

# Monitoring of charging stations for electric vehicles and forklifts



## PROBLEM

With the rapid increase in the popularity of electric cars and fork lift electric trucks in industry, the need for efficient and reliable charging stations is also increasing.

These stations often operate 24/7 and charge various types of batteries. However, with this growing use, new challenges and potential risks associated with safety are emerging. One of the key issues is the risk of battery overheating during charging, which can lead to fire or even explosion.

Safety risks become even more serious in large charging stations, where there is a high concentration of batteries. In these environments, a small incident, such as a short circuit or mechanical failure, can quickly escalate into a serious fire, with potential damage to property and endangering human lives.

The situation is complicated by the fact that most charging stations are designed with efficiency and charging point density in mind, often limiting access for regular maintenance and inspection. This makes timely identification of problems, such as malfunctioning cooling systems or abnormally high temperatures, difficult, which could indicate a potential threat.

## HOW DOES THE SAFETIS EV THERMAL CAMERA/SENSOR REDUCE RISKS?

SAFETIS EV presents an innovative solution for this kind of problem. It uses real-time detection with the help of 19,200 active temperature sensors, allowing quick and accurate identification of abnormal temperature changes in charging stations.

Since it doesn't need to be connected to an external computer or hardware, its installation and operation are extremely simple.

### ONBOARD SMART EVALUATION

Thanks to its own operating system, SAFETIS EV can perform „onboard“ SMART assessments, eliminating the need for additional external hardware. This facilitates quick identification and resolution of potential risk factors.

### DUAL ALARM DETECTION

SAFETIS EV has two-stage alarm detection, allowing users to define two different temperature thresholds: one for warnings and another for critical situations. This enables rapid and effective response to various levels of temperature anomalies.

This complex problem requires a sophisticated yet easily implementable solution that continuously monitors the temperature and other parameters of charging stations in real-time.

The goal is to quickly identify and address any issues before serious incidents occur, thereby minimizing the risks associated with the operation of these devices.

### COMMUNICATION PROTOCOL

One of the key aspects of SAFETIS EV is its ability to communicate via the Modbus RTU protocol, which is widely used in industrial applications. This makes it easy to integrate SAFETIS EV into existing systems. Communication is possible via RS485 or Ethernet, providing flexibility depending on the needs of a specific charging station.

### PRECISE LOCATION AND EASY INSTALLATION

SAFETIS EV is designed with optimal location in mind. Its compact dimensions and weight of less than 300 grams make it easy to install on various types of walls and ceilings.

For maximum efficiency, it is important to use the FOV (Field of View) calculator, which helps to determine how large an area can be covered and what the installation method will be.

### AUTONOMOUS FUNCTIONALITY

SAFETIS EV is designed to operate autonomously. This means that once installed and set up, it does not require further intervention. It allows for the setting of warning levels and critical temperatures and then records temperatures in real-time without requiring further settings or maintenance.

It provides a comprehensive yet simple and flexible solution for monitoring temperature parameters in charging stations, with a quick response to any potential problems.

### INTEGRATION INTO CHARGING STATIONS

The integration of SAFETIS EV into charging stations for electric cars and other electric vehicles is a process that can be divided into several basic steps.

Before starting, it is important to know the parameters that SAFETIS EV will monitor. This includes the types of risks, the layout of the station, and what other systems will be integrated.

### PROTOCOL SELECTION

Thanks to Modbus RTU support, the device can be connected via RS485 or Ethernet. The choice depends on specific needs and existing hardware equipment.



### HARDWARE INSTALLATION CAMERA MOUNTING

SAFETIS EV is a **lightweight and compact device**, making its installation simple. It can be mounted on various types of walls or ceilings.

### CABLE CONNECTION

The device needs to be connected to the power supply and also to the communication interface, which can be RS485 or Ethernet. Specific connectors (M12 and 8pin) serve for this purpose.

### SOFTWARE CONFIGURATION BASIC SETTINGS

SAFETIS EV has its own operating software for settings, but other software can be used thanks to the **standard Modbus RTU protocol**.

### ALARM SETTINGS

The user must define temperature thresholds for the warning and critical alarms. Setting Regions of Interest (ROIs): **Up to 64 different regions can be set for detailed monitoring**.

### START-UP AND MONITORING TESTING

After installation is completed, it is important to test the system to see if everything is working properly.

### START MONITORING

Once everything is set up and tested, monitoring can be started. **Long-term Maintenance SAFETIS EV is designed to operate autonomously**.

Once installed and set up, it does not require further intervention. This includes the option of remote firmware updates.

In this way, SAFETIS EV is ideally prepared for integration into charging stations, providing a robust, reliable, and efficient solution for monitoring temperatures and potential risks.