

# DIAGNOSTICS

## EcoNet and Flash Codes

### Inverter Product

The error codes below will be displayed at the EcoNet Control Center under Service window / Current Faults or in the Fault History and will be time & date stamped. VSODC (Variable Speed Outdoor Unit Control – EcoNet control board) fault code is what will be displayed on the VSODC

| EcoNet error code at Control Center                 | VSODU Fault Code | Description  | Possible Resolution(s)   | EV2 Drive LED Code  |
|---|------------------|--|--|---|
| A900_O Or A930_O<br>Inverter Fault – Identity Fault | 8                | <ul style="list-style-type: none"> <li>The inverter drive itself is not programmed and is not field serviceable.</li> <li>This fault should not occur in the field.</li> </ul> | <ul style="list-style-type: none"> <li>Return Drive to Distributor</li> </ul>  |   |
| T901_O Inverter Fault –<br>Compressor Overcurrent   | 15               | <ul style="list-style-type: none"> <li>Compressor is pulling more current than allowed in order to start</li> </ul>  | <ul style="list-style-type: none"> <li>System Grossly Overcharged</li> <li>Compressor full of liquid/oil</li> <li>Compressor Shorted to Ground – Check resistance of windings to ground.</li> <li>Tight Compressor</li> </ul>  | <p>Yellow 1 or 3 Flashes</p> <p>Or</p> <p>Red 4 Flashes</p> |
| T902 Inverter Fault –<br>Envelope Protection        | 31               | <ul style="list-style-type: none"> <li>Compressor current outside of predetermined envelope for RPM's</li> </ul>   | <ul style="list-style-type: none"> <li>Will display 31 at VSODU at time of fault – Will return to operation after time delay</li> <li>Must occur 15 times in a 24 hour period to be displayed in control center fault history.</li> <li>Verify refrigerant charge, often related to overcharge or high condensing pressures.</li> <li>Flooded Start</li> <li>Verify Airflow</li> </ul> |   |
| T903_O Inverter Fault –<br>PFC Overcurrent          | 15               | <ul style="list-style-type: none"> <li>PFC (Power Factor Correction) module is detecting high current internally</li> </ul>  | <ul style="list-style-type: none"> <li>Check Choke Connections – Replace Choke if it looks burnt.</li> <li>If Choke doesn't work, check drive</li> </ul>   |   |

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| T905_O Inverter Fault – DC Bus Undervoltage   | 15 | <ul style="list-style-type: none"> <li>• DC Bus voltage has dropped below acceptable voltage</li> <li>• DC Bus Voltage &lt;175 VDC</li> </ul>                                   | <ul style="list-style-type: none"> <li>• Incoming Voltage should be greater than 187 VAC.</li> <li>• Fault will reset when voltage is returned. Early VSODU firmware (Before VSODU Rev 57) may not properly reset this fault. Update VSODU firmware to current revision.</li> <li>• Can occur with power flicker due to storms, will reset when voltage returns after 5 minute delay.</li> <li>• Check Incoming Line Voltage to Drive.</li> <li>• Drive will reset after fault first two times. If unit locks out on third fault, it will reset in 30 minutes. Countdown timer on EcoNet will display "Locked"</li> </ul> | Yellow 8 Flashes       |
| A906_O Inverter Fault – AC Input Overvoltage  | 28 | <ul style="list-style-type: none"> <li>• Incoming Voltage &gt;253 VAC</li> </ul>  | <ul style="list-style-type: none"> <li>• Verify Incoming voltage to Drive by measuring voltage at L1 to L2</li> <li>• Contact Utility if voltage is greater than 253 VAC for a solution.</li> </ul>   | Yellow 10 Flashes      |
| A907_O Inverter Fault – AC Input Undervoltage | 27 | <ul style="list-style-type: none"> <li>• Incoming voltage &lt;187 VAC</li> </ul>  | <ul style="list-style-type: none"> <li>• Verify Incoming voltage to Drive by measuring voltage at L1 to L2 on drive.</li> <li>• Voltage must be &lt;187 VAC.</li> <li>• Could be caused by dirty power.</li> </ul>  | Yellow 9 Flashes       |
| T908_O Inverter Fault – PIM Over-temp         | 15 | <ul style="list-style-type: none"> <li>• Indicates the Power Inverter Module on the drive is overheated.</li> <li>• May stop compressor, or fold back compressor RPM</li> </ul> | <ul style="list-style-type: none"> <li>• Check Outdoor fan operation</li> <li>• Check Condenser coil for cleanliness</li> <li>• Check Drive Heat Sink.</li> <li>• Make sure unit clearances are correct.</li> </ul>   | Yellow 4 or 18 Flashes |

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|---|----|--|--|------------------------|
| T909_O Inverter Fault – PFC Over-temp       | 15 | <ul style="list-style-type: none"> <li>Indicates the Power Factor Correction circuit is overheated.</li> <li>May stop or fold back compressor RPM</li> </ul> | <ul style="list-style-type: none"> <li>Check Outdoor fan operation</li> <li>Check Condenser coil for cleanliness</li> <li>Check Drive Heat Sink.</li> <li>Make sure unit clearances are correct.</li> </ul>  | Yellow 5 or 19 Flashes |
| A910_O Inverter Fault – Lost Rotor Position | 15 | <ul style="list-style-type: none"> <li>Compressor speed not matching speed command from control</li> </ul>   | <ul style="list-style-type: none"> <li>Verify Compressor Connections at U, V, W and Molded plug</li> <li>Verify order/wiring at U, V, W.</li> <li>Check for Equal Resistance on compressor windings</li> <li>System Grossly Overcharged</li> <li>Compressor Tight or Locked</li> </ul> | Yellow 2 Flashes       |
| T911_O Inverter Fault – Current Imbalance   | 16 | <ul style="list-style-type: none"> <li>Compressor Current Imbalance</li> </ul>   | <ul style="list-style-type: none"> <li>Verify Compressor Connections at U, V, W and Molded plug</li> <li>Check Compressor Windings for significant differences in resistance as they should be equal.</li> </ul>   | Red 14 Flashes         |
| A912_O Inverter Fault – Micro Fault         | 16 | <ul style="list-style-type: none"> <li>Micro on Drive faulted</li> </ul>   | <ul style="list-style-type: none"> <li>Hard Reset on Drive</li> <li>If Hard Reset fails, replace Drive</li> </ul>  | Red 13 Flashes         |
| A913_O Inverter Fault - PIM Sensor Open     | 15 | <ul style="list-style-type: none"> <li>Power Inverter Module temperature sensor is open</li> </ul>   | <ul style="list-style-type: none"> <li>Hard Reset on Drive</li> <li>If fault persists, Replace Drive</li> </ul>  | Red 2 Flashes          |
| T914_O Inverter Fault – DC Voltage Low      | 15 | <ul style="list-style-type: none"> <li>DC Bus Voltage is running low</li> </ul>  | <ul style="list-style-type: none"> <li>Check Incoming Line Voltage to drive at L1 to L2.</li> <li>Voltage on DC Bus is generally 300 to 380 VDC.</li> <li>Check choke connections.</li> <li>PIM on Drive Defective</li> </ul>  | Yellow 17 Flashes      |

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|---|-----------|---|--|-------------------------|
| <p>T916_O Inverter Fault – Discharge Temp</p>       | <p>16</p> | <ul style="list-style-type: none"> <li>Compressor Discharge Temperature has exceed 235°F degrees for 30 seconds, and compressor may fold back until temperature is below 200°F</li> </ul> | <ul style="list-style-type: none"> <li>Verify Operating Superheat and Charge</li> <li>Check Reversing Valve for leakage from Discharge to Suction</li> <li>Check DLT Sensor Connection to Drive</li> <li>Verify DLT sensor resistance</li> <li>Should trip on T961_O first.</li> </ul> | <p>Yellow 6 Flashes</p> |
| <p>A919_O Inverter Fault – PFC/DSP Comm Fault</p>   | <p>15</p> | <ul style="list-style-type: none"> <li>Drive lost internal communication between PFC and DSP</li> </ul>   | <ul style="list-style-type: none"> <li>Hard Reset of Drive</li> <li>If fault persists - replace drive</li> </ul>   | <p>Red 9 Flashes</p>    |
| <p>A920_O Inverter Fault – COM/DSP Comm Fault</p>   | <p>16</p> | <ul style="list-style-type: none"> <li>Drive lost internal communication between PFC and DSP</li> </ul>   | <ul style="list-style-type: none"> <li>Hard Reset of Drive</li> <li>If fault persists - replace drive</li> </ul>   | <p>Red 8 Flashes</p>    |
| <p>A921_O Inverter Fault – PFC Temp Sensor Open</p> | <p>16</p> | <ul style="list-style-type: none"> <li>Sensor to PFC Is either low or open</li> </ul>   | <ul style="list-style-type: none"> <li>Verify proper airflow over the heatsink of the drive. Remove any obstructions.</li> <li>If the problem still persists after a hard reset of the drive, replace the drive.</li> </ul>  | <p>Red 1 Flash</p>      |

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|---|------|---|---|-------------------|
| T922_O Inverter Fault – PIM Temp Foldback       | 15   | <ul style="list-style-type: none"> <li>• Drive has folded back as a result of PFC temperature</li> </ul>                          | <ul style="list-style-type: none"> <li>• Verify proper airflow over the heatsink of the drive. Remove any obstructions.</li> <li>• Ensure OD fan is operating and coil is clean</li> <li>• Check OD unit clearances.</li> </ul> | Yellow 21 Flashes |
| T923_O High Refrigerant Pressure                | L 29 | <ul style="list-style-type: none"> <li>• System High pressure switch has opened.</li> </ul>                                       | <ul style="list-style-type: none"> <li>• Check Refrigerant Charge</li> <li>• Check connection of HPS to Drive</li> <li>• Check fan at condenser</li> <li>• Verify unit clearances</li> </ul>                                    | Yellow 20 Flashes |
| A923_O High Refrigerant Pressure                | L 29 | <ul style="list-style-type: none"> <li>• System High pressure switch has opened 3 times and is locked out for one hour</li> </ul> | <ul style="list-style-type: none"> <li>• Check Refrigerant Charge</li> <li>• Check connection of HPS to Drive</li> <li>• Check fan at condenser</li> <li>• Verify unit clearances</li> </ul>                                    | Yellow 20 Flashes |
| A925_O Inverter Fault – Compressor Model Unkown | 16   | <ul style="list-style-type: none"> <li>• Drive size and model data card do not match</li> </ul>                                   | <ul style="list-style-type: none"> <li>• Incorrect Memory Card has been installed</li> <li>• Incorrect Inverter Drive has been installed</li> </ul>   | Yellow 22 Flashes |
| A927_O Inverter Fault – DLT sensor Open         | 16   | <ul style="list-style-type: none"> <li>• Discharge Line Temperature Sensor is open</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Check DLT sensor connection to drive</li> <li>• Check DLT sensor resistance to temp</li> </ul>   | Red 3 Flashes     |
| A928_O Locked                                   | 16   | <ul style="list-style-type: none"> <li>• This is an indication that the system is locked out and needs to be reset</li> </ul>     | <ul style="list-style-type: none"> <li>• Check fault history for cause of lockout condition at control center</li> <li>• Address fault as indicated in history</li> </ul>   |                   |

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|  |           |  |   |                       |
|--|-----------|--|---|-----------------------|
| <p>A929_O 240VAC Missing or Comm Failure<br/><i>(Formerly Comm Failure)</i></p>                            | <p>16</p> | <ul style="list-style-type: none"> <li>• Drive is either not powered or there is a problem with the mod bus cable between VSODU and Drive</li> </ul>   | <ul style="list-style-type: none"> <li>• Verify Line voltage to unit is on and is measured by reading line voltage into drive at L1-L2 (Black to Yellow in bottom left corner of drive)</li> <li>• Check Modbus cable between VSODU and Drive. Closely Examine pins in connectors.</li> <li>• Is choke connected or open?</li> <li>• Hard Reset of Drive</li> </ul> | <p>Red 11 Flashes</p> |
| <p>A950_O Configuration Data Restore Failure</p>   |           | <ul style="list-style-type: none"> <li>• Firmware in VSODU is corrupt</li> </ul>   | <ul style="list-style-type: none"> <li>• Replace VSODU</li> </ul>   |                       |
| <p>A951_O Memory Card Data Write Failure</p>   | <p>d1</p> | <ul style="list-style-type: none"> <li>• VSODU is unable to write data to memory card</li> </ul>   | <ul style="list-style-type: none"> <li>• Possible Damage to solder joints on back of memory card socket on VSODU</li> <li>• Replace VSODU</li> <li>• Replace Memory Card also if VSODU does not resolve.</li> </ul>   |                       |
| <p>T952_O Outside Temperature Thermistor Failure</p>   | <p>84</p> | <ul style="list-style-type: none"> <li>• Outdoor Temperature Thermistor is either Open, Shorted or Low</li> </ul>  | <ul style="list-style-type: none"> <li>• Check connection at VSODU</li> <li>• Verify leads to sensor are not pinched, or damaged</li> <li>• Check sensor resistance/temp</li> </ul>   |                       |
| <p>A953_O Coil Temperature Thermistor Failure<br/><i>(Formerly called Evap Temperature Thermistor)</i></p> | <p>83</p> | <ul style="list-style-type: none"> <li>• Coil Temperature Thermistor is either Open, Shorted or Low</li> <li>• Unit will run in cooling mode, but will resort to time/temperature defrost in heating mode</li> </ul> | <ul style="list-style-type: none"> <li>• Check connection at VSODU</li> <li>• Verify leads to sensor are not pinched, or damaged</li> <li>• Check sensor resistance/temp</li> </ul>   |                       |

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|--|------|--|--|--|
| A954_O Suction Temperature Thermistor Failure    | 35   | <ul style="list-style-type: none"> <li>Suction Thermistor is either Open, Shorted, or Low</li> <li>Unit will run in cooling mode but will not run in heating mode</li> </ul> | <ul style="list-style-type: none"> <li>Check connection at VSODU</li> <li>Verify leads to sensor are not pinched, or damaged</li> <li>Check sensor resistance/temp</li> </ul>  |  |
| T955_O Compressor Temperature Thermistor Failure | 42   | <ul style="list-style-type: none"> <li>Sump Thermistor is either Open, Shorted, or Low</li> <li>Stator heat will not operate</li> </ul>                                      | <ul style="list-style-type: none"> <li>Check connection at VSODU</li> <li>Verify leads to sensor are not pinched, or damaged</li> <li>Check sensor resistance/temp</li> </ul>  |  |
| A956_O Suction Pressure Sensor Failure           | 36   | <ul style="list-style-type: none"> <li>Suction Transducer is either, shorted, grounded or open or outside of acceptable range</li> </ul>                                     | <ul style="list-style-type: none"> <li>Check Transducer using formula</li> <li><math>PSIA = 375 * (DCV_{out} / DCV_{in}) - 22.8</math></li> <li><math>PSIG = PSIA - 14.7</math></li> <li>Verify Connections at VSODU and Transducer</li> </ul> |  |
| T957_O Low Refrigerant Pressure                  | L 21 | <ul style="list-style-type: none"> <li>Pressure at Transducer has fallen below settings.</li> <li>50 PSIG for Cooling and 15 PSIG for Heating modes</li> </ul>               | <ul style="list-style-type: none"> <li>Check Refrigerant Charge</li> <li>Check for Restrictions in liquid or suction lines, drier, strainers etc.</li> <li>Check airflow and load at evaporator</li> </ul>                                     |  |
| A957_O Low Refrigerant Pressure                  | L 21 | <ul style="list-style-type: none"> <li>System has tripped the low pressure threshold 3 times in one call.</li> <li>Unit will be locked out for one hour</li> </ul>           | <ul style="list-style-type: none"> <li>Check Refrigerant Charge</li> <li>Check for Restrictions in liquid or suction lines, drier, strainers etc.</li> <li>Check airflow and load at evaporator</li> </ul>                                     |  |

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|   |                              |   |  |                         |
|---|------------------------------|---|--|-------------------------|
| <p>T959_O Compressor Heater On (Normal Operation)</p> | <p>Flashing<br/><b>H</b></p> | <ul style="list-style-type: none"> <li>Indicated only at control center</li> </ul>  | <ul style="list-style-type: none"> <li>Often times this is a result of short cycling due to envelope protection or pressure switch trips.</li> <li>Usually related to overcharge conditions</li> <li>Compressor Sensor not in correct location or not making good surface contact with compressor.</li> <li>Only Occurs on Firmware version 42 and Earlier. – Install new VSODU</li> </ul> |                         |
| <p>T960_O Compressor Lube Protection</p>              |                              | <ul style="list-style-type: none"> <li>Compressor Temperature fell below saturated refrigerant temperature indicating liquid is returning to compressor.</li> </ul> | <ul style="list-style-type: none"> <li>Check refrigerant charge</li> <li>Can happen in extreme cold temperatures when compressor slows down from overdrive</li> <li>Verify sump sensor is firmly mounted on compressor</li> <li>Compressor speed will fold back or be limited unit sump temperature is 10 degrees above saturated suction temperature.</li> </ul>                          |                         |
| <p>T961_O Compressor Discharge Temperature High</p>   |                              | <ul style="list-style-type: none"> <li>Folding back due to high discharge temperature</li> </ul>  | <ul style="list-style-type: none"> <li>When Discharge temperature exceeds <b>225°F</b>, Compressor will slow down to bring discharge temperature down below 200°F.</li> <li>Check system superheat and charge</li> <li>Verify reversing valve is not leaking from discharge to suction.</li> </ul>   | <p>Yellow 6 Flashes</p> |



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|--|----|--|---|--|
| A962_O or A970_O<br>Inverter/Compressor Mismatch | 16 | <ul style="list-style-type: none"><li>• Memory card does not match the compressor and drive installed in the equipment</li></ul> | <ul style="list-style-type: none"><li>• Likely an incorrect component such as a drive was installed in unit. Check current parts list to make sure correct drive is used.</li></ul> |  |
|--|----|--|---|--|

### Troubleshooting Notes:

If reversing valve will not shift to heating mode, check fuse on VSODU in addition to solenoid and wiring to reversing valve.

If compressor RPM's are not as expected, check LED on drive to see if it is folding back as a result of an issue.

Many faults can be attributed to system overcharge. Charge in system is critical.