



## Daikin LXE10E – Technical Information



**Model shown above is the DAIKIN LXE10E-A15  
(Fitted with Transfresh Provision option.)**

The most important part of any refrigeration machine is the compressor and the scroll compressor is the right choice for today's demanding performance and reliability requirements.

## Scroll compressor:

Scroll compressors have already been adopted in the majority of air conditioning and refrigeration applications due to their superior performance compared with alternative technologies. Key benefits include:

- Fewer parts
- Easier to manufacture
- Higher reliability
- Higher co-efficient of performance
- Lower weight
- Greater cooling capacity
- Lower power consumption
- Lower noise levels
- Reduced vibration



The scroll compressor used in the LXE10E machine was developed **specifically** for container applications, drawing on all of Daikin's technological expertise. Daikin has been designing and manufacturing scroll compressors for over 20 years. The company is one of the largest producers of scroll compressor in the world today, manufacturing over 1.2 million compressors every year for a wide variety of refrigeration and air conditioning products. Daikin is the only manufacturer of container refrigeration machinery that can offer this level of experience and expertise in scroll compressor technology. Advanced design features that ensure the best performance from the LXE10E scroll compressor include:

### High efficiency asymmetric scroll

The scroll design in the LXE10E features dual suction gas entry technology, with staggered gas discharge from the two entry compression chambers. This reduces over-compression loss in comparison with a normal scroll compressor, guaranteeing optimal efficiency.

The compression process from the suction to the discharge port is also shorter than normal, thereby reducing heat influence from other areas and improving energy efficiency

### High reliability bearings

The compressor uses a rolling bearing for the upper main bearing and a sliding bearing for the orbiting scroll drive. This combination ensures an ideal oil supply, regardless of the condition of the suction gas.

### Proper distribution of suction gas

The scroll compressor has a motor housing that can distribute the suction gas to the motor for cooling and to the compression. By providing proper distribution of the suction gas, pressure loss is reduced while the motor is cooled down sufficiently. This design feature has improved the volumetric efficiency of the LXE10E scroll compressor by approximately 3.5%.

### Highly efficient Trochoidal pump

A stable oil supply for the scroll is guaranteed by the use of a highly efficient Trochoid pump.

### Anti-corrosive paint

Reefer boxes and machines are subjected to severe environmental conditions and it is crucial that the paint on the compressor body is of extreme durability. To ensure maximum protection against corrosion and the effects of UV light, the LXE10E scroll compressor is treated with a two-coat paint system:

- Undercoat: epoxy zinc
- Topcoat: Micaceous iron oxide (MIO)

### Wide operation range

- Extended scroll wrap and adoption of gas injection system
- High durability against shock and vibration

### Powerful cooling capacity

For non pre-cooled cargo: The LXE10E has excellent cooling capacity to provide a fast temperature pull-down, which can prevent chilled cargo from ripening.

For deep-frozen cargoes: The LXE10E provides sufficient cooling capacity to ensure reliable transportation with end-user satisfaction. It also extends the reefer box's life expectancy.

The DAIKIN LXE10E machine also meets all the new proposed ISO requirements, currently being discussed.

### Net Cooling Capacity

Temperature (Ti/Ta)	<b>+2/+38</b>	<b>-18/+38</b>	<b>-29/+38</b>
Cooling Capacity (watts)	<b>10,600</b>	<b>6,400</b>	<b>4,000</b>

### Sensitive temperature control

To protect fresh products from freeze damage, the LXE10E provides uniform supply air temperature with its precise refrigerant control system. In combination with suction

modulating and discharge gas control, this accurate temperature control protects fresh products from freeze damage and moisture loss.

### Hot gas defrost and dehumidification system

This unique system has proved its efficiency in both the reefer market and the refrigeration industry, providing the most efficient defrosting available. Daikin's hot gas system provides faster defrosting and with less heat escaping into the cargo area, improved conditions for the cargo.

For dehumidification the DAIKIN LXE10E hot gas system provides a fully controllable and powerful product ensuring your cargo receives the best treatment.

### Superior reliability

By using the best materials and knowledge the LXE10E machine continues to provide the highest reliability, setting new standards for the container industry.

### User friendly:

**The DECOS III controller fitted to the LXE10E has been designed for ease and simplicity of use. It is the only controller in the refrigerated unit market that provides a graphical display, eliminating the need to fit and maintain a separate temperature chart plotter**

### Twin Display monitor

A combination of LED and LCD displays means that various modes can be operated and monitored easily by the user:

- Continuous monitoring of temperature, alarm etc at ship's deck
- Monitoring for maintenance work at terminals
- All sensor data can be checked (HP/LP pressure/current/voltage etc)

### Click touch keyboard

This concentrated control switch supplies the communication between the human operative and the LXE10E:

- Selection of each mode (setting temperature/defrost interval etc)
- Altering initial settings (calendar, internal time etc)
- Automatic PTI function (short PTI/ full PTI/ manual check)
- Energy saving operation/automatic pump down
- Manual defrost
- Sensor data display



## Clear and easy to use software

The LED/LCD displays, provide access to all sensor data and a graphical display of the recorded temperature. This function enables the unit to be operated without a separate temperature chart recorder, whilst the full trip data will also be stored in the controller memory for two years.

Daikin's DCCS software has many advantages, providing operational data control, the generation of reports and analysing the machine operation:

- Fast controller data downloads to personal computer.
- Easy analysis of live operational conditions with simplified piping diagram and actual sensor data.
- Easy preparation of Trip/USDA/PTI reports etc.
- Quick and easy data uploads from your laptop.



## Daikin Temperature Management System (DTMS)

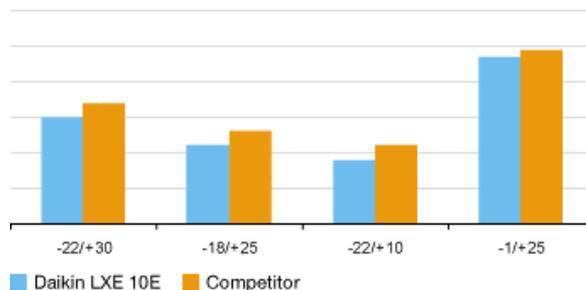
Developed for use with the LXE10E, DTMS is Daikin's newly developed control logic that significantly reduces power consumption and provides the optimum temperature environment and airflow for chilled cargo.

DTMS significantly improves refrigeration performance by continually monitoring both supply-air and return-air temperatures, together with their rate of change. DTMS is the only product on the market to monitor all three of these parameters.

DTMS works by automatically adjusting the cargo environment inside the container based on actual ambient conditions and cargo respiration rates. This continual fine-tuning enables temperature and airflow inside the container to be controlled with much greater accuracy, as the system responds to real time conditions.

The real time monitoring and adjustment ensures that the refrigeration unit operates at optimum efficiency, using the minimum amount of power. Automatic adjustment of fan speeds also reduces produce dehydration, particularly for chilled cargoes with a higher water concentration.

Power consumption comparison



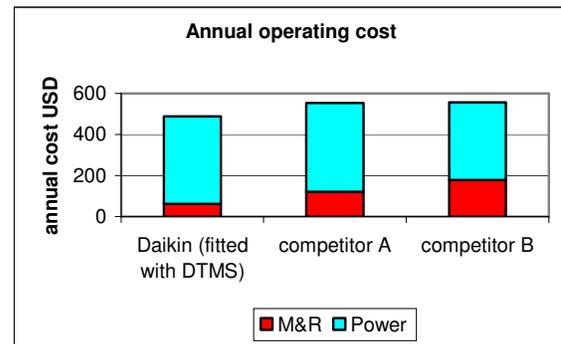
## Low operating costs:

A refined refrigerant control system allows the LXE10E to operate in any weather condition and with all types of cargo. Although extremely powerful, the LXE10E has very sensitive temperature control and utilises a hot gas system to provide both highly efficient defrosting and controllable heating.

Daikin's control systems ensure cargo is maintained at the correct temperature with the minimum amount of power being consumed, protecting both the cargo and the environment.

The high quality, performance and reliability provided by the DAIKIN LXE10E ensures all our customers benefit from very low operating costs and high utilisation and safe transportation of cargo to all locations in the world.

Many companies are using a Total Cost of Ownership calculation to assess the different machines, when realistic parameters are used the Daikin LXE10E fitted with DTMS, combined with the highest reliability and lowest cost of spares provides the lowest annual operating cost.



## Basic Specifications

Dimensions	Height	2234.5mm
	Width	2025mm
	Depth	416mm
	Weight	465kg +/- 2.5%
Refrigerant	Type	HFC R134A
	Charge amount	4.6kg
Fresh Air exchange	12.7mm H2O @ 60Hz	0 – 250 m³/hr
Inside temperature range		-30°C ~ +30°C
Ambient temperature range		-30°C ~ +50°C
Air flow rate	High (60Hz – 50Hz)	96.3 – 77 m³/hr
	Low (60Hz – 50Hz)	48.2 – 38.5 m³/hr
Cooling Capacity	Ti = -18°C, Ta = +38°C	6,400 Watts
	Ti = +2°C, Ta = +38°C	10,600 Watts
Power Consumption	Ti = -18°C, Ta = +22°C	2,200 Watts
	Ti = -1°C, Ta = +25°C	4,700 Watts (DTMS)

<b>Specification for DAIKIN LXE10E-A15 version</b>	
Multi functional electronic controller (DECOSIIIId) with integrated data recorder	Standard
Rechargeable back-up battery.	Option
Dry battery	Standard
R134A refrigerant (non-CFC)	Standard
5.5kW Scroll compressor	Standard
Power supply – 380 - 460V class (50/60Hz) power plug and 18m cable	Standard
Condenser – Air-cooled condensing type, anti-corrosive copper fin & tube	Standard
Water-cooled condenser	Available with LXE10E-1
Evaporator – Pre-coated aluminium fin & copper tubes	Standard
Dual speed evaporator fan motors	Standard
Dehumidification control	Standard
USDA sensor receptacles	Standard
High grade stainless steel back panels	Standard
Aluminium back panels	Option
Inside temperature range: -30/+30 deg. C	Standard
Ambient temperature range: -30/+50 deg. C	Standard
Machine colour: Ceramic White (Daikin standard colour)	Standard
Fresh air vent logging system	Option
Transfresh provision	Option
Dual Voltage	Option
Chart recorder	Option

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