YORK
BY JOHNSON CONTROLS

Service Information

File In/With: N/A	SI0299
	New 315

Equipment Affected: OptiView Control Panel Retrofit Kits for YT and YK Chillers

VSD Modbus Comms Upgrade for OptiView Control Panel Retrofit Kits

GENERAL

York YK and YT chiller control panels, beginning with the YORK variable speed drive model TM-3, utilized a standalone control board to handle the speed control functions of the variable speed drive. This board was called the Adaptive Capacity Control (ACC) board. It is the software on the ACC board that varies the speed of the motor and learns (or some say maps) the compressor's surge line. After the ACC board maps the surge line it then controls the speed of the motor while the OptiView controls the vane position of the compressor. Mapping the surge line prevents the compressor from operating at a speed that would allow surge. Mapping the surge line also enables the compressor to operate at the optimal speed and PRV position for maximum chiller efficiency. The ACC board, part number 031-01782-000, contains a microprocessor chip that is no longer in production and subsequently this part number ACC board is no longer available.

Note also that Millennium single line control panels use ACC board part number 031-01579-000. This ACC board is still available though it too is obsolete. When these boards are no longer available, customers experiencing an ACC board failure will need to update their control panel to OptiView and their VSD logic board for modbus communication (see Retrofitting an OptiView on a chiller with a single line panel later in this letter).

UPDATING A CHILLER WITH AN EXISTING OPTIVIEW PANEL

TABLE 1 - OPTIVIEW CONTROL PANEL AND WIRING MODIFICATIONS

PANEL	MODIFICATIONS
YK OptiView w/ 031-02430-001 microboard	J20 Adaptor Cable: 571-05166-000 J13 (OptiView to 3TB OptiSpeed cable): 375-92455-210 PRV sensor cable: 392-25793-401
YK OptiView w/031-02430-000, and 031-01730-000 microboard	New microboard: 331-02430-601 J20 Adaptor Cable: 571-05166-000 J13 (OptiView to 3TB OptiSpeed cable): 375-92455-210 PRV sensor cable: 392-25793-401
YK Pre-OptiView	Not impacted. Panel uses 031-01592-000 ACC Board

Work on this equipment should only be done by properly trained personnel who are qualified to work on this type of equipment. Failure to comply with this requirement could expose the worker, the equipment and the building and its inhabitants to the risk of injury or property damage.

The instructions on this service bulletin are written assuming the individual who will perform this work is a fully trained HVAC & R journeyman or equivalent, certified in refrigerant handling and recovery techniques, and knowledgeable with regard to electrical lock out/tag out procedures. The individual performing this work should be aware of and comply with all Johnson Controls, national, state and local safety and environmental regulations while carrying out this work. Before attempting to work on any equipment, the individual should be thoroughly familiar with the equipment by reading and understanding the associated service literature applicable to the equipment. If you do not have this literature, you may obtain it by contacting a Johnson Controls Service Office.

Should there be any question concerning any aspect of the tasks outlined in this bulletin, please consult a Johnson Controls Service Office prior to attempting the work. Please be aware that this information may be time sensitive and that Johnson Controls reserves the right to revise this information at any time. Be certain you are working with the latest information.

Product Technical Support

TABLE 1 - OPTIVIEW CONTROL PANEL AND WIRING MODIFICATIONS (CONT'D)

PANEL	MODIFICATIONS
YT OptiView w/031-02430-001 microboard	J20 Adaptor Cable: 371-06764-000 J13 (OptiView) to 3TB (OptiSpeed) cable: 375-92455-210 PRV sensor cable: 392-25793-401
YT OptiView w/031-02430-000, and 031-01730-000 microboard	New microboard: 331-02430-602 J20 Adaptor Cable: 371-06764-000 J13 (OptiView) to 3TB (OptiSpeed) cable: 375-92455-210 PRV sensor cable: 392-25793-401
YT Pre-OptiView	Not impacted. Panel uses 031-01592-000 ACC Board

When upgrading an existing OptiView panel you also need to take into consideration which VSD logic board is installed. Table 2 lists the VSD software levels for model VSD and model TM-3 drives along with the required modifications. Table 3 provides the VSD logic board upgrade kits based on the specific VSD model/type, voltage, frequency, and horsepower.

TABLE 2 - MODEL VSD AND TM-3 VARIABLE SPEED DRIVE MODIFICATIONS FOR MODBUS COMMS

VSD SOFTWARE PART NUMBER	MODIFICATIONS
Model VSD - VSD software part number 031-02547-XXX	No hardware changes Change logic board wiring and settings per 035-21565-000 (see Figure 1)
Model VSD - VSD software part number 031-01617-XXX	Logic board upgrade kit (see Table 3 below) Modbus Wiring Modifications : 371-05193-002
Model TM-3 - VSD software part number 031-02547-XXX	No hardware changes Change logic board wiring and settings per 035-21563-000 (see Figure 2)
Model TM-3 - VSD software part number 031-01617-XXX	Logic board upgrade kit (see Table 3 below) Modbus Wiring Modifications: 371-05193-001

TABLE 3 - VSD LOGIC BOARD UPGRADE KITS

VSD STYLE/TYPE	VOLTAGE/FREQUENCY	APPLICATION	KIT PART NUMBER
Model TM-3	460V/60 HZ, 400V/50 HZ	292/351 HP 419/503 HP |658/790 HP 900/1100 HP	331-02506-601
Model TM-3	400V/60 HZ, 415V/50 HZ	608/704 HP 845/900 HP	331-02506-606
Model VSD	460V/60 HZ, 400V/50 HZ	292/351 HP 419/503 HP	331-02506-602
Model VSD	575V/60 HZ	424 HP 608 HP	331-02506-603
Model VSD	400V/60 HZ, 415V/50 HZ	270/292 HP 385/419 HP	331-02506-607

The following items are included in the logic board upgrade kits in Table 3.

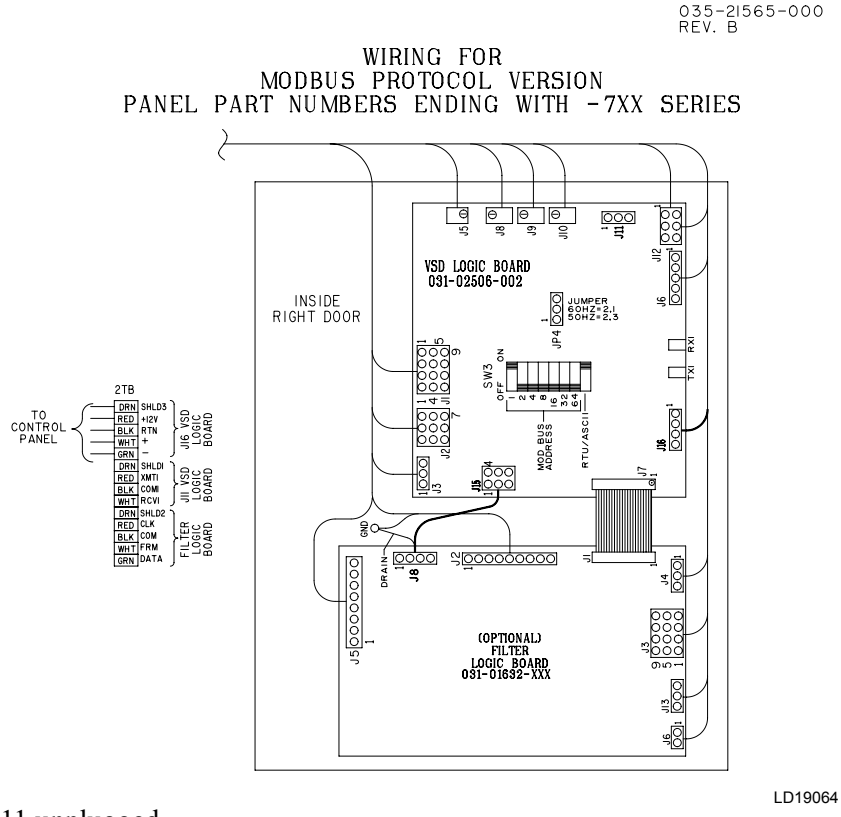
- 031-02506-00X logic board
- Flash, VSD logic U34
- Eprom, VSD logic U22
- Eprom instructions
- Wiring diagram, comms cables.

RETROFITTING AN OPTIVIEW ON A CHILLER WITH A SINGLE LINE PANEL

The ACC board's obsolescence also impacts our OptiView Control Panel Retrofit Kits for chillers already equipped with a Variable Speed Drive. We have recently implemented BOM changes to the kits that update the kits to modbus comms VSD control. Tables 4 lists the available OptiView retrofit kits to update an existing single line control panel that is controlling a VSD. When retrofitting to an OptiView panel you will also need to upgrade the VSD to the new logic board. Table 2 and Table 3 list the required parts.

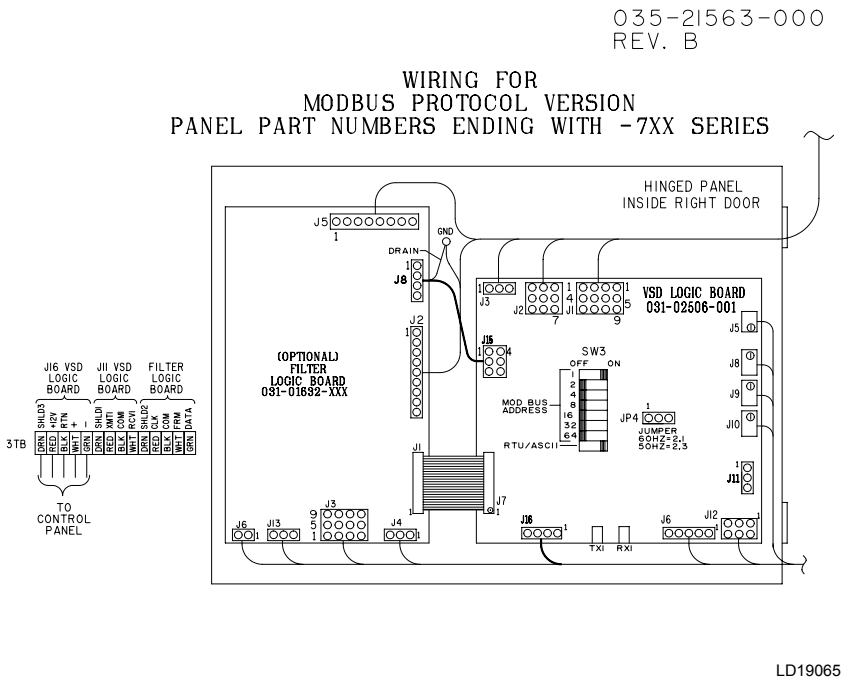
TABLE 4 - OPTIVIEW CONTROL PANEL RETROFIT KITS AND WIRING MODIFICATIONS

PANEL	MODBUS COMMS WIRING UPGRADE PARTS
YK Optiview Retrofit Kits: • 375-38121-107 • 375-38121-108 Barber Coleman* • 375-38121-109 Belimo* *Variable Orifice Actuator	J20 Adaptor Cable: 571-05166-000 J13 (OptiView to 3TB OptiSpeed cable): 375-92455-210 PRV sensor cable: 392-25793-401 See Table 2 and Table 3
YT OptiView Retrofit Kit: • 375-37826-112	J20 Adaptor Cable: 371-06764-000 J13 (OptiView to 3TB OptiSpeed cable): 375-92455-210 PRV sensor cable: 392-25793-401 See Table 2 and Table 3



1. VSD logic bd. J11 unplugged
2. VSD logic bd. J16 plugged in
3. VSD logic bd. J15 plugged into J8 of filter logic bd. remove small cable attached to main harness for this connection.
4. VSD logic bd. SW3 positions I and RTU/ASCII on. All other positions off.
5. VSD logic bd. JP4 60hz or 50 hz appropriately for application.

FIGURE 1 - 035-21565-000 FOR MODEL VSD DRIVES



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4. VSD logic bd. SW3 positions I and RTU/ASCII on. All other positions off.
5. VSD logic bd. JP4 60hz or 50 hz appropriately for application.

FIGURE 2 - 035-21563-000 FOR MODEL TM-3 DRIVES

There are several reasons why a customer should consider upgrading to modbus comms control. A primary reason is the parts obsolescence issue. We no longer have new ACC boards available from stock so customers with critical uptime requirements may experience undesired downtime while the modbus comms parts are ordered and installed.

Additional benefits include the following:

- **Viewable Surge Map**. This feature also gives you the capability of viewing the surge map in either table or list view and also provides the capability to delete or add specific surge points.
- **VSD Start Frequency.** The start frequency can be programmed from 30 to 60 hertz (standard 60 hertz units) or 30 to 45 hertz (60 hertz Quickstart units).
- **Speed Decrease Inhibit-Surge Map Point (LED).** Illuminates when the microboard ACC function is unable to reduce speed due to a mapped surge point.
- **Mapping Inhibited.** Illuminates when the microboard ACC function is not permitted to map points or reduce speed due to an unstable leaving chilled water temperature, manual speed control, current limit, or during soft shutdown.
- **ACC Surge Detected (LED).** Illuminates momentarily when a surge is detected in the microboard, while the drive is operating at less than maximum frequency.

- **Surge Avoidance Surge Detected (LED).** Illuminates momentarily when a surge is detected by the Surge Protection feature. The feature only detects surges that occur while the drive is operating at maximum frequency.
- **Surge Map Count.** This feature displays the total number of data points in the surge map.
- **Surge Margin Adjust.** This value determines how close the frequency reduction will be allowed to get to the surge line.

Additional information including the defaults and setpoint ranges are available in the OptiView Operations Manual (160.54-O1) and Service Manual (160.54-M1)

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