Scheduling Occupancy

The LRC fits into the APOGEE as an LCTLR point. This is the same interface used for other room controllers and Fume Hood Controllers (FHCs). Scheduling features in the field panel and Insight allow you to set up regular "DAY" and "NIGHT" commands to any LCTLR device. Inside the LRC, those commands display as NET OCC CMD (Point 29). The LRC uses NET OCC CMD, along with any other active occupancy information to set the state of OCC.UOC DO5. If using ventilation setback without a schedule, manually command NET OCC CMD to the unoccupied state. This will allow other occupancy commands to operate.

Manually Commanding Occupancy

A building operator may have a reason to override the automatic control system, and manually force the occupancy state of the room. For safety reasons, it is not possible to manually command the OCC.UOC DO5 point that is used to select the ventilation rates.

Commanding an LRC to Occupied Mode

When commanding an LRC to occupied mode, use CIS to set the point NET OCC CMD to OCC. This command will last until it is released or changed through CIS or until a command comes in from the network. Another method is to use Insight or the field panel to command the state of the controller's LCTLR point to "DAY". This command is transferred to the NET OCC CMD point in the LRC. This manual command will block any automatic occupancy commands (like a schedule) until the point is released.

Commanding an LRC to Unoccupied Mode

When commanding an LRC to unoccupied mode, first determine why the room is in the occupied mode. Use the Occupancy report to check each command source. For each one that indicates occupancy, make sure there is a reason why this is not the right state. If you decide it is appropriate, override the state of the command source using the following methods:

- NET OCC CMD - Set Point 29 from CIS, or command the LCTLR to "NIGHT" from the field panel or from Insight.
- OCC SWIT DI2 - Temporarily disable the switch using Point 18, OCC SWIT ENA. Remember to enable it again when the problem is corrected.
- BUTTON CMD - In the room, press the occupancy button, or use Insight or the field panel to manually set the value of BUTTON CMD to UNOCC. When the value is set, release the point.
- HOOD VOL - If possible, close the fume hood, otherwise, temporarily set the value of HOOD OCC VOL to zero. This disables the fume hood effect on occupancy. Remember to return the point to its original value after the problem is corrected.

6

Point Database

Chapter 6 presents a description of the point database for Applications 2600 (Slave Mode) and pneumatic actuator Applications 2601, 2602, and 2603 as well as electronic actuator Applications 2611, 2612, and 2613, including point descriptors, point addresses, and a listing of applications in which each point is found.

Address	Descriptor	Application	Description
01	CTLR ADDRESS	2600, 2601, 2602, 2603, 2611, 2612, 2613	Identifies the controller on the LAN trunk.
02	APPLICATION	2600, 2601, 2602, 2603, 2611, 2612, 2613	Identification number of the program running in the controller.
{04}	ROOM TEMP	2600, 2601, 2602, 2603, 2611, 2612, 2613	Actual reading from the room temperature sensor.
05	CFLO START	2601, 2603, 2611, 2613	Point used to set up the temperature control sequence.
06	CFLO END	2601, 2603, 2611, 2613	Point used to set up the temperature control sequence.
07	REHEAT START	2601, 2602, 2611, 2612	Point used to set up the temperature control sequence.
07	HFLO START	2603, 2613	Point used to set up the temperature control sequence.
08	REHEAT END	2601, 2602, 2611, 2612	Point used to set up the temperature control sequence.
08	HFLO END	2603, 2613	Point used to set up the temperature control sequence.
{09}	TEMP CTL VOL	2601, 2603, 2611, 2613	Amount of supply airflow that the temperature control sequence determines is necessary to regulate the room temperature.
10	HFLO MAX	2603, 2613	Point used to set up the heating mode of a dual duct temperature control sequence.

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Address	Descriptor	Application	Description
12	BUTTON ENA	2601, 2602, 2603, 2611, 2612, 2613	Connects Point 25 to Point 45. If this point is disabled, the button does not affect occupancy.
{13}	ROOM STPT	2600,2601, 2602, 2603, 2611, 2612,	Desired value of the room temperature.

Address	Descriptor	Application	Description
		2613	
{15}	HOOD SIG AI3	2601, 2602, 2603, 2611, 2612, 2613	Voltage that tells the LRC how much air the fume hood(s) is/are exhausting.
16	VENT ALM DEL	2601, 2602, 2603, 2611, 2612, 2613	Delay period that prevents "nuisance alarms" on the air change rate.
17	VENT ALM ENA	2601, 2602, 2603, 2611, 2612, 2613	When this is set to "yes", the VENT ALM point can drive the ALARM DO8.
18	OCC SWIT ENA	2601, 2602, 2603, 2611, 2612, 2613	Connects Point 24 to Point 45. If this point is disabled, it does not affect occupancy.
{19}	OCC BUTTON	2600, 2601, 2602, 2603, 2611, 2612, 2613	State of the push button switch on the thermostat. The momentary switch is only ON when the button is pushed. The value of this point provides no information on the occupancy state of the room.
21	OCC DISPLAY	2600,2601, 2602, 2603, 2611, 2612, 2613	Occupancy state of the LRC; drives display on thermostat.
22	VOL DIF ALM	2601, 2602, 2603, 2611, 2612, 2613	Alarm point. ON means room pressurization may not be adequate.
{23}	NET ALM CMD	2600, 2601, 2602, 2603, 2611, 2612, 2613	Alarm data sent in to LRC from network.
{24}	DI 2	2600	State of a switch wired to the LRC. Closed contact = ON = occupied.
{24}	OCC SWIT DI2	2601, 2602, 2603, 2611, 2612, 2613	State of a switch wired to the LRC. Closed contact = ON = occupied.
{25}	BUTTON CMD	2600, 2601, 2602, 2603, 2611, 2612, 2613	LRC's interpretation of Point 19. Records a user's request to change occupancy.
26	GEX P GAIN	2601, 2603, 2611, 2613	Feedback gain. Used to tune general exhaust flow control loop.
26	SUP2 P GAIN	2602, 2612	Feedback gain. Used to tune flow control loop in Supply Terminal 2.
{27}	ALM SWIT DI4	2601, 2602, 2603, 2611, 2612, 2613	State of switch wired to the LRC. May be used to pick up alarm information from some other device in the room.
28	ALM SWIT ENA	2601, 2602, 2603, 2611, 2612, 2613	When this is set to "yes", the ALM SWIT DI4 point can drive the ALARM DO8.
{29}	NET OCC CMD	2601, 2602, 2603, 2611, 2612, 2613	An occupancy input. This value comes to the LRC from the network or from a schedule.
{30}	GEX AIR VOL	2601, 2603, 2611, 2613	Measured value of the airflow from the room through the general exhaust terminal.
{30}	SUP2 AIR VOL	2602, 2612	Measured value of the airflow from the room through the general exhaust terminal.

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31	OCC SUP MAX	2601, 2603, 2611, 2613	Maximum supply in occupied mode.
31	SUP1 MAX	2602, 2612	Maximum supply flow allowed from terminal 1.

Address	Descriptor	Application	Description
32	OCC SUP MIN	2601, 2603, 2611, 2613	Minimum supply in occupied mode.
36	FLOW COEFF 1	2600	Calibration parameter for airflow sensor.
36	SUP FLO COEF	2601, 2603, 2611, 2613	Calibration parameter for airflow sensor.
36	SUP1 COEF	2602, 2612	Calibration parameter for airflow sensor.
37	DIF ALM ENA	2601, 2602, 2603, 2611, 2612, 2613	When this is set to "yes", the VOL DIF ALM point can drive ALARM DO8.
38	DIF ALM LVL	2601, 2602, 2603, 2611, 2612, 2613	VOL DIF ALM is triggered when VOL DIFFRNC goes below this level.
39	DIF ALM DEL	2601, 2602, 2603, 2611, 2612, 2613	Alarm delay point to prevent "nuisance alarms" on the flow difference.
40	FAIL MODE	2601, 2602, 2603, 2611, 2612, 2613	Select "HOLD" or "CLOSE" to tell the supply damper(s) what to do when a flow measurement signal is lost.
{41}	DO1	2600	
{41}	SUP FILL DO1	2601, 2603	Drives a solenoid valve that moves a damper. Do not use or manually set this point.
{41}	SUP1 FILL DO1	2602	Drives a solenoid valve that moves a damper. Do not use or manually set this point.
{41}	SUP EXTN DO1	2611, 2613	Drives a LAB AO-E module to extend electronic actuator. Do not use or manually set this point.
{41}	SUP1 ETN DO1	2612	Drives a LAB AO-E module to extend electronic actuator. Do not use or manually set this point.
{42}	DO 2	2600	
{42}	SUP BLED DO2	2601, 2603	Drives a solenoid valve that moves a damper. Do not use or manually set this point.
{42}	SUP1 BLD DO2	2602	Drives a solenoid valve that moves a damper. Do not use or manually set this point.
{42}	SUP RETC DO2	2611, 2613	Drives a LAB AO-E module to retract electronic actuator. Do not use or manually set this point.
{42}	SUP1 RTC DO2	2612	Drives a LAB AO-E module to retract electronic actuator. Do not use or manually set this point.
{43}	DO3	2600	
{43}	GEX FILL DO3	2601, 2603	Drives a solenoid valve that moves a damper. Do not use or manually set this point.
{43}	SUP2 FIL DO3	2602	Drives a solenoid valve that moves a damper. Do not use or manually set this point.

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{43}	GEX EXTN DO3	2611, 2613	Drives a LAB AO-E module to extend electronic actuator. Do not use or manually set this point.
{43}	SUP2 ETN DO3	2612	Drives a LAB AO-E module to extend electronic actuator. Do not use or manually set this point.

Address	Descriptor	Application	Description
{44}	DO4	2600	
{44}	GEX BLED DO4	2601, 2603	Drives a solenoid valve that moves a damper. Do not use or manually set this point.
{44}	SUP2 BLD DO4	2602	Drives a solenoid valve that moves a damper. Do not use or manually set this point.
{44}	GEX RETC DO4	2611, 2613	Drives a LAB AO-E module to retract electronic actuator. Do not use or manually set this point.
{44}	SUP2 RTC DO4	2612	Drives a LAB AO-E module to retract electronic actuator. Do not use or manually set this point.
{45}	DO5	2600	
{45}	OCC.UOC DO5	2601, 2602, 2603, 2611, 2612, 2613	Occupancy state of LRC; may drive light in room.
{46}	DO6	2600	
{46}	SPARE DO6	2601, 2602, 2603, 2611, 2612, 2613	Spare DO termination.
{47}	DO7	2600	
{47}	AUTOZERO DO7	2601, 2602, 2603, 2611, 2612, 2613	Drives 1he Autozero modules for calibrating the flow sensors. Do not use or manually set this point.
{48}	REHEAT AO1	2601, 2602	The voltage thal drives the reheat valve, either directly or through a pneumatic transducer.
{48}	MIX AO1	2603	The voltage that drives the mixing damper actuator 1hrough a pneumatic transducer.
{48}	REHEAT AO1	2611, 2612	Voltage that directly drives the reheat valve.
{48}	MIX AO1	2613	Voltage that directly drives the mixing damper actuator.
{49}	VALVE CMD	2601, 2602, 2611, 2612	State of 1he reheat valve. Represents how far the valve is open.
{49}	MIX DMPR CMD	2603, 2613	Position of 1he mixing damper. 100% means hot, 0% means cold.
{50}	DO8	2600	
{50}	ALARM DO8	2601, 2602, 2603, 2611, 2612, 2613	Intended to drive local alarm device {horn, light, etc.). Function set up by settlng alarm enable points.
{51}	HOOD VOL	2601, 2602, 2603, 2611, 2612, 2613	Airflow signal from the fume hood(s).
52	MAX HOOD VOL	2601, 2602, 2603, 2611, 2612, 2613	Hood exhaust airflow value that corresponds 1o 10 volts on HOOD SIG AI3. Must be setup to match the hood control equipment.

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{53}	TOTL EXHAUST	2601, 2602, 2603, 2611, 2612, 2613	Point 30 + Point 51 + Point 89. This value is the sum of the measured value of the airflow from the room through the general exhaust terminal, the airflow through the fume hoods, and any exhaust flows not connected to the LRC.
54	FLOW COEFF 2	2600, 2602, 2612	Calibration parameter for airflow sensor.

Address	Descriptor	Application	Description
54	GEX FLO COEF	2601, 2603, 2611, 2613	Calibration parameter for airflow sensor.
54	SUP2 COEF	2602, 2612	Calibration parameter for airflow sensor.
55	HOOD OCC VOL	2601, 2602, 2603, 2611, 2612, 2613	When HOOD VOL (Point 51) is above this value, hoods are considered open for purposes of occupancy. (This value does not affect the operation of the hood or the room pressurization system). Setting this value to zero means the hood flow does not affect Point 45.
56	HOOD UOC VOL	2601, 2602, 2603, 2611, 2612, 2613	When HOOD VOL (Point 51) is below this value, hoods are considered closed for purposes of occupancy. (This value does not affect the operation of the hood or the room pressurization system).
57	VALVE CLOSED	2601, 2602, 2611, 2612	Setup point. Tells the LRC what voltage fully closes the reheat valve.
57	MIX FUL COLD	2603, 2613	Setup point. Tells the LRC what voltage fully strokes the mixing damper to cold.
58	VALVE OPEN	2601, 2602, 2611, 2612	Setup point. Tells the LRC what voltage fully opens the reheat valve.
58	MIX FUL HOT	2603, 2613	Setup point. Tells the LRC what voltage fully strokes the mixing damper hot.
59	GEX DMPR DIR	2601, 2603, 2611, 2613	Setup point. Indicates NOPEN or NCLOSE for general exhaust damper actuator.
59	SUP2 DIR	2602, 2612	Setup point. Indicates NOPEN or NCLOSE for damper actuator on supply terminal 2.
60	GEXDUCT AREA	2601, 2603, 2611, 2613	Internal cross-sectional area of the general exhaust duct where the flow sensor is installed.
60	SUP2 AREA	2602, 2612	Internal cross-sectional area of the supply terminal two duct where the flow sensor is installed.
(61)	OTHER SUP	2601, 2602, 2603, 2611, 2612, 2613	Value of any supply airflows not connected to the LRC. Must be entered to the controller to account for flows it can not detect.
62	SUP DMPR DIR	2601, 2603, 2611, 2613	Setup point. Indicates NOPEN or NCLOSE for damper actuator on supply terminal.
62	SUP1 DIR	2602, 2612	Setup point. Indicates NOPEN and NCLOSE for damper actuator on supply terminal one.
63	ROOM P GAIN	2601, 2602, 2603, 2611, 2612, 2613	Proportional feedback gain used to tune the room temperature control.
64	ROOM I GAIN	2601, 2602, 2603, 2611, 2612, 2613	Integral feedback gain used to tune the room temperature control.
65	ROOM D GAIN	2601, 2602, 2603, 2611, 2612, 2613	Derivative feedback gain used to tune the room temperature control.

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66	ROOM BIAS	2601, 2602, 2603, 2611, 2612, 2613	Starting point where the value of TEMP LOOPOUT goes when the controller turns on.
67	UOC GEX MAX	2601, 2603, 2611, 2613	Maximum general exhaust in unoccupied mode.

Address	Descriptor	Application	Description
68	UOC GEX MIN	2601, 2603, 2611, 2613	Minimum general exhaust in unoccupied mode.
{69}	TOTL SUPPLY	2601, 2602, 2603, 2611, 2612, 2613	Point 35 + Point 61. This is the measured value of the airflow delivered to the room by the supply terminal plus the value of any supply airflows not connected to the LRC.
70	SUP P GAIN	2601, 2603, 2611, 2613	Feedback gain. Used to tune supply flow control.
70	SUP1 P GAIN	2602, 2612	Feedback gain. Used to tune the flow control loop.
71	UOC SUP MAX	2601, 2603, 2611, 2613	Maximum supply in unoccupied mode.
72	UOC SUP MIN	2601, 2603, 2611, 2613	Minimum supply in unoccupied mode.
73	DO DIR.REV	2600, 2601, 2602, 2603, 2611, 2612, 2613	Makes it possible to reverse the action of the output TRIACs.
{74}	GEX MAX	2601, 2603, 2611, 2613	Currently active maximum general exhaust.
{75}	GEX MIN	2601, 2603, 2611, 2613	Currently active minimum general exhaust.
{76}	SUP MAX	2601, 2603, 2611, 2613	Currently active maximum supply.
{77}	SUP MIN	2601, 2603, 2611, 2613	Currently active minimum supply.
{79}	TEMP LOOPOUT	2601, 2602, 2603, 2611, 2612, 2613	Value calculated by the room temperature PID algorithm. It indicates the thermal load on the room.
{81}	SUP DMPR CMD	2601, 2603, 2611, 2613	Tells the supply damper how fast to move. Positive means opening. Negative means closing.
{83}	VOL DIFFRNC	2601, 2602, 2603, 2611, 2612, 2613	Difference between measured airflow into the room, and measured airflow out. Equal to Point 53 - Point 69
84	TRACK METHOD	2601, 2603, 2611, 2613	Details. When the value is STPT, the supply flow follows the GEN EXH STPT. When the value is FLOW, the supply flow follows GEN EXH VOL.
{85}	GEX FLO STPT	2601, 2603, 2611, 2613	Desired value of the general exhaust. The controller selects the lowest value that will lead to adequate supply flow, and correct pressurization.
{85}	SUP2 STPT	2602, 2612	Desired value of the supply 2 set point.
{88}	VOL DIF STPT	2601, 2602, 2603, 2611, 2612, 2613	Desired value for the flow difference. This value can be selected and adjusted to achieve room pressurization.

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{89}	OTHER EXH	2601, 2602, 2603, 2611, 2612, 2613	Value of any exhaust airflows not connected to the LRC. Must be entered to the controller to account for flows it can not detect.
90	OC V ALM LVL	2601, 2602,	Ventilation alarm level in occupied mode.

Address	Descriptor	Application	Description
		2603, 2611, 2612, 2613	
90	OC V ALM LVL	2601, 2602, 2603, 2611, 2612, 2613	Ventilation alarm level in occupied mode.
91	UC V ALM LVL	2601, 2602, 2603, 2611, 2612, 2613	Ventilation alarm level in unoccupied mode.
{92}	VENT ALM	2601, 2602, 2603, 2611, 2612, 2613	Alarm point indicates inadequate air change rate.
{93}	SUP FLO STPT	2601, 2603, 2611, 2613	Desired value of the supply flow, chosen by the controller to achieve the correct flow difference for the room.
{94}	CAL AIR	2600, 2601, 2602, 2603, 2611, 2612, 2613	When the point is on, controller Is calibrating the flow sensors. Turns off automatically when done.
95	CAL SETUP	2600, 2601, 2602, 2603, 2611, 2612, 2613	Configuration setup code for the calibration sequence options.
96	CAL TIMER	2600, 2601, 2602, 2603, 2611, 2612, 2613	Time interval, in hours, between the calibration sequence initiations if a timed calibration option is selected in the point CAL SETUP.
97	SUPDUCT AREA	2601, 2603, 2611, 2613	Cross-sectional area of the supply duct at the spot where the flow sensor is installed.
98	LOOP TIME	2601, 2602, 2603, 2611, 2612, 2613	Time interval controls how often the LRC measures the room temperature and calculates a new output value.
{99}	ERROR STATUS	2600, 2601, 2602, 2603, 2611, 2612, 2613	Used to diagnose controller board failures.