

FRIGOBLOCK

Operator's Manual

T-Hybrid and UT-Hybrid Systems

Focused on Frigoblock Power Electronics Kit



THERMO KING

FRIGOBLOCK

Revision A

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TK 61793-1-OP-EN

TRANE
TECHNOLOGIES

Introduction

This manual is published for informational purposes only and the information furnished herein should not be considered as all-inclusive or meant to cover all contingencies. If more information is required, consult your Thermo King Service Directory for the location and telephone number of the local dealer.

Thermo King's warranty shall not apply to any equipment which has been "so installed, maintained, repaired or altered as, in the manufacturer's judgment, to affect its integrity."

Manufacturer shall have no liability to any person or entity for any personal injury, property damage or any other direct, indirect, special, or consequential damages whatsoever, arising out of the use of this manual or any information, recommendations or descriptions contained herein. The procedures described herein should only be undertaken by suitably qualified personnel. Failure to implement these procedures correctly may cause damage to the Thermo King unit or other property or personal injury.

There is nothing complicated about operating and maintaining your Thermo King unit, but a few minutes studying this manual will be time well spent.

Performing pre-trip checks and enroute inspections on a regular basis will minimize operating problems. A regular maintenance program will also help to keep your unit in top operating condition. If factory recommended procedures are followed, you will find that you have purchased the most efficient and dependable temperature control system available.

All service requirements, major and minor, should be handled by a Thermo King dealer for four very important reasons:

- They are equipped with the factory recommended tools to perform all service functions
- They have factory trained and certified technicians
- They have genuine Thermo King replacement parts
- The warranty on your new unit is valid only when the repair and replacement of component parts is performed by an authorized Thermo King dealer

Machine Information Policy

Use of this product serves as acceptance of the Thermo King Machine Information Policy available at: www.europe.thermoking.com. This product

includes a standard feature that collects and shares Machine Information with Thermo King. Separate terms may apply when a customer has entered into an agreement with Thermo King. Customers that would like to opt-out of sharing Machine Information with Thermo King should forward such inquiries to the email address Opt-Out@ThermoKing.com.

Software License

The product includes software that is licensed under a non-exclusive, non-sublicensable, terminable and limited license to use the software as installed on the product for its intended purpose. Any removal, reproduction, reverse engineering, or other unauthorized use of the software is strictly prohibited. Hacking the product or installing unapproved software may void the warranty. The owner or operator shall not reverse engineer, decompile, or disassemble the software, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation. The product may include third party software separately licensed as specified in any documentation accompanying the product or in an about screen on a mobile application or website that interfaces with the product.

Emergency Assistance

Thermo Assistance is a multi-lingual communication tool designed to put you in direct contact with an authorized Thermo King dealer.

Thermo Assistance should only be contacted for breakdown and repair assistance.

To use this system, you need the following information before you call: (phone charges will apply)

- Contact Phone Number
- Type of TK Unit
- Thermostat Setting
- Present Load Temperature
- Probable Cause of Fault
- Warranty Details of the Unit
- Payment Details for the Repair

Leave your name and contact number and a Thermo Assistance Operator will call you back. At this point you can give details of the service required and the repair will be organized.

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Introduction

Please note that Thermo Assistance cannot guarantee payments and the service is designed for the exclusive use of refrigerated transporters with products manufactured by Thermo King Corporation.



Belgium	+32 270 01 735
Denmark	+45 38 48 76 94
France	+33 171 23 05 03
Germany	+49 695 00 70 740
Italy	+39 02 69 63 32 13
Spain	+34 914 53 34 65
The Netherlands	+31 202 01 51 09
United Kingdom	+44 845 85 01 101
Kazakhstan	+7 7273458096
Russia	+7 4992718539
Others	+32 270 01 735

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General Inquires and Unit Maintenance

For general inquiries please contact your local Thermo King dealer.

Go to www.europe.thermoking.com and select dealer locator for your local Thermo King dealer.

Or refer to the Thermo King Service Directory for contact information.

Customer Satisfaction Survey

Let your voice be heard!

Your feedback will help improve our manuals. The survey is accessible through any internet-connected device with a web browser.

Scan the Quick Response (QR) code or click or type the web address https://tranetechnologies.iad1.qualtrics.com/jfe/form/SV_2octfSHoUJxsk6x?Q_CHL=qr&Q_JFE=qdg to complete the survey.



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Safety Precautions

Introduction

Installing of the power electronics kit (PEK) can be dangerous if not done according to the hereby specified instructions. Personal safety depends upon the strict observance of these instructions.

PEK can only be installed by a qualified technician. The technician is required to read and understand this manual and all additional documents referenced in this manual in order to:

- be familiar with the function and operation of PEK and its individual parts
- be familiar with the technical specifications of the PEK components
- follow the instructions precisely and without omission
- observe all the safety precautions

Additionally the technician is required to observe the different national provisions and legislation.

FRIGOBLOCK GmbH offers training and instruction courses for service and installation partners regularly. We recommend participation in these courses at least every three years or more frequently.

Danger, Warning, Caution, and Notice

Thermo King® recommends that all service be performed by a Thermo King dealer and to be aware of several general safety practices.

Safety advisories appear throughout this manual as required (refer to examples below). Your personal safety and the proper operation of this unit depend upon the strict observance of these precautions.

DANGER

Example!

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Example!

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Example!

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury and unsafe practices.

NOTICE

Example!

Indicates a situation that could result in equipment or property-damage only accidents.

General Safety Practices

⚠ WARNING

Equipment Damage and Risk of Injury!

Do not carry out maintenance and repair work by yourself. It can only be carried out by authorized service technician. Always contact the FRIGOBLOCK service partner.

⚠ DANGER

Risk of Injury!

Keep hands and loose clothing clear of fans and belts at all times when the unit is operating with the doors open.

⚠ DANGER

Confined Space Hazards!

Avoid engine operation in confined spaces and areas or circumstances where fumes from the engine could become trapped and cause serious injury or death.

⚠ WARNING

Risk of Injury!

Turn off the Inverter Drive Remote Controller located inside the driver's cab and turn the vehicle's engine off before any installation work or inspecting any part of the system. Turn off the vehicle's engine before going under the vehicle to inspect the engine compartment or before tilting the cab. Make sure that the truck engine may not be started unintentionally.

FRIGOBLOCK
Safety Precautions

⚠ WARNING

Hazardous Voltage!

If handled improperly, electric voltage can cause internal and external burns or death. Refrigeration machines in the Mains mode operate at 400 Volts and in the Alternator mode up to 460 Volts.

⚠ CAUTION

Sharp Edges!

Use extreme care when working with exposed coil fins. Contact with fins can cause painful lacerations. Use gloves while handling coils.

⚠ CAUTION

Risk of Injury!

Do not remove or render ineffective any guard or safety device.

NOTICE

Equipment Damage!

All mounting bolts must be the correct length for their applications and torqued to specification. Incorrect bolt lengths and improper torque specifications can damage equipment.

NOTICE

Equipment Damage!

Do not connect other manufacturer's equipment or accessories to the FRIGOBLOCK system. This could result in severe damage to equipment and void the warranty.

NOTICE

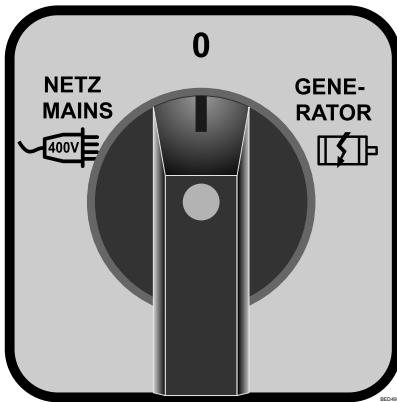
Equipment Damage!

Observe the performance data and limits on the nameplate of the power electronics kit.

Emergency Shutdown



1. Turn the vehicle's engine off.
2. Set MOA switch to position "0"



This isolates the refrigeration unit from the Power Electronics Kit and from the mains power.

First Aid

REFRIGERANT

- **Eyes:** For contact with liquid, immediately flush eyes with large amounts of water and get prompt medical attention.
- **Skin:** Flush area with large amounts of warm water. Do not apply heat. Remove contaminated clothing and shoes. Wrap burns with dry, sterile, bulky dressing to protect from infection. Get prompt medical attention. Wash contaminated clothing before reuse.

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Safety Precautions

- **Inhalation:** Move victim to fresh air and use Cardio Pulmonary Resuscitation (CPR) or mouth-to-mouth resuscitation to restore breathing, if necessary. Stay with victim until emergency personnel arrive.
- **Frost Bite:** In the event of frost bite , the objectives of First Aid are to protect the frozen area from further injury, warm the affected area rapidly, and to maintain respiration.

REFRIGERANT OIL

- **Eyes:** Immediately flush with large amounts of water for at least 15 minutes. Get prompt medical attention.
- **Skin:** Remove contaminated clothing. Wash thoroughly with soap and water. Get medical attention if irritation persists.
- **Inhalation:** Move victim to fresh air and use Cardio Pulmonary Resuscitation (CPR) or mouth-to-mouth resuscitation to restore breathing, if necessary. Stay with victim until emergency personnel arrive.
- **Ingestion:** Do not induce vomiting. Immediately contact local poison control center or physician.

ENGINE COOLANT

- **Eyes:** Immediately flush with large amounts of water for at least 15 minutes. Get prompt medical attention.
- **Skin:** Remove contaminated clothing. Wash thoroughly with soap and water. Get medical attention if irritation persists.
- **Ingestion:** Do not induce vomiting. Immediately contact local poison control center or physician.

BATTERY ACID

- **Eyes:** Immediately flush with large amounts of water for at least 15 minutes. Get prompt medical attention. Wash skin with soap and water.

ELECTRICAL SHOCK

Take IMMEDIATE action after a person has received an electrical shock. Get quick medical assistance, if possible.

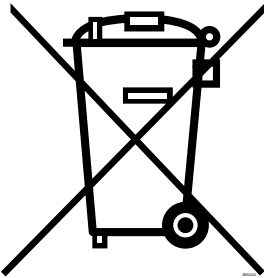
The source of the shock must be quickly stopped, by either shutting off the power or removing the victim. If the power cannot be shut off, the wire should be cut with a non-conductive tool, such as a wood-handle axe or thickly insulated cable cutters. Rescuers should wear insulated gloves and safety glasses, and avoid looking at wires being cut. The ensuing flash can cause burns and blindness.

If the victim must be removed from a live circuit, pull the victim away with a non-conductive material. Use wood, rope, a belt or coat to pull or push the victim away from the current. **DO NOT TOUCH** the victim. You will receive a shock from current flowing through the victim's body. After separating the victim from power source, immediately check for signs of a pulse and respiration. If no pulse is present, start Cardio Pulmonary Resuscitation (CPR). If a pulse is present, respiration might be restored by using mouth-to-mouth resuscitation. Call for emergency medical assistance.

ASPHYXIATION

Move victim to fresh air and use Cardio Pulmonary Resuscitation (CPR) or mouth-to-mouth resuscitation to restore breathing, if necessary. Stay with victim until emergency personnel arrive.

Disposing of the Product



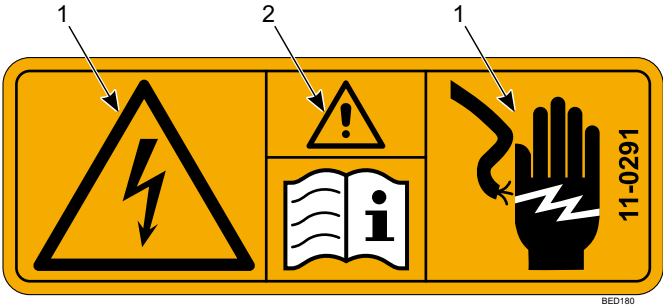
Please dispose of your product according to your national and local regulations at the end of its life. Contact your service partner for information about disposing of this product in your region of the world.

Safety Decals

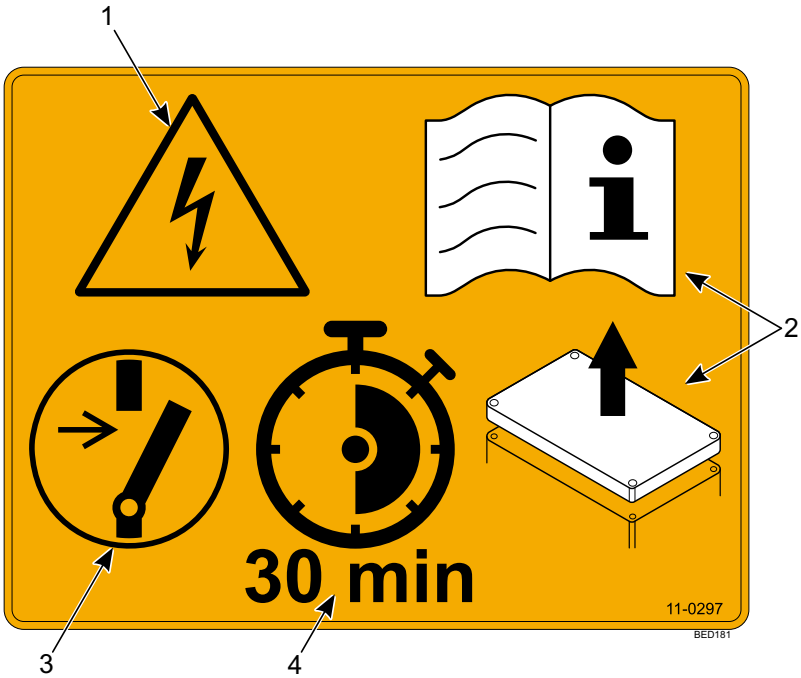
The following safety decals are placed on or around the FRIGOBLOCK's Power Electronics Kit components. They combine several safety signs together.

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Safety Precautions



1.	Electrical shock warning.
2.	Warning – Read instructions before handling.



1.	Electrical shock warning.
2.	Read instructions before opening the cover.
3.	Turn off the system before handling.
4.	Wait 30 minutes before opening the cover.

Unit Description

Unit Overview

This is a single and multi-temperature hybrid refrigeration solution for trailers.

System consists of Thermo King refrigeration unit and FrigoBlock Power Electronics Kit, combining electric and diesel power.

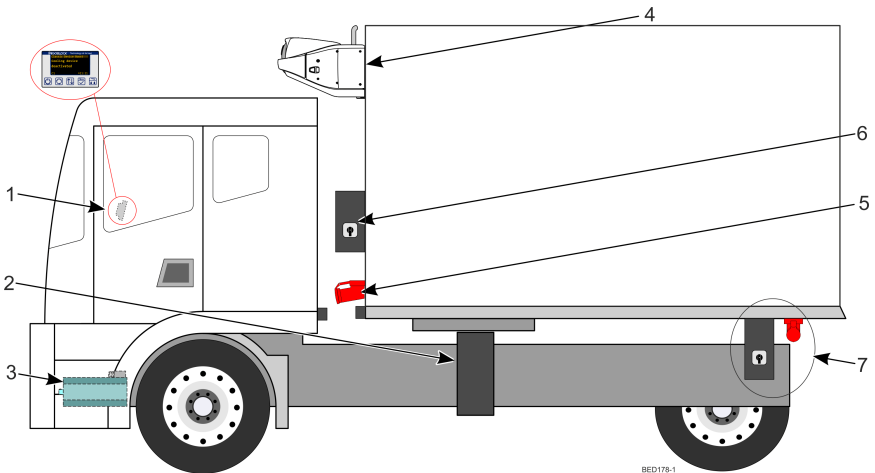
Features

The Hybrid system consists of several key components:

1. The FRIGOBLOCK Power Electronics Kit
 - a. Inverter Drive Remote Controller (controller, HMI)
 - b. Alternator (also called generator) kit
 - c. Inverter-Filter box
 - d. Mains-0-Alternator box (M0A)
 - i. Mains-0-Alternator switch (M0A switch)
 - e. CEE socket (the mains connection)
2. The Thermo King refrigeration unit
 - a. Truck Smart Reefer 3 controller (TSR-3 controller)

Note: For instructions on how to operate the Thermo King refrigeration unit please refer to the manual Operator manual available at www.emea-user-manuals.thermoking.com

FRIGOBLOCK Unit Description



1.	Inverter Drive Remote Controller (in cab)	5.	CEE socket
2.	Inverter-Filter	6.	Mains-0-Alternator control box (M0A)
3.	Alternator (connected to the engine belt drive)	7.	Alternative location for the CEE socket and the M0A box
4.	Thermo King Refrigeration unit		

Power Electronics Kit

Intended Use

The purpose of the FRIGOBLOCK Power Electronics Kit is to provide electrical energy for the refrigeration unit.

Proper use includes: compliance with safety, transport, installation, commissioning, operation, maintenance and repair instructions.

Limits of Use

The Power Electronic Kit can only be operated with the genuine FRIGOBLOCK parts and equipment.

The performance specifications and operating limits on the nameplates must always be maintained.

The Power Electronic Kit is only approved for operation in conjunction with the Thermo King refrigeration systems. It must not be used in any other way apart from what is described in this manual.

Photos and Illustrations

Figure 1. The Thermo King T-Series Refrigeration Unit



Figure 2. The Thermo King UT-Series Refrigeration Unit



Figure 3. Inverter-Filter



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Unit Description

Figure 4. Mains-0-Alternator Box



Figure 5. CEE Socket



Figure 6. Inverter Drive Remote Controller



Figure 7. Alternator Kit



Loading and Enroute Inspections

NOTICE

Preventative Maintenance FrigoBlock!

Pretrip inspections are an important part of a preventative maintenance program designed to minimize operating problems and breakdowns. Perform this pretrip inspection before every trip involving refrigerated cargo. Pretrip inspections are not intended to take the place of regular maintenance inspections.

Important: Make sure cargo is pre-cooled to the proper temperature before loading. The Thermo King unit is designed to maintain temperature, not cool an above-temperature load.

⚠ CAUTION

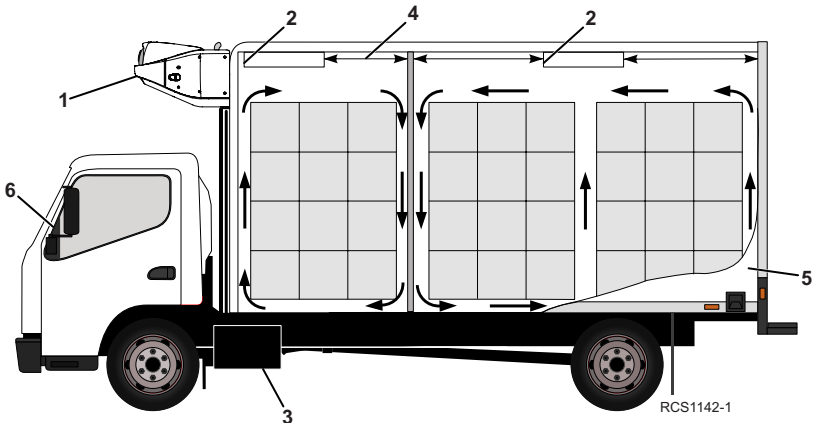
FrigoBlock PreTrip!

Turn the vehicle's engine off before inspection and set the M0A switch to position "0". Disconnect the mains cable from the CEE socket.

⚠ CAUTION

Risk of Injury!!

Disconnect the mains power cable before driving the vehicle.



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Loading and Enroute Inspections

1.	Inspect unit condenser grille openings to ensure they are free of debris.
2.	Inspect evaporator defrost drains to ensure they are not plugged or kinked.
3.	Confirm there is sufficient fuel in tank to operate unit for time required for deliveries.
4.	Make sure that there is a minimum of 1219 mm (48 in.) between evaporator air outlets and wall or bulkhead.
5.	Inspect cargo box compartment inside and out for: <ul style="list-style-type: none">• Inspect condition of door seals. They must seal tightly with no air leakage.• Damaged walls, missing insulation or blocked floor channels.• Inspect bulkheads (if applicable) for a air tight fit at ceiling, walls, and floor.
6.	Using the HMI Controller, turn the unit on to pre-cool cargo compartment: <ul style="list-style-type: none">• Adjust setpoint to desired cargo temperature and allow unit to run a minimum of 30 to 60 minutes (longer if possible) before loading cargo.
<p>Important: As product is being loaded, make sure evaporator air inlets and outlets are not blocked. Maximum air circulation is necessary to properly maintain the temperature of the entire load.</p> <p>Note: Listen also for other unusual noises, vibrations, etc.</p>	

Note: For instructions on how to Inspect your Thermo King unit please refer to the manual available at www.emea-user-manuals.thermoking.com

Note: For further best practices, please go to www.europe.thermoking.com/best-practices

Enroute Inspections

Complete the following enroute inspection every four hours. This will help minimize temperature related problems.

Inspection Procedure

1. Verify setpoint is correct.
2. Check the return air temperature reading. It should be within the desired temperature range.
3. Initiate a manual defrost cycle after each enroute inspection.

Inspection Troubleshooting

1. If a temperature reading is not within the desired temperature range, refer to the troubleshooting table ([Table 1, p. 24](#)). Correct problem as required.

Loading and Enroute Inspections

2. Repeat the Enroute Inspection every 30 minutes until the compartment temperature is within the desired temperature range. Stop the unit if the compartment temperature is not within the desired temperature range on two consecutive 30 minute inspections, especially if the compartment temperature appears to be moving away from the setpoint.
3. Immediately contact the nearest Thermo King Dealer or your company office.
4. Take all necessary steps to protect and maintain proper load temperature.

NOTICE

Cargo Loss!

Stop the unit if the compartment temperature remains higher than the desired temperature range from the setpoint on two consecutive 30 minute inspections. Contact the nearest Thermo King Dealer or your company office immediately. Take all necessary steps to protect and maintain proper load temperature.

Table 1. Inspection Troubleshooting

Problem: A return air temperature reading is not within desired temperature range of the setpoint.	
Cause	Remedy
The unit has not had time to cool down to correct temperature.	Refer to the load log history. Look for above temperature load records, properly pre-cooled cargo compartment, length of time on road, etc. Correct as required. Continue monitoring return air temperature until the reading is within the desired temperature range of the setpoint. <i>Note: Ensure cargo is properly pre-cooled prior to loading onto trailer. If 'warm cargo' is loaded onto trailer and reefer is used to cool to setpoint this will result in longer time required to cool down to correct temperature and possibly plugging of evaporator with frost due to increased humidity in trailer compartment.</i>
The unit may have a low refrigerant charge.	Check the receiver tank sight glass for refrigerant level. If fluid is not showing in the receiver tank sight glass, the refrigerant charge may be low. A competent refrigeration technician is required to add refrigerant or repair the system. Contact the nearest Thermo King dealer, authorized Service Center, or call the Thermo King Cold Line for referral. Consult the Table of Contents for Cold Line information.

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Loading and Enroute Inspections

Table 1. Inspection Troubleshooting (continued)

Problem: A return air temperature reading is not within desired temperature range of the setpoint.	
Cause	Remedy
The unit is in defrost or has just completed a defrost cycle.	Monitor the return air temperature after the defrost cycle is completed to see if the temperature returns to the desired temperature range of the setpoint.
The evaporator is plugged with frost.	Initiate a manual defrost cycle. The defrost cycle will automatically terminate when complete. Continue monitoring the return air temperature until the reading is within the desired temperature range of the setpoint.
Improper air circulation in the cargo compartment.	Inspect the unit and cargo compartment to determine if the evaporator fan (3) are working properly circulation the air. Poor air circulation may be due to improper loading of the cargo, shifting of the load, or depending on unit, fan belt slippage or faulty electrical fans. Correct as required. Continue monitoring return air temperature until problem is corrected.
The unit did not start automatically.	Determine the cause for not starting. Correct as required. Continue monitoring return air temperature until reading is within desired temperature range of the setpoint.
Multi-Temp Units Only – The unit is being used to cool/heat a single temperature load and does not have the capacity to cool the entire trailer.	A multi-temperature unit may not have the cooling or heating capacity to maintain a specific temperature range throughout an entire trailer.

Operating Instructions

Inverter Drive Remote Controller

▲ CAUTION

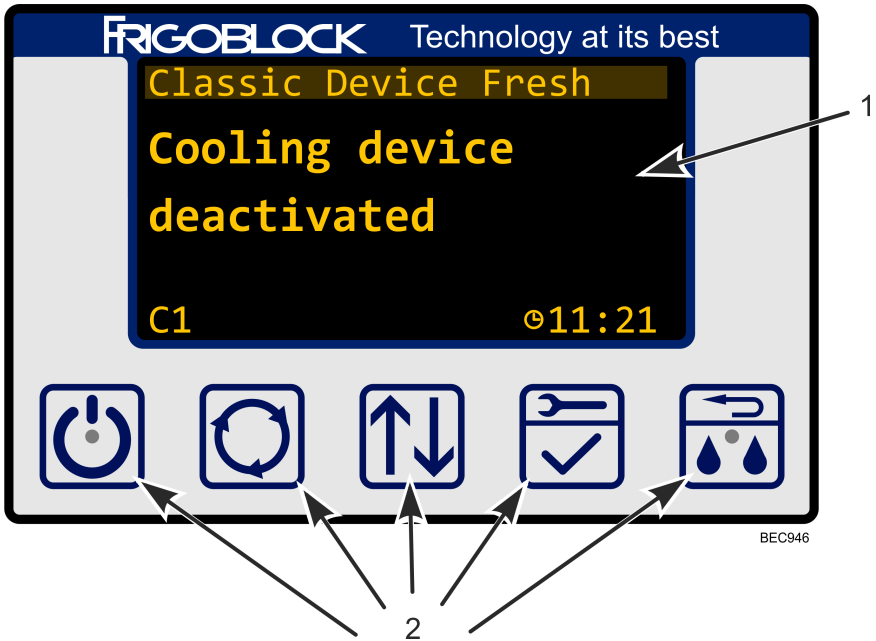
Risk of Injury!!

Do not operate the HMI Control Panel until you are completely familiar with its function.

Inverter Drive Remote Controller (controller, HMI) is a device used for controlling and monitoring the Power Electronics Kit. It is located in the driver's cabin.

Learning to operate this controller is not complicated and a few minutes studying the contents of this manual will be time well spent.

Figure 8. Inverter Drive Remote Controller



1.	Controller Display
2.	Function Keys

Controller Display

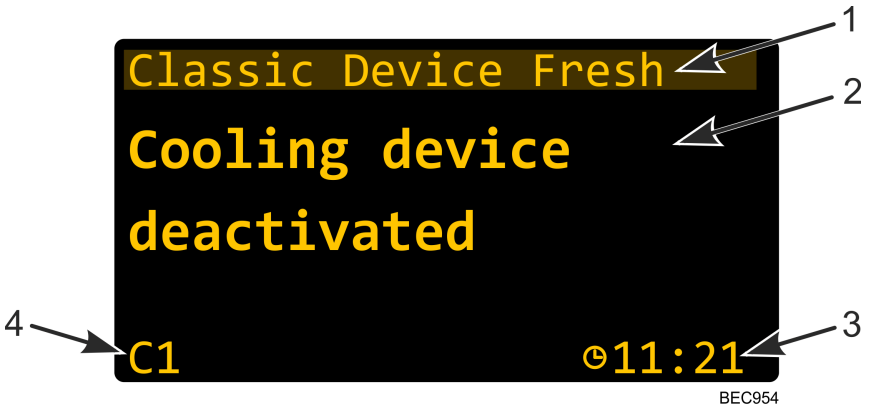
The control display is capable of showing both text and graphics. It is used to supply information to the operator about the state of the Power Electronics Kit and possible errors in the system.

Note: *The default message “Cooling device deactivated” does not mean the refrigeration unit is not working!*

Inverter Drive Remote Controller is a multipurpose device commonly used to control not only the Power Electronics Kit but also the refrigeration unit.






However, in the case of this Hybrid system, there is no electronic communication between Inverter Drive Remote Controller and the Thermo King refrigeration unit.

Figure 9. Controller Display



1.	Operating Mode *
2.	Status of Refrigeration Unit
3.	Time
4.	Power Output to the refrigeration unit – <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="background-color: black; color: yellow; padding: 2px 5px; margin-right: 5px;">C1</div> activated/ </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="background-color: black; color: yellow; padding: 2px 5px; margin-right: 5px;">C1</div> deactivated. </div>
* "Classic Device" = refrigeration unit; "Fresh" = chosen cooling mode	

Function Keys Overview

	Press briefly to switch the Power Electronics Kit on/off.
	Function not used in this Hybrid system.
	Press briefly to browse through the menu items.
	<ul style="list-style-type: none">• Press and hold to open the main menu ("Main Menu," p. 36)• Used to confirm a selection in the menu.
	Press briefly to go back in the menu.

MOA Box Overview

Figure 10. MOA Box



1.	MOA Switch
----	------------

Starting the Inverter Drive Remote Controller

1. Start the Vehicle's engine
2. Press the on/off key on the controller briefly.



BEC967

- First the light inside the key will flash on and off and when the power-up sequence is complete the light will stay constantly on.

Note: *If the controller does not switch on (black screen) or light inside the key does not stop flashing please check the fuses in the driver's cabin. If the fuses are not burned out and the system still does not start, please contact the authorized FRIGOBLOCK service partner.*

Error	Burned Fuse
Controller does not switch on (black screen).	F31 or F33
Light inside the key does not stop flashing.	F32

Operating Modes

The refrigeration unit can be powered from different sources. According to these sources we recognize three operating modes:

1. Diesel Mode

The refrigeration unit receives no power from the external sources (such as the mains or the alternator) and runs only on the diesel engine located inside the unit.

2. Mains Mode

FRIGOBLOCK

Operating Instructions

The refrigeration unit receives power from the mains via CEE socket.

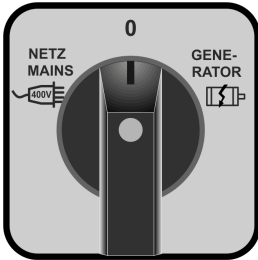
3. Alternator Mode

The refrigeration unit receives power from the FRIGOBLOCK Power Electronics Kit (from the alternator mounted on vehicle's engine).

Diesel Mode

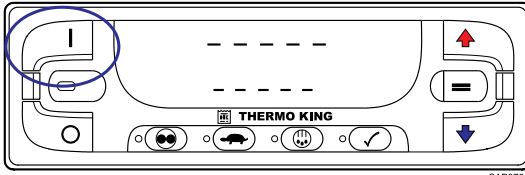
In this mode the vehicle's engine does not have to be running.

1. Set M0A switch to position "0".



BEC962

2. Press the ON key on the TSR-3 controller (located in the Truck Cab).



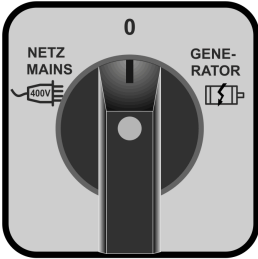
SAP375

3. Continue according to the instructions described in the Refrigeration Unit Operator manual available at www.emea-user-manuals.thermoking.com.

Note: If the Refrigeration unit does not receive power from the external source it automatically starts in the diesel mode. As soon as the Refrigeration unit starts receiving it's power from the external source it automatically switches to the electric mode and the internal diesel engine stops.

Mains Mode

1. Set M0A switch to position "0".

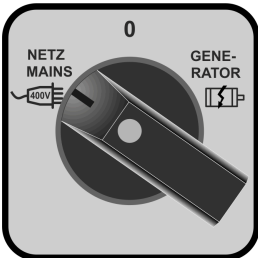


BEC962

2. Connect the mains cable to the CEE socket.

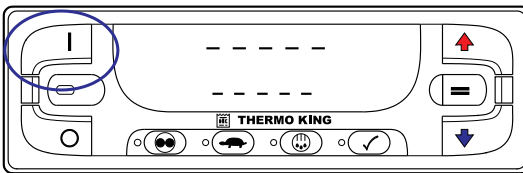


3. Set M0A switch to position "NETZ MAINS".



BEC963

4. Press the ON key on the TSR-3 controller (located in the Truck Cab).



FRIGOLOCK

Operating Instructions

- Continue according to the instructions described in the Refrigeration Unit Operator manual available at www.emea-user-manuals.thermoking.com.

Note: If the refrigeration unit was already running in the diesel mode when the M0A switch was set to this position the refrigeration unit will automatically switch to the Mains mode and the internal diesel engine stops.

Disconnecting the Mains Power

⚠ WARNING

Equipment Damage and Risk of Injury!

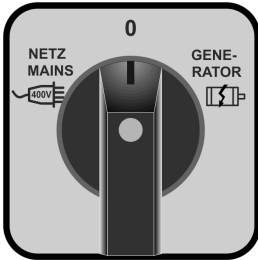
Do not disconnect the mains power cable with the M0A switch in position "NETZ MAINS". Switch it to position "0" first.

⚠ CAUTION

Risk of Injury!!

Disconnect the mains power cable before driving the vehicle.

- Set M0A switch to position "0".



BEC962

- Disconnect the mains cable to the CEE socket.

Alternator Mode

⚠ DANGER

Hazardous Voltage!

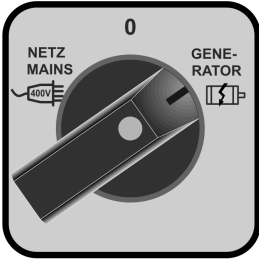
High Voltage is present when engine is running! Do not connect or disconnect electrical cables with the vehicle still running. Turn the engine off first.

⚠ CAUTION

Risk of Injury!!

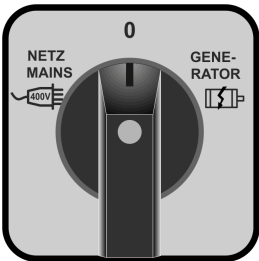
Be careful when inspecting elevated and not easily accessible areas.

1. Turn the vehicle's Engine Off
2. Set M0A switch to position "GENERATOR".



BEC964

3. Set M0A switch to position "0".



BEC962

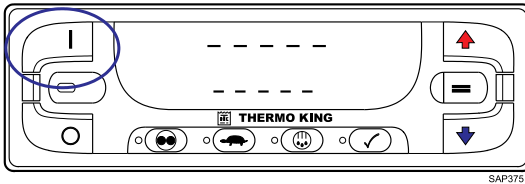
4. Start the vehicle's engine.
5. Press the on/off key on the controller briefly.



BEC967

Note: First the light inside the key will flash on and off and when the power-up sequence is complete the light will stay constantly on.

6. Press the ON key on the TSR-3 controller (located in the Truck Cab).



SAP375

7. Continue according to the instructions described in the Refrigeration Unit Operator manual available at www.emea-user-manuals.thermoking.com.

Note: If the refrigeration unit was already running in the diesel mode when the MOA switch was set to this position, the refrigeration unit will automatically switch to the Mains mode and the internal diesel engine stops.

Main Menu

Opening the Main Menu

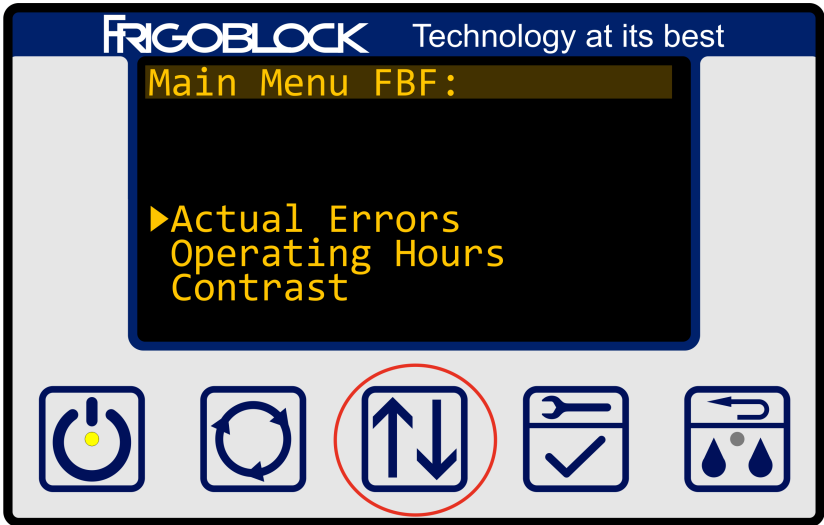
1. Press and hold this key to open the Main Menu



BEC967

2. To browse through the menu items press this key until you have reached your required selection





BEC975

3. Press the select key again to enter the required menu option.



4. To go back to the Main Menu, press this key



Note: The menu items "Software Version", "Status Information" and "Settings" are relevant only for the service technicians.

Fault Codes

When the microprocessor inside the Inverter Drive Remote Controller (controller, HMI) senses an abnormal condition, a fault code (error, alarm) is generated and the fault icon appears on the display.



In such case the operator needs to contact the authorized FRIGOBLOCK service partner.

If the controller does not start at all, please follow the Error Note on ([“Starting the Inverter Drive Remote Controller,” p. 30](#))

Operating Hours

1. Press and hold this key to open the Main Menu



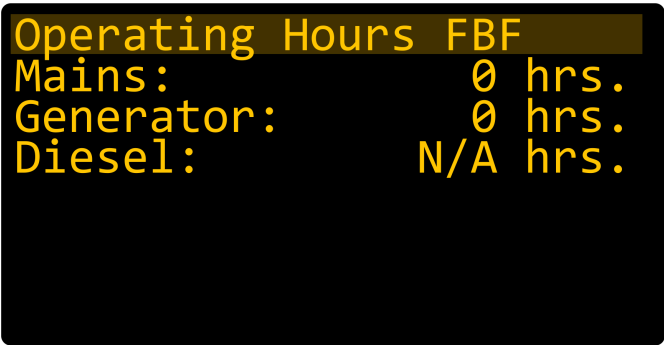
2. Scroll through the main menu until you reach “Operating Hours” using this key



3. Press the select key again to enter the required menu option.



4. The display now shows the time the individual components have been running.



BEC974

Note: Use this information to determine if there is time for the next inspection or maintenance. Please refer to your Maintenance inspection schedule (“Maintenance Inspection Schedule,” p. 47).

Contrast Adjustment

1. Press and hold this key to open the Main Menu



2. Scroll through the main menu until you reach “Contrast” using this key



3. Press the select key again to enter the required menu option.



4. The Contrast Display is now shown



BEC976

5. Press and hold the keys below to adjust the display contrast



6. Press the select key again to confirm the change.



Date and Time Setting

1. Press and hold this key to open the Main Menu





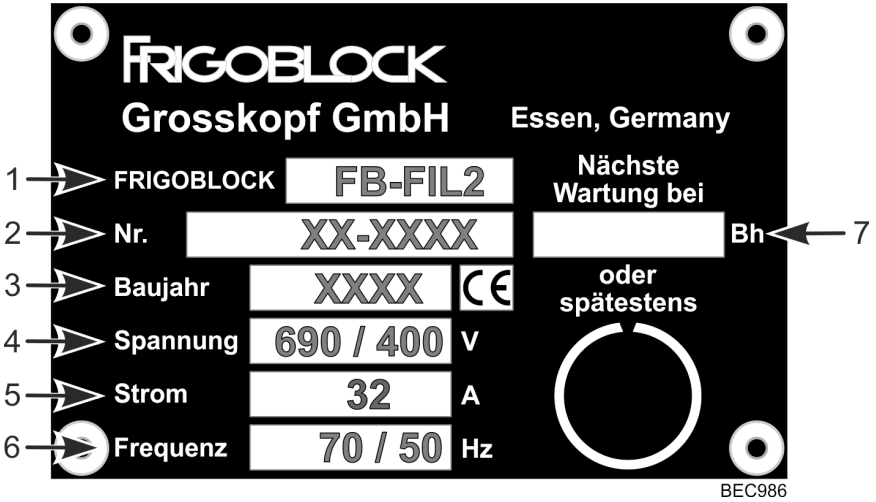
7. Press the select key again to confirm any changes.



Specifications

For identification of FRIGOBLOCK components the FRIGOBLOCK type and serial number are required. The technical specifications of the FRIGOBLOCK Power Electronics Kit are listed in the customer service book. They are also written on the nameplate that is fixed on the casing of the Inverter-Filter box.

Figure 11. Inverter-Filter Nameplate



1.	FRIGOBLOCK component type
2.	Serial number
3.	Year of manufacture
4.	Electrical voltage
5.	Electrical current
6.	Frequency
7.	Date of the next maintenance

Important: Observe the performance data and limits on the nameplate of the power electronics kit. Remember the maximum ambient temperature: +50 °C for the Alternator mode and +55 °C for the Mains and Diesel mode.

Note: For specification of the Refrigeration Unit, refer to Operator manual available at www.emea-user-manuals.thermoking.com

Warranty and Liability

FRIGOBLOCK Power Electronics Kit

The agreed warranty period is specified in the order confirmation. FRIGOBLOCK GmbH is not responsible for damage caused by:

- any use that is not intended;
- service and repairs not carried out correctly and in time,
- or undertaken by personnel with insufficient qualifications and experience.

Any liability to third parties is excluded.

Warranty claims will only be accepted if the owner of the refrigeration machine can demonstrate that all maintenance operations prescribed in the maintenance schedule were carried out by our service partners during the warranty period.

No warranty can be claimed if maintenance intervals have not been observed or maintenance work has not been carried out properly.

Changes and/or modifications of the refrigeration machine are not permitted and if made release FRIGOBLOCK GmbH from any warranty obligation. More details on our warranty and liability terms are contained in our General Terms of Delivery and Payment.

Thermo King Refrigeration Unit

Terms of the Thermo King Truck Unit Warranty are available on request from your Thermo King Dealer. Please also refer to TK 61598-2-WA Thermo King EMEA Limited Warranty for Self Powered Truck Units.

Maintenance Inspection Schedule

Inspection and Service intervals

Inspection and Service intervals are determined by the number of unit operating hours and by the age of the unit. The following intervals are defined for refrigeration units and alternator:

Interim Inspection	Regular Maintenance
<p style="text-align: center;">A Service</p> <p>The A maintenance is due with a total mileage of more than 100,000 km of the truck or every 3,000 operating hours of the truck (whichever comes first). A maintenance is an additional maintenance timed 6 months after the B maintenance.</p>	<p style="text-align: center;">B Service</p> <p>The B maintenance is due with a total mileage of more than 100,000 km of the truck or every 3,000 operating hours of the truck (whichever comes first) And MUST be carried out every 12 months.</p>

Note: For the number of operating hours, see “Operating Hours” (“Operating Hours,” p. 39).

The maintenance intervals specified above were determined under normal operating conditions. If the operating conditions are different the different maintenance intervals may be required. For example, the devices mounted close to the ground should be cleaned more often in winter than in summer.

The FRIGOBLOCK service partners are familiar with the detailed scope of inspection, test and maintenance required for your system.

All FRIGOBLOCK products are in process of constant improvement. Consequently, the scope of maintenance may change.

⚠ WARNING

Equipment Damage and Risk of Injury!

Do not carry out maintenance and repair work by yourself. It can only be carried out by authorized service technician. Always contact the FRIGOBLOCK service partner.

Important: Each maintenance performed should be recorded in the Service Check Book.

Note: For inspection and service intervals of the Refrigeration Unit Operator manual available at www.emea-user-manuals.thermoking.com

Serial Number Locations

The FRIGOBLOCK Power Electronics Kit serial number plate is located on the Inverter-Filter box.



For location of refrigeration unit serial number plate see Refrigeration Unit Operator manual

Note: Unit Operator manual available at www.emea-user-manuals.thermoking.com

Recover Refrigerant

At Thermo King®, and FrigoBlock we recognize the need to preserve the environment and limit the potential harm to the ozone layer that can result from allowing refrigerant to escape into the atmosphere.

We strictly adhere to a policy that promotes the recovery and limits the loss of refrigerant into the atmosphere.

In addition, service personnel must be aware of Federal regulations concerning the use of refrigerants and the certification of technicians. For additional information on regulations and technician certification programs, contact your local THERMO KING dealer.

FRIGOBLOCK
Notes

Thermo King – by Trane Technologies (NYSE: TT), a global climate innovator – is a worldwide leader in sustainable transport temperature control solutions. Thermo King has been providing transport temperature control solutions for a variety of applications, including trailers, truck bodies, buses, air, shipboard containers and railway cars since 1938. For more information, visit www.thermoking.com or www.tranetechnologies.com.

Thermo King has a policy of continuous product and product data improvements and reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.