Form Number: 161.01-PW6 (224)
Supersedes: 161.01-PW6 (1120)
Issue Date: 2024-02-14

Wiring diagrams

Contractor:			
Order number:			
Johnson Controls contract number:			
Johnson Controls order number:			
Purchaser:			
Job name:			
Location:			
Engineer:			
☐	**Reference**	**Date:**	
☐	**Approval**	**Date:**	
☐	**Construction**	**Date:**	

Job data

Chiller model number YZD:	
Number of units:	
System:	
Motor:	
Variable speed drive (VSD):	
Evaporator:	
Condenser:	
Stage end:	

General safety guidelines

Important: Read before proceeding.

This equipment is a relatively complicated apparatus. During rigging, installation, operation, maintenance, or service, individuals may be exposed to certain components or conditions including, but not limited to:

- Heavy objects
- Refrigerants
- Materials under pressure
- Rotating components
- Both high and low voltage

Each of these items has the potential, if misused or handled incorrectly, to cause bodily injury or death. It is the obligation and responsibility of rigging, installation, and operating and service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements can result in serious damage to the equipment and the property in which it is situated, as well as severe personal injury or death to themselves and people at the site.

This document is intended for use by owner-authorized rigging, installation, and operating and service personnel. It is expected that these individuals possess independent training that will enable them to perform their assigned tasks correctly and safely. It is essential that, before performing any task on this equipment, this individual must have read and understood the on-product labels, this document and any referenced materials. This individual must also be familiar with and comply with all applicable industry and governmental standards and regulations related to the task in question.

Safety symbols

The following symbols are used in this document to alert the reader to specific situations:

DANGER

Indicates a possibly hazardous situation which will result in death or serious injury if correct care is not taken.

WARNING

Indicates a potentially hazardous situation which will result in possible injuries or damage to equipment if correct care is not taken.

CAUTION

Identifies a hazard which could lead to damage to the machine, damage to other equipment and environmental pollution if correct care is not taken or instructions and are not followed.

ⓘ **Note:** Highlights additional information useful to the technician in completing the work being performed correctly.

⚠ WARNING

The PYT drive enclosure contains lethal AC and DC voltages. Before performing any service inside the enclosure, perform the .

The DC Voltage on the VSD DC bus takes at least 6 min to bleed off, after the chiller has stopped. Always check the DC Bus Voltage with a DVM to ensure the capacitor charge has bled off before working on the system. If there is voltage present across the bus and a discharge resistor has failed, a discharge tool, 371-06726-000, can be used to equalize the electrical potential energy across the capacitors.

Never short out the DC bus to discharge the filter capacitors. If the DC bus does not bleed down, the bus discharge tool must be used to equalize the potential on the bus.

Never place loose tools, debris, or any objects inside the PYT drive enclosure.

Never leave the PYT drive enclosure doors open if there is a potential for rain to enter the panel. Keep doors closed and assure all latches are engaged on each door unless the unit is being serviced. Use the service hole to connect instrumentation to components inside the PYT drive for live measurements.

Always lockout the disconnect supplying AC to the chiller.

The 1L line Inductor and or 2L filter inductor reach operating temperatures of over 300°F. Do not open panel doors during operation. If working in the drive before the inductor has completely cooled, take appropriate precautions to avoid direct contact with the inductor.

Wiring warning

⚠ WARNING

External wiring, unless specified as an optional connection in the manufacturer's product line, is not to be connected inside the control cabinet. Devices such as relays, switches, transducers and controls and any external wiring must not be installed inside the micro panel. All wiring must be in accordance with Johnson Controls published specifications and must be performed only by a qualified electrician. Johnson Controls will not be responsible for damage or problems resulting from incorrect connections to the controls or application of incorrect control signals. Failure to follow this warning will void the manufacturer's warranty and cause serious damage to property or personal injury.

Interface wiring warning

DANGER

Do not drill holes in the cabinet. Knockouts are provided in the cabinet to run the approved customer interface as outlined in *Unit Wiring for YZD Centrifugal Chiller with Magnetic Bearing Controller* (Form 161.01-PW8).

Failure to correctly make conduit openings, cut the power wire, or any attempt to make additional holes in the enclosure may cause an arc flash event, injury to personnel, and damage to equipment and its replacement outside of the factory warranty.

Changeability of this document

In complying with Johnson Controls policy for continuous product improvement, the information contained in this document is subject to change without notice. Johnson Controls makes no commitment to update or provide current information automatically to the manual or product owner. Updated manuals, if applicable, can be obtained by contacting the nearest Johnson Controls Service office or accessing the Johnson Controls Knowledge Exchange website at https://docs.johnsoncontrols.com/chillers/.

It is the responsibility of rigging, lifting, and operating and service personnel to verify the applicability of these documents to the equipment. If there is any question regarding the applicability of these documents, rigging, lifting, and operating and service personnel should verify whether the equipment has been modified and if current literature is available from the owner of the equipment prior to performing any work on the chiller.

Revision notes

Revisions made to this document are indicated in the following table. These revisions are to technical information, and any other changes in spelling, grammar, or formatting are not included.

Table 1: Revision notes

Affected pages	Description
1	Updated document title
6 and 7	Updated Nomenclature
8	Updated Notes throughout Field control wiring connections
9	Updated list items and image
10 to 13	Updated images
14	Updated content and image
15	Updated subsection title and image
16 to 18	Updated images
19 to 22	Moved sections under Options and updated content and images throughout
23 to 28	Added Chiller Integration and YZD dual panel integration for BAS communications

MSDS information

Material safety data sheets (MSDS) information can be obtained by calling (800) 451-8346 in the U.S. or by e-mailing MSDS@3Ecompany.com. Provide the product name, manufacturer, part number, and the specific language required. For additional safety information, Johnson Controls employees can refer to the following: https://my.jci.com/sites/BE/NASafety

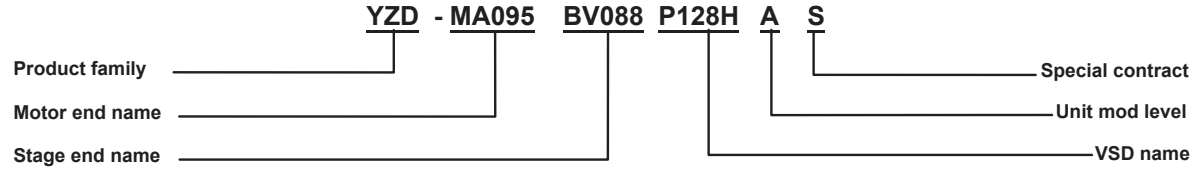
Associated literature

Table 2: Associated literature

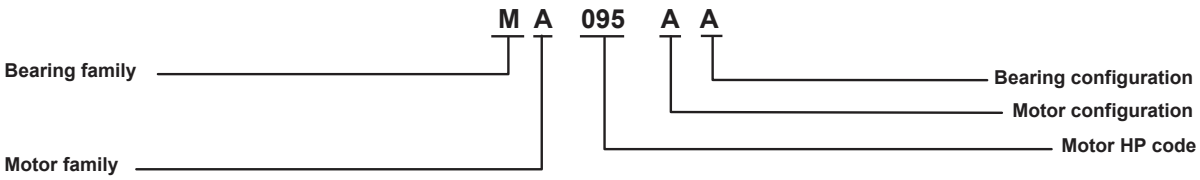
Manual description	Form number
YZD Unit Operations and Maintenance Manual	161.01-OM2
YZD Installation and Reassembly Manual	161.01-N2
YZD Installation Checklist and Request for Start-up	161.01-CL3
YZD Start-up Checklist	161.01-CL4
YZD - Water Pump Starters	161.01-PW5
YZD Field Connections	161.01-PW7
YZD Unit Wiring	161.01-PW8
Centrifugal Chiller Long Term Storage	50.20-NM5
SC-EQ Communication Card	450.50-N1
YZD BAS Protocol List	YZD-BAS-SC-EQ-Rev1.4

Nomenclature

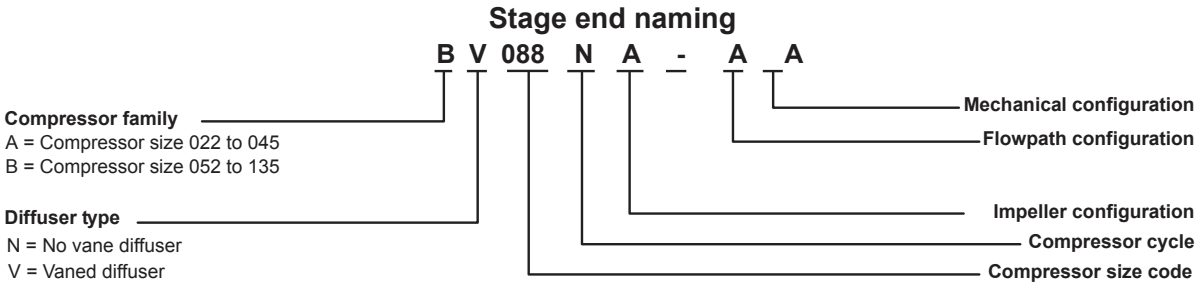
System nomenclature



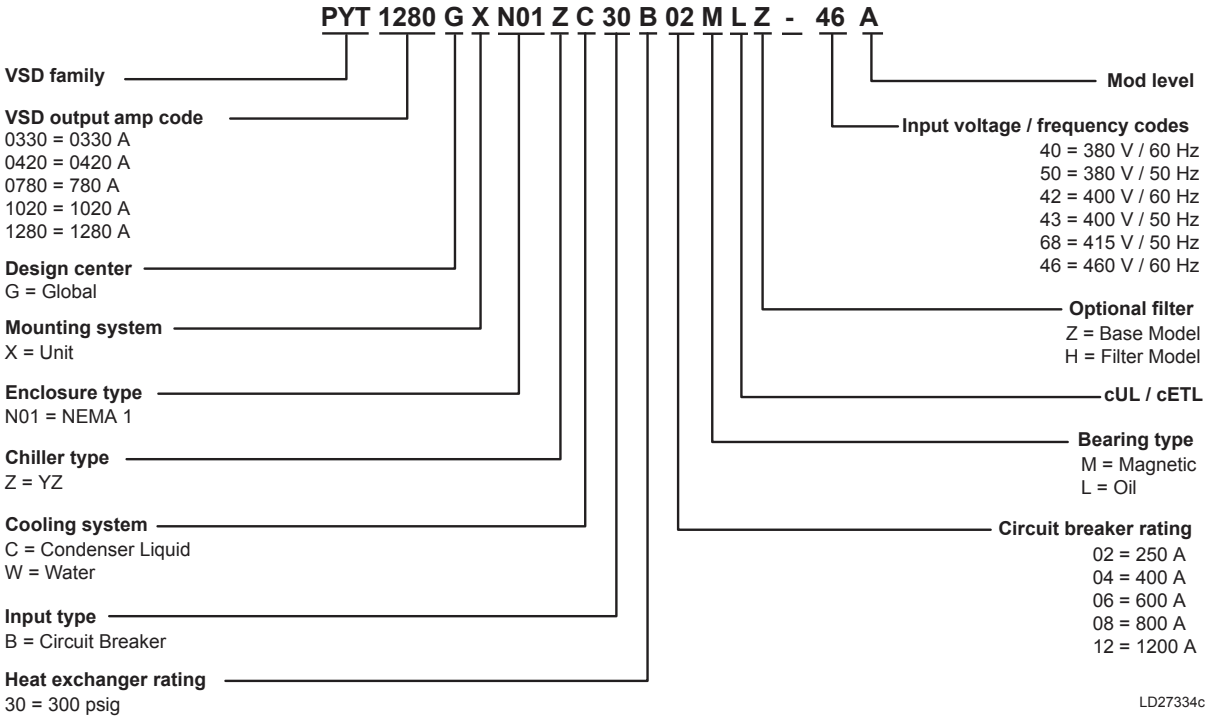
Motor end naming



Stage end naming



Variable speed drive nomenclature



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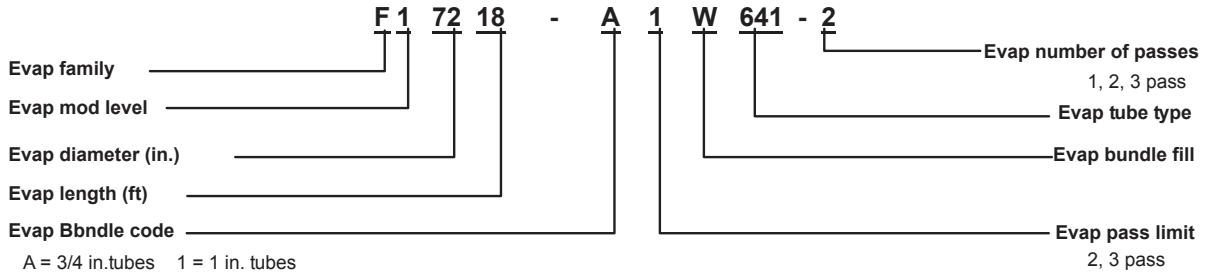
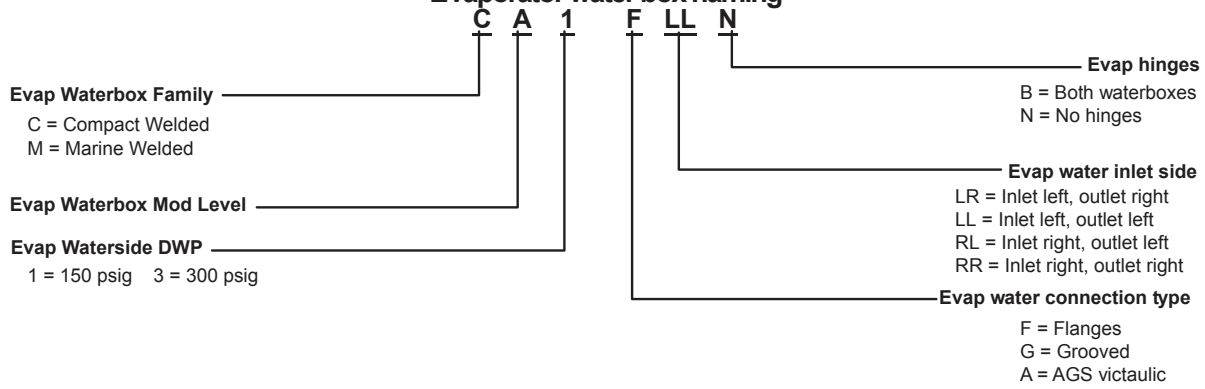
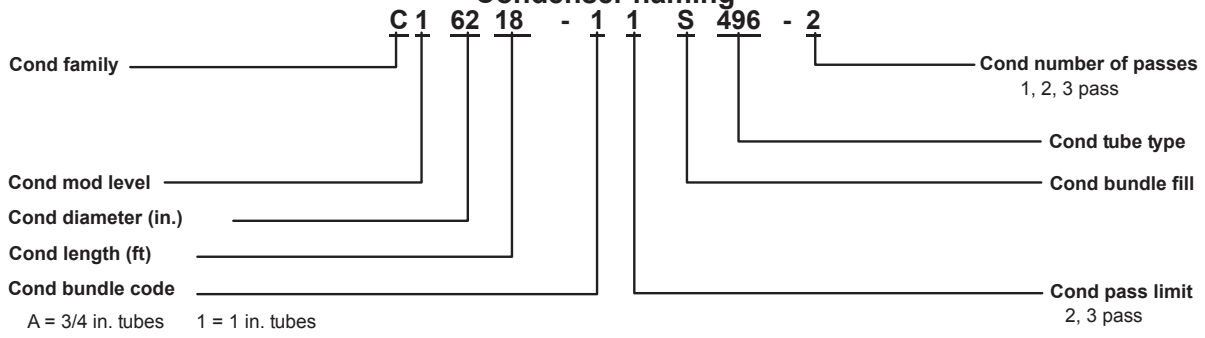
Evaporator naming



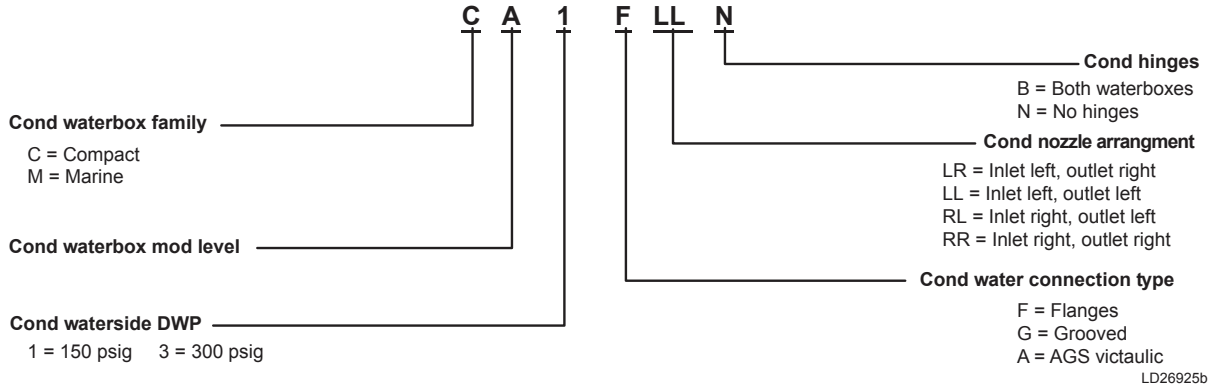
Evaporator water box naming



Condenser naming



Condenser waterbox naming



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Field control wiring connections

Important:

The following field control wiring is typical for system 1 and system 2 OptiView™ Control Center panels. The status and cycling contacts are for the individual systems and not for the whole unit.

There are no hardwire run/stop, input current limit, or cooling setpoint controls. Customer integration of the YZD unit is available through BAS communication, which can be either ModBus TCP/IP (Ethernet) or ModBus RTU. The HMI takes ModBus RTU over RS-232, but there is a 232-485 converter in the panel to connect in two wires RS-485. See Chiller Integration.

1. This document provides guidance on the recommended field control wiring connections, supplied by others, to the standard OptiView Control Center wiring diagram.
2. If more than one of these modifications is used with a particular unit, additional consideration must be given to the application to ensure correct functioning of the control system. Consult your Johnson Controls representative.
3. The additional controls and wiring for these connections must be furnished and installed in the field by others. See Wiring warning.
4. The controls specified are recommended for use, but other controls of equal specifications are acceptable.
5. All wiring must be in accordance with the National Electrical Code (NEC), and applicable State and Local Codes.
6. Each 120 VAC field-connected inductive load, for example, relay coil, motor starter coil, and similar components, must have a transient suppressor wired by others in parallel with its coil, physically located at the coil.
7. The OptiView Control Center is factory furnished for auto restart after power failure as a standard function. The control center can be field changed from Auto Restart to Manual Restart after a power failure with a setpoint in the control software setup screen.
8. The maximum allowable current draw for the sum of all loads is 2 A holding, 10 A inrush.
9. Refer to *YZD Field Connections - Water Pump Starters (Form 161.01-PW5)* for the following and required field wiring connections on the OptiView Control Center.
   - Chilled liquid pump run contacts (TB4-44 and TB4-45)
   - Condenser liquid pump run contacts (TB5-150 and TB5-151)
10. The chilled liquid flow switch is a safety control. It must be connected to prevent operation of the chiller whenever chilled liquid flow is stopped. In addition to protecting the chiller, the chilled liquid flow switch can be used in several other ways, including two flow switches, a flow switch and a relay, or separate contacts on the same flow switch.
11. Do not apply voltage on field wiring terminal blocks TB2 and TB3 on the I/O board in the OptiView Control Center, as 120 VAC source is fed from TB6 terminals 1 and 2.

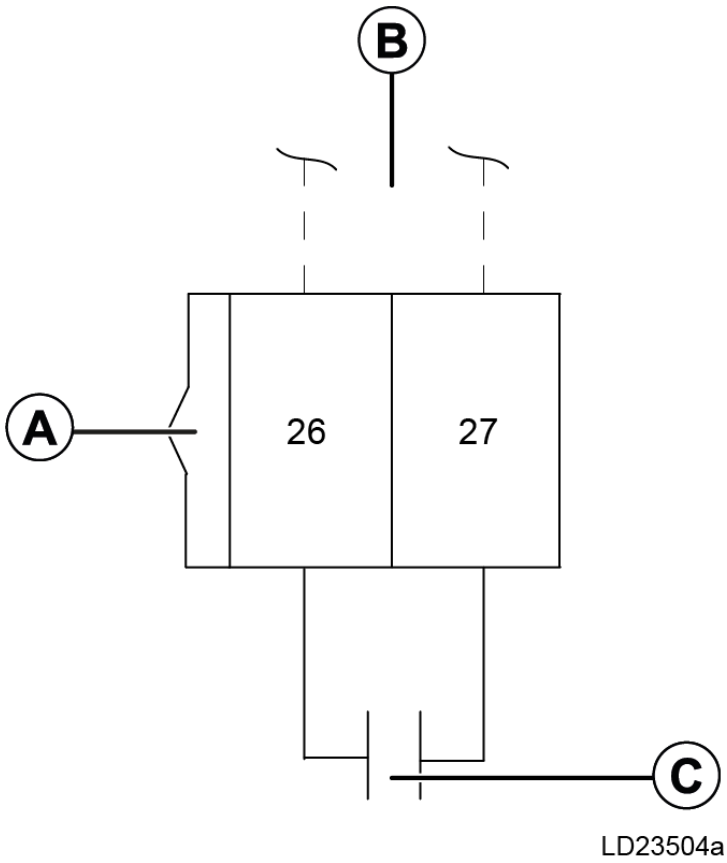
Status output contacts

Remote ready to start contacts

When closed, these contacts signify the following:

- The OptiView Control Center is in remote operating mode. See Figure 1.
- All chiller safety cutout controls are in the normal position, so the unit can start.
- All chiller cycling cutout controls are in the normal position, so the unit can start.
- A closure of the remote ready to start contacts then signifies that the unit can start when the PLC sequencing panel sends a run command. When the remote ready to start contacts close, the OptiView Control Center displays the `SYSTEM READY TO START` message.

Figure 1: Remote ready to start contacts



Callout	Description
A	I/O board TB4 in the OptiView Control Center
B	To the building controls
C	N.O. contacts on the I/O board, rated 2 A inductive at 250 VAC and 5 A resistive at 250 VAC

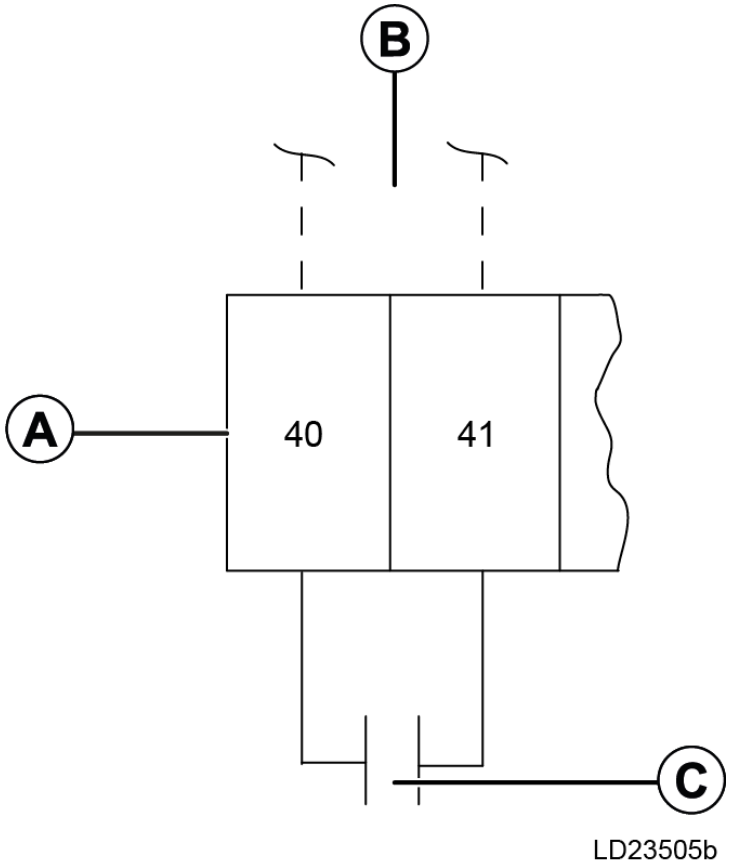
Cycling shutdown alarm contacts

When closed, the cycling shutdown alarm contacts signify that the system is not permitted to start due to a cycling shutdown condition.

The unit automatically restarts when the cycling condition is no longer present. Refer to *YZD Operations and Maintenance* (Form 161.01-OM2), for a list and explanation of all cycling shutdowns. While these contacts are closed, the OptiView Control Center displays `CYCLING SHUTDOWN – AUTO RESTART` on the **System Status** bar and the cause of the shutdown on the **System Details** bar of the display.

Note: Cycling shutdown contacts function in all operating modes.

Figure 2: Cycling shutdown alarm contacts



Callout	Description
A	I/O board TB5 in the OptiView Control Center
B	To the building controls
C	N.O. contacts on the I/O board, rated 2 A inductive at 250 VAC and 5 A resistive at 250 VAC

Safety shutdown alarm contacts

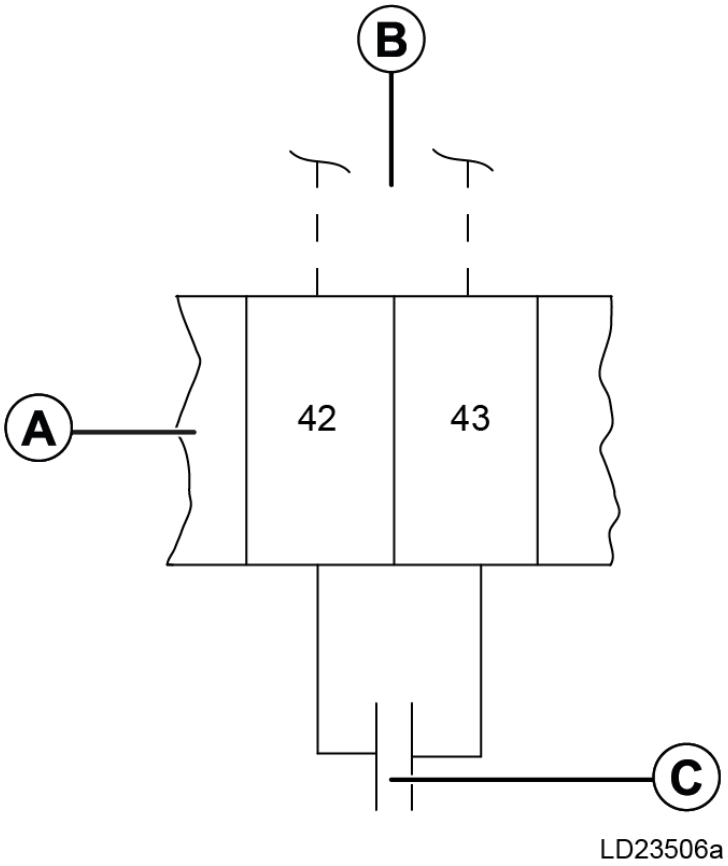
When closed, the safety shutdown alarm contacts signify the system is not permitted to start due to a safety shutdown alarm condition.

Safety shutdowns require a manual reset procedure to be performed before the unit can be restarted. Refer to *YZD Operations and Maintenance* (Form 161.01-OM2) for a list and explanation of all the safety shutdowns.

While these contacts are closed, the OptiView Control Center displays `SAFETY SHUTDOWN - MANUAL RESTART` on the **System Status** bar and the cause of the shutdown on the **System Details** bar of the display. These contacts remain closed until the safety condition no longer exists and a manual reset is performed by pressing the **Clear Faults** key on the control panel, after which the unit can restart.

ⓘ **Note:** Safety shutdown alarm contacts function in all operating modes.

Figure 3: Safety shutdown alarm contacts

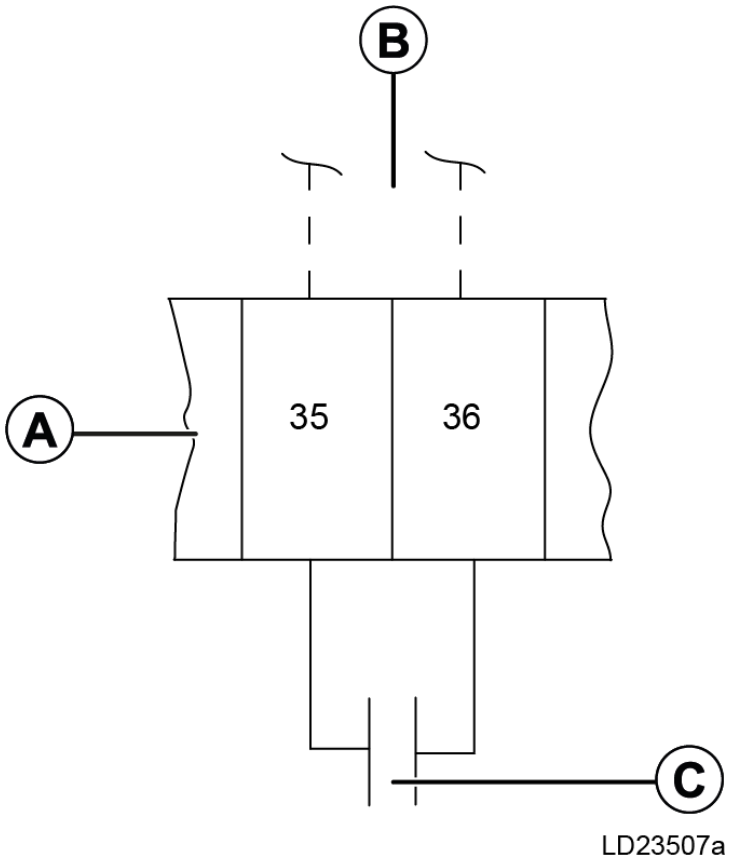


Callout	Description
A	I/O board TB4 in the OptiView Control Center
B	To the building controls
C	N.O. contacts on the I/O board, rated 2 A inductive at 250 VAC and 5 A resistive at 250 VAC

Run contacts

When closed, these contacts signify that the system is operating. See Figure 4. The OptiView Control Center displays a `SYSTEM RUN` message.

Figure 4: Run contacts



Callout	Description
A	I/O board TB6 in the OptiView Control Center
B	To the building controls
C	N.O. contacts on the I/O board rated, 2 A inductive at 250 VAC and 5 A resistive at 250 VAC

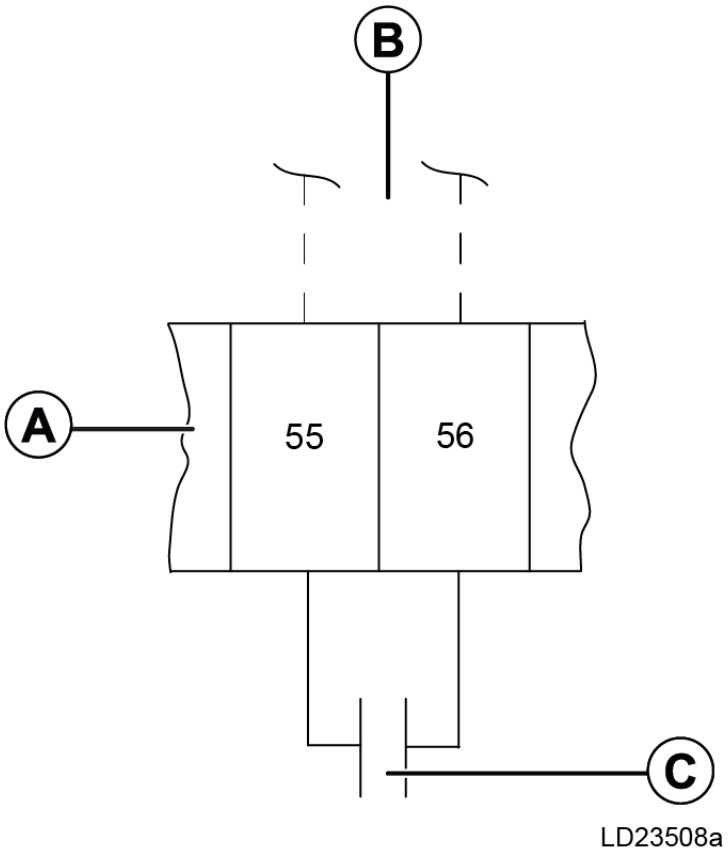
Warning alarm contacts

The warning alarm contacts close when one or more of the warning conditions occur. Refer to all warning conditions listed in *YZD Operations and Maintenance* (Form 161.01-OM2).

The contacts remain closed as long as the warning condition is in effect. For most warnings, the contacts automatically open when the condition is no longer present.

ⓘ **Note:** For certain warnings, the contacts open only after the condition is no longer present and the **Warning Reset** key is pressed in Operator (or higher) access level.

Figure 5: Warning Alarm Contacts



Callout	Description
A	I/O board TB4 in the OptiView Control Center
B	To the building controls
C	N.O. contacts on the I/O board rated, 2 A inductive at 250 VAC and 5 A resistive at 250 VAC

Remote Control

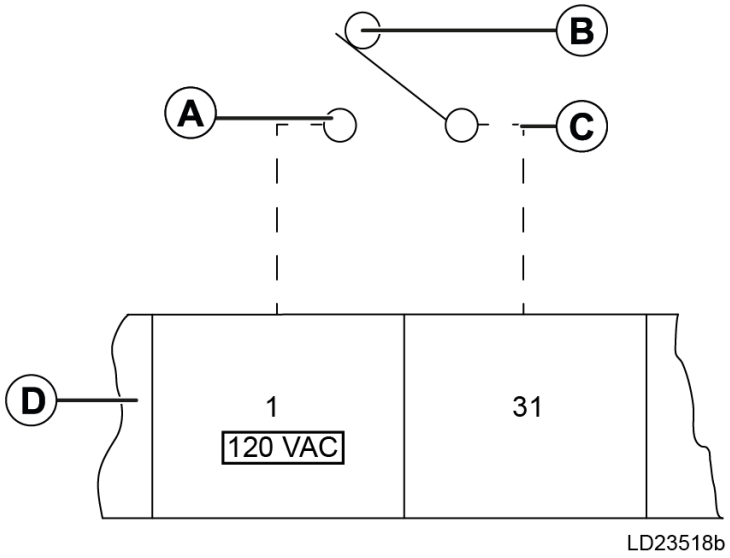
Auxiliary safety shutdown

The closure of a momentary, maintained N.O. switch or relay contacts causes the system to shut down and display the following messages:

- `SAFETY SHUTDOWN - MANUAL RESTART`
- `AUXILIARY SAFETY - CONTACTS CLOSED`

The system cannot restart until the contacts open. Press the panel **Clear Faults** key to give the system a start command.

Figure 6: Auxiliary safety shutdown input



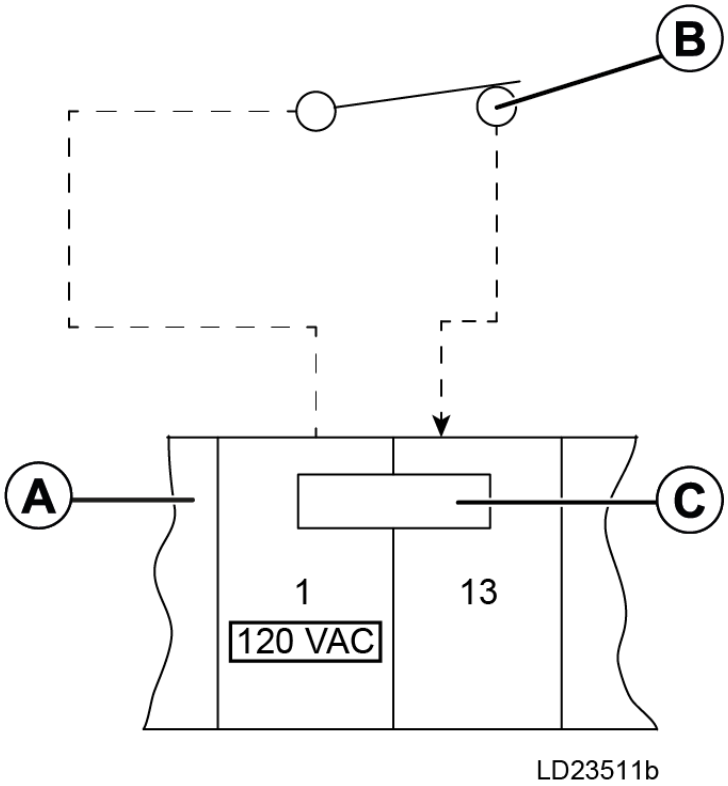
Callout	Description
A	Stop
B	Run
C	Momentary or maintained N.O. switch or relay contacts rated at 5 mA at 120 VAC
D	I/O board TB2 in the OptiView Control Center

System cycling shutdown input contacts

When an automatically reset device closes across this input allows the system to function in all operating modes. Opening the device contacts prevents the system from operating. The OptiView Control Center then displays the following messages:

- `CYCLING SHUTDOWN - AUTO RESTART`
- `SYSTEM CYCLING - CONTACTS OPEN`

Figure 7: Remote/Local cycling devices



Callout	Description
A	I/O board TB2 in the OptiView Control Center
B	Thermostat cycling switch, program timer, or contact remote start/stop switch. Contacts are rated 5 mA at 120 VAC.
C	Remove the jumper wire

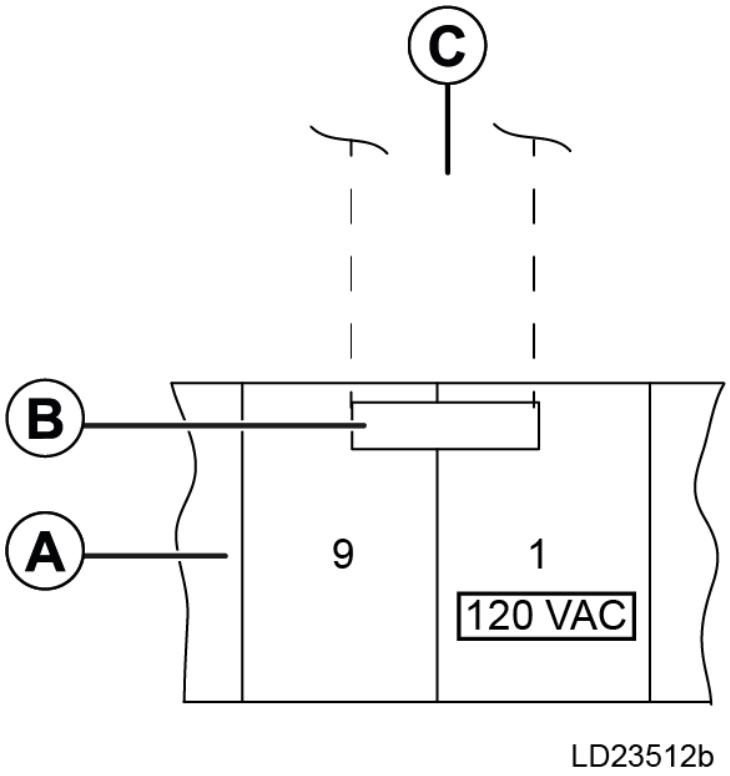
Multi-unit cycling shutdown input contacts

For multiple chiller installation applications, multi-unit cycling shutdown contacts are available to start and stop each unit, requiring both systems to be wired in parallel. The maintained closure of device contacts across TB2-1 and TB2-9 permits the unit to function in all the operating modes with a standing run command. Opening device contacts prevents the unit from operating.

The OptiView Control Center then displays the following messages:

- `CYCLING SHUTDOWN - AUTO RESTART`
- `MULTI-UNIT CYCLING - CONTACTS OPEN`

Figure 8: Multi-unit cycling shutdown



Callout	Description
A	I/O board TB2 in the OptiView Control Center
B	Remove jumper wire
C	Multi-unit switch with contacts, rated 5 mA at 120 VAC

Chilled liquid pump run (TB4- 44/45)

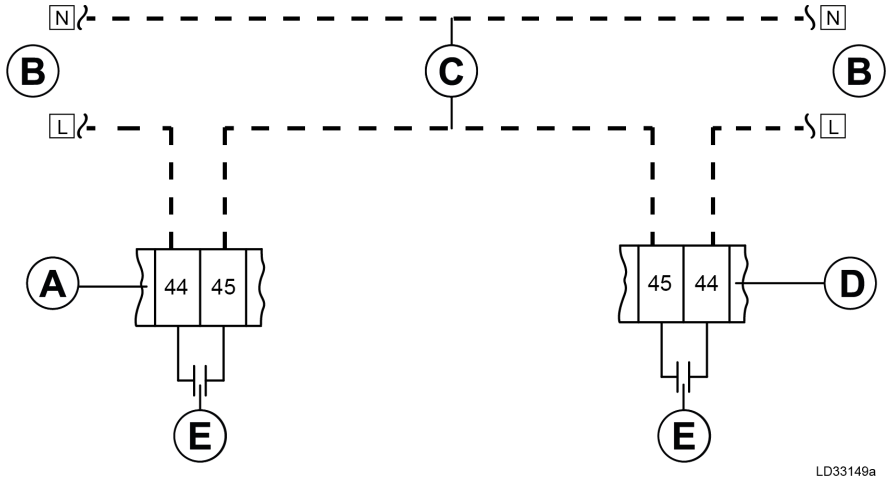
When the chiller is started, the contacts close immediately upon entering system startup. Normally, the contacts open for the stop command and most faults The following faults do not trigger the contacts to open:

- `LEAVING CHILLED LIQUID - LOW TEMPERATURE CYCLING SHUTDOWN`
- If chilled liquid pump Operation is set to enhanced, `MULTI-UNIT CYCLING - CONTACTS OPEN` or `SYSTEM CYCLING - CONTACTS OPEN CYCLING SHUTDOWN`
- `LEAVING CHILLED LIQUID FLOW SWITCH OPEN CYCLING SHUTDOWN`

Refer to *Field Connections: Water Pump Starters for YZD Chillers* (Form 161.01-PW5) for field wiring requirements.

Important: If these contacts are used, both systems must be wired together as seen the following figure.

Figure 9: Chilled liquid pump run



Callout	Description
A	I/O board TB4 in system 1 OptiView Control Center
B	Customer supplied 120 VAC
C	To evaporator pump starter/contactor, see Note 6
D	I/O board TB4 in system 2 OptiView Control Center
E	N.O. contacts on the I/O board, rated 2 A inductive at 250 VAC and 5 A resistive at 250 VAC

Condenser liquid pump run (TB5- 150/151)

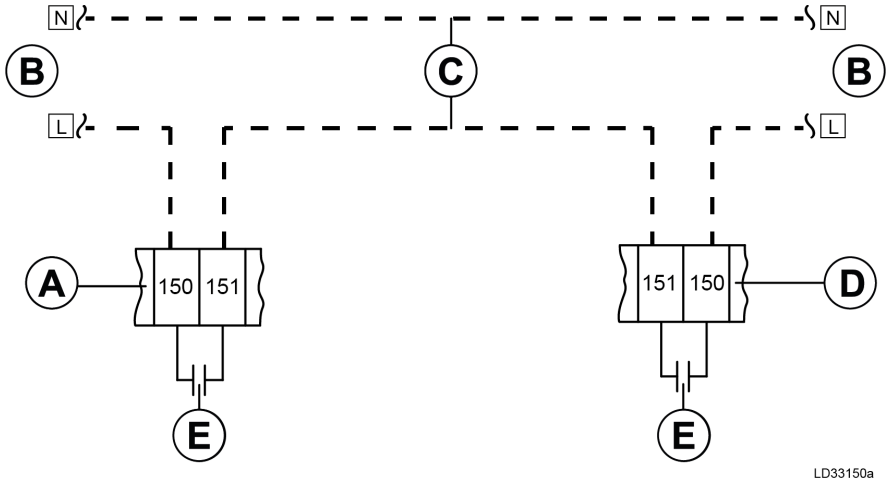
Contacts close simultaneously with system startup and open in coincidence with the receipt of a chiller stop command or any fault other than `CONDENSER - FLOW SWITCH OPEN CYCLING SHUTDOWN`.

Contacts also close when the chiller is stopped, the condenser pump is off, and the drop leg temperature is less than 35°F (1.7°C). This helps mitigate condenser freeze due to plant issues in brine applications. If the contacts are closed due to the saturated condenser temperature, they are opened when the drop leg temperature returns above 36°F (2.2°C) for 5 min consecutively while the chiller is stopped. Starting with version 13 (Y.OPT.01.13.308) the contacts also close and remain closed while the VSD cooling system is in a run state.

Refer to *Field Connections: Water Pump Starters for YZD Chillers* (Form 161.01-PW5) for field wiring requirements.

Important: If these contacts are used, both systems must be wired together as seen the following figure.

Figure 10: Condenser liquid pump run



Callout	Description
A	I/O board TB5 in system 1 OptiView Control Center
B	Customer supplied 120 VAC
C	To evaporator pump starter/contactor, see Note 6
D	I/O board TB5 in system 2 OptiView Control Center
E	N.O. contacts on the I/O board, rated 2 A inductive at 250 VAC and 5 A resistive at 250 VAC

Options

Optional head pressure control

Important: You must disable the head pressure control. This feature does not work with the YZD system.

Condenser liquid flow sensors

The thermal-type flow sensor interfaces with the microboard and the digital-type flow sensor interfaces with the I/O board.

For the program to read the appropriate inputs for the flow sensor status, using the Service access level manually enter the actual flow sensor type used on the Operations screen. Select J14 for thermal-type or TB4 digital-type. Refer to *YZD Operations and Maintenance* (Form 161.01-OM2).

Thermal-type flow sensor

When the thermal-type flow switch is used, the flow switch uses the cooling effect of liquid to detect flow.

When the flow of liquid is detected, the solid state relay output is turned on conducting current through the microboard load resistor to the +5 VDC applying greater than +4 VDC to the microboard input J14-7. Microboard jumpers JP10, JP11, and JP12 must be on pins 2 and 3.

Digital-type flow sensor

If preferred, you can use a digital condenser liquid flow interlock. The following flow switches are available, at an additional cost:

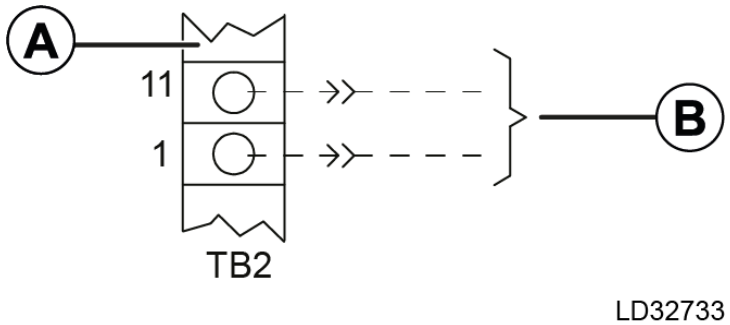
Paddle-type:

- Johnson Controls F61TB-9104, maximum 150 psi (YORK P/N 024-26116-200)
- McDonnell type FS7-4W, maximum 300 psi (YORK P/N 024-12144-000)

Differential pressure type:

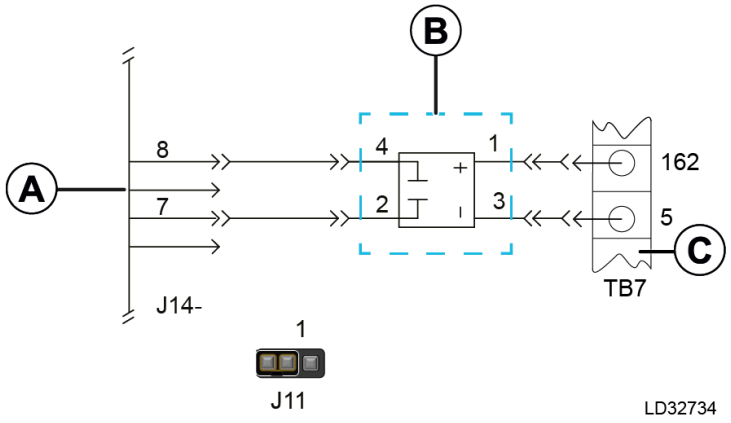
- Pretempco DPS300A-P40PF-82582-5 or Potter model 1382 #9113827010900, maximum 300 psi (YORK P/N 025-30919-000)
- Danfoss model RT 262A, code number 017D002566, maximum 150 psi (YORK P/N 025-51924-000)

Figure 11: Condenser flow switches, digital-type flow sensor



Callout	Description
A	I/O board
B	Condenser flow switch, wired by others

Figure 12: Condenser flow switches, thermal-type flow sensor



Callout	Description
A	Microboard
B	Flow sensor
C	To TB7 162 and 5 in the OptiView Control Center

Important: Condenser flow is required to complete a system startup. `WAITING FOR FLOW` is displayed on the system details bar until the condenser and chilled flow contacts close. If flow is not detected during the startup time (60 s), a `SYSTEM STARTUP FAILURE` fault occurs.

When condenser liquid is flowing, the flow switch contact closes. Opening the condenser liquid flow switch contacts while the chiller is running for 5 s continuously causes the unit to shut down. The flow switch status is continuously checked from the beginning of a system startup. Then the OptiView Control Center displays the following messages:

- `CYCLING SHUTDOWN - AUTO RESTART`
- `CONDENDER - FLOW SWITCH OPEN`

Chilled liquid flow sensors

The thermal-type flow sensor interfaces with the microboard and the paddle-type or differential pressure type flow sensor interfaces with the I/O board.

For the program to read the appropriate inputs for the flow sensor status, the actual flow sensor type used must be entered at the keypad Operations screen using the service access level. Select J14 for thermal-type or TB4 for digital-type. Refer to *YZD Operations and Maintenance* (Form 161.01-OM2).

Thermal-type flow sensor

When the thermal-type flow switch is used, the flow switch uses the cooling effect of liquid to sense flow.

When the flow of liquid is sensed, the relay output is turned on, conducting current through the microboard load resistor to the +5 VDC, applying greater than +4 VDC to the microboard input J14-4, microboard jumpers JP10, JP11, and JP12 must be on pins 2 and 3.

When no flow of liquid is sensed, the relay output turns off. This results in less than 1 VDC to the microboard input.

Digital-type flow sensor

If preferred, a digital chilled liquid flow interlock can be applied. The following flow switches are available, at an additional cost:

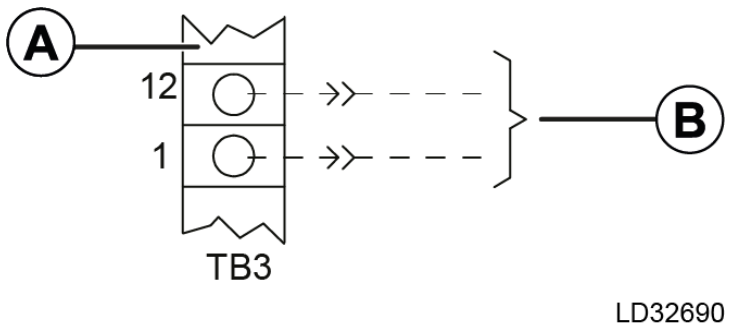
Paddle-type:

- Johnson Controls F61TB-9104, maximum 150 psi (YORK P/N 024-26116-200)
- McDonnell type FS7-4W, maximum 300 psi (YORK P/N 024-12144-000)

Differential pressure type:

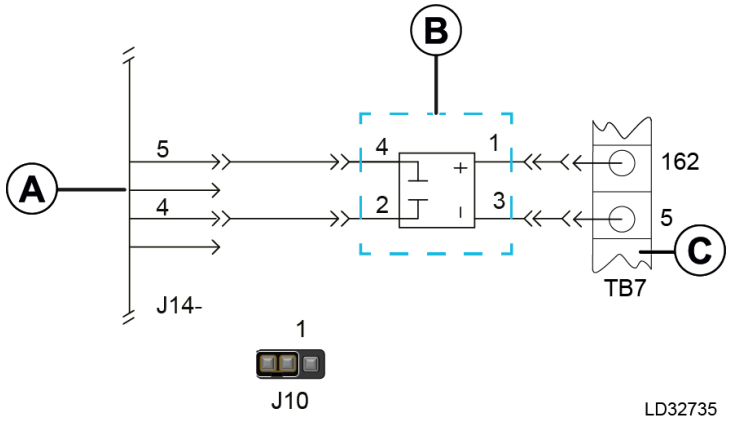
- Pretempco DPS300A-P40PF-82582-5 or Potter model 1382 #9113827010900, maximum 300 psi (YORK P/N 025-30919-000)
- Danfoss model RT 262A, code number 017D002566, maximum 150 psi (YORK P/N 025-51924-000)

Figure 13: Chilled flow switches, digital-type flow sensor



Callout	Description
A	I/O board
B	Chilled flow switch, wired by others

Figure 14: Chilled flow switches, thermal-type flow sensor



Callout	Description
A	Microboard
B	Flow sensor
C	To TB7 162 and 5 in the OptiView Control Center

Important: Evaporator flow is required to complete system startup. `WAITING FOR FLOW` is displayed on the system details bar until the condenser and chilled flow contacts close. If flow is not detected during the startup time (60 s), a `SYSTEM STARTUP FAILURE` fault occurs.

When chilled liquid is flowing, the flow switch contact closes. Opening the chilled liquid flow switch contacts while running for 5 s continuously causes the unit to shut down. The flow switch status is continuously checked from the beginning of system startup. Then the OptiView Control Center displays the following messages:

- `CYCLING SHUTDOWN - AUTO RESTART`
- `CHILLED FLOW SWITCH OPEN`

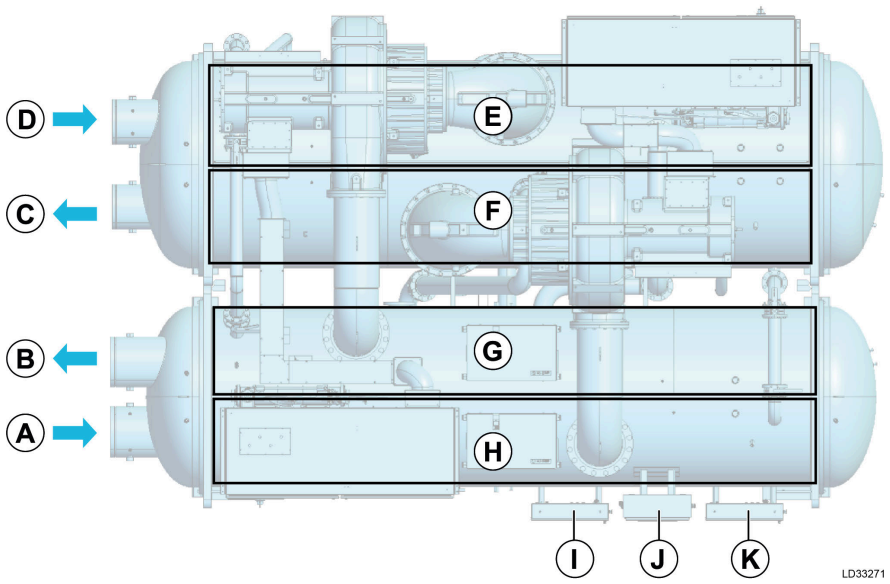
Chiller Integration

The OptiView Control Panels for each system independently maintain the respective unit systems. They communicate to the PLC sequencing panel through an SC-EQ card providing the operating conditions from the YZ SC-EQ BAS points list. The PLC panel uses this information to calculate the most efficient manner to sequence the systems. It also selects the lead and lag based on run time and provides the cooling setpoint for each system to balance the load across the entire unit.

OptiView to PLC communications

See Figure 15 for an example of the system layout. As you are facing the panels on the unit, the system 1 OptiView panel is on the left, the PLC panel is in the middle, and the system 2 OptiView panel is on the right.

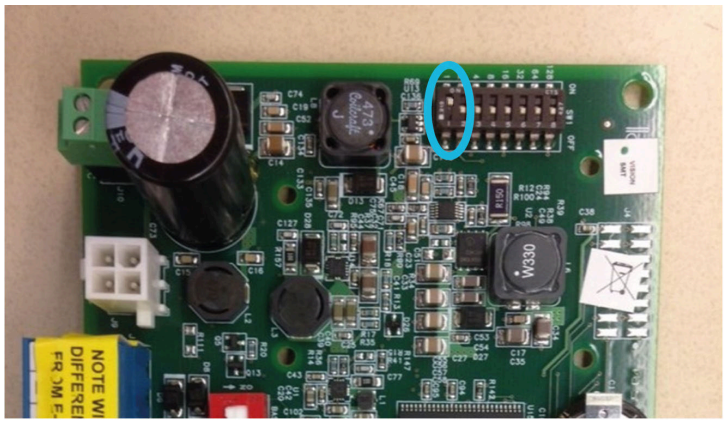
Figure 15: System layout



Callout	Description	Callout	Description
A	System 2 condenser water inlet	G	System 1 condenser
B	System 1 condenser water outlet	H	System 2 condenser
C	System 2 evaporator water outlet	I	System 1 OptiView control panel
D	System 1 evaporator water intlet	J	PLC sequencing panel
E	System 1 evaporator	K	System 2 OptiView control panel
F	System 2 evaporator		

The switch setting on the SC-EQ cards in the OptiView panels must be set to position 1 **on** and the rest set to **off**.

Figure 16: OptiView panel switch setting SC-EQ card position



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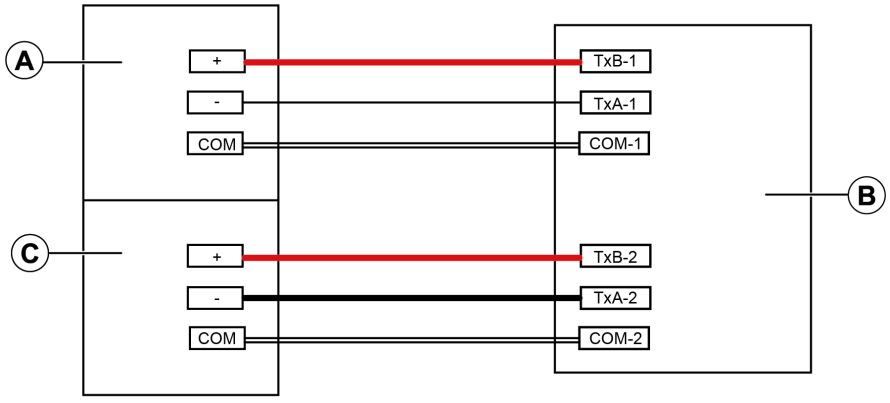
Match the wiring from the SC-EQ cards to the PLC input terminal block according the following table.

Table 3: Wiring from the SC-EQ to the PLC input terminal block

OptiView SC-EQ J12	Color	PLC input terminal block
COM	White	COM
-	Black	TxA
+	Red	TxB

Figure 17: Wiring from the SC-EQ to the PLC input terminal block



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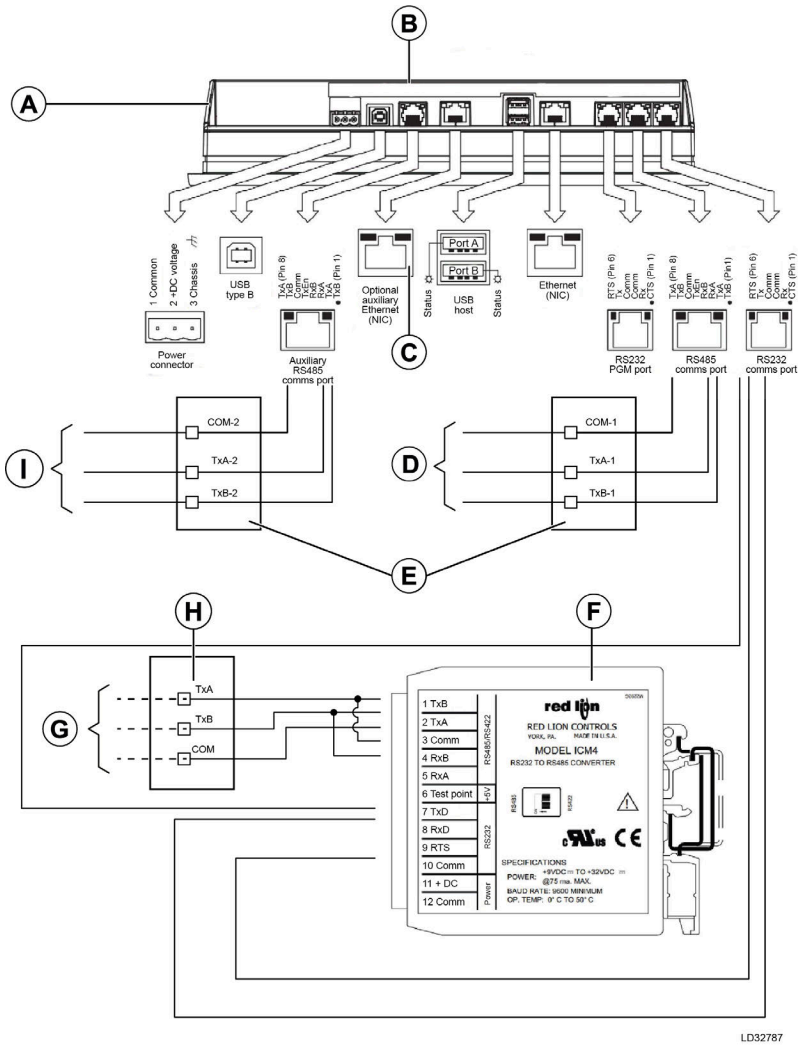
Callout	Description
A	SC-EQ system 1
B	PLC input terminal block
C	SC-EQ system 2

YZD dual panel integration for BAS communications

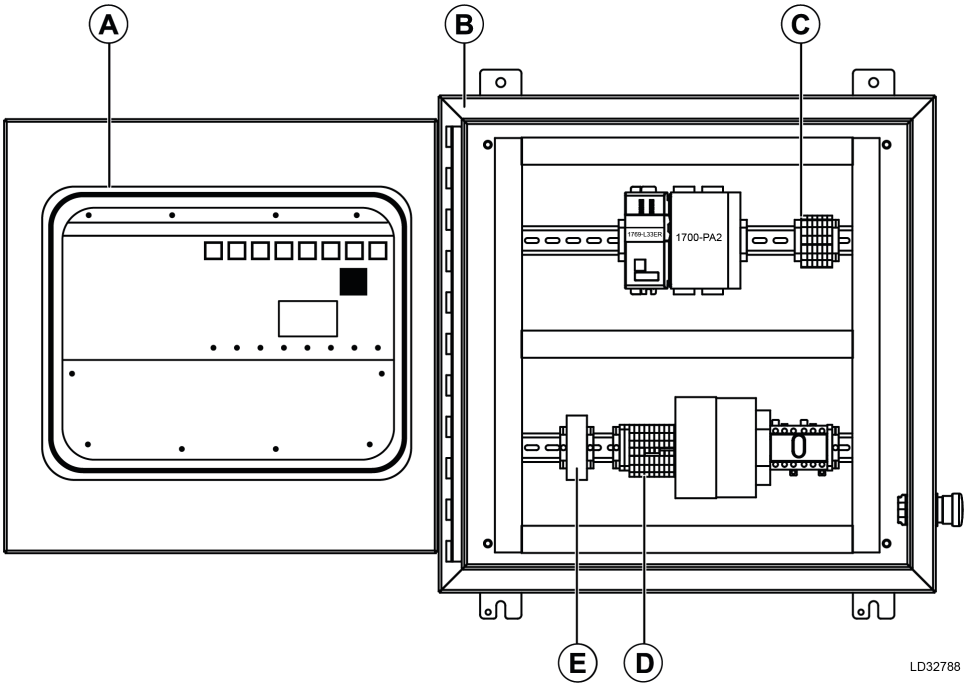
BAS integration, including the remote setpoint changes, with the unit is only possible through the PLC sequencing panel. Customer integration directly to system 1 and system 2 OptiView is not possible.

Figure 18: PLC ModBus communication diagram



Callout	Description	Callout	Description
A	HMI	F	RS-232 to RS-485 converter
B	G15 port pin outs	G	To customer BAS - RTU
C	To customer BAS - TCP/IP	H	Output terminal block
D	To SC-EQ board, system 1	I	To SC-EQ board, system 2
E	Input terminal block		

Figure 19: PLC ModBus communication diagram, continued



Callout	Description	Callout	Description
A	HMI	D	Output terminal block
B	PLC panel	E	RS-232 to RS-485 converter
C	Input terminal block		

Customer BAS communications to the PLC panel can be either ModBus TCP/IP (Ethernet) or ModBus RTU. The Auxiliary Ethernet port on the Red lion HMI is for TCP/IP. There is a RS-232 to RS-485 converter in the PLC panel that can be used for RTU.

The two OptiView control panels to PLC use the YZ SC-EQ list. The PLC sequencing panel to customer BAS uses YZD BAS protocol list. Refer to YZD BAS Protocol List Rev 1.4.

Figure 20: PLC panel remote control screen

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The PLC panel remote control screen can be accessed in service level or higher. In this screen you can toggle the method of control for run/stop, cooling setpoint, and current limit setpoint from local to remote. From this screen you can also configure the BAS communication ports. The following tables describe the screen displayed values and interactive functions in relation to the remote control feature. Refer to *Form 161.01-OM2* for the screen's other functions.

Table 4: Display only fields

Field name	Description
System X active current limit setpoint	The input current limit value in use from the OptiView and SC-EQ.
System X leaving chilled setpoint	The current chilled liquid temperature setpoint being sent to the OptiView from the supervisory PLC.
Active local cooling setpoint	The current local cooling setpoint for the system from the supervisory PLC.
WAN Port Mac	The MAC address for the auxiliary E4thernet port of the HMI.
WAN Ethernet IP	• Ethernet IP address: Displayed for the auxiliary Ethernet port of the HMI if it is in use • No IP: Displayed if there is no information
WAN mask	• Subnet mask: Displayed for the auxiliary Ethernet port for the HMI if it is in use • No mask: Displayed if there is no information
WAN gateway	Displays the gateway address for the auxiliary Ethernet port of the HMI if it is in use. If there is no information it displays an asterisk (*).

Table 5: Display only fields, LED

LED name	Description
System X SC-EQ online with Red Lion HMI port	• Green: Communications between the HMI and PLC are established • Red: The system is not be able to run
Red Lion HMI port online with PLC	• Green: Communications between the HMI and OptiView SC-EQ are established • Red: The compressor package is not be able to run

Table 6: Interactive fields

Button name	Description
Cooling setpoint	Toggles the leaving liquid setpoint between local or remote for customer BAS.
Current limit setpoint	Toggles the motor current limit setpoint between local or remote for customer BAS.
Run/stop	Toggles the start/stop signal between local and remote for customer BAS.
Panel unit display	Toggles the panel between imperial units and metric units. The cooling setpoint which is set in °F or °C is not converted and must be set if the units are changed. These units are fixed and cannot be changed to other variations.
Auxiliary Ethernet port	
WAN port configuration	If the auxiliary Ethernet port is being used for a connection to the BAS it can either be set to: • DHCP: Where the supervisory system assigns the network settings • Manual: Where the user can set the network settings using WAN setup inputs If the port configuration is set to disabled, the port is turned off.
WAN IP	Enter a free IP address on the connected network.
WAN subnet	Enter a subnet mask.
WAN gateway	Enter a gateway.
RS-232 port	
Serial baud rate	Enter a baud rate from 300 to 115,200.
Serial data bits	Enter data bits from 0 to 1, where 0 = 8 and 1 = 7.

ⓘ **Note:** Restart the system for changes to the aux port and the RS-232 port to take effect.

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