Weatherproof telephone

INDUTEL IP

Operating instructions

FUNKE+HUSTER·FERNSIG

FHF BA 9605-05 09/16 V1

BA9605-05-EN 09/16 V1
Manual
InduTel IP

☞	**Note** Please read the operating manual carefully before installing the device. Please check the contents of the box for completeness.	☜

FHF Funke + Huster Fernsig GmbH
Gewerbeallee 15 – 19
45478 Mülheim an der Ruhr
Tel +49 (208) 8268 - 0
Fax +49 (208) 8268 - 377
http://www.fhf.de

Table of Contents

1 About this Manual

This manual describes the operation and administration of the weatherproof VoIP telephone InduTel IP. In order to create a VoIP gateway or a VoIP PBX, please contact the gateway or PBX manufacturer for more information. All advice and instructions for the operation of the VoIP telephone must be followed carefully and the telephone should only be used as specified.

This manual is updated regularly.

1.1 Tips for Reading

Symbols can be found together with a box at various chapters of this manual. They are intended to refer you to chapters of particular significance, as shown below.

Note

Notes provide you with information that you may first need to become familiar with in order to configure the equipment properly.

Tip

Tips provide you with information on how to operate the terminals in a particularly easy or convenient way.

Caution

Notes provide you with information that you may first need to become familiar with in order to configure the equipment properly.

1.2 Overview of the Chapters

This manual offers extensive information about the VoIP telephone InduTel IP. Apart from the general basics, it also offers detailed operating instructions as well as administrator instructions.

General information on the phone is provided in chapter 2. It contains the setup of the phone and descriptions of the available keys.

Chapter 2.5 is particularly interesting for the user of the phone. Here it is shown in detail, which possibilities are available.

Chapter 3 is intended for the administrator of the system. The Web interface allows for comfortable administrative setup of the VoIP telephones.

☞	**Note** This configuration can be accessed after password entry only. Refer to chapter 2.	☜

Follow the safety instructions in the manual at all times!

☞	**Note** Parameters that are transmitted to the telephone per DHCP cannot be overwritten by a local configuration.	☜

Tip

For searching of special information in this document you can use the following assistance:

- Table of contents
- Index
- Abbreviations
- Overview tables
- Overview figures
- This document is available as a PDF file. With a PC it is possible to search selective for keywords.
- This document is available in the following languages:
    - German
    - English

For general questions concerning the operation of VoIP telephones or information that must be respected for operation with special PBX's or gatekeepers, a FAQ (frequently asked questions) document is available.

2 General Notes on Operation

1. The InduTel IP is a VoIP (Voice over Internet Protocol) telephone and is operated on a 10/100 BaseT Ethernet network. The connections are established via the Session Initiation Protocol (SIP).

2. The power supply may be established via Power over Ethernet (PoE) from the network or via a separate direct current voltage source (see chapter 2.2.2).

3. The programming and parameter setting are carried out solely via the web server of the telephone. The web server can be reached via the standard web browser of a PC. In order to access the web server, entering the username and the password is mandatory. The factory settings for the username and password are:

   Username: admin
   Password: fhf

   On default since software version 1.0 r8xx the device is working in the DHCP client mode. If no DHCP server is available, then the device uses the preset IP address 192.168.0.77 and mask 255.255.255.0.

4. The telephone has a handset rest with a magnetic contact as a hook switch. In order to end an existing call, the handset must be hung up, or the cut-off key (see chapter 2.3.1) on the keypad must be pressed.

5. The internal relay contacts only allow voltages of 30 VAC or 60 VDC to be switched. The maximum permissible current depends on the mode of operation (see chapter 8).

6. The handset of the telephone is fitted with a stray field coil for connection to hearing aids. Those who wear a hearing aid with an inductive receiver can receive the signal of the earphone capsule directly over the hearing aid.

2.1 At the Time of Delivery

2.1.1 Contents of the Packaging

- Telephone InduTel IP
- These operating instructions
- LAN device connector plug

2.1.2 Default Settings of the Telephone

DHCP mode	client
IP address (fall back) Mask (fall back)	192.168.0.77 255.255.255.0
Announcement of the current	dial *558800
Master Reset to Factory	dial **314159265359
Username	admin
Password	fhf
Number redial memory	empty
Speed dial memory	empty
Relay function	switched off
Tone call melody	2
Tone call volume	3
Handset volume	5
Microphone sensitivity	6

Table 1: Default Settings of the Telephone

2.2 Assembly and Installation

Since all telephones have the same preset IP address, the network settings should be configured with the web server of the telephone before the telephone is assembled.

The username and password at the time of delivery should be changed for security reasons.

The assembly of the telephone should only be carried out by qualified specialist personnel.

2.2.1 Wall Assembly

Assembly is carried out on a firm and even surface.

Fasten the telephone to the wall with four screws (of a size of up to Ø 8 mm).

Lead the LAN cable trough the cable screws and fasten the delivered device connector plug in to the LAN cable and plug the connector into the RJ45 plug-in. Then fasten the cable screw.

2.2.2 Connection of a separate DC Voltage Supply

If a PoE supply is not available, the telephone can also be operated with a DC voltage of 24 V to 48 V.

Take off the handset. Unscrew the keypad plate. Guide the supply line through the screwed cable gland and put the two connecting leads onto the terminals 3 and 4 (any polarity). Fix the supply line with the cable gland. Make sure that the cable connection to the keypad is plugged in. Then place the keypad plate back onto the telephone and fasten it with four screws. Then put the handset back.

2.2.3 Connection of the internal Relay Contact

Take off the handset. Unscrew the keypad plate. Guide the connection line through the screwed cable gland and put the two connecting leads onto the terminals 1 and 2. Fix the connection line with the screwed cable gland. Make sure that the cable connection to the keypad is plugged in. Then place the keypad plate back onto the telephone and fasten it with four screws. Then put the handset back.

Only use lines with a sheathing diameter of 5 mm to 9 mm, since the degree of protection IP 66 is not ensured otherwise. If you wish to use a separate DC voltage supply and the relay contact at the same time, you must use a four-core cable.

If a separate DC voltage supply and connection of the internal relay contact are not required, it is to be ensured that the sealing element is in the screwed cable gland.

2.2.4 Terminal Configuration

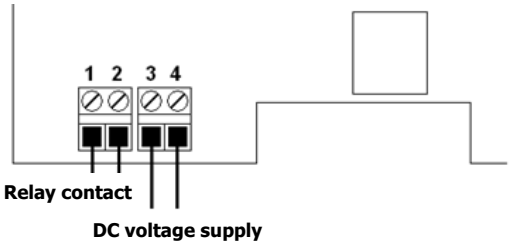

Figure 1: Terminal Configuration

2.2.5 Assembly of LAN-Connector RJ45

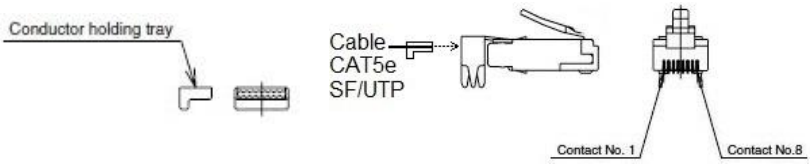

Figure 2: LAN Connector RJ45

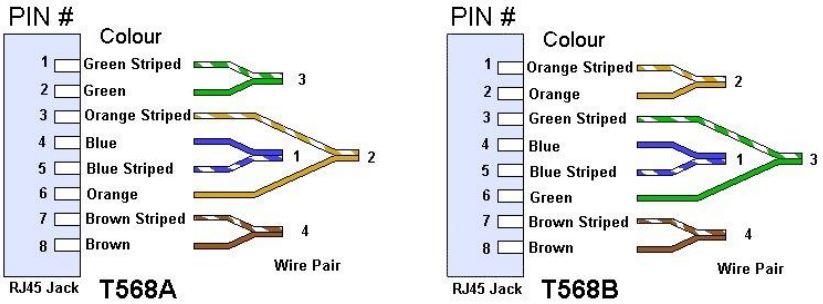

Figure 3: PIN Description according to T568A and T568B

PIN assignment depends on the condition of installation on site.

2.2.5.1 Crimping Tool

recommended tool:

LogiLink crimping tool Universal

WZ0003

Figure 4: LogiLink Crimping Tool Universal WZ0003

2.2.5.2 RJ45 Plug-in Connector with Insulation Displacement Termination

If Ethernet cables with rigid conductors are used, then it is recommended to use RJ45 plug-in connectors with insulation displacement termination. Because these plug-in connectors can be mounted without tools, the can be used with strand wires without using a crimping tool for mounting. A usable plug-in connector is the industrial Ethernet plug-in connector of the company Weidmüller, order number: IE-PS-RJ45-FH-BK.

2.3 Operating Elements

2.3.1 Version with Keypad

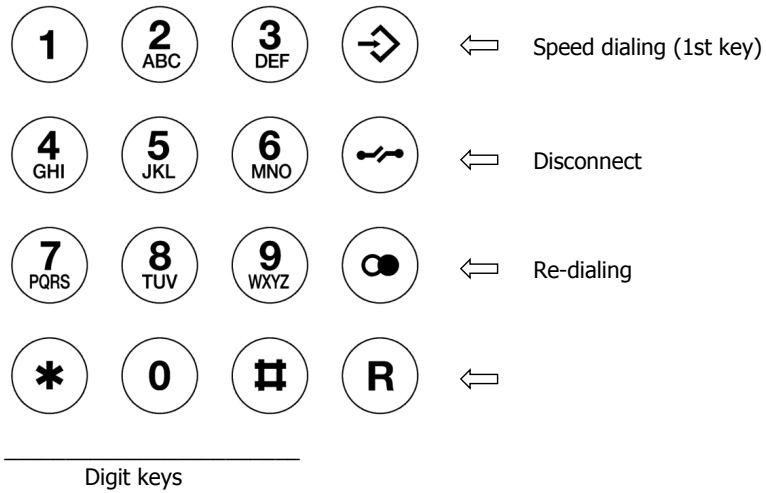

Figure 5: Operating Elements

2.4 Dimensions

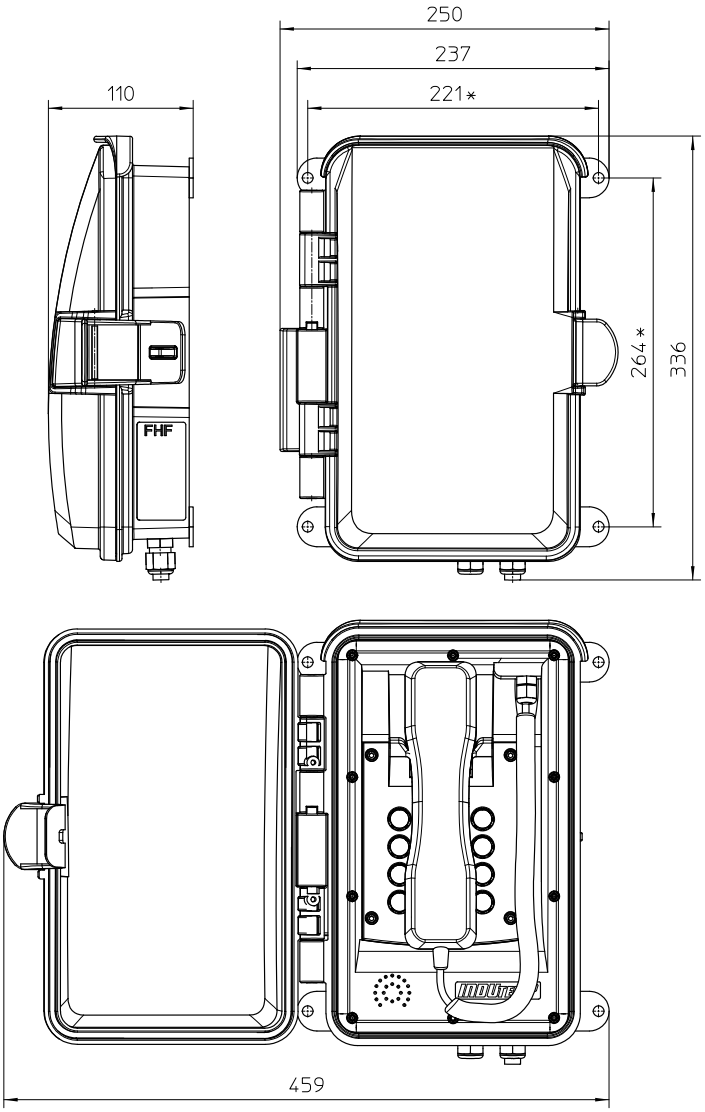

Figure 6: Dimensions in mm

2.5 Operation

2.5.1 Calling / Taking Call

You can answer a call by taking off the handset or dial the number of the person you wish to speak to.

2.5.2 Dialling

You can enter the desired telephone number using the number keys. Once a connection has been established, you can transmit tone dialling signals with the number keys, star and hash key.

Numbers are dialled in so-called block dialling. This means that the numbers must be entered quickly one after the other. After a pause of a certain length, the numbers entered so far are then dialled.

2.5.3 Speed Dialling

With the key ⊛ and then a number key you can dial telephone numbers you saved previously using the web server of the InduTel IP.

2.5.4 Re-Dialling

After taking off the handset and pressing the redial key, the telephone number last entered will be automatically dialled as long as the InduTel IP has not been restarted.

2.5.5 Disconnecting

If you want to end a conversation and start a new one straight away, you do not need to hang up the handset but merely press the cut-off key. The old conversation will be terminated and after a short time you will hear the dial tone. You can now enter the telephone number for the new conversation.

2.5.6 Announcement of the Current IP Address

The InduTel IP is able to announce the current IP address. For this purpose, the following "telephone number" must be dialled:

IP announcement = *558800

The address will be announced on the telephone earpiece.

3 Web Server

This section describes the administration/configuration of the telephone InduTel IP. All functions and properties of the telephone can be set via the web server.

☞	**Note** Before parameters become effective they have to be saved with "Apply Changes". In the certain parameters, the InduTel IP must be restarted in order for them to take effect.	☜

3.1 Authorization

The web server is accessed via a web browser. You should use an up-to-date version of a commonly used web browser.

In the delivery condition the DHCP client mode is active. If no DHCP server is reachable, then the telephone falls back to the following network settings:

IP-Address: 192.168.0.77
Net mask: 255.255.255.0

You will be requested to enter username and password.

The factory settings for the username and password are:

User Name: admin
Password: fhf

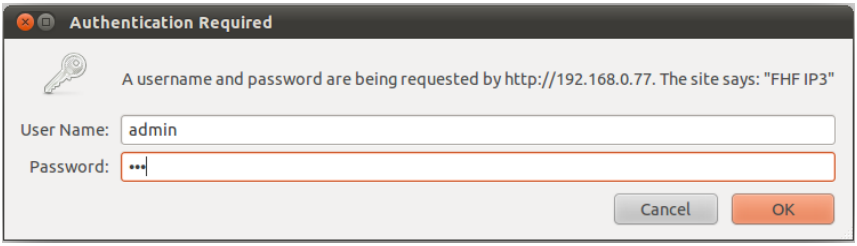

Figure 7: Authorization

3.2 Menus

The web server is the central control unit and is divided into various main menus and submenus, which are arranged on the left-hand side.

3.2.1 Info

In the main menu info different information submenus are merged.

3.2.1.1 Info

If you are successfully authorized, you will be taken to the main menu "Info" and the submenu of the same name.

This browser page is divided into four sections:

- **Device Info:** Device and network parameters as well as parameters for the fall back setups are displayed here. Furthermore information about host names, NetBIOS configuration and NTP server are displayed.
- **SIP Configuration:** SIP account settings are displayed here
- **Status:** This part indicates which state the telephone is in (unregistered, ready, dialling, startcall, talking, busy, incoming, callended, fault) and what the registration status of the PBX is (auth., Request, Registered, Unregistered, -).
- **Version:** The current hardware and software versions are shown here.

Figure 8: Info

3.2.1.2 About

The GNU licence terms are given in the submenu **"About"**.

3.2.1.3 System Details

In the submenu **"System Details"** there is additional information for the administrator. Moreover, the functions **"PING"** and **"TRACE ROUTE"** are available with which another IP address can be pinged or traced from the telephone.

. ☞	**Note** The **"TRACE"** command in particular can take up a great amount of time. Even if the web server indicates a **"Timeout / Refresh Error"** of the page, the **"TRACE ROUTE"** or **"PING"** command is still active in the background and the result can be shown later on by means of **"Show Last Ping"** or **"Show Last Trace"** – as long as no reboot or something similar interrupts the execution of the command. Therefore it is recommended to limit the number of pings or hops and to start with a small number (one or two) and to increase these step by step if necessary.	☞

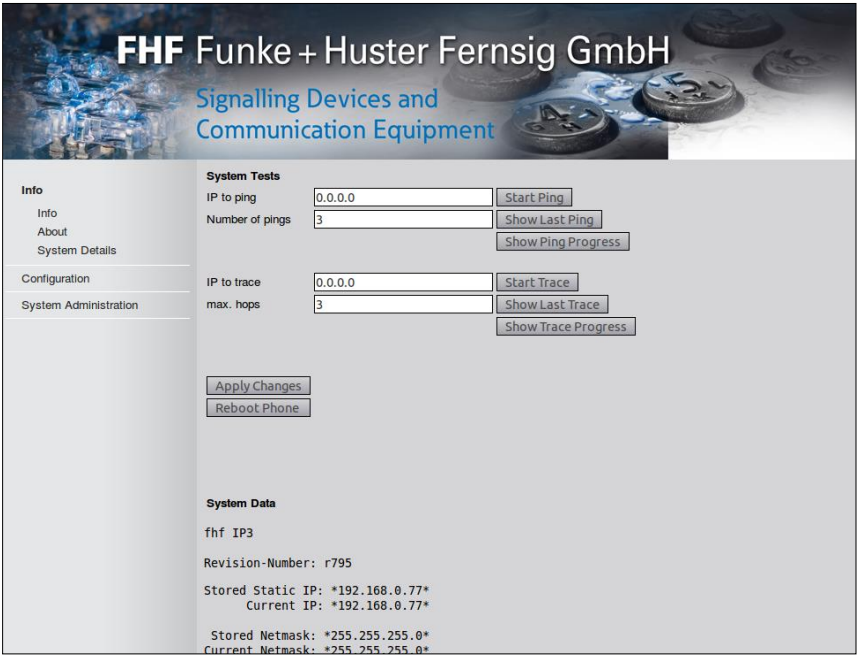

Figure 9: System Details

3.2.2 Configuration

In order to save the entered data on the following menus, the **"Apply Changes"** button must be clicked.

For the changes to take effect, the telephone must be restarted (**"reboot"**).

3.2.2.1 Network Settings

In this submenu you can choose whether the IP address is to be assigned dynamically via the network (DHCP) or manually. In case of manual assignment, the fields **"Subnet Mask"** and **"Gateway Address"** must additionally be entered in respect to the network parameters. You can also configure the IP address of an NTP server so that the date and time (GMT) in the bottom left-hand corner of the web server are shown correctly.

In the field **"IP Address"** will be always shown the actual IP address. Therefore a dynamically received IP address can be used static. If the DHCP server transfers a NTP address, this information will be used nether the less to the information in the field **"NTP Server"**. If the DHCP server distributes more than one NTP address, then the first one will be used.

For the identification of the telephone in a network a host name can be defined. The length is limited to 255 characters and may consist of the characters [a-z][A-Z][0-9][-] and [.] (RFC952). With the field **"Append MAC-Address"** the MAC address of the telephone can be appended to the host name for a unique identification. If the field is activated and the host name is not set, then the MAC address only (without leading hyphen) will be used as host name.

For supporting compatibility with windows networks a NetBIOS name and a workgroup can be defined and activated with the field **"Use NetBIOS name"**.

With the parameters below **"Fallback Settings"** can be defined the network settings to be used, if the phone is set to DHCP client mode and no DVCP server is reachable. This configuration will be displayed at the **"Info"** page. The host name in this case is not changeable and consists always of the string "ERR" followed by the MAC address of the telephone.

Figure 10: Network Settings

3.2.2.2 SIP Settings

You will find all settings related to SIP here. There are 4 sections altogether.

- **SIP Account Settings**

  In this section **"User ID"**, **"Displayname"**, **"Phone Number"** and **"Domain"** can be set. If **"Displayname"** as well as **"Phone Number"** are set, the **"Displayname"** will be used for registration on the PBX.

- **SIP Authentication**

  Here **Username** and **Password** can be set for the SIP-Registration.

- **SIP Register Settings**

- There are two **IP addresses** for registration configurable. The Parameter **"Secondary PBX"** is only used however if **"PBX Alternation enabled"** is selected further down on the webpage.

  With **"SIP Port"** a port can be set between 5.000 and 31.000 for the SIP connection.

  "Register Attempts" specifies the number of registration attempts before the telephone gives up trying to register. A value of zero corresponds to an infinite number of attempts.

  "Repeat Register Attempt After [secs]" indicates the time in seconds that passes after each failed attempt before the telephone makes another attempt.

  The parameter **"Register Expire"** defines the expire value the telephone uses for a registration attempt at the PBX. The value is limited to a range of 60 to 3600 seconds. The value will be used initially. If the PBX accepts the registration, then the telephone adapts the parameter with the value in the received [ACK] message. If a PBX rejects the register request with an answer containing "Interval too brief" as a reason, the phone will not be registered. The register expire value negotiated with the PBX will be used to check the connection with the PBX. If registering to the second PBX **("PBX Alternation"** = **"enabled"**) the configured value in the field **"Register Expire"** will be used initially.

- **SIP Features**

  "Interdigit timer [ms]" defines the duration in ms the telephone is waiting between two key strokes before trying to make a call with the already entered digits.

  "Idle timer [ms]" defines the time the phone is waiting after lifting the handset, to switch to the next state. This takes the field **"Auto dialer"** in account. If this option not is active, then the next state is an error state. If this option is active, then dialling will be started with the number from the field **"Auto dialer Number"**. This field must not be empty with activated auto dialer. The user has to take care for the configured data. If a call is made with the auto dialer, then the number will not be stored in the redial memory.

"Speed Dial" activates the feature of the same name (see Operation).

"PBX Alternation" activates permanent switching between the two given PBX IP addresses after a certain number of failed registration attempts (see **"Register Attempts"**).
If registration at one of the two PBX IP addresses was successful, the InduTel IP will monitor this connection. If the connection breaks down, the procedure of permanent alternation will restart until one of the two PBXs can be reached again.

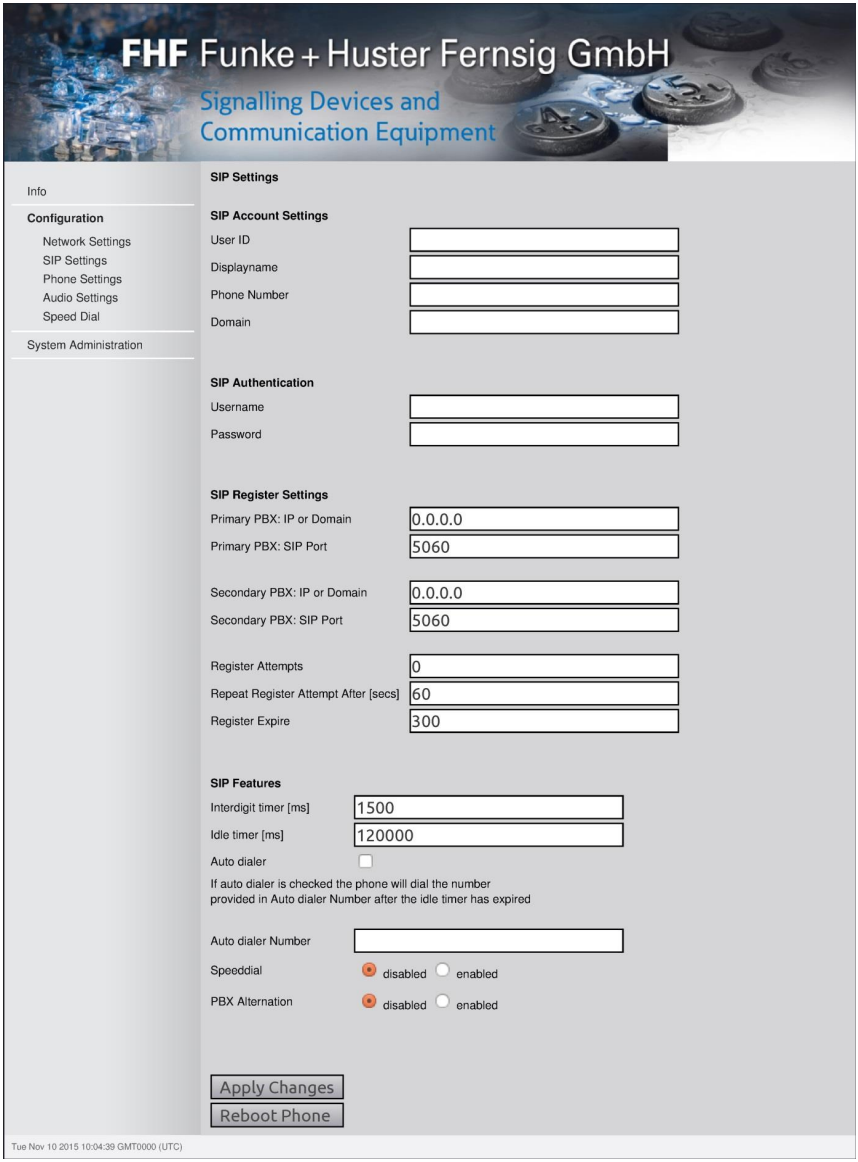

Figure 11: SIP Settings

3.2.2.3 Phone Settings

You can configure the "hardware behaviour" of the InduTel IP here.

- **Relay Activation**

  There are five options available. **"on/off"** generally switches the relay on or off. If **"incoming call"** is selected, the relay switches to **"on"** for as long as there is an incoming call. Selecting **"active call"** on the other hand ensures that the relay is on **"on"** for as long as an existing connection is active. The **"switch"** function makes it possible for the relay to be controlled locally from the InduTel IP.

- **Switch Function**

  Switching the relay with an active connection is not possible. The code is entered here which must be entered via the keypad (an **"internal call"** is involved) when the handset is off its hook in order for the relay to jump to **"on"** for a certain period of time **(time parameter)** before falling back into the **"off"** status again. Calling numbers/blocks beginning with the dialed code are no longer available as a telephone number. The default setup is **"*1234"**.

- **Handset Rest Lights**

  With this parameter, the handset rest lighting can either be turned on or off or be configured as an additional optical signal. If the point **"incoming call"** is selected, the LEDs start flashing while the InduTel IP rings.

- **Keypad Backlights**

  The keypad backlights can be turned on or off. Additionally, it is possible to set them to turn on when the handset is off hook by selecting **"off hook"**.

Figure 12: Phone Settings

3.2.2.4 Audio Settings

The settings for the handset, the ring tone and the country-specific signalling tones are made in this menu.

- **Ringer Settings**

  "Ringing Time" indicates how long the InduTel IP is to ring for before an incoming call is refused. The volume can be adjusted using the **"Volume"** control. The ring tone is selected via the **"Melody"** control.

- **Handset Settings**

  The receiver volume and microphone sensitivity for the handset are set here.

- **Indication Settings**

  The signalling tones can be localized under this sub item. If **"Custom"** is selected, the InduTel IP plays the tones previously installed by the user (see Section **"Manual Upgrade"**).

Figure 13: Audio Settings

3.2.2.5 Speed Dial

In the submenu **"Speed Dial"** you can assign a telephone number to each number key. When speed dialling with the key sequence "⊛, digit key", the telephone number assigned to the number key will be dialled if activation has been carried out under **"SIP Settings Speed Dial"**.

Figure 14: Speed Dial Settings

3.2.3 System Administration

3.2.3.1 Username & Password

In this submenu you can change the username and the password.

Figure 15: Username & Password

3.2.3.2 Manual Upgrade

In this submenu you can perform a telephone software upgrade. The greatest care is to be taken in doing so. It is to be ensured that only one InduTel IP ever accesses the TFTP server at the same time, otherwise a corruption of the transferred data will be caused and the upgrade process fails.

Caution

Never use the update function, if step 2 was not successful.

The parameter **"Automatic Reset to Default Settings"** defines if your current user settings will be kept or deleted when executing step 3a.

Note

If you update from version 1.0 r7xx to version 1.0 r8xx or higher, then the parameter **"Automatic Reset to Default Settings"** must be set to **"enabled"**. Keeping the user data is not possible.

Step 1: Press the **"Save Settings"** button and check carefully whether the shown settings are correct.

Step 2: Check whether there is a connection to the TFTP server by means of **"Probe Connection"**. For this purpose, the file designated in **"Enter Testfile Name"** is downloaded from the given server by means of TFTP and, if successful, the content is shown on the webpage. In order to avoid complications it is recommended to use a small file.txt with a little content like **"Download Successful".** If this is not successful, an error message appears.

Step 3a: Start the update by means of **"Update Now"**

or

Step 3b: Install a new set of tones by means of **"Install Sounds"**

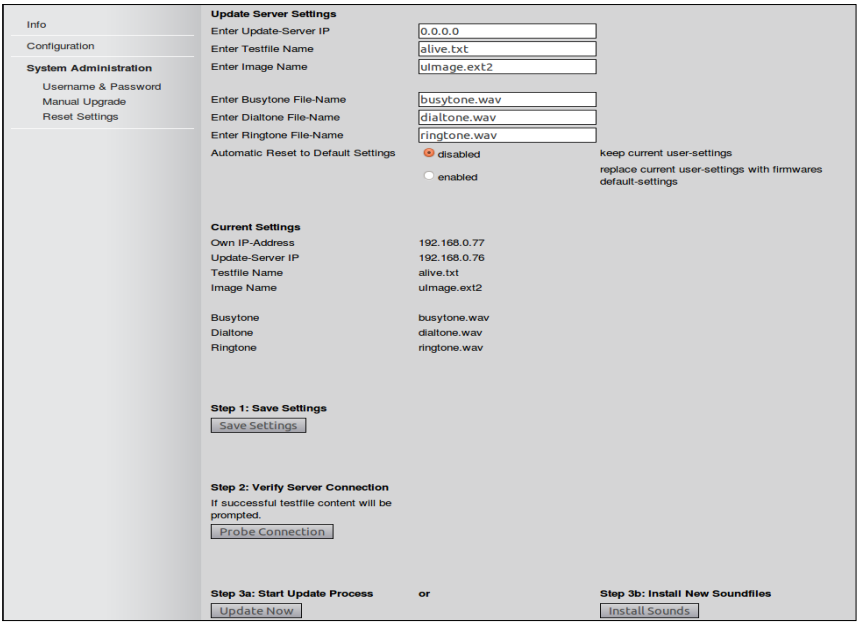

Figure 16: Manual Upgrade

3.2.3.3 Reset Settings

Here, you can permanently save the current settings under the menu item **"Create User Default Settings"** in order to restore them at a later time if necessary.

The telephone can be reset to its default settings using the keypad (press and hold the number key 1 + R key together for 5 seconds when the handset is on hook). If this behaviour is desired it can be activated here (pre-set at factory to disabled).

If **"User Default Settings"** have been created, the telephone can either be reset to these settings or to the **"Factory Default Settings"**.

- **Master Reset**

  The telephone can be set to its default settings at any time by means of a **"Master Reset"**. To do this, the handset must be taken off and the following telephone number dialed:

  Master Reset = **314159265359

Figure 17: Reset Settings

4 General Notes

4.1 Service

You have purchased a modern FHF product which has undergone a thorough quality control. If you have any questions regarding the telephone or if there is a disturbance, even after the guarantee period, please contact FHF. Have the type designation and article number ready when doing so (please see the type plate for this data).

4.2 Servicing and Maintenance

The telephone requires no maintenance. Nonetheless, cleaning should be carried out from time to time in areas of application with a high level of contamination due to dust, grease, oil etc. The handset and the device are to be wiped down using a damp cleaning cloth.

Caution

Never use pointed objects for cleaning. Please avoid using any other cleaning and scouring agents.

Lubricants/greases such as oils, fats etc. must NOT (!) be applied to moving housing parts!

4.3 Warnings and Safety Instructions

This device is a weatherproof telephone especially for operation in rough industrial environments. The following warnings and safety instructions are to be considered:

1. A correct connection is to be ensured. The supply cord is to be laid in such a way that there is no stumbling hazard.

2. The degree of protection IP 66 is only ensured when the housing is closed.

3. The telephone may only be operated under the ambient conditions specified (see "Technical Data"). Adverse ambient conditions, such as too high or too low an ambient temperature, are not permissible since these encourage the failure of electronic components.

4. It is to be ensured that the telephone, the supply line etc. are not damaged. If these are damaged then operating the telephone is not permissible.

5. Legal and commercial regulations, accident prevention regulations and electrical codes are to be considered when operating the telephone.

6. Only original spare parts are permissible when carrying out repairs. These must be exchanged in a technically correct manner. Using other replacement parts may cause damages and would lead to the warranty expiring.

7. Before repairing or exchanging the telephone it must be disconnected from the power supply. If maintaining or repairing the live device is unavoidable, this may only be carried out by specialist personnel.

8. The seals necessary for the tightness of the housing must not be damaged during assembly and disassembly.

9. The prescribed position of normal use is to be considered.

10. Changes to the product which serve for technical advancement may be made without being announced beforehand.

11. In accordance with EN60950-1:2006, the relay must not be subjected to voltages of greater than 42.4 V peak value or 60 V DC voltage.

5 Abbreviations

8	
802.1X	Standard for Authorisation in Computer Networks (IEEE)
802.3af	Standard for Power over Ethernet (IEEE)
A	
A	DNS-RR Address Record
AAAA	DNS-RR IPv6 Address Record
AC	Alternate Current
ACL	Access Control List
ACM	Avaya Call Manager
A/D	Analogue/Digital
ADC	Analogue Digital Converter
AES	Advanced Encryption Standard
ANSI	American National Standards Institute
AOR	Account of Registration
API	Application Program Interface
ARP	Address Resolution Protocol
AS-SIP	Assured Services-Session Initiation Protocol
ASCII	American Standard Code for Information Interchange
ASN.1	Abstract Syntax Notation One
ATEX	Atmosphere Explosive
ATM	Asynchronous Transfer Mode
B	
BER	Basic Encoding Rules (ASN.1)
C	
CA	Certificate Authority
CAPI	Common ISDN Programming Interface
CBIPS	Content-based IPS
CCP	Compression Control Protocol
CDPN	Called Party Number
CDR	Call Detail Records
CE	Conformité Européenne
CEC	Canadian Electric Code
CED	Called Terminal Identification (FAX)
CER	Canonical Encoding Rules (ASN.1)
CEST	Central European Summer Time
CET	Central European Time
CFR	Confirmation to Receive

CGN	Calling Party Number
CGPN	Calling Party Number
CLIR	Calling Line Identification Restriction
CM	Call Manager, siehe auch CUCM
CME	Call Manager Express
CNAME	DNS-RR Canonical Name Record
CNG	Comfort Noise Generation
CNG	Calling Tone (FAX)
CPN	Calling Party Number
CQST	China National Quality Supervision and Test Centre for Explosion Protected Electrical Products
CRC	Cyclic Redundancy Check
CRL	Certificate Revocation List
CSA	Canadian Standards Association
CSS	Cascading Style Sheets
CSTA	Computer Supported Telecommunications Applications
CTI	Computer Telephony Integration
CUCM	Cisco Unified Communications Manager, siehe auch CM
CUTR	Customs Union Technical Regulations
D	
DAC	Digital Analogue Converter
DC	Direct Current
DCN	Disconnect (FAX)
DCS	Digital Command Signal (FAX)
DDoS	Distributed Denial of Service
DECT	Digital Enhanced Cordless Telecommunications
DER	File name extension for a base64 coded certificate
DER	Distinguished Encoding Rules (ASN.1)
DES	Data Encryption Standard
DHCP	Dynamic Host Configuration Protocol
DIN	Deutsches Institut für Normung
DIS	Digital Identification Signal (FAX)
DOM	Document Object Model
DoS	Denial of Service
DN	Directory Number
DNS	Domain Name Server
DNSBL	DNS-based Blackhole List, Block List, or Blacklist
DNS-RR	DNS Resource Record
DNV	Det Norske Veritas
DRAM	Dynamic Random Access Memory
DSS1	Digital Subscriber System No. 1
DSL	Digital Subscriber Line

DTLS	Datagram Transport Layer Security
DUID	DHCP Unique Identifier
E	
E.164	Standard for the international public telecommunication numbering plan (ITU-T)
EAC	Eurasian Conformity
EAP	Extensible Authentication Protocol
EAR	Foundation Elektro-Altgeraete Register
ECN	Encoding Control Notation (ASN.1)
EDSS1	European Digital Subscriber System No. 1
EIA	Electronic Industries Alliance
EMC	Electromagnetic Compatibility
EMV	Elektromagnetische Verträglichkeit
ENUM	Telephone Number Mapping
EPID	Endpoint Identifier
ETSI	European Telecommunication Standards Institute
EUI-64	64-bit Extended Unique Identifier
F	
F/FTP	Foiled / Foiled Twisted Pair Cable
FAT	File Allocation Table. A from Microsoft developed file system.
FAT32	A FAT Variant
FAX	Telefax, Fernkopie
FCC	Federal Communications Commission
FOC	Fibre Optic Cable
FoIP	FAX over IP
FQDN	Fully Qualified Domain Name
FQTN	Fully Qualified Telephone Number
FTP	File Transfer Protocol
FTP	Foiled Twisted Pair Cable
G	
GOST	Gosudarstwenny Standart, sowjetische bzw. russische Normen
GMT	Greenwich Mean Time
GRE	Generic Routing Encapsulation
GSER	Generic String Encoding Rules (ASN.1)
GSM	Global System for Mobile Communications

H	
H323	Abbreviation for H.323
H.323	Higher recommendation of the ITU for protocols
HIPS	Host-based IPS
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
I	
IAID	Interface Association Identifier
IANA	Internet Assigned Numbers Authority
ICANN	Internet Corporation for Assigned Names and Numbers
IDN	Internationalized Domain Name
IE	Internet Explorer
IEC	International Electrotechnical Commission
IECEx	IEC System for Certification to Standards relating to equipment for use in Explosive Atmospheres
IEEE	Institute of Electrical and Electronics Engineers
IEEE 802.1X	Standard for Authorisation in Computer Networks
IEEE 802.3af	Standard for PoE
IETF	Internet Engineering Task Force
IIS	Internet Information Server
INMETRO	Instituto Nacional de Metrologia, Qualidade e Tecnologia (National Institute of Metrology, Quality and Technology)
IP	Internet Protocol
IPS	Intrusion Prevention System
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
ISA	International Society of Automation
ISC	Internet Systems Consortium
ISDN	Integrated Services Digital Network
ISO	International Standardization Organisation
ISRAM	Internal Static Random Access Memory
ITU	International Telecommunication Union
IVR	Interactive Voice Response
J	
JAVA	Java is a object orientated programming language
JMS	Java Message Service
K	
Kerberos	Kerberos is a computer network authentication protocol
KPML	Keypad Markup Language

L	
LabVIEW	Laboratory Virtual Instrumentation Engineering Workbench
LAN	Local Area Network
LCD	Liquid Crystal Display
LDAP	Lightweight Directory Access Protocol
LID	Language ID
LLDP	Link Layer Discovery Protocol
LTE	Long Term Evolution
LWL	Lichtwellenleiter (fibre optic cable)
M	
MAC	Message Authentication Code
MAC-Address	Media Access Control Address
MCF	Message Confirmation (FAX)
MD5	Message Digest Algorithm 5
MEST	Middle European Summer Time
MET	Middle European Time
MIB	Management Information Base
MoH	Music on Hold
MOS	Mean Opinion Score
MPPC	Microsoft Point-To-Point Compression Protocol
MPPE	Microsoft Point-To-Point Encryption Protocol
MS	Microsoft
ms	Millisecond
MTBF	Mean Time between Failures
MTTF	Mean Time to Failure
MTU	Maximum Transmission Unit
MX	DNS-RR Mail Exchange Record
N	
NAC	Network Access Control
NAPTR	DNS-RR Naming Authority Pointer
NAT	Network Address Translation
NDP	Neighbour Discovery Protocol
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NIPS	Network-based IPS
NS	DNS-RR Name Server Record
NTP	Network Time Protocol

O	
OBJ	Object Identifier
OID	Object Identifier
OID-IRI	OID Internationalized Resource Identifier
OUI-24	24-bit Organizationally Unique Identifier
OUI-36	36-bit Organizationally Unique Identifier
P	
P12	PKCS#12 file (see PFX)
PA	Potentialausgleich
PAI	P-Asserted Identity
PBX	Private Branch Exchange
PC	Personal Computer
PCAP	PCAP (Packet Capture) free programming interface (API), to capture network traffic.
PCM	Pulse Code Modulation
PDU	Protocol Data Unit
PEM	File name extension for a base64 coded certificate, enclosed with -----BEGIN CERTIFICATE------ and ------END CERTIFICATE------
PEN	Private Enterprise Number
PER	Packed Encoding Rules (ASN.1)
PFX	Personal Information Exchange File (see P12)
PHP5	Script Language
PIN	Personal Identification Number
PKCS	Private Key Cryptography Standards
PKI	Public Key Infrastructure
PoE	Power over Ethernet
POSIX	Portable Operating System Interface for UniX
PPE	Personal Protective Equipment
PPI	P-Preferred Identity
PPP	Point-to-Point Protocol
PPPoE	PPP over Ethernet
PPTP	Point-to-Point Tunnelling Protocol
Proxy	A hardware server that acts as an intermediary between a work station user and the Internet so that an enterprise can ensure security.
PSTN	Public Switched Telephone Network
PTB	Physikalisch Technische Bundesanstalt
PTR	DNS-RR Pointer Record
Q	
QoS	Quality of Service
QSIG	Q-Interface Signalling Protocol

R	
R&TTE	Radio and Telecommunications Terminal Equipment
RADIUS	Remote Authentication Dial-In User Service
RAS	Registration Administration Service
RBIPS	Rate-based IPS
RC4	RC4 (Ron's Code 4) ist eine Verschlüsselungsmethode, die 1987 von Ronald L. Rivest entwickelt wurde
RFC	Requests for Comments
RID	The Relative ID of a Windows Domain Group is the last numeric part of the Domain Group SID (Secure ID).
RLR	Receive Loudness Rating
RoHS	Restriction of Hazardous Substances
RPCAP	Remote PCAP
RSA	Asymmetric procedure or algorithm for encryption of discrete data, named after its inventors Ronald L. Rivest, Adi Shamir and Leonard Adleman.
RSSI	Receive Signal Strength Indicator
RSTP	Rapid Spanning Tree Protocol
RSVP	Resource Reservation Setup Protocol
RTCP	Real-Time Control Protocol
RTP	Real-Time Transport Protocol
RTTTL	Ringing Tones Text Transfer Language
S	
S/FTP	Screened / Foiled Twisted Pair Cable
SF/FTP	Screened Foiled / Foiled Twisted Pair Cable
SAX	Simple API for XML
SCCP	Skinny Call Control Protocol
SCP	Secure Copy
SDP	Session Description Protocol
SELV	Safety Extra Low Voltage
SFTP	Secure (SSH) File Transfer Protocol
SHA	Secure Hash Algorithm
SID	Windows Domain Group Secure ID
SIEM	Security Information and Event Management
SIF	Safety Instrumented Function
SIL	Safety Integrity Level
SIP	Session Initiation Protocol
SIPS	Session Initiation Protocol Secure
SLR	Send Loudness Rating
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SNTP	Simple Network Time Protocol

SOA	Start of Authority Record
SOAP	SOAP (originally defined as Simple Object Access Protocol) is a protocol specification for exchanging structured information in the implementation of web services in computer networks.
SQL	Structured Query Language
SRTCP	Secure Real-Time Control Protocol
SRTP	Secure Real-Time Transport Protocol
SRV	DNS-RR Service Locator
SS7	Signalling System #7
SSH	Secure Shell
SSL	Secure Sockets Layer
STI	Speech Transmission Index
STMR	Side Tone Masking Rating
STP	Shielded Twisted Pair Cable
STUN	Simple Traversal of UDP over NATs
SYSLOG	SYSLOG is a standard for forwarding log messages in an IP network.
T	
T.30	FAX Protocol G3 Standard
T.38	FAX Protocol G3 Standard over IP (FoIP)
TAPI	Telephony Application Programming Interface
TCF	Training Check Function (FAX)
TCP	Transmission Control Protocol
TDM	Time Division Multiplex
Telnet	Teletype Network Protocol
TFTP	Trivial File Transfer Protocol
TIA	Telecommunication Industry Association
TLS	Transport Layer Security
TNV	Telecommunications Network Voltage
ToS	Type of Service
TOSQA	Telecommunication Objective Speech Quality Assessment
TRCU	Technical Regulation of Customs Union
TSIP	TCP Session Initiation Protocol
U	
U/FTP	Unscreened / Foiled Twisted Pair Cable
U/UTP	Unscreened / Unshielded Twisted Pair Cable
UA	User Agent
UAC	User Agent Client
UAS	User Agent Server
UDP	User Datagram Protocol
UL	Underwriters Laboratories Inc.
UMS	Unified Messaging

UMTS	Universal Mobile Telecommunications Systems
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
URN	Uniform Resource Name
UT	Universal Time
UTC	Universal Time Coordinated
UTP	Unshielded Twisted Pair Cable
V	
VAD	Voice Activity Detection
VB	Visual Basic
VdS	Vertrauen durch Sicherheit
VIP	Very Important Person
VLAN	Virtual Local Area Network
VoIP	Voice over IP
VPN	Virtual Private Network
W	
WebDAV	Web-based Distributed Authoring and Versioning
WEEE	Waste Electrical and Electronic Equipment
WINS	Windows Internet Name Service
WLAN	Wireless LAN
WSDL	Web Service Description Language
X	
X.509	ITU-T standard for a public-key-infrastructure
X.680ff	ITU-T notation for ASN.1
X.690ff	ITU-T standards for ASN.1
XER	XML Encoding Rules (ASN.1)
XML	Extensible Markup Language
XSL	Extensible Stylesheet Language
XSLT	XSL Transformation, short XSLT, is a programming language for the Transformation of XML-Documents.

6 Overview

6.1 Tables

6.2 Figures

7 Index

8 Technical Data

Connection data	
Power supply	Power over Ethernet in accordance with IEEE 802.3af
Separate DC voltage supply	24 V_{DC} ... 48 V_{DC}
Power requirement	1.3 W
Connection	
LAN	Housing plug-in connector RJ45 ports (10/100 Mbit/s)
Relay and sep. DC voltage supply (mechanical)	Screwed cable gland M16 x 1.5 for cable diameter 5 ÷ 9 mm Screw terminals internal
Relay (electrical)	$V_{AC\ max}$ 30 V $V_{DC\ max}$ 60 V I_{max} 2A ≤ 30 V_{DC} 1A > 30 V_{DC} 1A ≤ 30 V_{AC}
Protocol	SIP (RFC3261)
Codecs	G.711 A-Law, G.711 µ-Law
Ringing volume	When housing cover open approx. 90 dB(A) at a distance of 1 m When housing cover closed approx. 65 dB(A) at a distance of 1 m
Housing (height x width x depth)	336 x 250 x 110 mm
Weight	2.6 kg
Normal operating position	Vertical wall assembly
Handset	
Mouthpiece	Electret microphone
Earphone capsule	Dynamic capsule with magnetic field generation
Environmental conditions	
Ambient operating temperature	-40°C... +55°C
Transport and storage temperature	-40°C... +70°C

Degree of protection in accordance with IEC60529	IP 66 (closed)

9 Declaration of EC-Conformity

FHF Funke + Huster Fernsig GmbH declares that the telephones InduTel IP are in compliance with the requirements of the EMC-directive 2014/30/EU, the low voltage directive 2014/35/EU, the R&TTE directive 1999/5/EU and the RoHS Directive 2011/65/EG.

The conformity with the above directives is confirmed with the CE sign.

CE

9.1 Support

If you have any problems during operation, then please contact the FHF support.

9.2 Disposal

Electrical and electronic old devices marked with this symbol may contain hazardous substances for humans and the environment. For this reason, they must not be disposed of together with unsorted municipal waste (domestic refuse). In order to protect our environment, there are therefore public collection points available for the disposal of the electrical and electronic old devices marked with this symbol.

Subject to alterations
or errors

FHF Funke + Huster Fernsig GmbH

Gewerbeallee 15-19 · D-45478 Mülheim an der Ruhr · Web: www.fhf.de
Phone +49 - 208 - 8268-0 · Fax +49 - 208 - 8268-286 · Mail: info@fhf.de
Orders: fhf-orders@eaton.com · Requests: fhf-sales@eaton.com
Support: fhf-support@eaton.com