YORK®
ES Service Information

File In/With: 160.54-M1, 16-.54-O1
SI0164
New 307

Equipment Affected: YK Chillers

YK Chiller Software Enhancements (Ver 16)

GENERAL

Beginning April 2007, enhanced software will be supplied in new production YK chillers and replacement microboard kit 331-02430-601. This software is backward compatible to all previous YK chillers equipped with microboard 031-02430-000 or 031-02430-001. The enhancements are listed below.

The versions and part numbers are:

- NEMA 1-4 and CE chillers: C.OPT.01.16.xxx (031-02474-001)

SELECTABLE COASTDOWN TIME SETPOINT

To assure bearing lubrication until the compressor motor stops rotating at chiller shutdown, the oil pump runs for the duration of the coastdown period. Larger motors require a longer coastdown time than the standard 150 seconds. Therefore, when "Standard" is selected for the COASTDOWN Setpoint on the Setup Screen, new setpoint COASTDOWN TIME allows the service technician (in Service Access Level) to enter a coastdown time appropriate for the motor applied. The time is programmable over a range based on the selection made for the CHILLER STYLE/COMPRESSOR Setpoint on the Operations Screen: For style F/J7 and G/K6-K7, the range is 240 (Default) to 900 seconds. For all others, the range is 150 (Default) to 900 Seconds.

CHILLED AND CONDENSER WATER – FLOW SWITCH SHUTDOWNS

To prevent nuisance flow switch shutdowns due to momentary flow interruption or rapid water temperature changes that can affect Thermal Flow Sensors, the following extended flow switch delays are implemented for both ANALOG and DIGITAL flow sensor selections:

"Leaving Chilled Liquid – Flow Switch Open" – The chilled water flow switch has remained open for 5 continuous seconds (2 continuous seconds with software version C.OPT.01.15A.xxx and earlier) while the chiller is running or failed to close during the Pre-Lube period. The chiller will automatically restart when the flow switch closes.

"Condenser – Flow Switch Open" – The condenser flow switch has remained open for 30 continuous seconds (2 continuous seconds with software version C.OPT.01.15A.xxx and earlier) while the chiller is running. This check is bypassed for the first 30 seconds of "System Run".

CURRENT IMBALANCE MESSAGES

The safety shutdown messages "Motor or Starter – Current Imbalance" and "LCSSS – Output Current Imbalance" have been combined into one message "Motor or Starter – Output Current Imbalance" for both Variable Speed Drives and Style B Solid State Starters.

NEW TREND/CUSTOM VIEW SLOT NUMBERS

The following slot numbers have been added:

2849 ACC Surge Count
2850 ACC Surge Type
2857 ACC Surge Point Count
2858 ACC Surge Delta P/P
2859 ACC Surge Output Frequency
2860 ACC Surge PRV Position

TREND SCALING ERROR CORRECTION

In previous software versions, the software automatically rescaled the Y-axis range (on certain parameters) after the operator had already selected the range. This could result in reducing the overall range. The Y-axis is now scaled to accommodate the highest value selected.

VARIABLE SPEED DRIVE – INVALID CURRENT LIMIT MESSAGE

In previous software versions, when operating at <full speed (60Hz/50Hz) and pressing the FIXED key on the VSD Tuning Screen, the message "Motor – High Current Limit" was displayed until the drive reached full speed. While this message was displayed, the PRV are inhibited from opening.

In this version, "Load Control Mode" is displayed instead of "Motor – High Current Limit" under this condition.

The compressor motor Variable Speed Drive has not yet reached full speed after having been commanded to do so in manual speed control. While this is displayed, the Pre-rotation Vanes are inhibited from further opening.

NEW CHILLER STYLE/COMPRESSOR SELECTIONS

The existing selections are changed as follows:

Existing	Change to
Style F/J,H3 compr	Style F/J1-J5H3 compr
Style F/PQH9 compr	Style F & G/PQH9 compr

The following new selections are added on the OPERATIONS Screen:

- Style F/J7 compr
- Style G/K1-K4 compr
- Style G/K6-K7 compr

Functionally, these new selections are the same as Style F/J1-J5H3: Proximity Sense = Probe, Oil Heater Output = TB1-64, Level Control Period = 3.5 seconds Flow Switch = Programmable (analog or digital), Variable Speed Drive Oil Pump "Pressure Setpoint not achieved" = 35 PSID

MOTOR LUBRICATION WARNINGS AND SHUTDOWN

This software version adds the AUTO LUBE and SHUTDOWN setpoints on the Motor Screen. Chillers that are equipped with Automatic Motor Lubrication hardware do not require manual lubrication and therefore do not require the motor lubrication warnings (reminders) or the warning safety shutdown. Therefore, when the automatic lubrication hardware is present, the AUTO LUBE Setpoint must be ENABLED. With this setting, no lubrication warnings or shutdown will occur.

If the AUTO LUBE setpoint is DISABLED, as it should be when not equipped with the automatic Motor Lubrication hardware, the motor lubrication warnings and shutdown will occur at the associated elapsed run times. With this setting, the SHUTDOWN Setpoint is used to enable or disable the safety shutdown that occurs at 1400 hours since last lubrication. The safety shutdown can be enabled or disabled per the customer's preference. If enabled, the safety shutdown will occur at the normal 1400 hours. If disabled, a warning will be displayed but the safety shutdown will not occur.

MICROGATEWAY - MOTOR LUBRICATION WARNING CODE CORRECTION

Previous software versions send an incorrect warning code to the Microgateway for the Motor Lubrication Warning "Motor – Bearing Lube Suggested". They send a code 5, which is "Condenser – High Pressure Limit". This error is corrected in this software version. The new codes sent to the Microgateway are:

"Motor-Bearing Lube Suggested" – Warning Code 36

"Motor-Bearing Lube Required" – Warning Code 37

"Motor-Lack of Bearing Lubrication" – Warning Code 38

MEDIUM VOLTAGE VARIABLE SPEED DRIVE

When used with microboard 031-02430-001, this software supports the Medium Voltage Variable Speed Drive (MV VSD). Refer to YORK Operator Manual 160.00-O6 and Service Manual 160.00-M6 for this product.

Since the MV VSD does not save snapshot data when faulting, History Reports do not include snapshot data of shutdowns. Report contains only motor run state, PRV position and MV VSD fault code.

MOTOR COMMUNICATIONS PROTOCOL SETPOINT

On new production chillers prior to March 2007, the VSD Adaptive Capacity Control (ACC) Board communicates with the Microboard COM5 serial port using YORK protocol. After this date, on new production chillers, the ACC functionality is contained in the Microboard and the ACC Board is not present. On these chillers, the VSD Logic Board communicates directly with the Microboard COM2 serial port using Modbus protocol. To allow this software to accommodate new production chillers and earlier chillers, this software allows selection of either YORK or MODBUS protocol when VSD-50Hz/VSD-60Hz is selected for the Motor Drive Type Setpoint. When used with Modbus protocol, microboard 031-02430-001 is required (ref SI0155). The protocol selection enables the appropriate serial communication port: "YORK" enables COM5; "MODBUS" enables COM2. The hardware present determines which protocol should be selected (ref SI0155): If the ACC Board is used, select "YORK". Otherwise, select "MODBUS".

With Modbus protocol, the device that the microboard serially communicates with is assigned an address. On VSD applications, this device is the VSD Logic Board. Whenever the microboard is reading or writing to this board, it transmits this address. If the transmitted address matches the address assigned, the Logic Board responds. Otherwise, it ignores the command/request. The address assigned to the VSD Logic Board is "1". This is done by the positioning the VSD Logic Board Modbus Address Switch SW3 position 1 to ON and setting the Motor Node ID setpoint to "1". If these two values are not set to the same number, the VSD Logic Board will not communicate with the microboard.

The following new setpoints are programmed on the SETUP Screen:

"Motor Communications Protocol"
Access Level Required: SERVICE

Only displayed when VSD-60Hz or VSD-50Hz is selected for Motor Drive Type Setpoint. Allows Service Technician to enable the appropriate serial communications port for communications to the Variable Speed Drive. Entered as “York” to enable COM5 (J15) or “Modbus” to enable COM2 (J13). Selection is based on hardware and interface. If ACC Board is used, select “YORK”. Otherwise, select “MODBUS”. Microboard 031-02430-001 must be equipped with 128KB BRAM (031-02565-000) to select “Modbus”. Chiller must be stopped with the Start-Run-Stop switch in the Stopped position to change this setpoint.

“Motor Node ID”
Access Level Required: SERVICE
Only displayed when “Modbus” is selected for the Motor Communications Protocol Setpoint above. Allows the Service technician to enter the Modbus Address of the VSD Logic Board. Must be set to “1”. The VSD Logic Board Modbus Address switch SW3 must also be set to “1”. Chiller must be stopped with the Start-Run-Stop switch in the Stopped position to change this Setpoint.

The following screens are affected by this new protocol selection:

Comms Screen
When Modbus Comms are selected, the COM2 Setup key on the COMMS Screen is not displayed.

Modbus Diagnostics Screen
When Modbus Protocol is selected, the VSD COMMS Screen is replaced by the DIAGNOSTICS VSD (Modbus) Screen. A reset counters key is present allowing the error counters to be reset to zero. This screen displays the following Modbus communications error counters:

- Panel to VSD
- VSD to Panel
- FTR to VSD (if IEE 519 filter present and enabled)