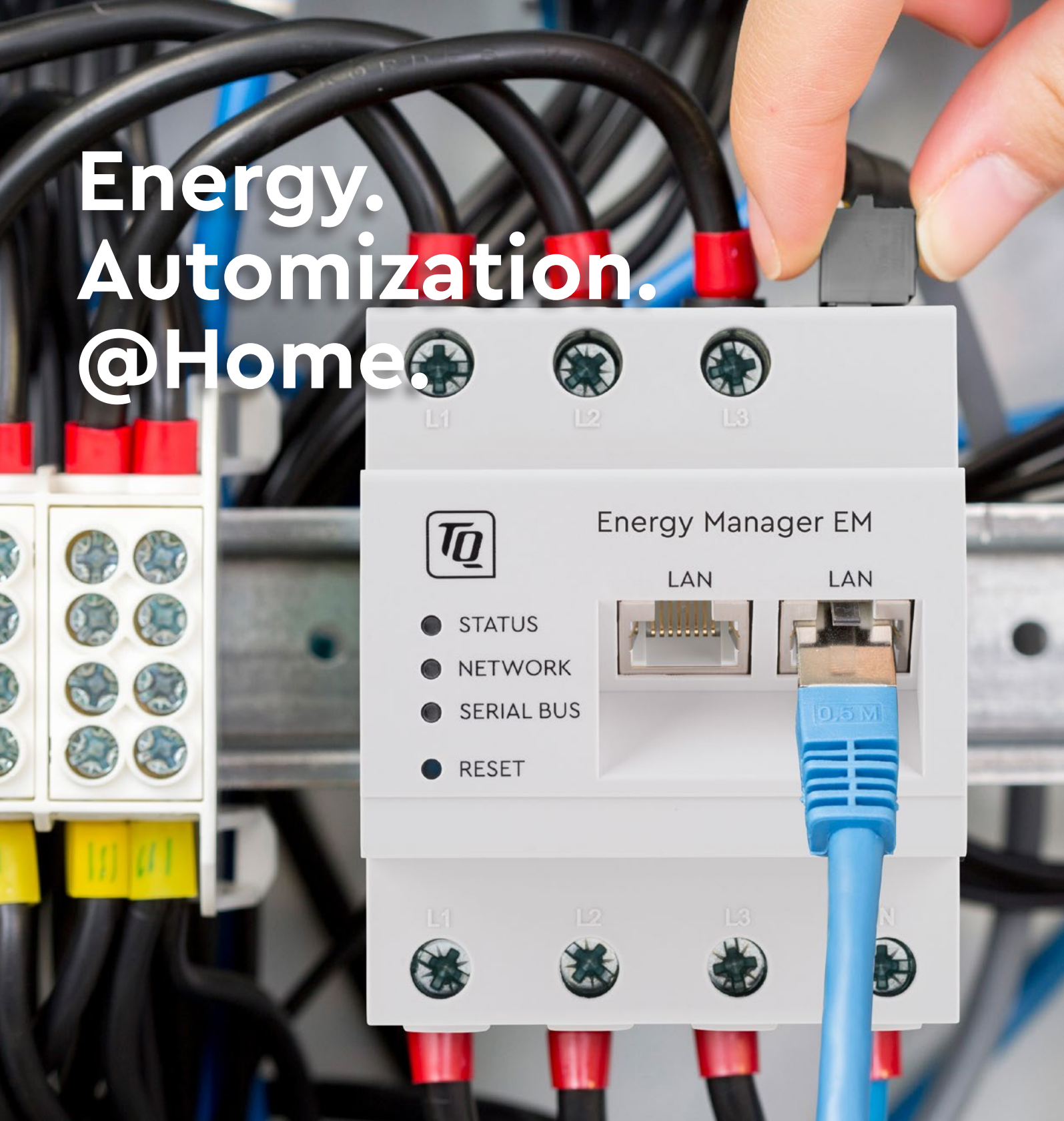


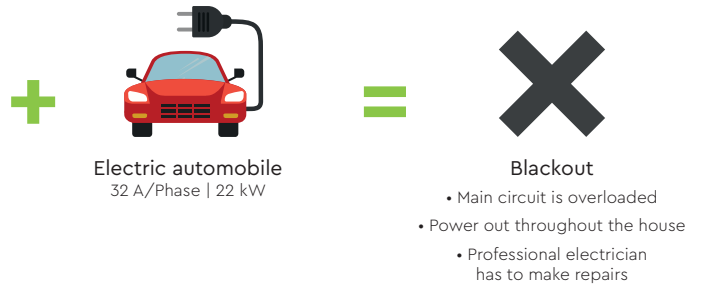
Energy. Automization. @Home.



**EM410 – Home charging with
optimized electricity consumption.**



Energy Automization – there's no getting around it!



Conclusion

Conventional home connection lines typically operate between 22 kW and 35 kW, making it impossible to charge electric vehicles without automation equipment.



EM410 – Features



Energy monitoring

- Displays overall consumption (resolution up to 200 ms)
- Automatic circuit breaker monitors individual pathways
- Monitors generation of energy (PV system)
- Values displayed per minute, quarter-hour
- Visual display
- Evaluation and storage also possible in the cloud



Energy automation

- Optimized charging of electric vehicles using solar units
- Optimized consumption management for solar units
- Overload (blackout) protection
- Switching for consumption points



Maintenance

- Support for remote cloud maintenance



Compatibility

- EEBUS-ready (supports devices with EEBUS connectivity)
- Monitoring of solar unit by means of current sensors (regardless of manufacturer)
- Controlling possible using Modbus (RTU and TCP)



Easy to install and set up

- Connectors for L1 to L3 and neutral wires
- Connector for LAN (Ethernet) and connecting plug for RS485
- Standard configurations cover all conventional applications
- Step-by-step support for initial installation
- Online support (FAQ, video demos)
- Compact casings (4 TE)



Monitoring and control

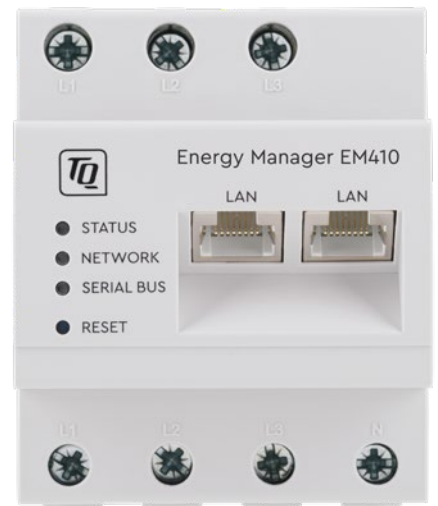
- Charging unit for electric vehicles
- Smart heater (heating rod)
- Switchable sockets
- Consumption points
- Home connections (washing machine, dryer, dishwasher)

ENERGY MANAGER

EM410

Hardware specifications

- Built-in 3-phase energy metering up to 63 A
- Up to 96 external electricity sensors can be hooked up using RS485
- Integrated Linux system



EM410 TECHNICAL DATA

PROCESSOR SPECS

ARM9 processor with 450 MHz, DDR2 RAM with 256 Mbyte eMMC Flash 4 GByte

OPERATING SYSTEM

Embedded Linux with built-in TCP/IP stack

INTERFACES (STANDARD)

2x LAN (10/100 Mbit) for data transmission via Modbus TCP or Json/Ajax

2x RS485 (Half-duplex, max. 115200 Baud) for data transmission via Modbus RTU

PRODUCT NORMS

EN 61010, EN 50428, EN 60950

VOLTAGE AND CURRENT INPUTS

Rated voltage: max. 230/400 V~

Operating voltage: 110/230 V~ ± 10 %

Frequency range: 50/60 Hz ± 5 %

SELF-CONSUMPTION

Voltage path: < 0,01 VA per phase

Current path: < 2 VA per phase

Device total: < 5 W

Current: Nominal current 5 A,
Limiting current 63 A

Start-up current: < 25 mA

INSTALLATION

Connection cross-section: 10–25 mm. *

Torque for screw terminals: 2.0 Nm

* Mechanical: 1.5–25 mm.

METERING ACCURACY

Accuracy class according to IEC 61557–12 based on metering value, Energy Manager

Voltage: ± 0.5 %

Current: ± 0.5 %

Effective power: ± 1.0 %

Apparent power: ± 1.0 %

Idle power: ± 1.0 %

Power factor: ± 1.0 %

Based on IEC 62053–22 or -23 (conventional)

Active energy: Class 1

Idle energy: Class 1

When using external current converters, please take their respective accuracy into consideration.

When using current sensors with the sensorbar, active energy accuracy Class 2 depending on the power factor.

MECHANICAL SPECS

Housing material: Fiberglass-reinforced polyamide

Glow wire test: In accordance with IEC 695–2–1

Protection class/type: II/IP2X

Weight/Dimensions: 0.3 kg/88×70×65 mm

OPERATING CONDITIONS

Ambient temperature: -25°C...+45°C

Storage temperature: -25°C...+60°C

Relative humidity: up to 75 % annual average, (non-condensing) up to 95 % on up to 30 days/year

Max. altitude for operation: 2000 m above NN



The Road to E-Mobility with the EM410

Before long drivers will be switching to electric vehicles. Cars with sufficient range will soon become available – and of course the owners will want to recharge their vehicles at home.

Consumers who own a photovoltaic system will be able to use solar energy to recharge their vehicles virtually without cost. All they have to do is regulate the charging current so it is suitable to the energy infeed of the house.

The goal is to achieve full consumption of the energy generated by the photovoltaic unit. And this is where the EM410 comes into play: It reliably regulates the electricity consumption throughout the home, making it indispensable for use with electric vehicles.

TQ Automation also offers solutions for industrial facilities, hotels and apartment buildings. A variant of the EM410 is ideal for metering purposes.

Overload protection

- Safe charging thanks to overload protection

Cost-optimized charging

- Optimized charging schedules for electric vehicles are calculated on the basis of the static electricity rate of the power supply companies

Optimal charging with self-generated electricity

- Charging using decentralized energy sources such as solar units or cogeneration plants

Controlled recharging of electric vehicles

- EEBus use-case for e-mobility
- Controlling unit uses Modbus TCP



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