

LNx

REFRIGERANT DETECTION SYSTEM
BEHAVIOR



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REFRIGERANT DETECTION SYSTEM BEHAVIOR

01 LENNOX® LOW GWP REFRIGERANT DETECTION SYSTEM (RDS)

The CORE controller incorporates a refrigerant detection system (RDS) to ensure safe operation of Lennox commercial HVAC systems that employ low GWP (Global Warming Potential) refrigerant. This system is required for all systems using R-454B refrigerant.

The RDS provides refrigerant dispersion and operator notification in the event of a refrigerant leak. When a refrigerant leak is detected, the controller turns on devices that can disperse the refrigerant and lower its concentration within the unit's cabinet.

The RDS is active during normal operation and is not active during modes where the RTU is being serviced or configured to prevent equipment from turning on or off unexpectedly when a technician is present.

After power-up, the sensors used in the RDS have a 30-second warm-up period before HVAC demands can be serviced.

1.1 SENSORS

The system supports up to two refrigerant detection sensors placed at various locations in the RTU. The number and placement of these sensors is determined by the model and cannot be changed. If an RTU requires sensors to be installed and they are not present or not functional, the RTU will operate with blower and outdoor fans on until the sensor(s) are replaced.

Sensors can only be replaced with Lennox-approved replacement parts.

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1.2 ALARMS

The system uses existing alarm reporting features to alert the operator of a refrigerant leak or faulty sensor(s).

Refrigerant Sensor #	1	2
Area	Indoor	Control Panel/ Compressor
Leak Detected by Sensor	Alarm 152	Alarm 153
Sensor faulty or missing	Alarm 257	Alarm 258

In addition, there is a dedicated dry contact relay that can be connected to a customer-supplied audible alarm to alert the operator of a leak or faulty sensor. The relay is closed when a leak is detected. If a sensor is faulty or missing, the relay may be configured to close for 5 seconds. This 5 second closure for non-leak events can be enabled or disabled via Parameter 543.

1.3 MITIGATION ACTIONS

In the event of a refrigerant leak the following mitigation actions are taken:

1. Blower, outdoor fan(s), and combustion air blower (if present) are turned on to disperse and dilute the leaked refrigerant.
2. Compressor, gas heat, and electric heat are turned off. Free-cooling is allowed to operate.

In VAV applications, the blower runs to maintain a configurable duct static pressure specifically for RDS mitigation

*Blower proof is required for all Lennox equipment with the CORE Control System using R-454B refrigerant. Blower proof is determined from either a physical blower proving switch or via blower RPM feedback (MODBUS or 0-5V PWM signal) depending on the model.

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1.4 USER TEST

The operator may test the RDS response via the component test menu within the CORE Service App. This operation simulates a leak condition and allows the operator to verify the mitigation actions described in the preceding section.

1.5 SENSOR PLACEMENT

	MODEL TYPE	NUMBER OF SENSORS	SENSOR 1 (INDOOR)	SENSOR 2 (CONTROL PANEL/COMPRESSOR)
Model L A	LGM	2	Y	Y
Model L A	LCM	1	Y	NA
Model L B*	LGM/LCM	1	Y	NA
Model L C*	LGM/LCM	2	Y	Y
Enlight A	LGT/LDT	2	Y	Y
Enlight A	LCT/LHT	1	Y	NA
Enlight B	LGT/LCT/LHT/LDT	1	Y	NA
Enlight C	LGT/LCT/LHT/LDT	2	Y	Y
Enlight D	LGT/LCT/LHT/LDT	2	Y	Y
Xion A	LGX024-060	1	NA	Y
Xion A	LGX072	2	Y	Y
Xion A	LHX	1	Y	NA
Xion B	LGX/LCX/LHX	1	Y	NA
Xion C	LGX/LCX/LHX	2	Y	Y
Strategos A	SGH	2	Y	Y
Strategos A	SCH	1	Y	NA
Strategos B	SGH	2	Y	Y
Strategos B	SGH	1	Y	NA
Strategos D	SCH/SGH	2	Y	Y



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Over a century later, we continue to build on this foundation, finding new ways to help meet today's business challenges. With a wide range of ENERGY STAR® certified products that lower costs through reduced energy demand, Lennox is a single source for efficient, reliable HVAC solutions that professionals continue to depend on—year in and year out.

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