KeContact

M20 (R1.18.000)
Expanded charging management
Operating manual V 1.05

Translation of the original instructions

KEBA®
Automation by innovation.

Document No.: 132579 | Version published: 06.2025
Document: V 1.05
Pages: 74

© KEBA 2021
Specifications are subject to change due to further technical developments. Details presented may be subject to correction.

All rights reserved.

KEBA Energy Automation GmbH

Reindlstraße 51, 4040 Linz, Austria, www.keba.com/emobility
+43 732 7090-0, +43 732 7309-10, kecontact@keba.com

For information about KEBA and our subsidiaries please look at www.keba.com.

Table of contents

1 Introduction 6
1.1 Representation of safety instructions 6
1.2 Purpose of the document 7
1.3 Requirements 7
1.4 Warranty 7
1.5 Notes on this document 8
1.5.1 Contents of the document 8
1.5.2 Not contained in this document 8
1.6 Further documentation 8

2 System overview 9
2.1 Network interfaces 11
2.1.1 LAN 12
2.1.2 Mobile network 13
2.2 Structure of a local charging network 14
2.2.1 Connection via router or switch 14
2.2.2 Ports for communication in the charging network 15

3 Description 16
3.1 Front view 16
3.2 Rear view 16
3.3 Type plate 17
3.4 Accessories / Spare parts 17

4 Displays and operating elements 18
4.1 Status LED 18
4.2 Power button 18
4.3 Reset button 18

5 Mounting and installation instructions 19
5.1 General instructions 19
5.2 ESD information 19
5.3 Inserting the SIM card 20
5.4 Space requirement 23
5.5 Installation in the control cabinet 24
5.6 Wall installation 26
5.7 Removing 27

6 Connections and wiring 28
6.1 Power supply 28
6.2 USB port 28

© KEBA 2021

6.3 Ethernet interface ... 29
6.3.1 Pin assignment ... 29
6.4 Graphic interface ... 29
6.5 Antenna ... 30
6.5.1 Mounting the antenna ... 30

7 Configuration ... 32
7.1 Enabling the DHCP server ... 32
7.1.1 Read out configuration ... 32
7.1.2 Adapt configuration file ... 33
7.1.3 Import configuration ... 33
7.2 Configuration in series via USB stick ... 33
7.2.1 Create configuration ... 34
7.2.2 Read out configuration ... 34
7.2.3 Adapt configuration file ... 34
7.2.4 Import configuration ... 35

8 Web interface ... 36
8.1 Main menu ... 38
8.1.1 Status ... 38
8.1.2 Charging sessions ... 39
8.1.3 RFID cards ... 39
8.1.4 Charging network ... 39
8.1.5 Local OCPP Server ... 41
8.1.6 System ... 44
8.1.7 Configuration ... 46
8.2 User menu ... 49
8.2.1 User settings ... 49

9 Functions ... 51
9.1 Load management in the local charging network ... 51
9.1.1 Equal allocation mode ... 51
9.1.2 Unbalanced load compensation ... 51
9.1.3 Current limiting ... 51
9.1.4 Phase-related load management ... 52
9.2 RFID authorization ... 52
9.2.1 Authorization modes ... 52
9.2.2 RFID authorization without OCPP backend connection ... 53
9.2.3 RFID authorization with OCPP backend connection ... 54
9.3 OCPP backend ... 55
9.4 Integration of external meters ... 57
9.4.1 Connection ... 57
9.4.2 Supported meters ... 57

KEBA © KEBA 2021

9.4.3 Settings 58
9.5 EMS integration 59

10 Maintenance 61
10.1 Diagnosis and troubleshooting 61
10.2 Software update 61
10.2.1 Software update via web interface 61
10.2.2 Software update via USB stick 62
10.2.3 Software update via OCPP backend 62

11 Technical data 63
11.1 General 63
11.2 Power supply 63
11.3 Ambient conditions 63
11.4 Interfaces 63
11.5 LTE antenna 64
11.6 Dimensions, weight 64

12 EU directives and standards 66

13 EC Declaration of Conformity 67

14 Country-specific characteristics 69
14.1 Country-specific characteristics for Austria 69

Index 71

© KEBA 2021

1 Introduction

This document describes an expanded charging network with the following devices:

- KeContact M20 master device (embedded PC with power adapter and LTE antenna)
- Compatible client devices (P30 c-series, x-series, P40)

The device variant can be read off based on the product designation on the type plate. The software version can be read out via the web interface. For more specific information on the client devices, see the respective "Operating Instructions".

The pictured devices used in this manual are visual examples. The figures and explanations contained in this manual refer to a typical device design. The devices used by you may differ in their appearance.

1.1 Representation of safety instructions

At various points in this manual, you will see notes and precautionary warnings regarding possible hazards. The symbols used have the following meaning:



DANGER!

Indicates an imminently hazardous situation, which will result in death or serious bodily injury if the corresponding precautions are not taken.



WARNING!

Indicates a potentially hazardous situation, which can result in death or serious bodily injury if the corresponding precautions are not taken.



CAUTION!

Means that if the corresponding safety measures are not taken, a potentially hazardous situation can occur that may result in slight bodily injury.

Caution

Means that damage to property can occur if the corresponding safety measures are not taken.



ESD

This symbol reminds you of the possible consequences of touching electrostatically sensitive components.

Information

Identifies practical tips and useful information. No information that warns about potentially dangerous or harmful functions is contained.

KEBA © KEBA 2021

1.2 Purpose of the document

This document describes the installation and configuration of the expanded KeContact M20 functions. This includes the description of settings in the web interface.

WARNING!

Risk of electric shock to persons!

In addition to this document, all information in the description of the power adapter, which is in the power adapter packaging, must be observed.

Information

If the description included with the power adapter cannot be read and understood due to the available languages, then use the description in the required language from the homepage of the manufacturer.

1.3 Requirements

This document contains information for persons with the following requirements:

Target group	Required knowledge and abilities
Electrician	Person who, due to his or her special training, expertise and experience as well as knowledge of current standards, is able to assess the work performed and the possible hazards. Knowledge of: ● current valid safety information, ● the mode of operation of the charging station, ● the displays and operating elements of the charging station, ● basics of network technology, ● basics of IT, ● diagnostic options, ● systematic fault analysis and rectification, ● the setting options on the charging station.

1.4 Warranty

Only general maintenance work that is expressly permitted by the manufacturer may be performed. Any other tampering to the device will result in a loss of the warranty claim.

© KEBA 2021

1.5 Notes on this document

The manual is part of the product. It is to be retained over the entire life cycle of the product and should be forwarded to any subsequent owners or users of the product.

The instructions contained in this manual must be followed precisely. Failure to do so can result in the creation of potential sources of danger or the disabling of safety devices. Apart from the safety instructions given in this manual, the safety precautions and accident prevention measures appropriate to the situation in question must also be observed.

1.5.1 Contents of the document

- Installation and configuration of the expanded KeContact M20 functions

1.5.2 Not contained in this document

- Installation and deinstallation of client charging stations
- Operating behavior of the client charging stations
- Configuration of the client charging stations
- Operation of the client charging stations

1.6 Further documentation

Manuals and additional information are available on our website:

www.keba.com/emobility-downloads

Designation	Target group
P30 operating instructions	• End customer • Electricians
P30 installation manual	• Electricians
UDP Programmer's Guide	• Programmer
Modbus TCP Programmers Guide	• Programmer
FAQ	• End customer • Electricians • Service technicians

KEBA © KEBA 2021

2 System overview

The KeContact M20 enables control of multiple charging stations. The connection is established over the IT network (switch/router). This enables charging with intelligent load management. In combination with an upstream energy meter (Modbus TCP), the entire charging network can be controlled dynamically.

Only one connection to a backend system (via OCPP) is necessary. The master (KeContact M20) is equipped with different network interfaces for these functions.

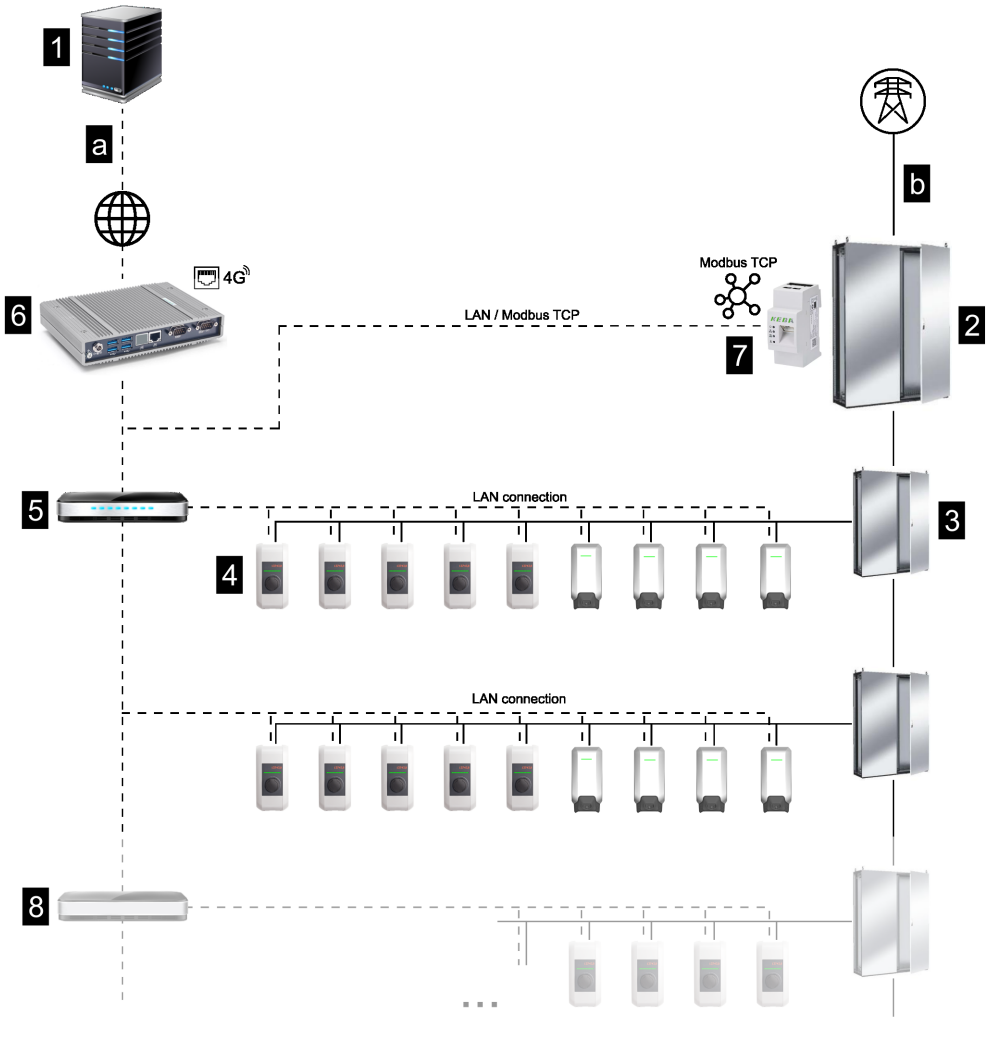


Fig. 2-1: System overview (example)

1 ... OCPP backend	2 ... Main distribution
3 ... Sub-distribution	4 ... Charging stations
5 ... Router/switch	6 ... KeContact M20 (master)
7 ... Energy meter	8 ... Switch (optional)
a ... Communication interface to operating company	b ... Power connection (power supply)

© KEBA 2021

Clusters

In a cluster consisting of multiple charging stations, the available power reserves can be used optimally across the entire system. Up to 200 charging stations (number depends on variant) in a maximum of 15 clusters can be connected with each other.

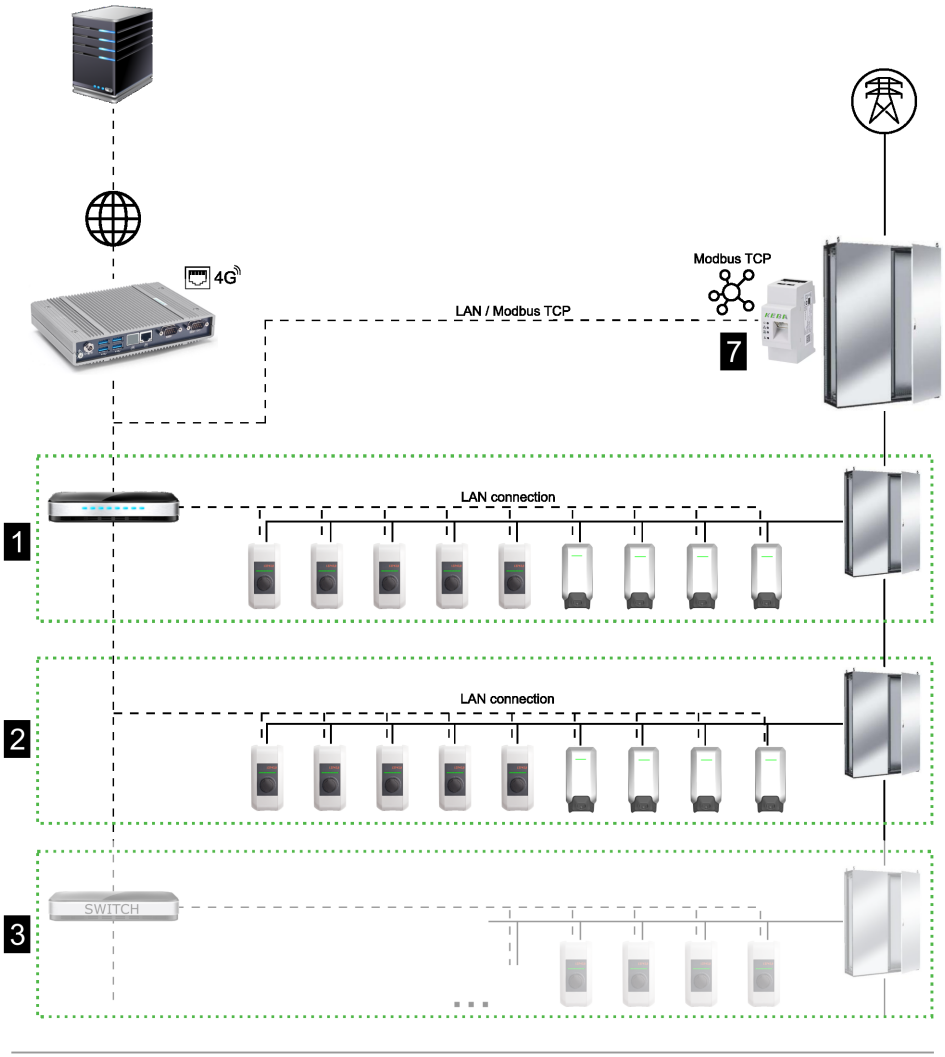


Fig. 2-2: System overview with cluster (example)

1 ... Cluster 1
2 ... Cluster 2
3 ... Cluster 3

The following chapters describe which network interfaces are provided and how to set up a network.

KEBA © KEBA 2021

2.1 Network interfaces

The KeContact M20 provides the following network interfaces (e.g. for connection to an OCPP backend, etc.):

- LAN
- Mobile network (via external antenna & SIM card, 4G/LTE - SIM card required, M2M SIM card recommended).

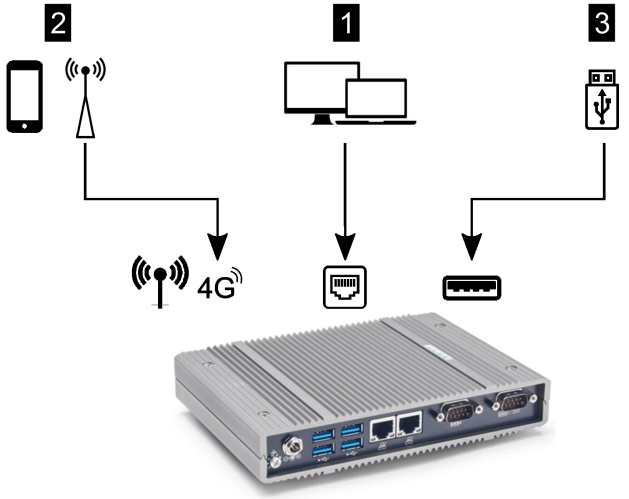


Fig. 2-3: *Configuration overview*

1 ... LAN	2 ... Mobile network via SIM
3 ... USB interface	

Client charging stations (P30 c-series) can only be connected to the master (KeContact M20) over LAN. The configuration is done via the web interface of the master.

Information

WLAN stick (WLAN access point / WLAN hotspot)

- The connection of a WLAN stick to the KeContact M20 is fundamentally possible, but not recommended. Use at your own risk. In case of problems, troubleshooting is not assisted by the manufacturer.
- The login data for the first login to the web interface can be taken from the supplied configuration label as needed.

CAUTION!

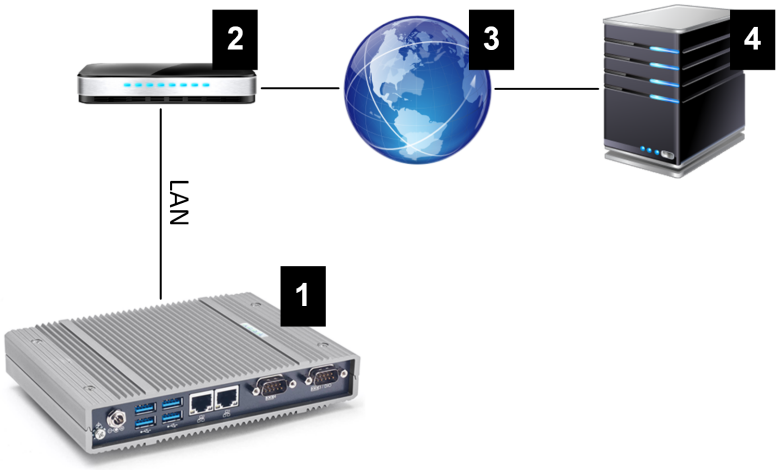
Danger to life from electromagnetic fields

Before connecting further wireless modules (e.g. WLAN), make sure that there will not be any out-of-band emission due to interference and that the limit values for people's exposure to electromagnetic fields are adhered to. It is recommended that corresponding documentation be included with the system documentation.

© KEBA 2021

2.1.1 LAN

The master can be connected to a router via the integrated LAN interface. The router provides a connection to an OCPP backend over the Internet.



1 ... KeContact M20	2 ... Router
3 ... Internet	4 ... OCPP backend

Connection: Ethernet1 connection

Via the LAN interface, the master can also be connected to other client charging stations, which creates a charging network.

© KEBA 2021

2.1.2 Mobile network

KeContact M20 has a mobile communications module. It enables a connection to a OCPP backend via the mobile network. The mobile communications provider may charge additional fees (depending on the tariff) for running data transmissions.

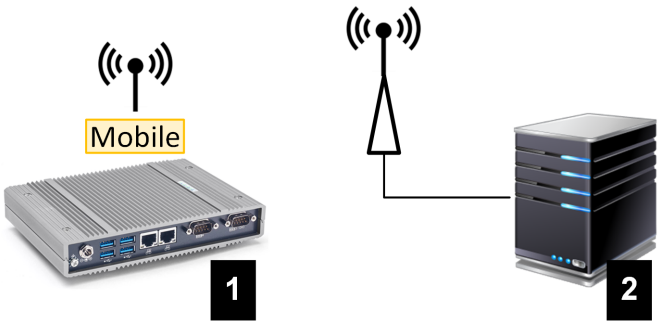


Fig. 2-4: *Mobile network*

1 ... KeContact M20 2 ... OCPP backend

For the connection to an external OCPP backend over the mobile network, a suitable SIM card must be installed during commissioning. When installing the SIM card, observing the ESD notices is mandatory.

In addition, the mobile network must be activated as the connection to the OCPP backend and the access data of the mobile service provider must be set in the configuration (web interface).

Information

The username and password for the mobile network connection must not be empty and must consist of more than one character!

© KEBA 2021

2.2 Structure of a local charging network

The client charging stations must be connected to the master using a router or switch.

To enable communication between master and client charging stations, the devices must be configured in the web interface, see Configuration.

2.2.1 Connection via router or switch

If there are multiple client charging stations, these must be connected to the master via a router or switch. The connection of the charging station to the router/switch is made via LAN.

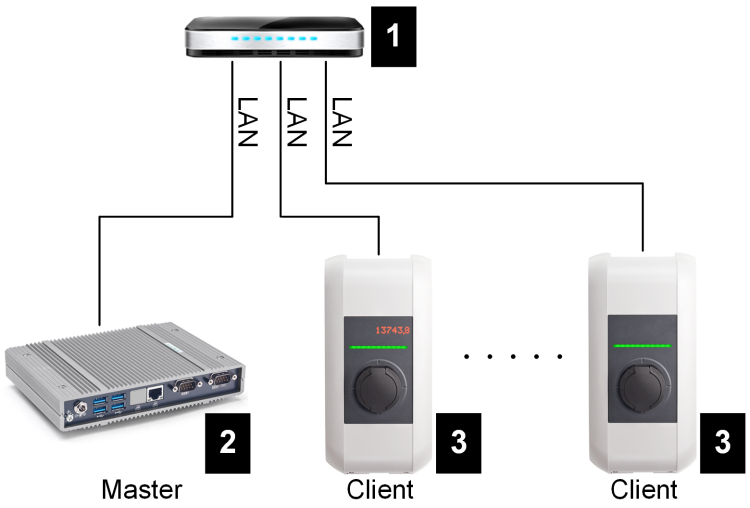


Fig. 2-5: *Connection via router or switch*

1 ... Router/Switch
2 ... KeContact M20 (master)
3 ... P30 c-series (client)

Using a router

For a network connection using a router, the router automatically provides the functionality of a DHCP server in most cases.

Information

If the IP addresses are assigned externally (for example, by routers with activated DHCP server), the IP addresses must not be in the following range: 192.168.25.xxx

This address range is reserved for charging stations where the IP address is set manually via DIP switches.

Using a switch

With a network connection via switch, the DHCP server of the KeContact M20 (master) must be enabled via the web interface (configuration); it is disabled in the delivery state. IP addresses are then assigned by the KeContact M20.

KEBA © KEBA 2021

2.2.2 Ports for communication in the charging network

For the correct communication in the charging network, the ports below must be enabled network-internally.

Information

If necessary, contact your network administrator to enable the ports.

Port	Protocol	Definition	Description
49153	TCP	Within the network	Charge Point Manager communication on the PDC (Master/Client)
15118	TCP	Within the network (Multicast)	Establishing a connection between the charging stations (SDP, Master/Client)
15118	UDP	Within the network (Multicast)	Establishing a connection between the charging stations (SDP, Master/Client)
7092	UDP	Within the network (Broadcast)	PDC control communication (Client)
7091	UDP	Within the network (Broadcast)	Logging Mechanismus (Client)
7090	UDP	Within the network (Broadcast)	XPU - PDC communication protocol (Master/Client)
5353	UDP	Within the network (Multicast)	Multicast DNS based service (Zeroconf) to find wallboxes in the network (Master/Client)
68	UDP	Within the network (Broadcast)	Dynamic Host Configuration Protocol (DHCP) for automatic network configuration (Master/Client)
67	UDP	Within the network (Broadcast)	Dynamic Host Configuration Protocol (DHCP) service provisioning
53	UDP	Within the network	Domain Name System (DNS) service for name resolution (Master)
23	UDP	Within the network (Broadcast)	Communication protocol to be able to find wallboxes in the network (Master/Client)
22	TCP	External Access	Secure Shell for Advanced Debugging (Master)
9	UDP	Within the network (Broadcast)	Communication protocol for the firmware download (Master)

© KEBA 2021

3 Description

3.1 Front view

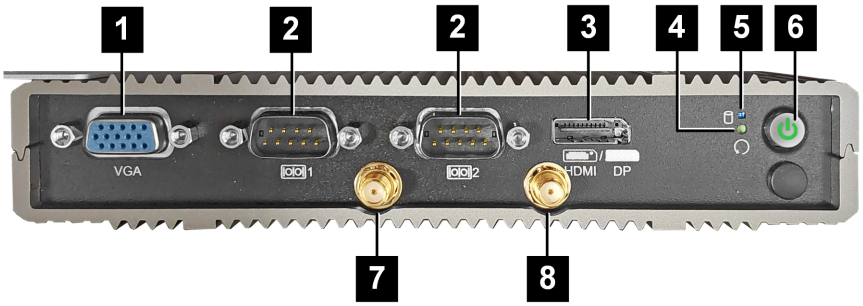


Fig. 3-6: *Front view of embedded PC*

1 ... VGA*	2 ... COM*
3 ... HDMI/DP*	4 ... Reset button
5 ... Status LED	6 ... Power button
7 ... LTE diversity antenna	8 ... LTE main antenna

*) Connection nonfunctional

3.2 Rear view

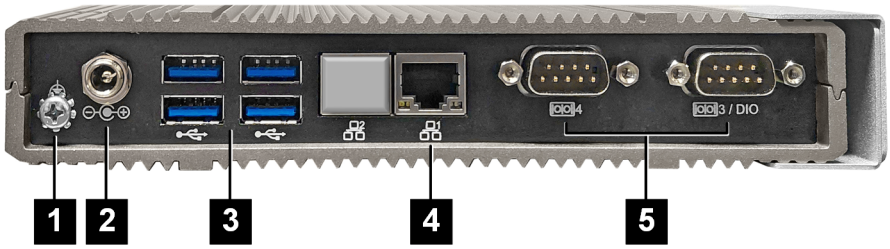


Fig. 3-7: *Rear view of embedded PC*

1 ... Ground (GND)	2 ... DC-In
3 ... USB	4 ... Ethernet (LAN)
5 ... COM*	

*) Connection nonfunctional

KEBA © KEBA 2021

3.3 Type plate



Fig. 3-8: *Type plate*

1 ... Manufacturer	2 ... Manufacturer address
3 ... Product designation	4 ... Material number, serial number
5 ... Technical data	6 ... Production location and date
7 ... Reference to product manual	8 ... ESD notice

Information

The CE marking of KEBA Energy Automation GmbH refers exclusively to the installation of the LTE modem and the SSD as well as the composition of the system components.

3.4 Accessories / Spare parts

The following accessories/replacement parts can be ordered from KEBA:

Accessories

Name	Description	Order no.
Wall brackets	Brackets for the KeContact M20 wall installation.	125254

Replacement part

Name	Description	Order no.
Power adapter	Top hat rail power adapter 60 W / 24 V / 2.5 A	125227

© KEBA 2021

4 Displays and operating elements

4.1 Status LED

The KeContact M20 is equipped with the following LED on the front.

Status LED	Description
Dark	No SSD/USB activity
Flashing blue	SSD/USB activity

4.2 Power button

The power button on the front of the KeContact M20 is backed by a lighting ring.

LED	Description
Dark	No supply voltage
Green	Device ready for operation

4.3 Reset button

Pressing the reset button on the front triggers a reset of the KeContact M20.

KEBA © KEBA 2021

5 Mounting and installation instructions

5.1 General instructions

To protect the KeContact M20 from unauthorized access, theft, vandalism and incorrect configurations, the device must be installed in a lockable environment (e.g. lockable control cabinet).



WARNING!

Risk of electric shock to persons!

- The Embedded PC must always be installed safely isolated from electric circuits with hazardous voltage.
- The power adapter must not be made user accessible.

5.2 ESD information

Electronic component are generally put at risk by electro-static discharges (**E**lectro **S**tatic **D**ischarge). An electro-static charge can occur during any activity involving movement. ESD can occur with any touch.

Most discharges are so low that they are not noticeable. However, they can nevertheless put unprotected electronic components at risk or even destroy them. Therefore, any handling with open electronics is only permissible with the application of effective ESD protection.

When handling **open** electronics, please follow the following ESD measures:

- Only touch open electronics if this is absolutely necessary.
- Wear a conductive ESD wristband.
- Use conductive mats.
- Establish a conductive connection between device/system, mat, wristband, and grounding connection.
- Cotton work clothes are preferred over synthetic fiber materials.
- Keep work area free of highly isolating materials (e.g. Styrofoam, plastics, nylon, ...).
- Use ESD protection even for defective modules.

Always keep the devices in their original packaging and only remove the packaging immediately before installation.

Avoid, for modules which are mounted in an enclosure, direct contact with any accessible electronic components, such as non-equipped terminals.

© KEBA 2021

5.3 Inserting the SIM card

ESD

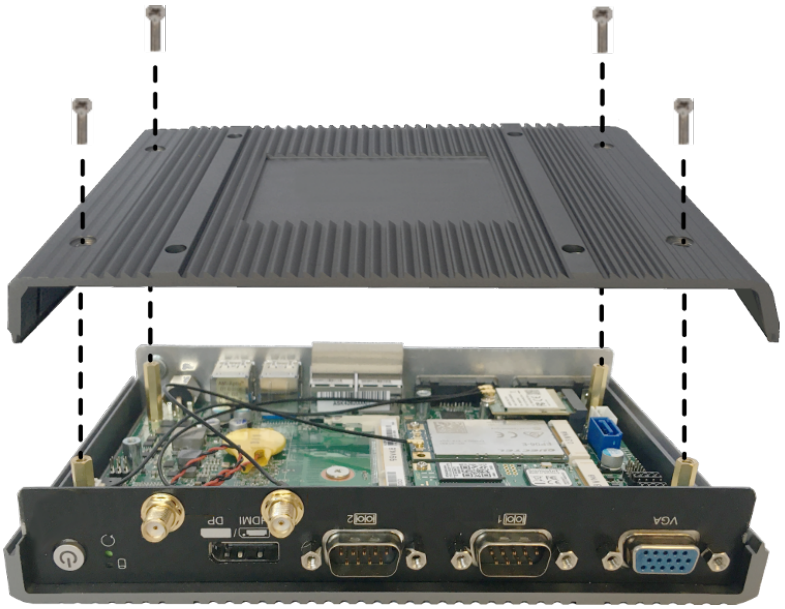
- This product uses components that can be damaged by electrostatic discharge. This symbol reminds you of the possible consequences of touching electrostatically sensitive components incorrectly. Damage due to improper handling is not covered by the warranty.
- Open the device only once you have taken appropriate ESD safety measures. Use a conductive wrist strap in combination with a well-grounded subsurface. Always discharge static charges from yourself by touching a bare metal surface connected to the floor or an approved anti-static mat before touching an ESD-sensitive electronic component.
- Always ensure a clean, ESD-compliant work area, such as approved anti-static matting.
- Adhere to the ESD information in the chapter "ESD information".

The slot for the SIM card is located inside the KeContact M20. Tools required:

- Phillips screwdriver PH1 (not included in the scope of delivery)
- PH00 Phillips screwdriver (included in the scope of delivery)

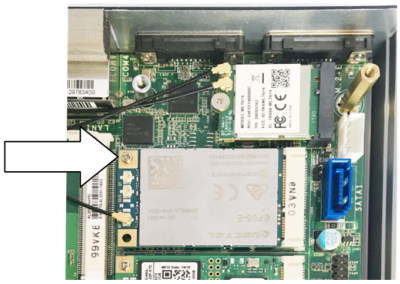
To insert a SIM card, proceed as follows:

1) Remove the lower housing cover by unscrewing the four screws.



2) Unscrew the screw on the circuit board with the PH00 Phillips screwdriver.

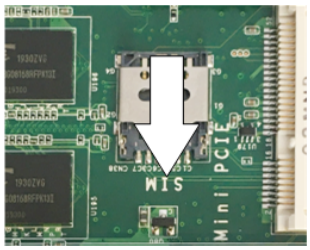
KEBA © KEBA 2021



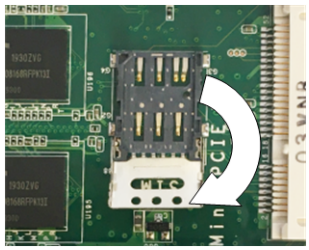
3) Tilt the circuit board upward at an angle (1) and pull it out the front (2).



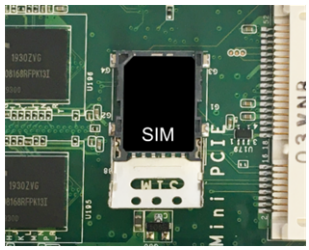
4) Unlock the SIM card slot by sliding the cover back.



5) Tilt the slot cover back

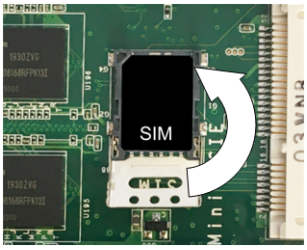


6) Insert the SIM card. Ensure the correct position.

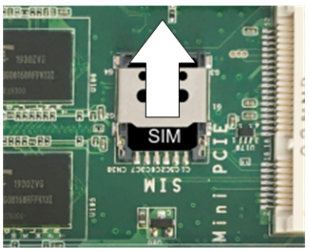


7) Close the cover again.

© KEBA 2021



8) Slide the cover forward to lock the slot.



9) Insert the circuit board at an angle (1) and tilt it down (2).



10) Secure the circuit board with the screw again. Check that the connection cable of the antenna is positioned securely.
11) Set the lower housing cover on the housing and mount it with screws (max. torque of 0.59 Nm, tolerance ±0.05 Nm).

The SIM card is inserted.

Information

The access data of the mobile network provider must be entered in the web interface (configuration).

KEBA © KEBA 2021

5.4 Space requirement

Embedded PC

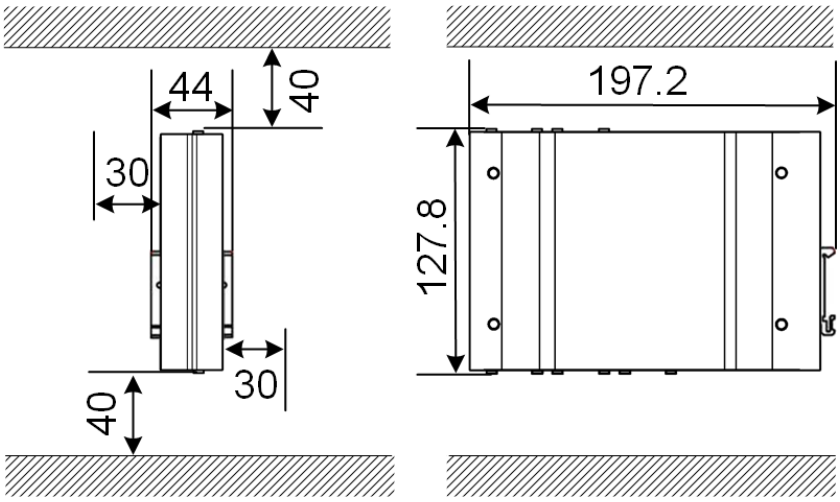


Fig. 5-9: *Space requirement (dimensions in mm) for control cabinet installation*

The specifications are minimum distances. If a USB stick is used in operation, more space may need to be taken into account.

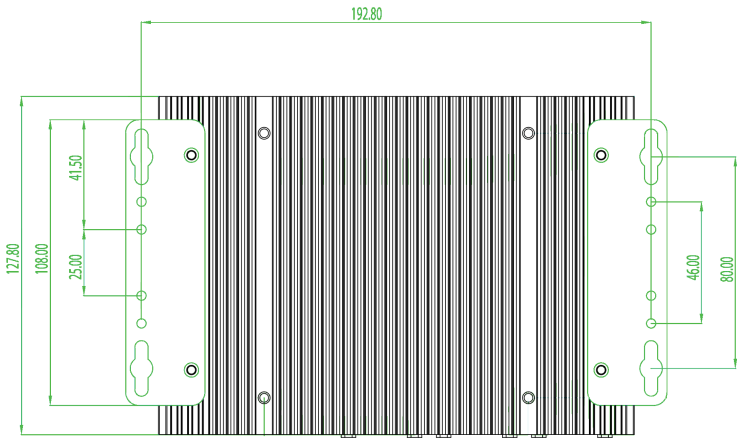


Fig. 5-10: *Space requirement (in mm) for wall installation*

© KEBA 2021

Power adapter

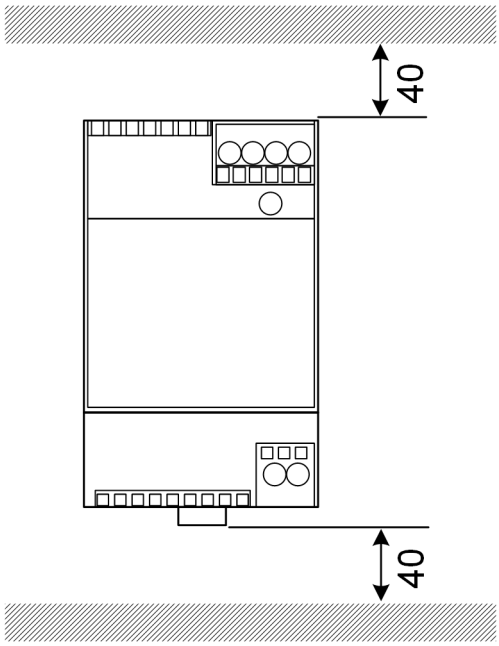


Fig. 5-11: *Power adapter space requirement (dimensions in mm) for control cabinet installation*

The specifications are minimum distances. For the size of the power adapter, see its dimensions in Abmessungen, Gewicht and the manufacturer's installation instructions, which is included in the packaging.

5.5 Installation in the control cabinet

Information

- When positioning the KeContact M20, you must make sure that it does not block access to existing control cabinet components.
- The SIM card may need to be installed before the mounting is done. Otherwise, installation is no longer possible.

The KeContact M20 can be mounted on a top hat rail. The mounting package includes two brackets (one has a shorter depth) and a mounting clip.

Information

The screw holes in the KeContact M20 for the mounting package are symmetrical. The mounting package can be mounted on any side of the KeContact M20.

Required materials and tools:

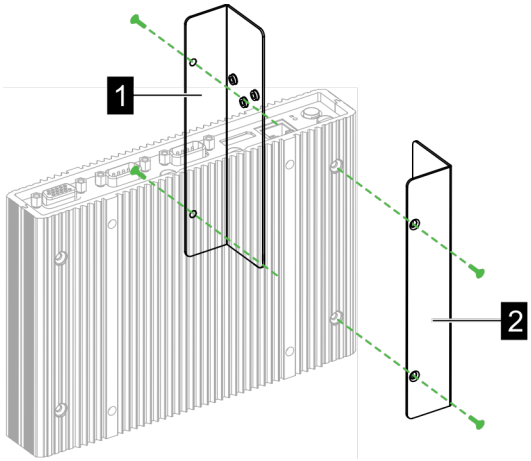
- 3x M3 screws, 5 mm length (included in the scope of delivery)

KEBA © KEBA 2021

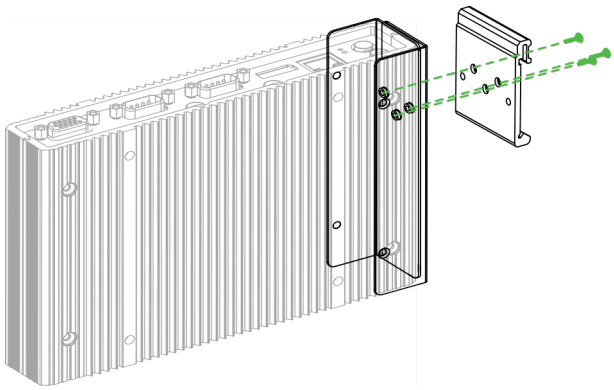
- Phillips screwdriver PH1 (not included in the scope of delivery)

Proceed as follows to mount the KeContact M20 on the top hat rail:

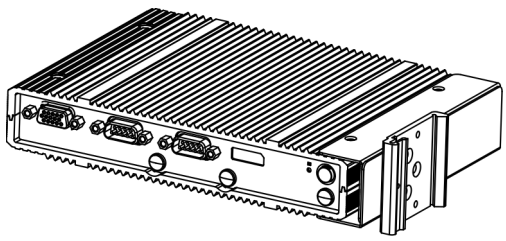
1) Unscrew the M3 screws on the side of the housing.
2) Secure the short bracket (2) on the KeContact M20 with two M3 screws (max. torque of 0.59 Nm, tolerance ±0.05 Nm).



3) Secure the long bracket (1) on the KeContact M20 with two M3 screws (on the opposite side of the short bracket). The long bracket must be above the short bracket.
4) Secure the mounting clip on the brackets with three M3 screws.

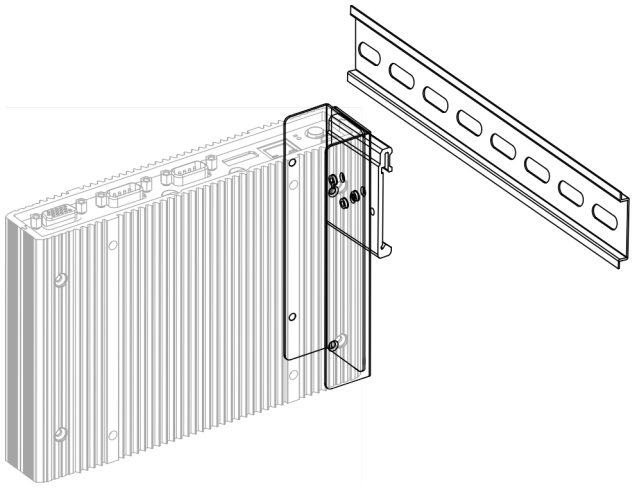


5) Check whether the mounting package is mounted as follows:



6) Mount the KeContact M20 on the top hat rail.

© KEBA 2021



7) If necessary, establish protective grounding for the mounting package.

The KeContact M20 is installed on the top hat rail.

5.6 Wall installation

The KeContact M20 can optionally be installed on a wall. Wall brackets are needed to do this. These are not included in the scope of delivery and can be ordered as accessories.

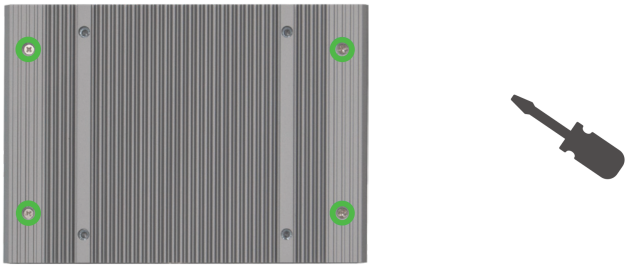
Information

The SIM card may need to be installed before the mounting is done. Otherwise, installation is no longer possible.

Required materials and tools:

- 4 x M3 screws, 10 mm length (included in the scope of delivery)
- Phillips screwdriver PH1 (not included in the scope of delivery)
- Wall brackets (not included in the scope of delivery)

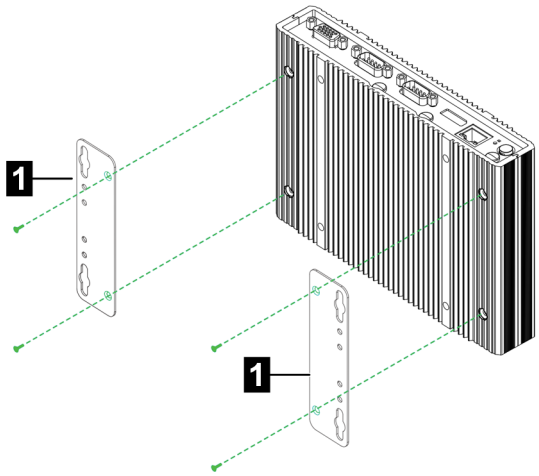
The four screw holes are located on the underside of the KeContact M20.



To install the KeContact M20 on the wall, proceed as follows:

1) Unscrew the M3 screws on the underside of the housing.
2) Secure the two wall brackets (1) on the KeContact M20 with four M3 screws.

KEBA © KEBA 2021



3) The KeContact M20 can be installed at various distances from the wall using the predrilled screw holes.
4) Install the KeContact M20 on the wall.

The KeContact M20 is installed on the wall.

5.7 Removing

Dismantling from the top hat rail

Tools required:

- Phillips screwdriver PH1 (not included in the scope of delivery)

To remove the KeContact M20, proceed as follows:

1) Remove the KeContact M20 from the top hat rail.
2) Remove the mounting clip by unscrewing the three M3 screws.
3) Remove the brackets by unscrewing the four M3 screws.
4) Screw down the housing again with the M3 screws.

The KeContact M20 is removed from the top hat rail.

Dismantling from the wall

Tools required:

- Phillips screwdriver PH1 (not included in the scope of delivery)

To remove the KeContact M20, proceed as follows:

1) Remove the KeContact M20 with wall brackets by unscrewing the screws in the wall.
2) Remove the wall brackets from the KeContact M20 by unscrewing the four M3 screws.

The KeContact M20 is removed from the wall.

© KEBA 2021

6 Connections and wiring

6.1 Power supply

The KeContact M20 may only be supplied using the power adapter included in the scope of delivery (in the control cabinet) using the DC-In jack.

The primary supply of the power adapter is the responsibility of the respective electrician (power connection line not included in the scope of delivery).

The power adapter is to be used in environments with contamination no greater than contamination level 2 (as per EN 61010-1). All safety notes and specifications of the power adapter manufacturer must be observed.

Information

Contamination level 2, description according to standard EN 61010-1:

Usually only non-conductive contamination appears; however, temporary conductivity caused by condensation must be expected on occasion.

6.2 USB port

The USB interface is used to connect removable media (e.g. in the context of maintenance work).

Information

The USB interface is not designed as an operational interface for ongoing operations. It is used exclusively in the service and startup event for connecting USB devices.

Connecting a USB component

To connect, proceed as follows:

1) Insert the USB component so that it engages.

The USB component is recognized and displayed by the operating system.

Removing a USB component

Information

If there is an ongoing process of saving to the USB component, it cannot be disconnected during the saving process! This may otherwise result in loss of data.

To disconnect, proceed as follows:

1) Pull out the USB component.

KEBA © KEBA 2021

6.3 Ethernet interface

The Ethernet interfaces are used for communication with non-real-time-capable networks.

CAUTION!

Fire hazard from transient currents

The shield of the Ethernet interface is not galvanically isolated. If there are connections to a device outside the building installation or to another equipotential bonding system, there may be high transient currents. In this case, use suitable optical transmission of the Ethernet interface.

6.3.1 Pin assignment

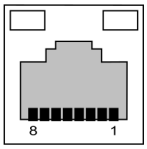


Fig. 6-12: *Pin assignment RJ45 socket*

Pin no.	Signal designation	Input/output
1	MX0+	Bidirectional
2	MX0-	Bidirectional
3	MX1+	Bidirectional
4	MX2+	Bidirectional
5	MX2-	Bidirectional
6	MX1-	Bidirectional
7	MX3+	Bidirectional
8	MX3-	Bidirectional

6.4 Graphic interface

The KeContact M20 features a VGA and HDMI/DP combo connector.

Information

This interface is not currently approved for use.

© KEBA 2021

6.5 Antenna

The antenna connectors are on the front of the module. An antenna can be attached directly to the device (for wall installation) or via cable (for control cabinet installation). The antenna is included in the scope of supply.



Fig. 6-13: *Antenna for control cabinet*

6.5.1 Mounting the antenna

CAUTION!

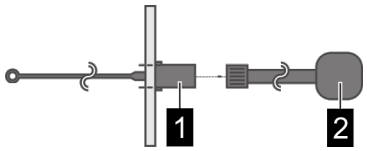
Danger to life from electromagnetic fields

To adhere to the limit values for people's exposure to electromagnetic fields, it is necessary to mount the antenna at least 25 cm away from people.

Mounting the antenna directly on the device

To mount the antenna, proceed as follows:

1) Switch off devices connected to the KeContact M20 and disconnect their power cables.
2) Tighten the antenna (2) at the antenna connection (1).



The antenna has been installed.

Mounting the antenna on the control cabinet

To mount the antenna, proceed as follows:

1) Switch off devices connected to the KeContact M20 and disconnect their power cables.
2) Unscrew the locknut and remove it and the washer from the antenna.
3) Feed the antenna cable into the control cabinet through a predrilled hole (for M10 screw).
4) Pull the adhesive film off the antenna, align the antenna and press it on the outside of the control cabinet.

KEBA © KEBA 2021



5) Use the washer and locknut (included in the scope of delivery) to fasten the antenna on the inside of the control cabinet (max. 5 Nm).
6) Tighten the antenna cable at the two antenna connections.

The antenna has been installed.

© KEBA 2021

7 Configuration

This chapter describes the necessary configuration for correct operation of the client charging stations. The following steps are required:

- Sett DIP switch 2.5 on the client charging station.
- Configuration (via web interface or using USB stick).

Depending on the network configuration, it may be necessary to enable the DHCP server on the KeContact M20.

7.1 Enabling the DHCP server

To simplify the setup of a charging network, the KeContact M20 can be configured as a DHCP server. This function is required for the network configuration if the KeContact M20 (master) and a client are connected directly or if a network connection is implemented via switch.

The DHCP server is disabled in the delivery state and can be enabled via the web interface (see 8 Web interface) or via USB stick.

The following tools are required for configuration via USB stick:

- An empty USB stick formatted with FAT32.
- A PC.

In addition, the settings that allow the configuration to be read out and imported must be activated in the web interface (under "Configuration" - "Device"):

- "*Allow USB init*": Allows the configuration to be read out. This setting must be activated at the master, which provides the configuration.
- „*Allow USB config*": Allows the import of the configuration. This setting must be activated at the master to which the configuration is transferred.

To enable the DHCP server via USB stick, the following steps are necessary:

- Reading out configuration
- Adapting the configuration file
- Importing configuration

7.1.1 Read out configuration

To read out the configuration, proceed as follows:

1) Plug the USB stick into the KeContact M20. It must be ready for operation and already configured.
2) Transfer of the configuration is started automatically. The status LED also flashes and soft audible signals are emitted at longer intervals.

Information

Do not remove the USB stick during the writing process! Otherwise it cannot be used for another configuration.

3) After the transfer is finished (approx. 1-2 minutes), the status LED goes out and an audible signal sounds.

KEBA © KEBA 2021

4) Remove the USB stick.

The configuration has been read out and transferred to the USB stick.

7.1.2 Adapt configuration file

To adapt the configuration file, proceed as follows:

1) Plug the USB stick into the PC.
2) Open the `CFG` directory on the USB stick.
3) Open the `*.conf` file with a text editor.
4) In the `[NETWORK]` section, set the `LocalDHCPServerEnabled` variable to `TRUE`.
5) Save the configuration file under the same filename.
6) Eject and remove the USB stick.

The configuration file is adapted.

7.1.3 Import configuration

To import the configuration to the desired KeContact M20, proceed as follows:

1) Plug the USB stick into the KeContact M20. It must be ready for operation and already configured.
2) Transfer of the configuration is started automatically. The status LED also flashes and soft audible signals are emitted at longer intervals.
3) After the transfer is finished (approx. 1-2 minutes), the status LED goes out and an audible signal sounds.
4) Remove the USB stick.
5) Restart the KeContact M20.

The configuration has been imported.

7.2 Configuration in series via USB stick

There is the option of configuring multiple masters (KeContact M20) with the same settings. In this process, the configuration of a master is saved on a USB stick and can then be transferred to other masters (KeContact M20).

The following tools are required for configuration via USB stick:

- An empty USB stick formatted with FAT32.
- A PC.

In addition, the settings that allow the configuration to be read out and imported must be activated in the web interface (under "Configuration" - "Device"):

- "*Allow USB init*": Allows the configuration to be read out. This setting must be activated at the master, which provides the configuration.
- „*Allow USB config*": Allows the import of the configuration. This setting must be activated at the master to which the configuration is transferred.

To transfer the configuration to a different master, the following steps are necessary:

- Creating a configuration

© KEBA 2021

- Reading out configuration
- Adapting the configuration file
- Importing configuration

7.2.1 Create configuration

If this has not yet been done, a first KeContact M20 must be configured with the desired settings. These settings serve as the basis for the configuration of additional KeContact M20.

The easiest way to configure the KeContact M20 is via the web interface. On the graphical user interface the available settings and selection fields are provided with short explanations.

Information

Not all settings available in the web interface can be transferred via USB stick to additional KeContact M20.

7.2.2 Read out configuration

To read out the configuration, proceed as follows:

1) Plug the USB stick into the KeContact M20. It must be ready for operation and already configured.
2) Transfer of the configuration is started automatically. The status LED also flashes and soft audible signals are emitted at longer intervals.

Information

Do not remove the USB stick during the writing process! Otherwise it cannot be used for another configuration.

3) After the transfer is finished (approx. 1-2 minutes), the status LED goes out and an audible signal sounds.
4) Remove the USB stick.

The configuration has been read out and transferred to the USB stick.

7.2.3 Adapt configuration file

To adapt the configuration file, the USB stick must be plugged into a PC and the `CFG` directory on the USB stick must be opened.

To use the configuration file to configure other masters, the filename and parts of the content must be adapted.

Adapting the filename

The filename contains the serial number of the KeContact M20 from which the configuration was read out. This serial number must be deleted from the filename.

A configuration file without a serial number in the filename can be used for the configuration of multiple KeContact M20.

KEBA © KEBA 2021

Adapting the content

The specific configurations that only apply to one KeContact M20 must be adapted or deleted in the configuration file.

The individual sections are marked with `[Name]`. Values are assigned to the variables according to the following formula: `Variable = Value`

To adapt and delete the specific configurations, proceed as follows:

1) Open the configuration file with a text editor.
2) Change `AmountConnectors=[x]`. The number of available charging stations in the charging network must be entered as the value.
3) Delete the following entries: `ChargeBoxIdentity`, `Connect2ConnectorSerial`, `HOTSPOT_SSID` and `HOTSPOT_KEY`.
4) Save the file and close.

The configuration file is adapted.

Information

By deleting all `Connect2ConnectorSerial` entries, the KeContact M20 automatically searches for other charging stations in the charging network. The number of charging stations specified under `AmountConnectors` is the number searched for.

7.2.4 Import configuration

To import the configuration to the desired KeContact M20, proceed as follows:

1) Plug the USB stick into the KeContact M20. It must be ready for operation and already configured.
2) Transfer of the configuration is started automatically. The status LED also flashes and soft audible signals are emitted at longer intervals.
3) After the transfer is finished (approx. 1-2 minutes), the status LED goes out and an audible signal sounds.
4) Remove the USB stick.
5) Restart the KeContact M20.

The configuration has been imported.

© KEBA 2021

8 Web interface

The necessary settings in the "Configuration" main menu for the communication between the charging stations are configured in the web interface. The configuration for the entire charging network takes place via the web interface of the KeContact M20 (master).

The actual size of the web interface may differ depending on the device variant.

A network connection is required to access the web interface with a PC or mobile terminal. The master web interface can be accessed by entering its IP address in a web browser.

The master IP address is determined differently depending on the connection type.

Router with integrated DHCP server	The master automatically receives an IP address via the DHCP server of the router. The IP address can be determined via the router. A DHCP server must not be enabled on the master.
KeContact M20 **(master) with local DHCP server**	The local DHCP server has been activated for the master, which automatically gives the master the following IP address: **192.168.42.1** The local DHCP server is disabled in the delivery state and can be enabled via configuration in the web interface.

A login is required to use the web interface.

The login data for the first login in the web interface is printed on the configuration label. The configuration label is in a pouch affixed to the installation materials. For security reasons, change the password after the initial login. In doing so, observe the password guidelines; refer to 8.2 User menu.

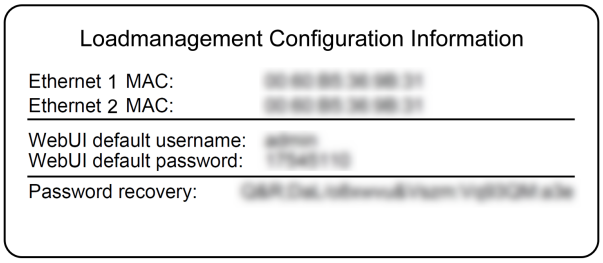


Fig. 8-14: *Configuration label*

After successful login, the start page of the web interface opens.

KEBA © KEBA 2021

Web interface start page

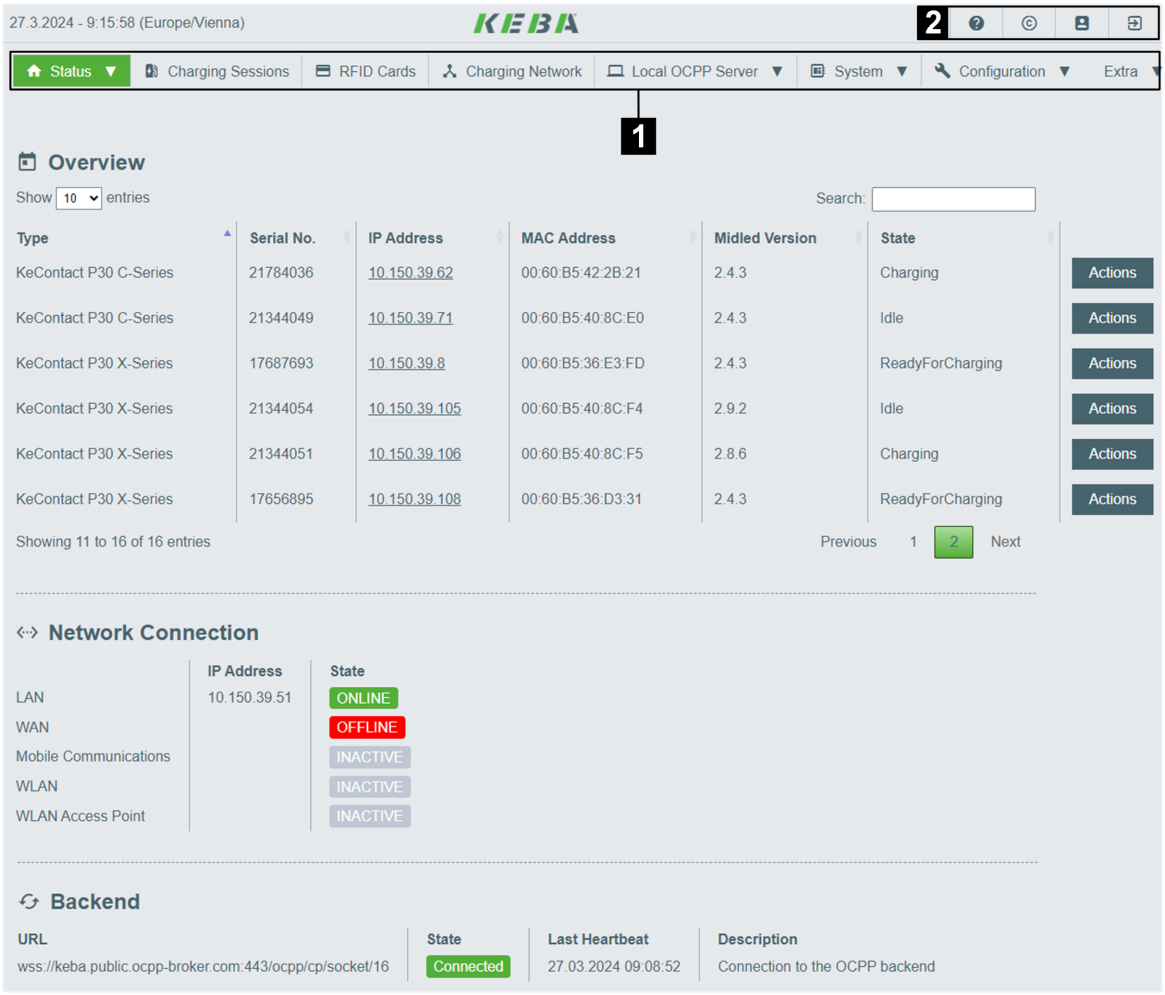


Fig. 8-15: *Web interface start page*

1 ... Main menu 2 ... User menu

The following chapters provide an overview of the possibilities of the web interface. A detailed description of the individual configuration options can be found directly in the web interface next to the respective configuration entry.

© KEBA 2021

8.1 Main menu

The main menu is divided into the following areas:

- Status
- Charging sessions
- RFID Cards
- Charging network
- Local OCPP Server
- System
- Configuration

8.1.1 Status

The page is divided into the following areas:

Overview

Here, basic information about all charging stations in the charging network is displayed (such as serial number, IP address, operating state, etc.).

When the respective IP address is clicked, a new browser window displays information about the charging station, such as total energy, energy of a charging session, power, voltage, current, status and event log. The scope of the displayed information is variant-dependent.

An "Actions" button is located next to each listed charging station. When the button is clicked, the following functions are available:

Start charging	Authorizes a charging session without an RFID card having to be held before the sensor. This function is only available with the authorization function enabled.
Stop charging	Ends the active charging session.
Restart	Restarts the charging station.
Unlock	Unlocks the charging plug on the charging station (not for the vehicle). For an active charging session, the charging session is ended first and then the charging plug is unlocked.

Network connection

Here, information about the network interfaces (LAN, mobile communications, WLAN and WLAN Access Point) of the master is displayed.

Backend

Information about the OCPP backend (such as connection status and address) is displayed here.

KEBA © KEBA 2021

8.1.2 Charging sessions

This page displays details about the charging sessions of the last 90 days. The "Export" button lets you export the charging sessions of the selected period as `*.csv` file.

A currently active charging session is displayed with the "PWMCharging" status. Various filter functions let you search for certain charging sessions. For example, you can filter for charging sessions that have a certain start date or for which a certain RFID card was used.

8.1.3 RFID cards

This page provides an overview of all stored RFID cards including their authorizations. RFID cards can be taught-in, edited and deleted. RFID cards can also be exported and imported as `*.csv` file.

8.1.4 Charging network

The configuration of the charging network is carried out in this area.

The area offers the following options:

- Charging preferences
- No. of charging stations
- Charging network settings
- Cluster
- TOR
- Parameter der Ladestation (Chargepoint parameters)

Charging preferences

A charging profile can be defined for the charging station here.

The charging station charges according to the set profile depending on the current assignment of the charging station and the power available in the entire charging network. If no current limit is set, the maximum available current is used for charging.

No. of charging stations

The number of connected client charging stations is configured and the current limits for the charging network are also set here. Depending on the product variant, up to 200 client charging stations can be specified.

© KEBA 2021

Charging network settings

CAUTION!

Fire hazard due to overload!

The configuration of the maximum current values per charging point is not a replacement of the short-circuit and overload protection of the connected charging points. The overload and short-circuit protection must be implemented in accordance with the applicable installation regulations.

The maximum total available current, minimum charging current and maximum current for asymmetrical charging and the function for asymmetrical charging of the charging network are configured here. Furthermore, the cluster function can be activated and deactivated.

Clusters

The respective clusters can be configured, exported and imported here. A max. of 15 clusters can be set. A name (alias) can be assigned for each cluster. The maximum current, phase assignment and minimum charging current are also configured here.

TOR (valid for Austria)

This is where the charging system's compliance with the Austrian TOR regulations is configured. For details, see "Country-specific settings for Austria".

Chargepoint parameters

The connection type (1-phase or 3-phase) of the charging station is selected here. For a 1-phase connection, the power cable wire that is used can also be selected. For a charging network, the connection type of the client charging stations can also be selected.

If a client charging station loses the connection to the master, or if an error occurs at the master, a specification can be made for the maximum charging current at which charging is to be continued. If "0" is entered, the charging process is terminated in the event of an error and the charging station is put into "out of operation" mode.

Permanently locked socket

Here, you can activate the function to permanently lock the charging cable in the socket of the charging station (anti-theft protection). If this function is deactivated, the lock is unlocked only after the completion of any charging session that may be in progress.

KEBA © KEBA 2021

8.1.5 Local OCPP Server

Configuration of the OCPP charging network is carried out in this area. The area offers the following options:

- Network Discovery
- Settings
- Software Management
- Clients Network

Network Discovery

Here, you can search for new charging stations in the network that can communicate using OCPP.

Local OCPP Server settings

Here, you can define all settings for the local OCPP server (IP address, host name, port, path, etc.).

Secure connection

In the settings, you can activate encryption of the OCPP load management communication.

Software management

Here, you can upload and manage software packages (keb files). These software packages can then be individually distributed to the desired charging stations in the Clients Network list and installed.

Clients Network

This list includes all charging stations that are connected to the local OCPP server via OCPP.

Charging stations can be added to or removed from the OCPP charging network.

Here, you can individually distribute software updates to the desired charging stations and display diagnostic data.

© KEBA 2021

8.1.5.1 Integrating P30 x-series / P40 charging stations into the OCPP charging network

In addition to P30 c-series clients, OCPP can be used to integrate P30 x-series and P40 charging stations into load management with KeContact M20 as master.

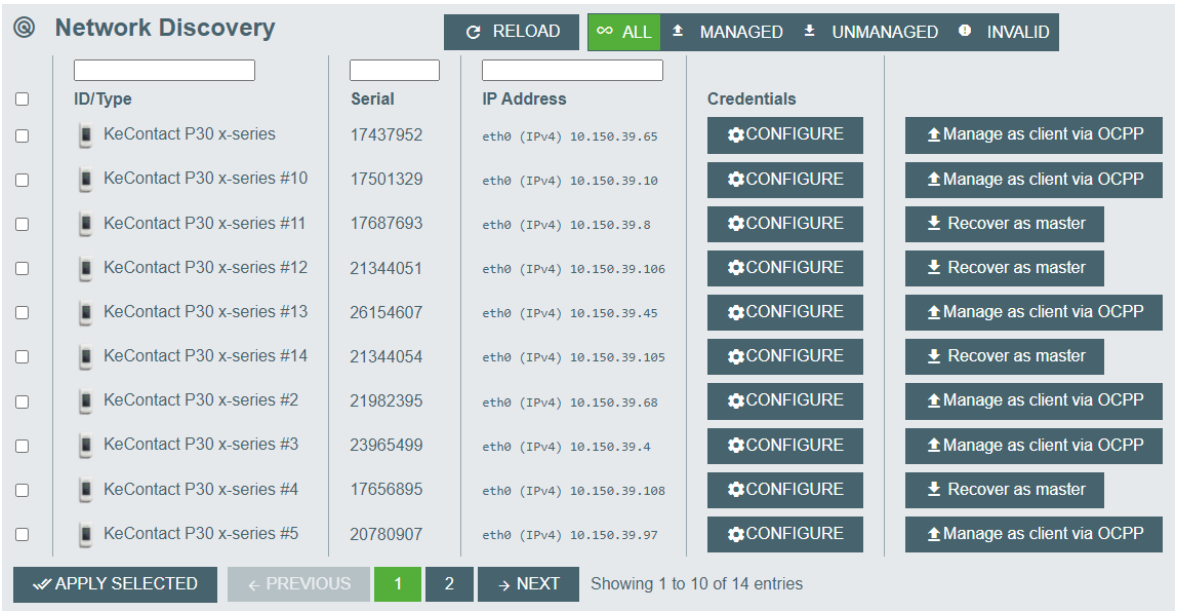
Requirements/instructions

- The software of KeContact M20 must be R1.17.500 (or higher).
- When updated to this software version, P30 c-series receive an update to the latest firmware version.
- P30 x-series receive an update to R1.17.1 (or higher) and the parameters for OCPP communication are installed. In addition, the "Local Controller OCPP Extension" software package is installed so that communication with KeContact M20 load management via OCPP can begin.
- For an update of KeContact M20 from 1.17.000 to 1.17.500, already integrated P30 x-series are automatically changed to OCPP load management communication and should continue to be visible in the network (in which case, no other steps are necessary).

Integrating charging stations into the OCPP charging network

For this process, proceed as follows:

1) In the KeContact M20 web interface, call up "**Main menu→Local OCPP Server→Network Discovery**". All P30 x-series or P40 charging stations connected in the network are searched for and listed.



2) At each of the desired charging stations, press the **[Configure]** button and enter the username and password for the respective charging station (default password is the respective serial number).
3) Press the **[Test]** button in the configuration dialog to test the login data and make any necessary adjustments if the password has been changed.

KEBA © KEBA 2021

4) At the desired charging stations, press the **[Manage as client via OCPP]** button or, as an alternative, check the box for multiple entries and press the **[Apply selected]** button to process all selected charging stations simultaneously. The conversion process starts and can take several minutes.
5) After successful completion of the process, the charging stations can be seen in the list with the other charging stations and can be configured there (parameters of the charging station). Furthermore, all charging stations connected via OCPP are included in the "**Clients Network**" list.

Removing charging stations from the OCPP charging network

For charging stations that have been integrated into an OCPP charging network to be used again without a charging network, they must first be deleted from the charging network. For this process, proceed as follows:

1) In the KeContact M20 web interface, call up "**Main menu→Charging Network**" and delete the charging stations in question, otherwise a corresponding error message will appear in the next step.
2) In the KeContact M20 web interface, call up "**Main menu→Local OCPP Server→Network Discovery**". All charging stations connected in the network are listed.
3) At the desired charging stations, press the **[Recover as master]** button or, as an alternative, check the box for multiple entries and press the **[Apply selected]** button to process all selected charging stations simultaneously. The conversion process starts and can take several minutes.

Information

The "Recover" process of the standard function is important so that the charging stations in question can then be used again as standalone or master.

© KEBA 2021

8.1.6 System

The area offers the following options:

- Software update
- API Access Settings
- Modbus TCP Settings
- Logging
- DSW settings
- Factory data reset
- Signed measurement data export
- Signed log data export
- WebUI certificates
- Restart system

Software update

The currently installed software versions are displayed. A software update can also be performed here.

API Access Settings

Here, you can activate the API required for communication with the APP.

Modbus TCP Settings

Here the Modbus TCP communication for control via a network can be activated and configured.

Logging

The event log can be downloaded here.

DSW settings

Here, you can view the configured DIP switch settings for each charging station in the charging network.

Factory data reset

The "Reset" button resets the configuration to the factory settings and all stored data (charging sessions, taught-in RFID cards, web interface password, etc.) is deleted.

Signed measurement data export

Here, you can export the signed measurement data records that can be used for billing charging sessions. This function is only available for device variants with a specific suitability.

KEBA © KEBA 2021

Signed log data export

Here, you can export the signed log data records that contain an event log. This function is only available for device variants with a specific suitability.

WebUI certificates

For an encrypted connection, certificates can be imported in *.pfx format. A connection to the web interface can be encrypted. The following certificates are available:

WebUI certificates

Certificate	Purpose
Https WebUI	Encrypted connection to the web interface

Restart system

The master can be restarted with this button.

© KEBA 2021

8.1.7 Configuration

The configuration of the charging station is carried out in this area.

Information

The DIP switch settings are independent of the web interface configuration and cannot be overwritten by software.

The area offers the following options:

- Device
- Network connection
- Routing
- Proxy
- OCPP
- OCPP certificates
- External TCP meter
- Direct payment feature
- Display text

Information

The settings made are only applied after the "Apply" button has been pressed.

Device

The basic settings for the charging station are configured here:

- Managing the authorisation function
- Synchronizing the time of the charging station with the time of the browser (the charging station restarts after a time synchronization)
- Activating and deactivating the USB stick functions
- Deleting the event log (log file)
- Rated voltage to which the charging station is connected
- Behavior of the charging station after a power failure

Network connection

The network communication can be selected and configured here. The WLAN access point can also be configured and activated or deactivated as necessary.

Routing

Here, you can configure the required routing settings.

KEBA © KEBA 2021

Proxy

All the configurations needed to use a proxy server can be specified here.

OCPP

All the necessary configurations for connecting to an OCPP backend can be found in this part. The displayed configuration options vary depending on the selected transmission type (SOAP oder JSON).

If a connection to the KEBA eMobility Portal is established via the KEBA eMobility App no settings need to be made here. If the settings are changed on the webinterface, those of the KEBA eMobility App are overwritten.

OCPP certificates

For an encrypted connection, certificates can be imported in `*.pfx` format. The connection to the OCPP backend and charging station can be encrypted. The following certificates are available:

OCPP certificates

Certificate	Purpose
Charge point certificate	Encrypted connection to the OCPP server
Central system root certificate	Certificate for logging in to the charging station at the OCPP backend (OCPP 1.6 JSON Security)
OCPP server certificate	Encrypted connection to the charging station
Manufacturer root certificate	Check of the signature for firmware updates (OCPP 1.6 JSON Security)

External TCP meter

Here, a setting is configured for whether the measured values are read out from an external meter in order to dynamically adapt the charging current. All settings required for the external meter can be specified here.

Additional meter types can be installed manually with a *.keb file.

Direct payment feature

This feature allows this device to be used as part of a payment solution in public and semi-public spaces. This function requires the KEBA Payment Terminal as well as charging stations certified in accordance with the German Measures and Verification Act.

Display text

Here, you can make settings for the text that is shown on the display of the charging station describing various processes of the charging station. The language of the text can be changed, the display duration can be configured and the display text itself can be changed.

© KEBA 2021

The text display is limited to 20 characters, and no umlauts or special characters can be used.

The abbreviations "Wh" and "kWh" must not be used in the display texts as they may be misleading to the user. These abbreviations are reserved for indicating transmitted energy. If either "Wh" or "kWh" are entered as display text anyway, this text is ignored and not shown on the display.

KEBA © KEBA 2021

8.2 User menu

The user menu contains important information and settings for the user. It is divided into the following areas:

- Help: help for using the web interface
- Licenses: display of commonly used licenses
- User settings: settings and changes to the currently logged in user
- Logout: logout of the currently logged in user

8.2.1 User settings

In this area, changes to the following user settings can be made:

Username and password

The web interface username and the corresponding password can be changed here. The following rules apply for assigning the password:

- At least 10 characters long
- Maximum of 2 successive identical characters
- At least 3 of the following criteria are fulfilled:
  - 1 uppercase letter (A−Z)
  - 1 lowercase letter (a−z)
  - 1 number (0−9)
  - 1 special character

Language of the user interface

The language of the user interface can be changed here.

Time format of the user interface

The time format and the time zone of the user interface can be set here.

Remote service interface

The remote access to the charging station can be enabled here. This enables a service technician to access the charging station via an encrypted connection. These settings can also be configured on the OCPP backend.

Log level

For error diagnosis, it can be necessary to record the processes of the charging station in detail. To do so, DEBUG mode can be enabled here. To ensure that the recorded data quantity is not too large, the duration for the detailed recording must also be specified.

© KEBA 2021

Recovery key

If you forget the web interface password, you can reset it using the displayed recovery key. The recovery key can also be found on the configuration label.

Information

It is essential to keep the recovery key in a secure place for the entire life of the product!

KEBA © KEBA 2021

9 Functions

Special functions are described in the following chapters.

9.1 Load management in the local charging network

Load management in a local charging network allows multiple charging stations to operate on a common supply. The maximum power allowed by the supply line is divided by the master.

Information

A charging process at a client charging station is only possible if there is a connection to the master. This prevents the connection from being overloaded.

The fallback function "Failsafe charging current" ensures, that the preconfigured charging current setting is used if the connection to the master is interrupted.

9.1.1 Equal allocation mode

If the parallel active charging stations in a local charging network request more power than the power supply provides (set maximum current), the available charging current is divided evenly across all charging sessions.

Charging current per charging station = set maximum current per phase / number of active charging sessions on this phase

If insufficient power is available for an additional charging process in the charging network (set minimum current is underrun), the new charging process will be lined up. Every 15 minutes, an active charging session is paused in sequence, lined up at the back of the line, and the next charging session in the line continues.

9.1.2 Unbalanced load compensation

Asymmetrical loads (unbalanced loads) can lead to an unstable network. To avoid unbalanced loads, a balance is established between the phases of the charging station during the charging process. The maximum current allowed for asymmetrical loads can be defined, but is determined by country-specific requirements.

The unbalanced load compensation can be defined for the entire charging network or individually for each charging station.

9.1.3 Current limiting

The current limiting for the charging station can be regulated in various ways.

- Setting by means of DIP switches locally on each charging station
- Assignment by the master
- Assignment via UDP connection
- Readout of an external meter using Modbus TCP

If a current limit is specified via several different types, then the lowest preset value is used for the currently valid current limit.

© KEBA 2021

9.1.4 Phase-related load management

Phase-related load management is used for a charging network with charging stations with a 3-phase connection.

The charging station verifies how many phases a vehicle is charging and detects whether the vehicle is one that charges with 1, 2 or 3 phases.

This information is ultimately used to regulate the uniform charging current distribution to the 3 phases.

9.2 RFID authorization

Certain device variants are equipped with an RFID reader, which enables the authorization of a charging process with RFID cards in accordance with ISO 14443 and ISO 15693. The RFID authorization only allows a charging session to be started if an identification takes place by means of an RFID card. The authorization function is enabled and disabled in the web interface of the master.

In the case of a local charging network without a higher-level OCPP backend, all RFID cards must be taught in at the master. Up to 1000 RFID cards can be stored. After teaching in, the permitted RFID cards are stored at the master and are managed by it in the charging network. It is not possible to teach in RFID cards at a client charging station.

When connecting to an external OCPP backend, all RFID cards must be taught in at the OCPP backend. Any number of RFID cards can be stored. It is not possible to teach in the RFID cards directly at a charging station.

The first 1000 RFID cards are relayed from the OCPP backend to the master, where they are stored locally. This enables charging sessions to be authorized even if the connection fails temporarily. In case of a connection failure, authorization requests, depending on the authorization mode, are compared to the locally stored RFID cards.

9.2.1 Authorization modes

The authorization modes described below are available in the web interface if the authorization function has been activated.

Online authorization mode
This defines which storage location an authorization request is to be compared to.

Mode	Description
FirstLocal	The authorization request is first compared to the locally stored RFID cards stored at the charging station. If the RFID card is not stored locally and a OCPP backend is used, a comparison takes place with the RFID cards stored at the OCPP backend. If no OCPP backend is used, this setting must be used for an authorization to be active.
FirstOnline	The authorization request is always compared to the RFID cards stored on the OCPP backend. There is no comparison to the locally stored RFID cards stored at the charging station.
OnlyLocal	The authorization request is always compared to the RFID cards stored locally at the charging station. No comparison is made to the RFID cards stored at the OCPP backend.

KEBA © KEBA 2021

Offline authorization mode
This defines how an authorization request is handled if the connection to the higher-level OCPP backend fails.

Mode	Description
OfflineLocalUnknown Authorization	All RFID cards are accepted, even if they are not stored locally at the charging station. Only those RFID cards that are stored locally at the charging station and have a status other than "ACCEPTED" are rejected.
OfflineLocalAuthorization	Only RFID cards stored locally at the charging station with the status of "ACCEPTED" are accepted.
OfflineNoAuthorization	All RFID cards are temporarily accepted. As soon as the connection to the OCPP backend exists again, the RFID card is checked and, if an invalid RFID card is being used, the charging process is canceled.
OfflineNoCharging	Charging is not possible in case of a connection failure.
OfflineFreeCharging	In offline mode, authorization is deactivated.

9.2.2 RFID authorization without OCPP backend connection

There are the following options for managing the RFID cards:

- In the web interface of the master

Managing RFID cards in the web interface

RFID cards can be managed via the configuration in the web interface. The following functions are available:

- Teaching-in, editing or deleting an RFID card
- Exporting or importing a list of stored RFID cards as `*.csv` file

Information

It is recommended to use a text editor for editing the *.csv file. Otherwise the date can be interpreted incorrectly upon import.

The following entries can be made during teaching-in and editing of an RFID card:

Eingabe	Beschreibung
Name of the Card	Name of the RFID card.
RFID Card – Serial No. (UID)	Serial number (UID) of the RFID card.
Expiry Date	Date up to which the RFID card is to be valid.
Master RFID Card	Set the RFID card as master RFID card. Only one card can be defined as master RFID card.
Status	Authorization of the RFID card. Here it is also possible to block an RFID card and thus prevent charging with the relevant RFID card.
Charging Station – Serial No.	Serial number of the charging station where the RFID card may be authorized. All or only certain charging stations in the charging network can be enabled for the RFID card.

© KEBA 2021

9.2.3 RFID authorization with OCPP backend connection

If the charging station or a charging network is controlled by an OCPP backend, please note the following:

- Teach in RFID cards:
  All RFID cards must be "centrally taught in" at the OCPP backend.
- "Authorization" in the web interface to "ON":
  Each authorization request is relayed to the OCPP backend.
- "Authorization" in the web interface to "OFF":
  A charging process can only be started without holding up an RFID card if the predefined token set in the configuration is recognized and accepted by the OCPP backend.

Information

For information on the functionality and the required settings of the OCPP backend, refer to the specific manual of the system used.

KEBA © KEBA 2021

9.3 OCPP backend

KeContact M20 offers the option of connecting to a central management system via the Open Charge Point Protocol (OCPP). OCPP, as an open application protocol, allows any central management system to be connected, regardless of the manufacturer or supplier. The following OCPP versions are supported:

- OCPP 1.5 via SOAP
- OCPP 1.6 via SOAP or JSON

Connection to an OCPP backend

When connecting to an OCPP backend, note the following:

- It is recommended that the master in the network be assigned a static IP address based on the MAC address of the device.
- Since the OCPP backend is usually not in the same network, the KeContact M20 must be assigned a "public IP address" which is routed to the internal IP address (NAT).
- The firewall must be configured so that communication between the KeContact M20 and the OCPP backend is possible.
- For a connection via VPN, the IP address of the VPN must be specified in the configuration (web interface) for the downlink.
- In the case of a mobile communications connection, it may be necessary for the required ports to be activated by the cellular service provider.

Ports for communication via OCPP

For communication with an OCPP backend, the following ports must be enabled in the network:

Port	Protocol	Definition	Description
Custom (1025 - 65535)	TCP	Can be reached externally (incoming)	OCPP Charge Point Service: This service is related to the OCPP backend. ● The port can be freely selected or it is specified by the OCPP backend. However, the port may only be located in the range from 1025 to 65535. ● The selected port must be configured on KeContact M20.
Custom	TCP	Access to external (outgoing)	Port at which the OCPP backend can be reached.
123	UDP	Incoming and outgoing	Port for the time server of the KeContact M20.

© KEBA 2021

Supported messages

Message	OCPP 1.5	OCPP 1.6
Authorize	x	x
BootNotification	x	x
ChangeAvailability	x	x
ChangeConfiguration	x	x
ClearCache	x	x
DataTransfer	x	x
GetConfiguration	x	x
Heartbeat	x	x
MeterValues	x	x
RemoteStartTransaction	x	x
RemoteStopTransaction	x	x
Reset	x	x
StartTransaction	x	x
StatusNotification	x	x
StopTransaction	x	x
UnlockConnector	x	x
GetDiagnostics	x	x
DiagnosticsStatusNotification	x	x
FirmwareStatusNotification	x	x
UpdateFirmware	x	x
GetLocalListVersion	x	x
SendLocalList	x	x
CancelReservation		x
ReserveNow		x
ClearChargingProfile		x
GetCompositeSchedule		x
SetChargingProfile		x
TriggerMessage		x

KEBA © KEBA 2021

9.4 Integration of external meters

The KeContact M20 can read out the measured values from external meters via Modbus TCP. This allows an intelligent calculation of the charging current provided to the vehicle, and the charging process is optimized. The measured values that are read out are included in the charging current specification.

The latest list of supported meters is available on our website:

www.keba.com/emobility-downloads

9.4.1 Connection

When connecting external meters please note the following:

- The connection is made via the Ethernet connection. For this purpose, the meter must be in the same network as the charging station.
- The meter must be connected with the same phase sequence as the charging station so that the house load calculation and the charging optimization are carried out correctly. If it is necessary to connect the charging station beginning with phase 2 in order to better distribute the phase loads, the meter must also be connected beginning with phase 2.

9.4.2 Supported meters

The following counters can be read out from the charging station with the help of a **Janitza ProData 2 datalogger**.

Manufacturer	Model
ABB	B23 312-100
B-control	EM300
Herholdt	ECSEM113
Janitza	B23 312-10J
Janitza	ECSEM114MID
Siemens	7KT1260

The following meters can be read out directly from the charging stations using Modbus TCP.

Manufacturer	Model	TCP port / Modbus address
KEBA	KeContact-E10	502 / 1
ABB	M2M	see manufacturer manual
ABB	M4M	see manufacturer manual
Carlo Gavazzi	EM 24	see manufacturer manual
Fronius	Smart Meter TS 65A via Symo GEN24	502 / 200
Fronius	DataManager	502 / 240
Gossen Metrawatt	EM228X	see manufacturer manual
Gossen Metrawatt	EM238X	see manufacturer manual
KOSTAL	Smart Energy Meter	see manufacturer manual
Phoenix Contact	EEM-MA371	502 / 255

© KEBA 2021

Manufacturer	Model	TCP port / Modbus address
Siemens	7KM2200	see manufacturer manual
TQ Systems	EM420	see manufacturer manual
TQ Systems (B-control)	EM300 LR (EM420 compatible)	see manufacturer manual
TQ Systems (B-control)	EM300 LRW (EM420 compatible)	see manufacturer manual

Information

Detailed information about the meter installation can be found in the installation instructions of the meter manufacturer.

9.4.3 Settings

The Modbus TCP feature is disabled by default. If an external meter with a Modbus TCP network interface has been installed in the system, it must be configured in the web interface in advance.

The maximum permitted charging current per phase and the maximum permitted charging capacity for the entire charging network can be configured in the web interface (under Configuration > External TCP Meter).

If the connection to the external meter gets interrupted, you can use the web interface to configure the charging capacity at which charging is to continue. If "0" is entered or if the field remains empty, the charging processes are interrupted in the event that the connection to the external meter is interrupted.

KEBA © KEBA 2021

9.5 EMS integration

KeContact M20 can be integrated into a higher-level energy management system (EMS). The EMS can transmit the current value available at the central connection point to the KeContact M20 via Modbus TCP. KeContact M20 takes over this value and regulates the connected client charging stations accordingly.

Requirements

- The software of KeContact M20 must be R1.18.000 (or higher).
- KeContact M20 must be in the same network (LAN) as the EMS.

Required settings

1) In the KeContact M20 web interface select the menu item „**Main menu→System**“.
2) Navigate to the menu item „**Modbus TCP Settings**“ and set the function to „**ON**“.
3) Set the „**Modbus TCP Port**“ to „**1502**“ (default setting) and save the settings.
4) Carry out the appropriate programming on the EMS for Modbus TCP data transmission according to the respective manufacturer's instructions.

Register list of the Modbus TCP server

Index	Attr.	Type	Description
0	ro	INT32	KeContact M20 Serial number (8 digits).
1100	ro	INT32	Read maximum available current. The value is returned in „**mA**“.
5004	wo	INT32	Write the maximum available current in ampere „**A**“. Value range: 0…6400
2100 - 2130	ro	INT32	Read maximum available current for the 15 clusters. The value is returned in „**mA**“. Register 2100 for cluster 1 Register 2102 for cluster 2 … Register 2128 for cluster 15
6004 - 6034	wo	INT32	Write the maximum available current in ampere „**A**“ for the 15 clusters. Register 6004 for cluster 1 Register 6006 for cluster 2 … Register 6032 for cluster 15

Information

Since the write operation may fail for any reason (e.g. validation), the client must verify the success of the write operation by reading the respective register.

© KEBA 2021

Charging network with cluster

If clusters are configured in the charging network, the maximum available current for each cluster can also be set. The system validates the maximum available current set by the EMS as follows. The maximum current of a cluster must not be:

- less than the total minimum current
- less than the cluster's minimum current
- greater than the cluster's maximum current

In addition, the failsafe currents are validated. The system ensures that the maximum set failsafe current per phase does not exceed the maximum current of a cluster or the total maximum current.

KEBA © KEBA 2021

10 Maintenance

10.1 Diagnosis and troubleshooting

The FAQs on our website help to rectify possible errors that might occur:

www.keba.com/emobility-faqs

10.2 Software update

The software of the charging station is subject to the update obligation in accordance with EU directive "Sales of goods 2019/771" and "Digital content 2019/770" and their national versions.

The software of the charging station must therefore always be kept up to date, as it may contain security updates, functional enhancements and bug fixes. A software update is available on our website:

www.keba.com/emobility-downloads

The information and instructions for the current software package from the associated release notes must also be observed.

Software update at charging network

A software update for a charging network must be performed at the master. The master relays the new firmware to the connected client charging stations (c-series) via the software update.

10.2.1 Software update via web interface

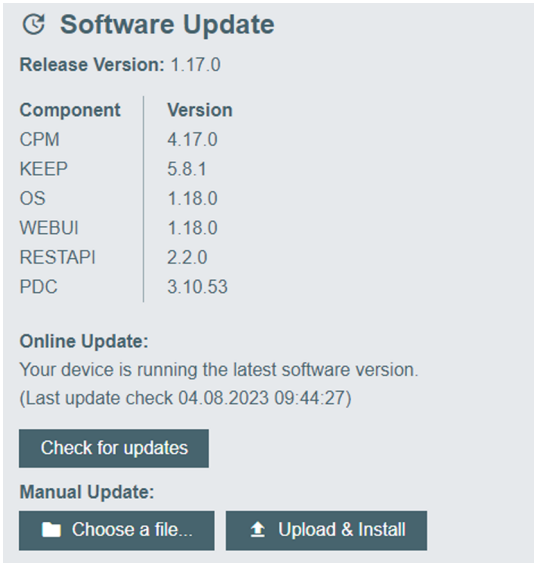


Fig. 10-16: *Web interface software update*

To perform a software update manually using the web interface, proceed as follows:

1) Download the current software for KeContact M20 (`*.keb` file).

© KEBA 2021

2) Log in to the KeContact M20 web interface.
3) In the main menu under "System", select the "Software Update" item.
4) Upload the current software using the "Choose a file ..." button.
5) Start the update process with the "Upload & Install" button.

The software update is performed.

10.2.2 Software update via USB stick

For a software update using a USB stick, this function must be activated in the configuration (web interface).

To perform a software update via a USB stick, proceed as follows:

1) Download the current software for the master (`*.keb` file).
2) Plug the USB stick into a PC.
3) Format the USB stick with FAT32.
4) Create a new directory on the USB stick with the name "`UPD`".
5) Copy the downloaded `*.keb` file into the "`UPD`" directory.
6) Connect the USB stick to the USB interface of the master. The update starts automatically.
7) The update process is output acoustically by signal tones. After the signal tones end, pull out the USB stick.

Information

Do not remove the USB stick during the update process! Otherwise, correct operation of the device is no longer possible.

The software update has been performed.

10.2.3 Software update via OCPP backend

The software update for the entire charging network can be performed via the OCPP backend.

To perform the software update an FTP link is required. The information downloaded from our website along with the software update contains the FTP link.

For details on using the FTP link, see the OCPP backend manual.

KEBA © KEBA 2021

11 Technical data

11.1 General

Max. managed charging stations:	
• mini / small / medium / large:	10 / 20 / 40 / 200
Max. number of zones:	15
Communication protocol:	Modbus TCP
OCPP backend:	Configurable (1.5 / 1.6)

11.2 Power supply

Embedded PC

Supply voltage:	9 - 36 VDC
Power:	Max. 30 W

Power adapter

Supply voltage:	100 - 240 VAC (50/60 Hz)
Output voltage:	24 VDC
Power output:	Max. 60 W
Overvoltage category:	II in accordance with EN 60664
Protection class:	II

11.3 Ambient conditions

Use:	Indoor
Access limitations at set-up location:	Limited access (control cabinet)
Installation (stationary):	Embedded PC: On the wall or on a top hat rail Power adapter: Only on a top hat rail
Operating temperature:	-20 °C to +55 °C
Storage temperature:	-40 °C to +85 °C
Relative humidity:	5% to 95% (non condensing)
Altitude:	max. 3.000 m above sea level

11.4 Interfaces

Ethernet interface

Number:	1 (RJ45)
Data transfer rate:	10/100/1000 Mbps
Isolation of shield connection:	Noein

© KEBA 2021

USB interface

Number:	4
Type:	A, USB 3.0

Serial interface *)

Number:	4
Type:	RS-232/422/485

*) This interface is not yet approved.

Mobile network

Category:	LTE Cat.4
LTE bands:	LTE-FDD B1/B3/B5/B7/B8/B20/B28 LTE-TDD B38/B40/B41
GSM bands:	900/1800 MHz

SIM card

Type:	Nano (4FF)

LTE antenna interface

Number:	2
Type:	SMA

11.5 LTE antenna

Type:	LTE dual antenna
Cable:	2 m LL 100 mit SMA male connector
IP code:	IP67

11.6 Dimensions, weight

LTE antenna

Width (W):	80 mm
Height (H):	14,7 mm
Depth (D):	74 mm
Installation:	Screw mounting M10x1

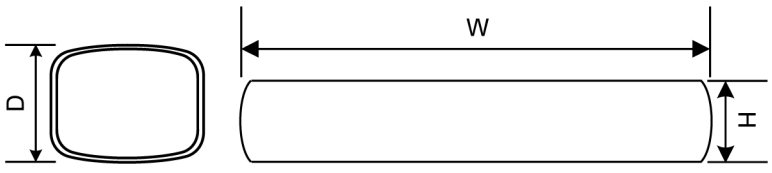


Fig. 11-17: *Schematic diagram, dimensions in millimeters*

KEBA © KEBA 2021

Embedded PC

Width (W):	188,5 mm
Height (H):	33 mm
Depth (D):	127,8 mm
Weight:	700 g

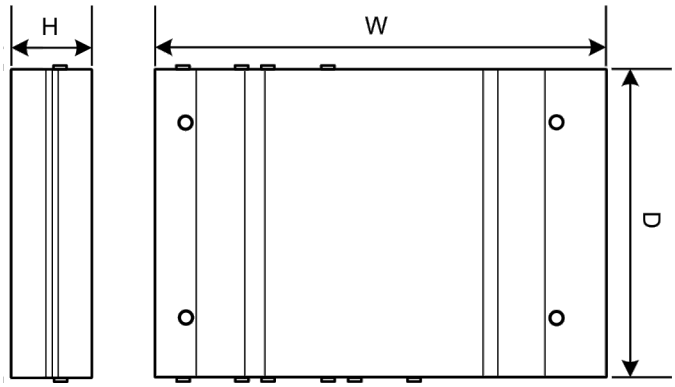


Fig. 11-18: *Schematic diagram, dimensions in millimeters*

Power adapter

Width (W):	54,1 mm
Height (H):	90,9 mm
Depth (D):	55,6 mm
Weight:	200 g

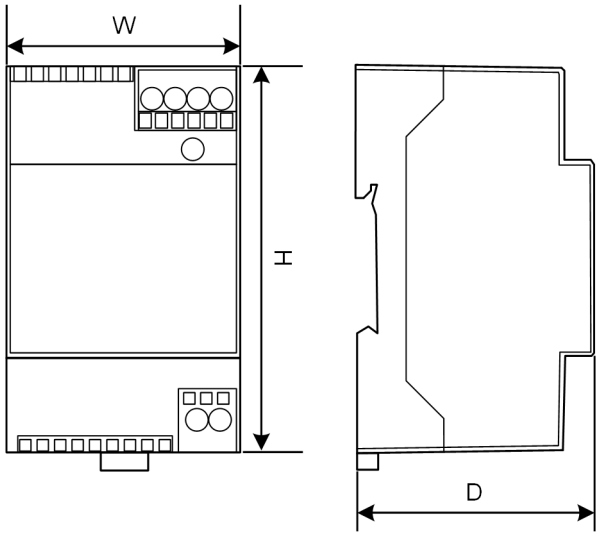


Fig. 11-19: *Schematic diagram, dimensions in millimeters*

© KEBA 2021

12 EU directives and standards

2014/35/EU	Low Voltage Directive
2014/30/EU	Directive on Electromagnetic Compatibility
2014/53/EU	Radio Equipment Directive (RED)
2011/65/EU	Restriction of Hazardous Substances Directive (RoHS)
2012/19/EU	Waste Electrical and Electronic Equipment Directive (WEEE)

© KEBA 2021

13 EC Declaration of Conformity

SIMPLIFIED EU DECLARATION OF CONFORMITY

KEBA Energy Automation GmbH
Reindlstraße 51
4040 Linz
AUSTRIA

EN Hereby, KEBA declares that the radio equipment type model (*1) is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet Address: (*2)

BG С настоящото KEBA декларира, че този тип радиосъоръжение (*1) е в съответствие с Директива 2014/53/ЕС. Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес: (*2)

CS Tímto KEBA prohlašuje, že typ rádiového zařízení (*1) je v souladu se směrnicí 2014/53/EU. Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese: (*2)

DA Hermed erklærer KEBA, at radioudstyrstypen (*1) er i overensstemmelse med direktiv 2014/53/EU. EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: (*2)

DE Hiermit erklärt KEBA, dass das Gerät mit Funkfunktion (*1) der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: (*2)

EL Με την παρούσα ο/η KEBA, δηλώνει ότι ο ραδιοεξοπλισμός (*1) πληροί την οδηγία 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο: (*2)

ES Por la presente, KEBA declara que el tipo de equipo radioeléctrico (*1) es conforme con la Directiva 2014/53/UE. El texto completo de la declaración UE de conformidad está disponible en la dirección Internet siguiente: (*2)

ET Käesolevaga deklareerib KEBA, et käesolev raadioseadme tüüp (*1) vastab direktiivi 2014/53/EL nõuetele. ELi vastavusdeklaratsiooni täielik tekst on kättesaadav järgmisel internetiaadressil: (*2)

FI KEBA vakuuttaa, että radiolaitetyyppi (*1) on direktiivin 2014/53/EU mukainen. EU-vaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: (*2)

FR Le soussigné, KEBA, déclare que l'équipement radioélectrique du type (*1) est conforme à la directive 2014/53/UE. Le texte complet de la déclaration UE de conformité est disponible à l'adresse internet suivante: (*2)

HR KEBA ovime izjavljuje da je radijska oprema tipa (*1) u skladu s Direktivom 2014/53/EU. Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi: (*2)

HU KEBA igazolja, hogy a (*1) típusú rádióberendezés megfelel a 2014/53/EU irányelvnek. Az EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: 2014.5.22. L 153/104 Az Európai Unió Hivatalos Lapja HU: (*2)

IT Il fabbricante, KEBA, dichiara che il tipo di apparecchiatura radio (*1) è conforme alla direttiva 2014/53/UE. Il testo completo della dichiarazione di conformità UE è disponibile al seguente indirizzo Internet: (*2)

LT Aš, KEBA, patvirtinu, kad radijo įrenginių tipas (*1) atitinka Direktyvą 2014/53/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo interneto adresu: (*2)

LV Ar šo KEBA deklarē, ka radioiekārta (*1) atbilst Direktīvai 2014/53/ES. Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē: (*2)

MT B'dan, KEBA, niddikjara li dan it-tip ta' tagħmir tar-radju (*1) huwa konformi mad-Direttiva 2014/53/UE. It-test kollu tad-dikjarazzjoni ta' konformità tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej: (*2)

NL Hierbij verklaar ik, KEBA, dat het type radioapparatuur (*1) conform is met Richtlijn 2014/53/EU. De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: (*2)

PL KEBA niniejszym oświadcza, że typ urządzenia radiowego (*1) jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodności UE jest dostępny pod następującym adresem internetowym: (*2)

© KEBA 2021

PT O(a) abaixo assinado(a) KEBA declara que o presente tipo de equipamento de rádio (*1) está em conformidade com a Diretiva 2014/53/UE. O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet: (*2)

RO Prin prezenta, KEBA declară că tipul de echipamente radio (*1) este în conformitate cu Directiva 2014/53/UE. Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: (*2)

SK KEBA týmto vyhlasuje, že rádiové zariadenie typu (*1) je v súlade so smernicou 2014/53/EÚ. Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese: (*2)

SL KEBA potrjuje, da je tip radijske opreme (*1) skladen z Direktivo 2014/53/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: (*2)

SV Härmed försäkrar KEBA att denna typ av radioutrustning (*1) överensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EU-försäkran om överensstämmelse finns på följande webbadress: (*2)

TR İşbu yazı ile KEBA, telsiz fonksiyonlu cihazın (*1) 2014/53/AB direktiflere uygun olduğunu beyan eder. AB Uygunluk beyanının komple yazısını aşağıdaki web adresinde bulabilirsiniz: (*2)

(*1)

Variants						
Example:	**KC-M20-** *I*	**E** *II*	**0L** *III*	**E02-** *IV*	**040-** *V*	**xxxxxx** *VI*
I	Product and series			**KC-M20**	...Device generation (KeContact-M20)	
II	Country-specific version			**E**	...Europe	
III	Interface - wireless			**0L**	...4G	
IV	Interface - wired			**E02**	...Ethernet	
V	No. of supported charging points			**010**	...Mini – Support of 10 KeContact P30 c-series charging points	
				020	...Small – Support of 20 KeContact P30 c-series charging points	
				040	...Medium – Support of 40 KeContact P30 c-series charging points	
				200	...Large – Support of 200 KeContact P30 c-series charging points	
VI	Customer options			**xxxxxx**	...Options for individual customer versions, not relevant for EU Declaration of Conformity	

(*2) www.keba.com/emobility-downloads

KEBA © KEBA 2021

14 Country-specific characteristics

14.1 Country-specific characteristics for Austria

TOR compliance

During commissioning, compliance with the TOR regulations can be activated in the KeContact M20 software.

- Conformity refers to the following regulations:
  „Technical and organizational rules for network operators and users | TOR Distribution network connection for low voltage (network levels 6 and 7)“ in version 1.2
- TOR compliance refers to an entire charging network consisting of compatible charging stations:
  - P30 x-series with software version 1.19 or higher
  - P30 c-series only as a client in a charging network
  - P30 variants with MID counter from production date 06/25

Supported parameters and default settings

Waiting time	Waiting time after power off due to frequency or voltage deviation. ● 5 seconds
Undervoltage limit	The undervoltage trip occurs when the grid-side undershoot of the specified limit of the nominal voltage (in percent) lasts longer than the defined undervoltage observation period. ● 80 %
Undervoltage observation period	Interval (in seconds) in which the voltage can briefly fall below the defined undervoltage limit without triggering the TOR undervoltage monitoring. ● 3 seconds

The charging process is interrupted if an undervoltage occurs for longer than the specified observation period. Charging begins after a randomized delay with an initial current of 6 A and gradually increases to the maximum possible value (ramp).

Enable TOR compliance

1) In the KeContact M20 web interface, select the menu item „**Main menu→Charging Network**“.
2) Navigate to the menu item „**TOR**“ and set the function to „**ON**“.
3) If necessary, adjust the TOR parameters and then apply the changes.
4) The TOR parameters are also transferred to existing client charging stations of a charging network and activated.

© KEBA 2021

Information

- Disabling TOR compliance can only be achieved by completely resetting the device to factory settings.
- TOR compliance also defines the following parameters:
  - „Randomized Delay" is activated.
  - „Avoid Asymmetric Loads" is activated.
  - „Max. Current for Asymmetric Loads" is set to 16 A.

© KEBA 2021

Index

C

Charging network 14
- Router 14
- Software update 61
- Switch 14

Client charging station 14

Clusters 10

Configuration
- DHCP server 32
- USB stick 33
- Web interface 36

Connections
- USB port 28

Current limiting 51

D

DHCP server 32

Direct payment feature 47

E

EMS integration 59

Equal allocation mode 51

External meter
- Connection 57
- Settings 58
- Supported meters 57

External meters 57

F

Front view 16

G

Gigabit Ethernet interface
- Pin assignment 29

Graphic interface
- Connection 29

I

Inserting the SIM card 20

Integrating charging stations into the OCPP charging network 42

Interfaces
- Graphic interface 29

L

Ladenetzwerk
- Lastmanagement 51
- Ports für die Kommunikation 15

LAN 12

Lastmanagement 51

Local OCPP Server 41
- Encryption 41

M

Master 14

Mobile network 13

Modbus TCP 57, 59

Mounting the antenna 30

N

Network interfaces 11

O

OCPP backend 55
- Ports for communication 55
- Supported messages 56

Order number for accessories 17

P

Permanently locked socket 40

Power button 18

© KEBA 2021

R

Removing charging stations from the OCPP charging network 43
Reset 18
RFID authorization 52
Authorization modes 52
Connection failure 53
OCPP backend 54
RFID card 53
Router 14

S

Serial configuration 33
Software update 61
Web interface 61
Status LED 18
Switch 14
System overview 9

T

Top hat rail 25, 27
TOR compliance 69

U

USB stick 33

W

Wall installation 26, 27
Web interface 36

KEBA © KEBA 2021

KEBA Energy Automation GmbH
Reindlstraße 51
4040 Linz / Austria
www.keba.com

Automation by innovation.