LRV Range

Innovative HVAC units for light rail applications.
Engineered for performance, reliability and safety

Designed to meet your urban needs

- Totally self-contained and hermetically sealed
- Microprocessor-based controller
- Lightweight, low profile design
- Ideal for new and retrofit applications
- Complete capacity range — 22kW-40kW (8-12 ton)
- Low life-cycle costs
- Proven high reliability with low maintenance
- Environmentally friendly with quiet operation

Thermo King

Quality Components

Scroll Compressors
Fully hermetic scroll compressors operate in tandem, offering high efficiency, low maintenance and quiet operation.

Evaporator Coil
Two TXV valves allow better performance through a wide range of cooling capacity requirements.

Control Box
The control box contains the microprocessor-based controller, circuit breakers, overload relays, contactors and more. All necessary sensors are pre-installed in the unit.

Can be used on both new and retrofitted light rail cars.

New Cars
The Thermo King LRV Range units for new rail cars can be designed into the car and installed during manufacture. Thermo King uses digital models of the cars to provide the manufacturer with efficient, suitable and quick installation procedures.

Retrofit
Older light rail cars are refurbished to extend their service life. In many older cars the temperature control was inadequate or non-existent. When refurbishing cars, the entire air circulation system may be used again with the addition of a Thermo King range unit. The result: a like-new car with the latest technology available in air comfort systems.

Thermo King LRV Range units are designed and manufactured to rail standards. A leader in mobile temperature controls, Thermo King has been supplying environmental control units for over 50 years. Now, the reliable comfort found in cross-country railway cars is available for light rail mass transit cars. Specifically designed for light rail vehicles, the Thermo King LRV Range effectively maintains passenger comfort. Streamlined, roof-mounted and microprocessor-controlled, the unit controls temperature and humidity by balancing interior air levels with the outside air. The Thermo King LRV Range also adapts to meet customers’ specific requirements.

The Thermo King LRV Range is an efficient, self-contained environmental control unit consisting of compressors, evaporator coil, condenser coils, condenser fan, heavy-duty blowers and a control box. The components are fitted into a low-profile frame for roof mounting.

Heavy-Duty Blowers
High pressure, heavy-duty blowers are designed to deliver maximum airflow throughout the car.

Condenser Fan/Motor
The condenser fan/motor has specially designed propeller blades for maximum airflow capacity.

Condenser Coils
Lacquer-coated condenser coils offer high anti-corrosion protection.
Customer Requirements
At Thermo King, customers’ requirements are paramount. We analyze and apply all of the requirements in our units, thus delivering a quality product that keeps passengers comfortable.

Temperature Management
Light rail cars are subject to frequent door openings, which can cause a rapid rise in cabin temperature. The LRV Range, with its microprocessor controller, reduces the temperature swiftly to maintain passenger comfort.

Humidity Reduction
The LRV Range microprocessor controller controls the unit to maintain optimum relative humidity.

Environmentally Balanced Controls
The LRV Range is designed and programmed to function in relationship to the outside environment. The ambient environment is calculated for the worst case conditions of temperature, relative humidity, latitude and elevation, ensuring that the unit will maintain optimum passenger comfort anywhere in the world.

Vibration Standard for Trains
The chart shows that the typical vibration environment experienced by bus units is dramatically different from the one experienced by rail units (as defined by International Standard IEC 61373). Using HVAC systems designed for bus applications on rail cars is not recommended. Thermo King’s LRV Range units are designed and tested to withstand the rigorous duty cycle of a rail car, where the shock and vibration characteristics are much more demanding on the structural integrity of the HVAC unit.

Optional Features

Advanced Microprocessor Controller
- Communicates with other on-board computers (MVB, LonWorks, Wireless, GSM)
- Remote Setpoint Controller enables operator to easily control temperature setpoint from a remote location

Power Source
- Independent power supply inverter for roof mounting with connector for emergency/ventilation

End Caps
- For a streamlined look

Heaters (0–24kW)
- Electric resistance wire heater
- Electric resistance tube heater
- Hot water heat exchanger

Optional Fresh Air Configuration
- Fresh air opening - side - max. 1100 m³/h
- Supply air opening - front
Specifications

<table>
<thead>
<tr>
<th>LRV Range Specification Performance Table</th>
<th>LRV 8T</th>
<th>LRV 10T</th>
<th>LRV 12T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Data – System net cooling capacity at 35°C (95°F) / 26.6°C (80°F) / 50% (ambient air dry bulb temperature / inside air dry bulb temperature / inside air inlet relative humidity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling capacity (related to the frequency rate) kW</td>
<td>22/28</td>
<td>28/34</td>
<td>32/40</td>
</tr>
<tr>
<td>Heating capacity (electrical or hot water) kW</td>
<td>0-24</td>
<td>0-24</td>
<td>0-24</td>
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<tr>
<td>Refrigerant type</td>
<td>R-407C</td>
<td>R-407C</td>
<td>R-407C</td>
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<tr>
<td>Compressor type</td>
<td>Scroll</td>
<td>Scroll</td>
<td>Scroll</td>
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</tbody>
</table>

**Electrical Data**

<table>
<thead>
<tr>
<th></th>
<th>LRV 8T</th>
<th>LRV 10T</th>
<th>LRV 12T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power voltage range @ 60Hz (AC) V</td>
<td>208-480</td>
<td>208-480</td>
<td>208-480</td>
</tr>
<tr>
<td>Control voltage range (DC) V</td>
<td>24-110</td>
<td>24-110</td>
<td>24-110</td>
</tr>
<tr>
<td>Frequency rate Hz</td>
<td>50/60</td>
<td>50/60</td>
<td>50/60</td>
</tr>
<tr>
<td>Power consumption, full cool (nominal @ 60Hz) kW</td>
<td>12-17</td>
<td>17-20</td>
<td>20-23</td>
</tr>
</tbody>
</table>

**Airflow Data**

<table>
<thead>
<tr>
<th></th>
<th>LRV 8T</th>
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<th>LRV 12T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh air @ 60Hz (max. flow related to the unit inlet location) m³/h</td>
<td>1000</td>
<td>1200</td>
<td>1500</td>
</tr>
<tr>
<td>Supply air @ 60Hz (max. at 150 Pa external pressure related frequency rate) m³/h</td>
<td>3700</td>
<td>5100</td>
<td>6000</td>
</tr>
</tbody>
</table>

**Unit Inlet Locations**

<table>
<thead>
<tr>
<th></th>
<th>LRV 8T</th>
<th>LRV 10T</th>
<th>LRV 12T</th>
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</thead>
<tbody>
<tr>
<td>Fresh air (outside air)</td>
<td>Front/Side</td>
<td>Front/Side</td>
<td>Front/Side</td>
</tr>
<tr>
<td>Return air (inside air)</td>
<td>Bottom</td>
<td>Bottom</td>
<td>Bottom</td>
</tr>
<tr>
<td>Supply air</td>
<td>Bottom/Front</td>
<td>Bottom/Front</td>
<td>Bottom/Front</td>
</tr>
</tbody>
</table>

**Weight**

<table>
<thead>
<tr>
<th></th>
<th>LRV 8T</th>
<th>LRV 10T</th>
<th>LRV 12T</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>560</td>
<td>580</td>
<td>600</td>
</tr>
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</table>

**Worldwide Service Organization**

Thermo King backs its equipment and customers with a highly-trained, worldwide service organization. This assures you the support of factory authorized service facilities and a stock of factory parts and factory trained mechanics.

**Warranty Summary**

Terms of the Thermo King Warranty are available on request from your local Thermo King dealer. Please reference document TK50049 for the Thermo King Bus Unit Warranty.