



# Enhance EMS Quality with Zebra Electronic Temperature Sensors

Temperature-monitoring solutions for medications within EMS vehicles and facilities

Emergency medical services (EMS) providers face several challenges in their job of caring for patients and worrying about medication storage, which is a critical task, but should not burden staff. Traditional, manual solutions relying on thermometers slow down workflows and introduce risk as EMS technicians (techs) try to manage the many types of medications in their vehicles with proper compliance documentation, all while they are also servicing calls. They need better visibility and easier monitoring tools to ensure medications stay within acceptable temperature ranges. Otherwise, they put themselves at risk of compromising medications, failing to meet accreditation or regulatory requirements, and potentially causing adverse effects on patients by administering medications that might have been damaged by extreme temperatures.

## Objectives

- Increase temperature-monitoring visibility and accuracy
- Improve management of medication and other temperature-sensitive products
- Automate data collection for reporting and analysis
- Reduce risk and ensure patient safety

## Challenge

Standard thermometers increase manual tasks, slow workflows, prohibit continuous monitoring and limit application uses.

## Zebra's Solution

Zebra's electronic temperature sensors are wireless, Bluetooth®-enabled devices that give EMS providers more monitoring control, smarter access to temperature data, and greater management capabilities for every temperature-sensitive item, whether they are stored in an EMS vehicle or facility.



## Other Solutions Introduce Risk and Slow Workflows

EMS techs can read temperatures of medications stored in a refrigerator or cooler with a thermometer, but this method only provides data for that specific instance in time. If excursions occurred and were corrected (e.g. the cooler unit lost power but regained power in time to return to desired temperatures), the manual reading would not identify the past excursion, leading to potential oversight of damage to medications due to extreme temperatures.

### Readings Between Shifts is Not Enough

EMS techs often take temperature readings at the beginning and end of shifts. They have no way to determine if temperature excursions occurred during shifts.

### Reading Standard Thermometers Require Staff Time

EMS techs don't have time to constantly check the temperature of stored medications. This process adds more tasks to their workflows and more opportunity for errors. As a result, excursions in vehicle cooler units might be identified but more likely they will not be seen, because readings are of only one point in time. Therefore, this method could result in administering medications that could have been damaged due to exposure to extreme temperatures.

### Using Manual Processes Does Not Allow For Expanded Monitoring

Manual processes, and the belief that temperature monitoring of room temperature medication is not as vital, often cause opportunities for improved quality control to be overlooked. It is not only refrigerated medications that need to be monitored, but also medications indicated to be stored at room temperature. This includes medic bags, drug boxes or compartments, or just the back of the ambulance.

### Station Bays Do Not Ensure Vehicle Temperatures

Although station bays are often temperature controlled, vehicles coming in from shifts in hot weather can take hours to cool down sufficiently for their interiors to reach compliant temperatures. Thermometers make it difficult to keep continual monitoring of vehicle interiors.



## Zebra Empowers Users with Connectivity and Visibility

Zebra's electronic temperature sensors are portable, wireless, Bluetooth®-enabled devices to empower EMS providers with exceptional visibility and managing capabilities to minimize risk. With mobile connectivity and cloud-based data-sharing, Zebra helps ensure EMS medications are easily monitored on a continual basis.

### Automate Remote Temperature Data Collection and Alerts

Zebra devices allow you to automatically upload temperature data for immediate, remote access to device data via the cloud, while at the same time sending alerts via email about any excursion. Once in range of a Bluetooth gateway at an EMS facility or in a vehicle with Wi-Fi capabilities, you can access temperature data at any time, remotely via desktop or mobile computer. More importantly, if the temperature goes out of the right temperature range, an alert is sent so you can take mitigating measures.

### Access Data at Any Time During a Shift

Zebra devices allow for immediate temperature readings at any point during a shift with Zebra's EDGEVue app. These enable wireless readings and uploads to the cloud using Bluetooth connectivity with a Zebra, Android™ or iOS mobile computer. In addition, real-time readings and alerts can be provided if the Bluetooth gateway is installed in a vehicle with onboard Wi-Fi.

### Read Temperatures Through Vehicles and Cooler Units

Zebra devices allow you to retrieve and record temperature data through coolers, containers and vehicles. This convenience makes it easier to quickly view temperature data without threatening environmental integrity. Not only do you limit exposure and help protect medications, you reduce EMS tech hours and speed workflows.

### Get Alerts About Temperature Excursions

One of the most powerful benefits of Zebra devices is the visibility to the temperature status, whether it be viewing the current status on the EDGEVue Mobile App or through the automated alerts when connected to the cloud via an OCEABridge installed in the vehicle. With data in the cloud, your team has better access to the data, allowing those on-site or remote personnel to contact the EMS techs to investigate and potentially save products from becoming damaged due to exposure to extreme temperatures.



### Customize Settings, Reduce Device Inventory

Unlike preconfigured solutions, Zebra devices are also among the most customizable in the market, giving users a wide range of options and controls over settings, start time, reading intervals and alarm limits. Zebra devices can even be named to associate with specific EMS vehicles, facilities, medic bags or coolers to avoid confusion as to which device is monitoring which area or unit.

### Reduce Waste and Costs

With the continuous data Zebra devices provide, you can prevent medications and biologics having to be thrown away because of excursion. You can also be certain which items remain compliant. For example, if a medication container feels warm and possibly non-compliant, an EMS tech doesn't have to err on the side of caution by throwing it out. They can consult the recorded data to determine if it has remained within acceptable temperature ranges.

### Speed Reporting for Accreditation and Compliance

Data in the cloud streamlines data-sharing, storage, and reporting for accreditation and regulatory compliance.

### Application Uses Include Facility Monitoring

Zebra devices can also monitor stationary facilities for medications and biologics. They can be configured in several ways to ensure compliant temperatures for storage refrigerators, with all the automated features of data collection and alerts. Configurations can include delayed alerts to account for daily activities such as EMS techs opening up refrigerators to retrieve medications for vehicle restocking.

Learn more about Zebra's Electronic Temperature Sensors.  
Please visit [www.zebra.com/electronictempensor](http://www.zebra.com/electronictempensor)



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