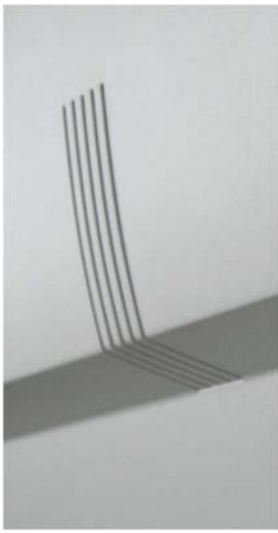

Ascotel® IntelliGate® Communications Systems

A150
A300
2025
2045
2065

Interfaces and Terminals as of I7.8

System Manual

AASTRA

Content

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1 Safety Information

This chapter provides you with information about Ascotel® IntelliGate® products and the symbols used in this document.

1. 1 About the products

Purpose and function

Ascotel® IntelliGate® is an open, modular and comprehensive communication system that comprises the IP PBX, a multitude of expansion cards and modules, and a complete series of system terminals including IP system terminals.

The system and all its parts were designed to cover the full spectrum of communication requirements of businesses and organizations using a single convenient solution. The individual parts of the system as a whole are coordinated and must not be used for other purposes or replaced by outside parts (unless for the connection of other approved networks, applications and terminals to the interfaces provided specially for that purpose).

Data protection

Unencrypted phone calls made in the IP network can be recorded and played back by anyone with the right resources. You should therefore prioritise the use of separate leased lines for WAN links or encrypt the IP packets, for instance using VPN (Virtual Private Network).

Trademarks

Ascotel® and IntelliGate® are registered trademarks of Aastra Technologies Limited. All other trademarks are trademarks of their respective proprietors.

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User information

Your system and individual components ship with safety instructions, product information and (quick) user's guides. Other device-specific information may also be supplied. You can find these documents and up-to-date versions of all the system manuals available for this system at http://www.aastra.com/docfinder. More information on your device can be found at http://www.aastra.com or in your dealer's documentation and homepage.

It is your responsibility to acquaint yourself with the functional scope, operation and proper use of both the system and its components.

- Check to ensure that you have all the user information available for your device, that it corresponds to your version of the system and its components, and that it is up-to-date.
- Read the user information carefully before configuring your system and putting it into operation.
- Keep the user information at hand and refer to it whenever you are in doubt about how to operate the system or its components.
- If you pass on your system or its components to others, make sure you enclose the accompanying user information.

Exclusion of Liability

Ascotel® IntelliGate® was manufactured in accordance with ISO 9001 quality guidelines. The relevant user information has been compiled with the utmost care. The functions of the product and of all part products have been checked and released as a result of extensive approval tests. Nonetheless errors cannot be entirely excluded. The manufacturers shall not be liable for any direct or indirect damage that may be caused by incorrect handling, improper use, or any other faulty behaviour on the part of a product. Potential areas of particular risk are signalled in the appropriate sections of the user information. Liability for loss of profit shall be excluded in any case.

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1. 2 About this document

This document describes the interfaces of Ascotel® IntelliGate® 2025/2045/2065 and Ascotel® IntelliGate® 150/300 as well as the terminals that can be connected to these two systems. It is intended for planners, installers and system managers of telephone installations. A basic knowledge of telephony, in particular of ISDN and IP technology, is required to understand the content of the System Manual.

The features, installation, configuration, expansion stages and system limits, the operation and maintenance, the DECT planning, and the possibilities for networking several systems into a private network (PISN) or an Ascotel® IntelliGate® Net (AIN) are not part of this Manual. They are described in separate documents.

The System Manual is available only in electronic form as a document in Acrobat Reader format, and can be printed out. Navigation in PDF format is based on the bookmarks, table of contents, cross references and index. All these navigation aids are linked, i.e. a mouse click takes you directly to the corresponding places in the Manual. We have also ensured that the page numbering in the PDF navigation corresponds to the page numbering of the Manual, making it much easier to jump to a particular page.

Referenced menu entries and parameters appearing on terminal displays or in AIMS (Ascotel® Information Management System) are *highlighted* in italics and in colour for a clearer orientation.

Document information

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1. 3 Considerations

Safety Considerations

Special hazard alert messages with pictograms are used to signal areas of particular risk to people or equipment.

Hazard

Failure to observe information identified in this way can put people and hardware at risk through electrical shock or short-circuits respectively.

Warning

Failure to observe information identified in this way can cause a defect to the product or to a module.

Warning

Failure to observe information identified in this way can lead to damage caused by electrostatic discharge.

General Considerations

Special symbols for additional information and document references.

Note

Failure to observe information identified in this way can lead to equipment faults or malfunctions or affect the performance of the system.

Tip

Additional information on the handling or alternative operation of equipment.

See also

Reference to other chapters within the document or to other documents.

Ascotel® IntelliGate® Net:

Particularities that have to be observed in an AIN.

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2 System Interfaces

Tab. 1 System interfaces and channels

Term	Explanation
B channel	User information channel: Each connection occupies one user information channel, e.g. 2 user information channels (connections) can be occupied simultaneously using one basic access.
D channel	Control and signalling channel: Channel for control and signalling as well as for packet data transfer.
2B+D / 30B+D	2 2 B channels and 1 D channel / 30 B channels and 1 D channel
Ports	Physical connection points on the PBX for network interfaces and terminal interfaces
Network interfaces	Network-side connection possibilities for the PBX
• Basic Access T	Digital network interface 2B+D
• Basic access S external	Digital network interface 2B+D: A terminal interface S configured as *EXTERN*.
• Primary rate access T2	Digital network interface 30B+D
• SIP access via the Ethernet interface on the basic system	For connection to one or more SIP providers. An SIP access contains a maximum of 30 channels.
• Analogue network interface (a/b network interface)	An analogue network connection has 1 user information channel.
Terminal interfaces	Terminal-side connection possibilities for the PBX
• ISDN terminal interface (terminal interface S)	Digital terminal interface 2B+D: Connection for Euro ISDN terminals, Terminal Adapters and ISDN PC cards.
• AD2 terminal interface (AD2 terminal interface)	A maximum of two AD2 system terminals, one system terminal and a Pocket Adapter, or one DECT radio unit can be operated on a proprietary AD2 bus.
• IP terminal interface (via Ethernet Interface)	Digital user-network interface for linking up IP system terminals and SIP terminals (soft- and hardphones).
• Analogue terminal interfaces (a/b terminal interface)	An analogue terminal connection has 1 user information channel.
Special interfaces	Other PBX connection possibilities
• Ethernet interface on the basic system	Central interface for connecting AIMS, a CTI server, IP system terminals, SIP terminals or for the network-side connection to SIP service provider.
• Ethernet interface on the expansion card AIP 6400	Interface to an IP network for networking Ascotel® systems via QSIG
• Ethernet interfaces on the expansion card AIP 6500	Interface to an IP network to implement an Ascotel® IntelliGate® Net and to connect IP and SIP terminals
• V.24 interfaces	Serial data interface
• Door Intercom Systems	Special interface for connecting door intercom systems
• General Bell	Special interface for general bell

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2. 1 Network Interfaces

The system supports the following types of network interfaces:

- Basic access T for connection to
  - the public ISDN network
  - the private leased-line network
- Basic access S external for connection to
  - the private leased-line network
  - a terminal with its own direct dialling plan (DDO)
- Primary rate access T2 for connection to
  - the public ISDN network
  - the private leased-line network
- SIP access via the Ethernet interface on the basic system for connection to SIP service provider.
- Analogue network interface for connection to the public analogue network

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2. 1. 1 Basic Access Variants

A basic access is a digital network interface for connection to the public network or to the private leased-line network. It can be set for the protocols DSS1 (public ISDN network) and QSIG / PSS1 (private leased-line network).

A basic access has two 64 kbit/s user information channels and one 16 kbit/s control and signalling channel (2B+D).
One call or data connection can be set up on each bearer channel (B channel) simultaneously and independently of the other B channel.

A basic access can be barred for outgoing calls (*Outgoing Calls Barred* setting).

Basic accesses for connecting the PBX to the public network can be operated as point-to-point and, with some network providers, also as point-to-multipoint (multiple subscriber number) access.

There are two types of basic access:

- Basic Access T
- Basic access S external

2. 1. 1. 1 Basic Access T

Basic access T is suitable for connection to both the public ISDN network and the private-leased-line network.

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2. 1. 1. 2 Basic Access S External

The basic access S external is an S interface configured as external (*S-bus protocol = EXTERNALS* setting in the interface configuration).

The basic access S external is designed for the following purposes:

- For connection to the private leased-line network or
- For connecting DSS1 terminal equipment, which evaluates the DDI number sent by the PBX and routes the call accordingly (e. g. a fax server, see also "Direct Dialling Out (DDO)", page 20)

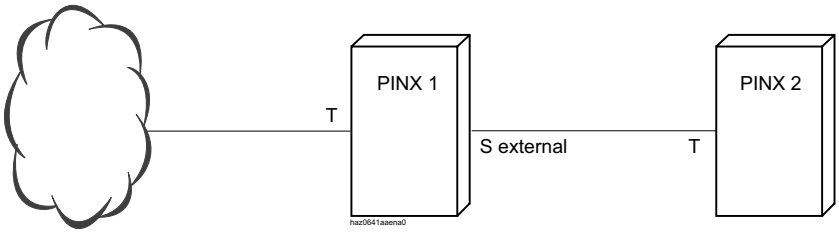

Fig. 1 S external in a private leased-line network: PINX-PINX connection

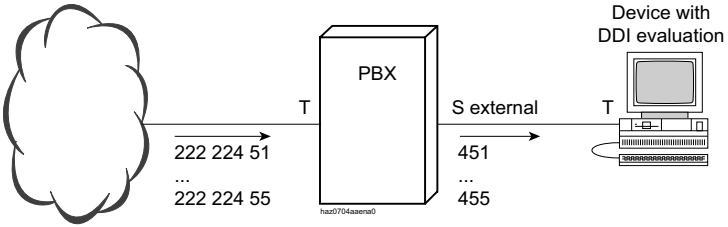

Fig. 2 S external in a DDI configuration

Note:

An S interface configured as external is a fully-fledged network interface and is no longer available as a user-network interface. A basic access S external cannot be used as a connection to the public ISDN network.

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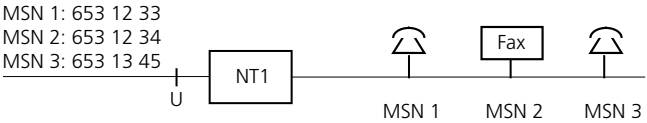
2. 1. 1. 3 Point-to-Point and Point-to-Multipoint Connections

Basic accesses can be configured as point-to-point or as point-to-multipoint (*TEI Management* setting in the configuration of the network interfaces).

Point-to-Multipoint Connection without a PBX

The basic access in point-to-multipoint configuration allows a selective dial-up of the terminals connected in parallel using MSN, the Multiple Subscriber Number. Here the network itself provides a kind of direct dialling, so to speak.



NT1: Network Termination

MSN: Multiple Subscriber Number

Fig. 3 Single basic access in point-to-multipoint configuration

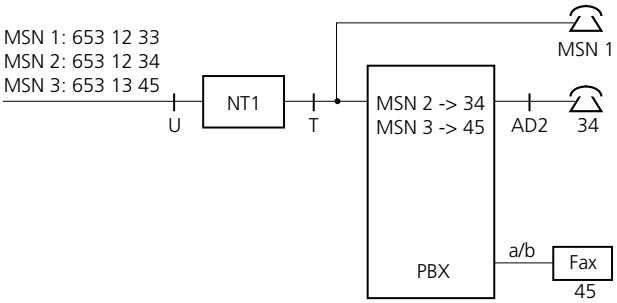
Note:

The fax with ISDN connection is implemented as a fax card in a PC.

Initialization setting:
Digital network interfaces are set on point-to-point configuration.

Point-to-Multipoint Connection with PBX

If a PBX is connected using point-to-multipoint, a direct dial number must be created for each MSN number, with all the digits of the MSN number.



NT1: Network Terminal
MSN: Multiple Subscriber Number
U/T: ISDN reference point
AD2: digital terminal interface AD2
a/b: analogue terminal interface

Fig. 4 Basic access in point-to-multipoint configuration, with single-digit direct dial and parallel terminal

Combinations are also possible in the case of several lines, e.g. one line in point-to-multipoint configuration and the remaining in point-to-point configuration.

Note:

If terminals (e. g. MSN1) are connected in parallel on the T interface, *Collision Detection* has to be activated as the PBX and the terminal influence each another. This also applies in cases where a/b connections are used on NT1.

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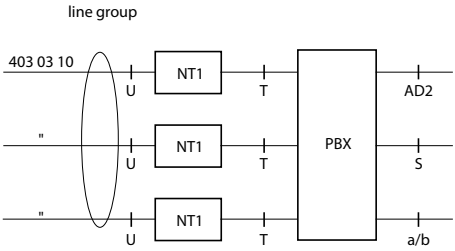
Point-to-Point Connection without Direct Dial

Without direct dialling in, only one call number is available. The individual PBX users can only be reached indirectly via the number.

This variant is suitable above all for systems with primarily outgoing traffic.



NT1: Network Terminal
U/T: ISDN reference point
AD2: digital terminal interface AD2
S: terminal interface S
a/b: analogue terminal interface

Fig. 5 Several basic accesses with line group in point-to-point configuration, without direct dial number

Note:
Do not connect any terminals between the NT1 and the PBX.

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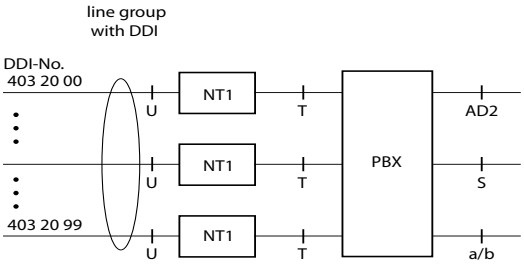
Point-to-Point Connection with Direct Dial

With direct dial the individual PBX users can be reached directly via their direct dial number.



NT1: Network Terminal
DDI: Direct dialling
U/T: ISDN reference point
AD2: digital terminal interface AD2
S: terminal interface S
a/b: Analogue terminal interface

Fig. 6 Several basic accesses in point-to-point configuration, with direct dial number

Note:
Do not connect any terminals between the NT1 and the PBX.

Periodic Reactivation of Layer 2 on the T-Interface[1)]

Layer 2 of the T network interface can be reactivated periodically every three minutes so that incoming calls are not rejected already at the local exchange after potential temporary interruptions in the U-interface. To do so, configure the parameter *L2 reactivation* of the T network interface to *special*.

Note:
In some countries T network interfaces are deactivated once a certain amount of time has elapsed without traffic, and are only reactivated when the PBX once again requests a connection.

[1)] Only in Germany and Austria.

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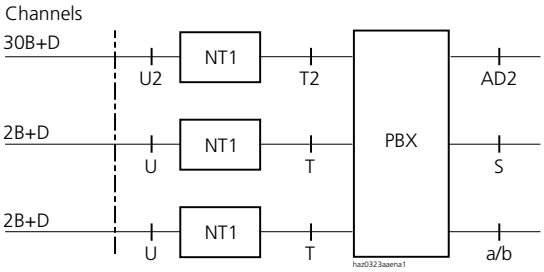
2. 1. 2 Primary Rate Access T2

A primary rate access is a digital network interface for connection to the public network or the private leased-line network. It can be set for the protocols DSS1 (public ISDN network) and QSIG / PSS1 (private leased-line network).

A primary rate access has thirty 64 kbit/s user information channels and one 64 kbit/s control and signalling channel (30B+D). One call or data connection can be set up on each bearer channel (B channel) simultaneously and independently of the other B channel.

Note:

Primary rate accesses can only be used as point-to-point connections.



NT1: Network Terminal
U2/U/T2/T:ISDN reference points
30B+D: Primary rate access channels
2B+D: Basic access channels
AD2: digital terminal interface AD2
S: terminal interface S
a/b: analogue terminal interface

Fig. 7 System with basic and primary rate accesses

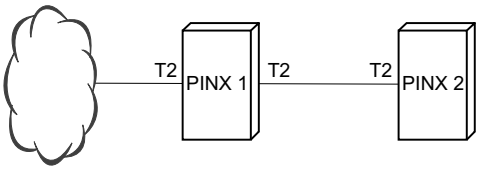


Fig. 8 Primary rate access in a private leased-line network: PINX-PINX connection

2. 1. 2. 1 Clock synchronization

The clock frequency of a PBX is provided (synchronized) by the public network via the basic accesses T and the primary rate accesses T2.

Should synchronization by the public network fail (due, for example, to exchange line interruptions), the PBX will use its own clock. This frequency deviates at most by 5 ppm from the nominal value, which ensures that the Ascotel® DECT system also remains available.

In a private leased-line network, PINXs that are synchronized by the public network pass on the clock reference to PINXs that are not connected directly to the public network.

Synchronization in the private fixed network has to be carefully planned to ensure there are no synchronization loops (see "PISN/QSIG networking" System Manual, "Synchronization" Chapter).

All the private leased-line network connections and public exchange line circuits are automatically in a shared clock reference table when the PBX is configured for the first time.

If a PBX is not networked in a PISN, the clock reference table can be left as it is; only the initial reference may have to be assigned differently.

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2. 1. 2. 2 Digital down-circuit connection of a PBX with QSIG

If a down-circuit Ascotel® PBX is connected with an up-circuit PBX via digital lines (T, T2), all the features as per QSIG are available providing the up-circuit system supports the QSIG protocol.

The down-circuit PBX is configured in accordance with the rules for networked PBXs.

The up-circuit ISDN PBX has a connection to the public network. It can also be an Ascotel® or a third-party product, provided it supports the QSIG protocol.

As a rule the down-circuit PBX is connected with the up-circuit PBX via its own fixed lines. Depending on the PBX type the interfaces can be basic accesses (T) or primary rate accesses (T2). Connections on an S external-type interface are also possible instead of connections on a T interface, providing at least one T interface is available for synchronization via the ISDN network.

Example: Down-circuit connection of a PBX with cordless system

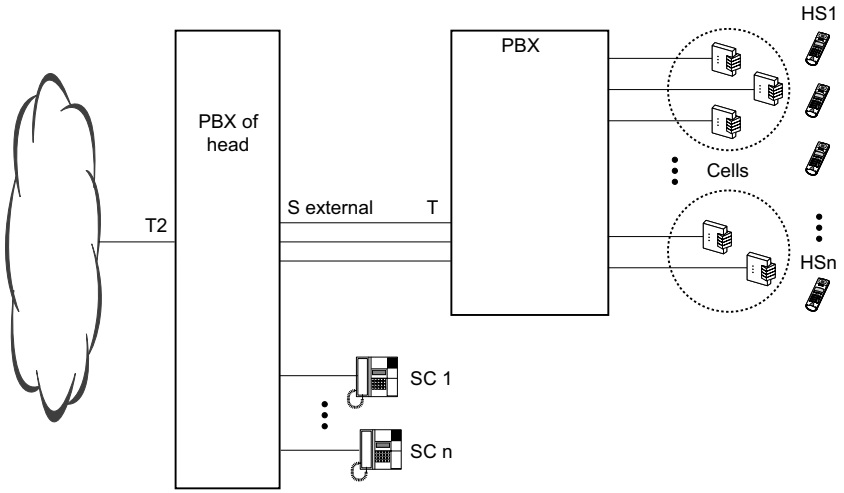

Fig. 9 Digital down-circuit connection with QSIG

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2. 1. 2. 3 Direct Dialling Out (DDO)

If a fax server is connected to an S bus, individual fax receivers allocated a DDI number can be specifically addressed. In terms of routing technology, this corresponding to a DDO (Direct Dialling Out) function.

The fax server forwards the incoming faxes via e-mail to the relevant PC stations that are set up as fax receivers.

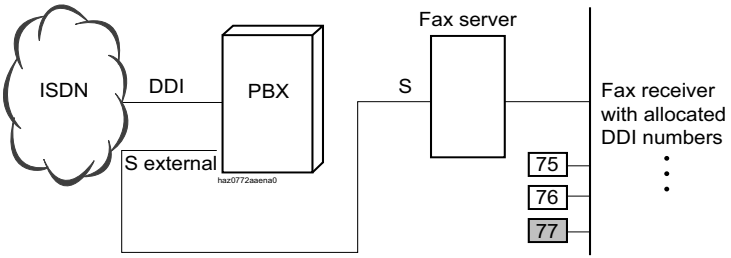

Fig. 10 Direct Dialling Out (DDO) to a fax server

Due to the configuration of the S interface as *EXTERNALS* and the use of the DSS1 protocol, the fax calls can be routed via routes and trunk groups. This means that all fax receivers that have been allocated a DDI number can be reached via a single S interface

See also:

"Call to DSS1 Terminal Equipment on the S Bus (DDO)" Chapter in the "System Functions and Features" System Manual

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2. 1. 3 SIP access

The PBX can be connected to one or more SIP providers via the Ethernet interface on the basic system. The PBX supports 10 SIP access with up to 30 channels per SIP access. One *SIP Access Channels* licence is required for each channel.

The PBX handles the SIP access in the same way as analogue or digital network interfaces, i. e. they are grouped in one or more separate trunk groups. Allocation to an SIP provider is defined for each trunk group. This means that international calls can be routed via SIP providers in different countries for example.

The PBX must register with a registrar of the SIP provider so that the SIP messages can be forwarded to the proxy server and from there to the public network, for example via a gateway. At least one SIP account has to be set up for each SIP provider. Each account contains a user name and password for identification with the registrar and an SIP identification number (SIP-ID). The SIP-ID is linked with a direct dial number so that outgoing and incoming connections can be made. A total of 500 SIP accounts can be set up and linked with the corresponding direct dialling numbers.

One SIP account per SIP provider can be set up as a default account. It can then be used by users without an SIP account for outgoing calls via a corresponding route or for incoming calls via a special call routing.

Besides the connection of Ascotel® IntelliGate® to one or more SIP providers, several Ascotel® IntelliGate® systems can also be networked via SIP.

System configuration

The tables below list the AIMS configuration parameters required.

Tab. 2 SIP provider configuration: General

Parameter	Parameter value	Remarks
Name	<Name>	Name of the SIP service provider
Broadband range	<Name>	Predefined broadband range used for this SIP provider.
Use '+' for the international prefix	<*Yes / No*>	If the provider requires the number in canonical number format, the parameter must be set to *Yes*.
Try to make external calls: Timeout	<4...36> sec.	Indicates how long the system attempts to dial via an SIP exchange before it switches to the next trunk group in the route. (Default Value: 32 s)
'From' field for CLIR	<*Anonymous (RFC 3261) / Transfer from SIP account (RFC 3323) / Name displayed is 'Anonymous'*>	Display shown to the recipient in the case of an outgoing call with activated CLIR

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Parameter	Parameter value	Remarks
Use DNS_SRV (RFC 3263)	<*Yes / No*>	Mechanism for resolving the SIP server (or the SIP service) with the help of a DNS enquiry, for example using an URI/URL.
Send 'Session Refresh' (RFC 4028)	<*Yes / No*>	If this parameter is on *Yes*, the PBX will attempt to negotiate a period for regular "Session Refresh Messages" with the SIP provider. For this the SIP provider must also support RFC4028.

Tab. 3 SIP provider configuration: Registrar

Parameter	Parameter value	Remarks
IP address	<Address>	IP address of the registrar at the SIP service provider. The PBX has to set up a connection to the address in order to register.
Port	<1...65535>	UDP port of the Registrar at the SIP service provider.
Name	<Name>	Domain name of the registrar at the SIP service provider
Preferred registration interval	<60..0.65535> sec.	Once this period of time has elapsed, the PBX automatically registers with the SIP registrar on a regular basis in order to maintain a faultless connection.

Tab. 4 SIP provider configuration: Proxy

Parameter	Parameter value	Remarks
IP address	<Address>	IP address of the proxy server at the SIP service provider. All the PBX's external SIP messages are sent to this address (*Primary proxy*). If it is not available, the messages are sent to the alternative IP address (*Secondary proxy*)
Port	<1...65535>	UDP port of the SIP proxy server
Name	<Name>	Domain name of the SIP proxy server, e. g. URL

Tab. 5 SIP provider configuration: NAT

Parameter	Parameter value	Remarks
Activate 'Keep alive'	<*Yes / No*>	If the parameter is on *Yes* the system periodically updates the NAT table on its own firewall using "Notify" messages to the proxy server. This means that the system remains reachable for incoming SIP calls.
ALG support	<*Yes / No*>	Supports the connection to SIP providers (depends on the provider). If the parameter is configured as *Yes*, IP packets that contain SIP signalling information are opened by the ALG (Application Layer Gateway) and the private IP address is replaced by the public IP address. (The public IP address in the system must be configured.)

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Tab. 6 SIP provider configuration: SIP access

Parameter	Parameter value	Remarks
Trunk groups	<Name>	Here the SIP provider is assigned to a new trunk group.
Maximum incoming calls	<30...240>	No further calls are routed via this trunk group once the set limit is reached. This is signalled to the caller by means of the congestion tone.
SIP access without accounts	<*Yes* / *No*>	This parameter has to be set to *Yes* to enable the SIP networking of systems. The parameter can only be configured if no accounts are assigned to the SIP provider.

Tab. 7 SIP account configuration

Parameter	Parameter value	Remarks
Name	<Name>	Name of the SIP account
Display Name (name to be displayed)	<String>	Some providers require this entry. A name or a number such as the SIP ID is entered here.
SIP-ID	<Number>	Identifier of this account with the SIP provider. This is the access number of the account which is then linked with a direct dialling number in the PBX. This parameter must be specified at all times.
User name	<Name>	User name of the SIP account with the SIP provider. This parameter is to be specified only if the SIP provider requires authentication.
Password	<Password>	Password of the SIP account with the SIP provider. This parameter is to be specified only if the SIP provider requires authentication.
Registration required	<*Yes* / *No*>	If this parameter is set on *Yes*, the SIP account will attempt to register with the provider. The SIP provider is then informed about the SIP user's current location.
Registered	<*Yes* / *No*>	Status field
Default account *DDI number*	<*Yes* / *No*> <DDI No.>	The default account allows users without SIP account to make calls via the SIP trunk. The DDI number with which the SIP-ID is to be linked is entered in this field. The field can be left blank if the SIP-ID corresponds to the DDI number.
'From' field: Type	<*SIP ID* / *Direct dialling number* / *System CLIP* / *User defined*>	Specifies what is entered in the definable part of the 'From' field for outgoing calls.
'From' field: String	<String>	User-definable character string in the 'From' field for outgoing calls.

See also

More detailed information on SIP access can be found in the "SIP Access with Ascotel® IntelliGate®" User's Guide (syd-0176, currently available in English only).

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2. 1. 4 Analogue Network Interfaces

The analogue network interfaces support DTMF and pulse dialling. A range of parameters in the System Configurations allows country-specific adaptations to the public network as well as other settings. The table below shows the configuration options available:

System configuration

Tab. 8 Analogue network interfaces: System configuration

Parameter	Parameter value	Remarks
Behind PBX	[*Yes* / *No*]	See "Analogue down-circuit connection", page 26
Line Attenuation	[*short* / *long* / *short D* / *long D*]	See "Attenuation on analogue network interfaces", page 28
Dialling mode	[*PULSE* / *DTMF*]	DTMF dialling should be used in preference whenever both dialling types are supported.
Ringing cycle	[5..0.60 s]	With incoming calls the internal ringing signal is discontinued if the time between each ringing signal on the exchange line is longer than the configured ringing cycle. This is the case for example when the external caller hangs up.
Dialling tone detection	[*Yes* / *No*]	If *Yes*, the PBX waits for the dial tone from the exchange before starting to dial.
Dialling tone time	[0..0.1200 s]	Maximum waiting time for the exchange dial tone if exchange dial tone detection is activated. After that, the PBX switches over to the next free trunk line. If dial tone detection is deactivated, dialling begins after the set time, even without an exchange dial tone.
International dialling tone	[*Yes* / *No*]	If *Yes*, the dialling process is interrupted after one of 10 predefined digit sequences to wait for the international dialling tone.
Exchange digit barring	[*No international dialling tone* or 1…10]	If the trunk line is configured to *Behind PBX* (analogue down-circuit connection), the exchange access prefix of the up-circuit PBX has to be entered in the exchange digit barring.
Release signal	[*Yes* / *No*]	In most cases the public network sends the PBX a release signal whenever the external user ends the call. If the parameter is configured as *Yes*, the connection is then cleared down by the PBX (see also the "Clearing Down Exchange-to-Exchange Connections" Chapter in the "System Functions and Features" System Manual).
Release signal type	[*Loop-break* / *Polarity reversal* / *Congestion tone*	Note: Polarity reversal and congestion tone is supported only by A150 and A300.
Congestion tone level	[*High* / *Low*]	The sound level of the congestion tone can vary greatly within a country and depending on the line length. With this setting the detection can be adapted to the existing level.

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Parameter	Parameter value	Remarks
CLIP detection	[*Yes / No*]	Note: CLIP detection on analogue exchange accesses is supported only by A150 and A300 (see also the "CLIP on Analogue Exchange Accesses" Chapter in the "System Functions and Features" System Manual).
Alerting signal type	[*No alerting signal* / *Ring pulse* / *Dual Tone* / *Line reversal & Dual Tone* / *Not defined*]	There are different methods for transmitting the CLIP data on analogue exchange accesses. An alerting signal is needed to detect the CLIP. The value of the parameter depends on the network provider. *No alerting signal*: Data transmission takes place between the first and the second ringing signal. The first ringing signal is used as the alerting signal. *Ring pulse*: Data transmission before the first ring. A ring pulse is used as the alerting signal. *Dual Tone*: Data transmission before the first ring. Two successive tones (dual tone) are used as the alerting signal. *Line reversal & Dual Tone*: Data transmission before the first ring. A line polarity reversal followed by two successive tones (dual tone) is used as the alerting signal. *Not defined*: No data is detected.
CLIP data damping	[*Yes / No*]	The level of CLIP data varies from one network provider to the next. An excessively high level can lead to detection problems. Activating this parameter can attenuate the signal.

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2. 1. 4. 1 Analogue down-circuit connection

With an analogue down-circuit connection the features of the up-circuit PBX can also be utilized.

This results in the following special applications for the user:

- Depending on the system configuration the user makes phone calls in a complex PBX environment. The subscriber's disposal is a large number of features at two levels (subscriber's own system and the up-circuit system). A short induction course helps users to familiarize themselves quickly with the PBX environment.
- Practically all PBX types that can be used as an up-circuit PBX also feature the DTMF dialling method on the analogue terminal line, in addition to pulse dialling. It is advisable to give preference to the DTMF dialling method over pulse dialling.
- If the up-circuit PBX requires that subscribers wait for the exchange-free tone, all the entered abbreviated dialling numbers must be provided with a hyphen "-" (interdigit pause) after the digits for exchange access. At this point the PBX will again pause for the tone when dialling.

Example: Exchange access via exchange access prefix

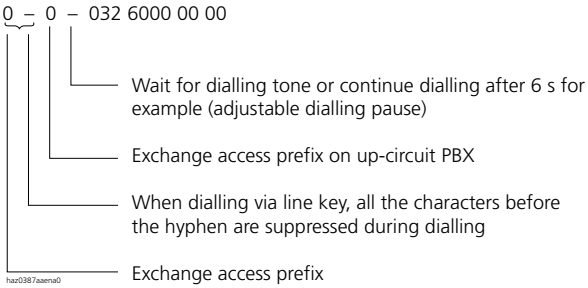

Fig. 11 Example of the exchange access prefix via up-circuit PBX

The following configuration steps are necessary:

1. The exchange access prefix of the up-circuit PBX must be entered in the exchange digit barring.

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2. The corresponding analogue trunk lines are configured to *Down-circuit from the PBX*. Consequence:
   – Digit barring is switched off in general. The digit barring of the up-circuit PBX has to be used.
   – Incoming calls are forwarded transparently to the user.
3. The corresponding analogue trunk lines are to be configured to the correct *dialling type*. If the up-circuit PBX provides DTMF and pulse dialling for internal users, it is advisable to configure DTMF.

Example: Enquiry call behind PBX

This feature can be used from both analogue terminals and system terminals.

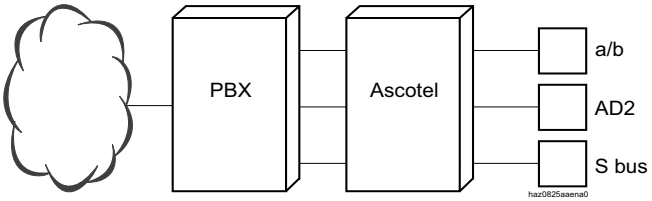

Fig. 12 Enquiry call behind PBX

Situation: The existing call connection of an Ascotel® user already seizes a trunk line to the up-circuit PBX. The procedure for setting up an inquiry call depends on the type of terminal:

- Analogue terminal
  – Flash: Dial tone of Ascotel®
  – Flash *42: Dial of up-circuit PBX
- System Terminals
  – Enquiry call menu: Dial tone of Ascotel®
  – Key with macro "I*42": Dial of up-circuit PBX

Using the exchange's features

To activate features on the public network such as the exchange feature "Call Forwarding" from the system itself, you need to seize a trunk line. The feature can then be entered in accordance with the service provider's operating instructions.

See also:
System configuration:
– *Down-circuit from the PBX*; Analogue network interfaces
– *Dialling type*; Analogue network interfaces

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2. 1. 4. 2 Attenuation on analogue network interfaces

With analogue network connections you have a choice of four different attenuation settings:

- *Long* or.
- *Long D* for long lines
- *Short* or
- *Short D* for short lines

On lines with a loop resistance < 280 Ω, *Short* or *Short D* should be selected to avoid problems with echo or instability (feedback).

The settings"*... D*" settings are used to increase the volume in an "analogue exchange - digital terminal" connection type by 3 dB in both directions as this type of connection is generally perceived as too quiet. The reference level is modified accordingly on the expansion card. Due to the restriction to the aforementioned connection type, the setting "*… D*" does not result in an increase if an analogue user-network interface is involved in a connection.

Note:

The setting"*... D* " setting should not be used (or only once the stability conditions have been thoroughly clarified) if the equipment (Terminal Adapter) operated on digital interfaces also features a four-wire to two-wire conversion, i. e. an analogue two-wire interface.

Initialization setting

Analogue network interfaces are set on *Long D*.

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2. 2 Terminal interfaces

The PBX supports digital and analogue user-network interfaces.

2. 2. 1 Digital user-network interfaces

On each of these digital user-network interfaces several appropriate terminals can be hooked up and operated simultaneously.

2. 2. 1. 1 User-network interface S

The S user-network interface is a digital 4-wire interface used for connecting ISDN terminals, Terminal Adapters and ISDN PC cards. Each of these interfaces has two 64 kbit/s user information channels and one 16 kbit/s control and signalling channel (2B+D). This makes it possible to establish two independent call or data connections simultaneously.

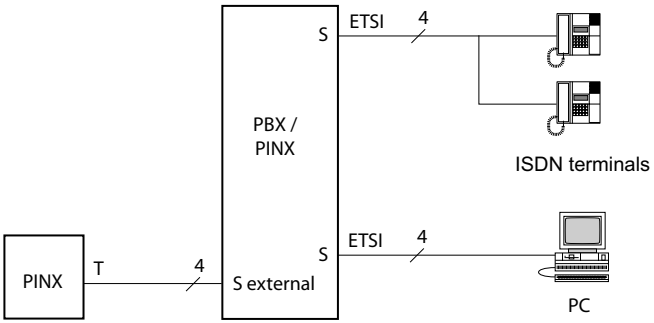

Fig. 13 Terminal interface S

Up to 8 terminals can be operated on an S user-network interface. They are addressed with the single-digit terminal selection digit (TSD).

Different modes are available for operating the S interface (*S bus protocol* setting in the interface configuration):

- The *ETSI* mode is used to operate ISDN terminals, Terminal Adapters and ISDN PC cards.
- With the *EXTERNS* mode an S interface can be used as a basic access S for private networking with QSIG / PSS1 or DSS1. It is then no longer available as a user-network interface (see "Basic Access S External", page 12).

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Format of the ETSI S-bus

The format on the ETSI S-bus can be configured in the interface configuration for each S interface.

Tab. 9 System configuration: Format of the ETSI S-bus

Parameter	Parameter value	Remarks
MSN format on the S-bus	• *TSD*	• Single-digit terminal selection digit (TSD) as per interface configuration
	• *User No.*	• Default setting • Mode of operation as customary in the public ISDN network
	• *DDI No.*	• For special applications (e.g. Unified Messaging Systems). • If the DDI number is missing, the system attempts to transmit one of the following numbers, in the sequence shown below: Number of the CDE, UG number, user number. • Also functions internally.

Exchange Access Prefix for Terminals on the ETSI S Bus

For terminals on the ETSI S-bus the interface configuration can be used to select whether or not the exchange access prefix of the CLIP should be truncated for incoming calls (setting *Delete exchange access prefix*, Inizialitation setting = *No*"). This setting is effective only in the S-bus mode (*S bus protocol* =*ETSI*).

Ascotel® IntelliGate® Net:

In an AIN the call charge format of ISDN terminals depends on the country and is based on the country configured with the AIN region of the node concerned or user. User allocation takes priority over a node-specific allocation.

Voice and data terminals on the S interface

Both voice and data terminals can be connected to the same S interface. When designing the system, bear in mind that data terminals can also take up user information channels. ISDN routers and ISDN PC cards that support channel bundling can take up both user information channels.

In mixed operation the availability of the terminals has to be taken into account.

One call or data connection can be set up on each bearer channel (B channel) simultaneously and independently of the other B channel.

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2. 2. 1. 2 AD2 terminal interface

The AD2 digital terminal interface is a proprietary, system-specific 2-wire interface used for connecting AD2 system terminals:

- Corded AD2 system terminals
- V.24 interface Pocket Adapter
- Ascotel® DECT Radio units

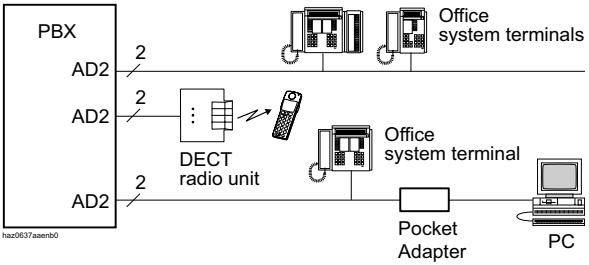

Fig. 14 AD2 terminal interface

Two system terminals or one system terminal and a Pocket Adapter can be connected in parallel to an AD2 terminal interface. Address allocation is done by means of a switch on the terminal.

One DECT radio unit can be connected for each AD2 interface. An SB-8 radio unit with 8 call channels occupies two AD2 interfaces.

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2. 2. 1. 3 IP terminal interface

The IP terminal interfaces are implemented via an Ethernet interface on the mainboard. Besides IP system terminals Ascotel® IntelliGate® also supports Aastra SIP terminals and SIP terminals by other manufacturers.

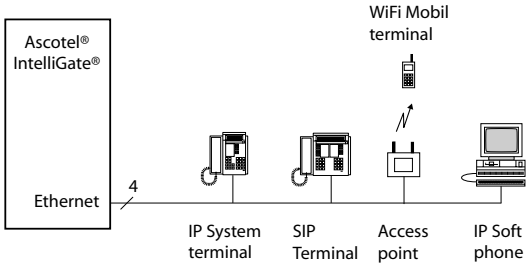

Fig. 15 IP terminal interface

Like all the other system terminals the IP system terminals (softphones and hardphones) communicate with the PBX via the AD2 protocol. Unlike conventional system terminals, however, call and signalling data is transmitted in the IP network. The devices are connected to the IP network.

The media data from SIP terminals is processed into packets using the SIP protocol and transmitted using the RTP protocol. Corded SIP terminals as well as WiFi mobile terminals connected with the IP network via an access point can be operated on an Ascotel® IntelliGate®.

The number of terminals on the IP user-network interface (Ethernet) is determined by the system limits on the one hand and by the number of licences on the other.

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2. 2. 2 Analogue terminal interfaces

This 2-wire interface supports the following off-the-shelf analogue terminals:

- Analogue phones with DTMF or pulse dialling (earth key is not supported)
- Radio units for cordless phones
- Two-wire door intercoms with DTMF control functions
- Group 3 fax machines[1)]
- Answering machines
- Modem

No call charges are transmitted to the connected terminals via analogue terminal interfaces.

CLIP display is possible (see "Technical Data", page 106 ff.)

One analogue terminal interface per system can be configured for connecting a general bell.

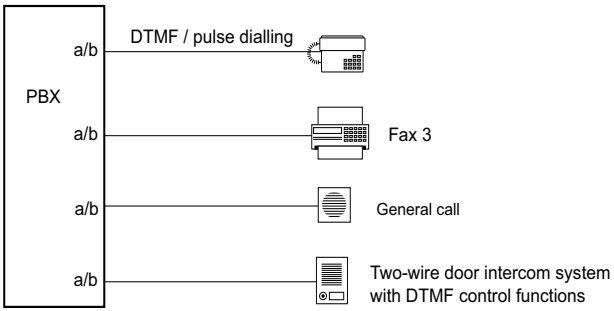

Fig. 16 a/b terminal interfaces

[1)] Transmission with the T.38 protocol is recommended for Fax over IP.

2. 3 Special Interfaces

The system supports a range of special interfaces.

2. 3. 1 Ethernet interfaces

The system provides two types of Ethernet interfaces:

- Ethernet interface on the basic system for
  - data exchange with AIMS
  - signalling and transmitting voice data (VoIP) in an Ascotel® IntelliGate® Net (AIN)
  - linking up the Open Interfaces Platform (OIP)
  - the connection of a CTI, alarm, ATAS or messaging server, etc.
  - the connection of IP system terminals
  - the connection of SIP terminals (Soft or Hardphones)
  - Connection to one or more SIP service providers.
  - Coupling two A150/300 systems into a single isyLink system
  - Networking Ascotel® IntelliGate® systems via SIP.
- Ethernet interface on the expansion card
  - AIP-6400 for networking Ascotel® systems with QSIG protocol
  - AIP-6500 for implementing an Ascotel® IntelliGate® Net and connecting IP system terminals and SIP terminals.

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2. 3. 2 V.24 Interface

The V.24 interface is a serial interface. Data transfer is asymmetrical, bipolar with a minimum of +/- 4 V over a minimum of 3 wires (SGND, TXD, RXD). Control signals are transmitted by code (XON, XOFF) or with additional lines for hardware flow control.

The system provides several V.24 interfaces:

- Two V.24 interfaces directly on the mainboard (20x5 systems only)
- V.24 interfaces on user-network interfaces via the Pocket Adapter

Not all V.24 interfaces on the system have the same functionality. The following table shows how the individual interfaces are used:

Tab. 10 Functionality and application of the V.24 interfaces on the system

Function / Application	V.24 on the Mainboard (20x5 systems only)	V.24 on the Pocket Adapter
Call data output (OCL / ICL) via printer or PC	✓	✓
Individual charge data output (ICC) via printer or PC	✓	✓
Dialling from PC with AT commands	–	✓
Dialling from PC with Unimodem on Windows	–	✓
TAPI TSPI PC Windows	–	✓
Ascotel® Messaging System	✓	✓
Data service with PC	–	–
Interface to hotel management systems	✓	✓
PBX configuration with PC (AIMS)	✓	3[1)]

[1)] PA Version □ V2.4

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2. 3. 2. 1 V.24 standard

In accordance with the V.24 recommendation, a cable length of 15 m limits the transmission speed to 38 400 bit/s. The maximum transmission speed via the V.24 interfaces on the mainboard (20x5 systems only) is 115 200 bit/s. Transmission errors can occur if these limits are exceeded. A current loop converter (TTY) has to be used if the cable length is insufficient. Cable lengths of up to approx. 1 km are possible with this interface.

Two types of equipment can be connected to the V.24 interface:

- DCE: Data Communication Equipment
  e. g. a PC
- DTE: Data Terminal Equipment
  e. g. a printer

The pin assignment differs according to the type of equipment used. Signals are specified as follows:

Tab. 11 V.24 signals

Signal	Pin		Signal direction		CCITT standard V.24	Name / function
	D-Sub-9	D-Sub-25	DTE	DCE		
TXD	3	2	out	in	103	Transmitted Data
RXD	2	3	in	out	104	Received Data
RTS	7	4	out	in	105	Request To Send
CTS	8	5	in	out	106	Clear To Send
DTR	4	20	out	in	108	Data Terminal Ready
DSR	6	6	in	out	107	Data Set Ready
DCD	1	8	in	out	109	Data Carrier Detect
SGND	5	7	—	—	102	Signal Ground

A straight connecting cable (modem cable; straight) must be used when connecting DTE-type equipment with DCE-type equipment (e.g. PC → modem, modem → PC).

A null modem cable must be used when connecting equipment of similar type DTE – DTE (e. g. PC→ PC). The null modem cable is crossed.

The DCD signal should only be used if a DCE is connected with a DTE.
DCD is activated by the DCE once the connection to the DTE is established.

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2. 3. 2. 2 Flow control

Depending on the set mode, the data flow is controlled differently by the equipment involved. The most common modes are Xon / Xoff or RTS /CTS.

Xon / Xoff mode

This mode is also known as a software handshake.
The data flow is controlled by the data receiving equipment. The data receiving equipment sends an SW signal over the data line as soon as its input memory is full, and an SW signal as soon as it is ready to receive again.

Xon / Xoff requires only a three-wire connection for signals RxD, TxD and SGND.

Drawback:
The data transmitting equipment cannot tell whether or not a receiving equipment is connected.

RTS / CTS mode

This mode is also known as a hardware handshake.
The two equipment involved use the RTS and CTS signals to indicate that they are ready to send and to receive, each signal being transmitted over a separate signalling line.

Advantage:
Data exchange cannot take place if there is no equipment ready to receive. For example no more data will be sent to the printer if the printer is switched off or out of paper.

Note:
To exclude any transmission errors, always operate the printer on the PBX in RTS / CTS mode.

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2. 3. 3 Interface for Door Intercom System

There are different ways of connecting door intercom systems:

- Using an options card OI-2DOOR (only systems 20x5)
- Using an options card ODAB (only systems A150/300)
- Using an ordinary analogue terminal port

In a connection using an options card, the equipment or installation is controlled via relays and a control input on the options card.

In a connection using an analogue terminal port the TFE must be capable of sending and receiving DTMF signals as the control is effected acoustically via a speech path.

A bell key is backed by an internal destination. The door intercom system can be addressed via an internal number.

A loudspeaker system can also be operated via the interface for door intercom systems.

See also:

"Special interfaces" Chapter in the Ascotel® IntelliGate® 150/300 or Ascotel® IntelliGate® 2025/2045/2065 System Manual

2. 3. 4 Interface for General Bell

Calls can also be routed to the general bell. Bells or lamps connected to the general bell interface signal calls which can be answered by anyone from any user's phone.

Coded ringing can be used to assign different ringing patterns to different destination persons or groups and, in this way, create a simple type of paging system.

Tip:

One analogue terminal interface per system can be reconfigured in such a way that it is also used for connecting a general bell. This eliminates the need for an external ringing voltage source.

See also:

"Special interfaces" Chapter in the Ascotel® IntelliGate® 150/300 or Ascotel® IntelliGate® 2025/2045/2065 System Manual

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3 Terminals

A distinction is made among terminals between system terminals and terminals by other manufacturers. At a secondary level another distinction is made between the type of terminal: corded or cordless connection or via an IP network. Added to this are the Pocket Adapter and the PC Operator.

3. 1 System terminals

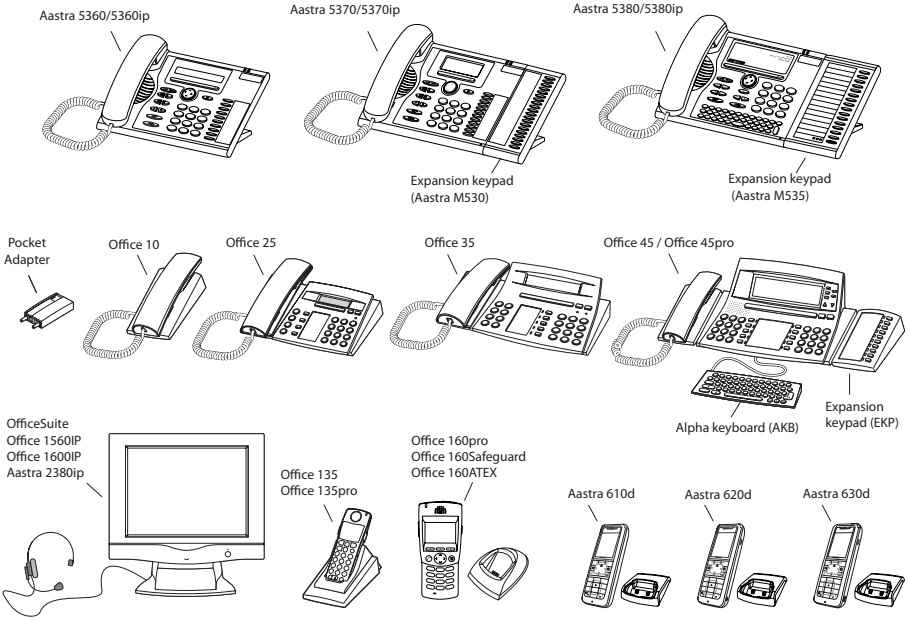

Fig. 17 System Terminals[1)]

All system terminals (incl. DECT handsets) are digital terminals. Alphanumeric displays, menu prompting and an intelligent Foxkey ensure a user-friendly, intuitive handling of the complete spectrum of performance. Letters are assigned to the digit keys of the dial pad in accordance with the Vanity table and are keyed in via the dial pad. Freely configurable keys are used to store frequently used call numbers, functions and operating procedures in the form of macros. A simple keystroke is enough to dial a call number or to listen to the Voice Mail System.

1) Office 20, 30, 35IP, 40, 100, 130, 150, 155 terminals will continue to be supported

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System terminals Aastra 5360, Aastra 5370 and Aastra 5380 can be operated on Ascotel® IntelliGate® as well as on NeXspan. The interface (bus) can be operated in either AD2 mode for Ascotel® IntelliGate® or in UDLT mode for NeXspan. These three terminals are also available as an IP version.

Foxkey/Softkey

With the Foxkey or softkeys all the system terminals have a variable function key that intelligently adapts to provide the right functions for each situation so that all the terminals can be operated intuitively. This means that depending on the system terminal's status you can easily access important commands with a simple keystroke. Scrolling at length through menus becomes superfluous.

Navigation key

Besides the Foxkey the system terminals of the Aastra 5300, Aastra 5300ip, Aastra 600d and Office 160 series also have a central navigation key. This is used to guide the user efficiently through the multi-functional menu. The navigation key makes it particularly simple to scroll vertically and horizontally through the various menu entries, open or exit menus, navigate through lists, etc.

Configurable keys

Freely configurable keys can be defined as number keys, function keys or team keys. Team keys provide a simple means, for example, of answering calls intended for absent colleagues on your own system terminal.

Convenient Dialling Options

Besides number dialling, system terminals also offer many other ways of setting up a connection. With dialling by name, for example, you can simply enter a person's name (or initials), and the system terminal searches for the matching telephone number and dials it per keystroke. The only requirement is that the system knows the name in question.

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Another convenient way of dialling call numbers is to dial from lists. A simple keystroke under the appropriate entry dials the number. The following lists are available with system terminals:

- Last-number redial list: The list of users last called from this particular system terminal.
- Unanswered call list: The list of users who have tried to reach this system terminal.
- Answered call list: The list of users whose calls were answered.

Data Integrity

All the terminal data is stored in a non-volatile memory on the system and can be saved using a backup with AIMS.

Applications

Certain system terminals are suitable for use under special conditions. The table below provides an overview of the applications.

Tab. 12 Area of application for system terminals

Area of application	Office 10	Office 25	Office 35	Office 45/45pro	Aastra 5360	Aastra 5370	Aastra 5380	Aastra 5360ip	Aastra 5370ip	Aastra 5380ip	Office 135/135pro	Aastra 610d	Aastra 620d	Aastra 630d	Office 160pro/	Office 160Safeguard/	Office 160ATEX/	Office 1560	Office 1560IP	Office 1600	Office 1600IP	OfficeSuite	Aastra 2380ip
System terminal on AD2	✓	✓	✓	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	–	1)	–	1)	–	1)	–
System terminal on the IP network	–	–	–	–	–	–	–	✓	✓	✓	–	–	–	–	–	–	–	–	✓	–	✓	–	✓
Handset (cordless)	–	–	–	–	–	–	–	–	–	–	✓	✓	✓	✓	✓	✓	✓	–	–	–	–	–	–
Softphone (on PC)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1)	✓	1)	✓	1)	✓
Wall mounting possible	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	–	–	–	–
Use as a key telephone	–	–	✓	✓	–	✓	✓	–	✓	✓	–	–	–	–	–	–	–	–	–	–	–	–	–
Use as Operator Console	–	–	–	✓	–	–	2)	–	–	2)	–	–	–	–	–	–	–	✓	✓	–	–	–	–
System settings possible	–	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Workshop, building site, heavy industry	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	✓	✓	✓	–	–	–	–	–	–
Surveillance and security services	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	✓	–	–	–	–	–	–
Environment subject to explosion hazards	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	–	–	–	–

1) Combination of Softphones on the PC with an (AD2) system terminal.

2) Requires an Aastra M535 expansion keypad

3. 2 Corded AD2 system terminals

The following table contains a summary of selected features of corded system terminals, which are described in more detail below.

Tab. 13 Overview of the Corded AD2 system terminals

	Office 10	Office 25	Office 35	Office 45 /45pro	Aastra 5360	Aastra 5370	Aastra 5380
Interface	AD2	AD2	AD2	AD2	AD2	AD2	AD2
Fixed function keys	2	4	8	12	10	10	10
Freely configurable keys	3	4	5	10	10	12	–
Number of Fox menus	1	2	3	4	2	2	3
Menu / Information key	–	✔	✔	✔	–	–	–
Navigation key	–	–	–	–	✔	✔	✔
Display (lines x characters)	–	1 x 14	2 x 24	8 x 40	1 x 14	5 x 22	7 x 34
Dialling by name	–	✔	✔	✔	✔	✔	✔
Private phone book entries	10	[1)]	[1)]	[1)]	[1)]	[1)]	[1)]
Entries, unanswered call list	–	4	10	10	4	10	10
Entries, answered call list	–	4	10	10	4	10	10
Open-listening function	–	✔	✔	✔	✔	✔	✔
Hands-free mode	–	–	✔	✔	–	✔	✔
Headset mode	–	–	✔	✔	–	✔	✔
Alpha keyboard	–	–	Option	Option	–	–	✔
Expansion keypads (Optional)	–	–	3	3	–	1	3
Bluetooth® module (optional)	–	–	–	–	–	–	✔
Pocket Adapter (optional)	✔	✔	✔	✔	✔	✔	✔
Variable tilt angle in the case of desktop installation	–	–	–	–	✔	✔	✔

[1)] Up to 350 entries (per user)

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3. 2. 1 Office 10

The Office 10 is a cost-effective alternative to analogue terminals. It features the intuitive operator prompting of system terminals: Pressing the Foxkey intelligently selects the function best suited to the situation. A message LED is used among others to signal notification by the Voice Mail System for example. The terminal itself is small, compact and can also be wall-mounted.

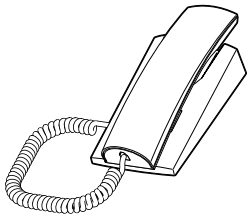

Fig. 18 Office 10

Characteristics of the Office 10:

- Digital telephony at an affordable price
- Intelligent Foxkey
- 3 configurable keys
- 1 Message LED
- Minimum space requirements
- Wall mounting (Optional)

Recommended for the following areas of application:

- Premises with a low calling rate
- Hospitals
- Hotel rooms
- Workshops

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3. 2. 2 Office 25

The Office 25 is the ideal model for ordinary phone users. It has a Foxkey and four configurable keys as well as an alphanumerical display for displaying the number and name of the caller (CLIP / CNIP), operator menus in many European languages, Foxkey assignment and more. With */# procedures you can take advantage of nearly the entire performance range of the system. With the Office 25 you can send and receive messages to and from equipment with an alphanumeric display.

Fig. 19 Office 25

Characteristics of the Office 25:

- Intelligent Foxkey
- 4 configurable keys
- 1 Message LED
- Alphanumeric display with 14 characters
- Dialling by name and by list
- Operator menus in many languages
- Loudspeaker for open-listening function
- Minimum space requirements
- Wall mounting (Optional)

Recommended for the following areas of application:

- Premises with a normal calling rate
- Office workers
- Administration
- Office

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3. 2. 3 Office 35

The Office 35 already features the full performance spectrum of Ascotel® IntelliGate® systems. All the features can be used intuitively through menu prompting and Foxkey. The operator menus are available in many European languages. The Office 35 is a terminal for high-volume telephoning with exacting requirements.

Fig. 20 Office 35

Characteristics of the Office 35:

- Intelligent Foxkey
- 5 freely configurable keys with unicoloured LEDs
- 1 Absent key
- 1 Message LED
- Graphics-compatible display with 2 lines of 24 characters
- Dialling by name and by list
- Operator menus in many languages
- Loudspeaker and microphone for open-listening and hands-free function
- Can be used as a key telephone
- Wall mounting (Optional)
- Headset (Optional)
- Expansion keypads with additional configurable keys (option)
- Alpha keyboard for simplified character input and command shortcuts (Optional)
- Interchangeable keyboard covers in different designs (Optional)

Recommended for the following areas of application:

- Premises with a high calling rate
- Frequent phone users
- Distribution staff
- Sales staff

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3. 2. 4 Office 45 / Office 45pro

The Office 45 features the full performance spectrum of Ascotel® IntelliGate® systems. All the features can be used intuitively through menu prompting and Foxkey. The large, clearly structured display and the display keys make operation all the easier and offer full operator functionality. On the Office 45pro the display is back lit. The operator menus are available in many European languages. The Office 45 can be used as a featurephone, key telephone or Operator Console. The "System Assistant" function allows the customer to define his own frequently occurring system settings.

Fig. 21 Office 45/45pro

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Characteristics of the Office 45/45pro:

- Can be used as a featurephone, key telephone and Operator Console
- Allows special settings to be made on the system
- Intelligent Foxkey
- 10 freely configurable keys with dual-coloured LEDs
- 1 Absent key
- 1 Message LED
- Graphics-compatible display with 8 lines of 40 characters (backlit on the Office 45pro)
- Dialling by name and by list
- Operator menus in many languages
- Loudspeaker and microphone for open-listening and hands-free function
- Possibility for full-duplex hands-free operation (hardware required)
- Headset (Optional)
- Expansion keypads with additional configurable keys (option)
- Alpha keyboard for simplified character input and command shortcuts (Optional)
- Replaceable keypad cover (Optional)

Office 45/45pro is recommended for the following applications:

- Premises with a very high calling rate
- Management
- Secretary
- Attendant
- System Assistant (PBX configuration)
- Telemarketing
- Telesales

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3. 2. 5 Options for Office 35 and Office 45/45pro

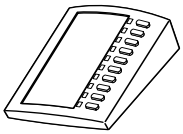
Office 35 and Office 45/45pro can be equipped with expansion keypads (EKP) and / or an alpha keyboard (AKB) (a maximum of 3 options can be combined).

3. 2. 5. 1 expansion keypad EKP

The EKP adds 10 configurable keys to an Office 35 / Office 45. Up to three EKP can be connected to each terminal. If an alpha keyboard is connected, only two other EKPs can be connected.

The EKP contains a connection socket for another EKP or the alpha keyboard.

If the EKP is connected to an Office 35, the LEDs will be lit red. If the EKP is connected to an Office 45, the LEDs will be lit red and yellow.



Additional keypad (EKP)

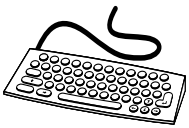
Fig. 22 expansion keypad EKP

3. 2. 5. 2 Alphanumerical keyboard AKB

The alpha keyboard is designed for convenient dialling by name, private phone book management and for writing text messages. The terminals Office 35 / Office 45 can also be operated directly from the alpha keyboard.

1 AKB can be connected to each terminal.

The AKB can be connected directly to the system terminal or to an expansion keypad EKP.



Alphanumerical keyboard (AKB)

Fig. 23 Alphanumerical keyboard AKB

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3. 2. 6 Aastra 5360

The Aastra 5360 satisfies all the basic requirements of modern telephony. With the integrated one-line display, 10 freely configurable keys and the innovative Ascotel® IntelliGate® system functions it is ideally equipped to meet the demands of everyday business life. The sturdy design of the Aastra 5360 also makes it an ideal information phone in visitor or service areas.

Fig. 24 Aastra 5360

Characteristics of the Aastra 5360:

- System terminal with display at an affordable price
- Intelligent Foxkey
- 4-way navigation key
- 10 freely configurable keys
- 1 Absent key with LED
- 2 attention LEDs
- Display with 14 characters (upper-case letters) and 1 symbol line
- Dialling by name and by list
- Operator menus in many languages
- Loudspeaker for open-listening function
- Wall mounting possible
- Variable tilt angle in the case of desktop installation

Recommended for the following areas of application:

- Premises with a normal calling rate
- Visitor and service areas, Administration, Office
- Office workers

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3. 2. 7 Aastra 5370

The Aastra 5370 is an all-rounder with an impressive performance spectrum. 12 configurable keys for customized team, control and alarming functions are available as standard. In combination with a headset the Aastra 5370 is also ideally suited for telephony workstations such as those used in call centre environments. With the headset connection based on the DHSG standard, it is possible to control the volume and to answer and end calls conveniently from the headset.

Fig. 25 Aastra 5370

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Characteristics of the Aastra 5370:

- User-friendly all-rounder model
- Can be used as a key telephone
- Intelligent Foxkey with 2 Fox menus
- 4-way navigation key
- 12 freely configurable keys with unicoloured LEDs
- 1 Absent key with LED
- 2 attention LEDs
- Graphics-compatible display with 5 × 22 characters
- Dialling by name and by list
- Operator menus in many languages
- Loudspeaker and microphone for open-listening and hands-free function (no additional hardware required for full-duplex hands-free operation)
- Wall mounting possible
- Variable tilt angle in the case of desktop installation
- Headset mode with DHSG standard
- 1 expansion keypad can be connected
- Power supply via AD2 or a plug-in power supply (optional)

Recommended for the following areas of application:

- Premises with a high calling rate
- Frequent phone users
- Distribution staff
- Sales staff
- Call centre staff

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3. 2. 8 Aastra 5380

The Aastra 5380 is a multifunctional information centre for users with higher standards. Besides a large backlit display the Aastra 5380 also features an integrated alphanumerical keyboard, which means searching for contacts or creating text messages particularly easy to do. Like the Aastra 5370, the Aastra 5380 also has a headset connection based on the DHSG standard. There is also the possibility of equipping the Aastra 5380 with a Bluetooth® module. With this up to 4 Bluetooth® headsets can be registered and operated. In combination with an Aastra M535 expansion keypad the Aastra 5380 can be operated as a user-friendly Operator Console.

Fig. 26 Aastra 5380ip

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Characteristics of the Aastra 5380ip:

- User-friendly system terminal for more exacting requirements
- Can be used as a key telephone
- Can be used as an Operator Console in conjunction with an Aastra M535 expansion keypad
- Intelligent Foxkey with 3 Fox menus
- 4-way navigation key
- 1 Absent key with LED
- 2 attention LEDs
- Graphics-compatible display with 7 × 34 characters
- Dialling by name and by list
- Operator menus in many languages
- Loudspeaker and microphone for open-listening and hands-free function (no additional hardware required for full-duplex hands-free operation)
- Wall mounting possible
- Variable tilt angle in the case of desktop installation
- Headset mode with DHSG standard
- Expandable with Bluetooth® module
- 3 expansion keypads can be connected
- Integrated alpha keyboard for user-friendly operation
- Power supply via AD2 or a plug-in power supply (optional)

Recommended for the following areas of application:

- Premises with a very high calling rate
- Management
- Secretary
- Telemarketing
- Telesales
- Operator workstation

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3. 2. 9 Options for Aastra 5370 and Aastra 5380

3. 2. 9. 1 expansion keypads

The Aastra 5370 terminal can be equipped with one expansion keypad; the Aastra 5380 with up to three expansion keypads. Each expansion keypad provides additional configurable keys for customized team, control and alarming functions. The status of each function is displayed visually by LEDs integrated in the keys. When operated on an Aastra 5370 the LEDs integrated in the keys light up unicoloured (red); when operated on an Aastra 5380, they light up dual-coloured (red/green).

On an Aastra 5380 the expansion keypads featured below can also be used in mixed operation.

Expansion keypad (Aastra M530)

The Aastra M530 expansion keypad provides 20 additional configurable keys with labelling strips.

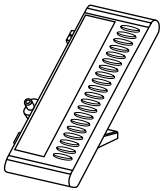

Fig. 27 Aastra M530

Expansion keypad (Aastra M535)

The Aastra M535 expansion keypad provides 15 additional configurable keys on three levels, i.e. a total of 45 storage locations. Instead of a labelling strip it has a backlit display.

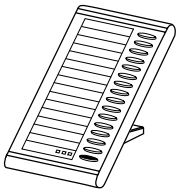

Fig. 28 Aastra M535

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3. 2. 9. 2 Plug-in power supply unit

If the power supply via the AD2 bus is insufficient, connect a plug-in power supply to the terminal. When using one or more expansion keypads connect the plug-in power supply to the last expansion keypad.

3. 2. 10 Older AD2 system terminals

The system terminals Office 20, Office 30 and Office 40 are supported as before. With only a few exceptions all the features of the Ascotel® IntelliGate® system are supported.

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3. 3 Cordless DECT system terminals

One or more radio units are required to be able to operate DECT handsets on the Ascotel® system. They are connected to one or two AD2 interfaces. They are powered either via the AD2 or locally using separate plug-in power supply units. System handsets as well as GAP-mode DECT handsets by other manufacturers can be logged on to the system via a radio unit.

More information on radio units and the planning of DECT systems can be found in the "Ascotel® DECT Systems" System Manual.

3. 3. 1 Overview of cordless DECT system terminals

Cordless DECT system terminals have virtually the same features as the corded terminals. The following table contains a summary of selected features of cordless system terminals, which are described in more detail below.

Tab. 14 Overview of cordless system terminals

	Office 135/ 135pro	**Office 160pro/ Safeguard/ ATEX**	**Aastra 610d**	**Aastra 620d Aastra 630d**
Standby time / Talk time	120 Hours / 12 hours	120 Hours / 12 hours	100 Hours / 12 hours	120 Hours / 12 hours
Display	39 x 90 dots monochrome	64 x 128 dots monochrome	176 x 160 dots monochrome	176 x 220 dots colour
Selectable font size	–	–	–	✔
Housing colour	anthracite[1)]	grey-anthracite[2)]	grey-anthracite	grey-anthracite
Backlighting (display)	✔	✔	✔	✔
Backlighting (keypad)	✔[3)]	✔[4)]	✔	✔
Menu / Information key	✔	✔	–	–
Foxkey or softkeys	✔	✔	✔	✔
Hotkey / functions	1 / 6	1 / 6	–	1 / 6
Freely configurable side keys	–	–	–	3
Dialling by name	✔	✔	✔	✔
Private phone book	5)	5)	5)	5)
Open-listening function	✔	✔	✔	✔
Hands-free mode	✔	✔	✔	✔
Volume control	✔	✔	✔	✔
Vibra call	✔[3)]	✔	–	✔
Socket for cable headset	✔[3)]	✔	✔	✔
Socket for Bluetooth® headset	–	–	–	✔

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	Office 135/ 135pro	Office 160pro/ Safeguard/ ATEX	Aastra 610d	Aastra 620d Aastra 630d
USB Interface	–	–	–	✔
Charging bay	✔	✔	✔	✔
Socket for headset charger	✔[3)]	–	–	–
Leather case	✔	✔	–	–
Carry clip	✔	✔	✔	✔
Class of protection	–	IP64	IP50	IP50, IP65[6)]
Explosion-protected type (ATEX)	–	✔[7)]	–	–
Man-down/no-movement/escape alarm	–	✔/✔/–[8)]	–	✔/✔/✔[6)]
Special emergency button	–	✔[8)]	–	✔[6)]
GAP compatible	✔	✔	✔	✔

1) Front Office 135pro in titanium-silver

2) Front Office 160Safeguard blue also, Office 160ATEX yellow also.

3) Office 135pro only

4) Off Office 160ATEX

5) Up to 350 entries (per user)

6) Aastra 630d only

7) Office 160ATEX only

8) Office 160Safeguard/ATEX only

Common DECT handset features

A handset is not allocated to any particular radio unit. It can set up and clear down incoming and outgoing calls in all radio units.

Even during a call, the user is able to move around freely with the handset within the coverage area (handover function).

A handset can be logged on simultaneously to a maximum of 4 different Ascotel® DECT systems.

The communication system recognizes only handsets that are logged on. This prevents unauthorized users from making use of the system.

DECT users can be integrated into user groups in the same way as other users.

Problem-free operation is no longer guaranteed at the limit of and outside the radio area.

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3. 3. 2 Office 135 / Office 135pro

The Office 135/135pro is ideal for office environments as well as for hospitals and retirement homes. As it is compact, light and handy, it can be taken along to any meeting. It is used mainly by users who are on the move yet need to be reachable.

Its operator convenience is similar to that of an Office 35. It also features a number of functions that are very useful for mobile users in particular, for example discreet ringing, key lock and a hotkey that can be used to store 6 numbers or functions. This system terminal's hands-free mode is of a very high quality. An easily readable LED rounds out the design of this system terminal. A leather pouch is available as an accessory.

The Office 135/135pro can be switched to a special room monitoring mode. The terminal can then be used to monitor a small child for instance (baby listening function). Other acoustic monitoring tasks can also be envisaged.

The Office 135pro also features Vibra Call, a socket for an optional headset, a socket for an optional charger and an backlit keypad.

The Office 135/135pro can be updated at any time with the current operating software via the radio network.

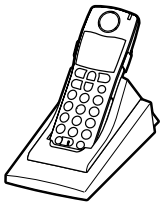

Fig. 29 Office 135/135pro

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Features Office 135/135pro:

- Small, practical, lightweight system terminal
- Easy to operate with one hand
- Sturdy, high-quality keypad
- Intelligent Foxkey
- Hotkey (2 configurable operating modes)
- Message LED
- Graphics-compatible, illuminated display
- Dialling by name and by list
- Hands-free mode with volume control
- Special room monitoring mode available (baby listening function)
- Can operate in combination with a corded system terminal (Twin Mode / Twin Comfort)
- Easy and convenient to use, even when in the charging bay
- Software update with radio network
- Leather case (Optional)

Additional features of the Office 135pro:

- Vibra call
- Headset socket (optional)
- Plug-in power supply socket for direct charging (optional)
- Backlit keyboard

Recommended for the following areas of application:

- Mobile use outside and inside buildings (office, retirement homes, hospitals)
- In connection with a corded system terminal (Twin Mode / Twin Comfort)

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3. 3. 3 Office 160pro/Safeguard/ATEX

These three models have each been designed for different customer requirements. The basic version is the Office 160pro. With its sturdy design, the splashwater-proof and shock-proof Office 160pro is particularly well suited for industrial environments. It has an intelligent Foxkey, a graphics-compatible, backlit display and a socket for an optional headset. Other features of the Office 160pro include hands-free operation with volume control, vibra call, hotkey and an LED. An integrated SIM card contains the registration data and personal settings. A leather case and a belt clip are available as options.

The Office 160Safeguard has been developed specially with personal safety in mind. An alarm can be raised in a matter of seconds using the large, easy-to-operate alarm button. The Office 160Safeguard also features passive alarm activation based on the integrated position and motion alarm. Here an alarm is triggered if for instance the handset remains in a horizontal position or is motionless.

The Office 160ATEX offers the same functions as Office 160Safeguard but is designed specially for mobile use in areas subject to explosion hazards (tank farms, chemical laboratories, sewage plants). The igniting of gases caused by sparking is excluded with this model.

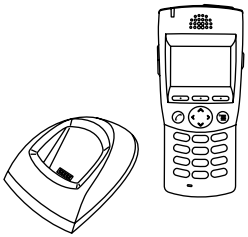

Fig. 30 Office 160pro/Safeguard/ATEX

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Characteristics of the Office 160pro:

- Shock-proof due to sturdy design
- Dust-proof and splashwater-proof (IP64)
- Vibra call
- Headset socket
- Intelligent Foxkey
- Navigation key
- Hotkey (2 configurable operating modes)
- Message LED
- Graphics-compatible, illuminated display
- Backlit keypad (except Office 160ATEX)
- Dialling by name and by list
- Hands-free mode with volume control
- SIM card (contains registration data and personal settings)
- Can operate in combination with a corded system terminal (Twinmode / Twincomfort)
- Can also be operated from the charging bay
- Leather case (Optional)
- Headset (Optional)

Additional features of the Office 160Safeguard/ATEX

- Active alarm activation using a large alarm button
- Passive alarm activation using integrated position and motion alarm

Recommended for the following areas of application:

- Mobile use outside and inside buildings (workshops, building sites, heavy industry)
- Office 160Safeguard/ATEX: Mobile use in environments with more exacting requirements as regards personal safety (surveillance and security services)
- Office 160ATEX: Mobile use in areas subject to explosion hazards (tank farms, chemical laboratories, sewage plants)

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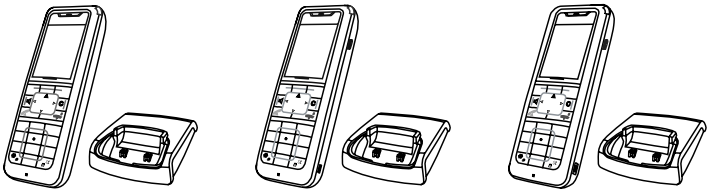
3. 3. 4 Aastra 610d / Aastra 620d / Aastra 630d

The three models of the Aastra 600d family of terminals are ideally adapted to working with the Aastra IntelliGate systems to ensure you have reliable access to the comprehensive range of possibilities provided by the telephone system throughout your company premises. 40 polyphonic and eight non-polyphonic ring tones mean that your mobile companion can be unmistakably identified at any time. The terminals have a headset socket so you can have both hands free when using the phone. A phone book with up to 350 contacts and 3 sub-entries each provides access to all the main contact information. Five different application profiles allow the phones to be adapted to each particular work situation, e. g. with headset or conference mode. A three-colour LED in the top right-hand corner signals important events, for instance using green to indicate an incoming call, flashing red whenever the system range is exceeded, and an orange light to inform you of the battery's charge state.



Aastra 610d Aastra 620d Aastra 630d

Fig. 31 Aastra 600d series of terminals

Compared with the Aastra 610d entry-level model, which has a backlit monochrome display, the Aastra 620d and Aastra 630d added-feature models have a backlit, colour display with variable font size and colour schemes. The two added-feature models are also equipped with a USB and Bluetooth® interface, have vibra call, and additional, freely configurable side buttons.

The Aastra 630d is ideally suited for use in tough working environments. With its integrated man-down, no-movement and escape alarm the terminal is ideal for use in the security or prison sector. With its additional emergency button and easy-clean property, the terminal is the ideal companion not only in security-related professions but also in hospitals or care facilities.

3. 3. 5 Older cordless DECT system terminals

The system terminals Office 100, Office 130/130pro, Office 150/150EEx, Office 155pro/Office 155ATEX are supported as before

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3. 4 IP system terminals

Like all the other system terminals the IP system terminals communicate with the communication system via the AD2 protocol. Unlike conventional system terminals, however, call and signalling data is transmitted in the IP network. The terminals are connected directly to the IP network, making the AD2 connection superfluous. The VoIP interface to the system is implemented via the Standard Media Switch on the mainboard or the Media Switch on an AIP 6500 expansion card (20x5 systems only). The IP system terminals can be operated anywhere in the IP data network as long as the connection complies with the quality criteria required for VoIP (Voice Over IP). This offers a whole range of user advantages:

- Unlike a connection via the public telephone network, no call charges are incurred, and users can be reached as internal users.
- Many features that are restricted when a remote user is integrated as a virtual user can be fully utilised, i.e. team keys, call forwarding, Voice Mail, Courtesy, text messages, announcements.
- In the case of smaller branch offices the customer can dispense with using an additional communication system in the branch.
- When expanding an existing infrastructure with new connections for PC and phones there is no need to expand the phone lines.

All IP system terminals can be used on a single communication system or in an AIN.

One licence per terminal is required to operate the IP system terminals. Exceptions: Office 35IP and Office 70IP-b do not require licences.

With IP system terminals a distinction is made between hardphones and softphones. Softphones are PC-based applications where speech is produced via a telephone handset, a headset or a Bluetooth device connected to the PC. It is also possible to couple an AD2 system terminal with a softphone.

The IP-relevant settings for Aastra 5360ip/5370ip/5380ip terminals are configurable via the web interface, which considerably reduces the administration work involved for the system administrator. All three hardphones are powered via PoE (Power over Ethernet) or an optional plug-in power supply unit.

Other network terminals (e.g. PC, printer) can be connected directly to an Aastra 5370ip and an Aastra 5380ip via the integrated mini-switch connection, which considerably reduces the amount of LAN (Local Area Network) cabling required.

The features of the IP system terminals Aastra 5360ip, Aastra 5370ip and Aastra 5380ip are identical to those of the AD2 system terminals Aastra 5360,

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Aastra 5370 and Aastra 5380. The hardware however is of course different due to the different connection type. In appearance the terminals can only be differentiated by the different connections on the housing base and the labelling.

Tab. 15 Overview IP system handsets

	Aastra 5360ip	Aastra 5370ip	Aastra 5380ip	Office 1560IP	Office 1600IP	Aastra 2380ip
Interface	IP	IP	IP	IP	IP	IP
Integrated switch for PC	–	✔	✔	PC-based	PC-based	PC-based
Fixed function keys	10	10	10	PC-based	PC-based	PC-based
Freely configurable keys	10	12	–	PC-based	PC-based	PC-based
Number of Fox menus	2	2	3	PC-based	PC-based	PC-based
Navigation key	✔	✔	✔	PC-based	PC-based	PC-based
Display (lines x characters)	1 x 16	5 x 22	7 x 34	PC-based	PC-based	PC-based
Backlit display	–	–	✔	PC-based	PC-based	PC-based
Dialling by name	✔	✔	✔	✔	✔	✔
Private phone book entries	1)	1)	1)	unlimited	unlimited	1)
Entries, unanswered call list	4	10	10	unlimited	unlimited	10
Entries, answered call list	4	10	10	unlimited	unlimited	10
Open-listening function	✔	✔	✔	PC-based	PC-based	PC-based
Hands-free mode	–	✔	✔	✔	✔	PC-based
Headset mode	–	✔	✔	✔	✔	✔
Alpha keyboard (Optional)	–	–	✔	PC-based	PC-based	PC-based
Expansion keypad (Option)	–	1	3	PC-based	PC-based	PC-based
Bluetooth® module (optional)	–	–	✔	PC-based	PC-based	PC-based
Variable tilt angle in the case of desktop installation	✔	✔	✔	PC-based	PC-based	PC-based

1) Up to 350 entries (per user)

See also:

A detailed description of the installation, configuration, commissioning and maintenance of IP hardphones can be found in the "Ascotel® IntelliGate® Net (AIN) and IP Terminals" System Manual. The Office 1560IP and Office 1600IP IP softphones are OIP client applications, and are described in the "Open Interfaces Platform" System manual.

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3. 4. 1 Hardphone Aastra 5360ip

With the exception of the differences mentioned below, the features of the Aastra 5360ip correspond to those of the Aastra 5360 (see page 49).

Fig. 32 Aastra 5360ip

Differences compared with the Aastra 5360:

- IP telephony at an affordable price suitable remote workstations with standard requirements
- Graphics-compatible display with 16 characters (upper and lower case letters) and one symbol line
- Power supply via PoE or plug-in power supply (optional)

3. 4. 2 Hardphone Aastra 5370ip

With the exception of the differences mentioned below, the features of the Aastra 5370ip correspond to those of the Aastra 5370 (see page 50).

Fig. 33 Aastra 5370ip

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Differences compared with the Aastra 5370:

- User-friendly IP all-rounder model suitable for remote workstations
- Integrated mini-switch (10/100 Mbit/s, half/full duplex, auto negotiation) e. g. for connecting a PC.
- Power supply via PoE or plug-in power supply (optional)

Special case of the Office 70IP-b hardphone

The design of the Office 70IP-b is identical to that of the Aastra 5370ip. It replaces the Office 35IP, which is no longer available.

Each Aastra 5370ip ships with the software of the Office 35IP preloaded. This means that the Aastra 5370ip can be logged on to and operated on the system as an Office 35IP. The terminal then becomes an Office 70IP-b. In this case the response and the menu structure are identical to that of an Office 35IP. The menu key, the info key and the END key are permanently allocated on the top three configurable keys.

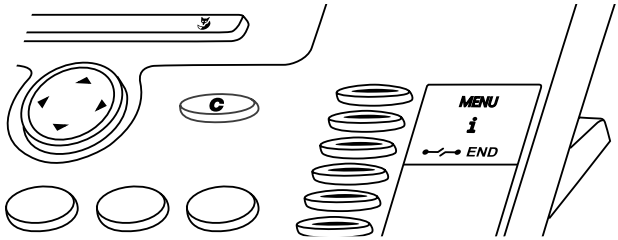

Fig. 34 Permanent allocation of the three configuration keys on the Office 70IP-b

If the Office 70IP-b is logged on to the system as an Aastra 5370ip a software update is automatically initiated. The terminal then becomes an Aastra 5370ip. From then on it can no longer be logged on to the system as an Office 35IP. If this is required nonetheless the Office 35IP software must be reloaded onto the terminal using the IP Update Manager.

Each Aastra 5370ip is supplied with a Quick User's Guide, which refers to its operation as an Aastra 5370ip. For operation as an Office 70IP-b the corresponding Quick User's Guide and a User's Guide can be found at http:// www.aastra.com/docfinder.

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3. 4. 3 Hardphone Aastra 5380ip

With the exception of the differences mentioned below, the features of the Aastra 5380ip correspond to those of the Aastra 5380 (see page 52).

Fig. 35 Aastra 5380ip

Differences compared with the Aastra 5380:

- IP model for more exacting requirements suitable for remote workstations
- Integrated mini-switch (10/100 Mbit/s, half/full duplex, auto negotiation) e. g. for connecting a PC.
- Power supply via PoE or plug-in power supply (optional)

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3. 4. 4 Options for Aastra 5360ip, Aastra 5370ip and Aastra 5380ip

3. 4. 4. 1 expansion keypads

Expansion keypads can be connected to Aastra 5370ip and Aastra 5380ip. They are the same ones as those used for Aastra 5370 and Aastra 5380 (see "Options for Aastra 5370 and Aastra 5380", page 54).

3. 4. 4. 2 Plug-in power supply unit

If the power supply is not provided via PoE (Power over Ethernet), connect a plug-in power supply to the terminal. If one or more expansion keypads are used (Aastra M530/Aastra M535) they are also powered at the same time.

3. 4. 5 Office 1600/1600IP Softphones

The PC-based system terminal Office 1600/1600IP is an OIP Client application. With its user-friendly interface it extends the boundaries of the system terminals, provides powerful group functions and integrates outstandingly well into standard PC programs.

Although designed primarily with small to medium-sized workgroups in mind, the Office 1600/1600IP is also an invaluable companion for individual users with high mobility requirements. With the centralised information management Office 1600/1600IP users have direct access to call lists, phone books, messages, etc., from home, from the company and from anywhere, using a simple connection to the company LAN.

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Fig. 36 Workstation with Office 1600IP

In combination with our call centre solution the Office 1600/1600IP makes for ideal co-operation within a workgroup.

Characteristics of the Office 1600IP:

- Logging in and out within a group
- Time slots for telephone contact follow-up
- Availability of individual call notes for all group members
- Shared call lists
- Advanced team keys
- Supervisor function

From the communication system viewpoint the Office 1600/1600IP is as much an IP system terminal as the Aastra 5360ip/5370ip/5380ip: But unlike the terminals of the Aastra 5300ip family the OIP server signals and controls all the Office 1600/ 1600IP terminals in the network. The IP addressing is also carried out via the OIP server. The control and signalling are carried out in the communication system, where the user data is also stored.

On the Office 1600, voice is transmitted via the AD2 interface of a system terminal; on the Office 1600IP this is done via IP, for example via a headset connected to the PC.

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3. 4. 6 Office 1560/1560IP Softphones

Friendly and efficient, and capable of keeping control even under the most hectic conditions: Those are the qualities people expect of a professional switching centre. All of which is easily achieved with the Ascotel® PC Operator Console, the PC workstation that fulfils virtually every requirement.

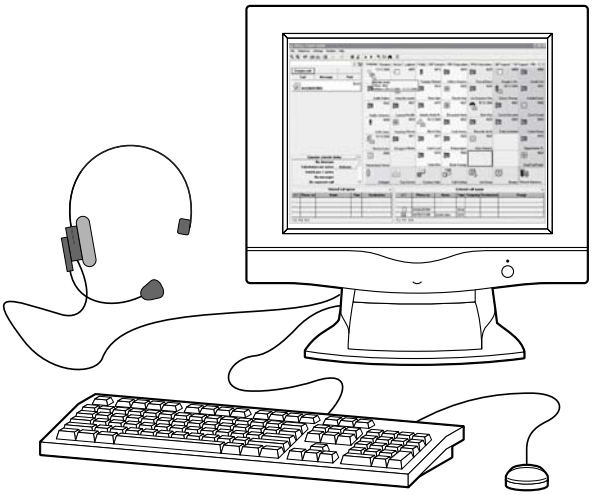

Fig. 37 PC Operator Console workstation

The PC-based system terminal Office 1560/1560IP is an OIP Client application. It can be used either purely as an Office 1560IP IP softphone or, in conjunction with a corded system terminal, as an Office 1560.

In an Ascotel® IntelliGate® Net the Office 1560/1560IP can be used as a network-wide Operator workstation. The only requirement is that all the single systems of the Ascotel® IntelliGate® Net network are connected to an OIP server.

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By integrating operator and information centre functions the PC Operator Console assists telephone attendants in dealing with their many different tasks:

- Switching calls
- Maintaining a clear overview of telephone traffic
- Answering enquiries
- Administering calls

Features of the PC Operator Console:

- Graphic interface
- Mouse and keyboard operation
- Foxkeys
- Busy indicator, dynamical busy indicator, phone book and logbook (modules)
- Call management with internal and external queues
- Feature Wizard (for activating Ascotel® IntelliGate® features)
- Background and foreground mode
- Database concept with import / export and DDE interface to other databases
- Synchronisation with a Microsoft® Exchange server
- Call routing in event of a failure of the PC Operator Console
- Possibility of running several PC Operator Consoles on one single system or an AIN
- All Ascotel® IntelliGate® features are supported.

Recommended for the following areas of application:

- Operator Console
- Information centre
- Frequent phone users
- Department secretary

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3. 4. 7 Aastra 2380ip Softphones

The Aastra 2380ip has so much to offer: all the convenience of a fully fledged telephone, time-saving functions, simple operation and outstanding clarity of information. What's more, it is not a desktop phone, bu an innovative softphone for PCs.

Fig. 38 Workstation with Aastra 2380ip softphone

The Aastra 2380ip is an autonomous softphone that comprises all the functionalities of an enhanced corded phone. It can be used wherever a fully functional VoIP infrastructure is available. Besides the wide range of supplementary functions as a softphone, the scope of available functions is essentially that of a system terminal.

Besides standard and USB headsets, Bluetooth® headsets can also be connected to the Aastra 2380ip. It is also possible to connect a USB handset.

Once the Aastra 2380ip is installed on a laptop and linked up to the company network via VPN, it is ideal for field staff. They themselves can then access all the functions and contacts at all times and are reachable by their colleagues on their usual phone number.

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Other features of the Aastra 2380ip:

- No OIP installation necessary for operation
- Same scope of functions as the Aastra 5380ip
- Operation by mouse click and keyboard
- Displayable keypad
- Displayable expansion keypad for team keys, functions and phone numbers
- Ring tones expandable using .mp3, .mid and .wav files
- Possibility of calling a contact directly from Outlook®

Recommended for the following areas of application:

- User-friendly PC workstations
- Field staff with laptop

3. 4. 8 Older IP system terminals

The system terminal Office 35IP is supported as before (see also "Special case of the Office 70IP-b hardphone", page 66).

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3. 5 Various terminals

3. 5. 1 SIP terminals

Besides IP system terminals Ascotel® IntelliGate® also supports SIP-based IP terminals (SIP terminals). With the integrated SIP protocol SIP terminals (softphones and hardphones) can be connected to the communication system via the Ethernet interfaces and registered as internal users.

Besides the basic functionality the SIP protocol also supports features such as "Call transfer", "Conference calls" and "CLIP/CLIR". */# procedures can also be used to operate various functions. The table in the "Features Overview" Chapter in the "SIP in Ascotel® IntelliGate®" System Manual provides an overview of the functions that can be carried out using SIP terminals.

SIP terminals on Ascotel® IntelliGate® can be split into two groups of terminals:

- SIP terminals of the Aastra 6700i family
  This group comprises the terminals Aastra 6730i, Aastra 6731i, Aastra 6751i, Aastra 6753i, Aastra 6755i and Aastra 6757i. These terminals have strong links with Ascotel® IntelliGate® and can be configured using AIMS. Compared with other SIP terminals, a number of Ascotel® IntelliGate® features are user friendly and menu-prompted. What's more, convenient, automated configuration of these terminals is made possible with the aid of a configuration server integrated in Ascotel® IntelliGate®.
- Other SIP terminals
  They include SIP terminals by Aastra or other manufacturers which do not have strong links with Ascotel® IntelliGate®. They include:
  - Softphones running as an application on a PC.
  - Line-connected hardphones.
  - WLAN and DECT terminals connected with the IP network via an access point.

See also:

More detailed information on the integration of SIP terminals of the Aastra 6700i family in Ascotel® IntelliGate® can be found in the "SIP in Ascotel® IntelliGate®" System Manual. Other documents on these terminals including brochures, User's Guides, installation instructions, etc., can be found at http://www.aastra.com and on your dealer's homepage.

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3. 5. 2 OfficeSuite

The OfficeSuite is a PC operating and configuration application for system terminals connected to the system. It is a user-friendly CTI Client which is installed on the OIP server.

In its new modern design, with a clearly structured user interface, the OfficeSuite broadens the range of possibilities provided by system terminals. A multitude of options and features make for high-quality telephony at the click of a mouse.

The OfficeSuite has a broad functional scope and covers a wide range of applications.

- The Call Manager enables many user-friendly telephone functions.
- The clearly structured journal allows quick access to call lists, messages and personal notes.
- All the available address books and personal contacts can be integrated in the phone book.
- A separate electronic note sheet is available specially for logging call notes during a phone call.
- Configuration of the coupled terminal.
- The presence indicator provides an overview at any time of the current phone and presence status of all required users.
- With the aid of the presence profiles the user can customize his personal and presence-related call routing and be notified individually of the events he wishes to be kept informed about.
- Link with Microsoft® Outlook®: The calendar and the presence indicator are connected via the Exchange link.

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3. 5. 3 Office eDial

Office eDial is a CTI application which can be connected either via the OIP- or the AIF-TAPI service provider. There is also the possibility of integrating the personal phone book of Microsoft® Outlook®. This allows Office eDial to look up the caller's phone number among the contacts of the personal Microsoft® Outlook® address book and, in the event of a match-up, to take over and display the contact data.

3. 5. 4 GSM terminals

Although the communication system does not have a GSM receiver, GSM terminals can be connected to Ascotel® IntelliGate®. The GSM terminal is assigned to a user and can be reached internally using his user number. If the user of the GSM terminal calls a call number specially set up in the communication system, he can carry out certain */# procedures or make internal/external calls. In an AIN that covers several countries this can help save considerable roaming charges.

With the GSM application Aastra Mobile Client for Nokia and Samsung devices, all the main telephony functions are available with menu prompting.

One licence has to be obtained for each GSM terminal.

A separate licence is required for using the Aastra Mobile Client. It includes a licence for integrating a GSM terminal.

For more details on connecting and configuring GSM terminals on Ascotel® IntelliGate® see "Integration of GSM terminals", page 90.

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3. 5. 5 Corded Terminals by Other Manufacturers

On the analogue and S user-network interfaces, appropriate terminal types from Aastra or other manufacturers can be used. For these terminals on the S bus, Ascotel® IntelliGate® also provides a number of ISDN features (see the "ISDN Services Supported by the System" Chapter in the "System Functions and Features" User Manual).

All terminals approved by the network operator can be used on the analogue user-network interfaces. The system supports pulse and frequency dialling modes.

The Ascotel® IntelliGate® features can be operated using */# procedures from ISDN terminals as well as analogue terminals. The table in the "Features Overview" Chapter in the "System Functions and Features" System Manual illustrates the complete spectrum of features and allows comparisons with the system terminals.

3. 5. 6 DECT Terminals by Other Manufacturers

Ascotel® IntelliGate® supports cordless terminals by other manufacturers based on the GAP standard (GAP: Generic Access Profile)

These restricted functions can only be fully utilized if they are implemented in accordance with the GAP standard in both the handsets and the system supplied by the outside manufacturer.

Note:

Restrictions are likely also with regard to the quality of the radio links since mobility management with handover/roaming cannot be influenced where non-system handsets are concerned. In other words, the quality of these functions depends to a large extent on the software of non-system handsets.

9d Handsets Connected to Ascotel® IntelliGate®

The rugged 9d handsets from the Ascom Wireless Solutions product portfolio can also be registered as system terminals on Ascotel® IntelliGate® under the GAP standard or with the *Advanced Messaging* licence. User-friendly messaging and alarm systems can be implemented in combination with the IMS (Integrated Message Server). The following overview shows the features available on the handsets, with and without licence:

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Tab. 16 Features on 9d handsets in GAP mode (without licence)

Features	Remarks
Local handset features	Local phone book, dialling by name, abbreviated dialling, configuration settings, etc.
Display caller's number to the called party (CLIP)	The name is displayed if a name is stored along with the phone number in the local phone book. The calls also appear in the call lists
User and system-specific configurations and activating/deactivating functions using */# procedures.[1)]	e. g. Call Forwarding Unconditional, telephone barring, Follow me, Do not disturb, remote control, control relays, operate switch group, etc.
Suffix dialling functions that can be activated with the Flash key during a call or while a connection is being set up.1)	e. g. enquiry call, brokering, call transfer, conference, call waiting, intrusion, parking, callback, etc.
Handover	Automatic call handover between radio cells

1) Same operation as on analogue terminals

Tab. 17 Additional features on 9d handsets with licence

Features	Remarks
Display caller's name to the called party (CNIP)	The name is provided by the PBX and so does not have to be stored in the local phone book
Display the number / name to the calling party (COLP / CONP)	The number / name is provided by the PBX
Display call charges	Where available, the call charges are indicated at the end of an outgoing call.
Use of Voice Mail functions	Notification on the display of Voice Mail messages received
Date/time synchronisation	Automatic date and time synchronisation after every registration with a system
Group calls	DECT group calls are possible with ordinary user groups. Up to 16 handsets are possible in one user group.

For more information on Ascom Wireless Solutions products see http://www.ascom.com/ws.

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3. 6 Installing, connecting and configuring terminals

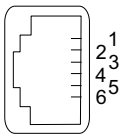
3. 6. 1 AD2 system terminals

Accesses

The connections on the underside of the system terminal are identified by the symbols. The meaning of the symbols is described in the corresponding operating instructions.

AD2 terminal interface

Tab. 18 AD2 interface on the terminal

RJ45 socket	Pin	Signal
	1	—
	2	—
	3	b
	4	a
	5	—
	6	—

Note:
The total length of the cables from the PBX to the system terminal must not be less than 10 m.

Terminal selection

Two system terminals can be connected to an AD2 interface. The PBX can only differentiate the two terminals by the position of the address switch on the terminal. The following settings are possible (TSD = Terminal Selection Digit):

- TSD1
- TSD2

Note:
In the following cases *Not Configured* is displayed along with the node number, the slot number and the port number. In this state the terminal is not ready for operation:

- A terminal has been created at the connected port, but the address selection switch is incorrectly set.
- No terminal has yet been created at the connected port.

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User allocation

Each terminal is allocated to a user in the configuration. If a terminal has been created at the connected port and the address selection switch is correctly selected but no user is allocated to the terminal, the terminal display reads *No Number* and indicates the terminal ID. In this state the terminal is not ready for operation.

Terminal type

The terminal type is specified along with the configuration of the system. when the lines are also assigned to the line keys.

Note:

If the terminal type configured is incorrect, the terminal display shows the warning *Wrong terminal type*. On the Office 10 the LED flashes slowly. In this situation, although the terminal can be used for basic telephone operations, none of the added features will be available. The terminal type must be entered via the AIMS Configuration Manager or on the terminal via login to the PBX.

Carrying out a logon on the terminal:

- Office 10: Press the Foxkey twice.
- All other system terminals: Long keypress (long click) on a function key. *Log on new set* appears next. Confirm with Foxkey *Yes*.

Self-tests for AD2 terminals

Once the terminal has been checked with regard to connections, unlocking, etc., the self-test can be used to detect possible sources of error.

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3. 6. 1. 1 Office 10

The terminal is a desktop model. A wall-mounted bracket is available as an option.

Installation of the desktop model

1. Feed the connecting cable through the strain relief on the handset rest.
2. Position the handset rest as required and put the handset in place.

Installation of the wall-mounted bracket (Option)

1. Feed the connecting cable through the strain relief on the wall-mounted bracket.
2. Screw the wall-mounted bracket onto the wall using the screws supplied and hook the handset into position.

Connection

1. Set the AD2 bus address (Fig. 39).
2. Plug the connector into the socket-outlet.
3. If the system is configured, test the operation of the terminal.
4. Label terminal.

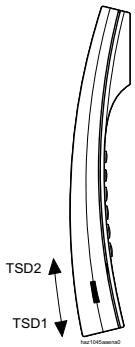

Fig. 39 Set the AD2 bus address

Note:
Make sure the TSD (address switch) is pushed in as far as the stop or the switchover will not function correctly.

Power supply

The terminal is powered via the AD2 line.

3. 6. 1. 2 Office 25, Office 35, and Office 45/45pro

These terminals are desktop models. A wall-mounted bracket is available as an option for Office 25 and Office 35.

Installation of the desktop model

Connect the handset cord and the phone cord to the terminal as indicated in the operating instructions.

Installation of the wall-mounted bracket (Option)

The wall assembly set consists of a baseplate, a wall plate and fastening screws (see Fig. 40).

1. Secure the wall plate to the wall using the three longer screws. Feed the cord through the middle opening on the wall plate (see ①).
2. Remove the 4 plastic feet on the underside of the terminal (see ②).
3. Secure the baseplate of the wall assembly set to the underside of the terminal using the 2 shorter screws (see ③).
4. Suspend the baseplate with the terminal onto the wall plate from above (see ④) and tilt downwards until it snaps into place (see ⑤).
5. Plug the phone cord into the terminal (see ⑥).

Connection

1. Set the AD2 bus address under the terminal's designation label.
   - TSD1 = Address switch not pressed (disengaged)
   - TSD2 = Address switch pressed (engaged)
2. Plug the connector into the socket-outlet.
3. If the system is configured, test the operation of the terminal.
4. Label the terminal as indicated in the operating instructions.

Expansion keypad EKP and alphanumerical keyboard AKB

The connection of the expansion keypads and the alphanumerical keyboard to Office 35 and Office 45 is described in the relevant operating instructions.

Power supply

The terminals are powered via the AD2 line (exception: Office 45pro).

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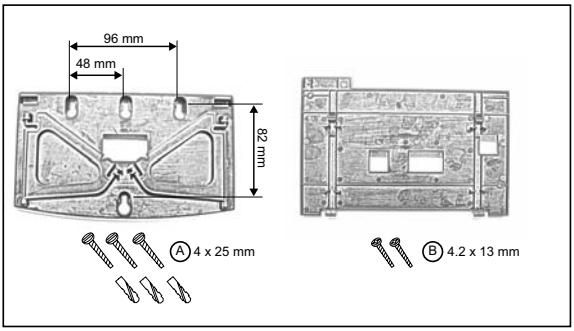

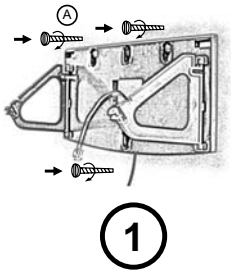

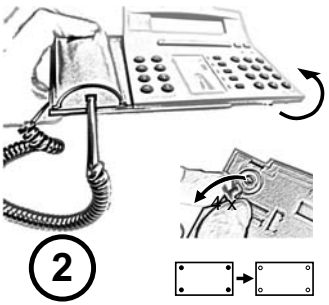

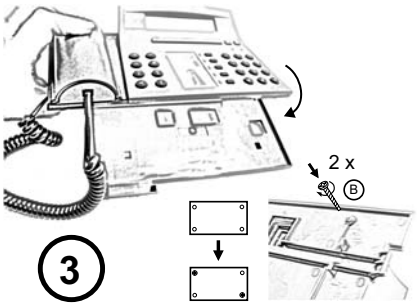

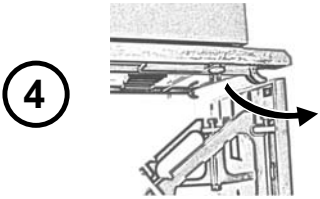

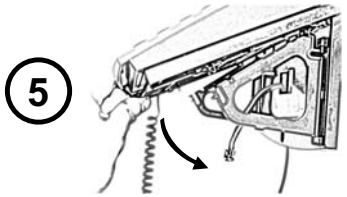

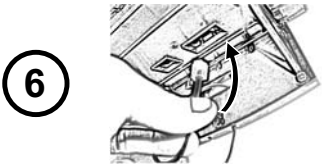

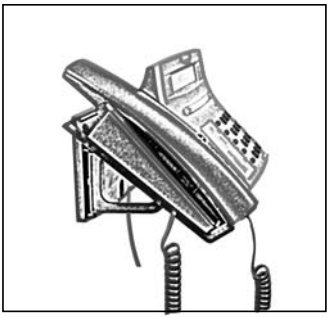

Fig. 40 Wall mounting of Office 25 and Office 35

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Self-test Office 25

1. Unplug the terminal connecting line from the connection socket; with the Foxkey on the outer left pressed down, reconnect the terminal connecting line. Once the self-test mode has started, release the Foxkey.

   All the display symbols appear.
2. Test keys: Pick up the handset and press one key after the other.
   Each keystroke generates a tone in the loudspeaker.
3. To exit the self-test mode, unplug then reconnect the terminal connecting line.

Should any irregularities occur during the self-test, contact a specialist.

Self-test Office 35, Office 45 Alpha Keyboard and Expansion Keypad

1. Unplug the terminal connecting line from the connection socket; with the Foxkey on the outer left pressed down, reconnect the terminal connecting line. Once the self-test mode has started, release the Foxkey.

   The LEDs go on and off, and the display symbols alternate periodically between lit and off.
2. With the handset off-hook, blow into the microphone.

   The microphone and earpiece are connected with each other; the noise can be heard in the earpiece.
3. Press the loudspeaker key.

   The hands-free microphone is briefly connected with the earpiece and the ambient noise is audible.
4. Test keys: Pick up the handset and press one key after the other.

   Each keystroke generates a tone in the loudspeaker.
5. Test the AKB and EKP supplementary equipment:

   All the LED displays on the connected supplementary equipment are flashing. Test keys: Press one key after the other.

   Each keystroke generates a tone in the loudspeaker. Pressing the keys "Shift", "Control" and "Alt" does not generate a tone.
6. To exit the self-test mode, unplug then reconnect the terminal connecting line.

Should any irregularities occur during the self-test, contact a specialist.

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3. 6. 1. 3 Aastra 5360, Aastra 5370, and Aastra 5380

These AD2 terminals can be both desktop-mounted and wall-mounted.

Installation

The following points are described in detail in the User's Guides for Aastra 5360/ 5370/5380:

- Set-up as a desktop phone (choice of two different set-up angles)
- Wall mounting
- Connecting one or more Aastra M530 or Aastra M535 expansion keypads.

Bluetooth® module

The Aastra 5380 can also be equipped with a Bluetooth® module as an option. To install (see Fig. 41), proceed as follows:

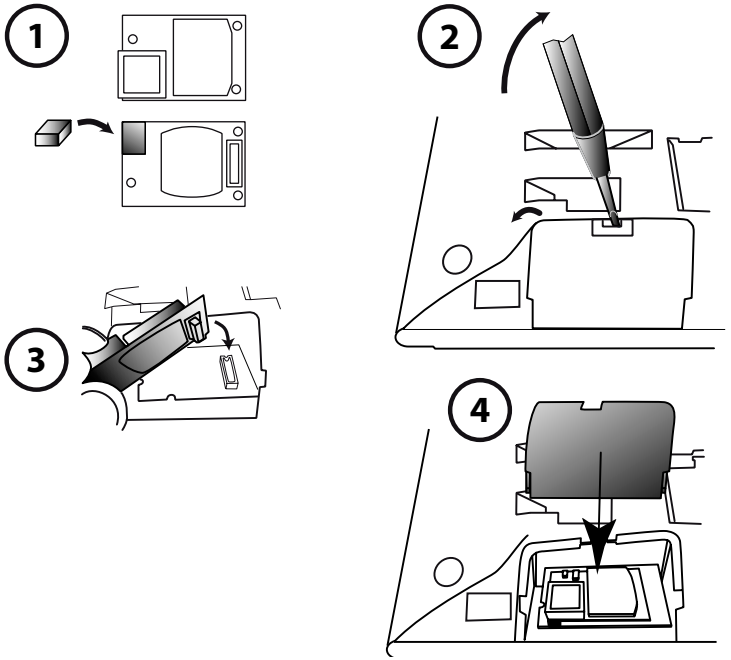

Fig. 41 Assembly of the Bluetooth® module

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Warning
The system's reliability can be adversely affected by electrostatic discharges caused by touching electronic components and elements, and subsequent damage can result. Always observe the ESD guidelines.

1. Fit foam spacers on the connector side of the Bluetooth® module (for the position of the foam spacer see ①). The spacer ensures that the Bluetooth® module sits securely.
2. Carefully remove the cover for the Bluetooth® module on the underside of the terminal using a suitable screwdriver (see ②).
3. Connect the Bluetooth® module. Make sure it is securely fitted (see ③).
4. Fit the cover for the Bluetooth® module back into place and press home until it snaps into place (see ④).

Connection

1. Setting the AD2 bus address on the terminal's underside:
   - TSD1 = address switch on position 1
   - TSD2 = address switch on position 2
2. Plug the connector into the socket-outlet.
3. If the system is configured, test the operation of the terminal.
4. Label the terminal as indicated in the operating instructions.

Power supply

The Aastra 5360, Aastra 5370 and Aastra 5380 terminals are normally powered via the AD2 bus. However there are several reasons that require powering with a plug-in power supply:

- Long line
- 2 terminals on the same bus
- 1 or more expansion keypads on the terminal
- Terminal power supply of the PBX is overloaded

Only use the corresponding plug-in power supply unit with FCC connector available as an option. It is connected either to the terminal itself or, when using one or more expansion keypads, on the last expansion keypad. The power available on the AD2 bus depending on the line length and the wire diameter, and the power input of the terminals are described in the "Ascotel® IntelliGate® 150/300" and "2025/2045/2065" System Manuals.

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3. 6. 2 DECT terminals Office 135/135pro, Office 160pro/ Safeguard/ATEX and terminals of the family Aastra 600d

Installation

The assembly of the charging bay and the handsets is described in the corresponding operating instructions.

Locations

The locations determined for the handsets and charging bays during the planning phase need to be checked against the following criteria:

Radio operation is affected by the following influences:

- Outside interference (EMC)
- Obstacles in the surrounding area affect the radio characteristic

To achieve optimum conditions for radio operation, observe the following points:

- Optimum radio operation depends on the radio unit → handset line of sight.
- Walls act as an obstacle to the propagation of radio waves. Losses depend on the wall thickness, construction material and reinforcement used. Do not place handsets near metal partitions.
- Do not place charging bays and handsets in the immediate vicinity of TV sets, radios, CD players or power installations (for reasons of EMC, e. g. distribution boxes, rising power lines).
- Do not place charging bays and handsets near X-ray installations (EMC).
- Minimum distance between handsets for fault-free operation: 0.2 m.
  Note: The charging bays of the Office 135 can be linked using connecting strips. However, operating several phones on interconnected charging bays can lead to malfunctions.

See also:

The planning and configuration of the DECT system, the installation of DECT radio units, and the logging on and off of handsets can be found in the "Ascotel® DECT Systems" System Manual.

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3. 6. 3 IP system terminals Aastra 5360ip, Aastra 5370ip, Aastra 5380ip

These IP terminals can be both desktop-mounted and wall-mounted.

Installation

The following points are described in detail in the User's Guides for Aastra 5360ip/ 5370ip/5380ip:

- Set-up as a desktop phone (choice of two different set-up angles)
- Wall mounting
- Connecting one or more Aastra M530 or Aastra M535 expansion keypads
- Connection to the LAN and possibly to the power supply

The Aastra 5380ip can also be equipped with a Bluetooth® module as an option. The assembly procedure is the same as for an Aastra 5380 and as described on page 85.

Power supply

The Aastra 5360ip, Aastra 5370ip and Aastra 5380ip terminals are powered either via a plug-in power supply unit or via Power over Ethernet (PoE).

Plug-in power supply unit:
Only use the corresponding plug-in power supply unit with jack socket available as an option.

Power over Ethernet (PoE):
The terminals support PoE in accordance with the IEEE 802.3af standard, i. e. the power supply is provided either via the data lines (Variant 1) or via the free lines (Variant 2), but not via both.

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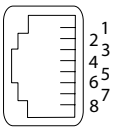
Tab. 19 Power over Ethernet

RJ45 socket	Pin	Signal	PoE power supply (Variant 1)	PoE power supply (Variant 2)
	1	Rx	DC+	—
	2	Rx	DC+	—
	3	Tx	DC-	—
	4	—	—	DC+
	5	—	—	DC+
	6	Tx	DC-	—
	7	—	—	DC-
	8	—	—	DC-

Depending on the power requirements different classes are defined in the IEEE 802.3af standard. The following table provides information on the class allocation of the IP system terminals.

Tab. 20 PoE class allocation

Class	Max. load, PSE[1)]	Max. power requirement, PD[2)]	Terminals
1	4.0 W	0.44...3.84 W	Aastra 5360ip, Office 70IP-b[3)]
2	7.0 W	3.84...6.49 W	Aastra 5370ip[4)], Aastra 5380ip[5)]
3	15.4 W	6.49...12.95 W	

1) PSE (Power Source Equipment) = power supply device, e. g. a switch

2) PD (Powered Device) = power consumer, e. g. an IP system terminal

3) No expansion keypad can be connected to an Office 70IP-b, which is why it falls into Class 1.

4) including an Aastra M530 or Aastra M535 expansion keypad

5) including up to three Aastra M530 or Aastra M535 expansion keypads

Configuration and commissioning

The configuration (addressing) and commissioning of the IP terminals is described in the "Ascotel® IntelliGate® Net and IP Terminals" System Manual.

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3. 6. 4 Office 1560/1560IP, Office 1600/1600IP, OfficeSuite and Office eDial

These softphone applications are OIP applications. The operating requirements and installation instructions are described in the "Open Interfaces Platform" System Manual.

3. 6. 5 Aastra SIP terminals Aastra 6751i, Aastra 6753i, Aastra 6755i and Aastra 6757i

The registration of Aastra SIP terminals and SIP terminals by other manufacturers as internal users is described in the "SIP in Ascotel® IntelliGate®" System Manual.

3. 6. 6 Integration of GSM terminals

One *GSM Terminals* licence is needed per terminal for the integration of GSM terminals. There are two steps to GSM terminal integration, which contains the following features:

Integration step 1

- The GSM terminal is assigned to a user and can be reached internally using his user number.
- If the integrated GSM user is assigned a direct dialling number, he can also be reached from the outside.
- The status of the integrated GSM user is monitored and displayed internally (e. g. on team keys). This is of course possible only for GSM users who are "logged in" or for calls to integrated GSM users set up via the internal user number.
- If the integrated GSM user calls an internal user on his direct dialling number, the called party is shown the CLIP of the integrated GSM user's internal call number.
- The external user of the GSM terminal can dial in using specially set-up direct dialling numbers for which *GSM integration* is configured as the CDE destination; once the external user has been authenticated he obtains the internal dialling tone. He can then carry out specific */# procedures in prefix dialling or make internal/external calls. Several such direct dialling numbers can be set up for each PBX or AIN. This can help to save considerable roaming charges in an AIN that covers several countries.

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Integration step 2

Suffix dialling procedures such as enquiry calls or setting up a conference are also possible. This requires special DTMF receivers which must be activated throughout the connection. This in turn requires DSP resources. This means that the following prerequisites are needed so that the functions of integration step 2 can be used:

- The number of DTMF receivers required must be covered with GSM channels in the DSP configuration (CM_1_1_2, *DSP configuration* tab). The number of assignable GSM channels differs depending on the system and the DSP (see "Ascotel Intelligate 150/300 and 2025/2045/2065) System Manual).
- If all GSM channels are busy, the functions of integration level 2 for the current call connection are not available.
- The enhanced functionality must be assigned to each GSM terminal in the terminal configuration (CM_3_2_2, *GSM settings* tab, parameter *Enhanced functionality* = *Yes*).

Note:

With 20x5 systems the functions of integration level 2 are not available in the following case: In the case of connections in which the GSM user is connected via an analogue network interface and the GSM channel is provided on a DSP-01, DSP-02 or DSP-04 card.

Ascotel® IntelliGate® Net:

The DSP resources must be made available at the node through whose network interface there is a PBX–GSM terminal connection.

See also:

An overview of the supported */# procedures of integration levels 1 and 2 can be found in the "GSM terminal on Ascotel IntelliGate" User's Guide.

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Automatic authentication of the GSM user

If the parameter *CLIP authentication* is set on *Yes* the GSM user is automatically authenticated by means of the CLIP, and the user obtains the internal dialling tone after a ring-back tone.

Note:

For security reasons automatic authentication is not used with "Break-in" or "Special Arrangement" situations as the incoming CLIP is not PSTN-verified in such cases. There may be cases however (especially with SIP providers) where the CLIP is received as "verified" when in fact it is not. An unauthorized person can then dial into the PBX and make calls or carry out certain */# procedures. After a first start automatic authentication is switched off.

In the case of a connection via analogue or SIP network interfaces the CLIP is normally received "unchecked". To allow automatic authentication of the GSM user nonetheless, the parameter *Allow GSM-CLIP authentication even if CLIP is unchecked* must be configured to *Yes* in the corresponding trunk group (initialization setting = no).

Manual authentication of the GSM user

If the parameter *Use CLIP for authentication* is set on *No* the GSM user is authenticated manually as follows:

1. The user of the GSM terminal dials a direct dialling number specially set up.
2. He obtains: a ring-back tone followed by a special authentication tone.
3. Input: <Internal user number> * <user PIN> #
4. He obtains: Internal dialling tone
5. The GSM user can now make an internal/external call or carry out */# procedures.

Note:

For both automatic and manual authentication the user PIN must be changed first. The initialization value "0000" is not permitted.

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System configuration

Tab. 21 Configuration in AIMS

Parameter	Parameter value	Remarks
Route	<Route number>	• This route is used if the GSM user's internal call number is dialled and an external call is then made to the stored call number.
External GSM call number	<Call number>	• The terminal's external call number in the GSM network is entered here.
CLIP authentication	<*Yes* / *No*>	• If this parameter value is set on *Yes*, the call number and password do not have to be entered to authenticate the GSM user.
CLIP selection	<*Normal* / *CLIP from User*>	• This parameter influences the CLIP display to the GSM user dialled via his internal call number.
Enhanced functionality	<*Yes* / *No*>	• The enhanced functionality requires DSP resources (GSM voice channels).
Allow CLIP authentication even if CLIP is unchecked	<*Yes* / *No*>	• Trunk group setting: Allows the automatic authentication of the GSM user via analogue or SIP network interfaces.
Allow enhanced GSM functionality for directly incoming calls	<*Yes* / *No*>	• Trunk group setting: Allows the use of features of integration level 2 if GSM integration is made with separate lines to the GSM provider (depends on the provider).
MWI route	<Route number>	• Route for MWI signalling (new Voice Mail voice message) to the integrated GSM user.
MWI CLIP	<CLIP No.>	• The CLIP for MWI signalling (new Voice Mail voice message) to the integrated GSM user is entered here. (input format the same as an external call number e. g. 00326553827). The CLIP is transmitted in accordance with the *Transit CLIP format* parameter for trunk group settings.

Note:

In the case of an external call to an integrated GSM user the caller's CLIP is always transmitted as redirecting information to the GSM terminal. This also applies to external calls to a user who has redirected to an integrated GSM user. In this case the parameter *Send redirecting information* must be set on *Yes* in the trunk group settings and "Special Arrangement" must be activated by the network provider.

Tip:

The GSM integration described above is not limited to GSM terminals; it can be used in principle for any external users.

See also:

A separate User's Guide is available for GSM terminals on Ascotel® IntelliGate®. It includes an overview of the functions that can be carried out using GSM terminals.

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Aastra Mobile Client

The Aastra Mobile Client is a GSM application for Nokia and Samsung devices. It means that the main telephony functions are available through menu prompting.

One *GSM Terminals with Aastra Mobile Client* licence is required for each Aastra Mobile Client. This licence also comprises a *GSM Terminals* licence.

To set up an Aastra Mobile Client, proceed as follows:

1. Purchase a *GSM Terminals with Aastra Mobile Client* licence and enter the licence code in AIMS. In addition to the licence code an Aastra Mobile Client access code is also printed out. You will need this access code later on for the Aastra Mobile Client administration (see item 9).
2. Configure a sufficient number of GSM channels in the DSP configuration.
3. In the direct dialling plan configure a direct dialling number with *GSM integration* as the CDE destination.
4. Create a user and assign him a GSM terminal.
5. Change the PIN of the user you have just created.
6. Configure the terminal data of the GSM terminal in AIMS in accordance with Tab. 21. The *Enhanced functionality* parameter must be set to *Yes*.
7. Restart the PBX to activate the licence and the changes to the DSP configuration.
8. On the licence server start the Aastra Mobile Client administration.
9. Enter the EID No. and the Aastra Mobile Client access code (see item 1).
10. Configure the parameter for the Aastra Mobile Client as shown in Tab. 22 by clicking the *Edit* button. Overlapping parameters must match the AIMS configuration.
11. Save and transmit the data and click the "+" button to expand the view.
12. Click the *Send download link* button to send an SMS with a download link for the Aastra Mobile Client to the GSM terminal.
13. Install the Aastra Mobile Client on the GSM terminal.
14. Click the *Send licence* button to send an SMS with the licence to the GSM terminal.
15. Restart the Aastra Mobile Client on the GSM terminal to activate the licence.

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16. Click the *Send configuration* button to send an SMS with the Aastra Mobile Client configuration to the GSM terminal.

17. Restart the Aastra Mobile Client on the GSM terminal to activate the configuration.

The Aastra Mobile Client is now set up and ready for you to use.

Tab. 22 Configuration in the Aastra Mobile Client Administration on the licence server.

Parameter	Parameter value	Remarks
GSM number	<GSM call number>	• GSM call number in canonical format (e. g. +41793130688).
Mobile phone type	<Select the mobile phone type from the list>	• All the mobile phone types currently supported are listed.
PBX dial-up access	<DDI number>	• Direct dialling number specially set up in canonical format, with *GSM integration* configured as CDE destination (e. g. +41326553867).
DTMF delay [ms]	<Delay time>	• Delay time after connection setup until the Aastra Mobile Client sends DTMF characters.
Description	<Name of the GSM user>	• Free text field
Auto login	<Check box>	• Activate for automatic authentication with CLIP. • Deactivate for manual authentication with entering the user number and user PIN.
User call number	<User call number>	• Internal user allocated the GSM terminal in the PBX.
PIN	<User PIN>	• PIN of the user allocated the GSM terminal in the PBX.
Force	<Check box>	• Activate if the PIN is to be transmitted automatically. • Deactivate if manual PIN input is required.
Enhanced DTMF	<Check box>	• Activate if the GSM provider supports the DTMF characters "ABCD". In this case the call numbers are transmitted to the PBX in canonical format. Dialling is then quicker.
Exchange access, Business	<Exchange access digit	• Digit defined in the PBX's numbering plan for *Exchange access, Business*. Used to replace the "+" of the canonical call number if the *Enhanced DTMF* parameter is not activated.
International prefix	<International prefix>	• Used to replace the "+" of the canonical call number if the *Enhanced DTMF* parameter is not activated.
MWI CLIP	<CLIP No.	• CLIP for MWI signalling (new Voice Mail voice message) to the GSM user in canonical format (e. g. +41326553827).
Voice Mail No.	<Voice Mail No.>	• Internal number of the Voice Mail system (e. g. 899). • If no number is configured, the *Voice Mail* function is not offered on the Aastra Mobile Client.

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Parameter	Parameter value	Remarks
Personal call routing	<Check box>	• Activate if personal call routing is used in a One Number configuration. • If the check box is deactivated, the *Personal call routing* function cannot be selected on the Aastra Mobile Client.
Take number	<User number>	• If a user number is configured here, a call made to that user can be taken on the Aastra Mobile Client during the ringing phase or during a call using the *Take* function. • If no user number is configured, the *Take* function is not offered on the Aastra Mobile Client. • A user's own number can also be entered in a One Number configuration.
Redkey	<Parameter>	• If the system is connected to an alarm server via ATAS, the *Redkey* function can be used to trigger an alarm. The parameter is added to the alarm and may contain up to 32 characters/digits. • If the parameter remains blank, the *Redkey* function is not offered on the Aastra Mobile Client.
Hide settings menu	<Check box>	• Activate if you do not want the menu in *Options* / *Settings* to be visible on the Aastra Mobile Client.

See also:

A separate User's Guide is available for the Aastra Mobile Client. It contains a list of the Nokia and Samsung devices supported as well as a short description of the telephony functions provided that can be operated using menu keys.

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3. 7 Malfunction

3. 7. 1 Malfunctions of the terminals in general

Tab. 23 Malfunctions on the terminal side

Error description	Error cause / error handling
Terminals with configurable dialling method experience sporadic malfunctions whenever control key is pressed.	System earth must not be connected on terminals configured for MFV / DTMF (double signalling on Flash / earth key).
Analogue terminals do not obtain a dial tone when off-hook.	No terminal has been created on the connected port or the terminal created has not been allocated to a user. • Create a terminal and allocate a user • Check installation or connecting cable
AD2 system terminals display *Not Configured* along with the node number, the slot number and the port number.	No terminal has yet been created on the connected port or an incorrect terminal selection digit (TSD) has been allocated to the terminal: • Check the configuration of the PBX and terminal • Check installation or connecting cable
System terminals do not obtain dial tone when seizing a line; display reads *Not available*.	PBX is prebarred • Unlock PBX • Replace terminal or expansion card if necessary

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3. 7. 2 Malfunctions of the DECT handsets

Tab. 24 Malfunctions of the DECT handsets

Error description	Error cause / error handling
No display.	• Switch handset on and test • Replace or charge battery
No radio link to radio unit; no aerial symbol.	Check coverage area (within range of a radio unit). • Check radio units in this section Handset not logged on to system • Log handset on
Impossible to dial.	Keypad blocked (keylock) • Reactivate keypad
No dial tone.	• Check radio units in this section
Poor connection quality (echo effect).	• Activate echo compensation
Handset beeps approx. every 10 s during a call (or in standby) while battery indicator is flashing.	• Replace battery immediately, either after or during the call (see handset operating instructions)
Call breaking up.	You are moving out of range. • Find a location with a better radio contact
A handset is called from a different system terminal, but cannot be reached.	Busy tone obtained and display reads *Busy* • Handset is busy Congestion tone obtained and display reads *Circuit overload* • All radio channels busy If congestion tone is obtained after 8 seconds and display reads *No answer*. Reasons why handset could not be reached: • Handset switched off • Handset not within reachable radio area • No radio channels currently available • Handset not logged on to system • Call diverted due to unobtainable
Handset not ringing.	• Activate tone ringing
Handset cannot be configured; PIN missing (or forgotten).	• Reset PIN using AIMS (overwrite)

3. 7. 3 Malfunctions of the DECT charging bays

Tab. 25 Malfunction of the DECT charging bay Office 135

Error description	Error cause / error handling
Handset will not charge.	• Connect power supply • Check the charging contacts • Check battery and replace if necessary. About the charging process: • Battery symbol on handset flashes when battery is being charged. • Check tone indicates correct contact.

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Tab. 26 Malfunction of the DECT charging bay Office 160

Error description	Error cause / error handling
Handset will not charge.	• Connect power supply • Check the charging contacts • Check battery and replace if necessary. • Display on the charging bay should light up or flash when handset is in place. About the charging process: • Display on the charging bay lights up red when battery is charging and green when battery is fully charged. • Check tone indicates correct contact.

See also:

Malfunctions relating to the DECT radio units, overload code displays and the status display of the DECT system are described in the "Ascotel® DECT Systems" System Manual.

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3. 8 Operation of the system terminals

3. 8. 1 Digit key assignment on system terminals

Digit key assignment depends on the family of system terminals and the language set for the PBX.

The following Latin script assignment for the digit keys applies to the system terminals Office 35 / Office 45/45pro / Aastra 5360ip / Aastra 5370/5370ip / Office 135/ 135pro and all models of Office 160 for all PBX languages with the exception of Greek:

Tab. 27 Latin-script digit key assignment

1	-.?1!,:;'"¿¡ -.?1!,:;'"¿¡
2 ABC	A B C 2 Ä Æ Å Ç a b c 2 ä æ å à ç
3 DEF	D E F 3 É d e f 3 é è ê
4 GHI	G H I 4 g h i 4 ì
5 JKL	J K L 5 j k l 5
6 MNO	M N O 6 Ñ Ö Ø m n o 6 ñ ö ø ò
7 PQRS	P Q R S 7 p q r s 7 ß
8 TUV	T U V 8 Ü t u v 8 ü ù
9 WXYZ	W X Y Z 9 w x y z 9
0	+ 0 + 0
*	* / ( ) < = > % £ $ ¤ ¥ ¤ @ & § * / ( ) < = > % £ $ ¤ ¥ ¤ @ & §
#	Space # Space #

On the Office 160 system terminal the space character is stored under digit 0 and the special characters are stored under the #-key instead of the *-key.

The Office 25 and Aastra 5360 terminals does not have an graphics-compatible display and therefore cannot display all the characters featured (see also the corresponding Operating Instructions).

The following Latin script assignment for the digit keys applies to the system terminals Office 35 / Office 45/45pro / Aastra 5360ip / Aastra 5370/5370ip / Office 135/ 135pro and all models of Office 160 if the PBX language is set to Greek. Greek letters are always displayed in upper case on the terminal displays:

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Tab. 28 Greek-script digit key assignment

	-.?1!,:;'" -.?1!,:;'"
	Α Β Γ 2 A B C Α Β Γ 2 a b c
	Δ Ε Ζ 3 D E F Δ Ε Ζ 3 d e f
	Η Θ Ι 4 G H I Η Θ Ι 4 g h i
	Κ Λ Μ 5 J K L Κ Λ Μ 5 j k l
	Ν Ξ Ο 6 M N O Ν Ξ Ο 6 m n o
	Π Ρ Σ 7 P Q R S Π Ρ Σ 7 p q r s
	Τ Υ Φ 8 T U V Τ Υ Φ 8 t u v
	Χ Ψ Ω 9 W X Y Z Χ Ψ Ω 9 w x y z
	+ 0 + 0
	* / ( ) < = > % £ $ ¤ ¥ ¤ @ & § * / ( ) < = > % £ $ ¤ ¥ ¤ @ & §
	Space # Space #

On the Office 160 system terminal the space character is stored under digit 0 and the special characters are stored under the #-key instead of the *-key.

The Office 25 and Aastra 5360 terminals does not have an graphics-compatible display and therefore cannot display all the characters featured (see also the corresponding Operating Instructions).

Note:

If only the language of the terminal and not the PBX language is set to Greek, only the static and dynamic menus will appear in Greek letters on the terminal. In such cases it is not possible to key in Greek letters or to edit texts in Greek letters (e.g. run alpha dialling, edit private phone book, etc.)

3. 8. 2 Alphanumerical keyboard (AKB)

The alpha keyboard for Office 35 and Office 45 is available in 2 variants, which differ in the keypad printing.

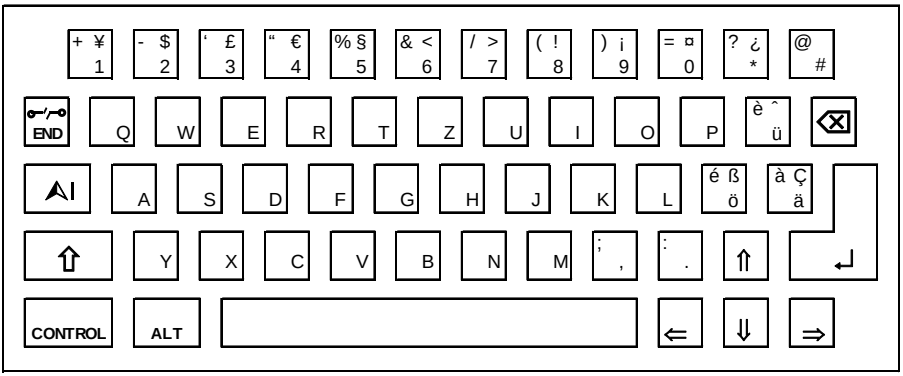

Fig. 42 AKB QWERTZ

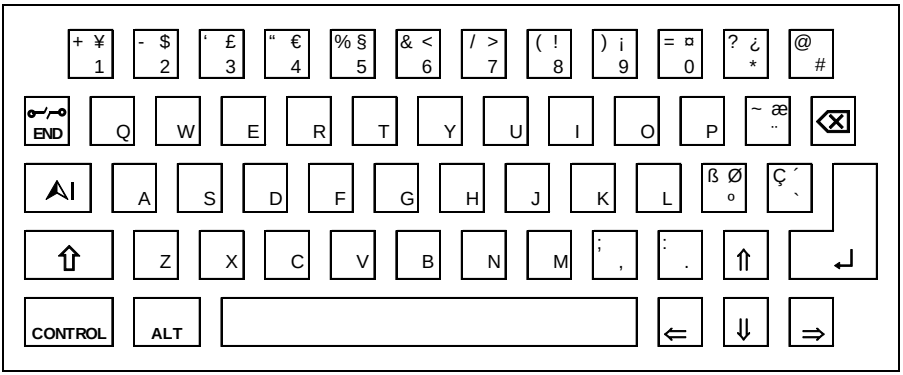

Fig. 43 AKB QWERTY

If an alpha keyboard (QWERTZ or QWERTY) is connected to a PBX that is set to Greek, the following keyboard assignment applies:

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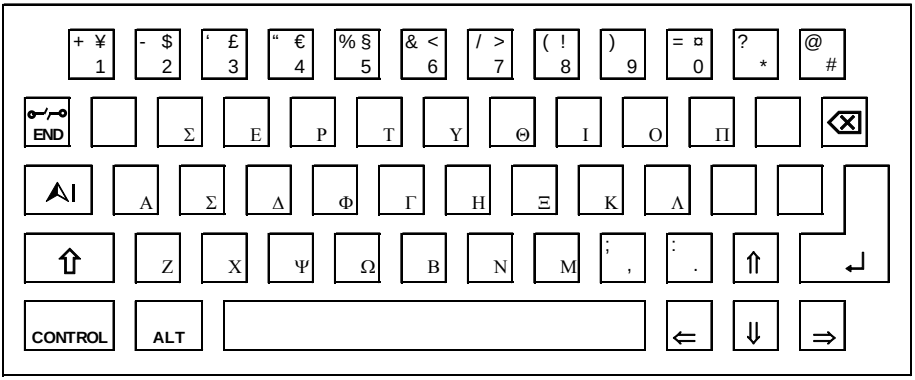

Fig. 44 Greek keyboard assignment

Note:

The keyboard can be switched from Greek to Latin using "Alt Tab" subject to certain restrictions with regard to special characters. This means that Latin characters can be keyed in via the AKB even though the PBX language is set to Greek.

3. 8. 3 Alpha keyboard Aastra 5380/5380ip

The integrated alpha keyboard on the Aastra 5380/5380ip is available in QWERTY version only. The special characters can be called up using the "Ctrl" key and the "Shift" key.

Tab. 29 Integrated alphanumerical keyboard Aastra 5380/5380ip

Key	<Key>	Shift + <key>	Ctrl + <Key>	CTrl + Shift + <Key>
A	a	A	ä á à â ã å æ	Ä á à â Ã Å Æ
B	b	B		
C	c	C	ç	Ç
D	d	D		
E	e	E	é è ê ë	É è ê Ë
F	f	F		
G	g	G		
H	h	H		
I	i	I	ï í ì î	ï í ì î
j	j	j		
K	k	K		
L	l	L		
M	m	M		
N	n	N	ñ	Ñ
O	o	O	ö ó ò ô õ ø	Ö ó ò ô Õ Ø
P	p	P		
Q	q	Q		
R	r	R		
S	s	S	ß	
T	t	T		
U	u	U	ü ú ù û	Ü ú ù û
V	v	V		
W	w	W		
X	x	X		
Y	y	Y	ÿ	
Z	z	Z		
@	@	@		
+	+	+	- . ? ! , : ; . " / \ ( ) = < > % £ $ õ ¥ ª & § ¿ ¡	

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3. 8. 4 Function commands (macros)

Function commands are used mainly for automatically activating / deactivating features using the function keys of the system terminals. The following function commands are available:

Tab. 30 Function commands for system terminals

Function command	Meaning
"A"	Seize line with maximum priority[1)]
"I"	Seize line
"X"	Disconnect
"P"	Pause 1 second before next action
"Lxx"	Seize line xx (line keys)[1)]
"N"	Enter call number keyed in during call preparation
""	Control keys function
"Z"	Activate / deactivate DTMF mode (tone dialling)
"R"	Use call number last dialled
"Y"	End call and reseize line [2)]

1) Available only with the key telephones.

2) Not available for Office 10.

The function commands can be stored directly on the system terminals or on the function keys via AIMS.

Note:

As the Office 10 does not have a text mode, only 3 function commands can be stored on function keys on this terminal. The 3 function commands are entered using the following keys:

Tab. 31 Function commands on function keys Office 10

	Pause 1 second before next action
	Control keys function
	Activate / deactivate DTMF mode (tone dialling)

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4 Technical Data

4. 1 Network interfaces

The following technical data applies to the network interfaces:

Basic Access T

- Standard Euro ISDN interface as per CTR-3
- Configurable for point-to-point or point-to-multipoint operation

Analogue network interfaces

- Voice path with A/D and D/A conversion (standard PCM, A-law)
- Transmission as per ES 201 168 (level country-specific)
- Signalling as per TBR 21
- Pulse or DTMF dialling, Flash signal
- Loop current detection
- Call charge receive 12 or 16 kHz (frequency and level setting country-specific)
- CLIP detection in accordance with ETS 300 778-1 (only A150/300)

4. 2 Terminal interfaces

The following technical data applies to the terminal interfaces:

Digital terminal interface AD2

- Proprietary interface, two-wire
- 2 system terminals per interface
- Power supply min. 75 mA, limiting at approx. 80 mA, terminal voltage 36...41 V
- Line termination in the terminal
- Transparent transmission of 2 PCM channels

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Digital terminal interface S

- Standard Euro ISDN interface
- Phantom power supply min. 140 mA, limiting at approx. 170 mA, terminal voltage 36...41 V

a/b analogue terminal interface

- Voice path with A/D and D/A conversion (standard PCM, A-law)
- Transmission as per ES 201 168 (level country-specific)
- Constant current loop supply approx. 25 mA (with loop resistances $\leq$ 1000 Ω)
- Leerlaufspannung der Schnittstelle je nach Hardware-Version 38...58 V. Bei Konfiguration als Türe kann die Leerlaufspannung je nach HW-Version auf 24...30 V sinken.
- Receive pulse or DTMF dialling
- CLIP display:
  - A150/300: CLIP will be supported on all analogue terminal interfaces as of I7.6 MR2. However different CLIPs can only be sent to 2 analogue terminals simultaneously.
  - 2025/2045/2065: Depending on the hardware version:
    Interfaces on 2025/2045 mainboard: As of version "-4")
    Interfaces on expansion cards: As of version "-3")
- Ringing supply 40...43 V 50 Hz at load 4 kΩ; no DC voltage overlay (country-specific versions also with 25 Hz)
- No control key detection
- No charge signalling pulses

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4. 3 System terminals

Tab. 32 AD2 system terminals

	Office 10, Office 25, Office 35, Office 45/45pro, Aastra 5360, Aastra 5370, Aastra 5380
Ambient temperature in operation	0 °C to 40 °C
Relative humidity in operation	30 % to 80 %
Admissible storage temperature	-25 ° to 45 °C
Power input	See the table for "Average Power Requirements of Terminals" and "Maximum Power Requirements of Terminals on AD2 Bus" in the Ascotel® 2025/2045/2065 or Ascotel® 150/300 System Manuals

Tab. 33 IP system handsets

	Aastra 5360ip, Aastra 5370ip, Aastra 5380ip
Ambient temperature in operation	0 °C to +40 °C
Relative humidity in operation	30 % to 80 %
Admissible storage temperature	-25 ° to +45 °C
Power input	see "Power supply", page 88

Tab. 34 Ascotel® DECT handsets

	Office 135/135pro	Office 160pro/Safe-guard/ATEX	Aastra 600d
Batteries	Ni MH battery pack 880 mAh	Li-Ion battery pack 720 mAh	Li-Ion battery pack 850mAh
Power input, charging bay	6 VA	3.6 VA	
Ambient temperature in operation	5 °C to 40 °C	0 °C to 40 °C	
Relative humidity in operation	5 % to 85 %	5 % to 85 %	
Admissible storage temperature	-25 ° to +45 °C	-20 ° to +70 °C	

Tab. 35 Dimensions and weights of AD2/IP system terminals

Terminals	Height (Type of mounting)	Width	Depth (Type of mounting)	Weight
Office 10	55 mm	82 mm	200 mm	approx. 360 g
Office 25	56 mm	224 mm	203 mm	approx. 500 g
Office 35	75 mm	254 mm	203 mm	approx. 680 g
Office 45/45pro	97 mm	336 mm	203 mm	approx. 960 g
System terminal EKP	44 mm	82 mm	133 mm	approx. 115 g

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Terminals	Height (Type of mounting)	Width	Depth (Type of mounting)	Weight
System terminal AKB	21 mm	190 mm	82 mm	approx. 150 g
System terminal PA	26 mm	61 mm	121 mm	approx. 180 g
Aastra 5360, Aastra 5360ip	115 mm (Desktop 25 °) 151 mm (Desktop 45 °) 199 mm (Wall)	262 mm	198 mm (Desktop 25 °) 166 mm (Desktop 45 °) 90 mm (Wall)	approx. 850g
Aastra 5370, Aastra 5370ip	115 mm (Desktop 25 °) 151 mm (Desktop 45 °) 199 mm (Wall)	262 mm	198 mm (Desktop 25 °) 166 mm (Desktop 45 °) 90 mm (Wall)	approx. 875 g
Aastra 5380, Aastra 5380ip	115 mm (Desktop 25 °) 151 mm (Desktop 45 °) 199 mm (Wall)	262 mm	198 mm (Desktop 25 °) 166 mm (Desktop 45 °) 90 mm (Wall)	approx. 935 g
Aastra M530	115 mm (Desktop 25 °) 151 mm (Desktop 45 °) 199 mm (Wall)	95 mm	198 mm (Desktop 25 °) 166 mm (Desktop 45 °) 90 mm (Wall)	approx. 180 g
Aastra M535	115 mm (Desktop 25 °) 151 mm (Desktop 45 °) 199 mm (Wall)	128 mm	198 mm (Desktop 25 °) 166 mm (Desktop 45 °) 90 mm (Wall)	approx. 325g

Tab. 36 Dimensions and weights of Ascotel® DECT terminals

	Handset		Charging bay	
	L x W x D	Weight	H x W x D	Weight
Office 135	138 x 49 x 23 mm	130 g	67 x 81 x 162 mm	100 g
Office 160pro/Safeguard/ATEX	134 x 60 x 27 mm	140 g	46 x 92 x 143 mm	135 g
Aastra 610d	135 x 49x 22.5 mm	120 g		
Aastra 620d	135 x 49x 22.5 mm	120 g		
Aastra 630d	135 x 53x 22.5 mm	137 g		

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