

Technical Service Bulletin:

Control Board Replacement Procedure

Models: Bosch IDS/IDP Premium Heat Pumps



BOSCH



WARNING

Dangerous operation, injury or property damage!

Improper servicing could result in dangerous operation, injury or property damage. The operations described below must be performed by qualified personnel.

NOTICE

Product damage!

Do not directly touch the components on the main board to avoid static electricity damage.

NOTICE

Improper operation!

The Control Board is default configured for IDS Premium and Dip Switch SW4-1 is set to OFF position. If replacing control board on an IDP Premium, ensure Dip Switch SW4-1 is set to ON position. See Table 1 for reference.

SW4-1 Dip Switch Settings

IDS Premium	ON OFF	OFF
IDP Premium	ON OFF	ON

Table 1

NOTICE

Product damage!

For IDS Premium:

The factory default mode is conventional 24VAC non-communicating mode and Dip Switch SW5-4 is set to OFF position.

If replacing a unit configured to communicating mode, ensure Dip Switch SW5-4 is set to ON position. See Table 2.

SW5-4 Dip Switch Settings

Non-Communicating	ON OFF	OFF
Communicating	ON OFF	ON

Table 2

NOTICE

Product damage!

Check the control board is set to the correct tonnage by setting Dip Switch J2. See Table 3.

J2 Dip Switch Settings

2 Ton / 4 Ton	ON OFF	OFF
3 Ton / 5 Ton	ON OFF	ON

Table 3

Board Replacement Procedure (For BOVA-36RTB-M20S & BPBA-36RCB-M18S)

1. Turn off power to both the indoor and outdoor unit and wait AT LEAST 5 minutes before removing the outdoor unit's control board access panel.



WARNING

Electrical hazard 380 volts DC!

Wait 5 minutes after disconnecting power, then verify DC voltage is less than 42 VDC at inverter test points P-N of socket CN8. Components may store a dangerous electrical potential of 380 Volts DC. Failure to follow these instructions could result in personal injury or death.

NOTICE

Improper operation!

Take a picture before removing any screws or wiring to use as reference when installing the new board.

Use a screwdriver instead of an electric screwdriver/drill or damage to the control board may occur.

Hold the board before removing the last screw, otherwise the main board may fall and cause damage.

There is no need to disconnect the field supplied wires; directly remove the wire plugs on the control board.

2. Remove wires and plugs from control board.

- Remove the 2 compressor wire plugs, power wire screws and ground wire screws (refer to Figure 1: items circled in blue).

NOTICE

Product Damage!

There are 5 different types of screws; they should not be mixed. Different screw types are installed in different locations. Refer to color coding in Figure 1 for appropriate screw type and location.

- Remove the 2 ground screws on the board (refer to Figure 1: items circled in green).
- Remove the 2 screws on the board (refer to Figure 1: items circled in red).
- Remove the 2 screws on the board (refer to Figure 1: items circled in purple).
- Remove the 6 screws on the board (refer to Figure 1: items circled in yellow).

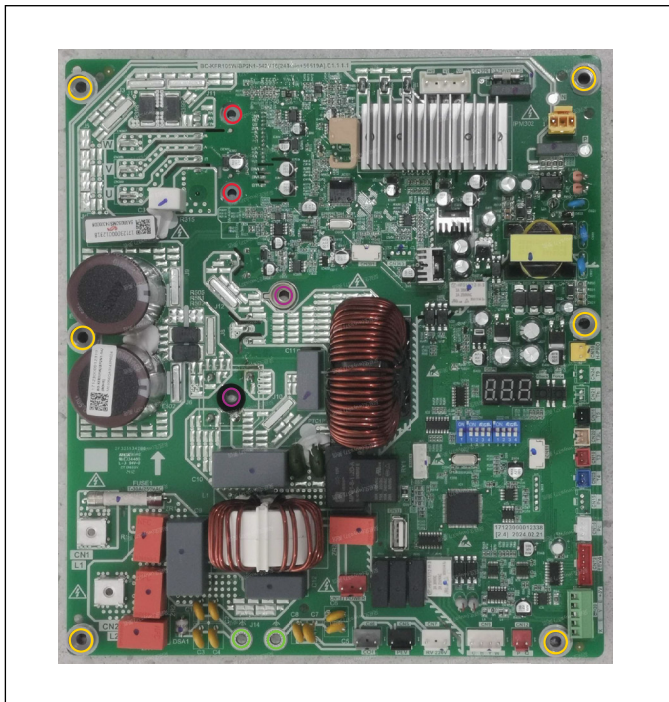


Figure 1











Screw Type					
Color for Location					

Table 4

- Remove the old board after finishing 2 to 7.

NOTICE

Product Damage!

If the thermal gasket falls off when removing the old board, the new thermal gasket in the accessory bag must be reinstalled. The surface of the thermal gasket must be kept clean. Refer to 9 to 10.

- Apply a thin and even layer of thermal paste on the heat sink designated location (refer to Figure 2: item framed in yellow).
- Put the thermal gasket on the heat sink designated location. The side with breakable groove faces out (refer to Figure 2).

NOTICE

Product Damage!

The full surface area of the replacement board's heat sink must be COMPLETELY covered with thermal paste. Failure to follow these instructions will cause poor heat dissipation and will lead to control board failure.



WARNING

Electrical hazard!

The thermal gasket must be installed properly before installing the new board. Failure to install the thermal gasket can result in property damage, personal injury, or death.



One tube of thermal paste is included with each board replacement.

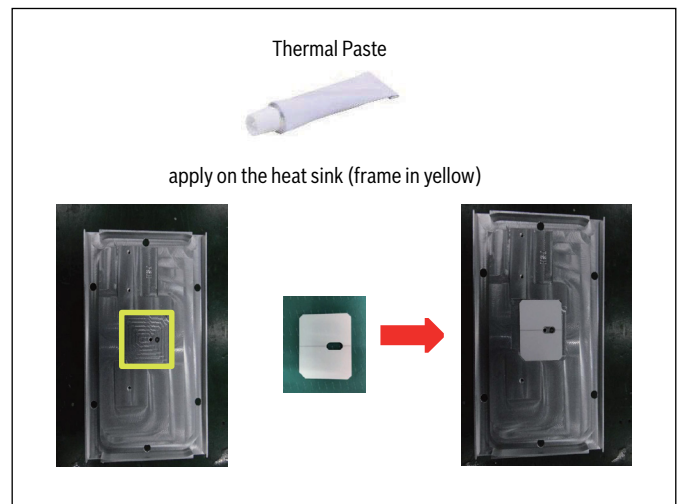


Figure 2

- Apply the thermal paste on the 4 components of the replacement board (refer to Figure 3).

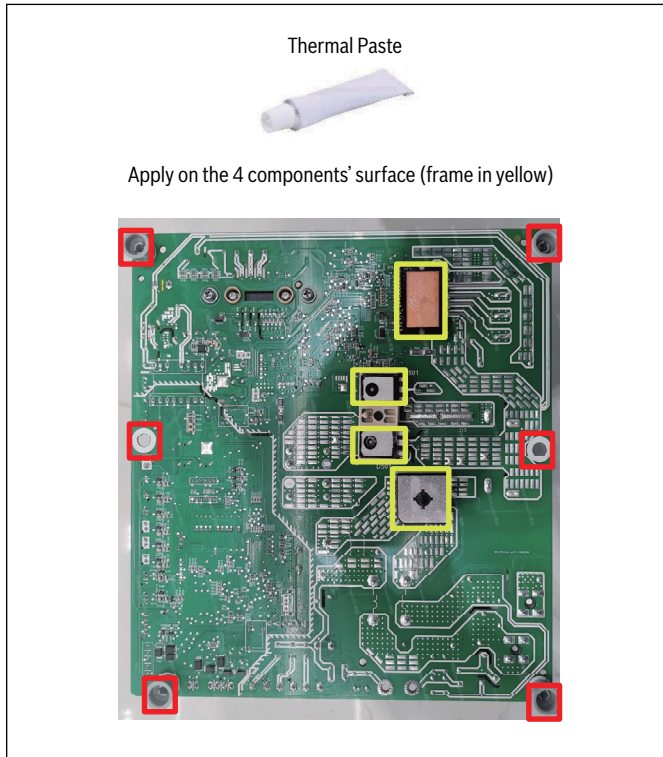


Figure 3

12. Install the 6 plastic standoffs on the new board (refer to Figure 3: items framed in red).
13. Install the new board on the unit.
14. Fasten all screws (refer to Figure 1 for screw type and location).
15. Reconnect the wires according to the wiring diagram located on the inside of the electrical control box panel and the picture that was taken prior to removal of the old board.
16. Check SW4/SW5/J2 dip switch positions. Refer to the Wiring Diagram (for IDS, page 6; for IDP, page 7) and the picture taken before replacement to ensure correct settings.
17. Double check all wire connections and screw positions before powering on.

Board Replacement Procedure (For BOVA-60RTB_M20S & BPBA-60RCB-M18S)

1. Turn off power to both the indoor and outdoor unit and wait AT LEAST 5 minutes before removing the outdoor unit's control board access panel.



WARNING

Electrical hazard 380 volts DC!

Wait 5 minutes after disconnecting power, then verify DC voltage is less than 42 VDC at inverter test points P-N of socket CN8. Components may store a dangerous electrical potential of 380 Volts DC. Failure to follow these instructions could result in personal injury or death.

NOTICE

Improper operation!

Take a picture before removing any screws or wiring to use as reference when installing the new board.

Use a screwdriver instead of an electric screwdriver/drill or damage to the control board may occur.

Hold the board before removing the last screw, otherwise the main board may fall and cause damage.

There is no need to disconnect the field supplied wires; directly remove the wire plugs on the control board.

2. Remove wires and plugs from control board.
3. Remove the 5 compressor and power wire screws (refer to Figure 4: items circled in blue).

NOTICE

Product Damage!

There are 5 different types of screws; they should not be mixed. Different screw types are installed in different locations. Refer to color coding in Figure 4 for appropriate screw type and location.

4. Remove the 2 screws on the board (refer to Figure 4 : items circled in red).
5. Remove the 3 screws on the board (refer to Figure 4 : items circled in purple).

- Remove the 2 ground screws on the board (refer to Figure 4: items circled in green).
- Remove the 7 screws on the board (refer to Figure 5: items circled in yellow).
- Remove the old board after finishing 2 to 7.

NOTICE

Product Damage!

If the thermal gasket falls off when removing the old board, the new thermal gasket in the accessory bag must be reinstalled. The surface of the thermal gasket must be kept clean. Refer to 9 to 10.

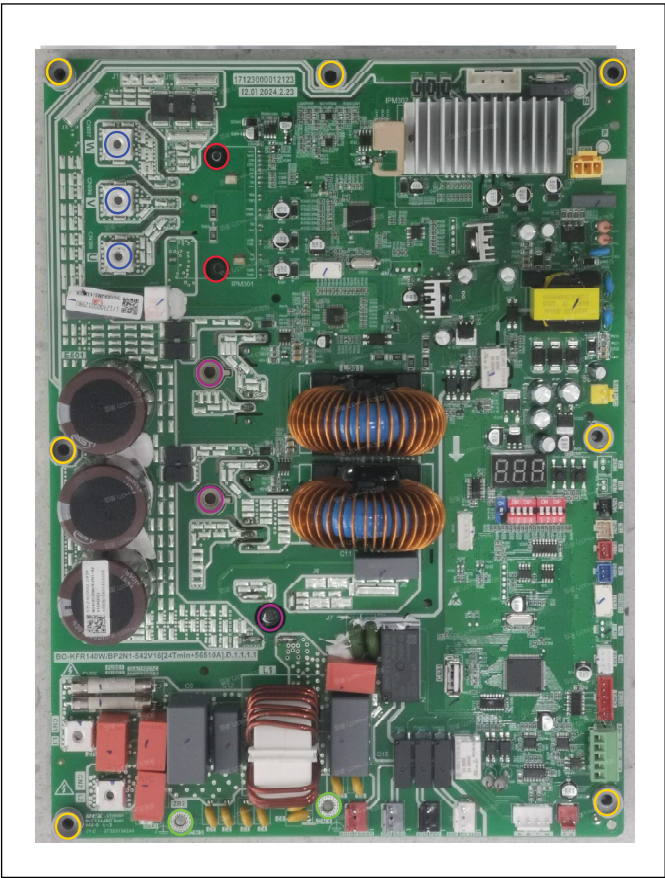


Figure 4

Screw Type					
Color for Location					

Table 5

- Apply a thin and even layer of thermal paste on the heat sink designated location equably and thin (refer to Figure 5: item framed in yellow).
- Put the thermal gasket on the heat sink designated location. The side with breakable groove faces out (refer to Figure 5).

NOTICE

Product Damage!

The full surface area of the replacement board's heat sink must be COMPLETELY covered with thermal paste. Failure to follow these instructions will cause poor heat dissipation and will lead to control board failure.



WARNING

Electrical hazard!

The thermal gasket must be installed properly before installing the new board. Failure to install the thermal gasket can result in property damage, personal injury, or death.



One tube of thermal paste is included with each board replacement.

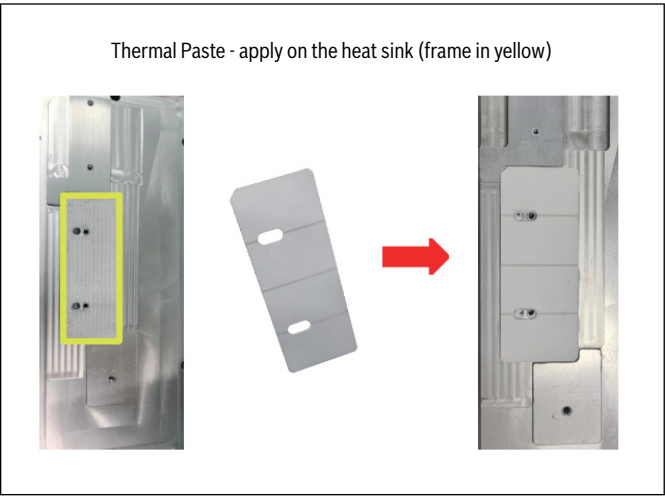


Figure 5

- Apply the thermal paste on the 6 components of the replacement board (refer to Figure 6).

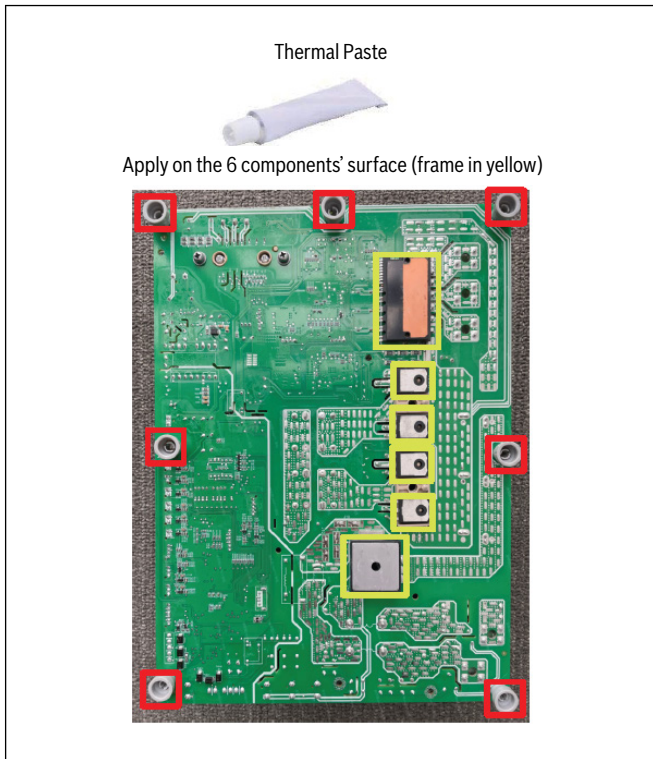


Figure 6

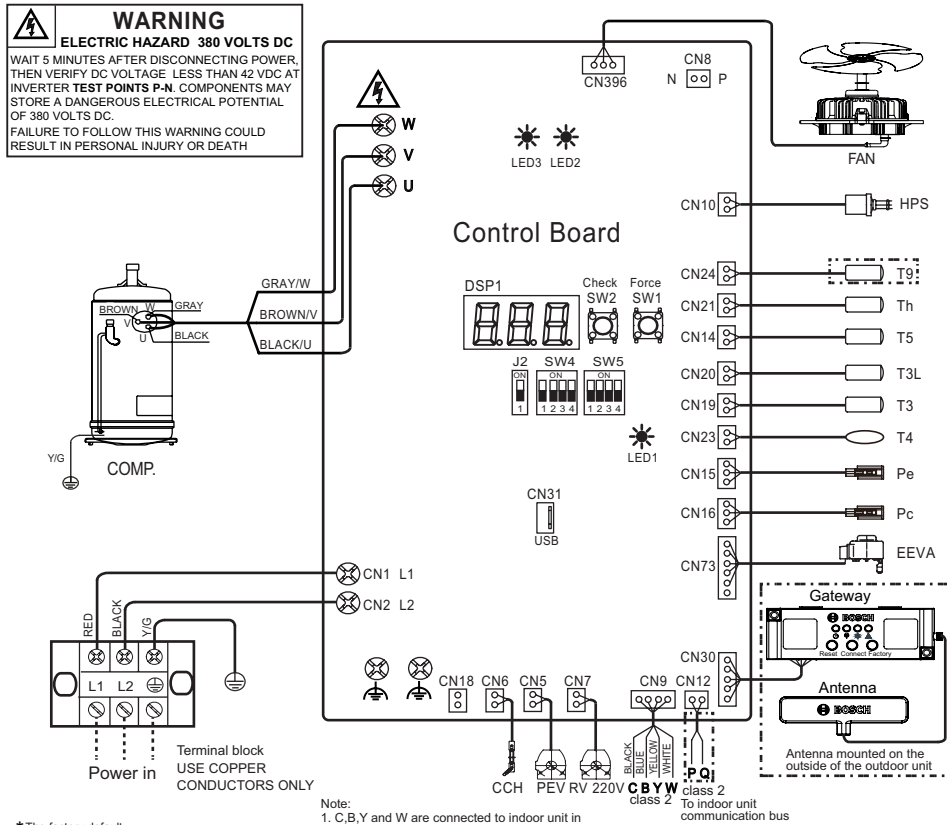
12. Install the 7 plastic standoffs on the new board (refer to Figure 6: items framed in red).
13. Install the new board on the unit.
14. Fasten all screws (refer to Figure 4 for screw type and location).
15. Reconnect the wires according to the wiring diagram located on the inside of the electrical control box panel and the picture that was taken prior to removal of the old board.
16. Check SW4/SW5/J2 dip switch positions. Refer to the Wiring Diagram (for IDS, page 6; for IDP, page 7) and the picture taken before replacement to ensure correct settings.
17. Double check all wire connections and screw positions before powering on.



If you have any questions regarding the information provided in this document, please contact our Technical Support team by phone at 1-800-283-3787, or via email at ac.techsupport@us.bosch.com.

IDS Premium Wiring Diagram

WARNING
ELECTRIC HAZARD 380 VOLTS DC
 WAIT 5 MINUTES AFTER DISCONNECTING POWER, THEN VERIFY DC VOLTAGE. LESS THAN 42 VDC AT INVERTER TEST POINTS P-N. COMPONENTS MAY STORE A DANGEROUS ELECTRICAL POTENTIAL OF 380 VOLTS DC.
 FAILURE TO FOLLOW THIS WARNING COULD RESULT IN PERSONAL INJURY OR DEATH



*The factory default

SW4: ON (Set capacity), OFF (Factory default)

SW5: ON (Set capacity), OFF (Factory default)

J2: ON (Set capacity), OFF (Factory default)

For 36/60K model *

For 24/48K model *




SW4-1	ON	Unused
SW4-2	ON	Must be set at OFF position *
SW4-3	ON	Adaptive capacity output disable *
SW4-4	ON	Accelerated cooling/heating *
SW5-1	ON	Heating time reduced 10% *
SW5-2	ON	Defrosting extended for 120 seconds *
SW5-3	ON	Reserved *
SW5-4	ON	Communication mode *
SW5-5	ON	Non-communication mode *

FORCE SW1	PRESS 1s	Forced cooling/heating (Charge mode)
FORCE SW1	PRESS 6s	Forced defrosting
CHECK SW2	PRESS 1s	Check the system parameters
CHECK SW2	PRESS 6s	Test mode (Not used)

- Note:
1. C, B, Y and W are connected to indoor unit in non-communication mode.
 2. B terminal is connected in heat pump heating operation, energized for heating.
 3. B and W signals are for heat pump system.
 4. Dash-dotted line means optional.
 5. Dotted line means field installed.
 6. P and Q are connected to indoor unit in communication mode.

6. P and Q are connected to indoor unit in communication mode.

Gateway button descriptions

		
Reset	Connect	Factory
Reset	Powers gateway off and back on	
Connect	Activates bluetooth(hold for at least 4 secs)	
Factory	Hold for 3-5 secs to run gateway in diagnostic mode	

Connect	Activates bluetooth(hold for at least 4 secs)
Factory	Hold for 3-5 secs to run gateway in diagnostic mode

Diagnostic Check: After holding down the factory button (3-5 secs), press connect button to run full diagnostics. If there are any faults on the gateway, the Fault LED will flash accordingly.

Number	Point check content
0	Outdoor unit capacity: H5=Heat pump 5 ton
1	Outdoor unit mode: 0-standby, 2-cooling, 3-heating
2	Outdoor unit set compressor speed
3	System last fault code
4	Liquid valve subcooling (°F)
5	Gas valve superheat(°F)
6	T3: outdoor coil temp.(°F)
7	T3L: outdoor coil outlet temp.(°F)
8	T4: outdoor ambient temp.(°F)
9	T5: compressor discharge temp.(°F)
10	Th: compressor suction temp.(°F)
11	Compressor IPM temp.(°F)
12	Pe: evaporating pressure(psig)
13	Pc: condensing pressure(psig)
14	Te: target evaporating temp.(°F) (only for cooling mode)
15	Te: evaporating temp.(°F)
16	Tc: target condensing temp.(°F) (only for heating mode)
17	Tc: condensing temp.(°F)
18	Target value of the compressor discharge superheat(°F) (only for heating mode)
19	Compressor discharge superheat(°F)
20	Compressor suction superheat(°F)
21	Openings of EEVA(P)
22	Fan speed stage
23	Outdoor unit fan current(A)
24	Compressor current(A)
25	Outdoor unit input current(A)
26	Outdoor unit input voltage(V)
27	Outdoor unit DC bus voltage(V)
28	Outdoor unit power(0.1kW)
29	Continuous running time of the compressor(min)
30	Outdoor unit main control software version
31	Indoor unit Heat Kit Staging
32	T2: indoor unit coil temp.(°F) (only for communication mode)
33	Indoor unit software version (only for communication mode)
34	Reserved
35	Remark*--"

LED1 GREEN	Solid ON	Main board powered on
LED2 RED	Solid ON	Compressor running
LED3 RED	2s ON	Standby
LED3 RED	0.2s ON	Communication fault with main control chip
LED3 RED	0.2s OFF	Driver fault
LED3 RED	Blink	Power off
LED3 RED	OFF	Fan running
LED3 RED	2s ON	Standby
LED3 RED	0.2s ON	Communication fault with main control chip
LED3 RED	0.2s OFF	Driver fault
LED3 RED	Blink	Power off
LED3 RED	OFF	Power off

CODE	Fault description
AIL	Ambient Temperature Limited(T4)
b2	Temperature sensor fault in indoor unit (T2)
b3	R454B refrigerant sensor fault in indoor unit
b4	R454B refrigerant sensor communication fault in indoor unit
b5	Communication fault between indoor unit and outdoor unit
b7	R454B refrigerant leakage protection in indoor unit
b8	R454B refrigerant sensor over service life in indoor unit
C3	The coil sensor is seated fault in cooling (T3)
E41	Temperature sensor fault (T3)
E42	Temperature sensor fault (T3L)
E43	Temperature sensor fault (T4)
E44	Temperature sensor fault (T5)
E45	Temperature sensor fault (Th)
E51	Outdoor unit high/low input voltage protection
E52	Outdoor unit high/low DC bus voltage protection
E7	Compressor discharge sensor is seated fault (T5)
E81	EEVA coil fault
EA	Control program does not match drive program in outdoor unit
F1	High pressure switch protection (HPS)
F2	5 times (P21) protection in 100 minutes, system lockout
F41	High pressure sensor fault
F42	Low pressure sensor fault
H01	Drive chip Communication fault in outdoor unit
J00-JCF	Compressor drive fault
n00-nCF	Fan drive fault
P0	Compressor IPM temperature protection
P1	High pressure switch protection (HPS)
P11	High pressure protection in cooling/heating (Pc)
P21	Low pressure protection in cooling/heating (Pe)
P31	Outdoor unit input over current protection
P32	Compressor over current protection
P4	High compressor discharge temperature protection (T5)
P5	Condensor coil temperature protection in cooling (T3)
PH	Low discharge superheat protection

CODE	Description
+	Forced operation mode
~(top)	Running indication under high pressure
~(bottom)	Running indication under low pressure
A	Running indication under return oil mode
C	Running indication under current limited condition
d	Running indication under T5 limited condition
F	Running indication under COMP. IPM Temp. limited condition
r	Running indication under compressor ratio limited condition
U	Running indication under low voltage limited condition
dF	Running indication under defrost mode

IDP Premium Wiring Diagram

