	<p style="text-align: center;">ELECTRONICS ENGINEERING (ESG) <u>INSTRUCTIONS</u></p> <p style="text-align: center;">OptiView Microboard 031-03630-001 Field Retrofit Instructions</p>	INSTRUCTION #	035-25093-000
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		PREPARED BY	B.A. Smith
		APPROVED BY	J. Ehrat
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## OVERVIEW

The 031-03630-001 Microboard is the replacement for the 031-02430-000 and 031-02430-001 microboards previously used in the YK OptiView panel with some differences for added reliability and functionality.

The new microboard is the same physical size and uses the same mounting screws as the older board. The same power supply is used with this new microboard, but the power supply wiring harness has been updated for better reliability. The new power supply harness assembly is p/n 571-06765-271 for UL YK OptiView Panels, and 571-06991-271 for CE YK OptiView Panels.

The new 031-03630-001 microboard consists of a base board with a small daughter board mounted on the base board. This daughter board is the SMARC processor board. The two boards are mated in the factory and cannot be replaced separately.

All of the connectors for the sensors, communication ports, display, and keypad have the same connector designations. The jumpers related to the display and thermal flow switches remain the same and should be set to the same positions as the existing 02430 microboard. The SW1 DIP switch settings should be set the same as the SW1 switch positions on the 02430. Position SW1-4 is now used in place of JP6 to determine where the microboard will boot from.

The 02430 BRAM chip, which stored the configurable setpoints, sales data, and Real Time Clock, has been replaced with FeRAM and a separate battery backed up Real Time Clock to maintain the time during power outages. The RTC Battery is a CR2032 button cell Lithium battery which can last over 10 years and is readily available at local stores.


## 031-02430-xxx REPLACEMENT

To replace the 031-02430-xxx microboard:

1. Record the setpoints and configuration settings, and print the Setpoints and Sales Order reports.
2. Retrieve the sales order data using the YMSO utility program. (See Instruction at the end of this document.)
3. Shut down the chiller and then power off the unit following all JCI Safety Requirements.
4. Remove all of the wiring harness plugs from the 02430 microboard, and label any loose communication wires that are currently connected to J2, J13 or J12.
5. Loosen the ground screw that holds the power supply harness green ground wire, and remove the power supply harness.
6. Remove the 10 microboard mounting screws, and remove the 02430 microboard.
7. Set the Jumpers JP2 through JP12 and JP21 through JP25 and SW1 switch on the 03630 to the same positions as those on the 02430 board. A description of these jumpers is found later in this document.
8. Install the new 03630 microboard using the screws previously removed.
9. Connect the power supply harness P2 to J2 on the power supply with the green and yellow ground wire oriented closest to the front of the panel. Attach the ground lug under the ground screw.
10. Connect power supply harness P30 to J30 on the panel wiring harness, J32 to P32 on the panel wiring harness, P1 to J1 on the 03630, and P3 to J3 on the 03630.
11. The VSOP J20 3 pin plug has been replaced by a removable screw terminal plug. The wires will need to be cut from the 02430 P20 plug. Strip the three wires 1/8" and insert them in the new 03630 J20 plug. Note that pin 1 on the 03630 board is opposite of where it was on the 02430 board. It is now on the left side of J20. Connect the white wire to terminal 1 of J20, the red to terminal 2, and the black to terminal 3.
12. If an ACC board is installed, the wires on the 02430 P15 plug will also need to be cut and stripped and inserted into the 03630 J15 COM5A removable screw terminal plug. Connect the red wire to terminal 1, the white wire to terminal 2, and the black wire to terminal 3.
13. If an ACC is not installed when the starter is a VSD, MVVSD, or MVSSS with Modbus communication, connect the red wire to J13-1(+12V), connect the green wire to J13-2 (-), the white wire to J13-3 (+), and the black wire to J13-4 (Gnd).


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- JP3\*** – Display Backlight enables signal level polarity. Jumper must be positioned according to the voltage level required to turn on the Display Backlight.  
**Pins 1-2:** 0VDC – Not Used.  
**Pins 2-3:** +12VDC or +5VDC as determined by position of JP4. SHARP LQ10D367/368 (031-01774-000), SHARP LQ104V1DG81 (031-03441-000), SHARP LQ104V1DG61 (031-02886-000), and LG Semicon LP104V2- W (031-02046-000) displays.
- JP4\*** – Display Backlight enable signal logic levels. Determines the logic levels of the Backlight Enable signal.  
**Pins 1-2:** +12VDC/0VDC – Not Used.  
**Pins 2-3:** +5VDC/0VDC SHARP LQ10D367/368 (031-01774-000), SHARP LQ104V1DG81 (031-03441-000), SHARP LQ104V1DG61 (031-02886-000) and LG Semicon LP104V2-W (031-02046-000) displays.
- JP5\*** – Display Backlight power determines the power supply voltage applied to the Display Backlight Inverter Board.  
**Pins 1-2:** +12VDC. SHARP LQ10D367/368 (031-01774-000), SHARP LQ104V1DG81 (031-03441-000), SHARP LQ104V1DG61 (031-02886-000), and LG Semicon LP104V2- W (031-02046-000) displays.  
**Pins 2-3:** +5VDC. Not Used.
- JP7\*, JP8\*** – Display brightness control technique. Determines whether the display brightness is controlled by a variable resistance or a variable voltage.  
**IN:** Variable voltage (0 to 5.0VDC). SHARP LQ10D367/368 (031-01774-000), SHARP LQ104V1DG81 (031-03441-000), SHARP LQ104V1DG61 (031-02886-000), and LG Semicon LP104V2-W (031-02046-000) displays.  
**OUT:** Variable resistance – Not Used.
- JP9\*** – Not Used.
- JP10\*** – Factory mounted thermal flow sensor – evaporator. Heat Recovery chillers and new production chillers after June 2009.  
**Pins 1-2:** Not Used.  
**Pins 2-3:** Heat Recovery chillers and new production chillers after June 2009.
- JP11\*** – Factory mounted thermal flow sensor – condenser. Heat Recovery chillers and new production chillers after June 2009.  
**Pins 1-2:** Not Used.  
**Pins 2-3:** Heat Recovery chillers and new production chillers after June 2009.
- JP12\*** – Factory mounted thermal flow sensor – heating condenser water. Heat Recovery chillers.  
**Pins 1-2:** Not Used.  
**Pins 2-3:** Heat Recovery chillers.
- JP14** – Applies a 120 Ohm terminating resistor across the COM3 RS-485 port.  
**IN:** Not Used  
**OUT:** No termination applied. This is the normal position.
- JP15** – Applies a pull-up voltage to the COM3 RS-485 + terminal.  
**IN:** Not Used.  
**OUT:** Use this setting. Bias resistor is installed on the I/O board.
- JP16** – Applies a pull-down voltage to the COM2 RS-485 - terminal.  
**IN:** Not Used.  
**OUT:** Use this setting. Bias resistor is installed on the starter board.
- JP18** – Applies a 120 Ohm terminating resistor across the COM2 RS-485 port.  
**IN:** Not Used  
**OUT:** No termination applied. This is the normal position.
- JP19** – Applies a pull-up voltage to the COM2 RS-485 + terminal.  
**IN:** Not Used .  
**OUT:** Use this setting. Bias resistor is installed on the starter board.

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**JP20** – Applies a pull-down voltage to the COM3 RS-485 - terminal.

**IN:** Not Used.

**OUT:** Use this setting. Bias resistor is installed on the I/O board.

**JP21\*** – Factory mounted thermal-type flow sensor – evaporator.

**Pins 1-2:** Not Used.

**Pins 2-3:** Factory mounted evaporator thermal-type flow sensor (new production chillers prior to June 2009) or Leaving Chilled Liquid Temperature Thermistor (chillers equipped with the optional Heat Pump Duty feature).

**JP22\*** – Factory mounted thermal-type flow sensor – condenser.

**Pins 1-2:** Not Used.

**Pins 2-3:** Factory mounted condenser thermal-type flow sensor (new production chillers prior to June 2009).

**JP23\*** – Remote Current Limit setpoint at J22. Configures Analog Input for 0 ~ 10VDC, 2 ~ 10VDC, 0 ~ 20mA, or 4 ~ 20mA.

**OUT:** Allows 0 to 10VDC or 2 to 10VDC input on J22-1.

**Pins 1-2:** Allows a 0 to 20mA or 4 to 20mA input on J22-2.

**Pins 2-3:** Not used.

**JP24\*** – Remote Leaving Chilled Liquid Temp setpoint at J22. Configures Analog Input for 0 ~ 10VDC, 2 ~ 10VDC, 0 ~ 20mA, or 4 ~ 20mA.

**OUT:** Allows 0 to 10VDC or 2 to 10VDC input on J22-3.

**Pins 1-2:** Allows a 0 to 20mA or 4 to 20mA input on J22-4.

**Pins 2-3:** Not used.

**JP25\*** – DC Undervoltage signal for Proximity Probe.

**Pins 1-2:** Correct position for YK

**Pins 2-3:** Not Used

**JP27** – Applies a pull-down voltage to the COM5B RS-485 - terminal.

**IN:** This is the normal position for better noise immunity.

**OUT:** Not Used

**JP28** – Applies a 120 Ohm terminating resistor across the COM5B RS-485 port.

**IN:** Not Used

**OUT:** No termination applied. This is the normal position.

**JP29** – Applies a pull-up voltage to the COM5B RS-485 + terminal.

**IN:** This is the normal position for better noise immunity.

**OUT:** Not Used

#### PROGRAM DIP SWITCHES

**SW1-1** – Refrigerant Selection. Must be set according to the refrigerant type installed in chiller.

**ON** – R-134a

**OFF** – R22

**SW1-2** – Liquid Type. Must be set according to whether the chiller is cooling water or brine solution.

**ON** – Brine. Leaving Chilled setpoint range is 10°F to 70°F.

**OFF** – Water. Leaving Chilled setpoint range 38°F (36°F if Smart Freeze enabled) to 70°F.

**SW1-3** – Diagnostics. Enables or Disables the software diagnostics.

**ON** – Enables diagnostics. Disables normal chiller operation.

**OFF** – Disables diagnostics. Enables normal chiller operation.

**SW1-4** – Boot from SD Card/Flash. (This replaces the function of the JP6 jumper on the 02430 board.)

**ON** – Enables boot from SD card to load a new program.

**OFF** – Boot the program stored in memory.



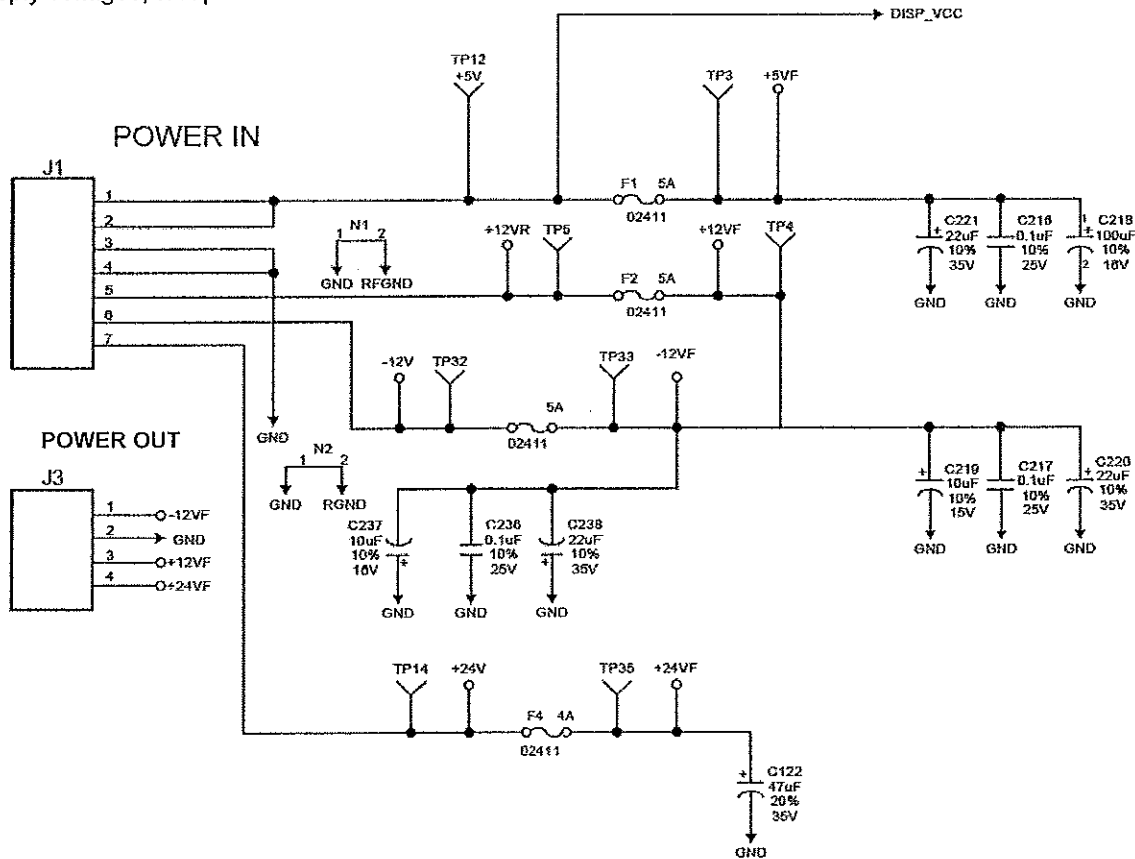
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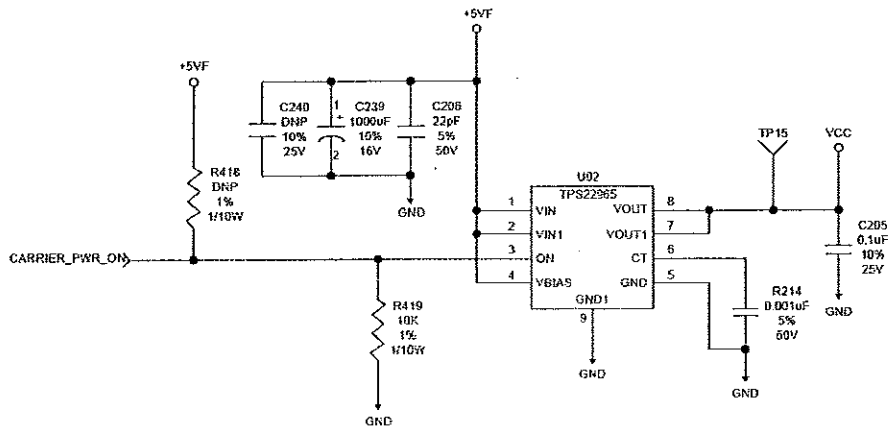
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POWER SUPPLY

There are LED indicators that indicate voltage presence for each of the primary power supply voltages. Four fuses protect the four incoming power supply voltages. There are voltage test points on each side of the fuses to allow in-circuit testing of the fuse either by voltage with power applied or with an ohmmeter when power is off. The following is a table of the power supply voltages, test points and associated fuses.



+5.0V LOAD TO SWITCH BASEBOARD



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The following voltages should be measured with a Digital Volt Meter in reference to Ground at TP1 or TP11.

Voltage	Test Point	Voltage Range	Fuse	LED
+5VDC	TP3	+4.92 to +5.28VDC	F1 (5A)	CR56
+12VDC	TP4	+11.58 to +12.5VDC	F2 (5A)	CR57
-12VDC	TP33	-11.5 to - 12.5VDC	F3 (5A)	CR58
+24VDC	TP35	+22.4 to +26.7VDC	F4 (4A)	CR59
+3.3VDC	TP2	+3.25 to +3.43VDC	n/a	CR62
VCC	TP15	+4.92 to +5.28VDC	n/a	n/a
+5VA	TP10	+4.95 to +5.05VDC	n/a	CR61
Battery	n/a	+2.95 to +3.45VDC	n/a	n/a

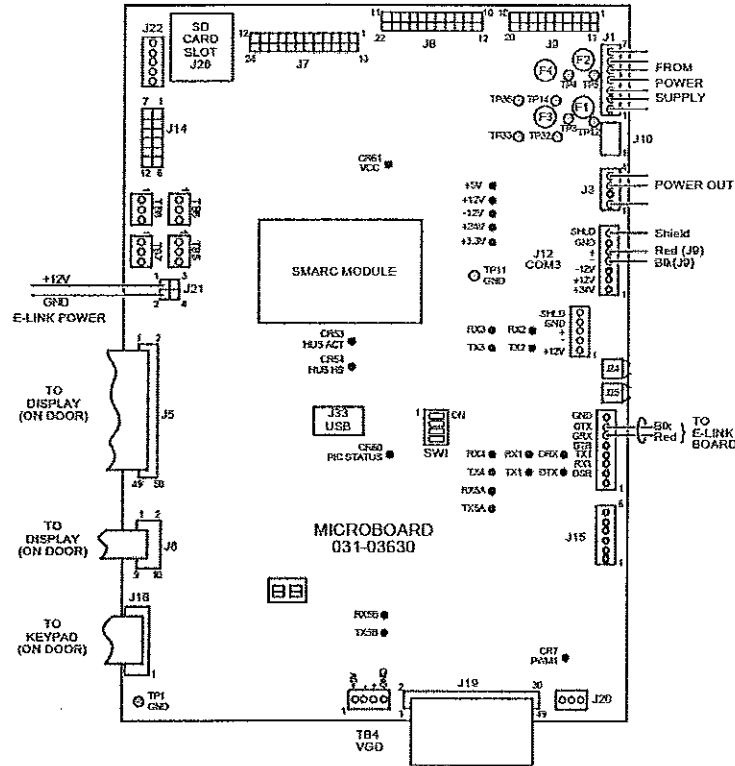


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LED INDICATORS AND TEST POINTS



LEDs

- VCC – Indicates that the +5VDC VCC voltage is present. This voltage is present after the SMARC module has activated the Carrier\_PWR\_On signal. This voltage is created on the 03630 board from the +12VDC.
- +5V – Indicates that the +5VDC from the external power supply is present.
- +12V – Indicates that the +12VDC from the external power supply is present.
- 12V – Indicates that the -12VDC from the external power supply is present.
- +24V – Indicates that the +24VDC from the external power supply is present.
- RX1 – Indicates that Printer Port 1 (J2) is receiving data.
- TX1 – Indicates that Printer Port 1 (J2) is transmitting data.
- RX2 – Indicates that Motor Controller #1 Port 2 (J13) is receiving data.
- TX2 – Indicates that Motor Controller #1 Port 2 (J13) is transmitting data.
- RX3 – Indicates that Expansion I/O Port 3 (J12) is receiving data.
- TX3 – Indicates that Expansion I/O Port 3 (J12) is transmitting data.
- RX4 – Indicates that YorkTalk E-Link Port 4 (J2) is receiving data.
- TX4 – Indicates that YorkTalk E-Link Port 4 (J2) is transmitting data.
- RX5A – Indicates that Port 5A (J15) is receiving data.
- TX5A – Indicates that Port 5A (J15) is transmitting data.
- RX5B – Indicates that VGD Actuator (Future)Port 5B (TB4) is receiving data.
- TX5B – Indicates that Port 5B (TB4) is transmitting data.
- PWM1 – Indicates that the microboard is sending a speed command to the VSOP Drive.
- PIC STATUS – Indicates that the microprocessor is running.
- HUB ACT – Indicates that the USB port is active.
- HUB – Indicates that the USB is in High Speed mode.

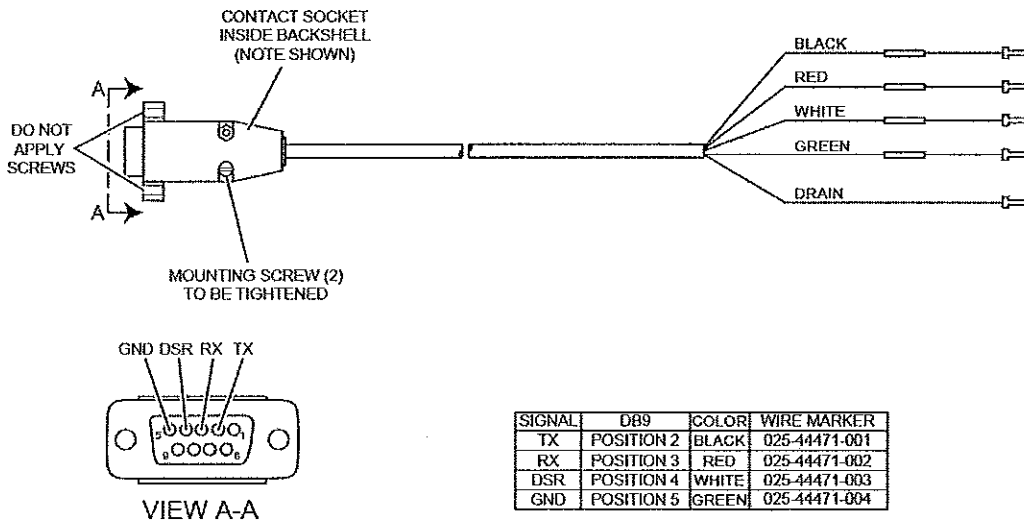
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### SALES ORDER DATA TRANSFER FROM THE 02430 to the 03630

Since you cannot pull the BRAM chip from the 02430 and use it on the 03630, the following procedure will transfer the Sales Order data using a Laptop, serial DB9 cable USB to RS-232 converter, and the YMSO program utility.


1. Install the YMSO program that can be downloaded at: [https://my.jci.com/sites/BE/NALiterature/york-products-service/chiller-service-literature/centrifugals-\(cyk-yb-yg-yd-yk-ykep-ymc2-yst-yt-titan\)/yk-mod-g](https://my.jci.com/sites/BE/NALiterature/york-products-service/chiller-service-literature/centrifugals-(cyk-yb-yg-yd-yk-ykep-ymc2-yst-yt-titan)/yk-mod-g).  
NOTE: Previous versions of YMSO should be removed before installing.
2. Connect the serial cable (375-90490-231) from the PC to the port labeled "COM4B" (J2) on the 02430 board.

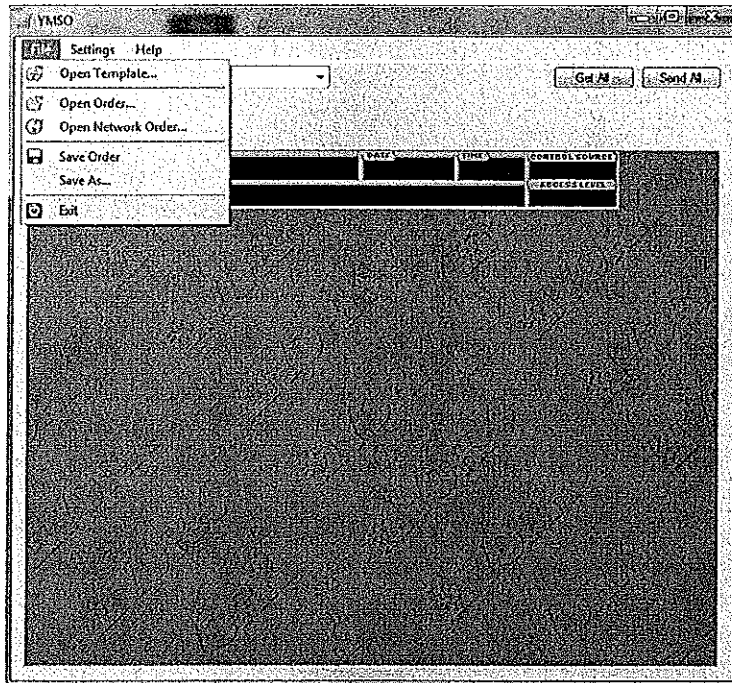
The serial cable may be purchased from Baltimore Parts or an equivalent cable may be purchased locally or made with appropriate locally purchased parts.



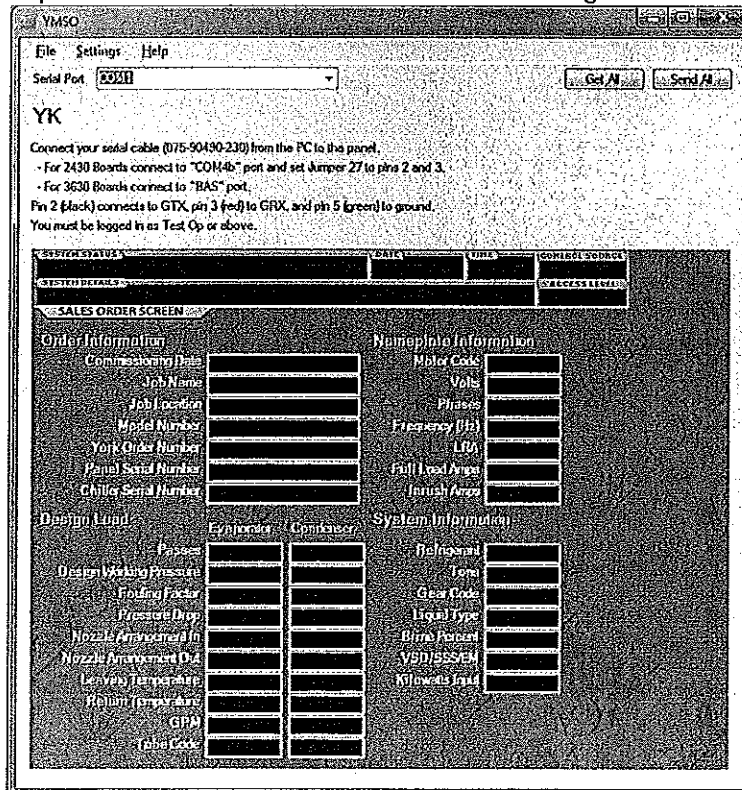
Pin 2 (black) connects to GTX (J2-7), pin 3 (red) to GRX (J2-6), and pin 5 (green) to ground (J2-8). Jumper JP17 on the 02430 microboard should be on pins 2 and 3. The chiller's Motor Drive Type setpoint must be set to EM.


3. Connect the serial cable to the laptop's DB9 port. Use a USB to DB9 serial converter (Edgeport/1 or equivalent) if necessary.
4. Run the YMSO program.
5. Set the Serial Port to match the port the serial cable is connected to on the laptop.

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6. Select Settings and set the Connection Type to Serial OV1.
7. Select File > Open Template and select the YK.xml file. The following screen should display.



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8. Press "Get All" button to retrieve all of the Sales Order data from the 02430 board.
9. Save this file as salesorder.dat.
10. Once the 03630 board is installed and powered, connect the serial cable to the 03630 J2 Port 4B with the following cable connections:  
Pin 2 (black) connects to J2-GTX, pin 3 (red) to J2-GRX, and pin 5 (green) to J2-GND.  
(There is no Jumper to set since Com 4A doesn't exist in the 03630)
11. Log in as Test Op with the Password 0228.  
NOTE: If system reports this as invalid, you will need an Admin Password to log in as Admin, navigate to the Sales Order Screen, and select "No" in response to Finish Panel Setup. Then log back in as Test Op.
12. Select File > Open Order and select the salesorder.dat file previously obtained from the 02430.
13. Press the "Send All" button.