

# COLD CHAIN MONITORING WITH FMX640 SERIES TRACKERS

## INTRO

Cold chain supply is becoming more significant in the logistics field since a lot of our products come in frozen. Unfortunately, it may be an issue for the fleet manager to monitor the temperature in the trailer while it is on its way, thus ensuring the quality of refrigerated goods becomes a real headache. Luckily, GPS devices can help, as they provide relevant information for the fleet manager about the situation in the reefer trailer.

## CHALLENGE

In cold chain logistics, challenges could arise in 3 separate stages. Firstly, the product might be damaged before it starts its journey while not being in the carrier's hands. Secondly, its quality might deteriorate while being transported because of incorrect temperature settings, refrigerator doors not closed, condensation, etc. And thirdly, the condition of the good might lessen when it is already in the beneficiary's care, as it might be stored in an improper storage environment.

Transport companies might not be able to solve problems in the first and third stages, thus ensuring the best possible conditions for frozen goods in the reefer trailer becomes of critical importance to them. Nevertheless, this challenge raises other questions for fleet companies.

All cold-stored transported goods need to be stored at a very specific temperature throughout their journey. Even slight temperature changes might affect either the quality of goods or the environment in which they are stored, which in turn might harm the products as well. Incorrect temperature settings can increase the risk of microbial growth or mould in the storage compartment, or if the temperature is too low, it may damage the product by forming larger groups of ice crystals on it.

Another area where many challenges occur is reefer fridge doors. Damaged doors may not close completely,

thus letting warm temperature into the reefer and letting cold one out. Even if you set the temperature settings correctly, this will affect the inner temperature of the reefer and the damage might be irreversible, thus costing lots of money to the transportation company. This kind of problem might even affect workers' safety, as the inner surface of the trailer might become slippery or be covered in unhealthy mould.

In addition, it is critical to possess accurate data about the environment in the trailer. The beneficiary of the goods or a regulatory institution might ask for such data in case the products turn out to be damaged upon delivery. And it would be a huge issue if the data would show that the environment in which the products were stored lessened their quality. The fleet manager needs to know at all times that the goods are stored in suitable conditions to avoid potential issues with the recipient.



## SOLUTION

Teltonika vehicle GPS tracker [FMC640](#), as well as our other PROFESSIONAL series devices, can read data from freezer trailer thermographs. This data would allow fleet managers to monitor the situation in the reefer trailer while it is on its way and give further instructions to the drivers in case some changes are needed. As a result, it would store more goods in proper conditions in the reefer trailer, thus ensuring that their quality does not diminish during the transportation stage.

A freezer thermograph is a device that measures the temperature in the trailer, while also storing data about the environment in the reefer trailer for further use and analysis. Thermographs that our devices support have an [RS232](#) communication line which can be connected to our FMC640 tracker via COM1/COM2 port. If connected, our device can start monitoring and storing data that is recorded by the thermograph. Since it is easy to connect and configure the two devices, this becomes a perfect solution for the transportation companies that operate in the cold chain supply industry. Here to add, Teltonika PROFESSIONAL series devices support three different types of thermographs – Carrier DataCold 600, Thermo King Transcom 2, and Thermo King TouchPrint.

FMC640 allows a fleet manager to monitor thermograph data live because the tracker is sending this data straight to the server. As a primary use of thermograph is temperature data logging, the GPS device also tracks this data. This leads to the possibility of changing some freezer settings while it is still on the way. The fleet manager notices that the temperature is too low or too high, calls the driver and asks him/her to adjust the temperature in the reefer. Such action ensures that goods are always stored in the right environment.

Thermographs also monitor fridge door status, and they send data if the doors are not closed properly. FMC640 tracker collects this data as well and sends it to the server. Same as for the temperature, a fleet manager can notify the driver that the fridge doors are not properly closed, and then the driver could close them to prevent likely damage to the goods, harm to surrounding people or himself/herself.

Input Name	Priority				Low Level	High Level	Event Only		Operand
Zone 1 Return Air sensor 1	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 1 Return Air sensor 2	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 1 Supply Air sensor 1	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 1 Supply Air sensor 2	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 1 Setpoint	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Supply Air sensor 1	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Return Air sensor 1	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Setpoint	None	Low	High	Panic	0	0	Yes	No	Monitoring
Ambient temperature	None	Low	High	Panic	0	0	Yes	No	Monitoring
Compressor Coolant Temperature	None	Low	High	Panic	0	0	Yes	No	Monitoring
Communication state flags	None	Low	High	Panic	0	0	Yes	No	Monitoring
Battery Voltage	None	Low	High	Panic	0	0	Yes	No	Monitoring
Diesel hours	None	Low	High	Panic	0	0	Yes	No	Monitoring
Standby hours	None	Low	High	Panic	0	0	Yes	No	Monitoring
Electric hours	None	Low	High	Panic	0	0	Yes	No	Monitoring
Installation Serial	None	Low	High	Panic	0	0	Yes	No	Monitoring
Alarm level	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 1 Compartment mode	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Compartment mode	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 3 Compartment mode	None	Low	High	Panic	0	0	Yes	No	Monitoring
Fuel Level	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 1 Compartment state	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 1 Evaporator temperature	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Compartment state	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Evaporator temperature	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Return Air sensor 2	None	Low	High	Panic	0	0	Yes	No	Monitoring
Zone 2 Supply Air sensor 2	None	Low	High	Panic	0	0	Yes	No	Monitoring

Also, thermographs have specific alarms, such as rapidly rising temperature in a reefer. Even more, Teltonika GPS devices can monitor these alarms and send a notification to the fleet manager that one or several alarms are on. PRO series Teltonika vehicle trackers can be configured in such a way that only particular alarms would be tracked. Above you can see a screenshot of the [Teltonika Configurator](#) setup option. Please note that the exact set of features depends on the specific thermograph model.

Should the fleet manager need data about the environment in the reefer trailer in the future, this data can be stored on the server to access later. This functionality comes in handy when the recipient of the goods or regulatory institutions want to know about the setting in which goods were stored during transportation.



## WHY TELTONIKA?

Teltonika Telematics PROFESSIONAL series trackers help to manage fleets that operate in the cold chain supply industry. These GPS tracking devices help to track the status of refrigerated goods, thus ensuring that their quality does not decline during the trip. Besides, our professional devices can be perfectly applied to more industries, such as international logistics, agriculture, construction, security, emergency services, etc.

## FEATURED PRODUCT

FMC640

## RECOMMENDED PRODUCTS

FMM640, FMB640-FMB641

