



# Installation Manual

## NovaTec S3





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## 1 Introduction

Dear Customer

We congratulate you on purchasing the NovaTec S3 . You have decided on buying a Gateway which was developed and produced utilizing the newest technical standards. The S3 is available in several versions and depending on the version provides the following interfaces (details see diagram in chapter 4.1):

- IP (SIP protocol),
- $S_0$  (each NT/TE configurable),
- $U_{p0}$  (each NT /TE configurable, only point-to-point) and
- analogue a/b.

This installation manual describes the installation and the initial operation of the S3. You are advised to read the entire manual thoroughly before starting the installation step by step.

## 2 Security Advice

- Do not install the S3 near to heaters or heating appliances and sources of electrical interferences such as fluorescent lamps and electric motors.
- Protect the S3 from dust, moisture, shock and vibration as well as from direct sunshine.
- Make sure that no foreign material like wire, cable ends, nails or small metal parts fall into the openings on the upper surface of the unit.
- The S3 cannot be used before the installation has been duly executed.
- Never use petrochemicals to clean the housing. For cleaning purposes, use a soft and dry cloth only.
- In case that an internal component is obviously damaged, e.g. because of a damaged housing, please remove the S3 from the power supply **immediately**.
- In order to avoid material damage or injury to persons, never expose the S3 to water (rain) or excessive moisture.
- For safety reasons it is not allowed to alter the S3 construction- or safety-related without prior explicit approval from NovaTec Kommunikationstechnik GmbH.
- NovaTec Kommunikationstechnik GmbH is not liable for damages resulting from any alterations. In particular repairs of all nature and any soldering on the PCB's are forbidden.
- The installation manual must always be delivered with the equipment when given to a third party.



### 3 Declaration of Conformity



We change the shape of the world

## KONFORMITÄTSERKLÄRUNG Declaration of Conformity

Gemäß dem Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen (FTEG)  
und der Richtlinie 1999/5/EG (R&TTE)  
Appropriate to the Law of Radio and Telecommunication Terminal Equipment and the Directive 1999/5/EC (R&TTE)

Der Hersteller  
The manufacturer

NovaTec Kommunikationstechnik GmbH  
Technologiepark 9, D-33100 Paderborn

erklärt, dass das Produkt  
declares that the product

**NovaTec S3**  
(Typ: Telekommunikationsendeinrichtung)  
(Type: Telecommunications terminal equipment)

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des §3 und den üb-  
rigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.  
complies with the appropriate essential requirements of FTEG (Article 3 of the R&TTE) when used in its intended  
purpose.

Verwendungszweck: Verbindungs-Router für 2 ISDN S<sub>0</sub>/U<sub>P0</sub> Kanäle EDSS1, 2 analoge Telefon-  
Schnittstellen und bis zu 4 VoIP-Kanäle.  
Intended purpose: Interconnection router for 2 ISDN BRI/U<sub>P0</sub> channels EDSS1, 2 POTS interfaces (ATA) and up to  
4 VoIP channels.

Richtlinie: 1999/5/EG (R&TTE), EMC 2004/108/EG, LVD 2006/95/EC, RoHS 2011/65/EU  
Directive: 1999/5/EG (R&TTE), EMC 2004/108/EG, LVD 2006/95/EC, RoHS 2011/65/EU

- Gesundheit und Sicherheit gemäß:  
Health and Safety requirements contained in:  
FTEG § 3 (1) 1  
Richtlinie 1999/5/EG  
(R&TTE) (Artikel 3 (1) a)  
LVD 2006/95/EC  
EN 60950-1:2006 + A11:2009
- Angewendete harmonisierte Normen:  
Applied harmonised standards:
- Schutzanforderungen in Bezug auf  
elektromagnetische Verträglichkeit:  
Protection requirements with respect to  
electromagnetic compatibility:  
FTEG § 3 (1) 2  
Richtlinie 1999/5/EG (R&TTE)  
(Artikel 3 (1) b) EMC  
2004/108/EG  
EN 55022:2010  
EN61000-3-2:2006 + A1:2009 + A2:2009  
Class A  
EN61000-3-3:2008  
EN 55024:2010
- Angewendete harmonisierte Normen:  
Applied harmonised standards:
- Schnittstellenstandards:  
Interface standards:  
S<sub>0</sub>: CTR3, 98/515/EG, 24.04.98  
(TBR3, Nov.95, TBR3 A1, Dez.97)  
a/b: 1 TR 110

CE-Kennzeichnung auf dem Produkt angebracht:  
CE mark affixed to the product:

Ja  
Yes

Paderborn, 07.08.2013

  
Dipl.-Ing. M. Keyhani, Geschäftsführer/Managing Director



## 4 General

### 4.1 Product Description

The S3 Gateway provides a connection between IP networks (SIP protocol) and ISDN networks resp. analogue terminal equipment. The S3 has an IP-interface with codecs for four B-channels and depending on the version also ISDN, BRI, Up0 (point-to-point) and analogue a/b interfaces.

The ISDN interfaces can be configured either as master (connection of ISDN terminal equipment) or as slave (e.g. connection of ISDN trunk lines or cross connection between telecommunication systems). Only analogue type terminal equipment can be connected to the analogue interface.

Table 1 gives an overview of the versions:

Article no.	IP interface (SIP) 4 B-channels	BRI interfaces	Up0 interfaces	analogue interfaces	High Precision Clock Source
1F8000R	1	2	0	0	0
1F8000RQ	1	2	0	0	1
1F8020R	1	2	0	2	0
1F8020RQ	1	2	0	2	1
1F8040	1	0	0	2	0

**Table 1**

### 4.2 Scope of Delivery

Pos.	Quantity	Description
1	1	NovaTec S3
2	1	Power supply and cable
3	1	USB cable
4	1	Mounting set
5	1	Short instruction

**Table 2**



### 4.3 Use of this Manual

This manual is divided into single chapters. The succession and the contents of the different chapters coincide with the succession of the tasks necessary for the installation and initializing of the S3. We therefore suggest reading the manual in its successive chapters as they are written, executing the tasks successfully before moving on to another chapter. You will install and initialize the S3 successfully if you follow the instructions in this manual as they are written.

### 4.4 Use of the Pictograms



**Advice:**

Important, please adhere to this information.



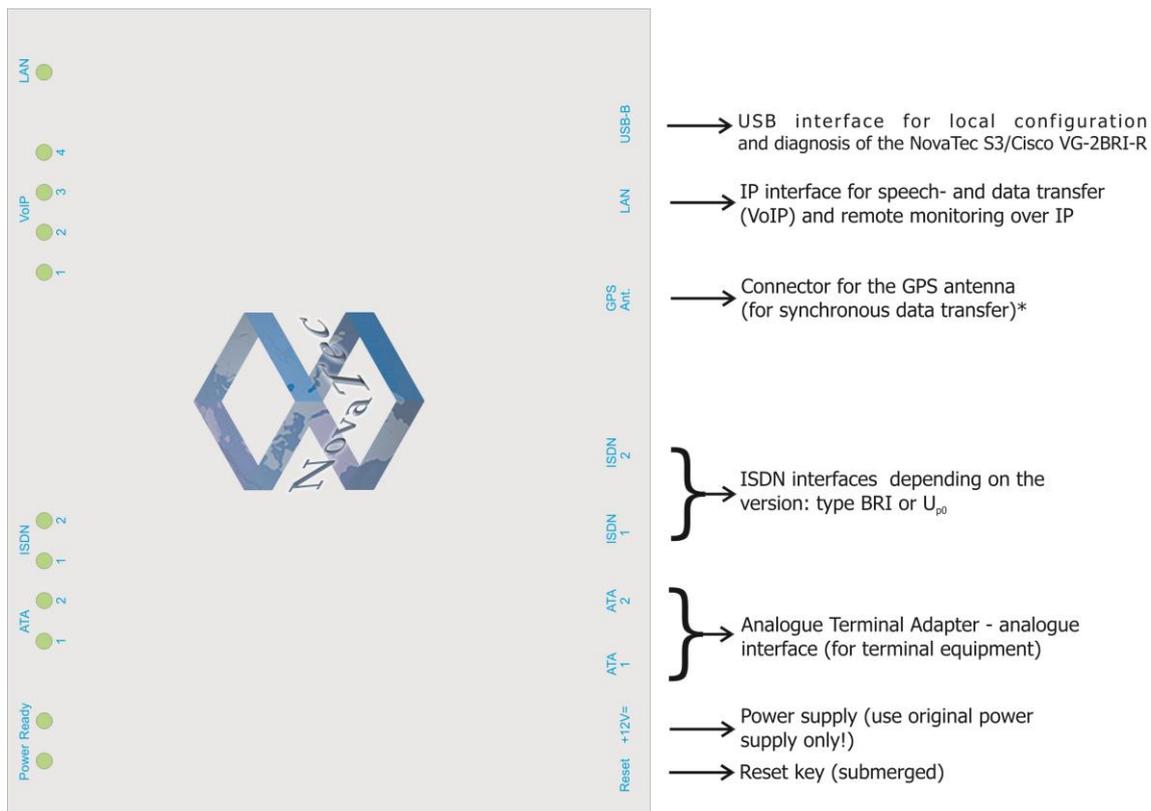
**Warning:**

Important information, it is essential that you adhere to this information as otherwise malfunctions resp. damages may occur.

## 5 The NovaTec S3

The S3 can be used everywhere where it is necessary to convert interfaces. The S3 functions as a gateway between IP, ISDN U<sub>p</sub>0-, ISDN BRI and analogue interfaces. Therefore e.g. the S3 can be operated behind a telecommunication system with U<sub>p</sub>0 interfaces to convert the signal in analogue a/b interfaces. Furthermore the S3 can be operated in a VoIP network to convert the signal into U<sub>p</sub>0-, BRI- or analogue a/b-interfaces or to make these connections available for terminal equipment. The functionality of the S3 depends on the version you purchased (see Table 1) and its configuration.

Picture 1 gives an overview of all interfaces.



**Picture 1: Overview over available interfaces**

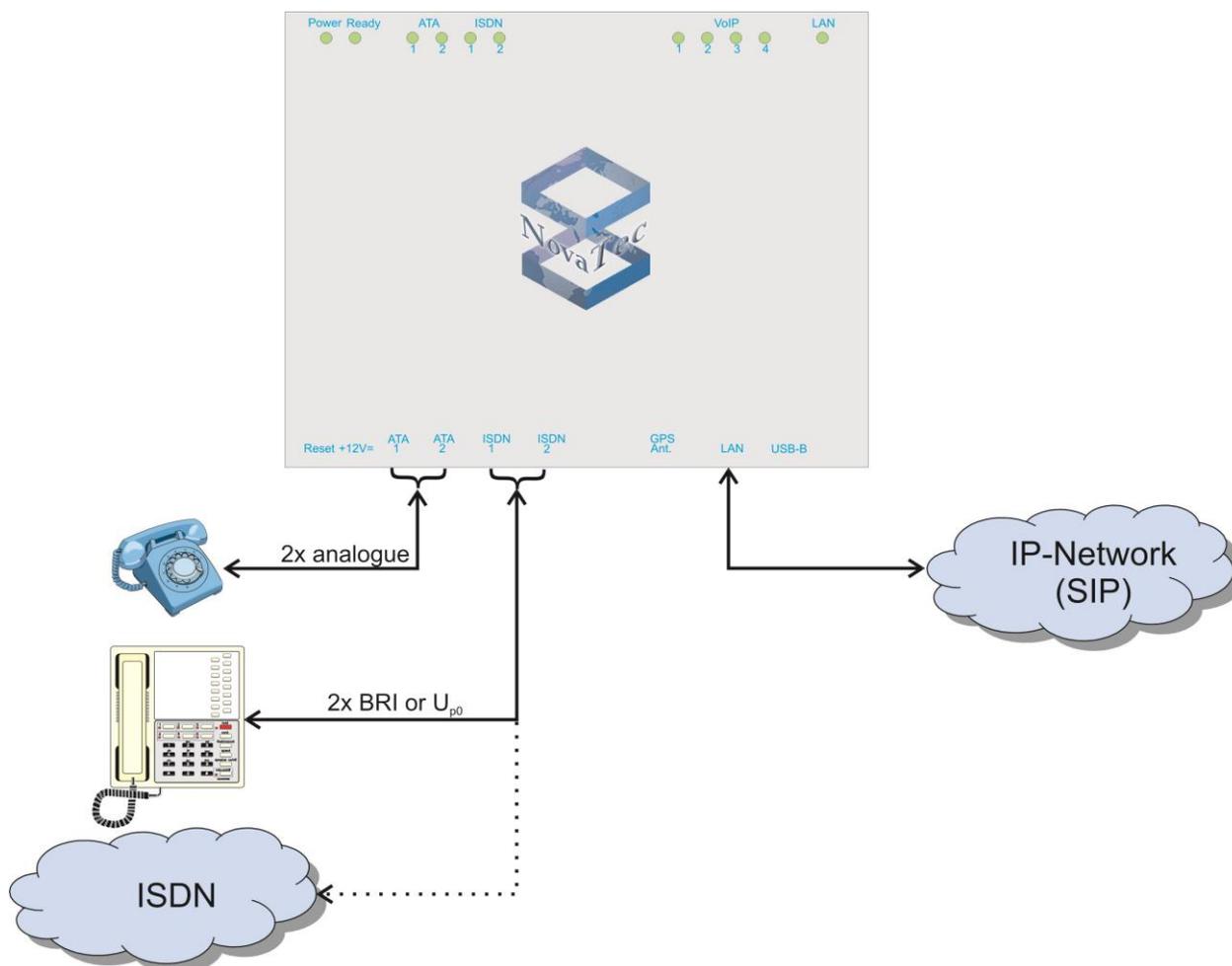
\*GPS antennas are no longer used. Alternatives are the type 1F8000RQ or the use of a RMCS server.



## 5.1 Integration of the S3

The S3 was developed to be embedded in existing networks in which interfaces are to be converted. The S3 is versatile and the version selected depends on the field of application.

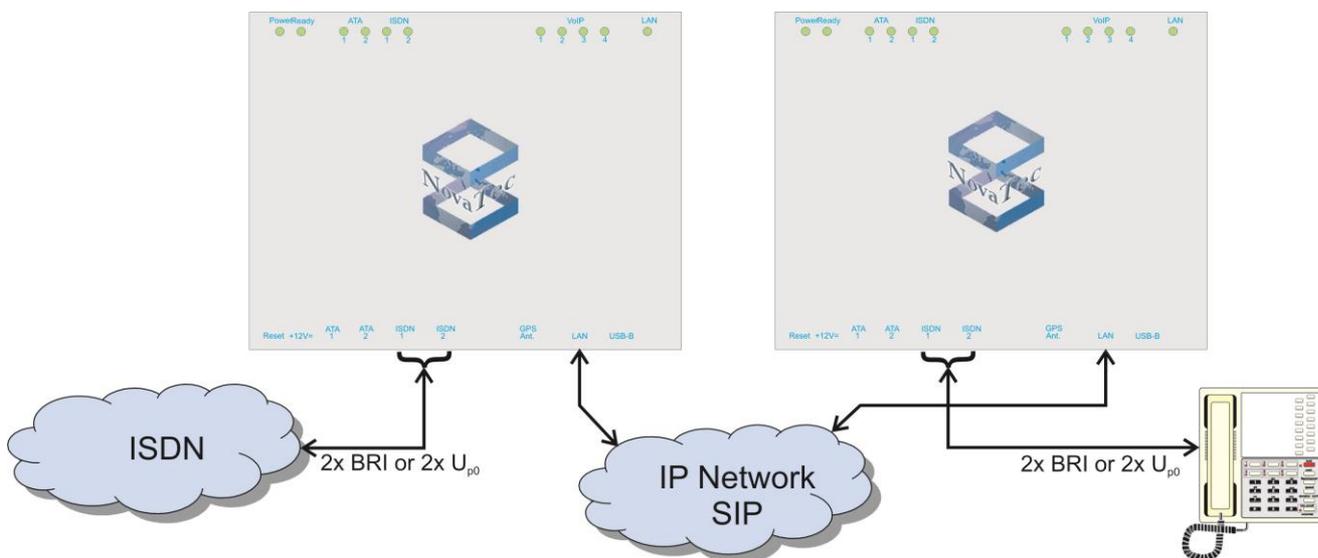
Picture 2 shows an overview of possible fields of applications of all versions. Please check Table 1 in addition as well.



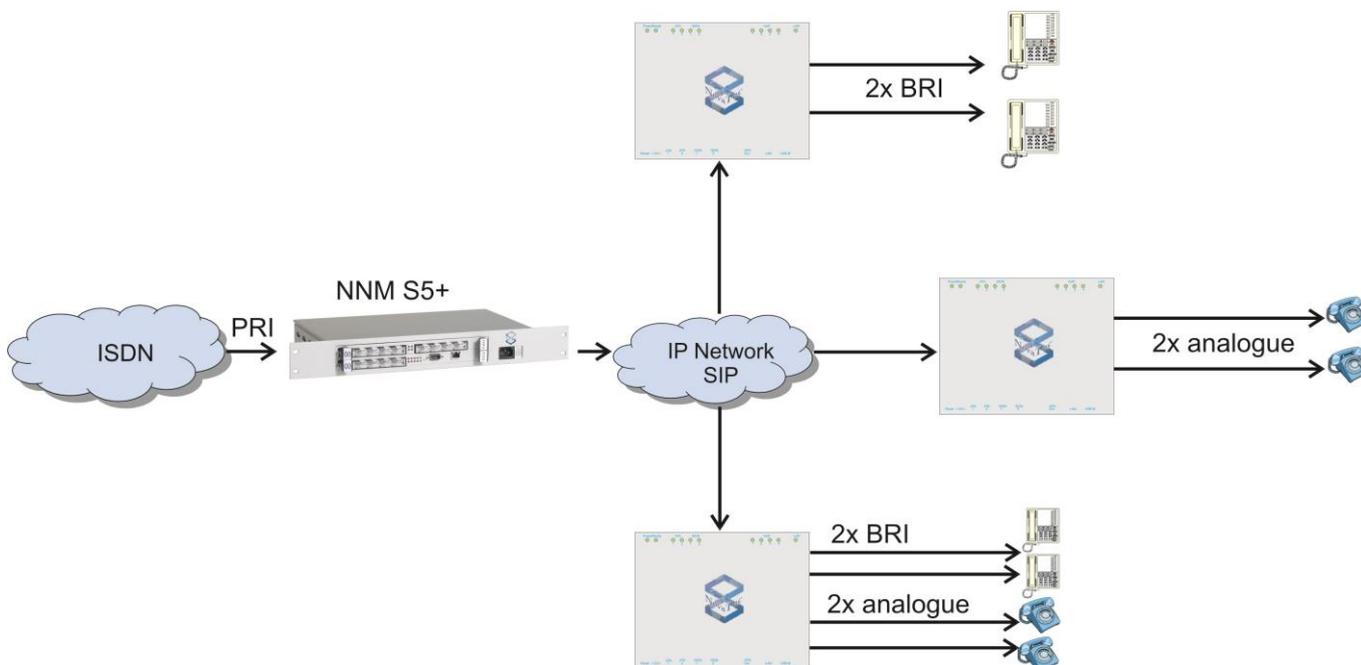
**Picture 2: Possible areas of application for S3**

## 5.2 ISDN over IP

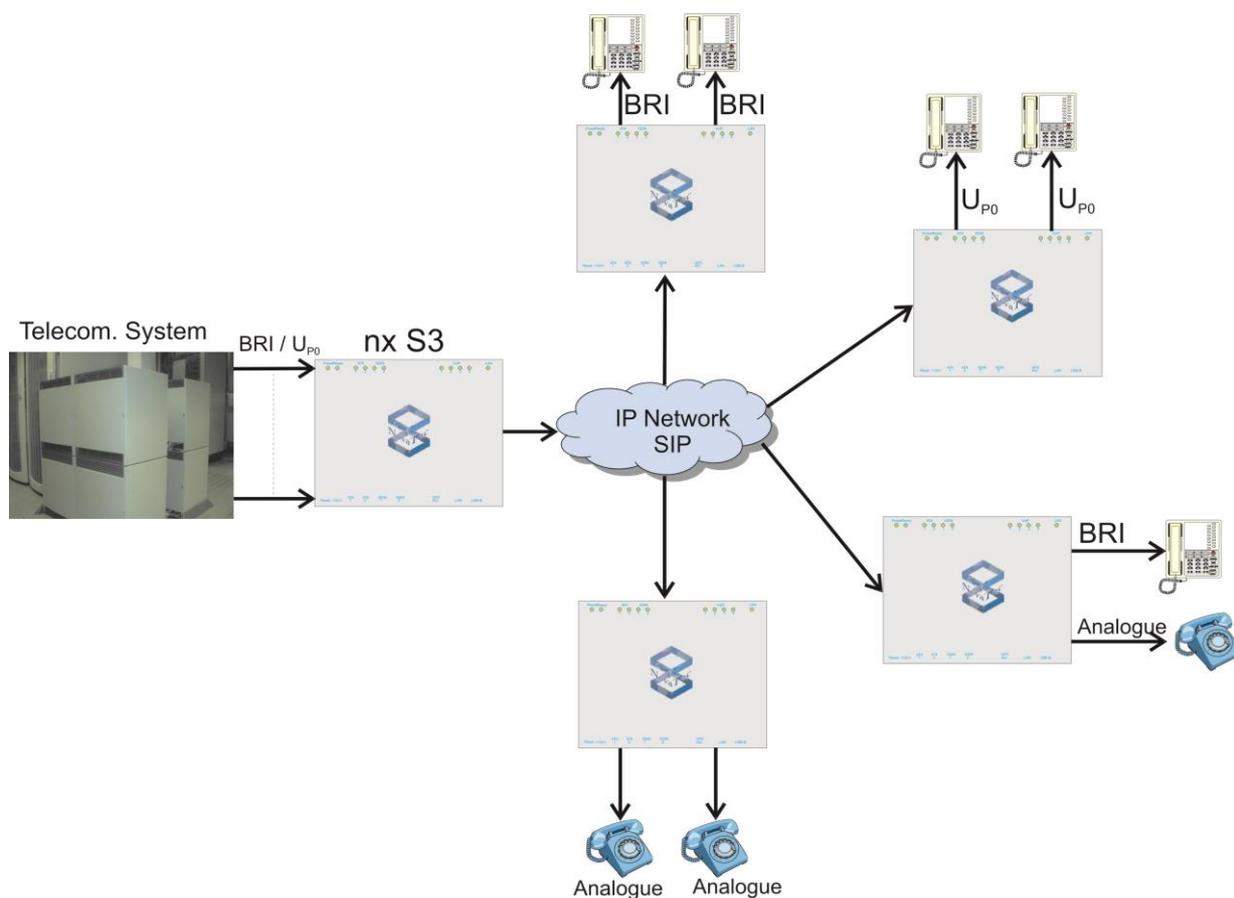
The ISDN interfaces in the S3 can be configured either as master (for connecting ISDN terminal equipment) or as slave (for connecting telecommunication systems or for cross connecting trunk lines). Thus the S3 can also be used to isolate a system via IP network. The following pictures show examples for this. The ISDN features are transparently passed through and are entirely available on both sides if NLP (Novatec Link Protocol) ist used..



**Picture 3: Building up ISDN interfaces via an IP network with the S3**



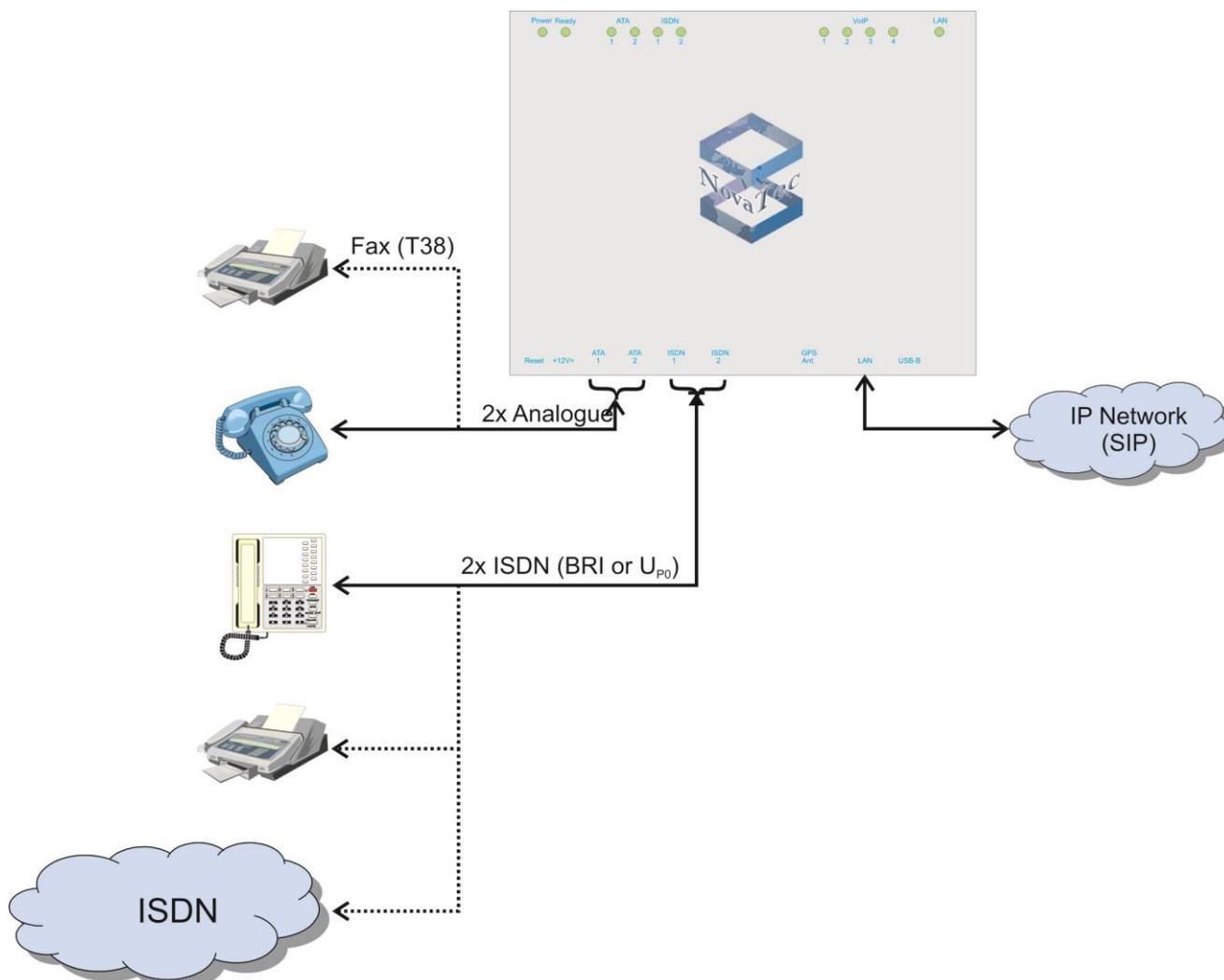
**Picture 4: Example of an application PRI to BRI/analogue via IP with the S3**



**Picture 5: Example of an application of a telecommunication network via IP**

### 5.3 Creating an ISDN resp. analogue Interface

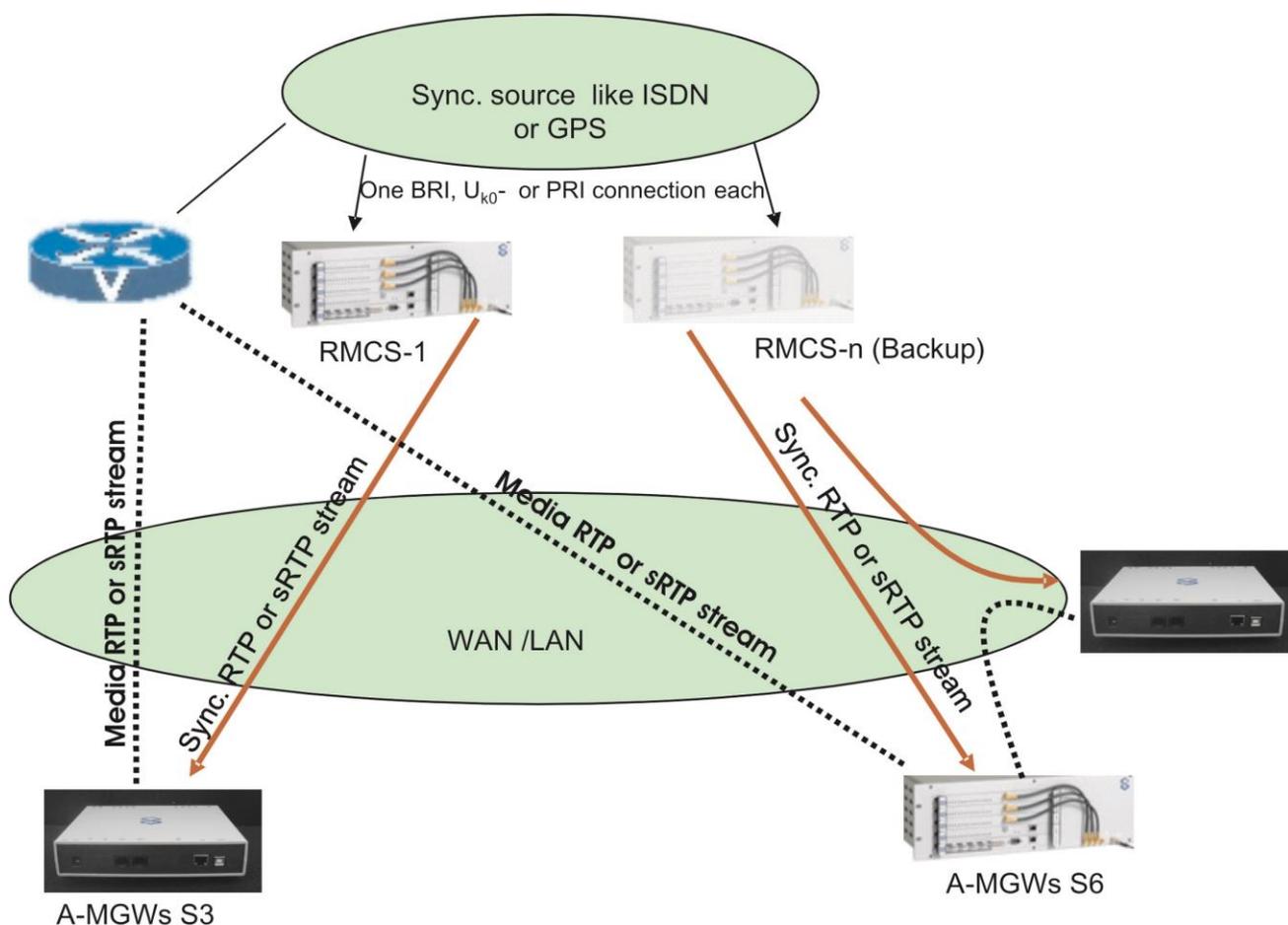
The S3 can provide an analogue interface for analogue terminal equipment respectively an ISDN interface (S0- resp. UP0) for ISDN terminal equipment or for the connection of ISDN trunk lines from a single SIP string. Even terminal equipment other than telephones such as PC's equipped with ISDN cards or faxes can be used on the S3 with the support of the T38 protocol.



**Picture 6: Providing ISDN resp. analogue interfaces from a single SIP string**

## 5.4 Synchronous Data Transfer

In certain applications such as videoconferencing (systems) it is necessary to transmit data synchronously between two locations. For this purpose you will need the S3 with article number 1F8000R or 1F8000RQ. The latter is only required with mobile phones or similar end devices which depend on minimum accuracy of the given clock pulse. The S3 comes with 4 codecs for VoIP, two BRI interfaces and can be used for clock pulse synchronization via RMCS. For a synchronous data transfer between several locations a RMCS Server, which has to be connected with each and every system which is to be synchronized, is additionally required.



**Picture 7 Example of a RMCS application**



## 6 Delivery Status

The S3 is delivered as follows:

- a factory set-up (see 6.1) is installed,
- a factory firmware is installed
- a factory license (see 6.2) is installed (from FW-Version 00.07.00.63; NMP 6.5),
- the customer specific configuration is installed (if ordered).

The current firmware version can be downloaded from [www.novatec.de](http://www.novatec.de) > Downloads.

The firmware license for the current firmware is delivered by email as soon as the S3 is dispatched.

### 6.1 Factory Set-Up

DHCP with option 129 is activated in the factory set-up.

The system will try for approx. one minute to reach the DHCP server after being restarted. If the DHCP request runs fail the system will fall back into the following IP default adjustment

- IP-address:192.168.127.254
- Subnet mask: 255.255.0.0
- Default-Gateway:192.168.1.254.

Please consider the following with modifications of the factory set-up:

If no DHCP server is available under „System IP Option“ in the configuration the existing entry „DHCP on“ has to be changed to „DHCP off“.

### 6.2 Firmware-License

From firmware version 00.06.07.00 you need a firmware license to ensure the functionality of the S3. If this license is missing telephony is not possible and only remote access is possible.

The license is already on board if the S3

- a. was delivered with firmware 00.07.00.63 or higher or
- b. was delivered with a firmware < 00.07.00.63 but configured by NovaTec .

The license data has to be uploaded onto the system with the NovaTec configuration interface if

- a. the S3 was delivered with a firmware < 00.07.00.63 and hasn't been configured by NovaTec or
- b. an upgrade onto firmware 00.07.00.63 or higher is effected or
- c. the current firmware is to be installed (see 6)

#### **The following points have to be considered when updating S3-systems:**

- a. Systems with a firmware version older/smaller than 00.06.07.00:  
An update onto firmware 00.06.07.00 or higher always requires a license key. The license cannot be readout of the system or stored.
- b. Systems configured with NMP 6.3.2 or 6.4:  
To copy the configuration onto the target system a license key is required irrespective of the firmware version. The license key has to be uploaded uniquely with the NovaTec configuration interface into the data base before the configuration can be transferred. The license cannot be readout



of the system or stored.

- c. Systems with firmware version 00.07.00.55 or higher configured with NMP 6.5 or higher:  
A valid license key is already existent within the system and NMP 6.5 allows the upload of the configuration data without needing to upload license data first. The license key stays within the system. It is only deleted if overwritten with other license data or the flash is deleted (login with „nopassword“). A new license key is only needed if the firmware version is to be updated.

Parallel to the dispatch of the S3 you will receive the license data via email. Store the license key well:  
**Subsequent deliveries are with costs!**

### **General information to firmware upgrades:**

For updates onto bugfix firmware versions no new license is required in general. Bugfix versions only differ from the original version by the last two characters.

Example:

Update from 00.06.07.00 onto 00.06.07.02:  
Update onto a bugfix version. No new license is required.

Upgrade from 00.06.07.00 onto 00.07.00.55:  
Upgrade onto a firmware version with new features. A new license is necessary.

In case of a downgrade or upgrade requirement, please contact our sales department. The available and approved firmware versions as well as the associated release notes are to be found online under [www.novatec.de](http://www.novatec.de) > Download.

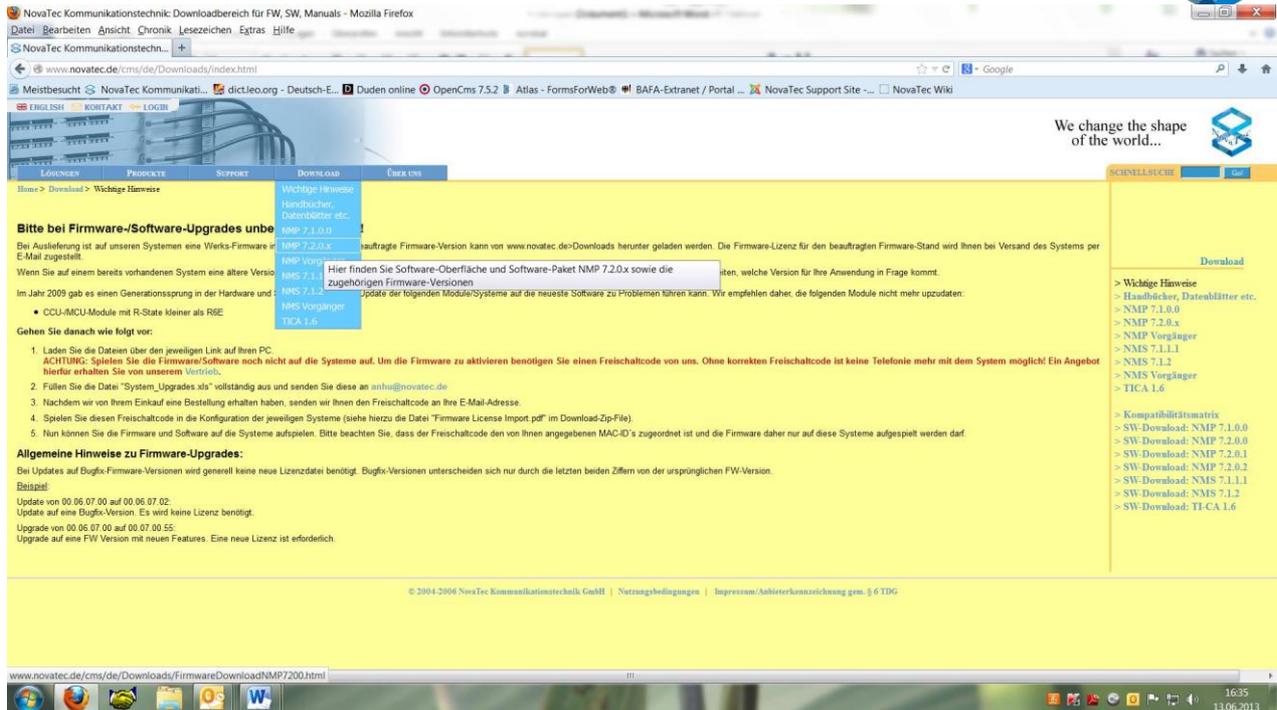
How to upload your license into the configuration is described under paragraph 7.

### **6.3 Reset into default configuration**

In case the system cannot be contacted after the configuration has been effected please press the reset button twice in succession. By doing so the S3 is reset into the default configuration: the IP configuration corresponds with the factory set-up (see 6.1). Any password set afore is deleted. As such the login is carried out with user "Technik" and without any password (from FW version 00.07.02.00).

## **7 Configuration**

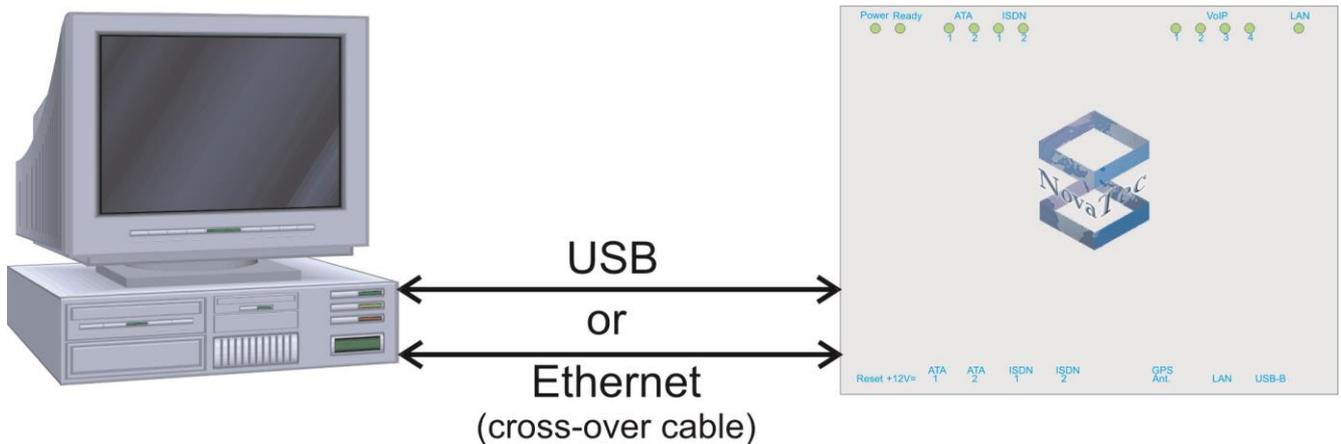
The S3 needs to be configured before installation. A PC with Microsoft Windows XP, Vista or NT is necessary. Download the PC tools from [www.novatec.de](http://www.novatec.de) > Download > NMP x.x.x. (Picture 8)



Picture 8

Install the software with the setup.exe file (folder: NovaTec\_NMP\_x.x.x.zip). Follow the instructions on your PC monitor. Extensive information on the different software categories can be called up with key „F1“. The initial installation of the S3 can be started by simply connecting the system with the mains supply to the delivered power supply.

A configuration data base file is created (mdb) with the users interface which is created from the configuration surface and then stored on the computer. After this is done connect the computer to the S3 via USB or Ethernet (cross-over wire).



Picture 9

**The default addresses of the S3 are:**

IP address: 192.168.127.254  
Gateway address: 192.168.1.254  
Submask address: 255.255.255.0

The configuration surface transfers the data file onto the target system (S3). After the successful transfer of the data base file onto the target system this reboots if necessary and is then ready for use according to



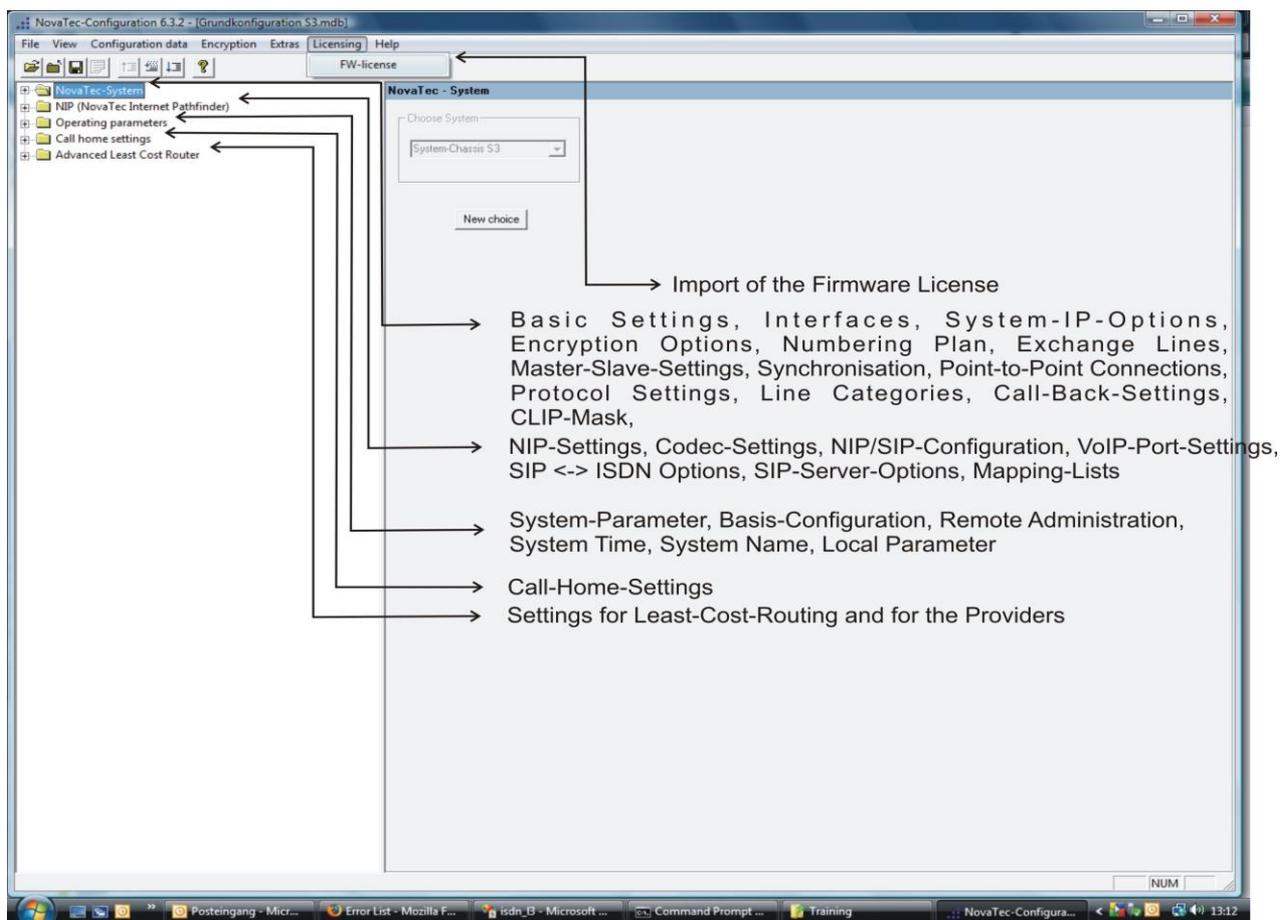
the configuration. If the S3 is in default mode after the restart the data base file was damaged. The LED`s in the system show the operational condition of the system. Should the system be in default mode please reconnect the S3 with the computer and correct the configuration before transferring the altered data base file onto the S3.

## 7.1 Firmware update via Trace Info Client (with USB or V.24):

1. Start your network services
2. A blue triangle appears in the Windows Systems tray
3. Right-click on the triangle and select settings
4. Activate the option „use COM port“ and set the COM port of your PC resp. the USB interface
5. Start the Trace Info Client
6. Click „Settings“
7. Enter „localhost“ as hostname and port 800. Confirm with "OK".
8. Click "Connect"
9. Enter „technik“ as username and the password of the target system (as the delivery state is without password the box remains empty)
10. Select "V.24 / USB" in the network box and confirm with "OK"
11. As soon as the connection is made new flags appear in the Trace Info Client
12. Select the flag "Diagnosis"
13. Click the button "Firmware" and select the firmware file you wish to transfer to the target system
14. A progress window appears whilst the firmware is uploaded
15. The firmware is target system resident. The message "Updating Firmware on Target" appears. **Do not switch off the system as long as this message is shown otherwise the system will not work after the reset!**
16. A notice will pop up telling you that the upload was successful and a reset is necessary.
17. Select „Systemreset“ (as long as the system reset has not been affected the system will run with the previous firmware).



The following mask appears after starting the configuration surface (picture 10):



Picture 10

Please effect all configurationally settings for the system in this mask. Whilst opening the configuration mask a connection to the target system is not necessary, the required settings can be carried out in offline mode. In all sub menus of the configuration mask a help text providing further information is available over the key "F1". Please be aware of the fact that there is **no store function** as known from many Windows programs: All given parameters are effected as soon as they are entered or altered. Regarding this we recommend to draw a copy of your configuration file (.mdb) before changing anything. You can draw this copy with Windows board tools or the function "close and copy to file" in the configuration mask under the menu topic "File".



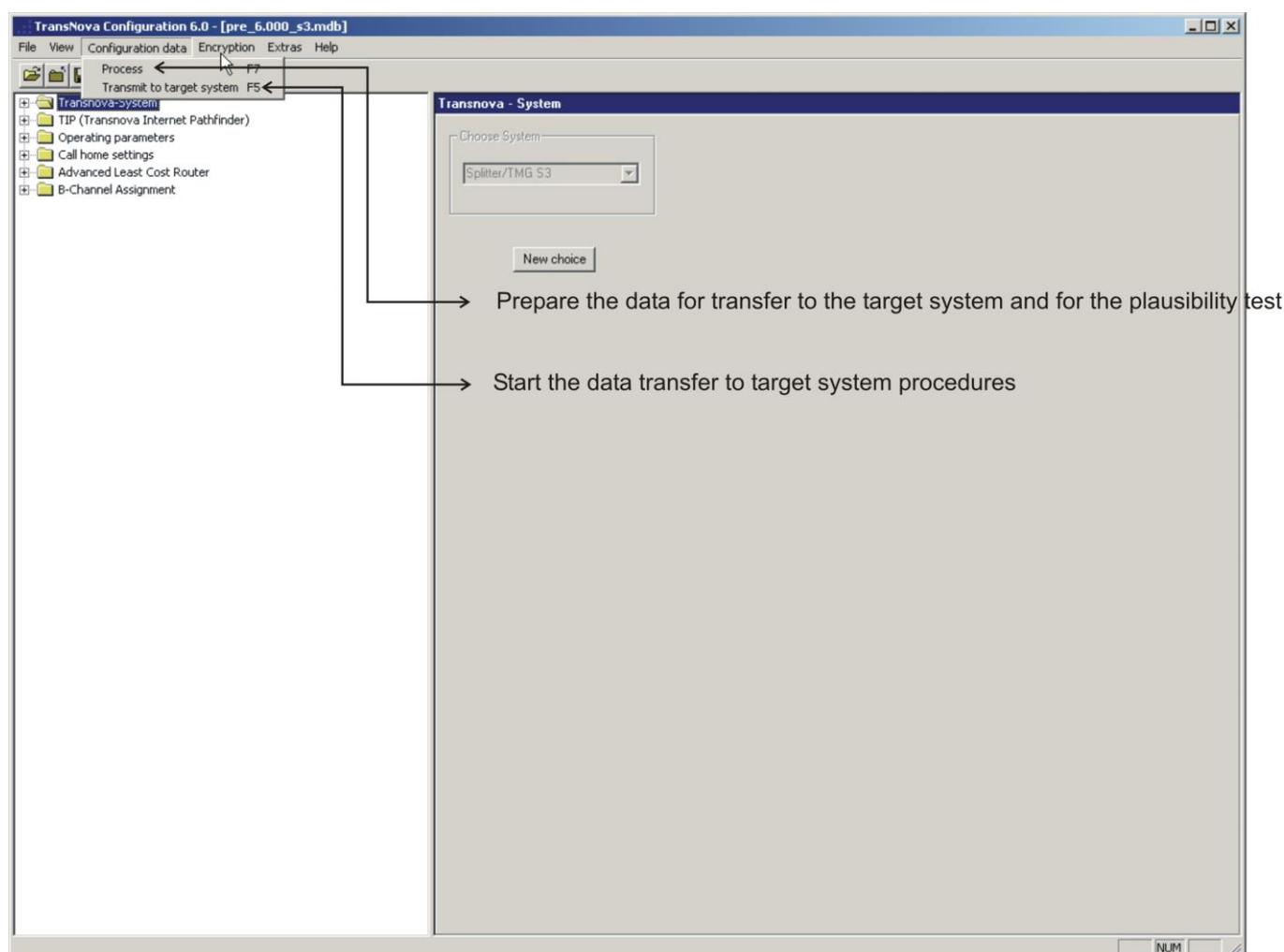
## 7.2 How to upload the firmware license into the configuration

1. Select the menu topic „Licensing/FW-License“.
2. Select the license sent to you by NovaTec for the related target system(s).
3. Prepare the configuration.
4. Transfer the configuration onto the target system.

You will receive the license from NovaTec via mail (please be aware of the details under 6.2).

## 7.3 Preparation and transfer of the data

Before transferring the data these have to be prepared. The preparation is carried out with the “Process” function in the pull-down menu (picture 11) or by pressing the “F7” key.



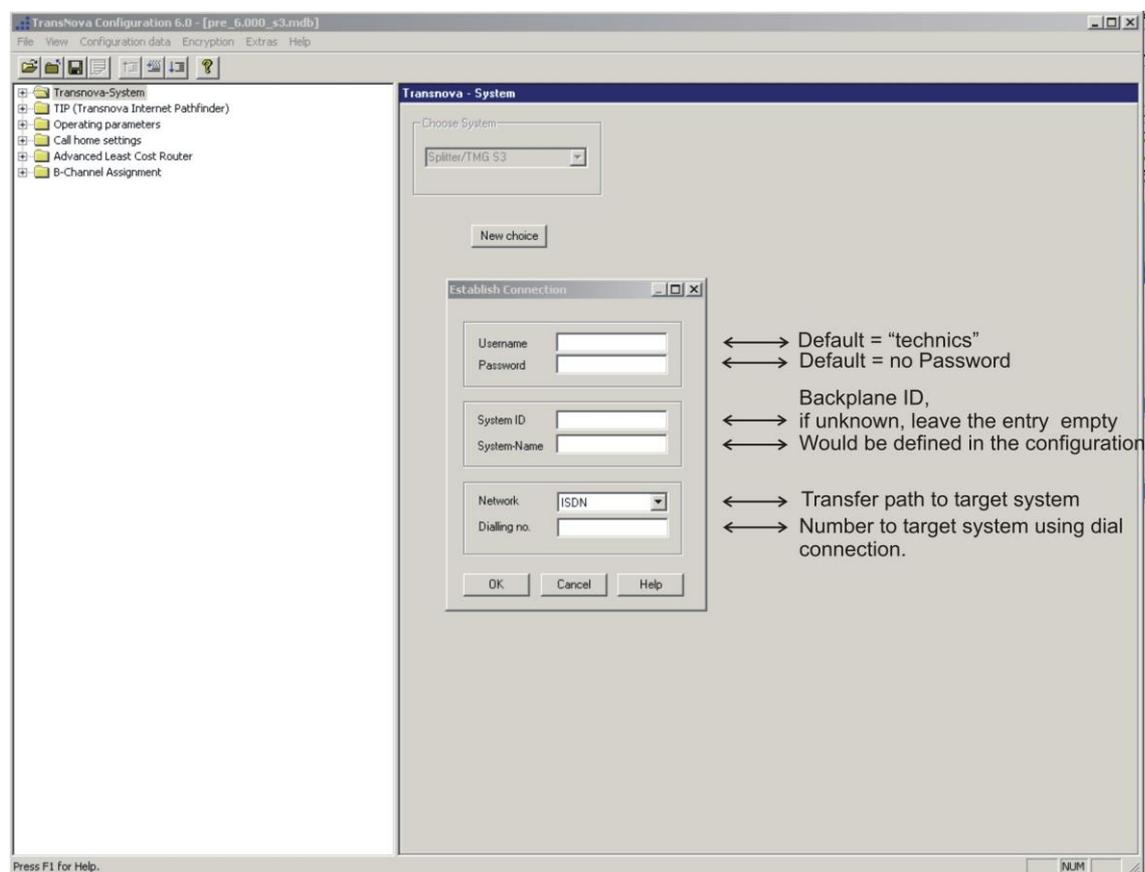
**Picture 11**

During this process a basic plausibility check of the configuration is carried out. Without the successful execution of the preparation the data cannot be transferred onto the target system. If the plausibility check detects errors in the configuration an adequate message with a failure indication will pop up. After a successful preparation of the data these can be transferred to the target system with the function “Transmit to target system” or by pressing the “F5” key. You will find a button “Extras/Save Config.” within the configuration mask. We recommend the usage of this button whereby the configuration data will not only be saved on the target system as packed file but also in their original form. Even though the transmission time is prolonged with this choice it is important when logging into the S3 system from a remote PC that



has not the configuration data of the target system. In this case you can trigger the original configuration from the system via download to enable you to carry out modifications.

Whilst the data transfer onto the target system is taking place an information retrieval will pop up after a security check with the following input options (picture 12):



Picture 12

### Username

The username is „Technik“ and cannot be changed. Should you state a username which is not known to the system, the configuration is not transferred.

### Password

Is also entered or changed with the Trace-Info-Client (entry in box „Password“: old; new; new). In delivery state the system has no password; this has to be given by you. Should you state a password which is not known to the system, the configuration is not transferred.

### System ID

The system ID – also backplane ID – is a worldwide unique code number which can be read out of the Trace Info Client. If you do not know the system ID please leave the box empty.

### System Name

You can give each system a name enabling you to differ e.g. the system configurations better. If a system does not have a name please leave the entry box empty.



## Network

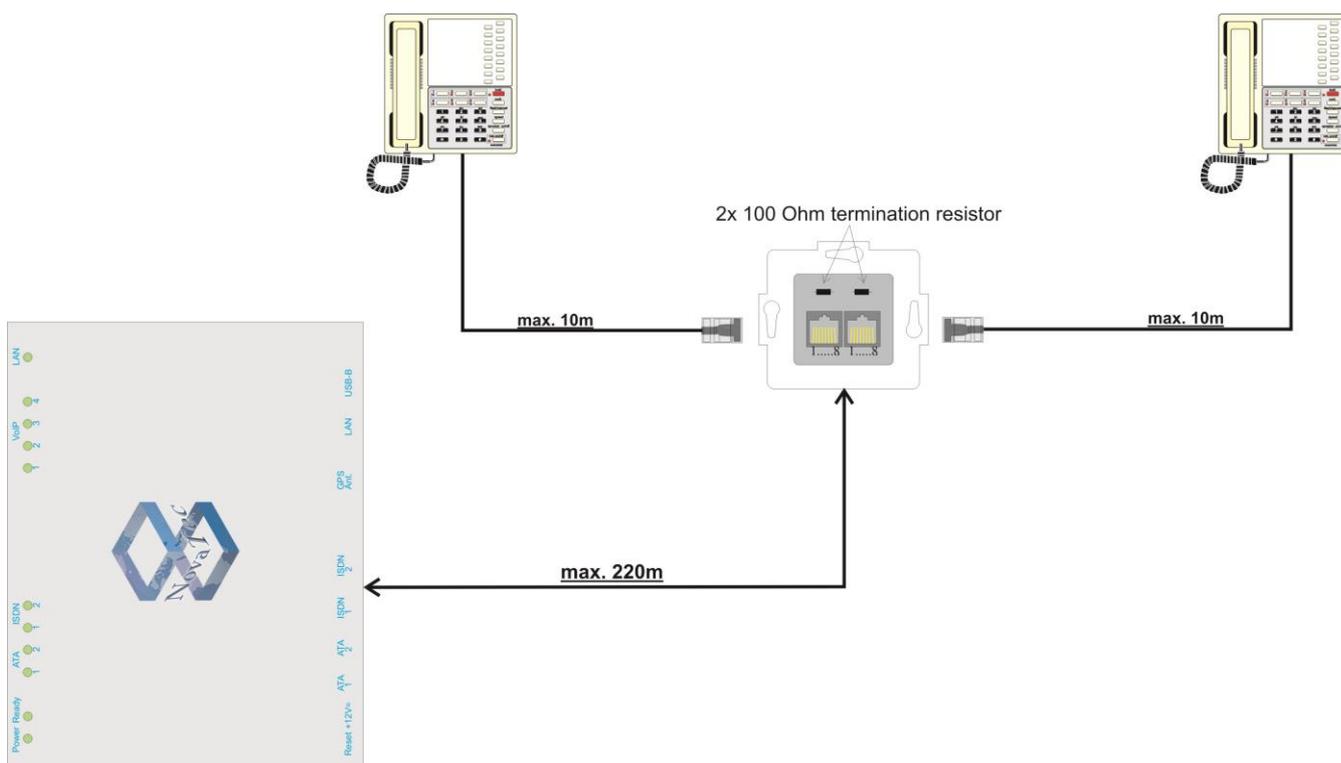
You can choose how the configuration software transfers the data to the target system. You can choose between V.24/USB, ISDN and TCP/IP. If your choice is ISDN you have to enter the call number in the box „Dialling no.“.

## 7.4 Installation

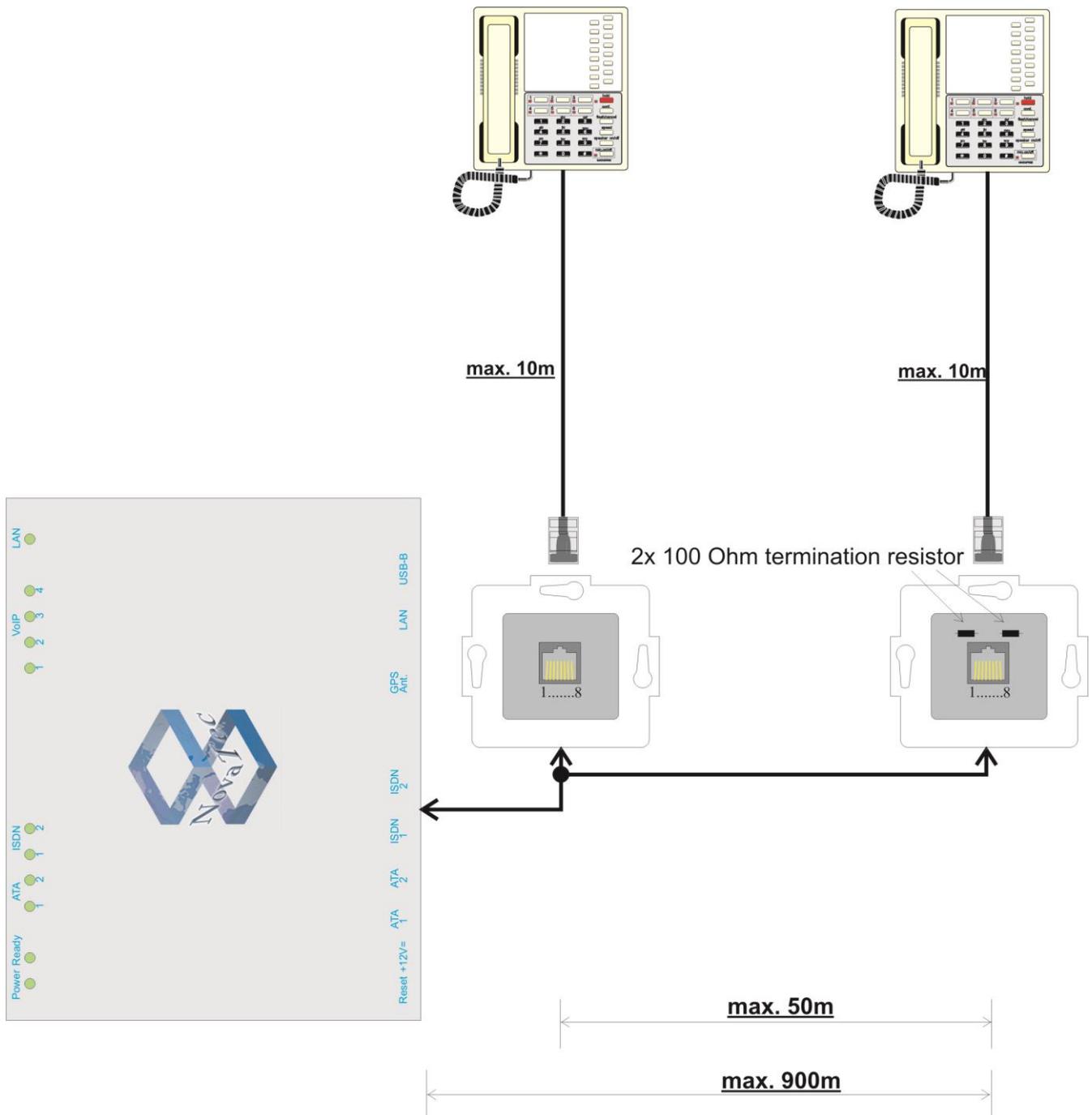
After its configuration the S3 can be installed at its destination with plug-and-play. Without prior configuration the S3 has its default IP address and hence is possibly outside remote reach within your IP net. **Please pay special attention when designating your IP addresses of routers and firewalls.**

Only end devices are connected to the analogue interface. To the Up0 and BRI interfaces NT's and TE's can be connected depending on the configuration. The BRI interfaces have internal termination resistors. Therefore it is only necessary to connect resistors at the termination point resp. to activate the available resistors in case of cross connected networks. Hence a star like connection of the BRI interfaces is **not** possible.

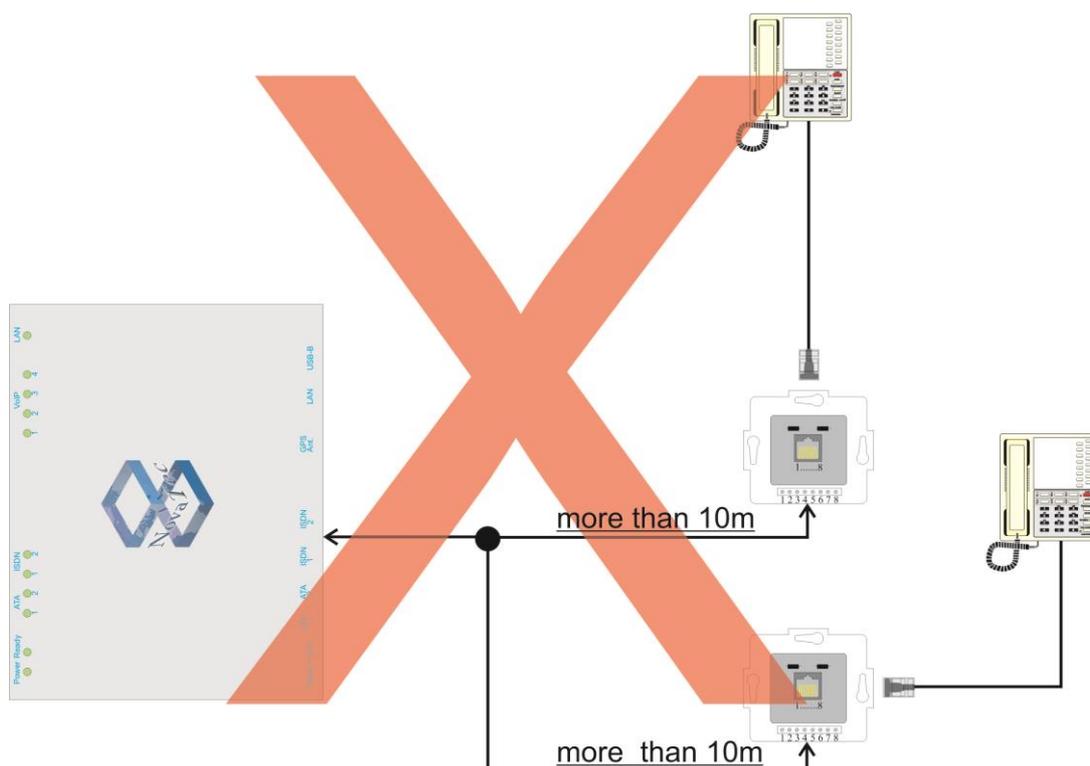
The maximum range for the BRI interfaces in the various operation modes can be found in paragraph 8 „technical data“.



**Picture 13: BRI line termination (passive bus)**



**Picture 14: BRI interface cross connection system termination (extended passive bus)**



**Picture 15: Incorrect cabling of the BRI interface**

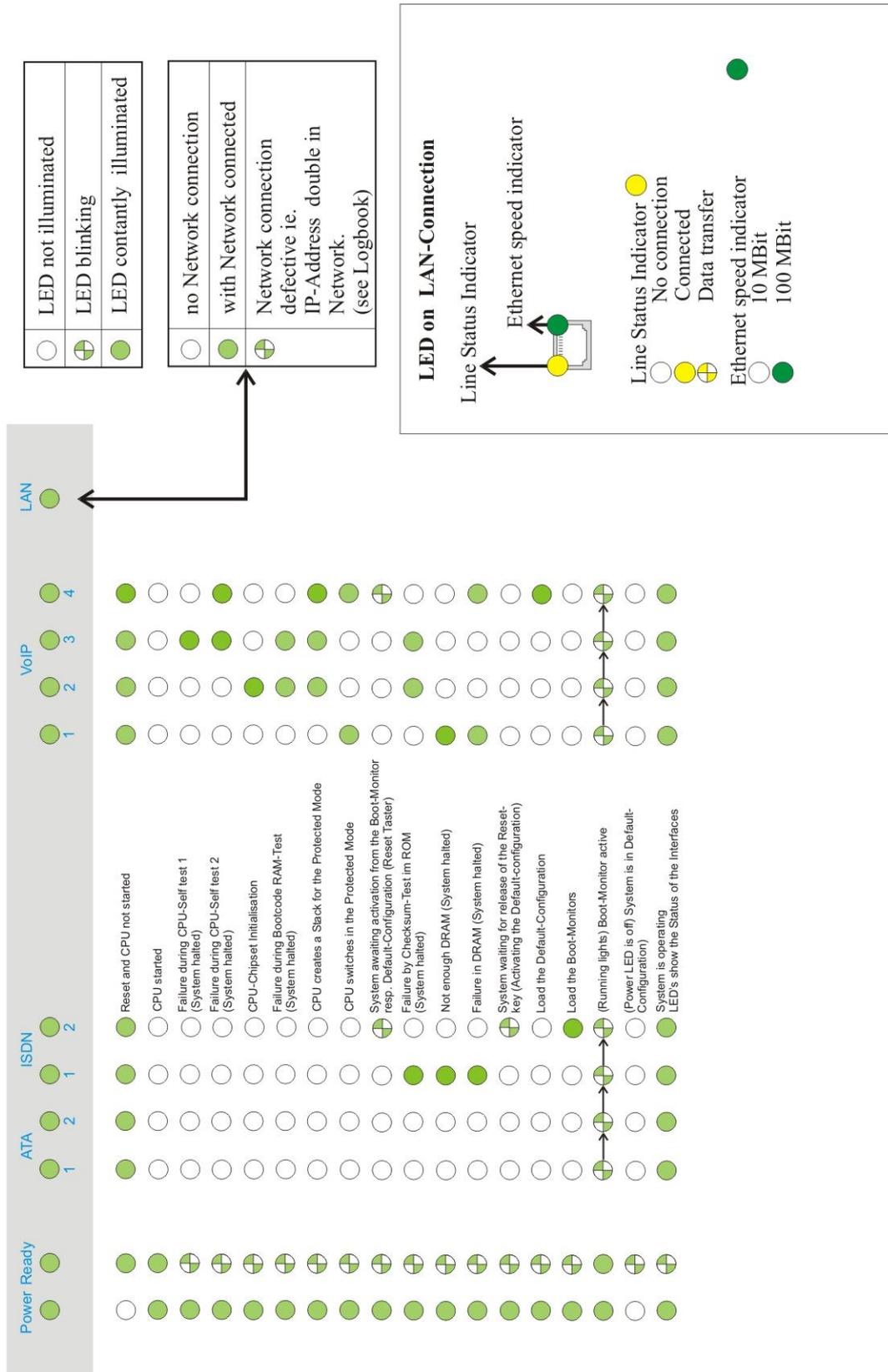
The system has not to be uninstalled for configuration modifications after installation. You can dial into the system with your PC via IP, fixed network or USB to be able to change e.g. the state of an interface or to transfer an updated configuration.

## 7.5 Status display

The status display of the S3 is divided into two categories: The boot stage (picture 16) and the operational stage. Several test steps are run during the boot stage which can be partially followed by watching the LEDs. A few test steps are run so fast that the corresponding indication of the LEDs is hardly perceivable. Should a test step fail the system will either stop with the correspondent indication or automatically reboot. In this case please contact our support team.

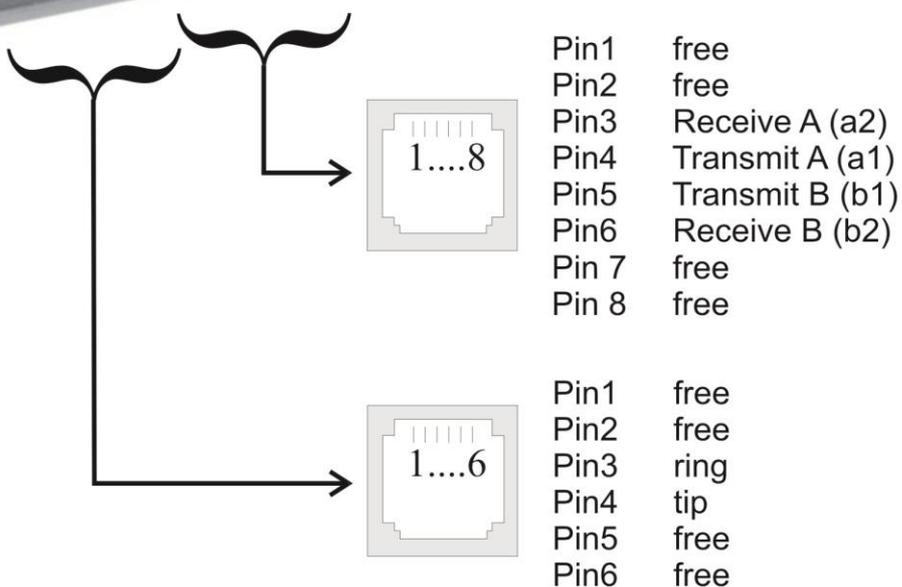
If the system is in default configuration a valid configuration has to be transferred from a PC onto the system.

Should the system be in operation mode the LEDs will show the state of the according interface. When the LEDs of the analogue resp. VoIP interfaces are on a call via the correspondent interface is active. Are the ISDN interface LEDs switched on ISDN terminal equipment is connected and layer 1 is active.



**Picture 16: Status indication of the S3**

## 7.6 Signal assignment of the interfaces



**Picture 17: Signal assignment of the interfaces**



## 8 Technical data

<b>Mechanical Data</b>	
Width x Depth x Height	Desktop / wall-mounted chassis: 211 mm x 155 mm x 40 mm
Weight	1 to 2 kg (depending on version)
Fastening method	Wall-mounted chassis: wall holders
Construction	Several options
<b>Electrical Data</b>	
Power Supply	90 to 264 V~ ; 47 to 63 Hz
Power Input	Max. 1 A at 230 V~
Electrical Supply	Rubber connector (IEC 320)
Overvoltage Protection	Internal overvoltage protection
Available Interfaces (depending on version)	<ul style="list-style-type: none"> <li>• Serial via USB</li> <li>• 1 x Ethernet according IEEE 802.3/802.3u</li> <li>• ISDN BRI, EDSS1</li> <li>• ISDN U<sub>PO</sub>, EDSS1*</li> <li>• Analogue*</li> </ul>
BRI Interface	<ul style="list-style-type: none"> <li>• According CTR 3, TBR 3, ITAAB</li> <li>• Supply: external with USS (feeding unit)</li> <li>• Range: max. 220 m (passive bus) max. 900 m (extended passive bus) max. 1000 m (point-to-point)</li> </ul>
Analogue Interface*	<ul style="list-style-type: none"> <li>• Automatic identification between IWV and MFV (ETSI Standards ETSI ES 201 235-1,2 V1.1.1)</li> <li>• Range up to 10,000 m (depending on cable type)</li> <li>• High ringing voltage with up to 5 US REN (Ringer Equivalent Number) according AT&amp;T / 125 V Peak ringing voltage and protection from temperature rise</li> <li>• Adjustment of the line impedance for 15 countries (Austria, ..., Germany, ..., USA)</li> <li>• Caller ID after Bellcore/Telcordia GR-30-CORE <u>Bell202 FSK</u> CID Coding and ETSI 300-659-1/2/3 V1.3.1 <u>V.23 FSK</u> Coding for transmission of CID</li> <li>• Call charge pulse is 12/16 kHz configurable</li> <li>• Modem standards up to V.90</li> <li>• Fax standards up to V.34</li> <li>• Fax/Modem/Speech identification (Fax/Modem Switch)</li> </ul>
IP Interface	<ul style="list-style-type: none"> <li>• SIP 2.0 → RFC3261</li> <li>• ITU V.110 → Data interface between ISDN, IP</li> <li>• TLS and sRTP</li> </ul>
Clock Accuracy	<ul style="list-style-type: none"> <li>• Worst Case: +/- 30 ppm</li> <li>• Temp. Drift: +/- 30 ppm at -0°C to +70°C</li> <li>• Pull Range: +/- 100 ppm</li> <li>• Clock accuracy with RMCS option: <ul style="list-style-type: none"> <li>• Long period (2 days) measurement: +/- 0.5 ppm (5 * 10<sup>-7</sup>)</li> <li>• Worst Case and guaranteed: +/- 5 ppm (5 * 10<sup>-6</sup>)</li> </ul> </li> </ul>



<b>Electrical Data</b>	
Encryption	<ul style="list-style-type: none"> <li>• SRTP according RFC3711 and RFC4711 (AES-CM-128 / HMAC-SHA1-32)</li> <li>• TLS Version 1.0 according RFC2246 and RFC3268 Key Agreement: RSA and Diffie Hellmann Cipher Suite: AES, DES and 3DES Certificate: X509v3 Hash Functions: SHA and MD5</li> </ul>
Codec and Speech Compression	<ul style="list-style-type: none"> <li>• G.711 incl. Annex I (BFI) and Annex II (VAD/CNG)</li> <li>• G.726 incl. VAD/CNG, BFI error concealment and payload support RTP according "RFC 3551"</li> <li>• G.728, 16 kbit/s</li> <li>• G.729 A/B, 8 kbit/s</li> <li>• Fax Relay, T.38 support V.21, V.27ter, V.29 and V.17</li> <li>• 10, 20 and 30 ms Voice Packet size (all Codecs, upstream) configurable</li> <li>• Adaptive/ Fixed Jitter Buffer maximal 200 msec</li> <li>• Jitter Buffer Inband Modem Support</li> <li>• RTP/SRTP Protocol Support according to RFC3550 and RFC3711</li> <li>• Payload Byte Counter (H248.1 Annex E)</li> <li>• X-CCD &amp; Clear Mode for data transmission</li> <li>• Silence Compression</li> <li>• Comfort Noise Generation</li> </ul>
Analogue Signalling	<ul style="list-style-type: none"> <li>• The Near Line Echo Canceller (16 msec) is compatible with applicable ITU-T G.165 and G.168 standards.</li> <li>• Caller ID Sender (CIDS), V.23 and Bel202</li> <li>• Caller ID Receiver (CIDR), V.23 and Bel202</li> <li>• DTMF/AT Generator</li> <li>• DTMF Receiver (DTMFR) ) according to ITU-T Q.23.</li> <li>• Universal Tone Generator (UTG)</li> <li>• Universal Tone Detector (UTD) according to ITU-T V.8</li> <li>• Text Phone V.18 A Detector</li> <li>• Call Progress Tone Detector (CPTD)</li> <li>• Answering Tone Detector (ATD)</li> <li>• Digital Identification Signal (DIS) V.21 Detector</li> <li>• DTMF Event Support according to RFC2833</li> </ul>
<b>Environmental Specifications</b>	
Storage and Transport	-20° C to +90° C 0% to 95% relative humidity (not condensing)
Operation	+5° C to +40° C 0% to 95% relative humidity (not condensing)
Heat Loss	30 J
Max./Min. Temperature	0 to 40° C

\*not available with TransNova® S3 (Cisco VG2-BRI-R)