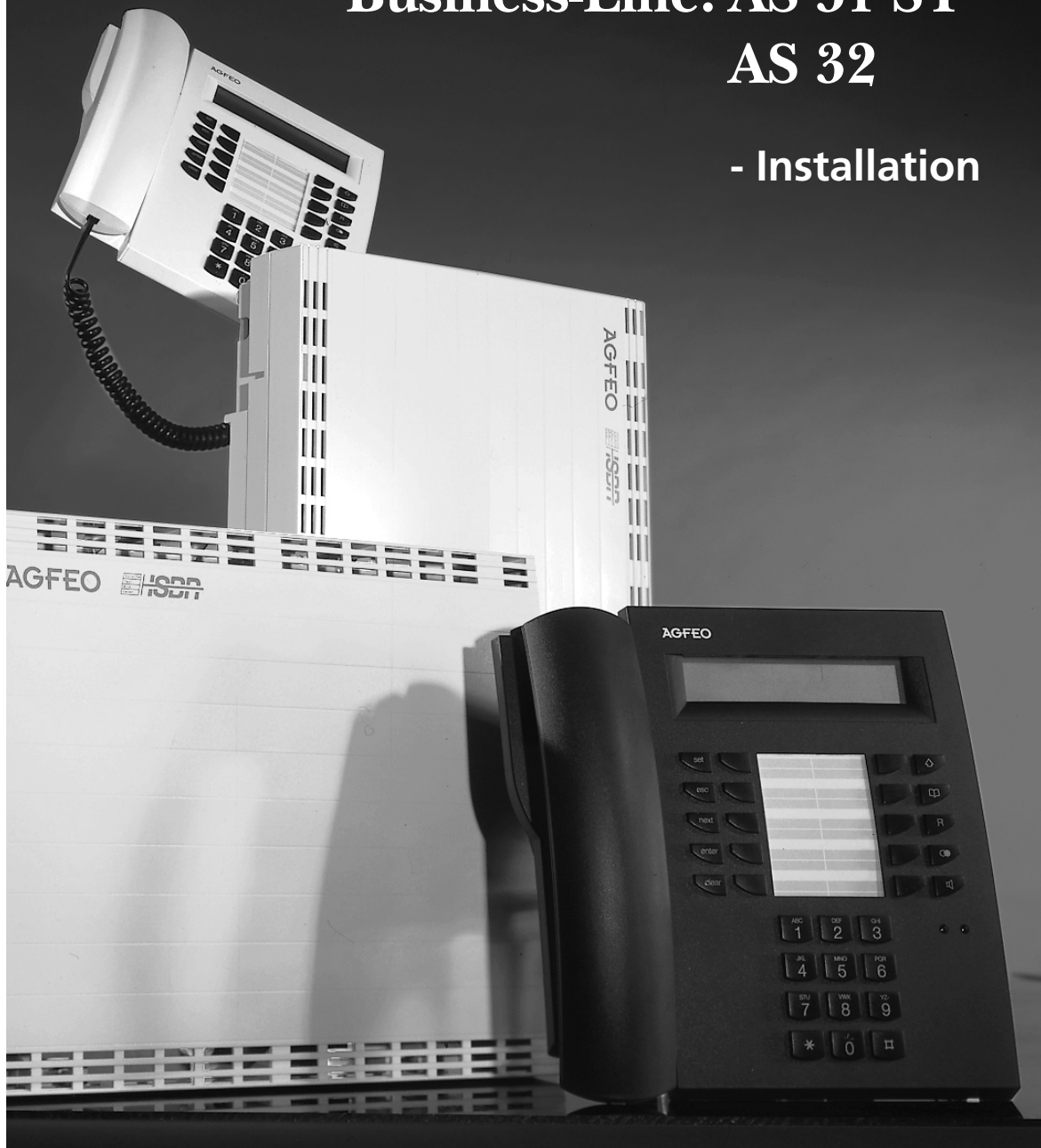


AGFEO

kommunizieren mit System

Business-Line: AS 31 ST AS 32

- Installation



Safety notes

The telephone system is intended for connection to an ISDN basic access (DSS 1).

You may connect all analog terminals to the analog user ports of the telephone system that you are also permitted to operate on the analog telecommunications network.

You may connect all DSS 1 ISDN terminals to an internal S0 bus (AS 32) that you are also allowed to operate directly on the ISDN network. Two digital AGFEO system

telephones can be also connected to every internal S0 bus.

Connected door hands free units must conform to the respective interface definition.

Any other use of the telephone system is not in accordance with its intended purpose and is therefore not permitted.

The telephone system has a general connection permit (Germany: AAE).

Safety notes



-- The telephone system conforms to the prescribed conformity and safety regulations.

- Attention! The telephone system must be electrically earthed. Therefore connect the Euro PE contact plug of the power cable only to an expertly installed socket (PE socket) to prevent danger to persons and material.

- Before connecting the subscriber lines to the subscribers and the ISDN network, pull out the 230 V mains plug to switch off the telephone system. Mortal danger!

- Protective measure! Touch the metal shield of the PC/printer socket of the telephone system briefly with your finger. This will discharge any possible electrostatic charges, thus

protecting the telephone system's electrostatically sensitive components.

- You must not connect and disconnect subscriber lines during a thunderstorm.

- Lay subscriber lines in such a way that no-one can step on them or stumble over them.

- Prevent the ingress of liquid into the telephone system as otherwise short-circuits may occur.

- No liability can be assumed for consequential damages such as the cost of an unintentionally continued connection.

- The telephone system is out of operation whenever power failures occur. You cannot make telephone calls in such cases.

Installation

Checking the scope of delivery

- 1 Telephone system
 - 1 Set of securing material (3 dowels S6, 3 wood screws (cross head recess) 4 x 40)
 - 11 connection terminals
 - 1 ISDN connecting cable (IAE-IAE), 1.5 m
 - 1 PC connecting cable
 - 1 Instruction package including instruction manual, installation manual, short-form operating instructions for system telephones, short-form operating instructions for a/b and ISDN terminals, 8 remote control cards
 - 1 Set of 3.5" diskettes with the programs: TK-Set, TK-LCR, TK-Bill, TK-Phone and TK-Timer.
- On our homepage "www.agfeo.de", you may find the operating manuals for download.

Choosing a location

- The telephone system must only be installed in a dry room in which there are no explosion hazards.
It must not be installed: in the proximity of air conditioning systems, radiators, devices that produce inadmissible interference radiation, in locations that are subject to direct sunlight, in environments containing excessive amounts of dust or in locations where it may be splashed with water or chemicals.
- Ambient temperature: 5°C to 40°C
- Humidity: max. 70% (no condensation)
- You must install the telephone system vertically, with the connection side pointing downwards, on a firm and flat surface.
- Minimum distance between the housing and other limits above or below it: 50 mm.
- The distance between the telephone system and the 230 V mains socket and the IAE socket should not be more than 1 m (mains lead approximately 1.2 m long).
- For configuration of the PBX AS 31 ST via the serial PC / printer interface (RS 232C), it must be possible to place a laptop or a PC in the direct proximity of the telephone system.
The PBX AS 32, however, can be configured by a PC with ISDN adapter via the internal S0 bus.

230 V power supply

A separate circuit is recommended for the telephone system's 230 V mains power supply. Short-circuits caused by other domestic appliances will then not have any detrimental influence on the telephone system.

Power consumption of the telephone system: approximately 40 VA (full load).

Do not plug in the 230 V mains plug until you have completed installation and checked the wiring after closing the housing.

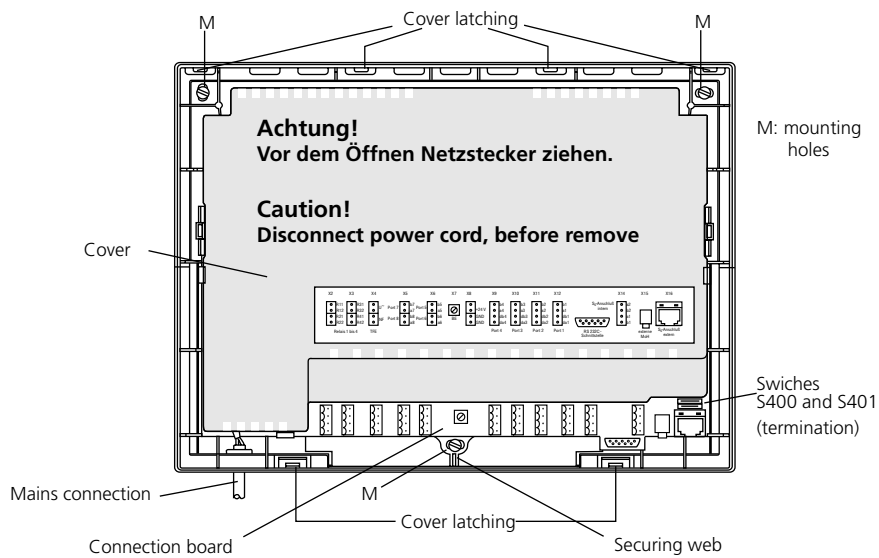
Pay attention to the fact that the electrical connection (shock-proof socket) for the telephone system (and if applicable, for additional devices) must have been installed by an authorised electrician. This will avoid any hazards for persons and property.

Opening the housing

Press with a screwdriver onto the tabs in the slits on the connection side of the housing. The cover is released and you can detach it.

Caution: mortal danger !

Before removing the inner cover, pull out the 230 V mains plug to switch off the telephone system. The inner cover may only be removed by a service technician.



Drawing 1: Open central housing of the telephone system

Securing the housing

- Mark the mounting holes (M).
Stone drill: 6 mm, hole depth: 40 mm
or
Wood drill: 3.5 mm,
Hole depth: 35 mm
- When marking the mounting holes, make sure that there are no concealed pipes or cables at these points (gas, water and power lines etc.).
- Drive in the dowels until they are flush with the wall.
- Drill the three mounting holes.
- Screw in the telephone system.

Safety notes

Pay attention to the safety notes

- before installing or removing a module,
- before connecting or disconnecting a connecting lead

1. Remove the telephone system's 230 V mains plug from the socket.
2. Remove the Western plugs of all external ISDN basic accesses from the

telephone system, the network terminator (NT) or the S0 bus.

3. Protective measure! Touch the metal shield of the PC/printer socket of the telephone system briefly with your finger. This will discharge any possible electrostatic charges, thus protecting the telephone system's electrostatically sensitive components.

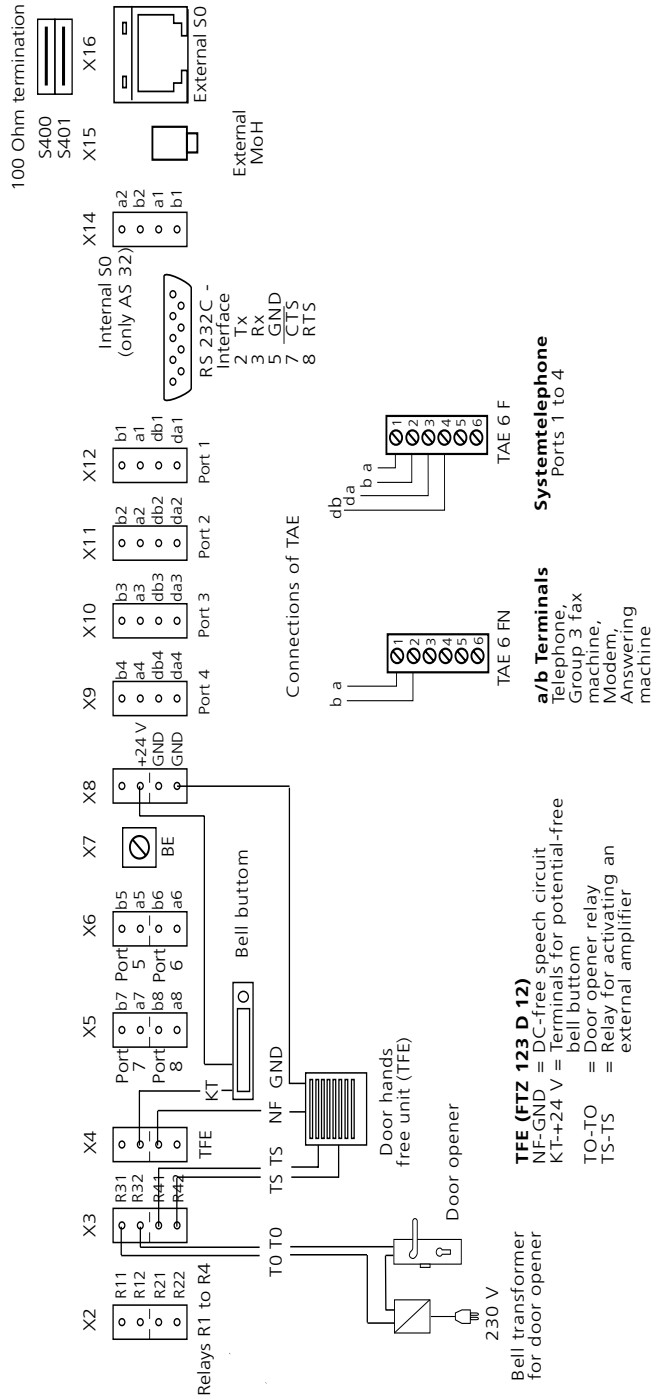
Connecting earth

Connect the "Betriebserde BE" (system earth) terminal to the equipotential bonding connection of your household installation.

You **must not** connect the earth to the PE conductor!
Earth: 1.5 mm² stranded wire

Drawing 2:
Pin assignments

1 - 6



External fixed S0 port (Western socket)

Point-to-point connection

You can only connect one ISDN telephone system to an ISDN point-to-point connection. You cannot connect any further ISDN terminals.

By means of the ISDN connecting cable, connect the ISDN system directly to the NTBA or to an ISDN socket (IAE/UAE) that is connected to the NTBA.

Terminators for the external S0 port

The two switches **S400** and **S401** for the 100 Ohm terminators, which must belong to one connecting line, must be closed for the point-to-point connection.

Point-to-multipoint connection

The point-to-multipoint connection may consist of an S0 bus. Up to 12 ISDN sockets (IAE/UAE) may belong to this ISDN bus. Besides the ISDN telephone system, you can connect up to seven further ISDN terminals to the S0 bus.

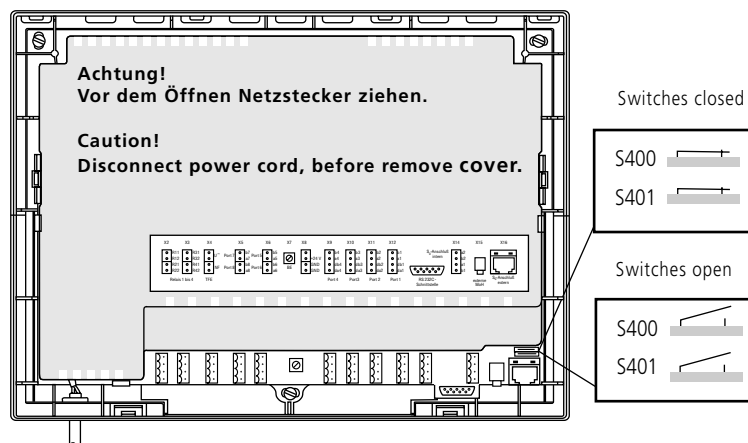
Terminators for the external S0 port

For the point-to-multipoint connection, the two switches **S400** and **S401** for the 100 Ohm terminators, which must belong to one S0 connecting line, must be

- **closed** if the external S0 port is connected directly to the NT or to the last IAE/UAE socket and the 100 Ohm terminators in the socket are not connected,
- **open** if the 100 Ohm terminators in the last IAE/UAE socket are connected or the telephone system is not the last ISDN terminal on the point-to-multipoint connection.

By means of the connecting cable, connect the ISDN telephone system to an ISDN socket of the S0 bus.

If the point-to-multipoint connection does not consist of an S0 bus, you can connect the ISDN telephone system directly to the NT.



Drawing 3:
Switches S400 / S401 (Termination)

Connecting analog users

You may connect all analog terminals to the telephone system that you are also permitted to operate on the analog telecommunications network.

a/b terminals are:

- Telephone (a/b telephone) with tone dialling (DTMF). **R** key as the flash key (flash time: 50-150 ms), ***** key and **#** key. Only restricted use can be made of telephones that are set to pulse dialling.
- Group 3 fax machines
- Answering machines
- Modems (up to 56600 bps, reduction of transmission speed to 33600 bps).

Connect a/b terminals by means of two wires to the La and Lb wires (speech wires) of the Vario ports. You must not connect the Da and Db connections.

System telephones ST20

Connect system telephones by four wires to the Vario ports by connecting them to the La and Lb wires (speech wires) and the Da and Db wires (data wires; data for signalling and displays).

For connection, carry out the following work:

- Place the connecting leads through the housing openings.
- Fit the screw terminals to the connecting leads.
- Plug the screw terminals of the individual leads onto the provided slots (see drawings 2).
- If you route a connecting lead of the telephone system outside of the building, you are advised to use external lightning protection.

Internal S0 port (AS 32)

You may connect up to eight ISDN terminals to one internal S0 access of the telephone system.

ISDN terminals:

- AGFEO system telephones digital
- ISDN telephones
- ISDN cards
- ISDN fax machines

Depending on current consumption, you may connect at least four ISDN terminals that do not have a power supply of their own.

Example: 4 ISDN telephones or 2 system telephones digital and 2 ISDN telephones.

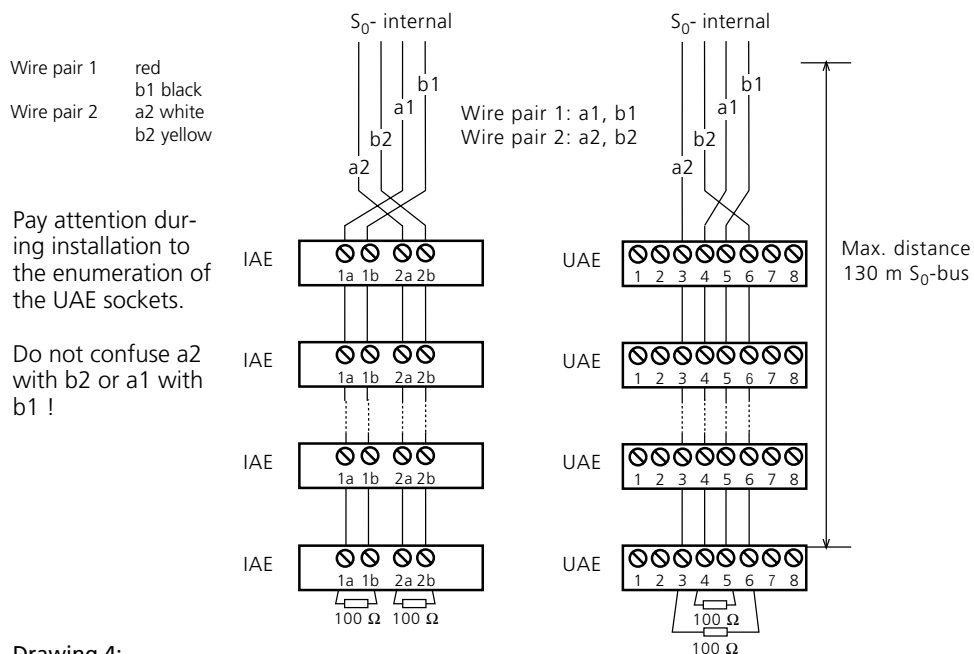
The ISDN terminals must operate in accordance with the DSS1 protocol.

In case you want to connect several ISDN terminals to the internal S0 plug, you have to install an S0 bus with several sockets. You connect this bus via a 4 wire screw clip. You need the following material to install an internal S0 port:

- Telecommunications cable; we recommend the cable type I-Y (St) Y 2 x 2 x 0.6
- IAE or UAE connection sockets; up to 12 sockets
- Terminators, 100 Ohm, load carrying capacity 0.25 watt, 2 terminators

An internal S0 bus may be 130 m long (distance from the telephone to the last IAE / UAE socket).

You have to terminate the internal S0 bus. Add two 100 Ohm terminators to the last IAE/UAE connection socket (drawing 4).



Drawing 4:
Wiring an internal S0 port

Connecting a door hands free unit (TFE)

TFE - interface conforming to the 4-wire TFE specification FTZ 123 D12 for the connection of door stations with amplifiers.

Connections: (drawing 2)

- Connection of a potential-free bell pushbutton to the contacts KT and +24 V. The telephone system supports one bell pushbutton.
- Connection of the DC-free speech circuit of the TFE to a loudspeaker system or an audio module AM 20 to the contacts NF and GND.
- Control of the TFE, of the loudspeaker system (activation of the amplifier or power supply) or of the audio module AM 20 (voice/music changeover) via the potential-free relay contacts TS (R4)
Maximum contact load-carrying capacity: 30 VDC/1 A or 123 VAC/0.5 A.
- Control of the door opener via the potential-free relay contacts T0 (R3)

Maximum contact load-carrying capacity: 30 VDC/1 A or 123 VAC/0.5 A.

You can only activate the door opener from a terminal of the telephone system after connecting an external bell transformer.

For connection, carry out the following operations:

- Place the connecting leads through the housing openings.
- Fit the screw terminals onto the connecting leads.
- Insert the screw terminals of the individual leads onto the provided slots (see drawings 2).
- If you route a connecting lead of the telephone system outside of the building, you are advised to use external lightning protection.
Maximum contact load: 30 VDC/1 A or 125 VAC/0.5 A, ohmic load.

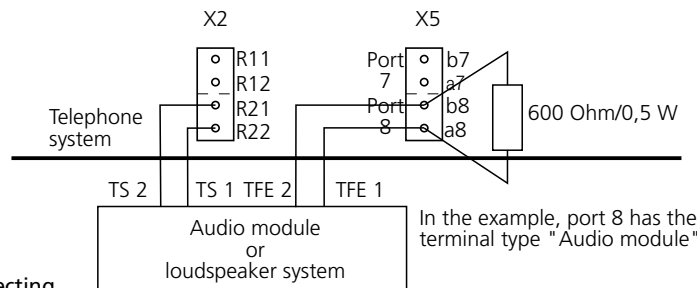
Connecting an audio module or loudspeaker system

You can connect an audio module or a loudspeaker system in place of a door hands free unit or to one of the eight ports for analog terminals (drawing 5).

The port used to connect the audio module must be programmed to terminal type "Audio module". With the programming the re-

lay R2 is automatically assigned to the audio module (TS 1 - TS 2). The relay controls the speech/music switching of the audio module for an announcement.

You must connect a resistor 600 ohms/0.5 W to the a/b connections of the "Audio module" ports.



Drawing 5: Connecting an audio module

Switching relays

You can put the relays to diverse use as individual switching relays R1 to R4 for other functions. For example, you can use them to connect a door hands free unit (TFE), an additional bell, a door opener or lighting.

By programming, for each relay you define whether it is to operate as a pulse relay (3 seconds on) or as an On/Off relay.

You can switch the relays from every inter-

nal or external telephone. You can also assign internal phone numbers to the relays in order to include them in the ringing distribution settings, e.g. when connecting an additional bell.

The relay contacts are bridged with a 1 kOhm, 100 nF spark quenching combination.

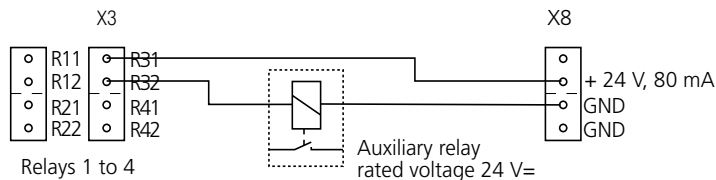
Maximum contact load: 30 VDC/1 A or 125 VAC/0,5 A, ohmic load.

Connecting an external auxiliary relay

The maximum contact load of the relays of the PABX is 30 VDC / 1 A or 125 VAC / 0.5 A, ohmic load. If you want to switch equipment or systems through the PABX relays which require a higher contact load, you must use a suitable auxiliary relay.

Drawing 6 shows the connection of the aux-

iliary relay, e.g. via the relay contacts R3. The output voltage 24 VDC of the PABX can be used as an operating voltage for an auxiliary relay with a rated voltage of 24 VDC. The maximum load of the output voltage is 80 mA.



Drawing 6: Connecting an external auxiliary relay

Connecting external music on hold (MoH)

To feed in external music on hold, connect the headphone output of an audio device (CD player, cassette recorder or stereo system) with a 3.5 mm jack plug to the "external MoH" (NF and GND) terminal on the top pc board of the telephone system (drawing 2).

Set the volume of external music on hold on the audio device. To set or check the vol-

ume, call an internal user of the telephone system from an external source. The external connection is put on hold when the internal user presses the inquiry key "R" or the "brokering key". You hear the music on hold and can adjust the volume.

Note: tunes played must be free from third-party proprietary rights (GEMA-free).

Connecting a printer for printing connection charges

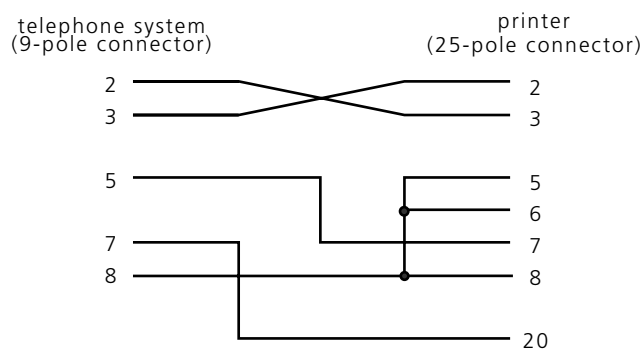
You can connect any printer to the telephone system's RS 232C interface to print out connection records. For connection, you need a cable that corresponds to the pin assignments given below (maximum length 3 m).

Your printer must be set as follows:

- 9600 baud
- 8 bits
- 1 stop bit
- no parity

To print out connection records, the printer must be on all the time and must be connected to the telephone system. The telephone system stores at least 500 connection records and the total connection charges, even in the event of a power failure.

Remove the printer cable from the system when no printer is connected. Close the housing.



Drawing 7: Printer cable pin assignments

Closing the housing

Hook the four top cover tabs into the cover latch of the bottom housing half.

Press onto the bottom edge of the cover until it engages.

The ventilation slots on the housing must not be concealed. Make sure that air circulation is not impeded.

Commissioning

You have installed the telephone system. Now, only a few operations are necessary before you are able to make telephone calls.

- Connect terminals. You can connect all terminals that you are also allowed to connect to the public telecommunications network.
- Insert the Western plug on the ISDN connecting cable in the telecommunications socket (ISDN line unit, IAE or universal line unit UAE) of your ISDN connection.
- Switch on the telephone system by inserting the mains plug.
- Once the telephone system has been switched on, you can immediately make internal and external telephone calls. When an external subscriber calls, all connected telephones ring according to the telephone system's default settings ("as-delivered" settings).
- By programming on a PC, you can set the telephone system's functions to suit your needs. Remote setting by your specialist dealer is possible.

Notes

- To avoid wrong dialling, dial a digit on an a/b terminal with DTMF after installation. The telephone system recognises the dialling method in this way.
- If you switch the dialling method on an a/b terminal from DTMF to pulse dialling, dial a digit higher than 2.
- If you operate two terminals on one terminal connection, both of them must dial with the same dialling method.

As -delivered state

The followings settings are active in the **as-delivered state**:

- The telephone system is set for connection to a system port. You only have to enter the system phone number.
- The switches S400 and S401 (termination for the external S0 port) are closed, the 100 ohm termination resistors switched on.

Analog ports - internal phone numbers (decade 1 set) and terminal types
AS 31 ST: 11 to 18, telephones
AS 32: 11 to 20, telephones
- External access: unlimited for all users
- Line seizure: line seizure „0“
- Call variant 1 (day): on, no internal phone number entered, subscribers 11, 12 and 13 are called in the case of a call
- Call variant 2 (night): off, no internal phone number entered
- Call forwarding internal: off, no internal phone number entered
- Number of calls: 5
- Don't disturb: off for all terminals
- Knocking protection: off for terminals
- Transfer of phone numbers to the called party and the caller: on
- Music on Hold (MoH): internal on
- Door call variant 1 (day): on, no internal phone number entered, subscribers 11, 12 and 13 are called in the case of a door call
- Door call variant 2 (night): off, no internal phone number entered
- Automatic dialing: off
- Printout of connection data set: off for all users
- Printout of dialed phone number: without
- Cost limit: no entry
- Own tariff units factor: 0,12 DM
- Base factor (network operator factor): 0, 12 DM
- Cleardown at cost limit: off
- Setup code: off
- Cost code: no entry
- Switch box code: no entry
- Least Cost Router (LCR): off, for all subscribers
- Busy on busy: off
- **AS 32**: Transfer of „0“ to dial from call list at internal S0 port: off

System telephones ST 20 and ST 25 (AS 32)

- Status display: off
- Cost display: off
- Display: German
- Call list: off

Technical data

Housing dimensions	32 x 25 x 8.5 cm (width x height x depth)
Weight	2,54 kg
Ambient temperature	
- Operation	5 °C to 40 °C
- Storage	-25 °C to +70 °C
Mains connection	230 V AC, +6%/-10%, 50 Hz
- Power consumption	30 VA (full load)
External fixed S0 access	Point-to-point or point-to-multipoint connection, ISDN (DSS1) 1 S0 access Connection by means of Western socket and included IAE connecting cable IAE8/IAE8
Internal S0 access (AS 32)	Point-to-multipoint connection, ISDN (DSS1) 1 fixed S0 access, 4-pole plug-in connection by means of screw terminal Max. connection length 130 m
- ISDN terminals (AS 32)	Max. 8 per internal S0 access, max. 4 passive ISDN terminals (telephones) connected to the system
Analog terminals	4 system telephones and 4 a/b terminals or 8 a/b terminals
- Connection	System telephones ST 20: 4-wire, plug-in screw terminal a/b terminals: 2-wire, plug-in screw terminal
- Range	System telephones 2 x 75 Ohm (Ø 0.6 mm twisted, 1200 m) a/b terminals: 2 x 50 Ohm (Ø 0.6 mm, 800 m)
- Dialling method	Pulse dialling or DTMF
- Signal key	Flash (50 ...150 ms)
PC/printer interface	RS 232C
- Range	3 m
- Connection	9-pole, D-sub socket or plug-in screw terminal
Data retention in the event of power failure:	unlimited
External music on hold (MoH)	
- Input impedance	100 kOhm, asymmetrical
- Input voltage	Max. 100 mVpp
- Connection	3,5 mm stereo jack socket
Door hands free unit TFE	in accordance with FTZ 123 D 12
- Connection	4-wire, plug-in screw terminal
- Contact load of the TS, TO relays	30 VDC/1 A or 125 VAC/0.5 A
Switching relays R1 to R4-contact load	30 VDC/1 A or 125 VAC/0.5 A, ohmic load Potential-free contacts jumpered with spark quenching combination of 1 kOhm, 100 nF.
- Connection	2-wire, plug-in screw terminal
Output voltage	24 VDC / 80 mA, service voltage for external relays



This unit fulfills the requirements of the EU guidelines:
91/263/EWG Telecommunications equipment
73/23/EWG Low-voltage devices
89/336/EWG Electromagnetic compatibility
This is why your telephone system bears the CE mark.

Ident. No. 529 273
Modifications and errors reserved.
Printed in Germany
1991

AGFEO GmbH & Co. KG
Gaswerkstr. 8
D-33647 Bielefeld
Internet: <http://www.agfeo.de>