

Operations Manual

IC+ Intelligent Control and Alarm System

MODELS COVERED:

IC+ Intelligent control and alarm system



Please read this manual before installing or operation of this equipment.



Versatile, Dependable Walk-Ins & Blast Chillers

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1 Introduction and Features

Intelligent Controller IC+ was designed by American Panel Corporation to control various walk-in door devices and to monitor the temperature of the walk-in cabinet.

IC+ features:

- Temperature Monitoring
- Temperature Alarms
- Panic Alarm (Optional)
- Door Open Alarm
- Door and Window Frame Heater Control
- Electronically Controlled Light Switch and Automatic Light Off
- HACCP Recording
- Wi-Fi Connectivity and Remote Notification
- Intuitive User Interface
- Battery Backup
- Adaptive Settings

2 Temperature Monitoring

IC+ monitors the walk-in cabinet temperature via a probe mounted in the warmest part of the cabinet which is near the door. The alarm delay will ensure that the alarm does not go off during normal door openings.

For an accurate air temperature reading do not restrict the airflow over the temperature probe. To monitor the air temperature at a different location an extended temperature probe is available for purchase.

If equipped with an extra temperature probe, IC+ will monitor the temperature at two locations or the temperature of two different cabinets



3 Temperature Alarm

If the temperature inside the walk-in cabinet goes above the high alarm threshold or below the low alarm threshold, the temperature reading on the display will blink indicating that the alarm time delay has been triggered. If the temperature does not return to normal limits within the delay time, the buzzer will go off and the display will show the alarm message alternating with the temperature reading. If IC+ is connected to the local Wi-Fi network, it will send an alarm message via e-mail.



The buzzer can be silenced by pressing the alarm mute button.



The alarm's set points and delay times are fully programmable to user's needs.

Default set points:

	High Alarm Trigger Point (AH)	Low Alarm Trigger Point (AL)	Alarm Delay (AD)
Cooler	45°F	32°F	40 Minutes
Freezer	20°F	-25°F	
Beer Cooler	34°F	30°F	

3 Panic Alarm

Panic alarm is an optional feature on American Panel walk-ins. If equipped with a Panic alarm, the walk-in cabinet will have an illuminated red push button installed on the interior of the cabinet and an alarm buzzer with LED light install on the exterior of the cabinet.

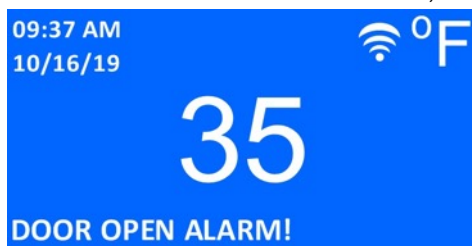
To trigger the alarm, push the illuminated red button mounted inside the walk-in cabinet and an audio/visual alarm buzzer will illuminate and sound the alarm and the IC+ controller will display the panic alarm message. If IC+ is connected to the local Wi-Fi network, and setup as such, it will send an alarm message via e-mail.



To clear the alarm, push and release the panic button to depress and then press the alarm mute button on the IC+.

5 Door Open Alarm

IC+ controllers monitor the status of the door. If the door is not fully closed or if left open for more than the pre-set time (5 minutes by default) the IC+ controller will display the alarm message and the onboard buzzer will sound. If IC+ is connected to the local WiFi network, it will send an alarm message via e-mail.



Close the door to reset the alarm.



6 Door Frame Heater and Window Heater Control

IC controller switches on the door frame heater and the window heater (if so equipped) when the air temperature drops below the preset threshold of 45oF and then cycles them on and off based on a time cycle. On coolers, by default, the heaters stays on for 35% of a 6-minute cycle and then stays off for 65%, the cycle will repeat. The alarm’s set points and delay times are fully programmable to user’s needs.

Default set points:

	Heaters On (Pr)	Heaters Off	Heaters Switched On Below Temp: (tP)
Cooler	30% of 6-minute cycle	65% of 6-minute cycle	45°F
Freezer	100% of 6-minute cycle	0% of 6-minute cycle	
Beer Cooler	65% of a 6-minute cycle	35% of a 6-minute cycle	

7 Electronically Controlled Light Switch and Automatic Light Off

The cabinet light can be switched on from the IC+ controller via the integrated light button or simply by opening the door. The IC+ will display a light bulb icon to indicate that the light is on inside the cabinet.



The Automatic Light Off feature of IC+ enables the user to save energy. The amount of time the light will stay on can be set from 1 minute to 60 minutes or can be set for manual shut off only. As default, the automatic light off feature is disabled.

Push the integrated light button on IC+ to turn the light off manually.

Back-to-back light control is provided as an optional feature.



NOTE: When using an occupancy sensor in conjunction with IC+, the Automatic Light Off feature must be enabled.



8 HACCP Recording

IC+ controller records the air temperature at preset time intervals which by default is set to 30 minutes. In addition to the air temperature IC+ records all the alarms and door openings.

The HACCP data can be previewed on the IC+ display.

To do so, push the **MENU** button and go to **HACCP Preview > Preview Events**.

Select any of the events in the list to view the details related to that event.

To download the data via USB, insert a USB drive in the USB port and follow the prompts on the display.

If IC+ controller is connected to an internet enabled Wi-Fi network, it can be setup to send periodic e-mails containing the HACCP data, see “**Wi-Fi Connectivity and Remote Notification**” chapter of this manual. An on-demand HACCP e-mail option is available in the IC+ menu at **HACCP Preview > Send Email HACCP**.

The retrieved data will be in a .csv format file that can be opened with Microsoft Excel or other compatible software. The name of the file will include the date and time when the file was retrieved.


Sample HACCP file:






NUMBER	DATE	START	DURATION	EVENT	TEMP	UNIT
1	10/16/2019	4:33:43 AM	--	FREEZER AIR TEMP	0	°F
2	10/16/2019	5:03:43 AM	--	FREEZER AIR TEMP	-3	°F
3	10/16/2019	5:33:43 AM	--	FREEZER AIR TEMP	-5	°F
4	10/16/2019	6:03:43 AM	--	FREEZER AIR TEMP	-5	°F
6	10/16/2019	6:06:42 AM	00:00:15 sec	DOOR OPEN	-1	°F
7	10/16/2019	6:16:44 AM	00:00:31 sec	PANIC ALARM	14	°F
8	10/16/2019	6:33:43 AM	--	FREEZER AIR TEMP	0	°F
9	10/16/2019	7:03:43 AM	--	FREEZER AIR TEMP	-3	°F
10	10/16/2019	7:33:43 AM	--	FREEZER AIR TEMP	-5	°F
11	10/16/2019	7:37:06 AM	00:44:10 sec	FREEZER HIGH TEMP.	22	°F
12	10/16/2019	8:03:43 AM	--	FREEZER AIR TEMP	16	°F
13	10/16/2019	8:33:43 AM	--	FREEZER AIR TEMP	16	°F
14	10/16/2019	8:43:20 AM	00:01:11 sec	DOOR OPEN	0	°F
15	10/16/2019	8:44:20 AM	00:00:11 sec	DOOR OPEN ALARM	3	°F

9 Wi-Fi Connectivity and Remote Notification

IC+ is equipped with a Wi-Fi module which enables it to connect to the local Wi-Fi network for the purpose of sending remote notification e-mails for all the alarms and sending e-mails containing HACCP data attachments.

Follow the steps below to connect the IC+ to Wi-Fi and to set it up for remote notifications:

Step
Reset the controller WiFi card before starting. At the controller, push Menu button and go to Settings (7055 default password). Go to WiFi Settings and select Reset WiFi Module. The controller will beep once to confirm and reboot the controller. This will take a couple of minutes for the card to restart, press Menu to exit the settings.
If multiple IC+ controllers are to be connected to the same Wi-Fi Network, you must set a different Network ID Number for each controller in order to differentiate among them. To do so, enter the IC+ menu, go to Settings (default passcode is 7055) > WiFi Settings > Network ID Number. When done press “MENU” button repeatedly to exit the settings menu.
 Note: When assigning different Network ID Numbers for each controller, make a note of the Network ID Numbers with the location for later reference.

<p>On a Bluetooth enabled device download IC+ Setup Tool app, available for IOS and Android devices.</p>	
<p>Enable the location feature on your device and open the IC+ Setup Tool app</p>	
<p>Press “Scan for Devices”</p>	
<p>Select the IC+ device from the list</p>	
<p>Default Passcode is “7055”</p>	
<p>Press “Outgoing Email Server Setup”</p>	
<p>IC+ controller will need an e-mail account set up so it allows IC+ to access it and send e-mails. For this purpose, American Panel Corporation provides a generic Gmail account icpluswalkin@gmail.com; however, we recommend replacing this account with a new one that is owned and maintained by the end user.</p>	
<p> American Panel Corporation is not responsible for the functionality of the generic account, icpluswalkin@gmail.com and it reserves the right to modify or discontinue the account without advance notice.</p>	



Outgoing Email Server Setup

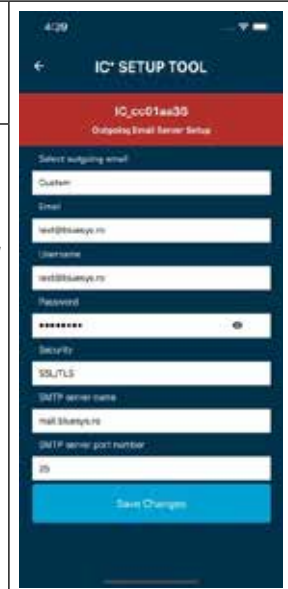
In the “Select outgoing email” choose one of the available options, fill in the required information, and press “Save Changes” when done.

Available options:

Default – select this option if you choose to keep the generic email account provided by American Panel Corporation. No SMTP server setting required.

Custom – select this option if you wish to configure the SMTP settings for a preferred email account

Gmail, Yahoo, or AOL – select this option to configure the SMTP settings for a preferred existing email account at one of the email servers mentioned above



Note: When using a Yahoo or AOL you must generate an app password, you can do so from the security settings of the Yahoo or AOL email account, and then enter that password in the Password field, see figure on the left.



Note: When using Gmail, you must turn on access to less secure apps from the security settings of the Gmail account. Only after that IC+ will be able to access the account.

User Email Templates Setup

Press “Add New User Email”



Enter the email address of the person that will receive the notifications.

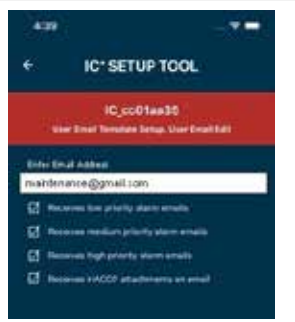


Note: IC plus supports up to 5 email recipients.

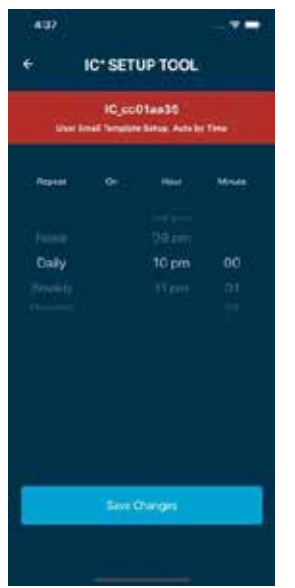


Select the type of alarms or emails that this user will receive. Press “Save Changes” when done.

High Priority Alarms: Power Failure, Panic Alarm, Defective Temp. Probe
Medium Priority Alarms: High Temp. Alarm, Low Temp. Alarm
Low Priority Alarms: Door Open Alarm



Set how often to receive the HACCP report email.



NOTE: To receive alarms via SMS text messages use email to text gateway. In the “Enter Email Address” field at step 11, see above, enter the 10-digit cellphone number you want the alarms to be texted to followed by the email domain corresponding to the cellphone carrier. For example, to receive texts on a T-Mobile number (123) 456 7890, enter 1234567890@tmomail.net. To find out the email domain for your specific carrier search on the Internet for “Email to text gateway list” or contact your cellphone carrier.

Internet Wi-Fi Setup

Choose a Wi-Fi network from the list, enter the password, and press connect.

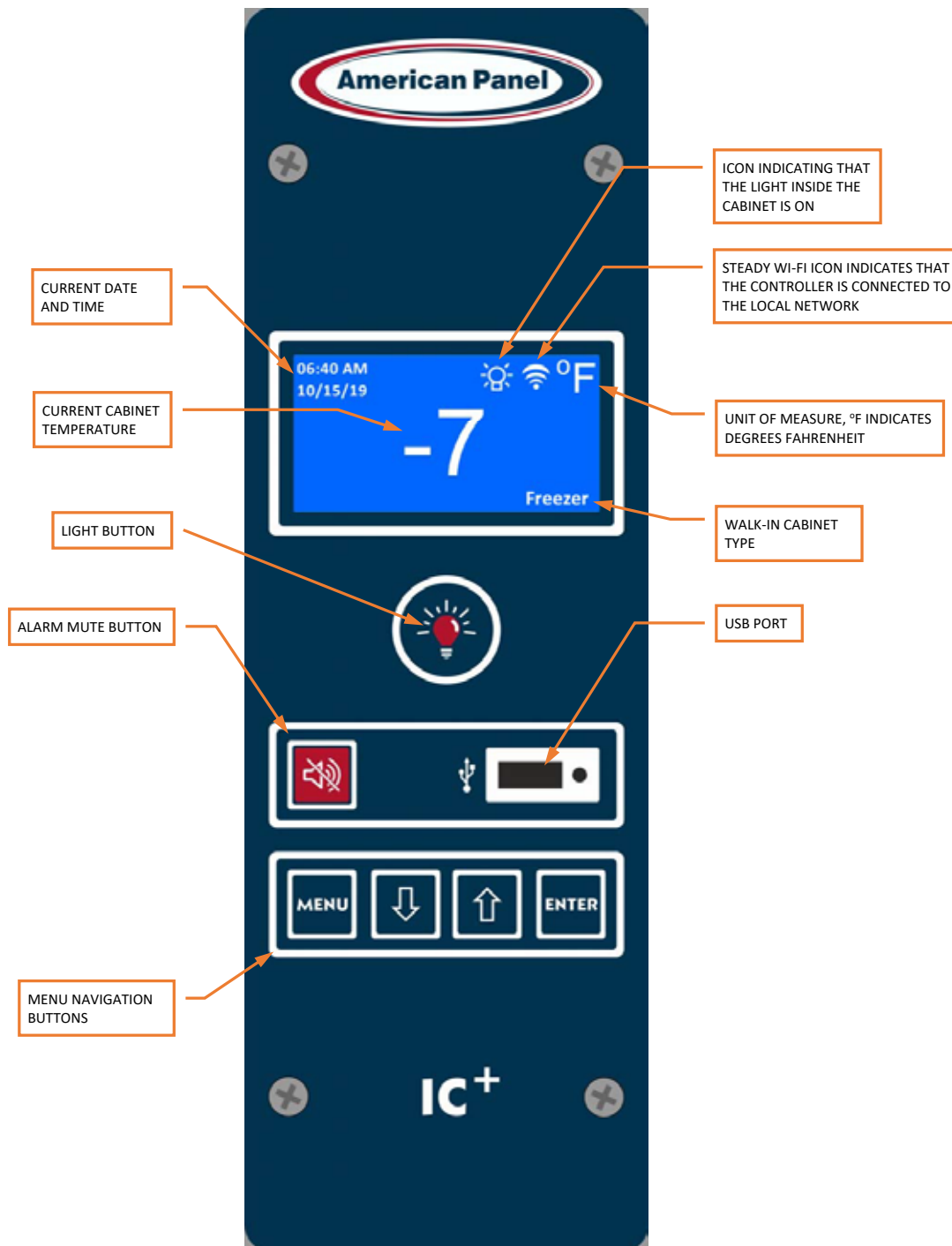


10 Navigating the Controls

To access IC+ Main Menu, push the MENU button then scroll to the desired option using the up and down buttons and press ENTER button to confirm the selection. To go to the previous screen, press the MENU button.

The Settings Menu can be accessed from the Main Menu, the default passcode is 7055. To change any parameter, scroll to it and press ENTER to confirm your selection. Use up and down buttons to change the parameter, when done press ENTER to confirm the new parameter.

11 User Interface





12 Restore the Default Settings

To restore the default settings press and hold up and down buttons for approximately 10 seconds, follow the prompts.

Note 1: Restoring the default settings will reset the access passcode to 7055.

Note 2: Restoring the default settings will not affect the WI-FI settings.

13 Troubleshooting

Issue	Possible Cause	Action
<p>The temperature reading is flashing on and off.</p>	<p>IC+ controller detected cabinet temperature higher or lower than the preset limits. The flashing number is the measured temperature inside the cabinet. The alarm will not go off until the alarm delay time expires.</p>	<p>Make sure all the doors are closed and check the temperature after few minutes to make sure it goes back to the normal range.</p>
<p>The IC+ beeps and displays the high temperature alarm message.</p> 	<p>If the high air alarm went off, the temperature inside the cabinet is above the preset limit. The flashing number is the measured temperature inside the cabinet.</p>	<p>To silence the alarm, press the alarm mute button. Check all doors to be closed, check the temperature setting at the thermostat (typically located on the evaporator coil) and make sure the refrigeration system works properly. If the issue persists, contact a refrigeration technician.</p>
<p>The IC+ beeps and displays the low temperature alarm message.</p> 	<p>If the low air alarm went off, the temperature inside the cabinet is below the preset limit. The flashing number is the measured temperature inside the cabinet.</p>	<p>To silence the alarm, press the alarm mute button. Check to make sure the refrigeration system works properly, check the temperature setting at the thermostat (typically located on the evaporator coil). If the issue persists, contact a refrigeration technician.</p>
<p>Condensation on the door frame and/or the window.</p>	<p>The setting for the door heater is too low.</p>	<p>Increase the percentage the door heater stays on. To do so, go to MENU > Settings (7055 default passcode) > Door Heater Setup > Percentage On. If the issue persists, contact a technician.</p>

14 Field Wiring

Note: All field wiring must be done by a licensed electrician in compliance with the national and local electrical codes.

Note: Electrician must provide seal-offs at every conduit entry on the warm and cold side of panels. Seal inside and around all conduits where passing through panels.

Wire Color Code (field wiring only)

Black (1 ea) and White (1 ea)– Main power wires, terminated inside the vapor proof light fixture or stubbed out. Electrician will provide the ground wire, see electrical schematic at chapter 14.1 of this document.

Red (1 ea) – Output to field mounted light fixture wire, terminated inside the vapor proof light fixture or stubbed out, see electrical schematic at chapter 14.2 in this document

Brown (1 ea) – Output to remote buzzer wire, terminated inside the vapor proof light fixture or stubbed out, see electrical schematic at chapter 14.3 in this document

Blue (1 ea) and Yellow (1 ea) – 3 WAY/Multi Way configuration wires, terminated inside the vapor proof light fixture or stubbed out, see electrical schematic at chapter 14.4 of this document

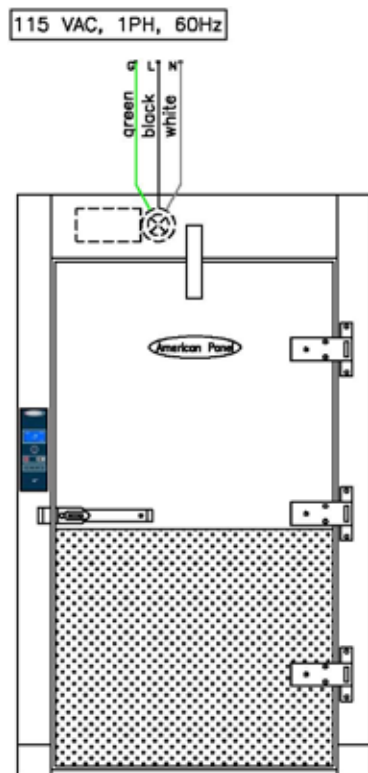
White with blue stripe (2 ea) – alarm dry contact wires, terminated in the rectangular connection box located next to the vapor proof light fixture, or stubbed out, see chapter 14.5 of this document.

Purple (2 ea) – evaporator fan cut out switch (closed when the door is closed), terminated in the rectangular connection box next to the vapor proof light fixture, or stubbed out, see chapter 14.6 of this document.

14.1 Main Power

Make all the connections inside the vapor proof light fixture located on the door frame inside the walk-in.

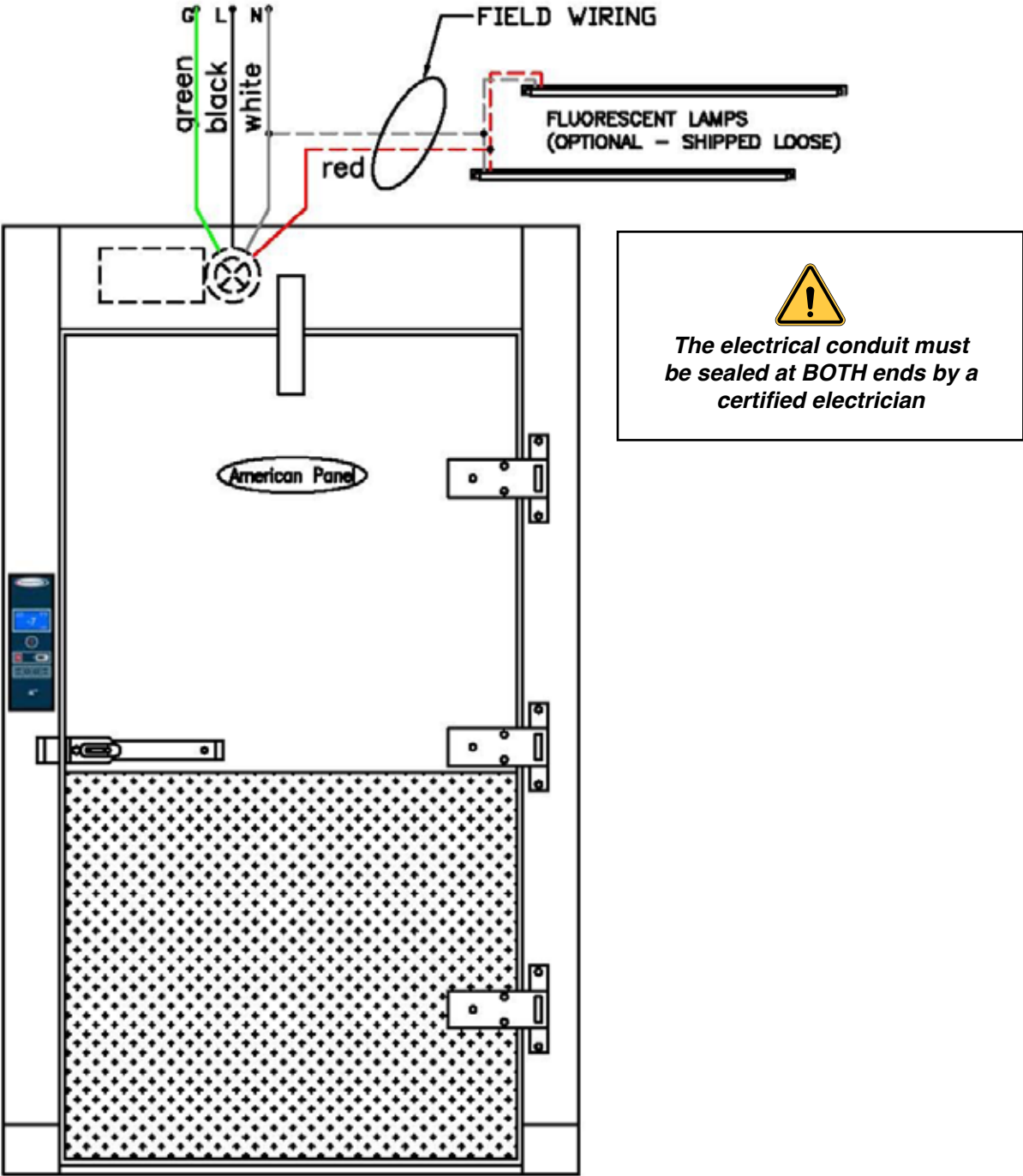
If an electrical stub-out construction was requested, all the connection wires will be stubbed-out thru the ceiling. In this case, the field connections will be made in a junction box provided by the installer.



THE ABOVE DIAGRAM IS MEANT TO SHOW
EXTERNAL CONNECTIONS ONLY!
ALL INTERNAL WIRING IS DONE ACCORDING
TO PRODUCTION SPECIFICATIONS.

14.2 Field Mounted Light Fixture

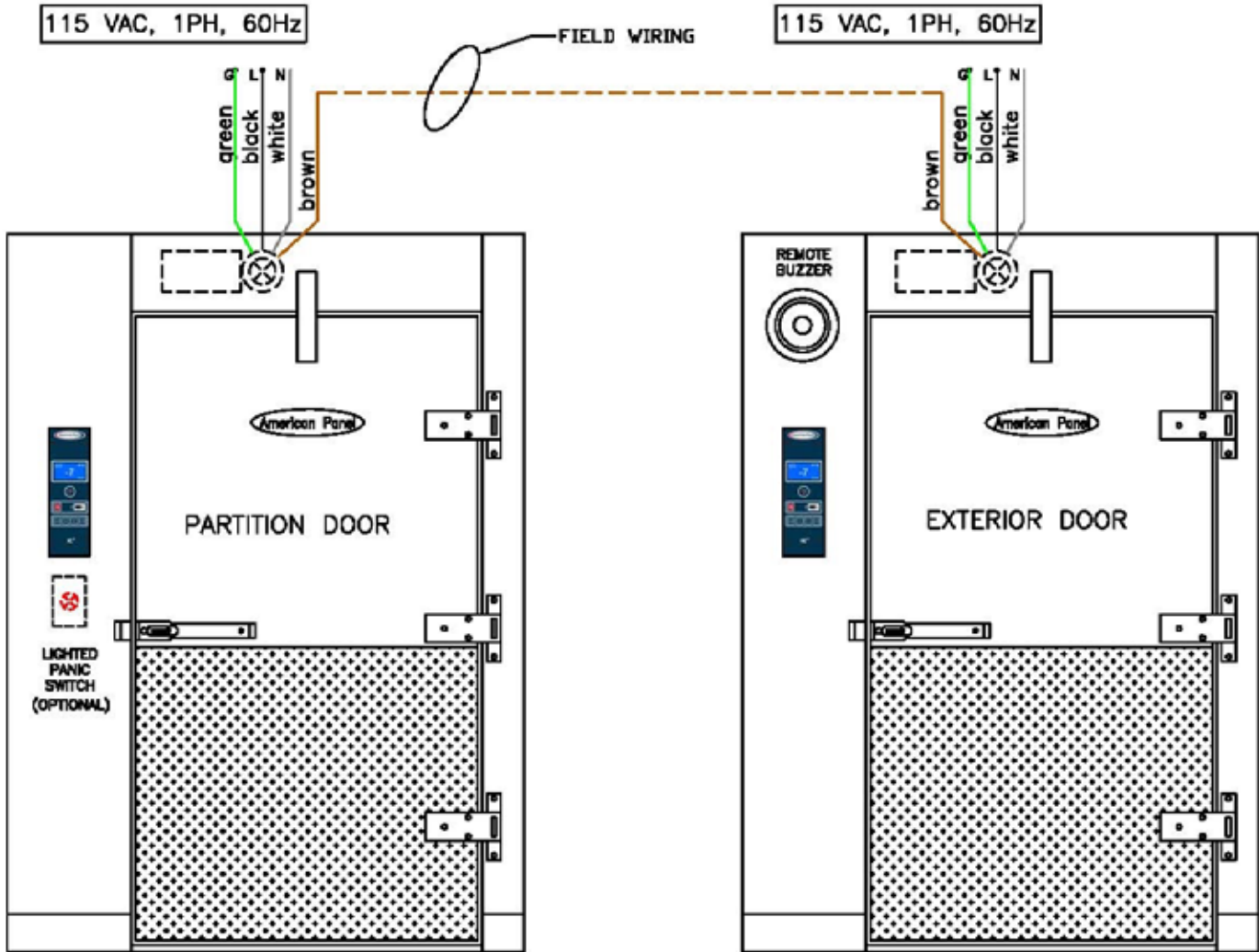
115 VAC, 1PH, 60Hz



THE ABOVE DIAGRAM IS MEANT TO SHOW EXTERNAL CONNECTIONS ONLY! ALL INTERNAL WIRING IS DONE ACCORDING TO PRODUCTION SPECIFICATIONS.



14.3 Panic Button for Partition Door



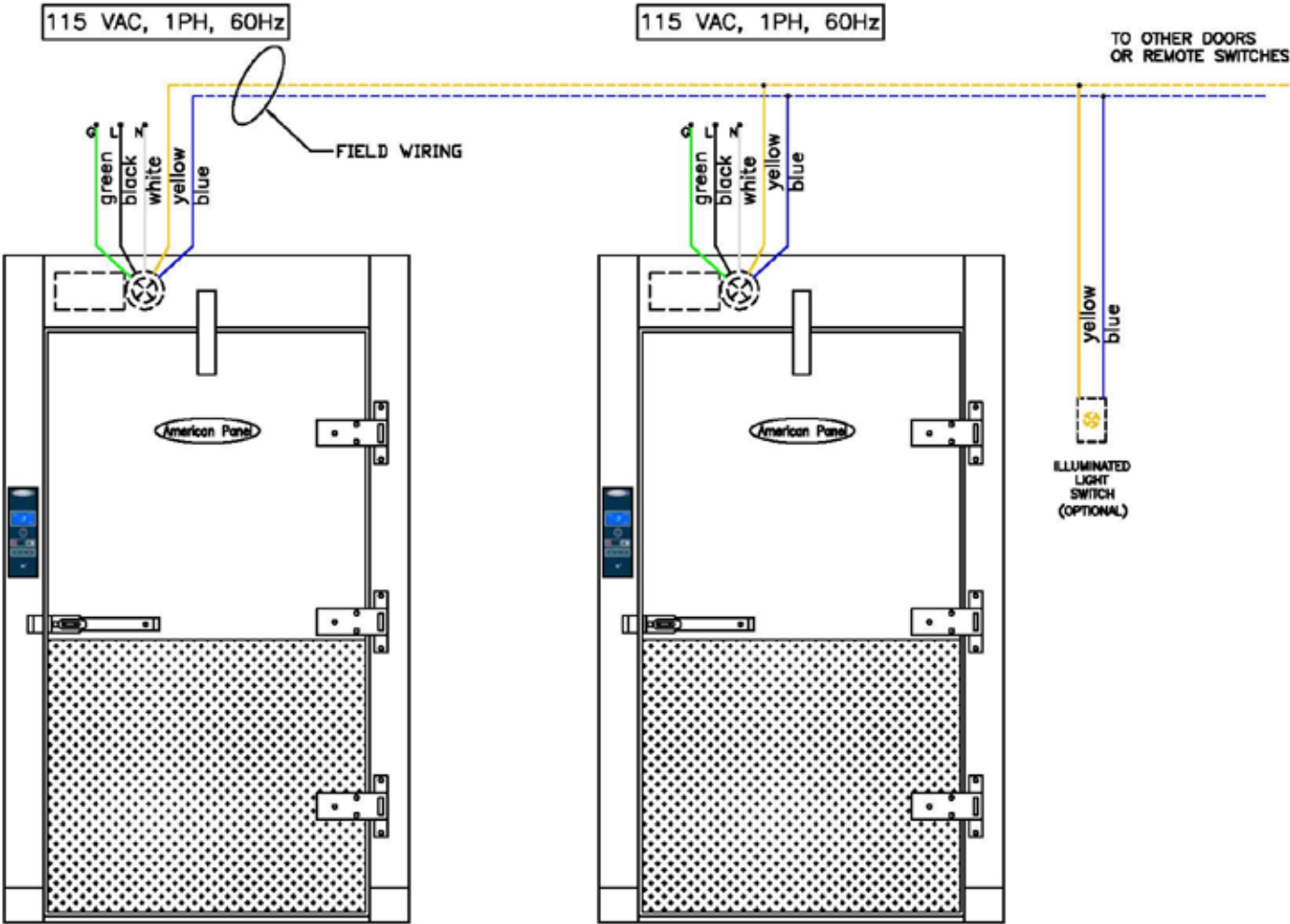
THE ABOVE DIAGRAM IS MEANT TO SHOW EXTERNAL CONNECTIONS ONLY! ALL INTERNAL WIRING IS DONE ACCORDING TO PRODUCTION SPECIFICATIONS.




The electrical conduit must be sealed at BOTH ends by a certified electrician

14.4 3 Way - 4 Way Configuration and Remote Light Button

This configuration is typical to cabinets that have multiple doors. The user will be able to turn on and off the light from any door.



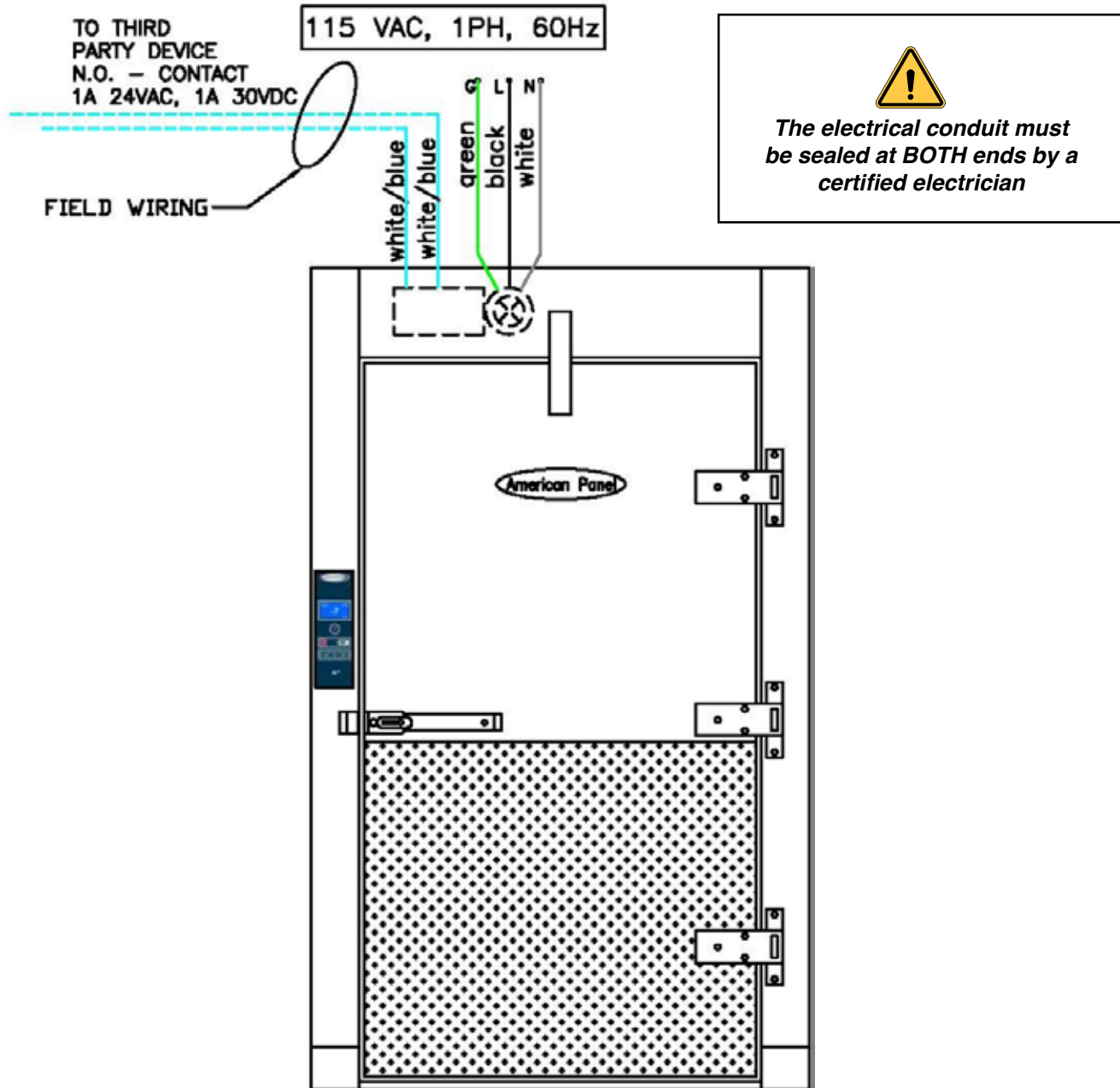
THE ABOVE DIAGRAM IS MEANT TO SHOW EXTERNAL CONNECTIONS ONLY! ALL INTERNAL WIRING IS DONE ACCORDING TO PRODUCTION SPECIFICATIONS.


The electrical conduit must be sealed at BOTH ends by a certified electrician



14.5 Alarm Dry Contact

Low voltage white with blue stripe wires are located inside the rectangular junction box, next to the vapor proof light fixture.

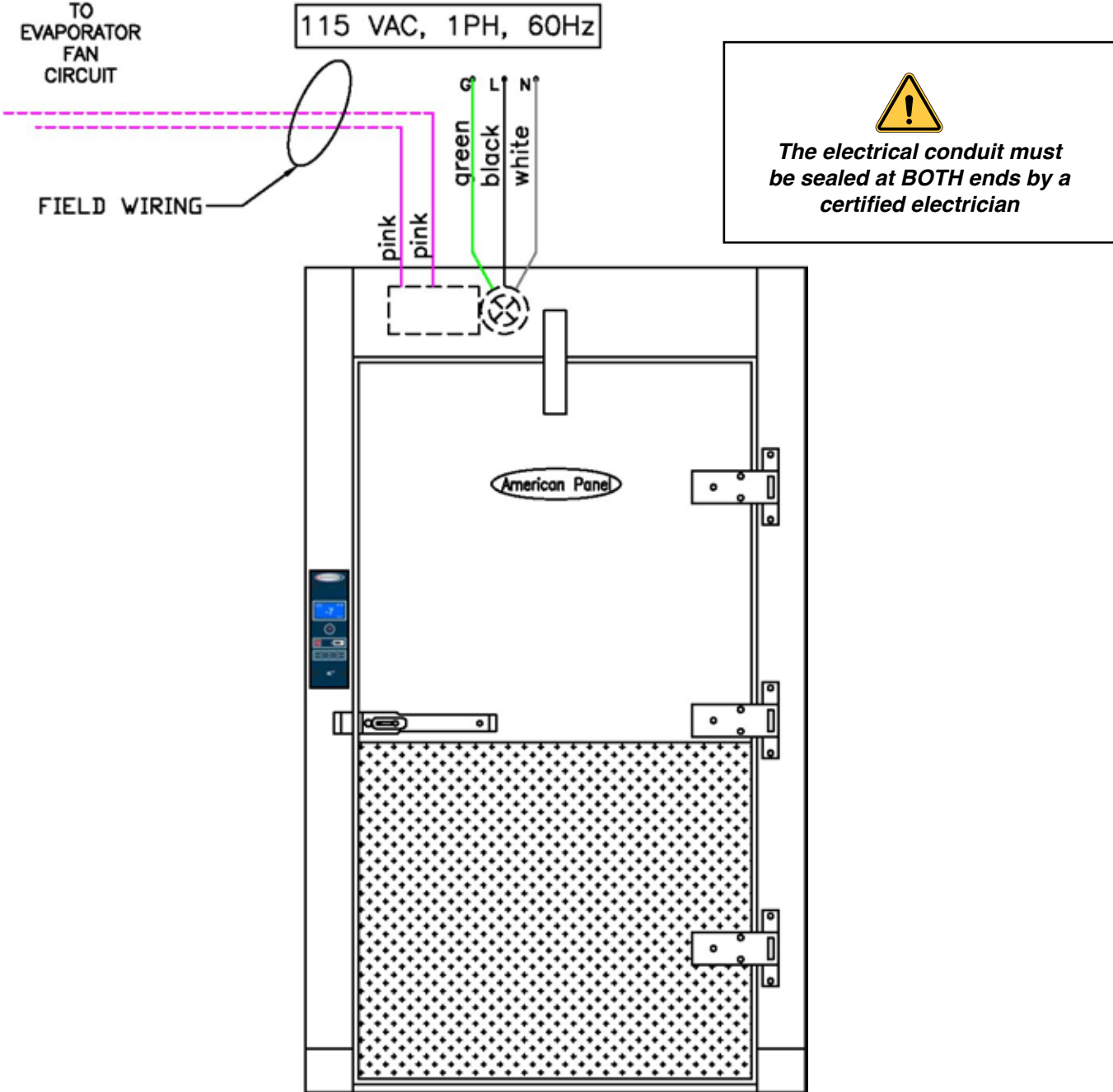


THE ABOVE DIAGRAM IS MEANT TO SHOW EXTERNAL CONNECTIONS ONLY!
ALL INTERNAL WIRING IS DONE ACCORDING TO PRODUCTION SPECIFICATIONS.



14.6 Evaporator Fan Cut-Out Switch

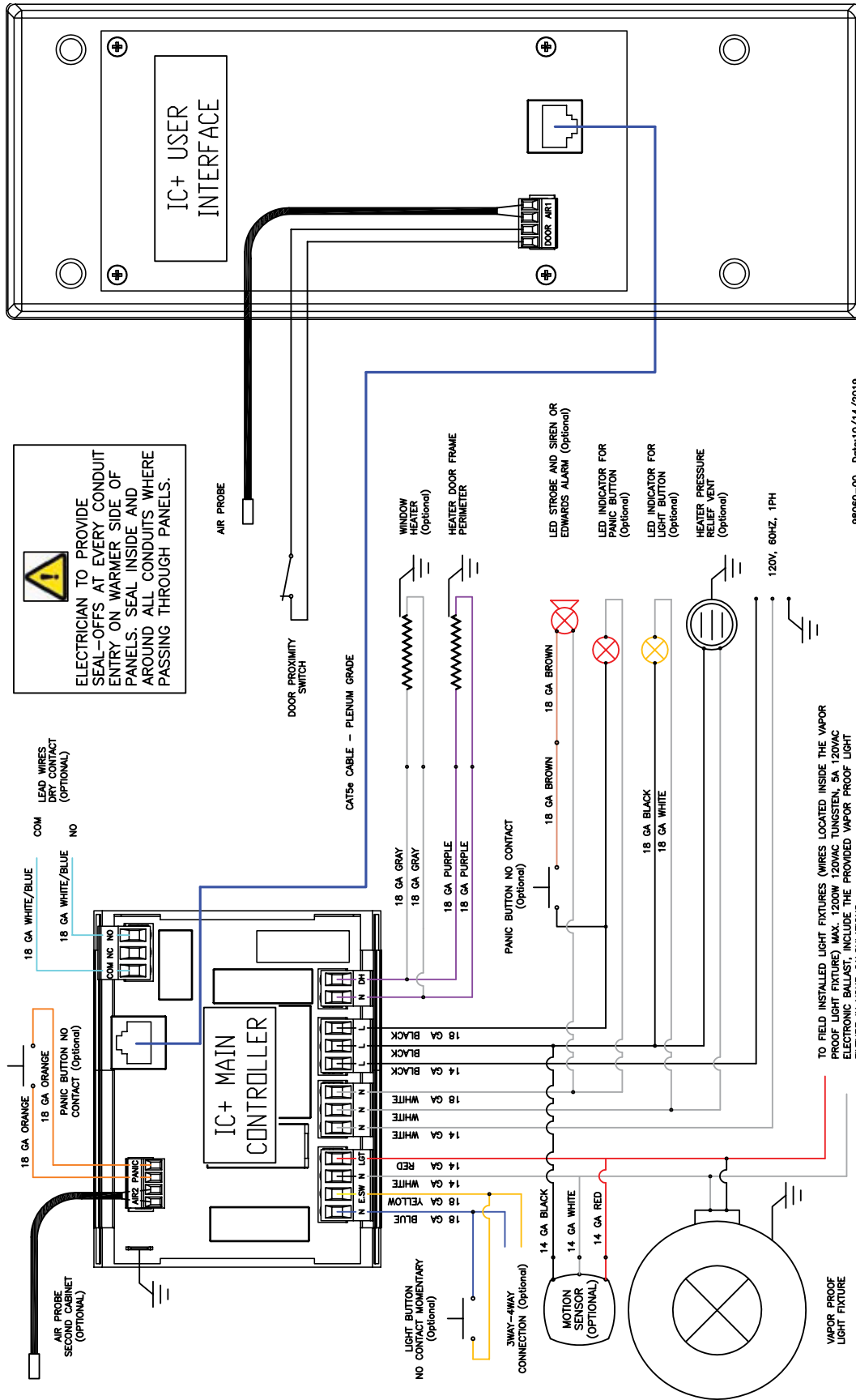
The pink wires are located inside the rectangular connection box, next to the vapor proof light fixture.



THE ABOVE DIAGRAM IS MEANT TO SHOW EXTERNAL CONNECTIONS ONLY! ALL INTERNAL WIRING IS DONE ACCORDING TO PRODUCTION SPECIFICATIONS.



15 Electrical Schematic



98060-00 Date:10/14/2019







Versatile, Dependable Walk-Ins & Blast Chillers



American panel is your trusted manufacturer for all your cold storage, blast chilling and shock freezing needs. Building on a 60-year family owned and operated heritage, American panel provides versatile, dependable custom crafted walk-in coolers, freezers, combination cold rooms and blast chillers.

Find out more at www.americanpanel.com