

# AGFEO

kommunizieren mit System

## Business-Line: AS 33 AS 34

- 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 that you are also allowed to operate directly on the ISDN network. Two digital AGFEO system tel-

ephones 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

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- 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 electro-

- static 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

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- 1 Telephone system
- 1 Set of securing material (3 dowels S6, 3 wood screws (cross head recess) 4 x 40)
- 18 (14) connection terminals
- 2 (2) ISDN connecting cable (IAE-IAE), 1.5 m
- 1 ISDN connecting cable (IAE-single wires)
- 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](http://www.agfeo.de)", you may find the operating manuals for download.

## Choosing a location

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- 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 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.

## 230 V power supply

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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 30 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.

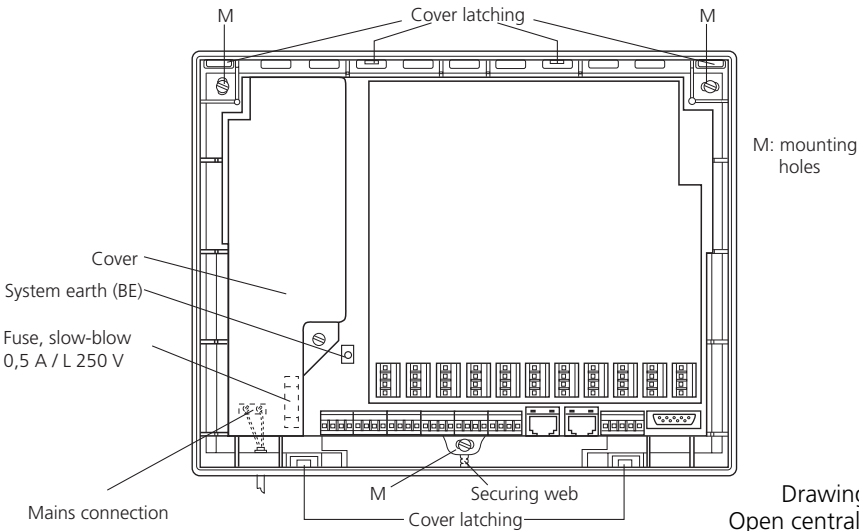
Pay attention to the fact that the electrical connection (shock-proof socket) for the telephone system (and if applicable, for additional devices) must have been installed by an authorised electrician. This will avoid any hazards for persons and property.

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

## Safety notes

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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. Briefly touch the metal shield of the PC/printer socket of the telephone system with your finger. This will discharge any possible electrostatic charges, thus protecting the telephone system's electrostatically sensitive components.

## Connecting analog users

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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
- Modem V.90 standard (up to 56600 bps, reduction possible by transmission path and cables to 33600 bps V.34+).

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 ST 20

Connect system telephones ST 20 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 and 3).
- If you route a connecting lead of the telephone system outside of the building, you are advised to use external lightning protection.

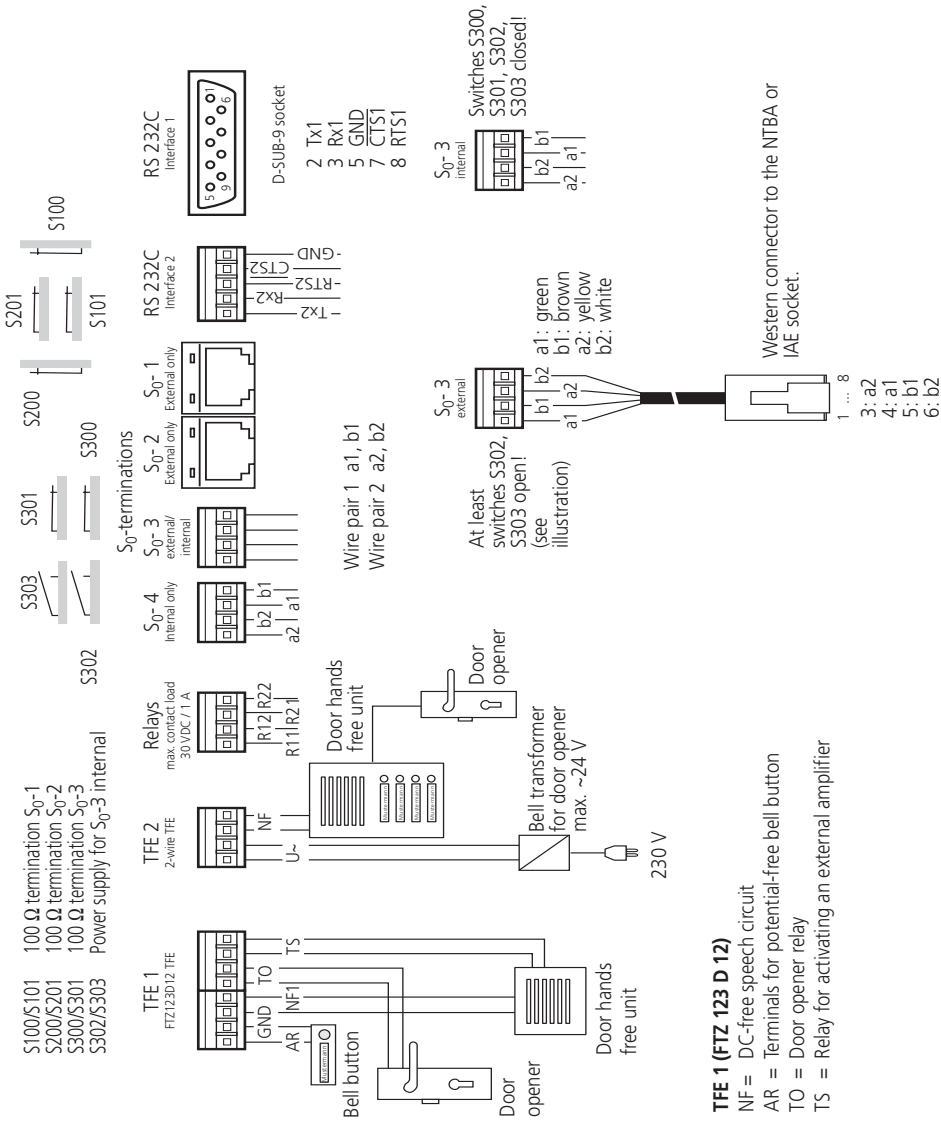
## Connecting earth

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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!

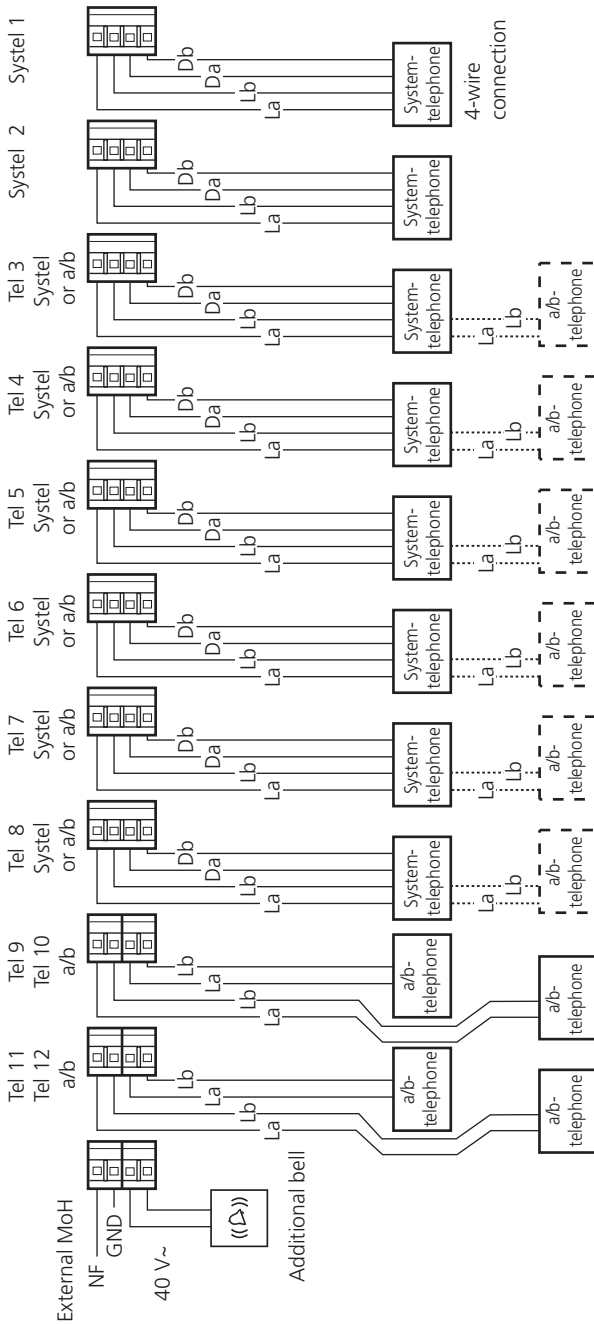
Earth: 1.5 mm+ stranded wire



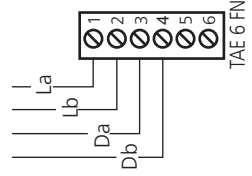
**TFE 1 (FTZ 123 D 12)**

- NF = DC-free speech circuit
- AR = Terminals for potential-free bell button
- TO = Door opener relay
- TS = Relay for activating an external amplifier

Drawing 2a:  
Pin assignments of the bottom PC board AS 34

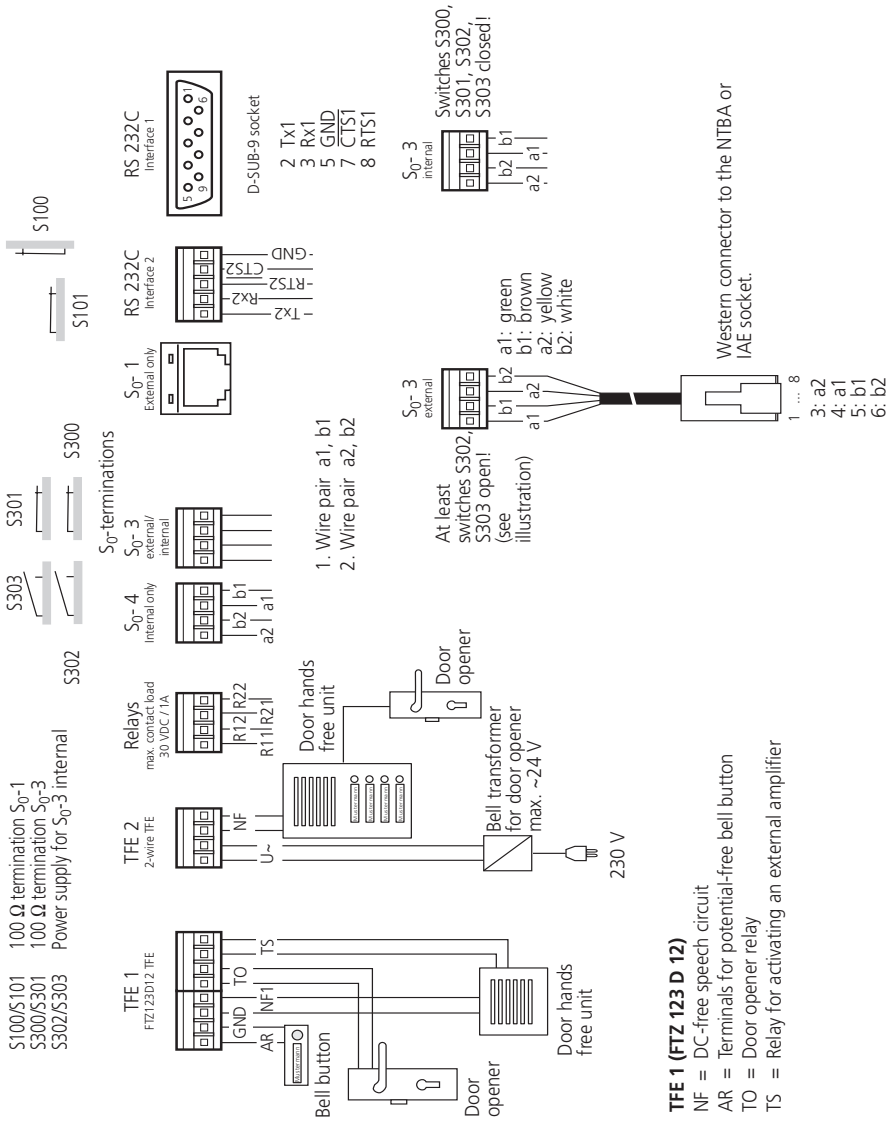


1. Wire pair: La Lb
2. Wire pair: Da Db



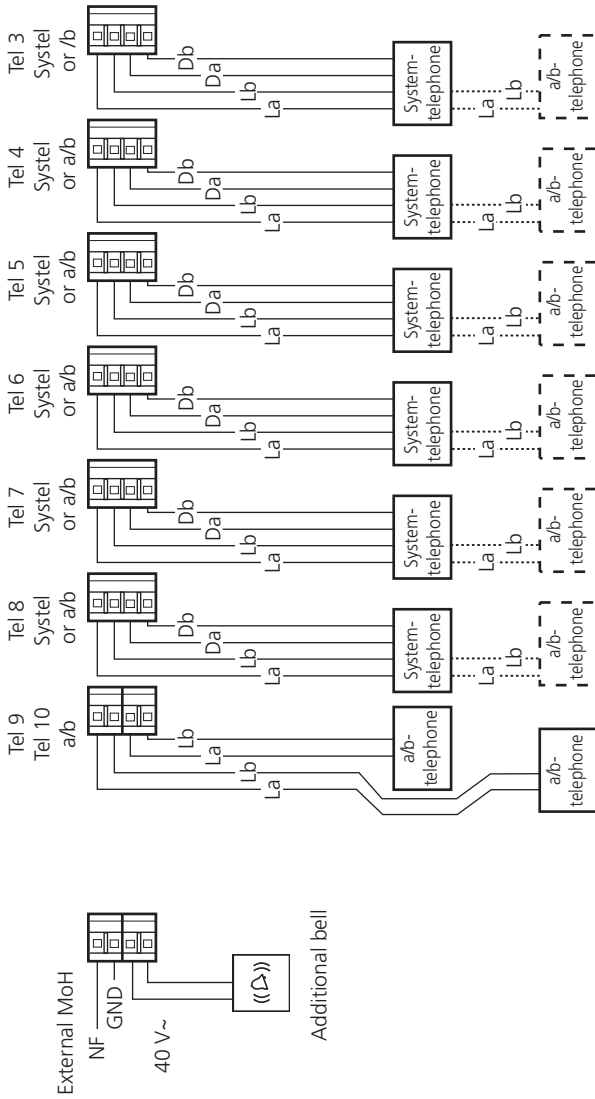
**Pin assignments of a TAE socket**  
 Da/Db only in the case of system telephones!

Drawing 2b:  
 Pin assignments of the top PC board AS 34

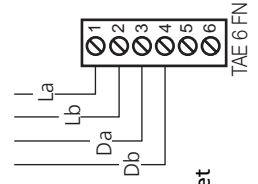


Drawing 3a:  
Pin assignments of the bottom PC board AS 33





1. Wire pair: La Lb
2. Wire pair: Da Db



**Pin assignments of a TAE socket**  
 Da/Db only in the case of system telephones!

Drawing 3b:  
 Pin assignments of the top PC board AS 33

## External fixed S0 port (Western socket)

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### 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

S0 port 1 - switches S100 and S101,  
drawing 2a (3a)

S0 port 2 - switches S200 and S201,  
drawing 2a

The two switches 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

S0 port 1 - switches S100 and S101,  
drawing 2a (3a)

S0 port 2 - switches S200 and S201,  
drawing 2a

For the point-to-multipoint connection, the two switches 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.

## Switchable S0 port S0-3 / Internal S0 port S0-4

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### External S0 port

You can connect the external S0 port to a point-to-point or a point-to-multipoint connection. You will find notes under the heading of "External S0 port (Western socket)".

Connect the four single wires of the included ISDN cable (Western plug - single wires) to the screw terminal:

Terminal	a1 - green wire
	b1 - brown
	a2 - yellow
	b2 - white

### Terminations for the external S0 port

**Point-to-point connection** - The two switches S130 / S02 (drawing 2a or 2b) for the 100 Ohm terminators must be closed ("as-delivered" setting).

**Point-to-multipoint connection** - For the point-to-multipoint connection, the two switches S130 / S02 for the 100 Ohm terminators must be:

- **closed** if the external S0 port is connected directly to the NTBA 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.

For the external S0 port, the power supply has to be switched off. To do this, switch S302 and S303 must be opened.

Do not insert the Western plug of the connecting cable into your ISDN connection socket until all installation work has been completed.

### Internal S0 port

As in the case of a point-to-multipoint connection, you can connect up to eight ISDN terminals to one internal S0 port 3 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.

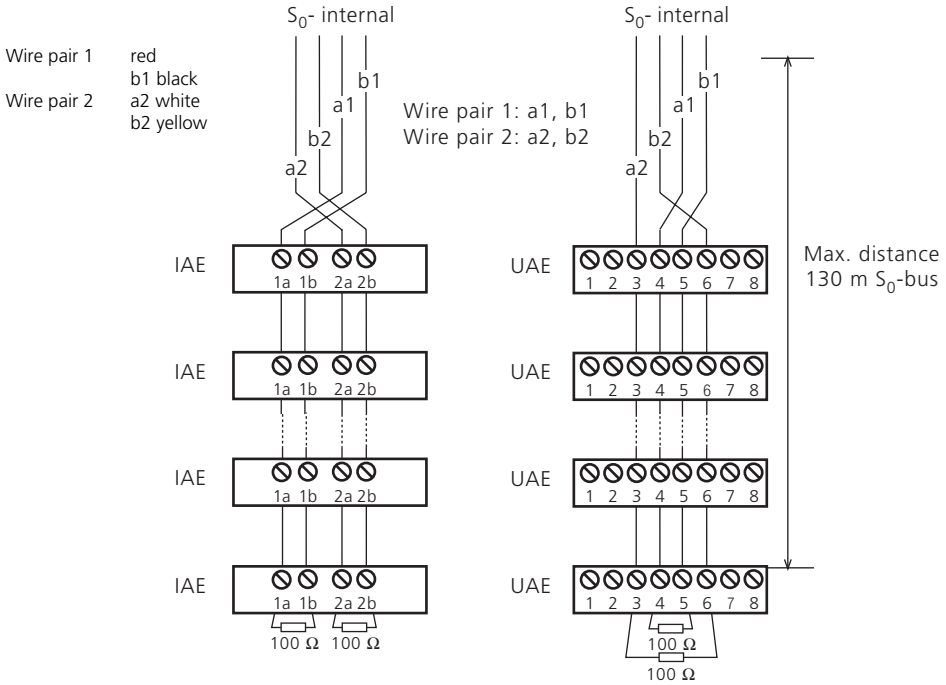
The ISDN terminals must operate in accordance with the DSS1 protocol.

If S0 port 3 is used as second internal S0 bus, the switches S300, S301 (termination) and S302, S303 (power supply) have to be closed. Additionally, the port must not be defined as external S0 port in the configuration of the PBX.

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 long
- IAE or UAE connection sockets; up to 12 sockets
- Terminators, 100 Ohm, load carrying capacity 0.25 watt, 2 terminators

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



**Drawing 4:**  
Wiring an internal  $S_0$  port

## Notes

Pay attention during installation to the enumeration of the UAE sockets.

Do not confuse a2 with b2 or a1 with b1 !

## Connecting a door hands free unit (TFE)

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The telephone system features two interfaces for connecting door hands free units:  
**TFE 1** - interface conforming to the 4-wire TFE specification FTZ 123 D12 for the connection of door stations with amplifiers.

**TFE 2** - interface conforming to the 2-wire door hands free unit (CE interface) specification.

**TFE 1** - interface conforming to the 4-wire TFE specification FTZ 123 D12

Connections: (drawings 2a, 3a)

- Connection of a potential-free bell pushbutton to the contacts AR and GND. 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 NF1 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  
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  
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.

**TFE 2** - interface conforming to the 2-wire door hands free unit (CE interface) specification.

The telephone system supports up to four bell pushbuttons.

The dialling method is DTMF (dual tone multifrequency).

Connections: (drawings 2a, 3a)

- Connection of the DoorLine T01 to T04 door hands free units to the contacts NF and NF.
- Control of the door opener  
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 to the U~ terminals.

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 2a and 3a).
- 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.

## Switching relays

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You can put the relays to diverse use as individual switching relays R1 and R2 with potential-free contacts R11, R12 and R21, R22 for other functions. For example, you can use them to connect an additional bell, a door opener or lighting.

If not door hand free unit (FTZ 123 D12 standard) connected, also the relay contacts T0 (relay R3) and TS (relay R4) may be used for different functions.

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 internal 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.

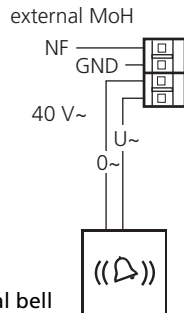
The relay contacts are bridged with a 1 kOhm, 100 nF spark quenching combination.

## Additional bell

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You can connect an additional bell to the 40 V ~ terminal of the top pc board (see drawing 5).

For the additional bell, you can program an internal phone number, which can be entered in the corresponding ringing distribution settings.



Drawing 5: Connecting an additional bell

## Connecting external music on hold (MoH)

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To feed in external music on hold, connect the headphone output of an audio device (CD player, cassette recorder or stereo system) to the "external MoH" (NF and GND) terminal on the top pc board of the telephone system (drawings 2b, 3b or 5).

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

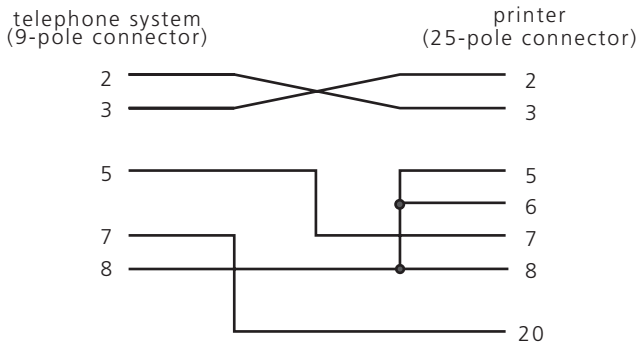
You can connect any printer to the telephone system's RS 232C interface to print out connection records. For connection, you need a cable that corresponds to the pin assignments given below (maximum length 3 m).

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 2000 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 6: 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

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- 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 switches S100 /S101, S201/S202 (termination for the external S0 access) are closed and the 100 Ohm terminators are on.
- Switchable S0 access: the switches S302/S303 are open (set to external), the switches S300/S301 (termination for the external S0 access) are closed and the 100 Ohm terminators are on.
- Internal phone numbers / terminal type: telephone  
AS 34: 11 (SysTel 1), 12 (SysTel 2), 13 (Tel 3) are called from externally  
AS 33: 11 (SysTel 1), 12 (Tel 4), 13 (Tel 5) are called from externally
- Outside line access: unlimited for all users
- Outside line seizure: "0"
- Call variant 1 (day time): no entry
- Call variant 2 (night time): no entry
- Internal call forwarding: off
- Do not disturb: off for all terminals
- Call waiting announcement prevention: off for all terminals
- Phone number communication to the called party and the caller: on
- Music on hold (MoH): internal on
- Automatic dialling: off
- Connection record printing: off for all users
- Dialed phone number printing: none
- Cost limit: no entry
- Own tariff units factor: 0012
- Basic factor: 0.12
- Cleardown at cost limit: off
- Setup code: off
- Switching box code: no entry
- Busy tone on busy: off
- Communication of "0" for dialling from the call list on the internal S0 access: off

### System telephones ST 20 and ST 25

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

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.

# Technical data

Housing dimensions	32 x 25 x 8.5 cm (width x height x depth)
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 accesses	Point-to-point or point-to-multipoint connection, even mixed, ISDN (DSS1) AS 34: 2 S0 accesses AS 33: 1 S0 access Connection by means of Western sockets and included IAE connecting cables IAE8/IAE8
Internal S0 accesses:	Point-to-multipoint connection, ISDN (DSS1) 1 fixed S0 access, 1 switchable internal/external S0 access (external: point-to-point or point-to-multipoint connection) 4-pole plug-in connection by means of screw terminals Max. connection length 130 m
- ISDN terminals	Max. 8 per internal S0 access, max. 4 passive ISDN terminals (telephones) connected to the system
Analog terminals	AS 34: 12 AS 33: 8
- Connection	System telephones: 4-wire, plug-in screw terminal a/b terminals: 2-wire, plug-in screw terminal 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)
- Range	Pulse dialling or DTMF Flash (80 ± 30 ms)
- Dialling method	
- Signal key	
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 mV <sub>pp</sub>
- Connection	2-pole, plug-in screw terminal
Door hands free unit TFE 1	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
Door hands free unit TFE 2	in accordance with CE
- Connection	2-wire, plug-in screw terminal
Switching relays R1, R2 - 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

## Copyright

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## Technical modifications

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AGFEO GmbH & Co. KG reserves the right to implement, without prior announcement, modifications to depictions and information in this documentation that serve the purpose of technical progress.

This documentation was elaborated with great care and attention and is revised on a

regular basis. Despite all checks, it is not possible to rule out the fact that technical inaccuracies and typographical errors may have been overlooked. All errors known to us are rectified in new editions. We are always grateful for information about errors in this documentation.

You can only use the numerous ISDN features of your AGFEO-ISDN telephone system if your network operator has provided you with these features.

## Technical Hotline

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If you have any questions regarding operation of your telephone system which these operating instruction cannot answer, please contact your dealer.

Before calling your dealer you should have a few data on hand for quicker service:

- What telephone system do you have?
- E.g. AGFEO AS 34 or AS 33 (on the type plate of the system)
- What connection type (PTP and/or PTMP) and which phone numbers do you have? (is on the registration or confirmation of the network operator)
- What software version do the AGFEO installation diskettes have? (printed on the diskettes)
- What software version does your

telephone system have? (can be read out on the PC or system telephone).

- What terminals have you connected to your telephone system? (analog terminals with and without DTMF dialing, ISDN telephones, fax machines etc.)
- Keep the operating instructions of the connected terminals and this manual at the ready.

Start your PC and read out the configuration with TK-Set. Print out the configuration of your telephone system if possible.



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.

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