# COLDTAINER

## USER MANUAL

**User manual**

T0022/FDN, T0022/FDH, T0032/FDN, T0032/FDH, T0056/FDN, T0056/FDH, T0082/FDN, T0082/FDH, T0082/XFDN, F0140/NDN, F0140/NDH, F0140/FDN, F0140/FDH, F0330/NDN, F0330/NDH, F0330/FDN, F0330/FDH, F0330/XFDN, F0720/NDN, F0720/NDH, F0720/FDN, F0720/FDH, F0760/NDN, F0760/NDH, F0760/FDN, F0915/NDN, F0915/NDH, F0915/FDN, F0915/FDH, F1340/NDN, F1340/NDH, F1640/NDN, F1640/NDH

Valid for all Coldtainer mobile fridges produced by Euroengel srl from May 2017 onwards

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## GENERAL

The COLDTAINERS has been designed for the professional temperature controlled transport of limited volumes of perishable items, like food, pharmaceuticals, biologicals.
The units are designed, if properly operated and connected to a suitable power source, to maintain perishable items at a stable temperature during transport, as a link of a "cold chain" system. Units are not designed to cool down or freeze or heat up perishable items.
The units are not intended for sale-to and use-by end consumers. The sales of Euroengel mobile fridges do not fall within the scope of Directive 1999/44/EC or similar end users protection legislations.

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## SAFETY

- Before using the unit, read these operating instructions carefully, including all information on operating safety, use and maintenance.
- Keep these operating instructions ready at hand and leave them with the unit, so that all users can find out about the functions and safety regulations. Every user must be well acquainted with the operation of the appliance and with the instructions concerning safety. Failure to observe these instructions can impair the performance of the appliance and cause damage.
- All installation work and adjustments to the unit must only be carried out by qualified personnel. Work performed by persons with insufficient technical knowledge may adversely affect the performance of the unit or cause physical injury or damage to the equipment.
- The unit must only be used by adults. Do not allow children to play with the units or touch the controls.
- Do not place inflammable liquids or gas bottles in the cool box. Danger of explosion!
- For large containers: never lock anybody inside. Danger of suffocation!
- Pay attention on all moving parts when closing the door. Watch out not to hurt your hands or fingers when operating the closing mechanism.
- Be aware of the full weight of the unit you are using. Use proper lifting equipment in the case.
- Before cleaning or carrying out maintenance work, always switch the refrigerator off and disconnect the plug.
- The unit's hermetic cooling system contains CFC free refrigerant gas (R134a or R404A). Make sure to not damage the cooling system so to avoid leaks.

## TECHNICAL NOTES

Specific versions with different internal temperature setting are available for each container size, (ask for data sheet of single models for specific values):

- NDN: cooling function, internal temperature down to 0°C (with +32°C ambient)
  NDH: automatic cooling / heating function, internal temperature from 0°C to +30°C (with ambient temperature from -20°C to +32°C)
- NDH: automatic cooling / heating function, internal temperature from 0°C to +30°C (with ambient temperature from -20°C to +32°C)
- FDN: freezer function, internal temperature down to -21°C (with +32°C ambient)
- FDH: automatic cooling / heating function, internal temperature from -21°C to +30°C (with ambient temperature from -20°C to +32°C)
- XFDN: deep freezing, internal temperature down to -30°C or -35°C, according to model (with +32°C ambient)

The COLDTAINERS operate via direct current compressors connected to a 12-24Vdc or 12Vdc power source (according to model). The high quality SECOP BD series direct current compressors used in the units are designed to withstand vibrations, also in case of use in off-road conditions, and can work with an inclination of up than 30°.The units shall be switched off if positioned at an angle of more than 30°. After being returned to a level position, allow to rest for approximately 30 minutes before switching on.
SECOP compressors have built-in protection systems against overload and start failure, fan overload, reverse polarity, overheating. When overload protection is activated, the compressor enters a cycle in which it attempts to start at approximately 60 second intervals until a successful start is achieved. When overheating protection is activated (i.e. ambient temperature exceed ab. +55°C) the compressor will restart automatically approximately 60 seconds after the temperature of the electronic has cooled down to a safe value.
If a voltage outside the specified range is applied to the electronic unit, the compressor does not start, or it stops if the voltage limit is exceeded during operation. The compressor will restart automatically approximately 60 seconds after the supply voltage has reached the reset voltage within the range in question. If a fan is installed, it will start to operate without a delay as soon as the reset voltage is reached.
Maximum operating ambient temperature is ab. +55°C (with degraded performances). Minimum operating ambient temperature (for NDH and FDH models) is -20°C.
The internal temperature displayed by the digital controller is the one sensed in the vicinity of the probe area. The temperature in other points of the container can vary, after stabilization, normally in a ± 2°C range.
The NDH and FDH versions have an internal fan for a better internal air distribution. An "internal fan" kit is available as accessory for the NDN, FDN and XFDN versions. Always pre-condition the internal temperature of the unit before use. Do not place

any hot item inside the unit, precool them first.
IMPORTANT: the starting current of the larger BD compressor can reach 35A (12V). To guarantee stable operations it is essential to connect the units to batteries of proper Ah capacity.
In case of the larger freezer versions it is recommended to use batteries with no less than 100Ah (with150A alternators) capacity.
In case of use of a too small Ah capacity battery, even if new and well charged, the compressor would not start. This is valid also for connection of multiple units to a same battery.
Eventually connect the unit to a proper capacity deep cycle service battery, using a proper split charging system to connect it to the main battery.
Even if the plastic materials (PE) used for the production of the units are food grade, it is always suggested to store food or other products in proper closed containers.

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## BEFORE USE

- The units should be placed in a dry location and should not be exposed to direct sun light or any other heat source (e.g. radiator). Protect it against rain and humidity. In case on use on a pick-up truck, always use a proper cargo cover to protect the unit.
- Always make sure there is sufficient ventilation so that heat generated during normal operation can dissipate. Ensure that the ventilation slots are not covered. Leave at least 50 mm. from top and around the unit to grant an adequate ventilation.
- Always secure tightly the units f loaded on a vehicle, in order to prevent any forward, side and backward movement during driving or while braking. Use load straps, anchor points or other suitable restraints, properly homologated.
- Store the items within the fridge so that the air can circulate around the goods.
- Do not open the fridge more often than necessary and do not leave the lid / door open for longer than necessary.
- Take care when transporting pharmaceuticals and biological products. Always check if the temperature range of the fridge is adequate for the purpose.
- All servicing and repairs involving recharging of the cooling system must only be carried out by a qualified customer service engineer.

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## ELECTRICAL CONNECTIONS, STANDARD MODELS

The Coldtainers can be operated connected to following direct current power sources:

- **12Vdc or 24Vdc** (the input voltage is automatically regulated by the electronic): T0022/FDN, T0022/FDH, T0032/FDN, T0032/FDH, T0056/FDN, T0056/FDH, T0082/FDN, T0082/FDH, F0140/NDN, F0140/NDH, F0140/FDN, F0140/FDH, F0330/NDN, F0330/NDH, F0330/FDN, F0330/FDH, F0720/NDN, F0720/NDH,

F0760/NDN, F0760/NDH, F0915/NDN, F0915/NDH.

- **12Vdc only**:
  T0082/XFDN, F0330/XFDN, F0720/FDN, F0720/FDH, F0760/FDN, F0915/NDN, F0915/NDH, F0915/FDN, F0915/FDH, F1340/NDN, F1340/NDH, F1640/NDN, F1640/NDH.
  (In case of intended connection of above models to a 24V system always use a DC/DC 24V to 12V voltage converter of proper Ah capacity. Over voltages can damage the electronics.)

The 12Vdc nominal value means a voltage, measured at the terminals of the electronic of the compressor from 9,6Vdc to 17,0Vdc.
The 24Vdc nominal value means a voltage, measured at the terminals of the electronic of the compressor from 21,3Vdc to 31,5Vdc.

### DC connectors, fridge side

On all units quality Anderson Power DC input connectors are used.

- single DC red AP connector: T0022/FDN, T0022/FDH, T0032/FDN, T0032/FDH:
- two AP connectors, one red and one yellow: all other models. The red AP connector is for the DC cord connection (12-24Vdc or 12Vdc only, according to specific model data); the yellow AP connector is 12Vdc only, for connection to an external AC-DC power supply (see specific voice hereunder).

### DC cords

A proper DC cord is included in the package of each fridge. The wires of the included DC cord are of the right cross section requested for a proper operation of the electronic. To prevent voltage drops and power losses, do not interrupt the cord and avoid additional extensions, switches, plugs or socket strips.
The direct connection to the + and – terminals of the battery of the vehicle will not interfere with the electric and/or network system with the vehicle itself. The electronic of the compressors are protected against reverse polarity. See technical data sheet for indication of DC cord provided in the scope of delivery of specific versions.
On T0022/FDN, T0022/FDH, T0032/FDN, T0032/FDH a 2,5 mt DC cord with cigarette plug is included (item 540010/01), to allow an easy use also on board of passenger cars.
The cigarette plug is provided with sliding stoppers to be pushed inside the 12V outlet of the car to maintain a stable electrical connection. In case a direct connection to the battery of the vehicle would be preferred, the 5 meter DC cord to order is item 540011/01.
IMPORTANT: The DC cord 540010/01 with cigarette plug cannot be used with other models, wires (included ones of onboard 12V outlets) are not of right size and Ah capacity.

### Direct connection to a DC battery

Connect the DC cord to the Coldtainer (red AP connectors) from one side and

directly to the + and – terminals of the battery from the other side (or to the 12V outlet of the car, on applicable models).
The DC cords are fuse protected. Make sure that the fuse is in place. Also the DC input connectors on the fridges are fuse protected. See technical data sheet for fuse size.

### Optional - Use of the Coldtainer connected to AC mains (100-240Vac 50/60 Hz)

It is possible to operate your unit connected to the AC mains by the use of external AC-DC power supplies of proper technical features, available as accessories. Three models are available, with 150W, 300W and 600W rated power. Verify the right model suggested for each model.
Note: the AC-DC power supplies are provided without the AC plug. It is responsibility of the user to install a proper Country approved plug. Ask a qualified personnel to do it.
The power supplies available as accessories have a worldwide input voltage (100-240Vac 50/60Hz) and a constant 13Vdc output, are IP65 rated and CE and UL/CSA certified. On the DC output line there is a yellow AP connector.
Connect the AC-DC power supply to the specific DC inlet (yellow AP connector) on the fridge.
Both DC lines can be connected at same time. In this case the "yellow" line will be the preferred power supply source. As soon as an internal relay will sense no voltage coming from the "yellow" line it will reconnect the "red" line from battery.
On all models it is possible to fasten the power supplies in special receptacles inside the silhouette of the containers (except T0022, T0032).
Note: T0022 and T0032 have a single red connector. To use that models with the external 150W AC-DC power supply, a "red-yellow" connectors interface is available as accessory.

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## ELECTRICAL CONNECTIONS, "AUTONOMOUS OPERATION" MODELS

The "Autonomous Operation" models are equipped as standard with internal battery pack (single battery for the "Light Capacity" models, multiple battery pack for the "High Capacity" models) and with a battery charger.
The "AuO" models are intended to operate fully independently, connected only to their internal 12 power source. No connection to external DC power source is provided. The internal battery protection will monitor the voltage of the battery and eventually switch off the compressor.

### Connection to AC mains (100-240Vac 50/60 Hz)

To recharge the internal battery pack, connect the battery charger to the AC mains (100-240Vac 50/60Hz) and switch it on (by its own main switch). The battery will be recharged with a proper charging curve.
With the battery charger connected to the AC mains and on it is possible at the same time to operate the unit and to recharge the battery (with longer battery

charging time)

## OPERATION

### Control panel

The control panel of all fridges is made of 3 elements:

- the main switch
- the electronic thermostat (touchscreen type)
- the red led light of self-diagnostic or the jack for the connection to SECOP communication gateway and Tool4Cool diagnostic software (only units with BD220CL compressor).

### Electronic thermostat (EVCO)

The EVCO electronic thermostat has a digital touchscreen display and an alarm buzzer. Following icons are active on Coldtainers:


| Icon | On | Off | Flashing |
|---|---|---|---|
| ❄ | compressor on | compressor off | setpoint setting active |
| HACCP | saved HACCP alarm in Evlink | | |
| 🔧 | | | - settings active<br>- operation with EVconnect App active |
| °C/°F | view temperature (°C or °F) | | |
| AUX | heating on (if applicable) | heating off (if applicable) | |

To operate the thermostat the touchscreen keys are

| | |
|---|---|
| SET | SET, keypad lock |
| FNC ∨ | DOWN |
| ∧ | UP |
| | (Off) Quick exit from programming procedure, with last set values saved in memory |

The display can show following alarm labels:
**"Pr1"** cabinet probe alarm
**"AL"** low temperature alarm
**"AH"** high temperature alarm

### Switch on the Unit
Ensure at all times that there is sufficient ventilation so that the heath generated during operation can dissipate. Ensure that the ventilation slots are not covered and that the units is sufficiently far away from walls or other objects so that the air can circulate.
Switch on the unit by turning the main switch to position "I".
The digital thermostat will run a self-test. Following the initialization, the present temperature inside the unit appears. The factory preset temperature for all models is +4°C.

### Switch off the Unit
Switch off the unit always by pressing the main switch to position "O". The unit will take the last set temperature in memory. If you do not want to use the cooler for a longer period of time, leave the cover slightly open. This prevents odor build-up.

### Lock / Unlock the keypad
If 30 seconds have elapsed without the keys being pressed, the display will show the "**Loc**" label and the keypad will lock automatically.
To unlock the keypad, touch a key for 1 second: the display will show the label "**UnL**".

### Modify the setpoint
Check that the keypad is not locked
1. Touch the SET key
2. Touch the UP or DOWN key within 15 seconds to set the new value
3. Touch the SET key (or do not operate for 15 seconds)

### Setting configuration parameters
1. Touch the SET key for 4 seconds; the display will show the label "**PA**"
2. Touch the SET key, the display will show the value "0"
3. Touch the UP or DOWN key within 15 seconds to set "**-19**"

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4. Touch the SET key (or do not operate for 15 seconds), the display will show the label "**SP**"
5. Touch the UP or DOWN key to select a parameter to modify
6. Touch the SET key, the display will show the actual value
7. Touch the UP or DOWN key within 15 seconds to set the value
8. Touch the SET key (or do not operate for 15 seconds)
9. Touch the SET key for 4 seconds (or do not operate for 60 seconds, or press the OFF key) to exit the procedure

### Enable temperature decimal point (not available with °F)

Follow the parameters setting procedure
Reach parameter "**P1**"
0=no 1=yes (default: 1)
Exit the procedure

### Change temperature unit of measure (°C or °F)

Follow the parameters setting procedure
Reach parameter "**P2**"
0=°C 1=°F (default: 0)
Exit the procedure

### Set a cabinet probe offset

Follow the parameters setting procedure
Reach parameter "**CA1**".
Min…Max values are -25…+25 °C/°F
Exit the procedure

### Set an High / Low temperature alarm

The EVCO electronic thermostat is equipped with an internal buzzer and high / low temperature alarms can be set. As there is not real time clock, back up battery and memory, alarms are active only with power connected and are not recorded.
To set high / low temperature alarms;

- follow the parameters setting procedure
- reach parameter "**A2**", low temperature alarm type
  - 0=disabled, 1=relative to set point, 2= absolute (default is 0)
  - touch UP or DOWN to select a value and touch SET key to set it
- reach parameter "**A1**", threshold for low temperature alarm
  - Min…Max values are -99…+99 °C/°F
  - touch UP or DOWN to select a value and touch SET key to set it
- reach parameter "**A5**", high temperature alarm type
  - 0=disabled, 1=relative to set point, 2= absolute (default is 0)
  - touch UP or DOWN to select a value and touch SET key to set it
- reach parameter "**A4**", threshold for high temperature alarm
  - Min…Max values are -99…+99 °C/°F
  - touch UP or DOWN to select a value and touch SET key to set it

- reach parameter "**A6**", high temperature alarm delay after power on
  - Min…Max values are 0…99 minutes (default is 0)
  - touch UP or DOWN to select a value and touch SET key to set it
- reach parameter "**A7**", high/low temperature alarms delay
  - Min…Max values are 0…240 minutes (default is 0)
  - touch UP or DOWN to select a value and touch SET key to set it
- reach parameter "**A11**", high/low temperature alarms reset differential
  - Min…Max values are 1…15 °C/°F (default is 2.0)
  - touch UP or DOWN to select a value and touch SET key to set it
- Touch the SET key for 4 seconds (or press the Off key) to exit the procedure

In case of High / Low temperature alarm the display will show "**AL**" or "**AH**" and the buzzer sound.
The temperature alarms have automatic reset. To silence the buzzer press a key

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## BATTERY PROTECTION

All units are equipped with an integrated voltage monitor system. The system measure the voltage at the input terminals of the compressor electronic (so be aware of voltage drops) and then switches off automatically the compressor as soon as the supply voltage falls below a set level. The unit will switch the compressor on once the battery has been recharged to the restart voltage level (normally 1,3V higher than the cut-out value).
The cut-off / cut-in pair of values are factory preset. See the technical data for the values for each model.
Please note that the protection circuit will disconnect only the compressor. Thermostat and fan will remain connected, draining a small amount of power from the battery.

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## SELF-DIAGNOSTIC

The SECOP electronics used in the units ave a built-in self-diagnostic program.
On models with BD50F and BD80F compressors, if there is a detectable error then the red LED light positioned nearby the display of the electronic thermostat will flash 1 to 5 times and repeat the pattern, showing the possible reason of the stop of the operation. 1 flash of the red LED light means that the battery voltage is below the cut/out setting. Check the source battery for proper operation and sufficient voltage output. If power source is adequate then check wire sizes and conditions of the connectors to avoid voltage drops.
On models with BD220CL compressors, it is possible to set all working parameters and access the self-diagnostic info via a gateway connection to a personal computer with the Tool4CoolÆ SECOP software.

## OPTIONAL – USE OF HACCP / BLUETOOTH MODULE

EVconnect is an easy solution that helps to easily get HACCP temperature and to manage the temperature alarms.
EVconnect is made of the EVLINK, a memory an transmission module (provided with 16Mb memory, real time clock and Bluetooth 4.0 transmission module) and of the EVconnect App for Android 4.4 devices.
EVLINK is available as an accessory and the App is freely downloadable on Google Play (an Apple version is under development).
This solution is capable of storing at least one year of recordings, that the user can download via Bluetooth into a smartphone or tablet without losing data. Temperature graph is immediately available as far as the possibility of send via e-mail the information as image or .csv file for Excel (r).
The EVLINK module should be connected to the EVCO thermostat using the TTL port on the side of the same. Do not try to extend the wirings. For full installation and use instructions see the notes provided with the EVLINK.

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## CLEANING AND MAINTENANCE

Always disconnect any electrical connection before you clean and service the units.
Clean the unit before first time use and at regular intervals thereafter.
IMPORTANT: do not wet the electronic components, are not water proof!
Use only neutral (food safe) cleaning agents. Never use aggressive or caustic cleaning agents, scouring powder, steel wool, abrasive sponges or chemical solvents. Never use brushes, scouring pads or hard or pointed tools to remove ice or to loosen objects which have frozen in place
The use of a high pressure cleaner and/or steam jet is strictly forbidden.
Clean the unit (inside and outside) with a neutral detergent, rinse with lukewarm water and dry it before any long term storage unplugged.
Humidity can form frost in the interior of the cooling device. This reduces the cooling capacity. Defrost the device in good time to avoid this. Wipe off the melted water with a damp cloth.
The hermetic cooling circuit of the units are maintenance free. No periodical maintenance is requested.

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## LIMITED LIABILITY

Euroengel srl has an indirect Limited Warranty and Liability policy, enforced via the local importers. Ask for specific conditions.
Warranty is limited at Euroengel's option to repair or replacement with new or remanufactured parts of any parts which are found by Euroengel to have been defective under normal use and service within the specified warranty period.
Euroengel will not be held liable for claims for damage resulting from the following:

- modification, misuse, improper installation, abnormal service, storage of hazardous chemicals, use of corrosive substances, transit damage, recharging of cooling system, accident, fire, improper repair, tampering or abuse
- incorrect voltages or faults with regards to power supply which falls outside of the appliance operating parameters.

The Limited Warranty is expressly in lieu of all other warranties either expressed or implied, including any warranty of merchantability or fitness for a particular purpose, that are disclaimed and excluded.
In no event and under no circumstances shall Euroengel be responsible under its Limited Warranty for any other charge whatsoever, including but not limited to charges or claims for lost business, lost time, lost profits, loss of use, loss of transported goods, or any kind of incidental or consequential damages, however denominated or described. Euroengel shall not be held responsible for any injuries to persons caused by the incorrect or negligent usage of the unit. The remedies of the Buyer herein are exclusive and the total cumulative liability of Euroengel shall in no event exceed the Buyer's purchase price of the unit or part of which such liability is based.

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## DISPOSAL

If possible, always take the packaging material for recycling.
If you wish to finally dispose of the appliance, ask your local recycling center or specialist dealer for details about how to do this in accordance with the applicable disposal regulations.

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The units are compliant to:
EU 2002/95/EC (RoHS)
EU 202/96/EC (WEEE)
EU EC 1907/2007 (REACH)
ECE Regulation 10.04 (ECM Automotive)
Plastic materials are approved in accordance with 2002/72/EC (and amendments)
Design of units is in compliance with EC 852/2004 (HACCP), Annex I, IV, art. 1, 7

The Coldtainer professional mobile fridges are designed and manufactured in Italy by
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Coldtainer™ is a trademark by Euroengel srl
Euroengel is a ISO 9001:2008 certified company
Approved by the Italian Ministry of Transport as manufacturer of ATP isothermal containers

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