RKN e1 container
Operations Manual

This manual is valid for:
RKN container,
P/N 120007R-()

Doc No. MO-RKN-3009
Version 24

www.envirotainer.com
## RECORD OF REVISION

<table>
<thead>
<tr>
<th>VER. NO.</th>
<th>REVISION</th>
</tr>
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<tr>
<td>24</td>
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- **1.6.1 ODLN sticker**: New chapter.
- **5. General cargo loading guidelines**: Added information about securing the pallet. Added information about verification testing.
- **7.1 Start the control unit** and **8.2 Infos**: Corrected the display images.
- **9. Technical specification**: Corrected temperature tolerance in cargo space.
- Updated illustrations to include the ODLN sticker.
- Updated revision number format (2.4 to 24).
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1. INTRODUCTION

1.1 SCOPE OF THE MANUAL

This manual provides information for personnel involved in the handling and transport of Envirotainer container series RKN e1 and is published by Envirotainer AB without warranty. If there are questions regarding this manual or the container, contact Envirotainer:
customercare@envirotainer.com
To contact one of our operations centers, refer to our website www.envirotainer.com.

1.2 SYMBOLS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>DANGER!</td>
<td>Indicates an immediate danger that will lead to death or serious injury if necessary measures are not taken.</td>
</tr>
<tr>
<td>WARNING!</td>
<td>Indicates a possible danger that can lead to death or serious injury if necessary measures are not taken.</td>
</tr>
<tr>
<td>CAUTION!</td>
<td>Indicates a possible hazard that can lead to injury or material / equipment damage if necessary measures are not taken.</td>
</tr>
<tr>
<td>NOTE!</td>
<td>Practical information or tips on how to perform a procedure.</td>
</tr>
</tbody>
</table>

1.3 SAFETY INSTRUCTIONS

- The design minimizes hazards to personnel and equipment during use. No material used in the construction constitutes a risk to the health of the personnel involved. All structural and mechanical components are free of sharp edges. Every attempt has been made to anticipate potential dangers and build in protections to prevent injury to personnel.
- Normal precautions should be observed when handling locks, doors and lids. Wherever necessary, warning stickers or texts will be attached to the container as a warning to users and ground handler personnel.

(PROCEED ON NEXT PAGE!)
• Always follow the "IATA Dangerous Goods Regulations" when loading the container with dangerous goods. The container must not be connected to the electrical outlet inside an airplane.

• Normal precautions should be observed when charging the container. Do not charge the container outdoors or in a damp, moist environments because of the risk for electric shocks.

1.4 THE CONTAINER

• The container is a temperature-controlled air cargo container used to transport temperature sensitive cargo in the refrigerated and controlled room temperature ranges.

• The container consists of two primary parts: the cargo space and the refrigeration system unit (refer to Fig. 1). The refrigeration system is controlled by a control unit and powered by internal, rechargeable batteries.

• The container is a forkliftable LD-3 air cargo container designed to hold one (1) US-pallet 1220 x 1016 mm (48 x 40”) or one (1) EURO-pallet 1200 x 800 mm (47.3 x 31.5”) of cargo.

1.5 CONTROL UNIT

• The control unit is the user interface for starting the container, setting the temperature, reading the actual air temperature inside the cargo space and other information.

• The control unit also has charging, alert and alarm indicators.

• The control unit is located outside the container on the left side of the doors (Fig. 1).

Refer to 7. Control unit operation.

- The system indicator (green light) is lit when the container system is operating.

- The charging indicator (blue light) flashes to indicate that charging is in progress and remains lit when the charging has been completed.
The alert indicator (yellow light) flashes to indicate that the container needs attention. If the alert indicator is flashing, measures can be taken to continue with the shipment.

The alarm indicator (red light) flashes to indicate that a technical part of the refrigeration system is out of order. If the alarm indicator is flashing, the container is not functioning properly and the shipment must be stopped.

1.6 CHARGING UNIT

- The charging unit is the user interface for charging the internal batteries of the container.
- The charging unit contains a charging cable and adapters for different countries.
- The charging unit is located on the left side of the doors (Fig. 1).

Refer to 3. Charging.
1.6.1 ODLN STICKER

The container is labeled with an Operational Damage Limits Notice (ODLN) sticker, to meet the IATA labelling requirements for aircraft containers. The ODLN describes the acceptable damage limits from an airworthiness perspective and can be used for safe loading on to the aircraft.

Before every lease, the containers are inspected against even stricter criteria than those stated on the ODLN. Therefore, the container will never exhibit the level of damages as described on the ODLN when released from an Envirotainer station.
2. LIMITS, AMBIENT CONDITIONS

The container is designed to maintain the temperature of the cargo shipped by cooling or heating the air inside the container. The following conditions must apply for the container to work properly:

2.1 PRE-CONDITIONING OF CARGO

- The container does not have battery capacity to cool down or heat up a large quantity of cargo.
- The container is designed to maintain the temperature of the cargo. It is therefore very important that the cargo is pre-conditioned correctly.

2.2 MINIMUM OPERATING TIME - FULLY CHARGED CONTAINER

- For a +5°C (+41°F) container set temperature the minimum operating time without recharging the batteries is 30 hours provided that the ambient temperature is between -10°C and +30°C (+14°F and +86°F). However, the operating time will increase if the ambient temperature is closer to the container set temperature of the cargo space.
- For other container set temperatures contact Envirotainers Customer Care team for advice: customercare@envirotainer.com

2.3 EXPOSURE TO EXTREME HEAT: ABOVE +30°C (+86°F)

The container can maintain the temperature in the loading area even though the ambient temperature is between +30°C and +40°C (+77°F and +104°F), but the battery consumption will increase, and the container operating time will therefore decrease.

For example, if the ambient temperature is +35°C (+95°F) and the container set temperature is +5°C (+41°F), the container can maintain the temperature but the container operating time will be reduced.

2.4 EXPOSURE TO EXTREME COLD: BELOW -10°C (+14°F)

The container can maintain the temperature in the loading area even though the ambient temperature is between -10°C and -20°C (+14°F and -4°F), but the battery consumption will increase, and the container operating time will therefore decrease.

For example, if the ambient temperature is -20°C (-4°F) and the container set temperature is +5°C (+41°F), the container can maintain the temperature but the container operating time will be reduced.
The container can maintain the temperature in the loading area down to an ambient temperature that is 35°C (63°F) below the set temperature.

For example, if the set temperature is +20°C (+68°F) the container can maintain the temperature down to an ambient temperature of -15°C (+5°F).

**NOTE!**

*The container remains operational between -25°C and -30°C (-13°F and -22°F) but might not be able to maintain the container set temperature.*
3. CHARGING

⚠️ WARNING!
- Charging must not take place inside an airplane.
- Do not charge the container outdoors or in damp, moist environments because of risk for electric shocks.
- Take caution when the container is moved and the electrical cable is fully extended. In addition, visually inspect the electrical cable for any abnormalities before connecting it to a power source.

⚠️ CAUTION!
Always pull out all of the cable when charging, approximately 10 meters (32 ft.). Charging with part of the cable inside the cable winder can cause damages to the cable winder.

ℹ️ NOTE!
- The battery switch only disconnects the batteries from the refrigeration system. Refer to 6.10 Battery switch.
- While charging, it is recommended to have the container switched on.
- The time required to charge the container depends on the battery level at the start of charging.
- The maximum time needed for charging is 8 hours regardless if the container is operating while charging.
- During the first hour of charging, the battery level is not updated on the display. As long as the blue charge indicator is flashing, charging is in progress. The display switches between showing CONTAINER INFO and Info, Pre-charging, Please wait.
- Avoid use of additional extension cable as far as possible.
- For optimal charging, make sure the ambient temperature is in the range 0°C to +20°C (+32°F to +68°F). If charging is made in temperatures outside this range, the charging capacity, and consequently the resulting battery energy, may be reduced.
- Charging must not be performed if the ambient temperature is below -20°C (-4°F) or above +40°C (+104°F).
- To avoid overload of power supply fuse, only connect one container per single-phase. The charging requires 1200 W when the container is switched off and 1850 W when the container is operating during charging.
- 120V supply requires at least a 20A circuit capability.
- 240V supply requires at least a 10A circuit capability.
3.1 CHARGING PROCEDURE

1. Open the cover of the charging unit (Fig. 1).

2. Pull out the cable from the charging unit (Fig. 4).

   CAUTION!
   
   Pull out all of the cable.

3. The container can be charged in two ways:
   - By connecting the blue CEE industry plug to a suitable socket. Continue with step 6.
   - By using one of the adapters. Continue with step 4–5.

4. Select the applicable adapter (Fig. 3) from the adapter case. More adapters can be ordered separately from Envirotainer. Refer to 3.2 Additional charging adapters.

(PROCEED ON NEXT PAGE!)
5. Connect the adapter to the charging cable (Fig. 4).

6. Connect the adapter / blue CEE industry plug to the power supply. The charge indicator (blue light) on the control unit starts flashing to indicate that charging is in progress. The charge indicator illuminates (fixed light) to indicate that the charging is completed.

   **NOTE!**
   - It may take up to 30 seconds before the charge indicator starts flashing.
   - The battery level is not updated on the display as long as the charge indicator is flashing.
   - During the first hour, the display switches between showing **CONTAINER INFO** and **Info, Pre-charging, Please wait**.
   - The charging indicator may illuminate (fixed light) at 95% battery status. If fixed light occurs at 95%, the batteries are considered fully charged.

7. Disconnect the adapter from the power supply and disconnect the adapter from the charging cable.

8. Make sure all five adapters and the cable for recharging is properly stored in the charging unit.

### 3.2 ADDITIONAL CHARGING ADAPTERS

The following adapters can be ordered separately from Envirotainer:

- **British Standard 546**
  - 15A, 3 pins
  - P/N 807W

- **NEMA 6-15R**
  - 15A, 250V
  - P/N 807X

*(PROCEED ON NEXT PAGE!)*
3. CHARGING

### RKN e1 container

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>Current Rating</th>
<th>Voltage</th>
<th>P/N</th>
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<tr>
<td>NEMA L15-30P</td>
<td>30A</td>
<td>250V</td>
<td>807Y</td>
</tr>
<tr>
<td>Danish SRAF 1962/DB 16/87</td>
<td>10A</td>
<td>250V</td>
<td>807Z</td>
</tr>
</tbody>
</table>

![Connectors](image.png)

*Fig. 5*

3.3 CHARGING CABLE

Avoid the use of an additional extension cable. If necessary, use an extension cable as short as possible. Make sure the cross-section of the wires are at least 2.5 mm² (0.0039 inch²).

3.4 CHARGING WITH DAMAGED CABLE OR CABLE WINDER

1. Open the cover of the charging unit.

*(PROCEED ON NEXT PAGE!)*
3. CHARGING

2. Remove the thumbscrews and pull out the adapter case (Fig. 6).

3. Disconnect the charging cable and connect the appropriate type of adapter (Fig. 7).

(PROCEED ON NEXT PAGE!)
4. Connect an extension cable to the adapter.

**NOTE!**

*Use as short cable as possible and make sure the cross-section of the wires is at least 2.5 mm² (0.0039 inch²).*
4. PRE-CONDITIONING

The cargo and container must be pre-conditioned to the container set temperature before
loading. Incorrect pre-condition affects the ability to maintain cargo temperature in the
container.

4.1 CARGO PRE-CONDITIONING

The cargo must be pre-conditioned to the set temperature that is to be maintained during
transport.

Cargo temperature recording

• If records must be kept of product temperature, Envirotainer recommends that temperature
recorders are placed as close to the product as possible, preferably in the packing material,
otherwise between the packing material.

• The temperature displayed on the control unit is the temperature of the air at the sensor
inside the container. This temperature can differ slightly from the actual product temperature.

4.2 CONTAINER PRE-CONDITIONING

Before pre-conditioning, a functional test of the container must be performed. Refer to 7.5
Functional test.

There are two types of container pre-conditioning:

• In a non temperature-controlled area

• In a temperature-controlled room

4.2.1 PRE-CONDITION WITH CONTAINER OPERATING IN NON
TEMPERATURE-CONTROLLED AREA

For this type of pre-conditioning:

• It is recommended to connect the container to the power supply.

• When connected to the power supply, the heating and cooling equipment consumes no
battery power.

• The charging time is not affected during charging.

1. Make sure the container is operating and the container set temperature is correct. Refer to
7. Control unit operation.

2. Make sure the doors to the cargo space are closed.

3. Make sure that any display message disappears before loading cargo.

(PROCEED ON NEXT PAGE!)
For more information on display messages, refer to 8.2 Infos and 8.3 Alerts.

4.2.2 PRE-CONDITION IN A TEMPERATURE-CONTROLLED ROOM

1. Place the container in a temperature-controlled room that is set to the desired temperature.
2. Open the doors to the cargo space.
3. Allow at least one hour for container pre-conditioning before loading the cargo.
5. GENERAL CARGO LOADING GUIDELINES

**CAUTION!**

- Use the door straps to hold the doors open while loading.
- Load the cargo on a pallet and secure it using shrink-wraps or similar.
- If the cargo is shrink-wrapped, it is recommended that the pallet base is not wrapped, to allow air flow onto the floor.
- Center the pallet in the cargo space.
- Do not load cargo between the spacers inside the container walls.
- Ensure that the air inlet at the lower left side of the loading area is not blocked by the cargo.
- Ensure proper weight distribution.
- Secure the cargo to the tie-down brackets using straps.

Envirotainer RKN e1 specifications are based on verification testing with a worst case load of empty cartons on a US pallet, dimensions 1219 x 1016 x 1214 mm (48 x 40 x 48”).
5. GENERAL CARGO LOADING GUIDELINES

5.1 CARGO LOADING

1. Switch on the container (if pre-conditioned without container operating) and make sure the container set temperature is correct and the container is pre-conditioned to the required cargo temperature. Refer to 7. Control unit operation.

2. Load the container (minimize the time the container doors are open during loading).

3. Close and lock the doors. Secure the right door with a seal (Fig. 9) if applicable. The left door cannot be opened before the right door is opened.

4. Place any shipping documents or check lists in the container placard holder.

5.2 AFTER CARGO LOADING

1. Check that the battery level is 95% or above.

2. Confirm that the container set temperature is correct on the control unit.

3. Check that the yellow alert indicator on the control unit is not activated. Refer to 7. Control unit operation.

4. Check that the red alarm indicator on the control unit is not activated.

5. Confirm that all doors and covers are closed and latched.

6. Make sure the container is stored in accordance with the specified limits and ambient conditions. Refer to 2. Limits, Ambient Conditions.
6. GENERAL CONTAINER HANDLING GUIDELINES

6.1 FORKLIFT REQUIREMENTS

The container is lifted using forklifts.

⚠️ CAUTION!
• The container can only be forklifted from the door side and the rear side.
• The container must not touch the ground when moved by forklift.

6.2 ROLLER BEDS

Use the straps (Fig. 10) outside the corners of the container to handle the container on roller beds.

6.3 AMBIENT CONDITIONS

Make sure the container is handled in accordance with the specified limits and ambient conditions. Refer to 2. Limits, Ambient Conditions.

6.4 SHIPMENT DURATION

If the duration of the shipment is longer than 30 hours, then charge the container whenever it is in a warehouse.

6.5 WRAPPING

Wrapping must not be applied to the container. If the container is wrapped, the air inlets and outlets are blocked and the container can not work properly.
6.6 GROUND TRANSPORT PRECAUTIONS

Make sure the container is transported in an environment where the temperature is between -10°C and +30°C (+14°F and +86°F). Limit exposure to other temperatures. Refer to 2. Limits, Ambient Conditions.

6.7 AIRCRAFT TRANSPORT PRECAUTIONS

Limit the time on the tarmac during aircraft loading (to avoid temperature extremes and direct sunlight).

6.8 UNLOADING

- Before unloading the container, check for damage.
- Unload the container by unlocking and opening the doors.

6.8.1 AFTER UNLOADING

Switch off the container by pressing and holding or for approximately 3 seconds.

6.9 STORAGE

It is recommended that the container is being stored on flat ground. The storage temperature must be between -40°C and +50°C (-40°F and +122°F).

⚠️ CAUTION!

No container, cargo or other must be stored on top of the container.

6.10 BATTERY SWITCH

The battery switch is located behind the adapter case.

The battery switch disconnects the batteries from the container system. That is, the container cannot run on battery power when the switch is off (Fig. 12).

⚠️ NOTE!

The refrigeration system can still run and the batteries can still be charged when the container is connected to an electrical outlet.
6.11 LONG-TIME STORAGE (NOT IN SHIPMENT)

When the container is to be stored for more than seven days, the battery switch must be switched off.

1. Open the cover of the charging unit.

2. Remove the thumbscrews and pull out the adapter case (Fig. 11).
3. Turn the battery switch to "STOP" (Fig. 12).
   When switching on the main switch: turn the switch to "START". (The switch then automatically turns to 1 (one).

4. Install the adapter case.

5. During long-time storage, the batteries must be fully charged every 30 days because of self-discharge. Refer to 3.1 Charging procedure.
7. CONTROL UNIT OPERATION

7.1 START THE CONTROL UNIT

1. Press 📩

   During start-up, the four indicators are lit for approximately one second to check the function of the indicators.

2. Check the following:
   - The indicators are switched off (after one second), except from the green indicator.
   - The default mode is visible on the display (Fig. 13).
   - The default mode shows Container temp, Set temp and battery status.

3. Press 🔖 to get access to the control unit menu. Use ⬆️, ⬇️, and ➤ to navigate in the menu and access settings and information.)
7.2 SET THE TEMPERATURE

1. To change between Celsius and Fahrenheit:
   - Press \( \downarrow \) to enter the main menu. The display shows TEMP MENU.
   - Press \( \downarrow \) to enter the TEMP MENU. The display shows Set temp.
   - Use \( \uparrow \) or \( \downarrow \) to step to Current unit F Set changes to C or Current unit C Set changes to F (depending on the current setting).
   - Press \( \downarrow \) to confirm the change.
   - Press \( \downarrow \) to return to default mode.
2. Press \( \uparrow \) to enter the main menu. The display shows TEMP MENU.
3. Press \( \uparrow \) to enter the TEMP MENU. The display shows Set temp.
4. Press \( \uparrow \) to enter the Set temp. The display shows Set new temp.

   **NOTE!**

   *The SET NEW TEMP mode is activated for 30 seconds. If the display returns to default mode before the new set temperature is confirmed by pressing \( \downarrow \), the new container set temperature is not saved.*

5. Use \( \uparrow \) and \( \downarrow \) to change the container set temperature.
   Hold down the buttons to speed up the change.
6. Press \( \downarrow \) to confirm the new container set temperature.
7. Press \( \downarrow \) to return to default mode.
8. Check that the container set temperature is correct in the default mode.

7.3 CHECK THE OPERATION MODE

1. Press \( \uparrow \) to enter the main menu. The display shows TEMP MENU.
2. Use \( \uparrow \) or \( \downarrow \) button to step to SYSTEM MENU and press \( \downarrow \) to confirm. The display shows ALARM VIEW.
3. Use \( \uparrow \) or \( \downarrow \) button to step to OPER. MODE and press \( \downarrow \) to confirm.
4. Check the current operation mode. Refer to 8. Operation modes, infos, alerts and alarms.
5. Press \( \downarrow \) twice to return to default mode.
7.4 CHECK THE BATTERY LEVEL

The battery level is shown in the default mode.

The battery percentage figure is continuously updated according to battery status:

- 100% battery capacity is maximum and is achieved when charging starts from low battery voltage.
- 95% battery capacity is considered fully charged if the blue light is fixed (not flashing).

7.5 FUNCTIONAL TEST

1. Disconnect the container from the power supply (if connected).

2. Set the temperature to +5°C (+41°F).

3. Check for air discharge from the air guide in the ceiling (Fig. 14).

4. Check that no alerts or alarms are activated.

   If an alert or alarm is activated, the yellow or red LED indicator is flashing and the alert or alarm is displayed (Fig. 15). Refer to 8. Operation modes, infos, alerts and alarms for recommended actions.

   ![Fig. 14](image)

   ![Check for air](image)

   ![Alert 1/2](image)

   ![Inside temp out of spec](image)

   ![Alarm 1/2](image)

   ![MRU failure 7](image)

   ![Fig. 15](image)

It is also possible to view activated alerts or alarms in the control unit menu.

(PROCEED ON NEXT PAGE!)
1. Press 🔄 to enter the main menu. The display shows TEMP MENU.

2. Use or to step to SYSTEM MENU and press 🔄 to confirm. The display shows ALARM VIEW.

3. Use or to step to ALERT VIEW and press 🔄 to confirm. The display shows activated alerts. The activated alert is shown as ALERT 1/1.

**7.6 VERIFICATION OF THE TEMPERATURE CONTROL SYSTEM**

The internal temperature control system is verified annually in accordance with FDA 21 CFR Part 211.68a. The verification is recorded by a verification sticker (Fig. 16).

![Example verification sticker](image)

Example: if a container was verified in October 2017, it must be verified again before the start of October 2018.

If verification is not performed as scheduled, contact Envirotainer: customercare@envirotainer.com

**7.7 SEAL THE CONTROL UNIT AND USE THE INFO BUTTON**

1. Use the rectangular opening in the latch to seal the control unit (Fig. 17).

(PROCEED ON NEXT PAGE!)
2. Press the Info button (Fig. 17) to scroll between default mode, alarm status and alert status. The backlight illuminates for 20 seconds when the button is pressed.

**NOTE!**

*It is only possible to toggle through the menu. No changes can be made.*
8. OPERATION MODES, INFOS, ALERTS AND ALARMS

8.1 OPERATION MODES

8.1.1 COOLING POWERSTEP X

- The container uses four different power steps for cooling, 1-4, depending on the required cooling performance. "Cool Pow 1" is the lowest power step for cooling and "Cool Pow 4" is the highest (i.e. maximum cooling).

- When the container has been cooling and there is no need for further cooling the power step "Cool Pow 0" is displayed. At this power step there is no cooling (or heating) but the air inside the cargo area continues to be circulated.

8.1.2 HEATING POWERSTEP X

- The container uses two different power steps for heating, 1-2, depending on the required heating performance. "Heat Pow 1" is the lowest power step for heating and "Heat Pow 2" is the highest (that is, maximum heating).

- When the container has been heating and there is no need for further heating the power step "Heat Pow 0" is displayed. At this power step there is no heating (or cooling) but the air inside the cargo area continues to be circulated.

8.1.3 DEFROSTING POWERSTEP 2

- The container uses one power step, "Defrost Pow 2", for defrosting. At this power step the cooling system is shut down for a few minutes for defrosting of evaporator. The defrosting process does not affect the air temperature in the cargo space.
8.2 INFOS

8.2.1 “INFO, PRECONDITIONING”

**REASON:**
- At start up, or when the set temperature is changed, the display switches between showing **CONTAINER INFO** and **Info Preconditioning** until **Set temp** is reached. The temperature in the container is outside the set tolerance as follows:

  - \( \leq 10^\circ C \pm 3^\circ C \) (\( 50^\circ F: \pm 5.4^\circ F \))
  - \( > 10^\circ C \pm 5^\circ C \) (\( 50^\circ F: \pm 9^\circ F \))

8.2.2 "INFO, PRE-CHARGING, PLEASE WAIT"

**REASON:**
- During the first hour, the display switches between showing **CONTAINER INFO** and **Info, Pre-charging, Please wait**. When the container is being charged, the battery level indicator is not updating during the first hour since this is the “diagnose phase” of the charging process.
8.3 ALERTS

8.3.1 "ALERT, BATTERIES AT 30% CHARGE LEVEL"

REASON:
- The battery capacity is below 30%.

ACTION:
- Check the battery level immediately to make sure that there is sufficient battery power for the remainder of the shipment. It is recommended that the batteries are charged. Refer to 3. Charging.

8.3.2 "ALERT, CONTAINER STOPPED, CHARGING REQUIRED"

REASON:
- The batteries are depleted (the cut out voltage for the batteries have been reached).

ACTION:
- Charge the batteries. Refer to 3. Charging.

8.3.3 "ALERT, SYSTEM TOO WARM, CHARGING PROLONGED"

REASON:
1. The batteries or chargers are too warm.
2. Interruption in temperature reading.

ACTION:
1. Disconnect the container from the mains and if possible move the container to a cooler area.
2. Wait for the system to cool down (depending of ambient conditions) and reconnect the mains. If the system temperature is still too high, the alert appears again after a few minutes.
8.3.4 "ALERT, INSIDE TEMP OUT OF SPEC"

**REASON:**

- The temperature of the air inside the cargo space is outside the following alert limits depending on container set temperature:
  - If container set temperature is < 10°C: ±3°C (50°F: ±5.4°F)
  - If container set temperature is ≥ 10°C: ±5°C (50°F: ±9°F)

The possible reason is that the ambient temperature is outside of specification, or that the doors were opened recently.

**ACTION:**

1. Make sure the ambient temperature is within the specified limits.
   *If not, move the container to an area with an ambient temperature within the specified limits*

2. Make sure the doors are closed properly.
   *If not, close doors.*

8.3.5 "ALERT, AMBIENT TEMP OUT OF SPEC"

**REASON:**

- The container is exposed to extreme ambient temperatures.

**ACTION:**

1. To safeguard the cargo, make sure the ambient temperature is within the specified limits.
   *If not, move the container to an area with an ambient temperature within the specified limits.*
8.4 ALARMS

- MRU-FAILURE 0
- MRU-FAILURE 1
- MRU-FAILURE 2
- MRU-FAILURE 3
- MRU-FAILURE 4
- MRU-FAILURE 5
- MRU-FAILURE 6
- MRU-FAILURE 7
- MRU-FAILURE 8
- MRU-FAILURE 9

**REASON:**
- One or more of the technical parts of the MRU (Mechanical Refrigerating Unit) is out of order. The container cannot work properly.

**ACTION:**
- The current shipment must be stopped and the container must be repaired.
  Contact Envirotainer: customercare@envirotainer.com
9. TECHNICAL SPECIFICATION

### REFRIGERATION SYSTEM
- Thermostat-controlled air conditioning system with compressor cooling and electrical heating.
- Powered by rechargeable batteries.
- Recharging power supply: 100-240 V AC, 50-60 Hz
- Max power consumption during charging: 1850 W
- Max charging time: 8 h
- Container set temperature range: 0°C to +25°C (+32°F to +77°F)
  - Temperature tolerance in cargo space
    - at set temp ≤ 10°C (≤ 50°F): ± 3°C (± 5.4°F)
    - at set temp > 10°C (> 50°F): ± 5°C (± 9°F)
- Autonomy at container set temperature +5°C (41°F): 30 h*
- Operation range at container set temperature +5°C (41°F), ambient conditions**: -20°C to +40°C (-4°F to +104°F)
- Storage temperature range: -40°C to +50°C (-40°F to +122°F)

### DIMENSIONS
- External cube (volume): 4.8 m³ (169.6 foot³)
- External dimensions (L x W x H): 2000 x 1535 x 1620 mm (78.7 x 60.4 x 63.8 in)
- Internal dimensions (L x W x H): 1340 x 1319 x 1315 mm (52.7 x 51.9 x 51.7 in)
- Door opening (L x H): 1340 x 1315 mm (52.7 x 51.9 in)
- Internal cube (volume): 2.3 m³ (81.9 foot³)

### WEIGHT
- Tare weight**: 635 kg (1,400 lbs)
- Max gross weight: 1,588 kg (3,500 lbs)
- Max net weight**: 953 kg (2,100 lbs)

### OTHER INFORMATION
- Suitable for use on aircraft A300, A310, A330, A340, A380, B747, B767, B777, DC10, IL86, MD11, L1011. For other aircrafts, alternative operating procedures may apply.
- Forkliftable with a slot-height of 95 mm (3.7 in), slot-width of 290 mm (11.4 in).

*Minimum operating time if ambient temperature is between -10°C to +30°C (+14°F to +86°F).
**For load specification, refer to test report TR120013.
The tare weight (and thereby the max net weight) may change due to repairs, see the manufacturer’s plate for correct weight.

9.1 EXTERNAL DIMENSIONS

![Diagram of the container dimensions](image)
9.2 LOADING SPACE

Fig. 27

1315 mm (51.7 in)

1340 mm (52.7 in)

1319 mm (51.9 in)
10. TROUBLESHOOTING

10.1 NO DISPLAY

1. Is the Display unit switched “on”?  
   no → Press the “On/Off” button
   yes → 2

2. Is the container battery switch on?  
   no → Switch on the container battery switch. Refer to chapter "6.10. Battery Switch"
   yes → 3

3. Have the batteries been charged?  
   no → Charge the container. Refer to chapter "3.1. Charging Procedure"
   yes → 4

4. Replace container. Make sure to put the cargo in temperature controlled area

Fig. 28
10.2 BATTERIES DO NOT CHARGE

1. Is the container connected to AC power?
   - yes
   - no → Connect to AC power.

2. Is the blue charging indicator flashing?
   - yes → The container is charging, wait 1 hour and monitor % level.
   - no

3. Has the fuse blown (at the facility's power central)
   - yes → Change fuse at the facility.
   - no

4. Is the charging outlet current capability verified?
   - yes → Verify the capability.
   - no

5. Is the adaptor broken?
   - yes → If available, use spare adapter.
   - no

6. Is the cable broken? (visually inspect the cable)
   - yes → Remove the adapter case.
   - Refer to chapter
   - "6.11. Long-time Storage"
   - Disconnect cable winder.
   - Connect domestic extension cable together with adapter.
   - Refer to chapter
   - "3.3. Charging Cable"
   - no

7. Replace container. Make sure to put the cargo in temperature controlled area

Fig. 29
10.3 ALERT

10.3.1 “TEMPERATURE TOO WARM”

1. Has the container been properly pre-conditioned?
   - yes
   - no

2. Is the container stored at a temperature above +40 C (+104 F)?
   - yes
   - no

3. Has the container recently been exposed to sun and/or high temperatures?
   - yes
   - no

4. Has the door been open recently?
   - yes
   - no

5. Has the door been properly closed?
   - yes
   - no

6. Is there any battery capacity left?
   - yes
   - no

7. Is the fan operating? (Is air blowing out of the air-guide at the roof of the container cargo space?)
   - yes
   - no

8. Product may not be pre-conditioned to container set temperature. Check with shipper.

Ensure container temperature has been given time to reach the desired temperature range. In room temperature, +20 to +25 C (+68 to +77 F), it takes approximately 30 minutes to pre-condition to +5 C (+41 F).

Move container to cooler area below +40 C (+104 F).

Monitor container temperature returns to range.

Wait until temperature stabilizes.

Close the door.

Charge the container. Refer to chapter "3.1. Charging Procedure”

Replace container.
10.3.2 "TEMPERATURE TOO COLD"

1. Has the container been properly pre-conditioned?
   - no
   - yes

2. Is the container stored at a temperature below -25 °C (-13 °F)?
   - no
   - yes

3. Has the container recently been exposed to very cold temperatures?
   - no
   - yes

4. Has the door been open recently?
   - no
   - yes

5. Has the door been properly closed?
   - no
   - yes

6. Is there any battery capacity left?
   - no
   - yes

7. Is the fan operating? (Is air blowing out of the air-guide at the roof of the container cargo space?)
   - no
   - yes

8. Product may not be pre-conditioned to container set temperature. Check with shipper.
   - Ensure container temperature has been given time to reach the desired temperature range.
   - Move container to warmer area above -25 °C (-13 °F)
   - Monitor container temperature returns to range.
   - Wait until temperature stabilizes.
   - Close the door.
   - Charge the container. Refer to chapter "3.1. Charging Procedure"
   - Replace container.

Fig. 31
10.3.3 "AMBIENT TEMPERATURE OUT OF SPECIFICATION"

1. Is the container exposed to extreme ambient temperatures?
   - yes: Move the container to an area with ambient temperatures within specification.
   - no:

2. Has the container recently been exposed to ambient temperatures out of specification?
   - yes: Wait to see that the alert disappears.
   - no:

3. Replace container.

*Fig. 32*

10.3.4 IF AN ADAPTER IS LOST

1. Is the needed adapter missing?
   - yes: Use the blue CEE plug to connect to the power supply.

*Fig. 33*

For more information on how to connect the power supply, refer to 3.1 Charging procedure.
11. RKN E1 CONTAINER CHECK LIST

For refrigerated and controlled room temperature products

☐ Start the container by pressing without the container being connected to the electrical outlet. The indicators on the control unit are lit to test the functionality. If the container does not start, ensure that the container battery switch is on.

Container charging

☐ Start the container.
☐ Connect the container to an AC power outlet to charge the batteries.
☐ Ensure that the blue charging light is lit (flashing or fixed).

Container pre-conditioning

(If pre-conditioning is performed in a non temperature-controlled area).

☐ Perform a functional test of the container.
☐ Ensure that the container doors are properly closed.
☐ Set the container temperature to the desired container set temperature.
☐ Wait at least 30 minutes before loading cargo.

(If pre-conditioning is performed in a temperature-controlled room).

☐ Perform a functional test of the container.
☐ Place the container in a temperature-controlled room that is set to the desired temperature.
☐ Ensure that the container doors are open.
☐ Wait at least one hour before loading cargo.

Container loading

☐ Ensure that product, packing material & container is pre-conditioned before loading.
☐ Minimize exposure of product to ambient temperatures during loading into the container.
☐ Place the cargo on pallets to ensure sufficient airflow between the cargo and the floor.
☐ Ensure that no packing material is loaded in a way that blocks the airflow between the spacers inside the container walls.
☐ Secure the cargo using the container’s tie-down brackets.
☐ Close and secure the container doors.
☐ Check that no alerts are active.
☐ Ensure that the blue charging light is fixed (not flashing) before disconnecting from AC power.
☐ Ensure that all charging equipment is correctly stowed in the charging unit, and that all adapters are in place.

Transport / Handling / Storage

☐ Charge the container whenever possible.
☐ Comply with specified limits and conditions.