CAREL PZQBY0H121K Temperature Control

Danfoss ETC1H1 Temperature Control

In Production From May 2013

Field Replacement of RA28 Nov 2013
Cooler must be leveled to ensure proper drainage & door operation

Actual orientation of controller in the Cooling Deck 2.0

CAREL COLD CONTROL: NORMAL SETTING

Cooler must be leveled to ensure proper drainage & door operation
Cooler must be leveled to ensure proper drainage & door operation.

Display will show USE, when running properly. It's not 350 or any other number.

CAREL COLD CONTROL: NORMAL SETTING

Cooler must be leveled to ensure proper drainage & door operation.
- Normal Setting #5 for all coolers
- Controller offers 9 settings, from 1 to 9
- Setting 9 is the coldest setting, offers 1°C (34°F) temperature
- Setting 1 is the warmest setting, offers 5°C (41°F) temperature
- Setting 5 is the normal setting, offers 3.3°C (38°F) temperature

QBD RECOMMENDS to run the cooler at normal #5 setting and use cooler for beverages storage only
CHANGE THE SETTING IN 4 STEPS

- **STEP 1:** Verify display for Normal running
- **STEP 2:** Push SET / WRENCH key for more than 3 seconds, display will show “5”
- **STEP 3:** Push Colder / Warmer key for changing the setting from Normal to colder or warmer setting. Display will show the desired number / setting
- **STEP 4:** Push SET / WRENCH key for more than 3 second to confirm the desired number / setting

**EXAMPLE:** Change the setting from 5 to 3

1. Verify Normal Running
2. Normal Setting “5”
3. Warmer Setting “3”
4. Confirm Setting “3” by pushing SET/WRENCH

**SETTING CHANGE COMPLETED ONLY AFTER STEP 4**
TEMPERATURE CONTROL
TEMPERATURE CONTROL

DISPLAY SHOWING OFF
OFF MEANS:
- Compressor power is disconnected from controller

Push COLDER (upper) key again for more than 3 sec. to return to USE mode

DISPLAY WILL SHOW OFF IF
- COLDER (upper) key is pushed for more than 3 sec
TEMPERATURE CONTROL

DISPLAY DURING COMPRESSOR CYCLING

Compressor display during normal **ON** cycle of compressor

Compressor display during normal **OFF** cycle of compressor

FAN FOLLOWS DEFINED LOGIC DURING COMPRESSOR OFF & DEFROST CYCLE FOR ENERGY SAVINGS

2015JA0002
TEMPERATURE CONTROL

DISPLAY DURING DEFROST

Compressor display during normal DEFROST cycle

Compressor display during normal DEFROST cycle-dripping time

FAN FOLLOWS DEFINED LOGIC DURING COMPRESSOR OFF & DEFROST CYCLE FOR ENERGY SAVINGS

2015JA0002
DEFROST CYCLE OF CD MODELS

- QBD’s CAREL controller comes with automatic defrost cycle (every 6 hrs. for 20 mins)

- For additional defrost requirements, manual defrost of 20 min can be achieved

  - Pushing **WARMER** (lower) key for more than 3 sec.
  - Controller will automatically come out of defrost cycle after 20 mins
ERROR CODE

Display may show “E0” if:

- Temperature probe is faulty/damaged
- Temperature probe is disconnected
TEMPERATURE PROBE POSITION

INCORRECT PROBE POSITION WILL RESULT IN COOLING RELATED ISSUES

COMPRESSOR CUT IN AND CUT OUT IS DETERMINED BY THE TEMPERATURE MEASURED BY PROBE
DANFOSS COLD CONTROL

Key Features and Benefits

TEMPERATURE CONTROL

- Fully Electronic with Mechanical Type Dial
- Highly accurate temperature measurement and control
- Direct retrofit for RA28 controller
- Programmable factory set temperature settings
TEMPERATURE CONTROL

VOLTAGE PROTECTION

- Low voltage protection: 90V
- High voltage protection: 145V

DEFROST

- Time based defrost every 3.0 hrs. of compressor running to avoid freezing and ensure efficient operation of the cooler

QUALITY

- Third party verification of controller relay for 1,000,000 cycle with Peak load of 20 AMPS
- Robust probe, IP65 design with NSF certification
TEMPERATURE CONTROL

RA28 REPLACEMENT WITH DANFOSS GUIDE

RA28 CONTROL

DANFOSS CONTROL
RA28 REPLACEMENT WITH DANFOSS GUIDE

Wiring diagram for RA28 CONTROL

Wiring diagram for DANFOSS CONTROL
RA28 REPLACEMENT WITH DANFOSS GUIDE

- **STEP 1:** Disconnect power before servicing. SERVICE BY TRAINED PERSONNEL ONLY.
- **STEP 2:** Remove the old cold control and sensor from the Cooling Deck.
- **STEP 3:** Place the new Sensor probe in the Return AIR, same as in CAREL or RA28 using a sensor holder as shown below and connect to controller.
- **STEP 4:** Place the new cold control inside the same electrical box and apply the knob followed by locking nut with washer (Optional) as shown below.

![Images of probe in return air side, controller with probe connected, locking nut, and knob.](images)
RA28 REPLACEMENT WITH DANFOSS GUIDE

STEP 5: Connect the T-Joint wiring connector to cold control L3, Fan and main supply
STEP 6: Connect the compressor wire to C1 of controller
STEP 7: Connect the neutral wire (White) to N5
STEP 8: Close the control and reinstall it back to the cooling deck at the same location
STEP 9: Rotate the knob and set to Normal setting 5
VERIFICATION TEST OF NEW CONTROLLER

- **STEP 1**: Make sure the voltage across receptacles is within (+/- 10%) of 115V before you connect the cooling deck.
- **STEP 2**: Connect the cooling deck to power supply.
- **STEP 3**: Evaporator fan motor should start within few seconds of power up.
- **STEP 4**: Compressor will start after some time (maximum 5mins, some cases to protect compressor) of power up.
- **STEP 5**: Compressor ON/OFF cycle will be determined by cold control. Make sure compressor maintains the desired temperature in the cabinet and cycle OFF once the desired temperature is achieved.

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