Belgacom Forum™ 500

Mounting and Commissioning

Manual

belgacom

Welcome to Belgacom

Thank you for buying this Belgacom product. Our products meet the highest quality demands and are outstandingly designed.

The following instructions will guide you in the operation of your Forum™ 500 and answer all important questions. Should you require further assistance or information, please contact the person responsible for your system or your retailer first.

Internet:
www.Belgacom.be/pabx

You can contact our Support on the following telephone numbers:

in Dutch: 0800 22 400
in French: 0800 33 400
in German: 0800 44 400
in English: 0800 55 400

Forum™ 500 Product Family

This manual applies to the Forum™ 500 product family, to which the Forum™ 512, the Forum™ 522, the Forum™ 514, Forum™ 516 and Forum™ 518 communications systems belong. If a reference is made in the text to the Forum™ 500, the description applies to all three systems; where individual features differ, there is a separate note.

Besides that, the Forum™ 550 system also belong to the product family. For this system a separate manual exist.

We wish you a lot of pleasure using your Forum™ 500.

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About this manual

This user guide is designed for the technician who will install the Forum 500 and put it into operation. Usually this is the responsibility of your Belgacom agent, who will prepare the Forum 500 and hand over the configured, operational system.

The information given

- about mounting the Forum 500

- about connecting and commissioning the terminals

- about installation and configuration of software and single components

are for these people only.

Please note: *The Forum 500 may only be installed and serviced by qualified Belgacom personnel.*

Users of the Forum 500 will find instructions and background information in this manual concerning administrative tasks which occur in the course of daily, routine operation (e.g. team configuration).

In addition, there is a list of frequently asked questions to help these users identify and eliminate malfunctions.

Features

The Forum 500 communications system is designed to be connected to an ISDN basic access using the DSS1 protocol. System access (point-to-point) and multi-terminal access (point-to-multipoint) are both supported. The two forms of access can be configured in parallel.

For this purpose

- the Forum 522/512 has a total of four S_0 ports (one external, one internal and two that are switchable between internal/external),

- the Forum 514 has a total of five S_0 ports (two external, one internal and two switchable between internal/external),

- the Forum 516/518 has a total of six S_0 ports, all switchable between internal/external.

The firmware of the Forum 500 is designed for configuring up to 150 users (300 users on the Forum 516).

You can connect the following devices to the Forum 500:

- Euro-ISDN terminals,

- Belgacom system telephones Forum Phone 510, Forum Phone 520 and Forum Phone 530,

- Belgacom Forum Base 500 base stations,

- DECT handsets Forum Free 560 and Forum Free 570 (by Forum Base 500),

- analogue terminals.

An S_0 port can be used by Euro-ISDN terminals working in accordance with DSS1. A U_{pn} port is suitable for the Forum Phone range of system telephones and for Forum Base 500 base stations. An analogue port is used by standard analogue devices.

If the CNIP (calling name identification presentation) feature is supported by your network provider, the latter will show you the name of callers in addition to their number for each incoming trunk call. The Forum 500 supports the display of the name on system telephones. However, if you have created an entry in the

telephone book of the Forum 500 under the number of the caller, this will be displayed instead.

The Forum 500 can be integrated into an existing network (LAN) and be used by all workstations as an Internet access router and mail client.

Configuration and programming of the Forum 500 is performed by means of a special Web browser (known as the "Web console"), which can be run on a connected PC.

The Forum 500 can also be prepared in the service centre.

A PC can be connected via a COM port for the purpose of configuring the system or transferring connection data.

To connect the Forum 500 with the existing company hardware, there are two actor ports (output) and one sensor port (input) available. These can be used to operate a door opener and a doorbell via the system, for example (this requires additional equipment).

The Forum 500 allows you to use CTI (**c**omputer **t**elephony **i**ntegration) applications made by other manufacturers. This requires installation of a TAPI driver on a Windows PC. The Forum 500 also has an integrated dialling wizard, the Forum 500 CTI, with which users can call up and use telephone functions on PCs without first having to install a special TAPI driver.

The Forum 500 complies with the regulations for telecommunications equipment. The DSS1 protocol is implemented.

Packet data in the D channel

Some business applications, for instance POS terminals, cash registers or creditcard terminals, require a permanent data connection over the X.25 packet data network. Packet data transfer through the ISDN D channel (according to X.31 via SAPI 16) can also be established between several S_0 interfaces of the Forum 500. Simultaneous connections are distinguished by means of a TEI (Terminal Endpoint Identifier).

X.31 packet data can be forwarded between two S_0 interfaces (for instance an internal and external S_0 interface). Equally, data can be forwarded ("routed") over permanent QSIG lines. Data can also be routed over an S_{2M} interface.

The routing table for X.31 packet data is set in the Configurator under **PBX Configuration**: **X.31**. Additional information can be found in the Configurator online help files.

Internet Access

It is possible to connect individual PCs to the Forum 500 via the internal S_0 ports, or to connect an entire LAN to the Forum 500 via the Ethernet port. These PCs can access the Internet via the Forum 500. If Internet access is already available from an Internet service provider, this can be configured in the Forum 500. If the client network is not IP-capable, the Forum 500 can administer the IP configuration necessary for Internet access. The Forum 500 has an integrated DHCP server and a DNS server, which in this case take over IP address administration and name resolution for the client PCs.

The Forum 500 enables Internet access for all connected PCs by means of a common IP address. Only this is externally visible. The local IP addresses of the client PCs are translated to the IP address of the Forum 500 by network address translation (NAT). In this way the client PCs in the LAN cannot be reached directly from the Internet. This protects them from direct external attack. The LAN is additionally protected by the Forum 500 filter lists, which can be customised individually (firewall function).

Note: *We recommend you to read through the explanations under Useful Information on Internet Access starting on page 71.*

E-mail

The Forum 500 has an integrated e-mail function that is able to use the POP3, APOP or IMAP4 protocols to check the Internet service provider for incoming mail. A mail account query can be configured for every member of staff (Forum 500 user). The Forum 500 then fetches the incoming e-mail headers (subjects) and senders from the mail server at set intervals, and forwards them to users' system telephones.

Further Network Features

You can offer staff the possibility of dialling into the LAN by means of RAS access.

A LAN-to-LAN link can also be implemented by ISDN. In this way two Forum 500s can connect their LANs by dial-in on demand.

A NET-CAPI program (driver software on the system CD-ROM) allows you to use ISDN functions on those PCs that do not possess a built-in ISDN card.

Further Telephony Features

Installing an extra memory card allows you to operate a digital voice memory and voice information system. For more information, refer to the user guides called "Forum Voice" and "Forum 500 Auto Attendant".

You can optimise your telephone communication by using the team functions and the call-queuing function.

You can also connect two Forum 500s. This cascading of telecom systems is a simple way to increase the number of terminals that can be connected.

As your company's requirements grow, the Forum 500 can be networked with other telecom systems. The Forum 500 can then operate as a sub-system or DECT server. It is also possible to create a telecom system with several networked telecom installations.

Tip: Refer to the explanations in the glossary (supplied as a PDF file on the system CD-ROM).

Factory Settings on Delivery

The following basic settings and features are active on delivery. We recommend that you configure the Forum 500 to your individual requirements before putting it into operation (see *Configuration* starting on page 42).

Telephony Functions

Forum 522/512

- The $S_0$1 port is configured for multi-terminal access, whereas the $S_0$2 port is configured for system access.

- The $S_0$3 and $S_0$4 ports are configured as internal S_0 buses with the call numbers 20 and 21.

- The four U_{pn} ports are configured for Forum Phone 520 system telephones with the call numbers 30 to 33.

- The four a/b ports are configured for analogue devices with the call numbers 10 to 13.

Forum 514

- The $S_0$1 port is configured for multi-terminal access, whereas the $S_0$2 port is for system access.

- The $S_0$3, $S_0$4 and $S_0$5 ports are configured as internal S_0 buses with the call numbers 20 to 22.

- The eight U_{pn} ports are configured for Forum Phone 520 system telephones with the call numbers 30 to 37.

- The four a/b ports are configured for analogue devices with the call numbers 10 to 13.

Forum 516/518

- The $S_0 1$ port is configured for multi-terminal access, whereas the $S_0 2$ port is for system access.

- The $S_0 3$ to $S_0 6$ ports are configured as internal S_0 buses with the call numbers 20 to 23.

- The 18 U_{pn} ports are configured for Forum Phone 520 system telephones with the call numbers 30 to 47.

- The four a/b ports are configured for analogue devices with the call numbers 10 to 13.

All Forum 500 Communication Systems

- The Forum 500 is configured ready for operation in Belgium.

- All cord-bound terminals connected ring when there are incoming external calls.

- The system PIN, for example for remote-programmable call diversion, is set at "0000".

Authorisations

The use of functions by a terminal on the Forum 500 is regulated by means of authorisations. These authorisations are configured for user groups to which the users with their terminals are then assigned.

Two user groups are preset: "Administrators" and "Guests". "Administrators" have access to all functions of the Forum 500 and unrestricted configuration rights. Users in the "Guests" group cannot configure the Forum 500, are not able to make external calls, and have only restricted use of the terminal functions of the Forum 500.

Note: *When the Forum 500 is commissioned, all connected terminals are assigned to the "Administrators" user group. You can configure additional user groups with restricted authorisations and assign them terminals as required by your users. For information*

on how to configure user groups and users, please refer to the "User Manager" chapter of the online help.

The following terminal functions are factory preset to the "Administrators" group:

- External line access: international numbers can be dialled from all configured telephones. External lines must be seized by entering a prefixed code.

- Least cost routing is not active. As soon as LCR is configured, users can make calls via individually selected call-by-callproviders.

- "VIP call" is activated.

- Announcements to system telephones are possible.

- Baby calls can be set up.

- If a call key is configured for a user on more than one terminal, he can program this key for more than one outgoing call, i.e. he can use his various terminals to make parallel calls from this telephone number.

- "Pick-up" and "selective pick-up" of calls from other telephones are activated. Pick-up protection is deactivated.

- "Call seizure" is deactivated.

- The "completion-of-calls to busy subscribers" feature can be activated.

- If more than one terminal is configured for a user under the same number, he can suppress the signalling of calls on the parallel terminals.

- The "call queue" function is deactivated.

- "Reaction: Connection will be disconnected" is deactivated as callers trying to reach a terminal that cannot be reached or is busy will hear a busy signal.

- Call forwarding to internal or external numbers can be activated. Call forwarding on no reply is executed after 20 seconds. Doorway calls can be forwarded.

- It is possible to transfer an external call to an external subscriber.

- Three-party conferences can be set up.

- Call protection, call-waiting protection and intercom protection are deactivated.

- The transmission of one's own phone number (MSN or system access number) to the display of the external party's terminal is activated, but can be hidden.

- The telephone lock can be activated. The terminal PIN is "0000".

- Interception of malicious callers is possible if this feature has been ordered from the network operator.

- Speed dialling is possible if this has been configured in the Forum 500 central telephone book.

- The black- and whitelists are not preconfigured and thus not active. If these lists are configured, they can be activated for the user groups. A special list with emergency telephone numbers is preset and activated.

- The door opener can be activated from all terminals. Doorway calls can be forwarded.

- Keypad dialling can be used.

- Call diversion for SMS calls in the wired network is deactivated.

- The evaluation of connection data by external cost-recording programs is deactivated.

- The cost multiplier is set to 100%, i.e. the costs are not multiplied by any factor.

- Every user can change the configuration of the Forum 500.

- Every user can create a personal telephone book and edit entries in the central telephone book.

- Every user can read out the charges.

- Every user who has a workplace PC can use the Forum 500 CTI to make calls, manage calls and messages, dial numbers from both the central and personal telephone books, and use the busy display of the Forum 500 CTI.

- The multi-company variant is not activated.

Internet Functions

Note: *Settings for mail and ISP and RAS access are only possible by releasing the Forum 500 IP package on the Web console Configurator in the* **SYS Configuration: Licences** *menu.*

- RAS access (with or without callback) can be set up for every Forum 500 user. RAS access requires activation of the RAS authorisation.

- More than one mail account query can be set up for every user.

- Every user with a system terminal can be informed automatically of the receipt of e-mails.

- Users can disconnect existing Internet connections (via the Forum 500 Web console and from a system terminal if the function has been configured on that terminal).

The following IP addresses are preset for the network configuration:

- Host name: host
- IP address: 192.168.99.254
- Network mask: 255.255.255.0

The following addresses are transmitted to the client PCs in the LAN via DHCP or PPP:

- Gateway address: 192.168.99.254
- Domain name: domain
- Domain name server: 192.168.99.254
- PPP addresses: 192.168.100.0 to 192.168.100.10
- DHCP addresses: 192.168.99.129 to 192.168.99.148

You can change the IP settings in the **Configurator**. Check with the network administrator responsible for the LAN if you wish to do this.

Installation

Scope of Delivery

The delivery consists of:

- One Forum 500 communications system (Forum 522, Forum 512, Forum 514 or Forum 516/518)

- Two connection cable for the ISDN S_0 port

- One V.24 connection cable (for the COM port, Forum 514 and Forum 516/518 only)

- One adapter cable for connection of RS-232 to RJ45 (for the COM port of the Forum 522/512)

- One set of mounting screws and wall plugs

- A 1.5 m power cable (Forum 512, Forum 514 or Forum 516/518 only)

- One plug-in power supply (Forum 522 only)

- One Forum Phone 510 quick user guide

- One Forum Phone 520/530 quick user guide

- One Forum Free 560/570 quick user guide

- One CD

Notes on Safety

The CE symbol on the product confirms that it meets the technical guidelines on user safety and electromagnetic compatibility valid at the time of approval.

Please note: *Installation and maintenance should only be performed by specially trained personnel. Always remove the power*

plug from the mains socket before connecting devices to the Forum 500 ports.

DANGER! This device contains hazardous voltages. To make the system dead, remove the power plug from the socket.

The Forum 500 may only be plugged into mains sockets with a protective earth conductor. Mount the Forum 500 only close to easily accessible sockets.

Only open the housing cover. Unauthorised opening of the module cover and improper repair may damage the Forum 500 and could invalidate your warrantee.

CAUTION! Static charges can damage the Forum 500. Make sure you discharge yourself and your tools before and while installing electrical and electronic components of the Forum 500.

Only devices that deliver safety extra-low voltage (SELV) may be connected to the Forum 500. Proper use of authorised devices meets this requirement.

Only devices meeting the technical requirements may be connected to the analogue ports. For details, refer to the section entitled *a/b Ports* starting on page 27.

Do not allow any fluid to penetrate the Forum 500, because this may cause electric shocks or short circuits.

Do not install the Forum 500 during a storm. Do not connect or disconnect lines during a storm.

The Forum 500 is designed for indoor use only. Lay the cables so that they cannot be walked on or tripped over.

The connection of external devices to the sensor/actor should be performed by a qualified electrician.

Mounting Location

The ambient temperature for operating the Forum 500 must be between +5 and +40°C. The power supply must be 230 V/50 Hz AC. A separate fuse for the power supply is recommended.

To maintain the prescribed ambient temperature, mount the Forum 500 in a well-ventilated location, away from direct sources of heat.

Do not position the Forum 500

- in front of or above heat sources such as radiators,
- in direct sunlight,
- behind curtains,
- in small, unventilated, damp rooms,
- on or near inflammable materials,
- or near high-frequency devices such as transmitters, X-ray or similar apparatus.

Use a separate 230 V power circuit and install overvoltage protection.

Wall Mounting

The Forum 500 is mounted on the wall with three screws as shown in this diagram:
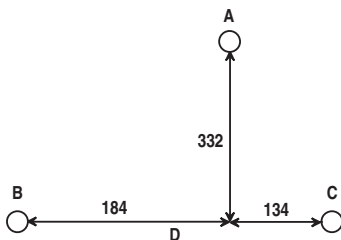
Mounting plan

To fasten the screws at points B and C, remove the cover of the Forum 500 and insert the screws in the holes provided for this purpose. The Forum 500 is suspended from the screw at point A, so there must be a space of 3 mm between the screw and the wall.

Available Ports

The Forum 500 has the following ports (see also *Positions of the Ports* starting on page 23):

Forum 522

- Four analogue a/b ports, designed as pressure terminals (a/b1 to a/b4)

- One actor ports for connection to a door opener, designed as pressure terminals (Actor)

- One S_0 port for connection to an external S_0 bus (usually the NTBA), designed as an RJ45 socket ($S_0$1)

- Two switchable S_0 ports ($S_0$2 and $S_0$3), which can be connected to either an internal or an external S_0 bus. The internal port is designed as a pressure terminal, the external port as an RJ45 socket

- One S_0 port for an internal S_0 bus, designed as a pressure terminal ($S_0$4). $S_0$4 can also be wired externally (as a master) when networking two Forum 500 communications systems in a Q.SIG trunk (also refer to *PBX Networking* starting on page 74).

- Four U_{pn} ports, designed as pressure terminals (U_{pn}1 to U_{pn}4)

- One LAN port (10BaseT), designed as an RJ45 socket

- One COM port for connection to a PC for configuration or transfer of call data, designed as an RJ45 socket

- One port jack to connect the plug-in power supply. Only use the original Forum 522 plug-in power supply.

CAUTION! It is not allowed to operate the plug-in power supply inside the housing of the Forum 522.

Forum 512

- Four analogue a/b ports, designed as pressure terminals (a/b1 to a/b4)

- Two actor ports for connection to a door opener, designed as pressure terminals (Actor1 for activating a door opener. Actor2 is unused.)

- One sensor port for connection to a bell, designed as a pressure terminal (Sensor)

- One PCM port for the connection of two systems, designed as an RJ45 socket (PCM)

- One S_0 port for connection to an external S_0 bus (usually the NTBA), designed as an RJ45 socket ($S_0$1)

- Two switchable S_0 ports ($S_0$2 and $S_0$3), which can be connected to either an internal or an external S_0 bus. The internal port is designed as a pressure terminal, the external port as an RJ45 socket

- One S_0 port for an internal S_0 bus, designed as a pressure terminal ($S_0$4). $S_0$4 can also be wired externally (as a master) when networking two Forum 500 communications systems in a Q.SIG trunk (also refer to *PBX Networking* starting on page 74).

- Four U_{pn} ports, designed as pressure terminals (U_{pn}1 to U_{pn}4)

- One LAN port (10BaseT), designed as an RJ45 socket

- One COM port for connection to a PC for configuration or transfer of call data, designed as an RJ45 socket

Forum 514

- Four analogue a/b ports, designed as pressure terminals (a/b1 to a/b4)

- Two actor ports for connection to a door opener, designed as pressure terminals (Actor1 for activating a door opener. Actor2 is unused.)

- One sensor port for connection to a bell, designed as a pressure terminal (Sensor)

- One PCM port for the connection of two systems, designed as an RJ45 socket (PCM)

- Two S_0 ports for connection to an external S_0 bus (usually the NTBA), designed as RJ45 sockets ($S_0$1 and $S_0$2)

- Two switchable S_0 ports ($S_0$2 and $S_0$3), which can be connected to either an internal or an external S_0 bus. The internal port is designed as a pressure terminal, the external one as an RJ45 socket

- One S_0 port for an internal S_0 bus, designed as a pressure terminal ($S_0$5). $S_0$5 can also be wired externally (as a master) when networking two Forum 500 communications systems in a Q.SIG trunk (also refer to *PBX Networking* starting on page 74).

- Eight U_{pn} ports, designed as pressure terminals (U_{pn}1 to U_{pn}8)

- One LAN port (10BaseT), designed as an RJ45 socket

- One sync port for synchronisation with another telecom system, designed as a pressure terminal (Sync)

- One COM port for connection to a PC for configuration or transfer of call data, designed as a 9-pin submin D port (V.24)

Forum 516/518

- Four analogue a/b ports, designed as pressure terminals (a/b1 to a/b4)

- Two actor ports for connection to a door opener, designed as pressure terminals (Actor1 for activating a door opener. Actor2 is unused.)

- One sensor port for connection to a bell, designed as a pressure terminal (Sensor)

- One PCM port for the connection of two systems, designed as an RJ45 socket (PCM)

- 6/12 switchable S_0 ports ($S_0 1$ to $S_0 6$), which can be connected to either an internal or an external S_0 bus. The internal port is designed as a pressure terminal, the external one as an RJ45 socket

- 18/36 U_{pn} ports, designed as pressure terminals ($U_{pn}1$ to $U_{pn}18$)

- Two LAN ports (10BaseT), designed as RJ45 sockets. The second LAN port of the Forum 516 is intended only for networking two Forum 516/516 or 514/516 systems

- One sync port for synchronisation with another telecom system, designed as a pressure terminal (Sync)

- One COM port for connection to a PC for configuration or transfer of call data, designed as a 9-pin submin D plug (V.24)

Positions of the Ports
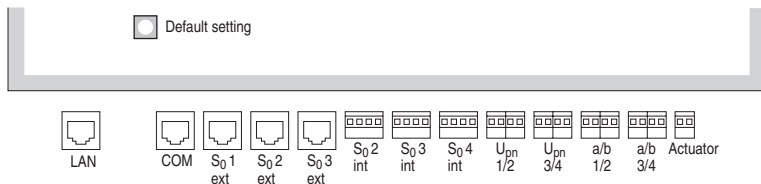
The following diagrams show the positions of the ports on the Forum 500 variants:

Position of ports on the Forum 522
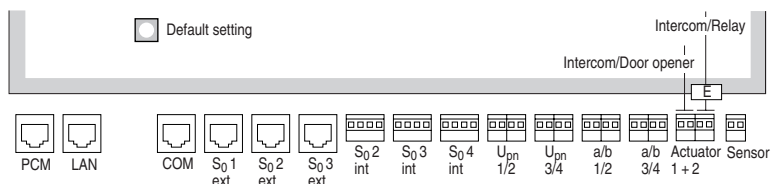
Position of ports on the Forum 512
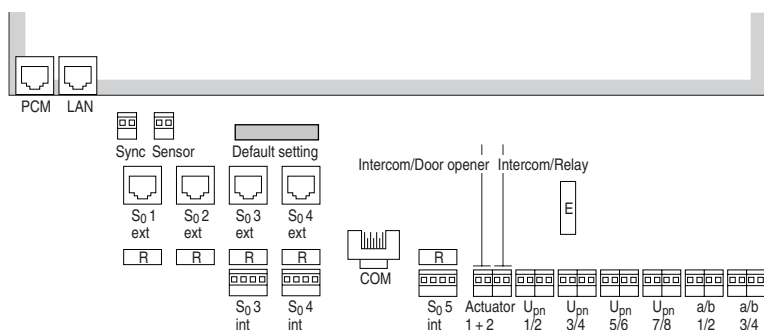
Position of ports on the Forum 514
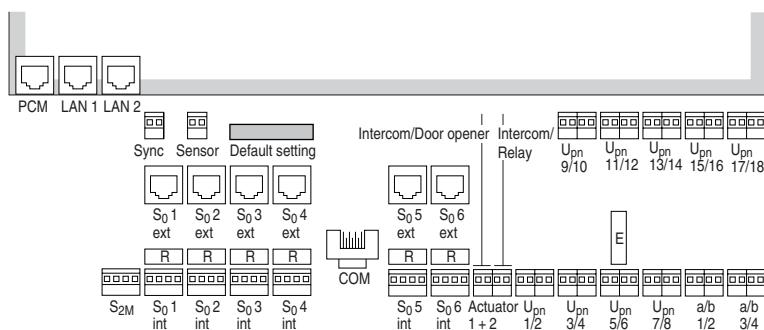
Position of ports on the Forum 516

Port Assignment, Termination, Cable Lengths

S_0 Ports

Whether you use the switchable S_0 ports for internal or external communication depends on your communications requirements and the existing basic accesses.

Note that the S_0 bus requires a terminating resistor of 100 ohms at each end. Resistors in the Forum 514 and Forum 516 are marked with an "R" in the diagrams *Positions of the Ports* on page 23 and are implemented as switch hooks.Open the switch if you do not wish to terminate the bus with the Forum 500.

In the case of the Forum 512, the S_0 buses are terminated by software. You make this setting in the S_0 port configuration in the C**onfigurator** on the Web console.

You can connect up to eight terminals on every internal S_0 bus; up to three of the terminals can operate without an external power supply. The length of the four-wire cable of an internal S_0 bus must not exceed 150 m. The power consumption of each internal S_0 bus is approx. 3 W.
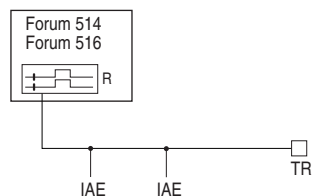
The S_0 bus is terminated at one end by the Forum 500; the hook switch is closed.
IAE = ISDN socket (German: "ISDN Anschluß Einheit") or an ISDN terminal.
TR = terminating resistor, the S_0 termination. The TR must be at the termination of the line. This can also be done by an appropriately wired IAE.
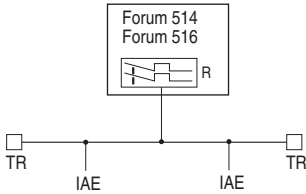
The S_0 bus is terminated by the TR at the ends; the hook switch is open.
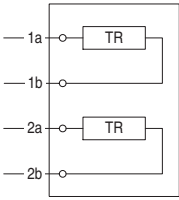
Termination on an ISDN socket

U_{pn} Ports

Each of the U_{pn} ports enable the connection of a Forum Base 500 DECT base station or a Forum Phone 510/520/530 telephone using a twin-wire cable.

Note:

The maximum permissible length of the twin-wire cable on a U_{pn} port of an interface card is 1,000 m when 0.6 mm cable (with twisted pairs) is used. The power consumption of each U_{pn} port is approx. 3 W.
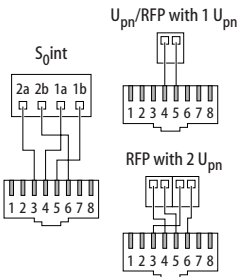
Pin assignment of the S_0 and U_{pn} ports

a/b Ports

The a/b ports are for operating analogue devices (a fax machine, modem or telephone). The maximum permissible length of the cable is 1,000 m when twin-wire 0.6 mm cable (with twisted pairs) is used.

If an entrance intercom system is connected to a/b1, the switch marked "E" on the diagram *Positions of the Ports* starting on page 23 must be open in order to isolate the low frequency voltage from the supply (see also the following section entitled *Actor/Sensor* on page 27).

Note: *With the newer structure of the communications system, the switch is electronic. For this reason, there is no "E" switch with this structure.*

Actor/Sensor

In order to operate an entrance intercom and door opener, you need two twin-wire cables:

- one cable between the door opener and the Actor1 port (marked Intercom/Door opener in the diagram *Positions of the Ports* starting on page 23) as well as
- one cable between the doorbell and the sensor port.

LAN Port

The LAN port (Forum 516/518: LAN 1 port) enables integration of the Forum 500 into an existing in-house LAN by means of a 10 Mbit hub.

A LAN line (twisted-pair line in accordance with 10BaseTcan be up to 100 m long.

The second LAN port of the Forum 516 is intended only for networking two Forum 516/516 or 516/514 systems.

DSL Port

External DSL modems can be connected via the LAN port. In the case of the Forum 500, the output of the DSL modem (NTBBA) is led to the LAN port of the Forum 500 (LAN 1 in the case of the Forum 516/518) via an external switch or hub. The router subsequently converts the PPPoE protocol to the TCP/IP protocol of the LAN.

TAE

DSL & Uk_0

DSL Splitter

DSL

Forum

S_0 | Net

TCP/IP & PPPoE

Uk_0 — NTBA — S_0

Crosslinked twisted pair cable
PPPoE

TCP/IP

PC

DSL Modem

Hub

Net
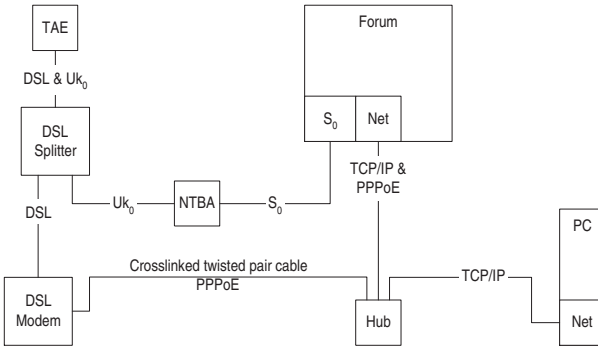
Connecting the Forum 500 to the network via ISDN and DSL

Connection of the DSL modem is via a crossover twisted-pair line. You can also use a switchable port on the hub, which is usually indicated by an "X".

PCM Port

The PCM port is used to connect two Forum 516 systems or a Forum 514 with a Forum 516 system by a special transmission procedure called pulse code modulation. The RJ-45 cable used must not exceed 4 m in length.

Sync Port

The twin-wire Sync port is used when the Forum 500 serves as a subsidiary system for a main system that is a DECT system.

Basic Setting Switch

Using the basic setting switch, it is possible to reset the Forum 500 system to the factory configuration (see *Factory Settings on Delivery* starting on page 12).

The position of the switch can be seen in the diagram *Positions of the Ports* starting on page 23.

Please note: *The current configuration data is lost, the system is reset to the default configuration. For this reason you should back up your configuration regularly, the best time being after every change. For details, refer to the chapter entitled Saving and Loading the Configuration starting on page 58 and to the Web console online help documentation.*

Power Failure

In the event of a power failure, all the contents in the memory (program and user data) are saved without change. The internal clock continues to run for 24 hours. If the power failure lasts longer than 24 hours, the time and date are reset to the factory setting when power is switched on again. When the first external outgoing call is made, the time and date are set to the current value.

On the multi-terminal access, the Forum 512, the Forum 514, the Forum 516 and the Forum 518 include an emergency service. In the event of a power failure, the external $S_0$1 port is switched over to the internal $S_0$5 port (in the Forum 512 to the $S_0$4 port) so that you can still use a connected telephone to make a call.

Emergency operation on a system access is not possible.

Connectible Devices

The Forum 500 ports offer a large number of possibilities for connecting devices. One of the many possible configurations is shown in the following diagram:
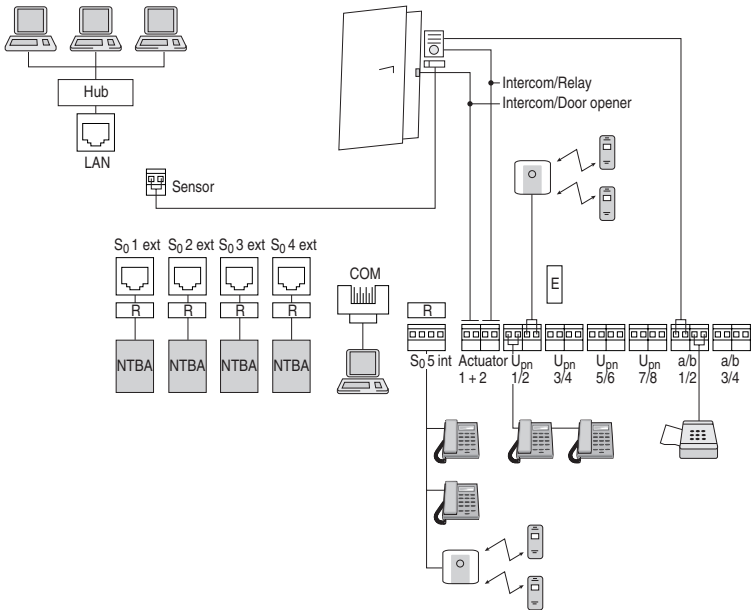
Example of port assignment of the Forum 514 with terminals

Internal/External S_0 Ports

The S_0 ports

- $S_0 2$ and $S_0 3$ (Forum 522/512)

- $S_0 3$ and $S_0 4$ (Forum 514)

- $S_0 1$ to $S_0 6$ (Forum 516)

can either be connected externally (i.e. to ISDN network terminators) or internally; simultaneous use of both is not possible.

The internal $S_0 4$ (Forum 522/512) or the internal $S_0 5$ (Forum 514) can also be wired externally (as a master) when

networking two Forum 500 communications systems in a Q.SIG trunk (also refer to *PBX Networking* starting on page 74).

Up to eight devices per bus (ISDN telephones, ISDN fax machines, ISDN base stations, ISDN cordless telephones, ISDN adapters for the PC) can be connected to the internal S_0 ports by twin-pair cables. The power for three of these devices can be supplied by the bus; if more devices are used, they then require their own power supplies. The internal S_0 buses enable point-to-multipoint calls as per the DSS1 protocol (Euro-ISDN).

U_{pn} Ports

A system terminal can be connected to every U_{pn} port by a twin-wire cable.The Forum Phone 510, the Forum Phone 520 and the Forum Phone 530 are cord-bound system terminals. The Forum Phone 520 and the Forum Phone 530 can be cascaded on a U_{pn} adapter (Module 2nd Forum Phone) so that you can operate two Forum Phones on one U_{pn} port. For further details, refer to the "Forum Phone 520, 530" user guide.

The Forum Base 500 base station is required for the use of cordless system telephones (e.g. Forum Free 560 or Forum Free 570).

If this base station is connected to a U_{pn} port, four simultaneous calls are possible with the mobile parts. If the base station is connected to two U_{pn} ports, eight simultaneous calls are possible. However, note that only as many external connections are possible as there are connected B-channels available.

If you use a cordless handset such as the Forum Free 560, this can also be contacted by other base stations using the GAP/CAP standard.

You can also operate the Forum Phone 510 ISDN terminal on a U_{pn} port.

a/b Ports

The a/b ports a/b1 to a/b4 can be used for connecting analogue terminals. These can be for voice or data communication, and use DTMF dialling, e.g.

- analogue telephones
- class 3 fax machines
- analogue modems (external or internal)
- external devices for music on hold
- external voice mail systems.

Please note: *Adhere to the following notes and recommendations regarding the connection of analogue devices. Devices not meeting the technical requirements of the Forum 500 can cause damage to it.*

Analogue Telephones

Only analogue telephones supporting tone dialling (VF signalling) can be operated on the Forum 500.

Modems

The maximum transmission rate for analogue modems is 33.6 kbit/s (V.34+).

Music on Hold

If you do not operate an external MoH device, the Access 5000 offers an internal MoH, which you can load in the Web console **Configurator**, **SYS Configuration: Components** menu. For details, refer to the online Help.

Please note: *Use only devices with an input impedance of 600 ohms, floating connection, for external music on hold. Incorrect input impedance can cause irreparable damage to the Forum 500.*

Voice Mail

If you are using an external voice mail system, it must be capable of handling the number of digits used for internal telephone numbers, e.g. five digits if you have configured five-digit internal numbers.

The external voice mail system can be connected to internal a/b ports as well as to internal S_0 ports. For both port types the voice mail system can activate the notification for system terminals with the code procedures ✱ 6 8 resp. # 6 8 .

Intercom System (for a/b)

The Forum 500 can be used to operate a "Doorline" intercom system. This intercom system must be connected to one of the a/b ports of the Forum 500 using the "Doorline" module. The "Doorline" module provides the actor for the door opener contact.

Observe the following for connection and use of the intercom system:

- The intercom system and the "Doorline" module should be set to their factory settings.

- In the **PBX Configuration**: **Ports**: **a/b**: **Change** menu in the Configurator, select **Doorline** under **Type**. Activate the **Actuator** option, if you want to use the actor port of the Forum 500 instead of the "DoorLine" relay. The "DoorLine" actor can be operated only when the speech channel is open at the same time. The internal actor can be operated at any time.

- The "Doorline" intercom system has a number of bell keys to which you can assign different call numbers in the **PBX Configuration**: **Ports**: **Doorline** menu in the Configurator.

- You can call the "Doorline" intercom system by entering the code procedure ✱❶❶❷ .

- The "Doorline" intercom system can be connected to any a/b port. However, you can use only one "Doorline" with the Forum 500.

For details on installing and configuring the "Doorline" intercom system, refer to the product user guide.

The intercom system should be installed by qualified personnel only as sensor/actor contacts will need to be connected for this procedure.

Actor/Sensor Ports

For the assignment of the ports, refer to the section *Available Ports* starting on page 20.

COM Port

Please note: *The connection line for the COM port can be up to three metres long.*

A PC for configuring the Forum 500 or transmitting call data can be connected to the COM port. This call data can be evaluated in detail with a call charge registration program.

LAN Port

Using the LAN port (Ethernet) you can integrate an Forum 500 into your corporate network (local area network), and thus use it, among other things, as an IP router for accessing the Internet.

The Forum 516 has a second LAN port for cascading your telecom system with another Forum 514 or Forum 516 (see *PBX Cascading* starting on page 74).

Accessories and Adapters

The Forum Phone 520 and Forum Phone 530 system telephones have one or two slots on the rear for various adapters and other accessories. Further information on installing and operating these add-ons can be found in the "Forum Phone 520, 530" user guide under "Add-ons (with & without an Adapter)".

In the following you will find technical details on the add-ons and a list of compatible accessories.

2nd Forum Phone Module (U_{pn} Adapter)

The "Module 2nd Forum Phone" (U_{pn} adapter) is an adapter with a U_{pn} port for connecting another Forum Phone 520/530 system telephone and a socket for an extra plug-in power supply.

Weight: 70 g
Dimensions: 73 x 60 x 30 mm
Power consumption: max. 195 mW
Cable length: max. 30 m

Please note: *The U_{pn} adapter may be used only for connecting the system terminals listed above. The U_{pn} extension cable must not exceed 30 m in length and must not be used outdoors.*

Note: *An extra plug-in power supply is required to operate combinations of equipment with a power consumption that exceeds the power output of the U_{pn} ports.*

a/b Adapter

You can use an a/b adapter to connect analogue terminals to the Forum Phone 520 and Forum Phone 530 system telephone.

Connecting an a/b adapter will result in exceeding the feed performance of the U_{pn} port, regardless of the range. Therefore, a plug-in power supply must be connected to the a/b adapter.

Note: *Please use the plug-in power supply with the product code 900 263 33.*

Weight: 70 g
Dimensions: 73 x 60 x 30 mm
Power consumption: max. 160 mW
Cable length: max. 3 m

Forum Phone 500 Module Headset (Audio Adapter)

The Forum Phone 500 Module Headset (audio adapter) is an adapter extension with four different ports for external audio and signalling devices.

Weight: 70g
Dimensions: 73 x 60 x 30 mm
Power consumption: max. 260 mW (with relay active).

Audio Adapter Pin Assignment

Port		Used for	Socket	Assignment
1	⌒	Ear cap, second handset, headset, active speaker or microphone	RJ-10 (4-pin Western socket)	1: microphone -
				2: speaker +
				3: speaker -
				4: microphone +
2	◯◯	Recording device; relay contact generates signal for starting and stopping recording.	Stereo jack, 3.5 mm	1 (GND): recording signal, relay contact 1
				2 (peak): recording signal +
				3 (ring): relay contact 1
3	⌂	Not used on Forum 500	Round power socket (4 mm)	-
4	▯	Door display	RJ-11 or RJ-12 (6-pin Western socket)	4, 5: relay contact 2
				1, 2, 3, 6: NC

Electrical Data of Ports

Port	Connection Values
Microphone, microphone of second handset, headset microphone	Electret microphone Typical sensitivity: 10 mV/Pa Power feed: I < 300 µA at 1.5 V
Ear cap, loudspeaker of second handset, headset, headset loudspeaker	Typical impedance: 150 ± 30 ohms Typical sensitivity: 94 dB/1 mW (0 dB = 20 µPa)
Active speaker	Max. output voltage: 1 V_{rms} at input impedance > 10 kohms
Recording device audio input	Typical input sensitivity: 0.24 mV (microphone level)
Recording device start/stop (relay contact 1)	Max. switching voltage: 50 VDC/29 V AC Max. switching current: 1 ADC/0.7 A AC
Door display (relay contact 2)	Max. switching voltage: 50 VDC/29 V AC Max. switching current: 1 ADC/0.7 A AC

Device Combinations

The "2nd Forum Phone" module (U_{pn} adapter) will require the use of the power supply as soon as an add-on (headset module or additional keypad) is connected to one of the devices.

PRA Connector Module

(ISDN 30/Forum 516 PRA Module)

The Forum 516 PRA Module allows you to operate a Forum 516/ 518 on a primary rate access. This access provides up to 30 voice channels. You can also use the Forum 516 PRA Module to network two systems, e.g. in order to use the Forum 516/518 as a subsidiary system or DECT server.

Note: *The maximum cable attenuation between the Forum 516/ 518 and the other system (NT or telephone exchange) must not exceed 6 dB. This corresponds to a length of approx. 150 to 200 m, depending on the type of cable used.*
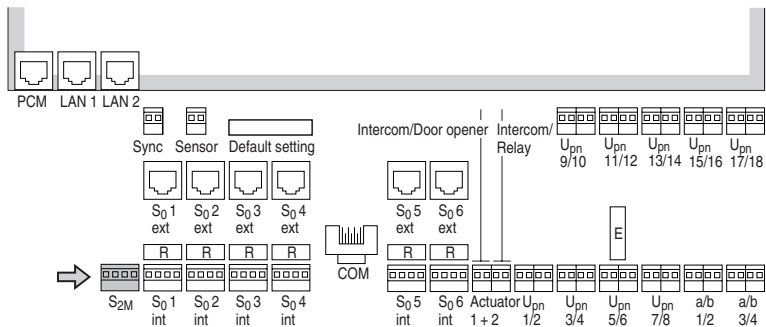
Location of the S_{2M} port (Forum 516 PRA Module)
on the connector module of the Forum 516/518

Installation

Please note: *The module should only be installed by trained personnel.*

DANGER! The device contains hazardous voltages.

1. Pull out the mains plug of the Forum 516/518.

2. Open the housing of the Forum 516/518.

3. For some models of the Forum 516/518 a separate module cover exists. Remove the cover of the module. To do this, push back the two locking levers, (1) and (2), and lift off the cover.
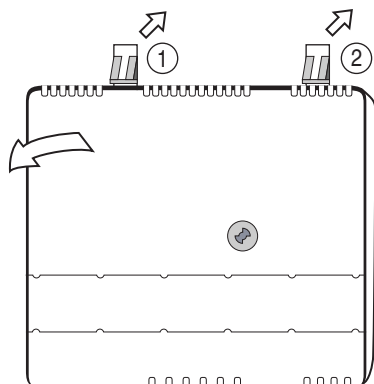
Removing the module cover

4. On the module board, remove the protective covers of the two S$_{2M}$ slots (3) and (4).
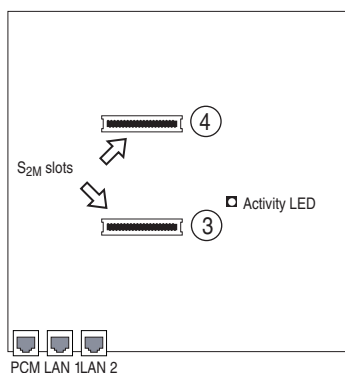
Position of the S$_{2M}$ slots on the module board

5. Insert the S$_{2M}$ module into the slots, making sure you insert the LED side of the module into the upper slot (4).
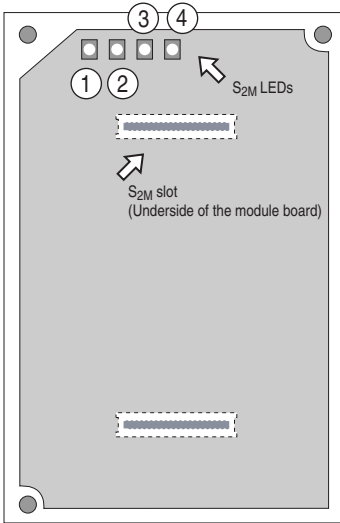
Position of the LEDs on the Forum 516 PRA Module

6. Replace the module cover. To do this, insert the locking hooks at the lower end of the cover into the recesses on the connection module. Press the module cover until the upper locking levers engage.

7. Wire the S_{2M} port of the connector module to the NT or the other PBX according to the following drawing. Make sure the RX and TX lines are crossed over (connect the RX lines of the Forum 516/518 to the TX lines of the other PBX).
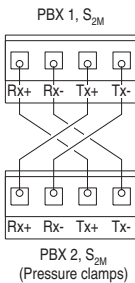
Example of the wiring of the S_{2M} port for two Forum 516/518*s*

8. If necessary, check to make sure that the NT is fed by its own power supply.

9. Reconnect the Forum 516/518 to the power supply.

10. Configure the S_{2M} module in the **Configurator** of the Forum 516/518 (refer to *Configuration* starting on page 42). Check the level 1 status with reference to the LEDs on the module. None of the LEDs are illuminated before the S_{2M} module has been configured.

LED Displays

LED	Meaning
1 (green)	Synchronous (= ok)
2 (green)	Blue alarm
3 (yellow)	Remote alarm or out of sync (yellow alarm)
4 (red)	Loss of signal (red alarm)

11. Pull out the mains plug of the Forum 516/518 again and close the housing.

12. Reconnect the Forum 516/518 to the power supply.

Configuration

The menu item **S_{2M}** appears in the **Configurator**, menu **PBX Configuration: Ports** after installation of the S_{2M} module. Configure the port in the input mask of this menu item. Further information on this can be found in the online help.

*If the menu item **S_{2M}** is not displayed, check whether or not the firmware has to be updated. You need software release 3.0 or higher.*

Configuration

Configuration and programming of the Forum 500 is performed by the **Configurator**, a special software application integrated into the system. The **Configurator** is operated via the Web console, which can be run on any PC connected to the Forum 500.
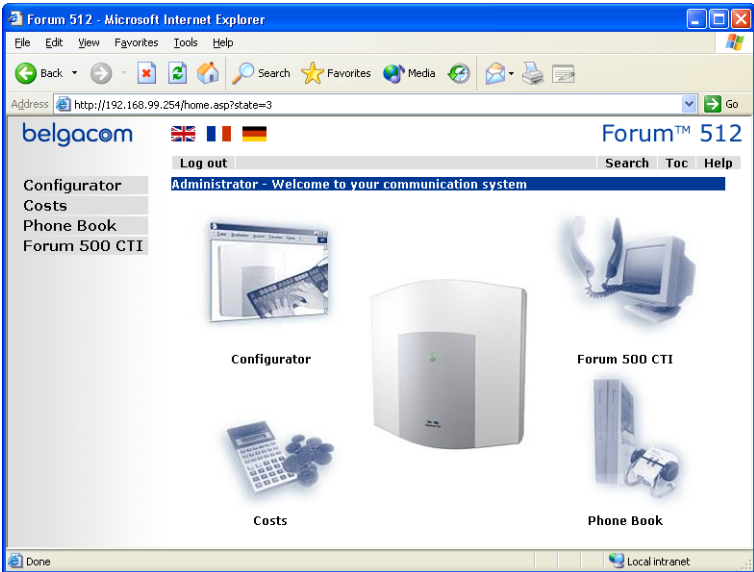
The Forum 512 Web console

Using the Web console, you can:

- perform the initial configuration of the Forum 500,
- configure users of the Forum 500 and authorise them to use certain system services,
- carry out further system maintenance,
- use PC-supported telephony functions,
- read out call charge information,
- access the Forum 500 telephone book.

The Web console has an integrated online help function that offers comprehensive information on configuration and maintenance of the Forum 500 (see *Loading the Online Help* starting on page 55).

For the initial configuration you can connect the PC to the Forum 500 via the Ethernet port. A COM port can also be used. The TCP/IP network protocol is used to set up a connection via one of these ports. You can then open the Web console of the Forum 500 and call up the **Configurator** from there.

Note: *This chapter describes initial configuration of the Forum 500. For day-to-day operation you can integrate the Forum 500 into a LAN and start the* **Configurator** *from any PC. For information on how to do this, refer to the Configuration Examples starting on page 62.*

Brief Guide to Initial Configuration

Setting up a first connection is quite simple with a standard Windows PC:

1. Turn off the PC. Remove all connected network cables.

2. Connect the PC network card to the LAN port. Use a cross-wired Ethernet cable to do this.

3. Restart the PC. If you manually deactivated the automatic configuration of the network card via DHCP, you must reactivate this and again restart the computer.

4. Start the Web browser. In the address field, enter "http://192.168.99.254/".

The login page of the Web console will then open. For further details, please refer to *Configuring the Forum 500* starting on page 52.

First Configuration via Serial Port

1. The serial port can also be used as alternative access for the first configuration.Additionally, you require a crossed serial line ("null modem").Install the "Setup RAS network link" program. To do this, you must log on as an administrator under Windows NT or Windows 2000/XP.

2. Shut down the PC. Remove all connected network leads. Connect the serial port of the PC to the COM port of the Forum 500. Use the connecting cable that is supplied.

3. Restart the PC. Set up an RAS link with the icon configured on the desktop under step 1. Enter "Administrator" without a password as your user name.

4. Start the Web browser. Enter "http://192.168.99.254/" in the address box.

You will see the log-on page of the Web console. Continue reading under *Configuring the Forum 500* starting on page 52.

System Requirements

Note: *If no connection can be established by following the instructions in the Brief Guide to Initial Configuration starting on page 43, refer to the more detailed explanations below.*

A normal TCP/IP-capable PC with a Web browser is required for the initial configuration. The PC should at least meet the following requirements:

- IBM-compatible 200 MHz PC

- 32 MB RAM and 50 MB of free hard disk space

- Microsoft Windows 95/98,
  Microsoft Windows 2000/XP or Microsoft Windows NT 4.0 operating system

- Microsoft Internet Explorer version 4.0 or higher, or Netscape Communicator version 4.5 or higher

Note: *Microsoft Internet Explorer is already installed in current versions of the Microsoft Windows operating system. If required, a Web browser can be installed from the system CD delivered with the Forum 500.*

In addition, the selected type of connection requires further system components that you may have to install on your PC. The driver software is normally supplied with the hardware, and the appropriate version should be available for your operating system. You will find the system software on the installation CD of your operating system.

For connection on the V.24 port (COM port) you need:

- Hardware: one free serial port (RS-232, V.24) and a serial cable (SUBD9). For configuration of the Forum 512, use the adapter cable supplied for connecting RS-232 to RJ-45.

- System software: serial port driver and TCP/IP protocol software

- Driver software: RAS adapter software for installation on the service PC

For connection by network card you need:

- Hardware: network card with 10BaseT port and RJ-45 network cable (crossover twisted pairs or connection via a hub)

- Software: network card driver and TCP/IP protocol software

For connection on an S_0 port you need:

- Hardware: (passive) ISDN card

- Software: ISDN card driver, RAS adapter software and TCP/IP protocol software.

Configuration under Windows

Before beginning initial configuration, install the necessary hardware and matching driver software on the PC. Follow the installa-

tion instructions supplied with the hardware. In many cases, the TCP/IP system software is installed together with the driver software for the hardware. When you have installed the driver software, proceed as follows:

Note: *The following steps are not necessary under Windows 2000/XP. If possible, use a network card connection as network cards are easier to configure and feature higher data transfer rates. For more information please read Connection by Network Card (LAN) starting on page 48*

1. Open "Network Settings" in the Control Panel of your PC. To do this, you select the item "Settings > Control Panel" from the Start menu and double-click on the "Network" icon. Under Windows NT, select the "Protocols" tab.

2. Check the list of installed components to see whether the TCP/IP protocol is present. If necessary, install TCP/IP by clicking on the "Add" button.

3. Select "TCP/IP" from the "Protocol/Microsoft" folder and confirm your entry with "OK".

4. Then follow the installation instructions displayed.

Depending on the type of connection (network card, S_0 port or V.24) you select, note the following when installing the driver and system software.

Connection on Serial Port (V.24)

The required components are normally ready installed together with the operating system. In this case, you can easily configure the connection to the Forum 500 by using the program "Setup RAS network link":

Note: *Under Windows NT or Windows 2000/XP you must log on as an administrator.*

1. Select the "Software, installation program for RAS network link" option. Click on "OK" to install the modem driver.

2. In the dialogue that follows, select a serial port and confirm this with "OK".

After restarting your computer, you will find an icon for the con-
nection to the Forum 500 on your desktop.

Note: *If this procedure cannot be completed properly, refer to
the section entitled Notes on Configuring the Serial Port on
page 47.*

Establishing a Remote Data Transfer Connection

1. Connect the serial port of the PC to the Forum 500 COM port.
   Use the V.24 serial connector cable supplied with the
   Forum 500 (for the Forum 512 use the adapter cable for
   connecting RS-232 to RJ-45).

2. Double-click on the Forum 500 desktop icon created with the
   "Setup RAS network link" program.

3. In the dialogue which follows, enter the user name and pass-
   word valid for the Forum 500 user account being used. For the
   initial configuration, log on under the user name "Administra-
   tor" without giving a password. Clear any entries in the
   "Domain" box and confirm this with "OK".

   When the connection is established, all necessary IP address
   parameters will be transmitted by the Forum 500 using the PPP
   protocol and automatically set for the direct PC link.

4. Once set-up of the connection is confirmed, you can continue
   with *Testing the Setup* starting on page 50.

Note: *It is not possible to operate a network card and a remote
data transfer connection for the same network address range
simultaneously. For this reason you must temporarily deactivate
the network card when you want to establish a remote data trans-
fer connection. To do this, open the "System" icon in the Control
Panel and deactivate the network card in the "Devices" tab. If the
PC is configured via DHCP, you can instead also disconnect the PC
from the LAN and reboot it.*

Notes on Configuring the Serial Port

A serial port is automatically detected when the PC boots and the
corresponding system software is installed. The TCP/IP connection

to the Forum 500 is established by means of additional system software: the RAS adapter software and the serial port driver.

Tip: The serial port that you use is operated with the parameters 57,600 baud, 8 data bits, 1 stop bit, no parity and no hardware data flow control.

Note: *The RAS network is always installed under Windows 2000/ XP and cannot be uninstalled. The following section is only relevant for users of old Windows versions.*

Installing the RAS Network under Windows 95 or Windows 98

1. Open the Control Panel and double-click on the "Software" icon.

2. Click on the "Windows Setup" tab and double-click on the item "Communications".

3. Tick the check box next to the component "RAS Network" and confirm your entry with "OK".

Installing the RAS under Windows NT 4.0

1. Open the Control Panel and double-click on the "Network" icon.

2. Select the "Services" tab and click on the "Add" button.

3. Select "Remote Access Service" from the list and confirm with "OK".

4. To conclude installation of the RAS, the RAS "Properties" dialogue is displayed. Select the driver "Forum Modem" that was created on the first start of the program "Setup RAS network link" and confirm this with "OK".

5. Confirm the configuration with the "Continue" button and close the network settings.

Note: *If you have installed an operating system update earlier (Service Pack), install this again after installation of the RAS.*

Connection by Network Card (LAN)

First-time configuration of the Forum 500 is also possible by a network card, providing this is already installed on the PC, of course.

When the driver software for a network card is installed, the necessary system software for the TCP/IP protocol is installed at the same time. During this process you should activate the automatic assignment of IP addresses by the DHCP protocol.

If the PC has been operating in a network to date, you should activate the automatic assignment of an IP address.

1. To do this, you select "Settings > Control Panel" in the Start menu. Double-click on the "Network" icon. Under Windows NT select the "Protocols" tab. Under Windows 2000/XP right click on the "LAN Link" icon. Select "Properties".

2. Double-click on the item "TCP/IP Protocol > Network card". Activate the option "Obtain an IP address from a DHCP server" in the "Properties" dialogue. Gateway or DNS entries must be deactivated.

Note: *Changes to the Gateway and the DNS configuration are made by DHCP.*

Establishing a Network Connection

1. Connect the PC network card to the Forum 500 network port. To do this, use either a crossover twisted-pair network cable or connect the Forum 500 via a hub.

Note: *For initial configuration, it may be wise not to connect the Forum 500 to an existing LAN in order to eliminate conflicts with an existing DHCP server.*

2. Restart your PC. During the system start, all necessary IP address parameters will be transmitted by Forum 500 via DHCP and automatically set for the network card.

Note: *If the PC has been operating under Windows NT in a network with a Windows NT domain, you will not be able to log on to the domain. So log on to the PC domain as the local user "Administrator".*

3. Continue reading under *Testing the Setup* starting on page 50.

Connection via the S_0 Port

First-time configuration of the Forum 500 is also possible by way of an internal S_0 port. To do this, remote configuration must first have been enabled by a connected terminal (see the section called *Remote Configuration* starting on page 56).

1. Use the ISDN cable to connect a PC, fitted with an ISDN card, to the internal S_0 port. On delivery, the S_0 ports of the Forum 500 are assigned as follows:

    – Forum 512: $S_0$3 and $S_0$4

    – Forum 514: $S_0$3 to $S_0$5

    – Forum 516: $S_0$3 to $S_0$6

2. Set up an RAS connection to the Forum 500 through the call number "398504". Log on as "Administrator".

Testing the Setup

Subsequent to establishment, test the TCP/IP connection between the Forum 500 and the PC.

1. Select the item "Run" in the Start menu. Enter the command "ping host.domain" or
   "ping 192.168.99.254" in the "Open" box.

2. Confirm this with "OK".

Tip: To find the IP address of the Web console, enter ✱ 🔢 🔢 🔢 on a connected system telephone. ✱ 🔢 🔢 🔢 will also show you the network mask.

You can test the correct IP configuration under Windows 95 and Windows 98. Select the item "Run" in the Start menu. Enter the command "winipcfg" in the "Open" box. Confirm this with "OK". Select the network adapter used for connection to the Forum 500. The IP addresses assigned by the Forum 500 on establishment of the connection will be displayed.
Under Windows NT4, 2000 and XP you can check the IP configuration by entering the commands "ipconfig -all" or "route print" in the command prompt. The command "arp -a" produces a list of assigned IP addresses for LAN links.

Starting the Browser

Start the installed Web browser.

When you start the Microsoft Internet Explorer for the first time, the Internet access wizard will automatically appear. Select the option "Use existing account" and confirm this with "OK".

If the PC has been operating in a network or used for Internet access, it is possible that access may be configured indirect via a proxy server. Deactivate access via a proxy server ("Direct connection"). To do this in the Internet Explorer, open the Internet options in the menu "Tools > Internet Options", then select the "Connections" tab. In Netscape Communicator, you select the command "Edit > Settings" and then select the section "Extended > Proxies" under "Category".

Note: *Reset your browser's options for the call-up of pages to their default settings specified on initial installation of the browser.*

Configuration for Linux and MacOS

All modern operating systems support the TCP/IP protocol. You can find detailed information on setting up hardware and software for the Windows operating systems under *Configuration under Windows* starting on page 45. In this section there are tips on integrating Linux and MacOS operating systems.

Linux

The Linux network configuration is usually performed by the setup program with which you install a Linux distribution. After installation, you will see a series of "How To's". In "Linux NET-3-HowTo" and "DHCP Mini-HowTo" you will find instructions on TCP/IP configuration.

For the Forum 500 to configure the TCP/IP settings of a Linux system via DHCP, you must also install the "dhclient" package and activate configuration via DHCP in the Linux network configuration. To access the Forum 500 **Configurator**, you should also install Netscape Communicator 4.5 (or higher).

MacOS

The TCP/IP protocol is already integrated in the new MacOS starting with version 7.6. For the Forum 500 to configure the TCP/IP settings of a MacOS system via DHCP, you must set the configuration method to "DHCP Server" in the menu "Control Panels TCP/IP".

To access the Forum 500 **Configurator**, you should also install Netscape Communicator 4.5 (or higher) or Microsoft Internet Explorer 4.5 (or higher).

Configuring the Forum 500

Preparing the Configuration

Before starting with the configuration, make sure you have the following documents at hand:

- An overview of the ports
- A list of the terminals to be connected
- A list of the IPEIs, if you wish to log on DECT terminals in the secure procedure
- A list of the users to be set up (staff entitled to use the services of the Forum 500) with their names, departments, and the internal call numbers you want to allocate to them
- For Internet access: the Internet service provider access data.

Data not available for first-time configuration can be updated or corrected at a later date.

Note: *Use the Configuration Guide starting on page 116. This will assist you in making the settings in the correct sequence.*

Starting the Web Console

1. Start your Web browser. Enter the Forum 500 IP address in the "Address" box:
   http://192.168.99.254/.

   If the configuration PC gets its IP address automatically from the Forum 500 or if the Forum 500 is entered as the domain name server, you can also start the Web console by entering the DNS name. The DNS name in the factory setting is **host.domain**. You can change this in the **Configurator** (**NET Configuration:Easy Access** menu).

2. The Forum 500 Web console is started. First set the country in which you are operating the Forum 500, and in which language the Web console is to be displayed.
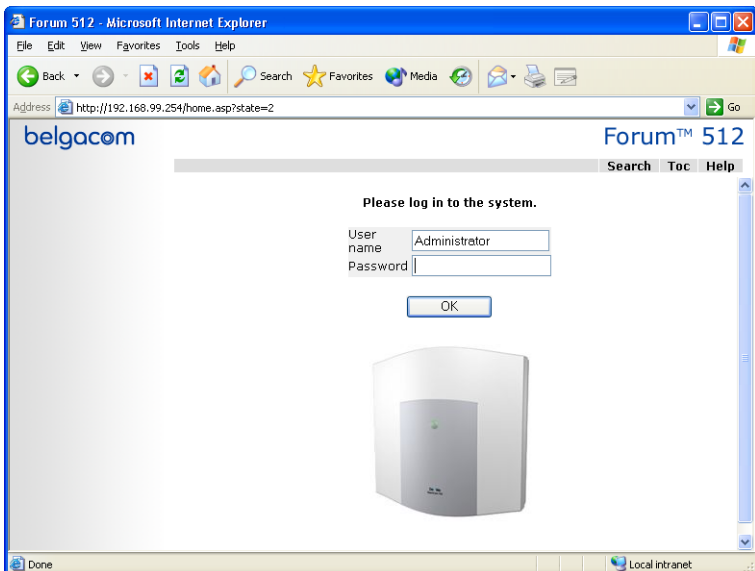
Forum 512: log-on dialogue box

3. To commence configuration, you must first log on. For the initial configuration, enter your:

   - user name: "Administrator"
   - password: for the initial configuration, leave this box blank.

4. Confirm this by clicking on **OK**.
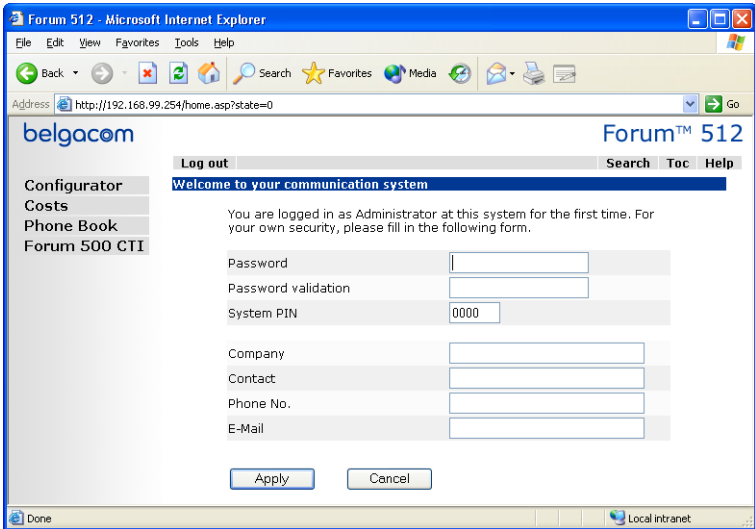
Forum 512: dialogue box for initial access

5. The software opens a dialogue for initial access. Determine an administrator password and enter it in this dialogue.

Note: *It is imperative that you enter an administrator password to prevent other users being able to log on (without a password) as administrator. The administrator has comprehensive configuration rights, which, for security reasons, must be restricted to the administrator. The administrator password can be seen and edited only by the administrator personally. Make a note of the password and keep it in a safe place.*

6. Confirm your input with **Apply**.

7. Click on the **Configurator** button on the home page.

Note: *When the* Forum 500 *is commissioned, all connected terminals are assigned to the "Administrators" user group. In your initial configuration, you should configure additional user groups*

with restricted authorisations and assign them terminals as required by your users.

You will find notes on using the **Configurator** and configuring **Ports**, **Users** and **User groups** in the online help. Click on **Help** in the menu bar or click on **TOC** to activate an overview of help topics.

Loading the Online Help

The online help can now be loaded in the Configurator:

1. Go to the **SYS Configuration: Components** menu. Select the entry **Online Help** and click on **Browse**.

2. Look for one of the language-specific ZIP files. Confirm your choice by clicking on **Open**.

3. Then click on **Load** to transfer the online help to the system.

Please note: *After completion of the loading operation, the system will take a few minutes to analyse the transferred file.*

Finishing the Configuration

1. When you have completed all the settings in the **Configurator**, you must save the configuration (see also *Saving and Loading the Configuration on page 58*).

2. Then select the **Log-off** command in the upper menu bar.

Preconfiguration

Configuration of the Forum 500 can be prepared by a Belgacom agent. For this purpose, a Forum 500 installed here is programmed with the customer data (e.g. user data, call distribution schemes, cord-bound terminals). This data is stored and then loaded into the Forum 500 at the customer's site by a service technician.

This prepared configuration must be completed at the customer's site (LAN configuration and DECT terminals).

For configuration of the Forum 500 Internet functions, first ask the responsible system administrator for details of the customer's LAN prerequisites.

Remote Configuration

The Forum 500 configuration can also be edited or updated by the Belgacom Customer Service Centre via remote access. In the factory setting on delivery, two Belgacom Remote Service Centre telephone numbers are preset, under which a system technician can dial into the Forum 500.

Note: *If one or more MSNs are entered on the* **PBX Configuration***:* **System***:* **Remote service** *menu page in the Configurator and the* **Status** *option is activated, remote configuration access is then activated when a data call from one of the entered MSNs is registered.*

In order for the system technician to be able to log into the Forum 500, he requires a user name and password. In this case, the solution would be to configure a "Service" user assigned to the "Administrators" user group.

If no RAS access has been configured in the Forum 500 **Configurator**, you can use the following code procedure to release the internal RAS access for remote configuration, and then block it again. These code digits can be entered on any standard terminal or Forum Phone system telephone.

Remote configuration on

☎ ✱ ❶ ❾ ✱ ⚏ (system PIN) ❟

Remote configuration off

☎ ❟ ❶ ❾ ❟

Activation is automatically cancelled 30 minutes after the last configuration activity.

Note: *During remote configuration, the* Forum 500 *is blocked for RAS access by any further users.*

Please note: *The system PIN is preset to "0000" and it is absolutely imperative that the system administrator changes it to prevent undesirable remote maintenance.*

Using remote configuration, all Forum 500 settings with the exception of the system PIN can be edited or updated. New software versions of the Forum 500 and the software for the connected system terminals and base stations can also be installed (see the **SYS Configuration: Firmware** menu in the **Configurator**).

For security reasons, settings in the **Configurator**, **Net Configuration** should only be edited on site to avoid malfunctions or failures in the customer's LAN (e.g. due to IP address conflicts). Refer to the chapter entitled *Configuration Examples* starting on page 62, where interaction between the Forum 500 and a LAN is explained.

Codes for IP Configuration

The IP configuration of the Forum 500 is performed on the Web console in the **Configurator**, in the **NET Configuration: Easy Access** menu.

In the event that the IP configuration of the Forum 500 has to be changed and access via the Web console is not possible, you can also use a code digit procedure to change these basic settings. Entry can be made from an analogue telephone, an ISDN telephone and from system telephones.

Ask your system administrator for the Forum 500 system PIN. The factory setting is "0000".

Set IP address

➤ ✳ 1 8 2 ⌗ (system PIN) ✳ ⌗ (www) ✳ ⌗ (xxx) ✳ ⌗ (yyy) ✳ ⌗ (zzz) #

Set NET mask

➤ ✳ 1 8 3 ⌗ (system PIN) ✳ ⌗ (www) ✳ ⌗ (xxx) ✳ ⌗ (yyy) ✳ ⌗ (zzz) #

Restart

➤ ✳ 1 8 5 ⌗ (system PIN) #

Saving and Loading the Configuration

Configurations are saved in a file archive and can be loaded to the Forum 500 either locally from a connected configuration PC, or by remote configuration.

The following configuration and customer data can be saved and loaded again:

- Telephony and network parameters
- User data
- Telephone book entries
- LCR tables

For further information, refer to the online help documentation under the topic **SYS Configuration: Data backup**.

Loading SW Updates

New versions of the system and terminal software can be loaded to the system.

New software versions of the Forum 500 are loaded from the configuration PC, which accesses the **Configurator** (see the **SYS Configuration: Firmware** menu). For information on connecting a configuration PC, see *Brief Guide to Initial Configuration* on page 43.

The terminal software is part of the Forum 500 software and is automatically loaded into the terminals via the Forum 500 if the software version in the terminal is different from the terminal software stored in the Forum 500.

Note: *If you are operating an PBX cascade, new system software is automatically transferred to the slave system from the master system.*

For further information, refer to the online help documentation under the item **SYS Configuration: Firmware**.

Resetting the System Data

You can restore the factory settings of the Forum 500 in the Configurator. Should this not be possible, refer to the next section entitled *Hardware Basic Settings Switch*.

Please note: *If this is done, all individual settings and the user data are then lost. For this reason, you should back up your configuration regularly, the best time being after every change. For details, refer to the chapter entitled Saving and Loading the Configuration starting on page 58 and to the Web console online help.*

Proceed as follows:

1. In the Configurator, call up the **SYS Configuration**: **Restart** menu.

2. Click on **Restart with Defaults**.

3. Confirm this by pressing "OK" when the query dialogue box opens.

Hardware Basic Settings Switch

The Forum 500 configuration can also be reset to the factory setting by means of the hardware basic settings switch.

Please note: *If this is done, all customer settings and user data will then be lost.*

To reset the Forum 500 to its basic settings, proceed as follows:

1. Switch off the Forum 500 by removing the power plug.

2. Remove the cover.

3. Press the basic settings switch.

   – Forum 512: The basic settings switch is a key switch. You press the basic settings switch by inserting a pointed object in the opening on the cover. Hold the switch down.

   – Forum 514/516: The basic settings switch is a hook switch. Close the switch.

You can see the positions of the respective switches in the diagram entitled *Positions of the Ports* on page 23.

4. Replace the power plug in the mains socket. Wait about 30 seconds until the lamp on the front of the Forum 500 starts to flash steadily.

5. Remove the power plug from the mains socket again.

6. Open the key switch.

   – Forum 512: Release the basic settings switch.

   – Forum 514/516: Open the hook switch.

   The system data is now reset.

7. Replace the power plug in the mains socket.

   The Forum 500 now reboots in the default configuration. The procedure is completed when all connected system terminals show the time on their displays.

8. Log on to the Web console (see *Starting the Web Console* on page 53). Configure the Forum 500 (possibly by loading a saved configuration; see *Saving and Loading the Configuration on page 58*).

Generating Your Own MoH Files

The Forum 500 comes with an internal MoH file for Music on Hold. The Forum 500 product CD contains a number of MoH files with different volume levels, which you can load at a later time as necessary.

The file format for non-resident Music on Hold is *.wav. You can also save your own MoH in a *.wav file and load it into the Forum 500.

If you have a Windows operating system, you can use the "Sound Recorder" program to generate your own MoH file. This program is usually located in the Windows directory called "Multimedia".

The MoH file must be coded with 8000 Hz, 8 bit mono in accordance with CCITT, A-Law. This coding is required for the Forum 500 and can be set in the "Sound Recorder" when you save the file

under **Format** (CCITT, A-Law) and **Attributes** (8000 Hz, 8 bit mono).

Note: *If you don't have the Sound Recorder program or the appropriate codec on your Windows operating system, you should install these components from your Windows CD.*

Load your MoH file in the Web console's **Configurator**, in the **SYS Configuration: Components** menu.

Note: *When generating your own MoH file, you may incur a fee for the use of non-resident melodies (e.g. a GEMA fee in Germany or MCPS fee in the UK). The MoH files that come with your Forum 500 can be used free of charge.*

Configuration Examples

Forum 500 in Computer Networks

One of the outstanding features of the Forum 500 is the integration of telephony and computer networks. Connect the Forum 500 via a computer network (LAN) with suitably configured workstations, and you can use its network features from these workstations. Using a Web browser you can access:

- the Forum 500 Configurator
- call charge administration
- the Forum 500 CTI, with which telephone functions can be used on a PC
- the Forum 500 central telephone book and your personal telephone book as well as to the company telephone book (if the multi-company variant is activated).

In addition, the Forum 500 can be used as an Internet access server. RAS access can also be implemented using the Forum 500, which enables the integration of external staff in the LAN.

In this chapter you will find several examples of configurations showing integration of the Forum 500 in a LAN. Which example applies to your situation depends on the size and properties of the existing or planned LAN infrastructure.

The following LAN prerequisites are possible:

Server configuration in the LAN	Forum 500 Functions
No IP server present	Forum 500 functions automatically as DHCP and DNS server
IP server present DHCP server present	Forum 500 functions automatically as DHCP client System Administrator must assign IP address and DNS name for Forum 500
IP server present No DHCP server present	Special case when integrating the Forum 500 in a LAN; settings in the "**NET Configuration**: **Easy Access**" menu must be coordinated with the responsible system administrator

Introduction to TCP/IP

In a single LAN it is possible to use various protocols for the transmission of data. The connection between a workstation computer and the Forum 500 runs via the TCP/IP protocol used on the Internet. TCP/IP can be used together with other protocols (e.g. NetBEUI, AppleTalk or IPX/SPX) on the same network.

Every device participating in data transmission using TCP/IP requires a unique IP address. An IP address consists of four groups of digits from 0 to 255, each separated by a full stop. The supplementary protocols DHCP and PPP automatically assign IP addresses to devices. Class C networks normally use IP addresses in which the first three numbers are the same and the last number is uniquely assigned to a specific device in the LAN. On the Internet, unique addresses assigned by a special organisation created for this purpose are used. Within a LAN, you can use addresses which are not unique world-wide.

TCP/IP enables the establishment of connections via one or more intermediate stations. The decision whether to connect directly or indirectly to the partner device depends on the network mask. The

network mask for a class C network is 255.255.255.0. If the IP address of the partner device does not fit the network mask, the connection is established via the default gateway. If a device knows several data routes to different intermediate stations, one speaks of a router.

The domain name system (DNS) resolves a plain text DNS name into an IP address. The DNS is a hierarchically structured database, distributed worldwide. A DNS server can supply information on the names and IP addresses for which it is responsible. For all other information, a DNS server contacts other DNS servers. For the establishment of every connection from the workstation, it is possible to give either an IP address, or a name that a DNS server resolves into an IP address.

Note: *For further explanations of technical terms, refer to the Glossary on the CD-ROM supplied.*

Forum 500 in a Serverless LAN

In a peer-to-peer network, the workstations are connected to one another via network cables. In many networks, the cables run in the form of a star from a central hub. Such networks do not require special servers. This configuration example is also valid for a LAN with a server using a protocol other than TCP/IP (e.g. AppleTalk or IPX/SPX).
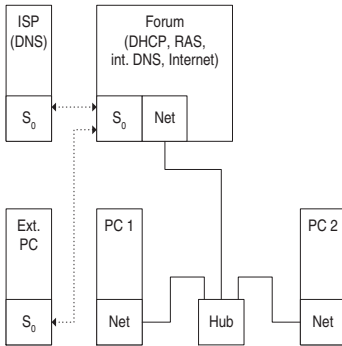
The Forum 500 in a serverless LAN

In a serverless LAN, the Forum 500 takes over the IP configuration of the connected workstations. All TCP/IP settings necessary for the workstations are assigned by the Forum 500 via DHCP (dynamic host configuration protocol). In this operating mode, an IP address space reserved for such networks is used:

192.168.99.254	Forum 500 IP address
192.168.99.129 to 192.168.99.148	DHCP addresses: IP address space for workstations
192.168.100.0 to 192.168.100.10	PPP addresses: IP address space for RAS dialling
255.255.255.0	Network mask (class C network)
192.168.99.254	DNS server IP address
192.168.99.254	Default gateway IP address

Install the TCP/IP network protocol and a Web browser for every workstation which is to have access to the Forum 500 network features.

For notes on installing network cards, refer to *Connection by Network Card (LAN)* on page 48.

DNS Name Resolution

In a serverless LAN, the internal DNS name resolution is performed by the Forum 500. If you type the string "host.domain"

into your browser, a DNS request is sent to the Forum 500 IP address. The Forum 500 responds with the correct IP address, so that the **Configurator** home page can be called up.

In a peer-to-peer network (Windows network), the workstations each have a name which is displayed in the network environment. These NetBIOS names can differ from the DNS names assigned to the workstations by the Forum 500. The Forum 500 is not visible in the network environment.

Internet Access

If access to an ISP has been configured on the Forum 500, the Forum 500 can be operated as an Internet access server without any additional configuration of the workstations. When you want to see a Web page, you simply type the URL (uniform resource locator; Internet address; "http://...") in your browser. In a serverless LAN, the Forum 500 is configured as a DNS server and default gateway. The workstation therefore sends its Internet connection request to the Forum 500.

In almost all cases, the request will contain a DNS name which is unknown in the internal network. When you type a URL into your browser, the Forum 500 receives the request to find the corresponding IP address. If the name is unknown in the LAN, the request is forwarded to an ISP's external DNS server.

Note: *Workstation PCs automatically add a domain name to URLs without a dot. You specify this domain name in the* **Configurator***. For example, if you have configured "firm.co.uk" as the domain name, an access request for "www.firm.co.uk" will be interpreted as a local DNS request which does not lead to the establishment of an Internet connection. For this reason, you should choose a name which is not used in the Internet as the domain name ("firm-forum.co.uk" for example).*

RAS Access

You can establish a connection from an external computer with an ISDN card to the Forum 500. The necessary TCP/IP settings are transmitted by the Forum 500 on establishment of the connection. The computer that has dialled in now has access to all services in

the LAN capable of being used via TCP/IP. The authorisation for RAS access is set up in the **Configurator** via the **User Manager: User Groups** menu.

In a serverless LAN, Windows uses the NetBIOS protocol for accessing files and printers via the network environment. NetBIOS can use NetBEUI, IPX/SPX or TCP/IP as the transport protocol. In the network environment, you can only access files and printers on workstations using TCP/IP for NetBIOS.

Note: *In a serverless LAN, the workstations running decide independently which one is to keep the list of names visible in the network environment. This process is triggered by broadcasts, which can take some time on a RAS connection. You can shorten this period by activating the "Find > Computer" function in the Start menu and selecting the client computer.*

Forum 500 in a LAN with an IP-enabled Server

In a LAN with an IP-enabled server, you should coordinate integration of the Forum 500 with the responsible network administrator. You must decide on the IP address space to be used and which network services (DHCP, DNS, RAS, Internet access) the Forum 500 is to handle in the LAN.
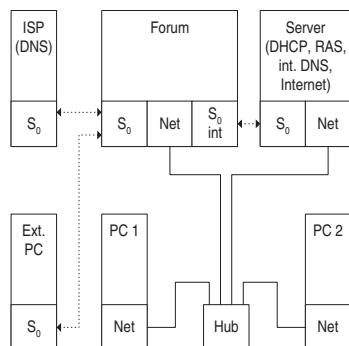
The Forum 500 in a LAN with an IP-enabled server

In many cases, an IP-enabled server configures the TCP/IP settings via DHCP for all workstations. On starting, the Forum 500 requests TCP/IP settings via DHCP. If this request is responded to, the Forum 500 uses the TCP/IP settings received. You can then use a workstation to access the Forum 500 **Configurator** under the IP address assigned by the server.

In networks in which the TCP/IP settings are made manually, you have to enter the corresponding TCP/IP settings in the Forum 500 **Configurator** (**NET Configuration: Easy Access** menu). Here the Forum 500 acts as the DHCP server. A workstation requesting the TCP/IP settings via DHCP then receives the settings you made in the **Configurator**.

DNS Name Resolution

In a LAN with an IP-enabled server, the latter is also responsible for DNS name resolution. If you want to start the **Configurator** by entering a DNS name, you must link this name on the server with the IP address used by the Forum 500. For further information, refer to the server documentation.

Note: *To access the Forum 500 under the same IP address after a restart, you must specify this IP address permanently on a DHCP server. On a DHCP server it is possible to link the MAC address of a network card with a specific IP address. You will find details in the server documentation.*

Internet Access

You can also use the Forum 500 as an Internet access server in a LAN with an IP-enabled server. To do this, you must enter the Forum 500 IP address on the server as the default gateway. In addition, you must edit the internal DNS server configuration so that the resolution of external DNS names is forwarded to the Forum 500.

In this example, the Internet connection is established from a workstation via the server, which in turn requests Internet access from the Forum 500.

There are two different ways of suitably configuring the internal DNS server. You can enter the Forum 500 IP address as a DNS forwarder. If you require access to extended DNS information, you can also configure the DNS server for a recursive DNS request without the DNS forwarder. For further explanation, refer to the DNS server documentation.
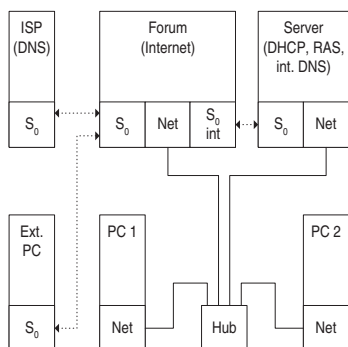
The Forum 500 as a DNS server in a LAN with an IP server

RAS Access

In a LAN with an IP-enabled server you can also enable external computers to dial in via the Forum 500. To do this, you should coordinate with the network administrator the IP address space which can be assigned to an external computer dialling in, and enter it in the **Configurator**, **NET Configuration: Easy Access** menu, under **PPP Addresses**.
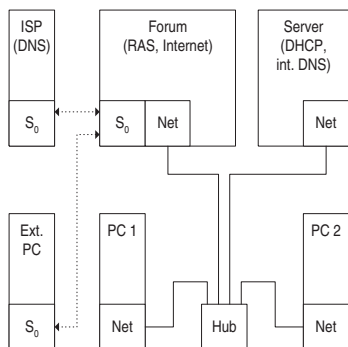
RAS access by the Forum 500 in a LAN with an IP server

The user account administered by the Forum 500, with which dial-ling in is permitted, only allows the establishment of direct and anonymous TCP/IP connections such as HTTP, FTP or SMTP con-nections. If you additionally want to allow file or printer access in the network, you must set up a suitable user account on the addressed server for network log-in. If you use the same log-in name for the Forum 500 user account and the same password for the network log-in, you have to enter this combination only once when dialling in.

Note: *In a larger Windows network with several segments, the lists of computer names visible in the network environment can no longer be established by broadcasts. In this case you use a special WINS server whose address the Forum 500 does not make known to the workstation when dialling in. For this reason, you enter the address of a WINS server manually in the network settings of the workstation.*

LAN-to-LAN Link

You can use the Forum 500 to interlink two LANs via ISDN. To do this, you configure two Forum 500 systems so that they can dial in to each other. In order for this to work, the two LANs must be con-figured for different IP address ranges (subnetworks). For at least one of the Forum 500 systems, change the prescribed address range for the LAN.
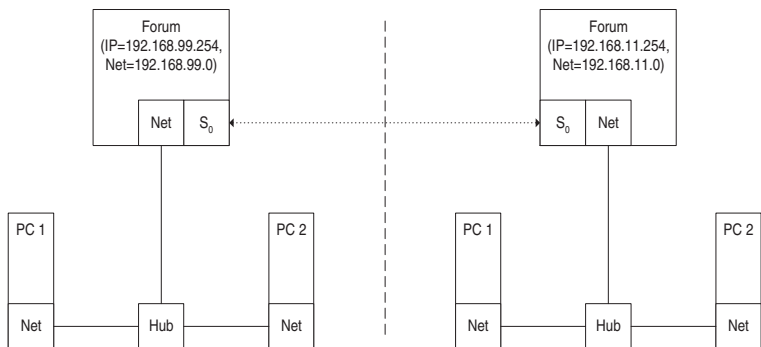
The Forum 500 in a LAN-to-LAN link

In the **Configurator**, **NET Configuration: LAN-LAN** menu you can configure the dial-in settings. The Forum 500 will set up a connection whenever a TCP/IP data transfer to the other LAN is requested.

Note that such a connection is only set up when specific requests are made. These can be for FTP file transfers, e-mails or down-loading Web pages. Name resolution via broadcasts is not possible. If you wish to use the LAN-to-LAN link to access files and printers in the Windows network, you need an IP-enabled server that administers the name resolution for the Windows network.

As the IP address range, you can select one of the 256 class C subnetworks designed for local LANs. Select a class C sub-network in the range from 192.168.0.0 to 192.168.255.0.

Useful Information on Internet Access

Costs

The Forum 500 uses a router function to access the Internet, which means that it automatically establishes an Internet connection when required and terminates the connection after a certain period of time if no data are being transmitted.

Unfortunately, programs other than those typically intended to access the Internet (such as your browser or your e-mail soft-ware) may send out data packets which cause an Internet connection to be established, even if these programs are not strictly Internet-associated applications.

Examples of such programs are the Microsoft^{TM} XP^{TM} operating system, various multimedia programs such as Realplayer^{TM} and anti-virus applications that may establish an Internet connection for automatic updates (the so-called "phone home function").

It is therefore highly advisable to limit ISP access by specifying the maximum monthly connection time under **Connection time**

per month (maximal) in the **NET Configuration**:
Connections: **ISP** menu on the web console.

Using the Web

A Web browser not only enables you to use the Forum 500 **Configurator** from every workstation but also to obtain a wealth of information from the Internet. Simply enter the desired URL in the address field of the browser. Access from a stand-alone PC via an online service differs from Internet access via the Forum 500 in the following respects:

- When you request a Web page, dialling in results automatically. There is no display of dialogues with manual confirmation of dialling in or hanging up.

- Requesting Web pages is not a connection-orientated service. When the Web page has been loaded completely, the TCP/IP connection is cleared. If you do not request further Web pages, the Forum 500 automatically releases the connection to the Internet after a certain, specifiable duration.

- It is possible to call up Web pages simultaneously from several workstations.

- The Forum 500 can block access to certain Web pages by means of filter lists.

E-mail

One of the most important services in the Internet is e-mail. E-mails are buffered in individual e-mail accounts on a mail server. Mail servers are operated by ISPs for example. With the Forum 500 you can set up one or more e-mail accounts for every user account configured on the Forum 500. These e-mail accounts are then checked at regular intervals.

If there are new e-mails in an e-mail account, and the Forum 500 has been configured for this function, the user specified in the Forum 500 user account is notified of the new e-mail on his system terminal. System telephones from the Forum Phone product range can also display information such as the sender or the subject of the e-mail.

NAT

Network address translation (NAT) is activated on accessing the Internet (ISP). You require this feature in order to translate internal IP addresses to valid external IP addresses. This has three important consequences for Internet access:

- Several workstations can share a single Internet access. You do not require a LAN access, only a single account with the Internet service provider.

- The IP addresses used in the LAN are translated into IP addresses valid worldwide. So you require no such addresses for your LAN.

- Only TCP/IP connections triggered from a workstation can be established. Consequently, while you can call up Web pages from a workstation, you cannot install a Web server visible in the Internet on a workstation.

Certain protocols cannot be used when NAT is being used. This affects protocols with the following properties:

- TCP/IP addresses are transported in the useful load, e.g. Net-BIOS over TCP/IP.

- The protocol requires an active, inward-directed connection establishment, e.g. ICQ.

- The protocol will function without TCP/UDP port numbers, e.g. ICMP or IGMP.

The Forum 500 NAT has suitable processes for ensuring the functions of many important protocols affected by these rules. These are the protocols FTP (in "active" mode), CuSeeMe ("videoconferencing"), IRC ("chat"), ICMP errors ("traceroute") and ICMP echo ("ping").

Protocols which require inward-directed connection establishment can be configured in the **Net Configuration**: **Port Access** menu. For further information, refer to the online help of this menu.

PBX Networking

As requirements grow, the Forum 500 can be operated together with other PBX installations. If you merely need a larger number of connections, it is easy to link a second PBX ("*PBX Cascading*"). If you want to operate the Forum 500 at several locations with different PBXs, this is possible by *PBX Networking*.

PBX Cascading

You can combine two PBXs in order to increase the number of terminals that can be connected. A master PBX and a slave PBX are connected to one another by means of two cables. The two PBXs essentially function like a single PBX with a higher number of ports. The master PBX controls the slave PBX. The following PBXs from the product family can be used for cascading:

Master PBX	Slave PBX
Forum 516	Forum 512, Forum 514 or Forum 516

Note: *The Forum 522 is not equipped with a PCM port. For this reason, PBX cascading is not possible with this PBX.*

Functionality of PBX Cascading

PBX cascading requires two twisted-pair leads with RJ45 plugs between the PBXs:

- Voice data: one lead with all eight pins wired 1 to 1. Connect this to the PCM ports of the PBXs. The shielded CAT-5 lead may be up to three meters long.

- Administration data: one CAT-5 Ethernet lead. You connect this to the LAN2 port of the master system (host system) and to the LAN1 port of the slave system (add-on system).
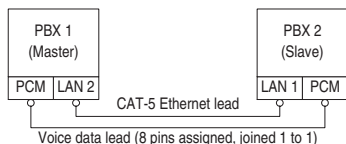
Cascaded PBX system

Putting a Cascaded PBX into Operation

Proceed as follows to put a cascaded PBX system into operation:

1. Take the additional slave system out of its packaging and place it in immediate proximity to the master system. Connect a system telephone to the slave system for a later performance check. Use the $U_{pn}1$ press-fit terminal.

Please note: *If you wish to use an older PBX as the slave system, you must first load system software for it (version 3.0 or higher).*

2. Back up the master system data. For further information, refer to the online help topic **SYS Configuration: Data Backup**.

3. Switch off the master system if it is operating. Disconnect the module from the power supply by pulling out the mains plug.

4. Connect the two modules by means of two suitable cables as described above.

5. Power on the two PBXs. The order in which you do this does not matter.

6. Select the **Type** of slave system with the Configurator of the master system in the **SYS Configuration: System: Slave** dialogue box. Enter the Ethernet card address of the slave system in the **MAC address** input field.

   If a possible slave system was detected when the system was started, there is an additional entry in the **Type** field ("Online: PBX type"). If you select this entry, the settings for **Type** and **MAC address** are applied automatically.

Please note: *If you change the type of slave system later on, the port settings that have been made will be deleted.*

The master system then initialises the slave system. This may involve transfer of firmware (operating software) from the master system to the slave system. This can take a few minutes.

7. Configure the system telephone connected to the slave system for testing purposes in the **Configurator**. In the **PBX Configuration: Ports: Upn** dialogue, click on one of the additionally displayed entries of the type **Upn 1/n** (1: slave system, n: U_{pn} port number)**.**

Note: *Changes to the configuration while initialising the slave system may trigger error reports referring to the ongoing initialisation.*

You can see that the initialisation has been completed from the display on the system telephone connected to the slave system.

Notes

Observe the following when operating a cascaded PBX system:

- All U_{pn}, S_0 and a/b ports of the slave system can be used with appropriate telephones. All features of system telephones on U_{pn} ports are available without restriction.

- The S_0 ports of the slave system can also be used for trunk lines or for PBX networking (see *PBX Networking* starting on page 77).

- It is not possible to operate a DECT base station on one of the U_{pn} ports of the slave system.

- The COM, actor/sensor and –if present– LAN2 ports of the slave system cannot be used.

- The two communications systems must have a direct Ethernet connection or be connected via a hub in order to exchange data. They cannot be connected through a router.

- The slave system cannot be addressed directly through a LAN. For configuration, always use the Web console of the master system.

- A memory card installed in the slave system (Forum Voice) cannot be used.

- To operate the slave system again normally, you must reset it to its factory settings (refer to *Resetting the System Data* starting on page 59).

PBX Networking

Forum 500 provides all the features necessary for PBX networking. You need PBX networking in the following cases:

- To operate the Forum 500 as a subsidiary system on another PBX. This will also allow you to use the Forum 500 as a DECT server, for example.

- To network several Forum 500s into a PBX system.

- To use flexible configuration possibilities of trunk lines for a Forum 500.

All settings that affect the configuration of PBX networking can be found in the Configurator menu **PBX Configuration: Trunks** and in the **PBX Configuration: System: Settings** dialogue under **System linking**. Refer also refer to the corresponding help topics in the Forum 500 online help.

Note: *If you do not need the features of PBX networking, the simplified configuration is sufficient in most cases. For this purpose, assign the preconfigured trunk groups* **Multi-terminal access** *or* **System access** *to the ports. The preconfigured route called* **External trunk** *now makes it possible to seize an external line immediately or by first dialling the prefix "0". You can rename the preconfigured bundle and the preconfigured route if required, but you cannot delete them.*

Connections

Networking two or more PBXs means interconnecting them. The Forum 500 allows you to use both trunk lines and point-to-point connections on external S_0 ports or on the S_{2M} port.
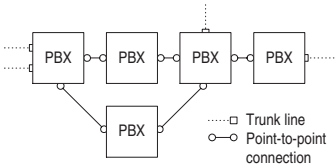
Example of a PBX network

Various line types and transmission protocols can be used for point-to-point connections. The required network topology (distance, connection capacity) determines which type of point-to-point connection is most suitable.

Protocol: Q.SIG or DSS1

The Q.SIG protocol, designed for ISDN point-to-point connections, is the preferable choice as the transmission protocol; alternatively, the DSS1 protocol, designed for ISDN dial-up connections in the Euro-ISDN, can be used. Certain PBX networking features can only be used with the Q.SIG protocol, however. In particular, the identifier indicating whether a call is internal or external cannot be transmitted using DSS1.

Both protocols implement communication on several protocol layers:

- L1: Layer 1 defines the physical line properties and the electrical coding of signals.

- L2: Layer 2 enables communication via individual error-protected channels that are independent of each other.

- L3: Layer 3 defines the administration of the individual channels and implements the features designed for ISDN.

Master/Slave

For an ISDN connection, it is possible to determine which PBX is the protocol master and which the protocol slave. This relationship can be determined for all three protocol layers independently of one another.

For each protocol layer, the PBX at the other end always has to be suitably configured. If one PBX is the protocol master for a layer, the other PBX must be the protocol slave for this same layer. Normally all three protocol layers are configured identically. In the

case of a trunk line, the network operator is the protocol master for all three layers.

Note: *In the case of an S_{2M} line, it is also possible to determine for each useful channel which end can administer a channel (master = internally seized or slave = externally seized). On S_0 lines this setting is determined by "L3 master" for both B-channels.*

L1 Clock

To enable PBXs in the ISDN network to communicate with each other, they must be "clock-aligned". The L1 protocol master sets the clock for layer 1, and the L1 protocol slave adopts (synchronises to) this clock.

When planning a PBX networking scheme, you must make sure that the L1 clock propagates from a master via a number of PBXs.
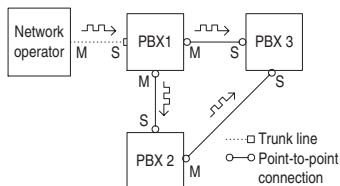
Example: propagation of the L1 clock

If more than one port with the setting **L1 Type** = "Slave" is configured on anForum 500 and the setting **L1 sync possible** has been activated, then one of the ports is automatically defined as the L1 clock source. The Forum 500 will automatically switch the clock source to another port configured as an L1 clock source (if a line fails, for example).

Please note: *Reciprocal or circular application of the L1 clock is not allowed.*

Example: In the above case you could reverse the L1 slave/master setting for the connection between PBX 1 and PBX 3. However, if you then activate the setting **L1 sync possible** for the port of PBX 1, this may cause parts of the PBX network to stop functioning temporarily.

When applying the L1 clock of trunk lines, you can assume that the public network is "clock-aligned". So, in the above example, you can connect additional trunk lines to one of the PBXs.

Types of Point-to-Point Connection

There are different types of connection available for an ISDN point-to-point connection between two PBXs, depending on the distance between them.

Direct Connection

This type of point-to-point connection joins the two systems directly to each other using a crossover twisted-pair cable. An S_0 connection can be used for distances up to 1,000 metres, while an S_{2M} connection can span up to 250 meters. Normally one PBX is the protocol master for all three layers, and the other PBX is the protocol slave for all three layers.
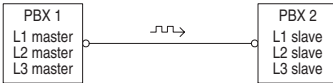
Direct connection

- Use the RJ45 jacks on one of the external S_0 ports for an S_0 connection between two Forum 500s.

- Use the pressure terminal of the S_{2M} port (Forum 516 PRA Module) for an S_{2M} connection between two Forum 516 systems.
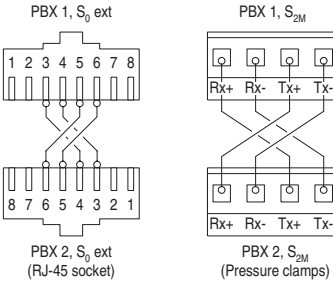
Wiring of a direct connection

Connection via an Active Transmission System

For distances exceeding the range of a direct connection, an active transmission system can increase the range to up to 50 km. Normally the L1 master is the transmission system for the two con-

nected PBXs. For the protocol layers L2 and L3, one PBX is nor-
mally the protocol master and the other PBX is the protocol slave.

Connection by an active transmission system

Note: *The active transmission system itself gets its L1 clock
either from the network operator or from a clock generator con-
nected by wire.*

Connection via the Public Network

Point-to-point connections via the public network of a network
operator can be used for bridging distances beyond 50 km. Due to
the long distance involved, for technical reasons it is not possible
to synchronise the L2 protocol. Consequently, the public network
is normally the protocol master for protocol layers L1 and L2. One
PBX is therefore the L3 master and the other PBX the L3 slave.
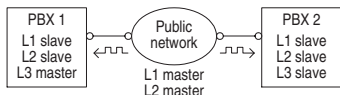
Point-to-point connection via a public network

Configuration

The possible configurations described below can be set up in the
Web console using the **PBX Configuration: Trunks** menu.

Trunk groups

This is a group of lines of the same type and direction. A line can
only be assigned to one **trunk group**.
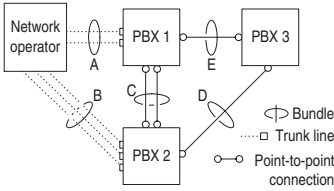
Example of a PBX network with trunk groups

In the above example, the following trunk groups are configured for PBX 1:

- Two S_0 lines in a multi-terminal configuration to the network operator which are assigned to the "A" trunk group.

- Two S_0 point-to-point connections to PBX 2 which are assigned to the "C" trunk group.

- One S_0 point-to-point connection to PBX 3 which is assigned to the "E" trunk group.

Note: *A line or a trunk group cannot be seized directly. It is always performed indirectly via a route.*

Routes

A **route** is a group of trunk groups enabling a connection in one direction. If the first trunk group of a route is fully utilized, the next trunk group is seized ("trunk group overflow"). One trunk group can also be used for different routes.

In the above example, a route set up for PBX 1 allows a connection to PBX 2. Trunk groups "C," "E" and "A" are assigned to this route. If a user connected to PBX 1 wants to reach a party in PBX 2, lines will be seized in the following order:

- PBX 1 first searches for a free channel in the "C" trunk group.

- If all the lines in trunk group "C" are busy, the system tries to set up a connection via trunk group "E". PBX 3 switches the connection through, provided it is appropriately configured (refer to *Numbering* starting on page 83).

- If it was not possible to set up an indirect connection via PBX 3, the system tries again via trunk group "A". The "prefix" necessary for this can be configured with the route.

- The user does not get a busy signal until the attempt to set up an indirect connection via the network operator has also failed.

Note: *If an internal connection is switched via a network operator, the call is signalled using the external number of the calling PBX.*

For each route you can define a randomly selectable code digit for seizing the route. You can also configure whether a user is authorised to seize a particular route, whether LCR is to be used for one of the trunk groups and the criteria (business or private call, booking numbers) for evaluating call data.

Numbering

A user can seize a particular route by pre-dialling a specific code digit. With this "open numbering", a user must always dial this code digit and then the telephone number in order to reach a party in another PBX.

If none of the telephone numbers in your PBX network occur twice, you can also configure "closed numbering", allowing the same telephone number to be used for reaching each user within the PBX network.

With closed numbering, the Forum 500 determines which route to seize from the telephone number dialled. The information needed for routing a call can be configured in a numbering table containing up to 100 entries. You use this table to assign telephone numbers and/or ranges of telephone numbers to a particular route.

A **default** entry in the numbering table makes it possible to seize a "default route" for all remaining unassigned numbers. In particular, this simplifies configuration of the Forum 500 as a subsidiary system: the only entry you assign to the **default** entry is the route to the host system
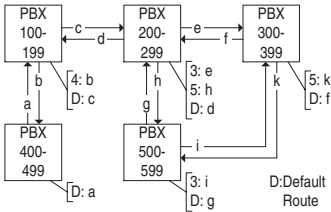
Example of closed numbering tables

The automatic switching of call requests (i.e. routing) by means of trunk group overflow or default numbering can lead to "circular switching".

To avoid this, a "transit" counter is incremented whenever a connection is switched through on Q.SIG lines. When the configured maximum value is reached, further switching stops.

Technical Details

A different PBX number must be set for each Forum 500 in a PBX network. This setting can be found in the Web console, in the menu **PBX Configuration: System** under the heading **System linking**. You can also set the maximum value for the transit counter there. This value depends on the topology of the PBX network and should allow the system to have the maximum number of further connections possible.

You can display the connection status of the lines at any time in the Configurator menu **System info: PBX: Trunks**. You should check this in particular after making changes to a configuration to see whether all the lines used for system networking are operable.

Some of the features possible in Q.SIG are not supported by Forum 500 with all their options, for example callback on busy within the Q.SIG network. The call categories defined in Q.SIG (e.g. Emergency Call, Operator, Normal) and the Q.SIG name transmission feature ("user names") are fully supported.

The code digits to be used for seizing a route with open numbering are not transmitted to the destination PBX and thus cannot be evaluated by it. To reseize a route (for example for a callback), you must set the appropriate digit prefixes in the trunk group configuration for the routes to be reseized.

Tip: If, for example, you are configuring a route which can be seized using routing code "5" and have selected one or more bundles for this route, change the **Prefix for dest. call number at incoming internal** setting to "5" for this bundle in order to enable the route to be reseized.

Owing to their hardware properties, not all S_0 ports of the Forum 500 can be used for PBX networking without restrictions. Depending on the type of system, some ports can only operate in the L1 master mode or L1 slave mode. The external S_0 and S_{2M} ports can be set according to the following table.

	S_0 1	S_0 2	S_0 3	S_0 4	S_0 5	S_0 6	S_{2M}
Forum 512	S	M/S	M/S	M	–	–	–
Forum 514	S	S	M/S	M/S	M	–	–
Forum 516/ 518	M/S	M/S	M/S	M/S	M/S	M/S	M/S

Legend

S = Slave
M/S = Master/Slave
M = Master

Team Functions

Introduction

With the team functions you can manage your telephone communication tasks by assigning lines with separate call numbers to the keys of different terminals. The terminal users, or team members, can thus pick up one another's calls or telephone each other using the configured keys.

Team functions can only be configured on the Forum Phone 520 and 530 system telephones because only these have the required features.

Explanation of Keys

The team functions are programmed on the call keys of the Forum Phone 520/530 telephones. Depending on the terminal, different numbers of call-keys are available:

Number of available call keys

Telephone	Number of keys
Forum Phone 520	Three keys with a display, five keys without a display
Forum Phone 530	Nine keys with a display
Forum Phone 530 with Forum Keypad 530	19 keys with a display, nine on the telephone itself and another 10 on a Forum Keypad 530

Note: *Only one function or call number can be programmed for each call key.*

The following keys can be used:

- **Trunk key**: Calls (for the programmed call number, e.g. 11) are signalled to this key, and you can make internal and external calls via this number. A trunk key can be programmed with

a substitute function (with another team member acting as the substitute). Calls for you are then signalled to the terminal of another team member. A trunk key also provides functions for managing calls. For example, you can configure call protection if you do not want to be disturbed, or call diversion to another telephone.

- **Team key**: As with a trunk key, a team key can be used to receive or make calls. However, this key cannot be used to change the settings for managing calls; it is not possible, for example, to configure call diversion to another telephone. Calls made via a team key are signalled to all terminals with a trunk key that has been programmed with the same number. For example, the team key with the number 11 calls all trunk keys with the number 11.

- **Busy key:** The purpose of a busy key is to make the busy status of other team members visible. An incoming call for a busy team member is signalled on the other team member's busy key. That team member can take this call by pressing the busy key, which seizes his own terminal's trunk key. Calls taken via the busy key are not entered in the call list of the team member who was originally called. In addition, it is possible to call the respective team member via his busy key when his terminal is idle. You set up a call to this team member by pressing your own trunk key.

- **Direct call key**: Only outgoing calls can be made with a direct call key; they are signalled to all terminals with the same number programmed to a trunk key. Calls via a direct call key are signalled to the destination terminal even if that terminal has been programmed with a substitution function or call protection. If the destination terminal has been configured for call diversion, the direct call is not diverted.

Which key is suitable for which purpose?

- **Trunk keys** can be assigned call numbers for managing central communication tasks, for example, customer support. If the call numbers of the support department are assigned to trunk keys on all of its terminals, then all members of the support department can receive and manage calls and use the substitute function.

- **Team keys**, for example, can be used to create a project group within a department. Calls from customers of this group can then be answered by any team member who is not busy. The team members can call each other by the team keys.

- A **busy key** can be used to configure an attendant terminal showing the status of the individual users. The attendant terminal sees the status of the users and can put calls through by simply pressing the key.

- **Direct call keys**, for example, can be configured at a terminal in a conference room in order to call the secretary.

Team Configuration

You can create teams and program call keys in the **Configurator** of the Forum 500 (**PBX Configuration: Groups** and **Ports: Upn** menu).

Call key 1 is preset as a trunk key on all system telephones. This setting can be changed by the system administrator.

Examples of Use

The following examples illustrate the various uses of teams and team functions.

For information on the display texts and how to use the individual functions, refer to the chapter "Managing Calls in a Team" in the "Forum Phone 520/530" user guide.

Executive/Secretary Team

In this example, the executive/secretary team comprises two members: the executive and the secretary. The secretary has one Forum Phone 52, and the executive has two, one of which is used as a parallel telephone in a sofa suite.
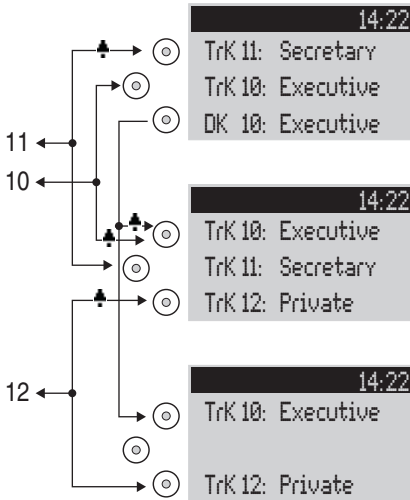
Example: executive/secretary team

Line Seizure

The secretary can be reached on the call number 11 (trunk key TrK 11: secretary's office).

The executive can be reached on the call number 10 (trunk key TrK 10: executive's office). He can also answer calls from his parallel telephone. In addition, a private line is configured for both of the executive's telephones (trunk key TrK 12: private).

Call numbers 11 and 10 are both configured as a trunk key on the executive's and the secretary's terminal respectively. Thus the executive and the secretary can use either call number (for answering as well as making calls). Each can act as a substitute for the other.

The secretary's terminal also has the executive's call number configured as a direct call number (DK 10: executive's office). The secretary can therefore reach the executive and put through calls even if the executive has programmed a substitute.

Line Busy Indication

If a line is busy, e.g. TrK 11 secretary's office, the other terminal will indicate this. The executive's private calls via TrK 12 are not

indicated on the secretary's terminal since no appropriate trunk key is configured on the latter's telephone.

Call Signalling

In this configuration example, calls to one's own call number are signalled acoustically on the following telephones:

- Call number 11 on the secretary's telephone
- Call numbers 10 and 12 on the executive's telephone.

Calls for the other team member's call number are indicated by an optical signal on one's own telephone (flashing trunk key LED).

The parallel telephone will indicate calls only by an optical signal.

Time-delayed acoustic signalling can be configured for TrK 10 on the secretary's telephone. If the executive, for example, does not answer a call within 10 seconds, the secretary's telephone will start to ring.

If the executive activates a substitute function with the secretary as the substitute, calls for call number 10 will be indicated on the executive's telephone by an optical signal only, but signalled acoustically on the secretary's telephone. The secretary can also activate a substitute function. Calls for call number 11 are then signalled acoustically on the executive's telephone, and indicated by an optical signal on the parallel telephone and the secretary's telephone.

Three-member Team

The three-member team described here is an example of a team configuration within a project group, e.g. export sales.

Each team member has one Forum Phone 520 system telephone with all call keys programmed as trunk and team keys.
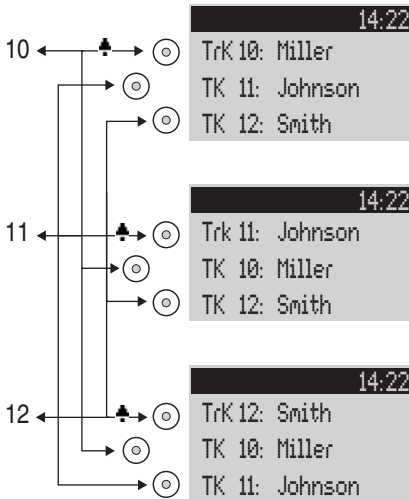
Example: three-member team

Line Seizure

Each team member's call number, e.g. call number 10 for Miller, is programmed as a trunk key on his telephone.

On the other telephones in the team, this call number is programmed as a team key (e.g. TK 10 on Johnson's and Smith's telephones). The team members can thus see which number a call is for and can answer it by pressing the appropriate team key.

The team members can call each other via the team keys. For example, Miller can call number 12 by pressing TK 12; the call is then signalled to Smith's telephone on TrK 12.

Line Busy Indication

If a line is busy, e.g. TrK 11 Johnson, the team keys 11 on Miller's and Smith's telephones will indicate this.

Call Signalling

In this example, calls via the trunk keys are signalled acoustically. Calls via the team keys are indicated by a visual signal (the team key LED flashes).

Unified Team

The unified team described here is an example of a team configuration within a department in which calls are to be managed quickly (e.g. support department).

Each team member has one Forum Phone 520 system telephone with all call keys programmed as trunk keys.
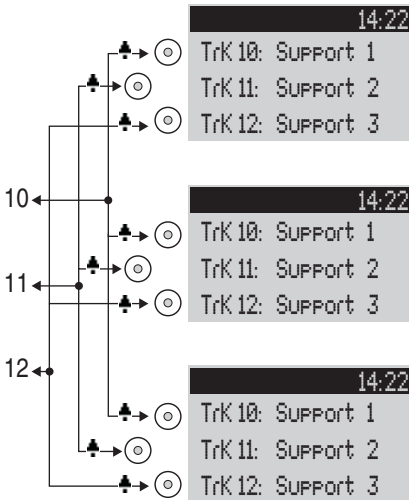
Example: unified team

Line Seizure

Call numbers 10, 11 and 12 are programmed as trunk keys on each team member's telephone (TrK 10 to TrK 12.

All team members can use these numbers for answering as well as making calls.

Tip: In this team configuration it is useful to program one of the function keys on each telephone with the "Hold" function. A call, e.g. for TrK 11, can then be put on hold by pressing the function

key. If another team member then presses trunk key TrK 11 on his telephone, he can accept the call. For further information on function keys, refer to the "Forum Phone 520, 530" user guide.

Line Busy Indication

If a line is busy, e.g. TrK 11 Johnson, the trunk keys on the other team telephones will indicate this.

Call Signalling

In this example, calls via all trunk keys are signalled acoustically.

Toggle Team

The toggle team described here illustrates how a large number of call numbers can be managed efficiently with the help of team functions.

Each team member has one Forum Phone 530 with all call keys programmed as trunk and team keys.
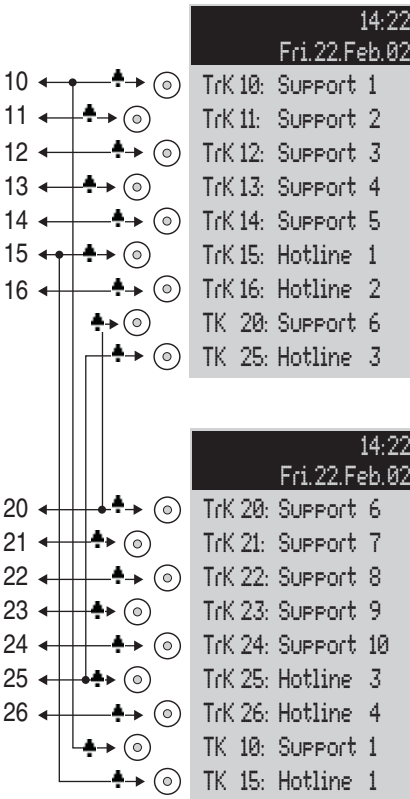
Example: toggle team

Line Seizure

Each team member is assigned seven call numbers, each programmed as a trunk key (TrK 10 to TrK 16 and TrK 20 to TrK 26). For each member, these trunk keys are programmed either as support numbers or hotline numbers.

The first support number and the first hotline number of each team member is programmed as a team key on the other member's telephone, e.g. TrK 10 and TrK 15 on Miller's telephone as TK 10 and TK 15 on Johnson's telephone. The assumption here is that most calls will go to the respective first call numbers, and team members can thus help each other out by answering one another's calls.

On each telephone it is possible to toggle between the calls on individual lines, e.g. TrK 10 and TrK 11, by pressing the appropriate key (toggling).

Every call on a trunk key can be transferred to any other party by means of the R key. For more information, refer to the chapter entitled "Consultation, Toggling, Transfer and Conference" in the "Forum Phone 520/530" user guide.

Line Busy Indication

If a line is busy, e.g. TrK 10 on Miller's telephone, the appropriate team key will indicate this, e.g. TK 10 on Johnson's telephone.

Call Signalling

In this example, calls via trunk keys are signalled acoustically. Calls via team keys are indicated by a visual signal (the team key LED flashes).

Call Queue

Introduction

A queue can be activated for the telephone numbers of any type of telephone, i.e. for system, analogue, ISDN and DECT telephones.

If a call number with a queue is busy, calls to this number enter the queue. A caller in the queue hears an idle tone.

Calls which remain in the queue for too long are cleared from the queue. The caller then gets a busy tone. The time until an external call is cleared from a queue is defined by the network operator. In the most European countries this is usually three minutes.

If more than one telephone number (e.g. trunk or team keys) has been configured for a telephone, separate queues are used for each number.

On the Forum Phone 530 system telephone, additional calls are signalled by a brief tone in the loudspeaker and in the display. If calls are in the queue, a number at the beginning of the second line of the display on the Forum Phone 530indicates how full the queue is. If more than one telephone number with a queue is configured on the telephone, the total number of entries are displayed.

Calls in a queue are handled by the Forum 500 in the following order of priority: instant connection, sensor calls, automatic recalls, VIP calls, then other internal and external calls. Sensor calls thus have priority over other calls, for example. Calls of the same priority level are switched in the order of their arrival.

The system administrator sets the number of calls that can be placed in a queue individually for each user group. The value can lie between "0" and "99". The "0" value deactivates the "Call queue" function for a user group. When the maximum number of calls in the queue is reached, further callers hear a busy tone.

Note: *As calling fax machines often operate with the "voice" service indicator (e.g. on analogue ports), you should assign ports for fax machines on the Forum 500 to a user group* **without** *a queue.*

Queues can be combined with the "forwarding," "pickup" and "hunt group" functions, for example, in order to configure an attendant terminal for an operator.

Activation of Queues

Queues can be activated per user group. The default factory setting of queues for the preset groups "Administrators" and "Guests" is **off**.

When using queues, it often makes sense to activate call waiting protection. For this purpose, "Call waiting protection" authorisation must be allocated to the user group, and call waiting protection must be activated on the terminal.

You should configure a new user group (e.g. "Operators") and activate the authorisations "Call queue", "Call waiting protection" and, if necessary, "Call forwarding". If users belong to this group, a queue will be activated automatically for all telephone numbers assigned to them.

Call Forwarding

Forwarded calls of the forwarding type "Immediately" and "On busy" have priority over queues. The queue of the forwarding telephone is not used for forwarding calls in this manner.

During the configuration of this type of call forwarding, the contents of the queue are **not** transferred to the target terminal. If there are still calls in the queue when the call forwarding function is activated, these calls can only be accepted on the source terminal.

If a call is to be forwarded "After delay", it enters the queue. If the call has not been answered before the delay period expires, it will be forwarded to the target terminal and can then be answered there.

Pickup

The functions "Pickup" (from a pickup group) and "Pickup selective" can be used together with queues. A user who accepts a call using "Pickup" or "Pickup selective" picks up the next call from the queue.

Hunt Groups

Hunt groups of the "parallel" type are usually used together with queues, with the queues of each telephone in the group being synchronised to each other. When a call to the number of the hunt group arrives, the call enters all parallel queues. If a call from one of the queues is answered, it is removed from all other parallel queues.

Examples of Use

Attendant Terminal for an Operator with Two System Telephones

The operator switches all incoming calls and can either work on the Forum Phone 530 or the mobile terminal, the Forum Free 570.

Configuration

- Configure the system access or access for multiple terminals under **PBX Configuration: Ports: S$_0$**.

- Configure the Forum Phone 530 and the Forum Base 500 under **PBX Configuration: Ports: U$_{pn}$**.

- Configure a trunk key for the Forum Phone 530 under **PBX Configuration: System telephones**.

- Configure the Forum Free 570under **PBX Configuration: Ports: DECT-PP** and assign the Forum Free 570 its own telephone number. Check in the Forum Free 570.

- Under **PBX Configuration: Call Distribution: Incoming** route all incoming calls to the number of the Forum Phone 530trunk key.

- In the **Configurator**, create a new group called "Operators" under **User Manager: User groups**. Activate "Call queue", "Call waiting protection" and "Call forwarding" for this group and set the **Dial out: External** option appropriately.

- Create a user called "Operator 1" under **User Manager: User**. Assign this user to the "Operators" user group. Assign the telephone numbers of the Forum Phone 530 trunk key and the number of the mobile Forum Free 570 to this user.

- Activate `Call wait. prot.` (call waiting protection) on both terminals in the `Protection` menu.

- Configure a function key on the Forum Phone 530 which activates/deactivates a "call forwarding immediately" to the telephone number of the mobile Forum Free 570 (in the menu `Call forwarding: Divert phone: Immediately`).

Use

Incoming calls are routed to the Forum Phone 530 manned by the operator, who then puts the calls through. A queue is used so that callers do not get a busy signal. The display on the Forum Phone 530 indicates how many calls there are in the queue.

If the operator wants to leave the workstation and take along the attendant terminal, call forwarding to the Forum Free 570 is activated by pressing a function key. Calls which are in the Forum Phone 530 queue must still be answered on this telephone. New calls are signalled on the mobile Forum Free 570 or enter its queue, allowing the Forum Free 570 to be used as a mobile attendant terminal.

On returning to the workstation, the operator deactivates call forwarding by pressing a function key. Calls which are already in the queue are switched on the mobile Forum Free 570. New calls are signalled on the Forum Phone 530 or enter its queue.

Group of Three Attendant Terminals

The attendant terminals switch all incoming calls. Incoming calls are administered in queues. Depending on the number of arriving calls, one to three attendant terminals in this group are manned. The attendant terminals are each equipped with a
Forum Phone 530.

Configuration

- Configure the system access or access for multiple terminals under **PBX Configuration: Ports: S$_0$**.

- Configure the three Forum Phone 530 telephones under **PBX Configuration: Ports: U$_{pn}$**.

- Configure a trunk key with its own telephone number for each of the Forum Phone 530 telephones under **PBX Configuration: System telephones**.

- Configure a hunt group of the "parallel" type under **PBX Configuration: Groups: Hunt Group**, and include the three telephone numbers of the trunk keys in this hunt group.

- Under **PBX Configuration: Call Distribution: Incoming** route all incoming calls to the number of the hunt group.

- In the **Configurator**, create a new group called "Operators" under **User Manager: User groups**. Activate "Call queue" and "Call waiting protection" for this group.

- In the **User Manager**, configure a u**ser** for each of the three operators and assign these settings to the user group called "Operators". Allocate each **user** the telephone number of the trunk key of their system telephone.

- Activate `Call wait. prot.` (call waiting protection) on all three terminals in the `Protection` menu.

- Program a function key with the function "Sign on/sign off from hunt group" on the three system telephones (in the menu `Calls: Hunt group`).

Use

Incoming calls are signalled in parallel to all signed-on attendant terminals. If the attendant terminals are busy, the incoming call

joins the queue on each of the terminals in the hunt group. If one of the attendant terminals accepts a call from the queue, the call is removed from the queues of all the other attendant terminals. The display on each attendant terminal (Forum Phone 530) indicates how full the queue is.

If attendants leave the terminal, they sign off from the hunt group by means of a function key. In contrast to Example 1, further calls do not have to be processed after the sign-off, as the calls are also registered in the queues of the other signed-on attendant terminals.

Note: *The last attendant terminal remaining in the hunt group should not sign off, so that incoming calls can always be signalled to at least one terminal.*

Multi-Company Variant

Communications systems are frequently shared by several companies. These companies want to jointly use the existing infrastructure (e.g. the existing lines and features of the system), while at the same time they wish to organise and pay for their communication completely independently of one another.

This "multi-company variant" can be implemented using the Forum 500 within a shared office, for example.

In the multi-company variant, the companies are essentially completely independent of one another. This allows them to have their own trunk lines, which is useful for billing purposes. The Forum 500 hardware and software are used equally by all the companies, however. It is possible to configure the Forum 500 for each company and define the extent to which the features of the system may be used.

In brief, the features of the multi-company variant are as follows:

- Up to five companies can be configured at the same time.

- Every user of the Forum 500 is assigned to a company.

- Each available trunk group is uniquely assigned to a company so that incoming external calls can be transferred to the correct internal subscriber.

- For each company, every route can have its own code. For example, it is possible to activate different routes with the code "0" for different companies. This enables separate charging for outgoing external calls, for example.

- An individual exchange ("operator") can be set up for each company.

- Each company can maintain the communication data of its business partners in its own company telephone book.

- The charges can be billed individually for each company.

Configuring the Multi-Company Variant

The multi-company variant can be commissioned and configured by the system administrator of the Forum 500 without any major effort. In the multi-company variant, the communications system behaves in exactly the same way as the single-company variant. This is particularly of interest to users who want to expand their own system and at the same time operate it in a group.

The process in brief:

1. The feature must be activated (see *Activating the Multi-Company Variant* starting on page 103).

2. The required companies must be set up (see *Configuring and Managing Companies* starting on page 104).

3. The users of the Forum 500 are assigned to the individual companies (see *Assigning Users* starting on page 104).

4. In order that the Forum 500 can transfer incoming calls to the corresponding company (or its staff) correctly, the existing trunk groups must be uniquely assigned to the companies (see *Assigning Trunk Groups* starting on page 105).

5. In the case of outgoing external calls, the lines via which the members of a company can make a call must be defined (see *Allocating Routing Codes* starting on page 105).

6. An exchange must be set up for each company so that the Forum 500 can correctly process statuses in which a call should be routed to the exchange (see *Configuring the Company Exchange* starting on page 106).

Activating the Multi-Company Variant

To be able to configure several companies in the Forum 500, the "Multi-company variant" feature must first be activated. This is done in the **Configurator** on the Web console in the **SYS Configuration: System** menu. Activate the **Multi company** option here.

Only when this option has been activated are the fields required to configure the multi-company variant available in the other menus of the Web console, for example in the **User Manager: User groups** menu or in the   **PBX Configuration: Trunks menu**.

Configuring and Managing Companies

Up to five companies can be configured in the Forum 500. By default, one company with the name "Company 1" is predefined. All configuration settings, e.g. in the user groups or in the trunk group configuration, apply to this predefined default company if not other company has been selected.

Companies are set up and managed in the **PBX Configuration: Companies** menu:

- A new company is created in this menu using the command **New**. Each company can be given a name up to 20 characters long. This name is then displayed in all configuration dialogue boxes in which company-specific settings can be defined.

- In this menu a company can be deleted again using the command **Delete**. If a company is deleted which is still used at other places (in the user groups, for example), the respective configuration is changed to the default company.

- The name of the default company can be changed, but the default company itself cannot be deleted.

Assigning Users

For each user you must define the company to which they belong. This assignment determines, for example, which company telephone book the user has access to and which company-specific configuration data apply to them.

As the Forum 500 manages users in groups, the assignment "user > company" is also established this way. The company to which each user group belongs must be defined for each group. A user group can only belong to one company, i.e. not to several. However, a company can have several user groups. It is therefore possible, in the same way as in the entire system, to allocate a

range of authorisation rights for the use and configuration of features for each company.

When setting up a new **user group** (in the **User Manager menu**), you will find that the default company is predefined; another company can be assigned as long as no other companies have been set up.

Assigning Trunk Groups

Connections of the same type and in the same direction are arranged in a trunk group (e.g. S_0 multi-terminal connections). To be able to correctly transfer incoming calls to the members of the configured companies (the users) via the lines of a certain trunk group of the Forum 500, each of the available trunk groups must be assigned to one of the companies. This is necessary to be able to transfer incoming external calls to the correct company exchange in cases where the called internal subscriber cannot be reached, for example.

The assignment of trunk groups to companies is done in the **PBX Configuration: Trunks: Bundle menu**.

For outgoing external calls which users set up via the lines of their company's trunk group, the assignment of the trunk group to the company is irrelevant: the charges are assigned according to the "source" principle.

Charges are billed to the company to which the user belongs who set up the connection. The Forum 500 recognises this on the basis of the assignment between user groups and companies and on the basis of the routing code with which a line of the trunk group was seized. For more information, please see the following section.

Allocating Routing Codes

Routes are used for automatic and selective seizure of trunk groups or connections for external calls. It is possible to seize a route by predialling a code.

In the **PBX Configuration: Trunks: Route** menu, you can define which company can seize each route. An individual **code** for the seizure is allocated per route for each company. The Forum 500

ensures that during configuration no seizure code is allocated twice (for two different routes) for each company. If during configuration of a route no code is allocated for one of the configured companies, the route concerned cannot be seized by the members (user groups) of this company.

Configuring the Company Exchange

An internal telephone number must be set up for each company which represents the exchange, i.e. "the operator". The calls to specific extensions arriving at the exchange are routed to this number, for example, as are all external calls where the called subscriber (a user who belongs to this company) cannot be reached, as in the case of a timeout.

A company exchange is set up in the **PBX Configuration: System: Operator** menu. In this menu, you can specify an internal telephone number for each company and time group which then represents the exchange for this company.

Working with the Multi-Company Variant

All the features of the Forum 500 which the users may already be familiar with from the single-company variant are available in the multi-company variant. These features can be used to the same extent and can be used in exactly the same way.

The following section describes the features additionally available to the users in the multi-company variant.

Company Telephone Book

An individual company telephone book can be created for each company. In addition to this, "personal" and "central" telephone books exist:

- A personal telephone book is available for each user.

- The central telephone book can be used across the companies by all users of the Forum 500.

The company telephone book is a central telephone book for the whole company. It is only available to the users/user groups who are assigned to this company. You can also define whether the members of each user group may edit the company telephone book or not.

The company telephone book is treated exactly the same way on the system terminals as the other types of telephone books. This means that the entries listed in the personal, central and company telephone books are displayed on the system phones at the same time.

Users can also use the telephone book of their company with the **Forum 500 CTI** Web applications and **phone book**, assuming they are authorised to use these applications.

In addition, it is also possible to assign a user group with the authorisation to edit foreign company telephone books. This authorisation is useful if members of this group - e.g. the "Administrators" - service the entire system. Foreign telephone books can only be edited in the **Configurator** in the **Phone Book** menu.

The number of entries in a company telephone book is unrestricted. The Forum 500 can manage up to 2,000 entries in *all* telephone books (in the central, personal and company telephone books).

Making Calls Between Companies

All users of the Forum 500 can make internal calls to one another, irrespective of which company they belong to. Calls between users from the different companies are therefore not subject to any restrictions.

Billing Charges per Company

In the Costs Web application you can output the charges for each company.

Users who are authorised to use this application can view the charges for each company.

Configuring the PC Software

Further possibilities of use can be implemented on a workstation PC with the Windows operating system by installing drivers and programs.

Note: *Under Windows NT or Windows 2000/XP you must log in as the administrator to install extra software.*

Further instructions for various options that are available are given below.

Setting up TAPI

With a TAPI (**T**elephony **A**pplication **P**rogramming **I**nterface) you can operate a CTI application (**c**omputer **t**elephony **i**ntegration). Here, the CTI application uses the services of the Forum 500 with the help of the TAPI driver installed on a Windows PC.

Requirements

You require an active IP network connection between the PC and the telephone system. Refer to the chapter entitled *Configuration under Windows* starting on page 45 if you have not yet established an IP network connection. CTI functions can be used only in conjunction with system telephones.

You must therefore have configured at least one user for a system telephone. In addition, you require a TAPI 2.1-compatible CTI application, for example the Phone Dialer included in the Windows operating system.

You will need a specific TAPI driver for the Forum 500. Ask your service technician.

Configuring the TAPI Connection

Note: *Under Windows NT or Windows 2000/XP you should log on as the user for whom you want to configure the TAPI connection.*

1. In the Start menu, select "Settings > Control Panel". Double-click on the "Telephony" icon ("Phone and Modem Options" icon under Windows 2000/XP).

2. Change to the "Telephony Drivers" tab ("Advanced Options" tab under Windows 2000/XP).

3. From the list of installed driver software, select **"Forum 500 Service Provider**" and click on "Configure".

4. In the following dialogue you will find a list with the configured connections for the user who is currently logged on. Click on "New".

5. In the following dialogue you provide information for the new connection. In the "Connection name" box you can enter a descriptive name for the connection. In the "CTI server" box you must enter the DNS name or the IP address of the Forum 500. Using the "…" button you can search for this in the LAN. In the boxes "Username" and "Password" you enter the user data of one of the users configured on the Forum 500. This user must be allocated a system telephone. Confirm your entry with "OK".

6. The new connection is now configured. Close the opened dialogues with "OK" and "Close".

Testing the TAPI Function

1. In the Start menu, select "Programs > Accessories > Communication" and then start the program called "Phone Dialer".

   Under Windows XP the "Phone Dialer" is started indirect by using the dialling function of the "Address book" (can be found in the start menu under "Programs >Accessories"). A manual start of the program file "Dialer.exe" in the "C:\Program files\Windows NT" folder is possible also.

2. In the "Tools" menu, select the item "Connect using…" to select the system telephone that is to use the CTI application. Under Windows 2000/XP you select the item "Options" from the "Edit" menu. In the "Lines" tab you then select the system telephone from the "Phone calls" list.

3. Enter a telephone number in the "Number" box and confirm with "Dial." Under Windows 2000/XP you first click on the "Dial" icon and in the subsequent dialogue activate "Phone call".

4. The number you entered is displayed on the selected system telephone. Lift the receiver to start dialling.

Note: *If the "Phone Dialer" program is not installed, you will have to install it. To do this, you open the "Control Panel" and click on "Software". In the "Windows Setup" tab you activate the "Connections" component.*

Setting up NET CAPI

With a CAPI driver (**c**ommon **a**pplication **p**rogramming **i**nterface) Windows programs are able to access services and functions of an ISDN card. With a network-based CAPI, the Forum 500 allows the use of ISDN functions also by PCs in which no ISDN card is integrated.

Requirements

You require an active IP network connection between the PC and the telephone system. Refer to the chapter *Configuration under Windows* starting on page 45 if you have not yet established an IP network connection.

Please note: *Before installing the CAPI driver for the Forum 500, any existent ISDN card must be removed and any CAPI drivers on your PC must be de-installed.*

Configuring the NET CAPI Driver

The NET CAPI driver requires an extra internal number so that the "virtual ISDN card" on the Forum 500 can be addressed:

1. Go to the C**onfigurator, NET Configuration: Connections: CAPI** menu. Click on **Change**.

2. Activate the **Status** check box. Enter at least one unassigned, internal number in the boxes under **Parameters**. Confirm your entry with **Assign**.

3. Go to the C**onfigurator, User Manager: User** menu. Select one of the users shown. Enter the number just assigned in one of the boxes **No. 1** to **No. 10**. Confirm your entry with **Apply**.

4. If it is to be possible to call the "virtual ISDN card" externally, or if external calls are to be possible, the number must be included in call distribution (**Configurator**, **PBX Configuration: Call Distribution** menu).

5. After installing the NET CAPI driver, you will find an extra icon on the right side of the Windows Start bar. Click on this icon with the right mouse key. Select the **Log-on** command from the menu.

Note: *In the subsequent dialogue you must log on NET CAPI first with the* **user** *(user name and password) for which you configured the CAPI telephone number in the* **User Manager** *(see Step 3).*

Using the Systray Display

You can configure a systray display for the Forum 500 to appear in the information area of the Start bar of a workstation. This systray display constantly shows you whether an ISP, an RAS or a LAN-to-LAN connection is active. It is also possible to display the current occupancy of the trunk lines.

Requirements

To use the systray display, you must first install TAPI; see *Setting up TAPI* starting on page 108.

Please note: *The systray display requires a current version of TAPI. If you are using TAPI from an earlier version of the Forum 500, you must first install the newer version.*

Installing the systray display

1. Copy the ForumSystray.exe program to your hard disk, e.g. to "C:\WINDOWS".

2. Start the copied program by "Start > Run" and the configuration dialogue is displayed. Select one of the entries displayed

under **Existing PBXs**. Enter your user name and password in the boxes under **Log-on**.

3. If you activate the **Autostart** check box, you will see the systray display even after restarting your PC.

4. Confirm the entries in the configuration dialogue with **OK** and the systray display logs on for the Forum 500.

5. Right-click on the systray display in the Start bar. Select **Configuration** to call up the configuration dialogue. Select **Network Connections** or **Trunk Lines** to produce a status dialogue.

Browser for Forum CTI

You can simplify the daily use of the Forum CTI using the Web browser especially adapted for the Forum 500. Each time the workstation is restarted, this browser program can automatically start and log you in. This means the Forum CTI is always operational and can be accessed using the icon in the information area of the task bar.

Installing the browser for Forum CTI

1. Start the "CTI-Browser-Setup.exe" setup program.

2. Follow the program instructions.

After installing the browser, there is a new menu entry in the Windows start menu under **Programs**: **Forum CTI Browser**.

Further information can be found in the online help of the browser program. To view this, click the top left corner of the program window on the system menu icon or on the icon in the information area of the task bar. Select the **Readme** command.

Synchronising the PC Clock

With the network service SNTP (simple network time protocol) it is possible to synchronise the internal clock of a PC with the time of the Forum 500.

Requirements

You must enter the time zone so that the Forum 500 can calculate the time of the internal clock back to the GMT (Greenwich Mean Time) required for SNTP:

1. Go to the **Configurator, SYS Configuration: System** menu. Click on **Change**.

2. Under **Internet time (SNTP)**, enter the **Time zone** for which the time of the Forum 500 applies and whether summer time is allowed for. Confirm this with **Assign**.

Configuring SNTP

For various operating systems, you can use one of the numerous SNTP programs offered for downloading on the Internet. Configure the Forum 500 as an SNTP server for such programs.

SNTP with Windows 2000

Here you configure the SNTP server as follows:

1. Log on as the administrator. Start the "Command Prompt" under "Start > Programs > Accessories".

2. Enter the command line "net time /setsntp:192.168.99.254". Confirm with the enter key. This command changes the setting for the SNTP server address in the system registry. Close the command line.

3. Open the "Services" dialogue under "Start > Settings > Control Panel > Administration". Set the autostart type of the "Windows Timer" service to "Automatic". Start the service with "Process > Start". Every time the service starts, the PC clock is synchronised with the time of the Forum 500.

Please note: *In a Windows domain network, the PDC server (primary domain controller) should automatically assume the function of the timer.*

SNTP with Windows XP

Here you configure the SNTP server by double-clicking on the time in the Start bar. Enter the Forum 500 as the "server" in the "Internet time" tab.

Address Queries using LDAP

You can search the data of the central telephone book of the Forum 500 from a workstation in the LAN using LDAP (Lightweight Directory Access Protocol"). When configuring an LDAP-enabled program, specify the IP address of the Forum 500 as the address of the LDAP server.

LDAP with Outlook Express

You can configure and operate the LDAP directory service with Outlook Express[TM], a Microsoft[TM] e-mail program, as follows:

1. Call up the **Accounts** command in the **Tools** menu.

   The **Internet Accounts dialogue box will then open**.

2. Click on **Add**. Select the **Directory Service** command from the pop-up menu.

   The **Internet Connection Wizard** dialogue box for Internet access will then open.

3. Under **Internet directory (LDAP) server, enter the address of the** Forum 500. It is not necessary to log in to the **LDAP server**. Click twice on **Next**. Then click on **Finish**.

4. Check the function. In the **Edit** menu, call up the **Find**: **People** command.

   The **Find**: **People** dialogue box will then open.

5. In the **Look in** list, select the entry with the Forum 500 address. Enter a user in the **Name** input field, Administrator for example. Then click on Find now.

   The list of entries found should now display the address from the central telephone book.

Note: *Only users can be found for whom an internal telephone number has been configured.*

Configuration Guide

The Configuration Guide contains a series of flowcharts that will help you to plan the configuration of the Forum 500 and guide you through the necessary settings step by step, focusing on the network settings. The individual charts are summarised below:

Note: *Settings for mail and ISP and RAS access are only possible when you have activated the Forum 500 IP licence on the Web console Configurator in the* **SYS Configuration: Licences** *menu.*

- **Overview**: This chart gives you an overview of the initial configuration of the Forum 500.

- **Configuring PBX Ports**: This chart shows you the necessary steps for configuring ports and terminals.

- **Configuring Easy Access**: This chart guides you through TCP/IP settings for the Forum 500.

- **Configuring ISP Settings**: These instructions support you in configuring the Internet access.

- **Configuring RAS Settings**: This chart guides you through the configuration of the RAS settings.

- **Configuring LAN-to-LAN Settings**: This chart guides you through the configuration of the LAN-to-LAN settings.

- **Configuring E-Mail**: This diagram tells you how to create the requirements needed for configuring the Forum 500 e-mail access function.

- **Configuring E-Mail Access**: This overview provides instructions on configuring the Forum 500 e-mail access server.

Overview

Ethernet network (LAN) exists?

Yes

No

Cross-connected ethernet cable available?

Yes

No

Connect the Forum 500 and the configuration PC to the network

Connect the configuration PC to the Forum 500 LAN port. Enable DHCP.

Connect the configuration PC to the Forum 500 COM port. Generate the Dialup Networking entry with "occonfig".

Start the Forum 500 configuration service via your Web browser.

Enter the Forum 500 address, for example "http://192.168.99.254".

User Manager

Create the user groups and users.

Set the system data. Select the access type. Connect the S_0, U_{pn} and analogue devices and configure them. Configure the call distribution scheme.

PBX Configuration

Configure the Least Cost Routing function: zones, network providers and holidays.

Configure Forum 500 Least Cost Routing function?

Yes

LCR Configuration

No

Configure Forum 500 network functions?

Yes

Enter the licence code for releasing the IP package in the "System Configuration: Licences" menu.

No

Easy Access Configuration

Dial in (RAS)?

Yes

RAS Configuration

No

Connection (LAN)?

Yes

LAN-LAN Configuration

No

Internet?

Yes

ISP Configuration

No

E-mail?

Yes

E-Mail Configuration

No

Save data

Finished

Flowchart: Overview

PBX Ports

Flowchart: Configuring the PBX Ports

Easy Access

Do you have a computer network? → LAN → No → Finished

Yes ↓

Host name → Assign a name to the Forum 500.

Do you have a DHCP server in your network? → DHCP → Yes → The Forum 500 takes the settings from your DHCP server

No ↓

Activate the Forum 500 DHCP server. → Forum 500 DHCP server

Ask your network administrator for the address range for the RAS accesses. For this purpose, your administrator must reserve an IP address range for the RAS accesses.

Enter the Ethernet-IP configuration for the Forum 500. → IP address / Network mask

Gateway address → Client computers are informed of this gateway address via DHCP as a gateway.

Enter the address range of the client computers in your network. → DHCP adresses

Domain name → Enter the domain name. This name is transferred to the client computers as the domain via DHCP.

Do you have a DNS server in your network? → DNS → Yes

Specify the IP address of your internal DNS server under "Domain Name Server". This is transferred as the DNS server to the client computers via DHCP.

No ↓

Specify the IP address of the Forum 500 under "Domain Name Server". This is transferred as the DNS server to the client computers via DHCP. → Forum 500 as DNS server

Register internal DNS

Enter the address range for the RAS accesses. → PPP addresses

Finished

Flowchart: Configuring Easy Access

ISP Settings

Flowchart: Configuring the ISP Settings

RAS Settings

Have you made the network
settings for the Forum 500?

LAN — No

Configure the RAS access of the
Forum 500. "NET Configuration:
Connections: RAS"

Yes

NET Configuration:
Easy Access

Configure the network
settings for the Forum 500.

Status — Activate the RAS access.

Telephone number — Specify the telephone number for which
the RAS access should be configured.

Select from PAP,
CHAP and CLID.

Authorisation

Number of connections — Specify how many simultaneous
connections are possible via this access.

Select the filter lists. Filter
lists are created in "NET
Configuration: Safe Access"

Filter list IN

Filter list OUT

Have you created users
with RAS access rights?

Users — No

Yes

User Manager: Users
and User Groups

Configure users that
have RAS access rights.

Add internal telephone
number to the
incoming call
distribution scheme.

Finished

Flowchart: Configuring the RAS Settings

LAN-to-LAN Settings

Have you made the network settings for the Forum 500?

Configure the LAN-LAN connection. "NET Configuration: Connections: LAN-LAN"

Flowchart element	Description
LAN — No	
NET Configuration: Easy Access	Configure the network settings for the Forum 500.
Yes	
Protocol	Select between PPP and HDLC transparent.
Telephone number local	Enter the internal telephone number.
IP address local	Enter the local IP address.
Network mask local	Enter the local network mask.
CLID — Yes / No	Authorisation method of the local LAN: CLID, PAP or CHAP?
User name local	Specify the user name with which the remote LAN can access a destination.
Password local	Specify the password with which the remote LAN can access a destination.
Telephone number remote	Specify the telephone number of the remote LAN access.
IP address remote	Specify the IP address of the remote LAN.
Network mask remote	Specify the network mask of the remote LAN.
CLID — Yes / No	Authorisation method of the remote LAN: CLID, PAP or CHAP?
User name remote	Specify the user name with which the remote LAN can be accessed.
Password remote	Specify the password with which the remote LAN can be accessed.
Direction of connection	Select the direction of the connection.
Maximum connection time per month	Specify the maximum number of minutes per month the connection to the remote LAN can be set up for.
Maximum idle time	Set the maximum idle time after which a connection to the remote LAN is cleared down.
Add internal telephone number to the incoming call distribution scheme.	
Finished	

Flowchart: Configuring the LAN-to-LAN Settings

E-mail Function

Have you made the network settings for the Forum 500?

LAN — No

Configure the network settings for the Forum 500.

NET Configuration: Easy Access

Yes

Do you want to use e-mail from the Internet?

Internet — Yes

Configure your Internet access.

NET Configuration: Connection: ISP

No

Has an internal e-mail server been configured in your LAN?

LAN — No

No e-mail use

Yes

Do you want to be notified of e-mails on your system telephones?

Notification — No

Finished

Yes

Have you stored the users to be notified?

Users — No

Create the users and activate e-mail notification. Also enter the users' e-mail addresses.

User Manager: Users, User Groups and User Accounts

Yes

Set the polling time periods.

NET Configuration: E-Mail Access

Finished

Flowchart: Configuring the E-mail Function

E-mail Access

Do you have access to a mail server in your network or in the Internet?

Mail server

No

Configure your network/ Internet access.

NET Configuration: Easy Access or Configure ISP

Yes

Do you have created mail account polls in the "User Manager: User accounts"?

User accounts

No

Set up user accounts in the User Manager.

User Manager: User Accounts

Yes

Configuration of e-mail access settings

Maximum number of e-mails per user account

Specify the maximum no. of e-mails per user account that should be temporarily stored by the Forum 500.

Specify the time intervals in which the Forum 500 is to poll all mail accounts from the standard POP server.

Enquiry interval

Start and end times:
Monday to Friday 1st starting time
Monday to Friday 1st ending time
Monday to Friday 2nd starting time
Monday to Friday 2nd ending time
Saturday 1st starting time
Saturday 1st ending time
Saturday 2nd starting time
Saturday 2nd ending time
Sunday 1st starting time
Sunday 1st ending time
Sunday 2nd starting time
Sunday 2nd ending time

Define the time windows in which the Forum 500 should check the mail accounts for new messages in the time intervals that have been set. You can define two time windows for each working day (Monday to Friday), and two each for Saturday and Sunday.

Finished

Flowchart: Configuring E-mail Access

Frequently Asked Questions

This chapter provides tips and information on how to deal with any malfunctions or faults you may experience with the Forum 500.

Please note: *Repairs to the Forum 500 should only be carried out by qualified personnel.*

The following LEDs indicate that the Forum 500 is ready for operation:
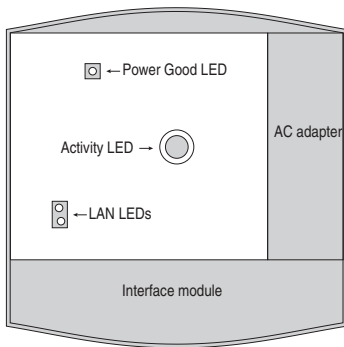
Position of LEDs on the Forum 500

The LAN LEDs are only visible on the Forum 514/516 when the labelling strip is removed.

General/Hardware

Question: The Forum 500 is not functioning.

Make sure the mains plug is properly connected.

Plug another device into the mains socket to check whether there is any voltage.

Question: The mains plug is connected, the mains socket is supplying output, but the Forum 500 still does not function.

DANGER! High voltage inside the device. To make the system dead, remove the power plug from the socket!

Take the housing cover off. Is the "Power Fine" LED at the top left lit up? If not, contact your service centre or an authorised dealer. The AC adapter plug of the Forum 500 may be defective.

Question: After restarting the Forum 500, nothing is indicated on the displays of any connected terminals.

It takes a short while for the Forum 500 to start up. After the restart, check whether the activity LED flashes at a rate of 10s / 1s. This flash cycle indicates that the Forum 500 has started up correctly and is ready for operation. If the Forum 500 has not restarted properly, reset the Forum 500 to its original factory setting (refer to the chapter entitled *Resetting the System Data* starting on page 59).

Telephony

Question: It is not possible to make external calls.

Check the connection between the NTBA and the Forum 500.

In the **Configurator**, check whether the external S_0 ports are configured correctly (**PBX Configuration: S0** menu).

Question: The Forum 500 is connected to an NTBA with a multi-terminal configuration. Why is it not possible to establish external connections?

With the original factory setting, an additional external S_0 port is set for an NTBA in system configuration; this additional port will be used first to seize a trunk line.

Deactivate the second S_0 port in the **Configurator** (**PBX Configuration: S0** menu).

Question: One of the telephones is not functioning at all.

Make sure the telephone has been properly connected.

Check also whether the appropriate port has been configured correctly in the **Configurator** (**PBX Configuration: Ports** menu).

Question: It is not possible to make external calls with one of the telephones.

Check whether a user is configured for the telephone. Otherwise the settings of the Guests user group are valid for the telephone. To standard, this user group has no external call authorisation.

Make sure the user configured for this telephone belongs to a user group with external line access (**Configurator**, **User Manager: User groups** menu).

Check also whether the internal call number of this telephone has been configured for outgoing call distribution (**Configurator**, **PBX Configuration: Call Distribution** menu).

Question: One of the features (e.g. call diversion) on one of the telephones cannot be used even though the feature has been configured in the **Configurator** of the Forum 500.

Make sure the user configured for this telephone belongs to a user group that has access to this feature (**Configurator**, **User Manager: User** and **User groups** menus). Some features cannot be used until the system PIN is changed.

Question: Nothing is indicated on the display of one of the connected ISDN telephones.

You have connected the ISDN telephone to an external S_0 port (RJ-45 socket). These ports are intended for connection to the NTBA only. Connect the telephone to an internal S_0 port (pressure terminal).

Question: Calls can be made but not received with one of the ISDN telephones.

The internal call number that has been configured for this ISDN telephone in the **Configurator** (**PBX Configuration: Ports: S0** menu) must also be configured as an MSN on the ISDN telephone itself. For further information, refer to the User Guide of your ISDN telephone.

Question: It is not possible to configure **Call Distribution: Outgoing** for multi-terminal access.

You have configured multi-terminal access and system access in parallel. All outgoing calls are therefore established via system access, and outgoing call distribution can be configured for system access only (**Configurator**, **Call Distribution: Outgoing** menu).

A specific MSN can be seized for individual calls by means of a code number procedure. For further information, refer to the "Forum 500, Operation on Standard Terminals" user guide.

Question: Which reason may have problems with receiving faxes resp. sending faxes?

In frequent cases, the reason may be found in a problem with the ISDN-L1 reference clock distribution. The L1 clock is delivered from the network provider. An unclean L1 clock distribution and the introduced signalling jitter is overheard by the human ear. Nevertheless, data and fax transmissions may be disturbed by the jitter. Please check, which ISDN lines will deliver the L1 clock. Details can be found under *L1 Clock* starting on page 79.

DECT

Question: The LED of the Forum Base 500 DECT base station is flashing, but none of the DECT devices is functioning.

Make sure the terminal setting for the corresponding U_{pn} port is set to **Forum Base 500** (**Configurator**, **PBX Configuration: Ports: U_{pn}** menu).

Question: The LED of the Forum Base 500 is continuously lit up, but one of the cordless DECT devices is indicating "No connection".

You have not configured a port for this DECT device. Configure a port in the **Configurator** and start the enrolment procedure (**PBX Configuration: Ports: DECT-PP** menu).

Question: Is it possible to increase the time for the enrolment procedure?

You must manually enter the IPEI of the DECT device in the **Configurator**. The enrolment time is then increased to one hour (**PBX Configuration: Ports: DECT-PP** menu).

Question: Another manufacturer's DECT device is not functioning.

Check whether the DECT device supports the DECT GAP standard. In the **Configurator**, also make sure **GAP** is set for this DECT device (**PBX Configuration: Ports: DECT-PP** menu).

Question: The startup procedure of the Forum Base 500 take a long time? What is the reason?

This behaviour may indicate a problem with the reference clock. Refer also to *Which reason may have problems with receiving faxes resp. sending faxes?* starting on page 128.

LAN

Question: It is not possible to establish a network connection with the Forum 500.

Check whether the LEDs for the hub and the PC's network card are indicating a connection.

Remove the labelling strip. Check the LEDs for the LAN functions of the Forum 500. The upper green LAN LED at the top indicates whether the network cable has been properly connected. The lower red LAN LED at the bottom indicates whether there is any network traffic on the line.

To check whether there is a network connection with your Forum 500, enter the "ping IP address" command in "Run" in the Windows Start menu (e.g. ping 192.168.99.254).

Question: How can I determine the IP address of the Forum 500?

To find out what the IP address is, enter the code number ✱ ➊ ➑ ➋ on one of the connected system telephones.

The code-number procedure ✱ ➊ ➑ ➌ also displays the network mask.

Question: The network connection is functioning, but nothing is displayed in the browser.

Enter the complete IP address of the Forum 500 along with the protocol identifier, for example http://192.168.99.254/.

Check whether the browser has been configured for connection through a proxy server. If so, deactivate the "Connect through proxy server" setting.

Question: You have just configured the Forum 500 via the network. Why is it not possible now to establish a remote data transfer network connection?

The network card and the communication (remote data transfer) adapter cannot be run with the same routing setting. Deactivate the network card before connecting via the dial-up network.

Question: Our network has grown over time, with several segments connected by one central router. How can PCs from all segments be connected with the Forum 500?

In the **Configurator**, use the **LAN** setting in **ISP** to specify the central router as the default gateway. If necessary, deactivate any filter rules defined for the ISP (**NET Configuration: Connections: ISP** menu). If several routers are configured for your network in different segments, you can enter extra static routes in the **NET Configuration: Easy Access: Routes** menu.

Question: In our network the Forum 500 dynamically issues the IP addresses by DHCP. Can I firmly assign the IP address for our internal server PCs (mail, Web)?

You need a static address assignment for these PCs. Make the appropriate assignment entries in the Configurator (**NET Configuration: DHCP** menu). Activate "Dynamic and static address".

If you fix a name for these IP addresses in the **NET Configura-
tion: Easy Access: Hosts** menu, you can address the server PCs
quite easily by the DNS names.

Internet

Question: I cannot access our company Web site.

Outside your system, your company Web site is accessed at
"www.firm.com", but in the **Configurator** you have entered
"firm.com" as the domain. Your company's site URL thus counts as
an internal URL and can only be accessed by entering the direct IP
address. If required, change the domain setting in the **NET Con-
figuration: Easy Access** menu.

Question: Why do some Internet services not work even though
they can be used when dialling in directly via a modem?

Some Internet services require an active connection coming from
the Internet. But the configured filter rules prevent this. Plus, it is
not possible to establish incoming Internet connections with the
PCs directly owing to the network address translation process.

Technical Specifications

Mains power supply	230 V ~ 50 Hz		
Rated power	Forum 512: 80 VA	Forum 514: 80 VA	Forum 516: 130 VA
Safety class	2		
Euro ISDN external for basic access, DSS1 protocol	Forum 512: 1x	Forum 514: 2x	Forum 516: —
Euro ISDN internal for ISDN terminals, DSS1 protocol	Forum 512: 1x	Forum 514: 1x	Forum 516: —
– Supply voltage	40 V ± 10%		
– Supply power	3 W		
– Range	150 m		
Euro ISDN switcha-ble for basic access, DSS1 protocol or for ISDN terminals, DSS1 protocol	Forum 512: 2x	Forum 514: 2x	Forum 516: 6x
– Supply voltage	40 V ± 10%		
– Supply power	3 W for internal		
– Range	150 m internal		
U_{pn} for system ter-minals and DECT base stations	Forum 512: 4x	Forum 514: 8x	Forum 516: 18x
– Supply voltage	40 V ± 10%		
– Supply power	3 W per U_{pn} bus		
– Range	1000 m		
a/b for analogue ter-minals with DTMF dialling, flash dura-tion of 60 to 310 ms	Forum 512: 4x	Forum 514: 4x	Forum 516: 4x

– Supply voltage	40 V ± 10%
– Supply power	25 mA
– Range	1,000 m
V.24 port (COM)	for connection of a PC
– Range	5 m
Permissible temperatures stationary, weatherproofed	+5°C to +40°C
Dimensions (B x H x D)	396 x 390 x 100 mm

Weight (only system)	Forum 512: about 2.8 kg	Forum 514: about 2.8 kg	Forum 516: about 3.2 kg
Contact load actor 1	10 A / 125 V		
Contact load actor 2	2 A / 125 V		
– Voltage range	$U_{\approx} = 5$ V … 30 V		
Sensor, switched by low AC voltage			
– Voltage range	$U_{\sim} = 6$ V … 24 V		

Note: *The online help provides an overview of the limits that should be observed when configuring the Forum 500.*
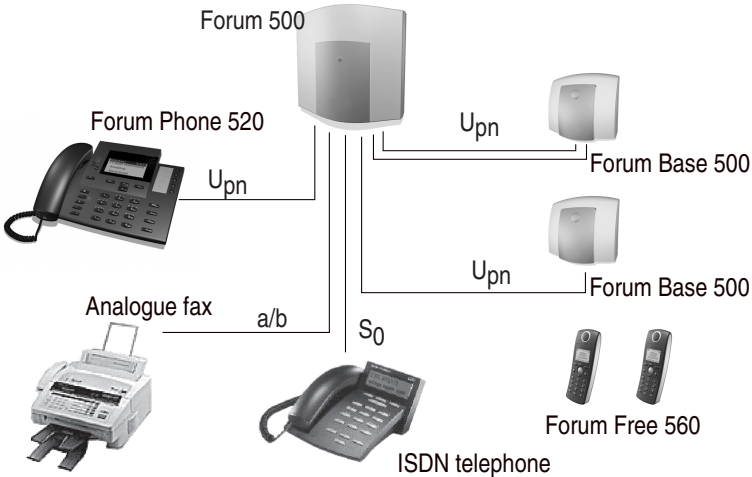
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Configuration Example

Configuration example: Forum 500 with connected terminals

For more information:

- Please dial 0800 55 400

- Visit us in the Internet at www.belgacom.be/pabx

- Contact your Belgacom dealer

Subject to changes

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