



elmeq
| Kommunikationstechnik

Description
Installation
Commissioning
Operation



elmeq C46e/ elmeq C48m/ elmeq C88m

Congratulations! And thank you for purchasing an elmeg PABX. Your new ISDN PABX is equipped with many useful and easy-to-use features to make ISDN communication with your network service provider more simple.

These operating instructions can be a helpful guide to assist you in using your new elmeg ISDN PABX.

No matter whether your elmeg PABX is for use on the job or for your personal use, ease of use and enjoyment while using the phone are guaranteed.

Please take a little time and try out the functions that are packed into this ISDN PABX so that you can learn to take advantage of the full range of features provided with your elmeg PABX.

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1 Description

1.1 Instructions

1.1.1 Instructions for using the PABX system

Unauthorized opening of the PABX and improper repairs may result in risk of injury for the user.

Caution! Unplug the 230 VAC connector plug before removing the enclosure cover and working on the cable terminal bay. Replace the enclosure cover before plugging the 230 VAC connector plug back in.

Do not expose the inside of the PABX to any liquids; this can result in electric shock and can destroy the PABX.

You should not connect or disconnect any lines to/from the PABX during thunderstorms.

Only terminals with SELV and/or which comply with ETS 300047 may be connected to the PABX system. The normal use of authorized terminals fulfills this regulation.

1.1.2 Loss of Power

On loss of power (230V~ power supply) the PABX is not operational, meaning that you can make neither inhouse nor external calls. An ISDN terminal with emergency power capabilities can be operated via the additional emergency power module (NSP module).

On return of power, functions which have been configured by the user, e.g. internal and external connections, are not active.

The features configured using setup programming are unaffected by a loss of power.

1.2 PABX Description

The PABX is an ISDN telecommunications system (PABX) for interfacing with the Euro ISDN (DSSI). The PABX is provided with external ISDN connections, which are configured for interfacing to the ISDN connections of the network service provider. Depending on the type of PABX, ISDN connections can be set as required as internal or as external ISDN connections. In addition, module slots for expansion of the ISDN and a/b ports are also provided. You can program the type of connection for the external ISDN connection either as a multipoint connection, or as a point-to-point connection. Depending on the type of PABX, up to eight (8) analog terminals can be connected. It is also possible to use door phone units and implement external music on hold. Internal numbers (the destination for the extension number with point-to-point connection) between 00 ... 99 can be freely assigned. The features provided for analog terminals can only be used with terminals which use DTMF calling and which are equipped with a flash button. Analog terminals which use pulse calling can only use features which operate without the flash button being pushed. Please note that the pushbuttons for some of the ISDN terminals available on the market may limit the use of the features provided by the PABX system.

All terminals connected to the PABX must be certified.

1.2.1 Cleaning

Please observe the following points:

You can clean your PABX system without any problems. Use a slightly moistened cloth or an anti-static cloth for this. Do not use any solvents! Never use a dry cloth; electrostatic charges could result in faults or malfunctions in the electronics. Always ensure, however, that no moisture penetrates into your PABX, as this could result in damage to the PABX.

1.3 How do I start up the PABX system?

Packaging

- Remove the PABX system and the enclosed packages from the packaging material and compare with the list in the installation instructions to ensure that no parts are missing.

Description

- First read the description for the PABX.

Installation

- Please read the installation instructions.
- Establish an appropriate installation location.
- Install the PABX.
- Install the functional grounding for the PABX.
- Install the required ISDN jacks for each internal ISDN bus.
- Install the required jacks for your analog terminals.
- Connect your ISDN and analog terminals and have the operating instructions for both close at hand.

Commissioning

- Now, begin with commissioning for multipoint connection (see Commissioning, Page 55)

or for

point-to-point connection (see Commissioning, Page 54).

Programming

- Program the PABX according to your own requirements.

Operation

- Use the operating instructions to check the programmed features (see Operating Instructions, Page 59).

You have now installed, programmed and tested your PABX system. We wish you many successful "connections" with your PABX system.

1.4 As-Delivered Condition of the PABX System

- The password has been set as **0000**.
- The first external ISDN connection has been set to "point-to-point connection DSS1".
- An external ISDN connection is assigned using **9** or ***80**.
- The internal ISDN connections are set as "short passive bus".
- No system number has been entered.
- For point-to-point connection, the two-digit extension has been set.
- External calls (extension 0) are signaled at the terminals in the switchable call mode "service-specific".
- The MSN is transmitted for external connections.
- The switchable call mode "Day" is active.
- Numbers in the call modes:

Call mode "Day":

10 = Telephony
 11 = Data
 12 = Fax Group 3
 13 = Fax Group 4

Call mode "Night":

14 = Telephony
 15 = Data
 16 = Fax Group 3
 17 = Fax Group 4

- No team is configured.
- The group call is set for "simultaneous".
- The switching authorization for switchable call modes (AVA), teams and door intercom (TFE) has been configured for no terminal.
- All extensions belong to group 00.
- Accepting a call is possible for all terminals.
- The analog connections have been configured for telephone multifrequency calling and flash button.

- The activated terminals are authorized for international calls.
- The number of the caller is displayed.
- The B number is displayed for the caller.
- Call waiting for a/b terminal has been configured.
- Automatic seizure has not been configured.
- The door intercom module has not been configured.
- No entry has been made for the TFE switchable call mode.
- No terminal has TFE authorization.
- No speed dialing destinations have been entered.
- Music on hold: You will hear internal music on hold melody 1.
- Call control has not been configured.
- The time is set as the date when the software version is delivered.
- The charge rate unit counter for calls is set to 0.
- Printout of the call charge records is not activated.
- Up to 2000 charge records can be stored for the terminals.
- The numbers in the call records are shown in their entirety.
- Call records for incoming connections are stored only when a client number is allocated.
- Analog charge forwarding is not activated.
- Analog call number transmission is deactivated.
- The keypad function for the external ISDN connection is not enabled for any terminals.
- Remote configuration can be initiated from any terminal.
- Remote switching authorization (external follow me) is deactivated.
- The switchover times are entered as follows in the calendar for all days of the week:

Switchover Night/Day: 8:00 AM
Switchover Day/Night: 4:00 PM
- A calendar is not assigned to the switchable call modes, the teams or TFE modes.
- The internal service number is 59.
- Internal numbers in the initial state

Module Slot	PABX	Connection	Internal numbers in the initial state
0	C46e, C48m, C88m	ISDN connection 1	10...19
0	C88m	ISDN connection 2	20...29
0	C88m	ISDN connection 3	30...39
0	C46e C48m, C88m	6 Analog connections 8 Analog connections	40...45 40...47
1 *)	C46e, C48m, C88m	4 Analog connections	48...51
1	C48m, C88m	ISDN connection 1	60...64
1	C48m, C88m	ISDN connection 2	65...69
1	C48m, C88m	ISDN connection 3	70...74
1*)	C46e, C48m, C88m	ISDN connection 4	75...79
2 *)	C46e, C48m, C88m	4 Analog connections	52...55
2	C48m, C88m	ISDN connection 1	80...84
2	C48m, C88m	ISDN connection 2	85...89
2	C48m, C88m	ISDN connection 3	90...94
2 *)	C46e, C48m, C88m	ISDN connection 4	95...99

*) Only one module of this type can be used in each of the elmeg C46e.

Numbers are skipped when the modules are only partially implemented.

1.5 LED Functions for the PABX Systems elmeg C48m and elmeg C88m

Two function indicator LEDs are located on the back of the cover (Installation Instructions, Figure 1) of the PABX. They are located on the right side under the cover and are visible from the outside. There are no LEDs on the elmeg C46e PABX.

Green LED	lights up:	PABX in operation.
Green LED	off:	Hardware error.
Red LED	lights up:	Error indicators.
Both LEDs	light up:	Runup phase (initialization) after switch-on.
Both LEDs	off:	Hardware reset or no power supply to the PABX.
Green LED	flashes:	An internal ISDN connection is overloaded. The Intelligent Power Management system will quickly deactivate the ISDN connection.

When the PABX is switched on, all the LEDs will light up for around 6...10 seconds. After this, the red LED will go out when the system is in operation. The green LED indicates correct operation.

1.6 Symbols, Dial tones and calling cycles

Please note: Some terminals may not produce the same dial tones, calling cycles and operating procedures.

1.6.1 Symbols used



This symbol prompts you to lift up the receiver of your phone.



This symbol indicates the current call status. Here: you have lifted up the receiver of your phone.



This symbol prompts you to hang up the receiver of your phone or the telephone is idle.



This signal indicates signaling at a certain terminal, e.g. your telephone is ringing.



This symbol prompts you to dial a number.



One of these symbols prompts you to select a certain digit or character.



One of these symbols prompts you to select a certain digit or character (e.g. a telephone number).



This symbol prompts you to press the flash button (signal button).



This symbol indicates that an acknowledgement signal can be heard in the receiver.



This symbol indicates a conference call.



This symbol indicates: The available features can be used with ISDN terminals.



This symbol indicates: The available features can be used with analog two-wire terminals (a/b terminals).



This symbol indicates: this feature can be used with the special functions of the system telephone CS 100, C90 and C100.



This symbol indicates: this feature can be used with the special functions of the system telephone CS 100.

1.6.2 Dial tones

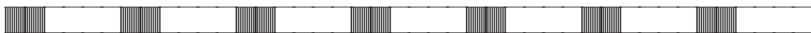
a/b

The following dial tones describe signaling for the PABX system when telephones are used.



Internal dial tone (440 Hz)

Internal dial tone. After lifting the receiver of your phone, you will hear this dial tone signaling that you are free to make a call. After 30 seconds this tone changes to the busy signal. Replace the receiver and lift it up again. You will again hear the internal dial tone.



Busy signal and negative acknowledgement signal (440 Hz)

Busy signal. When you hear this signal the external or internal subscriber you are calling can not be reached.

Negative acknowledgement signal. When you hear this signal the function you have selected can not be used, or the feature has not been configured or has been deleted.



Acknowledgement signal (440 Hz)

This signal indicates that your entry has been accepted.

Time intervals of the signals



0,5s 1s 1,5s 2s 2,5s 3s 3,5s 4s



Internal ringing signal (440 Hz)

This signal indicates that the telephone is ringing at the party being called (external or internal).



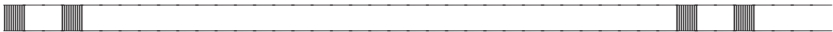
Special dial tone (both 440 Hz and 500 Hz)

This signal indicates, for example, that call rerouting is activated for your telephone.



External dial tone (425 Hz)

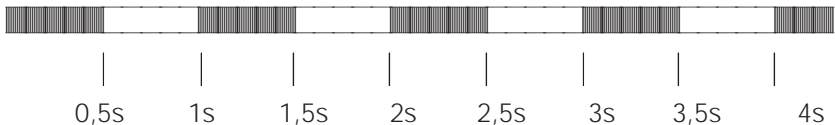
A continuous tone you hear when you have seized the external ISDN connection.



Call waiting signal (440 Hz)

Call waiting signal (only for a/b terminals). When you hear this signal during a call with another party it indicates that an external caller is calling you. The call waiting signal lasts a maximum of 30 seconds.

Time intervals of the signals



1.6.3 Calling cycles

a/b

The following illustrations are intended to show the duration of the calling cycles.

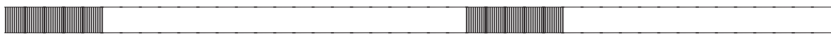


Internal call, Call-back, internal Return call

Internal call: You are called directly by an internal caller or by enquiry call.

Call-back: You are called automatically when the party you wish to talk to hangs up the receiver of his/her phone.

Return call: You activate an enquiry call, but hang up the receiver before dialing. The held first call is indicated by the return call signal 3 minutes at your phone.



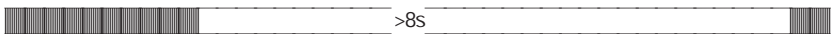
External call, external return call, call-back of the reserved ISDN connection

External call: You receive a call from an external party.

Return call: You activate an enquiry call, but hang up the receiver before dialing.

The held first call is indicated by the return call signal 3 minutes at your phone.

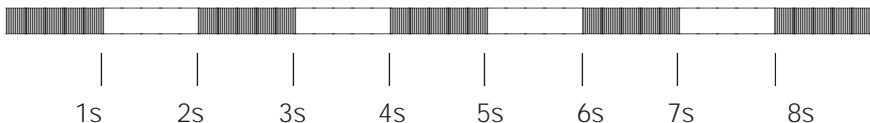
Call-back of the reserved ISDN connection: The noted busy external ISDN connection becomes available again; this is signaled by the call-back at your phone.



Door phone call

Door phone call: The doorbell button of your door phone is pressed, resulting in ringing of the phones entered in the activated TFE call modes at the indicated rate for about one (1) minute.

Time intervals of the cycles



2 Installation

2.1 Installation of the PABX

Please check to ensure that all items are in the package before beginning installation.

Contents:

- 1 PABX
- 1 ISDN connection cord
- 1 PC connection cable 9/9-pin (RS232)
- 1 Set of operating instructions
- 1 CD-ROM for setup programming under Windows 3.1, Windows 95 and Windows NT
- Bag with connector terminals
- 1 Drilling template
- 3 Dowels
- 3 screws

2.1.1 Installation location

Your PABX has been designed for operation at ambient temperatures above 0 and below +40 °C.

Therefore, we recommend that you avoid installing your PABX in the following locations:

- above or in front of sources of excessive heat, e.g. radiators
- in places exposed to direct solar radiation
- behind curtains
- in small, non-ventilated rooms
- in rooms with excessive humidity
- on or near flammable materials
- in the vicinity of high-frequency devices, such as radio transmitters, radiotherapy systems, etc.

The PABX is powered via a 230 V AC utility outlet. Please ensure that the electrical outlet (grounding outlet) for the PABX (and for additional devices

where required) is installed such that it is **freely accessible at all times** and that it is installed by a qualified electrician to prevent personal and material risks. We recommend installing separate supply circuit for 230 V AC power to your PABX. This protects your PABX from short-circuits that may occur in other inhouse equipment.

Also install functional grounding. For this, connect the grounding terminal FE to "Ground". Metallically bright parts of water or heating lines can be used here as "ground". Ensure that these lines are continuously conductive and that they are connected to the grounding circuit connector of your house service connection.

We recommend installing our fine overload protection module (FSM) for over-voltage protection of your PABX which can sometimes occur during thunderstorms.

The distance from the PABX system and the 230 VAC outlet and the ISDN connection should not be more than 1.3 meters due to the length of the connecting lines.

2.1.2 Wall-mounting the PABX

- Do not install your PABX during a thunderstorm.
- Place the drilling template on the selected mounting location and ensure that it is perfectly perpendicular.
- Mark the drilling points on the wall using the drilling template.
- Ensure that all the contact surfaces have firm contact with the wall and that there are no concealed supply cables or other wiring at the drilling points you have selected.
- Drill the mounting holes at the marked positions (when using dowels, use a 6 mm masonry drill).
- Screw the screws supplied with the system into the wall such that there is a gap of about 5 mm between the head of the screw and the wall.
- Hang the PABX on the screws by inserting the screw heads into the rear panel mounting holes.
- Then secure the PABX by screwing in the third screw at the marked position.
- Install the function ground.

2.1.3 Intelligent Power Management for the elmeg C48m and elmeg C88m

Your PABX is equipped with the Intelligent Power Management system. This system protects the ISDN connections of the PABX against overload. The current load is continuously monitored at each internal ISDN connection.

If too many terminals are connected to the PABX, this is indicated by a flashing green LED (elmeg C48m and elmeg C88m). Power supply to the mounted modules is also switched off. The PABX then attempts to reactivate the power supply automatically after a set time. If, for some reason, the cause for the overload is not eliminated (e.g. removal of a terminal), the ISDN connection concerned is deactivated. The deactivated ISDN connection is re-activated only on a reset of the PABX and after elimination of the overload. Please contact your dealer if the same ISDN connection continues to be deactivated.

2.1.4 Opening and closing of the PABX

Unplug the connector plug before opening the PABX.

To open the PABX, press in on the two catches and lift the cover at the front until it comes free. It can then be easily lifted off to access the cable terminal bay below.

To close the PABX, place the locking pins (back of the cover) into the openings in the enclosure of the PABX. Press down on the cover at the front until it catches.

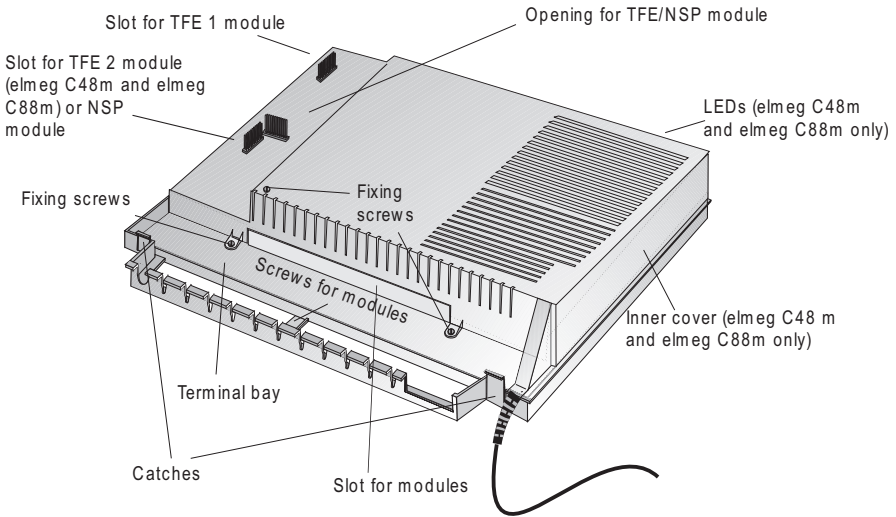


Fig. 1: PABX opened (in the example here: elmeg C48m/ elmeg C88m)

2.2 Connections

Before installing your PABX at an ISDN connection, you must first decide what type of connection (multipoint or point-to-point) you wish to configure as your ISDN connection. This connection must be applied for at your network service provider and then configured in the PABX as described in the section Programming.

2.2.1 Terminals

The terminals can be removed from the soldered pins on the printed circuit board (pcb). This allows you, for example, to switch user connections without disconnecting the cables. In the as-delivered state of the PABX, the terminals are not connected; they are included in a separate bag. To disconnect terminals which are set, lift the terminal block up carefully using a small screw driver and then remove the terminal. Ensure that you do not bend the pins.

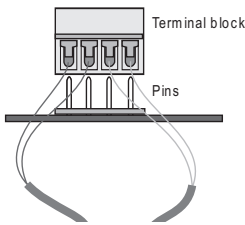


Fig. 2: Plugging in the terminal block

2.2.2 ISDN connectors

The ISDN connectors (Western connectors, RJ45 connectors) are locked after being plugged into the ISDN jack to prevent them from being pulled out. The lever points in the direction of the pcb after being plugged into the PABX. To unlock these connections (Figure 3) press on the small lever on the ISDN connector while pulling the ISDN connector out.

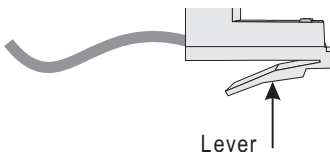


Fig. 3: ISDN connector

2.2.3 Connection elements of the cable terminal bay

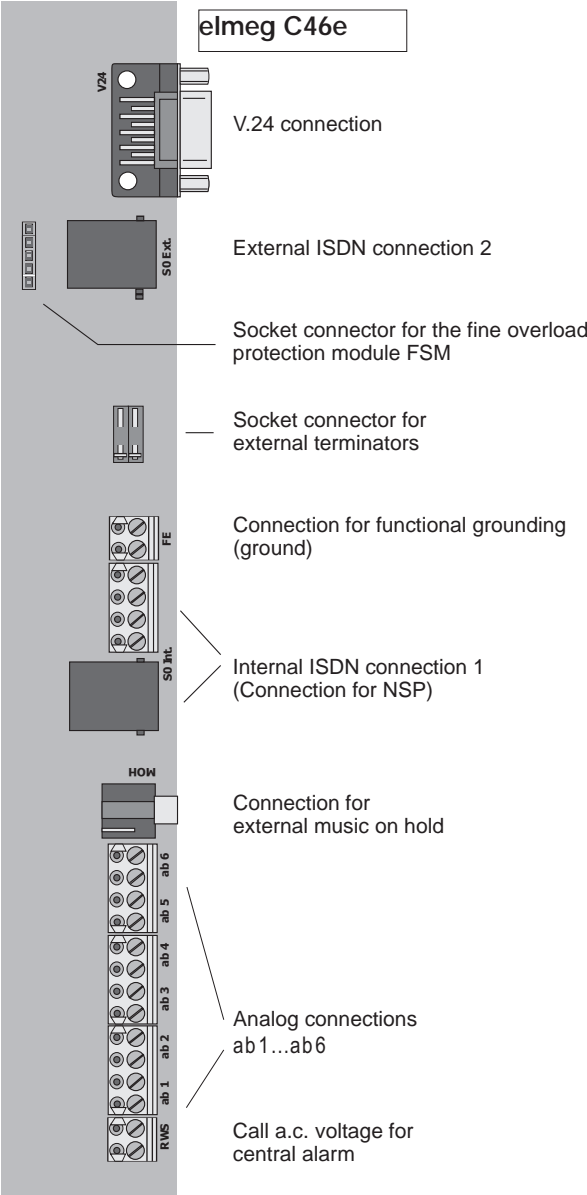


Fig. 4: Cable terminal bay of the elmeg C46e

elmeg C48m

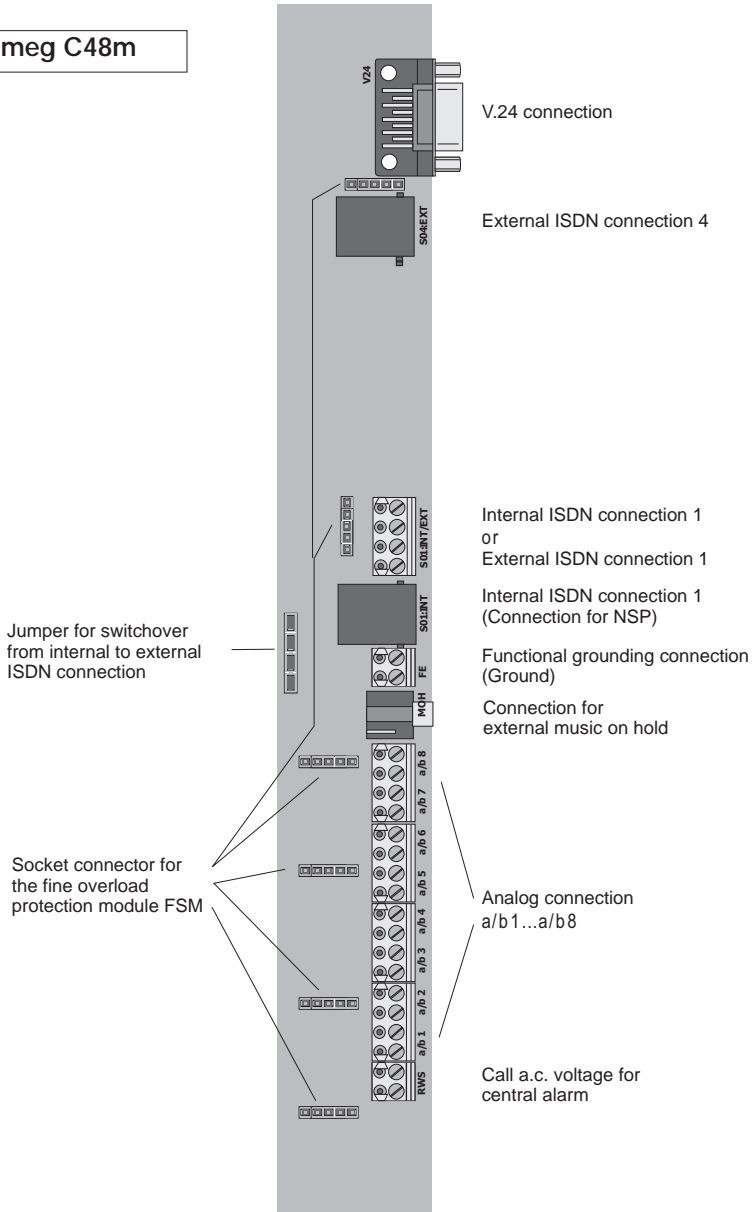


Fig. 5: Cable terminal bay of the elmeg C48m

elmeg C88m

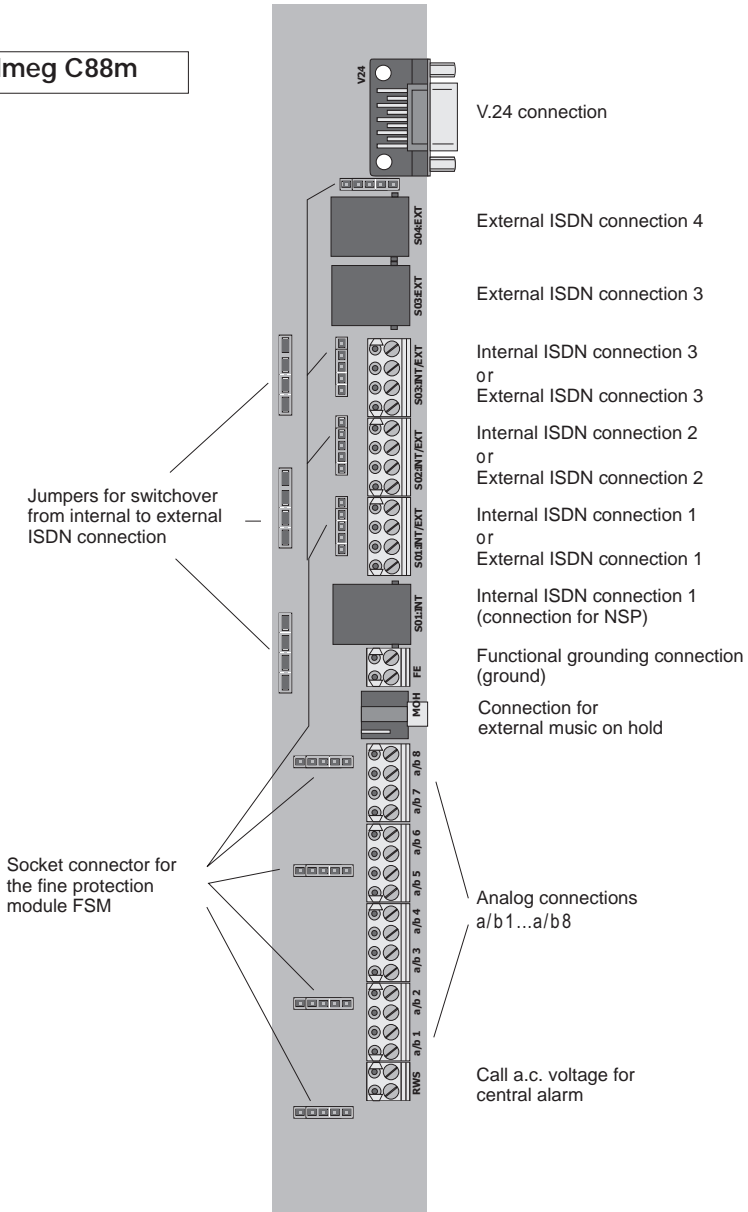


Fig. 6: Cable terminal bay of the elmeg C88m

2.2.4 External ISDN connection

The external ISDN connection is routed to an 8-pin RJ45 jack (Western jack)/ The four (4) middle terminal connections of the RJ45 jack are connected. Hard wiring is not possible. You can also install the PABX elmeg C46e in the bus system. For this, you can deactivate the terminators.

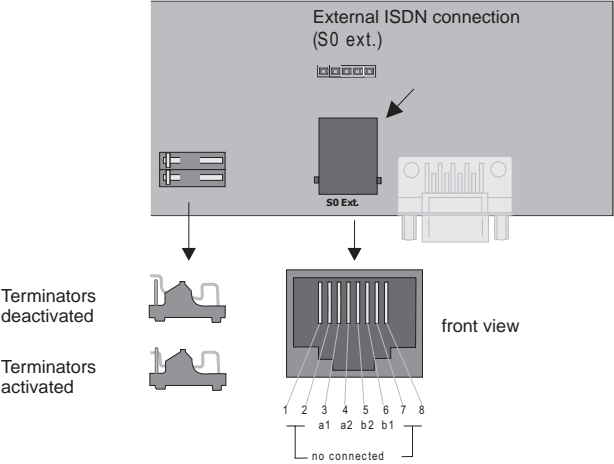


Fig. 7: elmeg C46e: External ISDN connection 2

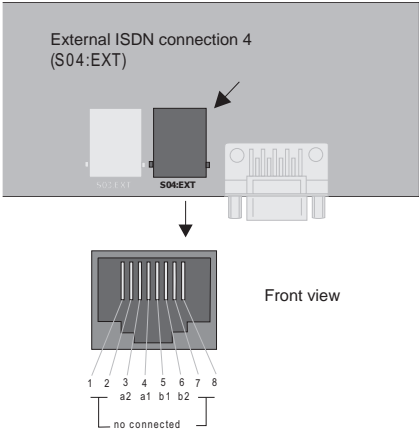


Fig. 8: elmeg C48m /elmeg C88m: External ISDN connection 4

2.2.5 elmeg C88m: Internal/external ISDN connection 3

The internal ISDN connection 3 can be switched to an external ISDN connection. In the initial state this connection is set to an internal ISDN connection. When the jumpers for the ISDN connection 3 are removed and programming is performed appropriately, the connection can be switched to an external ISDN connection. The internal ISDN connection is effected at terminal block S03: INT/EXT; the external ISDN connection at ISDN jack S03: EXT.

First remove the jumper for switchover for external connection (see Fig. 9)!

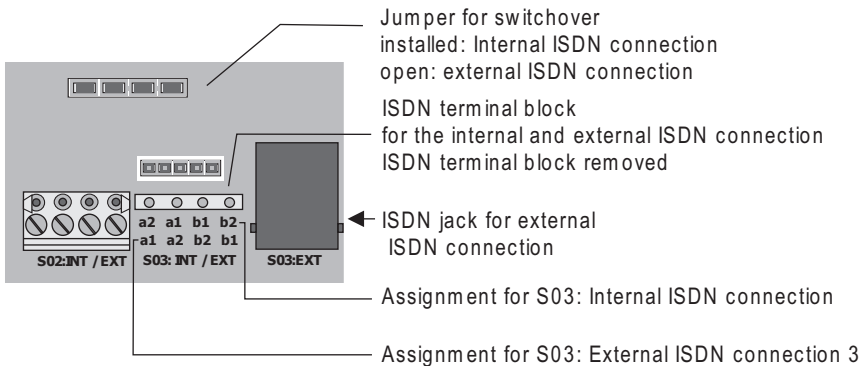


Fig. 9: elmeg C88m: Internal/ external ISDN connection 3

2.2.6 elmeg C88m: Internal/external ISDN connection 2

Figure 10 illustrates the connection circuit for the internal ISDN connection 2. This connection is provided with fixed interfacing to the terminals.

First remove the jumper for switchover for external connection (see Fig. 10)!

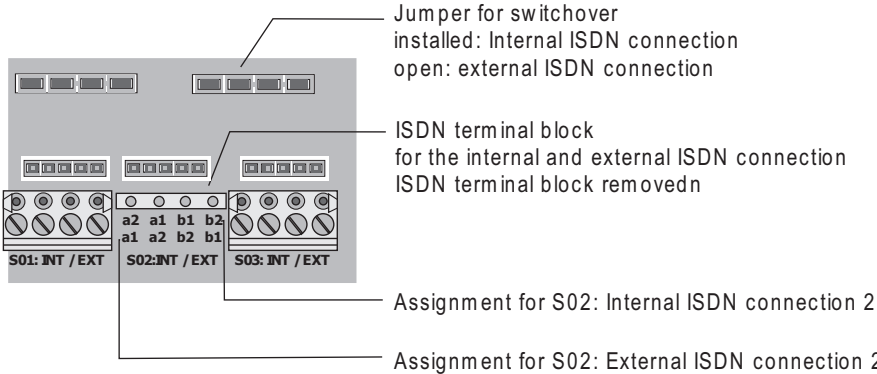


Fig. 10: elmeg C88m: Internal/ external ISDN connection 2

2.2.7 Internal/ external ISDN connection 1

elmeg C46e:
Can be used only as an internal ISDN connection.

When the NSP (emergency power supply) module is used, it is imperative on the elmeg C48 m and the elmeg C88m that this connection be used as an internal ISDN connection.

Figure 11 illustrates the connection circuit for the internal ISDN connection 1. This connection is provided with interfacing to an ISDN jack for the internal ISDN connection and fixed interfacing to the terminals for the internal or external ISDN connection.

First remove the jumper for switchover for external connection (see Fig. 11)!

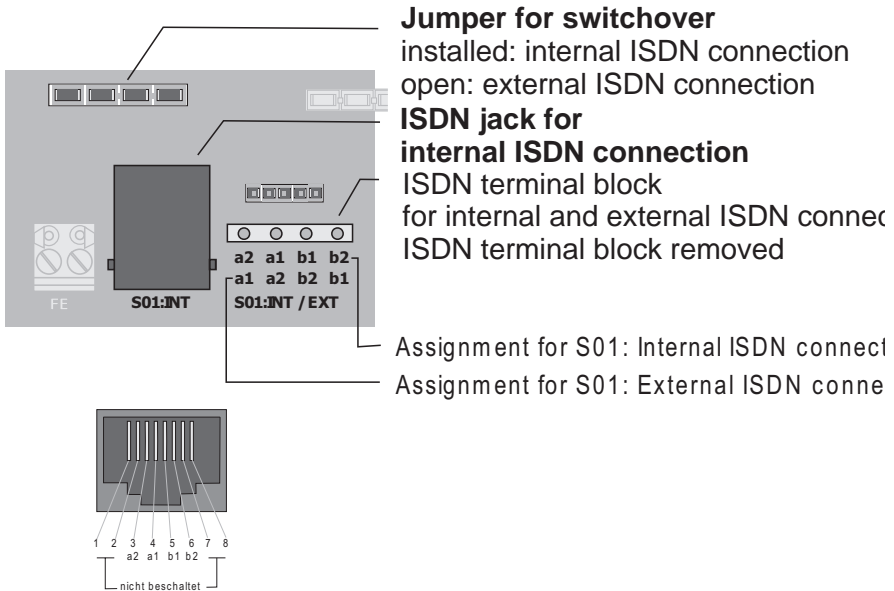


Fig. 11: ISDN connection 1 of the elmeg C48m and elmeg C88m (internal)

2.2.9 C46e: Internal ISDN connection

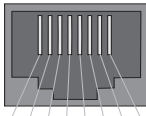
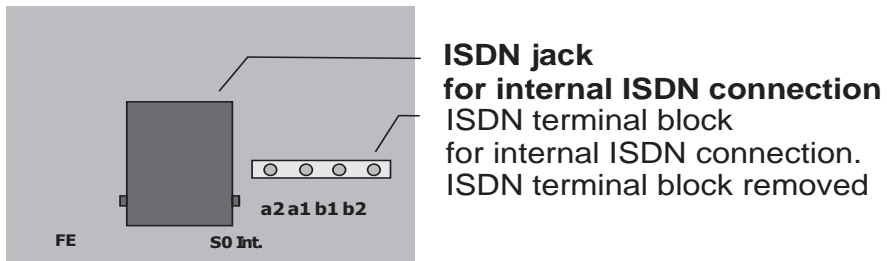


Fig. 12: Internal ISDN connection of the elmeg C46e

2.2.10 External music on hold

External music on hold can be fed into the PABX via a stereo jack. The 3.5 mm stereo jack is not supplied with the PABX and must be purchased at a special dealer.

elmeg C48m / C88m: When using external music on hold, the analog connection 6 (a/b 6) can no longer be used for connecting terminals.

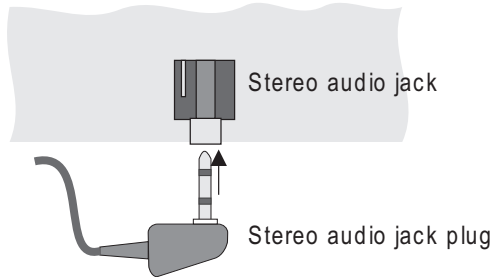


Fig. 13: Interface for external music on hold

Technical data on the music on hold interface:

Level:	max +10 dBm
Input resistance:	5000 Ohm
Electrical isolation from PABX:	via capacitors
Max. voltage at input:	1.7V _{eff} , 2,4V _{s~}

2.2.11 AC ringing voltage (RWS)

AC ringing voltage is required for the central alarm bell (not included in PABX scope of supply) for the PABX. The contact assembly through which the AC ringing voltage is switched to the central alarm bell that must be connected externally is located on the TFE module. AC ringing voltage may not be loaded more than 15 mA.

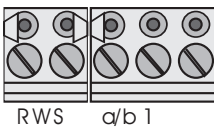


Fig. 14: Terminals for the ringing voltage

Only possible in the slot for TFE1!

2.2.12 Analog Connections

This figure 15 shows the terminals for the analog terminals of the PABX elmeg C48 m and elmeg C88m. There are no a/b 7 and a/b 8 connections on the elmeg C46e.

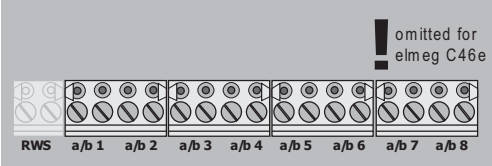


Fig. 15: Terminals a/b1...a/b8 for analog terminals

2.3 Connecting the PABX to the ISDN network of the network service provider

The following diagrams illustrate the three connecting options for the PABX to the external ISDN connection. If there are more than one external ISDN connections, different connecting options are available. If more than two external ISDN connections are to be interfaced, these must be hard-wired to the NT.

Direct ISDN connection using the ISDN connecting cord supplied with the system at the network termination (NT) is shown in Figure 16. This connection option is possible for PABX and multipoint connections. The switches for the terminators in the elmeg C46e must be closed.

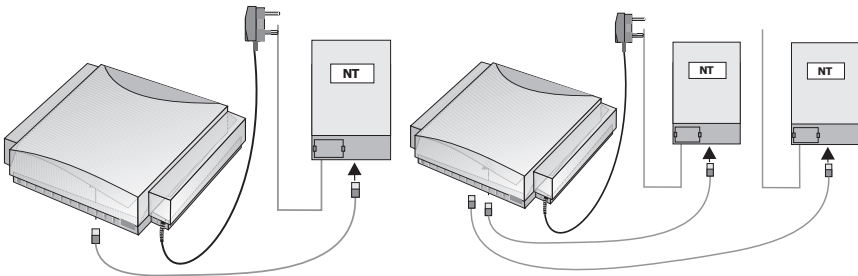


Fig. 16: One ISDN connection

Two ISDN connections

Connection to an ISDN jack supplied by the network service provider down-circuit of the NT is shown in Figure 17. This connection option is possible for PABX and multipoint connections. Observe the interfacing for the terminators (see Fig. 18)

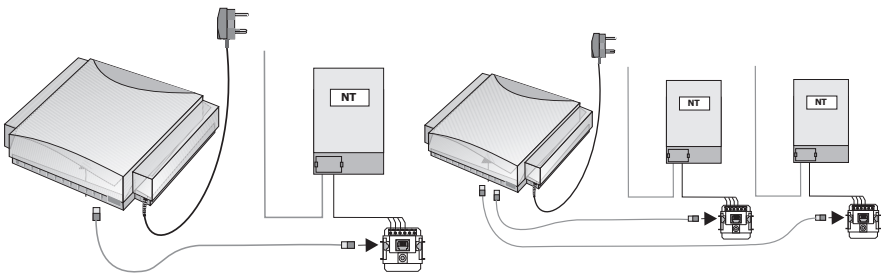


Fig. 17: One ISDN connection

Two ISDN connections

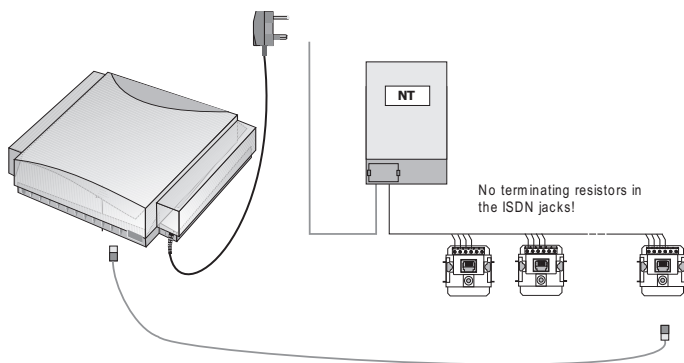


Fig. 18: Connection to the bus

Interfacing to an ISDN jack for a multipoint connection installed by the network service provider is shown here (Fig. 18). This connection option is only possible with multipoint connections. The PABX may only be connected in the last ISDN jack in the bus. The 100 Ohm terminating resistors must be removed from the last ISDN jack in the bus (see diagram), as the PABX is already equipped with terminating resistors.

2.4 Types of connection to internal ISDN connections

Three types of connections can be implemented at the three internal ISDN connections: the "short passive bus", the "expanded passive bus" and the "point-to-point". When delivered from the factory, the internal ISDN connections 1 ... 3 are set for the connection "short passive bus".

"Short passive bus"

The "short passive bus" can be up to 150 (wire diameter 0.4 mm) to 200 m (wire diameter 0.6 mm) long. This setting is made during programming. Up to 12 ISDN jacks may be connected in series. You may connect up to 8 terminals, with each internal bus supplying four terminals and the remaining four supplied from an external source (with a dedicated power supply unit). Of these eight terminals, two ISDN terminals can be in operation simultaneously (e.g. with two phones you can make inhouse or external calls simultaneously). The default inhouse extension numbers for the internal ISDN connection 1 (bus 1) are 10...19, for the internal ISDN connection 2 (bus 2) 20...29 and for the internal ISDN connection 3 (bus 3) 30...39. These numbers can be assigned to the

associated terminals by programming as required. All 100 Ohm terminating resistors must be connected in the last ISDN jack installed in the ISDN bus (Fig. 19).

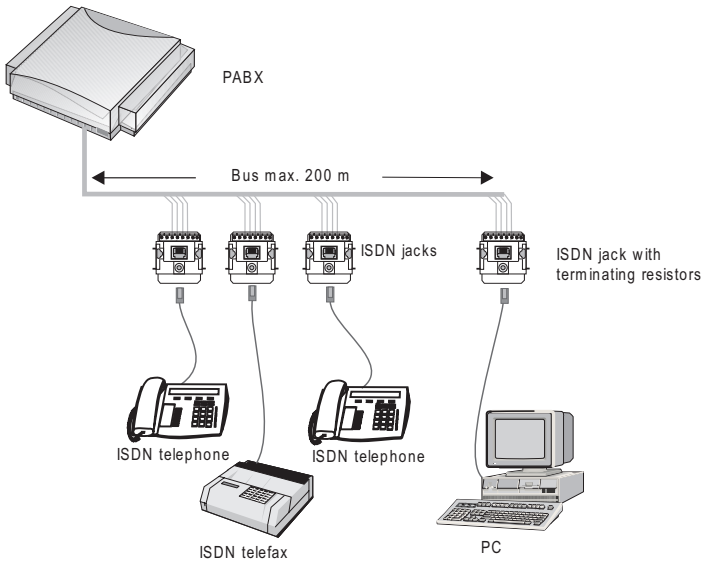


Fig. 19: Short passive bus interface

2.4.1 "Expanded passive bus"

We recommend not installing more than three (3) ISDN jacks at the node. The terminating resistors must be located at this node. A telecommunications distributor frame like those available at most special dealerships can, for example, be used as the node. There must be no further terminating resistors installed in the subsequent ISDN jacks. The wire diameter for the example used here is 0.6 mm.

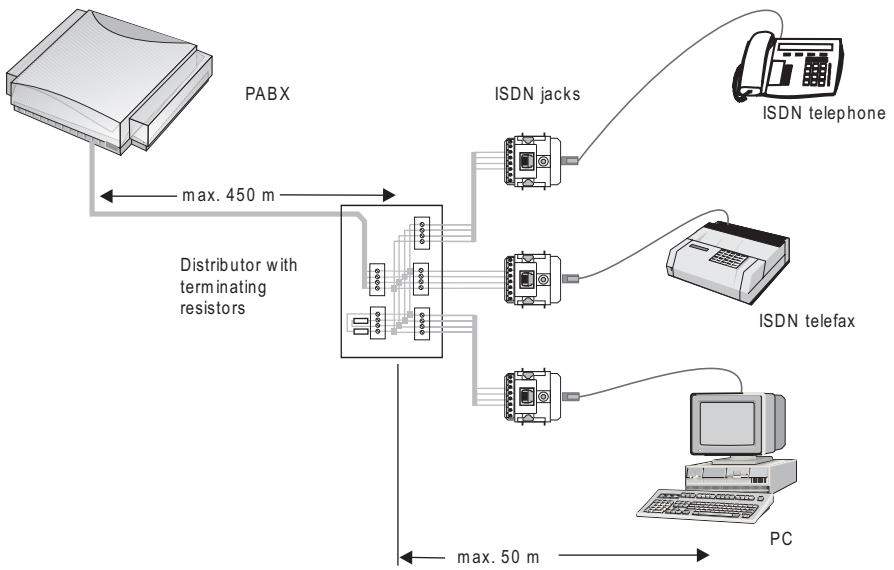


Fig. 20: Expanded passive bus interface

2.4.2 "Point-to-point"

This type of connection allows a distance of up to 1000 m between one ISDN terminal and the PABX. This setting is made during programming. The terminating resistors must be installed in the ISDN jack. The wire diameter for the example used here is 0.6 mm.

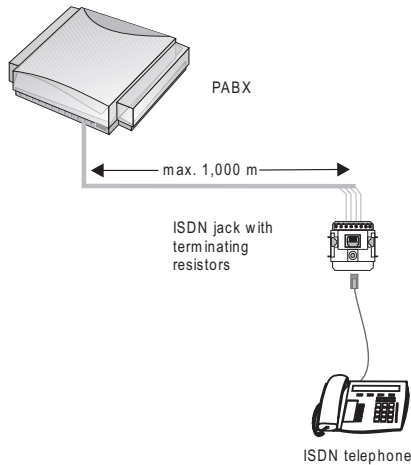


Fig. 21: "Point-to-point" connection

2.4.3 Connecting the ISDN terminals to the internal ISDN connection

Figure 22 shows the interfacing to RJ 45 jacks. The interfacing RJ 45-8 jacks and the designations used for these. The terminating resistors to RJ 45 jacks shown in Figure 23. The "point-to-point" connection corresponds to the bus interface (RJ 45) but with only one ISDN jack having terminating resistors. Figure 24 illustrates the connection assignment for RJ 45 4...8 jacks.

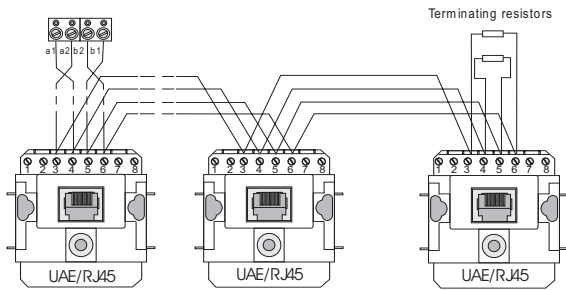


Fig. 22 Connection using UAE/ RJ45 jacks for an internal ISDN connection

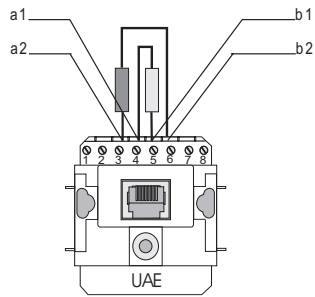


Fig. 23 Terminating resistors

[-]

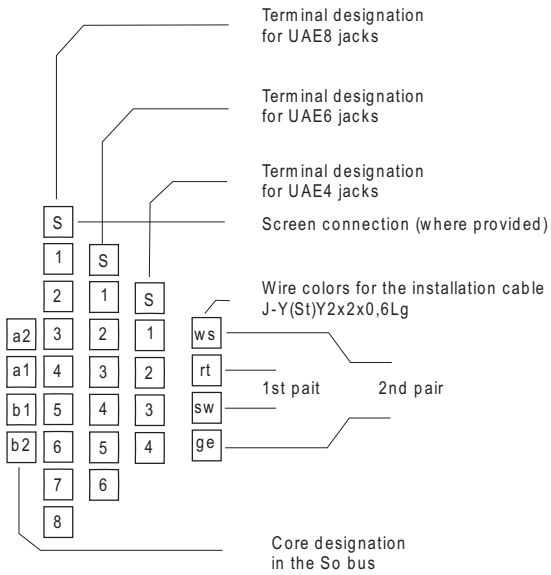


Fig. 24: Pin assignments for UAE-/RJ45 jacks

2.4.4 Connecting analog terminals

Analog terminals are, for example, telephones, multifunctional devices, fax machines of Group 2/3 and answering machines which can be connected to the conventional telephone network or to analog PABX systems. The calling method used for these terminals can be either pulse (PD) or multifrequency (DTMF). Only DTMF devices equipped with a flash button should be connected to the PABX. PD terminals can not utilize all of the features of the PABX. If you wish to wire the analog terminal connections, this can be performed after removing the enclosure cover. The terminals that are then visible a/b1.....a/b8 are, in the initial state, assigned to the inhouse extension numbers 40.....47. Terminals "a" and "b" are then connected to the corresponding terminals.(Fig. 26).

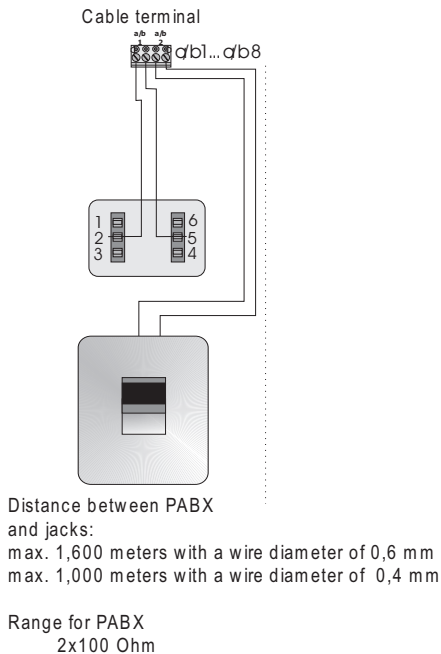


Fig. 25: Connection of analog jacks with the elmeg C48m / C88m

Leave yourself adequate lengths of cable in the PABX as a reserve in case changes are made.

Figure 15 on page 26 shows the lugs for analog terminals.

2.4.5 RS 232 port (V.24)

The RS 232 port can be used for connecting a laptop, PC or a printer to a serial port. Programming of the PABX via PC or laptop is performed via this port (see Programming). This port is not electrically isolated from the PABX ground.

All work on the RS 232 port may only be performed when the functional ground is properly activated. Devices which are to be connected via the RS 232 port (e.g. PABX and printers) must first be switched off and disconnected from the 230 V AC power supply before connection is made.

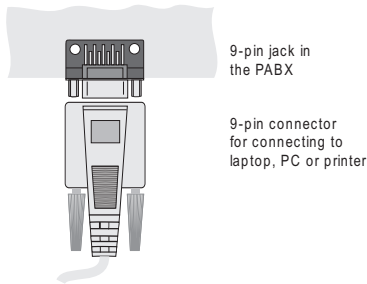


Fig. 26: RS 232 connection variants

Figure 28 shows the connections between the PABX and the PC, laptop or printer and adaptation between 9-pin and 25-pin connectors.

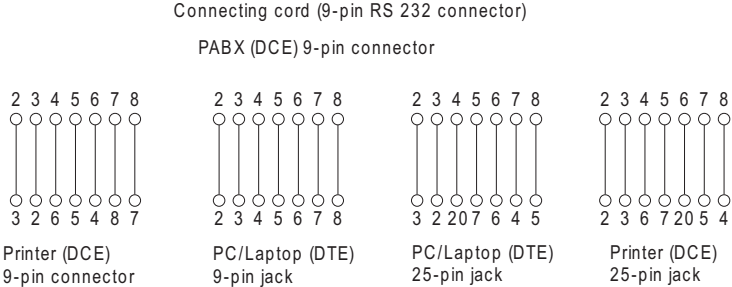


Fig. 27 RS 232 Connection variants

Line designations for a 9-pin connector

- | | |
|------------|---------|
| 2 = RxD | 6 = DSR |
| 3 = TxD | 7 = RTS |
| 4 = DTR | 8 = CTS |
| 5 = Ground | |

Line designations for a 25-pin connector

- | | |
|---------|------------|
| 2 = TxD | 6 = DSR |
| 3 = RxD | 7 = Ground |
| 4 = RTS | 20 = DTR |
| 5 = CTS | |

Serial port settings:

9600 Baud 8 Data bits Parity: none 1 Stop bit

2.5 Additional modules

2.5.1 Door Intercom Module (TFE)

The TFE modules (Figure 29) are plugged into the PABX contact pins shown on page 16 in Figure 1 and secured with two screws. Please ensure that all contact pins are plugged into the socket connector and that they are not bent.

Attention!

elmeg C48m / elmeg C88m: You can either install two TFEs, one NSP (emergency power module) or one TFE and one NSP in the PABX.

elmeg C46e: You can install one TFE (TFE1) and one NSP in the PABX.

The TFE module provides you with the following additional functions:

- Interfacing of a simple door phone with speaker and microphone, without preamps.
- Interfacing of call signaling (TFE call distribution) which is operated in parallel to the doorbell at the existing ringing system (für jeden der drei Klingeltaster ist eine eigene Anrufverteilung möglich).
- Interfacing of a central alarm bell (central bell) for direct or alternating voltage.
- Interfacing of call signaling (TFE call distribution) using buttons, without an additional external power supply.
- Indication of door opening function by a red LED on the TFE module.

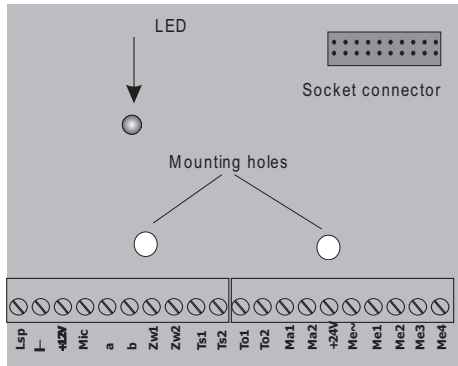


Fig. 28: TFE module

2.5.2 Interfacing of a simple door phone

Figure 29 illustrates the connection of a door phone equipped with a microphone and speaker. No door intercom amplifier is required for this connection. The bell transformer is used only for the door opener and the operating signal lamp. The interface connections at the door phone and bell transformer should only be seen as examples. When the doorbell is rung, the call is signaled at all terminals entered in the TFE call mode. If you configure an answering machine in the call mode, the party at the door will be able to hear the answering machine message.

Technical Data for the Modules:

Speaker	> 8 Ohm, approx. 2 Watts
Microphone	Dynamic microphone, or Elektret microphone with built-in pre-amp.
Doorbell	Potential-free button
Operating signal lamp	Example only. In this case, this lamp will light up when the door intercom is activated. The data for the lamp depend of the output voltage available at the bell transformer.

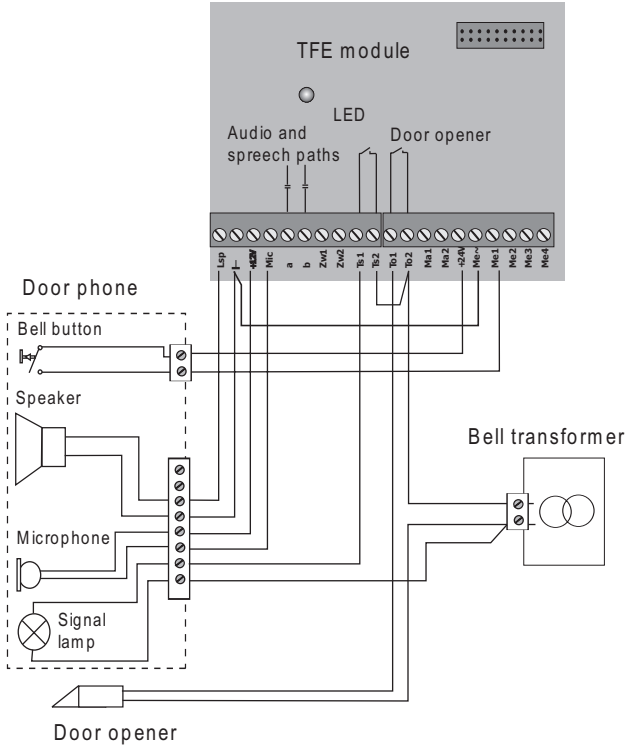


Fig. 29: Interfacing of a simple door phone

2.5.3 Interfacing of a door intercom module

Figure 31 illustrates the connection of an existing door intercom module with a door phone, door intercom amplifier and power supply to the TFE module. Ask your dealer about this. Ensure that the doorbell is connected potential-free, or connect it as shown in Figure 32. When the doorbell is pressed, the call is signaled at all of the terminals entered in the TFE call mode. If you have an answering machine entered there, for example, a party at the door will be able to hear the answering machine message.

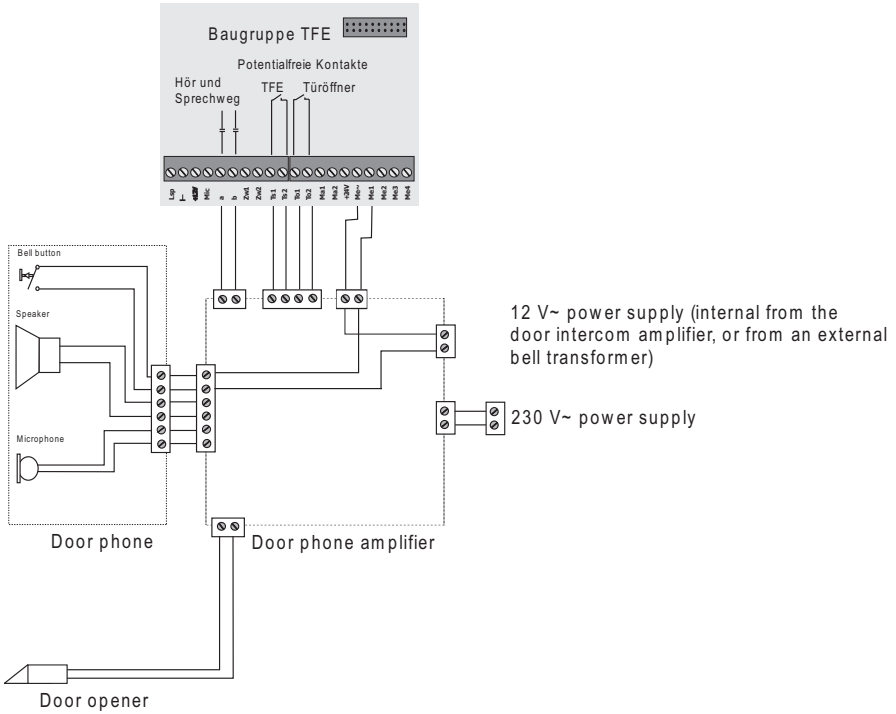


Fig. 30: Interfacing a door intercom

2.5.4 Interfacing of call signaling at the doorbell system

Figure 32 shows the connection of the TFE module to an existing doorbell system. When the doorbell is rung, the call is signaled at all terminals entered in the TFE call mode. You can connect up to three (3) doorbell buttons and assign a TFE call mode to each button. In this manner, when the doorbell button is pressed, only the phones assigned to that button will ring. If there are several doorbell buttons, the button pressed last will be signaled. Signaling of the button pressed first is terminated.

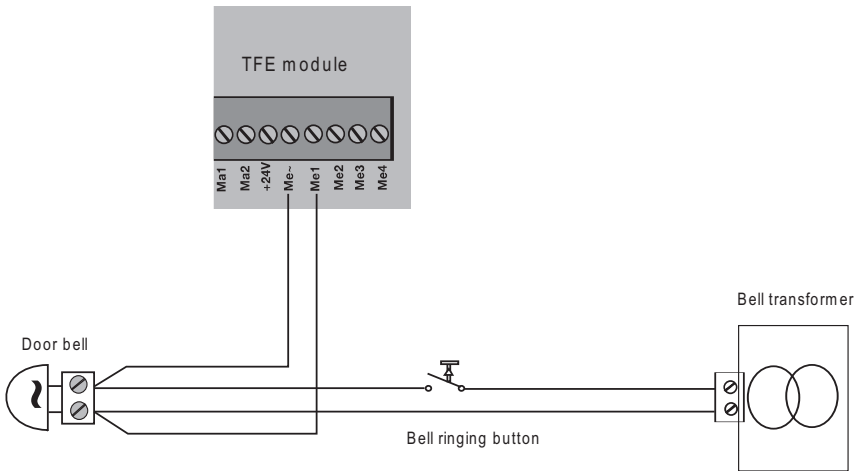


Fig. 31: Doorbell system

2.5.5 Interfacing of a central alarm bell

The central alarm bell is connected when an external call via the switchable call mode is present at the PABX. A central alarm bell (loud tone bell) installed in a factory shop or outside enables the call to be heard at these places. Interfacing: Figure 33 shows an AC alarm bell supplied from the PABX. When a DC alarm bell is connected, use an external power supply. An external power supply system via the bell transformer is then connected instead of power supply from the PABX.

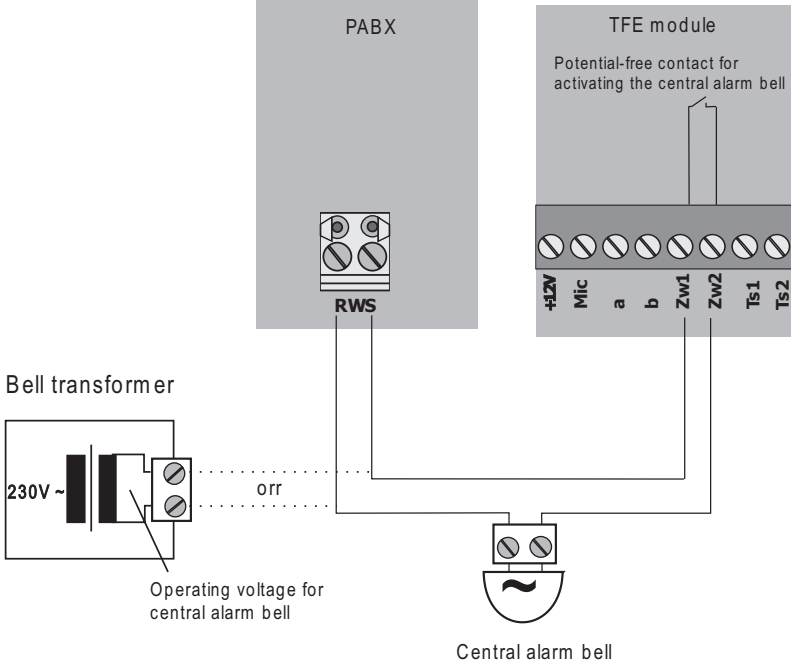


Fig. 32: Central alarm bell

Only possible in slot for TFE1.

2.5.6 Interfacing of call signaling at terminals using buttons

If you wish to signal a call at the terminals entered in the TFE call mode by pressing a button, you can use the connection shown in Figure 34.

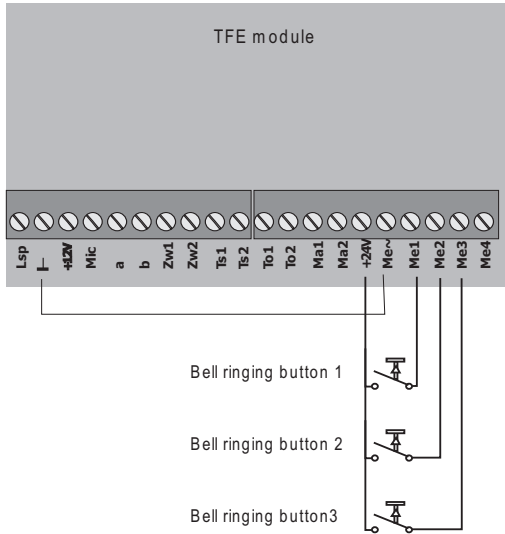


Fig. 33: Bell ringing button

2.5.7 Emergency Power Module (NSP)

The emergency power module permits continued use of the PABX to make calls on loss of the 230 V AC power supply. The terminal with which you can make phone calls on loss of power must also be equipped with an "emergency power" function.

Attention! you can install only one NSP in the PABX.

The NSP (emergency power supply) module (Figure 35) is plugged into the opening of the PABX marked on page 16 in Figure 1. Ensure that all of the contact pins are plugged into the socket connector and that they are not bent.

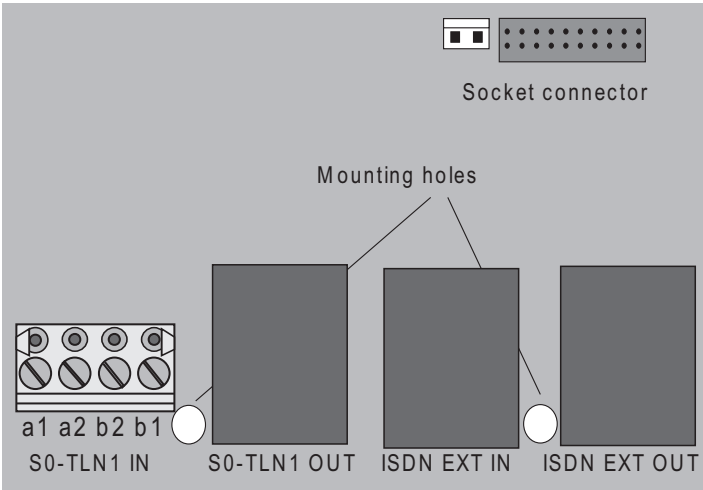


Fig. 34: Emergency power module

The external ISDN connection and the internal ISDN connection 1 (S01:INT with the elmeg C48m / elmeg C88m or S0 Int with the elmeg C46e) for emergency power supply are connected via the NSP (see Figure 36). Interfacing of the external and internal ISDN connections is effected using the connecting cables supplied with the system.

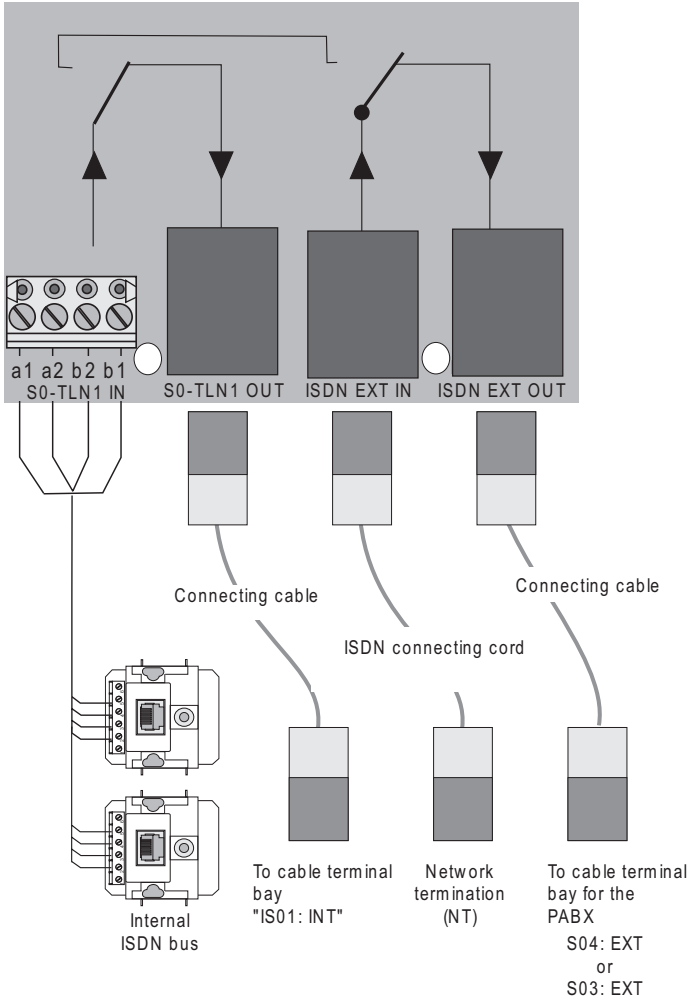


Fig. 35: Block diagram, emergency power module (NSP) (in this example here: elmeg C48m / elmeg C88m)

2.6 Modules

The PABX can be expanded using modules. Two modules can be installed and run in the PABX. The PABX is readily configured for the following modules:

- Module 4a/b with connections 1...4.
- Module 1/1 S0 with connection 4.
- Module 4/1 S0 with connections 1...4 (elmeg C48m and elmeg C88m only).
- Module 2/1 S0 with connections 3...4 (elmeg C48m and elmeg C88m only).

The modules have already been included in programming for the PABX. If a module is installed prior to initial commissioning, the numbers are automatically assigned to the connections. The corresponding module numbers can be found in the tables of the programming instructions.

2.6.1 Module slots

There are three different kinds of slots in the PABX:

- Slot 0 = Motherboard for the PABX.
- Slots 1 and 2 = Module slots.

These designations (0, 1 and 2) are also used for programming the PABX.

2.6.2 Installation of the modules

- Unplug the 230 VAC plug. Disconnect the PABX from all analog, TFE and ISDN connections.
- To install the modules, you must remove the inner cover of the PABX. It is secured by two screws - one at the lower right-hand side, and one at the top left-hand side (Page 16).
- Take the post connectors out of the enclosed package and mount these at the location provided for them in the motherboard.
- As shown in Figure 37 mount the module on the post connectors.
- Using the screws in the enclosed package, screw the module securely to the frame ground bar.

- Connect the motherboard to the module using the flat ribbon cable connector supplied with the system (the locking pins on the connector must point towards the front).
- Replace the inner cover

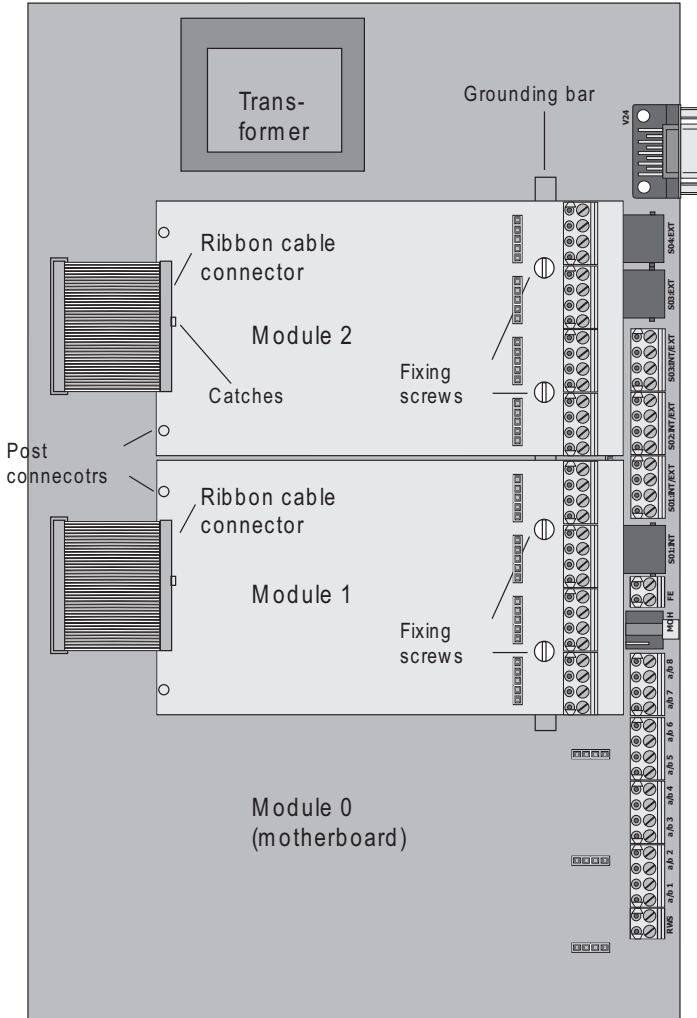


Fig. 36: Module slots. In this example here: elmeg C88m

2.6.3 Module 4 a/b

The 4 a/b module contains 4 analog connections. Connection and programming are performed the same as for the analog connections for the motherboard. In der elmeg C46e darf nur ein Modul eingesetzt werden.

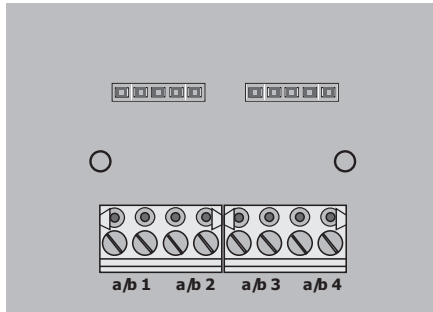


Fig. 37: Module 4 a/b

2.6.4 Module 1/1 S0

The 1/1S0 module contains an S0 port that can be configured either as an internal or as an external ISDN connection. When shipped from the factory, the switchover jumper is mounted, i.e. the internal ISDN connection is active. If the ISDN is to be used as an external ISDN connection, the jumper must be removed and this connection edited in programming. In der elmeg C46e darf nur ein Modul eingesetzt werden

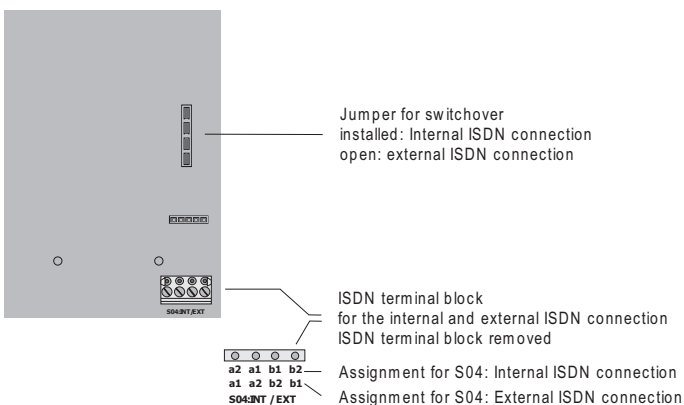


Fig. 38: Module 1/1S0

2.6.5 Module 2/1 S0 (elmeg C48m and elmeg C88m only)

The 2/1S0 module contains two S0 ports. The S03 port is defined as an internal ISDN connection. Port S04 can be configured either as an internal or as an external ISDN connection. When shipped from the factory, the switchover jumper is mounted, i.e. the internal ISDN port S04 is active. If the ISDN port S04 is to be used as an external ISDN connection, the jumper must be removed and this connection edited in programming.

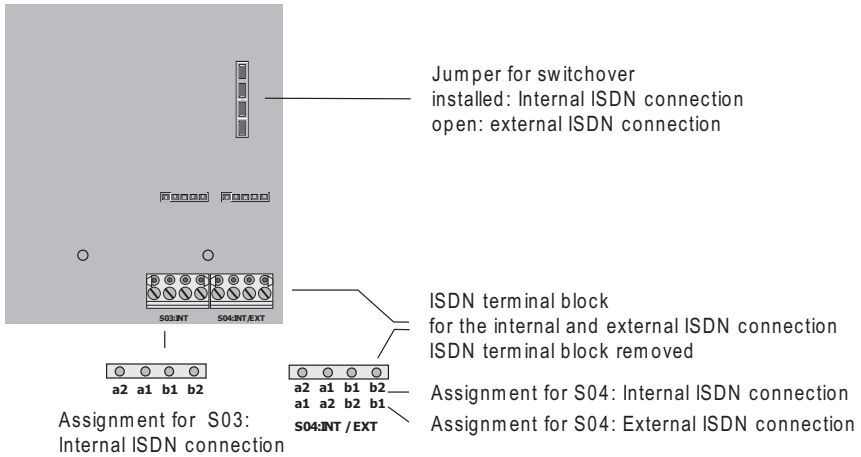
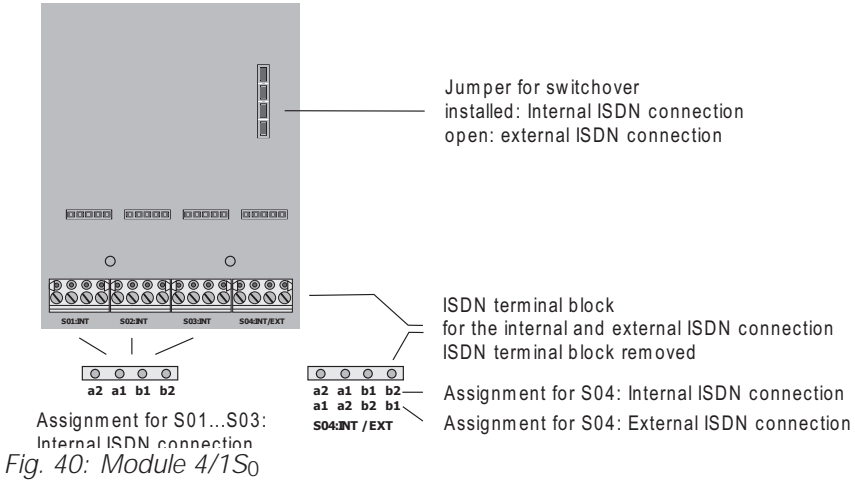


Fig. 39: Module 2/1S0

2.6.6 Module 4/1 S0 (elmeg C48m and elmeg C88m only)

The 4/1S0 module contains four S0 ports. Ports S01... S03 are defined as internal ISDN connection. Port S04 can be configured either as an internal or as an external ISDN connection. When shipped from the factory, this switchover jumper is mounted, i.e. the internal ISDN port S04 is active. If the ISDN port S04 is to be used as an external ISDN connection, the jumper must be removed and this connection edited in programming.



2.6.7 Fine overload protection module (FSM)

The fine overload protection module (FSM) is provided to divert overvoltage at analog or ISDN connecting lines (with the elmeg C46e implemented only for the external ISDN connection and the modules). Overload protection is required for each connection that is to be protected. Any overvoltage which occurs in the lines is diverted to the functional ground. It is imperative that you have functional grounding installed, as shown on page 14, and that it is always connected to provide continuous protection. The FSM module is plugged into the slots provided for it on the motherboard and modules 1 and 2. Please do not touch any other components on the motherboard when installing the FSM. The FSM is of symmetrical design, so that you can choose the direction in which it is plugged in appropriately.

Please note that the FSM module is an expendable fusible link, i.e. once a module has been actuated it must then be replaced with a new one.

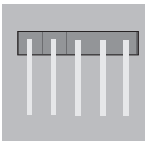


Fig. 41: Module FSM

3 Commissioning

3.1 Commissioning Instructions

In your agreement with your network service provider you have decided on a multipoint connection or a point-to-point connection and have installed your PABX in accordance with the instructions given in "Installation of the PABX". Now, make all necessary connections, including the 230 V AC power supply, for your system.

Attention!

When you activate the 230 V AC power supply it may not be interrupted for at least 30 seconds during the initialization phase of the PABXs!

Your PABX is equipped with a changeable internal "number map". In the initial state the internal numbers are defined. These numbers can be changed as required to between 00 and 99. Please ensure that internal numbers are only used one time. The assignment code for the external ISDN connection can be set to between 0 and 9.

Attention!

Inhouse extensions and connection assignment code for the ISDN connection may not begin with the same number; i.e. it is not permitted to have an internal extension starting with the number "9" when the external ISDN connection assignment code is also to be assigned a connection code "9".

The required internal numbers must be programmed as MSNs (see operating instructions for the ISDN terminals: "Entering MSNs") in the ISDN terminals on the internal ISDN bus.

Refer to your ISDN terminal operating manual how, and with which settings, this feature can be implemented.

If your ISDN terminal is equipped with a call list, please note the following: The PABX does not automatically place the "0" for seizure of the external ISDN connection in front of the number of the caller. Sie können diese Einstellung in der Einrichtprogrammierung ändern.

3.1.1 Commissioning at a point-to-point connection

Your PABX is set up for point-to-point connection when it is switched on. You can already make inhouse calls to analog extensions. In order that your terminals can also be reached by external parties, you must now program the system number.



Lift up the receiver of your phone. You will hear the internal dial tone.



Press the asterisk (*) button two times.



You will then hear the acknowledgement signal.



Enter your 4-digit password, e.g. 0000 (in the initial state).



Select this code.



Select the module (in this example Module 0= motherboard).



Select the connection (in this example Port 4= S04:EXT).



Enter the system number (ohne Vorwahl und Durchwahl).



End entry.



Hang up the receiver.

The terminals of your PABX can now be reached directly by external callers and you can make external calls.

Example: Commissioning at a point-to-point connection

The network service provider has assigned you your system numbers and number block 00....49. These direct dial-in numbers must be dialed by an external caller to reach a defined terminal. The number at which you can be reached by an external caller is your system number, e.g. 12345 and the direct dial-in number 00...49.

3.1.2 Commissioning for a point-to-multipoint connection

Install your PABX as described in "Installation of the PABX". Make all necessary connections, including the 230 V AC power supply connection, for your system.

An internal MSN must be assigned to each ISDN terminal (telephone, fax Gr. 4, PC card) that is to be operated at the internal ISDN multipoint connection. This internal MSN is one of the internal numbers 00...99. Enter the internal number you wish to have as the MSN as described in the Operating Manual for the ISDN terminal.

Switching over to multipoint connection

When switched on, your PABX is set up for point-to-point connection. Therefore, you must first switch it over to multipoint connection.



Lift up the receiver of your phone. You will hear the internal dial tone.



Press the asterisk (*) button two times.



You will then hear the acknowledgement signal.



Enter your 4-digit password, e.g. 0000 (initial state).



You will then hear the acknowledgement signal.



Select this code.



Select the module (in this example Module 0= motherboard).



Select the connection (in this example Port 4= S04:EXT).

or



Select the connection (in this example elmeg C46e connection ISDN S0 ext.)



End entry.



You will then hear the acknowledgement signal.



Hang up the receiver.

The PABX is now reset automatically.

You can now make internal calls to analog terminals. In order that your terminals can be reached specifically by external callers, you must now assign the internal numbers for the terminal to an MSN (see Programming). You will be informed of your MSNs when your application for this service has been approved by the network service provider.

Example: Commissioning at a point-to-multipoint connection

You have been allotted the MSNs 12345, 12346 and 12347 by the network service provider, for example. These MSNs must be dialed by an external caller in order to reach a defined extension. The number at which an external caller can reach you is 12345, for example. If, for example, your telephone, with the inhouse extension number 10, is to be called when this number is dialed, proceed as follows:



Lift up the receiver of your phone. You will hear the internal dial tone.



Press the asterisk (*) button two times.



You will then hear the acknowledgement signal.



Enter your 4-digit password, e.g. 0000 (initial state).



You will then hear the acknowledgement signal.



Select this code.



Select the module (in this example Module 0= motherboard).



Select the connection (in this example elmeg C48m / elmeg C88m port 4= S04:EXT).

or



Select the connection (in this example elmeg C46e ISDN connection S0 ext.).



Select the MSN/DDI index (in this example = 0)



Select the first MSN (in this example = 12345)





Press the # key, to end your entry.



You will then hear the acknowledgement signal.



Assign the MSNs to the terminals.

- 0** Select the module (in this example Module 0= motherboard).
- 4** Select the connection (in this example elmeg C48m / elmeg C88m port 4= S04:EXT).
- or
- 2** Select the connection (in this example elmeg C46e port 2 = S0 Ext.).
- 0** Select the MSN/DDI index (in this example = 0)
- 1 0** Select the terminal number, in this example = 10.
-  You will then hear the acknowledgement signal.
-  Hang up the receiver.

The terminal with the number 10 of your PABX can now be reached directly by external callers.

3.1.3 Commissioning of ISDN PC cards with "CAPI 1.1 interfaces"

Install the PC card in your PC. Look for the EAZ-MSN correspondence table (EAZ map) in the operating manual for the PC card. Assign an "internal direct dial-in number" (inhouse extension number) to EAZ 0....9. When doing this, observe the information provided for setup programming of the PABX in the Section "Assigning multiple subscriber numbers". Start the application program for your PC card. Configure the defined EAZ and enter the code for seizure of the external ISDN connection (in the initial state = "0").

Example:

- Your number with direct dial-in number 26 at which your PC card is to be reached is 12345-26.
- In a standard scenario, you have assigned this direct dial-in number the number 26 in setup programming for the PABX.

Then, during configuration of the PC card you assign the direct dial-in number (MSN) 26 to EAZ 8.

4 Operation

4.1 elmeg CS100 system telephones

CS100

You can also use elmeg CS100 system phones with the PABX system. This requires no special programming. The PABX will recognize an activated system telephone automatically.

You can configure the following function keys on the elmeg CS100 system telephone:

- distinct allocation of the external ISDN connection via the MSN
- connection key (exchange key)
- line key (internal subscriber key)
- Day/Night switchover of the switchable call modes
- team keys
- enter/delete team function
- message/message inhibit
- Simplex intercom/intercom inhibit
- Boss/secretary function

The description, configuration and definition of these functions are provided in the Operating Manual for the elmeg CS100 system telephone.

Messages can be placed through to system telephones elmeg CS100 and, starting at software version 3, to the elmeg C90 and C100 ISDN telephones.

Simplex intercom can be implemented to elmeg CS100 system telephones and, starting at software version 3, to elmeg C90 and C100 ISDN telephones.

4.1.1 Message

C/CS

The message function allows you to set up a connection from one system telephone to another one, or to a team with several system telephones, without this connection having to be actively accepted.

Messages are accepted automatically at the phones being called by activating the speaker when:

- the telephone is idle,

- the message has not been explicitly deactivated and
- the function "don't disturb" has not been activated.

C/CS

If the don't disturb function is activated at a system telephone, no messages can be put through to this phone. You can also specifically inhibit or permit messages using a function key or a code procedure.

Enable (permit) messages



Lift the headset of your system telephone.
You will hear the internal dial tone.



Select this code.



You will hear the acknowledgement signal.



Replace the headset.
Your system telephone can now receive messages.

Inhibit messages



Lift the headset of your system telephone.
You will hear the internal dial tone.



Select this code.



You will hear the acknowledgement signal.



Replace the headset.
No messages can be put through to your system telephone.

4.1.2 Simplex intercom

CS100

The intercom function allows you to set up a connection to another system telephone without this connection having to be actively accepted. Intercom calls are accepted automatically by the phone being called by activating the "hands free calling" function when:

- the telephone is idle,
- the intercom function has not been explicitly deactivated and
- the function "don't disturb" has been deactivated.





If, during an intercom call, the headset of the system telephone is lifted up, the call is transformed into a normal call.

If an intercom connection is not ended by one of the two subscribers, this connection is terminated automatically in the PABX after a defined time (approx. 2 minutes).





C/CS

If the don't disturb function is activated at a system telephone, no intercom connections are possible at this phone. You can also specifically inhibit or permit intercom calls using a function key, or a code procedure.

Enable (permit) intercom calls

-  Lift up the headset of your system telephone. You will hear the internal dial tone.
-  **5 9 0** Select this code.
-  You will hear the acknowledgement signal.
-  Replace the headset. Intercom calls are now possible at your system telephone.

Inhibit intercom calls

-  Lift up the headset of your system telephone. You will hear the internal dial tone.
-  **5 9 0** Select this code
-  You will hear the acknowledgement signal.
-  Replace the headset. Intercom calls are not possible at your system telephone.





4.2 Internal and external connections

a/b-ISDN

In the following operating sequences, only a phone link, i.e. a call between two users, is presented as an example. For analog telephones, only the functions for multifrequency (DTMF) calling phones or DTMF terminals with a flash button are explained.

4.2.1 Taking a call




a/b-ISDN

-  Your telephone rings.
-  Lift up the receiver of your phone.
-  Conduct your call.
-  Hang up the receiver to end the call.

4.2.2 Accepting a call in the group

a/b-ISDN

A call is signalled at a telephone in your group. You would like to accept this call at your own phone.

-  Lift up the receiver of your phone.
You will hear the internal dial tone.
-  Dial this code.
-  You can then conduct the call from your phone.

4.2.3 Inhouse connections

a/b-ISDN

All calls, fax transmissions or data exchange transmissions which are made between the internal analog and ISDN terminals are designated as "internal" (inhouse) connections. If a connection is made between the internal terminals and the terminals connected to the external ISDN multipoint connection, this represents an external connection for which you will be charged.

4.2.4 Inhouse calling

a/b-ISDN

You would like to make an inhouse connection with another PABX subscriber.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial the number of the inhouse subscriber you wish to call.
You then hear the ringing tone. The inhouse subscriber is being called.

The called subscriber answers his/her phone.



Conduct your call.



Hang up the receiver of your phone to end the inhouse call, or the inhouse party you are taking to hangs up the receiver. You then hear the busy signal. Hang up your receiver. This cancels the inhouse connection.

4.2.5 External connections

a/b-ISDN

You can establish two external connection simultaneously via the two B channels of an ISDN connection. These connections can also exist simultaneously with two different parties.

This allows you, for example, to call an external business partner while you simultaneously transmit data from your PC to another business partner.

An external caller who has dialed a non-existing internal direct dial-in number when the PABX is set up for a point-to-point connection, is signaled at the telephones in the switchable call modes. At the same time, the central alarm bell can be activated.

When you make an external call via your PABX, the PABX automatically transmits the service identification character that has been programmed for the analog connection or in the ISDN terminal.

Please note: ISDN terminals linked to multipoint connection and the internal ISDN bus may not always have the same dial tones, calling cycles and operating procedures as the PABX analog terminals. This has nothing to do with your PABX, but results because of the differing ISDN terminals.

4.2.6 External calls

a/b-ISDN

You wish to establish an external connection with an external subscriber, or with a subscriber with a multipoint connection.



Lift up the receiver of your phone. You will hear the internal dial tone.

9

or

*** 8 0**

If you wish to call via any available external ISDN connection, dial **9** or *** 8 0**.

*** 8**

For specific selection of an external ISDN connection:

dial this code.

Select the external ISDN connection through which you wish to call:

- 1** ISDN connection 1.
- 2** ISDN connection 2.
- 3** ISDN connection 3.
- 4** ISDN connection 4.
- 5** ISDN connection 5.
- 6** ISDN connection 6.

You will then hear the external dial tone.

If, after dialing **9** or *** 8 0** to *** 8 6**, you hear a busy signal, either your telephone does not have the correct authorization, or the external ISDN connection is busy.



Dial the number you wish to call.

You then hear the ringing tone.
The external subscriber is being called.
The called party lifts the receiver of his/her phone.



Conduct your external call.



End the call by hanging up your receiver.

4.2.7 Block calling (initializing call)

a/b

With the aid of block calling it is possible to first input the number completely at the terminal and to store it temporarily in the PABX. Then, you can initiate calling of the complete number to the exchange. With some network service providers block calling is essential to permit specific direct dialing to a certain terminal. This feature is described in the operating instructions for ISDN terminals. Block calling is also possible for inhouse calling.



Lift up the receiver of your phone. You will hear the internal dial tone.

*** 5 5**

Dial the code.

9

or

*** 8 0**

If you wish to call via any available external ISDN connection, dial **9** or *** 8 0**.

For specific selection of an external ISDN connection.

*** 8**

Dial this code.

Select the external ISDN connection through which you wish to call:

1 ISDN connection 1.

2 ISDN connection 2.

3 ISDN connection 3.

4 ISDN connection 4.

5 ISDN connection 5.

6 ISDN connection 6.



Dial the number you wish to call.

#

Begin your call by pressing the button **#**. Only now is your call sent to the exchange.

You then hear the ringing tone.

The external subscriber is being called.

The called party lifts the receiver of his/her phone.



Conduct your external call.



End the call by hanging up your receiver.

4.2.8 Routing discrimination

a/b-ISDN

This feature can only be used when there are two or more external ISDN connections available. During programming of the PABX you can define which external ISDN connection you seize from one or more set terminals. This makes it possible, for example, to have the PABX used by two companies, or to keep an "executive line" free.

Rate charging can then be specifically assigned to the "companies" and the terminals. Routing discrimination can not be disabled by "specific seizure of an external ISDN connection".

4.2.9 Automatic exchange line acquisition of an external ISDN connection

a/b-ISDN

The PABX allows individual users to automatically or manually activate the seizure of an external ISDN connection using a defined procedure. When this feature is activated, you are switched immediately to the external ISDN connection after picking up your receiver; you will then hear the external dial tone. You can then immediately begin your external call. If you wish to make an inhouse call, lift up your receiver and press the button *****; after this, you can make an inhouse call. If you wish to make an inhouse call and hear the busy signal after lifting your receiver (external ISDN connections are busy), first deactivate the feature "automatic exchange", replace the receiver and lift it up again. You will then hear the internal dial tone.

Activating automatic seizure



Lift up the receiver of your phone. You will hear the internal dial tone.



Dial the code.



You will then hear the acknowledgement signal.



replace the receiver; the feature has been activated.

Inhouse calling



Lift up the receiver of your phone. You then hear the external dial tone.



Select *****.
You will hear the internal dial tone.



You can now make inhouse calls.

Deactivating automatic seizure



Lift up the receiver of your phone. You then hear the external dial tone or the busy signal.



Select this code .



You will then hear the acknowledgement signal followed by the internal dial tone.

Deactivating automatic seizure for busy, external ISDN connection



Lift up the headset of your telephone. You hear the busy signal.



Select this code.



You will then hear the acknowledgement signal, followed by the busy signal again.



Replace your headset; this feature is now activated.

4.3 Call-by-Call Management

4.3.1 Call-by-Call

Usually, you are connected to your network service provider when you lift up the headset of your phone and dial 0. The feature "Call-by-call" permits you to make calls via a different provider which you can set by programming. For this, you can enter up to 10 codes for any desired providers when programming the PABX. The PABX will always first dial the number of the provider that you have entered first in the list. If a provider is busy, the PABX automatically dials the number for the next one in the list. If all of the providers in the list are busy, the connection is set up via your standard network service provider.

You can define 50 numbers (unit numbers) in the PABX which are not subject to the call-by-call function. When you dial a number which begins with one of the unit numbers entered in the list, this number is dialed directly, without the code of the provider being added.

Examples for unit numbers which should not be subject to the call-by-call function:

1, 2, 3, ...9	Local numbers
010	Number for other network service providers
0130, 0180, 0190	Service numbers in Germany
0700, 0800, 0900	Service numbers in Germany
0800	Service numbers in Austria
0800, 0900	Service numbers in Switzerland

4.4 Team call

a/b-ISDN

elmeg C46e: You can configure up to 20 teams (00...19).

elmeg C48m / C88m: You can configure up to 40 teams (00...39).

This feature can be used at either multipoint or point-to-point connections or for internal communication. In setup programming, you can assign up to eight (8) inhouse numbers to a team. These teams can then be assigned to the MSNs or the direct dial-in numbers. For internal team calls, a team number is assigned to a team during programming. If one of these MSNs or direct dial-in numbers are then called by an external subscriber oder von einem internen Teilnehmer

die Teamrufnummer, all assigned terminals are called. Teams are not configured as a function of the service. The switchable call modes "Day" and "Night" can be configured within each team. Call rerouting to an external subscriber is also possible within each team. Teams can not be called during an enquiry call or call forwarding.

4.4.1 Call at a busy team subscriber (busy on busy)

a/b-ISDN

When a member of a team is conducting a call you can decide whether further calls for this team are to be signaled or not. If the function "busy on busy" configured for this team, any further callers to this team will hear the busy signal.

4.4.2 Entering in/Deleting from a team (temporary)

a/b-ISDN

First, permanently assign your number to one, several or all teams during programming.

You can enter or delete yourself in the switchable call modes for a team, or for all teams. If you are not entered, no team calls will be signaled. Entering and deleting is effected simultaneously in the day/night modes. If all subscribers are deleted, the external call will be put through to the terminals entered in the current service-specific call modes.

Entering in a team



Lift up the headset of your telephone.
You will hear the internal dial tone.



Select this code.



Dial the team number.



You will hear the acknowledgement signal.



Replace the headset.

Deleting from a team



Lift up the headset of your telephone.
You will hear the internal dial tone.



Select this code.



Dial the team number.



You will hear the acknowledgement signal.



Replace the headset.

Entering in all teams



Lift up the headset of your telephone.
You will hear the internal dial tone.



Select this code.



Confirm your entry.



You will hear the acknowledgement signal.



Replace the headset.

Deleting from all teams



Lift up the headset of your telephone.
You will hear the internal dial tone.



Select this code.



Confirm your entry.



You will hear the acknowledgement signal.



Replace the headset.

4.5 Group call

a/b-ISDN

You can configure group calls for teams, service-specific switchable call modes and for the TFE call modes.

There are two types of group call modes, "simultaneous" and "linear".

Simultaneous group call:

All assigned terminals are called simultaneously as prescribed by their service. If a phone is busy, call waiting is effected.

Linear group call:

All assigned terminals are called simultaneously as prescribed by their service; if, for example, a terminal is busy, the next free one is called. At each terminal the incoming call will be signalled for approximately 15 seconds.

4.6 Forwarding a call

a/b-ISDN

4.6.1 Forwarding a call with prior notice

You wish to forward a call to an inhouse or external subscriber, or forward an external call to an inhouse subscriber and talk to the party before he/she accepts the call.

If so programmed, the party on hold will hear music on hold.



You are conducting a call.
You would like to forward this call to another inhouse, or to an external subscriber.



Press the signal button.
You will hear the internal dial tone .



Dial the number of the desired subscriber.
You will then hear the ringing tone .
The other user is being called.
The user lifts up the receiver .

(If you hear the busy signal, press the signal button **R** again to retrieve the call.)



Conduct your call.



Hang up the receiver.

4.6.2 Connecting two external callers with one another

Please note that ISDN terminals can only carry out forwarding of external calls to an external party via the keypad function, or using a special button.

If you connect two external callers after an enquiry call, please note:

- During this call, two B channels of your PABX are occupied.
- The call rates are charged the same for normal connections. If you started both external calls, you will be charged for the two calls between the external parties. If you connected an external caller after an enquiry call to another external party, the caller will be charged for his/her call and you will be charged for the call that you forwarded.



In an enquiry call you are conducting an external call; the first external call is placed on hold.

You would like to connect the two external callers with one another and wish to end the call yourself.



Press the signal button.



Press the button and then the button **4**.



Hang up your receiver.

The two external callers are now connected.

4.6.3 Forwarding calls without prior notice

a/b-ISDN

Call transfer without prior notice (explicit call transfer). You can forward calls within the PABX by dialing the number of the person you wish to call and then hanging up your receiver. The person you are calling is then called and receives the call after lifting the receiver.



Conduct your call.



Press the signal button.
You will hear the internal dial tone .



Dial the inhouse extension number you wish to call.
 You will hear the ringing tone .
 The inhouse subscriber is being called.



(If you hear the busy signal, press the
 signal button again to retrieve the call on hold.)



Hang up your receiver.
 The inhouse subscriber is being called. The inhouse subscriber
 being called lifts up his/her receiver and continues with the call.

4.6.4 Enquiry call

a/b-ISDN

With the enquiry call function it is possible to interrupt an internal or external call in order to conduct an enquiry call. The other party can not hear your enquiry call. When you complete your enquiry call, you can continue with your call that was in progress. If so programmed, the party on hold will hear music on hold.



You are conducting a call.
 You would like to make an enquiry call.



Press the flash button for analog telephones. You will then hear
 the internal dial tone.



Dial the number of the inhouse party you wish to call.
 You will hear the ringing tone .
 The inhouse subscriber is called and lifts up the receiver.



Conduct your enquiry call.

To end an enquiry call (specific for ISDN terminal), press the dis-
 connect button on your ISDN phone

or

or



With an analog terminal the flash button **R** must be pressed first
 and then the code *** 1** dialed; the current call is then discon-
 nected and you will be reconnected with the first caller.



Continue with your call.

4.6.5 Broker's call (operation varies with terminal used)

a/b-ISDN

The "broker's call" feature permits you to switch back and forth between two inhouse subscribers, two external callers or between an inhouse and external caller. The caller put on hold will, if so programmed, hear music on hold.



You are conducting a call and wish to conduct an enquiry call.



With analog phones press the flash button.
Please consult the operating instructions for information on this function for ISDN phones.
You will hear the internal dial tone; the first caller is placed on hold.



Dial the number of the party you wish to call.
You will hear the ringing tone.
The user is called and lifts up the receiver.



Conduct your enquiry call.



With analog phones, first press the flash button and then dial the code ***2** to switch between the first and second caller.



Continue with your first call.

or

or



Please consult the operating instructions for information on this function for ISDN phones. .



Continue with your call.



Hang up the receiver to end the call.

When you are switching between an inhouse party and an external caller and hang up the receiver your call is ended and your two callers are connected with one another!

When you are switching between two external callers and hang up the receiver, the existing call is ended and the call that was placed on hold is signaled with "return call".

When, during a broker's call, you press the button ***** and then the button **4**, the two external callers are connected with one another and your call with the external callers is ended.

4.6.6 Forwarding calls

ISDN

This function allows you to forward a call without having to accept the call yourself. You can take advantage of this feature with elmeg CS100 system telephones, or with ISDN telephones which support this function.

4.6.7 Switching a waiting subscriber

ISDN

This function allows you to put several connections on hold and to switch one of the subscribers on hold via a further connection (enquiry connection). You can take advantage of this feature with elmeg CS100 system telephones, or with ISDN telephones which support this function.

4.7 Automatic call-back

a/b-ISDN

4.7.1 Request automatic call-back (subscriber busy)

a/b-ISDN

As a subscriber you can initiate two automatic call-backs (subscriber busy) with an analog telephone. With an ISDN phone you can initiate up to eight (8) call-backs (subscriber busy) for each internal ISDN connection, and reserve one external ISDN connection. You can utilize this feature at an ISDN terminal when your ISDN terminal can dial via the keypad when busy or during a call, or when this feature is offered via a softkey. At 0:00 o'clock the feature of reserving an external ISDN connection is cleared. Internal automatic call-backs are deleted automatically after 30 minutes. The external automatic call-back is cleared after a time period defined by the exchange (usually after about 45 minutes). Manual deleting is also possible. An automatic call-back is not possible from an enquiry call.

You call an inhouse or an external party. The party being called is busy (you hear the busy signal). Dial the code ***4** and hang up your receiver. When the party you called hangs up his/her receiver, this will be signaled on your phone.

Your connection is set up via the external ISDN connection which you used to call the busy subscriber.

This function can only be used with phones which permit suffix dialing and when it function is supported by the network service provider.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial the number of the party you wish to call.
You hear the busy signal.



Dial the code.



You will then hear the acknowledgement signal, followed by the busy signal.



Hang up your receiver.

When the party you called hangs up his/her receiver, your phone will be called.



Your telephone will ring.



If you then lift up the receiver of your phone the party to whom the call-back was addressed is then called. If he/she then answers the phone, you can conduct your call as usual.

4.7.2 Request automatic call-back (subscriber not busy) (for internal calls only)

a/b-ISDN

For every subscriber you can utilize either an automatic call-back, or reserve an external ISDN connection. The last previously entered feature (call-back or reserve external ISDN connection) is the one that is activated. You can utilize this feature at an ISDN terminal when your ISDN terminal supports keypad dialing when busy or during an ongoing call. At 0:00 o'clock this feature is deleted automatically. Manual deleting can only be effected with an ISDN terminal. An automatic call-back is not possible from an enquiry call.

You make a call to an inhouse party. That party does not answer his/her phone (you hear the ringing tone). Dial the code ***4** and hang up your receiver. When the party you called lifts up his/her receiver and hangs it up again, this is signaled at your phone.

This function can only be used with phones which permit suffix dialing.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial the number of the party you wish to call.
You hear the ringing signal .



Dial the code.



You will then hear the acknowledgement signal, followed by the busy signal.



Hang up your receiver.

If the party you called hangs up his/her receiver for the first time after picking it up, your phone will be called.



Your telephone rings.



When you lift up the receiver of your phone the caller to whom the call-back was addressed is also called. If he/she lifts up the receiver, you can conduct your call as usual.

4.7.3 Deleting automatic call-back

a/b-ISDN

Analog telephones delete all external and internal call-backs (subscriber not busy and subscriber busy) using this procedure.

ISDN telephones delete automatic call-back (subscriber not busy) and the reserved external ISDN connections using this procedure.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial the code.



Wait until you hear the acknowledgement signal,
and then you will hear the internal dial tone.



Hang up the receiver. This function is now canceled.

4.8 Reserving an external ISDN connection a/b-ISDN

You can use either the function "automatic call-back" (subscriber not busy) or "reserving an external ISDN connection" for each terminal. The feature that is (lastly entered (automatic call-back or reserving an external ISDN connection) is activated; the previously active feature is then canceled. You can use this feature at an ISDN terminal when your ISDN terminal can dial via "keypad" on "busy" or during a call.

You would like to make an external call, but the external ISDN connection is busy. The procedure described below permits to reserve an external ISDN connection. When the external ISDN becomes available, your phone will ring and you can seize the external ISDN connection. All existing "reservations": are canceled automatically at midnight.

This function can only be used with phones which permit suffix dialing.



Lift up the receiver of your phone.
You will hear the internal dial tone.

0

If you wish to call via any available external ISDN connection, dial **0** or ***80**.

or

***80**

For specific selection of an external ISDN connection.

***8**

Dial this code.

Select the external ISDN connection through which you wish to call:

1 ISDN connection 1.

2 ISDN connection 2.

3 ISDN connection 3.

4 ISDN connection 4.

5 ISDN connection 5.

6 ISDN connection 6.

The external ISDN connection is busy.
You will hear the busy signal.

*** 4**

Dial the code *** 4**. You will hear the acknowledgement signal, followed by the busy signal.



Hang up the receiver. The external ISDN connection is now reserved.



Your telephone rings.



Lift up the receiver of your phone.
You will hear the internal dial tone.

0

Dial **0** or *** 8 0**.

or

*** 8 0**

For specific selection of an external ISDN connection.

*** 8**

Dial this code

Select the external ISDN connection through which you wish to call:.

- 1** ISDN connection 1.
- 2** ISDN connection 2.
- 3** ISDN connection 3.
- 4** ISDN connection 4.
- 5** ISDN connection 5.
- 6** ISDN connection 6.

You then hear the external dial tone.



Dial the external number you wish to call.

4.8.1 Canceling "reserving an external ISDN connection"

a/b-ISDN



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code **# 4 1**.



Wait until you hear the acknowledgement signal; after this you will hear the internal dial tone.



Hang up your receiver. This feature is now canceled.

4.9 Three party conference

a/b-ISDN

Operation for this function depends on the used telephones.

Three parties (up to two external parties) can conduct a three party conference call with one another. The conference is ended when the party who initiated the call hangs up his/her receiver. A party that has been called into a three party conference call can hang up at any time; the initiating caller can then continue the call with the remaining party.

You can initiate a three party conference call from a call already in progress.



You are conducting a call.



With DTMF phones, press the flash button.
You will hear the internal dial tone.



Dial the number of the internal or external party you wish to call.
You hear the ringing tone in the receiver.
The party being called lifts up the receiver.



You then conduct an enquiry call. You now wish to include the other party in your first call.



With DTMF phones, press the flash button.



Dial the code.



You can now conduct your three party conference call.

4.10 Central speed dialing memory

a/b-ISDN

With the central speed dialing memory (100 speed dialing numbers), an available external ISDN connection is seized automatically after the speed dial number is dialed and the call is made. The speed dialing number and the number being called are defined during programming.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial the code *#

or

or



Dial the code #*.



Select a speed dialing number (00...99).

The external party you wish to call is then called.

4.11 Call waiting

a/b-ISDN

During a call currently in progress, a second call is signaled optically or acoustically (depending on terminal used). Internal call waiting is not possible with a/b phones. Please consult the corresponding section in the operating instructions for information on this function for ISDN phones.

If call waiting is signaled with a/b phones and you ignore this signal, it will discontinue after around 30 seconds. With a/b phones you can inhibit call waiting during your current calls by activating the "barring call waiting" function.

Activating barring of call waiting



Lift up the receiver of your phone.
You will hear the internal dial tone.

Dial the code for barring of call waiting.



Call waiting permitted.

or

or



Call waiting inhibited.



You will then hear the acknowledgement signal for about 1 second, followed by the internal dial tone.



Hang up your receiver.

4.11.1 Accepting a waiting call (enquiry call to the waiting party)

a/b

If you wish to speak to the party initiating the call waiting, dial the code ***4** and you will be connected. The call with your first party is then placed on hold.



You are conducting a call.
You then hear the call waiting signal and would like to speak to the party making the second call.



With DTMF phones, press the flash button.



Dial the code.



You are now connected with the call waiting party. Your initial call is then placed on hold (see "Enquiry call").
See also "Broker's call" or "Three party conference" for further procedures.

4.11.2 Accepting a waiting call

a/b



You are conducting a call.
You then hear the call waiting signal .



Hang up the receiver (your initial call is then ended).



Your telephone rings.



Lift up the receiver of your phone. You are then connected with the call waiting party.

4.11.3 Refusing a waiting call



You are conducting a call.
You then hear the call waiting signal.



With DTMF phones, press the flash button.



Dial the code .
The call waiting party then hears the busy signal.



Continue with your initial call.

4.12 Service-specific switchable call modes (AVA)

a/b-ISDN

There are two types of call modes; the "Day" call mode and the "Night" call mode. The designations "Day" and "Night" have their origin in the history of telephone systems and do not actually refer to the time of day. These call modes are service-specific; only those terminals of the call modes are called whose programmed service concurs with the service of the caller. If an external number is entered in the switchable call modes, the call charges which accrue when this number is forwarded will be allocated to an inhouse number. The terminals, or an inhouse number, are assigned to the call modes "Day" or "Night" during setup programming. Up to eight (8) terminals, or one external number can be entered in one call mode. Only one of the call modes "Day" and "Night" can be used at one time. Terminals which have authorization for internal calls only can also be entered in the switchable call modes. However, no call signaling is effected at these terminals.

Two authorization options are required to change switchable call modes: using a password, or subscriber authorization. Additionally you can switch the call modes at a specific time, which is adjustable for each day of the week. For this, two separate calendars (1 and 2) are available.

4.12.1 Service-specific switchable call modes with multipoint connection

a/b-ISDN

Telephones which are to be called for an external call are entered in the switchable call modes. External calls can be signaled at the terminals entered in the call modes. For this, the call mode must be assigned to an MSN. It is also possible to assign the terminals entered in the call modes directly to an MSN.

4.12.2 Service-specific switchable call modes with point-to-point connection

a/b-ISDN

Telephones which are to be called for an external call are entered in the switchable call modes. Calls made via the call modes are put through when an external party dials a direct dial-in number that does not exist as an inhouse number ("0" in the initial state).

4.12.3 Activating service-specific switchable call modes

a/b-ISDN

Switchable call modes can be changed by any authorized subscriber.

Activating all service-specific "Day" call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code.



Confirm your entry.



You will then hear the acknowledgement signal.



Hang up your receiver.

Activating service-specific "Day" call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code.



Select the service option:

- 1** Telephony
- 2** Data exchange
- 3** Fax Group 2/3
- 4** Fax Group 4



You will then hear the acknowledgement signal.



Hang up your receiver.

Activating all service-specific "Night" call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.

9 0

Dial this code.



Confirm your entry.



You will then hear the acknowledgement signal.



Hang up your receiver.

Activating service-specific "Night" call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.

9 0

Dial this code.



Select the service option:

- 1** Telephony
- 2** Data exchange
- 3** Fax Group 2/3
- 4** Fax Group 4



You will then hear the acknowledgement signal.



Hang up your receiver.

4.12.4 Activating call modes for teams

a/b-ISDN

Switchable call modes can be changed by any authorized subscriber.

Activating the "Day" call modes for all teams



Lift up the receiver of your phone.
You will hear the internal dial tone.

*** 9 3**

Dial this code.

Confirm your entry.



You will then hear the acknowledgement signal.



Hang up your receiver.

Activating the "Day" call modes for one team

Lift up the receiver of your phone.
You will hear the internal dial tone.*** 9 3**

Dial this code.

0 0 ... 3 9

Select a team (with the elmeg C46e: only 00...19).



You will then hear the acknowledgement signal.



Hang up your receiver.

Activating the "Night" call modes for all teams

Lift up the receiver of your phone.
You will hear the internal dial tone.**# 9 3**

Dial this code.

Confirm your entry.



You will then hear the acknowledgement signal.



Hang up your receiver.

Activating the "Night" call modes for one team

Lift up the receiver of your phone.
You will hear the internal dial tone.**# 9 3**

Dial this code.

0 0 ... 3 9

Select a team (with the elmeg C46e: only 00...19).



You will then hear the acknowledgement signal.



Hang up your receiver.

4.12.5 Activate all switchable call modes

a/b-ISDN

This function allows you to switch all call modes (service-specific call modes, team call modes and TFE call modes) simultaneously. This can be performed by an authorized subscriber.

Activate all "Day" call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code.



Confirm your entry.



You will then hear the acknowledgement signal.



Hang up your receiver.

Activate all "Night" call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code.



Confirm your entry.



You will then hear the acknowledgement signal.



Hang up your receiver.

4.13 Call rerouting

a/b-ISDN

Call rerouting is a feature of the PABX and does not have to be applied for at your network service provider.

Call rerouting is basically the transferring of calls from an external terminal to an external terminal (two B channels are required for this), from one internal terminal to an external terminal, or from an internal terminal to another internal terminal. An external call that is forwarded is charged to the PABX subscriber.

There are three types of call rerouting; only one can be activated at one time:

- Call rerouting "immediate": Call rerouting is performed immediately when a call is made. The terminal that was originally dialed is not called.
- Call rerouting "delayed": The call is signaled at the dialed terminal for about 15 seconds; after that the call is rerouted to the programmed terminal. The terminal that was originally dialed is no longer called.
- Call rerouting "on busy": The call is rerouted immediately to the programmed terminal when the line that was originally called is busy.

4.13.1 Call rerouting, immediate

a/b-ISDN

Call rerouting is performed immediately when a call is made. The terminal that was originally dialed is not called.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code ***61**.



Dial the inhouse terminal extension number (00...99) (call destination).

or



For external call rerouting, first enter **0** or ***80**, and then the external number.



End entry.



You will then hear the acknowledgement signal for about 1 second, followed by the special dial tone.



Hang up the receiver.

4.13.2 Call rerouting, delayed

a/b-ISDN

The call is signaled at the dialed terminal for about 15 seconds; after that the call is rerouted to the programmed terminal. The terminal that was originally dialed is no longer called.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code ***62**.



Dial the inhouse terminal extension number (00...99) (call destination).

or



For external call rerouting, first enter **0** or ***80**, and then the external number.



End entry.



You will then hear the acknowledgement signal for about 1 second, followed by the special dial tone.



Hang up the receiver.

4.13.3 Call rerouting, on busy

a/b-ISDN

The call is rerouted immediately to the programmed terminal when the line that was originally called is busy. Barring of call waiting must be configured here, as otherwise call waiting will be carried out and not call rerouting.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Dial this code.



Dial the inhouse terminal extension number (00...99) (call destination).

or



For external call rerouting, first enter **0** or ***80**, and then the external number.



End entry.



You will then hear the acknowledgement signal for about 1 second, followed by the special dial tone.



Hang up the receiver.

4.13.4 Deleting call rerouting

a/b-ISDN

An activated call rerouting function is signaled by a special dial tone. A procedure can be used at the terminal where call rerouting was configured to cancel the configured call rerouting option (immediate, delayed or on busy).



Lift up the receiver of your phone.
You hear the special dial tone .

6 1

Deleting call rerouting immediate, delayed or on busy :
Dial the codes of one of the options .

or

6 2

or

6 3

You will then hear the acknowledgement signal for about 1 second, followed by the internal dial tone.

4.14 Follow Me

4.14.1 Internal Follow Me

Using this function, calls can be rerouted to an inhouse telephone. This type of call rerouting is configured at the subscriber to whom the call(s) is(are) to be rerouted. If call rerouting has already been activated for this subscriber, this must first be canceled before this new function can be configured.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Select this code.



Select the internal terminal extension (00.....99) that is to be rerouted.



End entry.



You will hear the acknowledgement signal for about one (1) second, followed by the internal dial tone.



Hang up the receiver.

4.14.2 Canceling Follow Me

a/b-ISDN



Lift up the receiver of your phone. You will hear the internal dial tone.



Select this code.



Select the internal terminal extension (00.....99) whose rerouting you wish to cancel.



End entry.



You will hear the acknowledgement signal for about one (1) second, followed by the internal dial tone.



Hang up the receiver.

4.14.3 External configuration of Follow Me

a/b-ISDN

Using this function, you can configure call rerouting from an external subscriber.

To configure call rerouting from an external subscriber you must dial a dial-in number (point-to-point connection) or an MSN (multipoint connection) that has been assigned a service number (internal virtual subscriber) in the PABX. In the initial state, 59 is the number for the service number. This number may not be used in the switchable call modes, teams or TFE call modes.

The PABX checks the authorization for configuring call rerouting from external callers on the basis of a PIN. The authorization PIN corresponds to the central programmer PIN for the PABX (initial state - 0000).

Please change this PIN to prevent unauthorized access to the PABX.

elmeg C48m/C88m: To dial in to the PABX the analog port 8 (subscriber or TFE) must be available at the time of the call. Only then is the PABX able to process the PIN for proper authorization and the procedure for configuring call rerouting.



Lift the receiver of your phone (external subscriber).



Dial the service number for your PABX.
(Multipoint connection: MSN
point-to-point connection: System number + extension)

Once remote access for call rerouting has been enabled, and if it is possible at this time (analog port 8 available), you will hear the special dial tone at your PABX. Set your phone to DTMF-mode or use a portable DTMF transmitter.



Enter the PIN for your PABX.



You will then hear the acknowledgement signal for about one (1) second.



Select this code.



Select the internal terminal extension (00.....99) that is to be rerouted.



Select the internal terminal extension (00.....99) (call destination).

or



For external call rerouting, first enter **0** or ***80**, followed by the external number.



End entry.



You will then hear the acknowledgement signal for about one (1) second, after which the connection will be terminated; you will hear the busy signal.



Hang up the receiver.

4.14.4 External cancellation of Follow Me

a/b-ISDN



Lift up the receiver of your phone (external subscriber).



Dial the service number for your PABX.
(Multipoint connection: MSN
point-to-point connection: System number + extension)

Once remote access for call rerouting has been enabled, and if it is possible at this time (analog port 8 available), you will hear the special dial tone at your PABX..Set your phone to DTMF-mode or use a portable DTMF transmitter.



Enter the PIN for your PABX.



You will then hear the acknowledgement signal for about one (1) second.



Select this code.



Select the internal terminal extension (00.....99) whose rerouting you wish to cancel.



End entry.



You will then hear the acknowledgement signal for about one (1) second, after which the connection will be terminated; you will hear the busy signal.



Hang up the receiver.

4.15 Project numbers

a/b-ISDN

In some subprograms of the elmeg PABX the project number is also described as the customer number.

A project is activated by entering a code and a subsequent project number (up to 6 digits). The call connection data and charge rates are stored in a project for output at the printer or the PC with the project number.

The project number can be entered for calls from external parties for existing connection using a code. This also represents a method for generating a complete data record for output at the printer or the PC.

4.15.1 Project number for a self-initiated external call

a/b-ISDN



Lift up the receiver of your phone.
You will hear the internal dial tone.

*** 5 0**

Dial this code *** 5 0**.



Dial the project number (max. 6-digits).

#

End entry.



You will then hear the acknowledgement signal for about 1 second, followed by the special dial tone.

9

If you wish to call via any available external ISDN connection dial **9** or *** 8 0**.

or

*** 8 0**

Dial the external number.



Conduct your call.

Note: You can also use this feature from an external enquiry call.

4.15.2 Project number for an external call to the ISDN terminal

ISDN

You can use this feature at ISDN terminals when your ISDN terminal can dial via "keypad" during an ongoing call.



Your telephone rings.



Lift up the receiver of your phone.



You are conducting a call and wish to have it charged to a certain project.



Dial this code.



Select the project number (max. 6 digits).



End entry.



You will then hear the acknowledgement signal for about 1 second.



Continue with your present call.

4.15.3 Project number for an external call to an ISDN terminal

ISDN

You can use this feature at an ISDN terminal when your ISDN terminal can select "Keypad" during an ongoing call.



Your telephone rings.



Lift up the receiver of your phone.



You are conducting a call and wish to have it charged to a certain project.



Press the signal button.
You will hear the internal dial tone.



Dial this code.



Select the project number (max. 6 digits).



End entry.



You will then hear the acknowledgement signal for about 1 second, followed by the internal dial tone.



Press the signal button.
Your project number is stored and you are reconnected with your previous call.



Continue with your call.

4.16 Call forwarding (AWS) by service at the exchange

a/b-ISDN

Call forwarding is a feature at the exchange of the network service provider and must be applied for at the network service provider. The PABX allows you to use this feature. Please contact your network service provider for further information.

The number of the external subscriber to whom the call is to be forwarded is defined by the specific services "immediate", "delayed" and "on busy". Call forwarding is made to the number entered during programming for the requested service.

For call forwarding set up at the exchange, up to a minute may pass from setup to the point when the acknowledgement signal is heard. Please do not hang up your receiver during this time.

4.16.1 Call forwarding for multipoint connections

- Calls are forwarded at the exchange specifically for each MSN or all MSNs by service (see Programming).

4.16.2 Call forwarding for point-to-point connections

- With a point-to-point connection, all external calls are forwarded "by service" (see Programming).

4.17 Answering machines

a/b-ISDN

4.17.1 Accepting a call

Calls that are signaled at the answering machine (the answering machine has not yet switched on) can be taken using the function "accepting a call". If an inhouse or an external party is already speaking on the machine, you can take this call at your phone.



Lift up the receiver of your phone.
You will hear the internal dial tone.



Accepting a call:
Dial this code.

or

or



Accepting a call:
Dial this code.



You can then conduct the call from your phone.

4.18 Door intercom module (TFE)

a/b-ISDN

elmeg C46e: You can connect one TFE module

elmeg C48m/ C88m: You can connect two TFE modules. When analog port 7 (TFE2) and analog port 8 (TFE1) are used for door intercom modules, they are not available for connecting further terminals.

The door intercom unit is connected via the additional TFE module. Up to two (2) TFEs can be connected. Up to three (3) bell buttons can be assigned to each TFE. A "Day" and "Night" TFE switchable call mode can be assigned to each ringing bell. When the ringing bell for the door phone is pressed, the terminals entered in the TFE call modes are called. The door intercom unit may only be used by terminals which have TFE authorization (see Programming).

If an external number is entered in the TFE call mode, the signal is forwarded to this external subscriber when the bell button for this door phone is pressed. The charge rates accrued for forwarding are then charged to the inhouse TFE number.



You hear the door phone call on your phone.



Lift up the receiver of your phone.



You can now speak with the door phone.

You wish to actuate the door opener.



With DTMF phones, press the flash button.



Dial this code.



Select the door opener. The door opener is actuated for approximately 3 seconds.

9 Door opener 1.

8 Door opener 2.



You will then hear the acknowledgement signal for 1 second.



Continue with your call.



End the door phone call; hang up your receiver.

Note: When you hear the door phone call at a different phone, or when you hear the door bell, you can, provided you have proper authorization, dial the number of the door phone and accept the door phone call.

This option can be used by ISDN phones which do not support suffix dialing. End the ongoing door phone call and hang up your receiver. Then lift up your receiver again and dial the code ***99** or ***98** to open the door.

4.18.1 Switching between TFE call modes

a/b ISDN

Switchable call modes can be changed by any authorized subscriber.

Activating all "Day" TFE call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.

*** 9 6**

Dial this code.

Confirm your entry.



You will then hear the acknowledgement signal.

Activating all "Night" TFE call modes



Lift up the receiver of your phone.
You will hear the internal dial tone.

9 6

Dial this code.

Confirm your entry.



You will then hear the acknowledgement signal.

Activating the "Day" call mode for a bell button



Lift up the receiver of your phone.
You will hear the internal dial tone.

*** 9 6**

Dial this code.

1 ... 2

Select the TFE.

1 ... 3

Select the bell button.



You will then hear the acknowledgement signal.

Activating the "Night" call mode for a bell button



Lift up the receiver of your phone.
You will hear the internal dial tone.

9 6

Dial this code.

1 ... 2

Select the TFE.

1 ... 3

Select the bell button.



You will then hear the acknowledgement signal.

4.19 Calendar

a/b ISDN

You can configure two completely independent calendars in your PABX. It is possible to switch automatically between a day and a night variant at a defined time. A different day/night switchover time can be selected for each day of the week. A calendar consists of date pairs which can be specifically assigned to the individual days of the week.

All features which differentiate between a day and a night call mode in call distribution (AVA, TFE, teams) can be used by these calendars, with each calendar being allocated specifically to the active feature. An assigned calendar replaces manual switchover between the day and night call modes for these features. If the entry is the same for Night/Day and Day/Night, switchover is not made; the calendar is configured during programming.

Example:

Day	Calendar 1		Calendar 2	
	Night ➔ Day	Day ➔ Night	Night ➔ Day	Day ➔ Night
Monday	09:30 am	08:15 pm	08:00 am	06:00 pm
Friday	07:00 am	02:00 pm	06:00 am	03:30 pm
Saturday	09:00 am	12:00 am	09:00 am	12:00 am

4.20 Parking at the internal bus

ISDN

Parking is only possible within a bus (internal ISDN connection). During an ongoing call, you wish to continue your call at a different inhouse location. After activating the parking function at the terminal, you can disconnect your ISDN terminal from the internal ISDN connection and take it with you to the other location. When you re-establish your connection to the internal ISDN connection within three (3) minutes after disconnection and deactivate the parking function, you can continue your previous call.

Please refer to the operating instructions for your ISDN terminal for the correct operating sequences.

4.21 Multifunctional device

a/b

If an analog terminal connection of the PABX is configured with "multiport functionality" for multifunctional devices, all calls are accepted regardless of the selected service option. On seizing of the external ISDN connection using a code, different service identifiers can be transmitted, regardless of how the analog connection has been programmed. If you call the external ISDN connection using ***80**, the service identifier "analog telephony" is transmitted.

Example:

You can not reach a fax machine of group 3 that is operated with a service identifier in a remote ISDN PABX. When you place a call using the code ***773** your PABX transmits the service identifier Fax Group 3". The remote ISDN PABX then recognizes the service option and connects you with the fax machine.

You wish to make an external connection with a certain service option.

***773**

You wish to send out a fax and also transmit the service identifier "Fax Group 3".

or

or

***774**

You wish to transmit the service identifier "analog telephony".

or

or

***772**

You wish to transmit the service identifier "ISDN telephony".

or

or

***771**

You wish to transmit the service identifier "speech".



Enter the external number.

The external subscriber is called.

4.22 Connection/Callcharges

a/b ISDN

elmeq C46e: The PABX can store up to 1000 connection data records

elmeq C48m/ C88m: The PABX can store up to 2000 connection data records.

The connection/call charges can be displayed on ISDN terminals and on analog terminals designed for this. The PABX can store connection data records which can then be output at the printer, the PC or a laptop. Output and storage of these call data records can be defined for certain or all terminals by appropriate programming. In the initial state all incoming external calls which have been assigned a project number and all external calls which you have initiated are stored. You can use a terminal emulation program, a printer or the charge data processing program from elmeq to output the call data records.

4.22.1 Call charge account (charge limit, allowance account)

a/b-ISDN

An account for call charges can be set up for each internal subscriber. The charge rates or amounts available to the subscriber for making calls are defined in this account. Once the rates or available amount has been exhausted, the subscriber can then only make internal calls. If a limit is reached during a call, the call can nevertheless be completed.

External calls are possible again after increasing the units or available amount on the call account.

Please note that in order to use this feature the call charge account must be activated for the subscriber and charge rate transfer must be applied for at the network service provider.

If the network service provider transfers charge rate units, you must enter the number of units in the call charge account. If the provider transfers allowance amounts, you must enter the amount for the call charge account, e.g. 100 corresponds to DM100, S100, SF100 or 100 charge rate units, depending on the configuration of the network service provider.

4.22.2 ISDN Terminals

ISDN

Connection/call charges can be displayed at any ISDN terminal that supports this function.

4.22.3 Analog terminals

a/b

Your PABX offers you the option to implement the display of connection/call charges at analog connections for terminals specially designed for this.

To implement this, you must have applied at your service provider for logging of the connection/call charges during the connection. In the initial state forwarding of the 12 or 16 kHz charge pulse is deactivated.

Please note that only the network service provider is authorized to provide you with binding connection/call charge logging. Due to the technology used in ISDN for connection/call charge transfer, the connection/call charges may be transferred even after the connection has been terminated. Therefore, because of the wide range of analog terminals on the market it can not be ensured that the charge pulses transmitted from your PABX after terminating a connection will be received properly by your terminal. Please refer to the Operating Manual for your terminals.

4.22.4 Printer, PC, Laptop

If, during output of the call data records to the printer, the PC or a laptop, you discover that these devices are not switched on or activated, or if there is no paper in the printer, your data records will not be deleted. A special programming feature allows you to repeat output of the data records.

Figure 42 shows an example of a data record being printed by an active printer (only the bold highlighted text is printed), and being transferred to a PC or laptop.

Type of Connection

G :	=	The external call is initiated itself
G1:	=	at the external ISDN connection 1
G2:	=	at the external ISDN connection 2
G3:	=	at the external ISDN connection 3
G4:	=	at the external ISDN connection 4
G5:	=	at the external ISDN connection 5
G6:	=	at the external ISDN connection 6
K :	=	You receive an external call
K1:	=	at the external ISDN connection 1
K2:	=	at the external ISDN connection 2
K3:	=	at the external ISDN connection 3
K4:	=	at the external ISDN connection 4
K5:	=	at the external ISDN connection 5
K6:	=	at the external ISDN connection 6

Type of Call (KVB in the example)

KVB	=	External call (incoming)
AVB	=	External connection (outgoing)
RVB	=	Enquiry call connection
UUG	=	Forward a call by transfer
UBA	=	Call forwarding without prior notice
WA	=	Return call
RUL	=	Call rerouting
RUX	=	Call rerouting from external to external party
AUB	=	No conclusions possible

4.23 Keypad Function

a/b-ISDN

You can only use this function when the network service provider supports this feature (e.g. activating call forwarding at the exchange). Ask your network provider about this and obtain the appropriate codes for this feature. Use of this feature must be enabled for a subscriber during programming. If the feature "automatic seizure of an external ISDN connection" activated you can not use the keypad function. "Automatic seizure" must first be deactivated.

Keypad functions can only be initiated from terminals to which the MSN that has been authorized for these functions at the exchange is assigned during programming.

4.23.1 Initiating the Keypad Function

a/b-ISDN



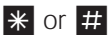
Lift up the receiver of your phone. You will hear the internal dial tone.



Dial **9** or ***80**.

You then hear the external dial tone.

The next characters and digits that you dial will be transmitted directly (transparent) to the exchange as "keypad information" for activating/deactivating a defined feature.



Dial ***** or **#**, as specified by the network provider.



Dial the desired numbers.

Depending on the network provider, you will receive an acoustic and/or an indication in the display of the ISDN terminal as positive or negative response.



Replace the receiver.

4.24 External Line Access Digit for Caller List

ISDN

There are ISDN telephones available on the market which can not use the caller list at a PABX. If an external call is made at these telephones, the number that is transmitted is not provided with the line access digit required for call-back. Consequently, a wrong number is dialed on call-back. To prevent this, you can configure the feature "External line access digit for caller list" for this telephone. Then, on call-back, the PABX automatically places the line access digit in front of the number for external calls. This feature can be configured during configuration programming for any terminal using the procedure described below.

Activating the external line access digit



Lift up the receiver of your phone.
You will hear the internal dial tone.

*** 5 9 2**

Dial this code.



You will then hear the acknowledgement signal.

Deactivating the external line access digit



Lift up the receiver of your phone.
You will hear the internal dial tone.

*** 5 9 2**

Dial this code.



You will then hear the acknowledgement signal.

4.25 Configuration of the PABX via the Internal Bus

You can program your PABX via the internal S0 bus.

Every PC on the internal bus which has authorization for remote access to the PABX can dial in to the PABX with the Service Center software to program the system, or to load the newest software. There is no time restriction during which dial-in must occur.

Dial the internal service number 59 for dialing into the PABX.

4.26 Remote Management Access

Using this function you can configure your PABX from the Service Center or load the newest software. You can initiate this function from an inhouse subscriber of your PABX system, or you can enable your system for direct dial-in by an external PC (e.g. your dealer). Please refer to the file Fernkon.PDF on the CD ROM for this.

4.26.1 Outgoing RMA Connection (2 B Channel Option)

You make a call to the Service Center from a telephone that is authorized to initiate a remote configuration via your PABX. The Service Center will explain the procedure for remote configuration to you and tell you the service number for establishing the data link. You then activate the enquiry call function and select a code procedure and dial the service number. When you hear the acknowledgement signal the data link has been set up. Then press the R button. Speech communication with the Service Center is restored and you can inform them of your configuration requirements.

This remote configuration option involves two (2) calls to the Service Center that are subject to charges. You can end either/both of these connections at any time by hanging up the receiver.

4.26.2 Outgoing RMA Connection (1 B Channel Option)

You make a call to the Service Center and inform them of your remote configuration request. The Service Center will explain the procedure for remote configuration and tell you the service number for establishing the data link. Once this call is concluded, you then initiate remote configuration from an authorized telephone. Once the data link has been set up you will hear the music on hold

for your PABX.

This remote configuration option involves one (1) call to the Service Center that is subject to charges. You can terminate the data link to the Service Center at any time by hanging up the receiver.

4.26.3 Incoming RMA Connection

An external subscriber (e.g. your dealer) can dial in to the PABX when remote access has been enabled. You can authorize a defined external subscriber for dial-in, and also define the time period during which the call can take place. Enabling the PABX is then limited to 20 minutes. When an external subscriber dials in to the PABX the system compares the number of the subscriber that is transmitted to the number that you have programmed to check the authorization for the dial-in call.

This remote configuration option does not involve any call to the Service Center that is subject to charges; the charges for this call are covered by the Service Center.

Terminating an active incoming RMA connection

You can terminate a connection coming from the Service Center using the following procedure:



Lift up the receiver of your phone. You will hear the internal dial tone.



Select this code.



You will then hear the acknowledgement signal for about one (1) second.



Hang up the receiver.

Canceling the clearance (enabling) for an incoming RMA connection

You can also cancel a programmed clearance for dial-in by an external subscriber. An existing, active RMA connection will not be terminated by this.



Lift up the receiver of your phone.
You will hear the internal dial tone.

7 9 9

Select this code.



You will then hear the acknowledgement signal for about one (1) second.



Hang up the receiver.

5 Programming Instructions

5.1 Programming the PABX

a/b-ISDN

Please note that the PABX system should only be programmed by trained personnel.

5.1.1 Setup Programming with the PC

Setup programming via the PC is the preferred method. Windows 3.1, Windows 95 or Windows 95 must be installed in your computer.

- Connect the RS-232 port of the PABX to your PC using the connecting cable (included in scope of supply) (see page 22).
- Windows 3.1:
Place the CD-ROM CD ROM drive. Start the program "install.exe" on the CD-ROM. Follow the instructions given by the installation program.
- Windows 95/Windows NT:
Place the CD-ROM CD ROM drive. The installation program is started automatically. follow the instructions given by the installation program.

Installation:

- Start the configuration software.
- Programming your PABX.

5.1.2 Setup programming using the telephone

Before you begin programming, please read through the section on programming. Then fill in the tables for programming as required by your PABX.

Setup programming and the tables are on the CD supplied with the system under the file names "Einricht.PDF" and "Tabellen.PDF".

This course of action will simplify subsequent programming for you. Setup programming for the PABX must be performed by an authorized subscriber with a valid password.

5.1.3 Remote Management Access (RMA)

Detailed information about the procedures for remote management access is provided on the CD provided with the system under the file name "Fernkonfig.PDF".

5.2 Technical Data

PABX:

Power plug:	Euro flat plug in accordance with DIN VDE 620
Power supply:	230 V~ (207 V ... 243 V)
Nominal capacity (elmeg C48m/ C88m):	max. 65 VA
Nominal capacity (elmeg C46e):	max. 50 VA
Frequency:	48 Hz ... 52 Hz
Class of protection:	II
Fusing (elmeg C48m/ C88m):	primary 630 mA
Fusing (elmeg C46e):	primary 200 mA
Length of the network connecting cord:	approx. 2 meters
Length of the ISDN connecting cord:	approx. 2 meters
Dimensions; WxHxD:	360 x 275 x 90 mm
Weight, approx.:	2.8 kg
Temperature range:	0° C ... 40° C

ISDN connections:

External ISDN connection:	Protocol DSS1, multipoint or point-to-point connection
Internal ISDN connection:	Protocol DSS1, multipoint connection
ISDN ports:	S0, supply voltage, approx. 40 V-
Channel structure:	B+B+D
ISDN line lengths with wire diameter of 0.6 mm:	
Short passive bus:	max. 200 meters
Extended passive bus:	max. 450 meters
Point-to-point connection:	max. 1000 meters

Analog ports

Supply (elmeg C48m/ C88m):	symmetrical, 35 mA at 600 Ohm
Supply (elmeg C46e):	symmetrical, 25 mA at 600 Ohm
Max. line lengths to the telephones with connection via wiring cable:	0.6 mm wire diameter = 1.6 km 0.4 mm wire diameter = 1 km
Calling method:	Multifrequency or pulse calling
Character period:	> 40 ms and <100 ms
Pause interval:	> 50 ms
Tone recognition:	-10 dBm ... 0 dBm
Call a.c. voltage at RWS:	
	$U_{eff} \geq 40 \text{ VAC} / \text{max. } 15 \text{ mA}$
Ringling voltage:	$U_{eff} \geq 40 \text{ VAC} / \text{max. } 15 \text{ mA}$
Ringling frequency:	25 Hz \pm 8%

Technical Data for Music on Hold Interface:

Level:	max. +10 dBm
Input impedance:	5000 Ohm
Electrical isolation to the PABX:	via capacitors
Max. voltage at input:	1.7 U_{eff} , 2.4 V_s AC

Technical Data for TFE Module:

Speaker:	>8 Ohm, approx. 2 Watt
Microphone:	Dynamic microphone with built-in preamp
Bell button:	Potential-free button

Abridged Operating Instructions

These abridged operating instructions are intended for operation of analog terminals. In the event that a function cannot be performed with an ISDN terminal, please consult the operating manual for your ISDN terminal

Message



Enable (permit) message



Inhibit message

Intercom



Enable intercom



Inhibit intercom

Accepting a call



Accepting a call

Internal



Making internal calls

External



Making external calls



Automatic seizure



Making external calls



Specific reservation



Block dialing



Block dialing

Block dialing with specific reservation

Automatic seizure



Activate automatic seizure



Deactivate automatic seizure
(external ISDN connection is available)



Deactivate automatic seizure
(external ISDN connection is busy)

Teams



Enter in team



Delete from a team

Forwarding a call



Forwarding a call with prior notice, internal



Forwarding a call without prior notice,
internal



Enquiry call



End enquiry call with analog terminals

R * **4**

Connect external subscriber

Broker's call

R

Broker's call (enquiry call)

R * **2**

Broker's call between subscribers

Call-back

* **4**

Request automatic call-back

**4** **0**

Clear automatic call-back

Three-party conference call

R

Enquiry call

R * **3**

Three-party conference call

Reserving an external ISDN connection

0 * **4**

Reserving an external ISDN connection
(external ISDN connections are busy)

0

Reserved external ISDN connection
becomes available (select one of the
seizure methods)

* **8** **0**

* **8** **6**

Reserving an ISDN connection

**4** **1**

Delete "Reserving an external ISDN
connection"



Central speed dialing

Central speed dialing

Call waiting

Activate call waiting feature (call waiting enabled)

Deactivate call waiting feature (call waiting disabled)

Take a waiting call

Accept a waiting call

Refuse a waiting call

Call rerouting

Activating call rerouting "immediately"

Activate call rerouting "by time"

Activate call rerouting "on busy"

Delete call rerouting

Follow me

Configure follow me feature

Delete follow me feature

Project numbers

 * 5 0  # 

Enter project number

  J R * 5 0

Project number for an external call

 # R J

Answering machine

 # 0 J 

Accepting a call on the answering machine

Door intercom unit

  J 

Take call

 R * 9 9 J 

Actuate door opener 1

 R * 9 8 J 

Actuate door opener 2

Multifunctional unit

 * 7 7 3  J 

Multifunctional unit: Fax group 3

 * 7 7 4  J 

Multifunctional unit: analog telephony

 * 7 7 2  J 

Multifunctional unit: ISDN telephony

Keypad functions

 0 (* or #) 

 * 8 0 (* or #) 

 * 8 1 (* oder #) 

 * 8 2 (* oder #) 

 * 8 3 (* oder #) 





Initiate keypad functions



Initiate keypad functions with specific reservation



Please refer to the documentation from the network service provider for a list and description of the functions.

Switchable call modes



All service-specific "Day" call modes on



All service-specific "Night" call modes on



"Day" call mode on for a team



"Night" call mode on for a team

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CE 0188 X

This device meets the requirements stipulated by the EC guidelines:

91/263/EC Telecommunications transmitting equipment
73/23/EC Low-voltage devices
89/336/EC Electromagnetic Compatibility

The PABX has therefore been given the CE mark

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Subject to changes 5135 035724.3 January 1999