



INNOV@™ Close Control Units



- **Providing IT Climate Technology**



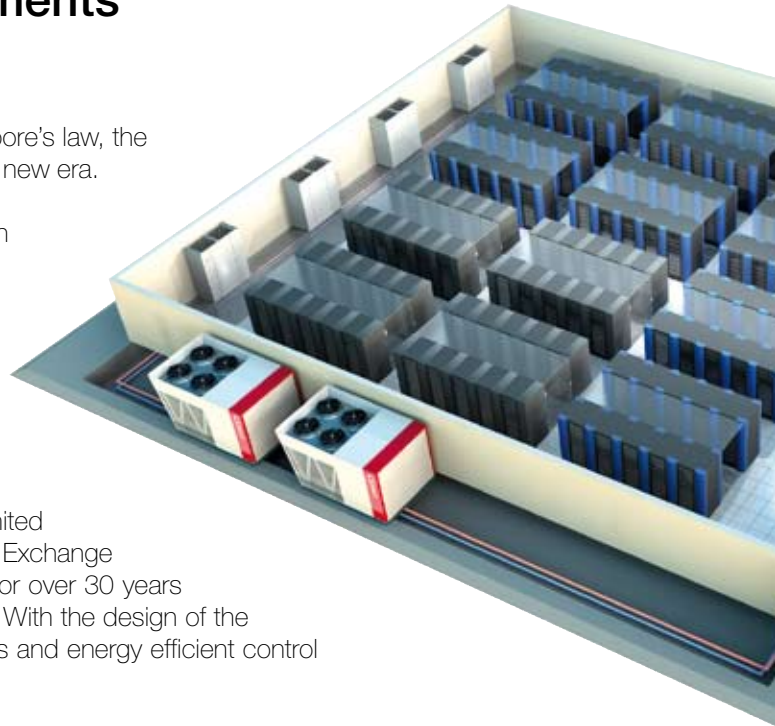
INNOV@™, Providing IT Climate Technology

• New design meets new requirements

New design meets new requirements. Just as the theory of Moore's law, the design of data centres & computer rooms moves us fast into a new era.

The evolution of data-communication technology has never grown as fast as it does today, or as it will tomorrow. Communication infrastructure is the standard in our society, but looking forward the needs will require a new level of service. The data communication market of today has specific requirements including high valued security and sustainability demands. The respect for the natural environment, green solutions and energy efficiency need to meet tomorrows demand.

Lennox International has been established in 1895 In the United States Lennox and you can find us at the New York Stock Exchange under the name LII. Today Lennox Europe has been involved for over 30 years in the production and design of Close Control Air-conditioning. With the design of the INNOV@™ range Lennox lives up to the required specifications and energy efficient control for tomorrows Hi-Tech environment.



• INNOV@ design

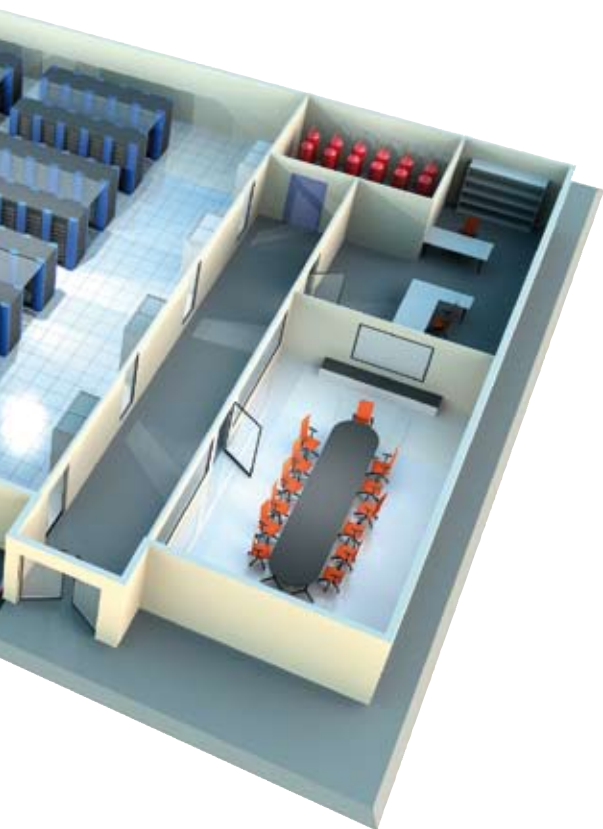
High-tech environments require dedicated environmental control. Energy efficiency, flexibility and modularity are criteria of today's equipment design. At Lennox we have decided that all INNOV@ units should live up to these criteria's. The complete range has been developed using the latest state of the art designing tools to reach a maximum functionality 24 hours a day, 365 days a year. All INNOV@Close Control Units feature:

- The latest microprocessor technology
- EC fans
- Full Frontal accessibility
- Self supporting frame
- Small Footprint
- Downflow / Upflow / Displacement airleaving configuration
- Hydrophilic Coating
- 3-way valve
- Stainless steel drip tray
- 2 potential free contacts

All units can be equipped with a full range off complementary options.



● Electronic expansion valve



Adopting efficient techniques old and new for optimizing the relation between cooling and energy consumption. Proven technology as the E.E.V. "electronic expansion valve" combined with the new electronic fan speed control highlight the effort Lennox has made towards the path of energy savings. Energy savings up to 10 - 12% a year on compressor energy consumption can be realized with the simple implementation of this option.



● Inverter driven compressor

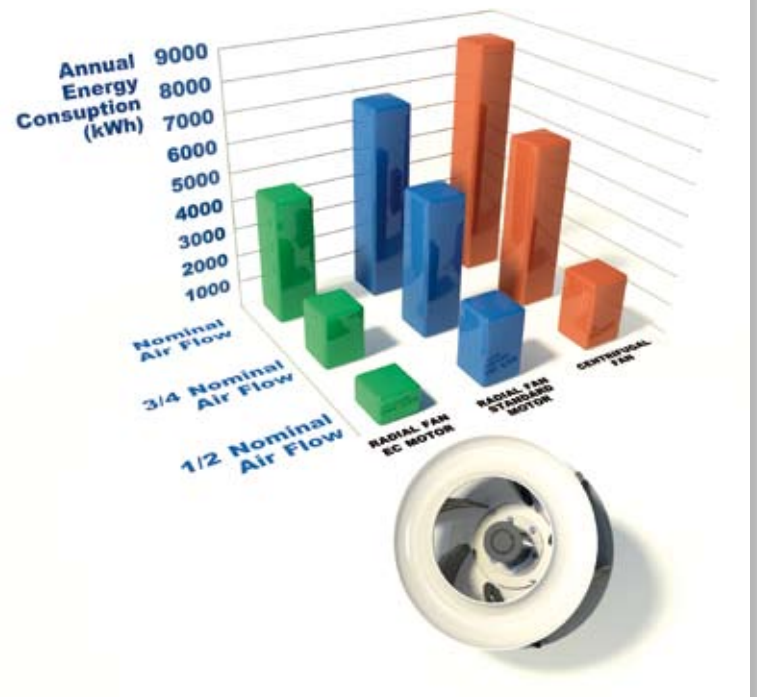


Inverter technology integrated in Close Control Air-conditioning provides the optimum cooling capacity required. Modulating cooling capacity from 25 - 100%, varying capacity in steps of 1 Hertz, with a maximum of 6 Hertz pro second INNOV@™ introduces a new flexibility in Close Control Air-conditioning. Variable temperature control combined with the related power consumption lives up to the required energy efficiency and savings.

INNOV@™, Providing IT Climate Technology

● EC fan technology

Standard in all INNOV@™ units are the Backward Curved Blade Fans with EC technology produced by EBM. The EC fans are recognized as the latest energy efficient development in fan technology. They not only provide the highest energy efficiency in fan technology but also provide various other opportunities such as fan speed control through the microprocessor or the Building Management System, silent running and A.A.C.



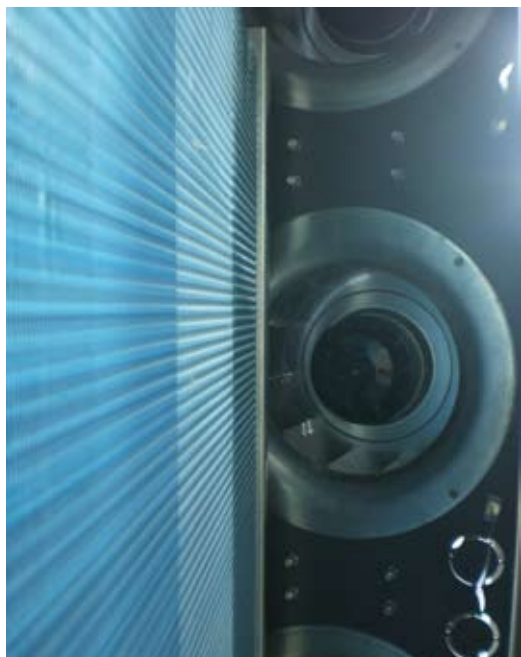
● Automatic Air volume control

INNOV@™ units equipped with A.A.C. technology "Automatic Air-volume Control" always provide the requested amount of air. The pro-active measurement of the airflow protects the sensible cooling capacity of the units and assures the required air volume to which the room is designed.

● Air leaving temperature control

The use of "new" architectural design such as hot and cold isle's and cooling alleys and technical developments on the server manufacturer side allow us to work with higher air temperatures on the server inlet side. Control of the air leaving temperature from the Close Control Units becomes more and more important. All INNOV@™ chilled water units and DX units with inverter driven compressor can be equipped with air leaving temperature control.





● Hydrophilic Coil Treatment

All coils of the INNOV@™ Close Control Units have a hydrophilic coil treatment. The function of this treatment is to minimize the surface resistance from the aluminium fins in order to allow a minimal film condensation during dehumidification operation. This results in a lower pressure drop during dehumidification which reduces the power consumption and sound emissions of the EC fans.

● Freecooling

The use of higher air leaving temperatures even makes free-cooling a more attractive proposition as it already was. In the INNOV@™ range we recognize two methods of free-cooling: direct and indirect.

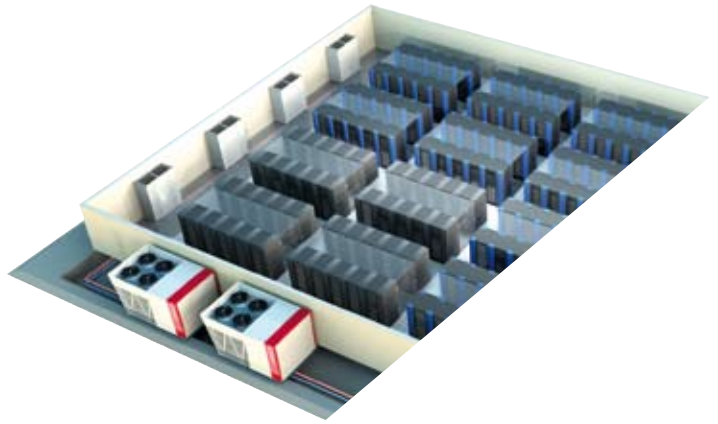
- Direct freecooling: the usage of ambient air with a lower temperature by bringing it direct from the outside into the room where cooling is required. The optional smart enthalpy control will protect the relative humidity inside the room avoiding little or too much humidity.
- Indirect freecooling direct integrated in the INNOV@™ Close Control units or in the Lennox Freecooling chillers. Optimized freecooling management for partial freecooling when the ambient temperatures can not provide 100% freecooling. This intelligent management control system is continuously looking for the optimum between free- and mechanical cooling. Ideal for combining it with our inverter controlled compressor management system. With this combination you will only need mechanical cooling for what you miss on free cooling.



INNOV@™, Providing IT Climate Technology

● Chilled water units

Besides our standard range of Chilled Water units we have also designed dedicated DATACENTER Coolers. Chilled water units designed for running on high water regimes (10 - 18°C) and providing a large cooling capacity combined with a relative small footprint.



● H.D.C. «high density cooler»

The use of Blade servers and 1U servers bring higher cooling demands inside the computer room or data-center. Existing C.C.U. solutions with cold air distribution do not have the required capacity. Lennox introduces the H.D.C. "high density cooler". The H.D.C. "high density cooler" is a small flexible solution which can be used in existing data centers for local upgrading or retrofitting but also in new build state of the art Datacenters. This small solution can be used as an in row solution in cooling alleys or as a dedicated 19" rack cooling solution can provide up to 39 kW cooling capacity on a ver small foot print: 300 x 1200 mm (Width x Depth) on a high water regime of 10°C - 15°C which is ideal to combine with free-cooling.



● Data web

Running Datacenters and computer rooms is all about control and efficiency. DATAWEB is a new smart solution for monitoring your INNOV@™ Close Control Units from a distance using the World Wide Web. With this solution it is possible to monitor your system with the help of web browsers like Internet Explorer, Firefox or Google Chrome. DATAWEB makes it possible to check online the status of your INNOV@™ units.

Added functionality; it is now possible to adjust online the most important parameters like room temperature, relative humidity, reset alarms (not mechanical alarms). Moreover, DATAWEB is able to generate e-mails to five different receivers when an alarm occurs.



● Service and Maintenance

The European Lennox Service Organization is located in fourteen European countries. Including Distributors and Agents our foot print is spread over 40 countries in the EMEA region. Maintenance contracts and service levels can be agreed on with your local Lennox partner. Quality is our main concern and in order to optimize our quality are all our service engineers regularly trained in Lennox University.



● Lennox University Lyon

In Lennox University we daily train our sales men and service engineers. Besides training our own people on our products, the daily job and product developments we also offer the possibility to our customers to attend our University for a dedicated training at different levels.



INNOV@™ technical data

INNOV@™ DX aircooled

upflow/downflow/displacement		0060	0080	0100	0110	0130	0160	0190	0205
Total cooling capacity ⁽¹⁾	kW	5,9	7,7	9,3	10,6	12,7	15,8	18,4	20,5
Sensible Cooling capacity	kW	5,9	7,4	9,3	10,6	12,5	15,6	17,3	18,9
SHR		1,00	0,96	1,00	1,00	0,98	0,99	0,94	0,92
Number of compressors	scroll	1	1	1	1	1	1	1	1
Air Flow	m ³ /h	1785	2150	3530	3530	3700	5100	5100	5100
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC	EC
Number of fan		1	1	1	1	1	1	1	1
Height	mm	1875	1875	1875	1875	1875	1875	1875	1875
Length	mm	600	600	900	900	900	900	900	900
Depth	mm	600	600	600	600	600	600	600	600

INNOV@™ DX aircooled

upflow/downflow/displacement		0201	0251	0281	311	0401	0272	0302	0362
Total cooling capacity ⁽¹⁾	kW	21,2	23,2	27,7	31,6	41,2	26,9	31,9	35,9
Sensible Cooling capacity	kW	21,2	23,2	25,5	27,2	40,0	26,9	31,6	35,9
SHR		1	1	0,92	0,86	0,97	1	0,99	1
Number of compressors	scroll	1	1	1	1	1	2	2	2
Air Flow	m ³ /h	7280	7280	7280	7280	12950	12950	12950	12950
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC	EC
Number of fan		1	1	1	2	2	2	2	2
Height	mm	1998	1998	1998	1998	1998	1998	1998	1998
Length	mm	1000	1000	1270	1270	1750	1750	1750	1750
Depth	mm	795	795	795	795	795	795	795	795

INNOV@™ DX aircooled

upflow/downflow/displacement		0422	0452	0532	0592	0602	0692	0762
Total cooling capacity ⁽¹⁾	kW	41,9	44,3	53,9	59,1	61,4	68,7	76,2
Sensible Cooling capacity	kW	40,6	43,9	46,9	49,1	58,9	65,3	70,9
SHR		0,97	0,99	0,87	0,83	0,96	0,95	0,93
Number of compressors	scroll	2	2	2	2	2	2	2
Air Flow	m ³ /h	12950	12950	14150	14150	19415	19415	19415
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC
Number of fan		2	2	3	3	3	3	3
Height	mm	1998	1998	1998	1998	1998	1998	1998
Length	mm	1750	1750	2000	2000	2500	2500	2500
Depth	mm	795	795	795	795	795	795	795

(1) Indoor conditions 24°C/ 50% relative humidity / Outdoor condition: 35 °C

(2) Electronically Commutated fan

Matching condensers available

Freecooling optional (direct / indirect)

Dualfluid optional

INNOV@™ DX watercooled

upflow/downflow/displacement		0060	0080	0100	0110	0130	0160	0190	0205
Total cooling capacity ⁽¹⁾	kW	5,3	7,0	8,9	10,0	11,7	15,5	17,8	19,7
Sensible Cooling capacity	kW	5,2	6,7	8,9	10,0	10,8	15,5	16,6	17,5
SHR		0,98	0,95	1	1	0,92	1	0,93	0,89
Number of compressors	scroll	1	1	1	1	1	1	1	1
Air Flow	m ³ /h	1785	2150	3530	3530	3700	5100	5100	5100
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC	EC
Number of fan		1	1	1	1	1	1	1	1
Height	mm	1875	1875	1875	1875	1875	1875	1875	1875
Length	mm	600	600	900	900	900	900	900	900
Depth	mm	600	600	600	600	600	600	600	600

INNOV@™ DX watercooled

upflow/downflow/displacement		0201	0251	0281	311	0401	0272	0302	0362
Total cooling capacity ⁽¹⁾	kW	20,0	21,1	27,1	30,2	39,2	23,5	28,9	34,0
Sensible Cooling capacity	kW	20,0	21,1	25,2	26,6	38,8	23,5	28,6	34,0
SHR		1	1	0,93	0,88	0,99	1	0,99	1
Number of compressors	scroll	1	1	1	1	1	2	2	2
Air Flow	m ³ /h	7280	7280	7280	7280	12950	12950	12950	12950
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC	EC
Number of fan		1	1	1	2	2	2	2	2
Height	mm	1998	1998	1998	1998	1998	1998	1998	1998
Length	mm	1000	1000	1270	1270	1750	1750	1750	1750
Depth	mm	795	795	795	795	795	795	795	795

INNOV@™ DX watercooled

upflow/downflow/displacement		0422	0452	0532	592	0602	0692	0762
Total cooling capacity ⁽¹⁾	kW	39,9	42,1	52,3	58,1	58,9	68,6	78,3
Sensible Cooling capacity	kW	39,1	42,1	46,0	48,8	58,9	66,9	73,7
SHR		0,98	1	0,88	0,84	1	0,97	0,94
Number of compressors	scroll	2	2	2	2	2	2	2
Air Flow	m ³ /h	12950	12950	14150	14150	19415	19415	19415
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC
Number of fan		2	2	3	3	3	3	3
Height	mm	1998	1998	1998	1998	1998	1998	1998
Length	mm	1750	1750	2000	2000	2500	2500	2500
Depth	mm	795	795	795	795	795	795	795

(1) Indoor conditions 24°C/ 50% relative humidity / Outdoor condition: 35 °C/ water 40/45 °C

(2) Electronically Commutated fan
 Freecooling optional (direct / indirect)
 Dualfluid optional
 Matching drycoolers available

INNOV@™ technical data

INNOV@™ Chilled Water

upflow/downflow/displacement»		0080	0110	0140	0160	0200	0230	0300	0380
Total cooling capacity ⁽¹⁾	kW	7,7	10,6	13,3	15,8	19,7	23,4	26,8	40,5
Sensible Cooling capacity	kW	6,8	8,9	13,0	13,2	18,5	19,3	23,3	32,7
SHR		0,88	0,84	0,98	0,83	0,94	0,83	0,87	0,81
Air Flow	m ³ /h	2300	2400	3800	3800	5100	5100	7450	7450
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC	EC
Number of fan		1	1	1	1	1	1	1	1
Height	mm	1875	1875	1875	1875	1875	1875	1998	1998
Length	mm	600	600	900	900	900	900	1000	1000
Depth	mm	600	600	600	600	600	600	795	795

INNOV@™ Chilled Water

upflow/downflow/displacement		0400	0500	650	0750	0900	1000	1200
Total cooling capacity ⁽¹⁾	kW	43,5	57,3	69,1	83,1	88,7	107,6	133,4
Sensible Cooling capacity	kW	36,6	47,7	56,8	66,2	74,1	88,0	102,8
SHR		0,84	0,83	0,82	0,8	0,84	0,82	0,77
Air Flow	m ³ /h	14550	14550	14550	14550	21400	21400	21400
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC	EC
Number of fan		1	2	2	2	3	3	3
Height	mm	1998	1998	1998	1998	1998	1998	1998
Length	mm	1750	1750	1750	1750	2500	2500	2500
Depth	mm	795	795	795	795	795	795	795

(1) Indoor conditions 24°C/ 50% relative humidity

(2) Electronically Commutated fan
water in - out: 7 - 12 °C

Freecooling optional (direct)

INNOV@™ Chilled Water

downflow		1500 ⁽³⁾	1500 ⁽⁴⁾	1800 ⁽³⁾	1800 ⁽⁴⁾	2100 ⁽³⁾	2100 ⁽⁴⁾
Total cooling capacity ⁽¹⁾	kW	144,2	73	177,7	90	248,5	131,6
Sensible Cooling capacity	kW	109,6	73	127,9	90	176,4	127,7
SHR		0,76	1	0,72	1	0,71	0,98
Air Flow	m ³ /h	24800	24800	26200	26200	36120	36120
Fan Type ⁽²⁾		EC	EC	EC	EC	EC	EC
Number of fan		2		2		3	
Height	mm	1998		1998		1998	
Length	mm	2510		2510		3160	
Depth	mm	945		945		945	

(1) Indoor conditions 24°C/ 50% relative humidity

(2) Electronically Commutated fan

(3) water in - out: 7 - 12 °C

(4) water in - out: 10 - 18 °C

Freecooling optional (direct)

INNOV@ ENERGY INVERTER DX aircooled

upflow/downflow/displacement		0060	0130	0281	0592
Compressor Speed 30 Hertz					
Total cooling capacity ⁽¹⁾	kW	3,2	6,3	12,3	24,4
Sensible cooling capacity	kW	3,2	6,3	12,3	24,4
SHR		1	1	1	1
Compressor Speed 70 Hertz					
Total cooling capacity	kW	6,3	11	21,9	43,9
Sensible cooling capacity	kW	5,9	11	21,9	42,1
SHR		0,94	1	1	0,96
Compressor Speed 110 Hertz					
Total cooling capacity	kW	9,5	15,8	31,6	62,9
Sensible cooling capacity	kW	7,6	13,4	27,2	54,7
SHR		0,8	0,85	0,86	0,87
Number off compressors ⁽³⁾	scroll	1	1	1	2
Air Flow	m ³ /h	1785	3700	7280	14150
Fan Type ⁽²⁾		EC	EC	EC	EC
Number of fan		1	1	1	1
Length	mm	1875	1875	1998	1998
Height	mm	600	900	1270	2020
Depth	mm	600	600	795	795

(1) Indoor conditions 24°C/ 50% relative humidity / Outdoor condition: 35 °C

(3) Electronic Expansion Valve standard

Freecooling optional (direct / indirect)

(2) Electronically Commutated fan

Matching condensers available

HDC «High Density Cooler»

Indoor conditions (T and R.H.)		24°C 50%	30°C 35%	35°C 26,5%	40°C 20%	45°C 15,5%
Total cooling capacity	kW	13,9	22,0	28,1	34,0	39,6
Sensible cooling capacity	kW	13,9	22,0	28,1	34,0	39,6
SHR		1	1	1	1	1
Fans' absorbed power	kW	0,75	0,75	0,75	0,75	0,75
Waterflow	l/h	2395	3780	4840	5850	6800
Airflow	m ³ /h	4000	4000	4000	4000	4000
Length	mm	300	300	300	300	300
Height	mm	2000	2000	2000	2000	2000
Depth	mm	1200	1200	1200	1200	1200

Chilled water @ 10/15°C

**The control is
in your hands**





BELGIUM, LUXEMBOURG
www.lennoxbelgium.com

CZECH REPUBLIC
www.lennoxczech.com

FRANCE
www.lennoxfrance.com

GERMANY
www.lennoxdeutschland.com

NETHERLANDS
www.lennoxnederland.com

POLAND
www.lennoxpolska.com

PORTUGAL
www.lennoxportugal.com

RUSSIA
www.lennoxrussia.com

SLOVAKIA
www.lennoxdistribution.com

SPAIN
www.lennoxspain.com

UKRAINE
www.lennoxukraine.com

UNITED KINGDOM AND IRELAND
www.lennoxuk.com

OTHER COUNTRIES
www.lennoxdistribution.com

Due to Lennox's ongoing commitment to quality, the Specifications, Ratings and Dimensions are subject to change without notice and without incurring liability.

Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.

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