

Smart Cleanroom Control Console, Tier 4

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Your Comprehensive Equipment Source

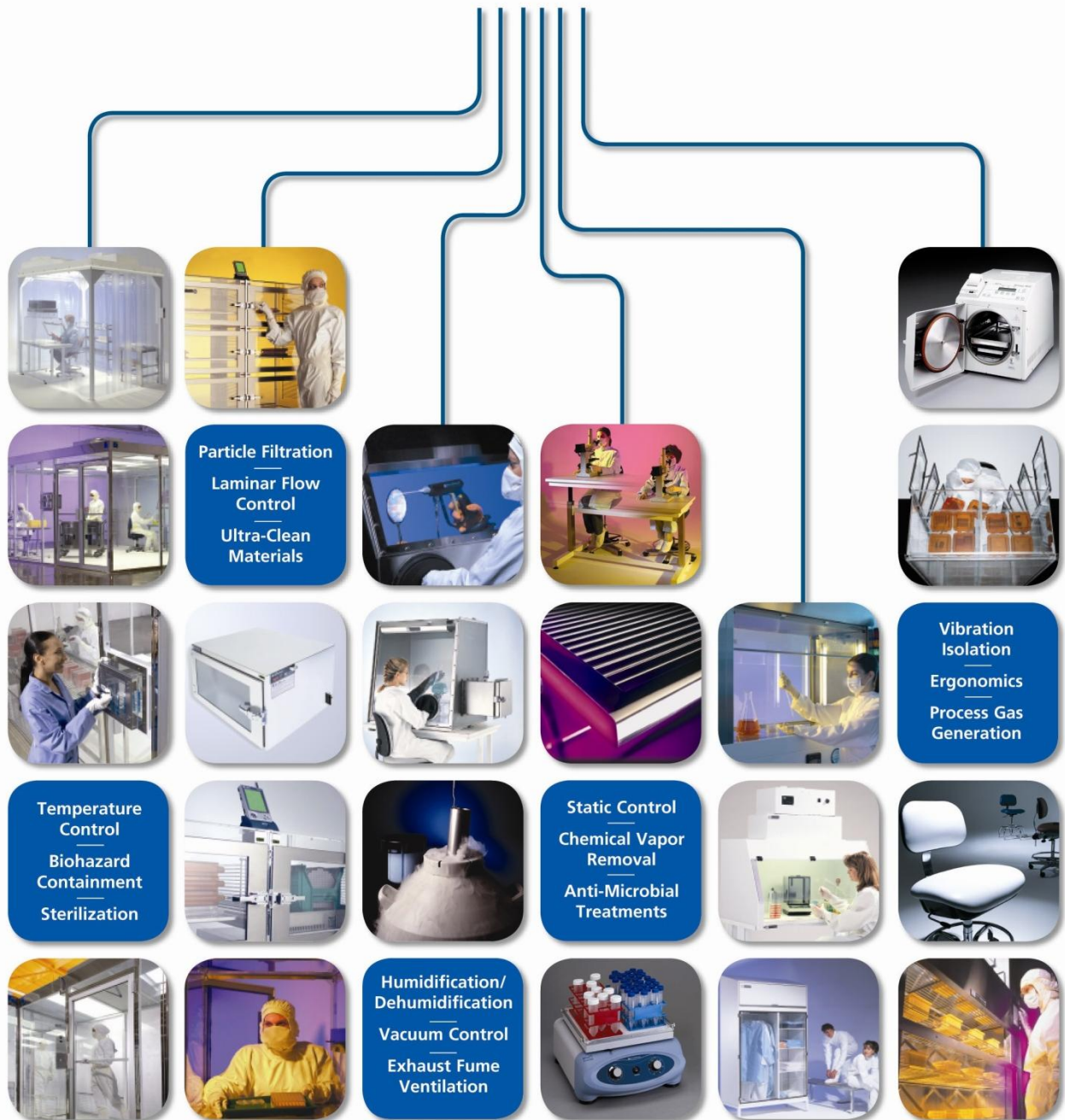




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Safety Notice

A thorough familiarity with all operating guidelines is essential to safe operation of the product. Failure to observe safety precautions could result in poor performance, damage to the system or other property, or serious bodily injury or death.



CAUTION

Cautions are used when failure to observe instructions could result in significant damage to equipment.

The following symbols are intended to call your attention to two levels of hazard involved in operation:



WARNING

Warnings are used when failure to observe instructions or precautions could result in injury or death.

The information presented here is subject to change without notice.

1.0 Introduction

This manual provides information on Terra Universal, Inc.'s Smart Cleanroom Control Console wiring and user configuration (Cat# 6607-04A). Keep this document in a safe space for future reference. Please read through this manual in its entirety before operating your Terra Universal Smart Cleanroom Control Console.

2.0 Description

The Terra Universal Smart Cleanroom Control Console is the brain of your cleanroom. The Fan Filter Units are the hands, and the Distributed Sensor Modules are the eyes and ears. All of these parts are connected together in series with Cat 5 pass-through cables. The Fan Filter Units and Distributed Sensor Modules can be connected in any order, with either port, but the Control Console must be connected at one end of the series chain.

Distributed Sensor Modules (DSMs) contain pressure, humidity, and temperature sensors. They will indicate an alarm to the control console if it detects an out-of-bounds atmospheric parameter in the room it is installed in, depending on the permissible range configured by the user.

Fan Filter Units (FFUs) are modules with powered blowers that drive air through a large filter, usually HEPA or ULPA. They will indicate an alarm to the control console if the fan RPM is too low or too high, and accept instruction from the control console to drive the fan motor at a specified speed.

DSMs and FFUs can also throw communication errors. The control console will also indicate an alarm if the connection to a DSM or FFU times out. This is indicated by the RX Timeout alarm. Examples of other common errors are Frame errors, CRC errors, Invalid format errors, and Unspecified comm errors. All of these are edge-case errors with the communication protocol between the units and should never happen.



3.0 Password Setup

On startup, the unit will run through its checklist, then default to the system overview screen (Figure 1). The System Overview screen displays the status of all motors on the bottom of the screen. It also has a rudimentary graphical representation of your cleanroom, which will display the room as red if there are any errors in a room's FFUs or DSMs.

Tap the settings button in the top right of the screen to continue with password setup.

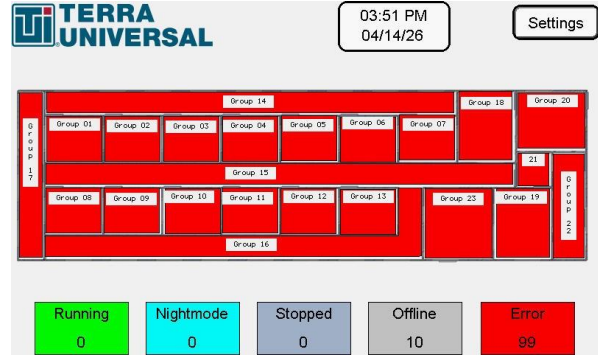


Figure 1: Main screen. In example, all rooms display red due to no connection to the console.

Figure 2 displays the settings menu. Most of the submenus here are locked until login credentials are entered. The default username and password are **Admin**. Enter **Admin** into the username and password fields and click Login. The USER field should populate with the username **Admin** to show that login was successful. To reset the password, click the Password Configuration button.

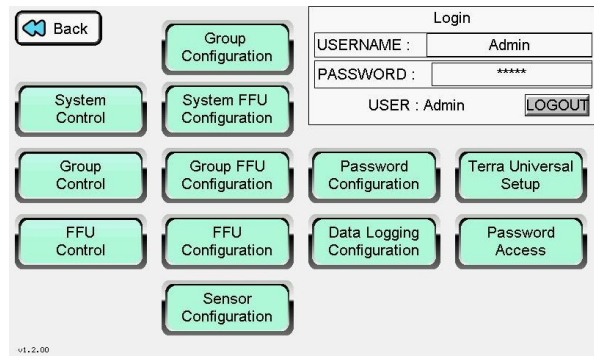


Figure 2: Settings menu



Exiting the menu when inside the Password Configuration submenu will apply the set username and password. Make sure the password is set to the desired value before clicking the “Back” button. There is no built-in password recovery method; for password troubleshooting, contact Terra Universal support.

In the Password configuration submenu (figure 3), click either field to set a new username or password. After configuring the fields to your liking, click the Exit button to save and exit. Exiting the menu will also logout the user. Accessing further menus will require another login with the newly created credentials.

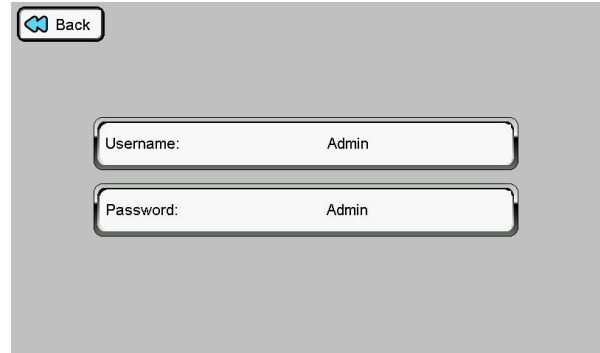


Figure 3: Password Configuration submenu

4.0 FFU/DSM System Configuration

To access FFU and DSM setup, navigate to the settings window and select Group Configuration. Here (figure 4), you can cycle between the titles for every room in your cleanroom by clicking the arrow icons next to the group number in the upper right corner. You can rename the room titles by clicking on the Name button. Click Apply to save the name before switching rooms. These names will be reflected in the default screen’s cleanroom diagram.

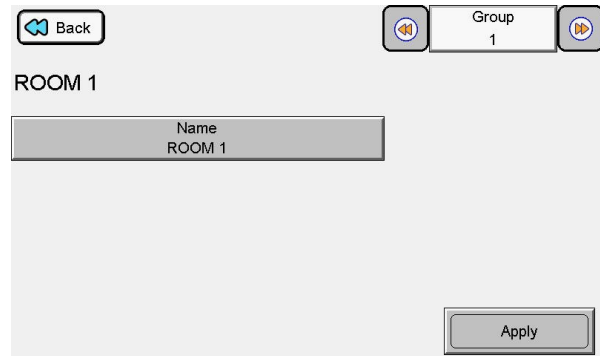


Figure 4: Group Configuration submenu

Next, select System FFU Configuration from the settings menu. Here (figure 5), you can configure the settings for every FFU at once. The motors in the FFUs are rated for 1250 RPM at 100% speed. It is strongly suggested to run the FFUs to a speed slightly lower than maximum speed to increase blower lifespan. Suggested* values:

	Normal Run	Nightmode
Speed %	85%	65%
Low RPM	500	500
High RPM	1300	1300

*The user should revise these RPM and fan speed settings based on performance experienced in testing

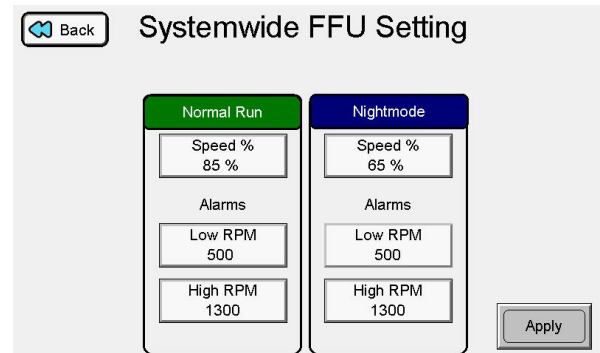


Figure 5: System FFU Configuration submenu



To instead set FFU settings by group, select the Group FFU Configuration submenu. This (figure 6) will appear identical do the System FFU Configuration submenu, with the addition of a group selection in the upper right corner.

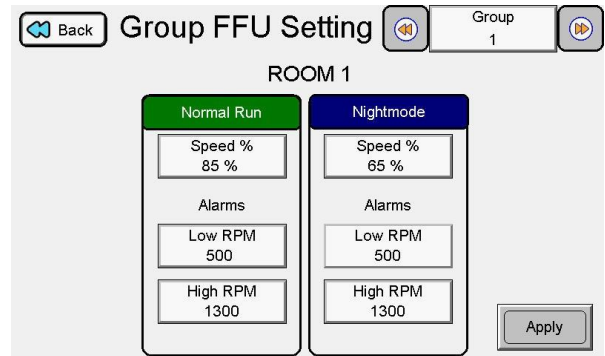


Figure 6: Group FFU Configuration submenu

To set each FFU's settings individually, select the FFU Configuration submenu (figure 7). Cycle through each device individually with the arrow icons in the top right.

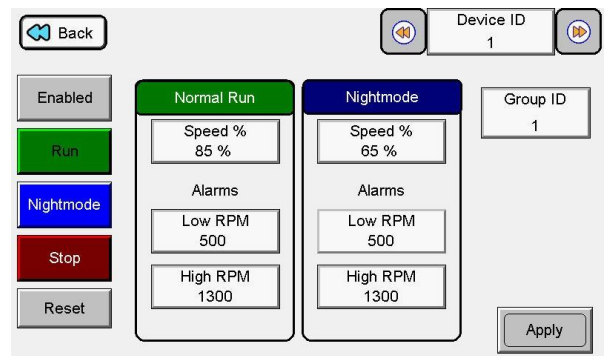


Figure 7: FFU Configuration submenu

The Sensor Configuration submenu (figure 8) is made of two parts: The first subscreen determines which sensors to enable. Select the desired sensors, then click apply. Select the sensor config button to continue.

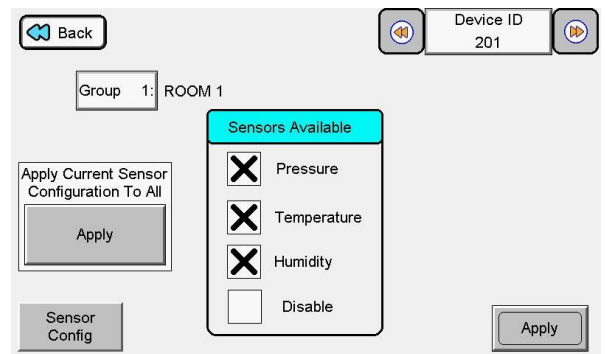


Figure 8: Sensor Configuration submenu, screen 1



This next subscreen (figure 9) allows you to set alarm parameters and correction for each sensor type. Use the arrows in the top right of the screen to cycle between sensor types.

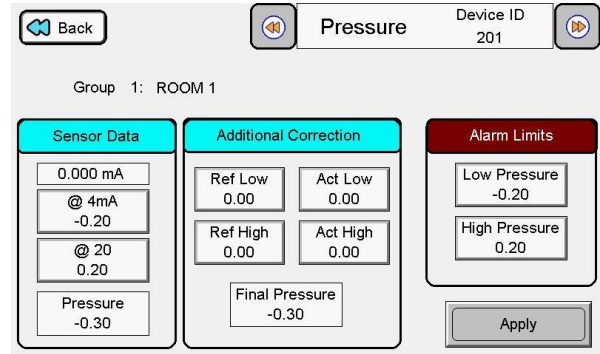


Figure 9: Sensor Configuration submenu, screen 2

5.0 System Control

There are a few ways to actually control your system. The first group is located in the settings menu. The submenus System Control, Group Control, and FFU Control are split in the same way FFU Configuration settings are split and function in the same way.

Using the System Control submenu (figure 10), you can set the operating mode of every FFU in the system. You can also enable or disable them as needed. The reset button is useful for resetting the alarm status of every FFU simultaneously.

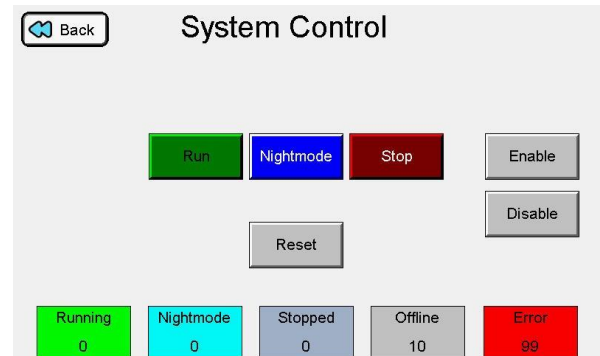


Figure 10: System Control submenu



Group Control (figure 11) is the same as System Control, but for specific rooms.

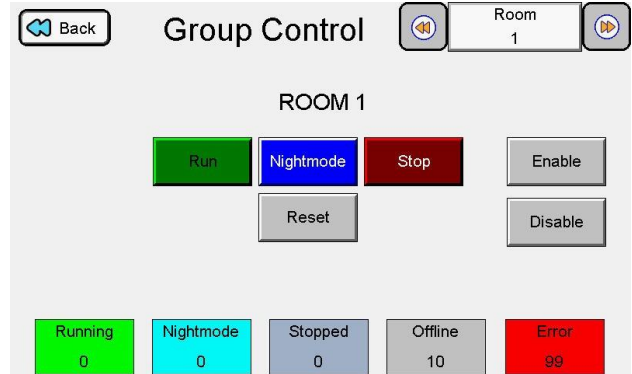


Figure 11: Group Control submenu

FFU Control (figure 12) is only visible if the FFU is currently throwing an alarm. There is extra information about motor performance of the identified FFU for troubleshooting.

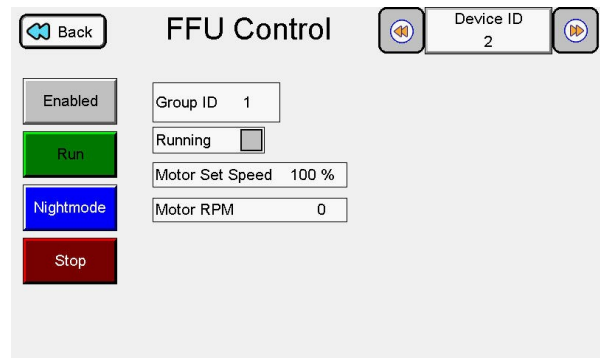


Figure 12: FFU Control submenu

These submenus can also be accessed directly by selecting each group/room on the main menu.



Figure 13: Main menu



Click any room on the main menu screen to be taken to a sectional view of the rooms near where the screen was clicked (figure 14). There are three sectional views depending on where was clicked: Left, Center, or Right views. Click any of these rooms to be taken to a Room menu.

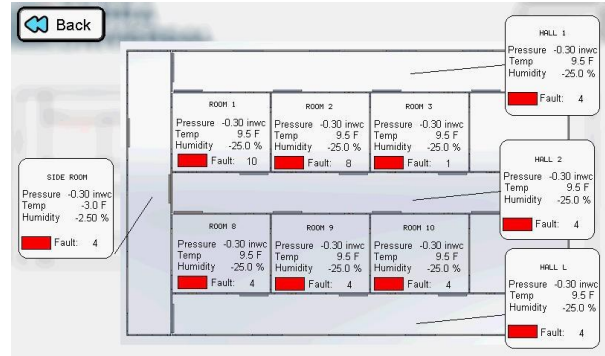


Figure 14: Room Subsection submenu

This (figure 15) is the Room submenu. This submenu has all the features of FFU Control submenu except for the ability to disable individual FFUs. Clicking the sensor data section will allow you to see a detailed view of what errors the DSM has reported. Clicking an FFU will take you to the FFU Control submenu to control that individual FFU. There is also a button there to navigate to the FFU Configuration submenu.

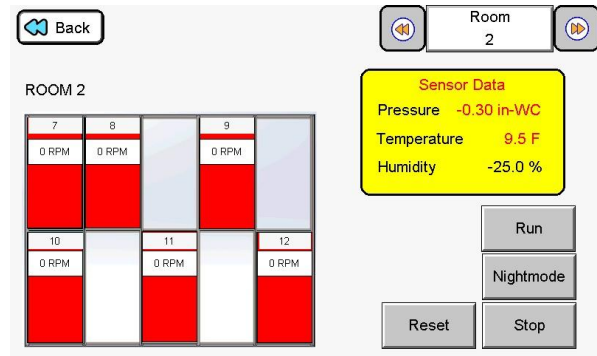


Figure 15: Room Control submenu

6.0 Date/Time, Beeper, Clone Menus

The Data Logging Configuration submenu (figure 16) allows you to configure the data logging system. From here, you can toggle data logging and adjust the frequency of logs. Unmounting the SD card is also possible from this submenu. Always unmount the SD card before removal else the user risks data loss.

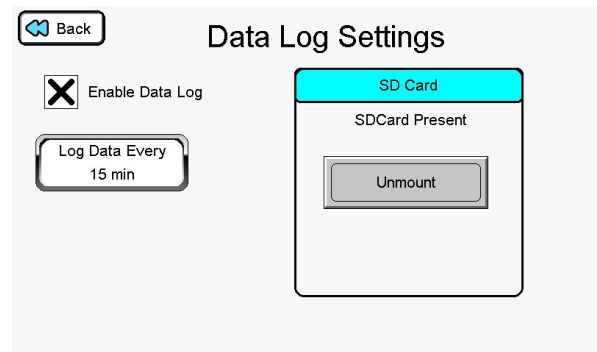


Figure 16: Data Logging Configuration submenu



ONLY remove the SD card using this function. **DO NOT** remove the SD card at any other time in order to prevent unmounting in the middle of a write operation and avoid loss of data or data corruption.

From the main menu, clicking the icon with the date and time on it will navigate to the Date and Time submenu (figure 17). From here, you are able to set the system date and time by clicking the respective fields. If applicable, Daylight Savings Time toggle will manually adjust the time setting forward or backward by 1 hour. There is no automatic Daylight Savings correction.



Figure 17: Date and Time submenu

On the side of the unit, outside the screen area, are a series of buttons (figure 18). Pressing the topmost button while logged in will take you to the PLC System menu.

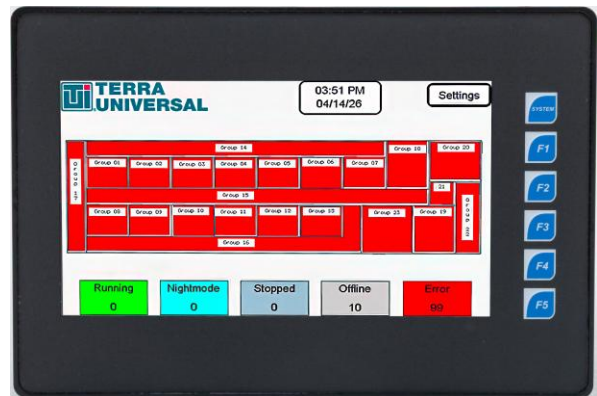


Figure 18: PLC side buttons

This (figure 19) is the PLC System menu. These are system-critical settings that should not be adjusted outside of two functions referenced in this section. To navigate this systems menu, use the arrow icons in the upper right section of the screen and make a selection with the enter icon.

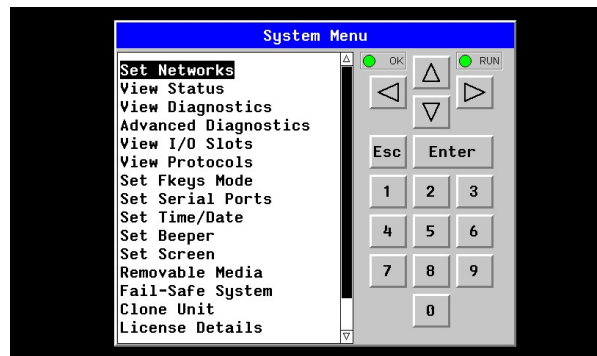


Figure 19: PLC System menu



Navigate to Set Beeper in the menu and select Enter. To toggle the beeper setting (figure 20), move the black highlight to the right with the right arrow icon, then use the up/down arrow icons to toggle between Yes and No to the desired selection. By default, the setting is set to No, but the user may elect to toggle it to yes if desired. This setting causes the PLC to audibly beep whenever an object on the screen is interacted with.

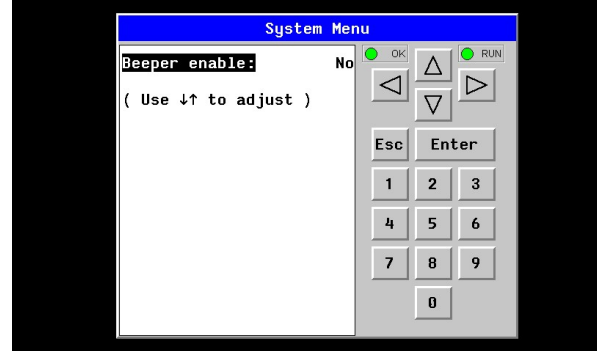


Figure 20: Beeper Toggle

The clone menu permits the user to create a clone file of the entire PLC configuration, or load a previously created clone file to the PLC, which will replace the entire PLC's current settings. Clone files are in the .DAT format. Use the up/down arrow icons to highlight the desired clone file, then select Load Clone. This menu also displays log files, but they cannot be accessed from this menu. Use the Make Clone icon to create a backup file. It is highly suggested to keep a backup file of the PLC config .DAT file in a separate SD card in case of emergencies.

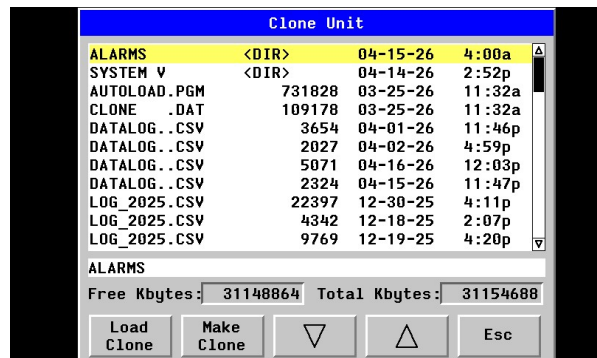


Figure 21: Clone Unit



Setup and Operating Guide

Smart Cleanroom Control Console, Tier 4

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7.0 Warranty



*Thank you for ordering from
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