AE100 ALL-ELECTRIC SERIES

ALL-ELECTRIC COLD PLATE SYSTEM

QUICK-START MANUAL FOR IFM CONTROLS

FLEET NUMBER _____

JTB BODY SERIAL NUMBER _____

Please refer to the Operator's Manual for complete information on use and maintenance of the refrigeration system. Keep the manual with the truck body.

1 Introduction

Johnson Truck Bodies has proudly produced refrigerated truck bodies with Cold Plate refrigeration systems for decades. As part of our commitment to continuous improvement, we have introduced a new control system for the All-Electric Cold Plate product line. This manual is written to help an experienced operator to quickly understand how to operate the improved controller. Please refer to the full Operator Manual for complete instructions on the use and care of the Cold Plate refrigeration system.

2 Quick Start Guide

Compared to previous systems, the most noticeable change is the User Interface. It has a digital color display of refrigeration system information and keypad to access information and adjust system settings. The User Interface is installed on the front left corner of the truck body.

The User Interface is rated for IP67 / IP65 protection from dust and jets of water. We have tested that it is unharmed by a pressure washer, but it is a good idea to avoid excessive pressure washing at close range.

In ordinary use, the operator only needs to press the button for the ON-OFF switch. Once the ON-OFF switch is turned on, the system runs automatically. However, if troubleshooting or servicing is needed, technicians will appreciate the additional information and settings that can be easily accessed.

In this guide, we refer to the User Interface buttons as labeled in the picture below. Button functions are generally unique to each screen. Screens have labels to show what each button does.

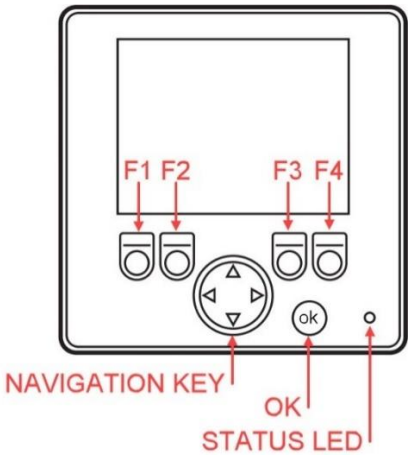


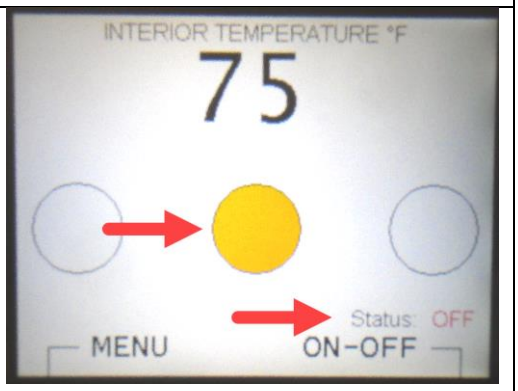
Figure 1: Keypad layout of User Interface

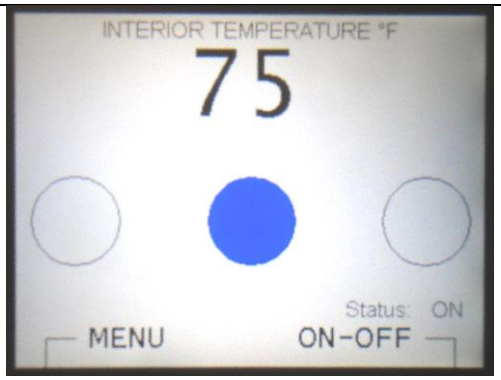
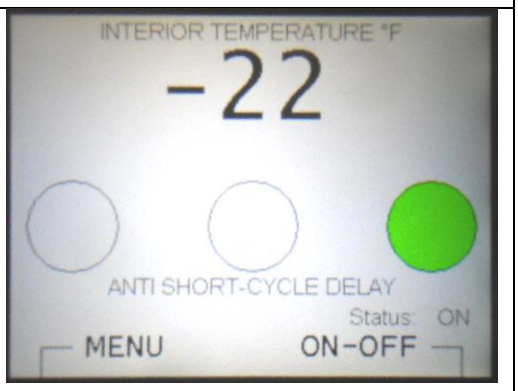
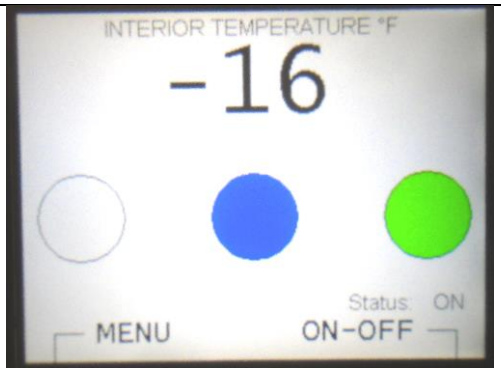
Table 1: Status LED and its meanings. Located to the right of the OK button.

LED Color	Pattern	Description
Orange	Blink 1x when turning on	Normal
Green	Blinking 2x per second Steady On	
Green	Blinking 5x per second	Abnormal – Contact JTB
Red	Blinking 5x per second Steady On	

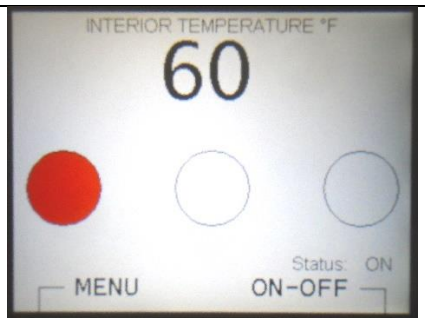
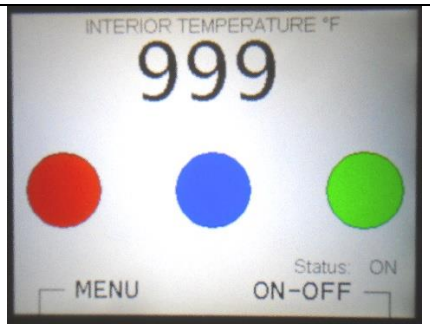
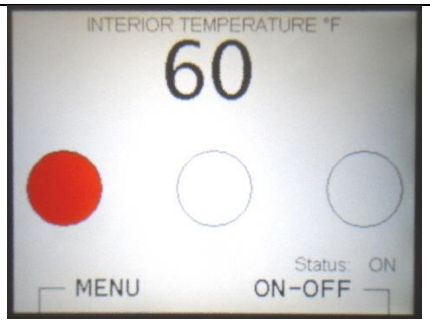
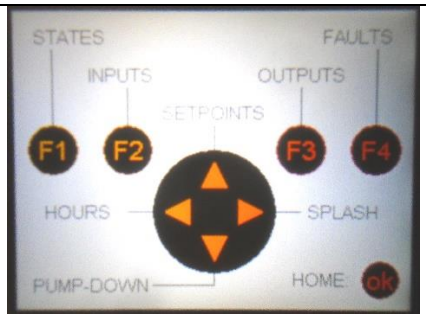
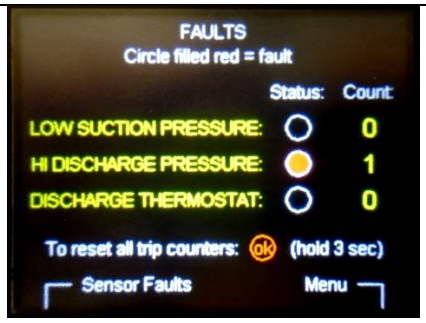
The User Interface saves any settings or changes and remembers them each time it turns on. Some features are password protected to prevent accidental or unauthorized settings changes.

Now introduced to the User Interface, following is a summary of normal operation.

Typical Operation Sequence	**User Interface**
The operator controls and monitors the refrigeration system with the User Interface (indicated by red arrow) The User Interface is installed on the front left corner of the truck body as shown. On this truck, the AC power inlet is installed just below it. The User Interface only functions when AC power is connected. *Trucks with the optional Cord Box feature no longer have an On-Off switch in or on the cord box; On-Off function is at the User Interface.	
Upon connection to AC power, the refrigeration system controller starts up. Start-up takes about 10 seconds.	
At the HOME screen, the F4 button is the ON-OFF SWITCH. If Switch Status is OFF, press F4 to turn ON the cooling system. When Switch Status is OFF, the blinking yellow indicator is a reminder that the system is not cooling. **It is recommended to turn the Switch OFF before unplugging from AC power.** *After a power-off event, the switch remains at its previous setting.	

When Switch Status is ON, if the Cold Plates are not frozen, the refrigeration compressor runs to freeze the solution in the Cold Plates and cool the body. The blue indicator shows that the system is actively cooling.	
Once the Cold Plates are frozen, the refrigeration compressor turns off. The blue indicator goes away, because the compressor is not running. The green indicator shows that the Cold Plates are fully frozen, and the Interior Temperature is in the desired range. *ANTI SHORT-CYCLE DELAY is a temporary message that the compressor will not immediately re-start for a short time (usually 30 seconds) even if conditions call for additional cooling.	
Any time the Interior Temperature begins to warm up due to heat infiltration, the system runs the refrigeration compressor again. The blue indicator shows that the system is actively cooling. The green indicator indicates that the Cold Plates are still fully frozen, and the Interior Temperature is still in the desired range.	

Indicator Color	**Description**
Blue	Refrigeration is currently running.
Green	Pull-Down is complete. Truck is ready for a delivery route.
Yellow	ON-OFF Switch is off. Refrigeration will not run.
Red Indicator	Fault.

Fault Conditions	User Interface
A flashing red indicator shows that a fault is present. Most faults prevent the compressor from running and cooling the truck. This protects the system from serious damage or hazards due to dangerous pressures or temperatures.	
Some faults still permit cooling, because there is no immediate hazard. In this case, the Interior Temperature sensor or its cable has been damaged. The compressor is primarily controlled based on refrigerant pressures, so only the temperature display is affected.	
Information about the fault can be accessed with the User Interface. Begin by navigating to the MENU. The HOME screen shows that the MENU is reached by pressing the F1 Button.	
At the MENU Screen, the F4 button navigates to the FAULTS screen.	
The FAULTS screen shows which fault(s) is currently occurring, and the number of times that each fault has occurred. In this case, high discharge pressure could be due to a combination of dirty/blocked condenser coil and very hot weather. See the troubleshooting guide for more help with faults.	

3 Advanced Features

This section is intended for the advanced user and service technician. There is no need for ordinary users to understand the full capabilities of the User Interface. Some screens or features may be password-protected to prevent unauthorized adjustment. If you need to access or edit password-protected areas of the controller, contact Customer Service.

⚠ **CAUTION:** Unauthorized adjustments to the password-protected areas of the controller can result in improper or unsafe operation, refrigeration system failure, possible injury to the operator, and lead to warranty revocation.

Screen	Description
HOME	Default screen. Intended for viewing during operation. Information Provided: INTERIOR TEMPERATURE, ON-OFF Switch Status, System Indicators
MENU	Accessed from the HOME screen by pressing F1 Button. Lists all available screens.
SPLASH	Includes software version ID. Displayed during system boot.
SETPOINTS	View and edit the: CUT-IN and CUT-OUT pressures. "INTERIOR TEMP for GREEN INDICATOR" *(maximum acceptable temperature)* Low- and High-Pressure Fault limits and reset pressures (when the respective fault will clear itself). ANTI SHORT-CYCLE DELAY timer
STATES	List of various operation states, some of which occur simultaneously. Indicators on the HOME screen are an abbreviated summary of the operation state(s).
INPUTS	View all the sensor readings that the controller is receiving. Useful for troubleshooting.
OUTPUTS	View all the system components that the controller is controlling. View the status (on/off) of all system components. Manually command system components on/off, overriding program. System damage could result from inappropriate over-rides. Over-rides are saved after exiting screen. Useful for function-testing system components.
FAULTS	View any active system faults. COUNTERS – Number of times each fault has occurred. SENSORS – View any active sensor faults and their counters
HOURS	Hour meter to track refrigeration system operation.

PUMP-DOWN	Special operation modes, generally used by the service technician. Closes the liquid line solenoid while the compressor is running. This traps the condensed refrigerant in the receiver tank while the compressor draws most of the remaining refrigerant out of the cold plates. Once the compressor turns off, a check-valve keeps most of the refrigerant isolated in the receiver and condenser coil. PUMP DOWN TO SETPOINT: This pump-down cycle terminates at the Setpoint for Low Pressure CUT-OUT. PUMP DOWN TO 2 PSI: This pump-down cycle terminates at 2 psig, which is the lowest safe pressure for the system. CANCEL PUMP-DOWN: Used to stop an active pump-down cycle before its automatic termination. OPEN VALVE FOR 20 SECONDS: Opens the liquid line solenoid to release refrigerant out of the receiver and into the expansion valves and cold plates. Used when resuming normal operation of the system. **If this step is not executed after Pump-Down, the suction pressure may never rise to the CUT-IN, causing the system to not run, despite the Cold Plates being warm.**

4 Troubleshooting

This chart has been prepared to help the user to efficiently resolve the most common problems encountered in operating the AE100 System with IFM Controls. Due to the variations in options, equipment, and installation, some information may not apply to your AE100 System. If you experience a problem that is not listed, or are unable correct the problem, please contact Customer Service at Johnson Truck Bodies. We are dedicated to helping you enjoy trouble-free service from our products.

If experiencing a fault, look for it in the "Problem" column.

Problem	Possible Causes	Correction
User Interface does not turn on	No AC power to body.	Check electrical supply and connections.
	Blown 5A ATO fuse for PLC VBBS or VBB1 (in condensing unit control panel)	Check for damaged wiring, replace fuse.
	12V power supply not functioning.	Check if power supply is overheated. Check if power supply has short-circuit fault.
	Loose cable on User Interface.	Check that locking nut is tight.
System on, but not Running	System Switch is OFF, Status is STANDBY	Press button F4 at HOME screen to turn System Switch to ON.
	Status is PLTS FROZE. (Suction pressure is below CUT-IN setpoint)	Verify that compressor starts after temperature rise in the refrigerated compartment. Solenoid valve was not opened after Pump-Down cycle.
	Status is FAULT.	Check FAULTS screen to see more information. Contact JTB for assistance.
FAULT Low Suction Pressure	Refrigerant loss.	Contact JTB for assistance or contact refrigeration technician.
	Failed pressure sensor.	
FAULT High Discharge Pressure	Ambient temperature exceeds the system capabilities.	Move truck away from sources of excessive heat.
	Airflow is restricted through condenser coil.	Inspect condenser coil and condensing unit for obstructions. Clean condenser coil.
	Failed pressure sensor.	Contact JTB for assistance or contact refrigeration technician.
FAULT Discharge Thermostat	Compressor is excessively hot	Check for restricted airflow. Check for low compressor oil level. Contact JTB for assistance or contact refrigeration technician.
	Faulty Discharge Thermostat	Contact JTB for assistance or contact refrigeration technician.

FAULT **Suction Sensor** **Discharge Sensor** **Temperature Sensor**	Loose wiring connection	Check termination in control panel on Condensing Unit
	Damaged sensor or wiring	Replace sensor (cable is integral with sensor) Contact JTB for assistance or contact refrigeration technician.
Line cord ends are hot to the touch when condensing unit is running	Arcing caused by routinely unplugging unit from grid power while the system is running.	Look for burnt spots on plug and socket. Have damaged components replaced before operating equipment. NOTE: Always turn off power when unplugging unit from Shore Power.
	Contact-to-Wire connections loose in plug body.	Have cord assembly serviced by a qualified electrician.
	Line cord wires worn or damaged.	If the jacket is cut or cracked, or if the inner wires are visible, the line cord is unsafe. It must be replaced and immediately removed from service.
Compressor starts but shuts off immediately (Short Cycling)	Low Refrigerant.	Contact JTB for assistance or contact refrigeration technician.
	Faulty pressure sensor.	

5 Service and Support

From pre-sale to post-sale, we are here for you from the initial sales inquiry to service support through the life of your Johnson equipment.

At Johnson Truck Bodies, we are positioned to provide you with the most efficient and convenient local and field support available through our in-house experts and service repair locations nationwide.

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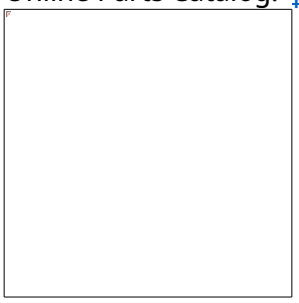

Customer Service

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