AIO™ Ceiling Ducted

Troubleshooting Manual

CONTACT INFO

VIP Customer/Technical Support
Email: vip@innova.co
Phone: (212) 204-2700

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CONTENTS

1. CEILING DUCTED

1.1 General anomalies

1.1.1 Anomaly table

Code	Description	Blocking
G1	The unit does not cool	No
G2	The unit does not heat	No
G3	Water leak	No
G4	Presence of condensation on the unit	No
G5	High noise level	No
G6	Faulty heating element	No
G7	Ice on the internal coil (summer)	No
G8	Ice on the external coil (winter)	No
G9	Ice on the condensate collection tray	No

1.1.2 Troubleshooting procedures

G1

Figure 1. G1 troubleshooting procedure video link

Anomaly: The unit does not cool

Blocking: No

General information

Compressor discharge temperature limits:

- R410a temperature below 100°C
- R32 temperature below 110°C

START

1. **Check that the unit is set to cooling mode with a setpoint lower than the ambient temperature. Is it set correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Set the unit correctly
2. **Check that the filters are clean. Are they clean?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Clean filters
3. **Check that the airflow rate is correct. Does it fall within the nominal values?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Set the P1-P8 setting of the unit to ensure the correct airflow (see paragraph "Airflow adjustment(P1-P8)" ***p. 12***)
4. **Check that cold air is coming out from the internal side and warm air from the external side. Is this the case?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Check the correct operation of the 4-way valve
5. **Check the compressor discharge temperature with a thermometer. Does it fall within the compressor discharge temperature limits?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Have the refrigerant recharged
6. **Despite the checks performed, does the anomaly persist?**
   Yes
   ▶ Connect the supervisor and check the unit parameters (see paragraph "Connection and verification with Supervisor" ***p. 12***)
   No
   ▶ Resolved
7. **Despite the checks performed, does the anomaly persist?**
   Yes
   ▶ Have the unit sizing checked
   No
   ▶ Resolved

END

G2

Figure 2. G2 troublesh

Anomaly: The unit

Blocking: No

General informati

Compressor disch

- R410a temper
- R32 temperat

START

1. **Check that th setpoint high it set correctl**
   Yes
   ▶ Proce
   No
   ▶ Set the
2. **Check that th**
   Yes
   ▶ Proce
   No
   ▶ Clean
3. **Check that th within the nor**
   Yes
   ▶ Proce
   No
   ▶ Set the
   the correct ai
   adjustment(P
4. **Check that w internal side Is this the cas**
   Yes
   ▶ Proce
   No
   ▶ Check
   valve
5. **Check the co with a therm compressor Yes**
   ▶ Proce
   No
   ▶ Have t
6. **Despite the c persist?**
   Yes
   ▶ Conne
   parameters (
   verification wi
   No
   ▶ Resolv

7. **Despite the checks performed, does the anomaly persist?**
   Yes
   ▶ Have the unit sizing checked
   No
   ▶ Resolved

END

G3

Figure 3. G3 troubleshooting procedure video link

Anomaly: Water leak

Blocking: No

START

1. **Check that the system drain slopes from the unit towards the outlet. Does it slope towards the outlet?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Adjust the slope of the drain
2. **Check that the condensate collection trays are securely fixed. Are they securely fixed?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Secure the trays correctly
3. **Check that the connection pipes under the trays are properly secured to the tray fitting. Are they securely fastened?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Secure the pipes properly
4. **Check that the pipe from the internal coil tray flows into the external coil tray. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Position the pipe correctly
5. **Despite the checks performed, does the anomaly persist?**
   Yes
   ▶ Check the thermal insulation of the pipes in the compressor area
   No
   ▶ Resolved

END

G4

Figure 4. G4 troubleshooting procedure video link

Anomaly: Presence of condensation on the unit

Blocking: No

START

1. **Check that the ductwork is properly insulated at the unit connections. Is it compliant?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Properly insulate the ductwork
2. **Check that the filters are clean. Are they clean?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Clean filters
3. **Check that the air duct is clear of obstructions. Is it clear?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Remove the obstructions
4. **Check that the fans are intact. Are they intact?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the faulty fans
5. **Despite the checks performed, does the anomaly persist?**
   Yes
   ▶ Check the integrity of the unit's insulating parts
   No
   ▶ Resolved

END

G5

Figure 5. G5 troubleshooting procedure video link

Anomaly: High noise level

Blocking: No

START

1. **Check that the fans are free. Are they free?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Remove the obstructions
2. **Check that th**
   contact with
   compliant?
   Yes
   ▶ Proce
   No
   ▶ Reposi
   piping from th
3. **Despite the cl**
   persist?
   Yes
   ▶ Set the
   the correct ai
   adjustment(P
   No
   ▶ Resolv

END

G6

Figure 6. G6 troublesh

Anomaly: Faulty h

Blocking: No

START

1. **Check on the**
   the electric he
   correct?
   Yes
   ▶ Proce
   No
   ▶ Set the
2. **Press the rese**
   thermostat u
   the button ha
   element work
   Yes
   ▶ Resolv
   No
   ▶ Proce
3. **Check with a**
   voltage on co
   correctly?
   Yes
   ▶ Proce
   No
   ▶ Replac
   "Replace the r
4. **Check with a**
   element is po
   correctly?
   Yes
   ▶ Proce
   No
   ▶ Check

connected correctly

5. **Check with a multimeter that there is a 220 V voltage and that the contact is closed on the power relay connectors of the heating element. Is this the case?**
   Yes
   ► Proceed to the next check
   No
   ► Replace the power relay of the heating element
6. **Despite the checks performed, does the error persist?**
   Yes
   ► Replace the heating element
   No
   ► Resolved

END

G7

Figure 7. G7 troubleshooting procedure video link

Anomaly: Ice on the internal coil (summer)
Blocking: No
START

1. **Check that the IPT sensor of the internal coil is positioned correctly. Is it positioned correctly?**
   Yes
   ► Proceed to the next check
   No
   ► Properly position the probe
2. **Check that the filters are clean. Are they clean?**
   Yes
   ► Proceed to the next check
   No
   ► Clean filters
3. **Check that the airflow rate is correct. Does it fall within the nominal values?**
   Yes
   ► Proceed to the next check
   No
   ► Set the P1-P8 setting of the unit to ensure the correct airflow (see paragraph "Airflow adjustment (P1-P8)" ***p. 12***)
4. **Check that the 4-way valve is functioning correctly. Is it functioning correctly?**
   Yes
   ► Proceed to the next check
   No
   ► Replace the 4-way valve
5. **Check with a multimeter that there is no voltage on connector CN2. Is this the case?**
   Yes
   ► Proceed to the next check
   No
   ► Replace the main board (see paragraph "Replace the main board" ***p. 12***)
6. **Despite the checks performed, does the error persist?**
   Yes
   ► Check the presence of refrigerant
   No
   ► Resolved

END

G8

Figure 8. G8 troublesh

Anomaly: Ice on th
Blocking: No
START

1. **Check that th**
   Yes
   ► Procee
   No
   ► Clean
2. **Check that th maximum flo**
   Yes
   ► Procee
   No
   ► Set the
   the correct ai
   adjustment(P
3. **Check that th positioned co**
   Yes
   ► Procee
   No
   ► Proper
4. **Check that th correctly. Is it**
   Yes
   ► Procee
   No
   ► Replac
5. **Check that th correctly. Is it**
   Yes
   ► Procee
   No
   ► Positio
6. **Check with a voltage on co correctly?**
   Yes
   ► Procee
   No
   ► Replac
   "Replace the
7. **Despite the ch persist?**
   Yes
   ► Check
   No
   ► Resolv

END

G9

Figure 9. G9 troubleshooting procedure video link

Anomaly: Ice on the condensate collection tray

Blocking: No

START

1. **Check that the system drain slopes from the unit towards the outlet. Does it slope towards the outlet?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Adjust the slope of the drain
2. **Check that the CN1 connector is positioned correctly. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Position the CN1 connector correctly
3. **Check with a multimeter that there is a 230 V voltage on connector CN1, provided that the outdoor temperature is below -9°C. Is this the case?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the main board (see paragraph "Replace the main board" ***p. 12***)
4. **Check that the connector of the condensate collection tray heating element is connected correctly. Is it connected correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
5. **Despite the checks performed, does the error persist?**
   Yes
   ▶ Replace the condensate collection tray heating element
   No
   ▶ Resolved

END

1.2 Errors displayed on the screen

1.2.1 Error table

Code	Description	Blocking	Condition
"E1" ***p. 7***	Temperature/ Humidity Sensor Error	No	The input does not detect serial communication with the intervention sensor
"E2" ***p. 7***	Internal Coil IPT Sensor Error	Yes	The input detects a resistance value (ohms) outside the expected range or a short circuit
"E3" ***p. 8***	External Air Temperature Sensor Error (OT)	Yes	The input detects a resistance value (ohms) outside the expected range or a short circuit
"E4" ***p. 8***	External Coil OPT Sensor Error	No	The input detects a resistance value (ohms) outside the expected range or a short circuit
"E5" ***p. 8***	Internal fan error	Yes	The internal fan speed is outside the allowable range
"E6" ***p. 9***	External Fan Error	Yes	The external fan speed is outside the allowable range
"E7" ***p. 9***	Communicati on error with the display	Yes	No communication between the display and the electronic boards
"E8" ***p. 10***	Compressor discharge sensor error	Yes	The input detects an ohm value out of range or a short circuit
"oF" ***p. 10***	Water Level Error	Yes	Activation of the maximum level float in the condensate collection tray
"bL" ***p. 10***	Display locked	No	Keyboard locked
"cP" ***p. 11***	Open contact for presence detection (CP)	Yes	The unit operates only with the CP presence contact closed

1.2.2 Troubleshooting procedures

E1

Figure 10. E1 troubleshooting procedure video link

Problem: Temperature/humidity sensor error

Condition: The input does not detect serial communication with the intervention sensor

Blocking: No

Electronic board: "Electronic boards" ***p. 13***

START

1. **Check the positioning of the CN21 connector on the main board. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
2. **Check the 5 V DC power supply on connector CN21. Is it correct?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the main board (see paragraph "Replace the main board" ***p. 12***)
3. **Despite the checks performed, does the error persist?**
   Yes
   ▶ Replac
   No
   ▶ Resolv

END

E2

Figure 11. E2 troublesho

Problem: Internal C

Condition: The inp (ohms) outside the

Blocking: No

Electronic board: "

Probe resistance v probes" p. 34

START

1. **Check the po the main boa**
   Yes
   ▶ Proce
   No
   ▶ Correc
2. **Disconnect th value of the p compliant wit the probe (se**
   Yes
   ▶ Proce
   No
   ▶ Replac
3. **Despite the cl persist?**
   Yes
   ▶ Replac
   "Replace the m
   No
   ▶ Resolv

END

E3

Figure 12. E3 troublesho

Problem: External A

Condition: The inp

(ohms) outside the expected range or a short circuit

Blocking: Yes

Electronic board: "Electronic boards" ***p. 13***

Probe resistance values: "Resistance values of the probes" p. 34

START

1. **Check the positioning of the CN17 connector on the main board. Is it positioned correctly?**
   Yes
   ► Proceed to the next check
   No
   ► Correctly position the connector
2. **Disconnect the probe and check the resistance value of the probe with a multimeter. Is it compliant with the specifications indicated for the probe (see the specific chapter)?**
   Yes
   ► Proceed to the next check
   No
   ► Replace the probe
3. **Despite the checks performed, does the error persist?**
   Yes
   ► Replace the main board (see paragraph "Replace the main board" ***p. 12***)
   No
   ► Resolved

END

E4

Figure 13. E4 troubleshooting procedure video link

Problem: External Coil OPT Sensor Error

Condition: The input detects a resistance value (ohms) outside the expected range or a short circuit

Blocking: Yes

Electronic board: "Electronic boards" ***p. 13***

Probe resistance values: "Resistance values of the probes" p. 34

START

1. **Check the positioning of the CN17 connector on the main board. Is it positioned correctly?**
   Yes
   ► Proceed to the next check
   No
   ► Correctly position the connector
2. **Disconnect the probe and check the resistance value of the probe with a multimeter. Is it compliant with the specifications indicated for the probe (see the specific chapter)?**
   Yes
   ► Proceed to the next check
   No
   ► Replace the probe
3. **Despite the checks performed, does the error persist?**
   Yes
   ► Replace the main board (see paragraph "Replace the main board" ***p. 12***)
   No
   ► Resolved

END

E5

Figure 14. E5 troublesh

Problem: Internal F

Condition: The inte
allowable range

Blocking: Yes

Electronic board: "

START

1. **Check the po**
   the main boa
   Yes
   ► Proce
   No
   ► Correc
2. **Check the 115**
   power conne
   Yes
   ► Proce
   No
   ► Replac
   "Replace the r
3. **Check the VS**
   connector. Is
   Yes
   ► Proce
   No
   ► Replac
   "Replace the r
4. **Despite the cl**
   persist?
   Yes
   ► Replac
   No
   ► Resolv

END

E6

Figure 15. E6 troubleshooting procedure video link

Problem: External Fan Error

Condition: The external fan speed is outside the allowable range

Blocking: Yes

Electronic board: "Electronic boards" ***p. 13***

START

1. **Check the positioning of the CN9 connector on the main board. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
2. **Check the 115 V AC or 230 V AC power on the power connector. Is it correct?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the main board (see paragraph "Replace the main board" ***p. 12***)
3. **Check the VSP 0-10 V DC signal on the CN9 connector. Is it correct?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the main board (see paragraph "Replace the main board" ***p. 12***)
4. **Despite the checks performed, does the error persist?**
   Yes
   ▶ Replace the faulty fan
   No
   ▶ Resolved

END

E7

Figure 16. E7 troubleshooting procedure video link

Problem: Communication Error with Display

Condition: No communication between the display and the electronic boards

Blocking: Yes

Electronic board: "Electronic boards" ***p. 13***

START

1. **Check the positioning of the CN11 connector on the main board. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
2. **Check that the COMP cable connects the main board to the power board. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
3. **Check that the COMP cable connects the power board to the driver board. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
4. **Check that the two red LEDs on the power board are lit. Are they lit?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the power board (see paragraph "Replace the power board" ***p. 12***)
5. **Check that the green LED on the driver board flashes every second. Does it flash every second?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the driver board (see paragraph "Replace the driver board" ***p. 12***)
6. **Check that the display cables are intact and show no signs of fraying or damage. Are they compliant?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the damaged cables
7. **Despite the checks performed, does the error persist?**
   Yes
   ▶ Replac
   "Replace the r
   No
   ▶ Resolv

END

E8

Figure 17. E8 troublesh

Problem: Compres

Condition: The inp
range or a short ci

Blocking: Yes

Electronic board: "

START

1. **Check the po**
   the driver boa
   Yes
   ▶ Proce
   No
   ▶ Correc
2. **Disconnect th**
   value of the p
   compliant wit
   the probe (se
   Yes
   ▶ Proce
   No
   ▶ Replac
3. **Despite the ch**
   persist?
   Yes
   ▶ Replac
   "Replace the c
   No
   ▶ Resolv

END

oF

Figure 18. oF troublesh

Problem: Water Le

Condition: Activati
condensate collec

Blocking: Yes

Electronic board: "Electronic boards" ***p. 13***

START

1. **Check that the water level in the external condensate collection tray is correct. Is it correct?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Check the drain tube
2. **Check the positioning of the CN15 connector on the main board. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
3. **Check the operation of the float using a multimeter. Does the float respond correctly to continuity tests?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Replace the float
4. **Despite the checks performed, does the error persist?**
   Yes
   ▶ Replace the main board (see paragraph "Replace the main board" ***p. 12***)
   No
   ▶ Resolved

END

bL

Figure 19. bL troubleshooting procedure video link

Problem: Display locked

Condition: Keyboard locked

Blocking: No

Electronic board: "Electronic boards" ***p. 13***

START

1. **Check that the ⏲ button has been pressed for about 10 seconds on the display. Has it been pressed?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Press and hold the ⏲ button for about 10 seconds
2. **Despite the checks performed, does the error persist?**
   Yes
   ▶ Replace the display
   No
   ▶ Resolved

END

cP

Figure 20. cP troubleshooting procedure video link

Problem: CP presence contact open

Condition: The unit operates only with the CP presence contact closed

Blocking: Yes

Electronic board: "Electronic boards" ***p. 13***

START

1. **Check the positioning of the CN13 connector on the main board. Is it positioned correctly?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Correctly position the connector
2. **Check with a multimeter that the circuit is closed. Is it closed?**
   Yes
   ▶ Replace the main board (see paragraph "Replace the main board" ***p. 12***)
   No
   ▶ Proceed to the next check
3. **Check for the presence of a jumper on the terminal connected to connector CN13. Is it present?**
   Yes
   ▶ Proceed to the next check
   No
   ▶ Check the presence of the cables connected to connector CN13
4. **Does the issue persist despite the checks performed?**
   Yes
   ▶ Replace the main board (see paragraph "Replace the main board" ***p. 12***)
   No
   ▶ Resolved

END

1.3 Errors reported by the Driver board (LED)

1.3.1 Error table

Code	Flashing (LED)	Error	QR	Video Link
1	●○○○○○	Excessive DC voltage		Link to the procedure video
2	○●○○○○			
3	●●○○○○			
4	○○●○○○			
5	●○●○○○			
6	○●●○○○			
7	●●●○○○			
8	○○○●○○			
12	○○●●○○			
15	●●●●○○			
18	○●○○○●			
19	●●○○○●			
20	○○●○●○			
21	●○●○●○			
22	○●●○●○			

Code	Flashing (LED)	Error	QR	Video Link
				Link to the procedure video
23	●●●○●○	EEprom error		Link to the procedure video
26	○●○●●○	IPM overheating error		Link to the procedure video
27	●●○●●○	Excessive AC current		Link to the procedure video

1.4 Additional procedures

1.4.1 Replace the main board

Link to the procedure video

Figure 21. Main board replacement procedure video link

1.4.2 Replace the power board

Link to the procedure video

Figure 22. Power board replacement procedure video link

1.4.3 Replace the driver board

Link to the procedure video

Figure 23. Driver board replacement procedure video link

1.4.4 Airflow adjus

Link to the procedu

For the full list of ai
the Ceiling Ducted

Figure 24. Airflow adjus

1.4.5 Firmware and

Link to the procedu

Figure 25. Firmware ar

1.4.6 Connection d

Link to the procedu

Figure 26. Connection video link

1.4.7 Replacement of the previous version of the condensate collection tray

Link to the procedure video

Figure 27. Condensate collection tray previous version replacement procedure video link

1.4.8 Reconfiguration of the CN6 connector

Link to the procedure video

Figure 28. CN6 connector reconfiguration procedure video link

1.5 Maintenance operations

1.5.1 General cleaning of the unit

Link to the procedure video

Figure 29. General cleaning procedure video link

1.5.2 Cleaning or filter replacement

Link to the procedure video

Figure 30. Cleaning or filter replacement procedure video link

1.5.3 Cleaning or replacement of the batteries

Link to the procedure video

Figure 31. Cleaning or battery replacement procedure video link

1.5.4 Cleaning or replacement of the condensate collection tray

Link to the procedure video

Figure 32. Cleaning or condensate collection tray replacement procedure video link

1.5.5 Refrigerant c

Link to the procedu

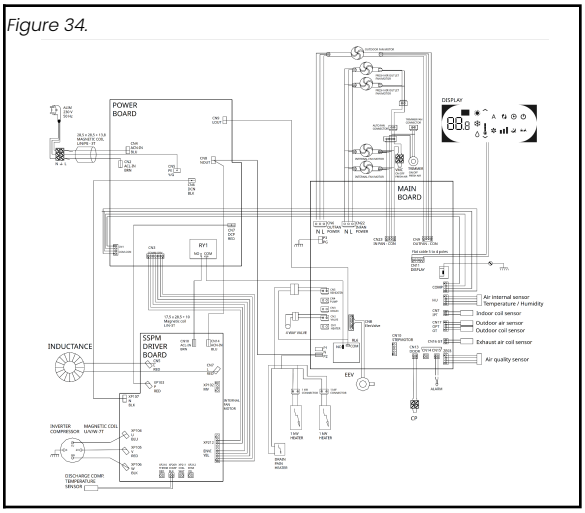
Figure 33. Refrigerant

1.6 Technical information

1.6.1 Electronic boards

CN13: Input
CN14: Drain Pump Start Level
CN15: Drain Alarm
ZE: Internal Air Quality Sensor
HU: Internal Air Humidity and Temperature Sensors
CN17 OT: External Temperature Sensor
CN17 OPT: Capacitor Sensor
CN7 IPT: Evaporator Sensor
CN16 GT: Exhaust Air Sensor
XP209: Compressor Drain Temperature Sensor
CN1: Heating element
CN2: Valve
CN5: Heater
CN4: Pump
CN23: Internal Fan
CN9: External Fan
CN19: Step Motor
CN10: Step Motor
CN11: Display

Figure 34.



1.6.2 Resistance values of the probes

Sensor 15 kΩ @ 25°C
Probe 15 kΩ 3450

T(°C)	Rmin	Rcent	Rmax	DR(%)	DT(°C)
-30,00	63,96	67,94	70,85	4,28	0,95
-29,00	60,58	64,25	66,95	4,20	0,94
-28,00	57,40	60,79	63,29	4,11	0,93
-27,00	54,40	57,53	59,85	4,03	0,91
-26,00	51,59	54,48	56,62	3,93	0,90
-25,00	48,94	51,60	53,59	3,86	0,88
-24,00	46,44	48,90	50,75	3,78	0,87
-23,00	44,09	46,35	48,07	3,71	0,85
-22,00	41,87	43,96	45,55	3,62	0,83
-21,00	39,78	41,70	43,18	3,55	0,82
-20,00	37,80	39,58	40,95	3,46	0,80
-19,00	35,94	37,54	38,85	3,49	0,79
-18,00	34,18	35,69	36,87	3,31	0,78
-17,00	32,52	33,91	35,01	3,24	0,76
-16,00	30,96	32,23	33,25	3,16	0,74
-15,00	29,47	30,65	31,59	3,07	0,73
-14,00	28,07	29,15	30,03	3,02	0,71
-13,00	26,75	27,74	28,55	2,92	0,69
-12,00	25,49	26,40	27,15	2,84	0,67
-11,00	24,30	25,14	25,84	2,78	0,66
-10,00	23,18	23,95	24,59	2,67	0,64
-9,00	22,12	22,82	23,42	2,63	0,62
-8,00	21,11	21,75	22,31	2,57	0,61
-7,00	20,15	20,74	21,26	2,51	0,60
-6,00	19,25	19,79	20,26	2,37	0,57
-5,00	18,39	18,88	19,32	2,33	0,55
-4,00	17,57	18,02	18,43	2,28	0,54
-3,00	16,80	17,20	17,58	2,21	0,52
-2,00	16,06	16,43	16,78	2,13	0,50
-1,00	15,36	15,70	16,02	2,04	0,49
0,00	14,70	15,00	15,30	2,00	0,46
1,00	14,04	14,34	14,64	2,09	0,49
2,00	13,42	13,71	14,02	2,26	0,51
3,00	12,83	13,11	13,42	2,36	0,53
4,00	12,27	12,55	12,86	2,47	0,56
5,00	11,73	12,01	12,32	2,58	0,59
6,00	11,22	11,50	11,81	2,70	0,62
7,00	10,74	11,01	11,32	2,82	0,64
8,00	10,28	10,55	10,86	2,94	0,67
9,00	9,85	10,10	10,41	3,07	0,37
10,00	9,43	9,68	9,99	3,18	0,32
11,00	9,04	9,28	9,59	3,30	0,74
12,00	8,66	8,90	9,21	3,40	0,77
13,00	8,30	8,54	8,84	3,51	0,80
14,00	7,96	8,19	8,49	3,62	0,82
15,00	7,63	7,86	8,16	3,74	0,85
16,00	7,33	7,55	7,84	3,85	0,88
17,00	7,03	7,25	7,54	3,96	0,90
18,00	6,75	6,96	7,25	4,08	0,93
19,00	6,48	6,69	6,97	4,19	0,96

T(°C)	Rmin
20,00	6,22
21,00	5,98
22,00	5,74
23,00	5,52
24,00	5,31
25,00	5,10
26,00	4,91
27,00	4,72
28,00	4,54
29,00	4,37
30,00	4,21
31,00	4,05
32,00	3,90
33,00	3,76
34,00	3,62
35,00	3,49
36,00	3,37
37,00	3,25
38,00	3,13
39,00	3,02
40,00	2,91
41,00	2,81
42,00	2,71
43,00	2,62
44,00	2,53
45,00	2,44
46,00	2,36
47,00	2,28
48,00	2,20
49,00	2,13
50,00	2,06
51,00	1,99
52,00	1,92
53,00	1,86
54,00	1,80
55,00	1,74
56,00	1,69
57,00	1,63
58,00	1,58
59,00	1,53
60,00	1,48
61,00	1,44
62,00	1,39
63,00	1,35
64,00	1,31
65,00	1,27
66,00	1,23
67,00	1,19
68,00	1,15
69,00	1,12
70,00	1,09
71,00	1,05
72,00	1,02
73,00	0,99

T(℃)	Rmin	Rcent	Rmax	DR(%)	DT(℃)
74,00	0,96	1,02	1,12	9,30	2,69
75,00	0,93	0,99	1,08	9,44	2,71
76,00	0,91	0,96	1,05	9,45	2,74
77,00	0,88	0,94	1,02	9,58	2,77
78,00	0,86	0,91	1,00	9,66	2,81
79,00	0,83	0,88	0,97	9,74	2,85
80,00	0,81	0,86	0,94	9,81	2,88
81,00	0,78	0,83	0,92	9,89	2,92
82,00	0,76	0,81	0,89	9,96	2,95
83,00	0,74	0,79	0,87	10,03	2,99
84,00	0,72	0,77	0,84	10,12	3,02
85,00	0,70	0,75	0,82	10,19	3,05
86,00	0,68	0,72	0,80	10,28	3,09
87,00	0,66	0,71	0,78	10,35	1,98
88,00	0,64	0,69	0,76	10,42	1,15
89,00	0,63	0,67	0,74	10,50	3,20
90,00	0,61	0,65	0,72	10,58	3,24
91,00	0,59	0,63	0,70	10,66	3,30
92,00	0,58	0,62	0,68	10,72	3,33
93,00	0,56	0,60	0,66	10,81	3,36
94,00	0,55	0,58	0,65	10,86	3,40
95,00	0,53	0,57	0,63	10,94	3,43
96,00	0,52	0,55	0,61	11,00	3,47
97,00	0,50	0,54	0,60	11,07	3,49
98,00	0,49	0,53	0,58	11,16	3,52
99,00	0,48	0,51	0,57	11,24	3,56
100,00	0,47	0,50	0,55	11,30	3,59
101,00	0,45	0,49	0,54	11,37	3,63
102,00	0,44	0,47	0,53	11,44	3,66
103,00	0,43	0,46	0,51	11,52	3,68
104,00	0,42	0,45	0,50	11,60	3,71
105,00	0,41	0,44	0,49	11,67	3,77
106,00	0,40	0,43	0,48	11,72	3,80
107,00	0,39	0,42	0,47	11,78	3,80
108,00	0,38	0,41	0,45	11,86	3,84
109,00	0,37	0,40	0,44	11,94	3,87
110,00	0,36	0,39	0,43	12,01	2,49

Probe 187 kΩ @0 °C

Probe 187 kΩ 3979

T(℃)	Rmin	Rcent	Rmax	DR(%)	DT(℃)
-30,00	891,20	966,10	1047,00	8,37	1,42
-29,00	840,30	910,30	985,40	8,25	1,41
-28,00	792,60	858,00	928,20	8,18	1,41
-27,00	747,80	809,00	874,70	8,12	1,40
-26,00	705,80	763,10	824,50	8,05	1,40
-25,00	666,40	720,00	777,50	7,99	1,40
-24,00	629,40	679,60	733,40	7,92	1,39
-23,00	594,60	641,70	692,10	7,85	1,39
-22,00	562,00	606,10	653,30	7,79	1,39
-21,00	531,30	572,70	616,90	7,72	1,39
-20,00	502,50	541,30	582,70	7,65	1,38
-19,00	475,40	511,70	550,60	7,60	1,38
-18,00	449,90	484,00	520,40	7,52	1,38
-17,00	425,90	457,90	492,00	7,45	1,37
-16,00	403,20	433,30	465,40	7,41	1,37
-15,00	382,00	410,20	440,30	7,34	1,37
-14,00	361,90	388,50	416,70	7,26	1,36
-13,00	343,00	368,00	394,50	7,20	1,36
-12,00	325,20	348,70	373,60	7,14	1,36
-11,00	308,40	330,50	353,90	7,08	1,35
-10,00	292,60	313,40	335,40	7,02	1,35
-9,00	277,60	297,20	317,90	6,97	1,34
-8,00	263,50	281,90	301,40	6,92	1,34
-7,00	250,20	267,50	285,80	6,84	1,34
-6,00	237,60	253,90	271,20	6,81	1,34
-5,00	225,80	241,10	257,40	6,76	1,33
-4,00	214,50	229,00	244,30	6,68	1,33
-3,00	203,90	217,60	232,00	6,62	1,33
-2,00	193,90	206,80	220,40	6,58	1,33
-1,00	184,40	196,60	209,40	6,51	1,32
0,00	175,50	186,90	199,00	6,47	1,31
1,00	167,00	177,80	189,20	6,41	1,32
2,00	159,00	169,20	179,90	6,32	1,31
3,00	151,40	161,00	171,10	6,27	1,30
4,00	144,20	153,30	162,90	6,26	1,31
5,00	137,40	146,00	155,00	6,16	1,29
6,00	130,90	139,00	147,60	6,19	1,30
7,00	124,80	132,50	140,50	6,04	1,30
8,00	119,00	126,30	133,90	6,02	1,29
9,00	113,50	120,40	127,60	5,98	1,29
10,00	108,30	114,80	121,60	5,92	1,28
11,00	103,30	109,50	115,90	5,84	0,61
12,00	98,63	104,40	110,50	5,84	1,27
13,00	94,16	99,66	105,40	5,76	1,27
14,00	89,92	95,13	100,60	5,75	1,27
15,00	85,89	90,82	95,98	5,68	1,26
16,00	82,06	86,74	91,62	5,63	1,26
17,00	78,43	82,85	87,47	5,58	1,25
18,00	74,97	79,16	83,54	5,53	1,25
19,00	71,68	75,65	79,80	5,49	1,25
20,00	68,55	72,32	76,25	5,43	1,24
21,00	65,57	69,15	72,88	5,39	1,24
22,00	62,74	66,13	69,67	5,35	1,24
23,00	60,05	63,27	66,61	5,28	1,23
24,00	57,48	60,54	63,71	5,24	1,23
25,00	55,04	57,94	60,95	5,20	1,22
26,00	52,71	55,46	58,32	5,16	1,22
27,00	50,49	53,11	55,82	5,10	1,22
28,00	48,38	50,86	53,44	5,07	1,21
29,00	46,36	48,72	51,17	5,03	1,21
30,00	44,44	46,68	49,01	4,99	1,21
31,00	42,61	44,74	46,95	4,94	1,20
32,00	40,87	42,89	44,99	4,90	1,20
33,00	39,20	41,13	43,12	4,84	1,19
34,00	37,61	39,44	41,34	4,82	1,19
35,00	36,10	37,84	39,64	4,76	1,18

T(℃)	Rmin
36,00	34,65
37,00	33,26
38,00	31,94
39,00	30,68
40,00	29,47
41,00	28,32
42,00	27,22
43,00	26,16
44,00	25,15
45,00	24,19
46,00	23,26
47,00	22,38
48,00	21,53
49,00	20,72
50,00	19,95
51,00	19,20
52,00	18,49
53,00	17,81
54,00	17,15
55,00	16,53
56,00	15,93
57,00	15,35
58,00	14,80
59,00	14,27
60,00	13,76
61,00	13,27
62,00	12,80
63,00	12,35
64,00	11,92
65,00	11,51
66,00	11,11
67,00	10,72
68,00	10,36
69,00	10,00
70,00	9,66
71,00	9,34
72,00	9,02
73,00	8,72
74,00	8,43
75,00	8,15
76,00	7,88
77,00	7,62
78,00	7,37
79,00	7,13
80,00	6,90
81,00	6,68
82,00	6,46
83,00	6,25
84,00	6,05
85,00	5,86
86,00	5,68
87,00	5,50
88,00	5,33
89,00	5,16

T(℃)	Rmin	Rcent	Rmax	DR(%)	DT(℃)
90,00	5,00	5,14	5,29	2,78	0,93
91,00	4,84	4,98	5,12	2,77	0,46
92,00	4,70	4,83	4,96	2,73	0,45
93,00	4,55	4,68	4,80	2,71	0,91
94,00	4,41	4,53	4,66	2,67	0,90
95,00	4,28	4,39	4,51	2,64	0,89
96,00	4,15	4,26	4,37	2,63	0,89
97,00	4,03	4,13	4,24	2,59	0,88
98,00	3,90	4,01	4,11	2,55	0,87
99,00	3,79	3,89	3,98	2,55	0,87
100,00	3,68	3,77	3,86	2,49	0,87
101,00	3,56	3,66	3,75	2,52	0,88
102,00	3,46	3,55	3,64	2,56	0,89
103,00	3,35	3,44	3,53	2,58	0,91
104,00	3,26	3,34	3,43	2,60	0,92
105,00	3,16	3,25	3,33	2,62	0,93
106,00	3,07	3,15	3,23	2,67	0,95
107,00	2,98	3,06	3,14	2,68	0,96
108,00	2,89	2,97	3,05	2,73	0,97
109,00	2,81	2,88	2,96	2,77	0,99
110,00	2,72	2,80	2,88	2,75	1,00
111,00	2,65	2,72	2,80	2,83	1,01
112,00	2,57	2,64	2,72	2,84	1,04
113,00	2,50	2,57	2,64	2,84	1,04
114,00	2,42	2,50	2,57	2,88	1,05
115,00	2,36	2,43	2,50	2,93	1,07
116,00	2,29	2,36	2,43	2,93	1,08
117,00	2,23	2,29	2,36	2,97	1,09
118,00	2,16	2,23	2,29	3,01	1,12
119,00	2,10	2,17	2,23	3,00	1,13
120,00	2,04	2,11	2,17	3,04	1,13
121,00	1,99	2,05	2,11	3,07	1,16
122,00	1,93	1,99	2,06	3,06	1,16
123,00	1,88	1,94	2,00	3,15	1,18
124,00	1,83	1,89	1,95	3,13	1,20
125,00	1,78	1,84	1,89	3,16	1,21
126,00	1,73	1,79	1,84	3,19	1,22
127,00	1,68	1,74	1,79	3,22	1,24
128,00	1,64	1,69	1,75	3,25	1,27
129,00	1,60	1,65	1,70	3,27	1,28
130,00	1,55	1,60	1,66	3,30	1,29

With over 20 years of experience in the climate comfort sector, we have a clear goal: growth through innovation. Our team is laser-focused on the conception, development, and production of innovative heating, ventilation, and air conditioning solutions. This mission has developed through bringing together technical skills, creativity, technology, design, Italian passion, and a global vision to achieve the best energy efficiency and performance.

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