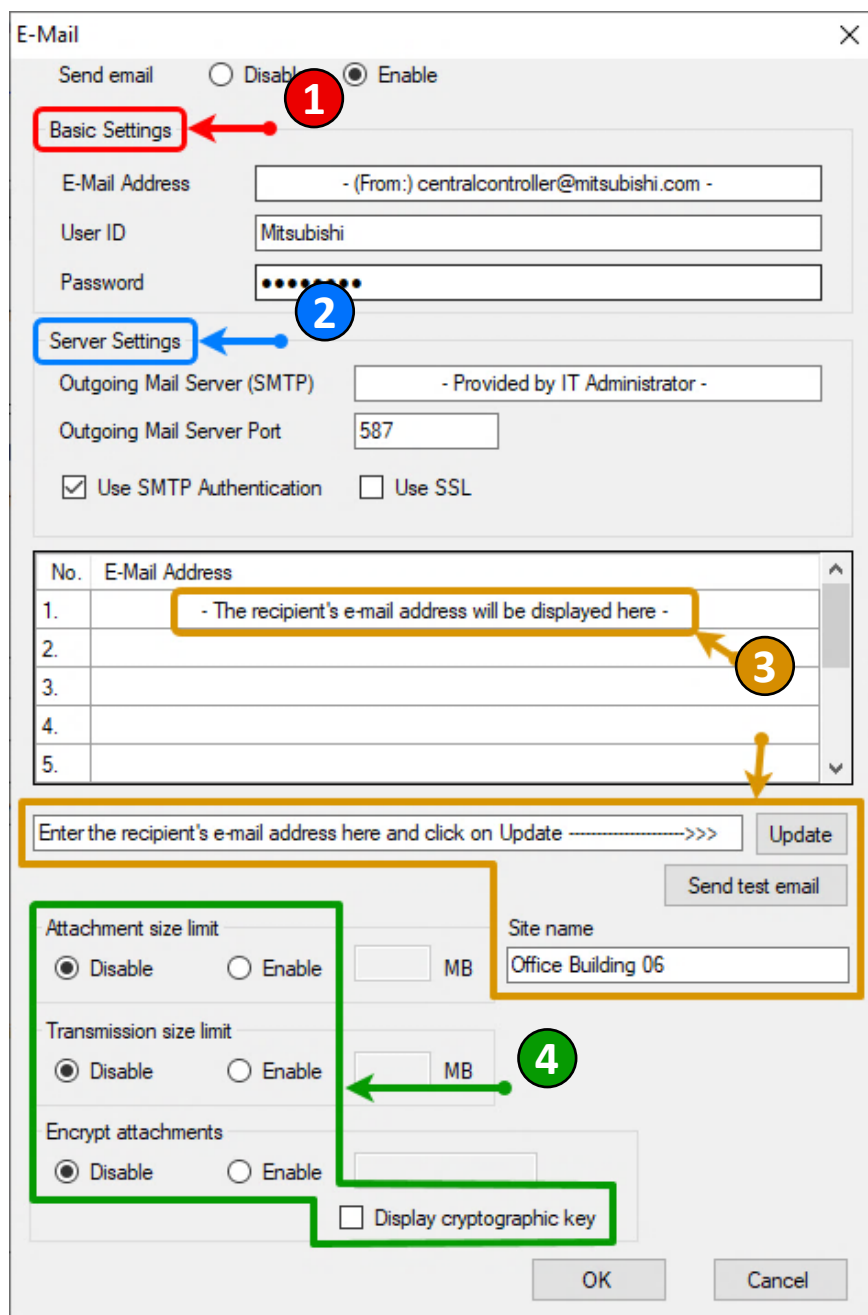
Charge Calculation Tool

E-mail Settings

Instructions

- 1) **Basic Settings:** Enter a valid **e-mail address**, then enter the **User ID** and **Password** required to login to it. This is the e-mail address that the central controller will use to send reports. Whenever the controller sends out a report, this e-mail address will appear in the *From:* box.
- 2) **Server Settings:** Enter the **SMTP address** and **Server Port** that the controller will use, then check the **SMTP Authentication** or **SSL** box if desired. Note that you must check the SMTP Authentication box when using port 587, and the SSL box when encrypting file attachments.
- 3) **E-mail Settings:** Enter an e-mail address for each **recipient** and click on **Update** to add them to the list. Then enter a **Site Name** and click on **Send Test E-mail** to confirm that the information was entered correctly. This is the e-mail address that the central controller will send reports to. Whenever the controller sends out a report, this e-mail address will appear in the *To:* box, and the Site Name will appear in the *Subject* line.
- 4) **Message Settings:** Choose whether you want to limit the size of file **Attachments** or **Transmissions**, and whether you want to **Encrypt** the file attachments or display a **Cryptographic Key** instead of a regular file name.

Important: The *Send E-mail* setting must be set to *Enable* in order to use the e-mail function.



The screenshot shows the 'E-Mail' configuration window. At the top, the 'Send email' option is set to 'Enable' (indicated by a red circle 1). Below this, the 'Basic Settings' section (indicated by a red box and arrow) contains fields for 'E-Mail Address' (set to '- (From:) centralcontroller@mitsubishi.com -'), 'User ID' (set to 'Mitsubishi'), and 'Password' (masked with dots). The 'Server Settings' section (indicated by a blue box and arrow) includes 'Outgoing Mail Server (SMTP)' (set to '- Provided by IT Administrator -'), 'Outgoing Mail Server Port' (set to '587'), and checkboxes for 'Use SMTP Authentication' (checked) and 'Use SSL' (unchecked). A table for recipients is shown below, with a yellow box and arrow (3) pointing to the first row which contains the placeholder text '- The recipient's e-mail address will be displayed here -'. Below the table, there is a text input field for adding a new recipient, an 'Update' button, and a 'Send test email' button. The 'Message Settings' section (indicated by a green box and arrow 4) includes 'Attachment size limit' (set to 'Disable'), 'Transmission size limit' (set to 'Disable'), 'Encrypt attachments' (set to 'Disable'), and a checkbox for 'Display cryptographic key' (unchecked). The 'Site name' field is set to 'Office Building 06'. 'OK' and 'Cancel' buttons are at the bottom right.

Charge Calculation Tool

Manual Charge Calculation

Instructions

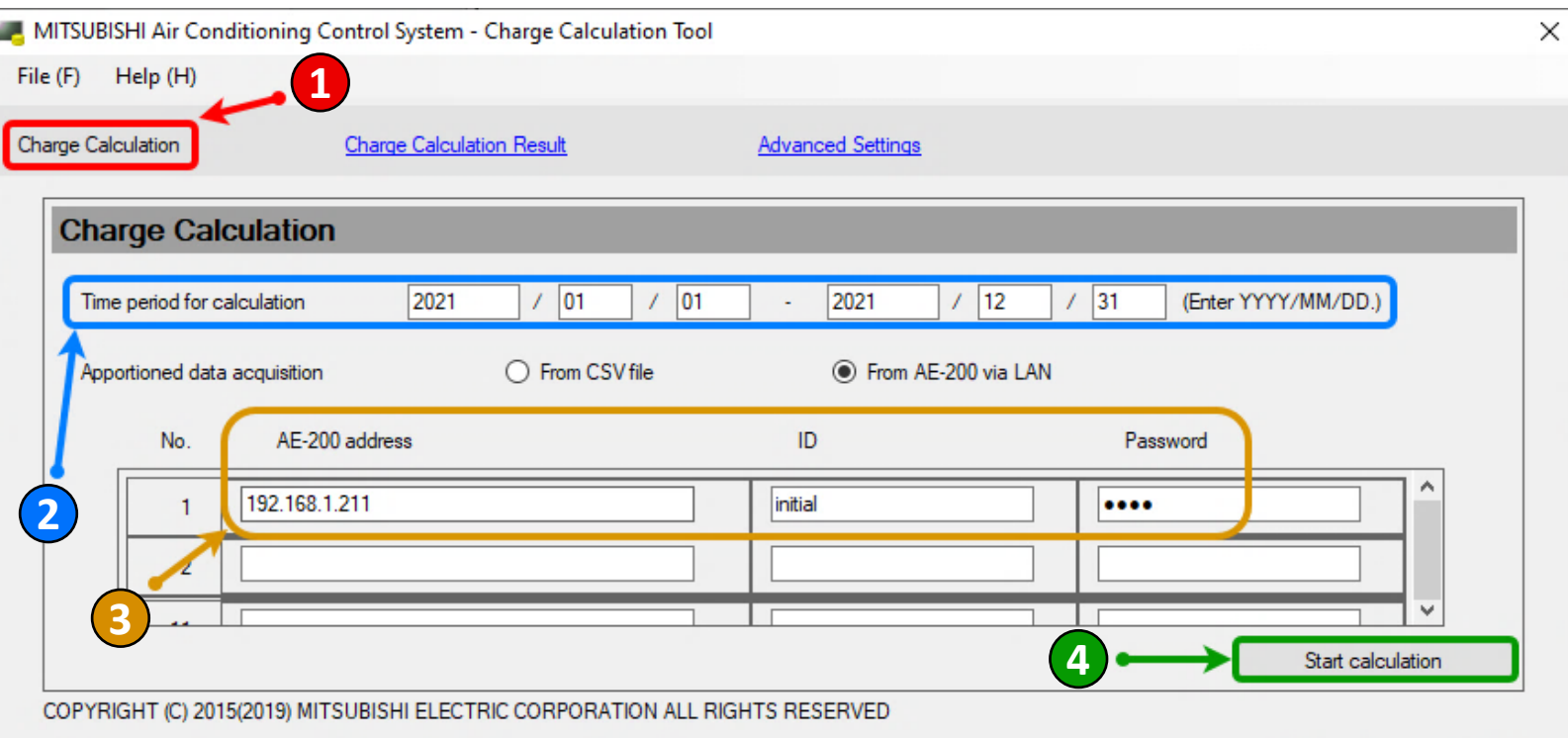
This is an optional function which allows you to manually run a charge calculation for a specific time period. This will not affect any of the automatic output settings.

- 1) Select **Charge Calculation** to return to the main page.
- 2) Enter the **Time Period** that you want to calculate energy usage for.
- 3) Enter the **IP address**, **User ID (initial)**, and **Password (init)** of the AE-200 (Billing) central controller.
- 4) Click on **Start Calculation**.

Important

Once the system finishes running its calculations, it will take you to the **Charge Calculation Result** screen where you can choose to output the results to a printer or CSV file. The CSV file can be opened with Microsoft Excel, and the results will be displayed as shown in the image to the right.

Clipboard		Font		Alignment		Styles	
A1		fx		701			
A	B	C	D	E	F	G	H
701 Charge Calculation Result (Energy manage							
Time period:2017/09/01-2017/09/30							
Energy ma	Apportion	Outdoor u	(Unit price	(Unit price	Apportion	Outdoor u	(Unit price
	[kWh]	[kWh]	[kWh]	[kWh]	[USD]	[USD]	[USD]
Smart MA	218.2	218.2	114.1	104.1	15.794	15.794	7.987
Smart ME	41.9	41.9	37	4.9	2.957	2.957	2.59



MITSUBISHI Air Conditioning Control System - Charge Calculation Tool

File (F) Help (H)

Charge Calculation [Charge Calculation Result](#) [Advanced Settings](#)

Charge Calculation

Time period for calculation: 2021 / 01 / 01 - 2021 / 12 / 31 (Enter YYYY/MM/DD.)

Apportioned data acquisition ☒ From CSV file ☐ From AE-200 via LAN

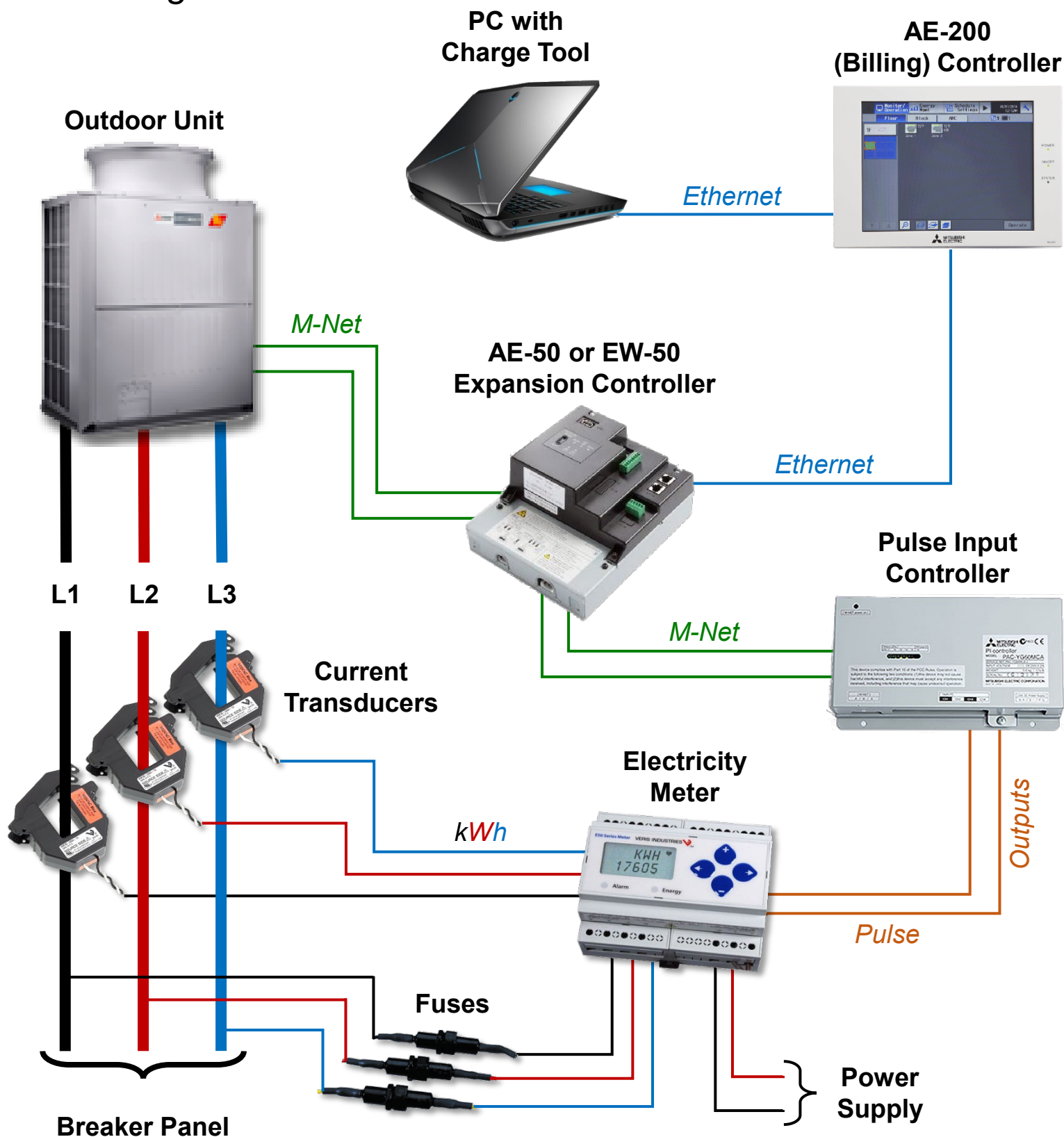
No.	AE-200 address	ID	Password
1	192.168.1.211	initial	
2			
3			

Start calculation

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Sample Layout Drawings

Basic Configuration

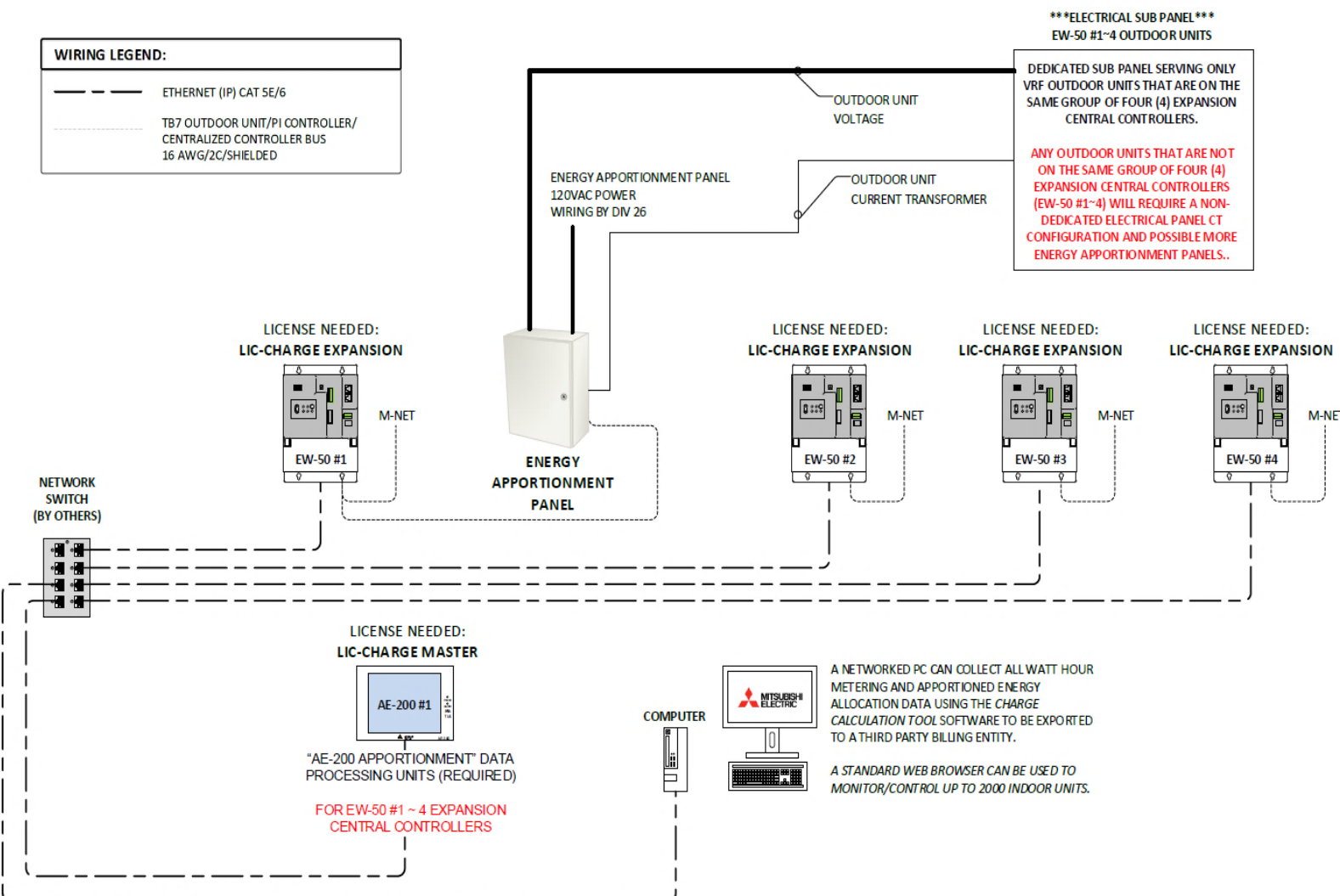


Sample Layout Drawings

Building Control Network Details

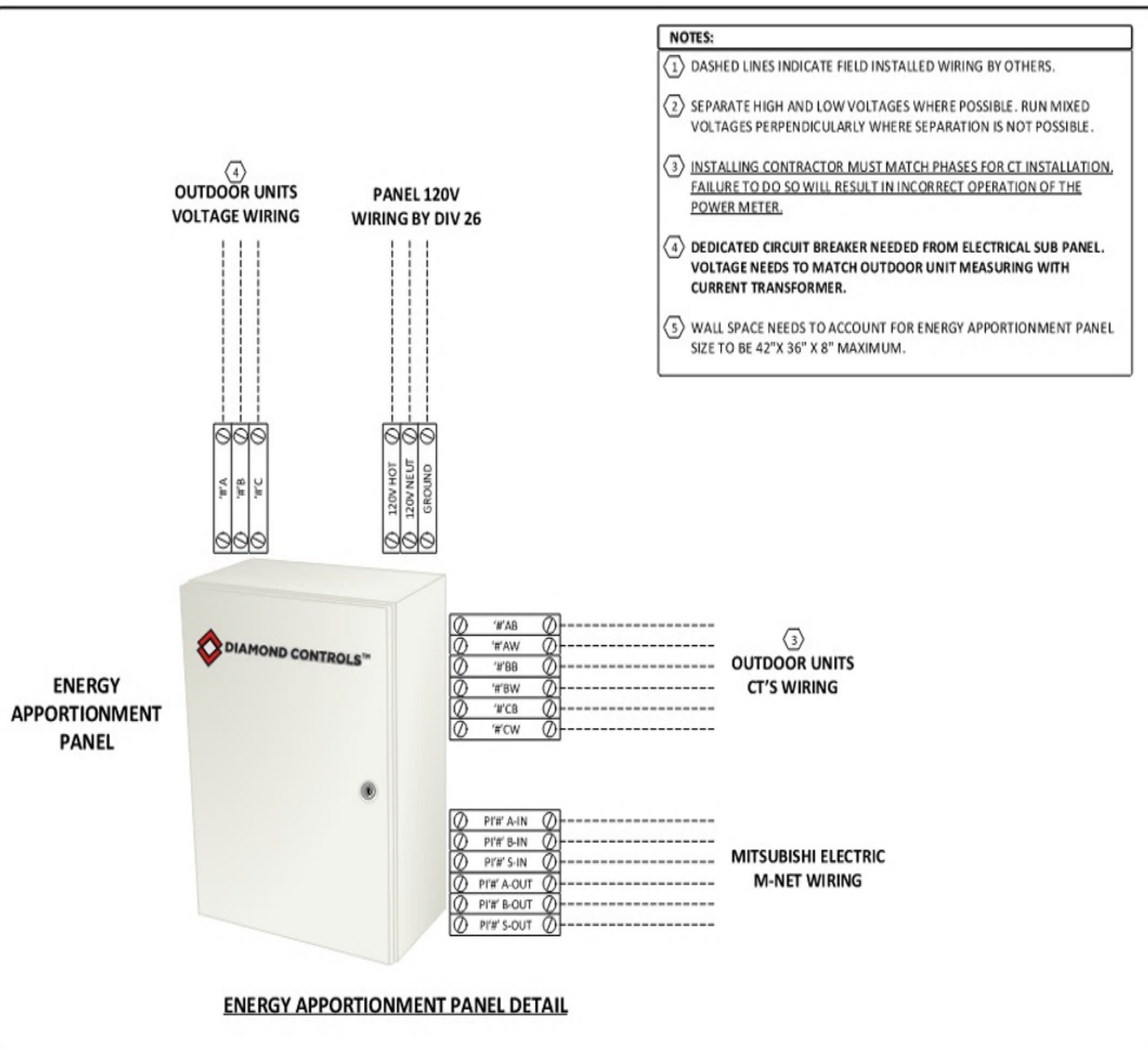
General Notes

- 1) The system shown below is a typical energy apportionment system. The VRF manufacturer shall provide a detailed submittal showing project-specific information for use by the installing contractor. The submittal shall include all wiring diagrams and details down to terminal level details. Generic information shall not be acceptable.
- 2) Energy apportionment system to be installed and wired by contractor. Commissioning shall be completed by VRF manufacturer personnel and authorized representatives only.
- 3) VRF system must be manually addressed to prevent any issues with auto addressing and energy apportionment systems utilizing auto addressing shall not be acceptable either.
- 4) Manufacturer must have documented approval from the authority having jurisdiction to utilize their energy apportionment methodology and equipment.
- 5) Wall space needs to account for energy apportionment panel size to be 42"x36"x8" MAX.



Sample Layout Drawings

Energy Apportionment Panel

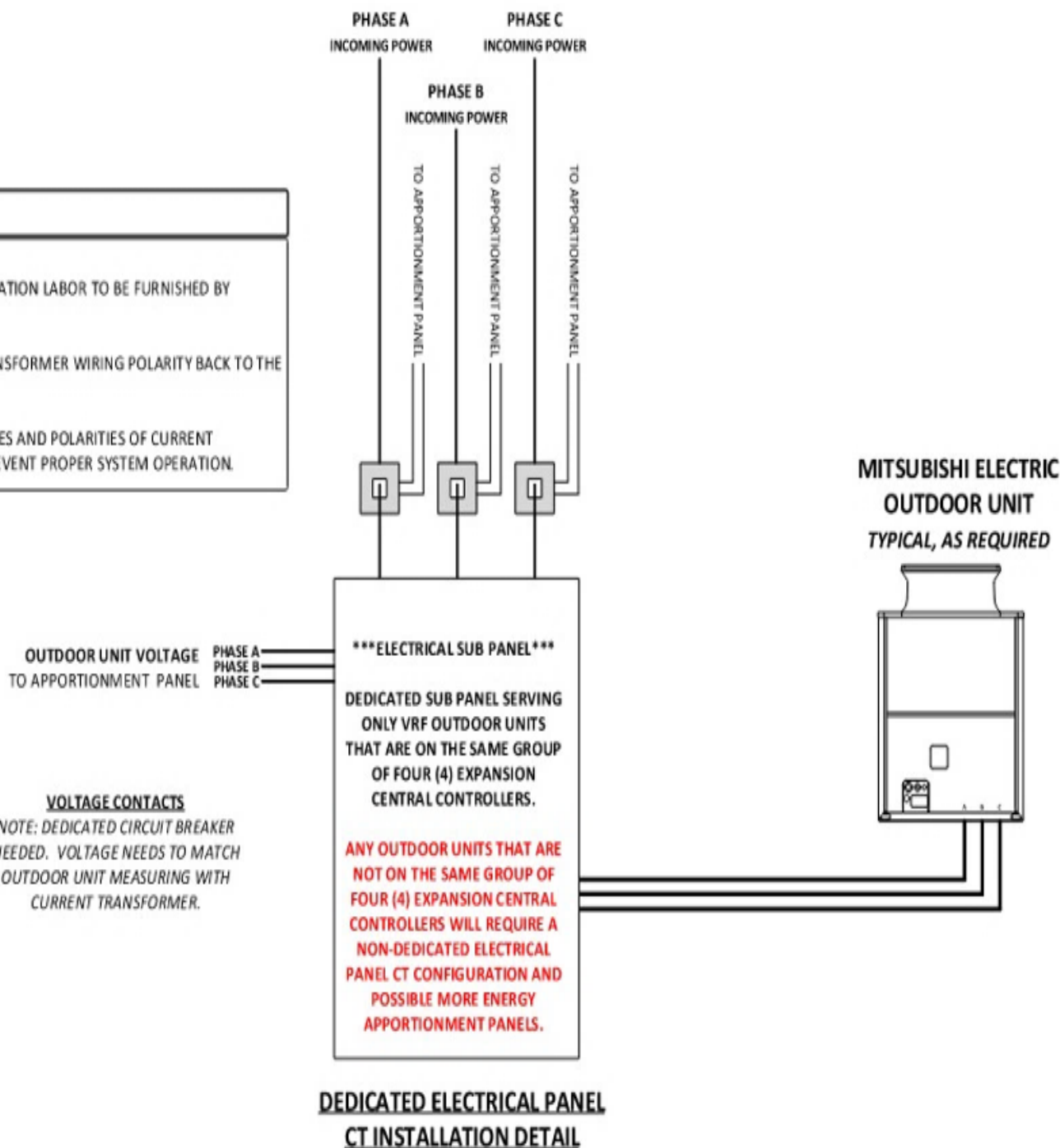


Sample Layout Drawings

Dedicated Electrical Sub-panel

NOTES:

- 1 ALL WIRING AND INSTALLATION LABOR TO BE FURNISHED BY OTHERS.
- 2 MAINTAIN CURRENT TRANSFORMER WIRING POLARITY BACK TO THE METER PANEL.
- 3 FAILURE TO MATCH PHASES AND POLARITIES OF CURRENT TRANSFORMERS WILL PREVENT PROPER SYSTEM OPERATION.



Sample Layout Drawings

Non-dedicated Electrical Sub-panel

