KeContact

P30
Charging Station
Error indicators & Diagnostics V 1.00

Translation of the original instructions

KEBA
Automation by innovation.

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1 Introduction

1.1 Purpose of the document

This document contains a collection of error indicators and diagnostic options for the charging station and is valid for devices of the type KeContact P30.

Information

This document is an extension to the supplied manuals of KeContact P30. You must comply with all instructions and safety notes in these manuals!

1.2 Requirements

This document contains information for persons with the following requirements:

Target group	Required knowledge and abilities
End customer	Knowledge of: ● the mode of operation of the charging station, ● the displays and operating elements of the charging station.
Service technician	Electrician with suitable basic technical basic education 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, ● diagnostic options, ● Systematic fault analysis and rectification, ● the setting options on the charging station.

1.3 Notes on this document

Contents of the document

- Diagnostic options
- Error indicators
- Measures to isolate or correct errors

Not included in the document

- Description of the charging station
- Assembly and disassembly of the charging station
- Configuration of the charging station

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2 Assistance in case of problems

Caution

Improper repair can lead to damage of the charging station!

Repairs to the charging station may only be carried out by authorized specialists (such as service technicians).

KeContact P30 outputs error messages via the LED bar in the event of faults that may occur during operation or after plugging in the charging cable. In addition, these errors are stored with additional in a log file (except for the e-series).

Error displays are shown in the following color combinations:

- Blue/red
- Red/white

Appropriate measures can be derived based on the error display.

2.1 General troubleshooting measures

If the charging station indicates an error on the LED bar, general troubleshooting steps can be performed first. After each step, it must be checked whether the error is still displayed. Specifically, these are the following steps:

- **Stop the charging procedure** by unplugging the vehicle from the charging station. Then start the charging procedure again.
- **Restart the charging station**: Disconnect the vehicle from the charging station and switch off the charging station for a short time (30 seconds) via the line circuit breaker.
- **Perform a software update**.

If the error continues to be displayed, the measures from the following tables must be carried out.

Contact a service technician

Some errors can only be resolved by a service technician. The measure is then "Contact service technician". With "service technician" it is meant the dealer or service partner where the charging station was purchased or the electrician who installed the charging station.

Helpful information

It is recommended that you have the following information ready before contacting the service technician:

- Product name and serial number of the charging station (on the type plate)
- Installed software version
- Activity during which the error occurs
- Vehicle brand and model

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2.2 Blue/Red error displays

This chapter covers the error messages shown in blue/red on the LED bar.

LED bar	Cause	Measure
	The switch-on test failed. The contactor in the charging station could not be switched on.	The charging station is defective and must be repaired or replaced.
	An incorrect supply voltage has been detected.	Contact a qualified electrician to check the correct connection of the charging station to the mains. If the device is correctly connected and the error persists: The charging station is defective and must be repaired or replaced.
	The charging current is too high. The connected vehicle charges with more current than permitted.	Compare the DIP switch settings of the charging station with the maximum charging current in the technical data of the vehicle. If the configuration of the charging station is lower, then the configuration must be adapted via the DIP switches. The configuration may only be adapted if this does not overload the connection. Compare the displayed value in the charging current display of the vehicle with the technical data of the vehicle. If the value in the charging current display is higher, then the vehicle must be checked in the workshop. If the check in the workshop does not provide a result: Contact a service technician
	The charging station has received an unexpected signal.	Check cables and connectors for possible damage and replace if necessary.
	The internal fault current monitoring of the charging station was triggered.	If the error occurs during startup without a connected vehicle: Disconnect the charging station for a short time (30 seconds) via the line circuit breaker. If the error occurs when the vehicle is plugged in: Cancel charging and switch off charging station for a short time (30 seconds) via the line circuit breaker. Then restart the charging process. If the error occurs repeatedly on the same vehicle: Have the vehicle checked in the workshop. It may be necessary to replace the charge controller in the vehicle.
	The charging station has detected a communication error with the display or a configuration error.	Verify that the DIP switches are configured correctly (see the "Installation Manual"). If the error persists: Contact a service technician

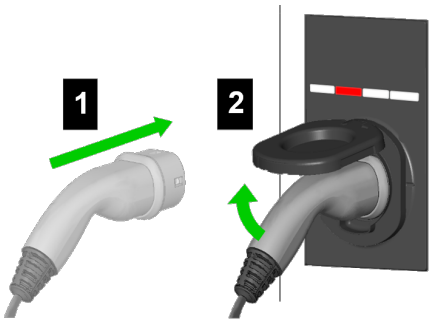
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LED bar	Cause	Measure
	The internal switching-current or fault-current mechanism has triggered.	Cancel charging and switch off charging station for a short time (30 seconds) via the line circuit breaker. Then restart the charging process. If the error persists: The charging station is defective and must be repaired or replaced.
	The internal system configuration is faulty.	Contact a service technician
	A previously occurring error persists.	Contact a service technician
	Internal error	Contact a service technician
	Internal error	Cancel charging and switch off charging station for a short time (30 seconds) via the line circuit breaker. Then restart the charging process. If the error persists: The charging station is defective and must be repaired or replaced.
	Internal error	Disconnect the vehicle from the charging station and restart the charging process. If a firmware/software update is running: The update has failed. The update must be downloaded again. If this does not solve the problem, a deep firmware update can be performed for P30 e-series, b-series and c-series, see "Firmware Update Instructions". If the error persists: Contact a service technician

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2.3 Red/White error displays

This chapter covers the error messages shown in red/white on the LED bar.

LED bar	Cause	Measure
	The plug was pulled out of the socket during charging or the plug was not properly locked and released from the socket during charging.	Disconnect plug and reconnect, paying attention to the correct locking.
	The plug was not recognized.	Check if the plug is compliant with the standard.
	The plug could not be locked.	Insert the plug completely into the charging socket (1) and push it upwards (2) until it locks.  If the problem persists, check the following: Contamination of the socket; use of a standard-compliant plug; mechanical damage of the plug; cable defect.
	Overtemperature shutdown: The permissible temperature in the charging station has been exceeded.	Disconnect the plug and wait until the charging station has cooled down. If the error occurs repeatedly: Check that the device is mounted in a suitable place.
	The charging station has not detected an electric vehicle but rather an unauthorized consumer. Only standard-compliant electrically operated vehicles may be charged.	Remove the unauthorized consumer and restart the charging process.
	The charging station is in commissioning mode.	Check the DIP switch settings for correct configuration and restart the charging process (see the "Installation Manual").
	The charging station has detected a short circuit.	Check cable and plug for damage and replace defective component. If the error persists: Contact a service technician
	The charging station has detected a configuration error.	Check the DIP switch settings for correct configuration and restart the charging process (see the "Installation Manual").
	The charging station has detected an invalid cable. For compatibility reasons, the charging station does not accept charging cables with a charging current of 13 A or less.	Use a charging cable with a higher charging current.

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2.4 Software update

With a software update, both the software and the firmware of the charging station are updated. All P30 charging stations have a firmware. P30 x-series has a firmware and an additional software.

Information

It is recommended to download the most-recent software for the charging station. A new software can take into account modified standards or improve the compatibility with new electric vehicles, for example.

Where can I find the most-recent software version?

The currently installed firmware version is briefly displayed when the charging station starts indicated a color code on the LED bar. The description below shows how to derive the firmware version from the color code.

Furthermore, the following charging stations have additional display options for the software and firmware version.

P30 b-series, **e-series and c-series**: The current firmware version is visible in the simplified web interface.

P30 x-series: The current firmware and software version can be seen in the web interface.

P30 with dot matrix LED display: The current firmware version is shown on the display when the charging station starts.

Deriving the firmware version from the color code

The firmware version consists of a major version and a subversion. Example: 3.09 (major version = 3, subversion = 09)

The **major version** is derived from the colors used. The current major version 3 has the colors blue/orange.

The **subversion** must be calculated. Each segment on the LED bar and each displayed color has a specific significance.

Significance of the LED segments:

LED segment	Value
S1	8
S2	4
S3	2
S4	1

Significance of the colors:

Color	Value
Blue	1
Orange	0

To calculate the subversion, the significance of the LED segment must first be multiplied by the significance of the color. The obtained results must then be summed.

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Example:  => firmware version **3.09**

Determining the major version

Colors	Major version
blue/orange	**3**

Determining the subversion

LED segment	S1	S2	S3	S4
Color	**Blue**	**Orange**	**Orange**	**Blue**
Significance of the LED segment	8	4	2	1
Significance of the color	1	0	0	1
Result (LED segment x color)	8	0	0	1
Subversion	8 + 0 + 0 + 1 = **09**			

Where do I find the software updates?

Software updates can be found on the KEBA website:

Manuals, software, downloads

www.keba.com/emobility-downloads

How can I tell whether or not the update is suitable for my charging station?

Based on the product type and the equipment series you can compare which updates are suitable on the download page. Product type and equipment series can be determined by the product name on the type plate.

Example: KC-**[***]**- ES2400**[*]**2-000-xx

Example	Description	Options
[***]	Product type	• **P30**
[*]	Equipment series	• **0** ... e-series • **1** ... b-series • **2** ... c-series • **3 …** a-series • **B, E, H, S, U** ... x-series

How are software updates performed?

P30 a-series, **e-series**, **b-series**, **c-series without network connection**: A description of how to perform the firmware update is included with the update file.

P30 c-series with network connection (slave charging station): The software update is carried out at the master charging station. The master charging station passes on the update to the connected slave charging stations.

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P30 x-series: To bring the software of the charging station up to date, a software update in the form of a *.keb file is required. The software update can be done with a USB stick, via LAN or via the web interface. With a software update, both the software and the firmware of the charging station are updated.

Information

The software update can take up to an hour. The update process is indicated by a slow orange flashing of the LED bar.

After the software update, the charging station restarts automatically. The LED bar will flash blue or green, depending on the authorization setting.

Software update via USB stick (P30 x-series)

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

1) Download the current software for the charging station (`*.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 charging station. The update starts automatically.

Software update via web interface (P30 x-series)

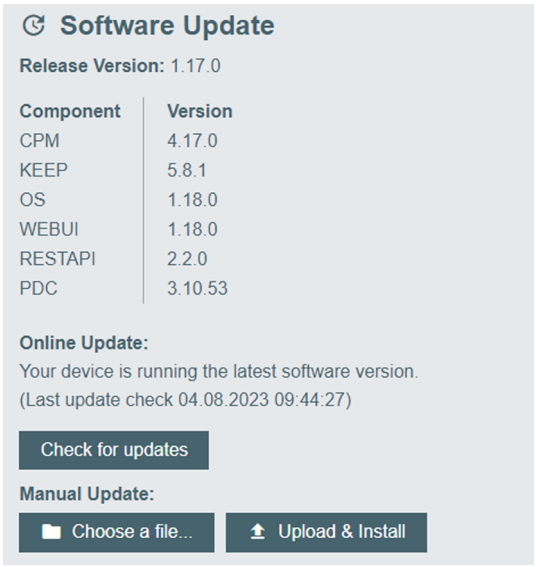


Fig. 2-1: *Web interface software update*

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

1) Download the current software for the charging station (`*.keb` file).
2) Log into the web interface of the charging station.
3) In the main menu under "System" select the item "Software Update".

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4) Upload the current software using the "Choose a file ..." button.
5) Start the update process with the "Upload & Install" button.

Software update via OCPP backend (P30 x-series)

A software update via an OCPP backend requires an FTP link. For details on using the FTP link, contact the provider of the OCPP backend.

Software update via KEBA eMobility Portal (P30 x-series)

For charging stations registered in the KEBA eMobility Portal, a software update can also be carried out via the portal.

Software update via KEBA eMobility App (P30 x-series)

For charging stations connected to the KEBA eMobility App, a software update can also be performed via the app.

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3 Diagnostic options

This chapter provides in-depth information to help service technicians diagnose and troubleshoot.

It is recommended you perform the general measures for troubleshooting first, see 2.1 General troubleshooting measures.

Log file

Details about the error messages can be found in the log file (except for the e-series). There the error history and detailed information about the errors can be called up in the log file.

Depending on the device version, the log file can be downloaded in the following ways:

- Via the web interface
- With a USB stick (x-series only)

Via the web interface

- P30 x-series: The log files can be viewed and downloaded in the "System" area under "Logging".
- All other P30 series: The logging can be viewed in the web interface and copied from there.

With a USB stick (x-series only)

An empty USB stick is required. For downloading, the USB stick must be connected to the charging station. After this, the log files are automatically loaded onto the USB stick. When the download is complete, the charging station indicates that the USB stick can be removed.

Determination of the error group

The errors are displayed in the log file via an error code. The position on the far right of the error code indicates to which error group an error code belongs. The error group can be calculated from the error display on the LED bar.

Each segment on the LED bar has a specific significance:

LED segment	Value
S1	8
S2	4
S3	2
S4	1

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Each displayed color has a specific significance:

Color	Value
Blue	0
White	0
Red	1

The following steps are necessary to calculate the error group:

1) First, the significance of the LED segment must be multiplied by the significance of the color.
2) All results obtained are subsequently summed up.
3) The sum is now converted to a hexadecimal digit. This hexadecimal digit indicates the error group.

Example: 

LED segment	*S1*	*S2*	*S3*	*S4*
Color	*Red*	*Red*	*Blue*	*Blue*
Significance of the LED segment	8	4	2	1
Significance of the color	1	1	0	0
Result (LED segment x color)	8	4	0	0
Error group (Sum of all results)	12 (decimal) =**c (hexadecimal)**			

=> The error code is: **0x[xxx]c**

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3.1 Blue/Red error displays

This chapter covers the error messages shown in blue/red on the LED bar.

ERROR_SCHUETZ



Error group: `0x[xxx]1`

The switch-on test failed. The contactor in the charging station could not be switched on. The contactor is not functioning or an internal function has prevented the contactor from being switched on.

Error code	Cause
`0x9001`	The current monitoring has not enabled the activation of the contactor. The function must be ready before the switching on.
`0xa001`	The charging controller has not enabled the activation of the contactor. The function must be ready before the switching on.
`0xc001`	The contactor is not switched on despite successful activation. The cause of the fault may lie in the contactor control but also in the contactor itself.

Measures

The charging station is defective and must be sent in for repair.

ERROR_VOLTAGES



Error group: `0x[xxx]2`

An incorrect supply voltage has been detected. The following causes are possible:

- An undervoltage was detected on phase 1: U < 160 V
- An overvoltage was detected on one of the three phases: U > 285 V
- The energy meter (voltage monitor) does not work. All measured values of the last 10 seconds were outside the specified tolerance range.

Measures

Check the charging station for correct connection to the mains supply.

If the device is correctly connected and the error persists: The charging station is defective and must be sent in for repair.

ERROR_CURRENT



Error group: `0x[xxx]3`

The charging current monitoring has detected too high a charging current. The cause of the overload is most likely to be in the connected vehicle. The criterion for the overload safety cut-off is an overcurrent that has been detected for at least 8 seconds on at least one phase.

The term overcurrent is defined as follows: I> 120% of the current input through the charging station

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Measures

Compare the DIP switch settings of the charging station with the maximum charging current in the technical data of the vehicle. If the configuration of the charging station is lower, then the configuration must be adapted via the DIP switches. The configuration may only be adapted if this does not overload the connection.

Compare the displayed value in the charging current display of the vehicle with the technical data of the vehicle. If the value in the charging current display is higher, then the vehicle must be checked in the workshop.

If the check in the workshop does not provide a result: Contact the KEBA support.

ERROR_PILOT



Error group: `0x[xxx]4`

Unexpected pilot signal received. The charging station has received an unexpected or undefined signal from the connected vehicle.

Measures

Check cables and connectors for possible damage and replace if necessary.

ERROR_FI



Error group: `0x[xxx]5`

The internal fault current monitoring of the charging station was triggered. An excessively high leakage or fault current has occurred in the charging station vehicle circuit.

The cause may be a failed self-test of the charging station. The error may also have been triggered by the connected vehicle.

Error code	Cause
`0x8005`	Self-test of fault current monitoring failed during restart of the charging station.
`0x8015`	Self-test of fault current monitoring failed after an error recovery. Either communication error with safety logic (error display only in firmware version 3.06) or fault current monitoring does not work.
`0x8025`	Self-test of fault current monitoring during connection of a vehicle failed. This self-test is indicated by the LED bar glowing orange for 3 seconds when the vehicle is plugged in.
`0x8035`	Check of the fault current monitoring status immediately before the contactor was switched on failed.
`0x8045`	Timeout during attempt to turn on the contactor.
`0x8065`	Switching on the contactor in the event of an error (tripping by fault current within 5 seconds -> soft fault). Charging cable must be disconnected.
`0x8075`	A fault current limit was exceeded during the charging procedure. The permissible limits are 6 mA for DC residual currents and 30 mA for AC residual currents.

Measures

If the error occurs during startup without a connected vehicle: Disconnect the charging station for a short time (30 seconds) via the line circuit breaker.

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If the error occurs when the vehicle is plugged in: Cancel charging and switch off charging station for a short time (30 seconds) via the line circuit breaker. Then restart the charging process.

If the error occurs repeatedly on the same vehicle: Have the vehicle checked in the workshop. It may be necessary to replace the charge controller in the vehicle.

ERROR_METER / ERROR_LED



Error group: `0x[xxx]6`

Possible causes for this error are:

- Communication error with the energy meter
- Communication error with the LED controller
- Configuration error of the energy meter

Error code	Cause
`0x8006`	Communication with the energy meter is faulty or not possible.
`0x8046`	A configuration error of the energy meter has occurred. The calibration data may possibly be incorrect.
`0x8056`	Communication with the LED controller is faulty or not possible. This error can occur immediately after a software update and is not critical in this case.
`0x8086`	The energy meter does not provide any measured values.
`0xa006`	The coupling between charge controller and LED controller is faulty. This error only occurs on devices with MID certification.

Measures

Verify that the DIP switches are configured correctly (see the "Installation Manual").

If the error persists: Replace the charging station

ERROR_CFB



Error group: `0x[xxx]7`

The internal switching-current or fault-current mechanism has triggered. The feedback of the contactors on a control was not OK. Possible causes include an error in the contactor monitoring function or a fused contactor. A fused contactor is a non-resettable hard fault.

Measures

Cancel charging and switch off charging station for a short time (30 seconds) via the line circuit breaker. Then restart the charging process.

If the error persists: The charging station is defective and must be sent in for repair.

Note for devices with firmware version prior to 3.06: Communication with the safety logic of the charging station may abort at irregular intervals. The error can be remedied in such cases by restarting the charging station. Since the error can occur repeatedly with old firmware versions, a software update is required.

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ERROR_CONFIG



Error group: `0x[xxx]8`

The internal system configuration is faulty.

Measures

Replace the charging station.

ERROR_PERSIST



Error group: `0x[xxx]c`

A previously occurring error persists despite running through the automatic error reaction. The error is displayed on the LED bar alternately with the triggering error if the original error can no longer be reset.

Measures

Contact the KEBA support.

ERROR_CON



Error group: `0x[xxx]d`

Internal error

Measures

Contact the KEBA support.

ERROR_STATE



Error group: `0x[xxx]e`

The internal charge controller has requested an illegal status change.

Measures

Cancel charging and switch off charging station for a short time (30 seconds) via the line circuit breaker. Then restart the charging process.

If the error persists: The charging station is defective and must be sent in for repair.

ERROR_SYSTEM



Error group: `0x[xxx]f`

The communication with the charging controller of the charging station is not possible or there is an error in the firmware.

Measures

Disconnect the vehicle from the charging station and restart the charging process.

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If a firmware/software update is running: The update has failed. The update must be downloaded again. If this does not solve the problem, a deep firmware update must be performed, see "Firmware Update Instructions".

If the error persists: Contact the KEBA support.

3.2 Red/White error displays

This chapter covers the error messages shown in red/white on the LED bar.

AUTARK_PLUG_LOST



Error group: `0x[xxx]1`

The plug was pulled out of the socket during charging or the plug was not properly locked and released from the socket during charging.

Measures

Disconnect plug and reconnect, paying attention to the correct locking.

AUTARK_PLUG_UNDEF



Error group: `0x[xxx]2`

The plug was not recognized.

Measures

Check if the plug is compliant with the standard.

AUTARK_OVERHEAT



Error group: `0x[xxx]3`

Overtemperature shutdown: The permissible temperature in the charging station has been exceeded.

Measures

Disconnect the plug and wait until the charging station has cooled down.

If the error occurs repeatedly: Check that the device is mounted in a suitable place.

AUTARK_LOCK_FAILED



Error group: `0x[xxx]4`

The plug could not be locked.

Measures

Unplug the plug and quickly plug it in again.

If the problem persists, check the following:

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- Dirt in the socket
- Use of a standard-compliant plug
- Mechanical damage of the plug
- Defect of the cable

AUTARK_OHMIC_LOAD



Error group: `0x[xxx]5`

The charging station has not detected an electric vehicle but rather an unauthorized consumer. Only standard-compliant electrically operated vehicles may be charged.

Measures

Remove the unauthorized consumer and restart the charging process.

AUTARK_IBN_MODE



Error group: `0x[xxx]7`

The charging station is in commissioning mode.

Measures

Check the DIP switch settings for correct configuration and restart the charging process (see the "Installation Manual").

AUTARK_SHORT_CIRCUIT



Error group: `0x[xxx]8`

The charging station has detected a short circuit.

Measures

Check cable and plug for damage and replace defective component.

If the error persists: Contact the KEBA support.

AUTARK_CONFIG_ERR



Error group: `0x[xxx]9`

The charging station has detected a configuration error.

Measures

Check the DIP switch settings for correct configuration and restart the charging process (see the "Installation Manual").

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AUTARK_13A_ERROR



Error group: `0x[xxx]a`

The charging station has detected an invalid cable. For compatibility reasons, the charging station does not accept charging cables with a charging current of 13 A or less.

Measures

Use a charging cable with a higher charging current.

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