



EURACOM[®]

141F ◊ 141

Installation manual for PABX-Systems



Important notes in advance

No personal registration is necessary for operation of your PABX, as your PABX is prepared to be connected via connector directly to the network termination (NTBA) of your network provider.

Please pay attention for your own safety:



ATTENTION!

Always unplug mains, before opening the PABX.



ATTENTION!

Connect or disconnect all connecting cables of your ISDN PABX only with unplugged 230V mains.



ATTENTION!

Do not make any installations during a thunderstorm. There is the danger of lightning strikes.



ATTENTION!

Be aware of hidden cables and pipes, as eg electricity cables, water or gas pipes while drilling holes for installation.



ATTENTION!

If you intend to install an internal line of your PABX, leaving the building and going to the outside area, you have to prepare a special lightning protection. Consult your dealer for this matter.



ATTENTION!

Equipment may be damaged by electrostatic discharge. Touch a grounded, metallic part (eg water or radiator pipe) directly prior to the installation.

Our contribution to environmental protection

- This instruction manual is printed on chlorine-free paper.
- All plastic parts of your PABX consist of fully recyclable material (PC+ABS-FR).

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By purchasing the Ackermann EURACOM 141F or EURACOM 141 ISDN PABX, you have decided in favour of a high-quality and future-compatible product. This system provides all the advantages of the digital Euro-ISDN network (DSS1) when connected to a multiple subscriber – or PABX connection while allowing you to continue using existing analog terminal devices.

Thanks to the update capability of this system – either via software in the case of the EURACOM 141F or by replacing the program module in the case of the EURACOM 141 – you can comfortably make use of the features of modern digital communication not only today, but also tomorrow.

And our development work continues. **Which is why the manufacturer reserves the right to change hardware and software specifications, as well as the operating instructions, without prior notice.**

Before you start

Please read this instruction manual carefully, in order to be able to install your PABX correctly. The supply volume of your PABX covers a comprehensive documentation:

- an instruction manual “Installation”
- an instruction manual “Configuration”
- an instruction manual “User ”

The instruction manual “Installation” you are reading just now, first only covers the informations you need to install your PABX. You can thus start with the individual configuration of your PABX rather quickly or keep the presettings.

What you should read in any case

Do read the chapter safety instructions (see inner side of cover) and also the isolated safety instructions (with symbols  and ) in this instruction manual.

Defining the symbols



ATTENTION!

Chapters marked this way indicate possible dangers for persons.



ATTENTION!

Chapters marked this way indicate possible dangers for the system, caused by electrostatic discharge

Check supply volume

Check the supply volume on the basis of your order. The supply volume has to include the following parts in any case:

- EURACOM PABX
- Instruction manual “Installation”
- Instruction manual “Configuration”
- Instruction manual “User”
- CD with PC programmes under the cover of the instruction manual “Configuration”.
- S₀ connecting cord
- Cord for connection of PABX / PC
- Adapter 9-pin to 25-pin
- Rawelplugs and screws
- Connectors

Do not throw away the box of your PABX necessarily. If you intend to place your PABX in a different place, you can carry it in the box easily and safely (in case of moving, guarantee). If you still want to throw away the box, please make sure to take it to the appropriate recycling areas.

Connect to mains

- ▶ First connect your PABX to the 230V mains after installation and check of all connections and with closed cover.
- ▶ Connect your PABX to a separate mains circuit. You thus avoid having a system breakdown, if there is a short circuit, caused by other appliances.

Select place for installation

Install your PABX in a dry and explosion-proof place. The ambient temperature must not exceed the area from 5°C to 40°C. The minimum distance of your PABX to other limitations shall be 10 cm. Install the PABX with the connectors facing downwards to a plane, strong wall.

Do not install your PABX

- near air conditioning units, radiators
- near appliances with illegal radiation
- in wet places or places with direct sunshine
- in an extremely dusty surrounding
- in a place, where it might be exposed to chemicals

Wall mounting

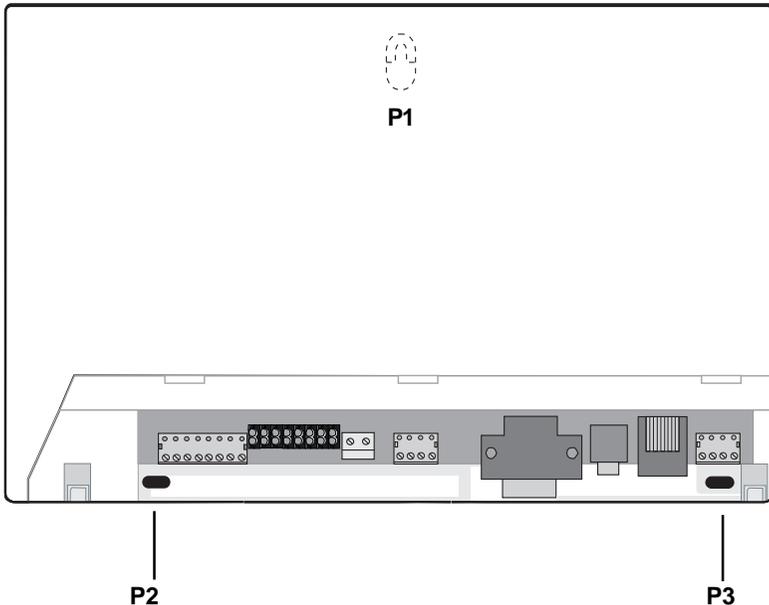


ATTENTION!

Be aware of hidden cables and pipes, as eg electricity cables, water or gas pipes while drilling holes for installation.

In case of wiring underneath the plasterwork, mount your PABX in such a way, that the corresponding cables run through the clamp area openings of the underside. You can screw your PABX to a wall on three fixing points as follows:

- ▶ Remove the clamp area cover of the PABX. In order to do this, grip the cover lid with both thumbs on the top edge and press the lid towards the front.
- ▶ Mark fixing hole P1 on the corresponding wall, drill hole, insert rawlplug and insert screw.
- ▶ Hang PABX onto the screw, adjust horizontally and mark fixing points P2 and P3. Remove PABX again.
- ▶ Drill holes for fixing points P2 and P3 and insert rawlplugs.
- ▶ Hang PABX onto screw P1 and fasten it with screws P2 and P3.



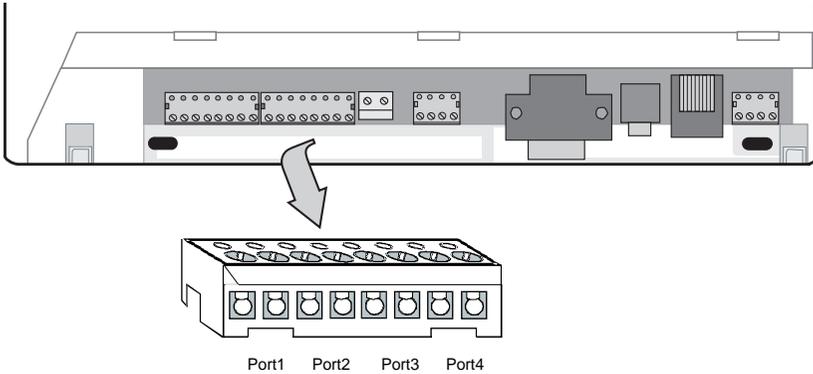
View of the fixing points for mounting the PABX on a wall

Installation systems EURACOM 141 and 141F - differences

Depending on the type of your PABX you will discover a different connection technique between EURACOM 141F and EURACOM 141 PABXs. Specially in the connection area of the analogue ports both PABX types differ from each other concerning the connection technique.

Connection system of EURACOM 141

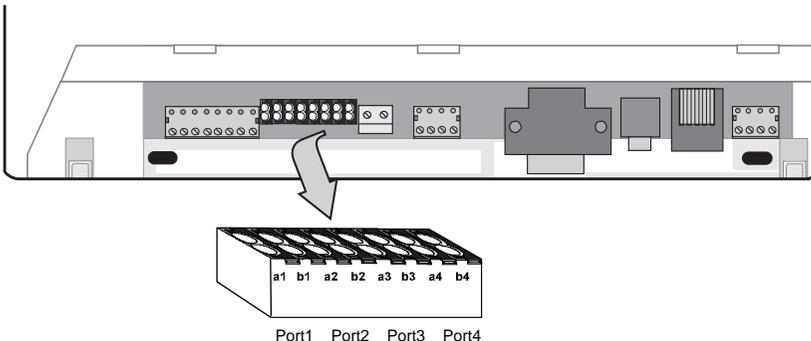
The connection of the analogue subscribers (also depicted as analogue ports) is done via a 8-pin plug-in screw clamp. The installation wire is inserted into the front opening in this case and fastened with screw from the upper side. The clamp indication is printed onto the screw clamp.



Clamp connector assignment in case of connection of 4 analogue subscribers to a EURACOM 141

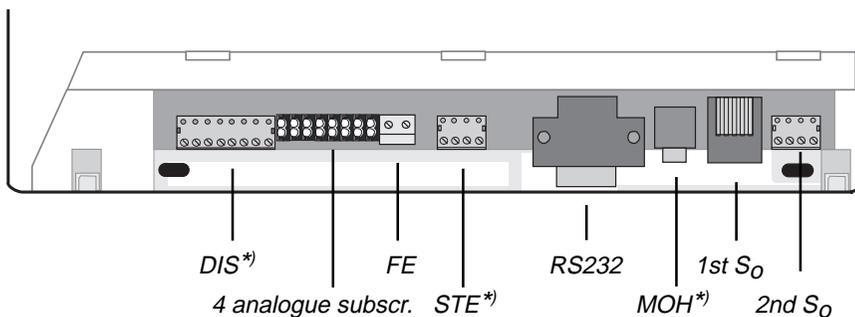
Connection system of EURACOM 141F

The connection of the analogue subscribers (analogue ports) is done via a 8-pin plug-in cage clamp. The installation wire is inserted into the opening and then engages. The clamp indication is printed onto the cage clamp.



Clamp connector assignment in case of connection of 4 analogue subscribers to a EURACOM 141F

Description of connectors



Interface name	Name of connector	What is the function of the interface?
4 analogue subscr.	a1-b1 .. a4-b4	Connectors for analogue terminal equipment
1st S ₀		1. ISDN-interface, basic network access (Western socket)
2nd S ₀	a1 b1 a2 b2	Connector for internal S ₀ bus
FE		Telecommunication earth
RS232		serial interface for printer or PC
MST module		
DIS ^{*)}	KT-KT'	Connector for potential free bell push key
	a-b	Speech circuit, DC free
	TO-TO'	Connectors for control of door release relay
	TS-TS'	Connectors for a relay
STE ^{*)}	S1-S1'	Connectors for potential free alarm contact
	A1-A1'	Connectors for control relay 1 or for secondary ringer 1
MOH ^{*)}		Connector for external music source (music on hold)

*) These interfaces are integrated into the PABX, but can only be activated however by use with the MST upgrade module!

And this is how you connect the PABX:

- ▶ Insert all cables through the opening of the clamp area.
- ▶ Connect the removable screw clamps (part of the supply volume) to the wires. The connector name is printed on the screw clamps. Assign the right cable to the different clamp connections.
- ▶ If you decide to connect a EURACOM 141 then connect the plug-in screw clamps (part of supply volume) to the installation wires. The clamp indication is printed onto the screw clamps.

If you decide to connect a EURACOM 141F, then first connect the wires of the analogue subscribers to the cage clamps and then all other wires to the plug-in screw claps (part of supply volume). The clamp indication is printed onto all of the cage clamps.

Assign the right wire to the different clamp connections.

- ▶ Plug the screw clamps into the corresponding socket places (--> drawing on page 7).
- ▶ Plug the included ISDN connection cord into the socket of the first PABX S₀ interface. Plug the remaining end of the cord after completed installation of all connections and with closed housing into the line socket of your ISDN basic access.

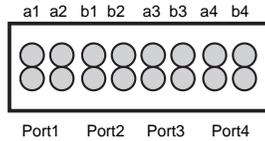


ATTENTION!

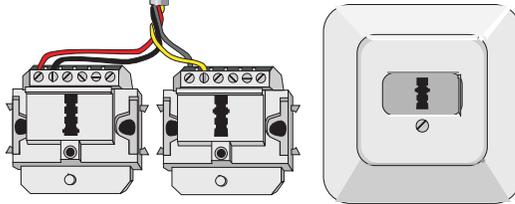
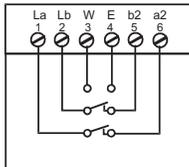
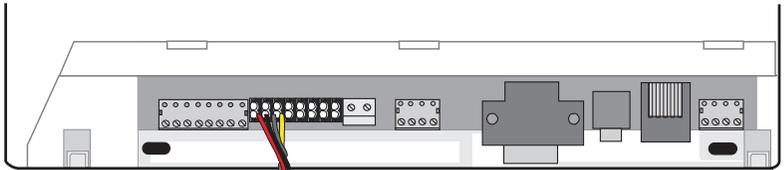
If you intend to install an internal line of your PABX, leaving the building and going to the outside area, you have to prepare a special lightning protection. Consult your dealer for this matter.

Connect analogue subscribers

You are able to connect 4 analogue subscribers by connecting them with both of the related wires to the desired clamps (port1 to port4) in correspondence with the connector's name. The polarity of the wires is not essential.



Connector position for connection of 4 analogue subscribers

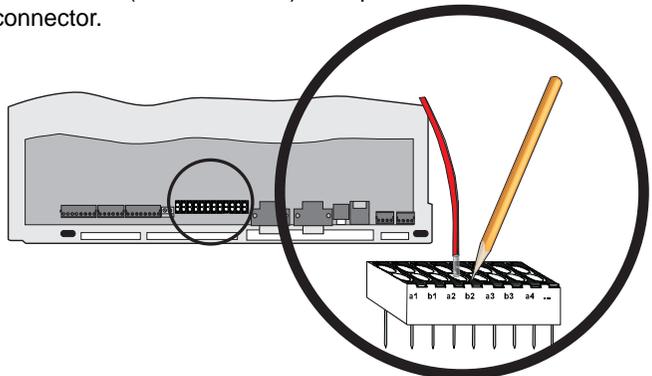


Connection of analogue subscribers (from outlet to PABX)

Connecting and disconnecting of analogue subscribers in case of EURACOM 141F

You should take a pen, eg and press its top onto the orange-coloured edge of the corresponding connection place.

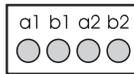
While doing this, you have to insert the wire into the opening or pull it out of the opening again for disconnection (see illustration). It is possible to use the front or back opening of the connector.



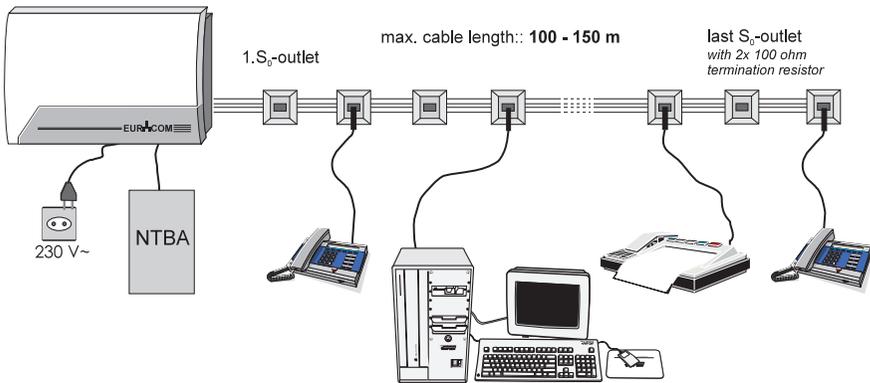
Connect internal ISDN subscribers

You may install up to 12 ISDN outlets on each of the internal S_0 busses and operate up to 8 ISDN terminals, as eg ISDN telephones, ISDN PC cards, connected to these outlets. It is also possible to use ISDN terminals, not being equipped with an own power supply. In this case the following combinations are possible:

- 4 ISDN terminals with a power consumption of up to 1 Watt and 4 ISDN terminals without power consumption, eg PC cards
- 8 ISDN terminals without power consumption, eg PC cards
- a combination, eg two ISDN terminals with and 6 without power consumption



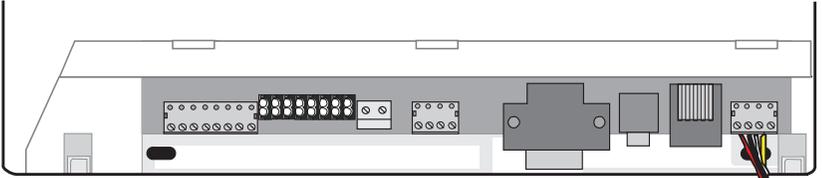
Connector position for connection of the second ISDN port (2nd S_0)



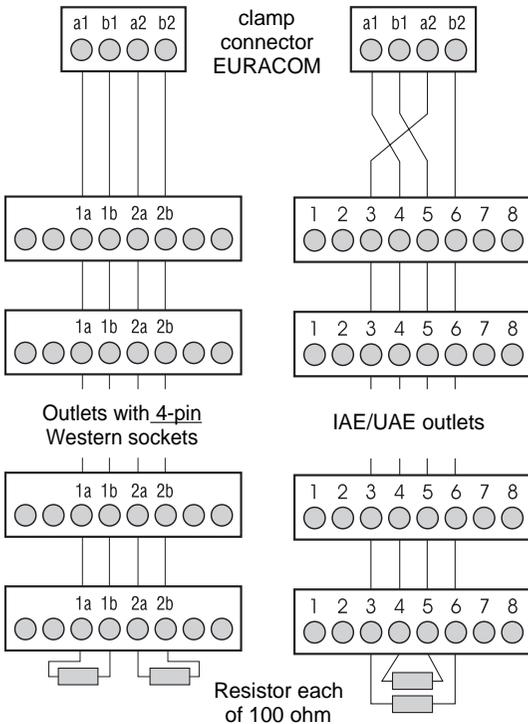
2nd S_0 -Bus (internal)

Wiring of internal S₀ bus for terminal equipment operation

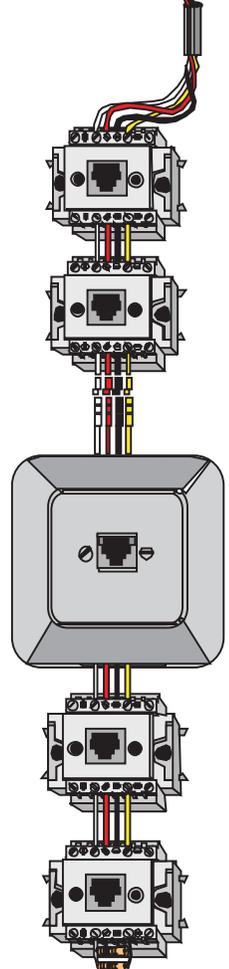
- ▶ The wiring of the internal S₀ bus should be carried out according to the connection illustration shown below.
- ▶ The last outlet has to be equipped with a resistor of 100 ohm value each between clamps 3/6 and 4/5 or 1a/1b and 2a/2b (power rating min. 0,25 Watt)



Example for connection of an internal ISDN bus



Wiring of the internal ISDN bus



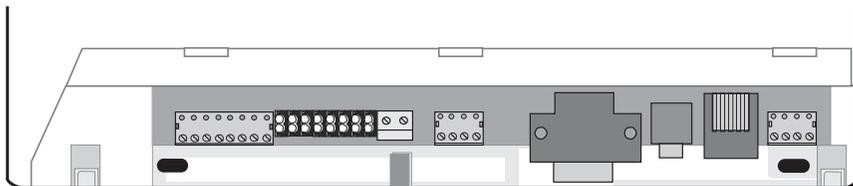
Connect telecommunication earth

For potential balancing reasons your PABX needs a telecommunication earth.

- ▶ Connect the telecommunication earth (FE) to your PABX by use of a 1,5 mm² wire, as shown in illustration below.
- ▶ Connect the other end of FE to the earth/ground potential of the building or floor, but by no means to the protective earth conductor.

IMPORTANT NOTE!

By no means connect FE via protective earth wire.



With 1,5mm² wire to **building or floor earth/ground potential.**

Do not connect to protective earth conductor!

Note VDE 0100!

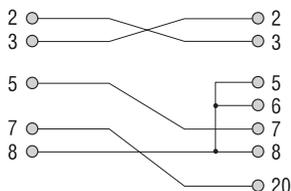
Potential balancing by grounding of the PABX

Connect PC and printer

It is possible to connect your PABX with a PC and a printer via the RS 232 interface by use of an appropriate cable (part of supply volume). You can set the interface parameters of your PABX to the parameters of your PC (--> instruction manual "Configuration", page 44).

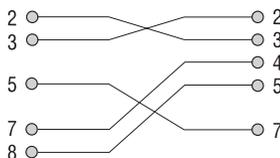
If your PC is equipped with a 9-pin connection, use the enclosed V.24 cable. If your PC is equipped with a 25-pin connection, use the enclosed adapter between V.24 cable and PC connection. If you prefer tailoring a cable yourself, please refer to the pinning given in illustrations below. The cable length must not exceed 3 m.

PABX
9-pin D-Sub-plug



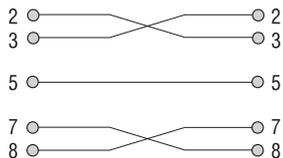
serial printer
25-pin D-Sub-plug

PABX
9-pin D-Sub-plug



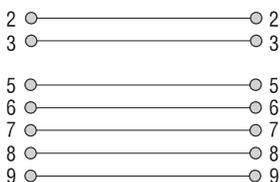
PC
25-pin D-Sub socket

PABX
9-pin D-Sub-plug



serial printer
9-pin D-Sub-plug

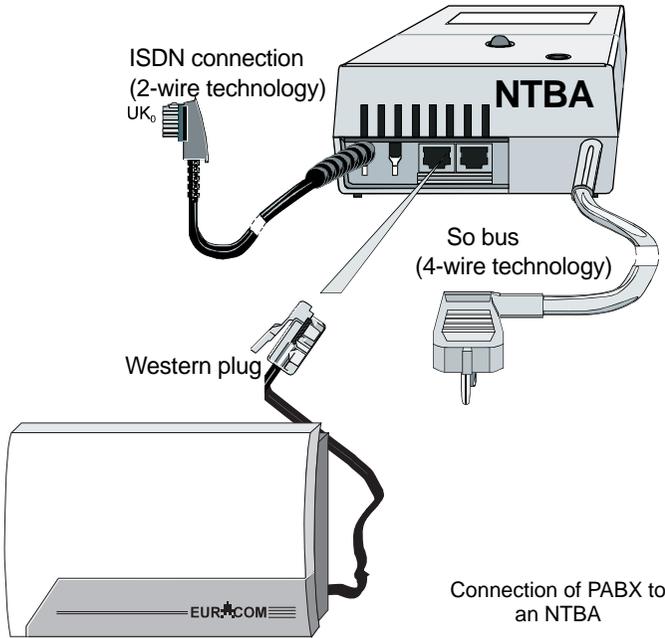
PABX
9-pin D-Sub-plug



PC
9-pin D-Sub socket
(included)

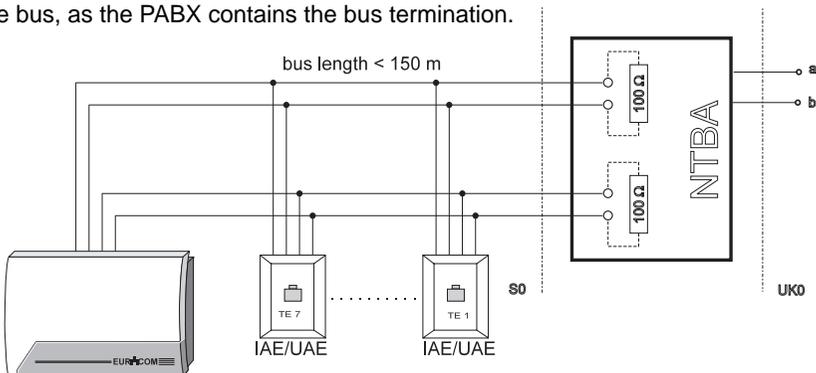
Establishing EURO ISDN connection

- ▶ Insert the included ISDN line cable into the Western socket (1st S_0) of your PABX.
- ▶ Then insert the other cable end into the S_0 socket of the Euro ISDN network termination (NTBA) installed by your network provider and click the plug in.



Multiple subscriber connection

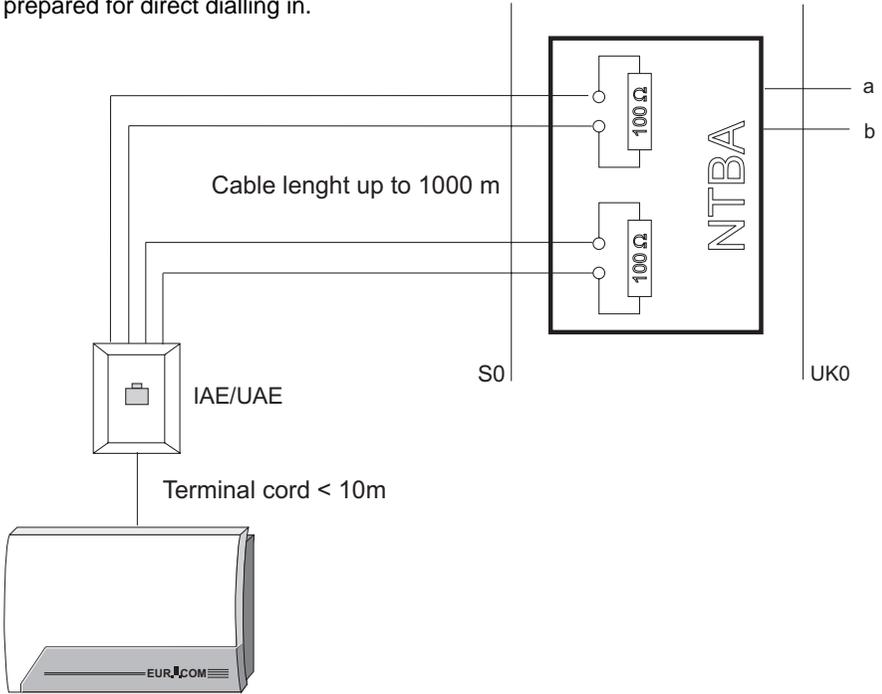
An ISDN multiple subscriber connection (point-to-multipoint) allows the installation of up to 8 ISDN terminals. In this constellation the PABX has to be the last equipment on the bus, as the PABX contains the bus termination.



ISDN multiple subscriber connection - point-to-multipoint connection

PABX connection

The PABX connection (point-to-point connection) allows to connect only one equipment, usually a PABX. The outlet, used for the PABX, must not contain any termination resistors, as these are integrated in the PABX. A PABX connection is always prepared for direct dialling in.



ISDN PABX connection - point to point connection

Power failure and emergency function

Your PABX is powered by the 230 V mains. In case of a mains power failure, your PABX can not be operated. However it will store all programmed configuration features, subscriber data and their call transfers.

Emergency function

In case of a mains power failure you are able to operate an ISDN terminal, set for restricted power mode, on the second S_0 port. This terminal must fulfill the network access requirements during operation on the public telecommunications network.

Conditions:

Multiple subscriber connection:

- Your telephone must be suited for restricted power authorization (please refer to the manual of your terminal equipment in this case!)
- Only **one** telephone is allowed for restricted power mode.
- You have to set your ISDN telephone to the desired emergency MSN.

Example:

1st MSN: internal PABX number
2nd MSN: 1st MSN of your connection
3rd MSN: 2nd MSN of your connection

PABX connection:

Your telephone must fulfill the requirements for network access, concerning a PABX connection. If not, the four jumpers (see illustration below), being placed in state of delivery, have to be removed.



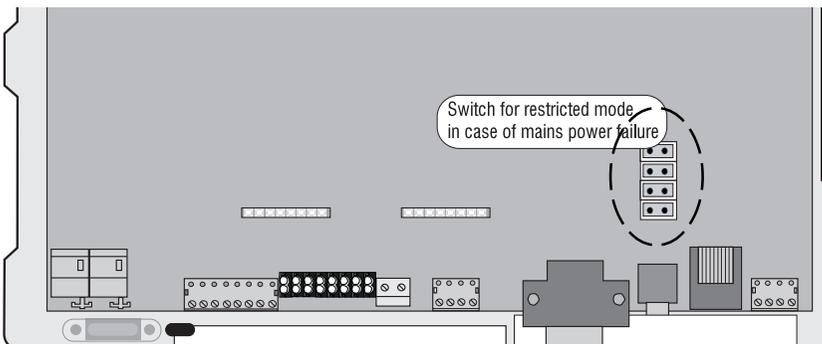
ATTENTION!

In any case unplug the mains before opening the equipment!



ATTENTION!

Equipment may be damaged by electrostatic discharge.
Touch a grounded, metallic part directly prior to the installation.



View of PABX inside area with switch for restricted mode function (marked illustration enlarged)

What can be upgraded, and what is the performance?

In case the current equipment of your PABX at a later time is not enough any more, you can upgrade your EURACOM.

For upgrading of your PABX the MST module is available:

The MST module offers you additional features

- for the connection of a fully separately controllable door station,
- for the connection of an external music source (please check, if national licence for music reproduction are necessary)
- for the connection of an alarm function (one actor and one sensor).

Upgrading with MST module



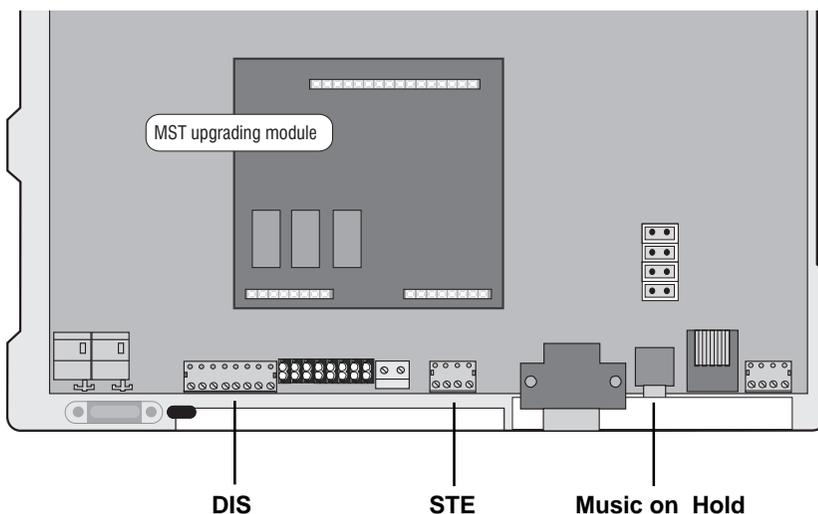
ATTENTION!

In any case unplug the mains before opening the equipment!

ATTENTION!

Equipment may be damaged by electrostatic discharge.

Touch a grounded, metallic part directly prior to the installation.

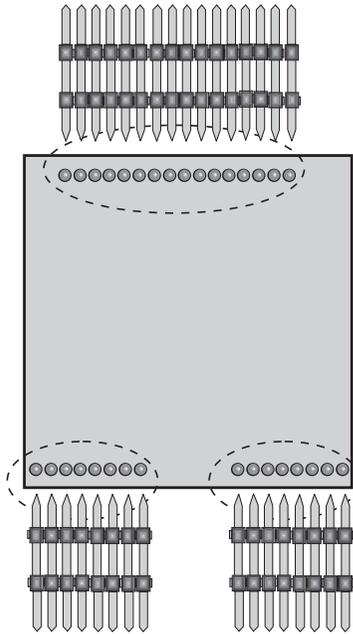


View of the PABX inside area with plugged MST module

- For opening lift the cover of the connector area at the lower edge upwards, until it comes out and remove it. Press the snap-in-hooks, each of them positioned left and right, with a screw driver one after another downwards and slightly lift the housing cover (see marking of housing cover).

Now follow step-by-step:

1. Carefully take the module and the three corresponding pin connectors out of the packaging.
2. Place the module in front of you in that way, that the side containing no components, is facing you.
3. Now take the pin connectors and insert them into the corresponding plug-in positions of the module (see illustration).



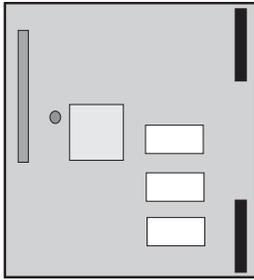
MST module with marked position of the plug-in places for the pin connectors



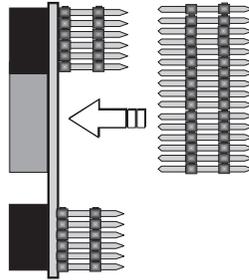
Upgrading MST module

- Now plug the module, with the component side facing upwards, onto the three connectors of the motherboard.

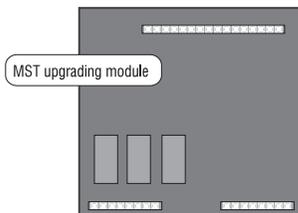
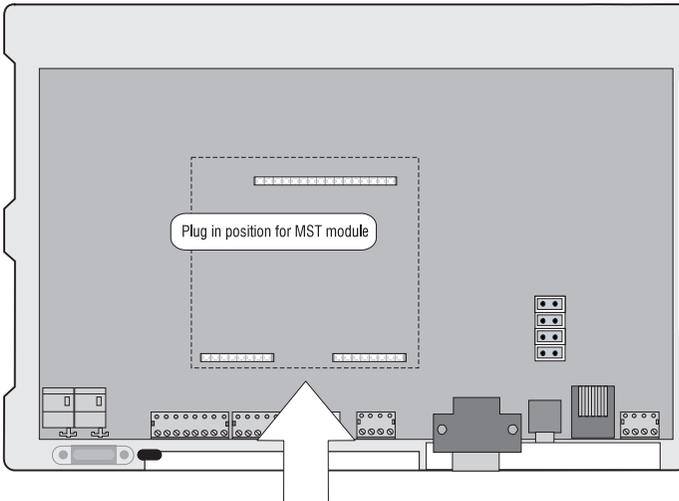
For position of the plug-in places please refer to the illustration below. The module is placed correctly, if the connectors of the module are placed onto the sockets of the motherboard and their positions are matching. The component side of the module has to face towards you.



Top view of MST module



Side view of MST module-Installation side of connectors



Plug in position of MST module on motherboard

If you have installed the MST module, you are able to connect the desired components.

Possible components are:

- an external music source
- a door intercom station
- several appliances, e.g. a secondary ringer.

► Connect these components to the corresponding slots in the clamp area of your PABX.

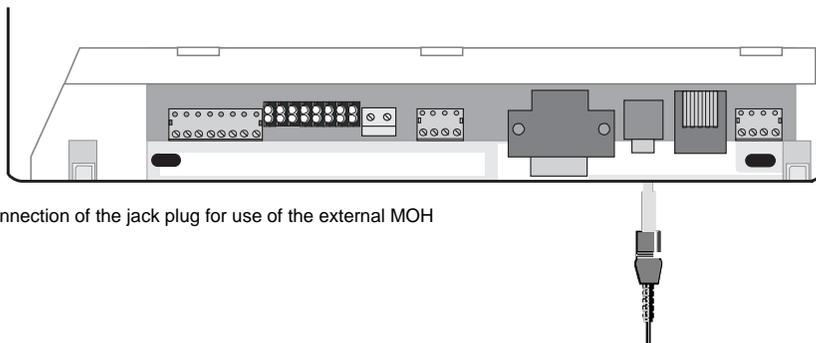
Connect external music source for music-on-hold

It is possible to connect an external music source to your PABX, e.g. CD player or tape recorder. Your caller will then hear, while being in hold condition, an announcement concerning your company or your individual music. This function is also known as MOH (music on hold).

- Connect the external music source via a standard jack plug of 3,5 mm to the jack socket of your PABX.
- Afterwards configure your PABX (--> instruction manual "Configuration", page 56).

IMPORTANT NOTE!

- The external music source has to be active all the time, if it is not controlled by the control contacts.
- Please make sure, that it is checked, if national licence for music reproduction are necessary.



Connection of the jack plug for use of the external MOH

Connect control elements (sensor and actor)

You can use the actor in 4 different ways:

1. Alarm contact
2. Secondary ringer
3. MOH switch
4. Manually switched relay

Connect the control elements according to illustration below.



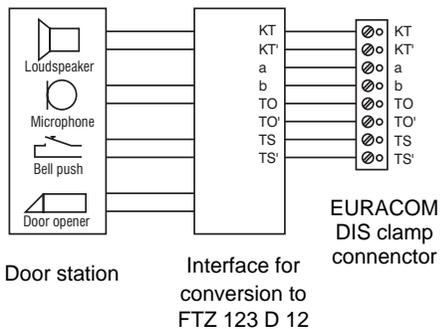
S1, S1' Connections for potential-free alarm contact (sensor)
A1, A1' Connections for operation of control relay (actor)

Afterwards configure your PABX (--> instruction manual "Configuration", page 57+).

Connect door station (DIS)

If you have upgraded your PABX with a MST module, you can operate all door intercommunication systems, which meet the relevant market standard (FTZ 123 D12).

Door bell, intercom station and the door release function can be connected.
Connect the equipment according to the following illustration.



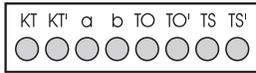
In case of door intercommunication systems according to standard FTZ 123 D12 the interface may be implemented completely or partially. In case of partial implementation it usually covers only the conversion of the listening and speaking circuit to two-wire technology.

In this case the bell push key and the door opener have to be connected separately. You get the information how to perform this conversion from the specification or from the manufacturer of the DIS.

You can find examples for the connection of various door stations on our internet homepage (<http://www.ackermann.com>).

Concerning your PABX, a controllable door station is available.

- ▶ Connect the components using the clamp connector located in the clamp area according to the following illustration.



- KT, KT' Connector for potential-free bell push key
 - a, b Speaker circuit, DC-free
 - TO, TO' Connector for door opener relay
 - TS, TS' Control of a relay for switching on an external amplifier (switching of speech path)
- ▶ Afterwards configure your PABX (see instruction manual “Configuration”, page 66 +).

Technical data

Housing:

Dimensions:	288 x 205 x 56 mm (width x height x depth)
Material:	Bayblend FR 110 (flame resistant)

Weight:

2 kg

Air circulation:

heat transfer (air cooling)

Ambient temperature:

Operation:	5°C to 40°C
Storage:	-25°C to +70°C

Relative humidity:

Operation at 23°C:	45% to 75%
5°C to 40°C:	25% to 80% (without moisture)
Storage:	20% to 90% (without moisture)

Nominal voltage and nominal current range:

180 - 253 V / 0,13 - 0,11 A
ELV circuit

Nominal frequency range:

50 - 60 Hz

Euro ISDN basic access:

Interface (1st S ₀):	TNV circuit ETS 300 012
Protocol:	DSS1 (ETS 300 125 and ETS 300 102)
Operation mode:	Multiple subscriber mode (point-to-multipoint) Transmission distance 100 - 150 m or PABX connection (point-to-point) Transmission distance 1000 m
Connection:	WE 8/4 (RJ 45) IAE plug

Internal analogue terminal interface:

Dialling procedure:	TNV circuit DTMF: flash key recognition: 80 msec hook flash: 150 - 900 msec
or:	Pulse: earth key substitution with dialling of number "1" or hook flash
Power feeding:	31 V +5% / -5% (current limited to max. 31 mA)
Ringling voltage:	37 to 53 VAC on 1,8kΩ + 1μF (ringing impedance) per port

Transmission distance:	2 x 100 Ω approx. 0,7 km with wire dia 0,4 mm approx. 1,6 km with wire dia 0,6 mm
Impedance:	Zr = 220 Ω + 820 Ω parallel 115 nF, symmetrical
Symmetry:	> 55 dB (300 Hz - 3400 Hz)
Level of tones:	-13 dB on Zr (950 mV)
Tone frequency	400 Hz
Charge pulse	16 kHz, -15 dB on Zr (950 mV)
Connection EURACOM 141:	4-pin plug-in screw connection clamp
Connection EURACOM 141F:	4-pin cage clamp

Printer / PC interface:	SELV circuit, RS 232 C
Connection:	9-pin D Sub socket
Connection cable:	shielded
Max. cable length:	3 m
Transmission rates:	2400, 4800, 9600 bit/sec no parity bit 1 stop bit

Internal S₀ interface:	SELV circuit
Internal:	according to ETS 300 012
Power feeding:	39 V +/- 5% (max. 100 mA) free running 37,5 V +/- 5% with power consumption of 4 Watt
Protocol:	DSS1 (ETS 300 125 and ETS 300 102)

MST module

Door intercom system interface:	SELV circuit according to FTZ 123 D 12
Max. switch performance:	(TS / TO relay) 28 VAC / 400 mA or 24 VDC / 300 mA potential free
Connection:	8-pin, plug-in screw connection clamp

Control elements:	SELV circuit
1 sensor:	5 V surveillance loop
2 actor relays:	28 VAC/400 mA or 24 VDC/300 mA potential free
Connection:	4-pin, plug-in screw connection clamp

External music on hold interface:	SELV circuit
Input impedance:	> 30 kΩ, asymmetrical
Input voltage:	2,0 V _{ss}
Connection:	3,5 mm jack
Max. cable length:	3 m

For your notes

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