

GUIDE SPECIFICATIONS

Simplicity® Intelli-Comfort™

Optional Control in 3 - 25 Ton Packaged Units

CONTROLS SPECIFICATIONS

GENERAL DESCRIPTION

Equipment with Simplicity as standard shall be factory run-tested through the control, after the test is complete; there are no wires to re-connect. All control wiring points shall be tested and verified through communication.

The control shall be UL or CSA recognized. The control shall be manufactured in a manufacturing facility that is certified to ISO 9001.

COMPRESSOR CONTROL

1. The control shall have a five-minute Anti-Short Cycle Delay to prevent excessive compressor cycling.
2. The control shall have a three-minute minimum run time to ensure that oil is returned to the compressor each time it starts. The minimum runtime shall be programmable up to 10 minutes.
3. The control shall monitor the High Pressure switch, the Low Pressure switch, and the Evaporator Freeze Thermostat separately. This shall be done on all circuits.
4. The control shall have a 30 second Low Pressure Switch bypass when it starts any compressor.
5. The control shall employ a "three times you're out" philosophy, before a hard compressor lockout occurs. The same switch must trip three times in a two-hour window, which starts when the first trip occurs. Otherwise, it will turn the compressor off and wait five-minutes after the switch re-closes, before restarting the compressor.
6. The control shall be capable of operating both compressors and the economizer when there is a call for both stages of cooling.
7. The control shall have a means of locking out mechanical compression below a low ambient trip point. This must be done without adding extra components to the unit.
8. The control shall have a means of locking out the mechanical compression when the economizer is operating in free cooling mode without additional components
9. The control shall have the means of operating the mechanical cooling down to 0°F by operating the com-

pressors 10 minutes on and 5 minutes off to defrost the indoor coil. The control shall start this operation below a low ambient switch point.

10. The control shall have a means of starting the compressor before the indoor Fan comes on when operating with a Thermostat in the AUTO FAN mode.

FAN CONTROL

1. The control shall have fully adjustable Fan ON and Fan OFF delays for both Heating and Cooling via communication.
2. The control's default Fan OFF delay for Cooling shall be 30 seconds to take advantage of the remaining capacity in the coil after the compressor has been turned off.
3. The control shall lock on the Fan if the high temperature limit trips three times in one hour of operation.
4. The Fan OFF delays for heating shall have three adjustments from the front of the control via push buttons. These adjustments shall be 45 seconds on delay and 90 seconds off delay, 45 seconds on delay and 180 seconds off delay, and 0 seconds on delay and 10 seconds off delay.
5. The control shall be capable of operating the fan without a G or fan signal from the thermostat.

EQUIPMENT CONTROL FEATURES

1. The control shall be capable of communicating on the Standard Open protocol, MODBUS RTU.
2. The register data for the MODBUS must be publicly available and open.
3. Monitoring software shall be provided at no cost. The monitoring software shall have a flashing icon when any unit wired to the computer has an alarm. Clicking the flashing icon shall display the fault code and the details of the fault.
4. The networking setup shall be as simple as daisy chaining three wires to each unit, then powering all the units

up and pushing a button on each control. There shall not be any dipswitches to configure the network address.

5. The control shall use a communication driver that is capable of having 64 nodes on the bus before a repeater is needed.
6. The control shall have a LED that uses a heartbeat of 1 second on and 1 second off when the control is operating properly. This is to tell the technician the control is operating properly.
7. The control shall use the heartbeat LED to display all error codes. The error code flash chart shall be on the inside panel of the equipment near the control location.
8. The control shall use non-volatile memory to store the last five alarms. There shall be a single button to push to recall these last five alarms. The alarms shall be stored first in last out. The first flash code shall be the last alarm that occurred. There shall be a button press sequence to clear the alarms in non-volatile memory.
9. The control shall have a button to reset compressor lock-outs without powering the unit down.
10. The control shall have a button to clear compressor Anti-Short Cycle Delays (ASCDs). When this button is pressed it will only clear the ASCDs for one cycle only and not permanently.
11. The control will be compatible with any BAS (Building Automation System). Any BAS shall be able to control the equipment when wired to the control's Thermostat Terminal Strip.
12. The control shall have loading of at least 25 milliamps on all thermostat inputs for controllers and thermostats that use output TRIACs.
13. The control shall have a Smoke Detector Shutdown input on the board. The control shall be powered through this input, so when the Smoke Detector trips, the control will shut down the unit immediately.
14. The control will have low voltage protection for the contactors and will not energize a contactor if the voltage is below 19.2 VAC, which is the pull in voltage for most contactors. If the control has a compressor contactor energized when the voltage drops, it shall not de-energize the contactor until the voltage drops below 16 VAC, which is the drop out voltage for most contactors.
15. The control shall have a means of low ambient control without adding any additional components. The control shall have a means of cycling the compressor on for 10 minutes and off for 5 minutes to defrost the indoor coil when the outside ambient is below a low ambient switch point without adding additional components.
16. The control shall have a means of storing compressor run time. This data shall be available through communication. The control shall have the ability to clear this data when a compressor is replaced.
17. The control shall have the ability to store a name of at least 26 characters in length. The control will leave the factory with the serial number of the equipment it is in, stored in non-volatile memory in the Name location.
18. The control shall have the ability to store the model number of the equipment of at least 26 characters in length. The control will leave the factory with the model number of the equipment it is in, stored in non-volatile memory.
19. The control shall have the ability to store the serial number of the equipment of at least 26 characters in length. The control will leave the factory with the serial number of the equipment it is in, stored in non-volatile memory.
20. The control shall not power the contactors through the thermostat wiring. Dropping voltage over the thermostat wiring causes chattering contactors when the contactors are powered in this manner.
21. The control shall monitor the Gas Heat operation in the heating mode. It shall monitor the gas valve when there is a call for heating. The control shall alarm when there is a call for heat and no gas valve voltage after 5 minutes.

COMFORT CONTROL FEATURES

1. The control will be installed and tested at the factory where the equipment is assembled.
2. The control will use a Wall Sensor that has a means of overriding the unoccupied mode for a programmable amount of time.
3. The Unoccupied Override time will be programmed in minutes up to 4 hours.
4. The control will use a Wall Sensor that has a warmer/cooler dial so the occupants can offset the programmed setpoint by a programmed amount between 1 and 5 degrees fahrenheit.
5. The control will have a Supply Air Sensor as standard.
6. The control will have a Return Air Sensor as standard.
7. The control will have an Outside Air Sensor as standard.
8. The control will use the Return Air Sensor in place of the Space Sensor if the Space Sensor fails for any reason.
9. The control will have a 365 day Real Time Clock.

10. The Real Time Clock will be able to do automatic Day-light Savings Time adjustment.
11. The control will have an Occupancy Schedule that allows two different Occupied schedules per day for each of the seven days of the week individually.
12. The control will have 20 Holiday Schedules, each capable of 99 days.
13. The control's Holiday Schedules will have a start time associated with each schedule.
14. The control will control the Economizer directly.
15. The control will be capable of operating the Economizer using Dry Bulb, Outside Enthalpy, or Differential Enthalpy.
16. When the control is using Enthalpy to control the Economizer, it will also have an Outside Air Temperature enable Setpoint.
17. The control will use two setpoints for Supply Air Temperature for the Economizer operation. One will be for a small space cooling demand and one for a large space cooling demand.
18. The control will have the capability of reading an Outside Air CO sensor and will close the Economizer if CO is present.
19. The control will have the ability to perform Demand Ventilation using one CO₂ sensor.
20. The control will have the ability to perform Differential Demand Ventilation using an Outside CO₂ sensor and an Inside CO₂ sensor.
21. The control will have a programmable maximum Outside Air Damper Position for IAQ operation.
22. The control will have the ability to temper the ventilation air during times when heating or cooling is not required.
23. The control will have the ability to offset the operating setpoint based on high Humidity in the Space.
24. The control will have programmable limits for use when offsetting the Operating Setpoint to control Humidity.
25. The control will have direct control of a Hot Gas Reheat system if it is installed in the equipment.
26. The control must be able to lockout Cooling below a programmable Outside Air Temperature Setpoint.
27. The control will be able to lockout Heating above a programmable Outside Air Temperature Setpoint.
28. The control will have a Space Temperature Alarm.
29. The control will have a Supply Air Temperature alarm for Heating and Cooling. The Alarm temperature will be programmable.
30. The Control will be able to perform a Pre-Occupancy Purge at a Programmable Time.
31. The control will have a hardware Smoke-Purge input.
32. The control will have the ability to read a dirty filter switch.
33. The control will have the capability of reading a fan proving switch.
34. The control will have an intelligent recovery function that will bring the space to the Occupied Setpoint just before or at the beginning of the first Occupied schedule each day.
35. The control will have Software controllable Mode Switches (Heat, Cool, and Fan).
36. The control will meter and track Unoccupied Override Time for billing purposes.

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