



HEINRICH KIPP WERK



USER MANUAL

K1494.01

Gateway

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1. Introduction

1.1 General

Please read these operating instructions carefully before using the Gateway.

These operating instructions provide important information on the use of the device. A prerequisite for safe working is the observance of all specified safety and handling instructions.

The relevant regional accident prevention and general safety regulations for the area where the device is used must be observed.

These operating instructions are an integral part of the product and must be kept accessible to qualified personnel at all times.

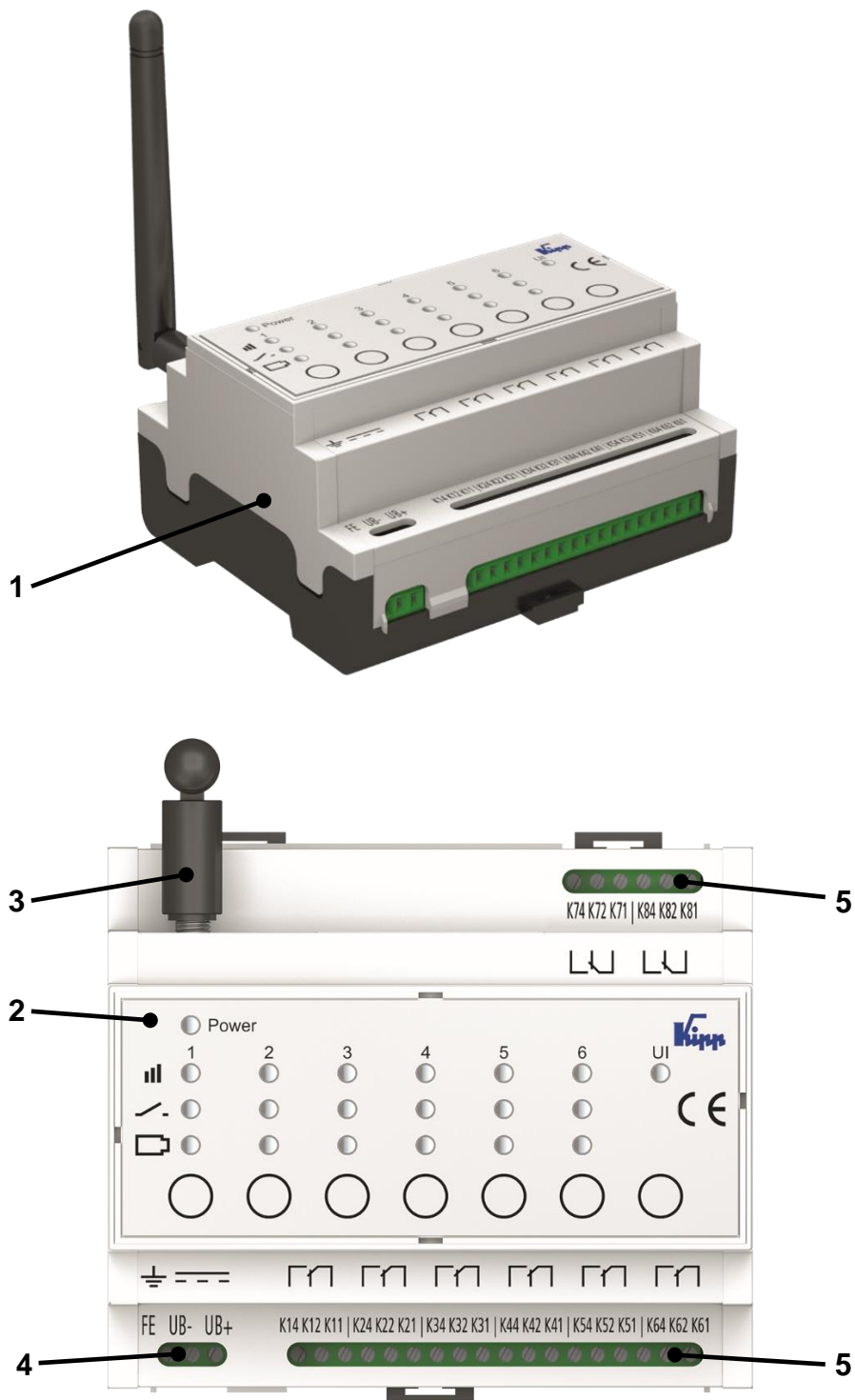
The general terms and conditions in the sales documents apply.

The use of the Gateway is the responsibility of the user. HEINRICH KIPP WERK GmbH & Co. KG is under no circumstances responsible for any kind of damage, however caused.

Subject to technical changes.

2. Design and Function

2.1 Overview



1. Housing for DIN EN 60715 mounting rail
2. Control panel
3. Antenna (detachable) / SMA antenna port
4. Power supply
5. Relay output

2.2 Description

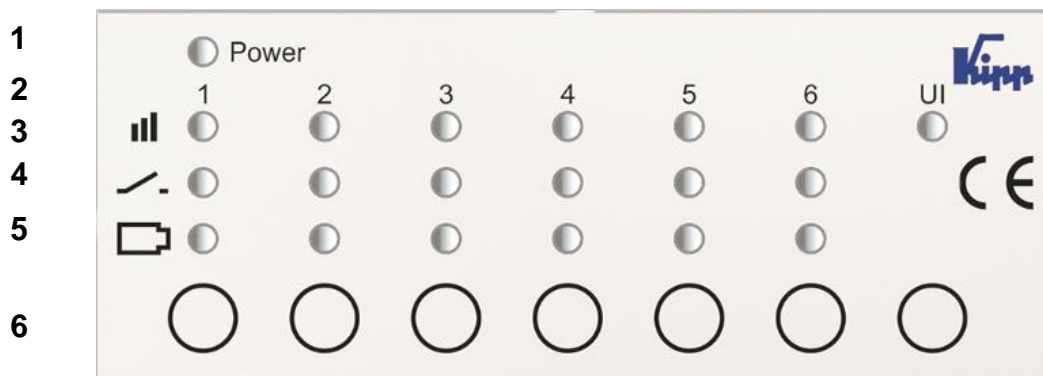
The gateway forms the interface between the indexing plungers with status sensor and a machine controller. It receives a radio signal from the indexing plunger and sends a binary output signal from the relay port which can be read by the machine control system.

This enables the actuation statuses of up to 6 indexing plungers to be transmitted.

A mobile device can be connected to the Gateway for additional visualisation.

The integrated control panel with buttons and LED's enables not only the connection and disconnection of the indexing plungers, but also the monitoring of the radio link, the actuation status and the battery charge.

2.3 Control panel



1. LED "Power" green
2. Designates the input channel
3. LED "Radio link" (green)
4. LED "Actuation status" (yellow)
5. LED "Battery charge level" (red)
6. Pairing buttons

2.4 Package contents

1. Gateway
2. Antenna
3. User manual
4. Packaging

3. Safety and warning notes

3.1 Explanation of symbols



WARNING!

... indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



TAKE CARE!

... indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to property and the environment.



INFO!

... highlights useful tips, recommendations and information for efficient and trouble-free operation.

3.2 Appropriate use

The Gateway receives the actuation status of up to 6 indexing plungers with status sensor and transmits this information to the relay outputs.

The relay outputs are connected to the machine control system via cable and forward the information on.

The assignment between an indexing plunger with status sensor and the desired relay output is made by pairing via the buttons on the control panel.

According to DIN EN IEC 61010-2-201, the Gateway is an open device.

It is therefore permanently mounted in a protected environment, such as a control cabinet, close to the controller. Operation, primarily for installation and maintenance purposes, should only be carried out by authorised personnel with access to the operating environment.

The trouble-free function and operational safety can only be guaranteed if the information in this operating manual is observed. During use, the legal and safety regulations required for the respective application must also be observed. This also applies analogously to the use of accessories.

The Gateway is not intended for safety relevant functions.

Correct and safe operation of the device requires proper transport, storage, installation and mounting, as well as careful operation and maintenance.

The device is designed and constructed exclusively for the intended use described here and may only be used in accordance with this. The technical specifications in this manual must be observed.

Improper handling or operation of the equipment beyond the technical specifications may cause damage and malfunction.

3.3 Operator responsibility

The device is intended for use in the commercial sector. The operator is therefore subject to the legal obligations for industrial safety.

The safety instructions in this user manual as well as the safety, accident prevention and environmental regulations valid for the application area of the device must be observed.

To work safely with the device, the operator must ensure:

- that the qualified electricians are regularly instructed in all applicable questions of work safety, first aid and environmental protection, and that they are familiar with the operating instructions and especially the safety instructions contained therein.
- that the device is suitable for the intended use.

3.4 Personnel qualifications



WARNING!

Risk of injury in the event of inadequate qualifications

Improper handling can lead to serious personal injury and property damage.

- The activities described in this operating manual may only be carried out by qualified personnel with the following qualifications.

Qualified electricians

Due to their technical training, knowledge and experience as well as their knowledge of country-specific regulations, applicable standards and directives, qualified electricians are able to carry out work on electrical installations and to independently identify and avoid possible hazards.

Qualified electricians are specially trained for the working environment in which they operate and know the relevant standards and regulations.

Qualified electricians must comply with the provisions of the applicable statutory accident prevention regulations.

Operating personnel

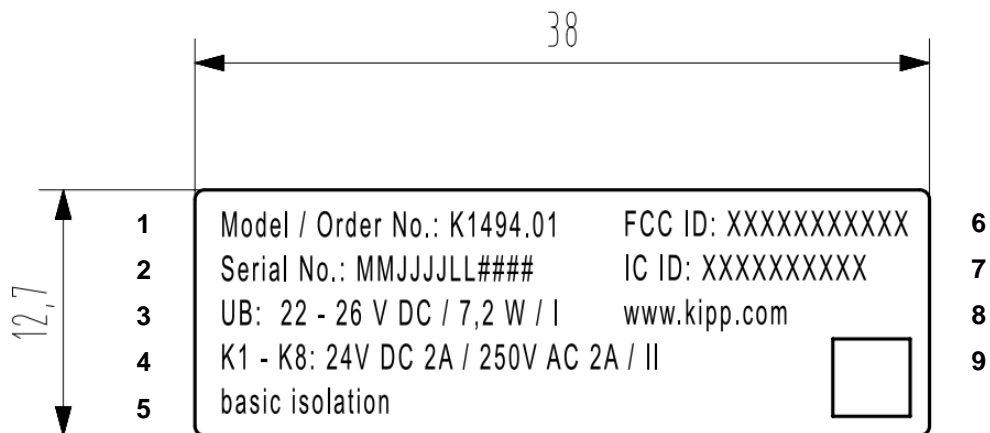
The operating personnel must never carry out any work on the Gateway unless they are qualified electricians.

They are trained in the operation and use of the Gateway and are permitted, within the scope of their productive activities, to monitor functions and eliminate errors using the control elements.

3.5 Personal protective equipment

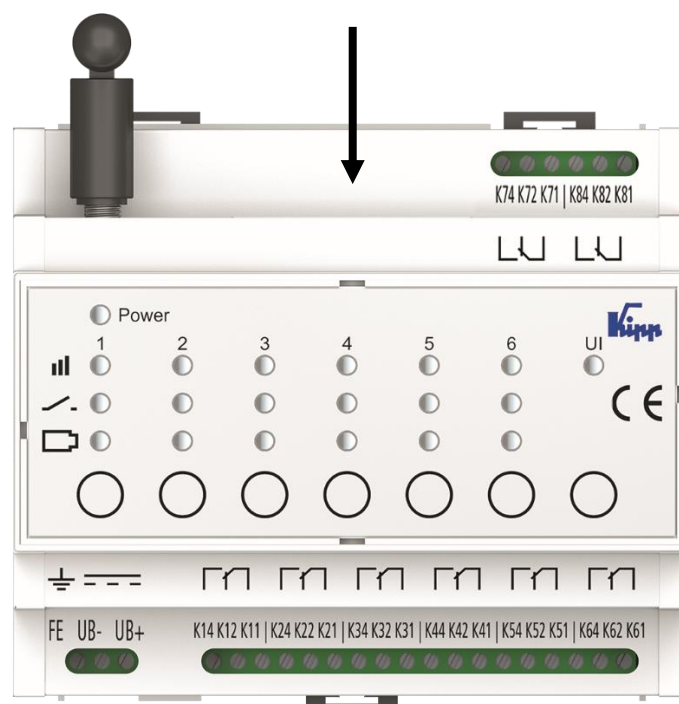
Requirements for the necessary protective equipment result from the environmental and application conditions at the place of use, other products or their combination with other products.

3.6 Type plate, safety markings



1. Model number / Order number
2. Serial number
3. Operating voltage rated data
4. Relay outputs rated data
5. Isolation
6. FCC ID
7. IC number
8. Manufacturers Website
9. Data Matrix Code

The type plate is on the top of the Gateway.



4. Transport, Packaging and Storage

4.1 Transport

Inspect the gateway and the supplied accessories for any damage caused during transport. Report any obvious damage immediately.



TAKE CARE!

Damage due to improper transport

Improper transport can cause considerable damage to property.

- When unloading the packages upon delivery and during internal transport, proceed with care and observe the symbols on the packaging.
- For internal transport, follow the instructions in the section “Packaging and Storage”.

The gateway requires careful handling. Hard impacts to the device during transport can cause permanent damage.

4.2 Packaging and Storage

The packaging offers optimum protection for the device. Do not remove the gateway from the packaging until immediately before installation. It is also recommended to keep the packaging for e.g. location changes or repair shipments.

The permissible ambient conditions can be found in the section Technical Data.

5. Commissioning, Operation



WARNING!

Installation by a qualified electricians

The Gateway may only be installed and connected by qualified electricians.

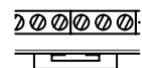
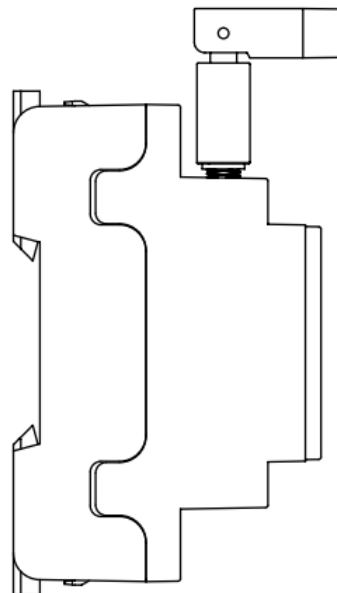
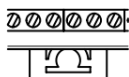
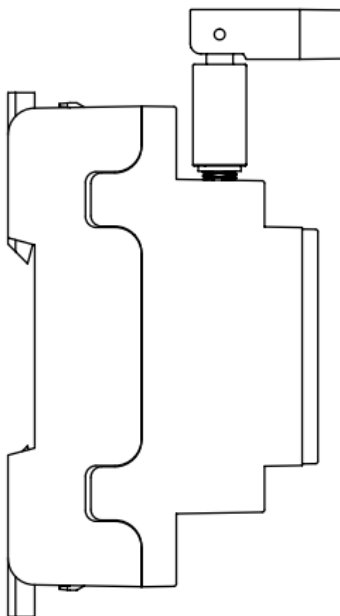
5.1 Installation

The Gateway is mounted without tools on a DIN EN 60715 mounting rail (top hat rail). As the Gateway is an open device according to DIN EN IEC 61010-2-201, it must be mounted in such a way that it is accessible only to authorised personnel and protected against all external influences.

This is the case when installed e.g. in a switch box.

When selecting the enclosure, the specific safety requirements must be taken into account.

1. Hook the housing onto the mounting rail.
Note the position of the retaining slides.
2. Fixate the housing by pushing in the individual retaining slides.





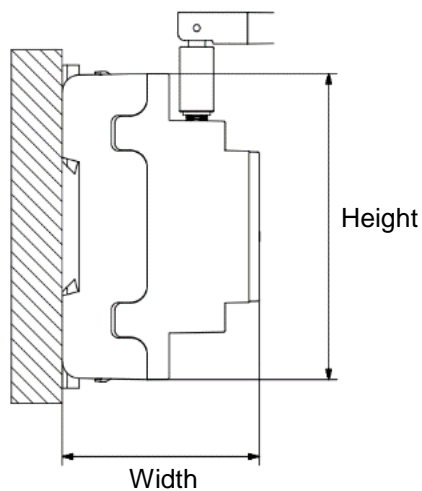
INFO!

Observe the mounting position

The Gateway may only be installed in one of the two illustrated mounting positions “hanging” or “lying”.

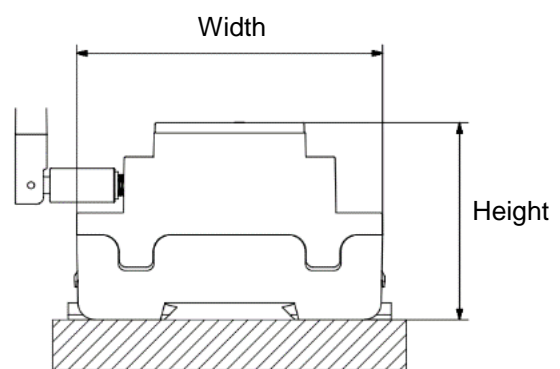
The antenna should still be mounted on top.

Mounted hanging



Width: 58.5 mm / Height: 90 mm

Mounted lying



Width: 90 mm / Height: 58.5 mm



INFO!

Control panel in normal operation

During normal operation, no user interaction is required on the control panel. To ensure process safety, the control panel must be installed so that it is inaccessible to unauthorised persons.

5.2 Electrical connection



WARNING!

Hazard protection

Depending on the wiring of the relay outputs, safety measures are required to protect the maintenance or electrical personnel from hazards e.g. protective covers for the exposed terminals.

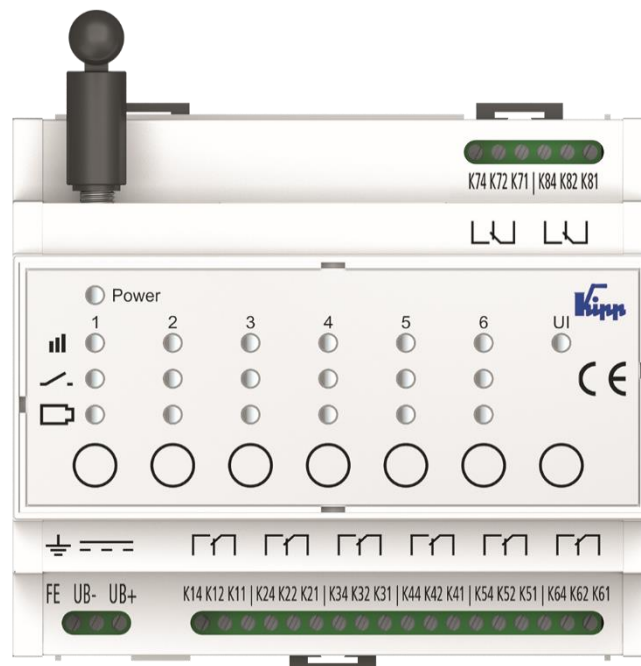


INFO!

Observe maximum cable lengths

The maximum permissible cable length for an EMC-compatible installation is 3 metres.

Pin assignment:



WARNING!

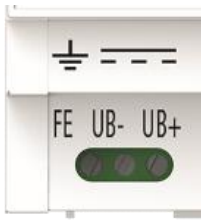
Observe the technical data

The exact requirements, component characteristics, conductor cross-sections and stripping lengths can be found in the section Technical Data.

It must be ensured that no wire strands protrude and touch neighbouring terminals, e.g. when using crimped ferrules.

A suitable tension relief must be provided.

5.2.1 Power supply



UB+: 24V DC

UB-: GND 0V

FE: Functional earth



TAKE CARE!

Provide a separator

The Gateway does not have its own device for disconnecting the power supply. This must be provided separately by the operator on site.



TAKE CARE!

Power supply

The power supply must meet the requirements of safety extra-low voltage (SELV) or protective extra-low voltage (PELV).



INFO!

Observe the technical data

The exact requirements, component characteristics and conductor cross-sections can be found in the section Technical Data.

5.2.2 Relay outputs

Relay changer outputs K1-K6:

Processing the actuation status of connected indexing plungers with status sensor.



Relay changer outputs K7-K8:

K7: All connected indexing plungers have a radio link

K8: The battery charge of all connected indexing plungers is sufficient



WARNING!

Observe the technical data

The exact requirements, component characteristics, conductor cross-sections and stripping lengths can be found in the section Technical Data.

It must be ensured that no wire strands protrude and touch neighbouring terminals, e.g. when using crimped ferrules.

A suitable tension relief must be provided.

5.3 Commissioning

After all electrical connections have been made, the Gateway is ready for operation. When power is on, the "Power" LED is permanently lit.

5.3.1 Establishing the radio link

To link a KIPP device e.g. an indexing plunger with status sensor to the input channels 1 to 6 (pairing), proceed as follows:

1. Move the indexing plunger's mushroom knob to establish the operating status.
2. The LED in the mushroom knob will start to blink (1x per second)
 - ➔ The indexing plunger sends a radio signal and attempts to link with the Gateway.
3. Press the pairing button of the desired input channel.
 - ➔ The "Radio Link" LED blinks and a link is established.
 - ➔ When the link is established, the "Radio Link" LED on the control panel lights up permanently. The LED on the mushroom knob of the indexing plunger goes out.

If another KIPP device is already connected to the desired input channel, the three LED's of that input channel will flash three times in succession.

In this case another input channel can be selected or the already linked KIPP device can be disconnected, see section 5.3.2.



INFO!

Ensure clear identification

For clear identification, make sure that only the KIPP device to be linked is in pairing mode.

On indexing plungers with status sensor, this is indicated by the flashing LED.

If an unlinked indexing plunger remains idle for more than 30 seconds, it changes from operating to idle status.

To connect a mobile device to the UI input channel, proceed as follows:

1. Press the UI input channel button
 - ➔ The "Radio Link" LED blinks and a link is established.
 - ➔ When a link is established, the "Radio Link" LED on the control panel lights permanently.

5.3.2 Disconnecting the radio link

To disconnect a KIPP device, e.g. an indexing plunger with status sensor, from the input channels 1 to 6, proceed as follows:

1. Press the pairing button of the input channel being disconnected for 10 seconds.
➔ As soon as the link is disconnected, the three LED's of the selected input channel flash 4 times in succession. The "Radio Link" LED then goes out.

Disconnecting a mobile terminal from the UI input channel:

1. Press the button of the UI input channel for 10 seconds.
➔ As soon as the link is disconnected, the "Radio Link" LED goes out.
➔ Alternatively, the disconnection can be done via the mobile device.

5.4 Operation

5.4.1 Normal operation

After successful commissioning, the connected KIPP devices, e.g. indexing plungers with status sensor, send the actuation status and the battery charge level to the Gateway at a transmission rate of 10 1/s.

An existing radio link, the actuation status and a required battery change can be identified for the respective channel by means of the LED's on the control panel.

If the actuation status of the indexing plunger changes, the information is sent to the relay output and the switching status of the changeover contact changes in accordance with the wiring.



INFO!

Secure radio communication / Connected devices

The communication between the indexing plunger and the Gateway receiver is encrypted.

Due to the unique identification, connected devices remain connected until they are manually disconnected by the operating personnel in accordance with chapter 5.3.2.

5.4.2 Malfunctions

The following malfunctions could occur:

Fault:	Termination of radio communication
Cause:	Connected devices out of radio range
Performance:	<p>"Radio Link" LED goes out 2 seconds after the last communication.</p> <p>The relays drop out and the basic state "Normally Closed" or "Normally Open", depending on the circuitry, is established.</p> <p>This response can be adapted on request.</p>
Countermeasure:	<p>Move the device within reach</p> <p>To reconnect, the device must not be in idle mode.</p>
Fault:	Interruption of the power supply
Cause:	Intentional or unintentional disconnection of the power supply.
Performance:	<p>"Power" LED is not lit</p> <p>The relays drop out and the basic state, depending on the circuitry, is established.</p> <p>The linked KIPP devices go into idle mode after 30 seconds.</p>
Countermeasure:	<p>Restore the power supply</p> <p>Reset connected KIPP devices from idle to operating mode.</p>

6. Care and Maintenance

6.1 Maintenance

The Gateway is maintenance-free.

6.2 Cleaning

The Gateway can be cleaned with a dry cloth.

7. Dismantling, Returning and Disposal

7.1 Dismantling

Before dismantling the gateway, all linked devices must be disconnected.



INFO!

Disconnection of connected devices

Because of the secure connection, if linked KIPP devices are not disconnected, they cannot be reconnected to another Gateway.

If the existing Gateway is no longer available due to a defect, a disconnection is effected by briefly removing the battery of the devices.

To disconnect the linked KIPP devices, proceed as described in section 5.3.2.

Then disconnect the electrical connections as prescribed and slide the gateway off the top-hat rail.

7.2 Returning

When shipping the device, please note the following:

All equipment sent to HEINRICH KIPP WERK must be free of hazardous substances (acids, alkalis, solutions, etc.) and must therefore be cleaned before returning.

It is recommended that the original packaging be used when returning the device. Alternative suitable transport packaging may be used.

Please consult your contact person before returning the goods. The address for returning goods can be found in the Service section.

7.3 Disposal

Incorrect disposal can pose risks to the environment. Dispose of equipment components and packaging materials in an environmentally friendly manner in accordance with the country-specific waste treatment and disposal regulations.



Do not dispose of in household waste. Ensure separate disposal according to national regulations.

8. Technical Data

Power Supply		
Operating voltage	[V]	24 V DC
Rated current	[A]	0.3 (max. 0.32 / min. 0.27)
Wattage	[W]	7.2
Surge voltage category		I
Interfaces		
Signal input		7x via radio transmission No. 1 to 6: for signal detection UI: for monitoring via a mobile device
Signal output		8x potential free changer contacts 2A 24V DC / 2A 250V AC K1-K6: Signal request actuation status K7: Radio link status K8: Battery level status
Connection terminals		Screw terminals 0.2 mm ² to 1.31 mm ²
Connection cables		24 - 16 AWG / 0.205 mm ² to 1.31 mm ²
Stripping length	[mm]	5 to 6
Surge voltage category		II
Designated load		AC and DC circuits, general load
Antenna connection		SMA port (for supplied antennae)
Radio transmission		
Transmission protocol		Bluetooth Low Energy
Transmission frequency	[GHz]	2.4
Reach	[m]	ca. 10
Transmission rate	[1/s]	10
Displays / Controls		
Green LED (Power)		Lights up when unit is in operation
Green LED (Radio reception)		Lights when the connected device is within range
Yellow LED (Actuation status)		Indicates the operation status of the connected device
Red LED (Battery charge)		Lights up when the battery needs to be replaced
Buttons		Enables a device to be connected and disconnected to the desired Gateway signal input.
Installation		
Fastening		On an IEC 60715 mounting rail
Mechanical data		
Weight	[kg]	0.3

Ambient conditions		
Location		Indoor use only
Altitude		Up to 2000 m
Operating temperature	[°C]	0 to 65
Storage temperature	[°C]	-10 to 65
Max. relative humidity	[%]	80 (without condensation)
Protection rating		IP20 acc. to DIN EN 60529
Impact strength		IK06 acc. to DIN EN 62262
Pollution degree		2
Approvals / Tests		
Radio approvals		Europe, USA, Canada
Electrical safety		EN 61010-1 / EN 61010-2-201
EMV		EN 301 489-1 / EN 301 489-17
Radio		EN 300 328
Vibration resistance		EN 60068-2-6
Shock resistance		EN 60068-2-27
Note		
Interference suppression		The user is responsible for interference suppression when switching inductive loads at the outputs.
Radio approval		The radio approval of the gateway is only valid with the supplied antenna.



Subject to change without notice.

9. Declaration of Conformity / Compliance Statement

The Gateway is certified for use in the following counties using the antenna supplied:

Europe	RED 2051/14/EU	FCC ID:	see type plate on the device
USA	FCC Part 15.247	IC:	see type plate on the device
Canada	IC RSS-210		

The certificates can be found on our homepage www.kipp.com.

HEINRICH KIPP WERK GmbH & Co. KG		
Spanntechnik Normelemente Bedienteile		
EU – Konformitätserklärung / EC Declaration of Conformity		
im Sinne folgender EU – Richtlinien / within the meaning of the following EC Directives:		
-	Beschränkung der Verwendung bestimmter gefährlicher Stoffe (RoHS) / Restriction of the use of certain hazardous substances	2011/65/EU
-	Funkanlagen Richtlinie / Radio equipment directive	2014/53/EU
Hersteller / Manufacturer:	Heinrich Kipp Werk GmbH & Co. KG Heubergstr. 2 DE-72172 Sulz am Neckar	
Bevollmächtigter zur Zusammenstellung der technischen Unterlagen / Authoriser for the compilation of the technical documents:	Steffen Haug Heinrich Kipp Werk GmbH & Co. KG DE-72172 Sulz am Neckar	
Der Hersteller / Bevollmächtigte erklärt, daß folgende Produkte / The manufacturer / authoriser declares, that the following product:		
Produktbezeichnung: Product description:	Gateway gateway	
Serien- / Typenbezeichnung: Series / type designation:	K1494.01	
Produktnummern / Product numbers:	K1494.01	
den Bestimmungen der oben bezeichneten Richtlinien entsprechen / comply with the provisions of the directives identified above .		
Folgende harmonisierte Normen und Spezifikationen sind angewandt / The following harmonised standards and specifications are applied:		
DIN EN IEC 63000:2019-05	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	
DIN EN 61010-1:2020-03	Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 1: Allgemeine Anforderungen Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	
DIN EN 61010-2-201:2019-04	Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 2-201: Besondere Anforderungen für Steuer- und Regelgeräte Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment	
ETSI EN 301 489-1: V2.2.3	Elektromagnetische Verträglichkeit (EMV) - Standard für Funkeinrichtungen und -dienste - Teil 1: Gemeinsame technische Anforderungen ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 1: Common technical requirements	
ETSI EN 301 489-17: V3.2.2	Elektromagnetische Verträglichkeit für Funkeinrichtungen und -dienste - Teil 17: Spezifische Bedingungen für Breitband-Datenübertragungssysteme ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 17: Specific conditions for Broadband Data Transmission Systems	
ETSI EN 300 328 V2.2.2	Breitband-Übertragungssysteme - Datenübertragungsgeräte, die im 2,4-GHz-ISM-Band arbeiten und Breitband-Modulationstechniken verwenden Wideband transmission systems - Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques	
Diese Konformitätserklärung verliert ihre Gültigkeit, wenn an dem Produkt Änderungen vorgenommen werden, die nicht vorher mit uns abgestimmt und schriftlich von uns genehmigt wurden. This declaration of conformity becomes invalid if changes are made to the product, which have not been agreed with us in advance and approved by us in writing.		
Sulz a.N., 26.11.2020 Ort, Datum Place and date of issue	Volker Göbel, Technischer Leiter, Mitglied der Geschäftsleitung Unterschrift und Angaben zum Unterzeichner signatory and identification of the signatory	
	 Unterschrift signature	



Compliance statement

FCC Warning:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help."

In order to comply with FCC Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.



Compliance Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

product description:	gateway
type designation / model:	K1494.01
product number:	K1494.01
Manufacturer:	Heinrich Kipp Werk GmbH & Co. KG Heubergstr. 2 DE-72172 Sulz am Neckar

10. Service

Address

Legal notice

