

Air/water inverter heat pumps with axial fans

## Manual Troubleshooting

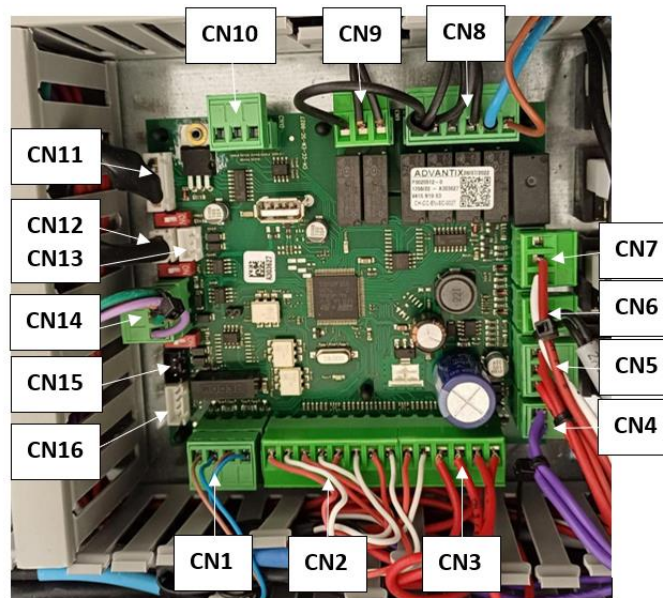
### Models

i-32V5 04	i-32V5 14
i-32V5 06	i-32V5 14T
i-32V5 06A	i-32V5 14TA
i-32V5 08A	i-32V5 16, i-32V5 SL16
i-32V5 08, i-32V5 SL08	i-32V5 16T, i-32V5 SL16T
i-32V5 10	i-32V5 16TA
i-32V5 10T	i-32V5 18
i-32V5 10TA	i-32V5 18T
i-32V5 12, i-32V5 SL12	i-32V5 18TA
i-32V5 12T, i-32V5 SL12T	
i-32V5 12TA	



00	16-10-2024	MS	AA	First issue
Rev	Date	Drafted	Approved	Notes
Catalogue				Series
MTR01020120000_00				i-32V5 TROUBLESHOOTING FOR OEM

## CONNECTIONS CONTROL BOARD – TERMINAL BOARD – ON-BOARD MACHINE



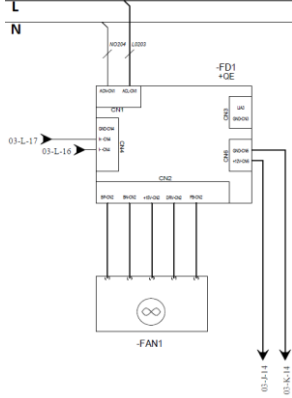
CN1-1		LP1 (Low Pressure Transducer)		CN1-2
CN1-3		HP1 (High Pressure Transducer)		CN1-4
CN2-1		IN1 (H2O Probe Input)		CN2-2
CN2-3		OUT1 (H2O Probe Output)		CN2-4
CN2-5		ST1 (Compressor Suction Probe)		CN2-6
CN2-7		DT1 (Compressor Exhaust Probe)		CN2-8
CN3-1		EXT1 (External Air Probe)		CN3-2
CN3-3	X-17.1	SAN1 (ACS probe) installer charge	X-17.2	CN3-3
CN3-4	X-19.1	IMP1 (Remote System Probe) Installer Load	X-19.2	CN3-4
CN3-5	X-20.1	SGready2 (DI9 Digital Input) Installer Load	X-20.2	CN3-5
CN4-1	12VAC	12Vac TRANSFORMER		
CN4-2	0VAC	0Vac TRANSFORMER		

## i-32V5 TROUBLESHOOTING

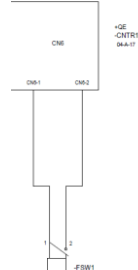
CN5-1	X-15.2	Q2 (REMOTE ON-OFF)	X-15.1	CN5-2
CN5-3	X-16.1	-	X-16.2	CN5-1
CN6-1	FSW1 (FLOW SWITCH)	CN6-2		
CN8-1	R1 (CRANKCASE RESISTANCE)	TBN-1		
CN8-2	4WV1	TBN-1		
CN8-3	X-6.1	-	X-6.2	TBN-1
CN8-4	X-9.1	OPTIONAL, R2	X-9.2	TBN-1
CN8-5	X-10.1	OPTIONAL, R3	X-10.2	TBN-1
CN8-6	TBL-1			
CN9-1	X-11.1	-	X-11.2	TBN-1
CN9-3	TBL-1	-		
CN10-1	P1 SIGNAL, PIN: -			
CN10-2	P1 SIGNAL, PIN: +			
CN11	EEV1 (EXPANSION VALVE)			
CN13	OPTIONAL (EXPANSION MODULE)			
CN14-1	X-4.1			
CN14-2	X-5.1			
CN14-3	X-5.2			
CN15-2	OPT1, PIN: T/R-			
CN15-3	OPT1, PIN: T/R+			
CN16	DISPLAY			



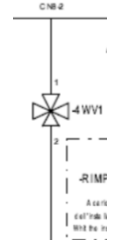
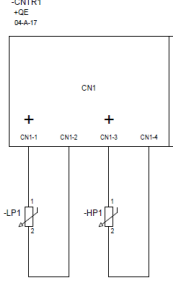
**TROUBLESHOOTING**

Code	Description	Block	Cause	What to check	What to do
E00	Remote ON/OFF	MACHINE	Digital input enabled as unbridged remote ON/OFF.	Verify that the H47=2 parameter and that the H75=0 polarity	Close digital input (jumper) terminals X-15.1, X-15.2
E001	High pressure alarm	MACHINE	<p>The pressure transducer detects a pressure higher than "high pressure set" (41.5 bar).</p> <p>It retracts when the pressure drops below 32.5 bar.</p> <p>If the alarm occurs more than 3 times per hour, the reset becomes manual.</p>	<ul style="list-style-type: none"> <li>Check that the reading is correct with a pressure gauge placed on the high-pressure charging connection</li> <li>If the alarm is in chiller mode: check that there is no air circulation that would increase the inlet temperature to the coil beyond the permitted limits</li> <li>If the alarm is in chiller mode, check that the changeover coil is not obstructed</li> <li>If the alarm occurs in heating mode, check the operation and fixing of the EEV thermostatic valve</li> </ul>	<ul style="list-style-type: none"> <li>Replace the EEV Coil (CN11 of the CNT1 control), if the alarm recurs replace the EEV valve body</li> <li>Check if the fan operates correctly.</li> <li>If the fan is not functional, check for 230 Vac on CN1 of the FD1/FD2 board. Check the correct connection between CN2 and fan</li> </ul>  <ul style="list-style-type: none"> <li>If the wiring is damaged replace with a new one</li> <li>If the wiring is correct, replace the fan</li> </ul>
E002	Low pressure alarm	MACHINE	<p>The pressure transducer detects a pressure lower than "low pressure set".</p> <p>Low Pressure Cooling=3.5bar Set</p> <p>Low pressure set in heating = 1.3bar.</p> <p>It retracts when the pressure rises above 5.5 bar in heating and 3.3 bar in heating.</p> <p>If the alarm occurs more than 3 times per hour, the reset becomes manual.</p>	<ul style="list-style-type: none"> <li>Check for gas leaks in the refrigerant circuit (leakage detector, ...)</li> <li>Verify that the low pressure transducer reading is correct by placing a pressure gauge on the low pressure charge port</li> <li>If the alarm shows up in cooling mode, check that the EEV valve is working properly</li> <li>Check the fixing and operation of the EEV thermostatic valve, physically verifying that the change in the valve steps displayed on the scada corresponds to an actual movement of the valve</li> </ul>	<ul style="list-style-type: none"> <li>If leaks have been detected: Recover the remaining refrigerant, repair the leak and restore the charge by checking the data in the technical label</li> <li>If the gauge reading does not match that given by the low pressure transducer, replace the transducer</li> <li>If the EEV valve malfunction has occurred, replace the coil. If the error persists, replace the valve body</li> <li>Make sure that the valve tube is not plugged by placing the magnet on the valve and checking the effect it has on the E002 error. If the error persists, the hose is plugged. If the error disappears, replace the EEV coil</li> </ul>
E005	Frost alarm	MACHINE	If the supply water probe (ST2) has a value lower than A08 (default 3°C).	<ul style="list-style-type: none"> <li>The temperature probe is correctly inserted into the outlet water sump</li> </ul>	<ul style="list-style-type: none"> <li>If the probe is not properly inserted into the thermowell, correct</li> </ul>

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			<p>This alarm is manual reset.</p> <p>In cooling mode the alarm is immediate while in heating mode it is active after 2 min. The alarm resets when the temperature returns to a value above 3°C</p>	<ul style="list-style-type: none"><li>Check the temperature at the delivery probe with a reference thermometer</li></ul>	<ul style="list-style-type: none"><li>If the temperature measured by the reference thermometer is different from the temperature measured by the supply probe, the probe is defective; Replace</li></ul>										
E006	Flow alarm	MACHINE	<p>If the flow switch diagnoses the lack of flow for a consecutive time of 10 seconds.</p> <p>If the alarm occurs more than 3 times per hour, the reset becomes manual.</p> <p>In the event of a flow error, the pump goes to the post-pumping phase (lasting P02 default 2 minutes). If during this phase the flow returns for a time of 5 seconds, then the alarm returns automatically (only if the number of interventions/hour of the alarm is not more than 3).</p>	<ul style="list-style-type: none"><li>Check the system water pressure</li><li>Check the operation of the flow switch, checking the wiring:</li></ul>  <ul style="list-style-type: none"><li>Check the correct installation of the water inlet and outlet hoses on the machine</li><li>Check the status of the system water filters</li></ul>	<ul style="list-style-type: none"><li>If air is present in the hydraulic system, vent by performing SFIA force: With the machine in OFF, once the installer password has been entered, enter the force menu (FOR) and then choose SFIA. The system vent function is activated, which consists of activating the pump for use for 5 minutes. During this phase, the pump alternates maximum and minimum speed cycles lasting 1 minute. Pressing SFIA again can interrupt the procedure. The pump eventually performs a post-pumping of P02 (default 2 minutes).</li><li>If the problem persists, replace the flow meter</li></ul>										
E008	Compressor driver limitation alarm	MACHINE	<p>If the compressors do not exceed the minimum frequency during the lubrication phase, the compressor is stopped and the E008 alarm appears.</p> <p>If the compressor does not reach the speed at the expected ramp value within 30 minutes, the alarm becomes active and the compressor is switched off for safety. If the number of interventions in an hour of the alarm is equal to 3, it becomes manual reset.</p>	<ul style="list-style-type: none"><li>Checking correct fan operation</li><li>Check the continuity of the connection between the U, V and W of the inverter and the U, V, W of the compressor.</li><li>Check the impedance between compressor phases:</li></ul> <table><tr><th>Model and size</th><th>Coil resistance at 20°C</th></tr><tr><td>4</td><td>1,82 Ω</td></tr><tr><td>06 08 06A 08A</td><td>0,75 Ω</td></tr><tr><td>10 1210T 12T10TA 12TA</td><td>0,65 Ω</td></tr><tr><td>14 16 1814T 16T 18T 14TA 16TA 18TA</td><td>0,37 Ω</td></tr></table>	Model and size	Coil resistance at 20°C	4	1,82 Ω	06 08 06A 08A	0,75 Ω	10 1210T 12T10TA 12TA	0,65 Ω	14 16 1814T 16T 18T 14TA 16TA 18TA	0,37 Ω	<ul style="list-style-type: none"><li>If the measured impedance values deviate from the values in the table, replace the compressor</li></ul>
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E009	High temperature alarm	COMPRESSOR	<p>If the discharge temperature associated with the compressor exceeds 120°C for at least 30 seconds, the alarm will be activated and the compressor will be blocked.</p> <p>If the temperature exceeds 130°C, the</p>	<ul style="list-style-type: none"><li>Checking correct fan operation</li><li>Check the wiring of the exhaust probe, and that the bulb is well inserted inside the well with the presence of dissipating thermal paste with the presence of thermal paste</li><li>Check the refrigerant charge by completely emptying the machine and weighing the gas (see the correct quantity on the technical</li></ul>	<ul style="list-style-type: none"><li>If the probe is not properly positioned, correct</li><li>If the refrigerant charge is incorrect, charge the correct amount of gas</li></ul>										

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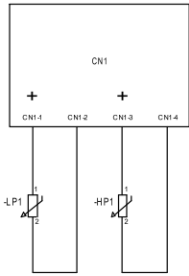
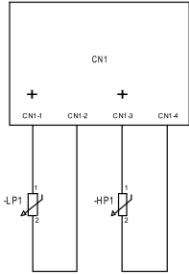
			error is triggered without waiting for the bypass time. The alarm automatically returns when the discharge temperature drops below the threshold of 110°C again.	label)	
E018	High temperature alarm in cooling	MACHINE	If the control probe has a value higher than 65°C for a time longer than 50 seconds, the alarm is active. Deactivation occurs if the temperature is below 62°C	<ul style="list-style-type: none"> <li>Check for proper coil wiring to the 4-way valve</li> <li>Check for correct switching of the 4-way valve</li> <li>Verify that the installation rules described in the MUI manual have been followed</li> </ul>	<ul style="list-style-type: none"> <li>If the 4-way valve is not working properly, replace the coil</li> <li>If it does not work even when replacing the coil, change the valve body</li> </ul> 
E020	Inverted pressure transducer alarm	MACHINE	When compressors have been running for more than 150 seconds, if the suction pressure probe measures a pressure higher than the condensing pressure probe, then alarm E020 is reported. This alarm cannot be reset (the machine must be turned off to eliminate the alarm).  This alarm is not managed in defrosting.	<ul style="list-style-type: none"> <li>Correct verification of the positioning and wiring of low CN1 1-2 and high CN1 3-4 transducers</li> </ul> 	<ul style="list-style-type: none"> <li>If the wiring does not comply with the positions shown in the wiring diagram, correct it</li> <li>If the inverter does not work, replace it</li> </ul>
E025	Outside temperature out of bounds	MACHINE	This alarm blocks the use of the refrigerant circuit due to too high an external temperature. The alarm is activated if the outside temperature exceeds: 45°C in heating and domestic hot water	Check the temperature of the outdoor environment with a digital thermometer. If this temperature is not consistent with the temperatures 45°C (if the machine is heating or in domestic hot water) and 48°C (if the machine is cooling), replace the EXT1 probe.	



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			48°C cooling The alarm automatically returns when the outside temperature drops by 1°C compared to the threshold of Intervention. In heating or sanitary care, the intervention of any auxiliary parts is allowed in substitution.																														
E041	Inconsistent temperature alarm	MACHINE																															
E611 E621 E631 E641 E651 E661	Temperature probe failure	E611:E651 (MACHINE)	<div>E6X1 The probe connected to the STX input is faulty, or the CN2, CN3 connectors are not properly wired.</div> <table><tr><th>C. n°</th><th>PIN</th><th>Denom.</th></tr><tr><td rowspan="8">CN2</td><td>1</td><td rowspan="2">IN1</td></tr><tr><td>2</td></tr><tr><td>3</td><td rowspan="2">OUT1</td></tr><tr><td>4</td></tr><tr><td>5</td><td rowspan="2">ST1</td></tr><tr><td>6</td></tr><tr><td>7</td><td rowspan="2">DT1</td></tr><tr><td>8</td></tr><tr><td rowspan="6">CN3</td><td>1</td><td rowspan="2">EXT1</td></tr><tr><td>2</td></tr><tr><td>3</td><td></td></tr><tr><td>4</td><td></td></tr><tr><td>5</td><td></td></tr><tr><td>6</td><td></td></tr></table>	C. n°	PIN	Denom.	CN2	1	IN1	2	3	OUT1	4	5	ST1	6	7	DT1	8	CN3	1	EXT1	2	3		4		5		6		<div><ul style="list-style-type: none"><li>Verify the integrity of the probes</li><li>Check the correct connection of the CN2 and CN3 connectors</li></ul></div> <div></div>	<div><ul style="list-style-type: none"><li>If the probes have defects, replace them</li></ul></div>
C. n°	PIN	Denom.																															
CN2	1	IN1																															
	2																																
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E691	Low pressure transducer fault		Transducer connected to ST9 input not connected or faulty	<div><ul style="list-style-type: none"><li>Check that the LP1 transducer is connected to terminals XC-CN1-1, CN1-2</li></ul></div>	<div><ul style="list-style-type: none"><li>If the wiring is correct, replace the transducer</li></ul></div>																												

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E701	High pressure transducer failure		Transducer connected to ST10 input not connected or faulty	<ul style="list-style-type: none"><li>Check that the HP1 transducer is connected to terminals XC-CN1-3, CN1-4</li></ul> 	<ul style="list-style-type: none"><li>If the wiring is correct, replace the transducer</li></ul>										
E801 (*)	Inverter/control board communication timeout		<ul style="list-style-type: none"><li>The compressor has not responded to control for more than 30 seconds. The communication cable between the controller and the inverter is not connected or is defective</li></ul>	<ul style="list-style-type: none"><li>Check the communication cable between CNTR1 control CN15 connector and INV1 inverter (see wiring diagram)</li></ul>	<ul style="list-style-type: none"><li>Replace the wiring harness between CNTR1 and INV1</li><li>If the error persists, replace the CNTR1 control board</li><li>If the error persists, replace the INV1 compressor driver</li></ul>										
E851 (*)	Inverter Hardware Problem		Inverter or compressor failed. Incorrect connection between inverter and compressor		<p>Check the continuity of the connection between the U, V and W of the inverter and the U, V, W of the compressor. Replace the driver.</p> <p>Check the impedance between compressor phases:</p> <table><tr><th>Model and size</th><th>Coil resistance at 20°C</th></tr><tr><td>4</td><td>1,82 Ω</td></tr><tr><td>06 08 06A 08A</td><td>0,75 Ω</td></tr><tr><td>10 1210T 12T10TA 12TA</td><td>0,65 Ω</td></tr><tr><td>14 16 1814T 16T 18T 14TA 16TA 18TA</td><td>0,37 Ω</td></tr></table> <p>If it deviates from the previous values, replace the compressor.</p>	Model and size	Coil resistance at 20°C	4	1,82 Ω	06 08 06A 08A	0,75 Ω	10 1210T 12T10TA 12TA	0,65 Ω	14 16 1814T 16T 18T 14TA 16TA 18TA	0,37 Ω
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(\*) Inverter errors:

Control error	6/8/10/12			04/06A/08A			14/16			10T/12T/14T/16T/18T10TA/12TA/14TA/16TA/18TA		
	Number of blinks - Error description	Causes	Solutions	Number of blinks - Error description	Causes	Solutions	Number of blinks - Error description	Causes	Solutions	Number of blinks - Error description	Causes	Solutions
E 851 - Inverter hardware problem	2 - Compressor failure	Compressor faulty Compressor cables disconnected Compressor overload	Check the resistance of the compressor windings Check wiring between inverter and compressor Replace the inverter	Driver current sensing circuit malfunction		Replace inverter	All type of error	Choke faulty	Check the L1 Choke wire Check the value of choke = 0.85mH±10%	15 - Driving protection	Compressor not connected Compressor overloaded	Check wiring Replace inverter
	5 - IPM current sampling error	IPM module fault	Replace inverter	Driver IC reset malfunction		Replace inverter				10 - IPM phase current sampling error	Output current sampling open/short circuit	Replace inverter
	12 - Output voltage sampling error	Supply voltage sampling error	Replace inverter	Driver memory chip malfunction		Replace inverter				2 - Heatsink temperature sensor error	Heat sink Temperature Sensor open/short circuit	Check heatsink temperature sensor wiring / replace inverter
	13 - DSP and PFC communication error	Internal MCU error Internal communication problem	Replace inverter	Driver charging circuit malfunction		Replace inverter				8 - DC driver board and power board communication error	Incorrect Communication Wiring Incorrect communication data	Replace inverter
	14 - Heatsink temperature sensor error	Heatsink temperature sensor faulty	Check the heatsink temperature sensor wiring/ replace inverter									
	15 - DSP and MCU communication error	Internal error in the communication circuit	Replace inverter									
E 861 - Motor power too high	1 - IPM module overcurrent	Short circuit output inverter IPM module damaged	Check resistance of compressor windings/ Replace inverter	Compressor instant overcurrent		Replace inverter	IPM temperature protection			3 - IPM protection when frequency increasing	IPM over current IPM over pressure IPM high Temperatures	Check the load Check the pressure Check IPM module
	3 - Compressor overcurrent	Compressor overloaded Short circuit output	Check compressor winding resistance Check compressor insulation/ Replace inverter	Compressor effective value over current		Replace inverter	Driver H/W over current at accel state/ Driver H/W over current at steady state/ Driver H/W over current at decel state			14 - Compressor over-current protection when frequency Decreasing	Compressor Overload Short circuit output Incorrect compressor	Reduce the load Check compressor Coil Resistance Check compressor insulation Check correct compressor
	11 - Input overcurrent	Compressor overload Low supply voltage	Measure Supply voltage Replace inverter				Driver S/W over current at accel state/ Driver S/W over current at steady state/ Driver S/W over current at decel state			12 - Compressor over-power protection	Compressor Overload Short circuit output Incorrect compressor	Reduce the load Check compressor Coil Resistance Check compressor insulation Check correct compressor

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E 871 - High inverter heat sink temperature	6 - Heatsink overtemperature	Insufficient cooling conditions High ambient temperature		PM modular over heat driver		Replace inverter	Ambient over temperature protection/ Heatsink over heat protection					
							IPM temperature protection/ PFC module over heat protection					
E 881 - Supply voltage out of limits	8 - Overvoltage bus DC	High supply voltage correct power supply wiring	Measure input voltage Check input power wiring/ Replace inverter	C modular temperature sensing circuit malfunction driver		Replace inverter	DC Bus under voltage protection			7 - DC Bus voltage-over protection	High AC input Voltage Wrong input wiring	Check power Source Voltage Level Check power Source Wiring
	9 - Low voltage bus DC	Low supply voltage	Measure input voltage Check input power wiring/ Repace inverter	Communication malfunction between driver and host device (main controller)		Replace inverter	DC Bus over voltage protection			6 - DC Bus voltage-under protection	Low AC input Voltage Wrong input wiring Pre-charge contactor trouble	Check power Source Voltage Level Check power Source Wiring Check pre-charge contactor
	10 - Low voltage AC input	Low supply voltage	Measure input voltage Check input power wiring/ Replace inverter							17 - AC input voltage lack protection	Lack 1 or 2 phase of 3-phase input (R/S/T) Input voltage <270V	Check power Source Wiring Check input Voltage value
E 891 - Compressor not connected to the power supply			Check connection between U,V,W of inverter and compressor	Compressor non-synchronism protection		Replace inverter	Driving protection (Output phase loss)					
				Compressor output phase loss		Replace inverter						
				Phase loss input		Replace inverter						
E 901 - Compressor driver and model mismatch				Compressor model error		Replace inverter	Compressor driver and model mismatch					
E911 - Overload protection				Compressor startup failure (motor low speed over current)		Replace inverter	Overload protection					

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<b>E921</b> - <b>PFC-POE overcurrent (PFC_POE over current)</b>				Driver PFC modular instant overcurrent		Replace inverter	PFC converter over current/ POE protection detects over current	Choke faulty	Check the L1 Choke wire Check the value of choke = 0.85mH±10%			
<b>E931</b> - <b>Communication error with main controller</b>				Communication malfunction between driver and host device (main controller)		Replace inverter	Communication error with master controller					
<b>E941</b> - <b>PFC converter fault</b>				Driver PFC modular temperature sensing circuit malfunction protection		Replace inverter	PFC converter fault (ex: CL ,OU,LU,PL)					
<b>E951</b> - <b>Heatsink temperature sensor or/and room sensor error</b>				IPM modular temperature sensing circuit malfunction driver		Replace inverter	Heatsink temperature sensor error					
<b>E961</b> - <b>Abnormal conditions</b>				Other malfunction		Replace inverter	Abnormal condition					
<b>E971</b> - <b>EEPROM not initialize</b>						Replace inverter	EEPROM not initialize					