MAXA HEATING & COOLING

Inverter air/water heat pumps with axial fans

Troubleshooting Manual

Models

i-290 0106
i-290 0109
i-290 0112
i-290 0115
i-290 0118

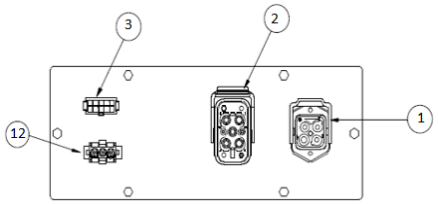
www.maxa.it

An Italian Company

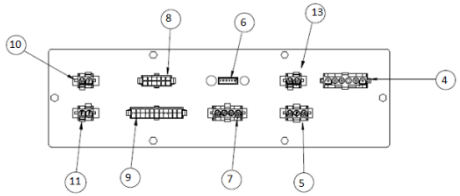
01	30-10-2024	AA	MS	Alignment to firmware V415R024S18
00	04-03-2024	AA	MS	First issue
Rev	**Date**	**Author**	**Approved**	**Note**
Catalogo / Catalogue / Katalog / Catalogue				**Serie / Series / Serie / Serie / Série**
MTR02050100000_01				**i-290 0106-0118 TROUBLESHOOTING**

ON-BOARD ELECTRICAL PANEL CONNECTORS

0106-0109

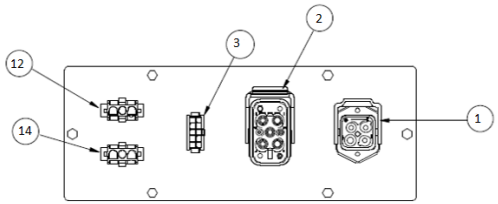


N°	Description
1	COMPRESSOR POWER SUPPLY CONNECTOR
2	ELECTRICAL PANEL POWER SUPPLY CONNECTOR
3	DO CABLE CONNECTOR
12	FAN POWER CONNECTOR

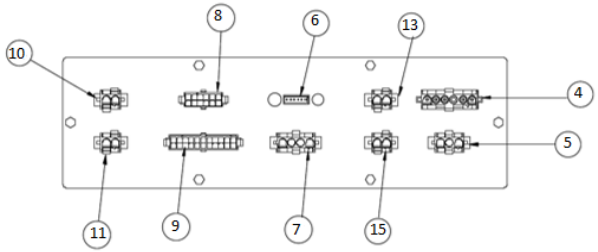


N°	Description
13	FAN SIGNAL CONNECTOR
9	SIGNAL CONNECTOR
6	EXPANSION SOLENOID VALVE CONNECTOR
5	FLOWMETER CONNECTOR
8	PROBE CONNECTOR
7	PRESSURE TRANSDUCER CONNECTOR
4	CIRCULATOR (PUMP) CONNECTOR
11	HIGH PRESSURE SWITCH CONNECTOR
10	THERMOSTAT CONNECTOR

0115-0118

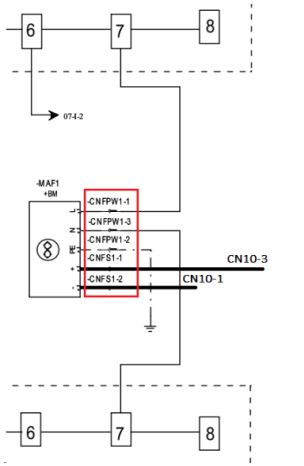
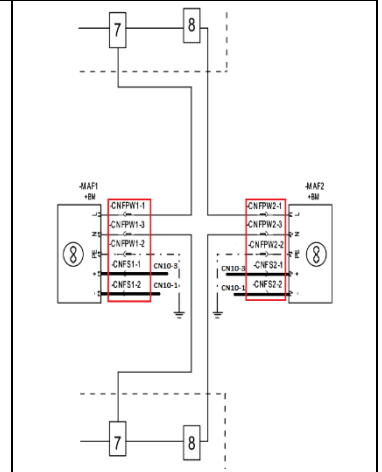


N°	Description
12	FAN POWER CONNECTOR 1 (UP)
14	FAN POWER CONNECTOR 2 (DOWN)
3	DO CONNECTOR
2	ELECTRICAL PANEL POWER CONNECTOR
1	COMPRESSOR CONNECTOR

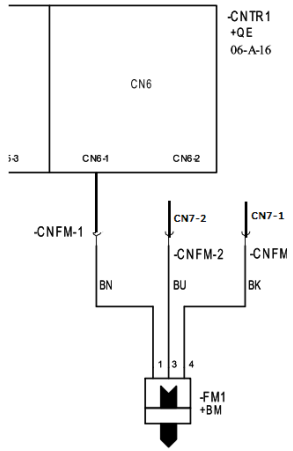


N°	Description
13	FAN SIGNAL CONNECTOR 1 (UP)
15	FAN SIGNAL CONNECTOR 2 (DOWN)
9	SIGNAL CONNECTOR
6	EXPANSION SOLENOID VALVE CONNECTOR
5	FLOWMETER CONNECTOR
8	PROBE CONNECTOR
7	PRESSURE TRANSDUCER CONNECTOR
4	CIRCULATOR (PUMP) CONNECTOR
11	HIGH PRESSURE SWITCH CONNECTOR
10	THERMOSTAT CONNECTOR

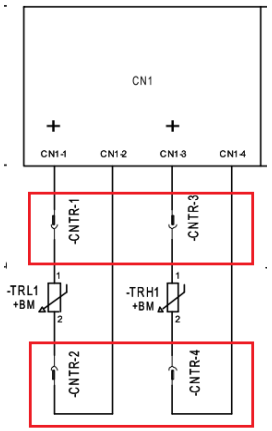
TROUBLESHOOTING

<table>
<tr><th>Code</th><th>Description</th><th>Blocking</th><th>Cause</th><th>What you have to check</th><th>What you have to do</th></tr>
<tr><td>E00</td><td>Remote ON/OFF</td><td>MACHINE</td><td>Digital input enabled as remote ON/OFF not jumpered.</td><td>• Check that there is a bridge between terminals C and ID3 on the user board
• Check that parameter H75=0</td><td>• If the bridge is not present, close the digital input by jumpering the terminals C and ID3 on the user board</td></tr>
<tr><td>E001</td><td>High pressure alarm</td><td>MACHINE</td><td>The pressure transducer detects a pressure above 'high pressure set' (30.3 bar).
It resets when the pressure drops below 22.8 bar.
If the alarm occurs more than 3 times per hour, reset becomes manual.</td><td>• Check that the reading is correct with a pressure gauge placed on the high-pressure charging port, for location see the user-installer manual
• If the alarm occurs in chiller mode: check that there is no air recirculation such as to increase the inlet temperature to the battery beyond the permitted limits
• If the alarm occurs in chiller mode, check that the exchange coil is not obstructed
• If the alarm occurs in heating mode, check the function and fastening of the thermostatic valve EEV
• Check that the gas charge is in accordance with the technical label on the unit</td><td>• Replace EEV coil, if alarm occurs replace EEV valve body
• Check correct fan operation. If not functioning, check the CNFPW board connectors relating to the fan(s):
<table><tr><th>SIZE</th><th>POWER CONNECTION</th><th>SIGNAL CONNECTION</th></tr><tr><td>0106-0109</td><td>12</td><td>13</td></tr><tr><td>0112-0118</td><td>12 (FAN1)
13 (FAN2)</td><td>13 (FAN1)
15 (FAN2)</td></tr></table><table><tr><th>0106-0109</th><th>0112-0118</th></tr><tr><td>  </td><td>  </td></tr></table>• If the gas charge does not comply with the technical label, drain all the gas and recharge the correct amount</td></tr>
</table>

E002	Low pressure alarm	MACHINE	The pressure transducer detects a pressure below 'set low pressure'. set low pressure in cooling = 2 bar set low pressure in heating = 0.3 bar Returns when pressure rises above 4 bar in cooling and 2.3 bar in heating. If the alarm occurs more than 3 times per hour, reset becomes manual.	• Check for gas leaks in the refrigeration circuit (leakage detector, ...) • Check that the low-pressure transducer reading is correct by placing a pressure gauge on the low-pressure charge port, for location see chapter 5.9 of the user-installer manual • If the alarm occurs in cooling mode, check that the EEV valve is functioning properly • Check fastening and operation of the EEV thermostatic valve, physically verifying that the change of valve steps displayed on the scale corresponds to actual valve movement • If the gas charge does not comply with the technical label, drain all the gas and recharge the correct amount	• If leaks are detected: recover the remaining refrigerant, repair the leak if possible and restore the charge by checking the data in the technical label • If the pressure gauge reading does not match the reading given by the low-pressure transducer, replace the low-pressure transducer • If the EEV valve malfunction occurs, replace the coil. If the error persists, replace the valve body • Ensure that the valve tube is not plugged by placing the magnet on the valve and checking its effect on error E002. If the error persists, the tube is plugged. If the error disappears replace the EEV coil • If the gas charge does not comply with the technical label, drain all the gas and recharge the correct amount
E005	Antifreeze alarm	MACHINE	If the flow water probe (TE OUT2) has a value below A08 (default 3°C) This alarm is manually reset. 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 6°C.	• The temperature probe is correctly inserted in the outlet water well • Check the temperature at the discharge probe with a reference thermometer • If the error occurs only in cooling mode, check that the direction of rotation of the circulator is correct.	• If the probe is not correctly inserted in the thermowell, insert it • If the temperature measured by the reference thermometer differs from the temperature measured by the flow sensor, the sensor is defective; replace it • If the direction of the circulator is not correct, turn it

E006	Flow alarm	MACHINE	If the flowmeter detects a lack of flow for a consecutive time of 5 seconds. If the alarm occurs more than 3 times per hour, the reset becomes manual. In the case of flow failure, the pump goes into post-pumping phase (duration of P02 default 2 minutes). If during this phase the flow returns for a time of 5 seconds, then the alarm resets automatically, but only if the number of alarm trips/hour is not more than 3.	• Check the system pressure • Check the functioning of the flowmeter by checking the wiring of connector 5 (CNFM)  • Check the correct installation of water inlet and outlet pipes on the machine • Check the condition of system water filters	• If air is present in the hydraulic system, vent by performing the function. With the machine in OFF position, once the installer password has been entered, enter the forcing menu (FOR) and then choose SFIA. The system venting function is activated, which consists of activating the utilisation pump for 5 minutes. During this phase, the pump alternates between maximum and minimum speed cycles lasting 1 minute. By pressing SFIA again, the procedure can be interrupted. The pump will still perform a P02 post-pump at the end (default 2 minutes). • If the problem persists, replace the flowmeter

E009	High exhaust temperature alarm	COMPRESSOR	If the discharge temperature associated with the compressor exceeds 110°C for at least 30 seconds, the alarm is activated, which locks the compressor. If the temperature exceeds 120°C, the error is activated without waiting for the bypass time. The alarm is automatically reset when the discharge temperature falls below the 100°C threshold again.	• Check the wiring of the exhaust sensor, and that the bulb is correctly inserted in the thermowell with the presence of thermal paste • Check the CNFM panel connector connection CNFM (TE DT1) • Checking correct fan operation • Check refrigerant charge: Verify by means of the FT charging machine that the charge has been correctly carried out	• If the probe is not correctly positioned, correct
E010	High temperature solar collector	SOLAR PUMP	If the collector probe exceeds the value of parameter S12 (maximum solar DHW storage temperature threshold), an alarm condition occurs that blocks the solar pump. The return hysteresis from the alarm condition is given by S08. This alarm also occurs in the event of a faulty solar collector probe.	• Check the integrity of the solar collector sensor • If the probe is faultless, check the measured temperature by comparing it with that of another probe in the same position	• If the probe is not intact, replace it • If the probe does not measure a correct temperature, replace it

E018	High temperature alarm in cooling mode	MACHINE	If the control probe has a value above 48°C for longer than 50 seconds, the alarm is active. Deactivation occurs if the temperature is below 45°C.	• Check the correct wiring of the coil to the 4-way valve • Check the correct switching of the 4-way valve • Check that the installation rules described in the MUI manual have been followed	• If the 4-way valve does not function properly, replace the coil
E020	Inverted pressure transducer alarm	MACHINE	With compressors on for more than 150 seconds, if the suction pressure probe measures a higher pressure than the condensation pressure probe, then alarm E020 is signalled. This alarm cannot be reset (power must be removed from the machine to eliminate the alarm).	• Check correct positioning and wiring of low and high transducers on connector n°7 (CNTR) 	• If the connector does not respect the positions shown in the diagram, replace it

E025	Outside temperature out of limits	MACHINE	This alarm blocks the use of the refrigeration circuit because the outside temperature is too high. The alarm is activated if the outside temperature exceeds 45°C in heating and domestic hot water 48°C in cooling mode. The alarm resets automatically when the outside temperature falls 1°C below the intervention threshold. In heating or DHW, the intervention of any auxiliary devices is allowed as a replacement.	• Check the integrity of the solar collector sensor • If the probe is faultless, check the measured temperature by comparing it with that of another probe in the same position	• If the probe is not intact, replace it • If the probe does not measure a correct temperature, replace it
E050	Sanitary over temperature alarm (with solar thermal enabled)	SOLAR PUMP	If the temperature of the DHW storage tank exceeds parameter S10, alarm E050 is signalled. If it falls below S10 again by a hysteresis given by S11, the alarm is reset.	• Check the integrity of the solar collector sensor • If the probe is faultless, check the measured temperature by comparing it with that of another probe in the same position	• If the probe is not intact, replace it • If the probe does not measure a correct temperature, replace it

E101	Communication timeout I/O modules	MACHINE	A 10-second timeout on communication between the main board and its I/O expansion boards. If communication fails, an alarm is triggered which is automatically reset. The alarm is only handled if the I/O configuration foresees the presence of the module in question. These alarms block the entire machine because it is not known a priori which functions are associated with the I/O present on the module that is not communicating.	• Check the integrity of the connection cable between main control and GI3 • Verify that the GI3 module is correctly powered • Verify the integrity and correct wiring of the GI3 expansion module probes • Verify that the expansion control is operating	• If the connection cable between main control and GI3 is not intact, replace it • If the correct power supply does not reach the GI3 module, supply it correctly • If the probes of the GI3 expansion module are not intact or correctly connected, replace them or connect them correctly • If the expansion control is not functioning, replace it

E611
E621
E631
E641
E651
E661
E671

Temperature probe failure

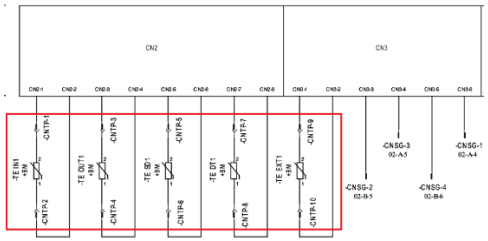
E611:E651 (MACHINE)

E661, E671, E681 (ASSOCIATE FUNCTION)

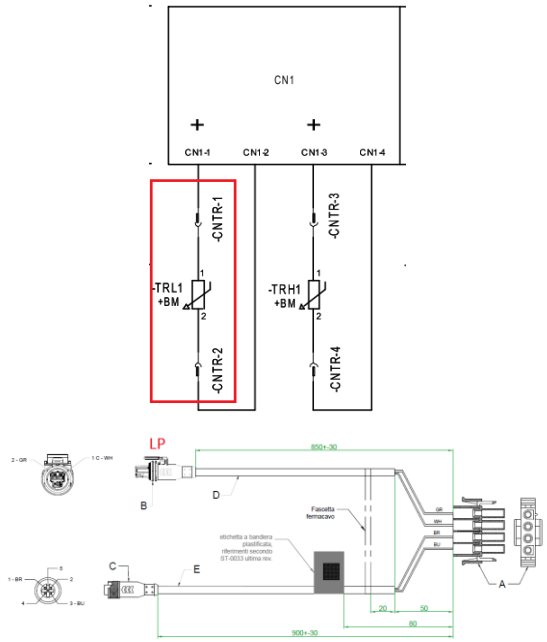
E6X1
The probe connected to the STX input is faulty, or connector n° 8 is not correctly connected.

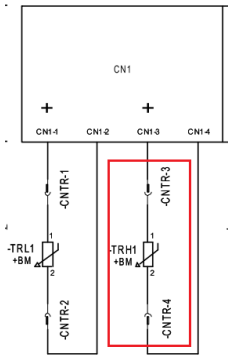
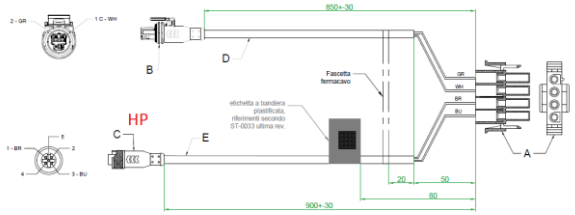
C. n°	PIN	Denom.
CN2	1	ST1
	2	
	3	ST2
	4	
	5	ST3
	6	
	7	ST4
	8	
CN3	1	ST5
	2	
	3	/
	4	/
	5	/
	6	/

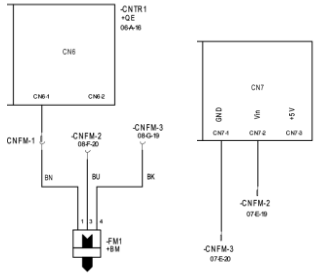
- Check the integrity of the probes
- Check the correct connection of connector n° 8

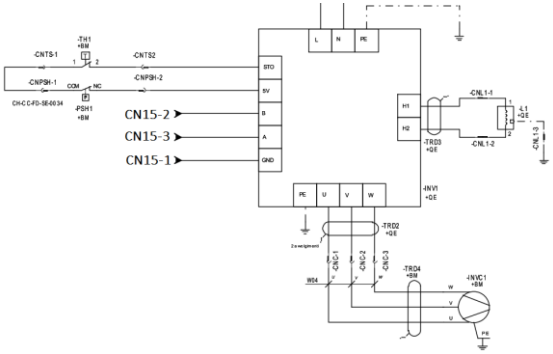


- If the probes are defective, replace the CNTP connector

E691	Low pressure transducer failure		Transducer connected to input ST9 not connected or faulty	• Check that transducer LP1 is connected to connector n° 7 at pins 1 and 2 	• If the connector is connected correctly, the transducer may be defective. Replace with a new connector n° 7

E701	High pressure transducer failure		Transducer connected to input ST10 not connected or faulty	• Check that the HP1 transducer is connected to connector n°7 at pins 3 and 4   	• If the connector is connected correctly, the transducer may be defective. Replace with a new connector n° 7

E711	Flowmeter fault (ratiometric analogue input)	PUMP	Flowmeter FM1 connected to connector n°5 not connected or defective	• Check the integrity of the cable connected between connector n°5 and flowmeter FM1 • Check that the connection inside the panel, between connector n°5 and CN6, CN7 of the control conforms to the wiring diagram  • Check that the flowmeter is operating	• If the cable connected between connector n°5 and flowmeter FM1 is not intact, replace it • If the connection inside the panel, between connector n°5 and CN6, CN7 of the control is not to the wiring diagram, fix it • If the previous points are verified, replace the flow meter

E801 (*)	Inverter/ control board communicati on timeout		• The compressor fails to respond to control for more than 30 seconds. • The communication cable between control and inverter is not connected or is defective.	• Check the communication cable between control CNTR1 connector CN15 and inverter INV1: 	• Replace wiring between CNTR1 and INV1 • If the error persists, replace the CNTR1 control board • If the error persists, replace the INV1 compressor driver

E851 (*)	Inverter hardware problem		Faulty inverter or compressor. Incorrect connection between inverter and compressor		Check the continuity of the connection between U, V and W of the inverter and U, V, W of the compressor. Replace the driver. Check the impedance between the compressor phases: **Model and size** / Coil resistance at 20°C **0106** / 0,90 Ω **0109** / 0,177 Ω **0112** / 0,31 Ω **0115** / 1,29 Ω **0118** / 1,29 Ω If it deviates from the previous values, replace the compressor.

i-290 0106-0118 TROUBLESHOOTING

(*) Inverter errors:

Control error	Heat pump size 0106/0109/0112			Heat pump size 0115/0118		
	Number of flashes - Error description	Causes	Solutions	Number of flashes - Error description	Causes	Solutions
E821	12 - IPM overcurret	Damaged IPM module	Change the inverter	IPM overcurrent	Damaged IPM module	Change the inverter
E831	43 - PFC module overheating	Damaged PFC module	Change the inverter	Overheating PFC module	Damaged PFC module	Change the inverter
E841	39 - DC undervoltage error	Damaged inverter	Change the inverter	DC undervoltage error DC overvoltage error (HW/SW)	Damaged inverter	Change the inverter
E 851	/ - Faulty AD converter	Faulty AD converter	Change the inverter	/ - Compressor start-up error		Change the inverter
E 861	35 - Overcurrent		Change the inverter	/ - AC overcurrent protection		Change the inverter
E 871	42 - High temperature of the IPM module		Replace the inverter	/ - IPM module high temperature protection	Defective IPM module	Change the inverter
E 881	36 - Overcurrent	Supply voltage too high	Inform your supervisor about problems with the supply line.	/ - Overcurrent	Supply voltage too high	
	37 - Supply voltage too low	Supply voltage too low	Inform your supervisor about problems with the supply line.	/ - Supply voltage too low	Supply voltage too low	

i-290 0106-0118 TROUBLESHOOTING

	19 - Voltage too high PFC module	Faulty PFC module	Replace the inverter			
E 891	41 - Lack of power supply phases	One or more phases of power supply of the inverter are not connected	Check the wiring of the inverter power phases	/ - Lack of power supply phases	One or more stages of power supply of the inverter are not connected	Check the wiring of the inverter power phases
	5 - Lack of compressor phases	One or more of power supply phases of the compressor are not connected	Check the wiring of the compressor power phases	/ - Power phase problem (software)	Defective inverter	Change the inverter
E 901	44 - Incorrect compressor code					
E 911	1 - Compressor overcurrent (locked rotor)	The compressor rotor is blocked	Replace the compressor	/ - Compressor overcurrent protection	The compressor rotor is blocked	Replace the compressor
	9 - Compressor overload	Compressor is overloaded	Replace the inverter. If the problem persists, replace the compressor.			
E 921	17 - HW overcurrent of PFC module	The PFC module is faulty	Replace the inverter	/ - PFC module over-current protection	Defective inverter	Change the inverter
	18 - SW overcurrent of PFC module	The PFC module is faulty	Replace the inverter			
E 941	52 - PFC module current sensor error	The PFC module is faulty	Replace the inverter	/ - Temperature sensor error of PFC module	Defective inverter	Change the inverter
	54 - PFC module temperature sensor error	The PFC module is faulty	Replace the inverter			
E 951	53 - IPM module temperature sensor error	The IPM module is faulty	Replace the inverter	/ - Temperature sensor error IPM module	Defective inverter	Change the inverter
E 961	6 or 13 or 14 - Compressor rotor problems	Compressor failure	Replace the inverter. If the problem persists, replace the compressor.	/ - Abnormal operation AD module	Defective inverter	Change the inverter
	7 - Compressor start-up error	Compressor failure	Replace the inverter. If the problem persists, replace the compressor.	/ - Compressor power supply phase failure	One or more compressor power phases are not connected	Check the wiring of the compressor power phases

				/ - Compressor speed error	Defective inverter	Change the inverter
				/ - MCU module error	Defective inverter	Change the inverter
E 971	34 - EEPROM error	Faulty EEPROM	Replace the inverter	/ - EEPROM error	EEPROM defective	Replace the inverter
E 981	40 - High pressure	Open STO input	Check the pressure measured by the high-pressure transducer	40 - High pressure	Open STO input	Check the pressure measured by the high pressure