



# INSTRUCTIONS

Version 2.3

D SIP-Sprechstellen  
GB **SIP intercoms**  
F Postes téléphoniques SIP

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### Important information

Please note that Behnke intercoms and accessories may only be installed and serviced by qualified electricians in compliance with the relevant safety provisions.

Before carrying out service and maintenance work, please ensure that the devices are safely disconnected from the power grid (unplug power supply unit) and are disconnected from any other network or phone connection.

For further legal information, please see page 51.

## CONTACT



### Information

For detailed information on our product, projects and services:

**Tel.: +49 (0) 68 41/81 77-700**



### 24-hour-service

Do you need help? Feel free to contact us 24/7. We will be happy to assist you with any technical questions you may have and we will also help you getting set-up.

**Tel.: +49 (0) 68 41/81 77-777**



### Telecom Behnke GmbH

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# 1. INTRODUCTION

## 1.1. What's in the box

- ▶ Basic electronics as a
  - Series 20, 30, 50 electronics box or
  - Series 10 compact intercom
- ▶ The present instructions

## 1.2. General Information

### Features

Behnke Series 20, 30 and 50 SIP remote stations are high-quality modular VoIP intercoms with acoustic echo suppression offering exceptional audio quality and full-duplex hands-free operation. Their components, such as speakers, microphone, keypad and call buttons, as well as the electronics form a compact unit in a double-walled housing. The modular design enables utmost flexibility for planning and implementation. Via the connected Ethernet, the device uses Voice over IP (VoIP) according to the SIP standard for establishing communication, either making use of an SIP-compatible telephone system, an SIP provider or by directly dialling an IP address. Use a standard web browser for configurations and software updates; your local network provides power (PoE). It is possible to externally connect direct call buttons to the remote stations and to have switches that may be freely configured to open the door, display a call or hold any other switch function. Use add-on modules to retrofit additional functions, e.g. a 4 line display with a telephone book function or up to 100 direct call buttons.

Series 10 compact remote stations are high-quality devices that come pre-assembled with up to two call buttons. They also feature acoustic echo suppression; so, these remote stations are suitable for full-duplex hand-free communications as well. They are also equipped with a relay to be configured according to your needs.

### **System requirements**

Minimum requirements to install Behnke SIP remote stations:

- ▶ PC or Apple® Macintosh® with browser (e.g. Microsoft® Internet Explorer®, Mozilla Firefox®, Apple® Safari®)
- ▶ Monitor/graphics with a resolution of at least 1024 x 768 pixels and true colour display
- ▶ Set-up network connection
- ▶ A free Ethernet port with PoE or a separate PoE injector.
- ▶ An SIP account, an SIP server or a remote terminal to directly accept SIP connections.

Minimum system requirements to install Behnke's IP video software:

- ▶ PC with Intel® Pentium® IV processor (1.7GHz) or AMD Athlon™ processor (1.2GHz) or better
- ▶ Network interface controller, configured
- ▶ Microsoft® Windows® 2000 or Windows® XP operating system or later
- ▶ 128 MB RAM or more
- ▶ Monitor/graphics with a resolution of at least 1024 x 768 pixels and true colour display

### 1.3. Series 20 and 30 remote station installation

**Please note:** For aesthetic appeal and moisture protection, please pay attention to the correct alignment of the aluminium brushing!

In case you wish **to install the electronics in a detached location**, please replace the module housing with an open counter plate for the appropriate front frame.

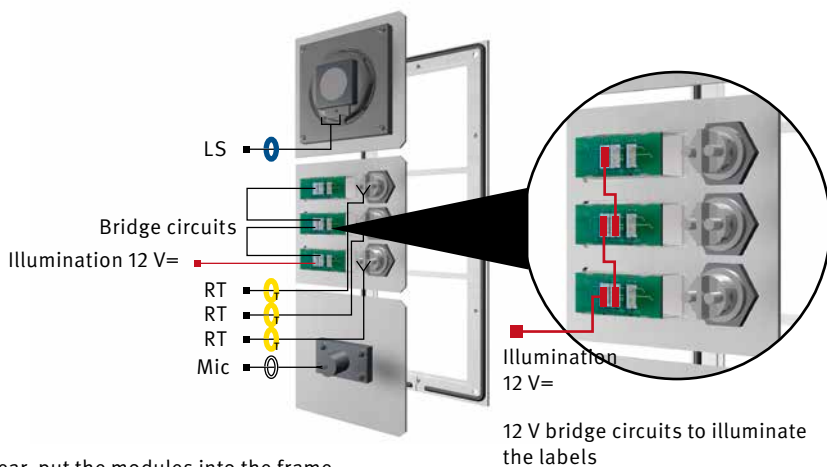
**Connect the cables as follows:**

- 1. Buttons (RT)** ▶ Connect to the MQS connectors from 1 to 8 marked with the yellow ring
- 2. Speakers (LS)** ▶ Connect to the connector marked with the blue ring
- 3. Microphone (mic)** ▶ Connect to the connector marked with the white ring
- 4. Keypad** ▶ 12-pin white socket

**Important: Do not confuse the connectors for the speakers and the microphone!**

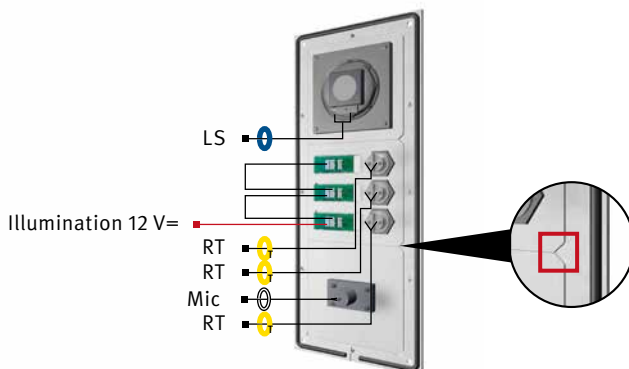
Please put unused cables into the module housing with the open end (connector) facing down. Doing so will prevent moisture from entering the connector. Now put the electronics box on top of the module housing.

**1** Insert the function modules into the front frame



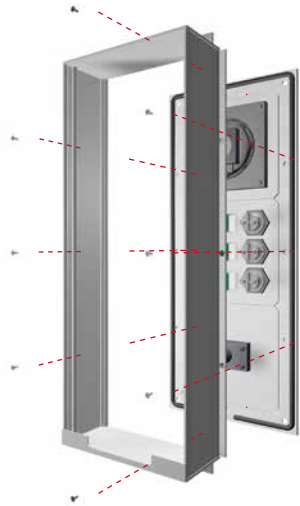
From the rear, put the modules into the frame

**2** Function modules inside the front frame

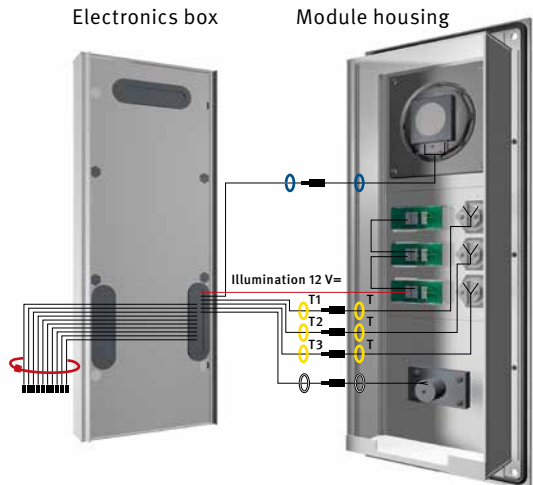


When inserting the modules, please always pay attention to the anti-rotation element and ensure that the modules latch into position with an audible "click".

## Introduction

**3** Fix the module housing**4** Fix the module housing onto the front frame.**Connection cable pin assignment****Series 20, 30, 50:****LS** (blue) ▶ Speakers**Mic** (white) ▶ Microphone**T1 bis T8** (yellow) ▶ Buttons 1 to 8**12-pin connector** ▶ Keypad

Connect existing components using the ribbon cable. Use a cable tie to bundle unused wires (connectors facing down).





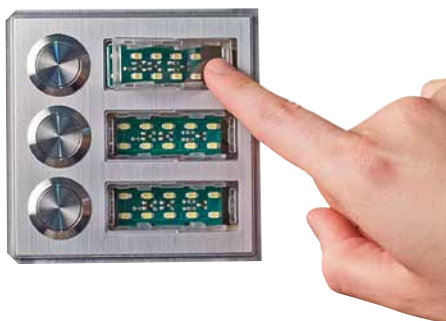
- 5 Clip the electronics box back onto the module housing.



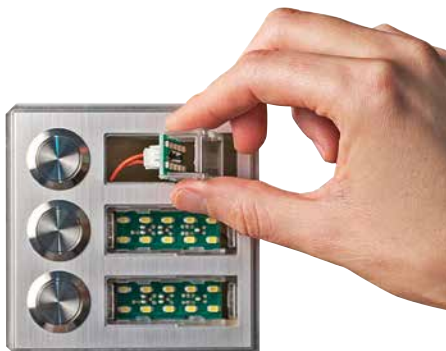
## 1.4. Insert printed label



**1** Condition as supplied to the customer



**2** Press on the right-hand side to remove the label holder



**3** Retrieve the label holder



**4** Insert the printed label from the left



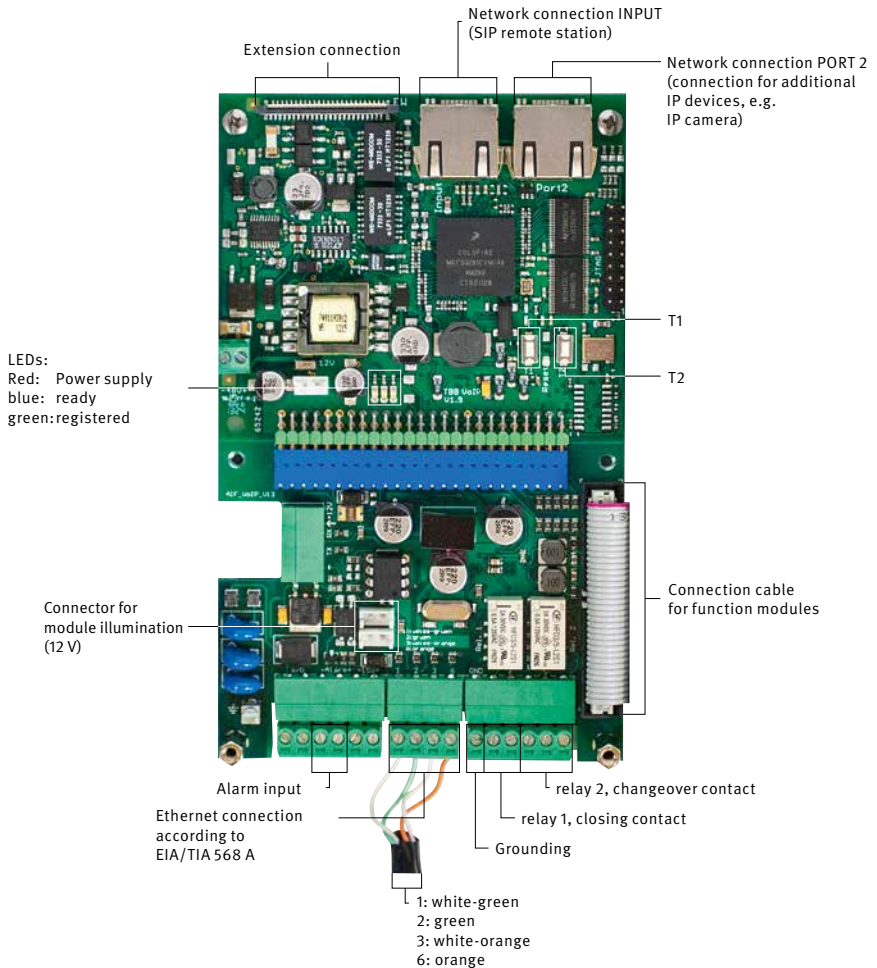
**5** Return the label holder to its original position from right to left; click into place



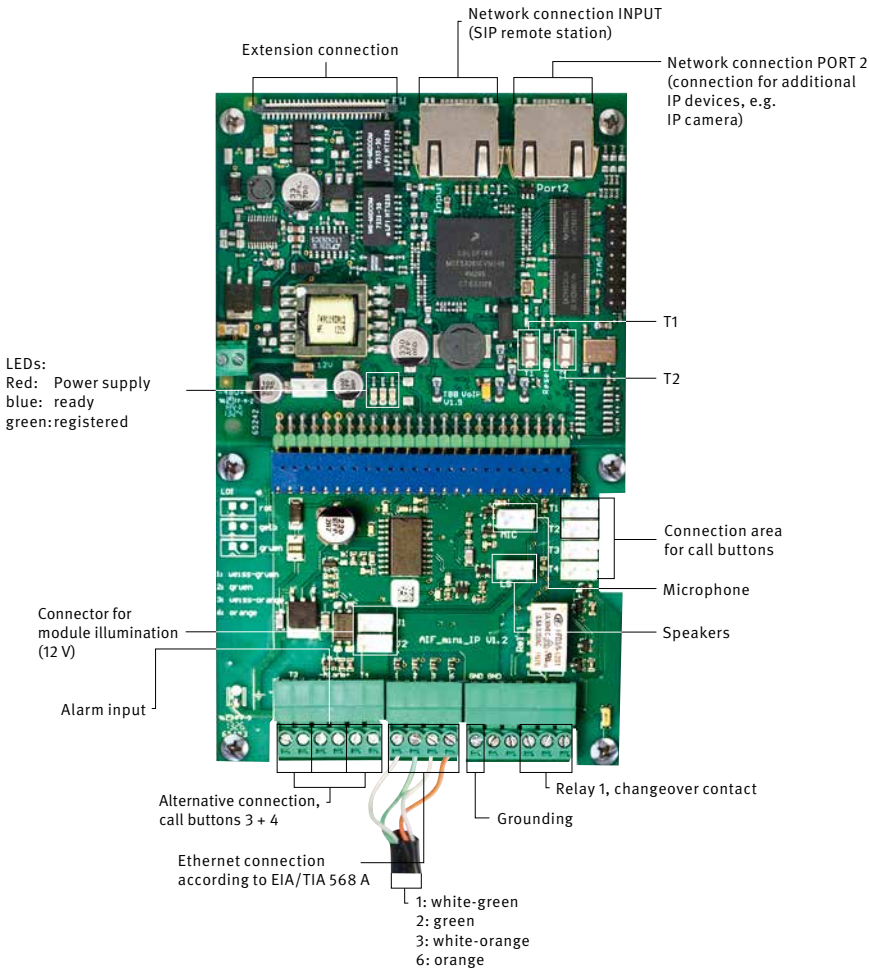
**6** Done!

## 2. HARDWARE

### 2.1. Series 20, 30, 50 basic electronics



### 2.2. Series 10 compact devices



### 2.3. Connections

#### Network connection - INPUT



Ethernet connection according to EIA/TIA 568 A

Usually, an RJ-45 connector (1 “INPUT”) is used to establish a network connection. You may also connect the individual cores to the connection interface using a terminal block 2: The network is connected to the terminals marked 1 (white-green); 2 (green); 3 (white-orange); and 6 (orange) according to EIA/TIA specification 568 A.

The number indicated refers to the pin position of the RJ45 plug / the RJ45 socket.

**Please note:**

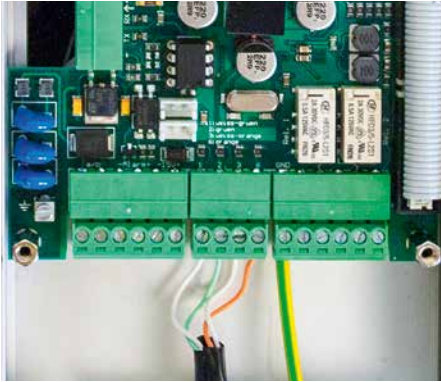
**The network connection must either be made via an RJ45 connectors or a screw terminal!**

The second RJ45 socket (PORT 2) 3 is intended for the connection of other terminal devices (e.g. an IP camera).

Ethernet connection according to EIA/TIA 568 A

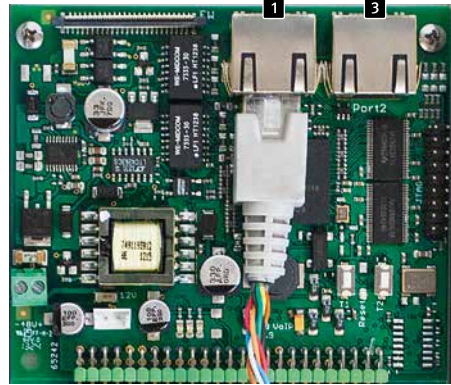
- 1: white-green
- 2: green
- 3: white-orange
- 6: orange

### Power supply



Power supply via PoE according to IEEE802.3af. If the remote station is connected by means of a screw terminal, the device supplying power must support phantom power (supply via wires 1, 2 and 3, 6, e.g. the Behnke PoE injector).

### Network connection PORT2

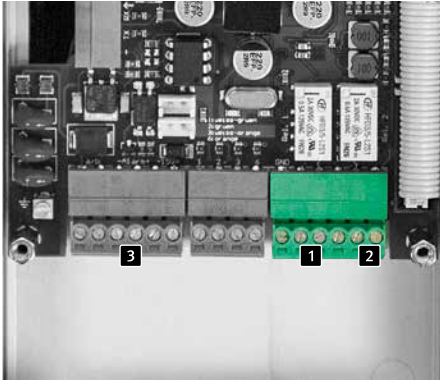


The 2nd Ethernet port is connected via an additional RJ45 socket labelled “Port2” **3**.

As the SIP remote station features a PoE-feeding switch, it is possible to connect a PoE-compatible terminal device with a maximum power drain of 7 W to this port.

**Please note:** There are no screw terminals for the 2nd Ethernet port.

**Potential-free outs (relays), ins**

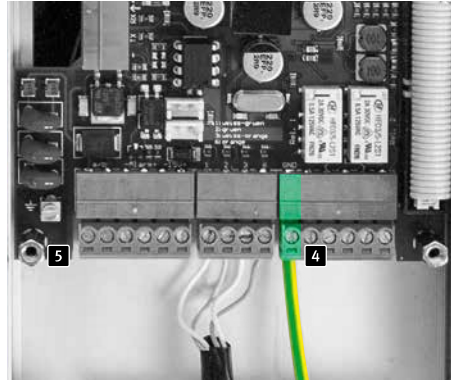


The SIP remote station can hold up to two potential-free outs (Relay 1 **1**, closing contact, relay 2 **2**, changeover contact) via screw terminals. Additionally, the SIP remote station provides an electrically isolated input, which is connected using screw terminals **3**.

The relays load maximum is 2 A at 30VDC or 0.5 A at 40VAC.

The alarm input triggers upon applying an input voltage between 10 and 15 V=, the maximum input voltage is 15 V=. Please bear in mind the polarity!

**Grounding connection**



**Important:** In case the electrical circuit is type TNV-1, an EARTH must be connected to the GND screw terminal **4**. A type TNV-1 electrical circuit is usually used for installations in a pillar, where the Ethernet cable is installed outside the building. In case the Ethernet cable remains within the building, the SIP remote station does not require a grounding connection.

The grounding terminal **5** must not be used here.



## Shielding



Put the earthed Ethernet cable shielding on the lower housing bar as shown in the picture.

## 3. CONFIGURATIONS AND SET-UP

### Preparation

- ▶ Connect the SIP remote station to the 10/100 Mbit Ethernet network
- ▶ Power supply via Power over Ethernet (PoE according to IEEE 802.3af)

Behnke SIP remote stations come pre-set for an automatic IP configuration via DHCP. It will automatically obtain its IP address from the DHCP server, where available. Use the buttons T1 and T2 on the basic electronics to change this setting:

After enabling the power supply, it will take approx. 90 seconds before the device will produce a dark confirmation signal. Once you have heard this signal, your remote station is available.

**Please note:** When you connect your SIP remote station to a new network, it may take up to 3 minutes before the device obtains a new IP address from the DHCP server.

Use the speaking menu to learn your remote station's IP address:

1. Press button T1 twice to hear the device say "Language English"
2. Press button T2 to hear the device say "State IP-address"
3. Press button T2 to make the device read its IP address to you

When there is no DHCP server, the remote station's IP address can be set to "static":

1. Press button T1 twice to hear the device say "Language English"
2. Press button T2 to hear the device say "State IP-address"
3. Press button T1 to hear the device say "Select IP-address setting"
4. Press button T2 to hear the device say "dynamic"
5. Press button T1 to hear the device say "static"
6. Press button T2 to confirm the selection

Now, the SIP remote station is set to a static IP address; its IP address is 192.168.100.100, and the subnet mask is 255.255.255.0.

To continue the configuration process, please use the web front end, which uses SSL encryption (https). The manufacturer included a signed SSL certificate, which leads to a security prompt in common browsers. By clicking "Continue to this website (not recommended)", you will still get access to the configuration page. To bypass this query in the future, it is possible to locally save the certificate in the browser. How to do so depends on the type of browser you use, so that we are unable to provide a standard procedure.

Once you get to the welcome screen, click login to get to the login page. Standard settings are as follows:

- **User name:** admin
- **Password:** admin

Now you will see the status page for your Behnke SIP remote station. You may access the online help by clicking the “Help”-button

**1** in the left column at any time.

**Note:** During a connected call, you may set the volume by pressing the keypad buttons on your phone as follows:

- ▶ **##1** + volume from 1-9
- ▶ **##2** + microphone sensitivity from 1-9

Example:

- ▶ Set volume to 5:  
**##15**
- ▶ Set microphone sensitivity to 7:  
**##27**

The screenshot shows the web interface for the Behnke SIP remote station. At the top right is the Telecom Behnke logo. Below it is a navigation bar with tabs: Home, Network, Audio, Phone-Numbers, Settings, Admin, and State. The main content area is titled 'Basic Configuration Information' and contains the following details:

- Provider: Behnke Telefon
- Phone Number: 305
- Status: **Online** (highlighted in green)
- Hostname: Behnke IP-Phone
- Remark:
- IP Address: 192.168.16.73
- Ethernet MAC: 02:00:00:52:00:28
- Connectec via: DHCP [432000 second lease]
- System Date: Mon Nov 10 11:33:49 2014
- System Uptime: 138 minutes
- Model: Series 20
- Multi-button: no
- Display: yes

In the left sidebar, there are buttons for 'Easy-Config', 'Logout', and 'Help'. A callout bubble with the number '1' points to the 'Help' button. At the bottom right of the main content area is a 'Stop Refresh' button. The footer contains the text: 'Software release R235.43.201411071622 BT: 2 Build: 196' and 'Copyright © 2013-2014 Telecom Behnke GmbH. All Rights Reserved. www.behnke-online.com'.

## 4. AUTO-PROVISIONING

It is possible to automatically configure your Behnke SIP remote station using auto-provisioning. Auto-provisioning will affect all the parameters accessible via the web frontend, including the phone books. Your Behnke SIP remote station supports two types of auto-provisioning:

**1. Fully automatic by means of DHCP Option 66.** To do so, configure the option 66 in the DHCP server, where you can find the configuration file.

Your Behnke SIP remote station supports downloads from http, https and ftp servers.

Example of a valid option 66:

ftp://192.168.30.2/behnke/ This folder must contain a file named as follows:

<MAC address>.txt

where <MAC Address> is the hexadecimal noted MAC address; as displayed in the web frontend under “Status” but without the colons.

**2. Semi-automatic by means of settings made to the configuration server**

Go to “Auto-provisioning” in the web-frontend to choose the configuration file you want the remote station to download and the file’s configuration server location.

## 5. RESET TO DEFAULT SETTINGS

Complete the following steps to reset the remote station to its default setting:

- ▶ Disconnect the power supply to your SIP remote station
- ▶ Press buttons T1 and T2 simultaneously and keep them pressed
- ▶ Reconnect the power supply to your SIP remote station
- ▶ Keep buttons T1 and T2 pressed until two LEDs (green, blue) start flashing every second
- ▶ Release buttons T1 and T2
- ▶ The remote station will be reset to default settings; this process takes approx. 90 seconds

Successful completion of the reset will be confirmed by the speakers emitting a confirmation tone.

The web interface offers a second option to reset the device to its default settings, to do so, please take the following steps:



The screenshot shows the Telecom Behnke web interface. The top navigation bar includes Home, Network, Audio, Phone-Numbers, Settings, Admin (1), and State. The Admin menu is expanded, showing options like Passwords, Firmware, Reset (2), Backup and Restore, Diagnostics, Provisioning, and Logout. The main content area displays the 'Restore' section, which includes a 'Restore' button (3) and a 'Reset Device' section. The 'Reset Device' section contains a 'Reset' button. The 'Admin' and 'Restore' buttons are highlighted with callouts.

## 6. TECHNICAL SPECIFICATIONS

### All remote stations

- ▶ Status/ remote control messages for integration with third party software
- ▶ Record up to 9 voice messages each up to 40 seconds long
- ▶ 16 MB joint flash memory for phone book and voice messages
- ▶ Store your configuration settings in a file

### Network

- ▶ MAC address (IEEE 802.3)
- ▶ IPv4 – Internet Protocol version 4 (RFC 791)
- ▶ ARP – Address Resolution Protocol
- ▶ DNS – A record (RFC 1706)
- ▶ DHCP Client – Dynamic Host Configuration Protocol (RFC 2131)
- ▶ TCP – Transmission Control Protocol (RFC 93)
- ▶ UDP – User Datagram Protocol (RFC 768)
- ▶ RTP – Real Time Protocol (RFC 1889) (RFC 1890)
- ▶ RTCP – Real Time Control Protocol (RFC 1889)
- ▶ DiffServ (RFC 2475), Type of Service (RFC 791, RFC 1349)
- ▶ SNTP – Simple Network Time Protocol (RFC 2030)
- ▶ SIPv2 – Session Initiation Protocol Version 2 (RFC 3261, 3262, 3263, 3264)
- ▶ SIP in NAT networks (STUN)
- ▶ Auto-provisioning via DHCP option 66 or via configured server
- ▶ Backup SIP server configurable
- ▶ Firmware update via web interface
- ▶ Integrated PoE switch supporting tagged VLANs

### Voice codecs

- ▶ G.711 (A-law,  $\mu$ -law)
- ▶ G726 (32 kbps)
- ▶ G.721
- ▶ In-Band, Out-of-Band DTMF and SIP-Info (RFC 2833)
- ▶ Full duplex, echo suppression (AEC)
- ▶ 10 possible speaker volume settings
- ▶ 10 possible microphone sensitivity settings

### Series 10 IP

- ▶ Compact device with integrated speakers and microphone
- ▶ One or two call buttons with illuminated labels
- ▶ One relay to configure freely

### Series 20 IP

- ▶ Modular design
- ▶ Up to 8 direct call buttons to which phone numbers may be assigned freely
- ▶ Two relays to configure freely
- ▶ Optional safety relay for remote installation
- ▶ Keypad module available, functions:
  - Directly dial phone numbers
  - Code lock
  - Speed dialling with up to 100 phone numbers
- ▶ Display module available, functions
  - Illuminated
  - Four lines with up to 20 characters each
  - Info texts depending on the device status, configurable
  - 199 phone book entries, more entries upon request
- ▶ Multifunctional button holding 100 call buttons upon request

**Safety and administration**

- ▶ Password protection for admin access
- ▶ Web browser assisted administration

**Physical connections**

- ▶ RJ45 port for Ethernet 100baseT, alternatively by means of a screw terminal
- ▶ Screw terminals for establishing the relay contacts

**Electrical characteristics**

- ▶ Power over Ethernet power supply (PoE according to IEEE 802.3af)
- ▶ Max. power drain: 12 W
- ▶ SIP remote station: 5 W
- ▶ Device at PORT2: max. 7 W
- ▶ Max. relay load:
  - 2 A/30VDC
  - 0.5 A/40VAC
- ▶ Input voltage, alarm input:
  - 10 V up to max. 15 V
- ▶ Operating temperature range: -20° C to +50° C
  
- ▶ TNV-1: In TNV-1 circuits, the SIP remote station must be grounded using the GND connection, cf. chapter 2.3. Connections, grounding connection
- ▶ EMC: EN55022 A / B, EN55024
- ▶ Safety: EN60950

# 7. CE DECLARATION

## EG-Konformitätserklärung EC-Declaration of Conformity

Dokument-Nr.: 010 Monat, Jahr: 09/13  
 Document-N°: Month, Year:

Hersteller: Telefonbau Behnke GmbH  
 Manufacturer

Anschrift: Robert-Jungk-Straße 3  
 Address 66459 Kirkel (Germany)

Produktbezeichnung: Serie 10-IP, Serie 20-IP, Serie 30-IP, Serie 50-IP, Serie SPL  
 Product type, model

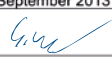
Das bezeichnete Produkt stimmt mit den Vorschriften folgender europäischer Richtlinien überein: \*  
 The indicated product is in correspondence with the following regulations of European Council: \*

Nummer / Kurztitel Number / Title	Eingehaltene Vorschriften Observed regulations
<input checked="" type="checkbox"/> 2004/108/EG EMV-Richtlinie EMC-Directive	DIN EN 55022 Einrichtungen der Informationstechnik- Funkstör- Class A/B (2010) eigenschaften- Grenzwerte und Meßverfahren <i>Information technology equipment- Radio disturbs                      characteristic- Limits and methods of measurements</i>  DIN EN 55024 Einrichtungen der Informationstechnik- Störfestig- (2010) keitseigenschaften- Grenzwerte und Meßverfahren <i>Information technology equipment- Immunity characteristic-                      Limits and methods of measurements</i>  DIN EN 61000-4-2 Störfestigkeit gegen die Entladung statischer (2009) Elektrizität (ESD) <i>Interference resistance to static electricity discharge</i>  DIN EN 61000-4-3 Störfestigkeit gegen hochfrequente (2008) elektromagnetische Felder <i>Interference resistance against high frequency magnetic fields</i>  DIN EN 61000-4-4 Störfestigkeit gegen schnelle transiente elektrische (2004+A1:2010) Störgrößen (Burst) <i>Interference resistance against fast transient electrical inter-                      ference factors/Burst</i>  DIN EN 61000-4-5 Störfestigkeit gegen Stoßspannungen (Surge) (2007) <i>Interference resistance against surge voltages</i>  DIN EN 61000-4-6 Störfestigkeit gegen leitungsgeführte Störgrößen, (2008) induziert durch hochfrequente Felder <i>Cable-propagated interference factors, induced by high                      frequency fields</i>
<input checked="" type="checkbox"/> 2006/95/EG Niederspannungsrichtlinie Low Power Directive	EN 60950-1:2006/ A11:2009/ A1:2010/ A12:2011 Sicherheit von Einrichtungen der Informations- technik <i>Safety of Information technology equipment</i>

Aussteller: Geschäftsführer  
 Issuer Manager

Ort, Datum: Kirkel, den 19. September 2013  
 Place, date

Konformitätsbeauftragter der  
 Telefonbau Behnke GmbH  
 Representative for conformity

  
 Sven Behnke (Geschäftsführer)  
 (Manager)

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, beinhaltet jedoch keine Zusicherung von Eigenschaften.  
 Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.  
 This declaration certifies the compliance with the indicated regulations, it does not guarantee attributes. Pay attention to the security advices of the relevant product information.

Konformitätserklärung Nr.: Declaration of Conformity N°.: 010	Seite 1 von 1 Page 1 of 1
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## 8. LEGAL INFORMATION

1. We reserve the right to change our products, without notice, for technical progress.

As a result of continuous development, the products illustrated may look different from the products actually delivered.

2. Reprints of texts, images or pictures or copies from these instructions in any media – given in full or as extracts – require our express written consent.

3. Design and layout of these instructions are copyright protected. We do not assume any liability for possible errors, contents errors and misprints (including technical data or within images and technical diagrams).

### **Information with regard to product liability:**

1. All products mentioned in these instructions may only be used for the purpose intended. In case of doubts, please contact a competent specialist or our services department (cf. telephone numbers).

2. Products with a power supply (especially those plugged in to 230 V) must be unplugged before opening or during installation.

3. Damage and consequential damage resulting from altering or meddling with our products or their improper use are excluded from product liability. This also applies to improper storage or external influences.

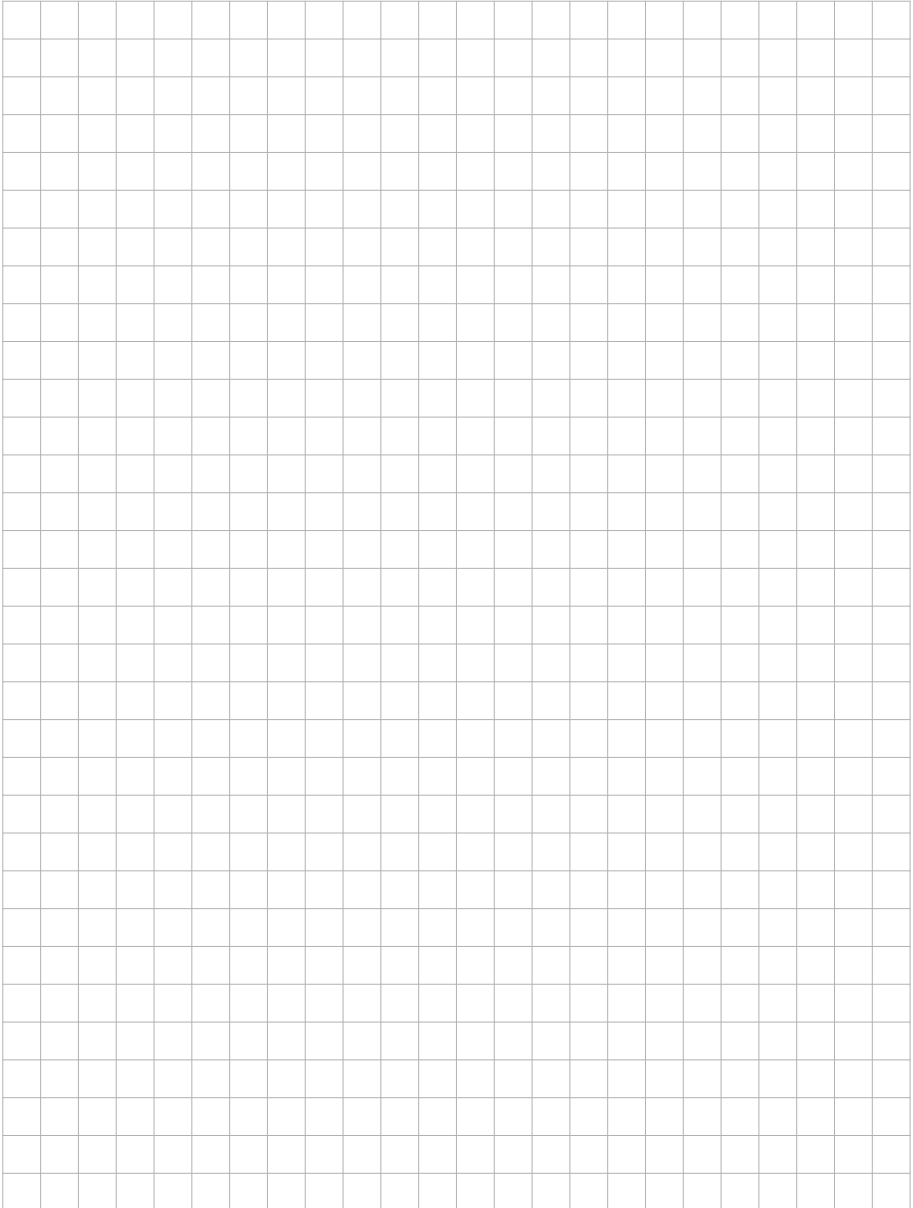
4. The respective guidelines for working on power supplies with 230 V or batteries equally apply to working with our products, e.g. directives regarding electromagnetic compatibility or the Low Voltage Directive. Please leave corresponding work to trained specialists familiar with the matter.

5. Our products meet all technical guidelines and telecommunications regulations currently applicable in Germany and the EU.

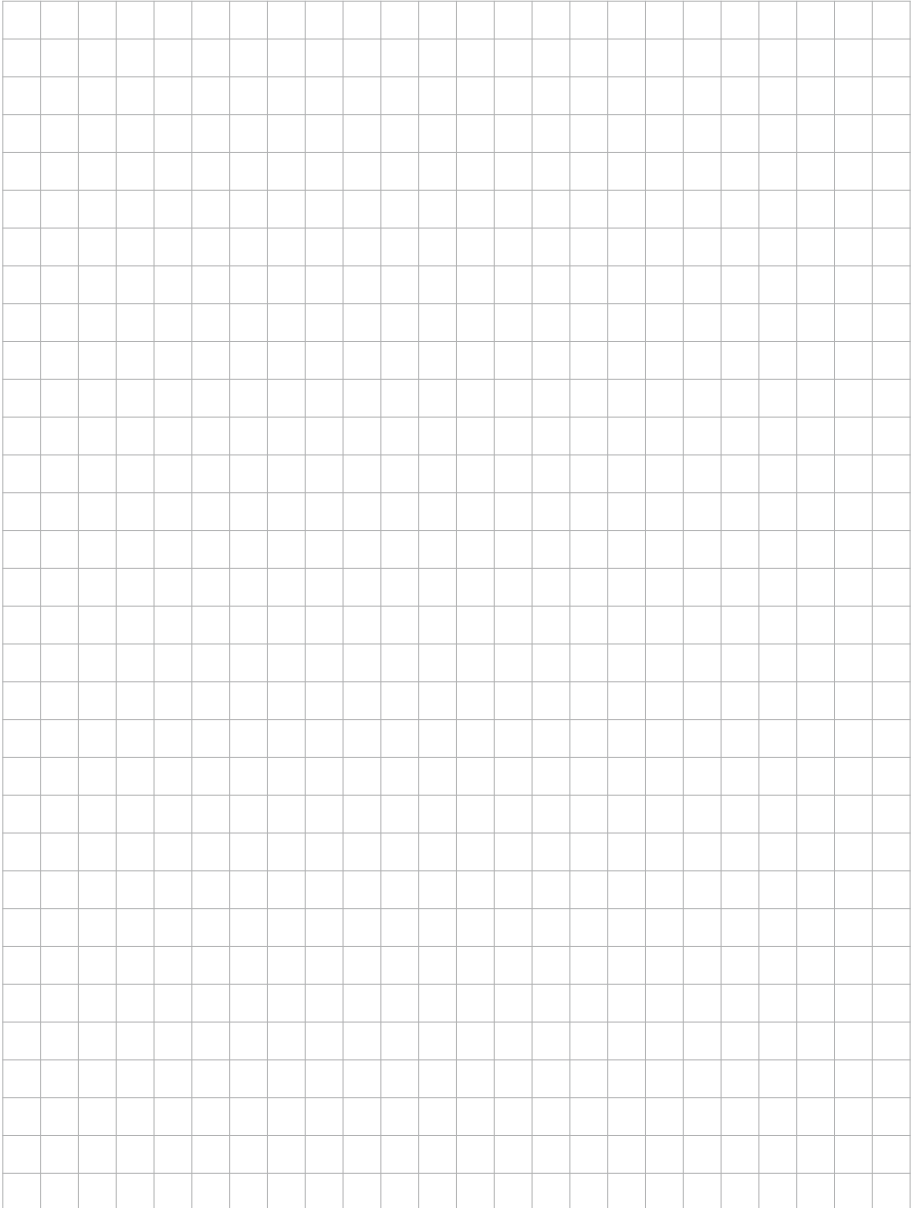


**Electromagnetic  
Compatibility  
Low Voltage Directive**

Notes



## Note





# TELECOM BEHNKE GMBH



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