

User manual

CLIMATIC™ 60



- Providing indoor climate comfort



AQUALEAN

CONTROL MANUAL

DISPLAY DC60

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The display DC60 is personalized for the user. It allows an overview of operation of the unit and allows access to certain parameters.

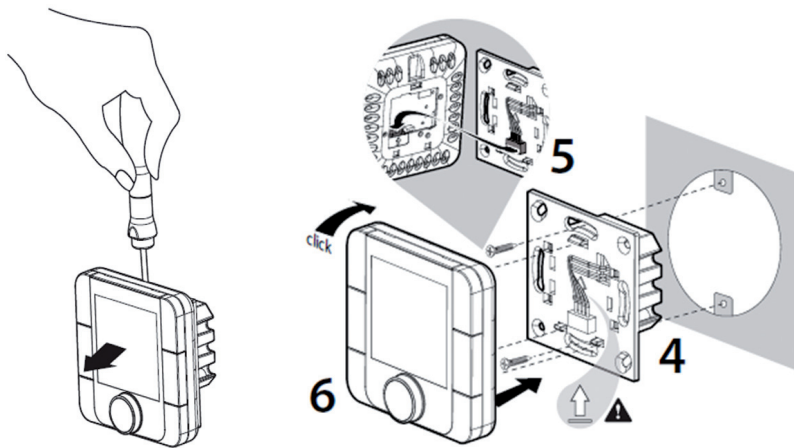
The 'DC60 is designed to be remote connected of the rooftop.

The 'DC60 is equipped with a temperature sensor.

The temperature sensor allows the acquisition of room temperature to control.

INSTALLATION

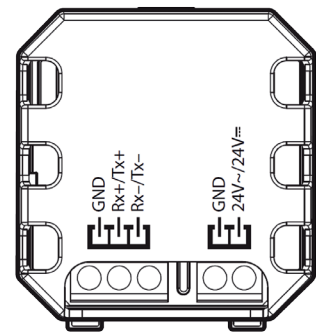
The DC60 has been designed for flush mount assembly, on distribution boxes compliant with the standards in force.



CONNECTION

WARNING: Separate as much as possible probes, displays, logical input cables from power cables with strong inductive load, in order to avoid possible electromagnetic perturbations.

IMPORTANT WARNING: Any wiring modification on the CLIMATIC™ 60 must be done by LENNOX technician or employees having valid electrical qualification and authorization.



Power supply

The power of the DC60 can be 24Vac (+10...-15%) 50/60Hz or 24Vdc (22...35Vdc), maximum current of 2VA.

LENNOX recommends a 24Vac supply (provided by rooftop) for installation of the display less within 30 meters of rooftop. For connection of the display of over 30 meters, a power supply, close to the display, 24Vac must be provided by the installer.

For an external connection to the rooftop (24V) using a transformer class 2 under 0,1A.

For any modification of wiring on the 24V supply or on 4-20mA sensor, check the polarity prior to apply the power. Wrong polarity may cause serious damage and destroy the Plan network. LENNOX will not accept liability for damage caused by wrong power connection or any wiring modification done by people without valid training and qualifications.

Communication

The DC60 is controlled by a communication bus: RS485.

Cable features

The connection of power and communication must be made by the following cable:

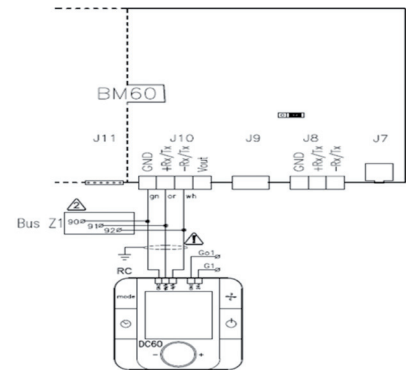
- LiYCY-P (0.34 mm²), 2 pairs with general shield

The cable length, with power, should not exceed 30m.

The cable length without power (24V external) must not exceed 150m.

For a better electromagnetic protection, Lennox recommends the use of LiYCY-P cable

For extended networks fit a 120 Ohm resistor between RX/TX+ and RX/TX- on the first and last device, to avoid possible communication problems.



The DC60 displays only the values and information of the 'Roof-Top' on which the DC60 is connected.

TEMPERATURE MEASUREMENT

All LENNOX rooftop comes with a temperature return sensor;

But if the DC60 is placed in the area conditioned by the rooftop, that display is connected, it is possible, in this case, to use the temperature measurement of the DC60.

To indicate the CLIMATIC™ 60 your choice, set the point 3213:

- '128' to use the measure of the 'DC60'
- '2 BM-B1' to use the return probe

CONFIGURATION

To communicate with the CLIMATIC™ 60 this basic parameters of internal DC60 must to be settled.

Setup menu

To do this, when the 'DC60 is powered; Simultaneously press the keys and . After some seconds, the text **C o d E** appears and the value '000' flashes. Turn the knob to change the value to select the number 022. Then validate the code by pressing the knob. If the code is wrong access the setup menu is not possible and the DC60 returns to the previous. If the code is correct the display shows **A d d r**.



(2 buttons on the right simultaneously)

Parameter's choice

By rotating of the knob , you can view and modify the following parameters:

- **A d d r**: Address DC60 on the communication bus (Always set to value 31)
- **b A u d**: Communication speed (always set to value 2)
- **b L b E**: Backlight mode
- **b L I n**: Backlight intensity
- **P C A L**: Probe calibration
- **C n S t**: Screen contrast
- **b u _ d**: Disabling 'Bip' keys
- **P S u 1**: Password (always set to value 22)
- **Y E a r**: Real time clock DC60; year
- **M o n t**: Real time clock DC60; month
- **n d a y**: Real time clock DC60; day
- **u d a y**: Real time clock DC60; weekday (1 = Monday)
- **H o u r**: Real time clock DC60; hour
- **m i n S**: Real time clock DC60; minute
- **E S C**: Exits the settings mode

Changing the parameters value

To activate the modified mode value:

- After selecting the desired parameter by rotating the knob .
- Press the knob .
- The **s e t** symbol appears on the right side of the value.
- Turn the knob to adjust the desired value.
- Press again on the knob to confirm your choice.
- The **s e t** symbol is no longer displayed on the right side of the value.
- The rotation of the knob is for select a new setting.

Mandatory values

- **A d d r**: **31**
- **b A u d**: **2**
- **P S u 1**: **22**

INITIALIZATION

If the connection between the CLIMATIC™ 60 and the 'DC60 is not correct (Offline) screen displays only the symbol Cn.

In this case, check: :

- the connection between CLIMATIC™ 60 and DC60
- the setting of the DC60
- the power of CLIMATIC™ 60

If the connection between the CLIMATIC™ 60 and the 'DC60 is correct (Online) to power up the screen displays only the symbol I n i t . This phase allows the CLIMATIC™ 60 to set up the DC60 with options of rooftop.

After some seconds, DC60 is operational.

SOFTWARE

A new software, based on RT60_v2_r1.0, has been developed for this units with some new features and modifications. This software will be identified as RT60 v2 r1.0 NSR x.x

UNIT RANGE & MODELS

The new ranges AWC (cooling only) and AWH (heat pump) have been added on menu 3111.

The new sizes 002, 003, 004, 005, 007, 008, 010, 012, 015, 018, 020 have been added on menu 3112.

NOTE

Models 002, 003 could be selected even in AWC (cooling only), even if those units are not supposed to be offered to the market (only the AWH heat pump models).

Models 004 and 005 are not yet available commercially but they are already included in the software.

BLOWER MANAGEMENT

These units use 2 types of blower fan motors:

- 2-3kW use 0-10V driven fans
- 4-20kW use PWM driven fans

There are 4 fan speed modes selectable by DC (or BMS):

Low/medium/high speed and automatic mode.

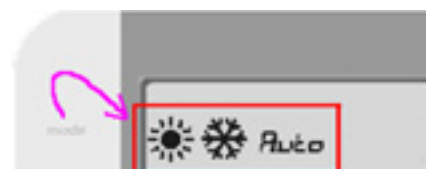


Low (menu 2329) and Nominal (menu 2328) are automatically pre-set depending on the unit model, but could be modified by the customer through DS display.

Blower speed modulation is managed according to the Room Capacity (as well as the Partial Load function on Baltic units). See the Regulation Charts for further details

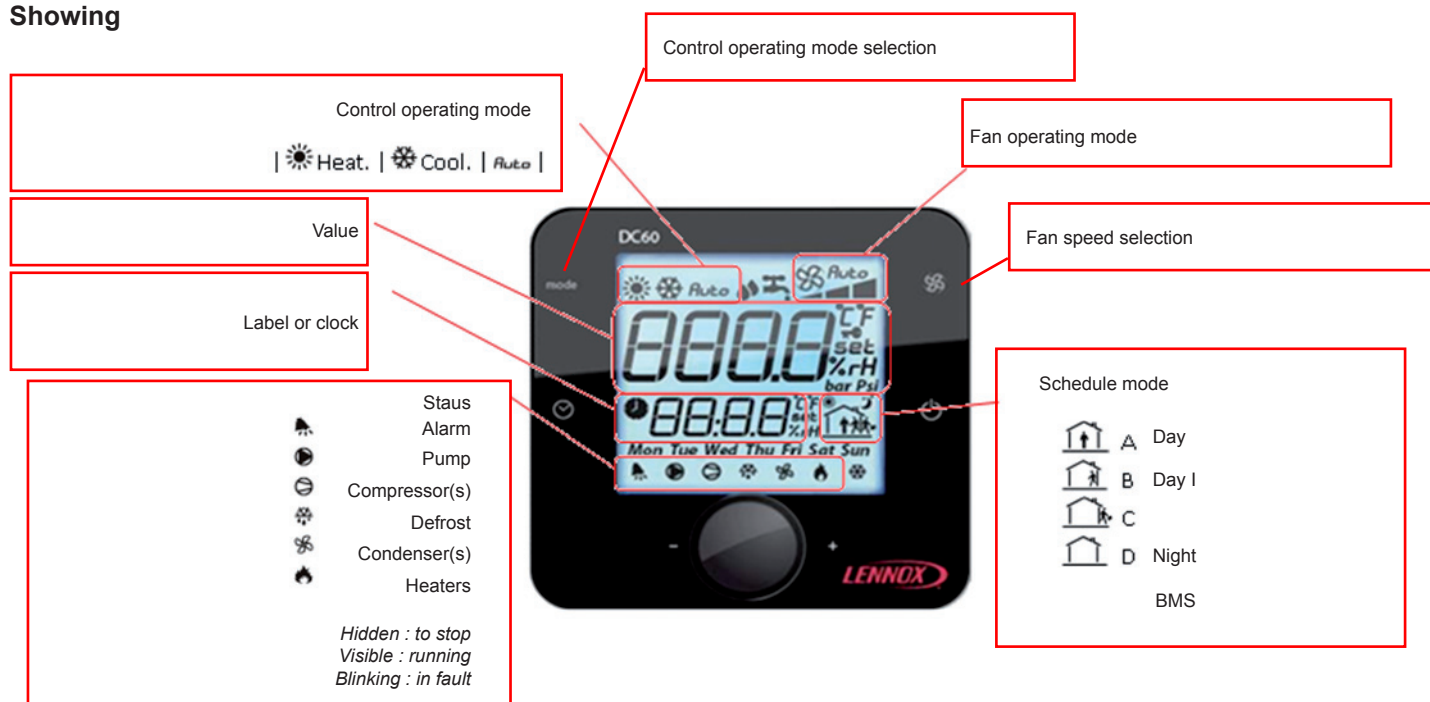
COOL/HEAT/AUTO MODE SELECTION

Differently from the other rooftop units, these WSHP units allow the customer selection of the operating mode (cooling, heating, and automatic) by the DC60, through the Mode button.

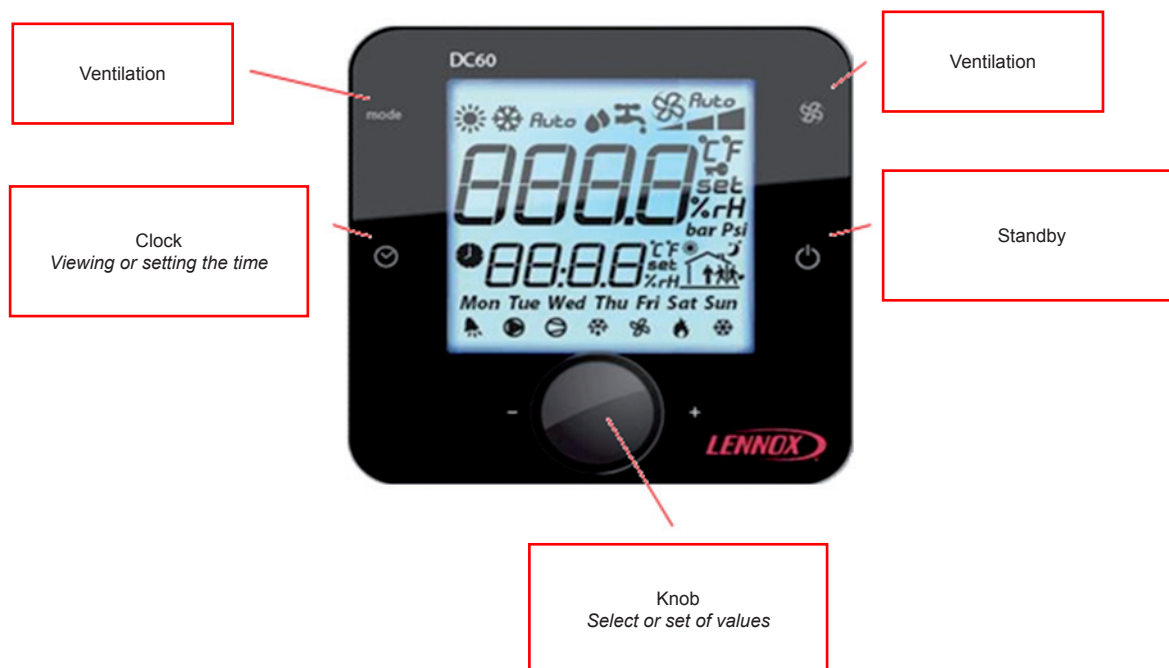


PRESENTATION

Showing



Buttons



USE**q On/Off unit**

By supporting a few seconds the button q, you can activate or not (On/Off) the rooftop connected.
 If the symbol OFF completed by the time ● is displayed, the rooftop is stopped and the DC60 in sleep mode.
 To restart the unit, press the button q a few seconds.

**⌚ Setting time**

At initialization of the DC60, the CLIMATIC™ 60 are synchronized time and day of week with the clock DC60.

To view the time, briefly press the button ⌚.
 To set the time press the button ⌚ a few seconds.

The **hour** value flashes.
 Turn the knob ⌚ to adjust the desired value.
 Press the knob ⌚ to select your choice.

Then the **minute** value flashes.
 Turn the knob ⌚ to adjust the desired value.
 Press the knob ⌚ to select your choice.



| M o n Monday | T u e Tuesday | W e d Wednesday | T H U Thursady | F R I Friday | S a T Saturday | S U N Sunday |

Then the **weekday** value flashes.
 Turn the knob ⌚ to adjust the desired value.
 Press the knob ⌚ to select your choice.

After a few seconds DC60 communicates the new time to the CLIMATIC™ 60.

USE

Information available

By rotating the knob , you can view or modify the following values:

DC60 set in light mode

set : Volatile temperature set point current mode (°C)

- : Indoor (Room) temperature (°C)

Set Volatile Temperature set point

This item allows you to view and/or modify the control temperature required for the Roof-Top selected.

If this point is changed, this value is used until the scheduling changes mode (A, B, C, D, BMS).

At each change of the mode, the CLIMATIC™ 60 sets the value of this set point on the preset value in the mode concerned.

Indoor (room) temperature

This item indicates the measured air temperature in the room conditioning.

The room temperature isn't available if the CLIMATIC™ 60 is configured to supply control.

DC60 set in full mode

- Unit : Number of rooftop connected to the DC60
- Sp-t set : Predetermined temperature set point current mode (°C)
- SEt set : Volatile temperature set point current mode (°C)
- AL- set : Alarms code
- t-Su : Supply temperature (°C)
- t-In* : Indoor (Room) temperature (°C)

*: Available if the option is enabled.

: Available if the level 2 is activated.

set : Adjustable with 'DC60.

Unit Unit connected

This item can know the number of rooftop connected to the DC60.

USE

S e t Volatile temperature set point

This item allows you to view and/or modify the control temperature required for the rooftop selected.

If this point is changed, this value is used until the scheduling changes mode (A, B, C, D, BMS).

At each change of the mode, the CLIMATIC™ 60 sets the value of this set point on the preset value in the mode concerned.

S P - t Predetermined temperature set point

If level 2 is active, this item allows you to view and/or change the preset temperature control for the active mode.

A L - Alarms code

This item can see the code of different active alarms on the rooftop.

If the rooftop isn't in alarm, this item is to 0.

By this item it's possible to reset the alarm activated. To do this set the value of the item to the value 0.

t - S u Supply temperature

This item indicates the measure of outlet air temperature of the rooftop.

t - I n Indoor (Room) temperature

This item indicates the measured air temperature in the room conditioning.

The room temperature isn't available if the CLIMATIC™ 60 is configured to supply control.

Setting value

If the value of the selected item is modified :

- To activate the modified value, press the knob .
- The S E T symbol appears on the right side of the value.
- Turn the knob to adjust the desired value.
- Press again on the knob to confirm your choice.
- The S E T symbol is no longer displayed on the right side of the value.
- The rotation of the knob allows to select a new item.

LEVEL 2 ACTIVATION



(2 buttons on the right simultaneously)

Simultaneously press the keys and .

After some seconds the text C o d E appears and the value '000' flashes.

Turn the knob to change the value to select the number 066. Then validate the code by pressing the knob.

If the code is wrong access the setup menu is not possible and the DC60 returns to the previous display.

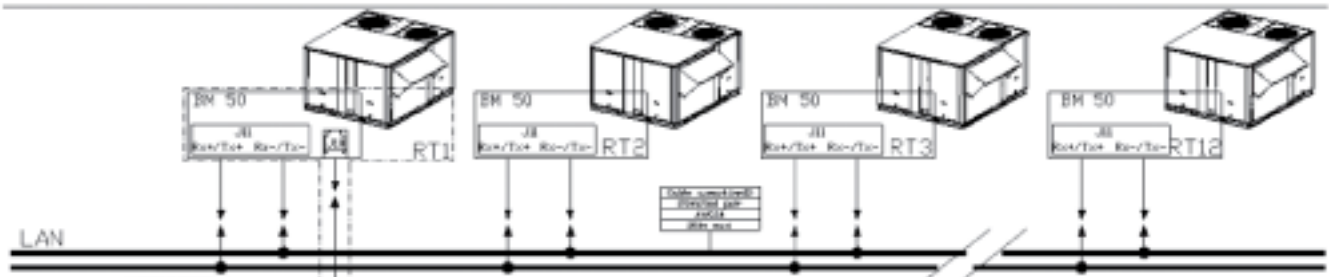
If the code is correct the level 2 is activ, and symbol is displayed to the right of the value.

The level 2 is turned off automatically every hour.

DC60 AND COMMUNICATION MASTER/SLAVES

If the master/slaves communication bus is connected between several rooftop (maximum 8).
The 'DM60', connected on this bus, allows viewing, alternatively, information of all connected units.

MASTER / SLAVES / DC60



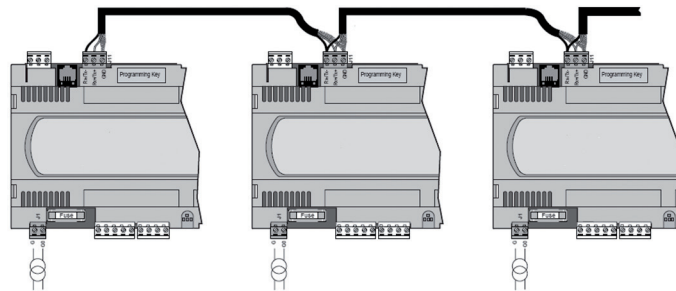
The inter-bus boards (pLAN) CLIMATIC™ connects to connector J8 on the BM60 cards.
Connection with 'star' is not recommended for optimum performance it is advisable to connect a maximum of two cables per unit.
The connection must be wired as follows:

- For a length of 0 to 300 m: AWG22 (0.34 mm²), a twisted pair shielded.
- For a length of 0 to 500 m: LiYCY-P (0.34 mm²), a pair overall shield.

cable length should not exceed 500 m.

For better protection of electromagnetic disturbances Lennox recommends the installation of cable LiYCY-P.

WARNING : The BM60 24Vac cards should not be connected to the 'earth'.



DC60 MULTIPLE FOR MASTER/SLAVE UNITS

Only one DC60 could be used to control several units (max 10 units) connected in master/slave network.
Through the Unit selection, the customer could link to the desired unit.
Selecting Unit=11, special broadcast command could be sent to all units.

BMS MANAGEMENT OF MASTER*SLAVE NETWORKS

All the units connected in a master/slave network can be controlled through the BMS network connected to the master unit (only 1 BMS card necessary in the master unit board).

All the units variables are displayed in the BMS tables (see the table)

Writing is allowed only if DS60 display is disconnected.

BMS NEW VARIABLES

@ADDRESS	FORMAT	R/W	DESCRIPTION
300	Integer	R/W	Unit On/Off
301	Integer	R	Alarm code
302	Integer	R/W	Alarm reset
303	Integer	R/W	BMS Watchdog counter
304	Integer	R/W	Cooling setpoint [BMS mode]
305	Integer	R/W	Heating setpoint [BMS mode]
306	Integer	R	Supply temperature
307	Integer	R	Room Temperature
308	Integer	R/W	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
309	Integer	R/W	Mode (1=COOL; 2=HEAT; 255=AUTO)
			SLAVE UNITED SELECTED FOR WRITING
400	Integer	R/W	Slave Unit selected
401	Integer	R/W	Unit On/Off
402	Integer	R/W	Alarm reset
403	Integer	R/W	Temporary setpoint of current zone
404	Integer	R/W	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
405	Integer	R/W	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 2
411	Integer	R	Unit On/Off
412	Integer	R	Alarm code
413	Integer	R	Middle Setpoint of current zone
414	Integer	R	Supply temperature
415	Integer	R	Room Temperature
416	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
417	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 3
421	Integer	R	Unit On/Off
422	Integer	R	Alarm code
423	Integer	R	Middle Setpoint of current zone
424	Integer	R	Supply temperature
425	Integer	R	Room Temperature
426	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
427	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 4
431	Integer	R	Unit On/Off
432	Integer	R	Alarm code
433	Integer	R	Middle Setpoint of current zone
434	Integer	R	Supply temperature
435	Integer	R	Room Temperature
436	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
437	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 5
441	Integer	R	Unit On/Off
442	Integer	R	Alarm code
443	Integer	R	Middle Setpoint of current zone
444	Integer	R	Supply temperature
445	Integer	R	Room Temperature
446	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
447	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 6
451	Integer	R	Unit On/Off
452	Integer	R	Alarm code
453	Integer	R	Middle Setpoint of current zone
454	Integer	R	Supply temperature
455	Integer	R	Room Temperature
456	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
457	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 7
461	Integer	R	Unit On/Off
462	Integer	R	Alarm code
463	Integer	R	Middle Setpoint of current zone
464	Integer	R	Supply temperature
465	Integer	R	Room Temperature
466	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
467	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 8
471	Integer	R	Unit On/Off
472	Integer	R	Alarm code
473	Integer	R	Middle Setpoint of current zone
474	Integer	R	Supply temperature
475	Integer	R	Room Temperature
476	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
477	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 9
481	Integer	R	Unit On/Off
482	Integer	R	Alarm code
483	Integer	R	Middle Setpoint of current zone
484	Integer	R	Supply temperature
485	Integer	R	Room Temperature
486	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
487	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)
			UNIT NUMBER 10
491	Integer	R	Unit On/Off
492	Integer	R	Alarm code
493	Integer	R	Middle Setpoint of current zone
494	Integer	R	Supply temperature
495	Integer	R	Room Temperature
496	Integer	R	Fan speeds (1=LOW; 2=MED; 3= HIGH; 255=AUTO)
497	Integer	R	Mode (1=COOL; 2=HEAT; 255=AUTO)



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Installation and service must be performed by a qualified installer and servicing agency.

