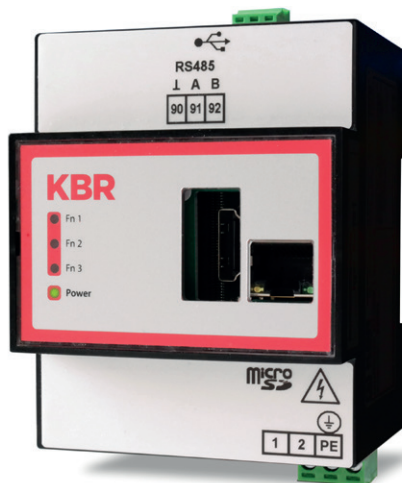




User Manual Technical Parameters



multisys D4-IGW-1 multimax D4-IGW-1



You can find the instructions for your KBR device at our download center.

<https://www.kbr.de/de/dienstleistungen/download-center>

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1 Introduction

Thank you for choosing this KBR quality product.

To become familiar with the operation and programming of the device and to use the full range of functions of this high-quality product at all times, you should read this user manual carefully.

The individual chapters explain the technical details of the device and show how damage can be avoided through proper installation and commissioning.

1.1 User Manual

This user manual must be accessible to the user at all times (e.g. in the switchgear cabinet). Even if the device is resold to third parties, the manual remains an inherent part of the device.

Although the utmost care has been taken in writing this user manual, errors may still occur. We would be very grateful if you would notify us of any errors or unclear descriptions you may notice.

1.2 Safety Keys

This manual contains instructions that you must follow for your personal safety and to avoid material damage. These instructions are identified by a warning sign or information symbol, depending on the degree of hazard they warn about.



DANGEROUS VOLTAGE

„Warning“ means that death, major injuries or damage may occur if suitable safety precautions are not taken.



CAUTION

„Caution“ means that minor injuries or damage may occur if the appropriate safety precautions are not taken.



NOTE

„Note“ is an important piece of information on the product, its operation or the respective part of the user manual to which special reference is being made.

Disclaimer

The contents of this user manual have been carefully reviewed in terms of the hardware and software described. However, deviations cannot be excluded and therefore complete conformity cannot be guaranteed. The specifications made in this user manual are reviewed on a regular basis; any corrections required will be included in the next revision.

1.3 Safety Notes

In order to prevent operating errors, device operation is kept as simple as possible. This will enable you to start your device up quickly.

It is in your own interest to read the following safety instructions carefully.



DANGEROUS VOLTAGE

The applicable DIN/VDE regulations must be observed during installation!

Connection to the mains, commissioning and operation of the device may only be carried out by qualified personnel. Qualified personnel within the meaning of the safety instructions in this manual are persons with electrical engineering training and knowledge of national accident prevention regulations, safety engineering standards and the installation, commissioning and operation of the device.

To prevent fire and electric shock, do not expose the device to rain or moisture!

Before connecting the device to the power supply, check whether the local power supply conditions comply with the specifications on the nameplate.

A faulty connection may result in the destruction of the device!

When connecting the device, adhere to the information given in the connection diagram (see "Connection diagram") and that the connecting cables are not live. When wiring, always ensure that all cables used are neither damaged nor faulty

and observe correct polarity!

Proper and safe operation of the product requires correct transport, storage, installation and assembly as well as careful operation and maintenance.

If the device has any visible damage it is considered unfit for use and must be disconnected from the mains! Troubleshooting, repairs and maintenance work may only be carried out at our plant or after contacting our customer service team.

If the device is opened without authorization, any warranty or guarantee claim is forfeited. Error-free functioning can no longer be guaranteed!

Opening the device may expose live parts. Capacitors in the device may still be charged, even if the device has been disconnected from all power sources. Do not operate open devices under any circumstances!

Lightning protection measures must be provided for all input and output cables in systems at risk from lightning strikes (See the chapter "Protective Measures")!

1.4 Product Liability

You have purchased a high-quality product. Only top-quality components with exceptional reliability are used.

Each device undergoes a long-term test before delivery.

With regard to product liability, please see our general terms and conditions for electronic devices, which you can read at www.kbr.de.

The warranty on device characteristics only applies if the device is operated in accordance with its intended use!

1.5 Scope of Delivery

Included in the scope of delivery:

- multisys D4-IGW-1 or multimax D4-IGW-1
- User manual

1.6 Disposal

Please dispose of defective, out-of-date or no longer used devices properly.

If you wish, we can dispose of the device for you.

1.7 Overvoltage and Lightning Protection

To protect your purchased high-quality devices from damage, we strongly recommend that you take overvoltage protection measures. Protect control voltage inputs, pulse and bus lines.

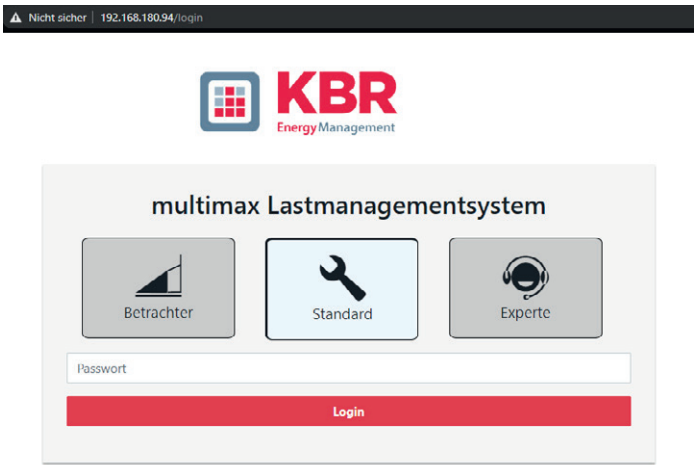
2 Range of Functions

The device is a universal minicomputer based on the Raspberry 3 Compute Module (CM3). It can be installed in standard switchgear cabinets and has an integrated power supply unit for a 230V power connection.

Depending on the application intended, a specific software image will be installed by the manufacturer.

2.1 Range of Functions multimax D4-IGW-1

The module is already configured as a web server. You can connect to the URL `http://[IP or host name on the nameplate]` with a browser. You will be directed to the login page:



There are three user profiles defined:

Profile	Default Password	Live Data	Historical Data	Standard Configurations	Expert Configurations
Viewer	viewer	x	x	-	-
Standard	user	x	x	x	-
Expert	kbradmin	x	x	x	x



NOTE

The default passwords can and should be individually reset under Expert Configurations.

For further help with operating, press the respective ? button

3 Installation

This chapter describes:

- „Mounting the device“
- „3.2 Connection Diagram“ on page 10
- „3.3 Terminal Assignment“ on page 12

3.1 Device assembly

The housing of the D4-IGW-1 has been designed for switchgear cabinet mounting on a 35 mm DIN rail. The module is snapped on the mounted DIN rail.



CAUTION

The device control voltage must be secured with a back-up fuse on site.

The electrical installation of the building must have a disconnecter or circuit breaker for the power supply voltage.

The disconnecter must be close to the device and be easily accessible to the user.

It must be marked as an isolating switch for this device.

The isolating switch must be UL/IEC-approved.

During installation, please also observe our instructions on safety measures against overvoltage and lightning in the chapter „Overvoltage and Lightning Protection“ Page 7.

3.2 Connection Diagram

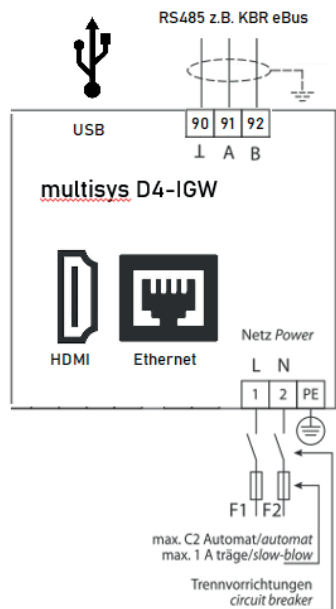


Figure 1:
Connection diagram

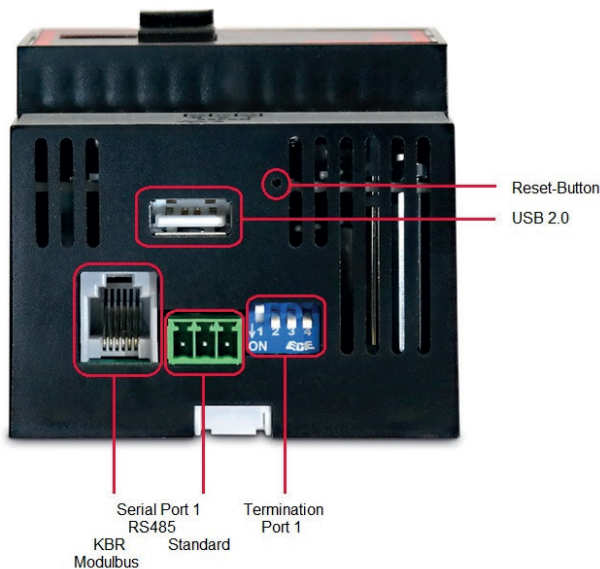


Figure 2:
Connections on top

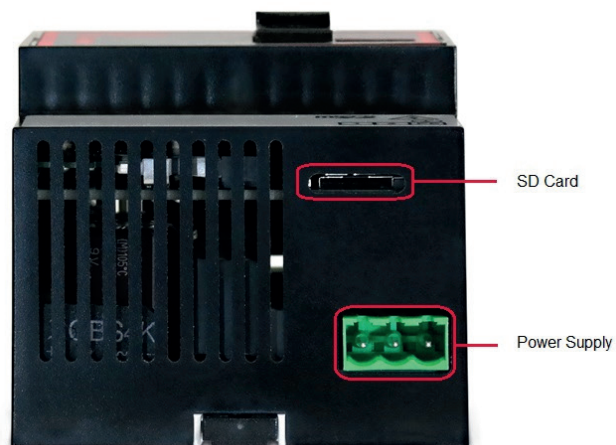


Figure 3:
Connections on bottom

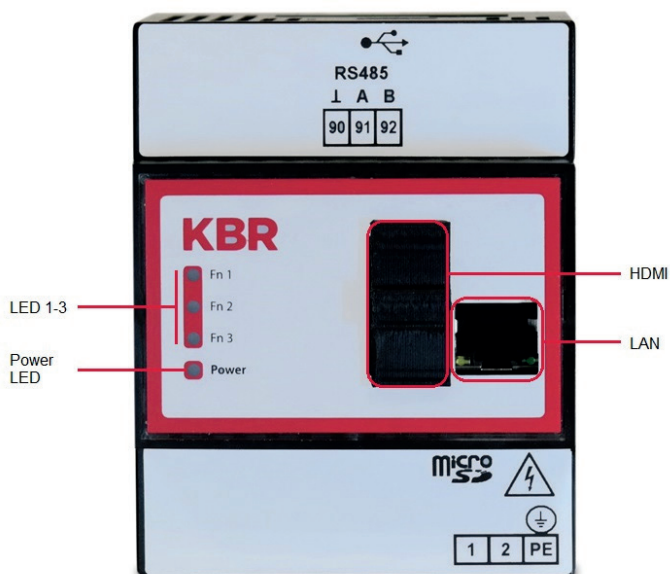


Figure 4:
Front view

3.3 **Terminal Assignment**

Terminals 1 (L) / 2 (N) and PE	Power Supply Connection. Auxiliary voltage is required for device operation. For technical data, please refer to the nameplate.
Terminals 90 (ground), 91 (A) and 92 (B)	Serial Port 1 RS485 Communication Port (e.g. KBR eBus)
Module OUT	A Serial Port 1. For communication with the KBR expansion modules. Maximum Output Power: 2W
Ethernet	Network Connection for Ethernet TCP
USB	Universal Serial Bus (USB 2.0)
HDMI	HDMI Display Connection

4 Network Communication

The standard for the D4-IGW-4 is a dynamic address for a DHCP server available in the network. If this process fails, a “fallback” address will automatically be set, which is as follows:

IP: 192.168.0.2

Subnet mask: 255.255.255.0

If a monitor is connected to the device, the IP address will be displayed during booting. With an address assigned via DHCP, this can generally also be queried in the respective router configuration. The connection to the system can also be made by giving the computer name (“host name”) regardless of the assigned IP address. This can be found on a sticker on the side of the housing.

Successful communication always requires that the D4-IGW-1 and its communication partner are in the same network subset. If the system receives a DHCP address, this is typically the case. However, if no DHCP server is available, the communication partner's network subset must correspond to the subset of the fallback address given above.

Example:

For one-time configuration, the connection to the D4-IGW-1 should be made directly from a Notebook (1:1 via crossover cable)

- D4-IGW-1 - static fallback IP: 192.168.0.2
- Communication partner (Notebook) - static IP: 192.168.0.1

☐ IP-Adresse automatisch beziehen

☒ Folgende IP-Adresse verwenden:

IP-Adresse:

Subnetzmaske:

Standardgateway:

☐ DNS-Serveradresse automatisch beziehen

☒ Folgende DNS-Serveradressen verwenden:

Bevorzugter DNS-Server:

Alternativer DNS-Server:

5 Configure Network Settings

In exceptional cases, it may be necessary to manually adjust the network configuration. There are essentially two options for this:

1. Online
2. Offline

5.1 Online

In order to be able to modify the settings during continuous operation, an SSH connection to the device must be established - see "Establish SSH Connection." Open the corresponding configuration data in the active terminal session with the following command:

```
sudo nano /etc/dhcpd.conf
```

The section to be edited is at the end of file.

Static address assignment - for the following entries, remove the annotation and modify as desired.

```
static ip_address=192.168.180.123/24
(IP-Adresse/Subnetzmaske)

static routers=192.168.180.1 (Gateway)

static domain_name_servers=192.168.180.2 (DNS server)
```

Dynamic address assignment (DHCP) - comment out the following entries accordingly

```
#static ip_address=192.168.180.123/24
(IP-Adresse/Subnetzmaske)

#static routers=192.168.180.1 (Gateway)

#static domain_name_servers=192.168.180.2 (DNS server)
```

Then save the file by pressing the key combination "Ctrl + O"
(close the file with "Ctrl + X").

5.2 Offline

Offline configuration is an option for being able to configure settings in advance, for example, or if a connection can no longer be established due to a configuration error ("locked out" of system).

To modify settings during non-continuous operation, the microSD card (see figure 3) must be removed from the device. This can then be integrated into a Windows system, for example, with the use of a card reader. Navigate to the following file using a file explorer and open it with Editor (preferably the Notepad++ editor):

```
KBR\dhcpd_template.conf
```

The section to be edited is at the end of file.

Static address assignment - for the following entries, remove the annotation and modify as desired.

```
static ip_address=192.168.180.123/24  
(IP-Adresse/Subnetzmaske)  
  
static routers=192.168.180.1 (Gateway)  
  
static domain_name_servers=192.168.180.2 (DNS server)
```

Dynamic address assignment (DHCP) - comment out the following entries

```
#static ip_address=192.168.180.123/24  
(IP-Adresse/Subnetzmaske)  
  
#static routers=192.168.180.1 (Gateway)  
  
#static domain_name_servers=192.168.180.2 (DNS server)
```

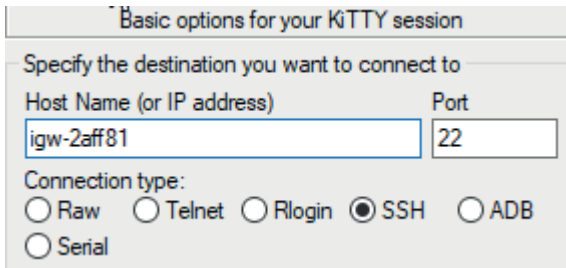
Save the modified file accordingly. Then reinsert the microSD card into the device slot on the D4-IGW-1 and reboot the system as normal (wait 2-3 minutes until all relevant services have started). To apply the changes you just made to the system, the network must be reset (as described under "Reset network settings").

6 Hardware Reset

The network settings in particular can be reset to a defined state by pressing a hardware key (see figure 2). The reset button must be held down continuously with an appropriate tool for 5 seconds to do so. Then the settings will be reset - an LED on the front of the housing will blink to confirm that the process was successful.

7 Establish SSH Connection

Using a standard SSH client, a secure connection can be established to the D4-IGW-4 - for example, using Kitty or Putty under Windows. The host name or even the IP address given can be used as the target (standard SSH port => 22)



Basic options for your KiTTY session

Specify the destination you want to connect to

Host Name (or IP address)	Port
igw-2aff81	22

Connection type:

☐ Raw ☐ Telnet ☐ Rlogin ☒ SSH ☐ ADB

☐ Serial

Login terminal console
User: kbr
Password: kbradmin

8 Technical Data

8.1 Technical Data for the multisys / multimax D4-IGW-1

8.1.1 Control and display elements

Operation	Reset push button
Control display	4 green LEDs: 3 x input status, 1 x power

8.1.2 Power supply

Power supply	US1: 100–240 V \pm 10% DC/50/60 Hz
Power consumption	23 VA/14W

8.1.3 Hardware Outputs

Interface	Serial interface	RS 485
		Protocol and speed depend on software configuration
Module bus interface	Serial interface	RS 485 (RJ12) for ready-made KBR system cable (6-pin modular cable, unshielded), max. length 30 m if placed suitably. Maximum output power: 2W
USB interface	Serial interface	USB 2.0 Port
Display interface	HDMI interface	Monitor port

8.1.4 Mechanical data

Top hat rail device	Housing dimensions	90 x 71 x 61 mm (H x W x D)
	Mounting type	Wall mounting on DIN rail 7.5 mm deep, in accordance with DIN EN 50022; suitable for distribution board mounting
	Weight	Approx. 210g

8.1.5 Surrounding Conditions / Electrical Safety

Surrounding conditions	Standards	DIN EN 60721-3-3/A2: 1997-07; 3K5+3Z11; (IEC721-3-3; 3K5+3Z11)
	Operating temperature	K55 (-5 °C +55 °C)
	Air humidity	5 % ... 95 %, non-condensing
	Storage temperature	K55 (-25°C +70°C)
	Operating height	0...2,000 m above sea level
Electrical safety	Standards	DIN EN 61010-1: 2011-07
	Protection class	I
	Overvoltage category	CAT III: Relay CAT II
	Rated surge voltage	4kV
Protection type	Standards	IP20 in accordance with DIN EN 60529: 2014-09
EMC	Standards	DIN EN 61000-6-2:2006-03 + amendment 1:2011-03 DIN EN 61000-6-3:2011-09 + amendment 1:2012-11 DIN EN 61326-1:2013-07

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