User Manual
Technical Parameters

Interfaces for KBR eBus, Modbus and Modulbus

multisys D2-ESET/MSMT-4
multisys D2-BSET-4

You will find the relevant instructions for KBR devices in our Download Center.

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

System | English

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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.

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.

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1 multisys D2-ESET/MSMT-4 and multisys D2-BSET-4 General

The **multisys D2-ESET/MSMT-4** connects the KBR eBus to your computer via an Ethernet connection. The transmission protocols are:

- KBR eBus
- Modbus

On the Energy Bus side it acts as server and on the Ethernet side it acts as client.

The two interfaces (RS-485 on the KBR eBus side, and Ethernet on the network side) are galvanically separated.

The **multisys D2-BSET-4** connects the KBR module bus to your computer through an Ethernet connection.

On the Modbus side, it acts as server, and on the Ethernet side, it acts as client.

The two interfaces (RS-485 on the module bus side, and Ethernet on the network side) are galvanically separated.

The RS-485 interface on the KBR eBus or the module bus can be terminated if necessary, using four DIP switches (terminating resistors are built into the multisys).

The device is equipped with a power LED for supply voltage monitoring.

The **multisys D2-ESET/MSMT-4** and the **multisys D2-BSET-4** each have a power supply (of <10VA; 100 - 240V ±10% DC/50/60 Hz) and are suitable for wall mounting on a 7.5 mm-deep DIN rail in accordance with DIN EN50022 (for distribution board mounting).

NOTE

The Ethernet interface settings of the **multisys D2-ESET/MSMT-4** and the **multisys D2-BSET-4** are identical.

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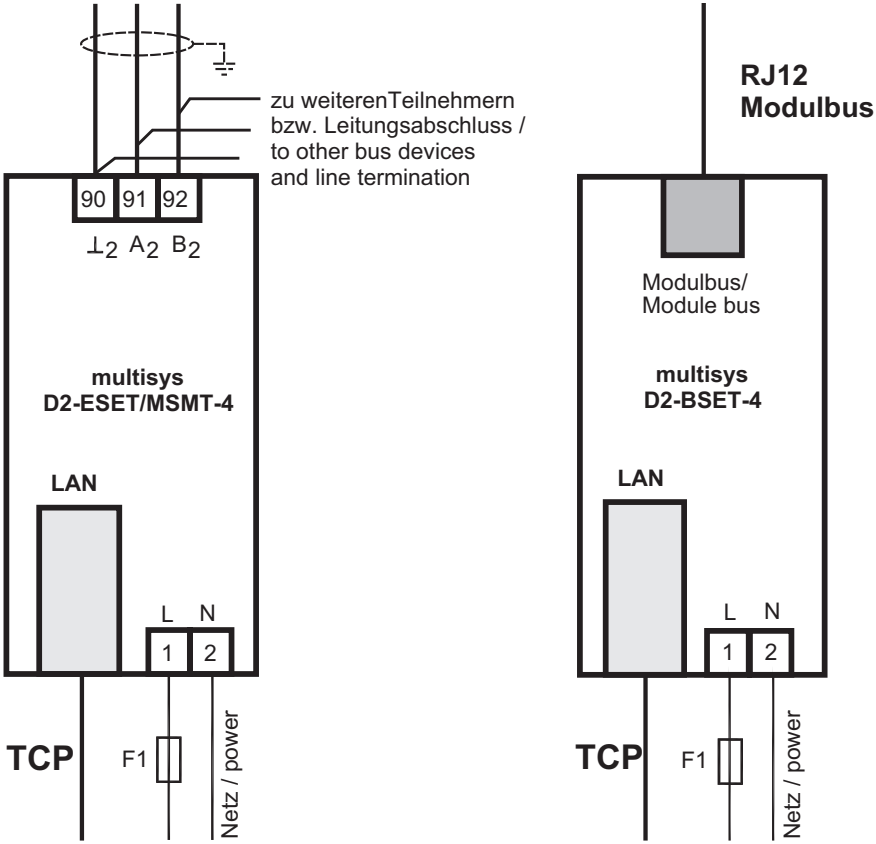
Both variations are described below.

1.1 Connection diagram



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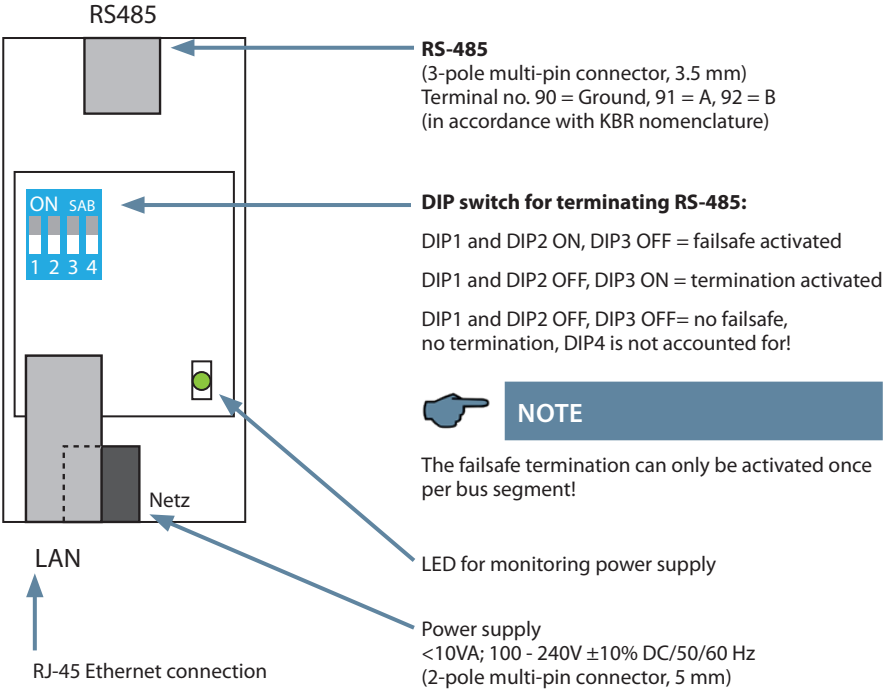
2 Hardware Configuration

2.1 RS485 Interface and LAN

The RS-485 interface is set to the KBR eBus parameters 38,400 baud, 8 data bits, parity even, 1 stop bit. If necessary, it can be terminated using four DIP switches.



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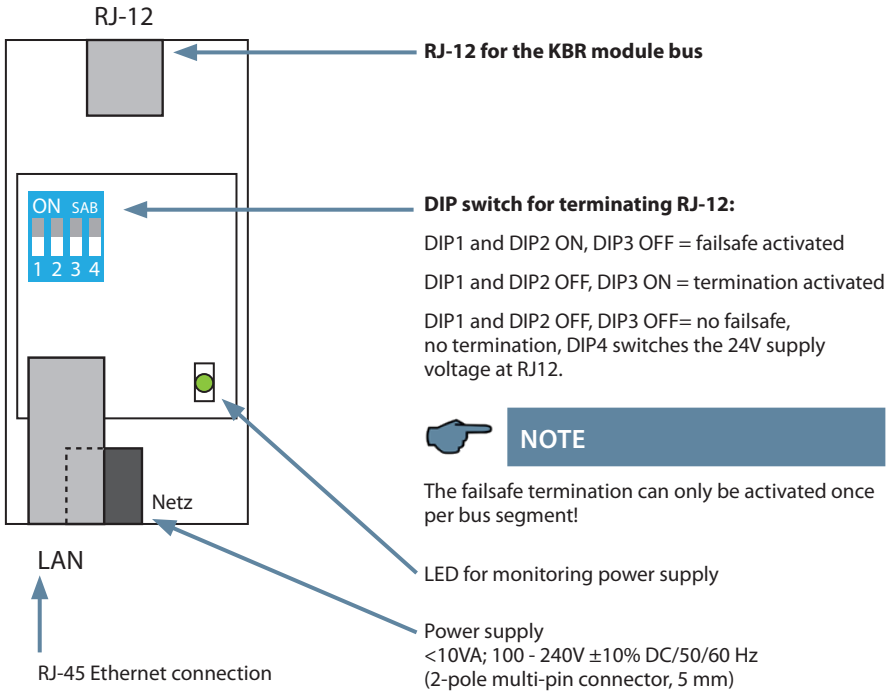
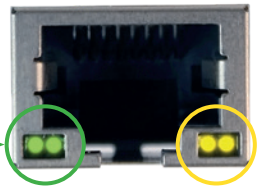
2.2 LAN and KBR Module Bus Interfaces (multisys D2-BSET-4)

The Modbus interface is set to the Modbus parameters 38,400 baud, 8 data bits, parity even, 1 stop bit. If necessary, it can be terminated using four DIP switches.



The operating status of the LAN interface (E-Port) is indicated by two LEDs:

Connection LED (left)	
Off	No connection
Green	10 / 100 Mbits



Activity LED (right)	
Off	No Data
Yellow	Data

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3 Software configuration

The present device is available in a version with Lantronix LAN port (until approx. Dec 2020) or IOT LAN port (from approx. Jan 2021).

There are three options for parameterizing the LAN port for these versions:

1. **Using a web browser and the web interface in the LAN port (Lantronix and IOT Lanport). See under 4.1.4.**

2. **Using the Telnet program (described for the execution with the Lantronix LAN port) see point 4**.

The connected device then reports under the factory-set IP address 192.168.0.1:

3. Using the IOT program **www.hi-flying.com/download-center-1/applications-1/download-item-iotservice (source of supply IOTService).**

First the IOT service tool should be installed. After starting the IOT service tool, the connected network is scanned and the Eports found are displayed.

Procedure: The parameterization with the IOTService Tool:

After installing and starting the IOTService Tool and the connected network is scanned and the E-Ports found are displayed and can be edited further.

Status

System runing status overview

System State

Product Name E20	MAC F0FE6BBA1D69
DHCP Disable	IP 192.168.0.1
Subnet Mask 255.255.255.0	Gateway 0.0.0.0
DNS 0.0.0.0	Firmware Version 1.34.12
System Time NTP Disabled	Total Running Time 0-Day 23:12:15
Remaining RAM 31694	Max Block Size 28576
Configuration Protected Disable	

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NOTE

For security reasons, the IP address of the device should be changed immediately, to prevent unauthorized persons from accessing the device from outside. In addition, the device should be password protected (for devices of the multimess series).

System Settings

Change the device system settings

Authentication	
User Name	admin
Password	admin

Basic Settings	
Host Name	mysys_BA1D69

Authentication	
DHCP	OFF
WAN P	192.168.0.1
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
DNS	0.0.0.0

NOTE

After selecting the port, you can access the parameterization with „Config“.

The factory setting is configured to eBus. If Modbus is to be used, proceed as described under 3.4.

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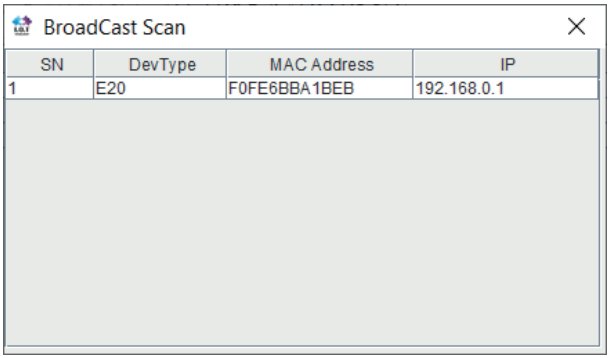
3.1 Assigning an IP Address to a Device of which the Address is Not in the Address Range of the Network

In the main window of the IOT Service Tool, open the 'BroadCast Scan' window via Setting (C) -> BroadCast.



E-port devices that are in the network but do not have a valid network address are listed here.

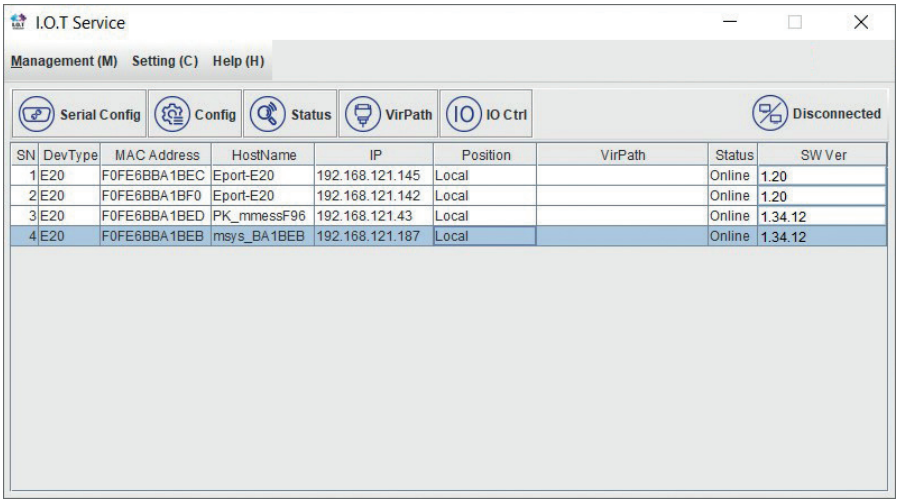
Double-click on the row with the device in it to open the 'Fast Setting' window:

NOTE

A valid IP address and the subnet mask can be entered here.

Click **'Confirm'** to apply the settings.

The device should then appear in the list in the main 'IOT Service' window.

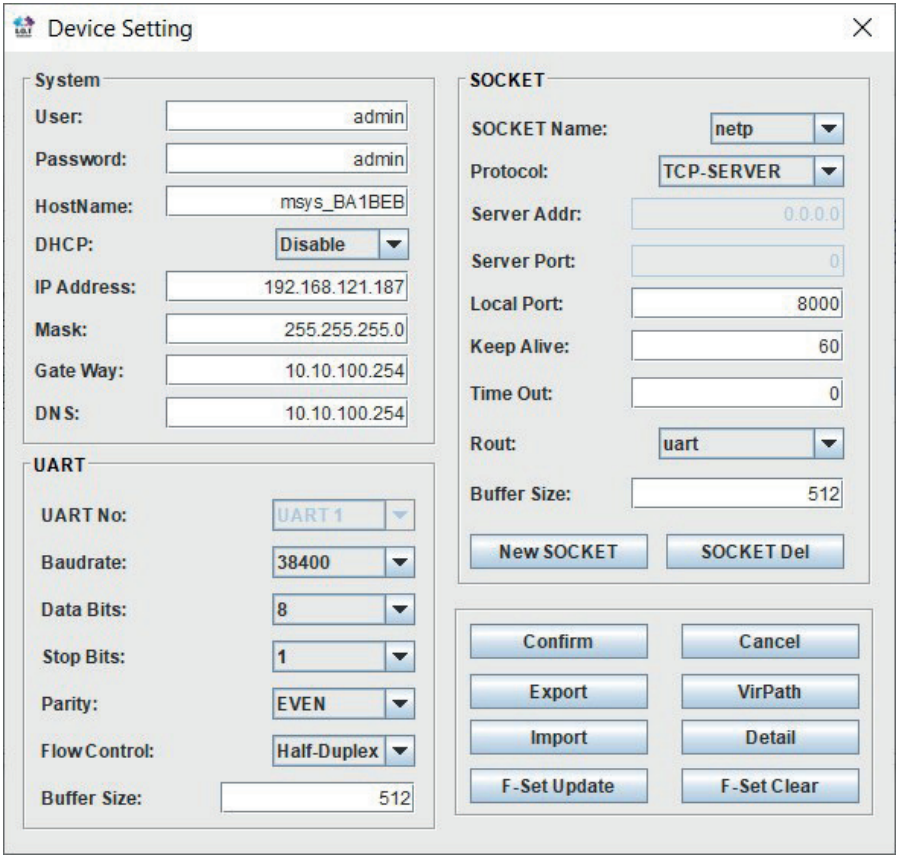


SN	DevType	MAC Address	HostName	IP	Position	VirPath	Status	SW Ver
1	E20	F0FE6BBA1BEC	Eport-E20	192.168.121.145	Local		Online	1.20
2	E20	F0FE6BBA1BF0	Eport-E20	192.168.121.142	Local		Online	1.20
3	E20	F0FE6BBA1BED	PK_mmessF96	192.168.121.43	Local		Online	1.34.12
4	E20	F0FE6BBA1BEB	msys_BA1BEB	192.168.121.187	Local		Online	1.34.12

After selecting the e-port, click on „**Config**“ to access the configuration settings.

3.2. E-port Configuration for eBus TCP

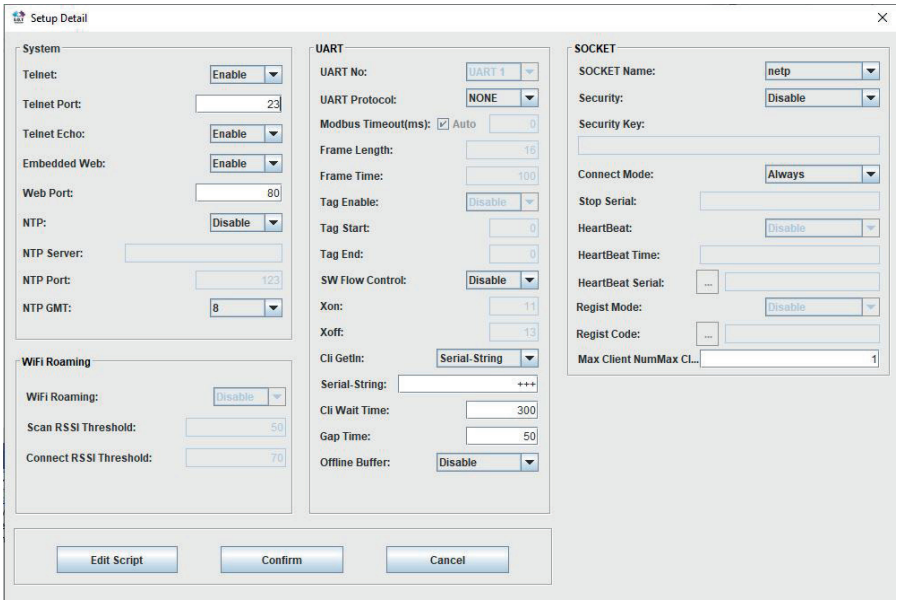
For eBus TCP, the parameters must be set as shown in the figure below. The network parameters (IP address, mask, gateway, DNS) must be adapted to local circumstances.



NOTE

- Flow Control: Half Duplex“ controls the changeover of RS-485 components.
- The local port must be set to 8000
- Click„Confirm“ to apply the parameters.

When „Detail“ is selected, this window appears:

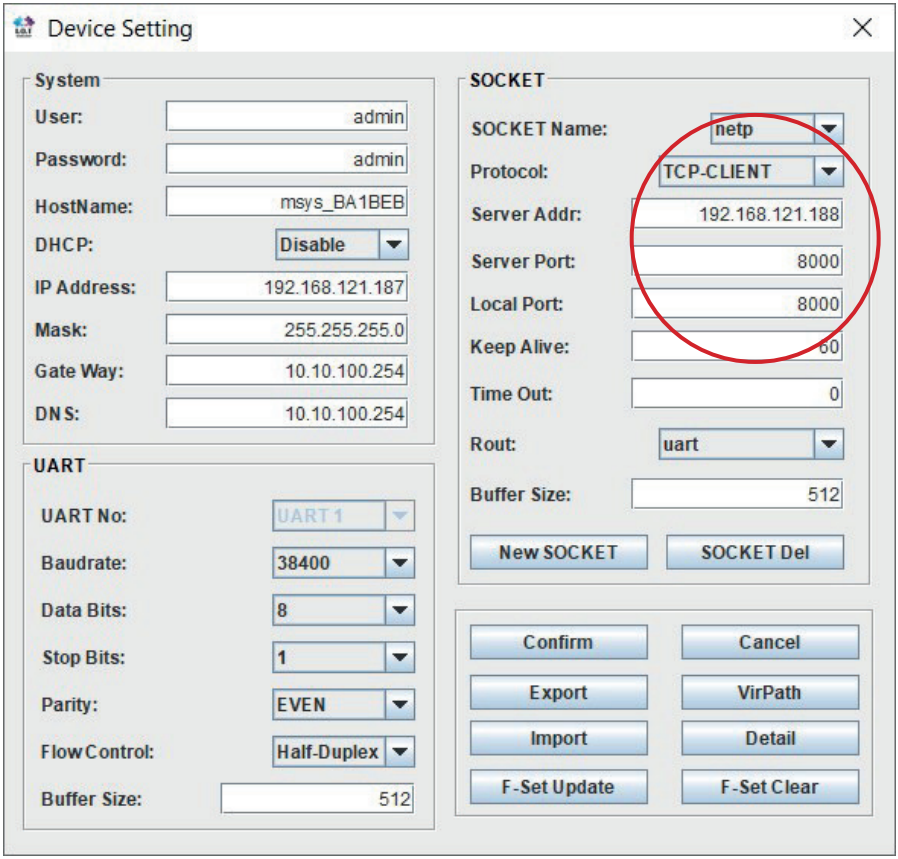


NOTE

- UART protocol should be set to ‚NONE‘ for eBus-TCP.
- Gap Time should be set to 10 (ms) (waiting time after serial reception, until Telex is sent over the network).
- Cli Waiting Time should be set to 15 (seconds) max.

3.3 Box-to-Box Operation (parameters of the server):

For this, the following settings are important:



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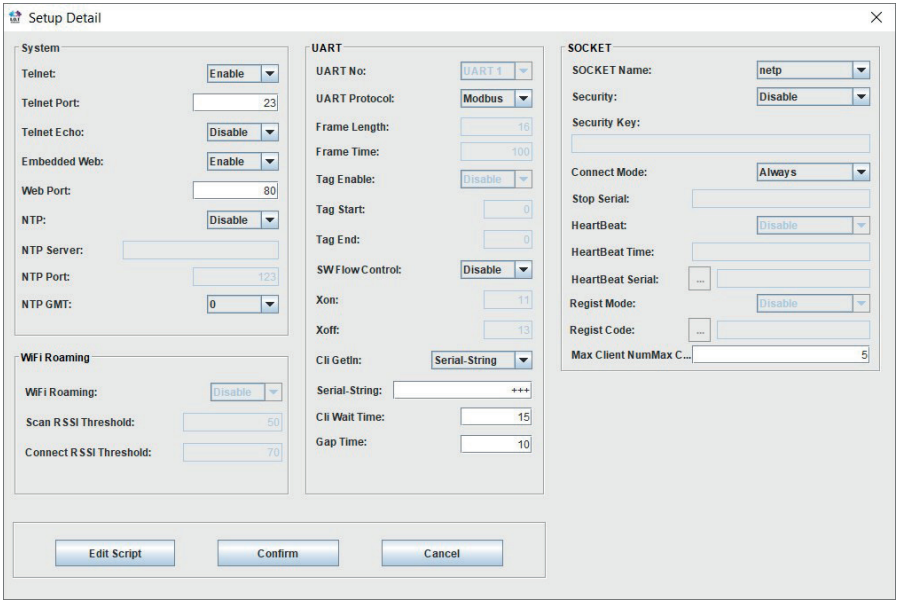
3.4 E-port configuration for Modbus TCP

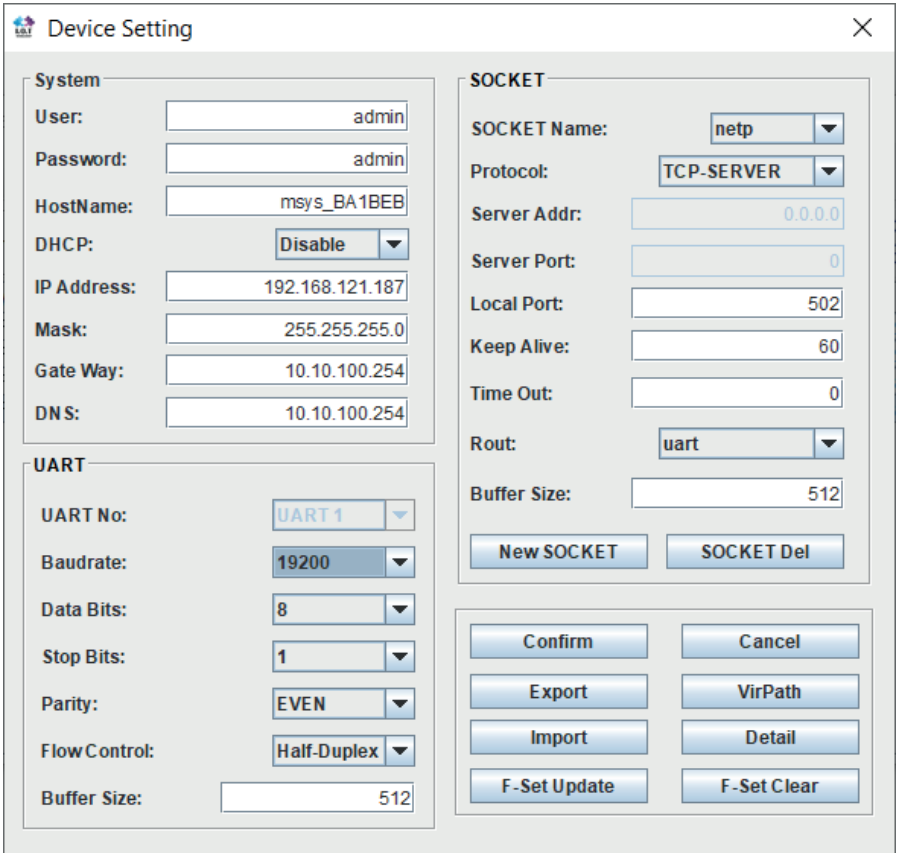
For Modbus TCP, the parameters must be set as shown in the figure below. The network parameters (IP address, mask, gateway, DNS) must be adapted to local circumstances.



NOTE

The UART parameters must be adapted to the local bus parameters. Local port: 502

Several connections to a serial interface, via the TCP, are possible. Replies are only sent to the enquirer



NOTE

Modbus ASCII cannot be configured.

Several connections to a serial interface, via the TCP, are possible. Replies are only sent to the enquirer.

4 LAN eBus configuration via Ethernet interface (Telnet)

The Ethernet interface of the multisys LAN eBus can be set up using the Ethernet interface via Telnet or the Lantronix tool DeviceInstaller.

HINWEIS

On delivery, the devices are set to the IP address 192.168.0.1. For this reason, it is recommended to check whether the device can be reached using this IP address.

Depending on the IP address, the following procedures are possible:

4.1 Procedure for IP address 192.168.0.1 or unknown IP.

The device can be configured using the Lantronix tool „DeviceInstaller“. Go to:

Browser https://ltrxdev.atlassian.net/wiki/spaces/LTRXTS/pages/106070471/Latest+version+of+DeviceInstaller (as of 03/31/2022) to download and install the two programs **Microsoft NET Framework version 2.0** and **Lantronix Device-Installer** (first install Microsoft's .NET Framework version 2.0).

After starting **DeviceInstaller**, the network connected is scanned, and the detected Lantronix ports are displayed and can then be edited.

4.1.1 Procedure for IP address 0.0.0.0

For the Ethernet address 0.0.0.0, access to the module has to be enabled first. (prerequisite: MAC ID known). The MAC ID can be gathered from a label attached to the side of the device, e.g. 00-20-4a-86-c9-91.

However, this procedure only works if the device does not have an IP address yet (0.0.0.0).

1. Connect the network cable to an existing network, or directly connect it to a computer using a crosslink cable.
2. Have the network administrator give you a network address.
3. Open DOS input window (with Start->All Programs->Accessories>Command Prompt).
4. **Connect network address using MAC ID (command arp -s):**

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```
Example:
Input: arp -s 10.66.22.98
00-20-4a-86-c9-91

Input: telnet 10.66.22.98 1

Response:
Establishing connection with
10.66.22.98... Connection to host
could not be established; port 1:
connection could not be estab-
lished

Input: telnet 10.66.22.98 9999
Input: Enter (within 2 seconds)

Response:
MAC address 00204AA6C991
Software version V6.5.0.7
(070919) XPTEXE
Press Enter for Setup Mode
basic parameters
Hardware: Ethernet TPI
IP addr 10.66.22.98,
no gateway set,
netmask 255.255.255.0

Security
SNMP is        enabled
SNMP Community Name:
               public Telnet
Setup is       enabled
TFTP Download is       enabled
Port 77FEh is  enabled
Web Server is  enabled
Web Setup is   enabled
ECHO is        disabled
Enhanced password is   disabled
Port 77F0h is  enabled

Channel 1
Baudrate 38400, I/F Mode 7F, Flow
00 Port 08000
Connect Mode: C0
Send ‚+++' in Modem Mode enabled
Show IP addr after ‚RING' enabled
Auto increment source port dis-
abled
Remote IP Adr: --- none ---,
Port 00000
Disconn Mode: 00
Flush          Mode: 80
Pack Cntrl:    20

Expert
TCP Keepalive: 45s
CPU performance:       Regular
Monitor Mode @ bootup: enabled
RS-485 tx enable:      active low
HTTP Port Number:      80
SMTP Port Number:      25
MTU Size:      1400
Alternate MAC: disabled
Ethernet connection type:
auto-negotiate

*** E-mail
Mail server: 0.0.0.0
Unit:
Domain:
Recipient 1:
Recipient 2:

Trigger 1
Serial trigger input: disabled
Channel: 1
Match: 00,00
Trigger input1: X
Trigger input2: X
Trigger input3: X
Message :
Priority: L
Min. notification interval: 1 s
Re-notification interval : 0 s

Trigger 2
Serial trigger input: disabled
Channel: 1
Match: 00,00
Trigger input1: X
Trigger input2: X
Trigger input3: X
Message:
Priority: L
Min. notification interval: 1 s
Re-notification interval: 0 s

Trigger 3
```

```
Serial trigger input: disabled
Channel: 1
Match: 00,00
Trigger input1: X
Trigger input2: X
Trigger input3: X
Message:
Priority: L
Min. notification interval: 1 s
Re-notification interval : 0 s
Change Setup:
0Server
1. Channel 1
2. E-mail
3. Expert
4.Security
5. Defaults
6. Exit without save
7. Save and exit       Your choice
? 0

IP Address : (000) 10.(000)
66.(000) 22.(000) 98
Set Gateway IP Address (N) N
Netmask: Number of Bits for Host
Part (0=default) (0)8
Change telnet config password (N)
N

Change Setup:
0 Server
1 Channel 1
3  E-mail
5 Expert
6 Security
7 Factory defaults
8 Exit without save
Save and exit  Your choice ? 1

Baudrate (9600) ? 38400

I/F Mode (4C) ?7F
corresponds to 8 data bits,
parity even, 1 stop bit
Flow (00) ?
Port No (10001) ? 8000
ConnectMode (C0) ?
Remote IP Address: (000).(000).
(000).(000)
Remote Port (0) ?
DisConnMode (00) ?
FlushMode (00) ?
DisConnTime (00:00) ?:
SendChar 1 (00) ?
SendChar 2 (00) ?

Change Setup:
0 Server
1 Channel 1
3 E-mail
5 Expert
6 Security
7 Factory defaults
8 Exit without save
9 Save and exit        Your choice
? 9

Parameters stored ...

Connection to host lost.
```

You can now make changes and save them with 9. Now it is ready for operation using the new network parameters.

The settings for the IP address, the default gateway and the netmask are made under the menu item 0 Server. The settings for the serial interface (KBR - energy bus) are made under the menu item 1 Channel 1 (eBus-Parameter 38400 Baud, 8 Datenbits, Parity even, 1 Stopbit).

4.1.2 Menu item 0 Server , setting IP address

IP Adress (10) etc.

Example: 10.66.22.98

Set Gateway IP Adress (N) ? N Gateway IP addr (0) (0) (0) (0)

Netmask: Number of Bits for Host Part (0=default) (8) Change telnet config password (N) N

When entering the netmask, observe the following chart:

Network Class	Host Bits	Netmask
A	24	255.0.0.0
B	16	255.255.0.0
C	8	255.255.255.0

4.1.3 Menu item 1 Channel 1, setting of serial interface (KBR eBus)

Baud rate (38400) ? 38400

I/F Mode (7C) ? 7F // the parameters 8 data bits, parity even, 1 stop bit correspond to the 7F coding Flow (00) ?

Port No (10001) ? 8000

All other parameters of this menu item stay the same.!

```
Change Setup:
0 Server
1 Channel 1
3 E-mail
5 Expert
6 Security
7 Factory defaults
8 Exit without save
9 Save and exit
Your choice ? 9
Parameters stored ...
```

When entering 9, the changes are saved and accepted.

The multisys 3D2-ESET can now be accessed using the KBR Visual Energy computer software.

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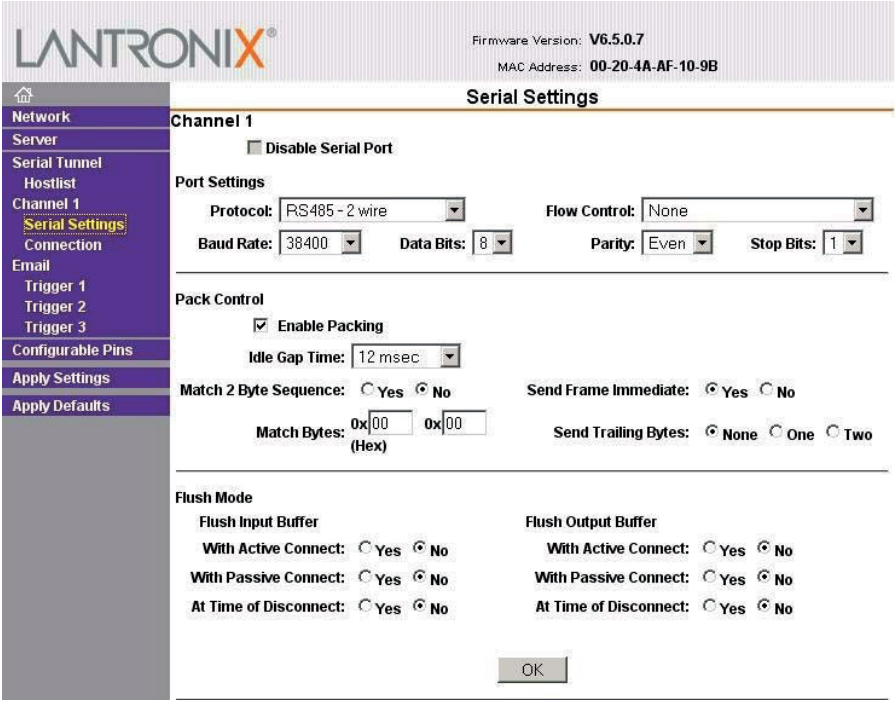
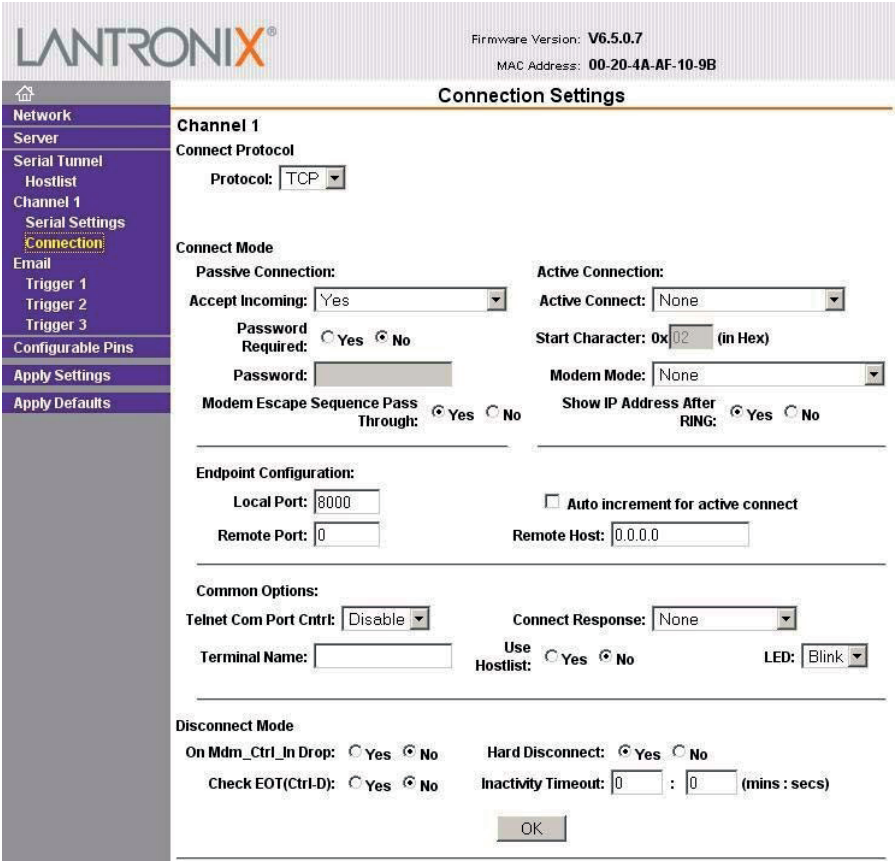
4.1.4. Web browser settings

The settings, which can be adjust by the Web Interface, are documented in the following pictures.

Enter the following IP address in your browser page: 192.168.0.1.



Channel 1 settings / Connection.



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4.1.5 Box-to-Box operation

In Box-to-Box operation, you can establish a logical permanent network connection between two **multisys D2-ESET -4** serial ports. In this operating mode, there is a permanent online connection between the two serial terminals connected. Possible additional data traffic or other network protocols do not influence the connection. In this operating mode, a permanent TCP connection between the server and client port is established. The server port is acting as a TCP client and thus responsible for opening (after configuration or reset) and closing (after deactivating the „Box-to-Box“ operating mode) tasks.

On the network side, there is only **multisys D2-ESET -4** data traffic using the Box-to-Box connection if serial reference data is available. There is no data traffic excessing the TCP protocol.

4.1.6 Setting the multisys D2-ESET -4 in server operation

Example: Server IP address 10.66.22.90

Menu 1 Channel 1

NOTE

For the operating mode „Box-to-Box“, only the server port is configured; The client IP address (remote IP address) and client port number (remote port) are only set at the server port!

NOTE

The configuration of the serial interface in the 0 Server sub menu has to be made at both ports.

Input: **telnet 10.66.22.90 9999**

Input: Enter **(within 2 seconds)**

```
Response:
MAC address 00204AA63735
Software version V6.5.0.7 (070919) XPTEXE Press Enter for
Setup Mode
*** basic parameters Hardware: Ethernet TPI
IP addr 10.66.22.90, no gateway set,netmask 255.255.255.0
```

```
*** Security
SNMP is                enabled
SNMP Community Name: public Tel-
net Setup is   enabled TFTP Down-
load is        enabled Port 77FEh
is             enabled
Web Server is          enabled
Web Setup is           enabled
ECHO is                disabled

Enhanced Password is disabled
Port 77F0h is  enabled
*** Channel 1
Baudrate 38400, I/F Mode 7F, Flow
00 Port 08000
Connect Mode : C0
Send ,+++‘ in Modem Mode enabled
Show IP addr after ,RING‘ enabled
Auto increment source port disa-
bled
Remote IP Adr: --- none ---, Port
00000 DisconnMode : 00
FlushMode      : 00
```

etc.

```
Change Setup:
0 Server
1 Channel 1
3  E-mail
5 Expert
6 Security
7 Defaults
8 Exit without save
9 Save and exit
Your choice ? 1

Baudrate (38400) ? I/F Mode (7F)
?
Flow (00) ?
Port No (8000) ?
ConnectMode (C0) ? C3
Start Char: (02) ? 02
Send ,+++‘ in Modem Mode
(Y) ?

Show IP addr after ,RING‘ (Y) ?
Auto increment source port (N) ?
Remote IP Address : (000)
10.(000) 66.(000) 22.(000) 98
Client-IP-Adresse
Remote Port (0) ? 8000 Client-Port
DisConnMode (00) ?
FlushMode      (00) ? 80
Pack Cntrl (00) ? 20
DisConnTime (00:00) ?00:20
SendChar 1 (00) ?
SendChar 2 (00) ?

Change Setup:
0 Server
1 Channel 1
3 E-mail
5 Expert
6 Security
7 Defaults
8 Exit without save
9 Save and exit
Your choice ?  9
```

Enter 9 to save and apply the changes.

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4.1.7 Setting the multisys D2-ESET -4 in client operation

NOTE

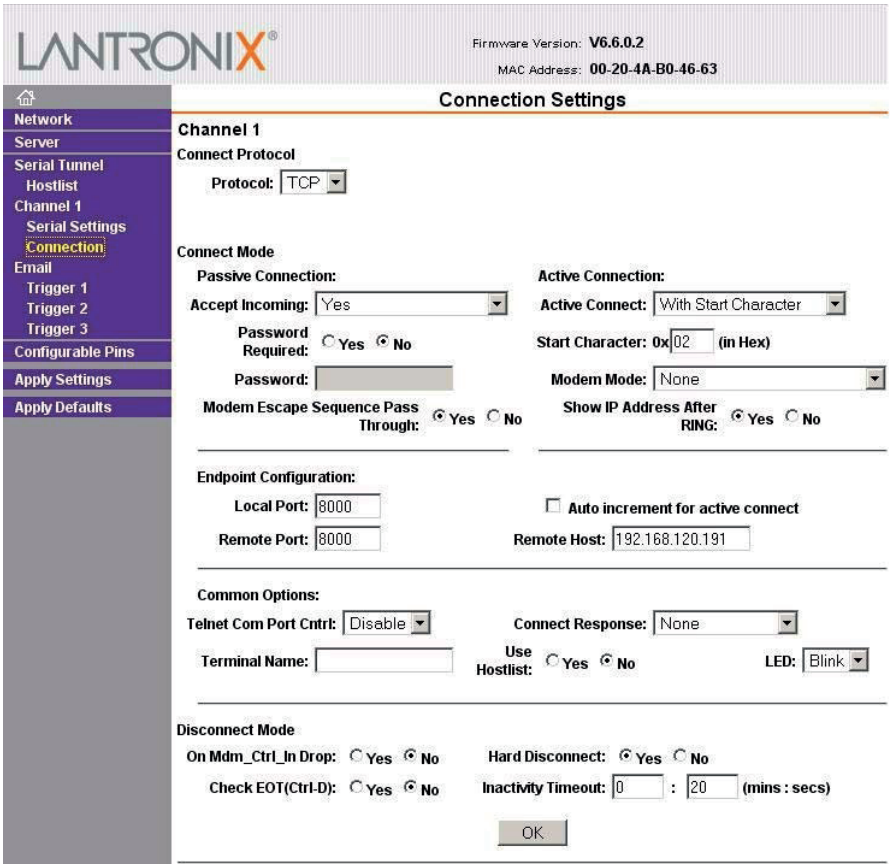
A description of how to set up the multisys D2-ESET -4 in client operation is given in section 3.2.

4.1.8 Web browser settings

The settings, which can be adjust by the Web Interface, are documented in the following pictures.

Channel 1 settings / Serial settings.

Channel 1 settings / Connection.



4.1.9 Resetting the multisys D2-ESET -4 from server to client operation

Example: Server IP address 10.66.22.90

To reset a multisys D2-ESET -4 configured as server to client for „normal“ network operation, you have to change the parameter in the 1 Channel 1 menu as follows:

Input: **telnet 10.66.22.90 9999**

Input: Enter **(within 2 seconds)**

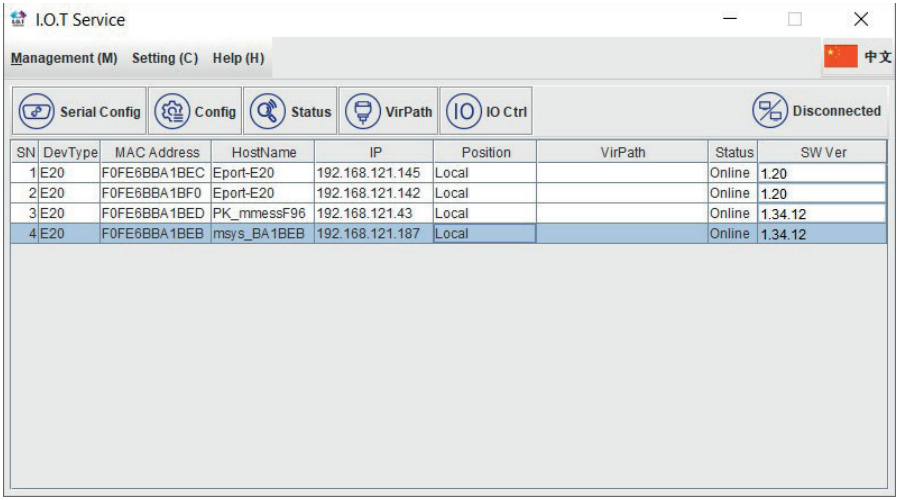
```
Response:
MAC address 00204AA63735
Software version V6.5.0.7
(070919) XPTEXE Press
Enter for Setup Mode

*** basic parameters Hardware:
Ethernet TPI
IP addr 10.66.22.90, no gateway
set,netmask 255.255.255.0

*** Security
SNMP is         enabled
SNMP Community Name: public Tel-
net Setup is    enabled TFTP Down-
load is         enabled Port 77FEh
is              enabled
Web Server is   enabled
Web Setup is    enabled
ECHO is         disabled
Enhanced Password is disabled
Port 77F0h is enabled

*** Channel 1
Baudrate 38400, I/F Mode 7F, Flow
00 Port 08000
Connect Mode : C3
Send ‚+++' in Modem Mode enabled
Show IP addr after ‚RING' enabled
Auto increment source port disa-
bled
Remote IP Adr: 10.66.22.98, Port
08000 Start Char: 02 Disconn Mode
: 00 Disconn Time: 00:20
Flush           Mode : 80 Pack
Cntrl           : 20
usw.

Change Setup:
0 Server
1 Channel 1
3 E-mail
5 Expert
6 Security
7 Defaults
8 Exit without save
9 Save and exit
Your choice ? 1
Baudrate (38400) ? I/F Mode (7F)
?
Flow (00) ?
Port No (8000) ? ConnectMode (C3)
? C0
Send ‚+++' in Modem Mode (Y) ?
Show IP addr after ‚RING' (Y) ?
Auto increment source port (N) ?
Remote IP Address : (010) 0.(000)
0.(000) 0.(000) 0
Remote Port (8000) ? 00000
DisConnMode (00) ?
FlushMode      (80) ?
Pack Cntrl (20)
DisConnTime (00:20) ?00:00
SendChar 1 (00) ?
SendChar 2 (00) ?

Change Setup:
0 Server
1 Channel 1
3  E-mail
5 Expert
6 Security
7 Defaults

8 Exit without save
9 Save and exit
Your choice ? 9
```

4.1.10 Settings with web browser

The settings that can be made using a web browser are documented in the following images.

Settings Channel 1 / Serial Settings.

Settings Channel 1 / Connection.



SN	DevType	MAC Address	HostName	IP	Position	VirPath	Status	SW Ver
1	E20	F0FE6BBA1BEC	Eport-E20	192.168.121.145	Local		Online	1.20
2	E20	F0FE6BBA1BF0	Eport-E20	192.168.121.142	Local		Online	1.20
3	E20	F0FE6BBA1BED	PK_mmessF96	192.168.121.43	Local		Online	1.34.12
4	E20	F0FE6BBA1BEB	msys_BA1BEB	192.168.121.187	Local		Online	1.34.12

5 Technical Data

5.1 Power supply

Power supply	<10VA; 100 - 240V ±10% DC/50/60 Hz

5.2 Electrical Connection

Connection elements		Plug-in terminals
Input control voltage	Fuse	max. 6 A
LAN connection		8P8C modular connector
BUS connection	Connection material	For proper operation, use shielded twisted-pair cables only; e.g. I-Y(St)Y 2x2x0.8
BUS connection **multisys D2-ESET/MSMT-4**	Pins for BUS connection via RS-485	Device Terminal 90 (⊥) Terminal 91 (A) Terminal 92 (B)
BUS connection multisys D2-BSET-4		6 pole modular cable, RJ-12 connector: 6P6C max. DC output power: 4 W

5.3 Mechanical data

DIN rail measuring device	Housing dimensions	90 x 36 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. 120g

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5.4 Standards and miscellaneous

Ambient conditions	Standards	DIN EN 60721-3-3:1995-09 + 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%	
	Storage temperature	-25°C … +70°C	
	Operating height	0 … 2,000 m above sea level	
Electrical safety	Standards	DIN EN 61010-1:2011-07; DIN EN 61010-2-030:2011-07	
	Protection class	I	
	Overvoltage category	Power supply:	CAT III: 300V
	Rated surge voltage	4kV	
Protection type	Standards	DIN EN 60529:2014-09	
	Terminals	IP 20	

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