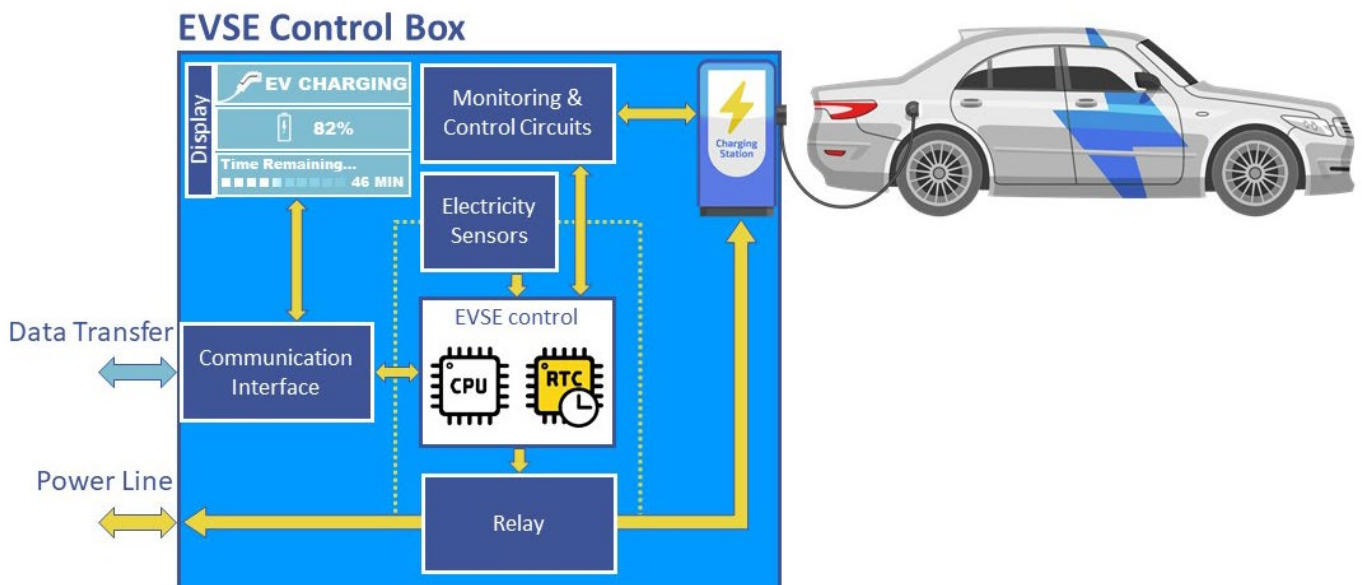


Save power and provide stable and accurate timing to EV charging station

Charging station, also called electric vehicle charging station, and **electric vehicle supply equipment (EVSE)**, is a machine that supplies electric energy from the grid to charge plug-in electric vehicles (EVs).

From simple domestic wall-box to more sophisticated charger, the EVSE control system managing the infrastructure, mainly consists of power stages, driven relays, energy metering, communication lines and user interface.



In such systems Smart Meter is used to quantify energy transfer and communicate with energy grid and users. The meter gets main power from AC power line. When AC power is lost, the Smart Meter must have sufficient energy storage to energize the AMI (Advanced Metering Infrastructure) network for a period long enough that all other Smart Meters can report their status to the utility's central office.

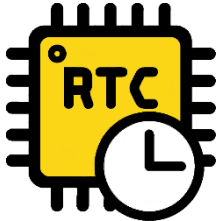
To limit size and cost of backup energy storage within the Smart Meter to keep function alive for data backup and status report it is crucial to use low power oriented architecture.

The use of Real-Time Clock (RTC) function, as low as 45 nA in timekeeping mode, allows the designer to power down the microcontroller when no task is required, resulting in significant power budget savings.



The Smart Meter equipped with a Real-Time Clock is the real-time interface in EVSE and where technology has to ensure:

- Stability (accurate power measurement over time)
- Reliability (24/7 availability, continuous monitoring)
- Intelligence (edge computing, demand response management)



Enabling stable, reliable and intelligent smart meter operation within EVSE, [Real-Time Clock \(RTC\) modules from Micro Crystal](#) participate to the optimization and the sustainable usage of grids.

Micro Crystal - Real-Time Clock (RTC) Module proposition:

P/N	Interface	EV charging specific requirements
RV-3129-C3	I ² C	Extended T range (-40 to +125°C), ± 8 ppm time accuracy over T
RV-3149-C3	SPI	Extended T range (-40 to +125°C), ± 8 ppm time accuracy over T
RV-3028-C7	I ² C	Standard T range (-40 to +85°C), ± 1 ppm time accuracy @ 25°C
RV-3032-C7	I ² C	Extended T range (-40 to +85°C), ± 2.5 ppm time accuracy over T



Off-the-Grid
(OTG)

Remote control issue can occur when facilities are located in underground parking lots or remote area. Using RTC **ensures accurate timekeeping** even when connection with grid communication network is interrupted. Also useful for Off-the-Grid applications or when electric vehicle owners return power to the grid during peak or emergency situations to earn revenue.

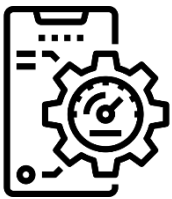
Independency.



Cost Saving

Most EV chargers typically remain in standby for 85% of their lifetime. By using an ultra-low-power RTC Module for timekeeping while MCU is in deep sleep mode, consumers and businesses can **reduce their charging costs**.

Efficiency.



Synchro

One of the best ways to charge EV cheaply at home is to take advantage of cheap off-peak energy rates through Time-of-use (TOU) or time-based tariff billing. With an RTC, smart meter in EVSE is **always synchronized**. MCU is using reliable real-time data allowing smart operation based on programmed charging settings (TOU, off-peak periods) and can support edge computing with **reliable reporting** from the EV charging node for smart grid company and users.

Reliability.

Extra
Features

Integrating an RTC not only adds reliability and efficiency to the system while saving energy. Extra features like an integrated 12-bit temperature sensor allows EVSE **thermal monitoring, alarming** and **extreme high accuracy through timing temperature compensation**.

Enhanced functionalities.



Key benefits of using Micro Crystal's RTCs

Sustainable power saving operation

- Energy & cost savings for users while operating RTC from low power energy source

Reliable timekeeping

- Reduce downtime
- No need for frequent time synch
- Always-on timekeeping function with automatic backup switch

Grid independent timing

- No delay
- No need for permanent connection with grid gateway

Extra features

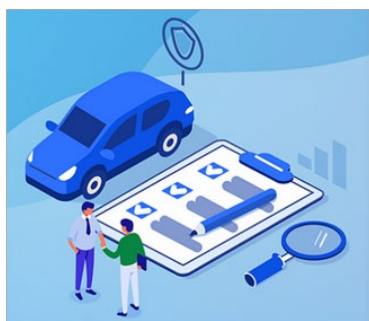
- Allowing better and safer operation in various environmental conditions



Quality and Support

100% of the parts are adjusted in frequency and the accuracy is verified before shipping ensuring high quality level for safe and robust operation.

Micro Crystal is ISO 9001 (Quality), ISO 14001 (Environmental) and IATF 16949 (Automotive) certified.



All RTC parts from Micro Crystal are PPAP'ed & AEC-Q200 qualified and ideally suited for Automotive Applications.

To accelerate development, Micro Crystal provides demo-board, Linux drivers and Windows Graphics User Interfaces (GUI) on request.

Request Linux kernel support for RTCs at:

www.microcrystal.com/contacts/linux-driver

If you are looking to learn more about how Micro Crystal has the solution for you, talk to our team of experts:

tech-support@microcrystal.com

