SIEMENS

SANTIS®-ab

User Manual

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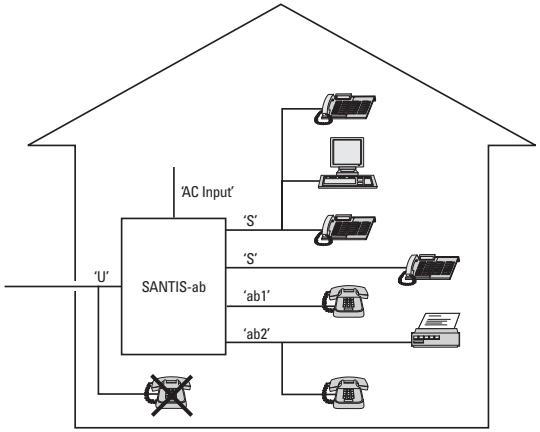
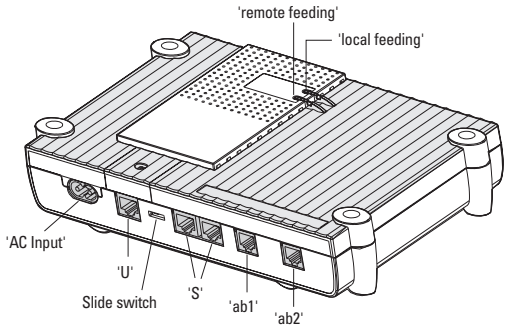




The pin allocation of the sockets depends on the version of the unit (see chapter «Pin Allocation of the Sockets» on page 7)

Configuration Procedure

1. Lift the handset and wait for the dial tone.
2. Dial ✱✱#73##.
3. Enter the *<password>* and confirm it with # (installer).
4. Enter the *<parameter number>*.
5. Enter the *<parameter value>* and confirm it with #.
6. Continue with point 4 or replace the handset.

Basic Configuration

Parameter [described on page]	Parameter Number	Parameter Value (Meaning)	Default Value	Programmed Value
Modes of Operation [17]	930	0 = NT1 + 2ab 1 = Pairgain 2 = NT1	0	_____
Configuration Access [17]	920	0 = configuration access to both interfaces 1 = configuration access only to the own interface	0	_____
Select Operation State Automatically [18]	940	0 = always select ISDN state 1 = select operation state automatically	1	_____
Maintenance [18]	980	0 = none 1 = 2 kHz pulses at the S-bus interfaces 2 = 96 kHz pulses at the S-bus interfaces 3 = pulses at the U-interface	0	_____

Extended Configuration

Parameter [described on page]	Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value	Programmed Value ab1; [ab2]
Multiple Subscriber Number (MSN) [19]	111; [112] 121; [122] 131; [132]	1. Multiple Subscriber Number (MSN) 2. Multiple Subscriber Number (MSN) 3. Multiple Subscriber Number (MSN)	– 0000 0000 0000 0000	_____;[_____] _____;[_____] _____;[_____]
Type of Terminal Equipment (HLC) [20]	221; [222]	0 = audio 1 = telephone 2 = fax gr. 2/3 (analog) 3 = modem	0	_____;[_____]
S-bus Configuration [20]	300	0 = short passive bus 1 = extended passive bus	0	_____;[_____]
Emergency Mode Priority [21]	210	0 = emergency mode priority at the S-bus 1 = emergency mode priority at the ab-interfaces	1	_____
Clear Back Time Delay [22]	311; [312]	0 = none 1 = 2 minutes	1	_____;[_____]
Suppress Charge Pulses (AOC) [22]	331; [332]	0 = suppress advice of charges pulse 1 = send advice of charges pulse	1	_____;[_____]
Distinctive Ringing [23]	541; [542]	0 = same ringing for all MSNs 1 = distinctive ringing	0	_____;[_____]
Hotline (HL) [24]	181; [182]	Directory number of the hotline	–	_____;[_____]
	191; [192]	0 = deactivate hotline 1 = activate hotline	0	_____;[_____]
Calling Line Identification Restriction (CLIR) [24]	411; [412]	0 = do not submit the number 1 = submit the number	1	_____;[_____]
Connected Line Identification Restriction (COLR) [25]	421; [422]	0 = do not submit the number 1 = submit the number	1	_____;[_____]
Call Waiting (CW) [25]	341; [342]	0 = do not signal waiting call 1 = signal waiting call	1	_____;[_____]
Reset [26]	010	1 = reset extended configuration	–	

SANTIS®-ab

User Manual

Contents

Introduction

In order to familiarize yourself with the ISDN services right from the start, please read these instructions carefully. This will prevent you entering the wrong data and puts you in a position to make safe and correct use of the functions of the SANTIS-ab.

Some of the services which are described in these instructions will possibly not be supported in your telephone network or you may have to pay a subscription for them. Please contact your network operator if you have any questions about services.

Safety Instructions

- Place the SANTIS-ab near an easily accessible mains power socket.
- Clean the SANTIS-ab only with a dry or moist cloth.
- Protect the SANTIS-ab from direct sunlight, water, excess dust, corrosive liquids and steam.
- Never open the SANTIS-ab.
- The SANTIS-ab shall be installed only by service personal. Please ask your network administrator.

Using the Manual

The chapters «Introduction», «Functional Description» and «Help with Problems» contain information that is important for all those who work with the SANTIS-ab.

In the middle of this manual you will find the removable drilling template for wall mounting of the SANTIS-ab.

For commissioning and configuration open the front cover of this manual.

There are brief instructions on the back cover for user-friendly telephoning with the analog terminal equipment at the ab-interfaces. Tear the instructions out and keep them by your telephone for convenient reference.

Functional Description

System overview

The SANTIS-ab is an ISDN termination unit for an ISDN basic access. It is connected to the telephone network using an existing telephone line (U-interface). The SANTIS-ab permits ISDN terminal equipment to be connected to the S-bus and analog terminal equipment to the two ab-interfaces.

Operating States

The SANTIS-ab includes a 'Plug and Play' function which permits the SANTIS-ab to be operated at an analog exchange port (analog state). If the central office switches to the ISDN exchange port, the SANTIS-ab switches automatically to the ISDN state (normal operation) and vice versa.

For 'Plug and Play' to function properly, the SANTIS-ab must be connected to ac mains power.

During commissioning, the SANTIS-ab checks the type of exchange port to which it is connected and, once it has run this check, is ready for operation in analog state or ISDN state.

The LEDs indicate the operating state of the SANTIS-ab (see chapter «LEDs» on page 9).

Analog State

In this mode (analog state) analog terminal equipment is ready for operation at the ab1 interface. Terminal equipment may be connected to the other interfaces ('ab2' and 'S'), but these are only ready for operation in ISDN state.

Attention: In the analog state only connect terminals which will withstand a voltage of at least 100 volts to the ab1-interface.

In the analog state, the SANTIS-ab can only be configured via the ab2 interface (see chapter «Requirements» on page 12).

ISDN State

The ISDN state is the normal operating state of the SANTIS-ab. In this state, the terminal equipment is ready for operation at the S-bus and at both ab-interfaces.

Modes of Operation

The SANTIS-ab has the following modes of operation in ISDN State. Depending on the operation mode that has been set, following interfaces will be available (see following table).

Mode	Available Interfaces
NT1+2ab	S-bus and ab-interfaces
NT1+2ab/CA restr.	S-bus and ab-interfaces; but with restricted configuration access (see chapter «Configuration» on page 12)
Pairgain	Only ab-interfaces with restricted configuration access (see chapter «Configuration» on page 12)
NT1	Only S-bus (see chapter «Configuration» on page 12)

Modes of Operation

The installer can only modify the operation mode after entering the password.

If the operation mode affects the operation of the SANTIS-ab, this is duly indicated in these instructions.

Ports and Operating Elements

U-interface

The U-interface (marked 'U') is used to connect the SANTIS-ab to the public telephone network.

Attention: Never connect analog terminal equipment to the U-interface. This will be destroyed in ISDN state due to the higher voltage.

S-bus

The SANTIS-ab has two S-bus interfaces (marked 'S') to which the S-bus is connected. A maximum of 6 (7 in operation mode «NT1») items of ISDN terminal equipment may be connected to the S-bus. The distribution of the ISDN terminal equipment between the two interfaces at the short passive bus is irrelevant.

The two S-bus interfaces at the SANTIS-ab are interconnected electrically.

ab-interfaces

The SANTIS-ab has two ab-interfaces (marked 'ab1' and 'ab2'). Connect the analog terminal equipment (telephones, gr. 2/3 fax machines, modems, etc.) to these interfaces. Up to 2 items of analog terminal equipment can be connected to each ab-interface.

The ab-interfaces can be used for the configuration of the SANTIS-ab (see chapter «Requirements» on page 12).

With the SANTIS-ab you can use a number of services at analog terminal equipment which would otherwise only be available in ISDN. Which services are available to you and how you use these services is described in the chapters entitled «Extended Configuration» (see page 19) and «User-friendly Telephoning» (see page 27).

With an incoming call the calling number is displayed at your analog terminal equipment (CLIP). This means that you know who is calling you before you accept the call. The calling number is only displayed if your analog terminal supports the CLIP with FSK function (see operating instructions for the terminal).

Pin Allocation of the Sockets

The pin allocation of the sockets depends on the version of the unit. These can be found in the table below. You can tell which version of the unit you have by looking at the product code number (S1608-K1000-Axx). You will find this on the label affixed to the bottom of the unit.

Version 1 (part number: S1608-K1000-A11).

Interface	Socket type and pin allocation
'U'	1 x 2 clamp contacts
'S' (receive)	2 x RJ45; Pin 3 and 6
'S' (transmit)	2 x RJ45; Pin 4 and 5
'ab1'	1 x RJ45; Pin 4 and 5
'ab2'	1 x RJ45; Pin 4 and 5

Pin Allocations of Version 1

Version 2 (part number: S1608-K1000-A12)

Interface	Socket type and pin allocation
'U'	1 x RJ45; Pin 4 and 5
'S' (receive)	2 x RJ45; Pin 3 and 6
'S' (transmit)	2 x RJ45; Pin 4 and 5
'ab1'	1 x RJ45; Pin 4 and 5
'ab2'	1 x RJ45; Pin 4 and 5

Pin Allocations of Version 2

Version 3 and 4 (part number: S1608-K1000-A13 and S1608-K1000-A14).

Interface	Socket type and pin allocation
'U'	1 x 2 clamp contacts
'S' (receive)	1 x RJ45; Pin 3 and 6 1 x 4 clamp contacts; Pin 1 and 4 (two outer contacts)
'S' (transmit)	1 x RJ45; Pin 4 and 5 1 x 4 clamp contacts; Pin 2 and 3 (two inner contacts)
'ab1'	1 x RJ11; Pin 3 and 4 1 x 2 clamp contacts
'ab2'	1 x RJ11; Pin 3 and 4 1 x 2 clamp contacts

Pin Allocations of Version 3 and 4

The connections of U- and ab-interfaces are polarity-independent.

Power Feeding

The SANTIS-ab is fed by the mains (110 ... 240 VAC / 50 ... 60 Hz). The SANTIS-ab recognizes the voltage and the frequency of the mains automatically so that no setting is required.

If the mains power fails, the SANTIS-ab is fed by the central office using a telephone line with the required operating voltage. In this case, the SANTIS-ab is in emergency mode. The emergency mode is indicated by the LEDs (see table «Meaning of the LEDs» on page 9).

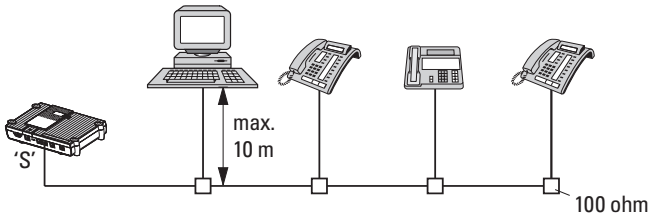
In the emergency mode, it is only the terminal equipment at the ab-interfaces or only one terminal equipment with emergency mode priority at the S-bus that is ready for operation (see chapter «Emergency Mode Priority» on page 21).

The SANTIS-ab cannot be configured in the emergency mode.

Slide Switch

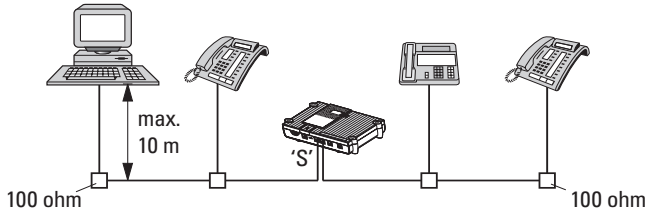
There is a slide switch on the front of the SANTIS-ab, which is used to define the terminating resistor at the S-bus.

Depending on the S-bus installation, the slide switch must be set to the corresponding position (see following two figures).



SANTIS-ab is located at the end of the S-bus

If the SANTIS-ab is at the end of the S-bus and one S-bus end is terminated with 100 Ohm, set the slide switch to the '100Ω' position.



SANTIS-ab is not located at the end of the S-bus

If the SANTIS-ab is not at the end of the S-bus and both S-bus ends are terminated with 100 Ohm, set the slide switch to the 'OFF' position.

If data transmission to or from a PC is not operating correctly, move the slide switch to the '50Ω' position (see chapter «Help with Problems» on page 35).

LEDs

The two LEDs 'local feeding' and 'remote feeding' on the top of the device indicate the operating state of the SANTIS-ab (see table «Meaning of the LEDs» on page 9).

The table «Meaning of the LEDs» is only applicable if the installation of the SANTIS-ab is complete. The meaning of the LEDs during installation is explained in the table «Meaning of the LEDs during commissioning» on page 10.

Green LED 'remote feeding'	Yellow LED 'local feeding'	Meaning
On	On	SANTIS-ab is in ISDN state (normal operation)
On	Off	SANTIS-ab is in ISDN state (emergency mode; see chapter «Power Feeding» on page 8)
Off	On	SANTIS-ab is in analog state or is not connected to the telephone network (U-interface)
Off	Off	SANTIS-ab is not connected to either the mains or the telephone network (U-interface).

Meaning of the LEDs

Commissioning

Assembly

The SANTIS-ab can be mounted on a wall or used as a desktop device. For desktop use, several devices can be stacked on top of each other.

Attention: Mount the SANTIS-ab in a dry room near an easily accessible mains socket.

If the SANTIS-ab is to be mounted on the wall, proceed as follows:

1. Drill the holes in the wall according to the enclosed template. The template can be found in the middle of this manual.
2. Insert the dowels and wood screws. Leave the wood screws protruding about 5 mm.
3. Hang the SANTIS-ab on the screw heads.

Installation

Attention: Never connect analog terminal equipment to the U-interface. This will be destroyed in ISDN state by the increased voltage (see also the diagram on the fold-out page at the front of this manual).

Proceed as follows for the installation of the SANTIS-ab:

1. Make sure that no terminals are connected to the U-interface (see diagram on the fold-out front page).
2. Connect the SANTIS-ab to the mains using the enclosed mains cable.
3. Connect the SANTIS-ab via the U-interface 'U' to the public telephone network. If you have a unit with clamp contacts (version 1 or 3) you must remove the cover from the top of the unit.
4. Check the LEDs using the following table.

LED	State	Meaning
'local feeding'	on	SANTIS-ab is connected to the mains.
'remote feeding'	on (with a delay of max. two minutes)	SANTIS-ab is connected via the U-interface to the telephone network.

Meaning of the LEDs during commissioning

5. As soon as both LEDs are on, the SANTIS-ab checks whether it is connected to an analog or an ISDN exchange port. During this check, which lasts for a maximum of 2 minutes, the SANTIS-ab cannot operate.
6. Following the check, the green LED 'remote feeding' indicates the operating state of the SANTIS-ab (see following table).

LED 'remote feeding'	Operating State	Further Procedure
Off	Analog state	The terminal equipment at the ab1 interface is ready for operation. All other terminal equipment is not yet ready for operation. In the analog state, the SANTIS-ab can only be configured via the ab2 interface (see chapter «Requirements» on page 12).
On	ISDN state	All terminal equipment at the ab-interfaces and at the S-bus are ready for operation.

Meaning of the LED 'remote feeding' following commissioning

7. Connect the analog terminal equipment (e.g. telephones, gr. 2/3 fax machines, modems, etc.) to the ab-interfaces designated with 'ab1' and 'ab2'.
8. Connect the ISDN terminal equipment (e.g. ISDN telephones, PCs with ISDN cards, fax gr. 4, etc.) to the S-bus designated with 'S'.
9. Set the slide switch to the corresponding position (see chapter «Slide Switch» on page 8).

Configuration

Before the connected terminal equipment can be used, the following settings (configuration) must be defined at the SANTIS-ab:

– Basic Configuration (see page 17)
  concerns the basic settings of the SANTIS-ab.
– Extended Configuration (see page 19)
  includes settings that concern the ISDN access.

The important factors to note during configuration are described below.

Requirements

The basic configuration and the extended configuration are set at an ab-interface using analog terminal equipment. This terminal equipment must possess the keys * and # and be in tone dialing mode. Use the operating instructions of the terminal equipment to ensure that the tone dialing mode is enabled.

Password

Some parameters can only be changed after entering the password (see chapter «Configuration Procedure» on page 15), which is only known by the network operator (installer). The network operator can change the password using the SANTIS-Management System.

The SANTIS-ab can be configured in the ISDN state, in the analog state or offline (without U-interface). The tables below show wich parameters are configurable via ab1- or ab2-interface by the user or installer.

Configuration in ISDN

Configuration by the User (without Password)

Mode	Parameters of ab1	Parameters of ab2	Other Parameters *
NT1+2ab	via ab1 / ab2	via ab1 / ab2	via ab1 / ab2
NT1+2ab/CA restr.	via ab1	via ab2	not legitimate
Pairgain	via ab1	via ab2	not legitimate
NT1	–	–	via ab1 / ab2

Configuration in ISDN State by the User

* «S-bus Configuration», «Emergency Mode Priority» and «Reset Extended Configuration»

Configuration by the Installer (with Password)

Mode	Parameters of ab1	Parameters of ab2	Other Parameters **
NT1+2ab	via ab1 / ab2	via ab1 / ab2	via ab1 / ab2
NT1+2ab/CA restr.	via ab1	via ab2	via ab1 / ab2
Pairgain	via ab1	via ab2	via ab1 / ab2
NT1	–	–	via ab1 / ab2

Configuration in ISDN State by the Installer

** All parameters of the Basic Configuration and the parameters «S-bus Configuration», «Emergency Mode Priority» and «Reset Extended Configuration» of the Extended Configuration

Configuration in Analog State

Configuration by the User (without Password)

Mode	Parameters of ab1	Parameters of ab2	Other Parameters *
NT1+2ab	via ab2	via ab2	via ab2
NT1+2ab/CA restr.	not legitimate	via ab2	not legitimate
Pairgain	not legitimate	via ab2	not legitimate
NT1	–	–	via ab2

Configuration in Analog State by the User

* «S-bus Configuration», «Emergency Mode Priority» and «Reset Extended Configuration»

Configuration by the Installer (with Password)

Mode	Parameters of ab1	Parameters of ab2	Other Parameters **
NT1+2ab	via ab2	via ab2	via ab2
NT1+2ab/CA restr.	via ab2	via ab2	via ab2
Pairgain	via ab2	via ab2	via ab2
NT1	–	–	via ab2

Configuration in Analog State by the Installer

** All parameters of the Basic Configuration and the parameters «S-bus Configuration», «Emergency Mode Priority» and «Reset Extended Configuration» of the Extended Configuration

Configuration in offline Mode

The 'ab2' interface can also be used to configure the SANTIS-ab offline (without being connected to the public telephone network). If you do this, you must enter the password for the same parameters as you would in the analog state (see table «Configuration in Analog State by the User» on page 14.

If the SANTIS-ab is configured offline, in the analog state or in operation mode «NT1», after lifting the handset, wait for the configuration tone (special sequence of tones). Start the configuration as soon as you hear the configuration tone.

The defined configuration remains stored even if there is a power failure.

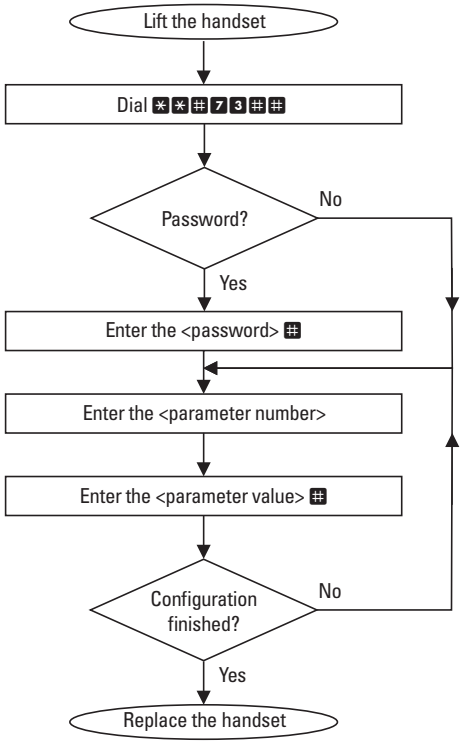
In the emergency mode (see chapter «Power Feeding» on page 8), the SANTIS-ab cannot be configured. Only the service «Hotline (HL)» can be disabled (see chapter «Hotline (HL)» on page 24).

Configuration Procedure

Proceed as follows for configuration (see also the diagram «Configuration Procedure» on page 16):

1. Connect the analog terminal equipment to the corresponding ab-interface (see tables in chapter «Requirements» on page 12).
2. Lift the handset and wait for the dial tone.
3. Enter ✱✱#73##.
   Once the last # has been entered, the dial tone is activated again.
4. Only for the installer: enter the *<password>* and confirm the entry with #. The dial tone is activated again.
   After entering the password, both the basic configuration as well as the extended configuration may proceed.
5. Enter the *<parameter number>*.
6. Enter the *<parameter value>*.
7. Confirm the entry with #. If the configuration was successful, the dial tone is activated.
   If the busy tone is activated, the configuration failed. In this case continue with point 5 and repeat the configuration.
8. Continue with point 5 to set further parameters. Otherwise replace the handset.

Steps 3 to 5 of the configuration must be completed within 60 seconds. Otherwise the configuration is interrupted and the busy tone is activated.



Configuration Procedure

Notes on Configuration

In the chapters «Basic Configuration» and «Extended Configuration», the «Parameter Number», the «Parameter Value (Meaning)» and the «Default Value» are listed in a table.

If the parameter numbers are different for the ab1 and ab2 interfaces, the parameter number for the ab2 interface is given in square brackets (e. g. [422]).

The factory setting of the parameter value can be seen in column «Default Value». A description of how to reset the parameters of the SANTIS-ab to the basic setting can be found in chapter «Reset Extended Configuration» on page 26.

Enter the configuration settings in the table on the front cover. This way, in the event of a fault, a new SANTIS-ab can be configured quickly.

Basic Configuration

General Information

The basic configuration settings are normally made once.

The basic configuration can only be defined by the installer by entering a password.

Modes of Operation

Define the operation mode of the SANTIS-ab.

Parameter Number	Parameter Value (Meaning)	Default Value
930	0 = NT1+2ab 1 = Pairgain 2 = NT1	0

If you change the operation mode, you will not hear a confirmation tone at the end of the configuration.

In order to set the operation mode «NT1+2ab/CA restr.», proceed as follows:

1. Set the operation mode (parameter number 930) to 0 = NT1+2ab (see table above).
2. Set the parameter number 920 to 1 = configuration access only to the own interface (see table below).

Parameter Number	Parameter Value (Meaning)	Default Value
920	0 = configuration access to both interfaces 1 = configuration access only to the own interface	0

Select Operation State Automatically

Here it must be defined whether the SANTIS-ab selects the operation state (analog state or ISDN state) automatically or always switches to the ISDN state after commissioning.

Parameter Number	Parameter Value (Meaning)	Default Value
940	0 = always select ISDN state 1 = select operation state automatically	1

Maintenance

For maintenance and test purposes, the SANTIS-ab can send test signals to the U- or S-interface.

Parameter Number	Parameter Value (Meaning)	Default Value
980	0 = none 1 = 2 kHz pulses at the S-bus interfaces 2 = 96 kHz pulses at the S-bus interfaces 3 = pulses at the U-interface	0

Extended Configuration

The extended configuration concerns the individual applications of the SANTIS-ab. The extended configuration can be set by the installer or the SANTIS-ab user.

To ensure smooth operation of the SANTIS-ab, at least the following parameters should be set:
– Multiple Subscriber Number (MSN) (see page 19)
– Type of Terminal Equipment (HLC) (see page 20)
– Emergency Mode Priority (see page 21)

Multiple Subscriber Number (MSN)

Your network operator has supplied several directory numbers (Multiple Subscriber Number (MSN)) for the ISDN port. Define here the multiple subscriber numbers to which the analog terminal equipment should respond at the ab-interfaces (e.g. the fax machine at the analog interface 'ab1' should only respond to the number 123 456 02).

The multiple subscriber numbers for the ISDN terminal equipment must be set at the ISDN terminal equipment.

Each ab-interface can be assigned up to three multiple subscriber numbers. If not all three multiple subscriber numbers are programmed, set those that have not been used to '0000 0000'.

In order to deactivate an ab-interface for incoming calls, set all three multiple subscriber numbers to '0000 0000'. The analog terminal equipment at this ab-interface is still available for outgoing calls.

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
111; [112]	1. Multiple Subscriber Number (MSN)	–
121; [122]	2. Multiple Subscriber Number (MSN)	0000 0000
131; [132]	3. Multiple Subscriber Number (MSN)	0000 0000

At the factory setting, no number is programmed for both ab-interfaces for the 1st multiple subscriber number. In this case, all calls are routed to both ab-interfaces. To reset this state, do not enter any digits for the parameter value for the 1st multiple subscriber number during configuration (e.g. 1 1 1 # or 1 1 2 #).

It is not necessary to program the entire directory number for the multiple subscriber numbers. If, for example, the multiple subscriber numbers 1234500, 1234501 and 1234502 were assigned, it is sufficient to program just the different final digits 0, 1 and 2.

Activate the function Distinctive Ringing (see chapter «Distinctive Ringing» on page 23) so that you can establish the multiple subscriber number under which you were called.

In the operation modes «NT1+2ab/CA restr.» and «Pairgain», this parameter can only be changed after entering a password, i.e. only by the installer.

Type of Terminal Equipment (HLC)

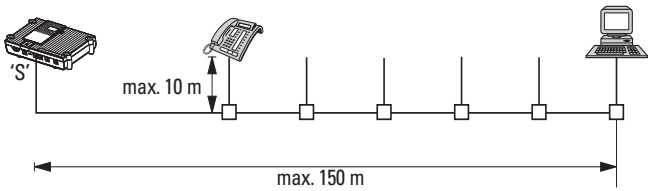
In addition to the multiple subscriber number, also define the ISDN service (Type of Terminal Equipment (HLC)) for terminal equipment logon.

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
221; [222]	0 = audio 1 = telephone 2 = fax gr. 2/3 (analog) 3 = modem	0

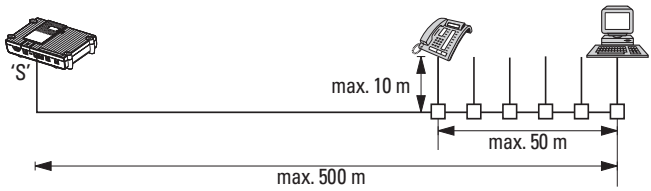
Set the ISDN service «0 = audio» if different types of terminal equipment (e.g. fax machine and telephone) or multifunctional terminals (e.g. fax unit with integrated telephone or modem with integrated fax) are being connected to an ab-interface. With the «0 = audio» setting all calls are routed to the corresponding ab-interface.

S-bus Configuration

The S-bus configuration (see the following two figures) must be defined depending on the S-bus installation).



Short passive bus



Extended passive bus

Parameter Number	Parameter Value (Meaning)	Default Value
300	0 = short passive bus 1 = extended passive bus	0

In the operation mode «NT1+2ab/CA restr.», this parameter can only be changed after entering a password, i.e. only by the installer.

Emergency Mode Priority

In the emergency mode (see chapter «Power Feeding» on page 8) only one terminal equipment is ready for operation at an ab-interface or at the S-bus. Define here which interface should be active in the emergency mode.

Parameter Number	Parameter Value (Meaning)	Default Value
210	0 = emergency mode priority at the S-bus 1 = emergency mode priority at the ab-interfaces	1

If you are allocating the emergency mode priority to the S-bus, activate the emergency mode priority on exactly one ISDN terminal equipment. Deactivate the emergency mode priority on all other ISDN terminal equipment. Configuration of the emergency mode priority on your ISDN terminal equipment is described in the corresponding operating instructions.

If the emergency mode priority is allocated to the ab-interfaces, please note the following:

- Disable the emergency mode priority at all ISDN terminal equipment (see operating instructions for the corresponding terminal equipment).
- All calls are routed to both ab-interfaces regardless of the multiple subscriber numbers.
- The ab-interface at which an incoming call is first accepted is the one with priority.

– If both ab-interfaces are active during a power failure, the call is interrupted at the ab2 interface.

In the operation mode «NT1+2ab/CA restr.», this parameter can only be changed after entering a password, i.e. only by the installer.

In the operation modes «Pairgain» and «NT1», this parameter is not available.

Clear Back Time Delay

Use this entry to define whether calls (in which you are the called party) should be disconnected immediately after going on hook or after a certain period of time (Clear Back Time Delay).

With activated «Clear Back Time Delay» the called party can replace the handset and accept the call again within the clear back time delay either at the same or at other terminal equipment at the same ab-interface.

How to transfer a call to terminal equipment that is connected to a different interface (e.g. ISDN telephone at an S-bus interface) is described in chapter «Terminal portability (TP)» on page 33.

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
311; [312]	0 = none 1 = 2 minutes	1

Set this parameter to «0 = none» if a fax machine (group 2/3), an analog modem or a telephone answering machine has been connected.

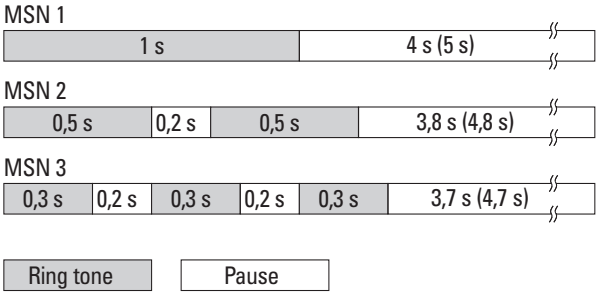
Suppress Charge Pulses (AOC)

A number of terminals can be disturbed by the charge pulse. Therefore suppress the charge pulses if you are connecting one of the following terminals to the ab-interface:
– Fax unit
– Modem

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
331; [332]	0 = suppress advice of charges pulse 1 = send advice of charges pulse	1

Distinctive Ringing

Use this service to define whether the connected telephones are to give different rings, depending on the number called, or not. Based on the different intervals between the rings, you can establish which directory number is being accessed. The 3 multiple subscriber numbers are assigned the following ringing cadences in normal operation:



Ringing Cadences

In emergency mode the pause between the ringing cadences is one second longer (the values in brackets apply).

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
541; [542]	0 = same ringing for all MSNs 1 = distinctive ringing	0

Hotline (HL)

If the service «Hotline (HL)» is activated, a predefined number is dialed automatically once the handset is lifted. This service is intended e.g. for children's emergency calls or alarm call.

To be able to use this service, the directory number of the hotline must be defined and the service activated.

Defining the directory number of the hotline

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
181; [182]	Directory number of the hotline	–

Activating the hotline service

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
191; [192]	0 = deactivate hotline 1 = activate hotline	0

The service may be activated and deactivated at any time. The predefined number remains stored.

To disable this service, the configuration settings must be entered immediately after going off-hook, otherwise the connection is set up automatically.

This service may also be disabled but not enabled again in emergency mode.

Calling Line Identification Restriction (CLIR)

You can use this service to prevent your number being displayed to the person you are calling. The setting that you make here applies to every call. Regardless of this setting, you can activate or deactivate this service for each call (see chapter «'Calling Line Identification Restriction (CLIR)' per Call» on page 33).

To use this service you must subscribe it with your network operator.

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
411; [412]	0 = do not submit the number 1 = submit the number	1

Connected Line Identification Restriction (COLR)

Activate this service if the called party number is not to be submitted to the calling party.

To use this service you must subscribe it with your network operator.

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
421; [422]	0 = do not submit the number 1 = submit the number	1

Call Waiting (CW)

Here it is defined whether a busy subscriber is informed of a waiting call by a tone.

This service has to be activated in the central office first.

Enabling the service in the central office

1. Lift the handset and wait for the dial tone.
2. Dial ✱ 4 3 # to signal a waiting call.
3. Wait for confirmation (tone or announcement) and replace the handset.

The key sequence ✱ 4 3 # is network-specific and may not function on your network. Should this be the case, please refer to your network operator.

Enabling and disabling the service in the SANTIS-ab

Parameter Number ab1; [ab2]	Parameter Value (Meaning)	Default Value
341; [342]	0 = do not signal waiting call 1 = signal waiting call	1

Deactivate Call Waiting at the corresponding ab-interface if terminal equipment such as modem, fax or mulitfunctional terminals (e.g. fax unit with integrated telephone or modem with integrated fax) are being connected.

How to accept a waiting call is described in chapter «Call Waiting» on page 32.

Reset Extended Configuration

This function resets the parameters of the extended configuration to the default values. The parameters of the basic configuration will not be changed.

The default values can be found in the corresponding functional description in chapter «Extended Configuration» on page 19 and on the front cover.

Parameter Number	Parameter Value (Meaning)
010	1 = reset extended configuration

In the operating states «NT1+2ab/CA restr.» and «Pairgain», the following parameters are not reset:
- Multiple Subscriber Number (MSN)
- Emergency Mode Priority
- S-bus Configuration

Configuration Example

You want to configure the a/b1-interface as follows:
- Multiple Subscriber Number (MSN): 7654321
- Type of Terminal Equipment (HLC): Telephone
- Emergency Mode Priority: at the S-bus

Take the following steps:
1. Lift the handset and wait for the dial tone.
2. Dial ****#73##** and wait for the dial tone.
3. To assign multiple subscriber number «7654321» to the a/b1 interface, dial:
   111 7654321 #. You hear the dial tone.
4. To assign the type of terminal equipment «telephone» to the a/b1 interface, dial:
   221 1 #. You hear the dial tone.
5. To assign emergency mode priority to the S-bus, dial:
   210 0 #. The dial tone is activated again.
6. Replace the handset.

User-friendly Telephoning

General Information

The services described below only refer to analog terminal equipment connected to the ab-interfaces. This terminal equipment must possess the keys * and # and be in tone dialing mode. Use the operating instructions of the analog terminal equipment to ensure that the tone dialing mode is enabled. The use of these services with the ISDN terminal equipment is described in the corresponding operating instructions.

In addition, the SANTIS-ab must be in ISDN state, which can be seen from the LEDs (see chapter «LEDs» on page 9).

How to make use of these services with the ISDN terminal equipment is described in the corresponding operating instructions.

One way of operating the services is with the key R. Depending on the terminal equipment, this key is designated either as R or RECALL.

Attention: Since replacing the handset briefly (> 0.5 sec) has the same function as the keys R, R or RECALL, always replace the handset for at least 1 second before you begin a new call. Otherwise your previous call may be put on hold and will continue to be charged. For example see chapter «Enquiry Call / Call Hold» on page 30.

Some of the services which are described in these instructions will possibly not be supported in your telephone network or you may have to pay a subscription for them. Please contact your network operator if you have any questions about the services.

Call Completion to Busy Subscriber (CCBS)

The function «Call Completion to Busy Subscriber (CCBS)» rings back the calling party automatically as soon as the busy called party replaces the handset.

Activation
The called subscriber is busy. Dial ○ ✱ 3 7 #. If the service has been activated successfully, you will hear first the confirmation tone for 3 seconds and then the busy tone.

Automatic completion
As soon as the called subscriber is free, your telephone rings. After lifting the handset the other party is automatically called. If you do not accept the ringback within 15 seconds, the automatic ringback is cancelled.

Deactivation
To deactivate the activated ringbacks because e.g. the calls are no longer necessary, proceed as follows:

1. Lift the handset and wait for the dial tone.
2. Dial # 3 7 #. The confirmation tone is activated. Otherwise, the busy tone is activated.

If several ringbacks have been activated, they are all cancelled.

Interrogation
1. Lift the handset and wait for the dial tone.
2. Dial ✱ # 3 7 # to query whether any automatic ringbacks are still outstanding or not. If the confirmation tone is activated, there is at least one ringback still outstanding.

Call Forwarding (CFx)

«Call Forwarding (CFx)» can be used to divert any incoming call to any other port (third subscriber with C-number). The SANTIS-ab supports the following types of call forwarding:

Unconditional
The call is forwarded immediately to the other port. The telephone does not ring in this case.

No reply
The call is only forwarded if it is not accepted within a certain period of time. During this time, there is the option of accepting the call.

Busy
The call is only forwarded if the called port is already busy.

The following table explains how to program the individual types of call forwarding.

Function	Unconditional	No reply	Busy
Activation	✱21✱ <*C-number*> #	✱61✱ <*C-number*> #	✱67✱ <*C-number*> #
Interrogation	✱#21#	✱#61#	✱#67#
Deactivation	#21#	#61#	#67#

Call Forwarding

The key sequences for call forwarding are network-specific and may not function on your network. Should this be the case, please refer to your network operator.

Comments
- Only the calls to MSN 1 are forwarded.
- Call forwarding refers to the entire ISDN port and not only to the terminal equipment at which call forwarding has been programmed. If call forwarding has been programmed for MSN 1, no further calls are taken under this MSN even if this MSN has been programmed at other terminal equipment.
- As long as one of these services is activated you hear a special dial tone.

Enquiry Call / Call Hold

«Enquiry Call / Call Hold» is used to put the active party on hold in order to activate an enquiry call with another subscriber (third subscriber). It is then possible to switch freely between the parties, initiate three party (3PTY) or to connect the two parties, releasing yourself from the connection.

Enquiry call

There is an active connection.

1. Dial ☐ and wait for the dial tone.
2. Enter the *<directory number>* of the third subscriber.

The connection will be substained if:
– the third subscriber cannot be reached
– the wrong directory number was dialed
– you do a wrong operation
– you forget the calling person in hold-position
replace the handset and wait for the ringing signal. Lift the handset for automatic connection to the called party.

There is an active call and a call on hold. The options are now as follows:

Release the call on hold and continue with the active call

1. Dial ☐ and wait for the dial tone.
2. Dial **0**.

Release the active call and resume the call on hold

1. Replace the handset and wait for the ringing signal.
2. Lift the handset for automatic reconnection to the call on hold.

or:

1. Dial ☐ and wait for the dial tone.
2. Dial **1**.

Switch between the two parties

1. Dial ☐ and wait for the dial tone.
2. Dial **2**.

Switch between any of the subscribers by dialing ☐, waiting for the dial tone and then dialing **2**.

Initiate Three Party

1. Dial ☐ and wait for the dial tone.
2. Dial **3**.

Explicit Call Transfer (ECT)
With explicit call transfer you connect the two parties you are connected to (not possible in Three Party (3PTY)), so that these parties then communicate without you. Take the following steps to do this:

1. Dial ☐ and wait for the dial tone.
2. Dial 4.
3. Replace the handset.

If the subscriber on hold replaces the handset, neither ☐0, ☐1, ☐2, ☐3 nor ☐4 establishes reconnection. Instead, there is no reconnection to the active subscriber nor is the dial tone activated. Replace the handset and wait for the ringing signal. Lift the handset for automatic reconnection to the active call.

Three Party (3PTY)

This service enables 3 parties to communicate with each other simultaneously.

Activation
There is already a connection with a subscriber.

1. Dial ☐ and wait for the dial tone.
2. Enter the <*directory number*> of the third subscriber.
3. Wait for connection to the third subscriber.
4. Dial ☐ and wait for the dial tone.
5. Dial 3. The Three Party (3PTY) service is now activated.

Switch between the two parties

1. Dial ☐ and wait for the dial tone.
2. Dial 2.

Now you can switch between the two parties as often as you like by dialing ☐2 or make use of the service Explicit Call Transfer (ECT) (see page 31).

Deactivation
Replace the handset in order to release the three party conference. All the connections are released automatically.

Call Waiting

This function is only available if it has been activated (see chapter «Call Waiting (CW)» on page 25).

During a call, the call waiting tone for another incoming call is activated. The options are now as follows:

Reject the waiting call

1. Dial ☐ and wait for the dial tone.
2. Dial 0.

End the current call and continue with the waiting call

1. Replace the handset and wait for the ringing signal.
2. Lift the handset for automatic reconnection to the waiting caller.

or:

1. Dial ☐ and wait for the dial tone.
2. Dial 1.

Put active call on hold and accept the waiting call

1. Dial ☐ and wait for the dial tone.
2. Dial 2.

Switch between the two parties by dialing ☐2.

Now you can initiate a Three Party (3PTY) (see page 31) or make use of the service Explicit Call Transfer (ECT) (see page 31).

Malicious Call Identification (MCID)

It is possible to determine the origin of a malicious call (call tracing). Use this function in the following situations:

– During a call
– At the end of the call: If the anonymous calling party has already replaced the handset. Now you have a few seconds to activate the service and to trace the call.

Activation

1. Dial ☐ and wait for the dial tone.
2. Dial *39#. You will receive the confirmation tone.

You may not terminate the call.

This service must be subscribed.

The network operator identifies the call by recording the malicious caller and the time of the call.

Terminal portability (TP)

You can park a call in progress and then resume it later (see also chapter «Clear Back Time Delay» on page 22).
– accept it at another terminal
– move the terminal to another socket.

It may not be parked for longer than 2 minutes, otherwise the connection is interrupted automatically.

Park a call

1. Dial ▢ during the call and wait for the dial tone.
2. Dial ✱ 7 9 *<park code>* # to disconnect from the other party.

Resume a call

Dial ✱ 7 9 *<park code>* # and you are connected to the parked subscriber again.

Park Code

The *<park code>* is optional. It may consist of up to 8 digits (0, 1, ... 9) for analog terminals.

S-bus terminals use in general up to 2 digits. Depending on the S-bus terminal its park code is predefined or can be changed by the user. Anyway they usually need a code, where analog terminals do not.

Do not use this service if a call is in the hold position.

'Calling Line Identification Restriction (CLIR)' per Call

Use the CLIR service (see chapter «Calling Line Identification Restriction (CLIR)» on page 24) to define whether the directory number of the calling subscriber is to be submitted (default value) or not to the called side. With the «'Calling Line Identification Restriction (CLIR)' per Call» service you can also activate or deactivate this service for each individual call. This service must be activated for each call.

Do not submit the own number to the called party

1. Lift the handset.
2. Dial ✱ 3 1 ✱.
3. Then dial the number of the desired subscriber.

Submit the own number to the called party

1. Lift the handset.
2. Dial # 3 1 ✱.
3. Then dial the number of the desired subscriber.

Comments

– This service is automatically deactivated again after one call.
– This service must be subscribed.

Outgoing Call Barring

Activate the «Outgoing Call Barring» service to block specific outgoing calls. You have selected a set of numbers on which the service applies for you when registering the ISDN-line. If you would like to have another set of numbers for outgoing call barring, you must subscribe to this with the network operator.

Activation or deactivation of the outgoing call barring is password protected. The outgoing call barring password consists of precisely 4 digits (0, 1, ... 9). The outgoing call barring password was allocated to you when the registration was confirmed.

Activation

1. Lift the handset and wait for the dial tone.
2. Dial *33* *<barring password>* #.

Interrogation

1. Lift the handset and wait for the dial tone.
2. Dial *#33#.

Deactivation

1. Lift the handset and wait for the dial tone.
2. Dial #33* *<barring password>* #.

Change the outgoing call barring-password

1. Lift the handset and wait for the dial tone.
2. Dial *17* *<old barring password>* * *<new barring password>* * *<new barring password>* #.

The key sequences for outgoing call barring are network-specific and may not function on your network. Should this be the case, please refer to your network operator.

Help with Problems

Not all faults are necessarily due to actual defects. Sometimes time and money can be saved if the user is able to detect and eliminate simple fault causes.

If the user is still unable to solve a problem with the SANTIS-ab even with the aid of these instructions and the table below, he should contact the installer or the network operator.

Problem	Cause / Solution
SANTIS-ab cannot be configured.	Check whether the terminal equipment used for the configuration is in tone dialing mode (see also terminal equipment operating instructions).
	Check the power supply (yellow LED 'local feeding'). See also see chapter «Power Feeding» on page 8.
Telephones at the ab-interfaces ring quietly.	Check whether the telephones connected have a piezo-electric ringer (not a mechanical bell). This is the case with more modern sets. If several telephones without piezo-electric ringer are connected to an ab-interface, this can result in the telephones no longer ringing or only quietly.
	Switch off the service «Distinctive Ringing». A number of automatic terminals (modems, telephone answering machines etc.) may possibly not recognise the different ringing sequences of multiple subscriber numbers 2 and 3 and will not therefore ring (see chapter «Distinctive Ringing» on page 23).
Buzzing noise during calls.	Radiating equipment such as DECT base stations installed beside the SANTIS-ab may cause disturbances. Place such equipment at least 50 cm away from the SANTIS-ab.
No calls are being received .	Check whether the multiple subscriber numbers and the type of terminal equipment have been programmed correctly. Reprogram these parameters (see chapter «Multiple Subscriber Number (MSN)» on page 19 and «Type of Terminal Equipment (HLC)» on page 20).
	Call forwarding may have been programmed, which means that all calls are forwarded and none are received (see chapter «Call Forwarding (CFx)» on page 29).

Help with Problems (section 1 of 2)

Problem	Cause / Solution
Not all terminal equipment at the ab-interfaces or at the S-bus is ready for operation.	Check the 'local feeding' LED. If this does not light, the SANTIS-ab is in emergency mode (see chapter «Power Feeding» on page 8). Check the power supply of the SANTIS-ab.
Data transmission to or from a PC with an analog modem at the ab interfaces is not functioning correctly.	Deactivate the «Call Waiting (CW)» function (see chapter «Call Waiting (CW)» on page 25).
	Suppress the advice of charges pulses (see chapter «Suppress Charge Pulses (AOC)» on page 22).
Data transmission to or from a PC with an S-Bus card at the S-bus is not functioning correctly.	Move the slide switch on the front of the SANTIS-ab to the '50Ω' or 'OFF' position (see chapter «Slide Switch» on page 8).

Help with Problems (section 2 of 2)

Index

User-friendly Telephoning

These are the brief instructions for the most important functions of analog telephones, but they are not intended to replace the detailed description in the main instructions.

The key sequences of the functions marked «*» below are network-specific and may not work in your network. Should this be the case, please refer to your network operator.

Call Completion to Busy Subscriber (CCBS)	**Activation**	☐ ✱ 3 7 #
	Interrogation	✱ # 3 7 #
	Deactivation	# 3 7 #
Call Forwarding (CFx) * Unconditional	**Activation**	✱ 2 1 ✱ <*C-number*> #
	Interrogation	✱ # 2 1 #
	Deactivation	# 2 1 #
	No reply:	6 1 instead of 2 1
	Busy:	6 7 instead of 2 1
Enquiry Call / Call Hold / Three Party (3PTY) / Explicit Call Transfer (ECT)	**Put current call on hold**	☐
	Release held call / continue with active call	☐; wait for dial tone; 0
	Release active call / activate held call	☐; wait for dial tone; 1
	Switch between the two parties	☐; wait for dial tone; 2
	Initiate three party conference	☐; wait for dial tone; 3
	Explicit Call Transfer (ECT)	☐; wait for dial tone; 4
Malicious Call Identification (MCID)	**Activation**	☐; wait for dial tone; ✱ 3 9 #
Terminal portability (TP)	**Park**	☐; wait for dial tone; ✱ 7 9 <*park code*> #
	Resume	✱ 7 9 <*park code*> #
'Calling Line Identification Restriction (CLIR)' per Call	**Do not submit the number**	✱ 3 1 ✱; wait for dial tone; <*access number*>
Outgoing Call Barring *	**Activation**	✱ 3 3 ✱ <*barring password*> #
	Deactivation	# 3 3 ✱ <*barring password*> #