TRAULSEN TECHNICAL BULLETIN

PRODUCT SERVICE DEPARTMENT **FORT WORTH, TX 76106**

TROUBLESHOOTING TRAULSEN INTELA-TRAUL™ SENSORS

Introduction:

To inform the field of basic technical information & troubleshooting techniques for sensors used by the Traulsen Intela-Traul control system.

Sensor Function:

- ***Cabinet Sensor*** *(Green):* The Cabinet Sensor reads the temperature of the return air to the evaporator. The control head then either cycles the compressor on or off depending on the temperature set points and return air temperature.

- ***Coil Sensor*** *(Blue):* The Coil Sensor reads the evaporator coil core temperature. The control head uses the evaporator coil core temperature to terminate the defrost cycle at 45ºF. In addition, the control head uses the evaporator coil core temperature to control evaporator fan delay.

- ***Liquid Line Sensor*** *(Yellow):* The Liquid Line Sensor reads the temperature of the liquid line. The control head uses the liquid line temperature to trigger a clean coil alarm at 140ºF & cycles the compressor off at a high temp limit of 160ºF liquid line temperature. Note: G-Series equipment does not have alarming capabilities.

Basic Troubleshooting:

- When checking a sensor value through the control head (see All Series – Quick Reference Guide for instructions on accessing the control head) a reading of **-40ºF** indicates an **open** in the sensor or sensor circuit and a reading of **266ºF** indicates a **short** in the sensor or sensor circuit. See Table1 for control head sensor parameters. Any inaccuracy observed in the sensor display temp outside of -40ºF or 266ºF will require the sensor be tested using the following method.

- All sensors (cabinet, coil, liquid line) can be tested for accuracy using a Volt Ohm Meter. An ice & water solution consisting of mostly ice with just enough water to submerse the sensor should be used to create a controlled environment of approximately 32ºF. Keep in mind this solution needs to be agitated or stirred to maintain a consistent temperature throughout and the solution temperature should be verified with an independent thermometer. At **32ºF** all sensors should return an Ohm reading of **32,000 Ohms +/- 10%.** See Table2 below for temperature & Ohms relationship of all Intela-Traul sensors.

Sensor	Parameter
Cabinet Air	Cb
Evaporator Coil	EL
Liquid Line	LL

Table1

TEMP (F)	R (OHMS)	TEMP (C)
25	39.9K Ω	-3.9
30	34.6K Ω	-1.1
32	32.7K Ω	0.0
35	30.1K Ω	1.7
40	26.1K Ω	4.4

Table2

Quick Reference Table:

Item	Details
Cabinet Sensor	• Green • Control parameter Cb • Reads return air • Compressor cycles off of cabinet sensor value
Coil Sensor	• Blue • Control parameter EL • Reads evaporator coil temperature • Terminates defrost @ 45^{0}F • Fan delay for defrost recovery
Liquid Line Sensor	• Yellow • Control parameter LL • Reads liquid line temperature • Triggers clean filter alarm @ 140^{0}F (R&A Series Only) • Compressor protection; Cycles compressor off @ 160^{0}F liquid line temperature
Sensor Open	• -40^{0}F
Sensor Short	• 266^{0}F
Sensor Test	• 32K Ω @ 32^{0}F
Alarm Codes (R&A Series)	• CAbSnr or Snr1 - Open or shorted cabinet sensor • CoLSnr or Snr2 - Open or shorted evaporator coil sensor • LL Snr or Snr3 - Open or shorted liquid line sensor

Table3

Advanced Trouble Shooting Tips:

***Note: There are a variety of reasons for the symptoms listed in Table4. This bulletin is intended to address the most common reasons associated with the Intela-Traul sensors only. Further troubleshooting outside the scope of this document may be required.**

Symptom	Possible Causes
Cabinet temperature display reads lower temperature than actual cabinet temperature	• Evaporator coil iced over • Defective cabinet sensor • Cabinet sensor not in proper location
Cabinet temperature display reads higher temperature than actual cabinet temperature	• Defective cabinet sensor • Air flow obstruction • Cabinet sensor not in proper location
Evaporator coil iced over	• Evaporator coil sensor is out of tolerance and terminating defrost too soon • Cabinet air sensor is out of tolerance causing cabinet air temp to run too low
Display temperature reads -40^{0}F	• Cabinet sensor is open • Cabinet sensor is disconnected • Cabinet sensor wire harness has an open • Cabinet sensor pin connector is loose or has a weak connection
Compressor cycles off before cabinet temperature is satisfied	• Liquid line sensor is out of tolerance and return to high of a temperature causing the compressor to cycle off • Liquid line is reaching 160^{0}F and cycling the compressor off on high temp limit

Table 4

Contact Traulsen Technical Service:

If further assistance is needed please contact Traulsen Technical Service at 800-825-8220, Monday thru Friday from 7:30am – 11:30am CST & 12:30pm – 4:30pm CST.