



Ascotel® IntelliGate® Communications Systems

Ascotel® IntelliGate® A150/300 as of I7.8 System Manual

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1 Safety Information

This Chapter contains information about the Ascotel® IntelliGate® product and this document itself as well as definitions relating to safety and general considerations. Information about commissioning, operation and data protection are other topics in this chapter. Please read this safety information carefully.

1.1 About the products

Purpose and function

Ascotel® IntelliGate® is an open, modular and comprehensive communication system that comprises the basic system, 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.

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.

Usage of third party software

The Ascotel® IntelliGate® systems and the relevant software components include or are partially based on third party software. The licence information of the third party products is listed in the Chapter [7.6](#).

1.2 About this document

This System Manual contains information on the expansion stages, system limits, installation, configuration, running and maintenance of Ascotel® IntelliGate® systems as well as their technical data. The system functions and features, the DECT planning, the descriptions of interfaces and system terminals as well as 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 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 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.

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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.

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 a module.



Warning

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

1.3 Commissioning

Completeness

Check for completeness when unpacking the delivered system. Complaints are to be settled within an appropriate period.

Damaged Components

Check the components for damage. Damaged systems or components must not be put into operation.

Foreign Matter in the Hardware

If objects or liquids have penetrated the equipment and/or modules, said equipment and/or modules must not be put into operation.



Hazard:

There is a risk of electrical shock or short-circuits if the hardware is damaged in any way or if liquids or objects get inside the equipment. Immediately disconnect the system from the mains as well from the UPS.

Electrostatic Discharge



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.

Mounting Instructions

Observe the following stipulations when installing the system:

- Do not expose the system to direct sunlight or other sources of heat (radiators). Observe the guaranteed temperature range.
- Observe the minimum distances specified in the assembly guidelines.
- To ensure the necessary circulation of air, do not obstruct the system's cooling ducts.
- The premises in which the system is installed must meet the following requirements:
 - Protected against water, condensation and humidity
 - Well ventilated
 - Observance of the permitted humidity range



Hazard:

Explosion hazard through operation in areas subject to explosion hazards.

Do not install the systems in areas subject to explosion hazards.

Installation Instructions

Observe the installation instructions precisely with regard to the components installed, the earthing concept and the connection of the system.

Observe the electrical limiting values specified in the System Manual when connecting third-party equipment such as switchgears, music sources, etc., to the system.

1.4 During Operation

The system is supplied with electrical voltage when in operation. Disconnect the system from the power supply when work requires opening the inner housing cover.

Maintenance Work

Any servicing, expansion or repair work is to be carried out only by technical personnel with the appropriate qualifications.

Replacing Components

Cards and modules should be fitted or removed only once they have been disconnected from the power supply. Always use original parts and components exclusively from the Ascotel® range.

PCBs are to be stored and shipped only in the specially designed antistatic packaging.

Cleaning

Clean the equipments with a damp cloth. Never use aggressive detergents.

1.5 Data protection

During operation the system records and stores personal customer data (call logging). Take the following precautionary measures:

- During configuration, always keep the configuration / planning data contained on the relevant data carriers under supervision.
- Ensure that only authorized persons have access to the data.

Regulating Access to the System Configuration

To ensure that only authorized persons have access to the system data, consistently implement the following protective measures:

- Change the passwords at regular intervals and keep them under lock and key
- Regulate remote maintenance access

2 System Overview

This chapter provides a brief overview of the Ascotel® IntelliGate® with its system terminals and application possibilities. In addition, installation versions and positioning in relation to other Ascotel® products are shown. Finally, we talk about the topics of networking possibilities, application interfaces, and connection possibilities.

Introduction

Ascotel® IntelliGate® 150/300 is a communications system designed for professional use in businesses and organizations operating in all industries with a typical payroll ranging between 3 and 30 employees. With its networking capability the system is particularly well suited for companies that operate in several locations. Coverage can even be extended to the smallest branch offices at low cost.

Voice communication technology is currently undergoing a major leap forward. New technologies such as Voice over IP (VoIP) are also used in small and medium-sized companies. A modern communications system must offer the customer the option of implementing the new technology or continuing to rely on conventional telephony. Migrating from conventional to VoIP, with the possibility of using a mix of both technologies, must be possible at all times.

And that is precisely one of the main strengths of Ascotel® IntelliGate®. As hybrid IP systems they handle both technologies with similar ease.

With the use of VoIP within the company, voice and data can be transmitted simultaneously via the local data network and/or the internet. No further investments into an additional and cost-intensive telephony installation is required.

Basic Systems

Ascotel® IntelliGate® 150/300 is a family of communication systems. While the A150 and A300 are based on the same fundamental system, they differ in their expansion possibilities.

All the connections and control elements are accessible from the front. The display elements are arranged so that they remain visible whatever the installation position.



Fig. 1 Ascotel® IntelliGate® 300

The basic systems can be expanded using interface cards and system modules. The number of available slots and sockets depends on the basic system.

Terminals

The system terminals are characterised by an attractive design, ergonomic operator convenience and customer-oriented functionality. The broad range of products ensures there is a suitable model for every use.

Among corded terminals the choice ranges from the cost-effective basic model to the fully equipped added-feature model. As an option the added-feature models can be equipped with an alpha keyboard and/or expansion keypads. Handsets are available in the form of elegant lightweights or in a sturdy, splashwater-resistant version. The system terminals are connected directly to an Ethernet interface on the PBX, making the IP infrastructure available for telephony uses. Special models (softphones and hardphones) are also available for telephone switching. The Pocket Adapter serves to connect a PC to a terminal interface.

Tab. 1 Area of application for system terminals

Area of application	Office 10	Office 25	Office 35	Office 45/45 pro	Aastra 5360	Aastra 5370	Aastra 5380	Aastra 5360ip	Aastra 5370ip	Aastra 5380ip	Office 135/135 pro	Aastra 610d	Aastra 620d	Aastra 630d	Office 160pro/	Office 160Safeguard/	Office 160ATEX/	Office 1560	Office 1560IP	Office 1600	Office 1600IP	Office Suite	Aastra 2380ip
System terminal on AD2	✓	✓		✓	✓	✓																	
System terminal on the IP network	-	-						✓	✓	✓											✓		✓
Handset (cordless)	-	-									✓		✓										
Softphone (on PC)	-	-									✓							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

Installation versions

Ascotel® IntelliGate® 150 and Ascotel® IntelliGate® 300 are suitable for both desktop installation, wall mounting and installation in a 19" rack system. Covers for connecting cables and special installation covers for rack installation are available separately.



Fig. 2 Installation versions

Positioning

Applications range from very small offices and branches (A150) to small and medium-sized companies (A300).

The diagram below shows the positioning in relation to the number of users compared with other Ascotel® products. The information relates to non-networked stand-alone systems.

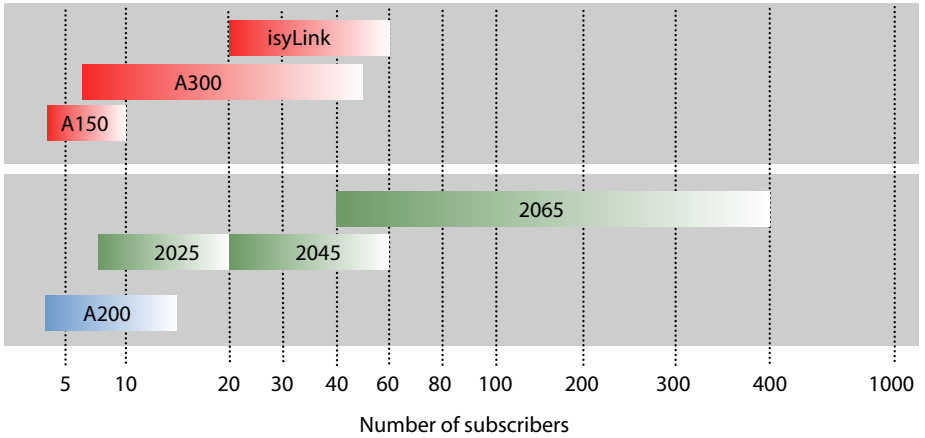


Fig. 3 Product overview in relation to the number of users

Networking Possibilities

The networking of several systems is possible both in a private network (PISN) and in an Ascotel® IntelliGate® Net (AIN). It is possible to combine systems of the family Ascotel® IntelliGate® 2025/2045/2065 and Ascotel® IntelliGate® 150/300.

Ascotel® IntelliGate® adapts easily to any company structure with the integration of external workstations with IP system terminals, of cordless handsets via DECT/WLAN, and of corded analogue or digital terminals and CTI workstations.

Digital or analogue network interfaces are used for the connection to the digital public network (ISDN/SIP) or the analogue public network (POTS).

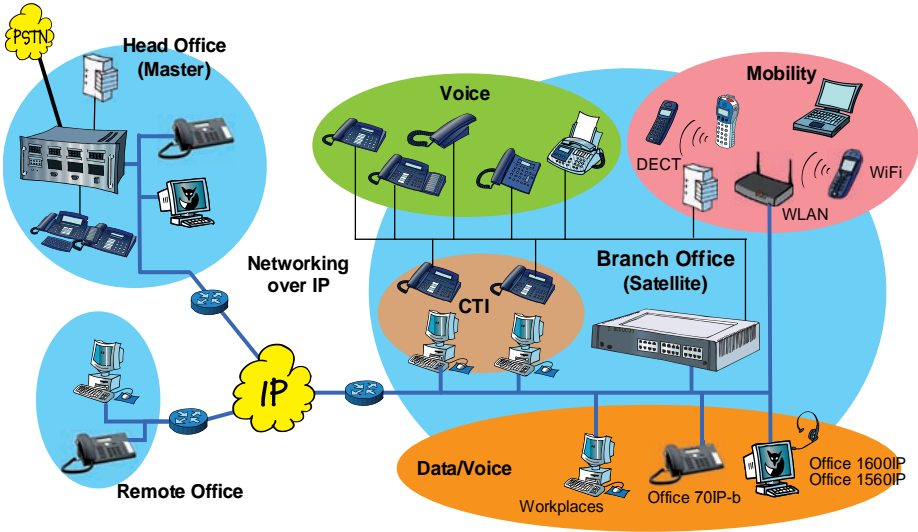


Fig. 4 Satellites in an Ascotel® IntelliGate® Net (AIN)

Application interfaces

The most important interface for own and third-party applications is the interface of the Open Interfaces Platform (OIP). This open interface allows the applications to be deeply integrated with telephony. The user is then able to benefit from a highly convergent complete system (telephony and IT system). Third-party applications can also be integrated into Ascotel® IntelliGate® without OIP using different interfaces (Ethernet, ISDN, V.24).

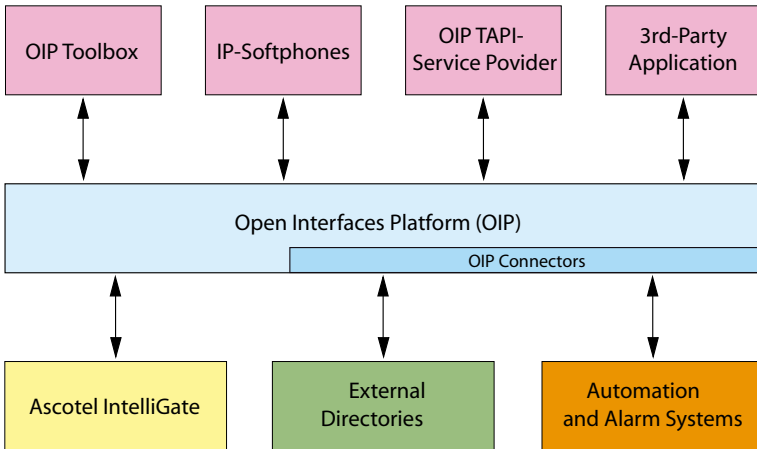


Fig. 5 OIP as middleware between Ascotel® IntelliGate®, external data sources and applications

OIP supports the connection of external directories and it is also possible to set up alarming and messaging systems.

Several Ascotel® IntelliGate® systems can be connected to an OIP server. It is then possible for instance to obtain network-wide call logging for all the systems, to display call charge information on the system terminals and to display status on the busy lamp field of the PC Operator for all the users connected.

Connection options

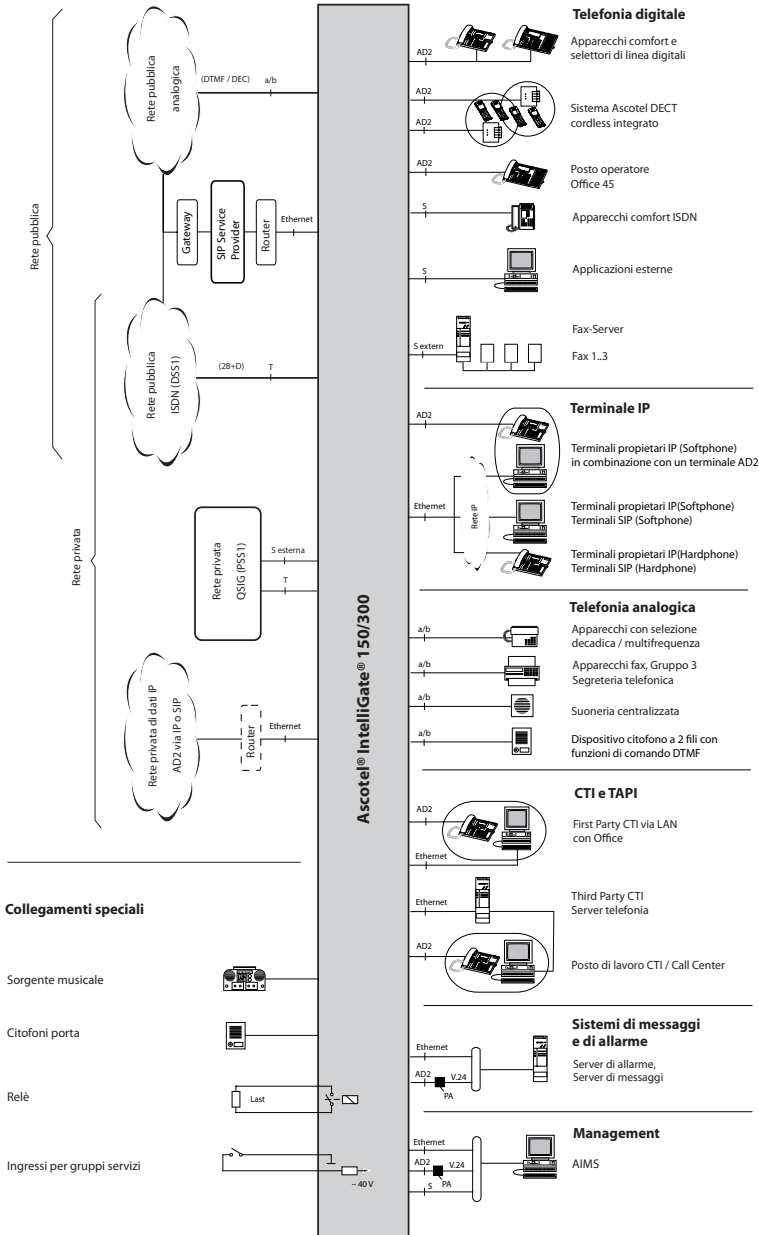


Fig. 6 Overview of interfaces with possible terminal equipment

3 Expansion Stages and System Limits

Within the system limits the basic systems can be expanded using interface cards, system modules and licences. To adapt the system ideally to suit the customer requirements, the available expansion possibilities and system limits need to be known. With the project data the optimum hardware configuration is easily determined using the Project Manager.

3.1 Overview

The expansion possibilities of the basic systems A150 and A300 at a glance. Some of the interface cards from the A200 can be reused, where available.

The equipment is powered by an external power supply. The same power supply unit is used for A150 and A300.

The mounting options are described in the Chapter "Mounting the System", page 87.

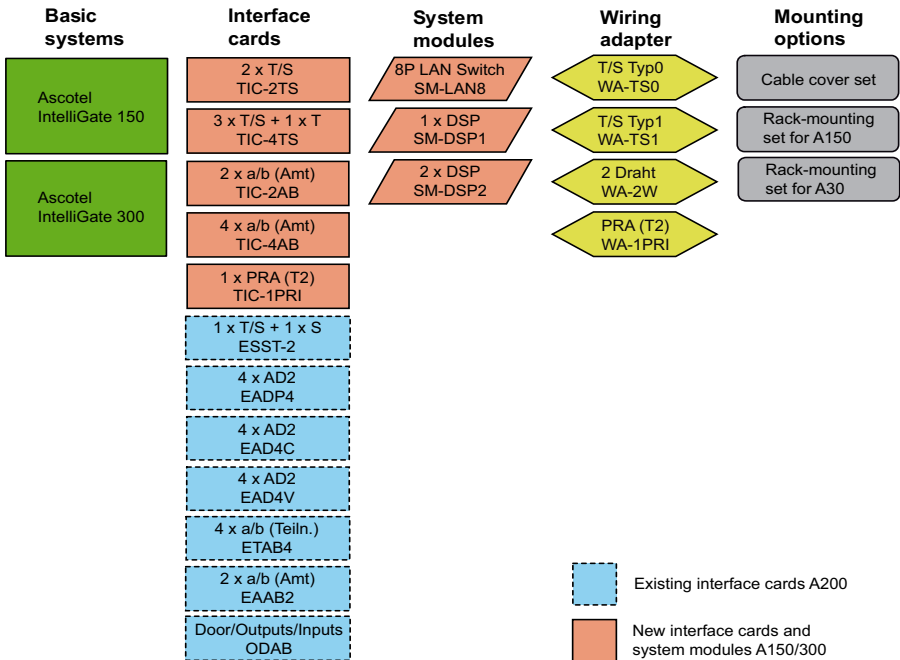


Fig. 7 Overview of the expansion possibilities

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3.2 Basic systems

The systems Ascotel® IntelliGate® 150 and Ascotel® IntelliGate® 300 are based on the same basic system, they differ in terms of the components fitted to the mainboard, the expansion possibilities and the system limits. The basic systems consists of the following components:

- Mainboard with connector strip, screw covers and designation label integrated in metal housing with detachable plastic cover
- Power supply unit with power cord

3.2.1 Interfaces

The following mainboard interfaces can be accessed only when the housing cover of the basic system is open:

Tab. 2 Mainboard

Interfaces	A150	A300	Designation / Remarks
Slots for interface cards	2	4	IC1...IC4 / with snap mechanism
Slots for system modules, type 1	1	1	SM1 / three system modules, stackable
Slots for system modules, type 2	–	1 ¹⁾	SM2 / three system modules, stackable
Slots for LAN switch modules	1	2	WA0...WAx / two slots per module
Slots for wiring adapters	2	4	WA1...WAx / one slot per wiring adapter
Interface for EIM card	1	1	EIM / card holder
Interface for fan ²⁾	–	1	FAN / 3-pin connector (A300 only)

¹⁾ For future expansions

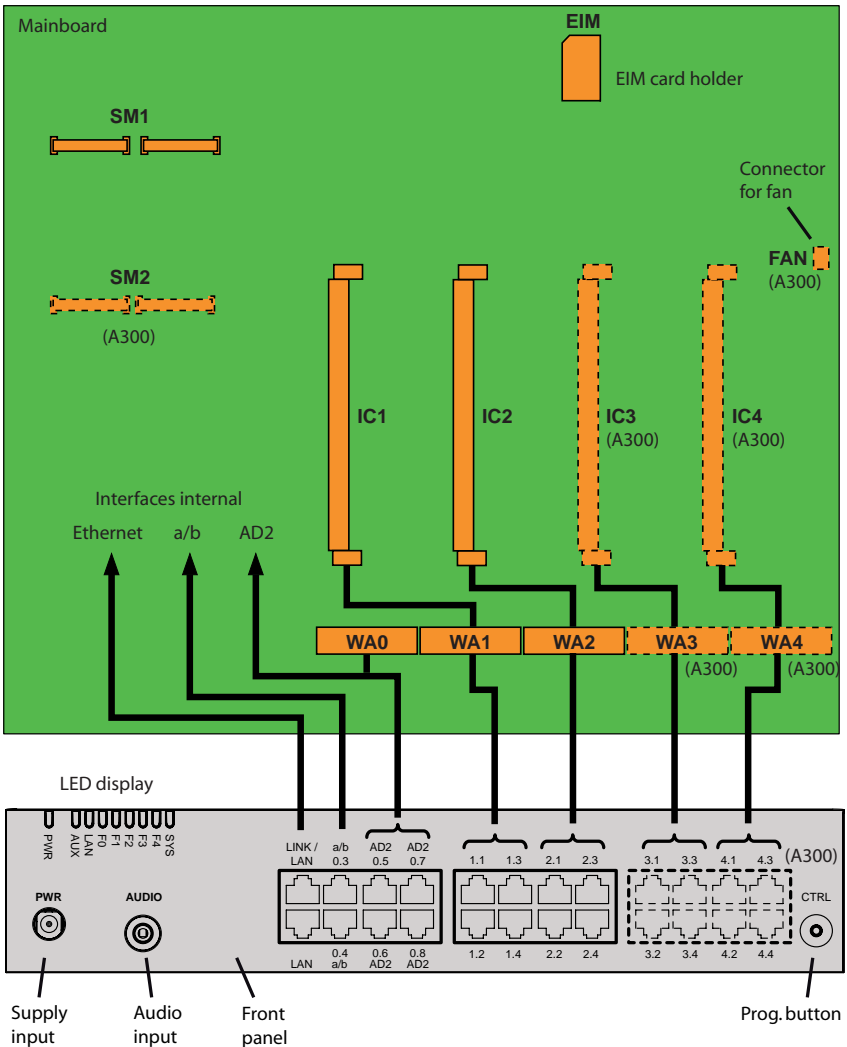
²⁾ The fan is required only if the A300 is rack-mounted

The following mainboard interfaces are routed to the front panel:

Tab. 3 Front panel

Interfaces	A150	A300	Note
AD2 terminal interfaces	2	4	RJ45 socket
a/b terminal interfaces	2	2	RJ45 socket
Ethernet interfaces 10/100BaseT, half/full-duplex	2	2	RJ45 socket
RJ45 sockets on front panel, total	16	24	RJ45 socket
Audio input	1	1	3-pin jack socket
Supply input	1	1	2-pin supply socket
Mechanical user interface	1	1	Pilot key
Optical user interface	1	1	LED display

The diagram below shows the position of all the interfaces and slots on the mainboard and front panel.



Legend:

- IC1...IC4 Slots for interface cards (trunk cards, terminal cards and options cards)
- WA0...WA4 Slots for Wiring Adapter and LAN switch modules
- SM1 Slot for stackable system modules, type 1 (DSP modules)
- SM2 Slot for stackable system modules, type 2 (for future expansions)

Fig. 8 Mainboard and front panel interfaces

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3. 2. 2 Basic functions

The basic functions of the systems depend first and foremost on the available DSP resources (DSP = Digital Signal Processor). The DSP chip on the mainboard provides signal processing functions for conference circuits, DTMF sender and receiver, compression of voice data, etc.

Part of these DSP resources is allocated to fixed functions and can be used without licences (see [Tab. 4](#)).

Another part is allocated to selectable functions, according to requirements. These functions are partly subject to licence (see [Tab. 5](#)).

The basic functions of the basic systems can be expanded by fitting DSP modules. The functions of the DSP chips on the modules can also be configured (see [Tab. 10](#)).

Fixed basic functions of the basic systems

The table below provides an overview of the fixed basic functions of the basic systems. No licences or additional hardware is required to use the functions.

Tab. 4 Fixed basic functions of the basic systems

Max. number of simultaneous ...	A150	A300
connections (without DECT)	10	30
Three-party conferences	1	3
Six-party conferences	–	1
Conferences, total	1	3
Usable DTMF sender	2	2
Usable DTMF receiver	4	4
Usable dial tone receiver	2	4
Circuits for the Call Waiting function	2	2
Circuits for the Intrusion function	1	1
Channels for playing Courtesy Announcements	3	3
Channels for playing Music on Hold	1	1
Basic Voice Mail channels (G.711) ¹⁾	2	2
FSK receiver for CLIP detection on analogue network interfaces	2	2
FSK transmitter for CLIP display on analogue terminals	2	2

¹⁾ for use without licence. Voice memory capacity of approx. 20 minutes. No Audio Guide. A licence is required to use the "Auto Attendant" function.

Selectable additional functions of the basic systems

The basic systems provide expanded additional functions as indicated in the following table. All the possible combinations are listed, with the maximum number of voice channels. For this the DSP chip on the mainboard has to be loaded with different firmware. Additional functions require the use of one or more DSP modules. Some of these functions are subject to a licence.

The additional functions are determined under CM_1_1_7 in the AIMS Configuration Manager. A description of the individual functions can be found as of [page 33](#).

Tab. 5 Selectable additional functions of the basic systems

<i>DECT</i>	<i>VoIP</i> ¹⁾	<i>Voice mail</i> ¹⁾	<i>GSM</i> ¹⁾	<i>Modem</i>	Remarks
4					Default configuration
2		2	8		
		4	8		
	3				2 of which can be used without a licence
				1	

¹⁾ Licences required (see also "[Licence-related system limits](#)", page 48).



Notes

- To be able to configure VoIP channels on the mainboard's DSP, make sure the *VoIP mode* parameter is configured to *Only VoIP-G.711*. The configured VoIP mode is valid for all the DSP chips of a node. The following also applies to this mode:
 - Two VoIP channels per system can be used without a licence.
 - The VoIP channels of the mainboard can be combined with VoIP channels of DSP cards.
- If Voice Mail channels are configured, the two basic Voice Mail channels that can be used without a licence are redundant (see [Tab. 4](#)).
- Voice Mail channels can only be configured on one DSP chip per node.
- The *Modem* function is used for remote maintenance via an analogue modem and can only be configured on the mainboard's DSP.
- The system has to be restarted for the configuration changes of the DSP to take effect.

3.3 Expansion with cards and modules

A basic system can be individually expanded using interface cards and system modules. The number of available expansion slots depends on the basic system (see ["Interfaces", page 24](#)).

3.3.1 Interface cards

Interface cards provide network interfaces and/or terminal interfaces or special interfaces. Interface cards are further broken down into:

- Trunk cards
- Terminal cards
- Options cards

On some cards the interfaces are partly configurable (S/T). This means that these cards cannot be clearly assigned to any particular category. They are listed both among the trunk cards and the terminal cards.

Some of the interface cards are already being used on the Ascotel® 200; others are exclusively for the Ascotel® IntelliGate® 150/300.

Interface cards are fitted into slots IC1...IC4 (see [Fig. 8](#)).

The interfaces are routed to the front panel using the Wiring Adapters (see ["Wiring Adapter", page 38](#)).

The length varies depending on the type of interface card. For precise dimensions see the Chapter ["Technical Data", page 227](#).

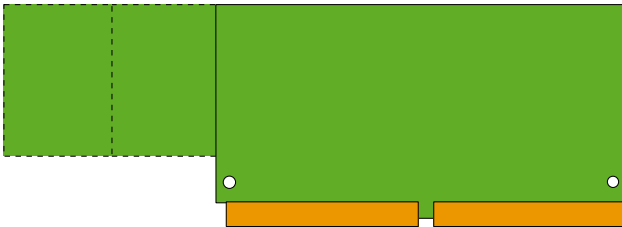


Fig. 9 Design of the interface cards

3.3.1.1 Trunk cards

The trunk cards contain interfaces for connection to the analogue public network (POTS), the digital public network (ISDN) or for networking systems to create a private telephony network (PISN). The trunk cards can be used and operated on any slots for interface cards.

On trunk cards with S and T interfaces the ratio of S to T interfaces is determined by the use of and the plug-in orientation of the wiring adapters (see "[Wiring Adapter](#)", page 106).



Note

On the ESST-2 terminal card the jumper must always be fitted in position T (see [Fig. 30](#)).

Tab. 6 Trunk cards

Type	Network interfaces per card	Max. number of A150 cards	Max. number of A300 cards	Remarks
TIC-1PRI	1 × T2	2	4	<ul style="list-style-type: none"> • Contains 30 B channels • 10 B channels can be used licence-free
TIC-4TS	3 × T/S + 1 × T	2	4	<ul style="list-style-type: none"> • Three T interfaces switchable to S • One fixed T interface
TIC-2TS	2 × T/S	2	4	<ul style="list-style-type: none"> • Both T interfaces switchable to S
ESST-2 ¹⁾	1 × T/S + 1 × S	2	4	<ul style="list-style-type: none"> • Used also in A200 • One T interface switchable to S, one fixed S interface. • The jumper on this card must always be fitted to position T.
TIC-4AB	4 × a/b	1	2	
TIC-2AB	2 × a/b	2	4	
EAAB2	2 × a/b	2	4	<ul style="list-style-type: none"> • Used also in A200

¹⁾ The card ESST-1 is not operational in A150/300

3.3.1.2 Terminal cards

Terminal cards are used for connecting digital and analogue voice and data terminals such as:

On terminal cards with S and T interfaces the ratio of S to T interfaces is determined by the type and plug-in orientation of the wiring adapters (see "[Wiring Adapter](#)", page 106).



Note

On the ESST-2 terminal card the jumper must always be fitted in position T (see [Fig. 30](#)).

AD2 terminal cards can be used in combination with LAN switch modules.

Tab. 7 Terminal cards

Type	Terminal interfaces per card	Max. number of A150 cards	Max. number of A300 cards	Remarks
EADP4	4 × AD2	2	4	• Used also in A200
EAD4V	4 × AD2	2	4	• Used also in A200 • Voice Mail functionality of the card cannot be used • Cannot be fitted to slot IC4 on A300
EAD4C	4 × AD2	2	4	• Used also in A200 • Courtesy functionality of the card cannot be used • Cannot be fitted to slot IC4 on A300
ETAB4	4 × a/b	2	4	• Used also in A200
TIC-4TS	3 × S/T + 1 × T	2	4	• Three S interfaces switchable to T • One fixed T interface
TIC-2TS	2 × S/T	2	4	• Both interfaces switchable to T
ESST-2 ¹⁾	1 × S/T + 1 × S	2	4	• Used also in A200 • One S interface switchable to, one fixed S interface • The jumper on this card must always be fitted to position T.

¹⁾ The card ESST-1 is not operational in A150/300

3.3.1.3 Option card

The ODAB options card contains relays, control inputs and an analogue terminal circuit for connecting a door intercom (TFE). The I/Os of the options card are partly configurable and can be used for the following purposes:

- The relays are used to switch any external devices or equipment. Any authorized user can operate the relays.
- Floating contacts are connected to the control inputs. This means that the connected control inputs can control switch group positions.
- Connection of a door intercom (TFE):
 - Bell input, which can be configured to any internal destination depending on the position of a switch group.
 - Door intercom system, which can be dialled using a separate number and operated via a phone by any authorized user.
 - Door opener, which can be activated via a phone by any authorized user.

Tab. 8 Options card

Type	Relays or control inputs	Analogue terminal circuit for connecting a door intercom	Max. number of A150 cards	Max. number of A300 cards	Remarks
ODAB	4	1	1	2	Used also in A200



Note

If the options card is used to connect a door intercom, it must be fitted to slot IC2 (A150) or slot IC4 (A300). This means that only one options card can be used for this purpose on each basic system. If using relays and control inputs only, use the slots IC1 slots (A150) or IC1, 2 and 3 (A300).



Ascotel® IntelliGate® Net:

A total of 22 ODAB options cards can be used in an AIN with A300 as Master. However the maximum number of cards per PBX has to be taken into account. An authorized user has the possibility of operating all the door openers, door intercom system and relays in an AIN. One of the switch groups 1...20 can be switched over using the switch group interface on the options cards.

3.3.2 System modules

System modules expand the resources of the basic systems, allowing the system to be expanded step by step in line with requirements.

3.3.2.1 DSP module

Some system functions require additional signal processing capacity. This is achieved using DSP modules (DSP stands for Digital Signal Processor). DSP modules increase the DSP capacity of the basic systems.

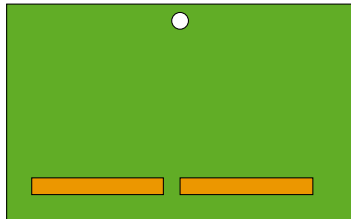


Fig. 10 Design of the DSP module

DSP modules belong to the category of system modules 1 and are fitted to the SM1 slot (see Fig. 8). The modules are stackable.



Note

The SM1 and SM2 slots are not identical (the space between the two connector rails is different). Fitting DSP modules on the SM2 slot is thus not mechanically possible.

Tab. 9 DSP modules

Type	Number of DSP chips per module	Max. number of A150 modules	Max. number of A300 modules
SM-DSP1	1	3	3
SM-DSP2	2	3	3

Allocatable functions

One or more functions can be allocated to the individual DSP chips on the DSP modules. For this the DSP chips have to be loaded with different firmware. The DSP resources can be used for DECT telephony, Voice-over-IP, Voice Mail, hands-free operation, integrated GSM users or fax transmissions. This means that for each DSP chip a specific number of voice channels is available for the corresponding functions. Some of these functions are subject to a licence (see also "[Licence-related system limits](#)", page 48).

- *DECT*
Operation of a DECT system with cordless terminals. In the case of connections between DECT and non-DECT environments the voice data has to be converted. This process requires DSP capacity. DECT channels can be used without a licence.
- *VoIP*
Connections between IP and non-IP endpoints are made via a gateway. This is carry out by the integrated Standard Media Switch that switches VoIP channels for call connections in the IP network. The Media Switch uses DSP resources for the real-time processing of the call data. The VoIP channels can be used for IP system terminals, SIP terminals, SIP access channels or to operate an AIN. Internal connections from IP terminal to IP terminal do not require VoIP channels. The operating mode for the Media Switch is determined using the *VoIP mode* parameter: The VoIP hybrid mode handles both G.711 and G.729 for coding voice data. Although more voice channels are available per DSP in *Only VoIP G.711* than in hybrid mode, the volume of voice data is greater and requires a greater bandwidth. The configured mode is always valid for the entire node.
VoIP mode = Only VoIP G.711: Two VoIP channels per system can be used without a licence. One *VoIP Channels for Standard Media Switch* licence is required for each additional VoIP channel.
VoIP mode = VoIP: One *VoIP Channels for Standard Media Switch* licence is required for each VoIP channel.
- *FoIP*
Reliable real-time fax transmissions via an IP network using the T.38 fax protocol (ITU-T). FoIP channels can be used without a licence.

- *Voice mail*

Voice messages and greetings need to be compressed before they are stored in order to increase the voice memory capacity of the Basic Voice Mail System from approx. 20 minutes to approx. 160 minutes. This requires an *Enterprise Voice Mail* licence and DSP resources. Two compressed Voice Mail channels are available with the licence. Each additional Voice Mail channel requires an additional *Enterprise Voice Mail Channels* licence. With additional licences the voice memory capacity can be increased to a total of 400 minutes (*Additional Voice Mail Recording Time* licence); the Auto Attendant function can then also be used (*Auto Attendant* licence).

The operating mode for the Voice Mail System is determined using the *Voice Mail mode* parameter: The *Normal (G.711 or G.729)* hybrid mode handles both audio formats while the number of voice channels per node is restricted to 4. In the *Expanded (G.729 only)* mode there are more voice channels available per node than in hybrid mode. However the quality of the audio data is somewhat poorer as a result of the compression. The configured mode is always valid for the entire node.

- *GSM*

Enhanced functionality is achieved for integrated GSM terminals by providing special DTMF receivers during the call connection. Suffix dialling procedures such as enquiry calls or setting up a conference can be carried out as a result. The number of GSM channels – and therefore the number of DTMF receivers – depends on the number of users with integrated GSM terminals who want to use this functionality simultaneously. One *GSM Terminals* licence is required for each integrated GSM terminal.

The allocatable functions are determined using AIMS under CM_1_1_7. The DSP cards provide additional functions as indicated in the following table. All the possible combinations are listed, with the maximum number of voice channels.

Tab. 10 Allocatable functions per DSP chip

<i>DECT</i>	<i>VoIP</i> ¹⁾	<i>FoIP</i>	<i>Voice mail</i> ¹⁾²⁾	<i>GSM</i> ¹⁾	Remarks
8				8	
6			2	8	
4			4	8	
4			6	8	Only if <i>Voice Mail mode = Expanded (G.729 only)</i>
4			8		Only if <i>Voice Mail mode = Expanded (G.729 only)</i>
			12	8	Only if <i>Voice Mail mode = Expanded (G.729 only)</i>
	2		4		
	4/8				4 channels if <i>VoIP mode = VoIP</i> 8 channels if <i>VoIP mode = Only VoIP-G.711</i>
		1/2			1 channel for A150 2 channels for A300

¹⁾ Licences required (see also "Licence-related system limits", page 48).

²⁾ If Voice Mail channels are configured, the two basic Voice Mail channels that can be used without a licence are redundant.



Notes

- To be able to configure VoIP channels on the DSP chip of a DSP card, make sure the *VoIP mode* parameter is configured either to *Only VoIP-G.711* or to *VoIP*. The setting is valid for all the DSP chips of a node. For *VoIP mode = Only VoIP G.711* the following applies:
 - Two VoIP channels per system can be used without a licence.
 - The VoIP channels of the mainboard can be combined with VoIP channels of DSP cards.
- If Voice Mail channels are configured, the two basic Voice Mail channels that can be used without a licence are redundant (see [Tab. 4](#)).
- Voice Mail channels and FoIP channels can only be configured on one DSP chip per node.
- The *Modem* function is used for remote maintenance via an analogue modem and can only be configured on the mainboard's DSP.
- The system has to be restarted for the configuration changes of the DSP to take effect.
- After a first start all the DSP chips are configured on "DECT".

3.3.2.2 LAN switch module

The LAN switch module SM-LAN8 can be used to set up a compact data network capable of connecting up to 8 users. The module has the following features:

- 10/100 Mbit/s
- Half-duplex/ Full-duplex
- Auto negotiation
- Auto MDI/MDIX (automatic detection allows the use of straight or crossover LAN cables)
- PoE (Power over Ethernet) is not supported

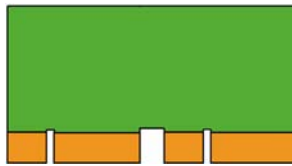


Fig. 11 Design of the LAN switch module

The LAN switch module uses two neighbouring slots WA0...WA4 and routes the Ethernet interfaces to the front panel. As the WA1...WA4 slots are also used for the wiring adapters, the corresponding slots can no longer be used for interface cards (IC1...IC4).

Exception:

The only exception are AD2 terminal cards. In this case the LAN switch module assumes the function of two wiring adapters and routes the AD2 interfaces together with the Ethernet interfaces to the same RJ45 sockets on the front panel. The same thing is also possible with the AD2 interfaces of the mainboard if the slots WA0 and WA1 are used for the LAN switch module. This means that universal building cables can be used simultaneously for data and voice transmission. The signals are separated again at the cable extremity and routed to separate connection sockets (see example below in Fig. 12).

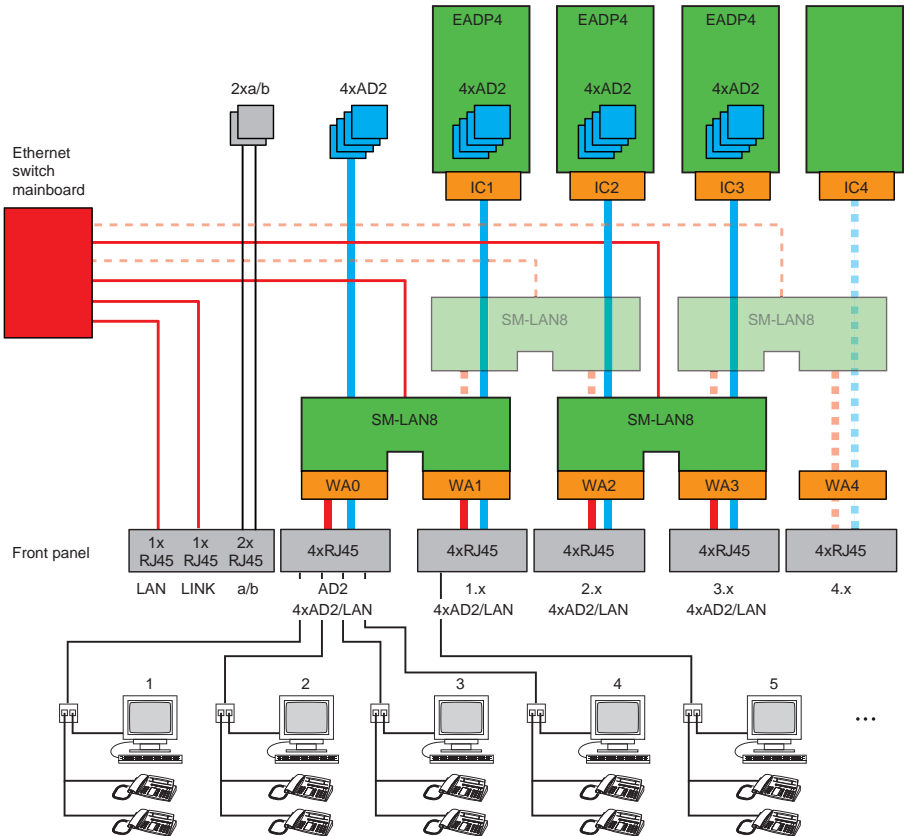
Tab. 11 LAN switch module

Type	Ethernet interfaces 10/100BaseT	Max. number of A150 modules	Max. number of A300 modules
SM-LAN8	8+1 ¹⁾	1	2

¹⁾ An interface is connected with the Ethernet switch of the mainboard

Example:

The schematic diagram shows an A300 fitted with two LAN switch modules and three AD2 terminal cards (the greyed LAN switch modules represent alternative component configurations). This means that the front panel provides 16 RJ45 sockets connected with Ethernet and AD2 interfaces. With this configuration 16 PCs and 32 system terminals can be connected. What's more, the two Ethernet interfaces and the two a/b terminal interfaces of the mainboard are also available as is a free slot (IC4) for another interface card.



Legend
 IC1...IC4 Slots for interface cards
 WA0...WA4 Slots for Wiring Adapter and LAN switch modules

Fig. 12 A300 with two LAN switch modules and three AD2 terminal cards

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3.3.3 Wiring Adapter

The wiring adapters route the interfaces of the various interface cards with the right connection diagram to the RJ45 sockets on the front panel. The adapters are fitted to WA1...WA4 sockets.

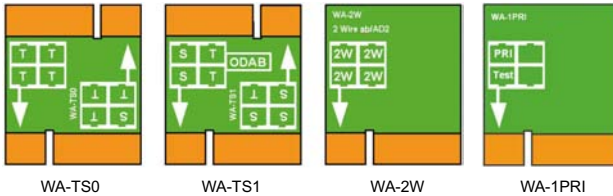


Fig. 13 Types of wiring adapters

There are four types of wiring adapters, of which two (WA-TS0 and WA-TS1) have different plug-in orientations. This determines the ratio of S interfaces to T interfaces.



Note

A configuration with wiring adapter is mandatory. An incorrect or missing configuration generates the corresponding error display on the LED display (F1...F4).

Tab. 12 Wiring Adapter

Type	Use with...	Remarks
WA-TS0	TIC-4TS, TIC-2TS, ESST-2 ¹⁾	Included in the equipment supplied with TIC-4TS and TIC-2TS
WA-TS1	TIC-4TS, TIC-2TS, ESST-2 ¹⁾ , ODAB	Included in the equipment supplied with ODAB
WA-2W	Mainboard interfaces, TIC-4AB, TIC-2AB, ETAB4, EAAB2, EADP4, EAD4C, EAD4V	Included in the equipment supplied with TIC-4AB, TIC-2AB, ETAB4 and EADP4 (with ETAB4 and EADP4 only with order variant A150/300).
WA-1PRI	TIC-1PRI	Included in the equipment supplied with TIC-1PRI

¹⁾ On the ESST-2 terminal card the jumper must always be fitted in position T (see Fig. 30).

The assignment to the RJ45 sockets depending on the Wiring Adapters is shown in Tab. 32.

The mounting of a component such as a LAN switch module represents a special case. It is fitted to two neighbouring wiring adapter sockets (WA0...WA4) and can be used together with one or two AD2 terminal cards. The LAN switch module then routes the AD2 interfaces together with the RJ45 sockets to the RJ45 sockets of the front panel (see "LAN switch module", page 36).

3.4 Expansion to an isyLink system

3.4.1 What's isyLink?

Ascotel® IntelliGate® isyLink (IntelliGate System Link) allows you to easily couple two Ascotel® IntelliGate® systems via a RJ45 patch cable and, thus, increase the number of connection ports for digital and analogue terminals.

The isyLink connection between the systems is an IP connection. Ascotel® IntelliGate® isyLink uses the integrated standard media switch to switch call connections via this IP link.

One of the systems works as master (isyMaster), and the other as satellite (isySatellite).

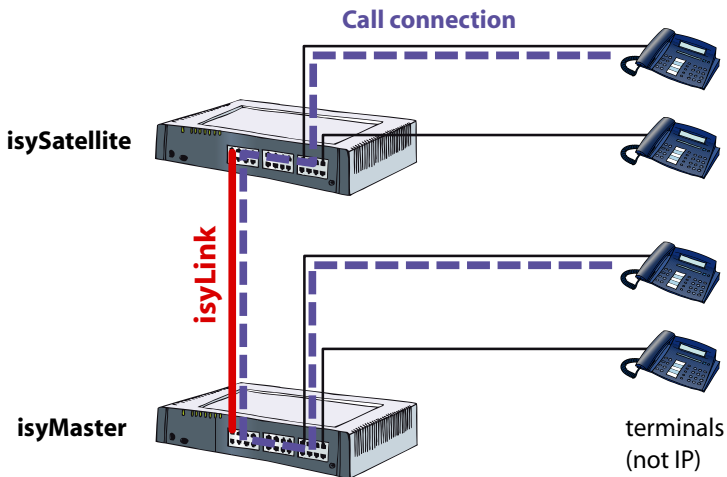


Fig. 14 Overview isyLink

The isyLink system requires VoIP channels which are provided by DSP chips on DSP modules of both systems for the isyLink connection. 8 VoIP channels each can be used licence-free once the systems are connected to each other. This means that with non-IP terminals 8 calls are possible simultaneously via the isyLink connection. If this is not enough, the number of simultaneous isyLink connections can be increased.

3. 4. 2 Application possibilities

Ascotel® IntelliGate® isyLink can be used with the systems Ascotel® IntelliGate® 150 (A150) and Ascotel® IntelliGate® 300 (A300). The following combinations are possible:

Tab. 13 Possible isyLink combinations

	isyMaster	isySatellite
Combination 1: <i>isyLink (A300+A300)</i>	A300	A300
Combination 2: <i>isyLink (A300+A150)</i>	A300	A150

Ascotel® IntelliGate® isyLink is appropriate in the following cases:

- For use with 20 to 40 digital and/or analogue terminals as an alternative to an Ascotel® IntelliGate® 2045.
- Expansion of an existing A300 or A150.



Notes

- The A150 in an isyLink can only be used as isySatellite.
- isyLink cannot be used as a node in an Ascotel® IntelliGate® Net.

3.4.3 Required hardware

2 isyLink sets are available to complement existing systems or when placing new orders of all equipment. The sets are suitable for different system environments.

3.4.3.1 isyLink set T

This set is suitable for traditional system environments (non-IP) and for hybrid systems which exclusively use the coding method based on the G.711 standard. This set comprises:

- 2 DSP modules SM-DSP1
- 1 RJ45 patch cable (1.5m)
- 1 Quick Installation Guide

With this set 8 VoIP channels G.711 are available on each of the two systems.

3.4.3.2 isyLink set H

This set is suitable for hybrid systems which besides G.711 also require the coding method according to the G.729 standard, e. g. for remote IP terminals or for connection to an SIP provider. This set comprises:

- 2 DSP modules SM-DSP2
- 1 RJ45 patch cable (1.5m)
- 1 Quick Installation Guide

With this set 8 VoIP channels G.711/G.729 are available on each of the two systems.

3.4.3.3 Fan

For heat removal purpose the A300 system can be fitted with a fan. The type of mounting will determine whether this is necessary. A fan needs to be installed in the following cases:

- If an A300 is fitted in a rack system
- If 2 or more systems are stacked up (desktop installation)

The fan for the A300 is to be ordered separately. Rack-mounting sets are also available for rack installation. The A300 rack-mounting set already comprises a fan. The A150 never requires a fan.

The procedure for the different types of mounting, for installing the fan, the location requirements and the minimum distances are described in the "[Installation](#)", [page 86](#)chapter.



Tip

For new systems the preferred planning method is to use the Project Manager (PM). It automatically suggests the most suitable and cost-effective solution. An isyLink solution can also be explicitly predefined in the type of mounting required. The PM then calculates whether this is possible and automatically lists the hardware components required (including the fan).



See also:

More detailed information on isyLink, e. g. detailed configuration instructions, can be found in the "Ascotel® IntelliGate® isyLink" installation instructions.

3.5 System Limits

System limits are defined on the one hand by the existing hardware with its expansion possibilities and on the other by the limits set in the software. The software limits can be enabled in part by licences.

3.5.1 General System Limits

The number of slots, interface cards and system modules per basic system have already been mentioned in the previous chapters and are not listed separately in this chapter.

Tab. 14 General system limits

Max. number...	Ascotel® Intelli- Gate® 150	Ascotel® Intelli- Gate® 300	isyLink A300 + A300	AIN with A300 as Master
Satellites in an AIN	–	–	–	10
users	20	100	100	100
Terminals per user ¹⁾	16	16	16	16
Simultaneous connections				
• AD2, a/b, S total (external)	10 ²⁾	30	30+30	cumulated
• Internal, total	5 ²⁾	25 ²⁾	30	cumulated
• DECT – not DECT (internal / external)	10	20	20 ³⁾	cumulated
• DECT – DECT (internal)	5 ²⁾	20	20 ³⁾	cumulated
• VoIP – VoIP via SIP access ⁴⁾ (external)	8	16	16	32
• VoIP – not VoIP (internal / external)	4	18	18+18	cumulated
Voice channels (standard VoIP) ⁴⁾	8	18	18+18	cumulated
Voice channels (Voice Mail) ⁴⁾	12	12	12+12	cumulated
FoIP channels T.38	1	2	2	cumulated
Trunk groups	20	30	50	90
Trunk groups in route	8	8	8	8
Network interfaces per trunk group	8	8	8	8
Routes	24	24	24	24
B Channel Groups	20	30	50	90
SIP Provider	10	10	10	10
SIP user account	500	500	500	500
Direct Dialling Plans	10	10	10	10
Total DDI numbers	500	500	500	500
Call Distribution Elements	500	500	500	500
User Groups	21	21	21	21
Members per user group with global call distribution	16	16	16	16

Ascotel® IntelliGate® A150/300 as of 17.8

Max. number...	Ascotel® IntelliGate® 150	Ascotel® IntelliGate® 300	isyLink A300 + A300	AIN with A300 as Master
Members per user group without global call distribution	20	100	100	100
Abbreviated dialling numbers + PISN users	1500	1500	1500	1500
Line keys per key telephone	39	39	39	39
Busy lamp fields for SIP/Aastra SIP terminals	30	30	30	30
Switch Groups	20	20	20	20
Positions per switch group	3	3	3	3
Hotline destinations	20	20	20	20
Emergency number destinations	50	50	50	50
Emergency numbers	10	10	10	10
Allocations of external call numbers to internal call numbers	50	300	300	300
External digit barring	8	8	8	8
Internal digit barring	8	8	8	8
Predefined text messages	16	16	16	16
Announcement / message groups	8	8	8	8
User per announcement / message group	16	16	16	16
Data service tables	8	8	8	8
X-25 D-channels	4	8	8	cumulated
User accounts for User Access Control	25	8	8	8
Authorization profiles for user accounts	25	25	25	25
Log entries per user account	20	20	20	20
First-party CTI users via LAN ⁴⁾	10	32	32	32
Third-party CTI interfaces	1	1	1	1
Third-Party CTI Interface (Basic, Standard) ⁴⁾	10	50	50	100
Groups, Agents (Call Centre) ⁴⁾	10	30	30	50
Mailboxes with Basic or Enterprise Voice Mail System	20	100	100	100
Greetings per mailbox	3	3	3	3
Profiles per mailbox for Automated Attendant	3	3	3	3
Total charge counters (users, network interfaces, cost centres)	134	258	258	420
Call data memory internal (number of records)	300	300	300	300
Phonebook entries	8000	8000	8000	8000
Call list entries	8000	8000	8000	8000
Freely configurable keys	4000	4000	4000	4000
Expansion keypads on AD2 terminals	30 ²⁾	60	100	100

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Max. number...	Ascotel® Intelli-Gate® 150	Ascotel® Intelli-Gate® 300	isyLink A300 + A300	AIN with A300 as Master
Expansion keypads on IP system terminals	30 ²⁾	60	100	100
expansion keypads Aastra M670i, Aastra M675i	30 ²⁾	60	100	100
Alpha keyboard (AKB)	10	40	40	100

¹⁾ only 1 Operator each, DECT/DCT terminal, Aastra 2380ip, Office 1600IP

²⁾ Limited by the maximum number of terminals

³⁾ With DECT on only one system

⁴⁾ Licences required

3.5.2 Terminals

Tab. 15 Maximum number of terminals per system and interface

Interface	Terminal type	System Terminals	per A150	per A300	isyLink A300 + A300	per AIN with A300 as Master	per interface
Miscellaneous	Terminals (including virtual and GSM)		20	100	100	100	
	Terminals (excluding virtual and GSM)		12 ¹⁾	50	60	100	
AD2	Featurephones / system terminals	Office 10, Office 25, Office 35, Office 45, Aastra 5360, Aastra 5370, Aastra 5380	10	40	60	100	2
	Operator Consoles	Office 45, Aastra 5380	4	8	8	16	2
	V.24 interface	OfficePocket Adapter	10	20	20+20	50	1
	Cordless System	SB-4 / SB-4+ radio units	10	20	20 ²⁾	32	1
	Cordless System	SB-8 / SB-8ANT radio units	5	10	10 ²⁾	32	³⁾
DECT	Handsets	Office 135, Office 160pro, Aastra 610d, Aastra 620d, Aastra 630d, DCT terminals, GAP terminals	10	50	60	100	

Ascotel® IntelliGate® A150/300 as of 17.8

Interface	Terminal type	System Terminals	per A150	per A300	isyLink A300 + A300	per AIN with A300 as Master	per interface
LAN	IP terminals	Aastra 2380ip, Aastra 5360ip, Aastra 5370ip, Aastra 5380ip, Office 1600IP, SIP terminals	12 ¹⁾	50	60	100	
	IP Operator Consoles	Office 1560IP, Aastra 5380ip	4	8	8	16	
	Aastra SIP terminals	Aastra 6730i, Aastra 6731i, Aastra 6751i, Aastra 6753i, Aastra 6755i, Aastra 6757i	10	50	60	100	
-	Virtual and GSM terminals		20	100	100	100	
S	Terminals on S interfaces (total)		10	50	60	100	8 ⁴⁾
	Terminals as per ETSI standard <ul style="list-style-type: none"> • ISDN terminals • ISDN PC cards • ISDN LAN routers • ISDN Terminal Adapters 		10	50	60	100	
a/b	Terminals on a/b interfaces (total)		10	18	18+18	100	1
	Analogue, nationally approved terminals <ul style="list-style-type: none"> • Pulse dialling (PUL) • Frequency dialling (DTMF) • Group 3 fax machines⁵⁾ • Answering machines • Modems 		10	18	18+18	100	1

1) Of which at least 2 are IP system terminals

2) With DECT on only one system

3) Operation on 2 AD2 interfaces in each case

4) Maximum of 2 simultaneous call connections.

5) Transmission with the T.38 protocol is recommended for Fax over IP. The corresponding DSP resources need to be allocated.

3.5.3 Terminal and network interfaces

Tab. 16 Terminal and network interfaces

Max. number...	Ascotel® Intelli- Gate® 150	Ascotel® Intelli- Gate® 300	isyLink A300 + A300	AIN with A300 as Master
Total terminal interfaces (AD2, a/b, S)	12	22	22+22	100
AD2 terminal interfaces	10 ¹⁾	20 ¹⁾	20+20 ¹⁾	100
Analogue terminal interfaces (a/b) DTMF / PD	10 ¹⁾	18 ¹⁾	18+18 ¹⁾	100
S terminal interfaces	6 ¹⁾	12 ¹⁾	12+12 ¹⁾	64
Door intercom (with ODAB card)	1	1	2	11
Network interfaces, total (a/b, T, T2, S external)	4	8	8 ²⁾	20
Analogue network interfaces (a/b) DTMF / PD	4	8	8 ²⁾	20
Basic accesses, total (T, S external)	4	8	8 ²⁾	20
Primary rate accesses (T2)	2	4	4 ²⁾	20
SIP access	10	10	10	10
SIP access channels	8 ³⁾	16 ³⁾	16 ³⁾	32 ³⁾

¹⁾ In maximum expansion network access is possible only via IP

²⁾ With network interfaces only on the isyMaster

³⁾ Licences required

3. 5. 4 Licence-related system limits

Certain system limits are scalable through licence acquisition.



Note:

Changes to the licence management:

As of 17.6 the OIP licences are no longer managed in the PBX, but by the OIP itself. Some OIP licences have changed, and new licences have been added. When you update OIP to version 17.6 or higher, OIP still reads the licences from the PBX and converts them. When you acquire other licences, you obtain a licence file that contains both the new licences and the licences transferred from the previous version. This means that once the update is completed, all the functions previously enabled are available once again.

The following licences are now managed by OIP:

- OIP Call Centre
- Third party CTI licences
- ATAS Gateway
- ATASpro Gateway
- Office 1560/Office 1560IP
- Office 1600/Office 1600IP
- Trial Licence, Office 1560x, Office 1600x, CTI

A detailed description of the OIP licences can be found in the System Manual "Open Interfaces Platform".

The following licences are managed in the PBX:

- *QSIG Networking Channels*
These licences are used to implement a private leased-line network with QSIG by enabling a specific number of simultaneously outgoing QSIG channels. Various licence levels are available (see [Tab. 17](#)).
- *CTI First Party via LAN*
This basic licence enables the CTI basic functions via Ethernet interface (e.g. for using a PC dial help) for a specific number of users (see "[General System Limits](#)", [page 43](#)). It cannot be combined with CTI third-party licences.

- *ATAS Interface / ATASpro Interface*

This licence expands the possibilities for connecting external alarm and messaging sources by providing the Ethernet interface in addition to the Pocket Adapter. The licences also offer additional possibilities compared with ATPCx (e.g. displaying the Fox menu on system terminals and triggering an alarm with the Redkey).

The "ATASpro Interface" licence can also be used to determine the position of users of DECT handsets, which can be visualized with the appropriate applications.



Note:

If you use the Open Interfaces Platform, OIP takes the licences from the PBX. So always acquire these licences for the PBX so you can use ATAS even without OIP.

- *Advanced Messaging*

Enables the SMPP protocol to be used for integrating an SMS server and 9d handsets to be logged on as system terminals (Ascom Wireless Solutions products). User-friendly messaging systems can then be implemented with Ascotel® IntelliGate®.

Note: This licence is not available for A150.

- *SMPP*

This licence allows the use of the SMPP protocol. It is visible only in AIMS (not on the licence server). The licence cannot be purchased individually but is part of the "Advanced Messaging" licence.

- *Ascotel® Mobility Interface (AMI)*

For the implementation of large-scale DECT systems Ascotel® IntelliGate® can be connected to the DECT radio system DCT 1800 (Ascom Wireless Solutions product). The "Ascotel® Mobility Interface (AMI)" is available for this purpose. Activation of the AMI functionality is subject to a licence.

Note: This licence is not available for A150.

- *Universal Terminal Interface (UTI)*

This licence allows the use of the UTI interface (Universal Telephony Interface) and therefore certain Ascotel® functions to be controlled using defined DTMF shortcuts (only for Italy).

- *Basic Ascotel® IntelliGate® Net*

This licence allows an Ascotel® IntelliGate® Net to be set up and operated with one Master and one satellite.

Note: This licence is not available for A150.

- **Ascotel® IntelliGate® Net Satellites**

An upgrade licence for each additional satellite is required to integrate more than one satellite in an Ascotel® IntelliGate® Net. An existing basic AIN licence has to be in place already.

Note: This licence is not available for A150.

- **SIP Terminals**

One licence is required per terminal to operate non-Aastra SIP terminals on Ascotel® IntelliGate®. The licences are needed when registering the terminals on the system and can be used even if "Aastra SIP Terminals" licences are missing.

- **Aastra SIP Terminals**

To operate Aastra SIP terminals Aastra 6731i, Aastra 6751i, Aastra 6753i, Aastra 6755i, Aastra 6757i, the WLAN terminal Aastra 312w and DECT terminals which are logged onto a DECToverIP® base station (e.g. RFP L32 IP), a licence is required for each terminal. The licences are needed when registering the terminals on the system. Use is not possible if "SIP Terminals" licences are missing.

- **SIP Access Channels**

The connection of Ascotel® IntelliGate® to an SIP service provider or the networking of Ascotel® IntelliGate® systems via SIP requires one licence per channel.



Ascotel® IntelliGate® Net

In an AIN all the SIP licences are always acquired for the Master. The number of licences determines the maximum number of simultaneously active voice channels, regardless of the nodes on which they are currently being used. Requirement: The DSP resources on each node must be available and allocated accordingly.

- **VoIP Channels for Standard Media Switch**

This licence enables the conversion of voice channels for VoIP - non VoIP connections and is used for IP terminals, SIP terminals, SIP access channels or to operate an Ascotel® IntelliGate® Net. High voice data compression is possible with the standard VoIP channels (G.729). One voice channel is activated with each licence.



Ascotel® IntelliGate® Net

In an AIN the licence can also be used for the connections between the nodes. Two VoIP channel licences are required for each node connection. The licences are always acquired for the Master. The number of licences determines the maximum number of simultaneously active conversions, regardless of the nodes on which they are currently being used. Requirement: The DSP resources on each node must be available and allocated accordingly.

- *GSM Terminals*

This licence is used to connect GSM terminals to Ascotel® IntelliGate®. One licence has to be purchased for each GSM terminal.

- *GSM Terminals with Aastra Mobile Client*

This licence enables easy integration of GSM terminals with Aastra Mobile Client. The licence also includes the "GSM Terminals" licence. One licence is required for each terminal.



Note:

For the "Aastra Mobile Client" licence the printout of the licence document contains not only the licence code but also an Aastra Mobile Client access code. You will need the access code to start the Aastra Mobile Client administration on the licence server. The administration application allows you to send not only the download link for the Aastra Mobile Client application by SMS (text message) to the individual GSM terminals, but also the licence to activate the application, and the prepared configuration data for integration in Ascotel® IntelliGate®.

- *Aastra 5300 Series IP Terminals (Office IP Terminals)*

Once licence per terminal is required to operate the Aastra 5360ip, Aastra 5370ip and Aastra 5380ip IP system terminals (previously designated as Office 60IP, Office 70IP and Office 80IP). The licences are needed to register the terminals on the system. If the required licences are missing, the relevant event message is output on the system.

- *Aastra 2380ip*

One licence per terminal is required to operate the IP softphones Aastra 2380ip. The licences are needed to register the terminals on the system.

- *Analogue Modem*

This licence allows remote maintenance of an A150/300 using an analogue modem. For this the *Modem* function must be allocated to the mainboard DSP. Transmitting event messages via an analogue modem is also possible.



Ascotel® IntelliGate® Net

In an AIN the licence is always acquired on the Master. The licence allows the remote maintenance of the AIN via any A150/300 node. The Master can also be a 20x5 system.

- *B-Channels on TIC-1PRI Modules*

With this licence, in addition to the 10 usable licence-free B channels on the TIC-1PRI interface card of an A150/300, one B channel is enabled per licence. A maximum of 30 B channels are possible per interface card.



Ascotel® IntelliGate® Net

In an AIN the licence is always acquired on the Master. For each licence an additional B channel is available on a TIC-1PRI interface card of any node, depending on where the B channel is currently being used. The Master can also be a 20x5 system.

- *TWP Connection*

This licence is used to connect to the Telephony Web Portal (TWP).

- *Enterprise Voice Mail*

This licence is used to compress (G.729) the voice data of two Voice Mail channels. This increases the total memory capacity considerably. The licence also allows you to use the Audio Guide.

- *Enterprise Voice Mail Channels*

This licence enables a further Voice Mail channel (G.729). This licence can only be used in conjunction with the Enterprise Voice Mail licence.



Ascotel® IntelliGate® Net

In an AIN the Enterprise Voice Mail licences are all acquired for the Master. The number of licences determines the maximum number of simultaneously active voice channels with high compression, regardless of the nodes on which they are currently being used. Requirement: The DSP resources on each node must be available and allocated accordingly.

- *Additional Voice Mail Recording Time*

This licence expands the voice memory available from 10 MB to 25 MB. This increases the voice memory capacity for voice messages and greetings from approx. 20 minutes to approx. 50 minutes or, in combination with the licence Enterprise Voice Mail, from approx. 160 minutes to approx. 6 hours and 40 minutes.



Ascotel® IntelliGate® Net

In an AIN the licence must always be acquired on the nodes on which added voice memory capacity is required. Requirement: The DSP resources on each node must be available and allocated accordingly.

- *Auto Attendant*

This licence enables the use of the "Auto Attendant" function and can be used independently of other Voice Mail licences.

Tab. 17 Overview of licences

Licence	Licensed attributes	Without licence	With licence
<i>QSIG Networking Channels</i>			
• xQSIG Channels	QSIG channels	0	x QSIG channels
• Upgrade from x to y QSIG Channels	QSIG channels	x	y QSIG channels
• Upgrade from x to maximum QSIG Channels	QSIG channels	x	max. QSIG channels
• Maximum QSIG Channels	QSIG channels	0	max. QSIG channels
<i>CTI First Party via LAN</i>	First-party CTI clients with basic functions on Ethernet interface	0	enabled for a specific number of users (see "General System Limits", page 43)
<i>ATAS Interface</i>	Use of the ATAS interface	unavailable	enabled
<i>ATASpro Interface</i>	Use of the ATASpro interface	unavailable	enabled
<i>Advanced Messaging</i>	SMPP protocol for integration of an SMS server and registration of 9d handsets as system terminals. (Includes licence SMPP)	unavailable	enabled
<i>SMPP¹⁾</i>	SMPP protocol	unavailable	enabled
<i>Ascotel® Mobility Interface (AMI)</i>	Functionality of the Ascotel® Mobility Interface for connecting the DECT system DCT 1800	unavailable	enabled
<i>Universal Terminal Interface (UTI)²⁾</i>	Use of the UTI interface	unavailable	enabled
<i>Basic Ascotel® IntelliGate® Net</i>	Operation of an AIN	unavailable	AIN with master and one satellite
<i>Ascotel® IntelliGate® Net Satellites³⁾</i>	Additional satellite in an AIN	0	1 additional satellite per licence
<i>SIP Terminals</i>	Number of registered SIP terminals in AIMS	0	1 additional SIP terminal per licence
<i>Aastra SIP Terminals</i>	Number of registered Aastra SIP terminals in AIMS	0	1 additional Aastra SIP terminal per licence
<i>SIP Access Channels</i>	Simultaneously usable channels to an SIP service provider	0	Per licence 1 additional SIP access channel
<i>VoIP Channels for Standard Media Switch</i>	VoIP functionality	0	Per licence 1 additional VoIP channel
<i>GSM Terminals</i>	Number of GSM terminals created in AIMS	0	1 additional GSM terminal per licence

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Ascotel® IntelliGate® A150/300 as of 17.8

Licence	Licensed attributes	Without licence	With licence
<i>GSM Terminals with Aastra Mobile Client</i>	Number of GSM terminals created in AIMS with Aastra Mobile Client	0	1 additional GSM terminal per licence and the possibility of activating an Aastra Mobile Client
<i>Aastra 5300 Series IP Terminals (Office IP Terminals)</i>	Number of registered Aastra 5360ip, Aastra 5370ip and Aastra 5380ip IP system terminals	0	per licence 1 additional IP system terminal
<i>Aastra 2380ip</i>	Number of registered Aastra 2380ip IP softphones	0	per licence 1 additional IP softphone
<i>Analogue Modem</i>	Use of the modem functionality on an A150/300.	unavailable	enabled
<i>B-Channels on TIC-1PRI Modules</i>	B channels that can be used simultaneously on the TIC-1PRI interface card of an A150/300.	10	Per licence 1 additional B-channel
<i>TWP Connection</i>	Connection to Telephony Web Portal (TWP)	unavailable	enabled
<i>Enterprise Voice Mail</i>	Voice compression and Audio Guide	unavailable	2 compressed Voice Mail channels (G.729) and Audio Guide can be used
<i>Enterprise Voice Mail Channels</i>	Voice compression	unavailable	1 additional Voice Mail channel with compression (G.729) per licence
<i>Additional Voice Mail Recording Time</i>	Increases the voice memory capacity of voice messages and greetings	10 MB	25 MB
<i>Auto Attendant</i>	Use of the "Auto Attendant" function	unavailable	enabled

1) this licence cannot be purchased separately; it is part of other licences

2) For Italy only

3) Upgrade to "Basic Ascotel® IntelliGate® Net" licence

All the licences are offered in separate licence packages. Depending on the sales channels the packages may differ from the licences in [Tab. 17](#). The systems are factory supplied unlicensed. Back-licensing is not provided for. However, resetting to the factory setting is possible.



Note

Once a licence has been obtained and entered, the system may have to be restarted in order to activate the licence.



Temporary offline licences

If the connection to the Master is interrupted in an AIN, the satellites restart in offline mode. The licences acquired on the Master are no longer visible to the satellites in offline mode. To ensure autonomous VoIP and QSIG traffic, the following licences are enabled in the satellites concerned for the duration of the offline mode or for a maximum of two hours:

- *QSIG Networking Channels*, unlimited
- *SIP Terminals*, unlimited
- *Aastra SIP Terminals*, unlimited
- *SIP Access Channels*, unlimited
- *VoIP Channels for Standard Media Switch*, unlimited
- *GSM Terminals*, unlimited
- *Aastra 5300 Series IP Terminals (Office IP Terminals)*, unlimited
- *Aastra 2380ip*, unlimited
- *Analogue Modem*

The licences are not visible in AIMS.

Trial licences

Trial licences are available for some functions. This means that licensed features can be used and tested, licence-free, for a period of 60 days. The trial licences are automatically enabled the first time a particular function is used and then listed in AIMS in the licence overview, complete with the date on which they expire.

Trial licences are available for the following functions:

- *QSIG Networking Channels*, unlimited
- *CTI First Party via LAN*
- *ATAS Interface*
- *ATASpro Interface*
- *SIP Access Channels*, unlimited
- *SIP Terminals*, unlimited
- *Aastra SIP Terminals*, unlimited
- *VoIP Channels for Standard Media Switch*, unlimited
- *GSM Terminals*, unlimited
- *Aastra 5300 Series IP Terminals (Office IP Terminals)*, unlimited
- *Aastra 2380ip*, unlimited
- *Analogue Modem*
- *Enterprise Voice Mail*
- *Enterprise Voice Mail Channels*, unlimited
- *Auto Attendant*

3.5.5 Power supply-related limits

The maximum number of terminals connected to the system can be limited by the supply power available to the system. The power supply-related limit per terminal interface must also be observed.

3.5.5.1 Supply power available for terminals

The 40 VDC power supply required for the connected terminals is rated for the power requirements of a typical system configuration.

The number of permissible terminals per system depends on the power requirements of the individual terminals. To check the power requirements refer to [Tab. 19](#) for details of the average power requirements of the terminals. This check can also be carried out automatically using the Project Manager.

The total power requirements of all connected terminals must not exceed the power output of the power supply.

Tab. 18 Power output of the 40 VDC power supply

	A150 basic system	A300 basic system
Available power output	24 Watt	24 Watt

The table below shows the average power requirements of the terminals for a line length of approx. 200 m and a wire diameter of 0.5 mm.

Tab. 19 Average power requirements of terminals

¹⁾ terminals	Connection	Output P [mW]
Office 10	AD2 interface	340
Office 25	AD2 interface	380
Office 35	AD2 interface	280 ²⁾
Office 45/45pro	AD2 interface	660 ²⁾
Office 45pro with power supply unit	AD2 interface	< 10
Expansion keypad (EKP)	Office 35, Office 45	80
Alpha keyboard (AKB)	Office 35, Office 45	20
Aastra 5360	AD2 interface	280
Aastra 5370	AD2 interface	680
Aastra 5380	AD2 interface	820
Aastra 5370, Aastra 5380 with power supply unit	AD2 interface	0
Aastra M530 expansion keypad	Aastra 5370	110
Aastra M530 expansion keypad	Aastra 5380	120

1) terminals	Connection	Output P [mW]
Aastra M535 expansion keypad	Aastra 5370, Aastra 5380	0 ³⁾
Pocket Adapter	AD2 interface	390
Radio unit without power supply unit SB-4/ SB-4+	AD2 interface	1400
Radio unit with power supply unit SB-4	AD2 interface	620
Radio unit without power supply unit SB-8	1 or 2 AD2 interfaces	1200 ⁴⁾
Radio unit with power supply unit SB-4+/SB- 8	1 or 2 AD2 interfaces	< 100
ISDN terminal	S interface	approx. 500
Analogue terminals	a/b interface	approx. 500

1) Assumptions:

Traffic volume with system terminals: Call Connection 38%, Ringing 2%

Radio unit SB-4/SB-4+: Active call connection on 2 channels

Radio unit SB-8: Active call connection on 4 channels

Background lighting Aastra 5380: 30% illuminated

LEDs on terminals and expansion keypads: 20% illuminated

2) The value applies to hardware version 2. The value for hardware version 1 is 60 mW lower.

3) An Aastra M535 always requires a power supply unit

4) for each AD2 interface

Overload shutdown

If the rated power is exceeded the power supply is disconnected. It is restored after approx. 20 s.

If an overload occurs, reduce the required supply power (e.g. by powering DECT radio units or system terminals locally).

3.5.5.2 limits per terminal interface

The power supply-related limit per terminal interface depends on the following variables:

- Terminals used
- Bus configuration
- Line length and conductor cross-section

For information on the calculations refer to "[Terminal interfaces](#)", page 126.

4 Configuration

This chapter introduces the configuration tool AIMS with its managers and auxiliary applications. With AIMS, the modular information and management system, the installer is able to configure and service the Ascotel® IntelliGate® system and its ancillary equipment centrally, online or offline. In addition, the access types are presented and user access control is discussed. Other topics in this chapter include remote access, data exchange between PC and PBX, and configuration steps.

4.1 AIMS Configuration Tool

The Ascotel® Information Management System (AIMS) is a software package used for the configuration and monitoring of a single system or an entire network. The configuration can be prepared offline and locally or remotely loaded to the system. Remote access means that changes and expansions can be carried out independently of time and location, and is used for the remote maintenance of the system.

**Note:**

AIMS is backwards compatible, i. e. a more recent version of AIMS can also be used to configure older systems.

AIMS is available in 2 software packages:

- Client Management Set (CMS)
- Configuration Set (COS)

The CMS version is intended for the end customer; the COS version is only for the installer.

**Note:**

The following Managers and auxiliary applications are not included in the Client Management Set (CMS):

- Upload Manager (UM) and System Event Manager (SEM)
(see "AIMS Managers", page 60)
- Ascotel® Search and Smart Software Update
(see "Auxiliary applications", page 62)

**See also:**

The Application Notes and Frequently Asked Questions (FAQs) in connection with AIMS can be downloaded from "<https://pbxweb.aastra.com>"

4. 1. 1 AIMSShell

The AIMSShell is used to administer the systems, replicate the nodes of an Ascotel® IntelliGate® Net (AIN) and set the access parameters. The numbering plan of a private leased-line network can also be specified here across all the nodes.

Other useful functions include *Backup* and *Restore*, *Upload* and *Download* and importing data from Project Manager or data from older systems.



See also:

How to operate AIMS and the individual functions are described in detail in AIMS help.

AIMS comprises several functional software modules. These are the AIMS Managers and auxiliary applications. Most are operated centrally from the AIMS Shell.



4. 1. 2 AIMS Managers

The table below shows the main properties and functions of the individual AIMS Managers:

Tab. 20 Overview of AIMS Managers

Symbol	Manager	Function
	Configuration Manager (CM)	<ul style="list-style-type: none"> • Configure system and customer data offline • Configure system and customer data online (via local access, dial-up access or LAN) • Adapt system or customer data flexibly and quickly
	Fault & Maintenance Manager (FM)	<ul style="list-style-type: none"> • Configure remote alarming • Display, evaluate and analyse event messages
	Account Manager (AM)	<ul style="list-style-type: none"> • Configuration of OCL and ICL data • Configuration of the OCL and ICL output interface • Recording of ICC data per user, network interface or cost centre (totalizer only) • Configuration and allocation of the surcharge calculator to the ICC counters • Data import from LCR tables • LCR management
	Hotel Manager (HM)	<ul style="list-style-type: none"> • Check-in and check-out • Configure room phones • Acquisition and printout of call charges • Room management (room available, occupied) • Wake-up calls for guests
	Information Manager (IM)	Information Manager (IM) supports the customers with helpful offline documentation.
	Upload Manager (UM)	The Upload Manager (UM) is used to update the software of a system from the PC.

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Symbol	Manager	Function
	Voice Mail Manager (VMM)	<ul style="list-style-type: none"> • AVS Voice Mail System Configuration • 2 authorization levels: Attendant and Administrator
–	IP Gateway Manager (GM)	<ul style="list-style-type: none"> • Online configuration of the AIP 6400 (web browser)
	System Event Manager (SEM)	<ul style="list-style-type: none"> • Comprehensive centralized monitoring of event messages • Installation on several PCs possible • Particularly well suited for monitoring networked systems • Receives and processes messages via ISDN or TCP / IP

The AIMS- Managers are called up via the *Manager* or using an icon on the toolbar (Exception: SEM is called up via the Windows Start menu or by means of the icon in the Windows taskbar).


The following table shows which Managers are password protected and which are available offline or online.

Tab. 21 Availability of AIMS Managers

Manager	Before login	After login	Offline (after login and File / Open)	Online (after login and File / Connect)
Configuration Manager (CM)			✓	✓
Fault & Maintenance Manager (FM)			✓	✓
Account Manager (AM)			✓	✓
Hotel Manager (HM)			✓	✓
Information Manager (IM)	✓	✓	✓	✓
Upload Manager (UM)		✓	✓	✓
Voice Mail Manager (VMM)			✓	✓
IP Gateway Manager AIP 6400 (GM)		✓	✓	✓

4. 1. 3 Auxiliary applications

Ascotel® Search


The auxiliary application Ascotel® Search is started via *Tools* → *Ascotel® Search* or by using the  icon in the menu bar. Ascotel® Search is a help tool for detecting Ascotel® systems in the IP network. Ascotel® Search finds all individual systems connected to the IP network, provided they are in the same subnetwork as the PC with AIMS and have at least SW version I7.



See also:

Additional information about Ascotel® Search can be found in AIMS help.


Smart Software Update

The auxiliary application Smart Software Update can be started via the Windows Start menu or by means of the  icon in the Windows taskbar.

If the Internet connection is active, by pressing a button this application automatically downloads the most current SW package (SW for PBX, AIP and IP phones) for the required systems and sales channels from the download server.

If the PBX is in the first-start state (from the factory or first-start executed) and you establish a connection with AIMS to the PBX, the SW version of the PBX is automatically compared to the last version downloaded from the download server. If the PBX software is older, an update is suggested.

Aastra IntelliGate® WAV Converter

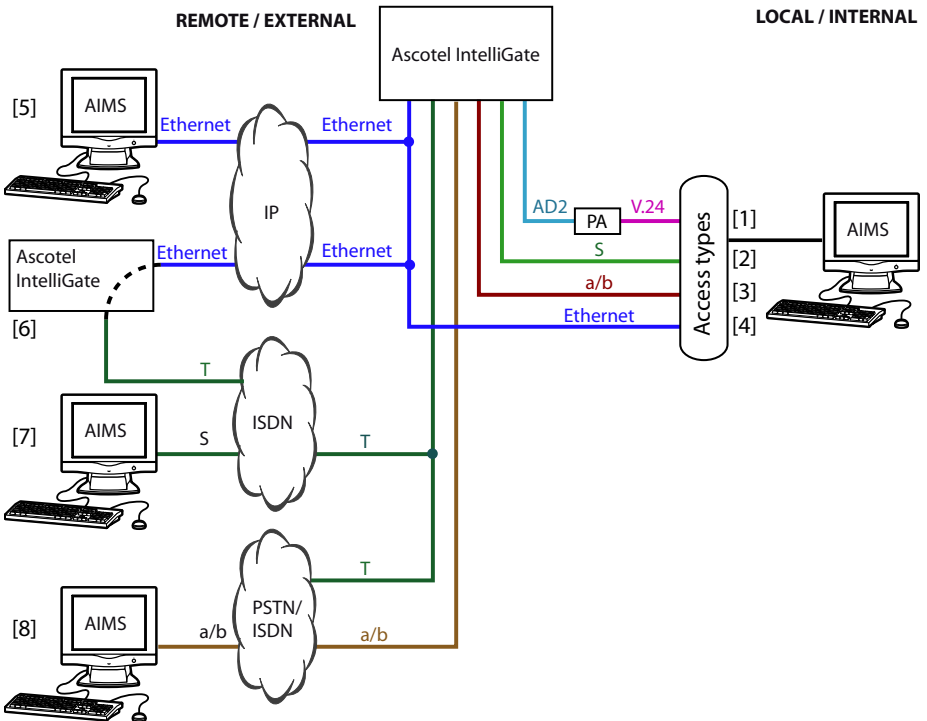
If the integrated Voice Mail System is operated in expanded mode, all the audio data must be available in compressed G.729 format. To be able to continue using existing, uncompressed voice messages and greetings in G.711 format, you need to compress the message and greetings first. The Aastra IntelliGate® WAV Converter  is provided for this very purpose in the AIMS shell under *Tools* → *Voice-Mail*.

Web based administration

This web-based configuration tool is available for the online configuration of the main parameters of A150 and A300 single systems. It provides a simple, user-friendly interface, a configuration guide and an online help. Web-based administration is available in the file system of every A150/300 as of I7.8 and does not have to be installed.

4.2 Access types

There are the following possibilities to access the PBX with AIMS:



- [1] Local access via v.24 interface on the Pocket Adapter
- [2] Internal dial-up access via an S terminal interface
- [3] Internal dial-up access via an a/b terminal interface
- [4] Internal access via the LAN or directly
- [5] External access via IP network
- [6] External dial-up access via dial-in node (only in AIN)
- [7] External dial-up access via ISDN connection via a T network interface
- [8] External dial-up access via a/b connection via a T or a/b network interface

Fig. 15 Overview of the access types



See also:

Detailed information can be found in the AIMS Help.

4.3 User Access Control

Access to the PBX configuration is password-protected. Any user wanting to log in to a PBX is prompted for his user name and password (access data).

4.3.1 User accounts and authorization profiles

A user's authorizations are regulated by authorization profiles, which are assigned to the user accounts.

4.3.1.1 First-start user account

The first-start user account (Default User Account) and several first-start authorization profiles are created when a new PBX is opened or after a first start. The first-start user account is linked with the authorization profile "*Administrator*". This authorization profile is assigned the administration rights for the "*User Access Control*" for "*Audio Services*" and for AIMS at the "*Installer*" authorization level (see [Tab. 22](#)).

The required user accounts and authorization profiles can be set up using the first-start user account.

4.3.1.2 Predefined authorization profiles

There are 6 predefined authorization profiles:

- *Administrator*
- *Systemmanager*
- *Attendant*
- *OIP*
- *1st party CTI user via LAN*
- *Support*

The authorization profiles are assigned administration rights and interface user rights. The allocation of existing authorization profiles can be transferred to other authorization profiles using "Copy & Paste".

Tab. 22 Predefined authorizations of the authorization profiles

Features	Adminis- trator	System- manager	Attend- ant	OIP	1st party CTI user via LAN	Support
Administration rights						
• User Access Control	✓	-	-	-	-	-
• Audio services	✓	✓	✓	-	-	✓
• AIMS permission level	Installer	System Manager	Attend- ant	No access	No access	Installer
Interface access						
• OIP	✓	-	-	✓	-	-
• Office 45	✓	✓	✓	-	-	-
• FTP	✓	-	-	-	-	✓
• Monitor	✓	-	-	-	-	✓
• First party CTI	✓	-	-	-	✓	-
• Third-party CTI	✓	-	-	-	-	-
• ATAS	✓	-	-	-	-	-
• Remote maintenance using dial-up access	✓	-	-	-	-	✓
• Ascotel® Search	✓	-	-	-	-	-
• Web based administration	✓	-	-	-	-	-

4.3.1.3 Administration rights

The various administration rights enable the following configuration possibilities:

- *User Access Control*
 - Creating new user accounts and authorization profiles
 - Deleting user accounts and authorization profiles
 - Assigning authorization profiles to user accounts
 - Editing the authorizations of authorization profiles
 - Changing the passwords of all user accounts
 - Blocking user accounts
- *Audio services*
Allows you to record and delete global greetings (Voice Mail) and Courtesy texts, and to record and delete music for the "Music on hold" function.
- *AIMS permission level*
Determines the authorization level for handling, accessing and editing the configuration data via AIMS, and the software upload authorizations.

Tab. 23 Authorizations for carrying out AIMS functions

Features	Installer	System Manager	Attendant
• Upload (PC -> PBX)	✓	-	-
• Download (PPX -> PC)	✓	✓	✓
• Backup (PC -> Disk)	✓	✓	✓
• Restore (Disk -> PC)	✓	-	-
• Data export	✓	✓	✓
• Data import	✓	-	-
• Transfer AIN configuration	✓	-	-
• Set sales channel	✓	-	-
• PBX first start	✓	-	-
• PBX restart	✓	-	-
• Status change remote maintenance	-	-	✓
• Software upload	✓	-	-

4.3.1.4 Interface access

The following interfaces can be enabled or disabled:

- *OIP*
Allows the OIP server to access the PBX. This authorization is not intended for individual persons.
- *Office 45*
Allows unlimited access to the configuration data via Office 45 (System Assistant).
- *FTP*
Allows access to the FTP server of the PBX. Needs to be enabled for software upload.
- *Monitor*
Allows monitors to access the PBX for fault diagnosis.
- *First party CTI*
Allows first-party applications to communicate with the PBX via the IP network by means of the CTI interface. This authorization is not intended for individual persons.
- *Third-party CTI*
Allows third-party applications to communicate with the PBX via the IP network by means of the CTI interface. This authorization is not intended for individual persons.
- *ATAS*
Allows third-party applications to communicate with the PBX via the IP network by means of the ATAS interface. This authorization is not intended for individual persons.
- *Remote maintenance using dial-up access*
Allows remote maintenance using dial-up access in principle. Remote maintenance itself (CM_1_2_1_4 "*Remote maintenance*") has to be enabled, too.
- *Ascotel® Search*
Allows access to the configuration via Ascotel® Search.
- *Web based administration*
Allows access to the web-based configuration of an A150/300 system using a browser.

4. 3. 1. 5 User accounts during version transfers

In a version transfer older than 16.6 four user accounts are created instead of the first-start user account ("*Default User Account*") and assigned to predefined authorization profiles. The older passwords are re-used and need to be changed during the first login.

Tab. 24 User accounts during version transfers

User account	Password of the...	Assigned authorization profile
<i>installer</i>	Authorization level 3	Administrator
<i>systemmanager</i>	Authorization level 2	Systemmanager
<i>attendant</i>	Authorization level 1	Attendant
<i>oip</i>	Authorization level 1	OIP



Note:

Prior to 16.6 passwords are not case-sensitive; beginning with 16.6 passwords are case-sensitive (see "[Password syntax](#)", page 70). This is why the passwords taken over during the version transfer are converted to lower-case.

4.3.2 Passwords

To ensure that the PBX can only be configured with AIMS by authorized personnel, access to both the PBX configuration and the PBX is protected by passwords. AIMS and PBX password management can be synchronised.



Note:

AIMS keeps a list of user accounts and their assigned authorization profiles. When AIMS is started, a check is carried out to see whether the user's OS name (operating system name) is on the list of user accounts. If so, the user is authorized to configure offline without entering his password (auto login). If the PBX password is identical to the user's password, he can even access the PBX without password and configure online.

4.3.2.1 Initialization password

To access the default user account enter the following:

Tab. 25 First Start password

User name	admin
Password	3ascotel

It is advisable to change the password immediately to prevent unauthorized access to the user access control.

The initialization passwords are the same in the PBX and AIMS.



Note:

It is not possible to configure the PBX with a first start password. During the initial commissioning or after initialization you are prompted to change the initialization password during the connection set-up with the PBX. This ensures that unauthorized personnel cannot manipulate the PBX from a distance once access for remote maintenance has been enabled.

4. 3. 2. 2 Password syntax

The following rules apply to password selection and spelling:

- A password must consist of a minimum of 8 and a maximum of 10 alphanumeric characters.
- Unlike the user names, the passwords are case sensitive.
- The following special characters can be used: ?, /, <, >, -, +, *, #, =, . and space.
- German umlauts (e. g. ä, ö, ü) and other diacritical characters (e.g. é, à, â) are not permitted.
- The standard passwords 1Ascotel, 2Ascotel, 3Ascotel and 4Ascotel are not permitted.
- The password must not be the same as the user name.



Note:

When upgrading older systems whose passwords do not comply with these rules, you will be prompted to change the passwords the first time you access the configuration of the upgraded system.

4. 3. 2. 3 Change password

Any user who is assigned the "*User Access Control*" administration right is authorized to change the passwords of all the user accounts. It is therefore advisable to assign this administration right restrictively.

Users whose password has been changed are prompted to enter their newly assigned password the next time they log in. The same applies to users whose accounts have been newly created.

Users without the administration right "*User access control*" can only change their own password.

4.3.2.4 Incorrect password

After 15 failed login attempts using incorrect passwords the corresponding user account is blocked; it can then only be reactivated by a user with the "*User Access Control*" administration right. He then replaces the old password with a new one. The next time he logs in, the corresponding user is prompted to change the password and enter the new one he has been assigned.

4.3.2.5 Lost password

As long as one user who has been assigned the "*User Access Control*" administration right can still log in, he can simply overwrite with a new password the password lost by the other user. The next time he logs in, the corresponding user is prompted to change the password and enter the new one he has been assigned. If the passwords of all "Administrators" are lost and if password-free access using an operating system name (auto login) is no longer possible either, it is possible to access locally without a password (see "[Password-free access](#)", page 71)

4.3.3 Access using the System Assistant on the Office 45

The System Assistant on the Office 45 has access to the menus with "*Attendant*" level. The user account under which he logs in must be assigned an authorization profile in which the "*Office 45*" interface access is enabled. The profile also needs to be assigned the AIMS authorization level "*Attendant*" if the remote access status is to be changed.

4.3.4 Password-free access

The control pilot key on the connector strip can activate a function that enables password-free, local access with administration right "*User access control*". The local access is possible via the V.24 interface of a Pocket Adapter or with a LAN cable. This is useful for example if all the passwords have been lost. The procedure is described in "[Enabling / disabling password-free access](#)", page 192.

There is no password-free access for remote maintenance.

Password-free access with the System Assistant on the Office 45 is also possible, but without the possibility of changing the status of remote access.

4.3.5 Automatic exit from the configuration

The PBX will interrupt access to the system configuration if you do not make any changes ("*View*" → "*Options*" under "*Online Connections*") to a parameter value or do not make use of the navigation system during the set disconnect time

4.3.6 Access log

The PBX draws up an access log for each user account so that the history of accesses to the configuration can be tracked. Denied access attempts using erroneous or incorrectly type passwords are also logged.

The logs can be read by any user.

Retrieving the log data

The PBX monitors and saves all the accesses as well as failed access attempts. These lists can be retrieved locally or remotely.

CLIP verification

If the setting "*CLIP required*" is set to "*Yes*" in the configuration, remote retrieval is possible only if the retrieving party logs in using a CLIP. The CLIP number is also recorded by the access log.

Entering the processes in the log

Each access attempt generates an entry in the corresponding list. In the case of a remote maintenance access an entry will not be generated if remote maintenance is barred or if "*CLIP required*" is set to "*Yes*" in the configuration and no CLIP is received.

4.4 Enabling remote access

With remote access the user is authenticated using his user name and password. The user account must also be assigned an authorization profile in which the interface access "*Remote maintenance via dial-up access*" is enabled.

4.4.1 Access enabled by local users

Remote access can be enabled in three ways:

- via */# procedures (see [page 74](#))
- With the AIMS Configuration Manager, if "*AIMS authorization level = Attendant*" in the authorization profile.
- Using the System Assistant on the Office 45 if "*AIMS authorization level = Attendant*" in the authorization profile.

It can be revoked again automatically or manually.

All enabling procedures have equal authorization status. This means that remote access can be enabled using an */# procedure for example, and then barred again using the "*Remote maintenance*" setting in AIMS or with the System Assistant on the Office 45.

When remote maintenance is activated, the event message "*Remote Maintenance Enabled*" is sent to the local printer and to all the terminals registered in message group 8.

Remote access can be enabled or barred using the */# procedures both from the idle state and the talk state, e.g. after an enquiry.

The authorization to activate / deactivate remote access using */# procedures can be allocated in the user configuration ("*Remote maintenance = Yes*").

When the system is initialized, the authorizations of all users are restricted.

**Note:**

It is advisable not to keep the remote access authorization permanently activated. This ensures that the PBX cannot be manipulated from a remote location by unauthorized persons.

4. 4. 2 */# procedure for remote access

Tab. 26 */# procedure for remote access authorization

Enable / bar a one-off remote access	*754 / #754
Enable / bar a permanent remote access	*753 / #753

When remote access is enabled using procedure *754, access will automatically be barred again once the remote configuration process has been completed. It is possible to bar access manually using #754 before a remote configuration process has been initiated.

Remote access can be enabled permanently using the procedure *753. To bar access, the authorized user must enter the procedure #753 manually.

The enabling or barring of remote access authorization using the */# procedure is signalled in each case by an acknowledgement tone.

Remote access authorization can also be enabled or barred in the AIMS Configuration Manager or with the System Assistant function on the Office 45, if the relevant authorization has been given.



Note:

In a QSIG network it is important to make sure that the authorization to change the remote access is also denied to unauthorized PISN users. Otherwise a PISN user would be able to use an abbreviated dialling number defined for the destination PINX and containing the appropriate procedure to change the remote access authorization to the destination PINX.



Ascotel® IntelliGate® Net:

In an AIN the remote access of all the nodes depends on the setting in the Master. If remote access is enabled in the Master, both the AIN configuration and the offline configuration of the satellites are enabled.

Remote access via an external dial-up connection to the AIN is also secured and has to be explicitly enabled (see ["Enabling / disabling the dial-up connection to the AIN"](#), page 193). This is irrespective of whether dial-up access is via a satellite or directly to the Master.

4. 4. 3 Function keys for remote access authorization

On system terminals (with the exception of Office 10) the */# procedure for enabling remote access authorization can be stored under a function key, providing the user has the appropriate authorization.

The relevant LED lights up if remote access is enabled once or permanently.

The relevant LED goes off as soon as remote access is denied again, either automatically or manually, using the procedure or the configuration menu or the AIMS Configuration Manager.

Tab. 27 Menu example of a one-off remote access on the Office 45

F12:		REMOTE MAINT.	ONCE ONLY
OK	BACK		? v

Tab. 28 Menu example of repeated remote access on the Office 45

F12:		REMOTE MAINT.	ON
OK	BACK		? v

The menus for Office 35 are similarly structured except that the submenu for "*Once Only*" or "*On*" is located on a separate page.

4.5 Exchanging data between PBX and PC

The system and user data is stored in the PBX and on the PC's hard disk. Both databases are serviced by the AIMS Managers. To keep the databases at the same level, you need to exchange data between the databases.

The figure below illustrates the interplay between the PC and the two databases:

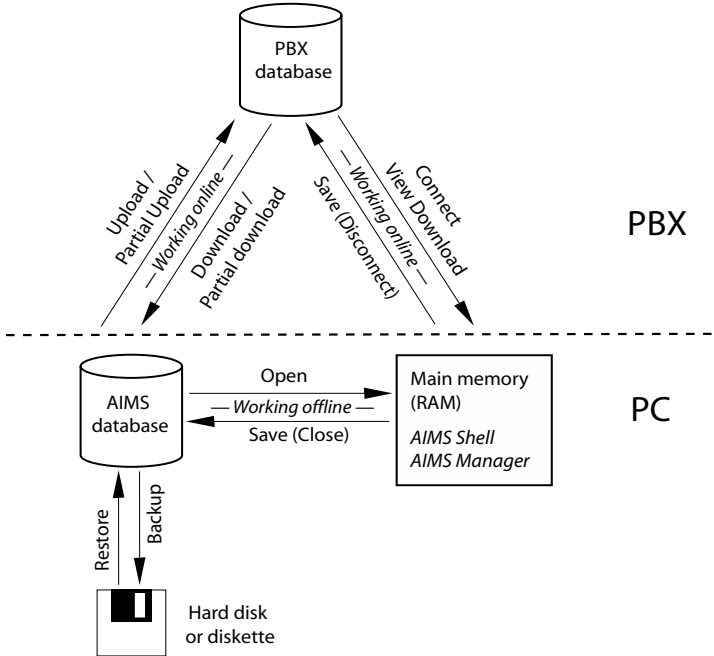


Fig. 16 Functions involved in exchange data between the PBX and AIMS

To edit or complement system and user data, load the data either directly from the PBX (PBX database) or from the PC's hard disk (AIMS database) into the main memory.



Note:

The data of the Voice Mail card and IPI card is administered in the corresponding Managers. The same applies to the data of the Project Manager.

4.5.1 Working offline (AIMS database)

With the AIMS database you can only work in offline mode. The following functions are available:

Open

All the data from the selected PBX is loaded from the AIMS database into the PC's main memory and made available for processing. When you modify the parameters in an AIMS Manager, a check mark is placed alongside the corresponding location on the menu tree.



Note:

The changes and the check marks are retained even if a Manager is closed without saving.

Close

The AIMS database is closed. If data was modified, the system will ask whether you want to save the changes in the AIMS database.

Save

After editing, the modified data is written from the PC's main memory into the AIMS database and the check marks on the modified parameters are deleted. Saving always stores the data from all the AIMS Managers.

Backup

The "*Backup*" function on the AIMS Shell stores the PBX data from the AIMS database to a backup file specified by the user. If the current PBX data is to be saved, it must first be loaded into the PBX database using "*Download*".



Tip:

Make two backup diskettes of the PBX data: Keep one with the system and give the other to the Installer.

Restore

The Restore function loads the PBX data from a backup file into the AIMS database. The data can then be transferred to the PBX using the Upload function.

4. 5. 2 Working online (PBX database)

Data in the PBX database can only be accessed in the online mode. The following functions are available:

Connect

The PBX is connected with the AIMS Shell and automatically loads the data of the PBX into the PC's main memory.

Disconnect

Closes all the AIMS Managers and disconnects the online connection between the PC and the PBX.

If data has been changed, but not yet stored in the PBX by saving, the system displays a prompt asking whether the configuration should be saved.

The system will then ask you whether you want to update the local AIMS database.

Save

The modified data is stored in the PBX and the check marks alongside the modified parameters are cleared. Saving always stores the data from all the AIMS Managers in the PBX.

Download

During a download via the AIMS Shell the PBX data are loaded from the PBX to the AIMS database.

During the download the PBX is automatically prebarred and then automatically released once the operation is completed. Existing connections are retained. The progress of the download operation is indicated by a progress indicator bar in a window. A download can be carried out when the system is operating under full-load conditions.

Partial download

The Partial Download function is used to save wave files (for Courtesy, Music on hold, and Voice Mail) from the PBX file system to the PC. This function is useful when there is insufficient free storage space available for the new software in the file system for a software update. In this case the downloaded files in the file system must be deleted and the storage of audio data temporarily prevented.

Download view

The View Download function loads the PBX data of the current window in an AIMS Manager from the PBX into the PC's main memory. This partial download is available in the online mode of individual Managers (e.g. Configuration Manager, Fault & Maintenance Manager). "*View Download*" is used to register new or modified hardware in AIMS.

Upload

During an upload via the AIMS Shell the PBX data are written from the AIMS database into the PBX.

During a data upload the PBX is automatically prebarred and then again released once the operation is completed. The progress of the upload operation is indicated by a progress indicator bar in a window.

The status of CFUs, user group members, switch groups relays and mailboxes can also be uploaded.

An upload is carried out in the following cases:

- Putting a new system into operation.
- Restoring a system if the configuration has been lost.
- Replicating a special configuration, e.g. copying customer data to a different system.



Note:

Some configuration changes only take effect after a restart. Once the upload is completed, the system asks whether the PBX should be restarted.

Partial Upload

The Partial Upload function is used to load the following data individually from the AIMS database to the PBX.

- Abbreviated dialling numbers
- PISN user data
- Terminal data (individual or block by block)
- LCR (Least Cost Routing) data
- AIP data
- Wave files (for Courtesy, Music on hold or all audio data)

With a partial upload, configuration data that changes frequently can be transferred more quickly into the system.



Note:

A partial upload is only followed by a restart and disconnection of existing phone connections if system data is loaded up onto a PBX. In this case the system generates an appropriate message.

Voice mail

In the expanded mode the Voice Mail System operates with compressed audio data (G.729). Existing uncompressed audio data (G.711) has to be compressed first before it can be played back. The data for the Audio Guide must also be available in compressed format.

This menu allows you to load voice messages and greetings from the system onto the PC, convert them with the Aastra IntelliGate® WAV Converter and then reload them back onto the system. The global greetings and the Audio Guide languages can be loaded separately.



See also:

The relevant procedure is described in detail in the AIMS Help.

4. 5. 3 Import / Export Data

The Import / Export function allows the user to import data tables (abbreviated dialling numbers, DDI numbers and names, user numbers and user names, terminal data) into the AIMS database or to export such tables from the database. The exported tables are stored in Excel format and can then be sorted or modified.

Importing data from the Project Manager

The PBX system data prepared with the Project Manager can be saved in a file with the ".csv" file extension. When the data is imported from the Project Manager, it is converted by AIMS and loaded into the AIMS database of a new PBX.

Importing data from older systems

In AIMS you can import system data from AIMS 4.x databases. For this to work, AIMS 4.x has to be installed before.

Similarly it is possible to transfer files with system data from the Project Manager to the AIMS database.

4.6 Configuration Steps

The configuration steps are based on the information determined during the planning and, where applicable, the installation.

4.6.1 System initialization

If a system is to be upgraded, it must first be in a defined state. This involves setting or deleting all the parameter values to their initialization value and carrying out a self-test.

This initialization can be achieved in the following ways:

- With the pilot key on the front panel
- With AIMS

4.6.1.1 Hardware-induced initialization

See ["Carrying out a first start", page 194](#)

4.6.1.2 Software-induced initialization

Carry out an initialization in the AIMS Configuration Manager or in the Fault and Maintenance Manager under "*Online*" → "*Reset PBX*". If the sales channel is also to be modified, create a new PBX in the AIMS Shell and select a sales channel. Then under "*Tools*" → "*Set/Change Sales Channel*" carry out an initialization using the corresponding initialization values.



Note:

To perform a first-start or a sales channel change, either a user account with the corresponding authorization profile is necessary (see ["User accounts and authorization profiles", page 64](#)) or the local, password-free access must be open (see ["Password-free access", page 71](#)).

4. 6. 2 Preparing Configuration with AIMS Offline

The complete configuration of a PBX can be created on the PC without access to the PBX and stored in the database. When this is done, data can be read in from the Project Manager and supplemented. The prepared configuration can then be uploaded to the PBX.



See also:

The procedural steps for configuring an individual system, a private network (PISN) or an Ascotel® IntelliGate® Net (AIN) are described in detail in AIMS help.

4. 6. 3 Configuration with AIMS (online)

If a PBX that has already been configured is present, the configuration can be directly loaded and edited with AIMS.

If the PBX to be configured is in the first-start state, the first-start parameters are loaded.



See also:

- The procedural steps for setting up and establishing a connection are described in detail in AIMS help.
- Part of the configuration settings is also accessible via the System Assistant function on Office 45. A separate set of User's Guide is available for this.

4.6.4 Activating the licences

The licence information is stored on the EIM card (Equipment Identification Module) located on the mainboard.

The licence information includes:

- The EID (Equipment Identification) serial number of the EIM card
- The sales channel identification CID (Channel Identification)
- Licence code LIC
- System type

Each basic system is supplied with a licence certificate containing the above information (without licence code). Please keep the certificate in a safe place.

Tab. 29 Example of licence information

Licensing	
Equipment Identification (EID):	81154445474349760E5844D276000035A317
Channel Identification (CID):	0
Licence code (LIC):	0408040158F396792739
System type:	A300

The licences must be activated. The licence code can be edited both online and offline with AIMS:

1. Type in the licence code under 1_2_2 "*Licensing*" in the system configuration. The licence code is stored in the EIM.
2. Upload the system configuration data and restart the system; the licensed function(s) is(are) now enabled.

All the features (even those subject to charges) can be configured offline without a valid licence number. When the configuration data is uploaded, AIMS will warn the user that the system does not yet have the required licences.

Each licence code can only be used for one PBX. To licence several systems, you will obtain separate licence codes to match the licence information of the individual systems.

The licence information can be viewed directly from the PBX using the Configuration Manager in AIMS.

The data stored on the EIM card is not deleted by a first start of the PBX, and remains available.

As of 17.6 the OIP licences are no longer managed in the PBX, but by the OIP itself.



See also:

["Licence-related system limits", page 48](#)

4.6.5 Reading initialization values

There is a simple method for reading out the first-start values:

1. Create a new system on the AIMS Shell in offline mode
2. Log in with the first-start access data
3. Open Configuration Manager
4. Add the desired hardware in the "*System configuration*".
5. Add system terminals, mailboxes, direct dialling numbers etc.
6. Most first-start values can now be read out.

5 Installation

This Chapter tells you the ways in which Ascotel® IntelliGate® 150/300 can be installed and the conditions to be observed. It also includes the mounting into a 19" rack, the correct way to connect the earthing, and the power supply. Other topics described in this Chapter comprise fitting the basic system with system modules, interface cards and the relevant Wiring Adapters. Finally the Chapter also describes the network and terminal-side connection of the interfaces.

5.1 System components

The figure below shows the components of the Ascotel® IntelliGate® A150/300 complete with mounting options.

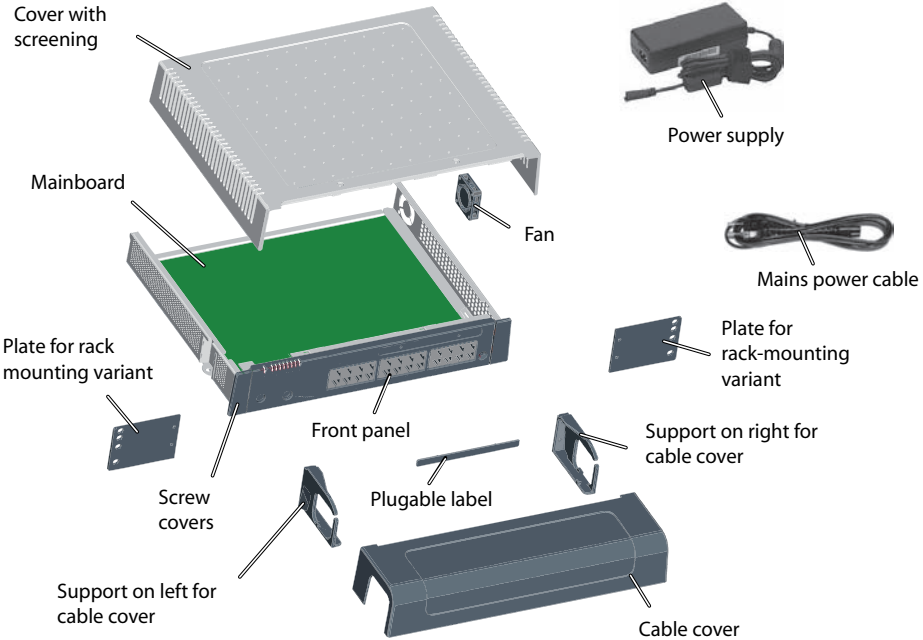


Fig. 17 System components with mounting options

5.2 Mounting the System

Ascotel® IntelliGate® 150/300 is suitable for both wall and desktop installation as well as for mounting in a 19" rack. Different mounting sets are available in each case.

5.2.1 Equipment supplied

The equipment supplied with the Ascotel® IntelliGate® A150/300 includes:

- A150 or A300 basic system
- Set of screws for wall or desktop installation and earthing connection
- Snap-on tag
- Power supply
- Power cord

5.2.2 Mounting options

Ascotel® IntelliGate® A150/300 includes all the materials required for wall or desktop installation. Additional rack installation sets are required for a 19" rack installation. These sets for A150 and A300 are different.

For wall mounting all the connecting cables can be concealed behind a cable cover. This set can be ordered as an option.

5.2.2.1 Cable cover set for A150/300

Equipment supplied:

- Cable cover
- Left-hand bracket for cable cover
- Right-hand bracket for cable cover
- Screw set

5. 2. 2. 2 Rack-mounting set for A150

Equipment supplied:

- 2 mounting plates for rack installation
- Screw set

5. 2. 2. 3 Rack-mounting set for A300

Equipment supplied:

- 2 mounting plates for rack installation
- Screw set
- Fan

5. 2. 3 Location requirement

The following location requirements must be observed when positioning the system.



Hazard

Failure to observe the location requirements can cause the system to overheat, damaging electrical components and/or the surrounding area.. An event message is generated if the heat dissipation is insufficient. If so, the appropriate measures must be taken immediately to improve the heat dissipation, e. g. by providing the required clearances, lowering the ambient temperature or installing the fan from the rack-mounting set (A300 only).

Tab. 30 A150/300 Location requirements

Heat radiation	<ul style="list-style-type: none">• Do not position in direct sunlight, near radiators or near other heating sources
EMC	<ul style="list-style-type: none">• Do not position in strong electromagnetic fields of radiation (e.g. near x-ray equipment, welding equipment or similar).
Heat dissipation	<ul style="list-style-type: none">• Do not place any objects on top of the system.• Observe the clearance requirements for wall mounting and desktop installation (see Fig. 18 and Fig. 19).• In a rack-mounted installation the space to the left and right between the system and the wall of the 19" rack must remain empty. The installation of a fan is also mandatory for the A300.
Environment	<ul style="list-style-type: none">• Room temperature 5...35 °C• Relative humidity 30...80%, non-condensing

5.2.4 Safety regulations

Be sure to observe the following safety regulations before carrying out work inside a basic system:



Warning

Components, interface cards or system modules can be damaged by electrical voltage.

Always disconnect the system from the power supply before removing the housing cover.



Warning

Components can be damaged by electrostatic discharge when touched. Always touch the earthed metal case of the basic system before carrying out work inside the housing. This also applies to interface cards and system modules that are no longer packed inside the ESD protective wrapping.

5.2.5 Wall mounting

There are two possibilities for wall mounting. In the first variant the front panel faces right (see Fig. 18); in the second, it faces downwards (see Fig. 19). The wall-mounting option chosen will depend on the way the cables are routed. The LED display remains visible whatever the mounting position, even when the cable cover is fitted.



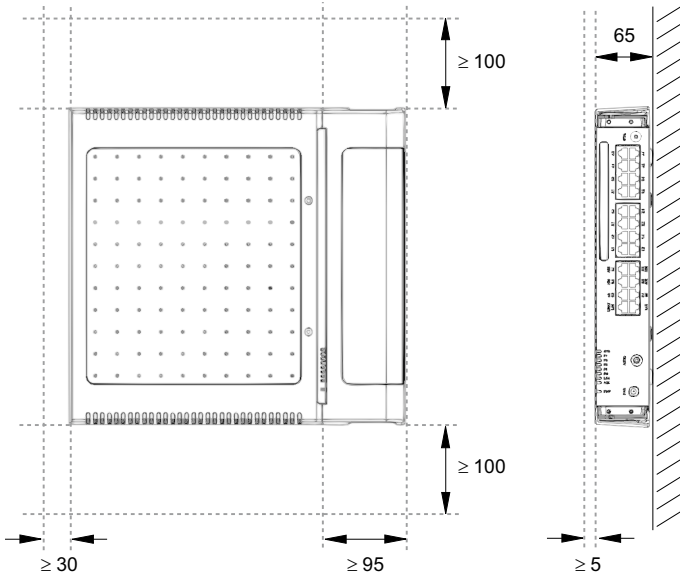
Warning

A wall-mounting option in which the front panel faces upwards or to the right is not permitted. Inadequate heat dissipation can damage the system.

5.2.5.1 Minimum distances

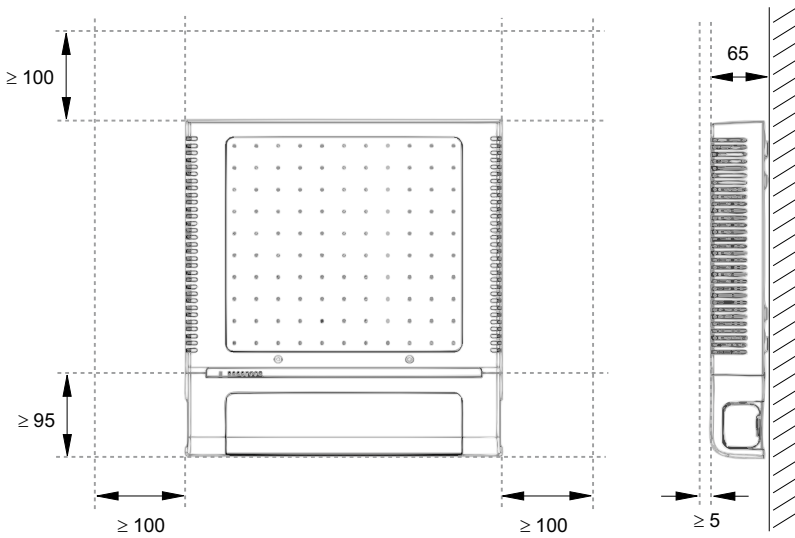
To ensure adequate heat dissipation, minimum distances need to be maintained with other objects such as cable ducts, cabinets or mobile objects. Maintaining minimum distances also allows the installation of the cable cover and the possibility of suspending the system into and out of the wall-mounted screws.

The two diagrams below illustrate the two wall-mounting possibilities.



All dimensions in mm

Fig. 18 Minimum distances for wall mounting (front panel facing to the right)



All dimensions in mm

Fig. 19 Minimum distances for wall mounting (front panel facing downwards)

5.2.5.2 Drilling plan

The system is suspended into two premounted wall screws using the suspension points in the housing base. Depending on the type of mounting, these are the suspension points marked under position A or B on the drilling plan. The system is secured with a third screw to prevent it from being dislodged accidentally (position C).

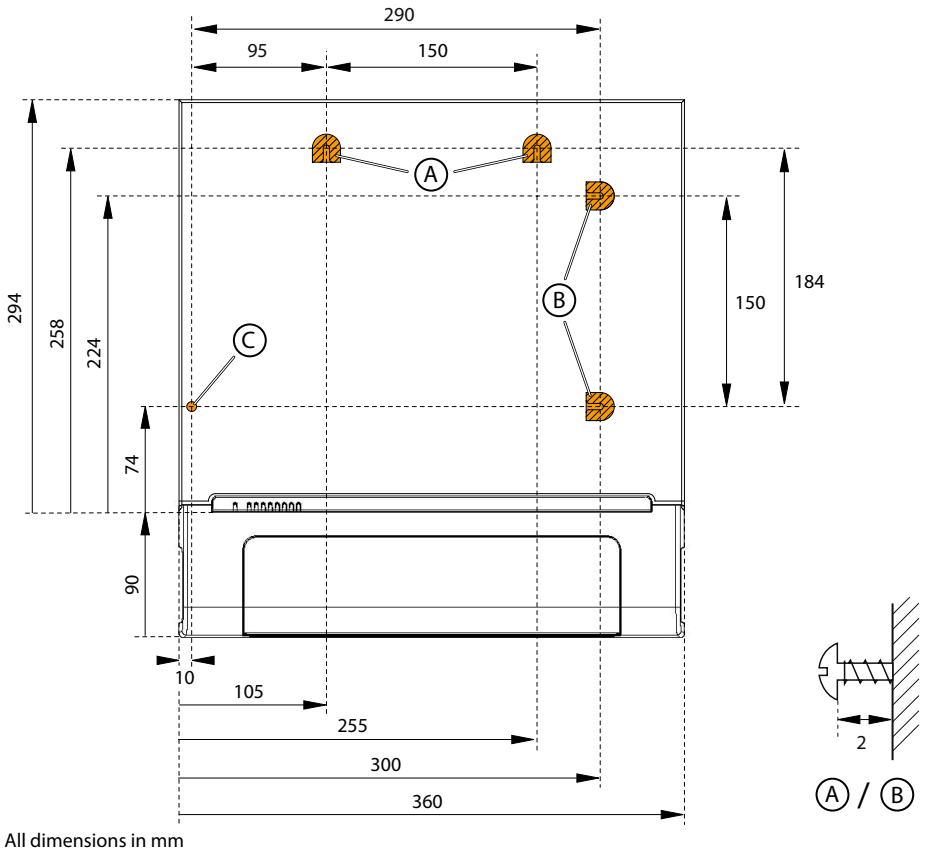


Fig. 20 Drilling plan for A150/300 wall mounting

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5. 2. 5. 3 Drilling template

The packaging box of the basic system can also be used for marking out the drill holes. To do so it is best to detach the part of the inner packaging box that contains the drill holes.

Note: The holes on the cardboard box are not labelled.

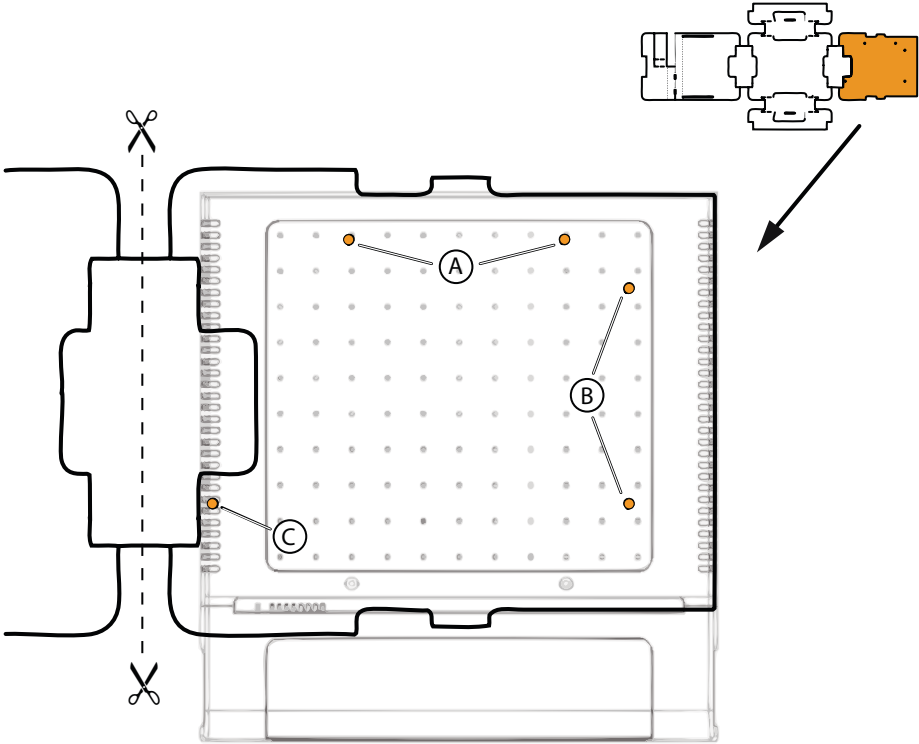


Fig. 21 Drilling template

5. 2. 5. 4 Wall-mounting procedure

Materials required:

- Screw set for wall/desktop installation
- 6 mm drill
- Screwdriver

To mount the system to the wall proceed as follows:

1. Using the drill template or the instructions on the drill plan to mark out the three drill holes. Make sure you observe the minimum distances to other objects, walls or ceilings as shown in [Fig. 18](#) and [Fig. 19](#).
2. Drill the three dowel holes.
3. Insert the dowel plugs.
4. Screw in the two shorter upper dowel screws (position A or B). Observe the distance between the screw heads and the wall as shown in [Fig. 20](#).
5. Disconnect the system from the power supply.



Warning

Be sure to observe the "[Safety regulations](#)", page 89.

6. Remove the housing cover.
7. Connect the earthing (see "[Connecting the earthing](#)", page 100).
8. Suspend the housing of the basic system onto the screws.
9. To secure the system screw in the long lower dowel screw (position C).
10. Fit the housing cover.
11. Secure the snap-on tag to the front panel or to a suitable position on the housing cover. The holes in the housing cover are spaced in such a way that the snap-on tag can be secured both lengthways and crossways.
12. Reconnect the system to the power supply.

5. 2. 6 Desktop installation

To protect the cable connections the system can also be secured using three screws. The same drilling plan (see [Fig. 20](#)) and the same procedure apply as for wall mounting (see "[Wall-mounting procedure](#)", page 93).



Warning

To ensure adequate heat dissipation make sure that no objects are placed on top of the system (see also "[Location requirement](#)", page 88). Minimum distances must also be observed as shown in [Fig. 18](#).

5. 2. 7 Rack-mounted installation

The rack-mounting set A150 or A300 allows the system to be installed horizontally into a 19" rack. Be sure to observe the following:

- The system takes up the space of 1.5 height units (units) inside the 19" rack. (1 unit corresponds to 44.45 mm).
- The holes in the mounting plates allow two systems to be placed directly above each other with a space requirement of three units. Different holes in the mounting plates are used for this purpose (see [Fig. 22](#)).
- The space on the left and right between the system and the panels of the 19" rack is for heat dissipation and must remain clear.
- The installation of a fan is compulsory when rack-mounting an A300; the fan is included in rack-mounting set A300.

Note: The set of screws for rack mounting always includes fastening screws for the fan. On the A150 these two screws are superfluous.

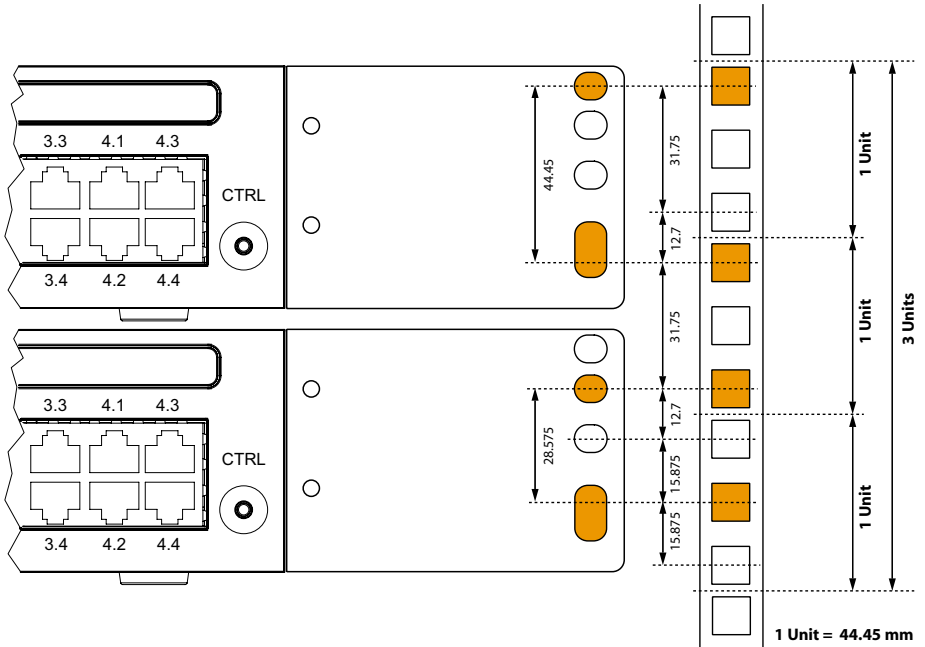


Fig. 22 Placing two systems above each other inside a 19" rack

5. 2. 7. 1 Rack-mounting procedure

Materials required:

- Rack-mounting set for A150 and A300
- Screw set for wall/desktop installation
- Screwdriver

For the rack-mounting of the A150/300 proceed as follows:

1. Pull off the screw covers on the left and right of the front panel.
2. Secure the mounting plates to the basic system using the M4 screws. Make sure the front panel and the mounting plate are aligned.
3. Disconnect the system from the power supply.



Warning

Be sure to observe the "[Safety regulations](#)", page 89.

4. Remove the housing cover.
5. A300 only:
Install the fan (see "[Installing the fan](#)", page 97).
6. Connect the earthing (see "[Connecting the earthing](#)", page 100).
7. Fit the housing cover.
8. Secure the cage nuts in the appropriate positions in the rack's fastening rails (see [Fig. 22](#)).
9. Secure the basic system to the rack's fastening rails using the M6 screws, the plastic washers and the cage nuts.
10. Fasten the snap-on tag to the front panel.
11. Reconnect the system to the power supply.

5. 2. 7. 2 Installing the fan

Materials required:

- Fan from rack-mounting set A300
- 2 screws from the rack-mounting screw set A300
- Screwdriver

To install the fan proceed as follows:

1. Disconnect the system from the power supply.



Warning

Be sure to observe the "Safety regulations", page 89.

2. Remove the housing cover.
3. Use the two screws to fit the fan to the inside of the housing. Take note of the arrows on the fan. They indicate the direction of rotation and the air flow. The air must flow out of the housing of the basic system (see Fig. 23).
4. Plug the fan connector into the socket marked "FAN" on the mainboard.
5. Fit the housing cover.
6. Reconnect the system to the power supply.



Note

The fan only turns if required by the equipment temperature.

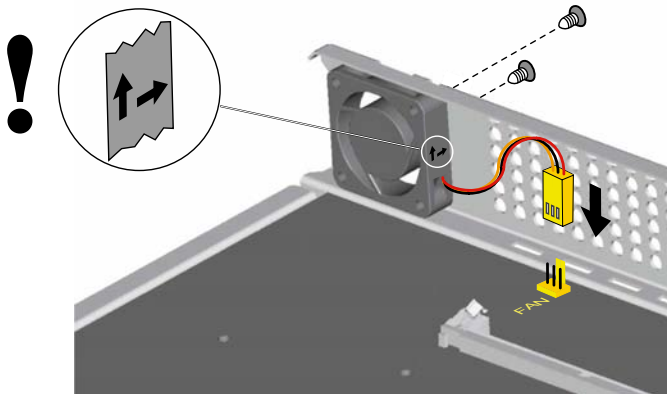


Fig. 23 Installing the fan in A300

5. 2. 7. 3 Installing the cable cover

Materials required:

- Cable cover set for A150/300
- Screwdriver

To install the cable cover proceed as follows:

1. Pull off the screw covers on the left and right of the front panel.
2. Use the M4 screws of the cable cover set to secure the brackets for the cable cover to the basic system.



Note

The two brackets are not identical. Compare the cable brackets with the figures in [Fig. 24](#).

3. Fit the cable cover over the brackets from above until they are felt to engage.

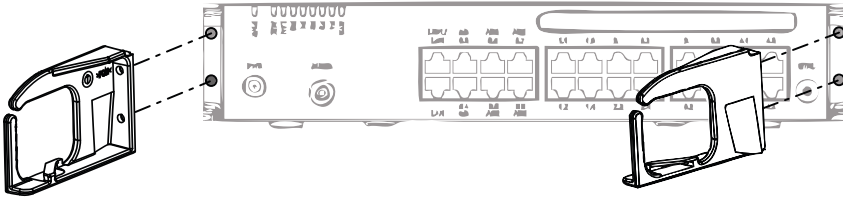


Fig. 24 Installing the brackets for the cable cover



Tip

To remove the cable cover reach into the side openings of the cover, gently press the two (engaged) lugs outwards and remove the cover.

5.3 Earthing and protecting the system

The protective earth and equipotential bonding are important integral parts of the safety concept: Standard EN 60950 relevant to safety matters stipulates protective earthing.



Warning

High leakage current.

Establish an earth connection before connecting to the telecommunications network.

Disconnect the system from the telecommunications network before carrying out maintenance work.



Warning

Overvoltage.

Transient overvoltage can occur on the mains and on the telecommunications network.

Protect each line installation leading from the building by using one surge voltage protector per core at the isolating point (main) distribution frame or entry point into the building.

Operation on an IT current distribution system

This system can be operated on an IT current distribution system with voltage up to 230 VAC.

5.3.1 Connecting the earthing

The system's earthing connection is located at the front left on the underside and can only be connected once the housing cover has been removed. The earthing wire is secured by a screw, spring washer and serrated lock washer, which are included in the screw set A150/300.

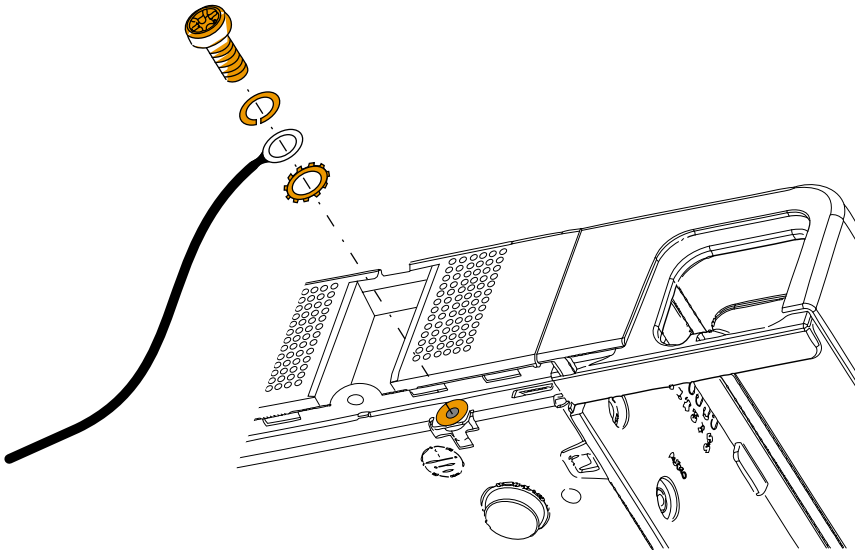


Fig. 25 Earthing connection

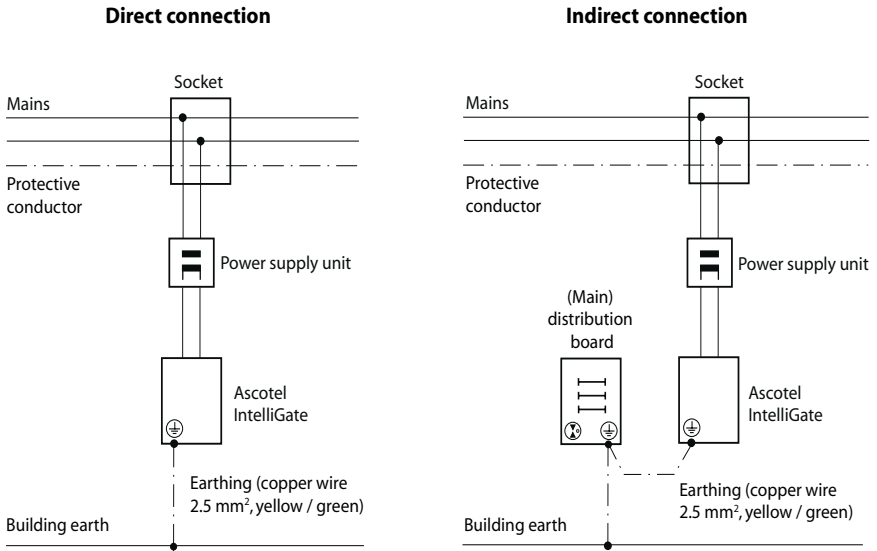


Fig. 26 Earthing of the system in the case of an indirect connection and direct connection



Note

In the case of an indirect connection make sure that the system's earthing wire does not form any earth loops with the earthed cable screenings of the installation cables leading up to the (main) distribution frame. The cables should be kept as short as possible and laid out in parallel.

5.3.2 Connecting the cable screening

When using shielded installation cables also use shielded RJ-45 connectors. In this way the shielding of the installation cables is automatically connected with the housing of the basic system and therefore with the building earth.



Note

Connect the cable screens to one another at the splitting point only. Observe the tree structure principle to prevent earth loops.

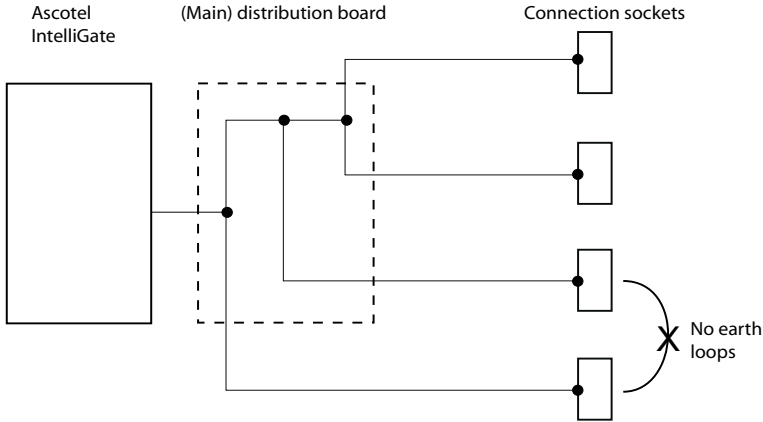


Fig. 27 Tree structure principle

5.4 Power Supply to the System

The system is powered as standard with 230 VAC or 115 VAC. To ensure that its operation is maintained even in the event of a mains outage, an external uninterruptible power supply (UPS) must be used.

5.4.1 115/230 V power supply

The system is powered by the supplied power supply unit. The power supply unit is connected to the mains using a two-pin standard Euro power cable.

The following points are to be observed:

- The mains connector acts as a disconnecting device and must be positioned so that it is easily accessible.
- Only ever use the supplied power supply unit.

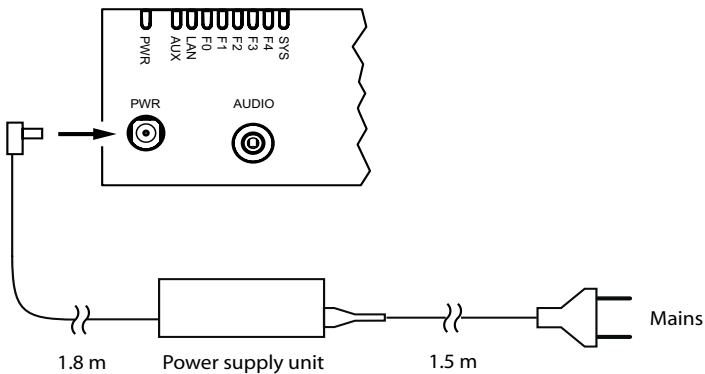


Fig. 28 Powering the system from the mains

5. 4. 2 Uninterruptible power supply (UPS)

The use of an external uninterruptible power supply (UPS) guarantees operation even in the event of a mains outage.

The UPS battery capacity is rated according to the system's power requirements and the required bridging time. The table below shows the required battery capacity for a battery voltage of 12 V.

Tab. 31 Power requirements of an A150/300 and battery rating (12 V)

System	Maximum power requirements		Battery capacity [Ah] ¹⁾ for bridging time		
	OC	W	1 h	4 h	12 h
A150	100	50	7	28	84
A300	150	75	11	44	132

¹⁾ Maximum configuration and maximum traffic volume. Typical conditions require approx. 60% of the specified battery capacity



Note

The uninterrupted operation of the system is ensured if the UPS takes over the power supply within 6 ms of the mains outage.



See also

For more technical details see ["Technical Data", page 227](#).

5. 5 Equipping the Basic System

For an individual expansion the A150/300 basic system is equipped with interface cards, the appropriate wiring adapters and system modules. An overview can be found in the Chapter ["Expansion Stages and System Limits", page 23](#).

5.5.1 Interface card

Interface cards are fitted to slots IC1...IC4. IC3 and IC4 are to be found only on the A300 (see Fig. 8).

1. Disconnect the system from the power supply.



Warning

Be sure to observe the "Safety regulations", page 89.

2. Remove the housing cover.
3. Place the interface card at a slight angle into the required slot (see Fig. 29). Make sure the angled side of the interface card is facing backwards (i.e. it must not project over the wiring adapter slots).
4. Carefully press the interface card downwards until the two lateral metal clamps engage.
5. Fit the corresponding wiring adapter (see "Wiring Adapter", page 106) into the appropriate wiring adapter slot WA1...WA4.
6. Fit the housing cover.
7. Reconnect the system to the power supply.

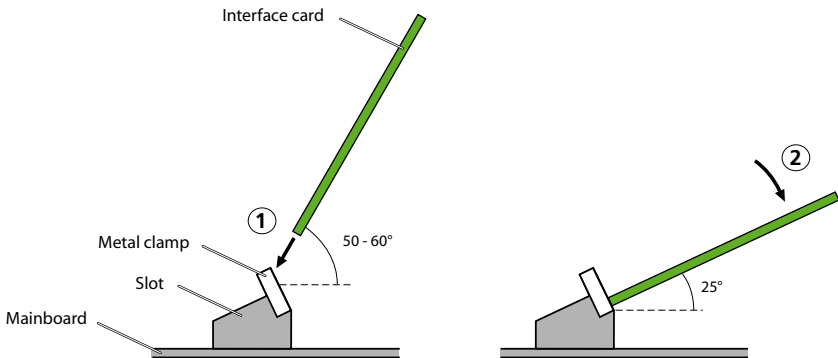


Fig. 29 Fitting an interface card



Notes

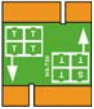



- The ODAB options card must be fitted to slot IC2 (A150) or slot IC4 (A300) if it is to be used for connecting a door intercom (see "Equipment on the ODAB options card", page 140).
- The AD2 terminal cards EAD4V and EAD4C cannot be fitted to slot IC4 of an A300 due to their mechanical dimensions.


5.5.2 Wiring Adapter

Wiring adapters are used to route the interfaces of the interface cards to the RJ45 sockets on the front panel and are fitted to slots WA1...WA4. Slot WA0 is equipped only in combination with the LAN switch module SM-LAN8. Slots WA3 and WA4 are to be found only on the A300 (see also Fig. 8).

The table below provides an overview of the combinations of wiring adapters and interface cards. Unless specified otherwise, the corresponding wiring adapter is included in the equipment supplied with each interface card.

Tab. 32 Combinations of wiring adapters / interface cards

Wiring Adapter	Interface card	Plug-in orientation	Port number			
			X.1	X.2	X.3	X.4
	TIC-4TS	TTTT	T	T	T	T
	TIC-4TS	STTT	S	T	T	T
	TIC-2TS	TTTT	T	T	-	-
	TIC-2TS	STTT	S	T	-	-
	ESST-2 ¹⁾²⁾	STTT	S	T	-	-
	TIC-4TS ¹⁾	SSTT	S	S	T	T
	TIC-4TS ¹⁾	SSST	S	S	S	T
	TIC-2TS ¹⁾	SSTT	S	S	-	-
	TIC-2TS ¹⁾	SSST	S	S	-	-
	ESST-2 ¹⁾²⁾	SSTT	S	S	-	-
	ESST-2 ¹⁾²⁾	SSST	S	S	-	-
	ODAB	SSTT	I/O 1.2	I/O 3,4	ab/Door Intercom	-
	ETAB4 ³⁾	-	a/b	a/b	a/b	a/b
	EADP4 ³⁾	-	AD2	AD2	AD2	AD2
	EAD4C ¹⁾	-	AD2	AD2	AD2	AD2
	EAD4V ¹⁾	-	AD2	AD2	AD2	AD2
	EAAB2 ¹⁾	-	-	-	a/b	a/b
	TIC-4AB	-	a/b	a/b	a/b	a/b
	TIC-2AB	-	a/b	a/b	-	-
	TIC-1PRI	-	T2	Test ⁴⁾	-	-

Wiring Adapter	Interface card	Plug-in orientation	Port number			
			X.1	X.2	X.3	X.4
	–	–	LAN	LAN	LAN	LAN
	EADP4	–	LAN+AD2	LAN+AD2	LAN+AD2	LAN+AD2
	EAD4C	–	LAN+AD2	LAN+AD2	LAN+AD2	LAN+AD2
	EAD4V	–	LAN+AD2	LAN+AD2	LAN+AD2	LAN+AD2

- 1) The wiring adapter is not part of the equipment supplied with this interface card and must be ordered separately.
- 2) On the ESST-2 terminal card the jumper must always be fitted in position T (see Fig. 30).
- 3) The wiring adapter is only part of the equipment supplied with order variant A150/300.
- 4) For test purposes the T2 interface is also routed in parallel to port X.2.
- 5) In combination with AD2 terminal cards the LAN switch module SM-LAN8 acts as two wiring adapters.

Please note:

- The arrows on the wiring adapters specify the plug-in orientation of the required port assignment.
- On the ESST-2 terminal card the jumper must always be fitted in position T (see figure below). The port assignment is specified by the wiring adapter alone.



Fig. 30 Jumper position on card ESST-2



Note

Any incorrectly fitted or missing wiring adapters are signalled by a red flashing LED on the display after start-up (see "Wiring Adapter Malfunction Mode", page 196).

5.5.3 DSP module

DSP modules belong to the category of system modules and are fitted to the SM1 slot (see Fig. 8). DSP modules are stackable.

1. Disconnect the system from the power supply.



Warning

Be sure to observe the "[Safety regulations](#)", page 89.

2. Remove the housing cover.
3. Remove the fastening screw from module slot SM1.
4. Instead of the fastening screw, screw in the spacer sleeve enclosed with the module.
5. Place the module on slot SM1 of the basic system (or onto a module already fitted in that slot) and press down evenly on both connectors as far as the stop.
6. Secure the module with the fastening screw.
7. Fit the housing cover.
8. Reconnect the system to the power supply.

5.5.4 LAN switch module

LAN switch modules belong to the category of system modules and are fitted to the two neighbouring slots WA0...WA4 (see Fig. 8). The WA1...WA4 slots are also used for the Wiring Adapters. If a LAN switch module occupies slots WA1...WA4, no interface cards can be fitted to the corresponding slots IC1...IC4. The AD2 terminal cards are the exception (see "[LAN switch module](#)", page 36).



Tip

Use slots WA0 and WA1 for a LAN switch module. As a result equipping slots WA2...WA4 is not limited to AD2 terminal cards.

1. Disconnect the system from the power supply.



Warning

Be sure to observe the "[Safety regulations](#)", page 89.

2. Remove the housing cover.
3. Place the module into two neighbouring slots WA0...WA4 and press it down evenly as far as the stop.
4. Fit the housing cover.
5. Reconnect the system to the power supply.

5.5.5 Component mounting rules

The component mounting rules mentioned in the previous chapters are listed here in an overview:

- In principle the interface cards can be used in all the card slots.
Exceptions:
 - The AD2 terminal cards EAD4V and EAD4C cannot be fitted to slot IC4 of an A300 due to their mechanical dimensions.
 - If the ODAB options card is used to connect a door intercom, it must be fitted to slot IC2 (A150) or slot IC4 (A300).
 - If the ODAB options card is used to control switch group positions and external devices, it must be fitted to slot IC1 (A150) or slot IC1, 2 or 3 (A300).
- DSP modules are stackable and must always be fitted to slot SM1. Slot SM2 on the A300 basic system is provided for the system's future expansions.
- On the ESST-2 terminal card the jumper must always be fitted in position T (see [Fig. 30](#)).
- The LAN switch module uses two neighbouring wiring adapter slots. If LAN switch modules are fitted, only AD2 terminal cards can still be fitted to the corresponding card slots.
- The preferred slots for a LAN switch module are slots WA0 and WA1. This means that there is always at least one slot still available for other interface cards besides AD2.
- The interfaces are enabled sequentially when the system is started up. The following rules apply:
 - The number of interfaces actually enabled is determined in each case by the system limits (see "[System Limits](#)", [page 43](#)). If a limit value is reached, all the interface cards or all the interfaces of the last card may not be enabled.
 - The interfaces are enabled in accordance with their designation, starting with the lower designations. This means that the terminal interfaces on the main-board are always enabled before those on the interface cards.

5.6 Connecting the System

There are two possibilities for connection to the telephone network and the terminal-side cabling:

- Direct connection
- Indirect connection via (main) distribution frame and any universal building cable installation (UBC) (see also [Fig. 34](#) and [Fig. 35](#)).

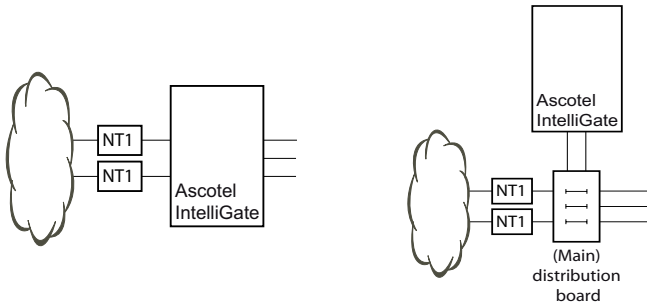


Fig. 31 Direct connection (left) and indirect connection (right)

On the front panel all the connections are made using RJ45 connectors.

5.6.1 Direct connection

The direct connection is with standard commercial cables. Details can be found in the Chapter "[Network Interfaces](#)", page 115.

5.6.2 Indirect connection

There are two possibilities for connecting the system indirectly to the telephone network and terminal-side cabling:

- Connection via main distribution board
- Connection to a universal building cable installation (UBC)

5. 6. 2. 1 Connection via main distribution board

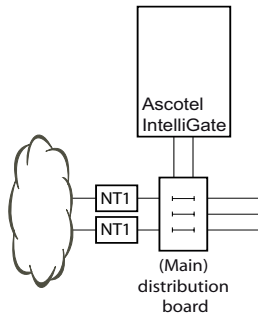


Fig. 32 Connection via main distribution board

The interface sockets on the front panel are connected with the (main) distribution frame or the patch panels using either standard commercial or prefabricated connecting cables.

Prefabricated connecting cable

The cable is 6 m long and, at one extremity, has 12 RJ45 connectors for the interfaces on the front panel. Two of them have 4 cores; the others, 2 cores. This means the cable is suitable for connecting the following interfaces:

- 2 network interfaces (T, S external) or 2 terminal interfaces (S), relay contacts/ control inputs of an ODAB options card or a combination thereof.
- 8 network interfaces (a/b) or 10 terminal interfaces (AD2, a/b) or a combination thereof.



Notes:

- This cable cannot be used to connect Ethernet interfaces (see also [Tab. 64 "Connection of Ethernet interfaces", page 147](#)).
- It is not possible to connect an ODAB door intercom interface with only one cable (see also ["Connection of a door intercom \(TFE\)", page 141](#)).



Tip

Use commercial connecting cables to connect the T interfaces.

Tab. 33 Diagram for a prefabricated connecting cable

Stranded element	Core colour	Cable designation	RJ45	Signal	
			Pin	Connection four-wire	Two-wire connection
1	white	1	4	f	a
	blue		5	e	b
	turquoise		6	d	-
	violet		3	c	-
2	white	2	4	f	a
	orange		5	e	b
	turquoise		6	d	-
	violet		3	c	-
3	white	3	4	-	a
	green		5	-	b
	turquoise	4	4	-	a
	violet		5	-	b
4	white	5	4	-	a
	brown		5	-	b
	turquoise	6.	4	-	a
	violet		5	-	b
5	white	7	4	-	a
	grey		5	-	b
	turquoise	8	4	-	a
	violet		5	-	b
6	red	9.	4	-	a
	blue		5	-	b
	turquoise	10	4	-	a
	violet		5	-	b
7	red	11	4	-	a
	orange		5	-	b
	turquoise	12	4	-	a
	violet		5	-	b

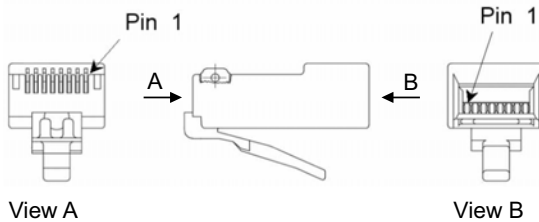


Fig. 33 Pin numbering, RJ45 connector

5. 6. 2. 2 Connection to a universal building cable installation (UBC)

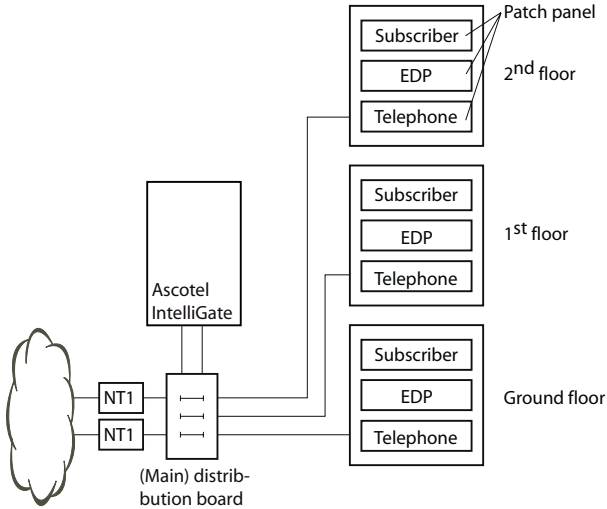


Fig. 34 Connecting to a UBC via a (main) distribution board (example)

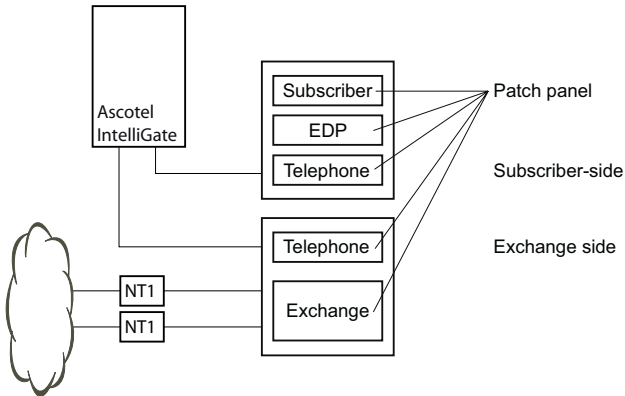


Fig. 35 Connecting to a UBC via wiring centre (example)

5.7 Cabling interfaces

All the interfaces are routed to the front panel and are therefore accessible without opening the system.

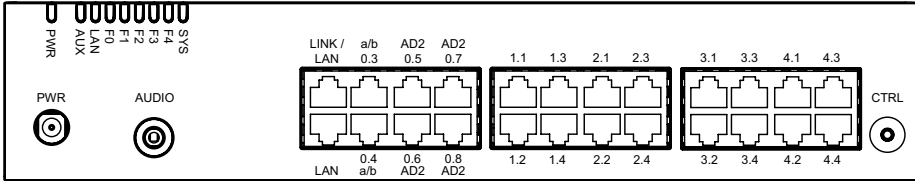


Fig. 36 Interfaces on the front panel with port designation

5.7.1 Port addressing

A port address is always of the type x.y. x is the number of the card slot, and y, the port number.

The slot numbering begins with 0 (= mainboard) and ends with 2 (for A150) or 4 (for A300).

With S interface and AD2 interface addresses, the terminal selection digit (TSD) is displayed in AIMS in addition to the slot and port numbers.

Tab. 34 Examples of interface addressing

Slot	Port address
Mainboard; AD2 interface x.5	0.5
Interface card on slot IC1; interface x.3	1.3
Terminal with TSD 2 on interface card in IC3; interface x.4	3.4-2

5.7.2 Network Interfaces

Equipping the system with interface cards provides the necessary network interfaces. With the exception of the Ethernet interface, which also represents a network interface via SIP access, there are no network interfaces on the A150/300 main-board.

5.7.2.1 Basic access T

With the appropriate interface cards and Wiring Adapters, T network interfaces can be made available at RJ45 sockets 1.1...4.4.

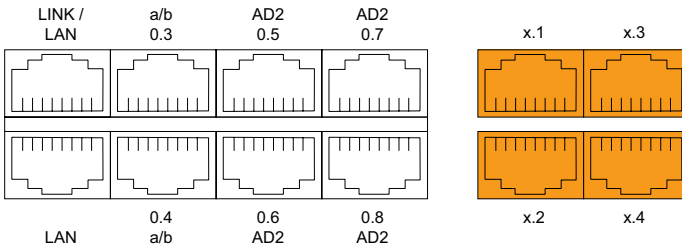


Fig. 37 Connection possibilities for T network interfaces

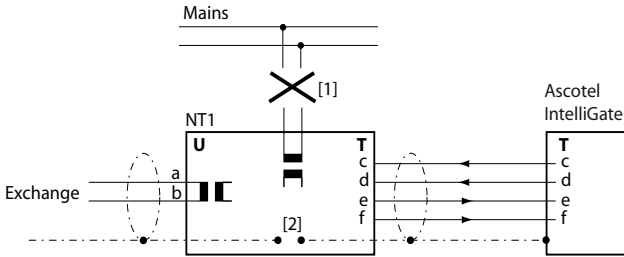
The connection from the front panel to the NT1 (Network Termination) is via straight patch cables with 8-pin RJ45 connectors on both sides. With the appropriate tools you can create your own cables.

Cable Requirements

Tab. 35 Cable requirements for basic access T

Core pairs x cores	1 x 4 or 2 x 2
Stranded	yes
Wire diameter, core	0.4...0.6 mm
Screening	recommended
Characteristic impedance	< 125 Ω (100 kHz), < 115 Ω (1 MHz)
Wave attenuation	< 6 dB/km (100 kHz), < 26 dB/km (1 MHz)
Near / crosstalk attenuation	> 54 dB/100 m (1 kHz to 1 MHz)

Basic access T, network-side

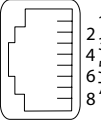
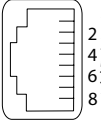


- [1] Do not connect power supply NT1
- [2] Do not fit the jumper

Fig. 38 Basic access on NT1

The assignment of the RJ45 connector is identical on the NT-side and on the side of the A150/300.

Tab. 36 Cabling of basic access T, network-side

RJ45		NT1	Cable cores Straight patch cables	A150/300	RJ45	
Socket	Pin	Signal T		Signal T	Pin	Socket
	1	-		-	1	
	2	-		-	2	
	3	c	←	c	3	
	4	f	→	f	4	
	5	e	→	e	5	
	6	d	←	d	6	
	7	-		-	7	
	8	-		-	8	

Basic access in the private leased-line network

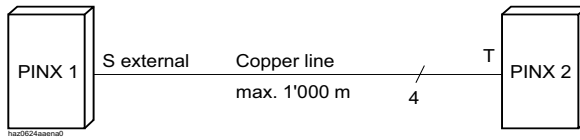


Fig. 39 Basic access S external, networked with copper line

Tab. 37 Cabling for basic access S external, networked with copper line

PINX 1 signal Basic access S external	Cable cores	PINX 2 signal Basic access T
c	←	c
f	→	f
e	→	e
d	←	d

Bus configuration

S external is subject to the conditions that apply to terminal interface S (see ["S terminal interfaces", page 133](#)).

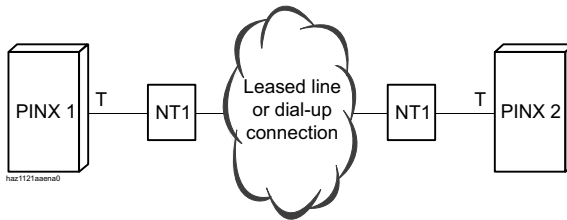


Fig. 40 Basic access T, networked with leased-line or dial-up connection

Tab. 38 Cabling for basic access T, networked with leased-line or dial-up connection

PINX 1 signal, basicaccess T	Cable cores	NT1	Network	NT1	Cable cores	PINX 2 signal, basicaccess T
c	→	c		c	←	c
f	←	f		f	→	f
e	←	e		e	→	e
d	→	d		d	←	d



See also

Chapter "Connections with basic accesses" in the PISN Networking System Manual.

X.25 connection in the D channel

To transmit X.25 data from a PC via an A150/300 to the public ISDN network using the D-channel, you need the appropriate terminal adapters with S-interface, which are connected to the S-interfaces of interface cards. With the appropriate Wiring Adapters all the S/T interface cards can be used:

Tab. 39 Combination possibilities for X.25

Interface card	Wiring Adapter	Plug-in orientation	Port coupling
TIC-4TS	WA-TS0	STTT	x.1 (S) with x.4 (T)
TIC-4TS	WA-TS1	SSST	x.1 (S) with x.4 (T)
TIC-4TS	WA-TS1	SSTT	x.1 (S) with x.4 (T) and x.2 (S) with x.3 (T)
TIC-2TS	WA-TS0	STTT	x.1 (S) with x.2 (T)
ESST-2 ¹⁾	WA-TS0	STTT	x.1 (S) with x.2 (T)

¹⁾ The jumper on this card must always be fitted to position T (see [Fig. 30](#)).

Example:

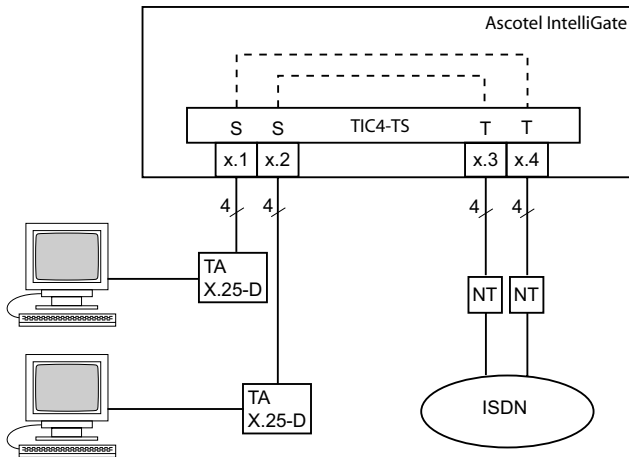


Fig. 41 Example with interface card TIC-4TS for X.25 mode

The number of possible D-channels for X.25 data can be found in the Chapter "[System Limits](#)", page 43.



See also

Chapter "Data Services" in the Features System Manual.

5. 7. 2. 2 Primary Rate Access T2

With the appropriate interface cards and Wiring Adapters, T2 network interfaces can be made available at RJ45 sockets 1.1...40.1. For test purposes the T2 interface is also routed in parallel to port X.2.



Note

In normal operation the x.2 test socket must not be connected; otherwise faults may occur.

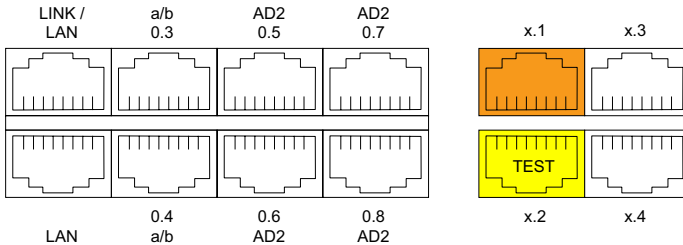


Fig. 42 Connection possibilities for T2 network interfaces

Cable requirements

The connection to NT1 (Network Termination) is implemented using commercially available screened cables with 8-pin RJ45 connectors at both ends, e.g. S-FTP 4P, PVC, Cat. 5e.

Tab. 40 Cable requirements for the primary rate access (NT1 to PBX)

Core pairs x cores	2 x 2 (for short distances also 1 x 4)
Stranded	yes
Wire diameter, core	0.4...0.6 mm
Screening	yes (Cat. 5)
Characteristic impedance	< 125 Ω (100 kHz), < 115 Ω (1 MHz)
Wave attenuation	< 6 dB/km (100 kHz), < 26 dB/km (1 MHz)
Near / crosstalk attenuation	> 54 dB/100 m (1 kHz to 1 MHz)

Primary rate access T2, network side

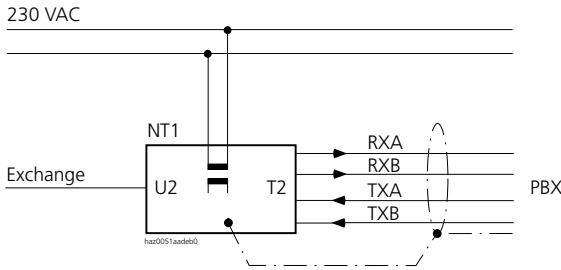
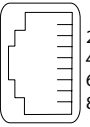
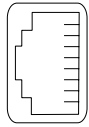


Fig. 43 Primary rate access T2 on NT1

Tab. 41 Cabling for primary rate access T2

RJ45		NT1	Cable cores Straight patch cables	A150/300	RJ45	
Socket	Pin	T2 signal ¹⁾		T2 signal	Pin	Socket
	1	TxA	→	RxA	1	
	2	TxB	→	RxB	2	
	3	-		-	3	
	4	RxA	←	TxA	4	
	5	RxB	←	TxB	5	
	6	-		-	6	
	7	-		-	7	
	8	-		-	8	

¹⁾ Other designations are also possible on the NT1 such as: "S2m ab" instead of "TxA/TxB" and "S2m an" instead of "RxA/RxB".

Primary rate access in the private leased-line network

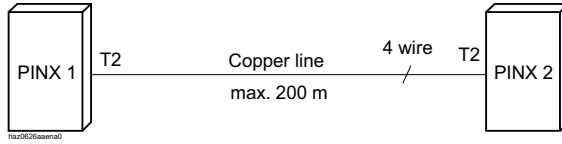


Fig. 44 Primary rate access, networked with copper line

Tab. 42 Cabling for primary rate access T2, networked with copper line

RJ45 Pin	T2 signal PINX 1	Cable cores Crossed patch cables	T2 signal PINX 2	RJ45 Pin
1	RxA	<p>haz1129aaxxa0</p>	RxA	1
2	RxB		RxB	2
3	—		—	3
4	TxA		TxA	4
5	TxB		TxB	5
6	—		—	6
7	—		—	7
8	—		—	8

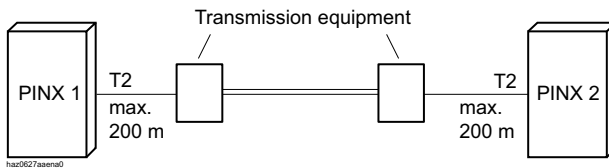


Fig. 45 Primary rate access, networked with transmission equipment TE

Tab. 43 Cabling for primary rate access T2, networked with transmission equipment

RJ45 Pin	T2 signal PINX 1	Cable cores Straight patch cables	Signal TE	Signal TE	Cable cores Straight patch cables	T2 signal PINX 2	RJ45 Pin
1	RxA	←	RxA	RxA	→	RxA	1
2	RxB	←	RxB	RxB	→	RxB	2
3	—					—	3
4	TxA	→	TxA	TxA	←	TxA	4
5	TxB	→ <small>haz1130aaxxa0</small>	TxB	TxB	← <small>haz1131aaxxa0</small>	TxB	5
6	—					—	6
7	—					—	7
8	—					—	8

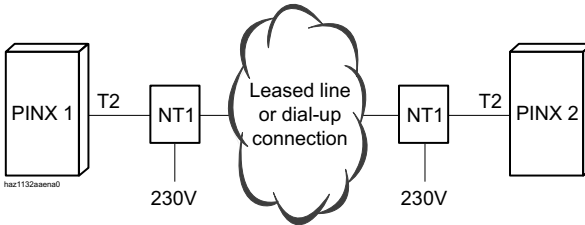


Fig. 46 Primary rate access T2, networked with leased-line or dial-up connection

Tab. 44 Cabling for primary rate access T2, networked with leased-line or dial-up connection

RJ45 Pin	T2 signal PINX 1	Cable cores Straight patch cables	T2 sig- nal NT1	Network	T2 sig- nal NT1	Cable cores Straight patch cables	T2 signal PINX 2	RJ45 Pin
1	RxA	←	RxA		RxA	→	RxA	1
2	RxB	←	RxB		RxB	→	RxB	2
3	—						—	3
4	TxA	→	TxA		TxA	←	TxA	4
5	TxB	→ <small>haz1130aaxxa0</small>	TxB		TxB	← <small>haz1131aaxxa0</small>	TxB	5
6	—						—	6
7	—						—	7
8	—						—	8



See also:

System Manual “PISN / QSIG Networking”

5.7.2.3 Network interfaces a/b

With the appropriate interface cards and Wiring Adapters, a/b network interfaces can be made available at RJ45 sockets 1.1...4.4.

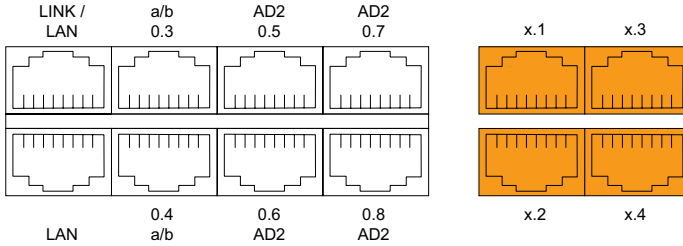


Fig. 47 Connection possibilities for a/b network interfaces

In a direct connection the RJ45 connector is connected directly to the trunk cable using a crimp clip.

With an indirection connection you need to observe the cable requirements.

Connection

Assignment of the RJ45 sockets on the front panel A150/300

Tab. 45 Cabling for network interface a/b

	A150/300	RJ45	
	a/b signal	Pin	Socket
<p>Ascotel IntelliGate</p>	-	1	
	-	2	
	-	3	
	a	4	
	b	5	
	-	6	
	-	7	
	-	8	

Cable Requirements

Tab. 46 Requirements for a/b network connection cables

Core pairs x cores	1 x 2
Stranded	not required
Wire diameter, core	0.4 ... 0.8 mm
Screening	not required
Resistance a/b	max. 2 x 250 Ω

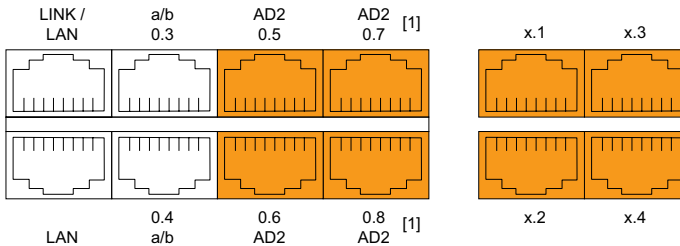
5.7.3 Terminal interfaces

The number of available terminal interfaces on the mainboard can be increased by fitting interface cards.

The RJ45 connector assignment is the same for interfaces of the mainboard and terminal cards.

5.7.3.1 AD2 terminal interfaces

The AD2 terminal interfaces of the mainboard are permanently routed to the RJ45 connector strip and labelled accordingly. With the appropriate interface cards and Wiring Adapters, additional AD2 terminal interfaces can be made available at the RJ45 sockets 1.1...4.4.

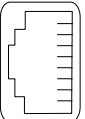
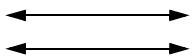
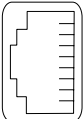


[1] Ports 0.7 and 0.8 are available only on basic system A300

Fig. 48 Connection possibilities for AD2 terminal interfaces

Connection

Tab. 47 Cabling for AD2 terminal interfaces

A150/300			Cable cores		Connection socket	
Socket	Pin	Signal		Signal	Pin	Socket
	1	-		-	1	
	2	-		-	2	
	3	-		-	3	
	4	a		a	4	
	5	b		b	5	
	6	-		-	6	
	7	-		-	7	
	8	-		-	8	

AD2 bus configuration

Depending on the line length 1 or 2 terminals can be connected on each AD2 interface. In this connection the Pocket Adapter (PA) and the DECT radio unit are also considered as terminals. The following requirements apply with regard to the bus length to ensure that the maximum permissible signal delay is not exceeded:

Tab. 48 AD2 bus length and number of terminals

Number of terminals	Total length AD2 bus	Distance between the 1st and 2nd connection point (excl. connection cord)
1	A: max 1200 m	–
2	B: max. 700 m or 1200 m ¹⁾	C: max. 10 m

¹⁾ For 1200 m none of the terminals must be of the type Office 20, Office 30 or Office 40.

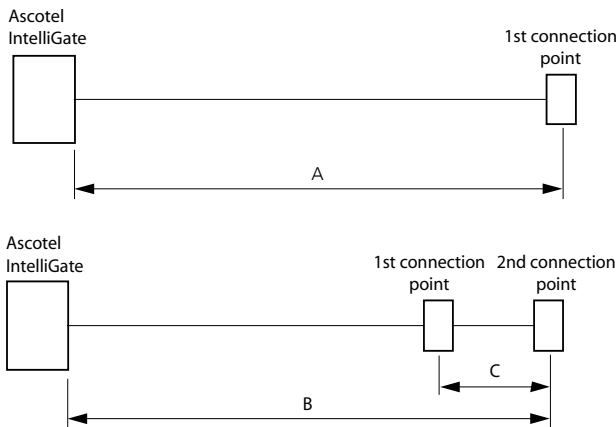


Fig. 49 AD2 bus



Notes

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

Restrictions

The maximum length of an AD2 bus is further restricted by:

- the maximum power requirements of the connected terminals and their supplementary equipment
- the line resistance (depending on the line length and wire diameter)

Tab. 49 Maximal power requirements of the terminals on the AD2 bus

¹⁾ system terminal	Connection	Max. power input [mW]
Office 10	AD2 interface	900
Office 25	AD2 interface	900
Office 35	AD2 interface	630 ²⁾
Office 45	AD2 interface	1110 ²⁾
Office 45pro with power supply unit	AD2 interface	< 10
Expansion keypad (EKP)	Office 35	150
Expansion keypad (EKP)	Office 45	210
Alpha keyboard	Office 35, Office 45	30
Aastra 5360	AD2 interface	900
Aastra 5370	AD2 interface	1220 ³⁾
Aastra 5380	AD2 interface	1340 ³⁾
Aastra 5370, Aastra 5380 with power supply unit	AD2 interface	0
Aastra M530 expansion keypad	Aastra 5370	300
Aastra M530 expansion keypad	Aastra 5380	500
Aastra M535 expansion keypad	Aastra 5370, Aastra 5380	0 ⁴⁾
Pocket Adapter (PA)	AD2 interface	400
DECT radio unit without power supply unit SB-4	AD2 interface	1700
DECT radio unit with power supply unit SB-4	AD2 interface	620
DECT radio unit without power supply unit SB-4+/SB-8	1 or 2 AD2 interfaces	1400 ⁵⁾
DECT radio unit with power supply unit SB-4+/SB-8	1 or 2 AD2 interfaces	< 100

¹⁾ Assumptions:

System terminals: In hands-free mode, loudspeaker on maximum volume, all LEDs lit

Aastra 5380: Backlighting with maximum brightness

expansion keypads: All LEDs lit

Radio units: Active call connection on all channels

²⁾ The value applies to hardware version 2. The value for hardware version 1 is 60 mW lower.

³⁾ The value can increase to approx. 600 mW if the power available at the AD2 bus allows it.

⁴⁾ An Aastra M535 always requires a power supply unit

⁵⁾ for each AD2 interface

The diagram below shows the power available in relation to the line length and the wire diameter. The table can then be used to determine the number and type of terminals that can be connected to the AD2 bus under the given conditions. The power available can also be calculated by measuring the loop resistance where the wire diameter is known.

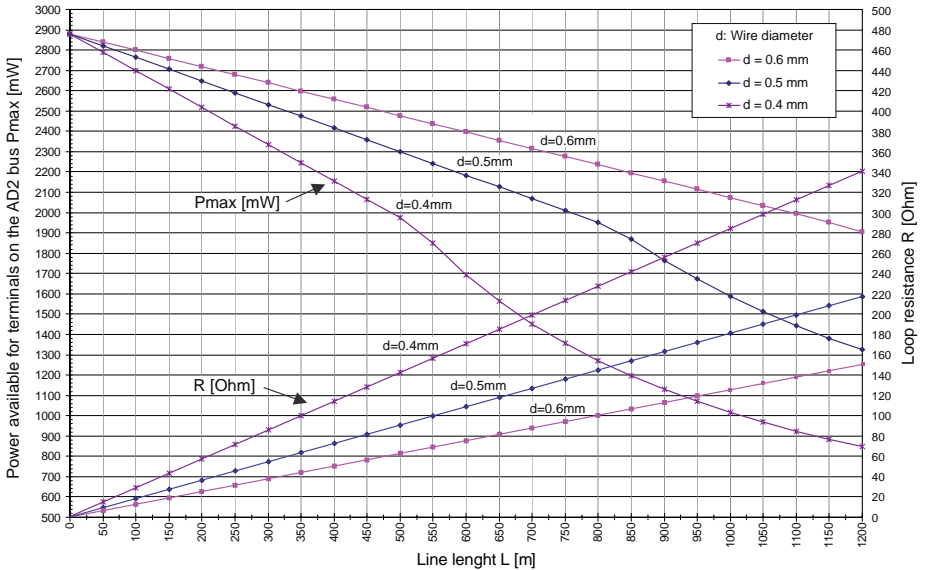


Fig. 50 Power available for terminals on the AD2 bus



Notes

- If another terminal is operated on the AD2 bus in addition to an Aastra 5370 or Aastra 5380, at least one terminal must be powered by a local power supply unit.
- An Aastra 5370 or Aastra 5380 with an Aastra M535 expansion keypad always requires a power supply unit.
- An Aastra 5380 with 3 Aastra M530 expansion keypads always requires a power supply unit. With 2 expansion keypads the use of power supply unit depends on the line length and the line cross-section.

Automatic detection of critical power supply situations

All terminals except Aastra 5370 and Aastra 5380: When a system terminal (or a second such terminal) is connected to the AD2 bus, the maximum power input is automatically determined; all the terminals (incl. EKP, AKB) connected to the interface are taken into account. The maximum power available is also determined based on the calculated line length (assumption: wire $\varnothing = 0.5$ mm). If the calculated power available is below the maximum possible power input of the connected terminals, the message "*Power supply critical xy*" is generated on the terminal connected last (accuracy approx. 150 m).

Terminals Aastra 5370 and Aastra 5380 only:

During startup the Aastra 5370 and Aastra 5380 terminals carry out a detailed measurement of the available power. A warning is shown on the display if the result is inadequate: "*Line power too weak: External power supply required!*"



Notes

- Depending on the power available based on the line length on the AD2 bus the ringing and hands-free volume decreases accordingly.
- The backlighting of the Aastra 5380 display is brighter if the terminal is powered by a power supply unit.

Rating examples

Example 1:

Office 45 with one expansion keypad (EKP)

Maximal power requirements as per [Tab. 49](#): 1320 mW

[Fig. 50](#) indicates:

- Maximum line length for a wire diameter of 0.4 mm: 770 m
- Maximum line length for a wire diameter of 0.5 mm: 1200 m
- Maximum line length for a wire diameter of 0,6 mm: 1200 m

Example 2:

One Office 35 and one Office 45 with one alpha keyboard each

Power requirements as per [Tab. 49](#): 1800 mW.

[Fig. 50](#) indicates:

- Maximum line length for a wire diameter of 0.4 mm: 560 m
- Maximum line length for a wire diameter of 0.5 mm: 880 m
- Maximum line length for a wire diameter of 0,6 mm: 1200 m

Example 3:

Evaluation of an existing line installation

Line diameter: 0.5 mm

Loop resistance: 120 Ω

[Fig. 50](#) indicates:

- Line length: 660 m
- Power available: 2120 mW

Cable Requirements

Tab. 50 Requirements for an AD2 bus cable

Core pairs x cores	1 x 2 or 1 x 4
Stranded	yes ¹⁾
Wire diameter, core	0.4...0.6 mm
Screening	recommended
Characteristic impedance	< 130 Ω (1 MHz)

¹⁾ Note: max. 25 m can be crossed unstranded.
(CH: Applies also to cable type G51)

Installation rules

- If an Ascotel® DECT radio unit is used, do not connect any other system terminal to the same AD2 bus.
- Do not use any terminating resistors at the bus extremity.
- Avoid using different cable cross-sections on the same bus
- Use the supplied cables for connecting the terminals

Terminals

The following system terminals can be operated on the AD2 bus:

- System Terminals
- OfficePocket Adapter
- Ascotel® DECT radio unit

The terminals on an AD2 bus are addressed via a single-digit terminal selection digit (TSD).

Example:

The address of a terminal with TSD 2 on AD2 interface 0.5 on the mainboard is 0.5-2.

5.7.3.2 S terminal interfaces

With the appropriate interface cards and Wiring Adapters, S terminal interfaces can be made available at RJ45 sockets 1.1...4.4.

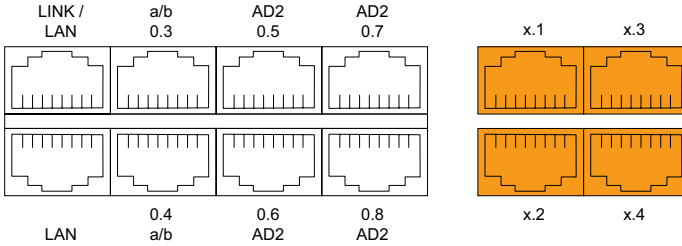


Fig. 51 Connection possibilities for S terminal interfaces

Connection

Tab. 51 Cabling for S terminal interfaces

A150/300		Cable cores			Connection socket	
Socket	Pin	Signal		Signal	Pin	Socket
	1	-		-	1	
	2	-		-	2	
	3	c	←	c	3	
	4	f	→	f	4	
	5	e	→	e	5	
	6	d	←	d	6	
	7	-		-	7	
	8	-		-	8	

S bus configuration

The S bus is a four-wire, serial ISDN bus based on the DSS1 protocol (ETSI standard). It starts in each case at an S interface of the system. Four bus configurations are possible, depending on the line length and the number of terminals:

Tab. 52 S-bus configurations depending on line length and the number of terminals

S bus	Short	Short, V-shaped	Long	Point-to-point
Length (max.)	150 m	2 x 150 m	500 m	1'000 m
System ↔ terminal	–	–	20 m	–
Terminal 1 ↔ Terminal 4	–	–	–	–
Number of terminals (max.)	8	8	4	1



Note

The maximum number of terminals per S bus depends on the power requirements of the terminals (see "Restrictions", page 135).

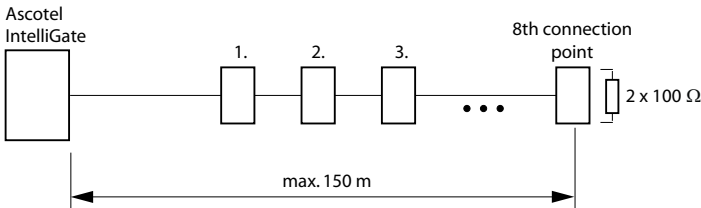


Fig. 52 S bus, short

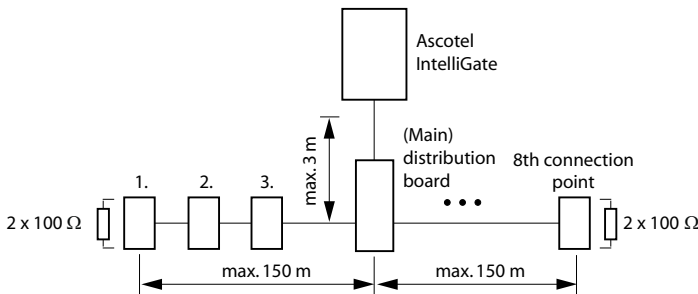


Fig. 53 S bus, short, V-shaped

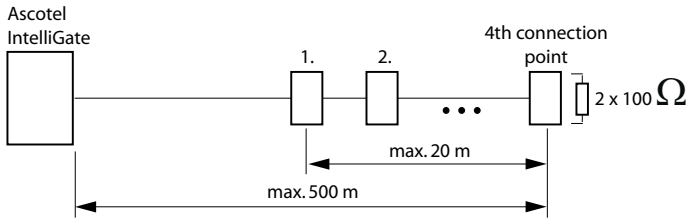


Fig. 54 S bus, long

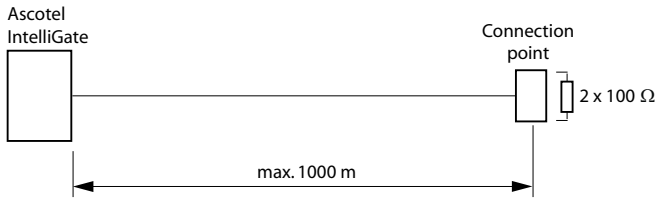


Fig. 55 S bus, point-to-point

Greater distances (up to 8 km) can be achieved using the S bus extension PT 10.

Restrictions

The maximum number of terminals per S bus is further restricted by the power requirements of the terminals and their supplementary equipment:

Tab. 53 Power balance on the S bus

	Power available [W]
S bus short	5 ¹⁾
S bus, long	3.5 ¹⁾

¹⁾ These values are based on a wire diameter of 0.5 mm.

The number of terminals is the sum of the power requirements of the individual terminals and the power available on the S bus.

Connection sockets

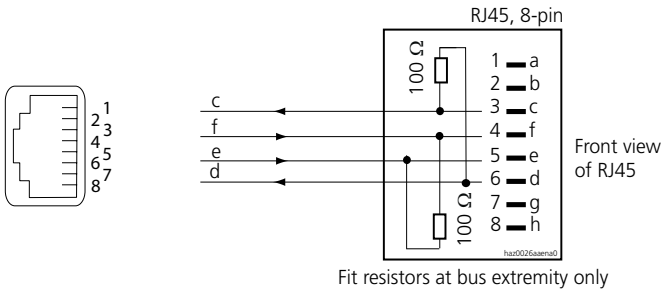


Fig. 56 RJ45 connection, single socket

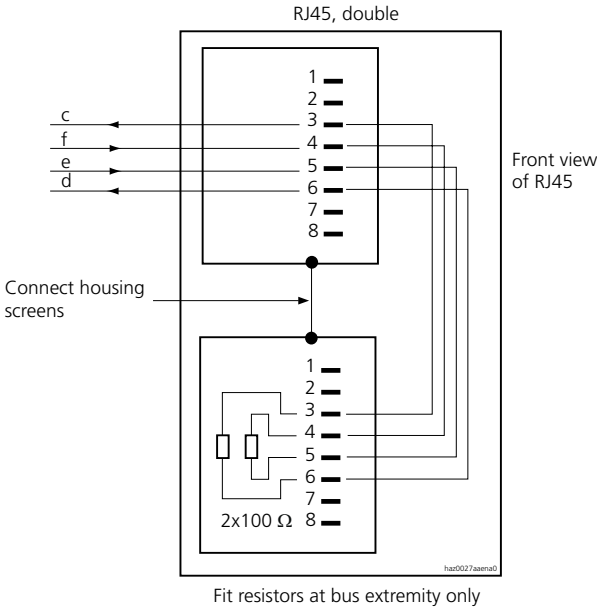


Fig. 57 RJ45 connection, double socket

Installation rules

Always terminate the bus extremity with $2 \times 100 \Omega$ (0.25 W, 5%)!

Cable Requirements

Tab. 54 Requirements for an S bus cable

Core pairs x cores	1 x 4 or 2 x 2
Stranded	yes
Wire diameter, core	0.4...0.6 mm
Screening	recommended
Ohmic resistance	< 98 $\Omega/\kappa\mu$ (conductor), < 196 Ω/km (loop)
Characteristic impedance	< 125 Ω (100 kHz), < 115 Ω (1 MHz)
Wave attenuation	< 6 dB/km (100 kHz), < 26 dB/km (1 MHz)
Near / crosstalk attenuation	> 54 dB/100 m (1 kHz to 1 MHz)

Terminals

The ETSI protocol must be set in the interface configuration.

Up to 8 terminals of different types can be connected to one S bus.

- Standard ISDN terminals
- ISDN Terminal Adapter
- PC with ISDN card
- Group 4 fax machines¹⁾, etc.

Two call connections are possible simultaneously for each S bus.

¹⁾ Not possible within an AIN

5.7.3.3 a/b terminal interfaces

The a/b terminal interfaces of the mainboard are permanently routed to the RJ45 connector strip and labelled accordingly. With the appropriate interface cards and Wiring Adapters, additional a/b terminal interfaces can be made available at the RJ45 sockets 1.1...4.4.

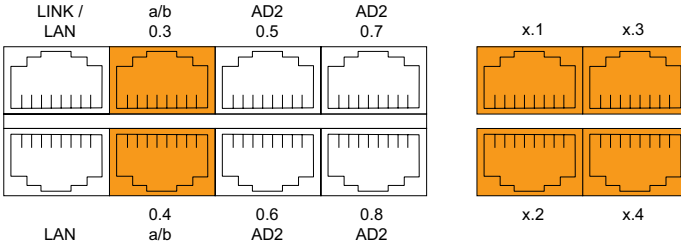
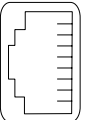
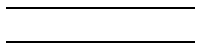
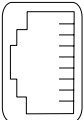


Fig. 58 Connection possibilities for a/b terminal interfaces

Connection

Tab. 55 Cabling for a/b terminal interfaces

A150/300			Cable cores		Connection socket	
Socket	Pin	Signal		Signal	Pin	Socket
	1	-		-	1	
	2	-		-	2	
	3	-	-	-	3	
	4	a	-	a	4	
	5	b	-	b	5	
	6	-	-	-	6	
	7	-	-	-	7	
	8	-	-	-	8	

Cable Requirements

Tab. 56 Requirements for a/b cables

Core pairs x cores	1 x 2
Stranded	only for lengths > 200 m
Wire diameter, core	0.4 ... 0.8 mm
Resistance a/b	max. 2 x 250 Ω
Line length with ø 0.6	max. 4 km
Screening	not required

Terminals

The following analogue terminals can be connected to the system:

- 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 machines¹⁾
- Answering machines
- Modem

¹⁾ Transmission with the T.38 protocol is recommended for Fax over IP. The corresponding DSP resources need to be allocated.

5.7.4 Special Interfaces

5.7.4.1 Equipment on the ODAB options card

The ODAB options card contains the following equipment:

- 1 analogue terminal interface for connecting a door intercom
- 4 Relays or control inputs

With the aid of jumpers the options card is configured for connecting a door intercom or provides control inputs and relay outputs. The interfaces of the options card are available at the RJ45 sockets 1.1...4.4.

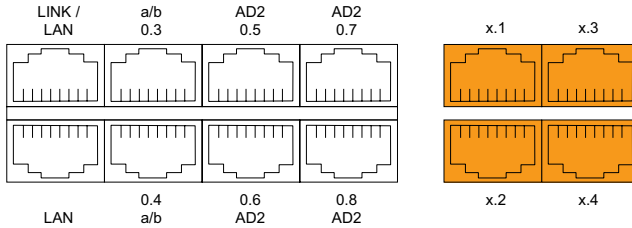


Fig. 59 Interfaces of the ODAB options card

Connection of a door intercom (TFE)

If the options card is fitted to slot IC2 (A150) or slot IC4 (A300), an analogue terminal interface is available for connecting a door intercom.



Note:

This analogue terminal interface cannot be used for other purposes as the software does not support it.

Jumper Configuration

The jumper configuration is shown in the following diagram. Three of the four IO ports are used for connecting the door intercom. A control input or a relay output is available for other purposes.

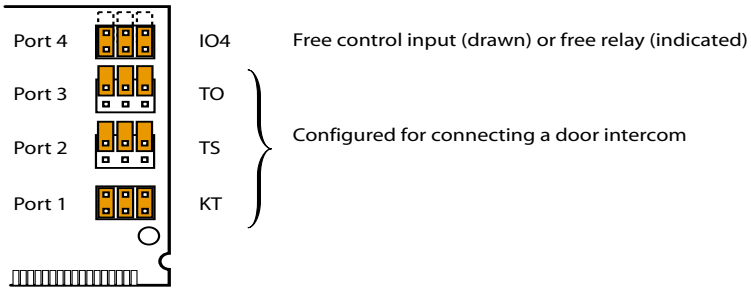


Fig. 60 Jumper configuration for connecting a door intercom

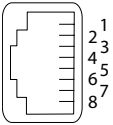
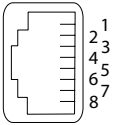
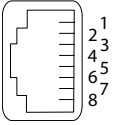
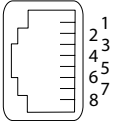


Note

If the options card is fitted to slot IC2 (A150) or slot IC4 (A300), the jumpers of ports Port 1, 2 and 3 must be fitted as shown in [Fig. 60](#).

Connector assignment

Tab. 57 Connection in slot 2 (A150) or slot 4 (A300)

RJ45		A150/300	RJ45		A150/300
Socket X1	Pin	Signal	Socket X3	Pin	Signal
	1	-		1	-
	2	-		2	-
	3	KT1		3	Tb
	4	TS2		4	-
	5	TS1		5	-
	6	KT2		6	Ta
	7	-		7	-
	8	-		8	-
Socket X2	Pin	Signal	Socket X4	Pin	Signal
	1	-		1	-
	2	-		2	-
	3	TO2		3	-
	4	IO4		4	-
	5	IO4		5	-
	6	TO1		6	-
	7	-		7	-
	8	-		8	-

Tab. 58 Connections for the options card ODAB

IO port	Connection	Function	Value
-	Ta, Tb	Connection for two-wire door intercom system signal	600 Ω
1	KT 1, 2	Input, bell key switch	40 V / 4 mA
2	TS1, 2	Floating contact, "Switch on / off power supply for door intercom system"	max. 24 VAC, 30 VDC, 1 A
3	TO1, 2	Floating contact, "Door release"	max. 24 VAC, 30 VDC, 1 A

Connection for door intercom with 600 Ohm speech path

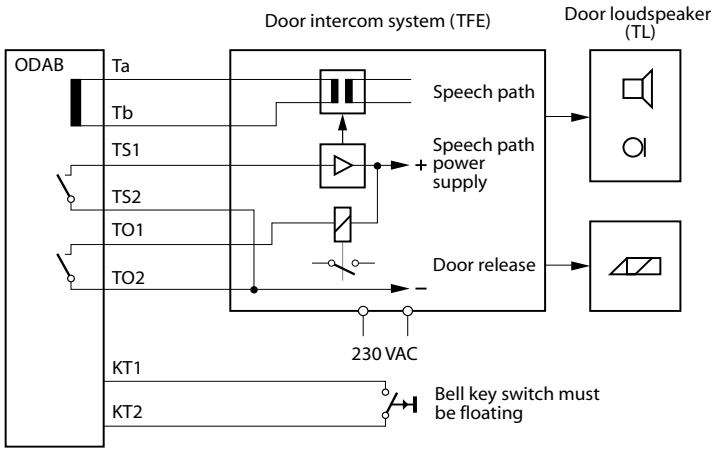


Fig. 61 Schematic circuit diagram

Points to be observed for the connection:

- The door intercom system requires an external power supply.
- The signal circuit does not require a power supply.
- The speech path (a/b, no DC component) is connected to Ta and Tb.
- The door intercom system is switched on via the TS contact output.
- The door release is actuated via the TO contact output.



Warning

The bell key switch does not requires an external power supply and must have a floating connection.

Connection of port 4

The free port IO4 can be used as a potential-free relay contact or as a control input. Configured as a relay contact (O4) an external device or an external equipment can be connected. Configured as a control input (I4) one or more switch groups can be switched between position 1 and 2. Otherwise the same statements apply as described in the following Chapter "Relay and control inputs".

Tab. 59 Switch group control via the control inputs

Control input I4	Switch positions of the switch groups
Passive state (Off)	Position 1
Active state (On)	Position 2

Relay and control inputs

If the options card is fitted to slot IC1 (A150) or slot IC1, 2 or 3 (A300), the analogue terminal interface cannot be used. However two control inputs can be used for switching a switch group and two relay outputs for controlling external devices or equipment.

Jumper Configuration

The jumper configuration is shown in the following diagram.

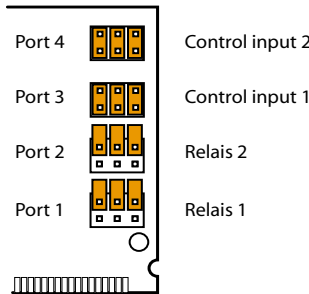


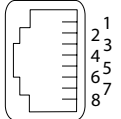
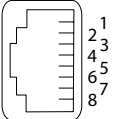
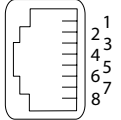
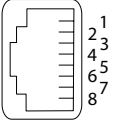
Fig. 62 Jumper configuration for relays and control inputs



Note

If the options card is fitted in slot IC1 (A150) or slot IC1, 2 or 3 (A300), the jumpers must be fitted as shown in Fig. 62.

Tab. 60 Connection in slot IC1 (A150) or slot IC1, 2 or 3 (A300)

RJ45		A150/300	RJ45		A150/300
Socket X1	Pin	Signal	Socket X3	Pin	Signal
	1	-		1	-
	2	-		2	-
	3	O1-1		3	-
	4	O2-1		4	-
	5	O2-2		5	-
	6	O1-2		6	-
	7	-		7	-
	8	-		8	-
Socket X2	Pin	Signal	Socket X4	Pin	Signal
	1	-		1	-
	2	-		2	-
	3	I3-1		3	-
	4	I4-1		4	-
	5	I4-2		5	-
	6	I3-2		6	-
	7	-		7	-
	8	-		8	-

Tab. 61 Connections of control inputs and relay outputs

IO port	Signal	Function
1	O1-1, O1-2	Floating contact, relay 1
2	O2-1, O2-2	Floating contact, relay 2
3	I3-1, I3-2	Control input 1
4	I4-1, I4-2	Control input 2

Freely connectable relay

The two freely connectable relay contacts can be used to control external devices or equipment such as heating, alarm or outdoor lighting systems (possibly via external relay for 230 VAC).

There are no special requirements for the cables.

Tab. 62 Relay operating data

Parameter	Value
Number of changeover switches per relay	1
Insulation between the changeover switches	0.5 kV
Type of contact	no (normally open, NO contact, make contact)
max. contact loading	24 VDC, 30 VAC, 1 A

Switch group interface

The routing elements of switch groups 1..20 are controlled via control inputs I3 and I4. Control is effected using external switches (door contacts, time switches, etc.). The signal no-load voltage is approx. 40 VDC, the short-circuit current approx. 4 mA.

The permissible switch and loop resistances are as follows:

- Active state (On): < 4.5 kΩ
- Passive state (Off): > 11 kΩ



Warning

The control inputs do not require an external power supply but they must have a floating connection.

There are no special requirements for the cables.

Tab. 63 Switch group control via the control inputs

Control input I3	Control input I4	Switch positions of the switch groups
Off	Off	Position 1
On	Off	Position 2
Random	On	Position 3

Other conditions:

- The switch group configuration determines which of the switch groups 1...20 are switched.
- An options card's control inputs can control one or more switch groups.
- The same switch group can only be switched by the control inputs of one options card.
- Control of the switch groups using the control inputs takes priority over control using */# procedures.

5.7.4.2 Ethernet Interface

The A150/300 basic systems have a 2-port LAN switch 10/100 Base T. The Ethernet interfaces are permanently routed to the RJ45 connector strip and labelled accordingly.

By fitting LAN switch modules to slots WA0...WA4 the number of Ethernet interfaces can be increased by a maximum of 2×8 , which are then available at the RJ45 sockets on the front panel. Two neighbouring Wiring Adapter slots are used for each LAN switch module. The WA1...WA4 slots are also used for the Wiring Adapters. If a LAN switch module occupies slots WA1...WA4, no interface cards can be fitted to the corresponding slots IC1...IC4. The AD2 terminal cards are the exception (see section below "[Combining Ethernet and AD2 interfaces](#)").

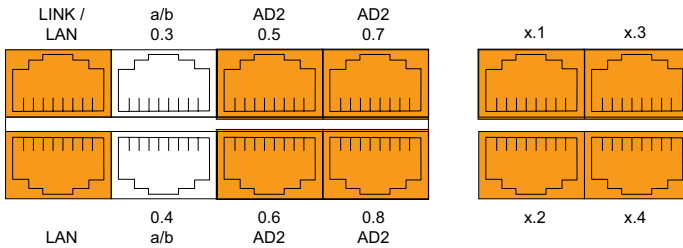


Fig. 63 Connection possibilities for Ethernet interfaces

The LAN switch modules are connected with the 2-port LAN switch integrated in the basic system.

Connection

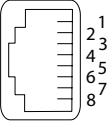
Tab. 64 Connection of Ethernet interfaces

RJ45 socket	Pin	Signal
	1	Tx+
	2	Tx-
	3	Rx+
	4	—
	5	—
	6	Rx-
	7	—
	8	—

Combining Ethernet and AD2 interfaces

LAN switch modules can be combined with AD2 terminal cards. In this case the LAN switch module assumes the function of two wiring adapters and routes the AD2 interfaces together with the Ethernet interfaces to the same RJ45 sockets on the front panel. The same thing is also possible with the AD2 interfaces of the mainboard if the slots WA0 and WA1 are used for the LAN switch module. This means that universal building cables can be used simultaneously for data and voice transmission. The signals are separated again at the cable extremity and routed to separate connection sockets.

Tab. 65 Connection of Ethernet/AD2 interfaces

RJ45 socket	Pin	Signal	Interface
	1	Tx+	Ethernet
	2	Tx-	Ethernet
	3	Rx+	Ethernet
	4	a	AD2
	5	b	AD2
	6	Rx-	Ethernet
	7	—	—
	8	—	—

Terminal cabling

At the cable extremity the signals are separated as indicated in the diagram below and wired to two connection sockets.

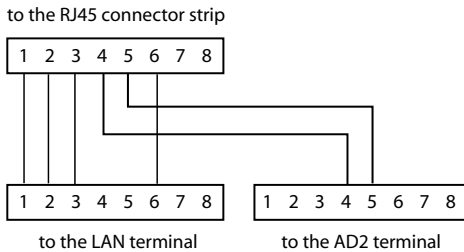


Fig. 64 Connection diagram

Two possibilities for separating the signals are listed below:

- Separating the signals in a double RJ45 socket
- Splitting the signals after a single RJ45 socket using a Y-adapter with a wiring circuit as shown in Fig. 64 (commercially available). The wiring of the cable cores of PINs 7 and 8 is irrelevant as they are not required.



Warning

- Neither AD2 terminals nor a LAN terminal are to be connected to an unsplit RJ45 socket. The two directional taps of an RJ45 socket are to be labelled in such a way that the connections can be identified without ambiguity. Otherwise the terminals might be damaged if the connections are reversed.
- Do not use Y-adapters on which all the cores are wired in parallel to both RJ45 sockets. This can damage the equipment.

Settings

The IP address can either be taken from a DHCP server in the IP network or configured statically. If a DNS server is used, the system can also be addressed via its host name.

Tab. 66 Initialization values, IP address

Parameter	Parameter value
<i>IP address</i>	192.168.104.13
<i>Subnet mask</i>	255.255.255.0
<i>Gateway</i>	0.0.0.0
<i>DHCP</i>	<i>Yes</i>
<i>Host name</i>	<i>intelligate<MAC address>¹⁾</i> Example: intelligate00085d803100

¹⁾ This entry is hidden and does not appear in the parameter's input field

First-start response

The IP addressing after a first start depends on whether a static IP addressing is already stored on the EIM card from a previous configuration. A static IP addressing (IP address, subnet mask, gateway) entered manually is stored on the EIM card and remains available after a first start. This means that the system remains accessible via Ethernet interface in the same way as before the first start.

If no IP addressing is entered on the EIM card, the system is started with DHCP after a first start. The system tries to log on with the DHCP server and to enter its host name on the DNS server. If logon is successful the system is accessible via the host name. If the logon to the DHCP server fails, the system deactivates DHCP temporarily and can be accessed via the static initialization value address. The system is then accessible with a direct connection via the IP address.



Note:

DHCP is deactivated only temporarily and is reactivated after a subsequent restart.

Cable types

Both the 2-port switch on the basic system and the LAN switch module have Auto MDI/MDIX. With the automatic detection straight or crossover LAN cables can be used for all connection types.

Cable requirements

Use commercial Cat. 5 cable, or choose a cable type with the following characteristics:

Tab. 67 Requirements for an Ethernet cable

Core pairs x cores	2 x 2 (for short distances also 1 x 4)
Stranded	yes
Wire diameter, core	0.4...0.6 mm
Screening	yes
Category	Cat. 5 minimum

5.7.4.3 Audio interface

The Audio interface can be used to

- play music or an announcement on to connections with a caller on hold ("Music on Hold" function).
- play music or an announcement for the Courtesy Service (announcement prior to answering), Voice Mail greetings or for "Music on Hold" and to store as a wave file.

Any playback equipment (tape recorder, CD player, etc.) with a line output can be used as the music source

The customer is responsible for all copyright matters relating to any music playback.

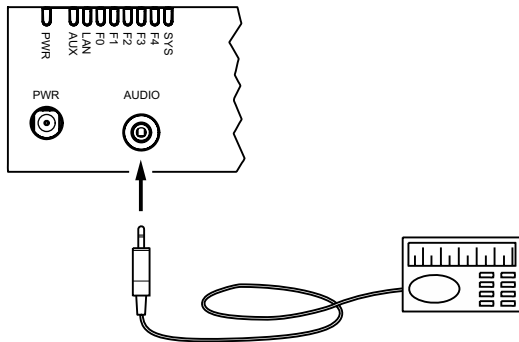


Fig. 65 Audio interface

Tab. 68 Technical data of the audio interface

Input impedance	approx. 15 k Ω
Input level	0.1...5 V (configurable in 8 levels via AIMS)
Input circuit	asymmetrical
Output resistance, music source	< 1 k Ω
Installation cable	NF cable screened (required for low levels)
Socket	3.5 mm stereo jack

5.7.4.4 General bell

One analogue terminal interface per system can be configured in such a way that it is used for connecting a general bell. The connection procedure is described in "a/b terminal interfaces", page 138. It is possible to use commercial auxiliary bells designed for connection in parallel to analogue terminals as a general bell. However the impedance of the connected general bell (or total impedance in the case of several devices connected in parallel) must not fall below 1 k Ω . An AC relay must be interposed if connecting a large number of auxiliary bells.

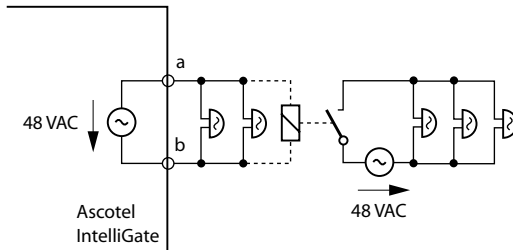


Fig. 66 Connecting general bells to an analogue terminal interface



See also

"General bell on an analogue terminal interface" in the Features System Manual.

5.7.4.5 V.24 interface on the Pocket Adapter (PA)

The PA provides a V.24 interface for connecting an AD2 interface with a PC. The PA's V.24 cable is connected to a serial interface on the PC¹⁾.

Two terminals can be connected to an AD2 interface. An system terminal can be connected via the PA. The PBX differentiates the two terminals on the basis of the position of DIP switch S2 on the PA (see Fig. 68) and the setting of the terminal selection digit (TSD) on the system terminal. Both terminals must have a different TSD.

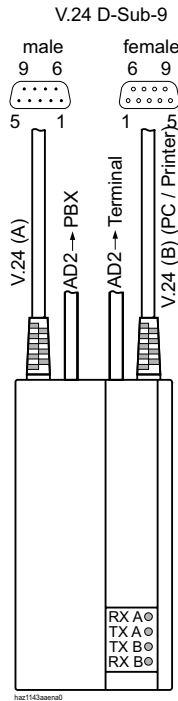


Fig. 67 LED displays and connections on the Pocket Adapter

¹⁾ PA Version □ V2.4

Settings

The same communication parameters must be set on all the connected equipment. On the PA this is done using DIP switches S1... S8 (see Fig. 68).

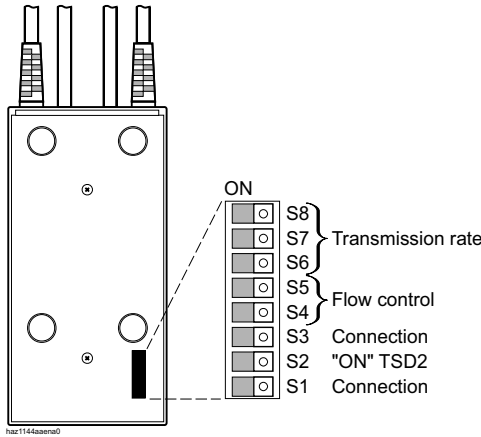


Fig. 68 DIP switches

Connection

DIP switches S1 and S3 are used for setting the two pieces of equipment that are to communicate with each other via the PA.

Tab. 69 Setting the connection

Switch S1	Switch S3	Connections
ON	ON	Reserve
ON	OFF	V.24 (B) ↔ AD2 terminal
OFF	ON	V.24 (A) ↔ V.24 (B)
OFF	OFF	V.24 (A) ↔ AD2 terminal

Example:

V.24 (B) ↔ AD2 terminal

Connects the system terminal with PC or Mac

Transmission rate

Tab. 70 Setting the transmission rate

Switch S8	Switch S7	Switch S6	Transmission rate
ON	ON	ON	Test mode
ON	ON	OFF	19200
ON	OFF	ON	9600
ON	OFF	OFF	4800
OFF	ON	ON	2400
OFF	ON	OFF	1200
OFF	OFF	ON	600
OFF	OFF	OFF	reserved

Flow control

Tab. 71 Setting the flow control

Switch S5	Switch S4	Flow control
ON	ON	none
ON	OFF	Xon / Xoff
OFF	ON	Hardware with RTS / CTS ¹⁾
OFF	OFF	Xon / Xoff and RTS / CTS

¹⁾ Factory setting. Essential for online operation with AIMS

Terminal selection digit (TSD)

Usually the Pocket Adapter is addressed as Terminal 2.

Tab. 72 Setting the address

Switch S2	Address
ON	2. Terminal
OFF	1. Terminal



Notes:

- The PA cannot be set with AIMS.
- With AIMS a PA cannot be configured on to an interface.
- Connected PAs are indicated in AIMS after a download (but cannot be modified).

Significance of the LEDs

The 4 LEDs indicate the equipment status and the current direction of the data transmission.

Tab. 73 LED display

	LED on	LED blinking	LED flashes once	LED flashes twice
RX A	DTR B = on	Data from PBX to V.24 (A)	Xoff to V.24 (A)	—
TX A	DSR A = on	Data from the equipment on V.24 (A) to PBX or PC	Xoff from the PBX	Startup
TX B	DSR B = on	Data from PC to PBX	Xoff from the PBX	Startup
RX B	RTS B = on	Data from PBX to PC	Xoff from PC	—

In the test mode all the LEDs blink very quickly and in unison.

Signalling the Ready Status

The DTR signal (Data Terminal Ready) must be used to indicate to the PA that the data terminal equipment connected is ready. If this signal is not available no data will be sent.

Connector types

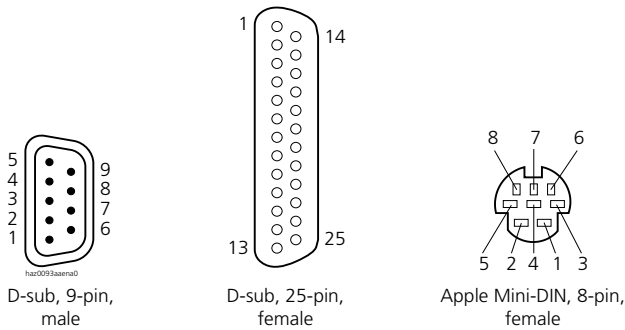


Fig. 69 V.24 connector types, front view of connector and socket

[Tab. 74](#) indicates the type of plug-in connections used on the equipment (female = socket and male = connector) and the DTE or DCE equipment type.

Tab. 74 Type of connectors on the interfaces to the Ascotel® IntelliGate®

Device	Type	Connection type (connector on the equipment)
Mainboard (20x5 only)	DTE	D-sub, 9-pin (male)
Pocket Adapter (PA)	DCE	D-sub, 9-pin (female)
Serial printer	DTE	D-sub, 25-pin (female)
PC	DTE	D-sub, 9-pin or D-sub, 25-pin (male)
Mac	DTE	Mini-DIN, 8-pin (female)
Terminal Adapter	DCE	D-sub, 9-pin (female)

Cable types

The following tables provide an overview of the V.24 connections used in Ascotel® IntelliGate® systems and the connector and cable types used.

Tab. 75 V.24 cable types on the PBX

	PA Office DCE	Serial printer DTE	PC / Mac DTE	TA DCE
PA Office DCE	—	=	=/= Mac	—
Serial printer DTE	=	—	—	—
PC / Mac DTE	=/= Mac	—	—	= [1]
TA DCE	—	—	= [1]	—

= straight cable (modem cable)

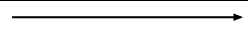
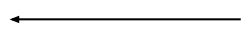
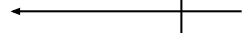


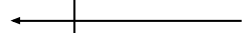
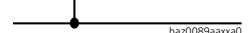
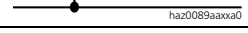
= Mac straight cable for Mac computers

[1] combination with Mac not possible

Tab. 76 Straight cables (modem cables)

Signal	DTE		Cable cores	DCE	Signal
	D-Sub-9 female	D-Sub-25 female		D-Sub-9 male	
TXD	3	2	→	3	TXD
RXD	2	3	←	2	RXD
RTS	7	4	→	7	RTS
CTS	8	5	←	8	CTS
DTR	4	20	→	4	DTR
DSR	6	6	←	6	DSR
DCD	1	8	←	1	DCD
SGND	5	7	→ <small>haz008Baaxa0</small>	5	SGND
Application with Ascotel® IntelliGate®	— PC Printer PC PC	PC — — PC —		PA PA PA TA TA	

Tab. 77 Straight cables (modem cables) for Mac applications

Apple standard Signal	DTE Mini-DIN, 8-pin male	Cable cores	DCE	Signal
			D-Sub-9 male	
TXD-	3		3	TXD
RXD-	5		2	RXD
Handshake on	2		8	CTS
Handshake off	1		4	DTR
RXD+	8		6	DSR
General input	7		1	DCD
GND	4		5	SGND
Application with Ascotel® IntelliGate®	Mac	 <small>haz0089aaxxa0</small>	PA	

6 Operation and Maintenance

This chapter describes maintaining the system and configuration data as well as updating the system software. Replacing cards, modules and terminals are also described. The user interface of the basic system as well as operations supervision using the event message concept, the operating state display, and the error display are also topics covered in this chapter.

6.1 Data Maintenance

6.1.1 What data is stored where

The PBX's data storage system consists of three elements:

- In the Flash components are stored the system software, the boot software and the configuration data. The contents of the memory are retained even when there is no power supply.
- In the RAM components (main memory) are stored volatile data that cannot be saved. It is available only when the system is in operation.
- The EIM card (Equipment Identification Module) contains the system-specific data (system ID, system type, sales channel, licence code, generation, DECT identification numbers), IP address of the Ethernet interface on the mainboard).

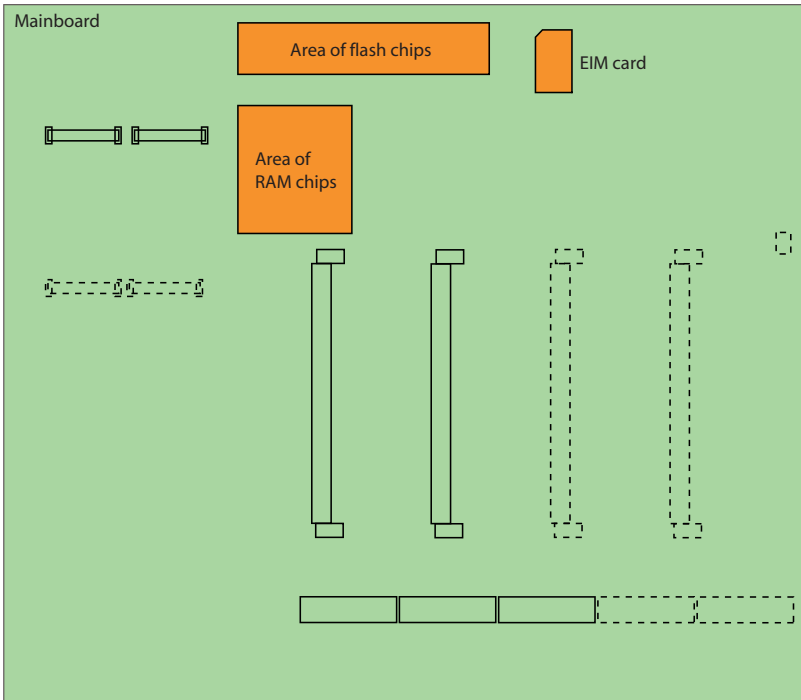


Fig. 70 Memories on the mainboard A150/300

6. 1. 1. 1 System software

The entire system software package of the PBX is stored in serial Flash components in compressed form.

The RAM components comprise the main memory for program data. When the PBX starts up, the system software on the serial Flash memory is decompressed and loaded into the main memory.

6. 1. 1. 2 Data of the PBX File System

The PBX file system contains the data of the following: Basic/Enterprise Voice Mail System, Courtesy Service, Music on hold, crash log and other monitor logs. The data is stored in serial Flash components.

The audio data (Voice Mail, Courtesy and Music on hold and audio guide) can be stored in the AIMS Shell via the function *"Tools" → "Partial download" → "Download wave files"*. This function is useful for a backup or if there is insufficient free storage space available in the serial Flash components for an update of the PBX software. After the update the wave files are reloaded to the PBX with the function *"Tools" ∅ "Partial upload" ∅ "Wave file upload - All audio data"*.



See also:

The procedure and special information relating to the backup and the upload of the audio data are described in detail in the AIMS Help.

6. 1. 1. 3 Boot software

The boot software is stored in parallel Flash components.

6. 1. 1. 4 Configuration data

There are two categories of configuration data:

- System configuration data
- Terminal configuration data

This data is stored in parallel Flash components.

System configuration data

The System Configuration data contains all the settings for the System Configuration with the exception of the terminal-specific settings.

The system configuration data is stored in parallel Flash components and backed up with AIMS Backup.

System configuration data can only be modified using AIMS.

Terminal configuration data

The terminal configuration data includes all the terminal-specific settings such as

- private phone books
- key assignments
- terminal settings such as volume, ringing melody, etc.

Configuration data is available for system terminals only. It is stored in a parallel Flash memory and saved during the AIMS backup.

Configuration data can be modified either using AIMS or directly from the system terminal.

6. 1. 1. 5 System-specific data

The system-specific data (system ID, system type, sales channel, licence code, generation, DECT identification numbers, IP address of the Ethernet interface on the mainboard) is stored on the EIM card (chip card). This data is not deleted by a first start of the PBX, and remains available. It can be ported to a different PBX by replacing the EIM card.

6. 1. 2 Updating configuration data

System configuration data can only be modified using AIMS (see also "[System configuration data](#)", page 162).

Terminal configuration data can be modified using both AIMS and the system terminal (see also "[Terminal configuration data](#)", page 163).

6. 1. 2. 1 Maintaining configuration data with AIMS

Maintaining configuration data with AIMS (Upload / Download, Backup / Restore) is described in detail in AIMS help.

6. 1. 2. 2 Deleting terminal configuration data

To delete the system configuration data from a system terminal, delete the terminal's user number from the numbering plan in the system configuration (Configuration Manager) using the Delete key. All the data is then reset to its initialization values.

The terminal configuration data of a single system terminal can be reset to the first-start values in the Configuration Manager under 3_2_2 with the "*Reset terminal data*" button.

6.2 Update Software

6.2.1 System software

The PBX's system software is loaded using the AIMS Upload Manager or the additional application "Smart Software Update".

The PBX's system software also contains the software for the Office 45 system terminals, the DECT radio units and the Office 135 and Office 160 handsets.

There are several possibilities for establishing a communication link between the PBX and the AIMS Upload Manager (see "[Access types](#)", page 63).



Tip

The PBX's software version can be displayed as follows on system terminals with a display:

1. Access the configuration menu
2. Long-click on the * key

Depending on the terminal, additional information is displayed.

6. 2. 1. 1 **AIMS Upload Manager**

The Upload Manager called up via the AIMS Shell is a convenient and reliable way of loading a new system software on to the PBX.

All the information and settings required for the software upload are accessible via the main menu of the AIMS Upload Manager, namely "*PBX Remote Upload*".

The top left-hand portion of the screen contains pull-down menus and a toolbar. They contain all the main standard functions.

In many menus you can use F1 or the "*Help*" button to obtain context-sensitive help information.

The "*Configuration*" tab

The "Upload" tab contains information, input and selection possibilities for the system type, software version and the PBX connection.

"*PBX*" Tab

This tab is used to define when the newly loaded system software is to be activated and how long it should be monitored to ensure it is operating without fault.

"*Options*" pull-down menu

In menu item *Options* → *Settings* the default settings for the communication link are configured. Please refer to the Help information to find out more about the individual parameters.

Monitor

The Upload Monitor is an Upload Manager function and is called up using *Options* → *Monitor*. The Upload Monitor is used to call up detailed information on the PBX (e.g. hardware expansion, event messages, upload configuration). The Upload Monitor is not available while a software upload is running.

6. 2. 1. 2 Standard upload

Loading a PBX with new system software takes places in several phases. The Upload Manager monitors the system software copying process from the PC to the PBX. The PBX monitors the version transfer.

Sequence phases for the standard upload:

- Preparation phase:
The Upload Manager prepares the PBX for the transmission of the new system software.
- Upload and backup phase:
The new system software is transmitted to the PBX in compressed form and stored in the dedicated Flash memory on the Flash card. The previous system software remains stored as a backup.
- Software update phase:
The current system software is replaced by the freshly loaded system software.
- Restart phase and version transfer:
The PBX is restarted automatically. The boot software starts the new system software and runs a version transfer at the same time.
- Monitoring phase:
During the monitoring phase, the new system software is active, but the old remains in the Flash memory. In this phase, the old system software can be reactivated at any time with a "*Rollback*". When the monitoring phase is finished, the old application is deleted.

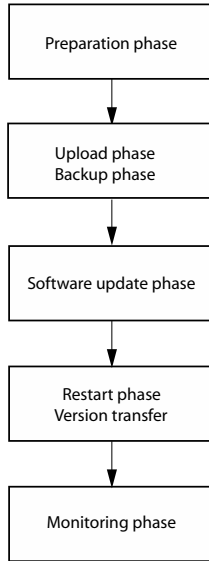


Fig. 71 Software upload sequence

During a standard upload the PBX remains operational during the upload phase. After a successful software upload, the PBX runs an automatic warm-start at the set time and restarts with the newly loaded system software.

It is possible that there is insufficient storage space in Flash memory for the update of the PBX software. In this case the wave files (Voice Mail, Courtesy and Music on hold) can be stored on the PC and deleted from Flash memory. When the monitoring phase is finished, the wave files can be reloaded to the PBX (see "[Data of the PBX File System](#)", page 162).

If for whatever reasons the software upload is not possible or if a fault occurs during the upload, the previous system software with the previous configuration data remains activated.

If errors are detected in the system software during the time in which the newly loaded system software is being monitored for fault-free operation, the previous system software is reactivated.

Successful and failed software uploads are stored as event messages in the PBX and output at the set signal destinations.



See also:

For information on event messages and signal destinations, see "[Event message concept](#)", page 200.

Initiating an upload process

To ensure a successful software upload, carry out the following preparatory steps:

1. Recommendation: Use AIMS to save the configuration data (*Tools* → *Backup*).
2. If necessary: Save the wave files (Voice Mail, Courtesy and Music on hold) (*Tools* → *Partial download* → *Download wave files*).
3. Call up the AIMS Upload Manager.
4. Select the "*Configuration*" tab.
5. Enter user name and password (changed) of a user account.
Note: To perform the upload, the user account must be assigned an authorization profile for which the "*FTP*" interface access is enabled (see "*User Access Control*", page 64).
6. Select the system type.
7. Click the "*Add*" button in the "*Software*" field and specify the zip file with the system software you require.
→ The software version you have added appears in the list box.
8. Select the software version you want from the list box.
9. Select the PBX connection.
10. Use the "*Settings*" button to set the connection parameters.
11. Select the *Upload* tab.
12. Set the time at which you want the newly loaded system software to be activated.
13. Set the period of time during which you want the newly loaded system software to be monitored for fault-free operation.
14. Click the "*Upload*" button.
→ The upload process is now initiated.

Bar indicator

During the software upload a dialog box with a horizontal bar indicates the time progress of the upload process.

If you need to stop the upload at any stage, click the "*Cancel*" button. The software upload is then stopped and the current system software remains in operation.

Status display

The status display provides information with date and time indications on the current software upload, including all the event messages output in connection with the current software upload.

Upload log

Once an upload process is completed or if it is terminated prematurely, the settings of the software upload including the data automatically entered in the log directory are printed out on the system printer.



See also:

Further information about uploading is available in Help of the Upload Manager.

6. 2. 1. 3 Emergency Upload of the system software

An Emergency Upload has to be activated whenever a standard software upload is not possible or has proved faulty. To ensure a successful Emergency Upload, proceed as follows:

The Emergency Upload is carried out via the LAN interface using the Upload Manager:

1. Set the system to boot mode using the pilot key (see "[Boot Mode](#)", page 197).
2. Call up the AIMS Upload Manager.
3. Enter user name and password (changed) of a user account.
Note: To perform the upload, the user account must be assigned an authorization profile for which the "*FTP*" interface access is enabled (see "[User Access Control](#)", page 64).
4. Select the system type.
5. Click the "*Add*" button and specify the zip file with the system software you require.
→ The software version you have added appears in the list box.

6. Select the software version you want from the list box.
7. "Select *EUL via LAN*" and use the "*Settings*" button to enter the IP address.
8. Click the "*Upload*" button.
 - The Emergency Upload is started.

6. 2. 2 **Software of corded system terminals**

The software for the system terminals is contained in the PBX's system software and is therefore always updated along with the PBX's system software.

The Office 10, Office 25 and Aastra 5360 system terminals do not have their own memory. The Office 35, Office 45, Aastra 5370 and Aastra 5380 system terminals and all IP system terminals (hardphones) have a flash memory.

System terminals with flash memory

The flash memory contains the boot software and the application software. AD2 terminals also have an area with the interface software.

The actual software for the radio unit is contained in the PBX's system software. (Exception: Office 35). When you start up the terminal, the software versions of the terminals are compared with that of the PBX. If the versions differ, the software is downloaded from the PBX to the terminal. When updating the PBX software this can take several minutes for each AD2 terminal.

Aastra M530 and Aastra M535 also have a flash chip containing software. The update mechanism is the same as the one described above. However a local power supply is always required (Power over Ethernet is also possible with IP terminals).

6. 2. 3 Software for DECT systems

Ascotel® DECT radio unit

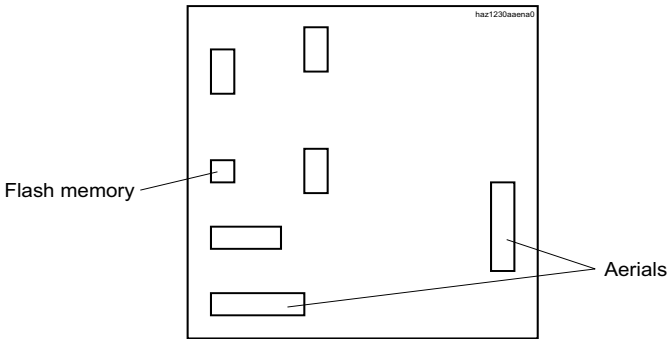


Fig. 72 Ascotel® DECT radio unit

The Flash memory on the Ascotel® DECT radio unit contains an area that cannot be modified. It is used for starting the radio unit and receiving the software for the radio unit.

The actual software for the radio unit is contained in the PBX's system software. The loaded software is tested when the radio unit starts up. If the loaded software is not identical to the version in the system software, the software will be downloaded from the PBX on to the Ascotel® DECT radio unit and stored in the Flash memory of the Ascotel® DECT radio unit.

Office 135 and Office 160 DECT handsets

The software for the Office 135 and Office 160 DECT handsets, is updated via radio (AIR download). This requires the handset to be logged on to system A.

The memory in the handsets is a Flash memory. The Flash memory contains an area that cannot be modified. This area contains the handset's boot software.

The software for the handsets is contained in the PBX software package. The loaded software is tested when the handset starts up. If the loaded software is not identical to the version in the system software, the PBX will initiate an AIR download. The software is loaded from the PBX onto the handsets via radio and stored in the Flash memory.

To be able to run an AIR download, you need to ensure that the handset contains a functional software.

The handset remains fully functional while an AIR download is in progress. The new loaded software is activated only once the download has been successfully completed. A reset is carried out on the handset.

Software update of the Aastra 600d series via FTP

The software for the Aastra 610d, Aastra 620d and Aastra 630d handsets is updated via radio (AIR download). The update can be enabled or disabled individually for each handset using the menu *System - Download server* on the handsets. If the handset is logged on to several systems, this menu defines which system the software update is relevant to.

There is only one software for the handsets of the Aastra 600d series. It is included in the PBX software package and stored on the PBX file system. If the handset software is to be updated independently of the PBX software, it can be updated using FTP (File Transfer Protocol). The PBX's file system can be accessed with an FTP Client (e. g. Filezilla) or with the Windows Explorer. The section below describes access with the Windows Explorer:

1. Start the Windows Explorer.
2. In the address bar enter the PBX's IP address (ftp ://<IP address>).
Note: If the address bar is not visible, it can be unhidden under "*View - Icon bars - Address bar*".
3. In the login window enter the PBX's user name and password.
You are now in the PBX's file system.
4. Switch the "sw\handset" subdirectory and replace the "mddf.ini" file.
5. Switch the "sw\handset\aastra600d" subdirectory and replace the files "pp.hdf" and "firmware.cnt".
6. All the handsets that selected this system for the download and have not disabled the download will now automatically start the software update.

6.3 Hardware update

Hardware maintenance comprises replacing cards and modules when there is a defect or for a generation change. Safety regulations must be observed and the step-by-step procedure must be followed.

6.3.1 Preparations

First steps before cards are removed or added:

- Inform users
- Prebar the system
- Disconnect system power supply

6.3.1.1 Inform users

Inform all concerned users if the system has to be put out of operation during working time.



Tip

To inform users, use the internal messaging system on the system terminals.

6.3.1.2 Prebar the system

Prebarring the system prevents setting up new connections. Ongoing calls are not cleared down. If a user tries to set up a call while prebarring is activated, he will obtain no dialling tone and the system terminal display will read "*Not available*"

The system is prebarred in the AIMS Configuration Manager or in the Fault & Maintenance Manager under 1_1_2 "*Slot configuration*": press the "*Prebar system*" button.

The LED display on the front panel shows when the system is prebarred (see [Tab. 88](#)).



Ascotel® IntelliGate® Net:

In an AIN every node can be individually prebarred and unlocked again. However, only when the Master is prebarred is it displayed. The barred state of a satellite is visible neither on the Master nor on the satellite.

As soon as there are no more active connections in the prebarred system, the system can be taken out of operation.



Note:

Prebarring the system can be dispensed with if all concerned are aware that existing connections will be disconnected.

6.3.1.3 Disconnect system power supply

Disconnect the system from the power supply.



Warning

Be sure to observe the "[Safety regulations](#)", page 89.

6.3.2 Licenses and EIM cards

The license information and IP address of the PBX's Ethernet interface are stored on the EIM card.

6.3.2.1 Licences

To expand a system already in operation or to re-order a licence for a new system (see "[Licence-related system limits](#)", page 48), proceed as follows:

1. Order the licence package you want from your authorized dealer. For this, specify the system's licence information (EID, old licence code, system type). Your dealer will then send you a new licence code.
2. Overwrite the old licence code with the new code (see "[Activating the licences](#)", page 84). The new licence code is stored in the EIM.
3. Upload the system configuration data and restart the system; the licensed function(s) is(are) now enabled.

6.3.2.2 EIM card

The EIM card must be replaced in the following cases:

- A licence is transferred to another system of the same type
- The mainboard is defective
- The EIM card is defective

A licence is transferred to another system of the same type

A licence can only be transferred to a system of the same type. To do so you need to replace the EIM card with the licence information.

The mainboard is defective

If you need to replace a defective mainboard, transfer the EIM card from the defective mainboard onto the new one. For instructions on how to replace the mainboard, see "[Replacing the Mainboard](#)", page 182.

The EIM card is defective

In the unlikely event of a defective EIM card, contact your authorized dealer to discuss the procedure.

Replace EIM card

The EIM card is located in a chip-card holder that is secured directly on the mainboard. The position of the chip-card holder on the mainboard is shown in [Fig. 70](#).

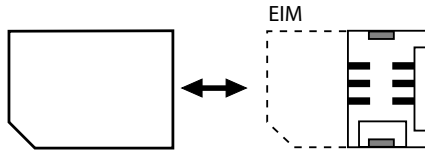


Fig. 73 EIM card

Procedure

1. Carry out preparations (see "[Preparations](#)", page 174).
2. Remove the housing cover.
3. Gently push the EIM card along the guide tongues out of the chip-card holder.
4. Push the new EIM card under the guide tongues and through to the stop in the chip-card holder.
5. Fit the housing cover.
6. Reconnect the system to the power supply.



Notes:

- The EIM card must be fitted before the system is put into operation. The PBX will not start without the EIM card.
- If the defective EIM card was replaced by a new one, all DECT handsets must be logged on again. This is necessary because the DECT identification numbers are stored on the EIM card.

6. 3. 3 Interface cards

The different card types, the number of slots and the maximum configuration are all determined by the system limits (see "[3 Expansion Stages and System Limits](#)").

A number of rules have to be observed when fitting the cards (see "[Component mounting rules](#)", page 109).

All configuration data is centrally stored in non-volatile Flash memory. This means that configuration data is preserved whenever a defective interface card has to be replaced by a new one.

6. 3. 3. 1 Replacing a defective interface card

A card is replaced by the same card type with the same number of ports.

Procedure:

1. Carry out preparations (see "[Preparations](#)", page 174).
2. Remove the housing cover.
3. Remove the defective interface card by pressing the two lateral metal clamps outward at the same time and gently lifting the interface card.
4. Place the interface card at a slight angle into the required slot (see [Fig. 29](#)). Make sure the angled side of the interface card is facing backwards (i.e. it must not project over the wiring adapter slots).
5. Carefully press the interface card downwards until the two lateral metal clamps engage.
6. Fit the housing cover.
7. Reconnect the system to the power supply.

6. 3. 3. 2 New card with fewer ports

A card is replaced by a similar card with fewer ports.

Procedure:

Change the card and put the PBX into operation again. Similar procedure as described in "[Replacing a defective interface card](#)", page 178.

The following data is deleted:

- The system and terminal configuration data of the terminals on the terminal interfaces that are no longer present in the new configuration.
- The system configuration data of the network interfaces that are no longer present in the new configuration.

Tab. 78 Example: Reducing terminal interfaces

TIC-4TS → TIC-2TS	The configuration data of terminal interfaces 3 and 4 are deleted.
EADP4 → TIC-2TS	The configuration data of all 4 terminal interfaces is deleted.



Note:

If the terminal configuration data of system terminals is deleted following the reconfiguration of a card, a warning message will appear beforehand to give you the possibility of cancelling the process. However, this is possible only if the configuration data of the original card was not already deleted beforehand.

6.3.3.3 New card with more ports

A card is replaced by a similar card with more ports.

Procedure:

1. Change the card and put the PBX into operation again. Similar procedure as described in ["Replacing a defective interface card"](#), page 178.
2. Select *"Confirm system configuration"* in the AIMS Configuration Manager.
3. Configure new ports.

The system configuration data (User No., User configuration, etc.) of the terminals on the new ports is created as new data (initialization values).

Tab. 79 Example: Expanding the number of terminal or network interfaces

SC-08AD2 → SC-16AD2	The configuration data of terminal interfaces 9...16 is created as new data.
ISDN-04ST → SC-08AD2	The configuration data of all 8 terminal interfaces is created as new data.

6.3.3.4 Change slot

Interface cards can be moved to a different slot. The terminal configuration data of the system terminals can be transferred.

Procedure:

1. Change the slot and put the PBX into operation again. Similar procedure as described in "[Replacing a defective interface card](#)", page 178.



Note:

The wiring adapter must also be changed to the corresponding slot. Any incorrectly fitted or missing wiring adapters are signalled by a red flashing LED on the display after start-up (see "[Wiring Adapter Malfunction Mode](#)", page 196).

2. Connect the system terminals to the ports of the new slot.
3. Re-configure port allocation using the AIMS Configuration Manager.
4. Insert the card in the new slot in AIMS and remove it from the old slot. The configuration data at the old slot location is now deleted.



Note:

Not all cards can be equipped on all slots (see "[Component mounting rules](#)", page 109).

6.3.4 System modules

The system module category includes the DSP cards SM-DSP1 and SM-DSP2, which are equipped on slot SM1, and the LAN Switch Module SM-LAN8, which is equipped in two adjacent wiring adapter slots.

6. 3. 4. 1 **Change Defective DSP Module**

1. Carry out preparations (see "[Preparations](#)", page 174).
2. Remove the housing cover.
3. Remove the defective module by loosening the fastening screw and carefully pulling the module out vertically of the module slot.



Note:

If multiple modules are equipped and the defective card is not top-most, the spacing sleeves have to be loosened and the modules pulled. The order of the modules on the slot is relevant only if different types of modules are equipped.

4. Press the new module downward evenly on both connectors to the stop.
5. Secure the module with the fastening screw.
6. Fit the housing cover.
7. Reconnect the system to the power supply.

6. 3. 4. 2 **Change a defective LAN switch module**

1. Carry out preparations (see "[Preparations](#)", page 174).
2. Remove the housing cover.
3. Carefully pull the defective module vertically out of the two slots.
4. Fit the new module onto the same two slots WA0...WA4 and press it down evenly as far as the stop.
5. Fit the housing cover.
6. Reconnect the system to the power supply.

6.3.5 Mainboard

If the components on the mainboard are defective or permanently faulty, the entire basic system with the metal chassis must be replaced.

Replacing the Mainboard

1. If still possible, save the configuration data using AIMS (*Tools* → *Backup*).
2. Disconnect the system from the power supply.



Warning

Be sure to observe the "[Safety regulations](#)", page 89.

3. Remove the housing cover.
4. Remove the interface cards (see "[Interface cards](#)", page 178), the system modules (see "[System modules](#)", page 180) and the wiring adapter.
5. Change the EIM card of the defective mainboard to the new mainboard (see "[EIM card](#)", page 176).
6. Dismantle all the connected cables in such a way that the new basic system can be identically reconnected.
Note: The mainboard is not dismantled but replaced complete with metal housing.
7. The new basic system can now be reassembled, fitted and installed in the reverse sequence.
8. Carry out a first-start of the system (see "[System initialization](#)", page 82) and reload the configuration data using (*Tools* → *Restore*).

6.3.6 Replacing system terminals

6.3.6.1 Corded system terminals

Terminals with the same level of added features

Replacing a defective terminal

Once the defective system terminal has been replaced by an identical terminal the terminal configuration data is automatically transferred.

Relocating a terminal

The terminal configuration data of a system terminal can be copied to another terminal with the same level of added features using the AIMS Configuration Manager (*Edit* → *Copy* and *Edit* → *Paste*). You can choose the parameters to copy from a list. The data can also be saved with AIMS and then reloaded if the system terminal is logged on to a different card.

Terminals with a different level of added features

Given that every level of added features on system terminals has a certain number of features, the features are adapted (reduced or increased) to the new terminal whenever the terminal definition is changed. The features are reduced if a terminal is replaced by a terminal with a lower level of added features (e. g. Office 45 → Office 10 to Office 35) or by a predecessor model (e. g. Office 45 → Office 40).

If a system terminal is replaced by a system terminal of a different level of added features, the terminal display will display the message "*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.

Before the added features of the new system terminal can be used, the new terminal type will have to be entered in the PBX using the AIMS Configuration Manager "*Terminal data*" or by configuring at the terminal.

6.3.6.2 DECT terminals

Replacing a radio unit

1. Dismantle the defective radio unit.
2. Fit the new radio unit.

Replacing a handset

1. Bisheriger DECT-Benutzer via AIMS abmelden.
2. Log new handset on. The handset data is preserved until the user number is also deleted.

6.4 Generation Change

6.4.1 System Upgrade

All that is required to upgrade a system is new system software. The system upgrade can be carried out on site or remotely with a version transfer.

1. Initiate the upload process as described in the paragraph "[Initiating an upload process](#)", page 169. Select "*Start Now*" as the activation time.
2. Once the upload is completed, the PBX resets and is then ready to operate again with the new system software and the usual system configuration.



Notes:

- AIMS 7.6 and higher uses the Microsoft SQL Server database for its data management. Borland Paradox was used up until AIMS 7.5. During the AIMS 7.6 installation process the existing data stock of the Borland Paradox database is transferred to the Microsoft SQL Server database and adapted. The existing Paradox database is preserved. Only generation ≥ 17.0 PARADOX databases can be transferred. The Paradox database can also be subsequently imported. The relevant instructions can be found in the AIMS Help. Please also refer to the version notes for AIMS 7.6 in the readme.txt file.
- An Aastra 5370ip logged on to the system as an Office 35IP prior to the upgrade to 17.5 (= Office 70IP-b) can still be used. If the terminal is logged on to the system as an Aastra 5370ip a software update is automatically initiated. One licence per terminal is required to operate the IP system terminals.

6. 4. 2 System Downgrade

A successful downgrade requires the existence of a corresponding system software and valid configuration data. AIMS is backwards compatible, which means that AIMS does not necessarily have to be changed.

1. Carry out an emergency upload as indicated in "[Emergency Upload of the system software](#)", page 170.
2. Once the system has started up, load the saved configuration data using AIMS under "*Restore*", and save the data in the PBX with "*Upload*". The PBX reboots and is then ready for operation with the old system software and the familiar system configuration.

**Note:**

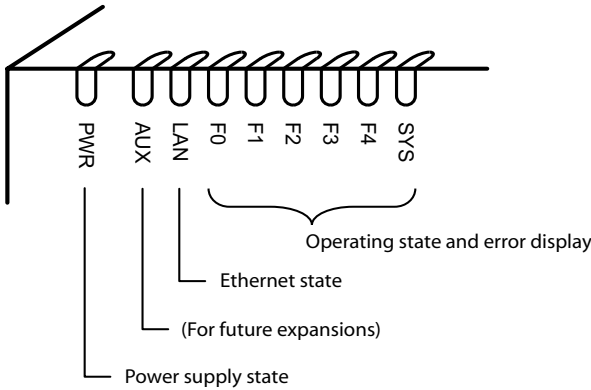
An Aastra 5370ip terminal that was logged on to the system as an Office 35IP (= Office 70IP-b) can still be used after the downgrade to 17.x (x<5). This is not possible with a terminal that was logged on as an Aastra 5370ip as it can no longer be logged on as an Office 35IP. If this is required nonetheless the Office 35IP software must be reloaded onto the terminal using the IP Update Manager.

6.5 User interface

The user interface on the front panel consists of the display elements and a pilot key. It is used to indicate operating states and carry out functions.

6.5.1 Display elements

The front panel features an LED display with a total of 9 labelled LED. It is used to show an operating state and error indicator during the start-up phase and during operation.



"PWR" lits: Power supply in order

"LAN" lits: Port has a connection with the network

"LAN" Flashing: Port is receiving or sending data

"F0, F1, F2, F3, F4, SYS": see ["Operating modes and display priorities"](#), page 189

Fig. 74 LED display

Each LED can take on one of four states: green (G), orange (O), red (R) and inactive. In general the colours have the following meaning:

Tab. 80 Significance of the LEDs colours

Colour		Meaning
Inactive	-	Switched off
Green	G	Normal operation / everything in order
Orange	O	Function is being carried out / is active
Red	R	Warning / error

An LED activation period lasts 1 second and is subdivided into 8 units of 125 ms. In this way all the various flashing patterns can be displayed.

Example:

In the following display pattern the LED lights up green for 500 ms and is then inactive for 500 ms. Then it lights up green again for 500 ms ... etc.

Tab. 81 Example of a display pattern

LED activation period	Description
← 1s →	
G G G G - - - -	Flashing green

The following display patterns and symbols have been defined for displaying the status of the basic system:

Tab. 82 Defined display patterns

LED activation period	Description	Symbol
← 1s →		
- - - - - - - -	Inactive	-
G G G G G G G G	Steady green	G
O O O O O O O O	Steady orange	O
R R R R R R R R	Steady red	R
G G G G - - - -	Flashing green	G -
O O O O - - - -	Flashing orange	O -
R R R R - - - -	Flashing red	R -
G G G G O O O O	Flashing green/orange	G O
O O O O R R R R	Flashing orange/red	O R
R R R R G G G G	Flashing red/green	R G
G G - - G G - -	Rapidly flashing green	G - G
G - G - G - G -	Very rapidly flashing green	G - G
R - R - R - R -	Very rapidly flashing red	R - R

6. 5. 2 Pilot key (CTRL key)

Pressing the pilot key carries out certain functions or switches the system to a particular mode.

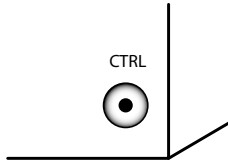


Fig. 75 Pilot key

Different actions are carried out depending on how long the key is pressed and the system's current operating state. The duration of the keypress is divided into three time intervals:

Tab. 83 Keypress duration, pilot key

Designation	Abbreviation	Keypress duration
Short keypress (Short Click)	SC	0..0.2 seconds
Long keypress (Long Click)	LC	2...10 seconds
Very long keypress (Very Long Click)	VLC	More than 10 seconds

6. 5. 3 Carrying out functions

The pilot key is used to carry out various functions. For certain functions the system has to be in a particular operating state beforehand.

Restart

In all operating states a very long keypress (VLC) on the pilot key forces the basic system to restart (reset). The restart is initiated **after the key is released**.

Tests

See ["Thorough RAM test"](#), page 190.

Special accesses

See ["Enabling / disabling password-free access"](#), page 192 and ["Enabling / disabling the dial-up connection to the AIN"](#), page 193.

Restoring initialization values

See "Carrying out a first start", page 194 and "Resetting the IP address", page 195.

Emergency Upload via LAN

For an Emergency Upload via LAN the system must first be set to boot mode, see "Boot Mode", page 197.

6.5.4 Operating modes and display priorities

The system software of the A150/300 recognizes various operating modes, which are displayed with the LEDs F0, F1, F2, F3, F4 and SYS. In the following these displays are referred to as combination patterns or patterns and are numbered for easy reference.

The various operating modes have different display priorities, i.e. a mode with a higher display priority will cover up the combination pattern of a mode with a lower display priority. The combination patterns covered up are stored and continually updated in the background, which means that no patterns are lost.

The table below lists all the operating modes and their display priorities. The highest display priority is 1; the lowest, 7.

Tab. 84 Operating modes and display priorities

Operating mode	Display priority	Remarks
Error Mode	1	<ul style="list-style-type: none"> System is no longer able to run
Startup Mode	2	<ul style="list-style-type: none"> When power is supplied After a restart/first start Used as a progress indicator during startup
Application Command Mode Boot Command Mode	3	<ul style="list-style-type: none"> Used for carrying out certain functions This mode is exited automatically if no input is made within 20 seconds.
Warning Mode	4	<ul style="list-style-type: none"> System is still capable of running but the system function may be impaired. Problem needs to be remedied as soon as possible.
Wiring Adapter Malfunction Mode	5	<ul style="list-style-type: none"> System is running but a problem has been detected on one or more wiring adapter slots.
Feature Mode	6	<ul style="list-style-type: none"> System is running normally but one function is active.
Normal Mode	7	<ul style="list-style-type: none"> System is running normally.

6. 5. 4. 1 Startup Mode

Startup begins as soon as power is supplied or after a restart/first start, and ends when the system enters Normal Mode. The LED combination patterns 1...9 indicate the individual startup phases in chronological order and also serve as a progress indicator.

Tab. 85 Combination patterns during startup

Pattern No.	F0	F1	F2	F3	F4	SYS	Duration [s]	Meaning
1	R	R	R	R	R	R	~1,5	Red LED test
2	O	O	O	O	O	O	~1,5	Orange LED test
3	G	G	G	G	G	G	~1,5	Green LED test
4	G-G	-	-	-	-	-	~4	RAM self-test
5	G	G-	-	-	-	-	~4	Startup State
6	G	G	G-	-	-	-	~1	Preparing system software loading
7	G	G	G	G-	-	-	~25	Loading the system software
8	G	G	G	G	-	-	~1,5	System software successfully loaded
9	-	-	-	-	-	G-G	~25	System software starting up

The startup phase is now completed and the system switches to Normal Mode. The pilot key now accepts inputs; the terminal displays are visible shortly thereafter.

Thorough RAM test

To carry out a thorough RAM test during startup, press the pilot key briefly (SC) during the orange LED test (pattern 2). Pattern 10 is displayed during the thorough RAM test instead of pattern 4.

Tab. 86 Patterns during the thorough RAM test

Pattern No.	F0	F1	F2	F3	F4	SYS	Duration [s]	Meaning
10	G-G	-	-	-	-	-	~60	RAM self-test (thorough)

The startup continues normally after the thorough RAM test.

6.5.4.2 Normal Mode

Normal Mode means that the system software is running fault-free. Depending on the situation the LEDs display the following combination patterns:

Tab. 87 Combination patterns in Normal Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
11	–	–	–	–	–	G –	System in normal operation
12	G	–	–	–	–	G –	At least one internal port seized
13	–	G	–	–	–	G –	At least one external port seized

Mutual combinations of patterns 12 and 13 are possible as are combinations with patterns 14...16.

6.5.4.3 Feature Mode

Feature Mode means that the system software is running fault-free, but that a special function (feature) is active. Depending on the function the LEDs display the following combination patterns:

Tab. 88 Combination patterns in Feature Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
14	–	–	–	–	–	O –	System is prebarred
15	–	–	–	O	–	G –	Password-free access enabled to configuration via V.24 (PA) or Ethernet.
16	–	–	–	–	O	G –	Remote access to AIN enabled via an external dial-up connection.

Mutual combinations of patterns 14...16 are possible as are combinations with patterns 12 and 13.



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In an AIN the offline mode of a satellite is indicated by the green-orange flashing SYS-LED. Combinations with the patterns of the Normal Mode and Feature Mode are possible.

Exception: Pattern 14 (prebarred system) takes priority over the offline mode display.

6. 5. 4. 4 Application Command Mode

The Application Command Mode is used to enable or disable password-free access (pattern 15) and remote access to the AIN via an external dial-up connection (pattern 16).

The Application Command Mode is indicated by the SYS-LED flashing green-orange.

The Application Command Mode is entered using a long keypress of the pilot key (LC) in Normal Modus. Combination pattern 17 is displayed once the Application Command Mode has been entered.

Tab. 89 Patterns after entering the Application Command Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
17	R	-	-	-	-	G O	Application Command Mode active

The Application Command Mode is exited automatically if no input is made within 20 seconds; the system returns to Normal Mode.

Enabling / disabling password-free access

The following sequence changes the status of the password-free access:

Requirement: The system has been started up and is running normally.

1. Press the pilot key with a long keypress (LC)
→ "SYS" flashes green-orange and "F0" lights up red
2. Press the pilot key several times with a short keypress (SC) until "F3" lights up.
→ "F3" indicates the current status: steady red = disabled, steady orange = enabled.
3. Press the pilot key with a long keypress (LC)
→ After 2 second keypress "F3" lights up green by way of confirmation.
→ When the key is released, the status changes and the system jumps back to original Mode.
→ "F3" now indicates the new status: inactive = disabled, steady orange = enabled.



Note:

You are strongly advised to keep the password-free access open only for as long as necessary. For security reasons it is automatically deactivated again after a restart or at the latest after 60 minutes.

Enabling / disabling the dial-up connection to the AIN

The following sequence changes the status of the remote access to the AIN via an external dial-up connection:

Requirement: The system has been started up and is running normally.

1. Press the pilot key with a long keypress (LC).
→ "SYS" flashes green-orange and "F0" lights up red
2. Press the pilot key several times with a short keypress (SC) until "F4" lights up.
→ "F4" indicates the current status: steady red = disabled, steady orange = enabled.
3. Press the pilot key with a long keypress (LC).
→After 2 second keypress "F4" lights up green by way of confirmation.
→When the key is released, the status changes and the system jumps back to original Mode.
→"F4" now indicates the new status: inactive = disabled, steady orange = enabled.



Note:

You are strongly advised to keep the remote access to the AIN via an external dial-up connection open only for as long as necessary. There is no time limit to the access and it remains in place even after a system restart.

6. 5. 4. 5 Boot Command Mode

The Boot Command Mode is used to carry out a first start or set a fixed IP address.

The Boot Command Mode is indicated by the SYS-LED flashing orange-red.

The Boot Command Mode is entered using a long keypress of the pilot key (LC) during the startup state (see pattern 5, [Tab. 85](#)). Pattern 18 is displayed once the Boot Command Mode has been entered.

Tab. 90 Patterns after entering the Boot Command Mode

Pat-tern No.	F0	F1	F2	F3	F4	SYS	Meaning
18	R	-	-	-	-	O R	Boot Command Mode active

The Boot Command Mode is exited automatically if no input is made within 20 seconds; the system returns to Startup Mode and restarts.

Carrying out a first start

The following sequence carries out a system first start.



Note:

A system first start deletes all the configuration data, which is reset to its initialization values. Save the data beforehand with a backup. The data stored on the EIM card is not deleted by a first start of the PBX, and remains available.

Requirement: The system is in the Boot Command Mode (pattern 18).

1. Press the pilot key briefly.
→"F1" lights up red
2. Press the pilot key with a long keypress (LC).
→After 2 second keypress "F1" lights up green by way of confirmation.
→The first start is initiated once the key is released.
→The system now deletes the database. The process can last up to 30 seconds and is displayed with pattern 19. The startup then continues normally.

Tab. 91 Patterns while the database is deleted as a result of a first start

Pattern No.	F0	F1	F2	F3	F4	SYS	Dura-tion [s]	Meaning
19	G -	G -	G -	-	-	-	~30	Deleting the database



See also:

["Carrying out functions", page 188](#)

Resetting the IP address

The IP address data is stored on the EIM card and is retained even after a first start. The following sequence only resets the IP address data of the basic system to the initialization values. All the other data is retained.

Requirement: The system is in the Boot Command Mode (pattern 18).

1. Press the pilot key several times with a short keypress (SC) until "F2" lights up red.
2. Press the pilot key with a long keypress (LC)
 - After 2 second keypress "F2" lights up green by way of confirmation.
 - The IP address data is reset to the initialization values once the key is released.The startup then continues normally.

Initialization values of the IP address data:

- IP address: 192.168.104.13
- Subnet mask: 255.255.255.0
- Gateway: 0.0.0.0

6. 5. 4. 6 Wiring Adapter Malfunction Mode

The system switches to this mode if an unsuitable wiring adapter is fitted into one of the wiring adapter slots. This also applies to situations in which a LAN switch module is combined with an unauthorized interface card (non-AD2 terminal card). Missing wiring adapters are also indicated.

The Wiring Adapter Malfunction Mode is indicated by one or more red flashing LEDs F1...F4. The LED number corresponds to the number of the Wiring Adapter slot concerned. The SYS-LED flashes green as in the Normal Mode.

Tab. 92 Example pattern for Wiring Adapter Malfunction Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
20	–	–	R –	–	–	G –	Incorrect or missing wiring adapter in slot WA2

6. 5. 4. 7 Warning Mode

The system switches to the Warning Mode if a problem occurs that impairs the system’s normal operation. The Warning Mode is indicated by the red-green flashing SYS-LED and is exited only once the problem is remedied.

The different warnings are binary coded and are indicated by the LEDs (F0...F4).

Tab. 93 Warning Mode combination patterns

F0	F1	F2	F3	F4	SYS	Error	Category / Description	Remedy
–	–	–	–	R	R G		Fan out of operation	Check connections or replace fan
–	–	–	R	–	R G		Oscillator Tuning Blockmissing (can cause DECT problems)	Contact Support. The Oscillator Tuning Block has to be loaded.

6.5.4.8 Boot Mode

The boot mode enables an Emergency Upload via the Ethernet interface. This is required whenever there is no longer any executable system software stored on the basic system for whatever reason or if a downgrade to an older software version is to be carried out.

The Boot Mode is indicated by the SYS-LED flashing red.

To access the boot mode press the pilot key during the LED test red, which is executed during the start-up phase (see pattern 1, [Tab. 85](#)). The length of time the pilot key is pressed is irrelevant. Pattern 21 is displayed once the Boot Mode has been entered.

Tab. 94 Combination patterns in Boot Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
21	–	–	–	–	–	R –	Boot Mode active

The boot mode remains active until the Emergency Upload is completed or the system is restarted manually.

6.5.4.9 Error Mode

The system switches to the Error Mode if a problem or error occurs that prevents the system's normal operation. This can be a hardware error or a software installation error.

The Error Mode is indicated by the red SYS-LED flashing very rapidly and is exited only once the error is remedied. In many cases this involves a system restart.

The different errors are binary coded and are indicated by the LEDs (F0...F4).

Tab. 95 Error Mode combination patterns

F0	F1	F2	F3	F4	SYS	Error	Category / Description	Remedy
-	-	-	-	R	R-R-R	no LIC	Hardware: No licence: EIM card missing or defective	Insert or replace EIM card
-	-	-	R	-	R-R-R		Hardware: No IP address data on the EIM card	Run a first start or replace EIM card
-	-	-	R	R	R-R-R		Hardware: EIM card not compatible	Replace EIM card
-	-	R	-	-	R-R-R	E-505	Hardware: DRAM defective	Replace basic system
-	-	R	-	R	R-R-R	E-530	Hardware: BBT Integrity Check: No free replacement blocks available	Replace basic system
-	-	R	R	-	R-R-R	E-531	Hardware: BBT Integrity Check: Inconsistent Bad Block Table	Replace basic system
-	-	R	R	R	R-R-R	E-532	Hardware: BBT Integrity Check: ECC has detected an uncorrectable read error	Replace basic system
-	R	-	-	-	R-R-R	E-533	Hardware: BBT Integrity Check: Block 0 is faulty; the Bad Block Table cannot be used	Replace basic system

F0	F1	F2	F3	F4	SYS	Error	Category / Description	Remedy
-	R	-	-	R	R-R-R	E-404	Software: Version transfer not possible: The country and/or sales channel in the PBX (EIM card) does not match the information in the configuration data in the Flash	Using AIMS set a different EIM card and / or distribution channel.
-	R	-	R	-	R-R-R	E-405	Software: Version transfer not possible: Software release unknown.	Load new system software onto main-board
-	R	-	R	R	R-R-R	E-522	Software: Incompatible Boot software	Contact Support. A different Boot software may have to be loaded.
-	R	R	-	-	R-R-R	E-700	Software/Hardware: General copy error	Load correct system software onto main-board or replace basic system.
-	R	R	-	R	R-R-R	E701	Software: Copy error between file system and DRAM	Load correct system software onto main-board or replace basic system.
-	R	R	R	-	R-R-R		Factory Server Error: No DHCP	For the manufacturer only
-	R	R	R	R	R-R-R		Factory Server Error: No TCP connection	For the manufacturer only
R	-	-	-	-	R-R-R	E-534	Software: corrupt file system	Contact Support. The file system must be reformatted.
R	R	R	R	R	R-R-R	EUL	Software: Emergency Upload Functional system software no longer available	New system software must be loaded with EUL via LAN (see page 170).
-	-	-	-	-	-		Software: General boot error	Contact Support. A different Boot software may have to be loaded.
R-R-R	R-R-R	R-R-R	R-R-R	R-R-R	R-R-R		Software: General error	Load new software onto mainboard. If unsuccessful, contact Support.

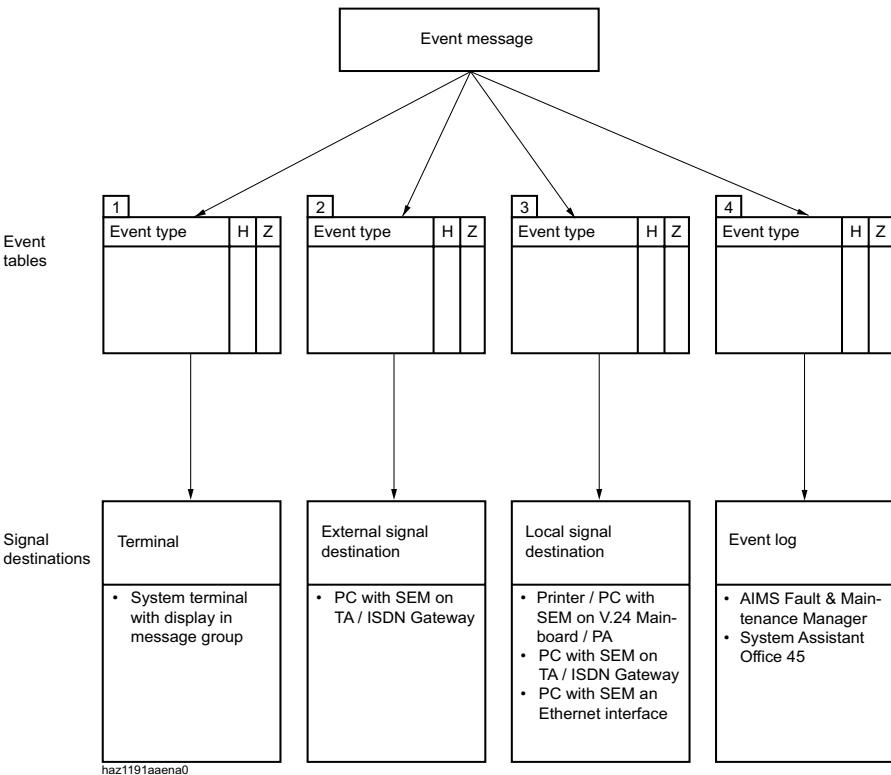
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6.6 Operations supervision

6.6.1 Event message concept

The PBX generates an event message every time an event or error occurs. The event tables in the Fault & Maintenance Manager are used to specify how often an event message of a particular type may be generated over a given time period before the event message is sent to the allocated signal destinations.

The Fault & Maintenance Manager has 4 event tables that can be allocated to 4 signal destinations:



F = Frequency
T = Time period

Fig. 76 Distribution principle for an event message

6.6.1.1 Event types

Tab. 96 Event types, in alphabetical order

Event/ error message	Trigger condition	Details
<i>ACD server out of service</i>	ACD server defined as destination but not responding.	Date, time
<i>ATAS: connection established</i>	ATAS: connection (re) established	Date, time
<i>ATAS: Connection lost</i>	ATAS: connection lost	Cause (0: Logoff, 1: missing cycle signal), date, time
<i>Card out of service</i>	A card previously in operation has stopped functioning.	Number of the expansion slot, date, time
<i>CL Printer Jam</i>	<ul style="list-style-type: none"> • No response from system printer for past 4 minutes • Printer out of paper or switched off 	V.24 interface, interfaces/card number, port number, date, time
<i>CTI first party Connection lost</i>	The ATPC3 first-party link was interrupted because the cycle signal is missing.	User number, date, time
<i>CTI first party Connection re-established</i>	The ATPC3 first-party link was (re)established	User number, date, time
<i>CTI third party: Connection lost</i>	The ATPC3 third-party link was interrupted	Cause (0: Logoff, 1: missing cycle signal), date, time
<i>CTI third party: Connection re-established</i>	The ATPC3 third-party link was (re)established	Date, time
<i>ESME unobtainable</i>	The LAN connection between the SMSC and the ESME is interrupted	Date, time
<i>External signal destination missing</i>	External signal destination not automatically reachable	0: Busy / 1: Not available / 2: Barred / 3: Undefined, date, time
<i>External SMS gateway unobtainable</i>	External SMS gateway unobtainable by network provider or incorrectly configured	Date, time
<i>Fan stopped</i>	The fan is jammed or defective or the connection is no longer making contact.	Date, time
<i>ICC overflow</i>	Individual cumulative counter or cost centre counter overflow	User number, cost centre, exchange line, room number, date, time
<i>Inactive radio unit port</i>	Radio unit not responding	Card number, port number, date, time
<i>Insufficient bandwidth</i>	An user in an AIN is trying to set up a connection and the bandwidth currently available with the WAN link is insufficient.	Link ID, WAN link name, available bandwidth in Kbit/s, date, clock
<i>Internal signal destination missing</i>	Local output blocked or not available	0: Busy / 1: Not available / 2: Barred / 3: Undefined, date, time
<i>IP terminal: Connection lost</i>	An IP system terminal is no longer connected to the PBX	User number, terminal ID, date, time

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Event/ error message	Trigger condition	Details
<i>IP terminal: Connection re-established</i>	An IP system terminal has re-established the connection to the PBX	User number, terminal ID, date, time
<i>IP terminal: SW updating successful</i>	The software update of an Aastra 5360ip/5370ip/5380ip has now been successfully completed after unsuccessful attempt(s).	User number, terminal ID, date, time
<i>IP terminal: SW updating failed</i>	The software update of an Aastra 5360ip/5370ip/5380ip has failed for the stated reason.	User number, terminal ID, reason, date, time
<i>LCR on alternative network provider</i>	Automatic switch from primary network provider to secondary network provider using LCR function	Provider ID, date, time
<i>Licence for IP system terminal now available</i>	A sufficient number of licences is now available again for Aastra 5360ip/5370ip/5380ip.	Date, time
<i>Licences for offline operations expired</i>	The maximum duration of two hours for the temporary licence activation has expired.	Date, time
<i>Limits reached for busy lamp field</i>	A busy lamp field on an SIP/Aastra SIP terminal could not be configured because the system limit for the platform has been reached.	Terminal ID, key number, date, time
<i>Local network supply error on the radio unit</i>	Local power supply of a SB-4+ / SB-8 / SB-8ANT radio unit failed or unavailable	Card number, port number, date, time
<i>Mains voltage failures</i>	Event message once mains power is restored <ul style="list-style-type: none"> • Mains power has failed more frequently than entered in the trigger table 	Date, time
<i>Malfunction</i>	With 3-digit error ID Hardware or software error during self-test (for more details see Tab. 95). With 5-digit error ID: General error during operation. The error ID can help Support to pinpoint the possible cause of the error.	Error ID, date, time
<i>Memory usage below the critical range</i>	The free storage space available in the file system has once again increased above 3 Mbytes	File type ID, Usage, Date, Time
<i>Memory usage over the critical range</i>	The free storage space available in the file system has dropped below 3 Mbytes	File type ID, Usage, Date, Time
<i>Monitor Event</i>	Monitor Event	Monitor Type, Date, Time
<i>No DECT-DSP channels available</i>	DECT channels on DSP-0x overloaded	Date, time
<i>No DTMF receiver (GSM) available</i>	A permanent DTMF receiver (for executing suffix dialling procedures) could not be assigned to an integrated GSM terminal with enhanced functionality.	BCS Ref., date, time
<i>No response from network</i>	No answer to call setup on T / T2 interface	Port number of the exchange line circuit, date, time
<i>Node: Connection lost</i>	A node is not connected to the Master for a certain amount of time (configurable).	Node number, date, time
<i>Node: Connection re-established</i>	A node is reconnected with the Master for a certain amount of time (configurable) after an interruption.	Node number, date, time

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Event/ error message	Trigger condition	Details
<i>NTP: Synchronisation failed</i>	Time synchronization via the NTP server (NTP = Network Time Protocol) has failed.	Date, time
<i>NTP: Synchronisation reestablished</i>	Time synchronization via the NTP server (NTP = Network Time Protocol) has been restored.	Date, time
<i>Numbers missing</i>	Card(s) not full logged on <ul style="list-style-type: none"> Insufficient memory reserved in the numbering plan to enable allocation of numbers to all users: Type in missing numbers by hand 	Date, time
<i>Outgoing call rejected</i>	Call rejected by the network <ul style="list-style-type: none"> On any line: error code 34 On required line group: error code 44 	Port number of the exchange line circuit, cause, date, time
<i>Overheat</i>	The temperature inside the housing is too high.	Date, time
<i>Port out of service</i>	A port previously in operation has stopped functioning.	Number of the slot, relevant port number, date, time
<i>QSIG licence limit reached</i>	Maximum number of licensed outgoing connections with QSIG protocol exceeded	Route number, user number, date, time
<i>Recording error</i>	<ul style="list-style-type: none"> Card not fitted Card not logged on Card defective 	Card number, date, time
<i>Remote maintenance is activated</i>	Remote maintenance has been activated	Unfiltered output to local destinations
<i>Reset card</i>	A reset was carried out for one card	Number of the expansion slot, date, time
<i>Satellites missing after supervision time</i>	After an AIN update (Master and all satellites) some satellites no longer have a connection to the Master.	Total satellites missing, Satellites rolled back, Date, Time
<i>SIP account available</i>	The SIP account is unable to register with the SIP provider for a specific reason (0: Provider cannot be reached / 1: No authorization). The event is triggered only if the parameter " <i>Registration required</i> " is configured to " <i>Yes</i> ".	Provider, account, date, time
<i>SIP account available</i>	The SIP account has successfully registered with the SIP provider.	Provider, account, date, time
<i>Software upload</i>	During an upload in PBX status: <ul style="list-style-type: none"> <i>"Update running"</i> <i>"Supervision running"</i> <i>"Normal running"</i> 	<ul style="list-style-type: none"> "New PBX software loaded, starting.." "New PBX software crashed, rollback executed" "New PBX software started, running fault-free" Date, time
<i>Sync. lost on trunk re-established</i>	A T / T2 interface entered in the clock pool has been successfully re-synchronized with the system clock.	Port number, date, time
<i>Sync. lost re-established</i>	Synchronization with the network has been restored on at least one T / T2 interface.	Date, time

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Event/ error message	Trigger condition	Details
<i>Synchronisation loss to exchange</i>	A T / T2 interface entered in the clock pool has lost the system clock.	Port number, date, time
<i>System overload</i>	Network access attempted when all lines are seized or the PBX is overloaded.	Route number, user number, date, time
<i>The System has crashed</i>	The System has crashed	Date, time
<i>Too few FoIP channels</i>	Setting up a fax connection via T.38 failed because no FoIP channel is available.	Available FoIP channels on nodes
<i>Too few licences for GSM terminals</i>	The connection setup with an integrated GSM terminal failed because the number of configured GSM terminals is greater than the number of licences for GSM terminals. All the integrated GSM terminals remain blocked until there are enough GSM licences.	Number of GSM licences, number of configured GSM terminals, date, time
<i>Too few licences for IP system terminals</i>	An Aastra 5360ip/5370ip/5380ip was unable to register because there are too few IP system terminal licences.	Date, time
<i>Too few VoIP channel licences</i>	Connection setup failed because the licence limit for simultaneously active VoIP channels has been reached.	No. of licensed VoIP channels, Date, Time
<i>Too few VoIP channels</i>	An user is trying to set up a connection that requires one or more VoIP channels which are currently not available.	Available VoIP channels on this node, date, time
<i>Too many event messages</i>	Number of message types exceeds limit entered in the table on: <ul style="list-style-type: none"> • "Sync. Loss on T / T2" • "Outgoing Call Rejected" • "No response from network" 	Date, time
<i>Too many network interfaces</i>	System limits exceeded	Card No., date, time
<i>Too much user data</i>	System limits exceeded	Date, time
<i>Total Synchronization loss</i>	Synchronization with network has failed on all T / T2 interfaces	Date, time
<i>Trial licence expired</i>	The duration for which a trial licence can be used for a specific feature has expired and there is no valid licence.	Licence ID, date, time
<i>User alarm</i>	With *77[nnnn] from a terminal	nnnn [0000...99999], user number, date, time
<i>User does not answer</i>	No answer to incoming DDI call from user on S bus or AD2	DDI No., date, time
<i>Wake-up call unanswered</i>	Room wake-up call not answered	Room No., date, time
<i>Wrong or missing wiring adapter</i>	There is no wiring adapter in the wiring adapter slot or the wiring adapter fitted is unsuitable.	Slot number, date, time

6.6.1.2 Event tables

Event tables list all the event messages the PBX is capable of generating (see [Tab. 96](#)).

The frequency of event messages can range between "0" and "20".

The time period is indicated in hours, ranging between "0" and "672". The longest time period "672" corresponds to 28 days or 4 weeks.

If the frequency of event messages is set to "0", the time period will also automatically be set to "0". No event message is sent to a signal destination.

If the frequency of event messages is set to "1", the time period will automatically be set to "0".

The event message will immediately be sent to the signal destinations.

If the time period is set to "0" hours, the frequency of the event message will automatically be set to "1".

The event message will immediately be sent to the signal destinations.

There are 4 event tables in the Fault & Maintenance Manager. Each event table can be individually configured and allocated to one of the 4 signal destinations. This means it is possible to decide which event message – if any – should be sent to a particular signal destination either immediately, with a delay or not at all.

Example

Tab. 97 Example of event table

Event type	Frequency	Time period
<i>Total Synchronization loss</i>	10	1
<i>System Overload</i>	1	0
<i>No response from network</i>	0	0

In this example an event message is sent to the message destinations if there is a "*Total synchronization loss*" event message when the PBX generates the event message 10 times within 1 hour. With the event type "*System overload*", an event message is sent to the signal destinations immediately; while the event type "*No Response from Network*", no event message needs to be sent to the signal destinations.

6. 6. 1. 3 Signal destinations

4 signal destinations can be configured in the Fault & Maintenance Manager. Any one of the four event tables can be assigned to each signal destination.

When the PBX is first started, one event table with its own number is assigned to each signal destination.

Signal destinations include:

- System terminals with alphanumeric display)
- External signal destination (signal destination PC (SEM) via ISDN or LAN / WAN to T interface)
- Local signal destination (e.g. PC (SEM) / printer, PC (SEM) on S interface / Ethernet interface)
- Event log (event protocols in the Fault & Maintenance Manager)

There are several possibilities for connecting the signal destinations with a PBX:

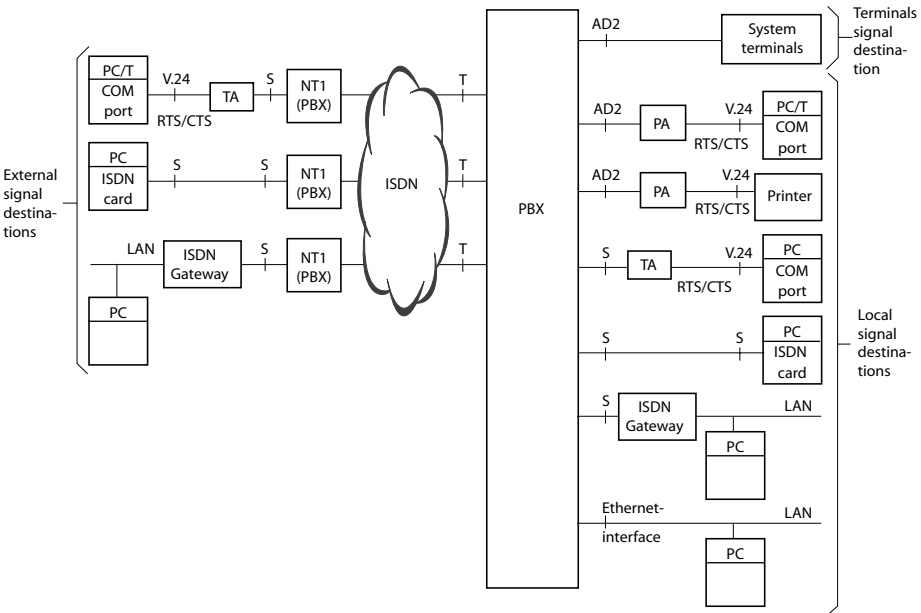


Fig. 77 Overview of connection possibilities for the various signal destinations

Signal Destination: terminal

Depending on the allocated event table, event messages are sent to all the system terminals that have a display and are entered in message group 8.

External signal destinations

Depending on the event table allocated, event messages are sent to a specified external signal destination. Two external signal destinations can be specified:

- 1 preferred external signal destination
- 1 alternative external signal destination

Signalling an event message to an external signal destination

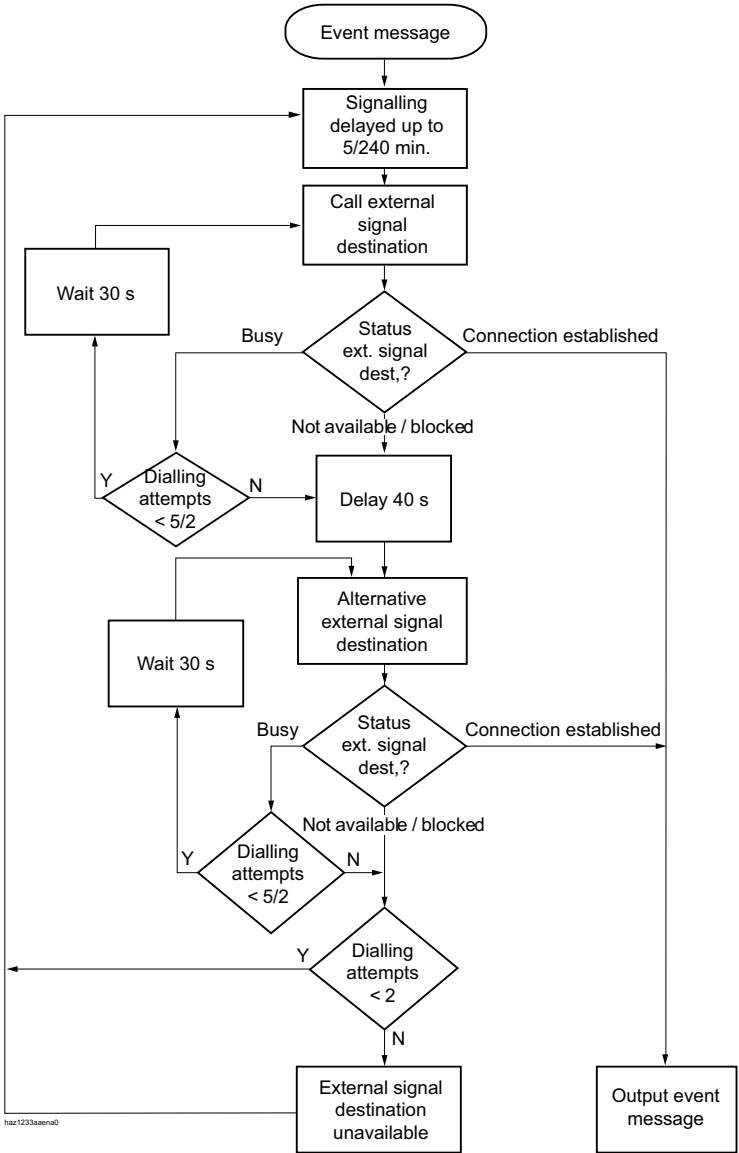


Fig. 78 Flowchart of the signalling of an event message to an external signal destination

The following principles govern the way event messages are signalled to an external signal destination:

- Individual event messages are not signalled if they occur at short intervals. The event messages are stored temporarily for 5 minutes and then sent together to the external signal destination.
- If over a period of one hour an attempt is made unsuccessfully to send the event messages to the external signal destination, the signalling period is extended from 5 minutes to 4 hours. As soon as the event messages are successfully output at the external signal destination, the time period is reset to 5 minutes.
- If over a period of 1 hour an attempt is made unsuccessfully to send an event message to an external signal destination, the number of dialling attempts is reduced from 5 to 2. As soon as an event message has been successfully sent, the number of dialling attempts is increased to 5 again.
- If the attempt to send an event message to an external signal destination was unsuccessful, the PBX will generate the event message "*External event message destination missing*".



Note:

Event tables and signal destinations should be set in such a way that the event message *External event message destination missing* is signalled immediately to any signal destination still available.

Routing an external signal destination

The following points are to be taken into account when specifying the routing to external signal destinations:

- If the external signal destination is dialled up via an exchange access prefix followed by the call number, the call will be routed via route 3. To use a different route, you need to configure a route selection.
- Digit barring for external calls and printer faults (in the case of call logging) do not affect outgoing event messages.

Configuring external signal destinations

If a PBX sends an event message, the event message opens a PPP communication channel via the public network from the PBX to a Terminal Adapter, connected either directly to a PC with the System Event Manager (SEM) software program or indirectly via a LAN / WAN (ISDN gateway). Once the event has been confirmed, the PBX clears down the PPP connection.

There are several possibilities for connecting external signal destinations to a PBX:

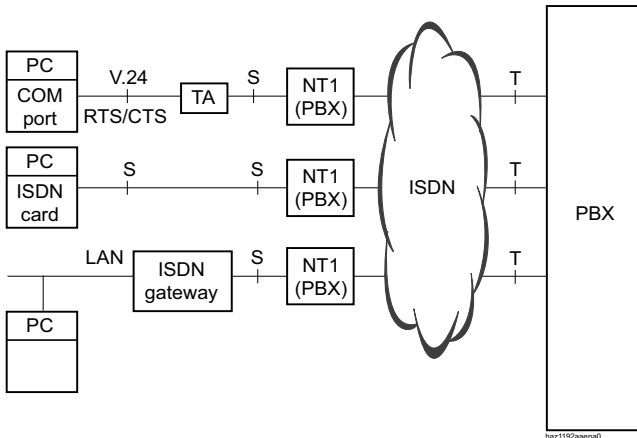


Fig. 79 Overview of connection possibilities for external signal destinations

Two external signal destinations ("*Preferred event message destination*" and "*Alternative event message destination*") can be configured.

The PPP via ISDN communication protocol is used for the connection between the PBX and the external signal destination.

The following parameters need to be selected or entered in the Fault & Maintenance Manager for each of the two external signal destinations:

- Call number of the external signal destination (possibly as a route selection)
Possible external signal destinations include:
 - Ordinary exchange output (route 3 is used)
 - Route selection
 - Cost centre selection (route 3)
 After initialization, the call charges are allocated to cost centre 100.
- IP address of the PC if the PBX is to connect with the PC via an ISDN gateway.
If the PBX is to connect with the PC without ISDN gateway, the "*IP address*" entry should remain empty.
- TCP port number (the initialization value is 1062; if the value is changed in the SEM, it will have to be altered accordingly on the PBX side.)
- User name and password of the dial-up networking of the PC or ISDN gateway, to gain access via the TA or the ISDN gateway to the PC with the SEM.

Other necessary configurations

The following parameters must also be configured.

- In the Fault & Maintenance Manager:
System ID of the PBX. This is important so that the PBX can be identified by the SEM. The system ID must match the system ID stored in the AIMS Shell. In the system ID you can store a serial number or the DDI number for the remote maintenance of the PBX (20 digits).
- In the Configuration Manager:
Route 3 must be allocated trunk groups with digital network interfaces ("*Routes*" setting).

Local signal destinations

Depending on the event table allocated, event messages are sent to a specified local signal destination.

There are several possibilities for connecting a local signal destination to a PBX:

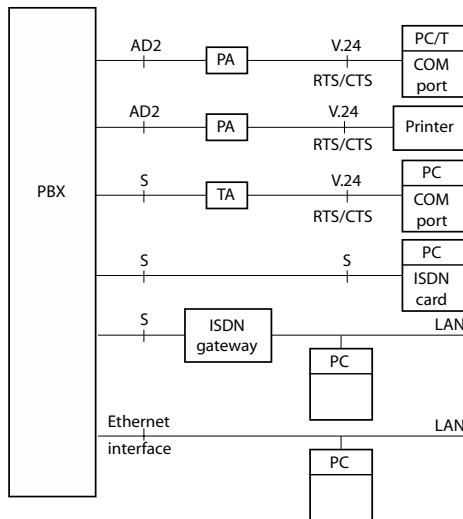


Fig. 80 Overview of connection possibilities for local signal destinations



Note:

Event tables and signal destinations should be set in such a way that the event message *Internal event message destination missing* is signalled immediately to any signal destination still available.

Configuring a local signal destination on a V.24 interface

The local signal destination is connected to the V.24 interface of a Pocket Adapter (PA).

The "*Local Output Interface*" must be set on "*Printer*" in the Fault & Maintenance Manager.

The following parameters need to be selected or entered in the Fault & Maintenance Manager:

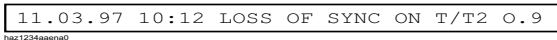
- Location of the V.24 interface to which the local output destination is connected (V.24 PA = Pocket Adapter)
- Required output format "*PC*" or "*Printer*" (see "*Output formats*", page 212)
- With "*Printer*" output format: Language in which the event messages are to be output.
- With the V.24 interface on the PA - port address
- With "*PC*" and "*Printer*" output format as the output location: Maximum page length of the printout

Output formats

There are two output formats available for local signal destinations connected to a V.24 interface.

- Printer Format
- PC format

Printer Format



```
11.03.97 10:12 LOSS OF SYNC ON T/T2 0.9
```

Fig. 81 Event signal format "*Printer*" for printer as the local output destination (example with date, time and event message)

PC format

The event signal format "*PC*" is required if a PC is configured as the local signal destination using the System Event Manager (SEM).

Configuring a local signal destination on an S interface / ISDN

As with an external signal destination the event message opens a PPP communication channel from the PBX to a Terminal Adapter, connected either directly to a PC with the System Event Manager (SEM) or indirectly via a LAN (ISDN gateway). Once the event has been confirmed, the PBX clears down the PPP connection.

Configuring a local signal destination on an S interface

The event messages are displayed in PC format.

The "*Local Output Interface*" must be set on "*IP Destination*" in the Fault & Maintenance Manager.

The following parameters need to be selected or entered in the Fault & Maintenance Manager:

- Destination: "*Local PPP*" communication protocol.
- Call number of the local signal destination (the call number is checked by the PBX, a warning message will appear if the call number is incorrect)
- IP address of the PC if the PBX is to connect with the PC via an ISDN gateway. If the PBX is to connect with the PC without ISDN gateway, the "*IP address*" entry should remain empty.
- TCP port number (the initialization value is 1062; if the value is changed in the SEM, it will have to be altered accordingly on the PBX side.)
- User name and password of the dial-up networking of the PC or ISDN gateway, to gain access via the TA or the ISDN gateway to the PC with the SEM.

Configuring a local signal destination on ISDN

The event messages are displayed in PC format.

The "*Local Output Interface*" must be set on "*IP Destination*" in the Fault & Maintenance Manager.

The following parameters need to be selected or entered in the Fault & Maintenance Manager:

- Destination: PPP via ISDN communication protocol
- Call number of the local signal destination (the call number is not checked by the PBX, if the entered call number is incorrect, the PBX will issue the event message "*Internal message destination is missing*").
- IP address of the PC if the PBX is to connect with the PC via an ISDN gateway. If the PBX is to connect with the PC without ISDN gateway, the "*IP address*" entry should remain empty.
- TCP port number (the initialization value is 1062; if the value is changed in the SEM, it will have to be altered accordingly on the PBX side.)
- User name and password of the dial-up networking of the PC or ISDN gateway, to gain access via the TA or the ISDN gateway to the PC with the SEM.

Configuring a local signal destination on an Ethernet interface

A PC (with the System Event Manager) connected either directly to the Ethernet interface or to the basic system via a LAN (LAN connection) can be configured as the local signal destination.

The event messages are displayed in PC format.

The "*Local Output Interface*" must be set on "*IP Destination*" in the Fault & Maintenance Manager.

The following parameters need to be selected or entered in the Fault & Maintenance Manager:

- Destination: Ethernet
- IP address of the PC
- TCP port number (the initialization value is 1062; if the value is changed in the SEM, it will have to be altered accordingly on the PBX side.)

Signal destination Event Log

When the PBX is initialized, the signal destination Event Log is automatically allocated event table 4. In event table 4 the frequency for all event types (with the exception of the event type "*Too many event messages*") is set on "1" and the time period on "0". This means that all the PBX's event messages are immediately entered in the event log.

If the signal destination event log is assigned a different event table or if event table 4 is reconfigured, the event messages are entered in the event log in accordance with the new event table or the new configuration.

The Event Log consists of four protocols:

- Event messages (max. 254 entries)
- System failures (max. 80 entries)
- Power failures (max. 10 entries)
- Card failures (max. 150 entries)

If the maximum number of entries is exceeded, the oldest entry in each case is deleted.

These 4 Event Logs protocols are not printed out automatically; likewise, your attention is not drawn to any incoming event message. The protocols have to be retrieved manually in the Fault & Maintenance Manager or printed out.



See also:

Event messages entered in the protocols of the Event Logs can also be retrieved on the Office 45 using the System Assistant function on Office 45 (see "[Maintenance menu on the Office 45](#)", page 219).

Testing the signal destination configuration

To test the configuration, you can trigger a test event message via the Fault & Maintenance Manager. The event message is signalled without any delay, directly at the selected signal destination.

If the PBX is connected with AIMS via a TA, the test event messages will be signalled only once the connection is cleared down.

6.6.1.4 SNMP destination

5 SNMP destinations can be defined. These destinations are linked with the same event table as the local destination, and so the same rules are applied. Forwarding to the SNMP destinations can be activated and deactivated independently of the forwarding to the local and external signal destinations.

For configuration in the Fault & Maintenance Manager proceed as follows:

1. In the tab "*SNMP destination*" enter the IP address under "*IP address/host name*" (or the host name if DNS is configured)
2. Configure the remaining parameters
3. Repeat the procedure for all the destinations
4. Switch the parameter "*Destination SNMP event message*" to "*On*"

SNMP stands for "Simple Network Management Protocol" and is used by Network Management Systems (NMS). Ascotel® supports the version SNMP V1.

If the Network Management System is to know the potential events of the PBX, the corresponding system components have to be defined in the form of configurable objects (Managed Objects: MO). These objects and the related event messages are stored in an object library referred to as the Management Information Base (MIB). The current MIB version can be downloaded from <https://pbxweb.aastra.com>. The user name and password are required in order to access the data. Registration with the "Aastra Application Partner Programm" is required.

6.6.2 System Event Manager SEM

The System Event Manager (SEM) is a program capable of receiving and handling PBX event messages. It consists of the components:

- SEM Configurator
- SEM Server
- SEM Viewer

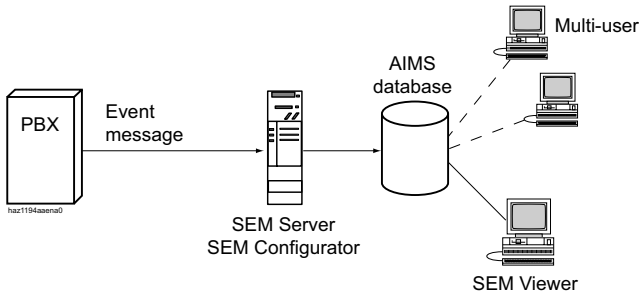


Fig. 82 SEM concept (general)

Event messages are sent to the SEM Server by the PBX. The SEM Server stores all the important data in the corresponding AIMS database. This data can be retrieved and edited using the SEM Viewer.

SEM Configurator

The SEM Configurator is used to start or end the SEM Server.

The relevant TCP port has to be activated for data transmission.

The event types can be assigned different priorities in the SEM Configurator.

The SEM Configurator is also used to set, for each individual AIMS database, the way in which the SEM Server should respond to each incoming event message (e.g. send e-mail, print out on a printer).

If you want a beep or melody to signal that the SEM Server has received an event message, make the appropriate setting in the SEM Configurator.

SEM Server

The SEM Server receives event messages from PBX systems and stores all the important data in the corresponding AIMS databases.

For the program to operate correctly, there has to be at least one AIMS database.

SEM Viewer

The SEM Viewer is used to edit the event messages stored by the SEM Server; they can then be filtered, sorted, printed or written into a file according to, for example, status, customer, PBX or priority.

The SEM Viewer can also be used to set, for each AIMS database, the way in which the SEM Server should respond to an event message (e.g. send e-mail, print out on a printer).

6. 6. 3 Operating state and error displays

Operating state

During the start-up phase, various self-tests are performed and the individual phases are shown in the LED display on the front panel (see "[Startup Mode](#)", [page 190](#)).

When operation is OK, the SYS LED flashes green, regularly, and once per second in the display on the front panel. The system is in normal mode. The assignment of internal or external ports, password-free access as well as remote access via an external dial-up connection to AIN are shown as status in the LED display (see "[Normal Mode](#)", [page 191](#) and "[Feature Mode](#)", [page 191](#)).

Error Displays

Whenever the system detects an error, it displays the corresponding error code in the LED on the front panel (providing the system is still powered and the display is working).

There are 3 types of error:

- System is running but a problem has been detected on one or more wiring adapter slots. (See "[Wiring Adapter Malfunction Mode](#)", [page 196](#).)
- Warning. System is still capable of running but the system function may be impaired (see "[Warning Mode](#)", [page 196](#)).
- Serious error. System is no longer able to run (see "[Error Mode](#)", [page 198](#)).

In the event of sporadic errors check the installation for earth loops.

6.6.4 Other aids

6.6.4.1 Maintenance menu on the Office 45

The System Assistant function on the Office 45 under the "*Maintenance*" menu item can be used to retrieve system information which in the event of a malfunction provides important clues as to the cause of the fault:

Tab. 98 "*Maintenance*" menu selection:

1: <i>View</i>	3: <i>Delete</i>
2: <i>Print</i>	4: <i>Both</i>

You can select from the following menu items:

1. System status
2. System failures
3. Mains voltage failures
4. Event messages

System status menu item

Tab. 99 Display of the system status lines

<pre>== SYSTEM STATUS BCS: 00000 SUBS: 0011 DIST: 0001 Back with [<--]</pre>	<pre>CC: 00000 NSUB: 0000 DDIN: 0000</pre>	<pre>LINE: 0001 ABB: 1000</pre>
--	--	---------------------------------

The system status lines provide useful information for a more in-depth fault diagnosis. They can be printed out and sent to customer support on request.

Tab. 100 The displayed data and what it means

Display	Description	Normal value / idle state	Note
<i>BCS</i> : xxxx	Number of existing BCS references	<i>BCS</i> : 00000	Each active connection needs 2 BCS references
<i>CC</i> : xxxx	Number of existing call controls	<i>CC</i> : 00000	For each BCS reference there is one or more CC
<i>SUBS</i> : xxxx	Number of users in the system	<i>SUBS</i> : 0000	0000: No ports busy
<i>NSUB</i> : xxxx	Number of PISN users in the system	<i>NSUB</i> : 0000	0000: No PISN user in the system
<i>LINE</i> : xxxx	Number of lines in the system	<i>LINE</i> : 0000	0000: No lines defined
<i>DIST</i> : xxxx	Number of call distributions in the system	<i>DIST</i> : 0000	0000: No call distribution defined
<i>DDIN</i> : xxxx	Number of DDI numbers in the system	<i>DDIN</i> : 0000	0000: No DDI numbers defined
<i>ABB</i> : xxxx	Number of abbreviated dialling numbers in the system	<i>ABB</i> : 1000	1000: Initialization value unchanged

System failures menu item

Tab. 101 System failures display

== <i>SYSTEM FAILURESE</i>				52
W 15.09.2000	13:32	011A59F2,	011A5A8C,	01156FFE
W 06.12.00	13:32	011A59F7	011A5A82	01156FF1

The system's last 80 system failures (resets) are displayed. The resets are incremented in the counter in the top right (0...255).

Significance of the display: Error type W = restart (watchdog), date, time

When printing, only the last 4 addresses are printed out.

Power failures menu item

Tab. 102 Power failures display

== <i>POWER FAILURES</i>	
01.12.98	16:13

Only the restart time is recorded.

Event messages menu item

Tab. 103 Event messages display

== <i>EVENT MESSAGES</i>		
01.12.98	00:01	OUTGOING CALL REJECTED TO LINE: 12.25
02.12.98	09:15	TOO MANY EVENT MESSAGES

The event messages are identical to the displays obtained when entering the configuration with System Assistant on the Office 45. They are stored in event table 4 (see ["Event message concept", page 200](#)). The entries in the Maintenance menu remain stored until they are deleted with the *"Delete"* command.

Remarks

- The display on the event message header line ("1") indicates the number of event messages that have occurred (max. 255). You can use the cursor keys to scroll through the lines (not visible)(e.g.4 events 1/2: 2 events on page 1,2 events on page 2)
- The last 254 entries can be displayed.
- The event entries record only the time of the error incident, not the time at which it was remedied.
- More detailed information on triggering and printing event messages can be found in ["Event message concept", page 200](#).



See also:

Event messages can also be called up in the AIMS Fault & Maintenance Manager (see ["Signal destination Event Log", page 215](#)).

6.6.4.2 AD2 Monitor pro

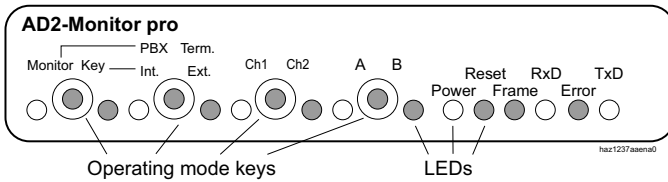


Fig. 83 Front view of the AD2 Monitor pro

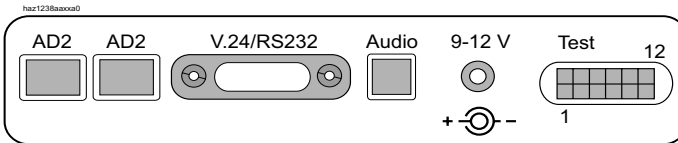


Fig. 84 Rear view of the AD2 Monitor pro

The AD2 Monitor pro is used for the following tasks:

- Monitoring the AD2 interface including addressing, installation and power supply, and recording the data flow in both directions with output on a V.24 terminal.
- Simulating a terminal with an AD2 interface that answers data sent by the PBX or is controlled via V.24.

The AD2 Monitor pro is looped into the connecting line as near as possible to the terminals. It can be set for several operating modes:

- MM Monitor Mode: Passive line monitoring
- MT terminal mode: AD2 terminal simulation incl. line monitoring
- Audio Int. / PBX:
 - With MN, the PBX's B channel is switched to handset.
 - With MT, the internal PCM Codec is activated.
- Audio Ext. / PBX:
 - With MN, the PBX's B channel is switched to handset.
 - With MT, the externally connectable PCM Codec is activated.
- Channel 1/2 M1/M2: Selects the AD2 channel used
- Switch A/B: MA: Controls the output for the test connector

The AD2 Monitor pro offers user-friendly settings on the device itself, with LED displays for the transmit and receive channels as well as operation via V.24, including data logging with the setting of breakpoints. Updated AD2 Monitor pro software can be loaded directly onto the Monitor from a PC, as an Intel Hex file.

The Quick User's Guide supplied with the Monitor provides an overview of all the possibilities and applications for the AD2 Monitor pro.

6. 6. 4. 3 Fault & Maintenance Manager

For information on the Fault & Maintenance Manager see "[Event message concept](#)", [page 200](#).

6. 6. 4. 4 System Event Manager SEM

For information on the System Event Manager (SEM) see "[System Event Manager SEM](#)", [page 217](#).

6. 6. 4. 5 Measuring equipment for cordless systems

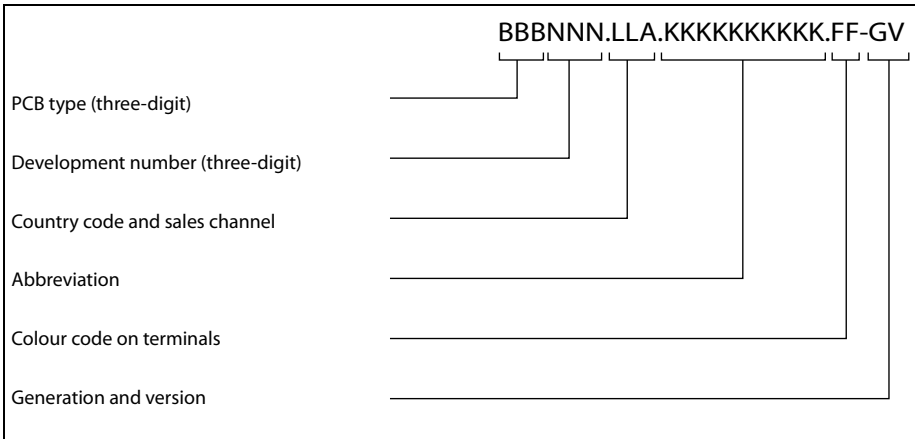
The aids required for measuring out DECT systems are described in the "Ascotel DECT System" System Manual.

7 Annex

This chapter informs you about the systematic designation system and provides you with an equipment overview of the basic systems with cards, modules and optional components. It also provides you with technical data of the basic systems and system terminals as well as a table overview of the control elements and digit key assignments of the system terminals. Finally, we provide you with PC Dial commands, the procedure for transferring a Crystal private file, a list of no longer supported functions, licensing information of third-party software products, and a table summary of related documents and help systems.

7.1 Systematic Designation System

Tab. 104 PCB Designation



Tab. 105 Explanation of the PCB Designation

Part of the PCB designation	Remarks and examples
PCB type (three-digit)	LPB = Printed circuit board fitted KAB = Cable fitted PBX = Complete system SEV = Set packed EGV = Terminal packed MOV = Module/card packed
Project number (three-digit)	957 (System 150/300)
Country code and sales channel (one to three-digit, with full stops)	Two-digit country code as per ISO 3166, Sales channel (1...9) for various sales channels, Example: CH = Switzerland SWISSCOM CH2 = Switzerland private market EXP = Export channels (not country-specific) Space = No country code
Abbreviation	TIC-4TS = Interface card with 4 T/S interfaces EADP4 = Interface card with 4 AD2 interfaces
Colour code on terminals	Colour designation in accordance with EU directive
Generation and version	Example: -3C = 3rd generation, version C (Generation new modules: -1) Notes: <ul style="list-style-type: none"> • A generational change is effected following substantial changes to the functionality of a PCB. • A change of version is effected following small changes to functions or once faults have been remedied. Backward compatibility is guaranteed.

7.2 Rating Plate and Designation Stickers

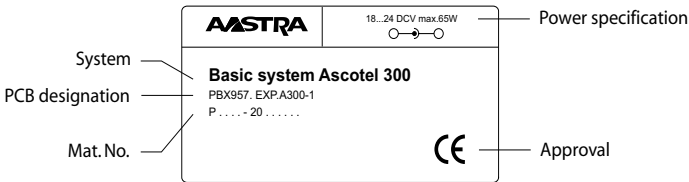


Fig. 85 Rating plate (example basic system A300)

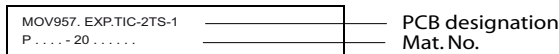


Fig. 86 Designation stickers (example interface card)

7.3 Equipment Overview

Tab. 106 Equipment Overview

Designation	Description
MOV957.EXP.SM-DSP1-1	System module with 1 DSP chip
MOV957.EXP.SM-DSP2-1	System module with 2 DSP chips
MOV957.EXP.SM-LAN8-1	System module LAN switch 8 ports
MOV957.EXP.TIC-2AB-1	Interface card 2 × exchange a/b
MOV957.EXP.TIC-4AB-1	Interface card 4 × exchange a/b
MOV957.EXP.TIC-2TS-1	Interface card ISDN basic 2 × T/S
MOV957.EXP.TIC-4TS-1	Interface card ISDN basic 4 × T/S
MOV957.EXP.TIC-1PRI-1	Interface card ISDN PRA 1 × T2
MOV957.EXP.WA-2W	Wiring Adapter 2W
MOV957.EXP.WA-T50	Wiring Adapter T50
MOV957.EXP.WA-TS1	Wiring Adapter TS1
MOV957.EXP.WA-1PRI	Wiring adapter 1PRI
PBX957.EXP.A150-1	Ascotel® basic system 150
PBX957.EXP.A300-1	Ascotel® basic system 300
SEV957 COVER WITH SHIELDING	Housing cover for A150/300
SEV957 FAN	Fan for A300
SEV957 FRONT COVER A150	Front cover for A150
SEV957 FRONT COVER A300	Front cover for A300
SEV957 LABEL A150	Snap-on label for A150
SEV957 LABEL A300	Snap-on label for A300
SEV957 LABEL BLANK	Snap-on label without writing
SEV957 MAINS CABLE	Power supply unit mains cable for A150/300
SEV957 PSU-60W	Power supply unit for A150/300
SEV957 SCREW COVER LEFT & RIGHT	Left & right screw covers
SEV957 SCREW SET RACK MOUNT	Screw set rack mount for A150/300
SEV957 SCREW SET WALL MOUNT	Screw set wall mount for A150/300
SEV957.EXP.CC-1	Cable cover set for A150/300
SEV957.EXP.RM-A150-1	Rack-mounting set for A150
SEV957.EXP.RM-A300-1	Rack-mounting set for A300 including fan
SEV957 COVER SCREWS-1	Housing cover screw set for A150/300
SEV957 DIST. PIECE HEXAGONAL-1	6 Dist. Piece Hexagonal to DSP module (Spacer sleeve for DSP module)

7.4 Technical Data

7.4.1 Basic Systems

Tab. 107 Dimensions and weights

	A150/300, wall-mounted	A150/300, rack-mounted
Height	65 mm	65 mm
Width	360 mm	483 mm
Depth	294mm	294mm
Weight (excl. mains cord, expansion cards and packaging)	2.4 kg	2.5 kg

Tab. 108 Electrical isolation of interfaces

Interface	all systems	
Analogue network interfaces	0.2 kV	Operating isolation
Digital network interfaces BA	65 V	Operating isolation
V.24 on the Pocket Adapter	0.5 kV	
Control input on ODAB		no isolation, but input impedance > 8 kΩ
Freely connectable relay on ODAB	0.2 kV	
Door intercom system on ODAB	0.2 kV	
Audio input		no isolation

Tab. 109 Ambient conditions

Condition	all systems
Ambient temperature	5 °C to 35 °C
Relative air humidity	30% to 80%, non-condensating

Tab. 110 Electrical data

	A150	A300
Class of protection	1	
Input voltage	95 V...253 V, 48...62 Hz	
Input current	approx. 0.11 A...0.7 A.	approx. 0.11 A...1.0 A
Resistant to voltage breaks	< 6 ms	
Power input with min. configuration	ca. 15 W	ca. 15 W
Power input with max. configuration	ca. 50 W	ca. 75 W
Undervoltage limit (system reset, data backup)	< 90 V	

Tab. 111 Heat dissipation

	A150	A300
Maximally configured system	approx. 37 W = 135 kJ/h	approx. 50 W = 180 kJ/h

7.4.2 Interface cards, modules and wiring adapters

Tab. 112 Design

Card/module	Design
TIC-4TS	B
TIC-2TS	B
ESST-2	C
TIC-4AB	B
TIC-2AB	B
TIC-1PRI	C
EAAB2	B
EADP4	C
EAD4V	A
EAD4C	A
ETAB4	B
ODAB	C
SM-DSP1	D
SM-DSP2	D
SM-LAN8	E
WA-TS0	F2
WA-TS1	F2
WA-2W	F1
WA-1PRI	F1

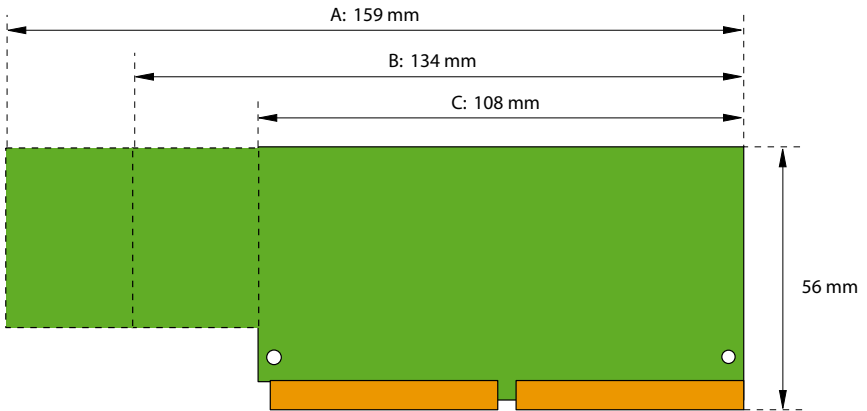


Fig. 87 Dimensions of interface cards (design A, B, C)

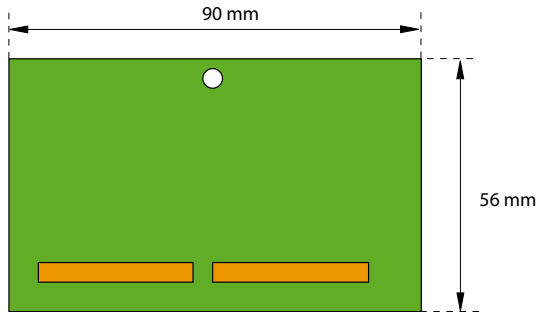


Fig. 88 Dimensions of system module (design D)

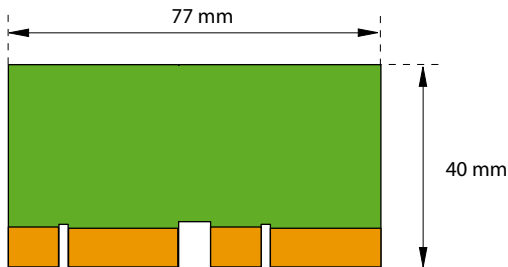


Fig. 89 Dimensions of system module (design E)

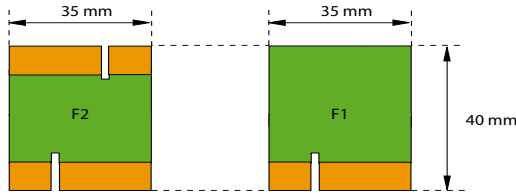


Fig. 90 Wiring adapter dimensions (design F)

7.4.3 LAN switch

Tab. 113 LAN switch on SM-LAN8 / on the mainboard

- 8-port 10Base-T / 100Base-TX switch
- Fully compliant with IEEE 802.3/802.3u
- Auto MDI-X, Autopolarity, Autonegotiation
- Flow control fully supported (half duplex: backpressure flow control, full duplex: IEEE 802.3x flow control)
- Embedded SRAM for packet storage
- 1024-entry look-up table, direct mapping mode
- QoS: 802.1p VLAN tag, DiffServ/TOS field in TCP/IP header, IP-based priority

7.5 Functions and Products No Longer Supported

- As of 17.5, Office 1550 is no longer supported.
- As of 17.7 a DECT handset can no longer be logged as a visitor for a specific amount of time.
- As of 17.7, paging systems will no longer be supported on the S bus interface (e.g. teleCOURIER 900).

7.6 Licensing information of third-party software products

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7.7 Documents and Help Systems with Further Information

Product	Document
Ascotel® IntelliGate®	System Description A150/300 Installation Instructions isyLink What's New System Manual for System Functions and Features System Manual for Interfaces and Terminals System Manual for SIP in Ascotel® IntelliGate® SIP Access User's Guide with Ascotel® IntelliGate® (English) */# procedures Application Notes, technical information, FAQs and compatibility lists are all available on the internet/extranet support page at: https://pbxweb.aastra.com
AIMS	Installation instructions (readme file) Information Manager Help system Application Notes
Web based administration	Help system
Upload Manager	Help system
System Event Manager	Help system
Project Manager	Operating Instructions
DECT	System Manual for Ascotel® DECT System Operating Instructions DECT Planning
Basic/Enterprise Voice Mail System	Operating Instructions System Manual for System Functions and Features
OIP	What's New System Manual for Open Interfaces Platform Help system OfficeSuite User's Guide User's Guide for First Party TAPI Service Provider
Networking	System Manual for Ascotel® IntelliGate® Net System Manual for PISN/QSIG Networking
IP system handsets	Quick User's Guide Aastra 5360ip / Aastra 5370ip / Aastra 5380ip Operating Instructions for Office 1600/1600IP / Aastra 5360ip / Aastra 5370ip / Aastra 5380ip / Aastra 2380ip
System Terminals	Quick User's Guides for Office 10 / Office 25 / Office 35 / Office 45/ 45pro / Office 135/135pro / Office 160pro/Safeguard/ATEX / Aastra 5360 / Aastra 5370 / Aastra 5380 / Aastra 610d / Aastra 620d / Aastra 630d

Product	Document
	User's guides for Office 10 / Office 25 / Office 35 / Office 45/45pro / Office 135/135pro / Office 160pro/Safeguard/ATEX / Aastra 5360 / Aastra 5370/ Aastra 5380 / Aastra 5380 / Aastra 610d / Aastra 620d / Aastra 630d Function overview Office 45 System Assistant Operating Instructions
PC Operator Console	Office 1560/1560IP Quick User's Guide Help system
GSM Terminals	Quick User's Guide for GSM Terminal on Ascotel® IntelliGate®
	Aastra Mobile Client User's Guide

The documents can be accessed at <http://www.aastra.com/docfinder>.

Further documents in the Internet:

- Environmental information for basic systems and system terminals
- Declarations of conformity for basic systems and system terminals
- Labels for system terminals and expansion keypad
- Safety instructions for system terminals
- Application Notes
- Product information
- Leaflets
- Brochures
- Data sheets

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