

**DAIKIN**



# Daikin

## LXE10E Reefer Machine

The industry's bestselling  
scroll reefer unit

Quality

Performance

Reliability

Quality Performance Reliability – Daikin consistently delivers all three essential ingredients for the transportation of your refrigerated cargo

# About the LXE10E

Daikin introduced the LXE10E to the industry in 2001. It was developed with the close cooperation of shipping lines and operators to provide a product tailor-made for their requirements and specifications. It was designed to surpass competitors in three areas: *Quality*, *Performance* and *Reliability*. From design and development, right through to the final manufacturing process, these are the three fundamental cornerstones of Daikin's philosophy.



Quality

Performance

Reliability

## Advanced design

Daikin's commitment to manufacturing the best reefer unit in the market is characterised by listening closely to and understanding the needs of the industry, using a strong focus on design and technology, coupled with the best tradition of the Japanese manufacturing industry.



The LXE10E advanced design features include:

- ▶ Inside temp range -30/+30°C
- ▶ Ambient temp range -30/+50°C
- ▶ Digital temperature control software to reduce power consumption
- ▶ Reliability in all weather conditions
- ▶ Low maintenance and operational costs
- ▶ Environmentally friendly refrigerant
- ▶ Compliance with industry environmental regulations and forward looking design to comply with future legislation
- ▶ Sensitive and accurate temperature control – to protect fresh produce from freeze damage
- ▶ Hot gas defrost system – providing the most efficient and fastest defrost available

The majority of parts in a Daikin unit are designed and manufactured in-house, ensuring that components are purpose-designed and built to give the best possible performance in container refrigeration applications. It also enables Daikin to apply the most rigorous quality controls throughout the entire manufacturing process.

The LXE10E uses a single scroll compressor specifically designed for the demanding container industry. Both the refrigeration and electronic systems incorporated into the unit are modern and robust to ensure the best in performance, quality and reliability.

The standard Daikin machine operates in all conditions without the need for any additional equipment. Our competitors need to fit extra equipment in order to operate in all conditions.

Thanks to the LXE10E, Daikin are still leading the way – and continuous improvement processes ensure that Daikin remain a leader in design and technology within the industry. The market has recognised the exceptional value and performance provided by the LXE10E, with the majority of the world's leading shipping lines now benefiting from the use of Daikin's machine in their fleets.



## Scroll compressor



Scroll compressors offer superior performance in nearly all air conditioning and refrigeration applications. Daikin's 25-year history in the manufacture of scroll compressors, manufacturing over 1.5 million compressors every year, means they can bring their expertise in this area to the container refrigeration industry. Daikin is still the number one supplier of scroll reefer machines in the industry.

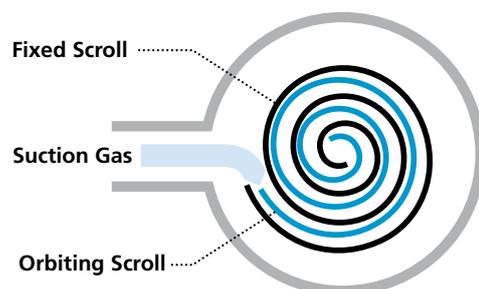
Scroll compressors have already been adopted in the majority of air conditioning and refrigeration applications, due to their superior performance compared with alternative technologies.

Daikin has been designing and manufacturing scroll compressors for over 25 years. The company is one of the largest producers of scroll compressors in the world today, manufacturing over 1.5 million compressors every year for a wide variety of refrigeration and air conditioning products.

The scroll compressor used in the LXE10E machine was developed specifically for container applications, drawing on Daikin's extensive technological expertise. Daikin is the only manufacturer of container refrigeration machinery that can offer this level of experience and expertise in scroll compressor technology.

This is reflected in real benefits to the refrigeration industry, Higher Reliability as a result of:

- ▶ Fewer components
  - Easier to manufacture*
  - High durability against shock and vibration*
  - Anti-corrosive paint system to protect the compressor against severe environmental conditions.*
- ▶ Lower power consumption (more details overleaf)
- ▶ Greater cooling Capacity
- ▶ Higher co-efficient of performance (COP +10%)
- ▶ Lower weight (-50%)
- ▶ Lower Noise Levels



## Low operating cost



The reliability of Daikin's LXE10E sets an industry standard for reliability – a factor which, together with its lower power consumption, translates into savings for unit owners and operators.

### Digital temperature control software

Developed for use with the LXE10E, DTMS (Daikin Temperature Management System) was designed to significantly reduce power consumption and provide the optimum 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. It works by automatically adjusting the cargo environment inside the container based on actual ambient conditions and cargo respiration rates, allowing more accurate control and responding to real-time conditions.

Daikin's DTMS software was the first product on the market to monitor all three of these parameters.

This enables the unit to operate at optimum efficiency, using the minimum amount of power necessary. Automatic adjustment of fan speeds also reduces produce dehydration, particularly for chilled cargoes with a higher water concentration.

### Powerful cooling capacity

For non pre-cooled cargo, the LXE10E has excellent cooling capacity at temperature pull down, which can prevent chilled cargo from ripening.

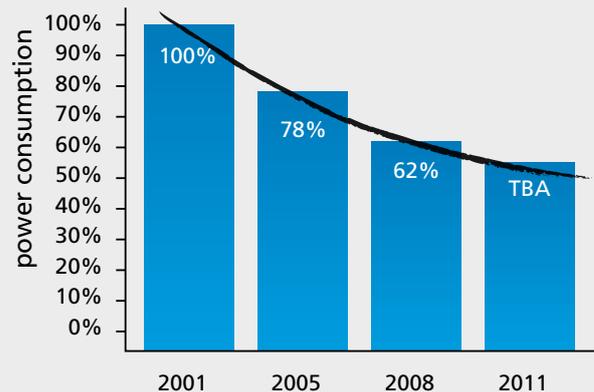
For deep frozen cargoes, the LXE10E can reliably maintain lower temperatures and can prolong container life, reducing the impact of insulation deterioration.

It is capable of maintaining low temperatures (-30°C) in a 40ft hi-cube with high ambient (+50°C) conditions.

Latest independent test results provided by Cambridge Reefer Technologies:

- ▶ -29°C/+38°C: 4,000 watts
- ▶ -18°C/+38°C: 6,400 watts
- ▶ +2°C/+38°C: 10,600 watts

### LXE10E reduction of power consumption over 10 years



### Superior reliability

By using the best materials and engineering know-how, the LXE10E machine continues to provide the highest reliability in machinery for the container refrigeration industry. Operational feed-back from our customers confirms this.

### Lowest spare parts costs

Daikin spare parts are approximately half the cost of any competitor. With the highest reliability and lowest cost of spares, Daikin customers benefit from the lowest operational and M&R costs.

**Daikin's Temperature Management System (DTMS) is fitted as standard on all new machines**

## User friendly interface



The DECOS IIIe 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 comprises 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:

- ▶ All sensor data can be checked (HP/LP pressure/current/voltage etc)

### Click-touch keyboard

The control panel switches provide feedback to the operator to confirm successful operation:

- ▶ 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 is stored in the controller memory for a minimum of two years.

Daikin's DCCS software has many advantages, providing operational data control, the generation of reports and analysing 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
- ▶ Continuous monitoring of temperature, alarm
- ▶ Monitoring for maintenance work at terminals



# Service & after sales



Daikin is committed to the long-term success of our customers by providing high quality equipment together with the after-sales network required to support the global refrigerated container industry today and in the future.

To provide high quality after-sales care, Daikin has continued to expand its Service and After Sales Network. A network of regional Daikin service managers and a comprehensive service dealership provide full support and quality of service, guaranteeing customer satisfaction, no matter where they are in the world.

In order to provide customers with the best service possible, there is a specially dedicated service and after-sales website providing:

- ▶ 24-hour technical support
- ▶ Training seminars by qualified engineers
- ▶ Online ordering of spare parts and parts search, along with prices
- ▶ Online warranty claims applications
- ▶ Latest service-related news
- ▶ Software downloads for the controller
- ▶ Download tools programme that allows customers to check the data history of controllers



Parts Centers



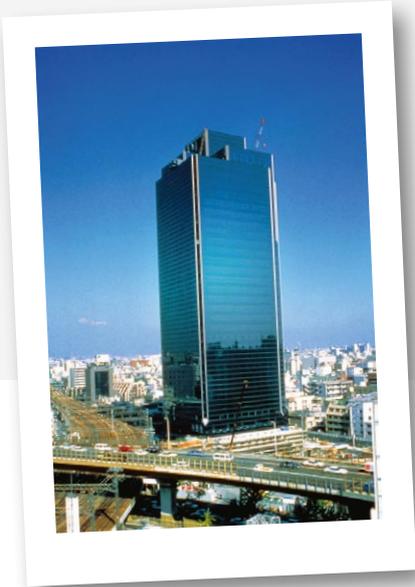
Authorized Repairers



Visit the Daikin After Sales and Service website at

[www.daikinreefer.com](http://www.daikinreefer.com)

# About Daikin



**Daikin Transportation and Refrigeration Systems Division is a wholly owned division of Daikin Industries Ltd. Founded in 1934 and headquartered in Japan, Daikin Industries has grown into a world-leading producer of air-conditioning and refrigeration systems and fluoro-chemical products.**

## Our history in container refrigeration

Daikin was one of the first major manufacturers to enter the refrigerated container market back in 1968 and became the leading supplier of container refrigeration equipment throughout the 1980s.

In 1997, Daikin introduced the LXE10D, its first machine running on R134a. This was followed in 2001 by the launch of the groundbreaking LXE10E, a scroll compressor refrigeration unit also running on R134a.

The Daikin LXE10E was extremely well-received by the industry and helped the company to re-establish its role as a major global supplier of container refrigeration equipment. By the end of 2010, over 150,000 units had been delivered, and in the ten years since the

introduction of the LXE10E, Daikin's customer base has grown to include the shipping, leasing, domestic and second-hand markets, with customers worldwide.

Today, Daikin is the largest global supplier of container refrigeration machines using scroll compressor technology. In 2009, Daikin opened a state-of-the-art factory in Suzhou, China, where all new units are now made. This enables faster delivery to manufacturers in mainland China. The factory is also built next to the existing Daikin compressor factory. These factories operate under strict quality control to provide the high-quality products associated with Daikin.

## The future

Daikin aims to continue strengthening its role as a major global supplier to the reefer industry by consistently providing the best-performing machines at economic prices. The company will further grow its refrigerated container business, as well as expanding into the total refrigeration field, ensuring a long-term supply of high-quality, reliable machines.

## Environment

Developing a series of energy-efficient products that exceed legal requirements and proactively developing initiatives to sustain and improve the environment, starting with design and development of products, through to materials procurement, production, and sales, and finally to product disposal and recycling, Daikin works to an environmental action plan which is strictly adhered to.

**In all of us,  
a green heart**



For further information on our environmental policy visit

[www.daikinreefer.com](http://www.daikinreefer.com)



# Daikin LXE10E Reefer Machine

## Basic specifications

- ▶ **Dimensions:**  
Height 2234.5mm  
Width 2025mm  
Depth 416mm
- ▶ **Weight:** 465kg +2%-4%
- ▶ **Refrigerant type:** HFC134a
- ▶ **Charge amount:** 5.2kg
- ▶ **Fresh air exchange:**  
12.7mm H<sub>2</sub>O @ 60Hz 0 – 250 m<sup>3</sup>/hr
- ▶ **Inside temperature range:**  
-30°C ~ +30°C
- ▶ **Ambient temperature range:**  
-30°C ~ +50°C
- ▶ **Air flow rate:**  
High (60Hz-50Hz) 96.3-77m<sup>3</sup>/hr @ 12.7mm H<sub>2</sub>O  
Low (60Hz-50Hz) 45.2-38.5m<sup>3</sup>/hr @ 3.2mm H<sub>2</sub>O
- ▶ **Cooling capacity:**  
Ti = -18°C, Ta = +38°C 6,400 Watts  
Ti = +2°C, Ta = +38°C, 10,600 Watts

## Specifications

- ▶ Multi-functional electronic controller (DECOS IIIe) with integrated data recorder
- ▶ Backup battery (rechargeable)
- ▶ Refrigerant (non CFC)
- ▶ 5.5kW scroll compressor
- ▶ Daikin Temperature Management System
- ▶ Power supply 380 – 460V class (50/60Hz) power plug and 18m cable
- ▶ Condenser air-cooled condensing type, anti-corrosive copper fin & tube
- ▶ Evaporator pre-coated aluminium fin & copper tubes
- ▶ Dual-speed evaporator fan motors
- ▶ **Machine colour:**  
Ceramic White (Daikin standard colour)

## Options

- ▶ Fresh air vent position logging
- ▶ Dehumidification control
- ▶ Remote monitoring Modem
- ▶ Water cooler condenser
- ▶ Electronic Chart Recorder

## Standards and regulations

- ▶ ISO 1496 Part 2 Thermal Container
- ▶ ISO standard 10368 high data rate, broadband and power cable communication modem
- ▶ TIR specifications; International Customs Conventions on Container
- ▶ USDA cold treatment requirement
- ▶ ATO-DLO for flower bulb transportation
- ▶ Standard Association of Australia
- ▶ Japanese Industrial Standard
- ▶ Regulation EC 842/2006 F-gas legislation
- ▶ EN12830 temperature recording



The air conditioners manufactured by Daikin Industries have received ISO 9001 certification for quality assurance.

**Certificate Number: JMI-0107**  
JQA-0495  
JQA-1452



All Daikin Industries locations and subsidiaries in Japan have received environmental management system standard ISO 14001 certification.

**Daikin Industries, Ltd**  
**Domestic Group**  
**Certificate Number EC99J22044**

For more information and news visit

[www.daikinreefer.com](http://www.daikinreefer.com)