



BY JOHNSON CONTROLS

Service Information

File In/With:

SI0301

New

615

Equipment Affected:

YCAV, YCIV, YVWA and YVAA
VSD Screw Chillers

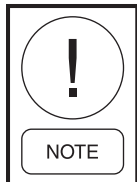
Identifying, Troubleshooting and Calibrating the
PEEK Style Level Sensor

GENERAL

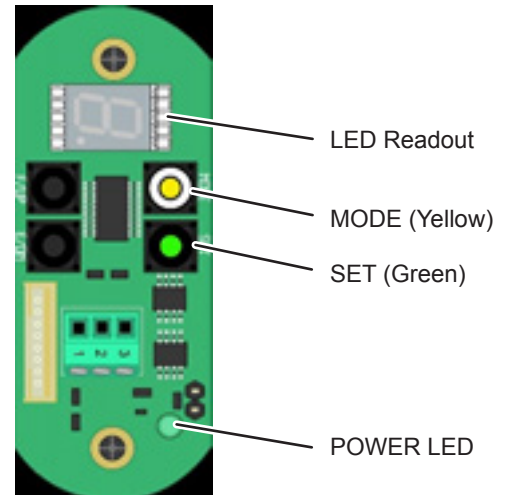
The PEEK style level sensor is pre calibrated from the factory and should **not** require calibration. In the unlikely event you do need to recalibrate, carefully read Sections A and B of this bulletin before attempting a sensor level recalibration.

SECTION A: IDENTIFYING THE PEEK STYLE LEVEL SENSOR

STEP 1 The best way to identify the PEEK style level sensor is to remove the sensor cover and look at the PCB. The PEEK style level sensor has a LED readout on the PCB with a yellow **MODE** button and a green **SET** button.



Your buttons may be all black on some older PEEK sensors, however if you have the LED readout you have a PEEK sensor.



STEP 2 Confirm that you have the correct PEEK level sensor Assembly or Control Head on your unit by referring to the part numbers in *Table 1*.

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.

TABLE 1 - PEEK PART NUMBER INFORMATION

| CHILLER MODEL | YCIV / YCAV | NOTES | YVWA | NOTES | YVAA | NOTES |
|-------------------------------|---------------------------------|-------|--------------------------------|-------|---------------------------------|-------|
| PEEK Level Sensor Description | 12" PEEK (35% Default Level) | | 6" PEEK (50% Default Level) | | 12" PEEK (50% Default Level) | |
| PEEK Assembly P/N (JCI) | 325-43503-001 | | 325-44846-001 | | 325-43503-002 | |
| Innovative Assembly Part No. | CS02C7671-0120 | | CS02C7671-0060 | | CS02C8020-0120 | |
| PEEK Control Header P/N (JCI) | 025-43503-200 | | 025-44846-200 | | 025-43503-201 | |
| Innovative Control Header P/N | 8002C7671-0120 | | 8002C7671-0060 | | 8002C8020-0120 | |

STEP 3 If you do not have one of the above part numbers, you do **not** have a PEEK style level sensor. Your sensor **cannot** be calibrated and should be replaced with the new style PEEK level sensor assembly. **A control head replacement is possible with a PEEK sensor only.** Head replacement is **not** possible with all other level sensors.

SECTION B: TROUBLESHOOTING THE PEEK LEVEL SENSOR

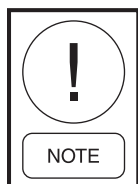
STEP 1 At the microboard, remove the appropriate level sensor output plug and check the DC voltage reading between the 30V pin and the Ground/Drain pin (see unit schematics or *Table 2* below to identify these pins). The output voltage should be approximately 30 VDC (although a range of 24-40 VDC is acceptable). If you do not read within this range, the problem is most likely with the Chiller microboard. Follow appropriate microboard troubleshooting procedures.

TABLE 2 - DC VOLTAGE READINGS BY PIN

| MODEL | SENSOR LOCATION | DC VOLTAGE CHECK | INPUT SIGNAL CHECK |
|--------------|------------------------------------|--------------------|--------------------|
| YCAV YCIV | Flash Tank Level Sensor - System 1 | J21 pins 18 to 17* | J21 pins 6 to 17* |
| | Flash Tank Level Sensor - System 2 | J22 pins 18 to 17* | J22 pins 6 to 17* |
| | Flash Tank Level Sensor - System 3 | J23 pins 18 to 17* | J23 pins 6 to 17* |
| | Flash Tank Level Sensor - System 4 | J24 pins 18 to 17* | J24 pins 6 to 17* |
| YVWA | Condenser Level Sensor - System 1 | J21 pins 18 to 17* | J21 pins 6 to 17* |
| | Condenser Level Sensor - System 2 | J22 pins 18 to 17* | J22 pins 6 to 17* |
| YVAA | Evaporator Level Sensor - System 1 | J23 pins 18 to 7* | J23 pins 6 to 7* |
| | Evaporator Level Sensor - System 2 | J24 pins 18 to 7* | J24 pins 6 to 7* |

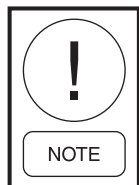
* Pins 7 and 17 are grounds.

STEP 2 Reinsert the plug into the Microboard. Using a digital milliamp meter, check the milliamps between the INPUT pin and the GND/Drain pin (see unit schematics or *Table 2* above to identify these pins). The ammeter should read between 2 and 22 mA.

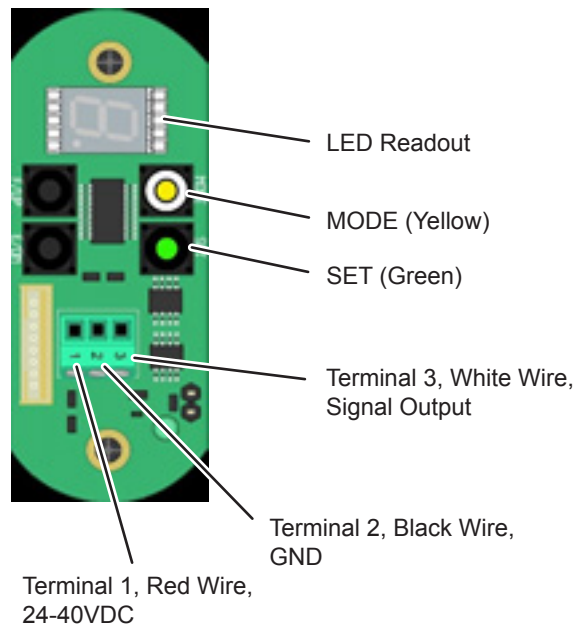


It is highly recommended that you check the mA fuse in your digital ammeter prior to doing this test to ensure your ammeter is functional.

STEP 3 Remove the cover on the level sensor head. **NOTE: There are 3 set screws on the head that can be loosened to allow head rotation for easier access.** Measure DC voltage between pin 1 (red supply VDC wire) and pin 2 (black ground wire). This should match the 24-40VDC voltage found in Step 1. If you do not read a similar voltage, then you have an issue with your cable and/or plugs. Ohm check the cabling back to the control panel.



The colors of the wires leaving the microboard and the colors of the wires landing inside the sensor head are not always aligned (ie., W to W, R to R, B to B). When ohm checking, be certain to follow the schematics. The diagram to the left identifies the terminals within the sensor head.

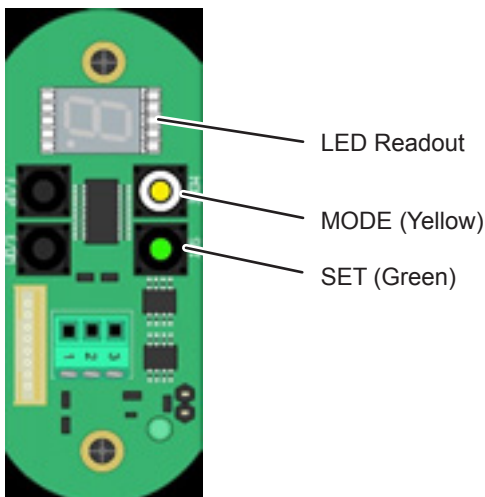


STEP 4 Measure the output signal between pin 3 (white signal output wire) and pin 2 (black ground/shield wire). It should match the milliamp reading found in Step 2. If you do not read between 2 and 22mA milliamps, then you have an issue with your cable and/or plugs. Ohm check the cabling back to the control panel.

SECTION C: CALIBRATING THE PEEK FLASH TANK LEVEL SENSOR ON A YCIV / YCAV UNIT (12" P/N 325-43503-001)

STEP 1 Ensure the refrigerant level in the appropriate system flash tank is at approximately half level in the sight glass. This may require going into the chillers's **Service** mode (Unit Switch Off, Service, 9675, Enter) and manipulating the flash tank feed and drain valves while applying 115V to open the economizer feed valve.

STEP 2 To enter sensor calibration MODE press and hold the Yellow MODE button for 1-2 seconds. The LED display should now display a zero "0". You are now in calibration mode. Press the Yellow MODE button repeatedly until a 5 appears on the LED display.



STEP 3 Carefully push the Green SET button **one time**. **DO NOT** push more than once!

STEP 4 Exit calibration mode by pressing the Yellow MODE button repeatedly until the LED display goes blank. Your sensor is now calibrated to a 35% Flash Tank level.

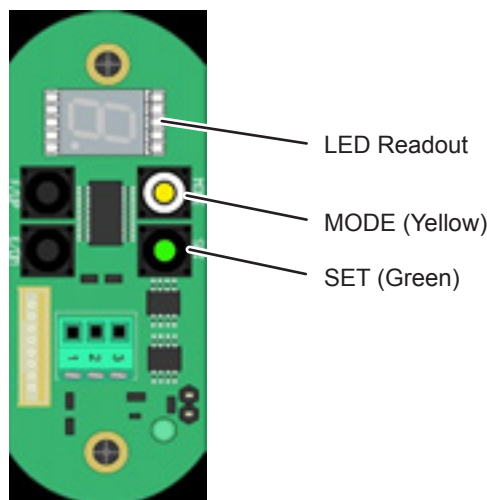
STEP 5 At the chiller panel, the display should now indicate that the Flash Tank level is at 35%.

STEP 6 If the panel display **does not** indicate an approximate 35% level, follow troubleshooting procedures outlined in Sections A and B of this bulletin, then retry the calibration. If the panel display still does not indicate a Flash Tank Level of approximately 35%, then replace the level sensor head (P/N 025-43503-200) only. It is **not** necessary to replace the PEEK style probe.

SECTION D: CALIBRATING THE PEEK CONDENSER LEVEL SENSOR ON A YVWA (6" PN 325-44846-001)

STEP 1 Ensure the refrigerant level in the appropriate condenser sight glass is at approximately half level. This may require going into **Setup Mode** (Unit Switch ON, Program, 4245, Enter) and manipulating the Condenser Level Sensor Setpoint.

STEP 2 To enter sensor calibration MODE, press and hold the Yellow MODE button for 1-2 seconds. The LED should now display a zero "0". You are now in calibration mode. Press the Yellow MODE button repeatedly until a 5 appears on the LED display.



STEP 3 Carefully push the Green SET button **one time**. **DO NOT** push more than once!

STEP 4 Exit calibration mode by pressing the Yellow MODE button repeatedly until the LED display goes blank. Your sensor is now calibrated to a 50% level.

STEP 5 At the chiller panel, the display under System Data, should now indicate that the Condenser level is at 50%.

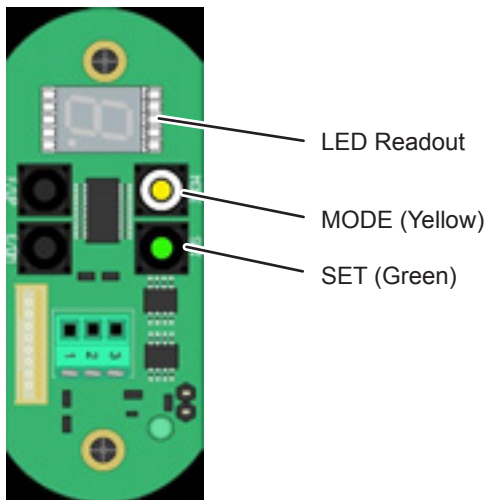
STEP 6 If the panel display **does not** indicate an approximate 50% Condenser Level, follow troubleshooting procedures outlined in Sections A and B of this bulletin, then retry the calibration. If the panel display still does not indicate a Condenser Level of approximately 50%, then replace the level sensor head (P/N 025-44846-200) only. It is **not** necessary to replace the PEEK style probe.

SECTION E: CALIBRATING THE PEEK EVAPORATOR LEVEL SENSOR ON A YVAA (12" P/N 325-43503-002)

NOTE: The 12" level sensor is only found on YVAA with Round tube Condenser Tubes

STEP 1 Ensure the refrigerant level in the appropriate evaporator sight glass is at approximately half level. This may require going into Setup Mode (Unit Switch ON, Program, 4245, Enter) and manipulating the Evaporator Level Sensor setpoint.

STEP 2 To enter sensor calibration MODE, press and hold the Yellow MODE button for 1-2 seconds. The LED should now display a zero "0". You are now in calibration mode. Press the Yellow MODE button repeatedly until a 5 appears on the LED display.



STEP 3 Carefully push the Green SET button **one time**. **DO NOT** push more than once!

STEP 4 Exit calibration mode by pressing the Yellow MODE button repeatedly until the LED display goes blank. Your sensor is now calibrated to a 50% level.

STEP 5 At the chiller panel, the display should now indicate that the Evaporator level is at 50%.

STEP 6 If the panel display **does not** indicate an approximate 50% level, follow troubleshooting procedures outlined in Sections A and B of this bulletin, then retry the calibration. If the panel display still does not indicate an Evaporator Level of approximately 50%, then replace the level sensor head (P/N 025-43503-201) only. It is **not** necessary to replace the PEEK style probe.

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