

W&T

www.WuT.de

Operating instructions

Commissioning and application

rule.box

valid for the product:

#53920 rule.box USB

#55920 rule.box hub

#57920 rule.box Digital 2xIn, 2xOut

#58920 rule.box RS232/422/485

v1.00, 27.11.2020, english

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Errors and omissions excepted:

Because we can make mistakes, none of our statements should be used without verification. Please report any errors or misunderstandings that come to your attention so that we can identify and correct them as quickly as possible.

Only carry out work on or with W&T products if it is described here and you have read and understood the instructions in full. Unauthorized action can cause hazards. We are not liable for the consequences of unauthorized actions. In case of doubt, please contact us or your dealer again!

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1. Security and law

Notes

This manual contains instructions concerning your personal safety. They are introduced by a signal word expressing the seriousness of the danger:


DANGER means an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a possible hazard that could result in death or serious injury.

CAUTION indicates a possible hazard that may result in injury.

In each case, the signal word of the highest applicable hazard level is used in a warning. This means that if there is an indication of danger to life, there may also be a danger of injury.

If a warning refers to an entire section or to a sequence of work steps, it precedes them and is structured as follows.

 SIGNAL WORD Nature and source of the hazard
Consequences of the danger
➔ An action step to avert the consequences of the danger
➔ Another action step to ward off the consequences of the danger

A warning notice that refers to an individual work step immediately precedes it and is structured as follows:

1. Previous work step

 **SIGNAL WORD: Nature and source of the hazard**

Consequences of the danger

➔ Action step to avert the danger

➔ Further action step to avert the danger

2. Work step to which the note refers
3. Subsequent work step

Some other information within this guide is also highlighted:

! **Note: Risk of property damage imminent**
Circumstances that can lead to property damage

i **General information**
General information on the following text section

📖 **Further information**
Reference to further information

P **Produkt**
The following section refers only to a specific product.

👤 **Target groups**
The following section or sequence of actions is aimed at a specific target group.

Instructions for action

Tasks for achieving specific goals are instructions for action in the form of step-by-step instructions. These have the following structure:

🔧 Solve task

The introductory paragraph summarizes the task and points out general prerequisites needed to perform it. The following is a list of

- items needed for implementation and
 - concrete requirements that must be met
1. first action step
 2. second action step
 3. third action step

Achieved result and, where applicable, a performance review.

Other design elements

References to websites:

 www.wut.de

User input:

129.11.121.1

Sourcecode:

```
print(„This is a programming example“)
```

Emphasis in text:

Identifiers, such as **button labels**, are highlighted in the body text.

Qualified personnel

 **WARNING** Danger to life due to electric current

Improper installation can lead to accidents with electric current

- ➔ Installation by qualified personnel only
 - ➔ Observe documentation
 - ➔ Observe safety regulations
-

The products described in this manual may only be installed and started up by personnel qualified for the task in hand. The documentation corresponding to the respective task must be observed; in particular the safety and warning instructions contained therein.

Qualified personnel, based on their training and experience, are capable of recognizing risks and avoiding possible hazards when handling the products described.

Intended use

The various models of the rule.box are IoT gateways for the networking of devices, cloud services, databases, etc. in the context of the Internet of Things and Industry 4.0. They serve as data aggregators and as switching and control centers. Any other use is not in accordance with the intended purpose. Wiesemann & Theis GmbH is not liable for damage resulting from improper use.

Product modifications

Product modifications are not permitted. Wiesemann & Theis GmbH shall not be liable for any damage resulting from unauthorized product modification.

Electrical safety

- Before starting any work on the rule.box, completely disconnect the power supply by taking suitable measures and secure it against being switched on again.
- Only use the device in closed and dry rooms.
- Do not expose the device to high ambient temperatures or direct sunlight. Observe restrictions with regard to the maximum ambient temperature.
- Keep ventilation openings free and maintain a distance of at least 10cm between the rule.box and neighboring heat sources.
- Observe nominal values for input voltage and output currents.
- During installation, ensure that no free-hanging wires protrude into the interior of the device. Make sure that no individual wires are sticking out of stranded wires. Use wire end ferrules.
- Screw the terminals tightly.
- Screw down unused terminals.
- Only use power supplies that ensure safe isolation of the low-voltage side from the supply mains in accordance with EN62368-1 and have „LPS“ property.

Electromagnetic compatibility

! Note: Electromagnetic interference

To ensure electromagnetic compatibility, use only shielded network cables!

The rule.box meets the industrial limits for immunity as well as the stricter emission limits for household and small business. There are no EMC-based restrictions with regard to the usability of the devices in these environments.

Conformity to standards

📄 Complete declarations of conformity

The complete declarations of conformity for your device can be found on the associated online data sheet at www.wut.de

The rule.box is compliant with the following standards and normative documents:

- EN 55032: 2012 Kl. B
- EN 61000-3-2: 2014

- EN 61000-3-3: 2013
- EN 61000-4-2: 2009
- EN 61000-4-3: 2006 + A1: 2008 + A2: 2010
- EN 61000-4-4: 2012
- EN 61000-4-5: 2014 +A1
- EN 61000-4-6: 2014
- EN 61000-4-8: 2010
- EN 61000-4-11: 2004
- EN 61000-6-2: 2005
- EU Directive 2011/65/EU (RoHS)

Storage

Store the rule.box in a dry room. Make sure to comply with the ambient conditions. The temperature must be between -40°C and +70°C, the humidity must not exceed 95% rel. humidity. We recommend storage in the original packaging.

Transportation

No special restrictions apply with regard to transport. To protect the product from mechanical stress, we nevertheless recommend transporting it exclusively in its original packaging.

Disposal

Electronic devices must not be disposed of with household waste, but must be taken to a professional electronic waste disposal. The rule.box is marked according to 2012/19/EU on waste electrical and electronic equipment. This directive regulates the Europe-wide take-back and recycling of waste electronic equipment. You can dispose of the device via existing collection and return systems or return it to your specialist dealer.

2. Product information

Manufacturer

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Porschestr. 12
42279 Wuppertal
Germany

Tel: +49 (0)202 26800
Fax: +49 (0)202 2680265
E-Mail: info@wut.de
www.wut.de

WEEE registration: DE 77008276
BattG registration: 21000788

Product labeling

The unique identification of the product type is done via the article number on the device label. The unique device identification is found in the form of the MAC address on the underside of the device. This consists of twelve characters (six bytes in hexadecimal representation), starting with the manufacturer identification 00:c0:3d. The following 6 characters uniquely identify your device.

***i* Damage to or loss of the device label**

Part number and MAC address can be read out via the web interface and via the WuTility tool (www.wut.de/wutility) if the device label is damaged or lost.

Scope of delivery

The scope of delivery includes:

- rule.box (#53920, #55920, #57920 oder #58920)
- Connector (#11111)
- Quick guide
- Device passport
- Risk information

Accessories and spare parts

For reliable operation we recommend the use of original W&T accessories:

Connector (#11111)

2-pole, 5.08 mm pitch for power supply connection

 www.wut.de/11111

Power supply with Euro plug (#11021)

Output: 24V DC, 500mA, energy efficiency: Level VI, no-load power < 0.075W

 www.wut.de/11021

15 Watt Top Hat Rail Power Supplyl (#11080)

Universal LPS power supply with wide range input 100-240V, 1 TE



 www.wut.de/11080

Ethernet-Switch Industrie, 4 Port (#55604)

Industrial PoE switch with four ports

 www.wut.de/55604

Symbols on the products

Symbol	Explanation
	<p>CE marking</p> <p>The product complies with the requirements of the applicable EU directives.</p>
	<p>WEEE marking</p> <p>The product must not be disposed of with household waste, but in accordance with the disposal regulations for electrical waste applicable at the place of installation.</p>

3. Installation

Installers

The following section is intended for the installers of the rule.box and assumes appropriate expertise.

Mounting in the control cabinet

Mount on top hat rail

Note: Risk of property damage imminent

Please observe the safety instructions in chapter 1.

The rule.box can be mounted on DIN rail (TH 35).

1. Place the rule.box slightly angled upwards with the receptacle on the upper edge of the top-hat rail.
2. Press the device against the top-hat rail from the top front until the holder clicks into place.

The rule.box is now firmly mounted on top-hat rail.

Set up power supply

Set up power supply via PoE

The rule.box can be electrically supplied as a device of power class 2 via PoE according to IEEE802.3af. For this you need

- A PoE switch or a PoE injector

1. Connect the rule.box on „Network“ or „Network 1“ to the PoE switch / the PoE injector via a shielded network cable.

The rule.box starts operation.

Set up power supply via external power supply unit

WARNING Danger to life due to electric current

The use of an incorrect power supply can lead to accidents with electric current and fire

- ➔ Only use power supplies according to the specification
 - ➔ Observe documentation
 - ➔ Observe safety regulations
-

The rule.box can be supplied with voltage via an external power supply unit. Such a power supply must be potential-free and the reference ground for the output voltage must not have a direct connection to the protective earth. Furthermore, a safe isolation between the extra-low voltage side and the supply network according to EN60950-1, as well as LPS property are mandatory.

- a power supply unit that meets the specifications (see Accessories section)
- a screwdriver

1. Attach the green terminal adapter to the power supply unit
2. Plug the green terminal adapter into the socket on the device

The rule.box starts operation.

Connect network cable

The rule.box is equipped with one or two network interfaces, depending on the model. For the connection to a network you need:

- a patch cable

1. Use a patch cable to connect the rule.box to the network into which you want to integrate the device.

The rule.box is connected to the network.

4. Commissioning

Network Administrator

This section is intended for network administrators and assumes knowledge of network configuration. If you as a user do not know what to do with the steps described here, please contact your system administrator.


Make network settings

To perform the tasks described below, you will need the following information:

- MAC addresses of the devices to be configured
- Network parameters of the device to be configured: IP addresses, subnet definitions, gateways, DNS and time servers.

Make network settings via the WuTility


In this section, you assign a basic network configuration to the rule.box using the WuTility configuration software. If you want to configure multiple devices, make a note of the respective MAC addresses that you will find on the bottom of the device. For the implementation you need:

- a current web browser
 - the software WuTility ( www.wut.de/wutility)
1. Open the Wutility
 2. Select the device you want to configure by its MAC address from the list of available devices.
 3. In the toolbar at the top, click the **IP Address** button
 4. Set the desired network parameters
 5. Click **Next**

The rule.box adopts its setting and then restarts.

Make network settings via DHCP

If automatic configuration via DHCP is enabled in your network, your box will obtain a configuration after you connect it to the network. To find out the IP address of your rule.box, you need either

- Access to the leases of your DHCP server, for example via the log file or via the display of network subscribers on your router.
- the software WuTility ( www.wut.de/wutility)

1. Open the log file of your DHCP server or the overview of network nodes at your router to determine its IP address based on the MAC address of the rule.box.
2. If necessary, configure a fixed lease for the rule.box so that it is always accessible under the same IP address.

The rule.box is now accessible via the IP address assigned by the DHCP server.

Make network settings via the default IP

In this section, you assign an IP configuration to the rule.box via the web interface. To do this, use the preset default IP of the device. For the implementation you need:

- Administration rights for the network interface of your PC
- a current web browser

1. Assign a temporary or secondary IP configuration to your network interface on network 190.107.233/24.
2. Open your web browser.
3. Enter the IP address 190.107.233.110 in the address line.
4. Log in as administration user.
5. Click on **Basic Settings**.
6. Click **Network**.
7. Enter the desired network configuration.
8. Click the **Save** button at the bottom right.

The rule.box adopts your setting and is accessible via the assigned IP address.

Call web interface

Calling up the web interface via IP address

The web interface can be accessed via the IP address of the rule.box.

1. Open your web browser.
2. Enter the IP address of the rule.box in the address bar.

The web interface is displayed.

Calling up the web interface via the WuTility

The web interface can be accessed via the WuTility.

1. Open the WuTility.
2. Select the device whose web interface you want to access from the list of available devices.
3. Click the **Browser** button in the toolbar at the top.

The rule.box web interface opens in your web browser.

Make language settings

The web interface is available in German and English translation.

1. Click the **circle with the country flag** in the upper right corner of the web interface.
2. Select the language in which you want the web interface to be displayed based on the country flag.

The language of the web interface changes.

Make further settings via the web interface

General notes on the web interface

All other settings of the rule.box are made in the administration area of the web interface. Here you will find the following controls.

- Crumb navigation (top)
- Administration menu (left)
- Save button
- Reload button
- Buttons in dialog boxes

Log in administration user

To make settings via the web interface, you must first log in as an administration user. No password is set in the delivery state.

1. Call up the web interface.
2. Click the **Login** button in the upper right corner of the user interface.
3. Specify the password for the administration user, if you have assigned one.
4. Click **Login**.

You can now make settings via the web interface.

Configure second network interface

Product

The following section refers only to the rule.box hub #55920.

The device can be connected to another network segment via the second network interface.


1. Log in to the web interface as an administration user.
2. Click the **Network** button in the **Basic Settings** section of the Administration menu.
3. Make the configuration of the second network interface.
4. Click **Save** to apply the changes.

The second network interface can now be used.

Set date and time

i **Manually set time is not stored permanently**

Note that a manually entered time will be lost after a few days if the power supply is interrupted.

When delivered, the rule.box is set so that the time is automatically obtained from  ntp.org when Internet access is functioning. Alternatively, you can configure your own time servers or specify the time manually.

1. Open the web interface as an administration user.
2. Click the **Basic Settings** button in the **Administration menu**.
3. Then click the **Date and Time** button.
4. Activate the **External time server** option and specify up to two time servers. Alternatively, deactivate the **External time server** function and specify the current time in Manual configuration.
5. Select the **time zone** that applies to the device location.
6. Click the **Save** button.

The rule.box takes over the configuration for date and time.

Change device information

The rule.box displays information about the device and the manufacturer on the web interface. In the delivery state, this information refers to the product and to Wiesemann & Theis as the manufacturer. You can customize this information, for example, if you use the rule.box as a component in your own product.

7. In the administration area, under the **Basic settings** menu item, select the **Information** button.
1. Enter details about the product in the **Device Information** area.
2. In the **Manufacturer Information** area, enter information about the manufacturer.
3. Save the changes.

On the start page of the rule.box, the changed information is displayed under the menu item „Properties“.

Set/change passwords

Note: Danger from cyber attacks

Please assign strong passwords for all users to maintain the highest possible level of information security.

The rule.box has four different user roles: The administrator who can set the device's preferences, a user who can define Node-RED flows, a dashboard user who can access the dashboards associated with the flows, and a database user who has read and write permissions to the internal database.

1. Open the web interface with administrator rights.
1. In the left menu under the item **Basic settings**, select the button **User**.
2. If necessary, adjust the user names for the two Node-RED users.
3. Assign strong passwords for all users.
4. Then click the **Save** button.

You have protected the accesses for the different user roles with a password.

5. Use

IoT developers and end users

The following section is intended for developers and users of Node-RED flows and dashboards.

Node-RED documentation

This manual does not cover the programming of Node-RED. A good introduction to this can be found in the official documentation at: www.nodered.org/docs.

Node-RED

Open Node-RED Editor

The Node-RED Editor can be accessed via the IP address of the device and the port assigned in the network settings under „Web access“: [http\(s\)://IP:Port](http(s)://IP:Port). This is port 1880 in the default setting. Alternatively, the editor can also be accessed via the web interface.

1. Open the rule.box web interface.
2. In the left menu, click the **Node-RED Editor** button.
3. If necessary, enter the user name and password for the Node-RED Editor to log in.

The editor is loaded.

Open Node-RED Dashboard

The Node-RED Dashboard can be accessed via the IP address of the device and the port assigned in the network settings under „Web access“: [http\(s\)://IP:Port/ui](http(s)://IP:Port/ui). This is port 1880 in the default setting. Alternatively, the dashboard can also be accessed via the web interface.

1. Open the rule.box web interface.
2. Click the **Node-RED Dashboard** button in the left menu.
3. If necessary, enter the username and password for the dashboard user to log in.

The dashboard is loaded.

Interfaces

Wiring of the digital inputs and outputs

Product

The following section refers only to the rule.box Digital #57920.

For the operation of the inputs and outputs a DC voltage of max. 30V DC is required, which must be applied to the terminals **Vdd** and **GND**.

1. Connect a voltage of max. 30V DV to the **Vdd** terminal of the 6-pin connector.
2. Connect the corresponding GND potential to the **GND** terminal of the 6-pin connector.

The basic requirement for the operation of the inputs and outputs is now fulfilled.

The inputs are wired via the terminals **Inputs 0** and **Inputs 1**. They are designed for voltages up to 30V DC and are galvanically isolated from the internal circuitry via optocouplers with 1kV. An input signal is detected when a voltage greater than 8V DC (+/-1V DC) is applied to one of the input terminals against **GND**.

1. Connect a signal line to **Inputs 0** or **Inputs 1**.
2. Now connect the input with a voltage, e.g. 24V DC. The corresponding ground potential is connected to the **GND** terminal.

The input detects a signal and the control lamp on the terminal lights up.

The outputs **Outputs 0** and **Outputs 1** operate current driving and can be loaded with 500mA each. An activated output switches the voltage **Vdd** at its terminal.

1. Connect a consumer, e.g. a signal lamp, to one of the two digital outputs **Outputs 0** or **Outputs 1** and **GND**.
2. Switch on the output via Node-RED.

The output now carries the voltage **Vdd**, the indicator light above the terminal is on and the consumer is switched on.

Serial interface

Product

The following section refers only to the rule.box Serial #58920.

The serial combination interface of the rule.box is to be addressed in Node-RED under `/dev/ttyS1`. The interface is designed as a combination module and can be switched between the operating modes **RS232**, **RS422** and **RS485** via DIL switch. With SW6 and SW7 you switch on the termination in RS422/485 mode.

Operating mode	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
RS232	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
RS422, RS485, 4-wire bus master DTR handshake	OFF	OFF	OFF	ON	OFF	*	*	OFF
RS422, RS485, 4-wire bus master RTS handshake	OFF	OFF	OFF	OFF	ON	*	*	OFF
RS485, 4-wire / 2-wire with echo DTR control	OFF	OFF	ON	ON	OFF	*	*	OFF
RS485, 2-Draht ohne Echo DTR-Steuerung	ON	OFF	ON	ON	OFF	*	*	OFF
RS485, 4-wire / 2-wire with echo RTS control	OFF	OFF	ON	OFF	ON	*	*	OFF
RS485, 2-wire without echo RTS control	ON	OFF	ON	OFF	ON	*	*	OFF
RS485, 4-wire / 2-wire with echo Automatic control	OFF	ON	OFF	ON	OFF	*	*	OFF
RS485, 2-wire without echo Automatic control	ON	ON	OFF	ON	OFF	*	*	OFF

1. Open the housing, following the instructions in this manual.
2. Set the desired operating mode of the serial interface according to the table shown above.
3. Switch on the termination in RS422/485 mode via switches 6 and 7 if required.
4. Close the housing again.

The serial interface now operates in the set operating mode.

The pinout of the serial data line is determined by the set operating mode. Operation in RS232 mode results in the following pinout:

Pin#	Signal	Function
1	DCD	Input
2	RxD	Input
3	TxD	Output
4	DTR	Output
5	GND	Signal GND
6	DSR	Input
7	RTS	Output
8	CTS	Input
9	RI	Input

In an RS422 or RS485 mode:

Pin#	Signal	Function
1	TxD A	Output
2	RxD A	Input
3	RTS A	Output
4	CTS A	Input
5	GND	Signal GND
6	TxD B	Output
7	RxD B	Input
8	RTS B	Output
9	CTS B	Input

For 2-wire connections in RS422/485 operation, it is mandatory to insert a jumper between pins 1 + 2, and 6 + 7 in the connector of the data line on the rule.box side.

USB interface

Product

The following section only refers to the rule.box USB #53920.

The USB interface of the rule.box is compatible with the USB standard 2.0. You can connect HID devices, mass storage devices and USB-to-serial converters. The user data from HID devices can be tapped directly via the **HID IN** node in Node-RED. When connecting mass storage devices, the first partition is mounted as the **usbmedia** folder under **/data/userfiles** in the rule.box file system. USB-serial converters are typically addressed under **/dev/ttyUSB0**.

1. Connect a USB device to the USB interface of the rule.box.
2. Configure a flow with the desired function in Node-RED.

The USB device is now used via Node-RED.

6. Maintenance

Open housing

! Note: Risk of property damage due to electrostatic discharge

Electrostatic discharges can destroy components on the board. Therefore, if you do not have ESD equipment, touch the metal surround on the network interface before opening the housing to establish equipotential bonding.

Some maintenance work requires access to the circuit board. For this purpose, you can open the housing.

1. Remove the power supply and network cable.
2. Dismantle the rule.box from the top-hat rail.
3. Touch the metal surround of a network socket to perform equipotential bonding.
4. Gently press the narrow sides of the rule.box housing together so that the plastic lugs on the long sides of the bezel detach from the body of the housing.
5. Pull off the front bezel.

You can now pull the board out of your guide to perform maintenance.

Restore factory settings on the hardware side

With the help of a jumper inside the device, the rule.box can be reset to the factory settings.

1. Open the housing of the rule.box according to the preceding instructions.
2. Pull the board out of the guide.
3. In the middle of the board you will find two jumpers, each of which is connected to only one contact pin.
4. Close the contact jumper of the jumper pointing to the rear side of the device.
5. Supply the board with voltage.
6. The recovery process is indicated by the following blink code: Short on, long off.
7. After successful execution, the flashing pattern is inverted: Long on, short off.
8. Disconnect the board from the power supply.
9. Set the jumper back to the uncontacted initial position.
10. Close the housing.

You can now mount the rule.box again and put it into new operation.

Restore factory settings immediately

You can also reset the rule.box in the administration area of the web interface.

1. In the administration navigation, select the menu item **Maintenance**.
2. Click the **FACTORY SETTINGS** button in the **Reset** area
3. Confirm the reset in the following dialog.
4. Observe the status LED. During the reset, this flashes in the following pattern: Short on, long off.
5. After successful execution, the flashing pattern is inverted: Long on, short off.

You can now start up the rule.box again.

Perform firmware update

This section describes a firmware update using the WuTility tool. For the execution you need:

- the software WuTility

 www.wut.de/wutility

- The latest firmware for your product

 www.wut.de/53920

 www.wut.de/55920

 www.wut.de/57920

 www.wut.de/58920

1. Download the latest firmware from one of the above Internet addresses.
2. Unzip the zip file.
3. Open the WuTility.
4. Select the device whose firmware you want to update from the list of available devices.
5. Click the **Firmware** button in the toolbar.
6. Select the UHD file with the current firmware.
7. Click **Next** to perform the update.
8. Wait for the feedback in the WuTility.

9. After successful update, click the **Finish** button to complete the process. The rule.box restarts with the changed firmware and is accessible via the network again after a short time.

Warm start

You can restart the rule.box in the administration area of the web interface.

1. Click on the **Maintenance** menu item in the administration navigation.
2. Click on **RESTART DEVICE** in the **Reset** area.
3. Confirm the restart in the following dialog.

After a successful restart, the web interface is reloaded.

7. Decommissioning

Dismounting the device from the top-hat rail

The rule.box can be easily detached from the top-hat rail. For the implementation you need:

- a small slotted screwdriver

1. Remove the network cable and the power supply.
2. Below the rule.box, at the level of the top-hat rail, there is a black tab. Use the screwdriver to pull this downwards.
3. Tilt the front of the rule.box upwards to lift the device from the top-hat rail.

You can now maintain, store or dispose of the rule.box.

Proper disposal

Electrical appliances must not be disposed of with household waste.

1. Please dispose of the rule.box at the local collection point or return it to your specialist dealer.

Many thanks!

8. Technical data

Online data sheets

Detailed information about the product, as well as tools and the latest firmware, can be found in the online data sheet at: www.wut.de

Connections and displays

Network: 1 x 100/1000BaseT Autosensing/Auto-MDIX, RJ45

P Product

The following entry refers only to the rule.box hub #55920.

1 x 100/1000BaseT Autosensing/Auto-MDIX, RJ45
(not PoE capable)

P Product

The following entry refers only to the rule.box USB #53920.

USB: 1 x USB 2.0

P Product

The following entry refers only to the rule.box Serial #58920.

Serial interface: 1 x RS232/422/485, switchable w. DB9 connector

P Product

The following entries for „Digital inputs“ and „Digital outputs“ refer only to the rule.box Digital #57920.

Digital inputs:	2 x Digital In, max. input voltage 30V DC Switching threshold: 8V DC (+/-1V DC)
Digital outputs:	2 x Digital Out, 6 ... 30V DC, 500mA course closing
Supply voltage:	Power over Ethernet (PoE) or 24 ... 48V DC (+/- 10%) per screw terminal
Current consumption:	PoE Class 2 (3,84 ... 6,49W) typ. 140mA at 24V DC external supply
Displays:	LEDs for system, error and network status

Hardware and software

Hardware:	Marvell 88F6820 Flash: 4GB (eMMC) RAM: 1GB (DDR3)
Software:	Node-RED Node-RED Dashboard various pre-installed Node-RED extensions

Housing and other data

Housing:	Plastic housing with integrated Top-hat rail mounting 105 x 22 x 77mm (L x W x H)
Lagertemperatur:	-40...+70°C
Betriebstemperatur:	0...60°C
zulässige Luftfeuchtigkeit:	0...95% Relative humidity, non-condensing



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