



UNIT CONTROLLER 8 (UC8)

Troubleshooting guide

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1. Cautions

- ! Turn off mains power before opening the electrical panel of a unit.
- ! When disconnecting and connecting connectors hold them by the housing. Do not pull on the wires.
- ! Use as little force as possible when replacing electronic circuit boards.
- ! Never pull on individual electronic components.

2. Recommended service tool set

- Set of screwdrivers of various sizes: blades, pozi-drive and Phillips
- Socket set (metric)
- Allan keys (metric)
- Small and medium size crescent
- Long nose pliers
- Multi-meter and probe leads of good quality
- Refrigerant scales
- Mobile telephone / Smart-phone

Additional potentially useful items:

- Amp-meter clamp
- Temperature probe
- Length of appliance wire, mains voltage rated
- Wire cutting and stripping tool
- Roll of electrical insulation tape
- Quick-connect (spade) terminals (6.3mm, 0.25") (rubber insulating boots are useful too)
- Quick-connect (spade) crimp tool
- Pressure gauges for R410a refrigerant
- Laptop computer with USB to RS485 converter (Hyperterm or TeraTerm program installed)
- Torch or other battery powered lamp (e.g. headlamp)

3. Recommended set of spare parts

- Bottle with R410a refrigerant
- Known good UC8 controller circuit board, programmed with software version 1.5.3 or later
- Set of Temperzone standard temperature sensors (yellow, blue, red and white leads)
- 34.5 bar and 45 bar pressure transducers
- Temperzone pressure transducer leads

4. Items to check first

Thoroughly investigate the customer complaint:

- What exactly is the complaint?
- Does the problem appear only under certain conditions?
- Does the unit run at all?
- Check mains power is properly connected and is the mains voltage correct.
- Check control wires between indoor and outdoor units and to the thermostat or other controller.
- Take careful note of any information shown on the controller board display.

Notes:

1. Hydronic units will not run the compressor until:
 - The water flow switch (if used) is closed, indicating an adequate flow of water.
2. Chiller units will not run the compressor until:
 - The water flow switch (if used) is closed, indicating an adequate flow of water.
 - The supply water temperature is above +2°C.

5. Viewing system temperatures and pressures

It is possible to use the display on the UC8 controller to view system pressures and temperatures. This is available with the unit in normal mode and in commissioning mode and regardless whether the compressor is on or off. It is not available when the controller is reporting a fault.

To view pressures, temperatures, superheat and expansion valve information:

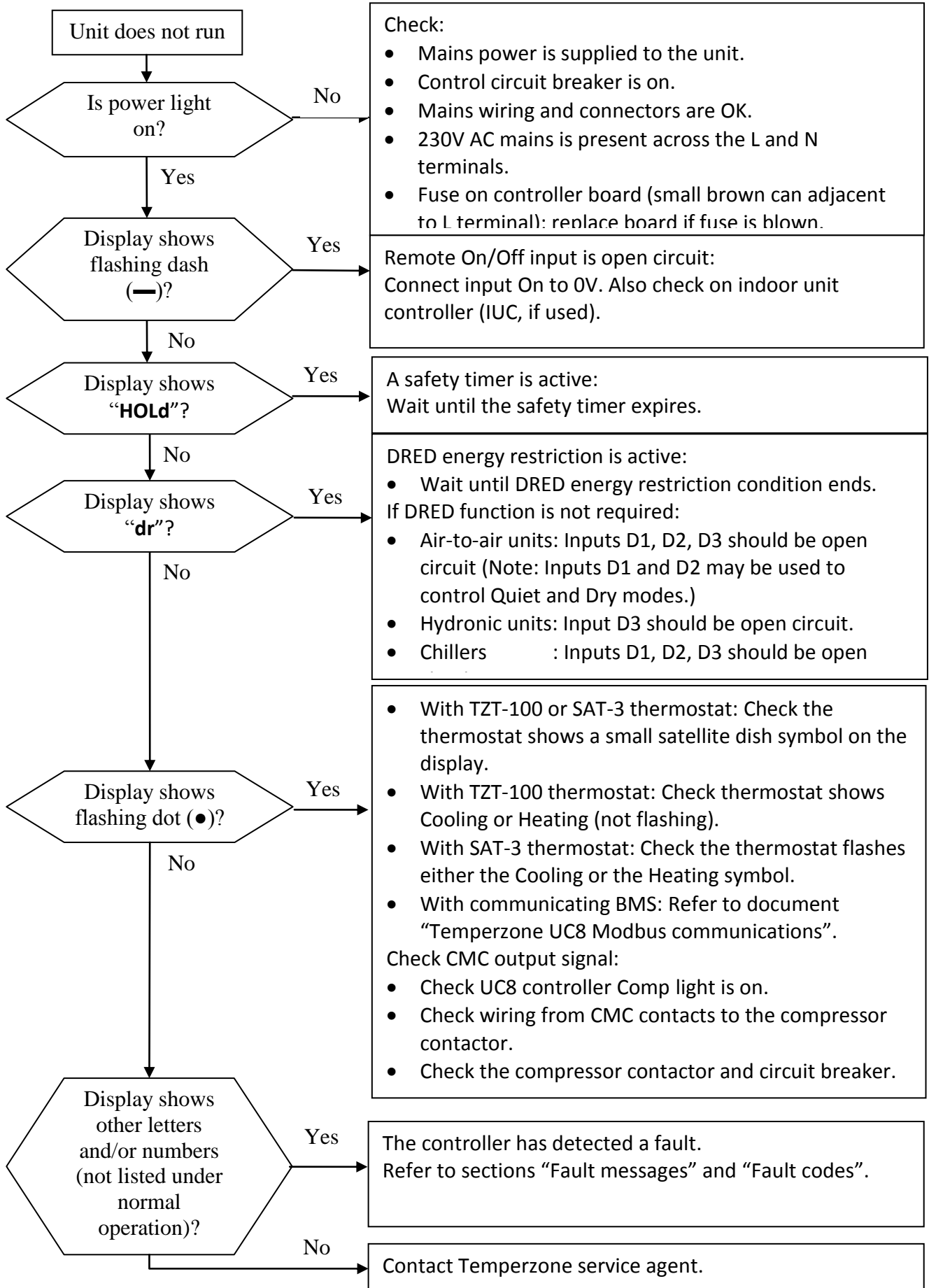
Repeatedly press the pushbutton to cycle the display through the options (in a round robin fashion). After 2 minutes the display will automatically return to a flashing dot (or “c”).

Display	Meaning	Units
• or c	Normal mode (default)	
SLP	Suction line pressure	kPa
Et	Evaporating temperature	°C
SLt	Suction line temperature	°C
SSH	Suction side superheat	K
dLP	Discharge line pressure	kPa
Ct	Condensing temperature	°C
dLt	Discharge line temperature	°C
dSH	Discharge side superheat	K
ICEt	Outdoor coil de-ice sensor temperature	°C
CAP	Unit capacity (duty)	%
EE1	Expansion valve 1 opening	%
EE2	Expansion valve 2 opening	%

Pressures are shown in kPa. Divide by 6.895 (roughly 7) to convert to PSI.

Temperatures are shown in degrees Celsius (°C). If the indicated temperature is below 0°C then a minus sign is shown before the value. Note: If the unit has one or two pressure transducers then the condensing and/or evaporating temperatures shown are converted from pressure readings.

6. Troubleshooting procedure



7. Normal display messages

The UC8 controller display may show one or more of the following during normal operation.

Table 1: Normal controller display messages

Display	Meaning
UC8 1.5.3	Controller model number (UC8) and software version. (shown only after power-on)
dF	Configured for fixed capacity or digital scroll compressor.
038	Configured for Copeland ZPV038 compressor & Carel Power+ inverter.
550	Configured for Toshiba DA550 compressor & Carel Power+ inverter.
66	Configured for Siam ANB66 compressor & Carel Power+ inverter.
78	Configured for Siam ANB78 compressor & Carel Power inverter.
063	Configured for Copeland ZPV063 compressor & Emerson CSD100 inverter.
dELAY	The unit waits for a random start-up delay time. (up to about 30s, occurs only after power-on)
• (flashing)	Normal operation.
— (slowly flashing)	Unit is OFF by Remote On/Off signal.
dE-ICE	The unit is de-icing the outdoor coil.
c	Commissioning mode (automatically expires after 30 minutes)
t	Test mode (automatically expires after about 1 minute)
HOLD	The compressor is held-on or held-off by a safety timer
dr	DRED energy consumption restriction is active

8. Fault messages

Display	Meaning	Possible causes	Possible remedy
LP	Low pressure protection	Check for refrigerant leaks.	Fix leak, evacuate unit, then recharge.
		Expansion valve is closed.	Check valve coil is properly fitted onto the valve body. Check UC8 DIP switch settings. Repair wiring to the valve. Replace expansion valve.
		Faulty transducer cable. Faulty transducer. Faulty LP switch.	Repair transducer cable. Replace transducer. Replace LP switch.
		Service valve is closed.	Open service valves.
HP	High pressure protection	Outdoor fan does not start (cooling mode).	Repair fan or fan wiring.
		Indoor fan does not start (heating mode).	Repair fan or fan wiring.
		Unit is overcharged.	Remove excess refrigerant charge.
		Expansion valve is closed.	Check UC8 DIP switch settings. Repair wiring to the valve. Replace expansion valve.
		Faulty transducer cable. Faulty transducer. Faulty HP switch.	Repair cable to the transducer. Replace transducer. Replace HP switch.
		Service valve is closed.	Open service valves.
HI-t	High temperature protection	Insufficient refrigerant.	Add refrigerant.
		Faulty discharge line temperature sensor.	Replace sensor.
		Problem with expansion valve.	Check expansion valve opening.
FROSt	Indoor coil frost protection	Air filter blocked.	Clean or replace air filter.
		Indoor dampers closed.	Check indoor damper and damper controls.
		Excess amount of cold fresh air introduced.	Check fresh air damper and damper controls.
		Indoor fan speed too low.	Increase indoor fan speed.
		Faulty indoor fan motor. Faulty indoor fan speed controller.	Replace indoor fan motor. Replace indoor fan speed controller.
		Return air temperature too low.	Ensure unit is not operated in cooling mode with very low return air temperature.
		Insufficient refrigerant.	Add refrigerant.
HI-SL	High suction line temperature protection	Insufficient refrigerant.	Add refrigerant.
		Very high room temperature (cooling mode).	Reduce indoor fan speed (temporarily).
		Very high outdoor ambient temperature (heating mode).	Ensure unit is not operated in heating mode with very high outdoor ambient temperature.
		Faulty suction line temperature sensor.	Replace sensor.

Display	Meaning	Possible causes	Possible remedy
Lo-dSH	Low discharge superheat protection	Unit is overcharged.	Remove excess refrigerant charge.
		Discharge line temperature sensor not properly fitted.	Correctly fit the temperature sensor.
		Faulty discharge line temperature sensor.	Replace sensor.
		Incorrect expansion valve selection	Check DIP switch settings for switches 7, 8, 9 and 10
HI-dSH	High discharge superheat protection	Loss of refrigerant.	Find refrigerant leak and repair. Replace refrigerant with correct charge.
		Faulty discharge line high pressure transducer.	Replace transducer.
		Incorrect expansion valve selection	Check DIP switch settings for switches 7, 8, 9 and 10
LO-t	Water freeze protection	Insufficient flow of water	Check water circulating pump. Check water valves are open.
		Supply water temperature too low.	Ensure supply water temperature is above +10°C.
		Lack of refrigerant charge.	Add refrigerant.
FLOOD	Sump condensate flooding protection	Condensate drain pipe is blocked	Unblock condensate drain pipe.
		Condensate drain pipe slope is insufficient	Increase pipe slope or install sump condensate pump and float switch.
		No U-trap installed	Install U-trap
		Faulty sump condensate float switch.	Replace float switch.
		Faulty sump condensate pump.	Replace pump.
OL	Overload protection	Indoor fan is overloaded.	Check indoor fan. Check airflow is not obstructed.
		Outdoor fan is overloaded.	Check outdoor fan. Check airflow is not obstructed.
		Compressor overheated.	Wait until compressor has cooled down sufficiently. Check system has adequate refrigerant charge. System design must ensure adequate return of compressor lubricating oil.
		Faulty wiring / connection to input IN#2.	Repair wiring.

9. Fault codes.

Display	Fault	Possible causes	Possible remedy
F10	Outdoor fan	Incorrect DIP switch settings.	Change DIP switch settings.
		Loose wiring between UC8 board and outdoor fan speed controller board.	Repair wiring.
		No power to outdoor fan speed controller.	Ensure power is present.
		Faulty outdoor fan speed controller board.	Replace outdoor fan speed controller.
F11	Indoor fan	Incorrect DIP switch settings.	Change DIP switch settings.
		Loose wiring between UC8 board and indoor fan speed controller board.	Repair wiring.
		No power to indoor fan speed controller.	Ensure power is present.
		Faulty indoor fan speed controller board.	Replace indoor fan speed controller.
F12	Low pressure transducer. Refer to "LP".		
F13	High pressure transducer. Refer to "HP".		
F14	Suction line temperature sensor	Loose connection.	Repair connections.
		Faulty temperature sensor.	Replace sensor.
F15	Discharge line temperature sensor	Loose connection.	Repair connections.
		Faulty temperature sensor.	Replace sensor.
F16	De-Ice temperature sensor	Loose connection.	Repair connections.
		Faulty temperature sensor.	Replace sensor.
F17	Outdoor coil temperature sensor	Loose connection.	Repair connections.
		Faulty temperature sensor.	Replace sensor.
F18	Indoor coil temperature sensor	Loose connection.	Repair connections.
		Faulty temperature sensor.	Replace sensor.
F19	Outdoor ambient temperature sensor	Loose connection.	Repair connections.
		Faulty temperature sensor.	Replace sensor.
F20	Superheat unknown	Check: low pressure transducer, suction line temperature sensor, high pressure transducer, discharge line temperature sensor, outdoor coil temperature sensor, indoor coil temperature sensor.	
F21	Thermostat serial comms lost	Loose wiring.	Repair connections.
F22	System 1 or BMS serial comms lost	Loose wiring.	Repair connections.
		Master unit or BMS controller off.	Turn master unit or BMS on.
		Master unit or BMS communications intermittent.	Ensure BMS communicates at least once every 5 minutes.
F23	System 2 serial comms lost	Loose wiring.	Repair connections.
		Incorrect DIP switch settings.	Check DIP switch settings.
F24	System 3 serial comms lost	Loose wiring.	Repair connections.
		Incorrect DIP switch settings.	Check DIP switch settings.

Display	Fault	Possible causes	Possible remedy
F25	System 4 serial comms lost	Loose wiring.	Repair connections.
		Incorrect DIP switch settings.	Correct DIP switch settings.
F26	Cannot read DIP switches	Moisture on controller circuit board.	Allow controller to dry.
		Faulty controller.	Replace controller circuit board.
F27	Invalid fan selection		Correct DIP switch settings.
F28	Missing outdoor coil de-ice temperature sensor	Control signals request heating mode on a cooling-only unit.	Remove heating mode request signal.
		Loose wiring.	Repair connections.
		Faulty outdoor coil de-ice sensor.	Replace sensor.
F29	Microcontroller temperature too high	Wait until the unit has cooled down. Find cause of extremely high temperature in the electrical compartment.	
F30	Supply voltage out of bounds	Check that 230V AC mains power supply voltage is stable.	
F31	A slave unit reports a fault	Check slave units.	
F32	Internal comms problem	Moisture on controller circuit board.	Allow controller to dry.
		Faulty controller.	Replace controller circuit board.
F33	Refer to "high discharge superheat" (shown as "HI-dSH")		
F34	Problem with readings from the pressure transducers	Transducer wires swapped.	Correct transducer wiring.
		Transducers fitted to wrong pipe.	Swap transducers.
		Incorrect transducer type.	Fit correct transducer.
		Expansion valve closed.	Repair EEV wires.
		Faulty transducer.	Replace transducer.
F35	Reverse cycle valve	Loose wiring.	Repair wiring.
		Faulty reverse cycle valve.	Replace reverse cycle valve.
F36	Invalid DIP switch setting on TZT-100 thermostat	The TZT-100 thermostat DIP switches must be set to: <ul style="list-style-type: none"> • 1-stage operation • heat-pump equipment type • the reverse cycle valve must be on when the thermostat requests heating mode 	
F37	Indoor unit serial comms lost	Loose wiring.	Repair connections.
		Indoor unit has no power.	Restore power to the indoor unit.
		Excessive electrical interference	Use shielded twisted pair wires. Route comms cables well away from other cabling. Remove source of electrical interference.
		Faulty indoor unit controller	Replace indoor unit controller.
F38	Indoor unit controller reports a fault	Loose temperature sensor wiring in indoor unit.	Repair temperature sensor wiring.
F39	Problem with variable speed compressor inverter	Loose wiring.	Repair connections.
		Inverter has no power.	Restore power to the inverter.
		Faulty inverter.	Replace inverter.

Display	Fault	Possible causes	Possible remedy
F40	High compression ratio	Indoor fan speed too low. Air filter blocked. Unit is overcharged.	Increase indoor fan speed. Clean or replace air filter. Remove some refrigerant.
F41	Low compression ratio	Unit is undercharged.	Add refrigerant.
F42	High evaporating temperature	Very high room temperature combined with high indoor fan speed (cooling mode).	Temporarily reduce indoor fan speed.
		Excess introduction of fresh (hot outdoor) air.	Reduce amount of fresh air.
F43	Low condensing temperature	Very low room temperature combined with high indoor fan speed (heating mode).	Temporarily reduce indoor fan speed.
		Excess introduction of fresh (cold outdoor) air.	Reduce amount of fresh air.

10. Safety timer durations

Safety timer	Compressor Off-Duration
Unit start-up delay (after mains power-on)	2 minutes
Minimum compressor run-time (On-to-Off duration)	2 minutes
Minimum compressor off-time (Off-to-On duration)	3 minutes
Minimum compressor cycle-time (On-to-On duration)	6 minutes (a maximum of ten compressor starts per hour)
Hydronic unit compressor start delay (allow time for water valve to open)	45 seconds
HP protection	3 minutes
LP protection	3 minutes
High discharge temperature protection	3 minutes
Frost protection (indoor coil)	6 minutes
Freeze protection (hydronic units)	3 minutes
High suction line temperature/pressure protection	3 minutes
Low discharge superheat protection	3 minutes
Overload protection	3 minutes

11. Protection functions

High pressure protection (HP)

Protects a unit from excessively high refrigerant pressure.

Conditions: Unit with HP switch: When the switch activates (open circuit).
Unit with high pressure transducer: When compressor discharge pressure exceeds 4237 kPa (614.5 PSI, equivalent to +66°C condensing temperature).
Hydronic reverse cycle units only (these units switch the high pressure transducer to the suction line when heating): When the indoor coil temperature exceeds 56°C.

Note: A faulty pressure transducer is also reported as an HP fault.

Low pressure protection (LP)

Protects a unit from excessively low refrigerant pressure.

Conditions: Unit with LP switch: As soon as the switch activates (open circuit).
If a low pressure transducer is connected there are two levels:
Transient level: When pressure is below 114 kPa (16.5 PSI, equivalent to -35°C).
Normal level: When pressure is below 228 kPa (33.0 PSI, equivalent to -25°C).

Notes: The transient level is always applied.

The normal level is applied when more than 3 minutes have expired since the compressor started, or more than 3 minutes after the end of a de-ice cycle.

A faulty pressure transducer is also reported as an LP fault.

Indoor coil frost protection

Protects a unit from forming too much ice on the indoor coil. Applied only when a unit is cooling in normal mode, not applied when a unit is de-icing the outdoor coil.

The frost protection function activates when very cold indoor coil conditions persists for longer than the frost-protect delay time of 6 minutes.

Conditions: When $T(\text{evaporating})$ is below -8°C for longer than the frost-protect delay time.
When the sum of $T(\text{evaporating}) + T(\text{suction line})$ is below -6°C for longer than the frost-protect delay time. For example: $T(\text{ev}) \leq -6^\circ\text{C}$ and $T(\text{sl}) \leq 0^\circ\text{C}$.
If $T(\text{evaporating})$ is not known to the controller: When $T(\text{suction line})$ is below -8°C for longer than the frost-protect delay time.

High temperature protection

Protects the compressor from overheating and the compressor lubricating oil from deterioration. On a unit with electric heating protects the unit from becoming extremely hot and burn-out of the electric heating element.

Conditions: When the compressor discharge line temperature exceeds:
+120°C for longer than 2 seconds **or**
+105°C for longer than 1 hour.

Hydronic units with electric heating only:

When the supply air temperature sensor (connected to input AMB) exceeds +75°C for longer than 2 seconds.

High suction line / evaporating temperature protection

Protects the compressor motor from overheating.

If the unit has a variable duty compressor (digital scroll or variable speed) then high suction line / evaporating temperature protection is applied only when capacity is at 50% of nominal duty or higher. If the unit has a fixed duty compressor this protection is always applied.

Conditions: When $T(\text{evaporating})$ exceeds $+27.5^{\circ}\text{C}$ (equivalent to 1665 kPa, 241.5 PSI) and/or $T(\text{suction line})$ exceeds $+30^{\circ}\text{C}$ for longer than 15 minutes.

Low discharge superheat protection

Protects a unit with an electronic expansion valve (EEV) from prolonged flooding of the compressor. This protection does not apply to units that use accurators.

Discharge superheat is defined as the difference between the compressor discharge line temperature and the condensing temperature.

Conditions for units with fixed duty compressor:

- When discharge superheat is below 10K for longer than 20 minutes.

Conditions for units with variable duty compressor (digital scroll and variable speed types):

- At nominal duty and higher: When discharge superheat is below 10K for longer than 20 minutes.
- Between standard minimum and nominal duty: Minimum discharge superheat varies linearly with capacity from 0K at standard minimum duty to 10K at nominal duty.
- At standard minimum duty and below: Protection not applied.

Standard minimum duty for a digital scroll compressor: 40%.

Nominal duty for a digital scroll compressor: 100%.

Standard minimum duty for a variable speed compressor: 25%.

Nominal duty for a variable speed compressor: 65%.

High discharge superheat protection

Protects a unit from prolonged running with a lack of refrigerant. Applied only when the unit operates in normal mode, not applied when a unit is de-icing the outdoor coil.

Discharge superheat is defined as the difference between the compressor discharge line temperature and the condensing temperature.

Conditions: When discharge superheat is above 45K for longer than 45 minutes.

Freeze protection

This function applies only to hydronic units and chillers. Protects against freezing of the circulating water.

For hydronic reverse cycle units the protection applies only to when the unit is heating the room (and thus cooling the water). For chillers the protection applies only to when the unit is cooling the water.

Conditions: When $T(\text{evaporating})$ is below -10°C for longer than 1 minute.
When $T(\text{evaporating})$ is below -4°C and $T(\text{suction line})$ is below 0°C for longer than 1 minute.

Reverse cycle valve failure protection

Stops a unit from running in the wrong mode if the reverse cycle valve fails to assume the correct position (cooling or heating). The function is not applied to hydronic units nor to chillers.

This function comes in two versions. The first version applies only to air-to-air units which are equipped with two pressure transducers (connected to UC8 inputs HPT and LPT) and also have a temperature sensor fitted to the indoor coil (connected to UC8 input IC for packaged units, or connected to IUC input T1 for split units).

- Conditions:** If the unit is **cooling** and **all** of the next conditions are true:
1. The unit is cooling (not off and not de-icing the outdoor coil).
 2. The compressor runs at more than 50% of nominal capacity.
 3. The indoor coil temperature sensor reports a temperature that is closer to the condensing temperature (calculated by the controller from the compressor discharge line pressure) than to the evaporating temperature (calculated by the controller from the compressor suction line pressure)
 4. The difference between the condensing temperature and the evaporating temperature is greater than 20°C.
 5. The above situation persists for longer than 3 minutes.

If the unit is **heating** the same list of conditions applies except that the indoor coil temperature sensor must give a reading closer to the condensing temperature than to the evaporating temperature.

The second version of this function applies only to air-to-air units which do not have pressure transducers (nothing is connected to UC8 inputs HPT and LPT) but have temperature sensors fitted to the indoor- and outdoor- coils (connected to inputs IC and OC respectively). It also applies to split units where the indoor unit controller (IUC) reports indoor coil temperature to the UC8.

- Conditions:** **All** of the next conditions must true:
1. The unit is cooling or heating (not off and not de-icing the outdoor coil).
 2. The compressor runs at more than 50% of nominal capacity.
 3. The measured condensing temperature is more than 10°C colder than the measured evaporating temperature (i.e. temperatures are the ‘wrong way around’).
 4. The above situation persists for longer than 3 minutes.

Overload protection

Protects various components of the system such as the compressor, indoor and outdoor fan motors.

Conditions: When the overload input signal becomes active.

The UC8 controller has a number of options for the overload input signal:

Units with a LP switch connected to UC8 input IN#2: In these units any overload switches can be wired in series with the COMP input signal (option). In this case when an overload signal is active the unit will not run the compressor but the controller display will not show a fault.

Units with a low pressure transducer connected to UC8 input LPT: Overload switches can be wired to input IN#2. If the input becomes inactive the display will show the “OL” message and the compressor is stopped.

12. Lock-out

The controller counts the number of trip events for each of the safety functions.

If any one of the trip counters listed below reaches the count of 3 then the unit will be placed into lock-out mode. During lock-out mode the compressor and the fans are not allowed to run. The display will show which protection caused the lock-out and the fault relay output is active.

Trip event counters are reset to zero when the thermostat calls for the compressor to be off. A trip event is also removed from the count if the event occurred longer than 12 hours ago.

Faults that can lead to lock out are:

- HP
- LP
- High temperature protection
- Frost protection
- High suction line / evaporation temperature protection
- Low discharge superheat protection
- High discharge superheat protection
- Freeze protection
- Reverse cycle valve failure protection
- Variable speed compressor driver trip events

Lock-out mode can be cleared in a number of ways:

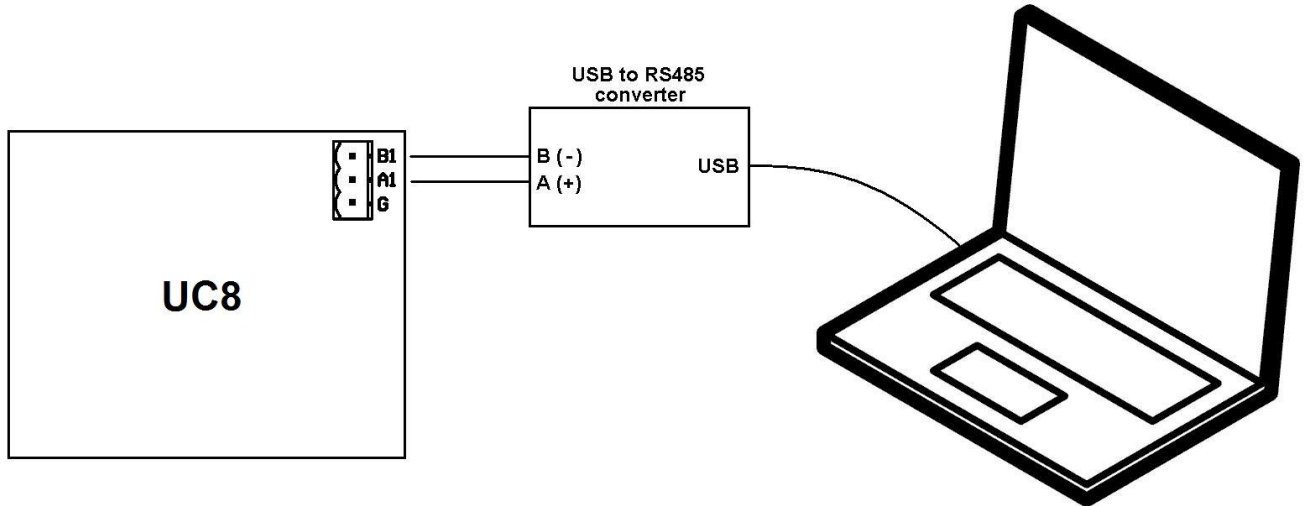
- By removing and then restoring mains power to the UC8 controller.
- By Modbus RTU command sequence. Refer to document UC8 Modbus communications for details.
- By BACnet command sequence. Refer to document UC8 BACnet communications for details.

When a unit was locked out and the UC8 controller is reset, e.g. by removing and then restoring mains power, the display will show the previous fault message for 20 seconds (after the normal start-up sequence). After that normal operation resumes. The 20 second long message display will repeat every time mains power is removed and restored until the unit has completed at least one normal compressor-on / compressor-off cycle.

13. Unit log

The controller keeps an internal log of certain information. The log can be viewed as follows:

- Connect a USB to RS485 converter to a computer and to UC8 terminals A1 and B1 respectively.



- On the computer start a simple communications program such as HyperTerm or TeraTerm.
- Settings of the communications parameters must be: 115200 baud, 8 data bits, no parity bit, 1 stop bit. The COM port number must be that of the USB to RS485 serial interface.
- Switch power to the unit controller off.
- Press the small push-button on the UC8 controller circuit board. While still holding down the push-button switch power to the unit on. Keep pressing (a few seconds) until the display on the controller shows the letter **P**.
- The computer screen will now show a small menu as shown here:

```
=====  
(C) COPYRIGHT 2015 Temperzone  
UC8 bootloader    version 2.1  
  
Please choose an option:  
Download new software - 1  
Start normal operation - 2  
View unit log record - 3  
Disable write protection - 4  
=====
```

- Choose “View unit log record” by pressing **3** on the computer keyboard.

- The unit log will now be displayed on the computer screen. An example:

```
===== Unit log record:
Cooling hours      : 168
Cooling minutes   : 20
Heating hours     : 35
Heating minutes   : 46
DeIcing hours     : 1
DeIcing minutes   : 12
Cooling cycles    : 68
Heating cycles    : 51
De-ice cycles     : 14
HP events         : 0
LP events         : 0
Frost  events     : 0
Freeze events     : 0
High Temp events  : 0
High S/L events   : 0
Overload events   : 0
Low DSH  events   : 0
High DSH  events  : 0
Power-on resets   : 4
Watchdog resets   : 0
Manual  resets    : 1
Other   resets    : 0
Indoor coil sensor faults : 0
Outdoor coil sensor faults : 0
Ambient temp sensor faults : 0
Discharge line sensor faults : 0
Suction line sensor faults : 0
De-Ice temp sensor faults : 0
High pressure sensor faults : 0
Low  pressure sensor faults : 0
High board temp faults : 0
Reverse cycle valve faults : 0
IUC communication faults : 0
IUC reported faults : 0
Compressor inverter faults : 0
Compressor envelope faults : 0
Normal operation starts now...
```

- The controller will immediately resume the normal unit power-up procedure.
- The information on the computer screen can be copied to any text document using normal select-copy-paste procedures. The text document can then be saved for future reference, emailed to a service centre, etc.

14. Expansion valve types and DIP switch settings

9	10	Electronic expansion valve type	How to recognise the valve type
OFF	OFF	Dunan DPF series	removable black coil
ON	OFF	Zhe Jiang Sanhua DPF series	non-removable metal coil
OFF	ON	Carel E2V series (& E3V series with unipolar coil)	removable red coil
ON	ON	Custom series	-

Below are images that will help to recognise the correct expansion valve used in the unit:



Dunan



Sanhua



Carel

Disclaimer:

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