CITY MULTI Equipment Start Up Process

Purpose

The CITY MULTI Equipment Start up Process is a guideline to assist in conducting the CITY MULTI system start up. If done properly it can be used in combination with the Extended Warranty Process to gather required information for that procedure. Generally, the R2 series will take more time than the Y series, so schedule time accordingly. A good rule of thumb is to reserve one day for every 25 indoor units.

CITY MULTI Checklist

The installing contractor is required to complete all sections of CITY MULTI Pre-start up Checklist prior to system start up.

Ensure the following:

1) Appropriate line voltage to all system components.

2) Control wiring is terminated correctly and proper voltage is present.

3) All components are correctly addressed. Port assignments are necessary for R2 systems.

4) All field installed components in the refrigerant system must be pressure tested and triple evacuated.

5) All additional charge has been weighed into the system and service valves opened.

6) Line voltage is applied to outdoor units 12~24 hours prior to start up.

7) An “as built” Diamond System Builder (DSB) file depicting correct addresses, port connections, line lengths and sizes is required prior to the scheduled start up.

8) Where applicable, the unit must be installed above snowline.

Procedure

1) General Inspection

a) Inspect all system components paying close attention to wiring, refrigerant lines and drains. Be mindful of correct line sizing and condensate lifts.

b) Be aware that R2 units require the correct twinning kits.

c) **Know** the minimum/maximum distance required for Y and R2 series twinning kits to ensure piping is correct.

d) The **only** acceptable way for twinning outdoor units are the examples given in the installation instructions.

2) Equipment Power

a) If unsure at what point control wiring was connected to the outdoor unit or units, de-energize the outdoor unit or units for at least 10 minutes.

b) Note the outdoor unit or units LED display; not all error codes will display here, but the ones that do will not allow the system to operate. These errors will have to be corrected before starting the system.

c) Be sure line voltage is present for all indoor components.

d) Always have available the correct Outdoor Technical Service Manual for troubleshooting error codes.

3) Connecting Options for PAC-USCMS-MN-1 or CMS-MNG-E

a) Connect the MN Converter to any communication terminal; TB3 on the outdoor unit, TB2 on the Branch Controller (BC) or TB5 on the indoor unit.

b) The MN Converter can be connected at the M-Net terminal block (terminals A and B) of the Central Controller.

Note: The Central Controller can also be accessed at the same time, using a network cable and the Initial Settings Tool, for initial Settings, including grouping, date and time and basic information, etc…

4) Starting Maintenance Tool

a) Do not open the Maintenance Tool program prior to connecting (the MN Converter Interface) to the City Multi system and your computer via the USB connection.

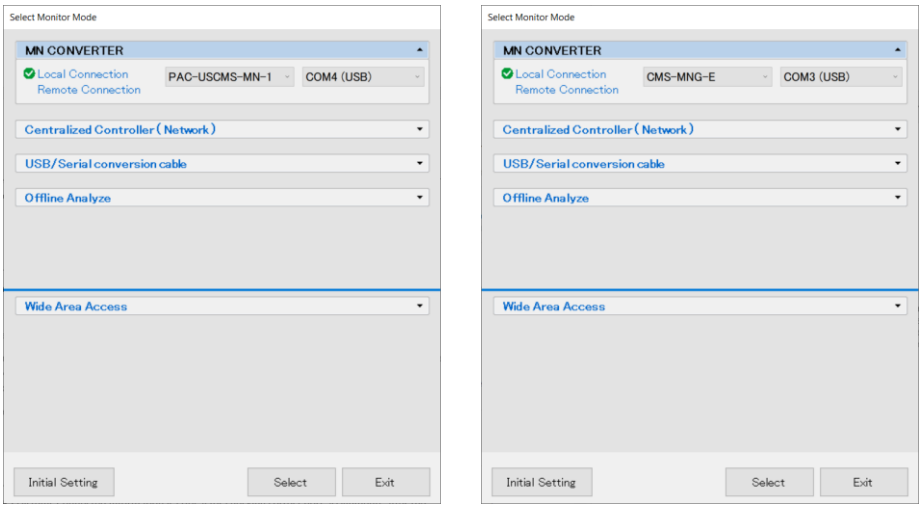
b) Open Maintenance Tool and select units of measurement.

c) Select Monitor Mode MN Converter.

d) Select Local Connection.

e) Select connection port. This will be a drop down box, after drivers are installed; version 5.07 and later will show the com port and PAC-USCMS-MN-1 or CMS-MNG-E (See Figure 1) depending on which converter is being used. Make sure that the com port has (USB) or (CMS).

Figure 1



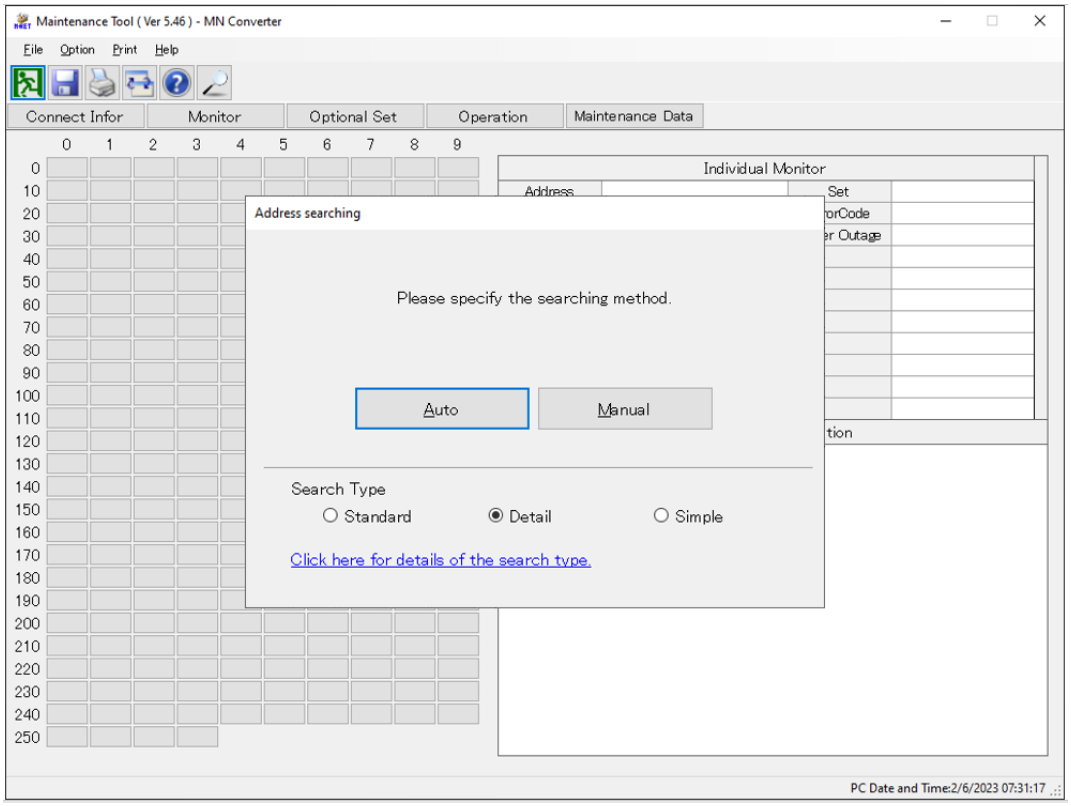
5) Maintenance Tool Search

a) There are two methods for searching. Select **Auto** for any startup. Manual can be used when all addresses are known (See Figure 2).

b) All addresses will be shown in the address grid. If addresses are missing locate the missing addresses and correct. Missing addresses can be caused by duplicate addressing or communication wire connection problems. If addresses are changed, cycle power to the outdoor unit/s for 10 minutes.

c) Be mindful of the address range for all components (See Figure 20).

Figure 2



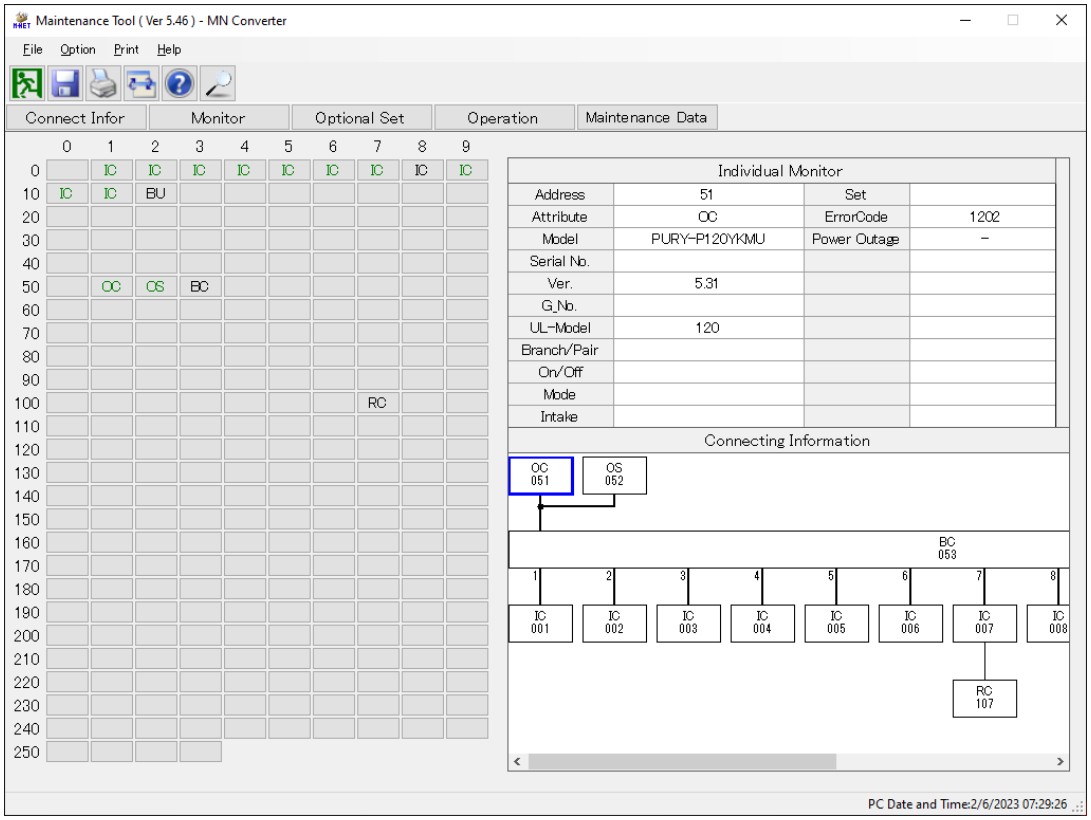
6) Maintenance Tool Connected Information (R2 only)

a) For R2 systems Connected Information is critical for checking correct port assignments after the system has started and exited Initial Mode.

b) Connected Info can be viewed from the address grid screen. After the search is complete place the cursor over the OC that you wish to view, the bottom right side of the screen will display Connected Information. For R2 systems the port assigned (reflects the position of the rotary switch SW14 on the indoor control board) will also be displayed (See Figure 3).

c) For R2 systems Port assignments can also be viewed from the Monitor screen in the IC information area. This is useful when verifying Port assignments (See Figure 15).

Figure 3

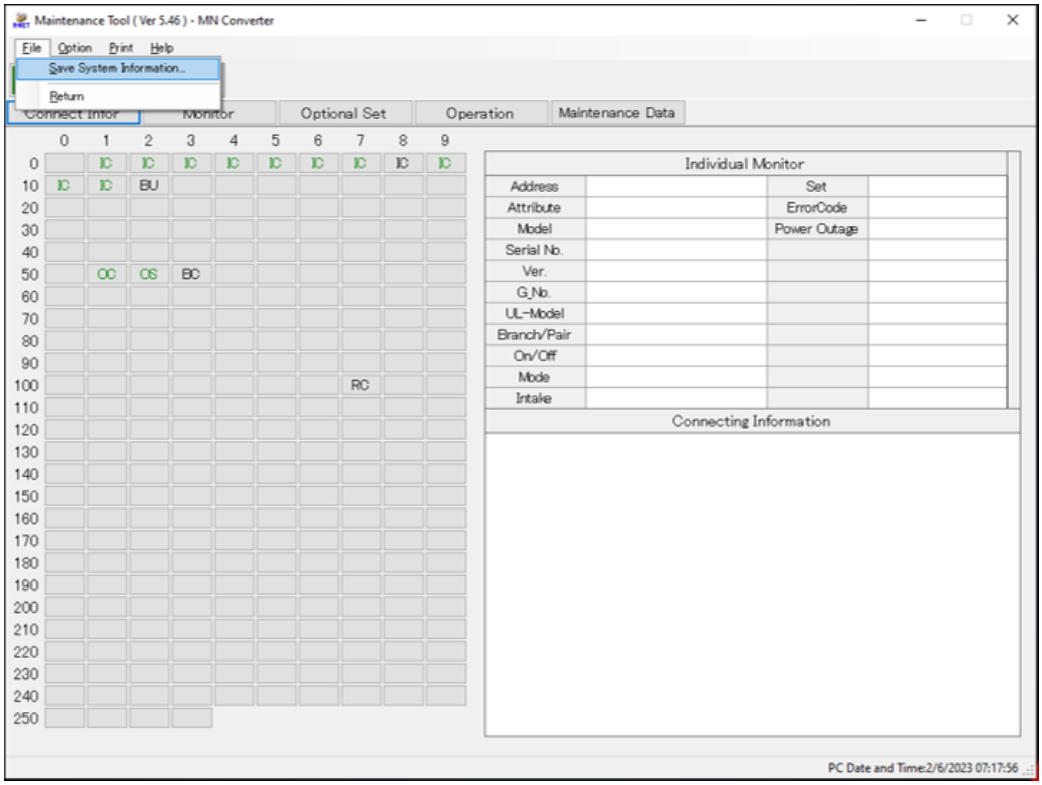


7) System Information

a) System Information must be saved and submitted with monitored run time. Be sure all information is correct. For Y series, once all addresses are correct the information can be saved by clicking on **File** at the top left of the address grid screen, then click, **Save System Info** (See Figure 4). The information will save and store in the same manner as run time information and both will be in Offline Analyze. Offline Analyze will be one of the options when you first open Maintenance Tool on the Select Monitor Mode screen (See Figure 17). You have to select the System Info button to export System Information.

b) For R2 systems, wait until all port assignments are verified before saving system information.

Figure 4



8) Starting The CITY MULTI System

a) At this point all addresses should be correct and accounted for. All errors up to this point should have been corrected.

b) To bring up the Monitor screen from the grid screen click the **Monitor** tab at the top of the screen, all other tabs will fade then click the OC you wish to monitor. Multiple systems can be monitored simultaneously by clicking all OC's (See Figure 5).

c) Once this is done in the correct order, a **Confirm** tab will appear at the bottom of the screen. Click on the Confirm button to move to the Monitor screen (See Figure 5).

d) Note the pressure sensors 63HS and 63LS on the outdoor units, PS1and PS3 in the BC (R2 only). They should all read the same or very close with the system off and not running.

e) To start the system, click the **Drive Operation** tab. This tab will allow control of either indoor unit (IC) or the Branch Controller (BC). Choose **IC** this will bring up the Operation screen. From here you can give individual commands or batch commands (See Figure 6).

f) The Operation screen will populate with the highest addressed IC on the system you are monitoring. To change addresses simply click **Change** at the top of the screen and move to the next address (See Figures 7 & 8).

g) To conduct a batch command select **Set All** at the top of the Operation screen. Be mindful if there are multiple refrigeration circuits (outdoor units) daisy chained at TB7 all the IC's in all systems will start (See Figures 9 & 10).

h) You can also select individual IC's by using the **Set Selected Address** button.(Figures 11 & 12)

i) Selecting Test Run Heating or Cooling will allow the system to run for two hours in whatever mode selected. Both set point and return air will be ignored during this period.

j) The outdoor unit or units will start in Initial mode. Wait until Ordinary mode to judge the system's performance. Keep in mind the data required for the Extended Warranty Report must reflect all indoors operating in Test Run heat or cool and the outdoor unit or units in Ordinary mode.

k) For Y and S series only, if the system is judged to be operating correctly, the start up process is complete. Information on saving and exporting data will be in Section 10.

Figure 5

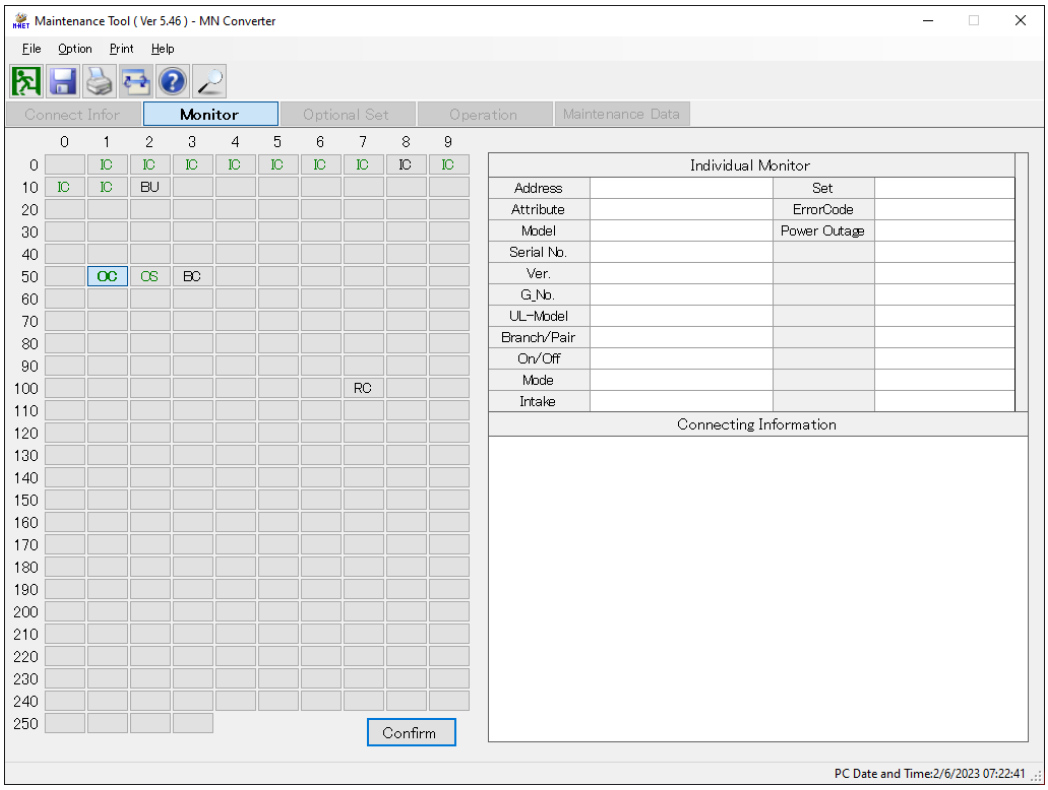


Figure 6

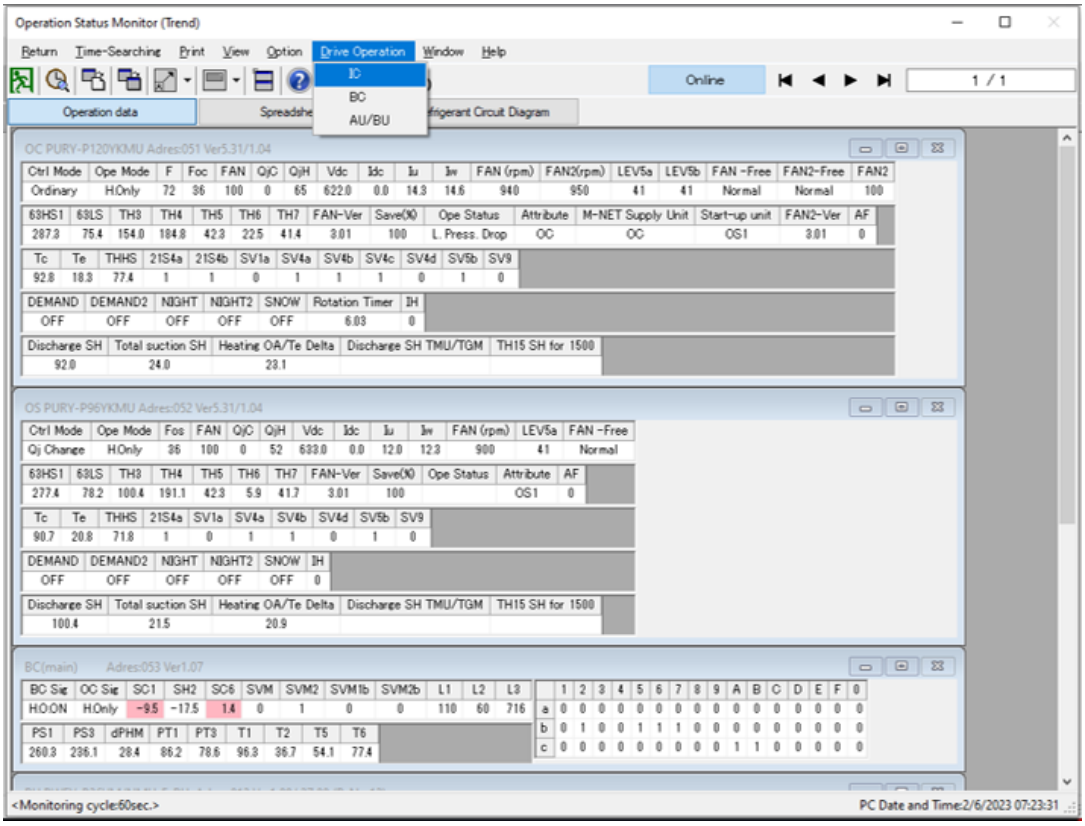


Figure 7

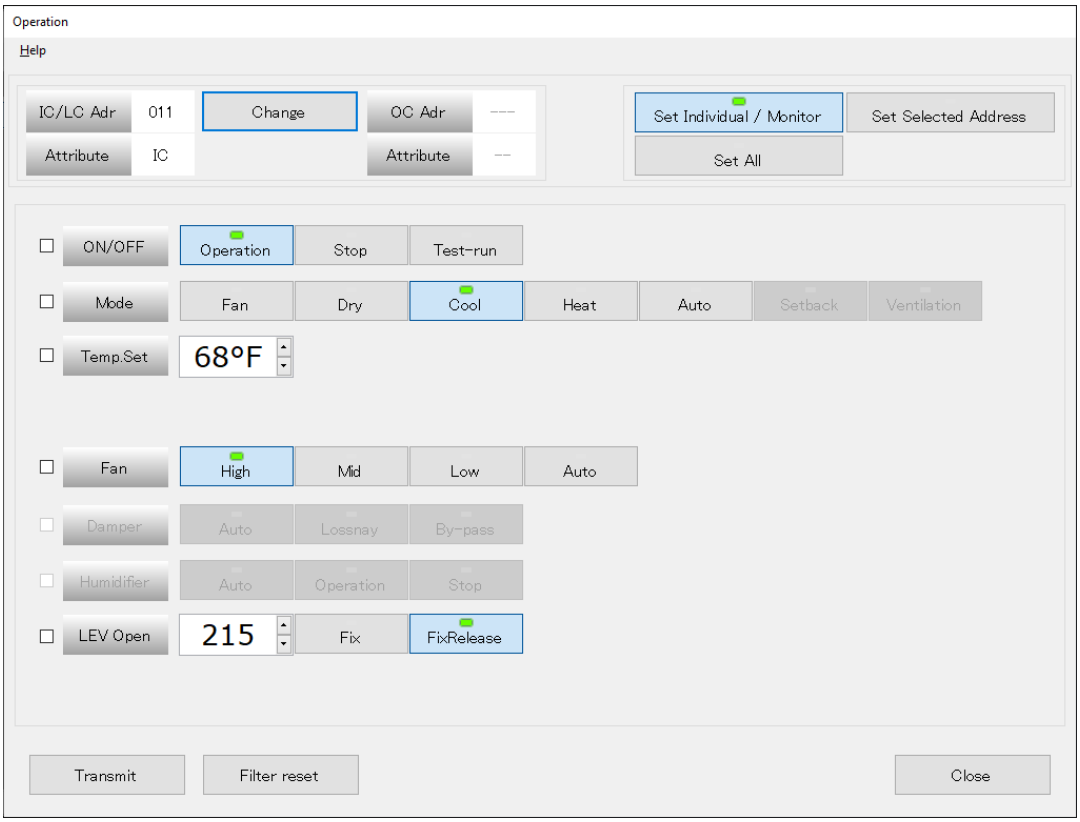


Figure 8

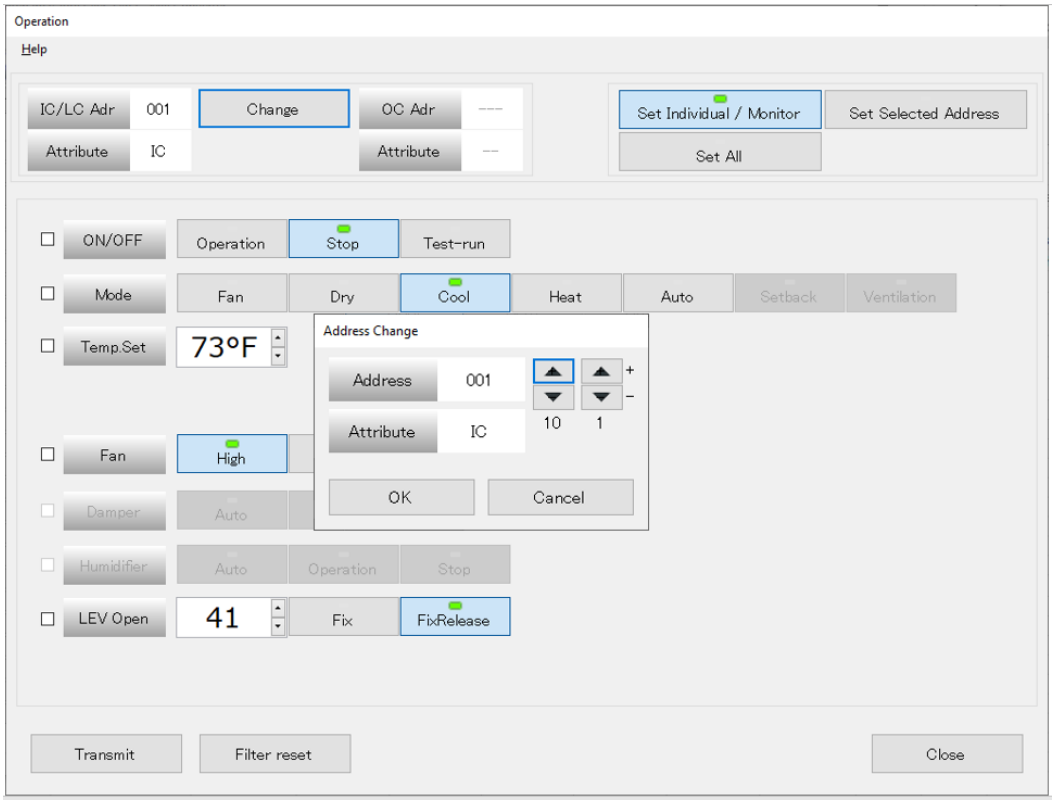


Figure 9

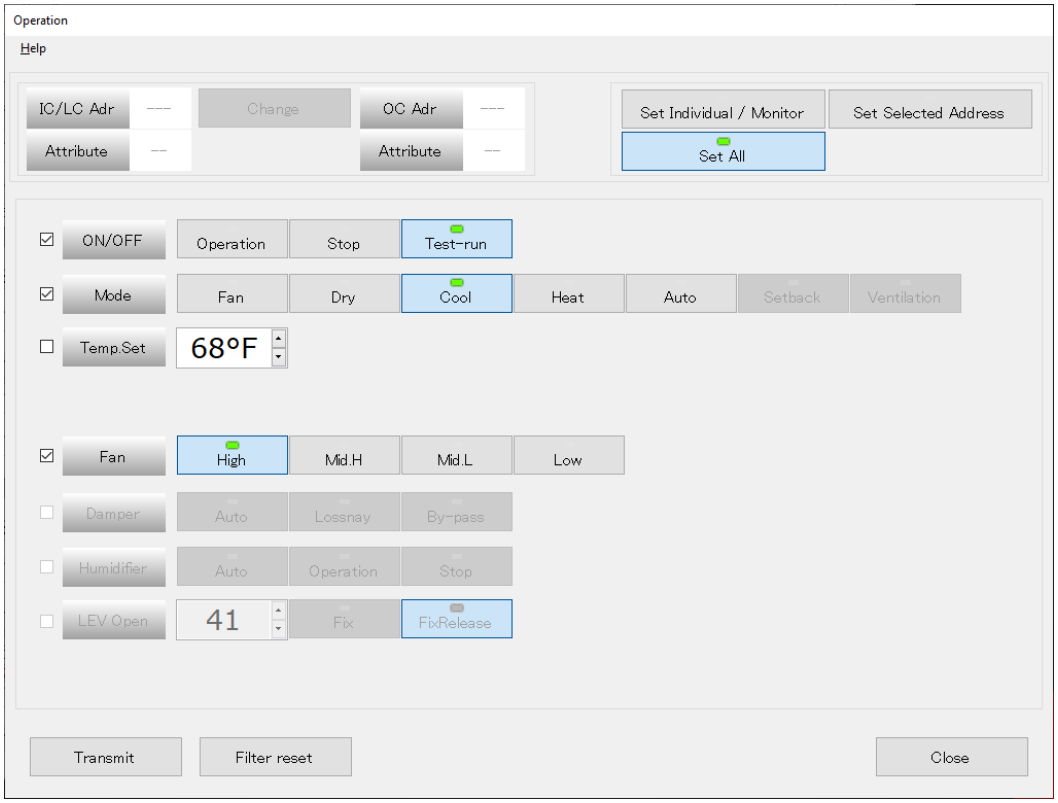


Figure 10

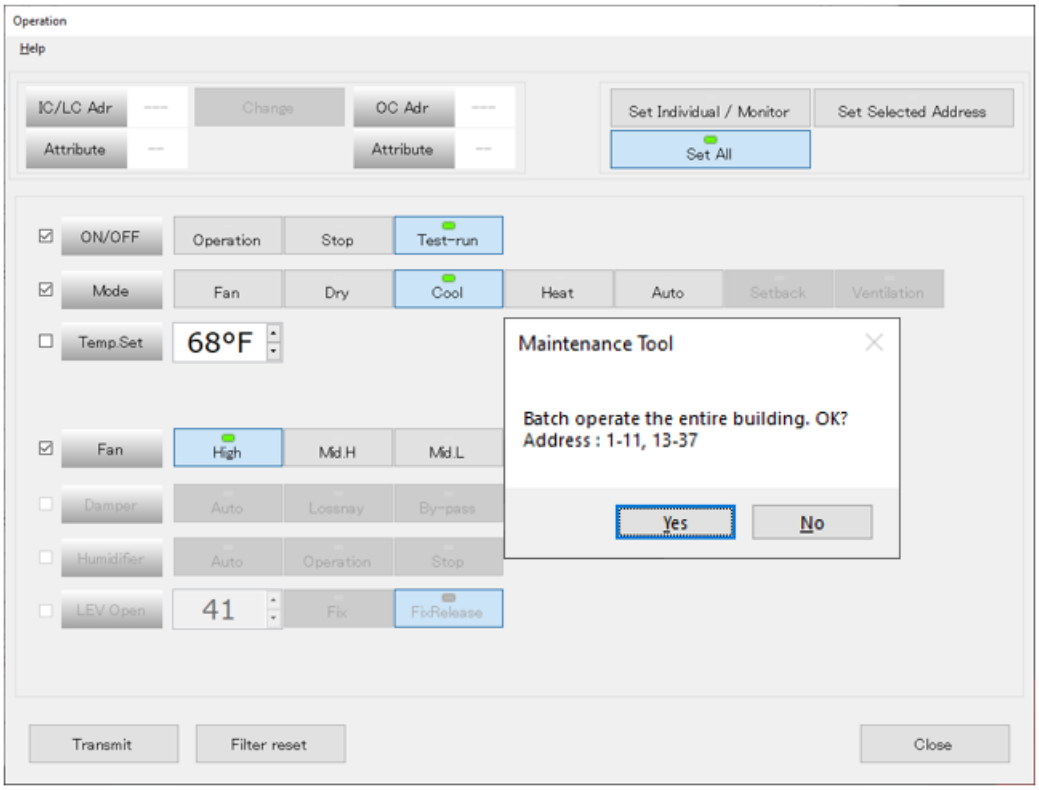


Figure 11

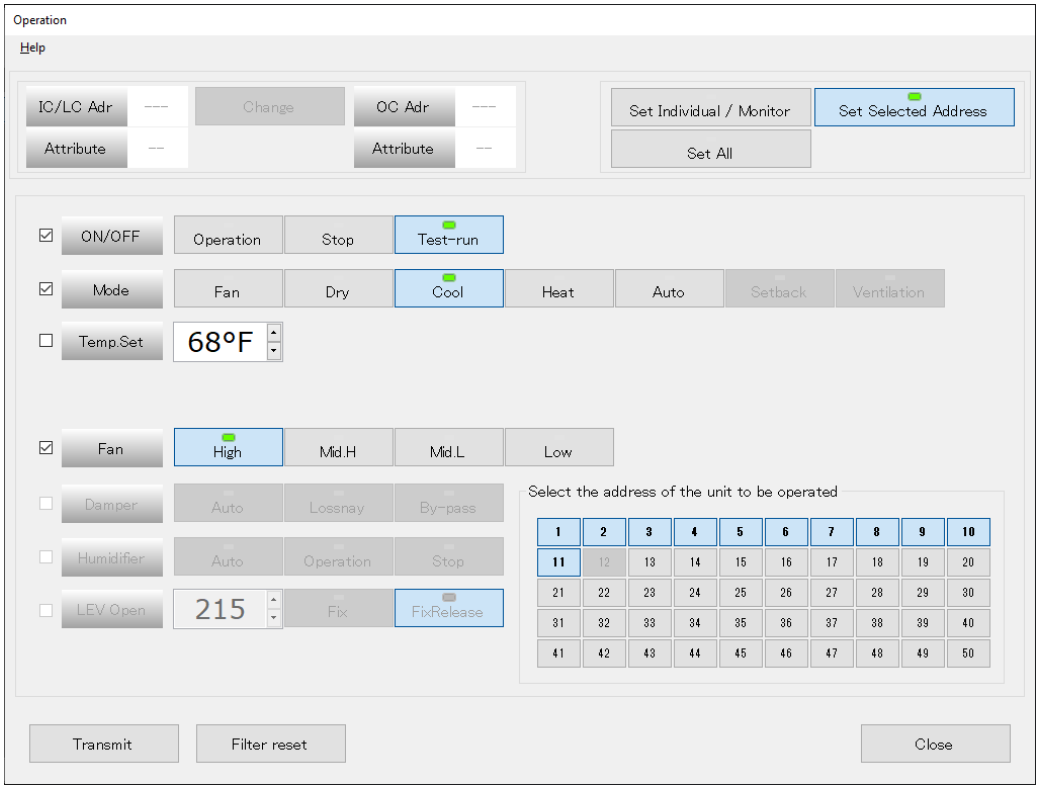
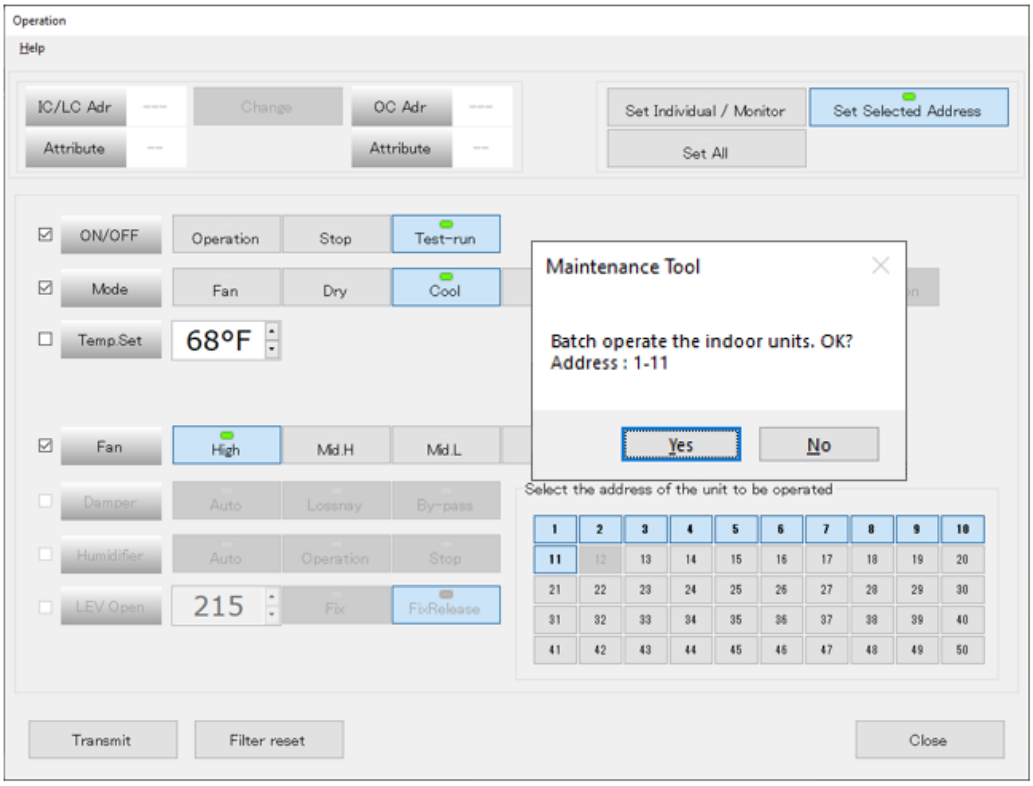


Figure 12



9) Verifying BC Port Assignments R2 Only

a) Have System Information present for reference while verifying port assignments.

b) Be sure system operation mode is Ordinary, and that all the indoor units are in Test Run. This allows ports assignments to be verified while not being concerned with indoor and outdoor units stopping.

c) In cooling all TH2 temperatures should average between 35 ~ 50 degrees.

d) In heating mode all TH3 temperatures should be above 125 degrees.

e) To manually control the BC, click **Drive Operation** at the top of the Monitor screen then select BC Operation (See Figure 13).

f) When the BC operation screen populates you will see across the top 1 ~ 9 and A ~ 0, this represents a 16 port BC. Each port will have A, B, and C solenoids. These are represented in a vertical row of blocks beneath each port. The blocks will have a 0 (0 = closed) or 1 (1 = open) in each. Here you can command the solenoids open or closed by clicking the block. The fourth vertical block allows you to Fix or Cancel the command by clicking this block. To send the command select **Transmission** on the center right side of the screen (See Figure 14).

g) Close the ports for the indoor address you are checking (A & C for cooling, B for heating) then close the BC operation screen. Now check for temperature change on the indoor unit, TH2 if in cooling mode, TH3 if in heating mode (See Figure 15).

h) Be mindful of all indoor units; if the port assignment is incorrect the temperature change can be seen on another indoor unit. If this occurs, note the indoor unit address and port assignment and continue verifying ports. All corrections can then be made at the same time when verification is complete.

i) After all ports have been verified or corrected, system information can be saved for the Warranty Report.

Figure 13

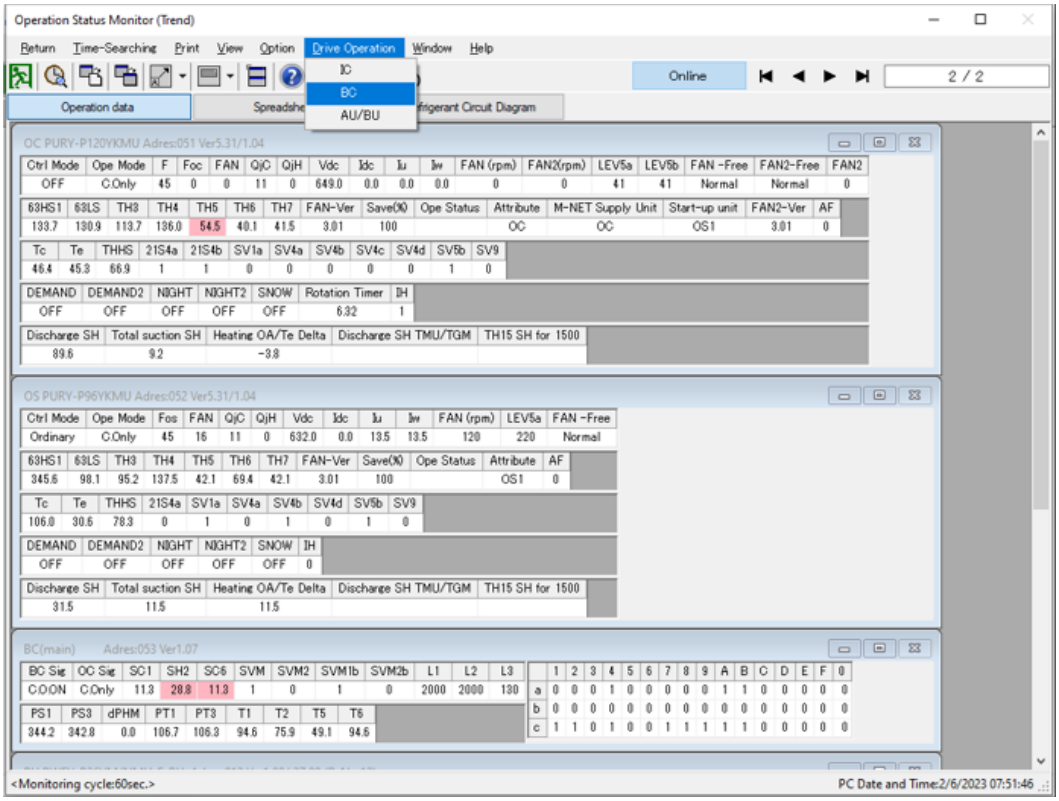


Figure 14

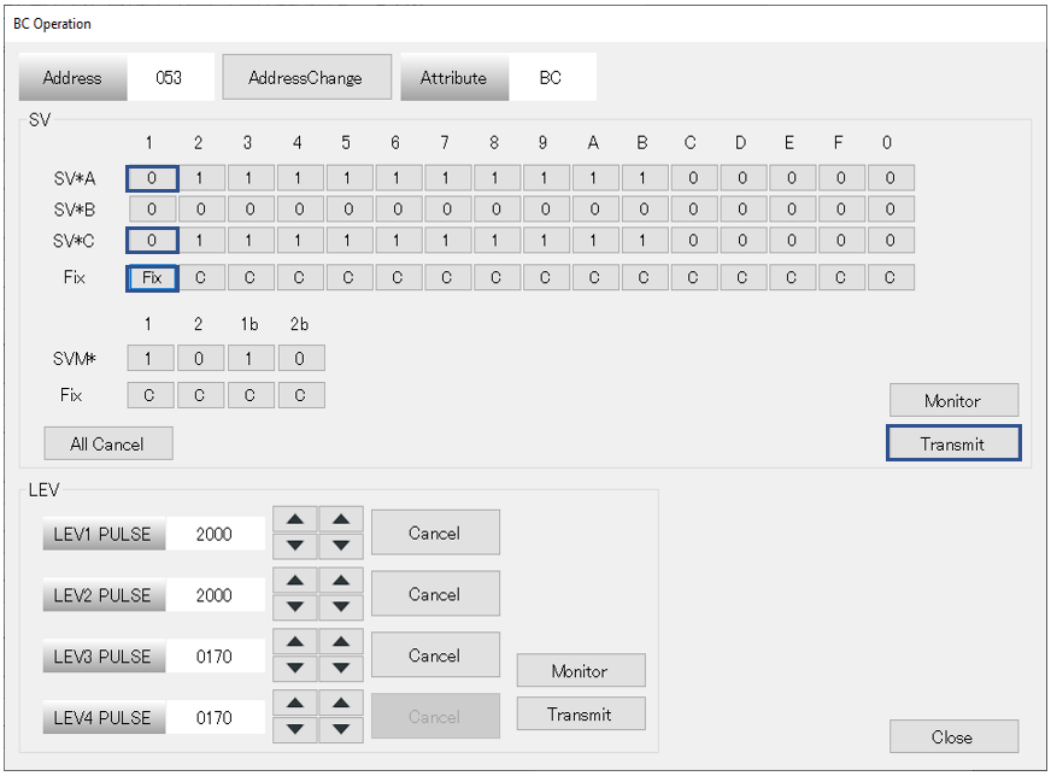
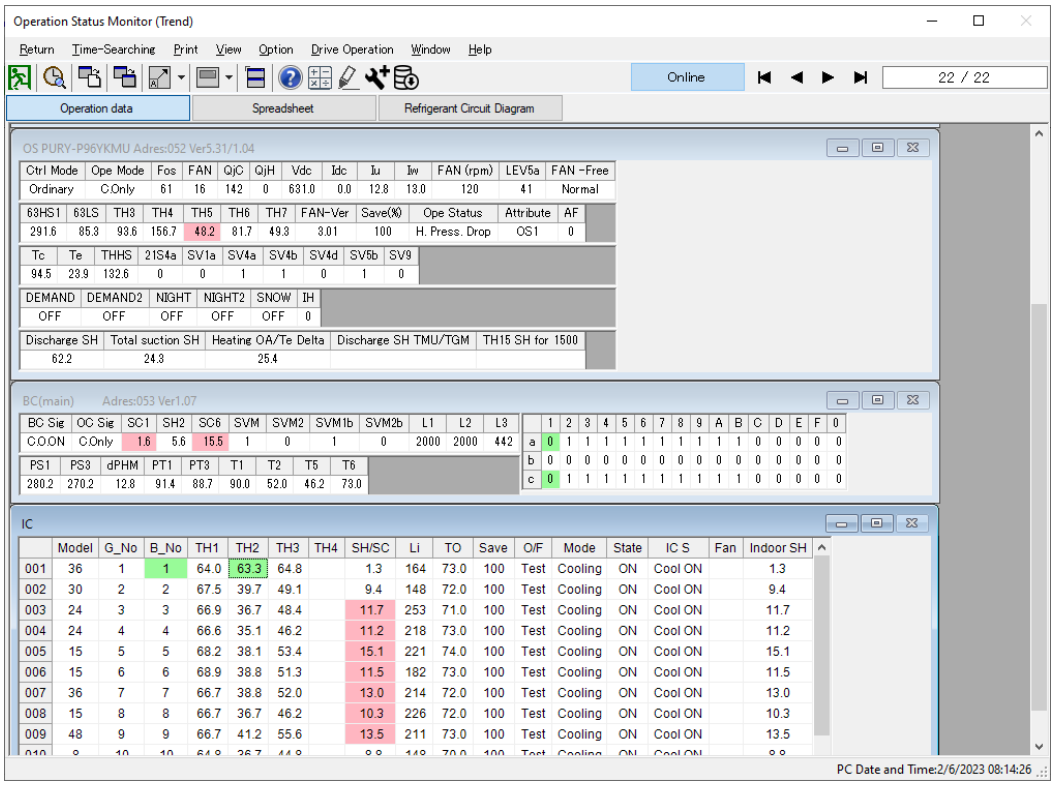


Figure 15



10) Saving and Exporting Data

a) When viewing the Monitor screen, Maintenance Tool is recording the data at approximately one minute intervals. When exiting the Monitor screen a **Confirm Data Save** box will appear asking if you would like to save the data. Here you can name the data and write comments (See Figure 16).

b) When submitting data for the Extended Warranty Process ensure all files submitted for a single system reflect the same name. This will avoid confusion when information is received from large sites with multiple systems.

c) The data is saved in Offline Analyze. **Offline Analyze** is selected from the **Select Monitor Mode** screen (See Figure 17).

d) Here you may view the saved data simply by highlighting the data and either double clicking on it or by selecting **Offline Analyze** at the bottom of the screen. (See Figure 18).

e) The data must be exported for the extended warranty submission. To export, highlight the data then click export. Browse to a folder where you can find and locate the exported file. The desktop is usually the easiest to remember. Maintenance Tool converts the file so that it can be imported to another computer. For the file to be used on another computer it must be imported into Maintenance Tool for viewing. The import process is the same as export but in reverse. (See Figure 19).

Figure 16

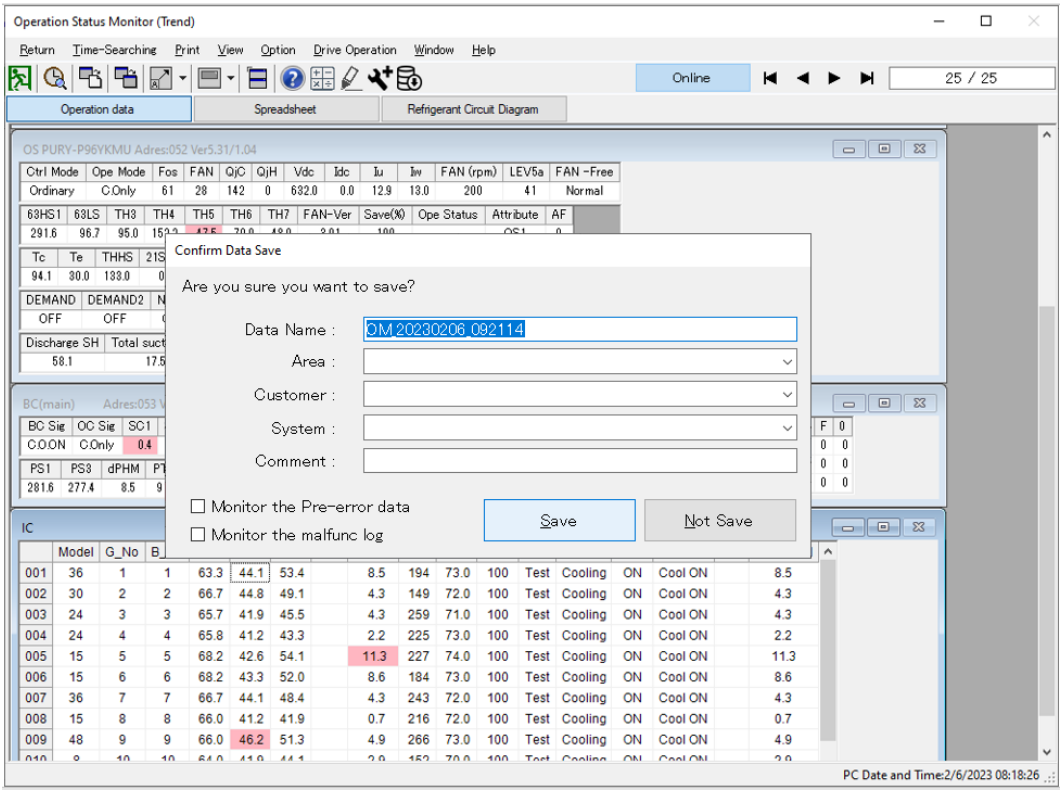


Figure 17

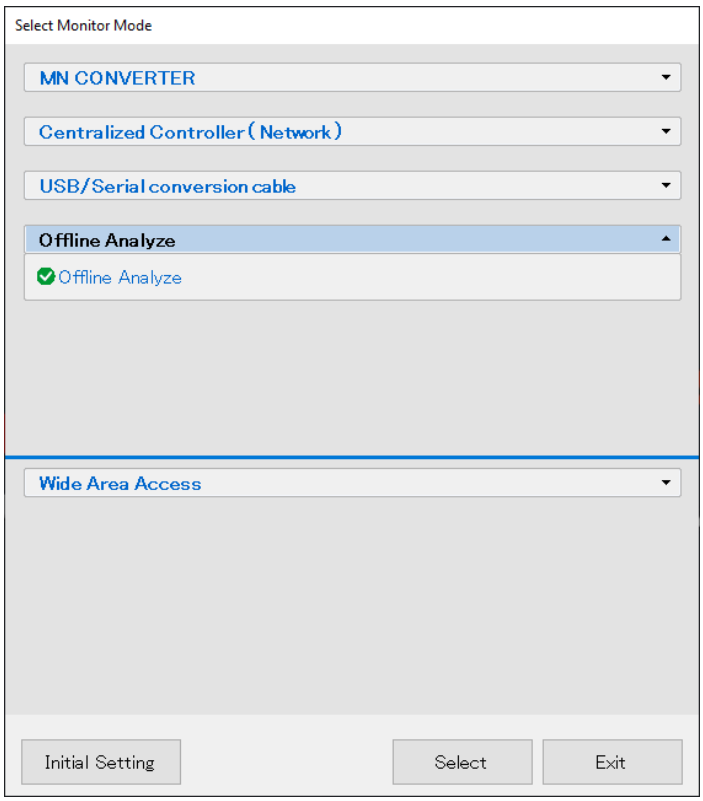


Figure 18

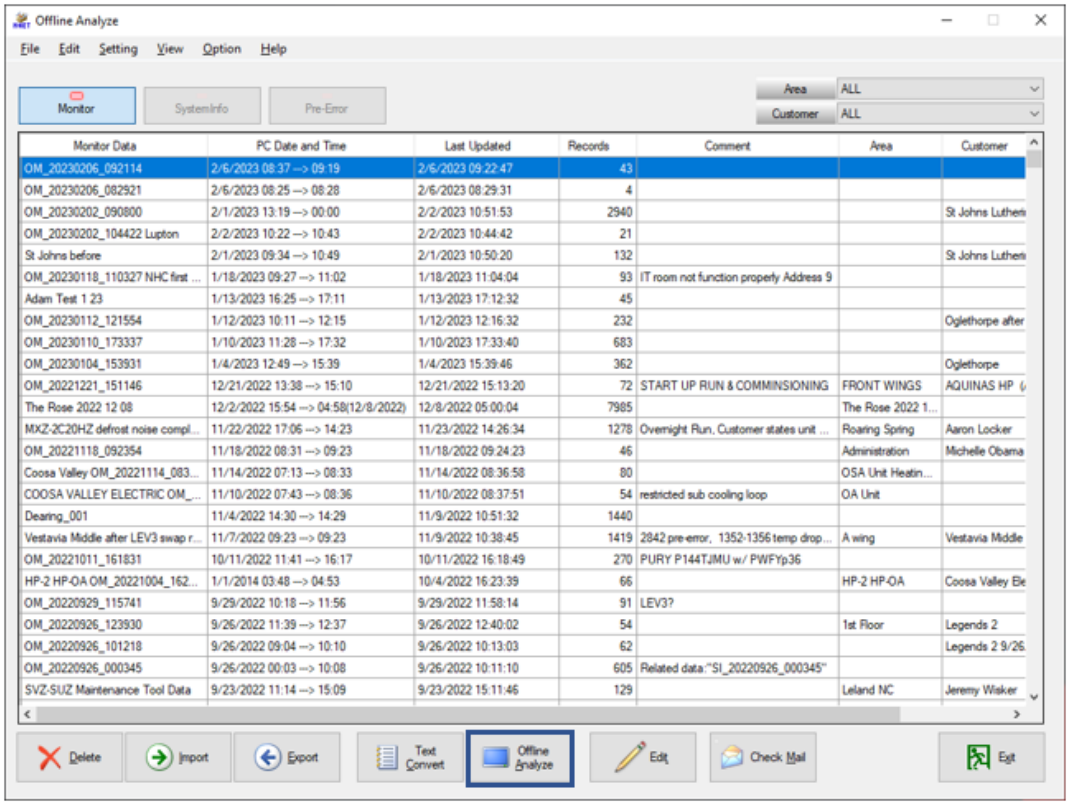


Figure 19

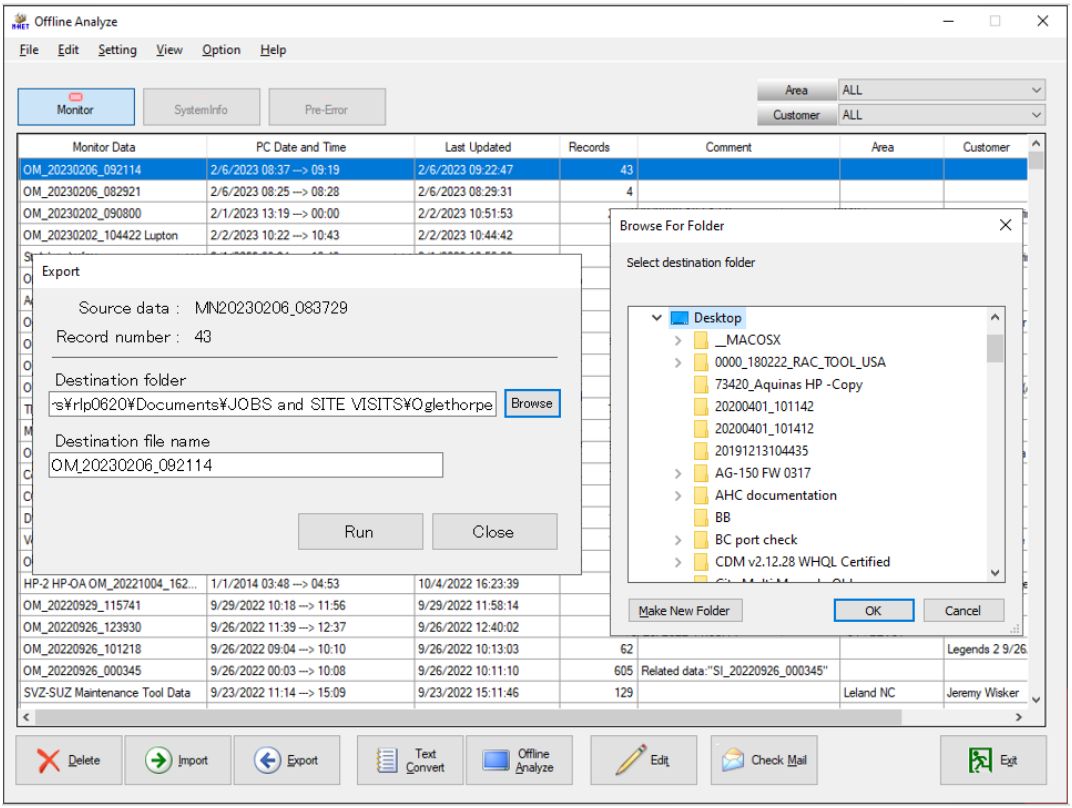
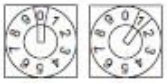
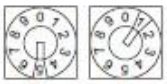
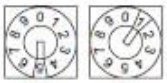
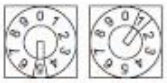
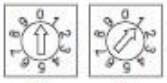
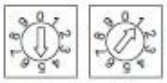
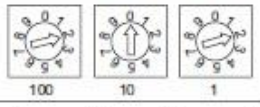
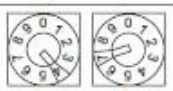


Figure 20

2-4-2. Rule of setting address

Unit		Address setting	Example	Note
Indoor unit		01 ~ 50		Use the most recent address within the same group of indoor units. Make the indoor units address connected to the BC controller (Sub) larger than the indoor units address connected to the BC controller (Main). If applicable, set the sub BC controllers in an PURY system in the following order: (1) Indoor unit to be connected to the BC controller (Main) (2) Indoor unit to be connected to the BC controller (No.1 Sub) (3) Indoor unit to be connected to the BC controller (No.2 Sub) Set the address so that (1)<(2)<(3)
Outdoor unit		51 ~ 99, 100 (Note1)		The smallest address of indoor unit in same refrigerant system + 50 Assign sequential address numbers to the outdoor units in one refrigerant circuit system. OC and OS are automatically detected. (Note 2) * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
BC controller (Main)		52 ~ 99, 100		The address of outdoor unit + 1 *Please reset one of them to an address between 51 and 99 when two addresses overlap. *The address automatically becomes "100" if it is set as "01~ 50"
BC controller (Sub)		52 ~ 99, 100		Lowest address within the indoor units connected to the BC controller (Sub) plus 50.
Local remote controller	ME, LOSSNAY Remote controller (Main)	101 ~ 150	1 Fixed 	The smallest address of indoor unit in the group + 100 *The place of "100" is fixed to "1"
	ME, LOSSNAY Remote controller (Sub)	151 ~ 199, 200	1 Fixed 	The address of main remote controller + 50 *The address automatically becomes "200" if it is set as "00"
System controller	ON/OFF remote controller	000, 201 ~ 250		The smallest group No. to be managed + 200 *The smallest group No. to be managed is changeable.
	AG-150A GB-50ADA GB-24A	000, 201 ~ 250	0 0 0	
	PAC-YG50ECA	000, 201 ~ 250	0 0 0	*Settings are made on the initial screen of AG-150A.
	BAC-HD150	000, 201 ~ 250	0 0 0	*Settings are made with setting tool of BM ADAPTER.
	LMAP03U	201 ~ 250	2 Fixed 	

Note1: To set the address to "100", set it to "50"
Note2: Outdoor units OC and OS in one refrigerant circuit system are automatically detected.
OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.