ALCATEL BUSINESS SYSTEMS
PROFESSIONAL & CONSUMER DIVISION **TD – ILLKIRCH – IT BU**

Alcatel 2840 – 1.1 Internet Screen Phone: External Specifications

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Alcatel 2840 – 1.1 Internet Screen Phone: External Specifications

Electronic Appraisal by Document Manager

Contents

Chapter 1

GENERALITIES

1 INTRODUCTION

This document presents the External Specifications of the **ALCATEL PSTN internet screen phone, referenced 2840 1.1**.

The internet screen phone is an advanced **telephone and internet terminal** offering a range of services:

- telephony
- easy access to Class and Comfort Phone Services
- Plug'n Surf Internet browsing
- Electronic mail
- Multi–purpose local address book by storing telephone numbers, e–mail addresses, www sites

The document describes the features of a **generic PSTN** internet screen phone to be customized to national standards.

The Man Machine Interface is not presented in this document.

Hardware and mechanical aspects are described in document **PSTN Internet Phone: Mechanical & Hardware brief description: 3AK 29000 0413 UUZZA**.

2 HISTORY

Edition **1** : 02.11.98 creation, to be reviewed.

Edition **2**: 03.24.98 approved by marketing and R&D teams.

Edition **3**: 07.17.98 modifications for version 1.1. Modification are marqued with revision bars.

3 CHARACTERISTICS OVERVIEW

The main characteristics of the **internet screen phone** are:

- **COMPACTNESS**

  The internet screen phone has the aspect of a **compact** mono–bloc telephone integrating a flat 7,5" backligthed touch screen.

  It is formed by a base casing supporting the handset, 5 LEDs, the numeric keypad, 13 keys, a screen and a smart card reader. A pencil allows to select objects on the touch sceen and can be placed on the base.

  The base integrates a pull–out alphanumeric keyboard.

- **SERVICES**

  The internet screen phone offers services related to advanced telephony (second outgoing call, three party, etc...), internet connection for browsing and e–mail services and user data as address book, call log list, etc... stored in a local permanent storage.

- **NETWORK INTERFACE**

  The PSTN internet screen phone can be connected to an analog line either to a **public network** or behind a **PABX** and tested with Alcatel 4400 and Alcatel 4200.

- **SOFTWARE UPGRADE**

  Software upgrade is made by downloading via an IP server **on user request.**

  New services and set–up can be downloaded to the terminal using software upgrade.

- **POWER**

  The internet screen phone is powered by **mains** through a transformer outside the terminal.

  There is **no power consumption** through the network interface. This means that the terminal is off when mains disappears.

  During inactivity, the terminal is in a **reduced power consumption mode**, the standby mode.

- **CUSTOMIZATIONS**

  Hardware and software customizations are necessary to be conform to national standards. These customizations are not described in this document. For each customer, a document describing the customizations is produced.

4 LIST OF ACRONYMS

API:	Application Programming Interface
CCS:	Class and Comfort Services
CD:	Call Diversion
CFB:	Call Forwarding Busy
CFNR:	Call Forwarding on No Reply
CFU:	Call Forwarding Unconditionnal
CIDCW:	Caller ID on Call Waiting
CLIP:	Calling Line Identification Presentation
CLIR:	Calling Line Identification Restriction
CW:	Call Waiting
DES:	Data Encryption Standard
DTMF:	Dual Tone Multi–Frequency
ETS:	European Telecommunication Standard
HDLC:	High–level Data Link Control
HTML:	Hyper–Text Markup Language
HTTP:	Hyper–Text Transfer Protocol
HOLD:	Call Hold
IAP:	Internet Access Provider
IMAP4:	Internet Message Access Protocol version 4
IP:	Internet Protocol
ISO:	International Standard Organization
ISP:	Internet Service Provider
ITU:	International Telecommunication Union
MD5:	Message digest 5
MIME:	Multipurpose Internet Mail Extensions
MNP:	Microcom Networking Protocol
PABX:	Private Automatic Branch Exchange
POP3:	Post Office Protocol version 3
PPP:	Point–to–Point Protocol
PSTN:	Public Switched Telephone Network
SMTP:	Simple Mail Transfer Protocol
RAM:	Random Access Memory

RSA:	Rivest, Shamir and Adleman
SHA:	Secure Hash Algorithm
SSL:	Secure Socket Layer
TCP:	Transmission Control Protocol
TFTP:	Trivial File Transfer Protocol
UDP:	User Datagram Protocol
URL:	Uniform Resource Locator
VGA:	Video Graphics Array
WWW:	Word Wide Web

5 DOCUMENT REFERENCES

[1] ETS 300 648 : Calling Line Identification Presentation supplementary service; Service description

[2] ETS 300 649 : Calling Line Identification Restriction supplementary service; Service description

[3] ETS 300 659 : Subscriber line protocol over the local loop for display services; Part 1 and Part 2

[4] ETS 300 778 : Protocol over the local loop for display services; Caller Display Service – Terminal Equipement Requirements; Part 1 and Part 2

[5] ITU V.8 : Procédures de démarrage des sessions de transmission de données sur le réseau téléphonique général commuté

[6] ITU V.8bis : Procédures d'identification et de sélection des modes de fonctionnement communs entre ETCD et entre ETTD sur le réseau téléphonique général commuté et sur les circuits loués point à point de type téléphone

[7] ITU V.23 : 600/1200 baud modem standardized for use in the general switched telephone network

[8] ITU V.32 : Famille de modems à deux fils fonctionnant en duplex à des débits binaires allant jusqu'à 9600 bit/s pour usage sur le réseau téléphonique général avec commutation et sur les circuits loués de type téléphonique

[9] ITU V.32bis : Modem fonctionnant en mode duplex à des débits binaires allant jusqu'à 14 400 bit/s pour usage sur le réseau téléphonique général avec commutation et sur les circuits à 2 fils de type téléphonique loués de poste à poste

[10] ITU V.34 : A modem operating at data signaling rates of up to 33 600 bit/s

[11] ITU V.42 : Error–correcting procedures for DCEs using asynchronous to synchronous conversion

[12] ITU V.42 bis : Data compression procedures for data circuit terminating equipment (DCE) using error correction procedures

[13] RFC 768 : UDP User datagram Protocol

[14] RFC 791 : IPv4 Internet Protocol version 4

[15] RFC 793 : TCP Transmission Control Protocol

[16] RFC 821 : SMTP Simple Mail Transfer Protocol

[17] RFC 1101 : DNS encoding of network names and other types

[18] RFC 1331 : The MD5 Message–Digest Algorithm

[19] RFC 1332 : PPP Internet Protocol Control Protocol (IPCP)

[20] RFC 1334 : PPP Authentication Protocols

[21] RFC 1521 : MIME Multipurpose Internet Mail Extensions

[22] RFC 1661 : PPP Point to Point Protocol

[23] RFC 1730 : IMAP4 Internet Message Access Protocol version 4

[24] RFC 1738: Uniform Resource Locators

[25] RFC 1877: PPP Internet Protocol Control Protocol Extensions for Name Server Addresses

[26] RFC 1939: POP3 Post office Protocol version 3

[27] RFC 1994: PPP Challenge Handshake Authentication Protocole (CHAP)

[28] RFC 2068: HTTP HyperText Transfer Protocol

[29] HTML 3.2 : HTML HyperText Markup Language: http://www.w3.org/TR/REC–html32.html

[30] RFC 2109: HTTP State Management Mechanism

[31] ISO/IEC 7816: Information technology – Identification cards – Integrated circuit(s) cards with contacts: Parts1, 2, 3, 4

[32] : PSTN Internet Phone: Mechanical & Hardware brief description: 3AK 29000 0413 UUZZA

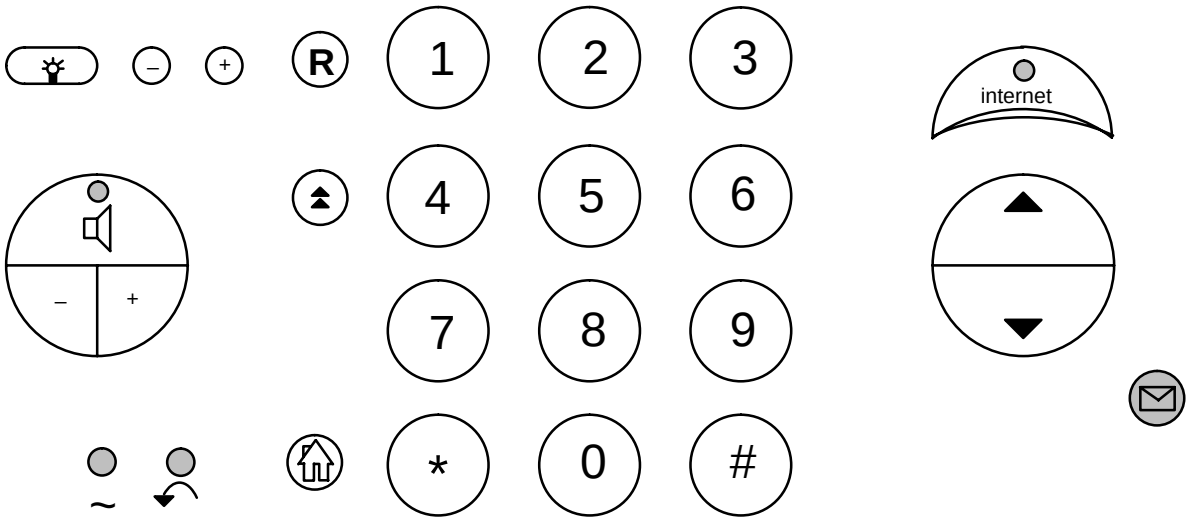
Chapter 2

INTERFACES

1 USER TERMINAL INTERFACE

1.1 VIEW OF THE BASE

The following figure gives a view of the base components: keys and leds. The leds are represented in grey. The "✉ "key is transparent and incorporates a led.



1.2 TOUCH SCREEN

The touch screen allows to **select objects.**

A selected object is displayed differently from an unselected object. As long as the finger moves on the screen, selection follows finger moving.

At contact release a click is emitted to give a feedback and the **associated action** of the selection is executed.

A **pencil** is available to select objects.

A calibration function is offered to user.

1.3 LCD

It is a **VGA** display of 7.5" (640x480 pixels) and 256 colors.

The brightness is adjustable by the "**+**" and "**–**" keys.

A **screen saving mode** is managed to save backlight lifetime.

1.4 KEYBOARD

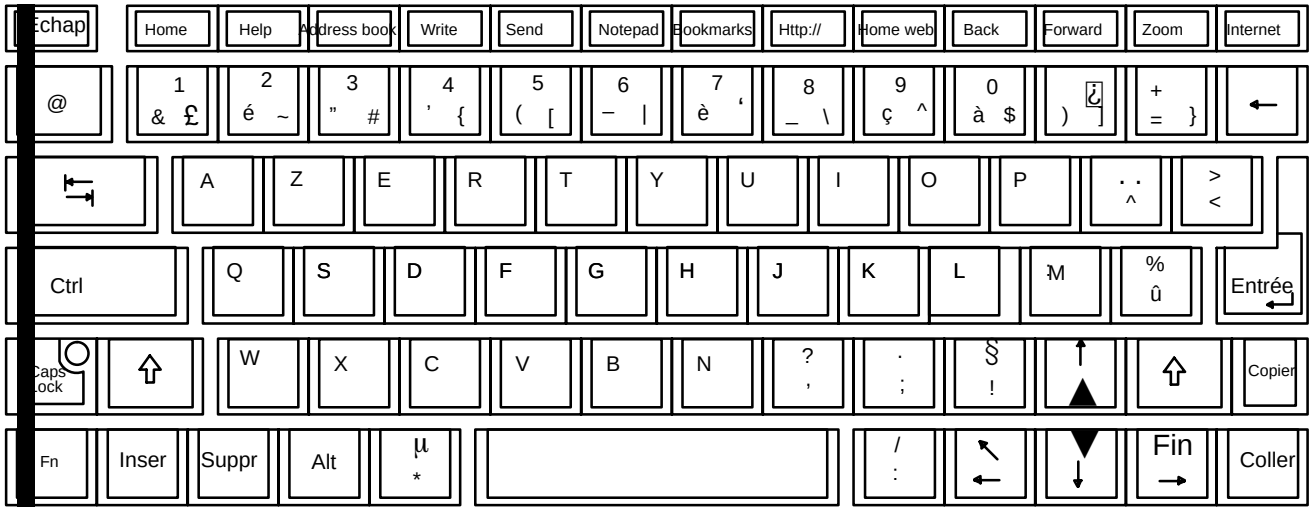
The internet screen phone keyboard is divided in a dialling keypad and 13 keys grouped by functional sets:

- **Screen** adjustements keys:
  - : lights the screen on or off
  - , "**+**" and "**–**": adjusts the screen brightness
- **Audio** control keys:
  - : puts the loudspeaker on or off, allows handsfree activation, initiates an outgoing call, takes an incoming call and releases a call
  - "**+**", "**–**" : adjusts loudhearing level
- **Communication** function keys:
  - "**Internet**": connects to provider or disconnects from provider
  - "▲": redials the last called number
  - **"R**": Flash key used to access network services
- **Navigation** keys:
  - : Home key. Joins the terminal's local home page
  - " ▼ " and "▲ ": scrolls pages down and up
- **Message** keys:
  - : access to last incoming call list containing e–mail and voice mail message waiting indicators and incoming calls

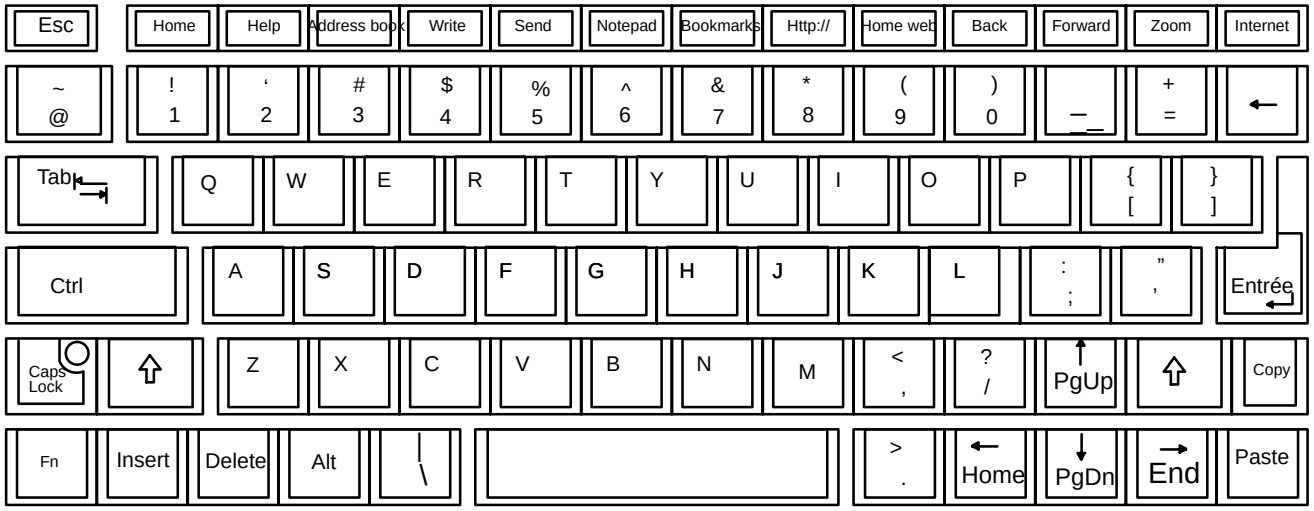
1.5 PULL–OUT ALPHANUMERIC KEYBOARD

It is an alphanumeric keyboard of 79 keys with a led to indicate Caps lock. In the following representations, labels and graphics are indicative.

1.5.1 AZERTY Keyboard



1.5.2 QWERTY Keyboard



1.5.3 First row key definitions

Key numbering starts at the left with number 1.

Key 1	Echap ou Esc	escape character
Key 2	Home	terminal home page
Key 3	Help	help
Key 4	Address book	address book
Key 5	Write	write a mail
Key 6	Send	send a mail
Key 7	Notepad	Write a note associated to a contact

Key 8	Bookmarks	bookmarks
Key 9	Http://	access to browser with focus on goto field
Key 10	Home web	home page of provider
Key 11	Back	back (cache pages and local pages)
Key 12	Forward	forward (cache pages)
Key 13	Zoom	Switch to Full screen in Browser an Write mail
Key 14	Internet	internet connection/disconnection

Keys are active in some terminal contexts.

1.6 LIGHT EMITTING DIODES INDICATORS

The internet screen phone has 5 diodes located on the base. The diodes are:

- ~: **Power led** : it is a green led. The led is on, when the internet screen phone is plugged on mains. During security transaction with smart card inside the reader, the led is blinking.
- ↶: **Call Forward led** : it is a red led. The led is turned on when Call Forward unconditional is activated by the user.
- ✉: **Message led** : it is a red led. The led is blinking, when new E–mail or voice mail messages are available.
- "**Internet**": It is a red led. The led is on, when an internet connection is started.
- 🔊: **Line led** : It is a red led. The led is on when the line is taken for phone calls. The led is blinking in case of ringing signal.

1.7 AUDIO

1.7.1 Handset mode

The user can adjust the handset loudness level by the keys "**+**" and "**–**". They are two levels:
– normal level
– normal level plus 6dB.

On–going off–hook, the user adjustment is lost (level returns to normal level), it is a temporary adjustement.

1.7.2 Loudspeaker mode

The user can adjust the loudhearing loudness level by the keys "**+**" and "**–**" (handset loudness level is not affected). There are **6** levels with a step of 6 dB between each level.

Loudhearing is started with default loudhearing level.

Loudhearing activation/desactivation during a call and switch between held and active calls keeps the last user adjusted level.

The adjustments are valid for the current calls (the new level is lost at the end of the calls), it is a temporary adjustment.

1.7.3 Handsfree mode

It is an **analog half–duplex** handsfree.

Handsfree mode is activated:

- when the line is taken by pressing the  key
- when dialling a number from local permanent memory or using preparotary dialling, whitout lifting the handset
- during conversation when the user puts the handset on–hook while pressing the  key.

Handsfree mode is descativated by the user by taking the handset off or when the line is released.

1.7.4 Indication tones

The internet screen phone gets the tones generated by the public network or the PABX as soon as they are available on the line.

The tones are emitted either on the handset if it is off–hook, either on the loudspeaker if the handsfree mode is activated or on both if loudhearing mode has been activated.

1.7.5 Ringing tones

The internet screen phone offers programmation of **15** selectable ringing tone "**melodies**" and **6** adjustable **volume** levels by step of 6 dB in set–up menu.

During incoming call, the user can adjust the volume by the keys "**+**" and "**–**" . The user can cut the ringing by the "**–**" key. This adjustement is lost for new incoming calls.

If ringing is set off in set–up menu, incoming calls are still displayed on the screen.

1.7.6 Warning beeps

Warning beeps are emitted on the loudspeaker.

Beep emission can be turned on/off in set–up menu. By default, beeps are emitted.

1.7.7 Touch screen feedback

A button release on the touch screen is confirmed by emetting a key click on the loudspeaker.

Button click emission can be turned on/off in set–up menu. By default, button click is off.

1.7.8 Mute function

The mute function allows the user to switch off the handset microphone or the handsfree microphone during conversation.

The mute function can be activated or desactivated by the user by clicking the mute button on the touch screen during conversation.

Mute state is indicated on the screen by an icon.

Mute function is automatically desactivated when the line is released.

Switching from handsfree mode to handset mode and vice–versa does not reset mute function.

1.7.9 Internet audio

Audio files (AU and WAV files) are heared in loudspeaker mode during an internet connection or as attachment from a received mail.

2 NETWORK INTERFACE

2.1 NATIONAL SPECIFICATIONS

The internet screen phone implements for a country a specific network interface respecting the national specifications for:

- Telephony
- Audio
- Modem
- Class and Comfort Services

2.2 LINE AND CALL STATES

This section describes line and call states of the terminal.

2.2.1 Off–line state

In **idle state** or **Off–Line state,** the line is not taken. The associated call states are:

- **Local state**: no incoming call is presented.
- **Ringing State** : this state is active as soon as an incoming call is detected. The ringing can be ON or OFF. This state ends either when the call has disappeared since ringing timer or when the user takes the line. The ringing timer is started on ringing signal. The timer value is set to **9 seconds** and is customizable.

2.2.2 On–line state

In **loop state** or **On–Line state,** the line is taken. The associated call states are:

- **Please Dial state**: the line is taken, but dialling has not started
- **Dialling State :** dialling is in progress. A timer is started for each dialled digit, it is the conversation timer. The dialling state is active until expiration of the conversation timer. The conversation timer value is set to **10 seconds** and is customizable.
- **Conversation state** : this state is active on an incoming call, as soon as the user takes the line and on an outgoing call, **after expiration of the conversation timer**. This state ends when the line is released. In case of an internet connection (V.34 modem connection exists), the following two sub–states are managed:

– **IP connection in progress** : the state exists during an IP connection progress initialized for web–browsing or email functions. This state covers modem training and PPP establishment.

– **IP connected state** : the state starts as soon as an IP connection acknowledge is received in the "IP connection in progress" state. In IP connected state, several sockets can be opened: HTTP, POP3, IMAP4, SMTP.

2.3 TONE DETECTION

The internet screen phone is able to **detect dial tone**. It enables to start dialling sequence in semi automatic dialling (dial tone detection is associated with a standard pause : dial starts either with successfull detection or end of pause).

In case of data call, the terminal detects **busy tone**. It remains on–line until the user releases the line.

2.4 DIALLING

Pulse dialling and DTMF dialling are possible. Dialling mode can be selected into DTMF dialling mode or pulse mode in a set–up menu. Default mode is DTMF dialling mode.

Dialling **Star (*)** or **Hash (#)** in pulse dialling mode switches to the DTMF dialling mode.

In DTMF dialling mode, it is not possible to switch to pulse dialling mode.

Dialling the **flash** key restores the dialling mode programmed in the set–up.

A feedback meant for the user is emitted either on the handset if it is off–hook, either on the loudspeaker if handsfree mode is activated or on both if the loudhearing mode has been activated.

2.4.1 Pulse dialling

Pulse calibration is done to assure open loop time, closed loop time and inter–digit time.

2.4.2 DTMF dialling

DTMF calibration is done to assure digit time and inter–digit time.

2.4.3 Flash key

Flash key (R) allows the activation of a flash signal (long or short) depending on the actual flash parameter setting.

Flash signal is available only in DTMF dialling mode. A short signal is a loop interruption of 110 ms +/– 10 ms and a long flash signal is a loop interruption of xx ms+/– 10 ms, xx value is conform to national standard. Default setting is long flash.

In semi automatic dialling, a pause is inserted automatically after the flash key.

Pressing Flash key during dialling does not interrupt dialling process. The key is dialled after the previous given digits.

Flash key and digits dialled after flash key are not stored in the redial buffer. Exeption is made for the second call phone service. If used, it generates two entries in the redial list.

Flash key may be stored in address book.

2.4.4 Pause

A pause (P key on the alphanumeric keyboard) can be entered in a phone number saved in local permanent memory, or inserted due to the comparison with prefixes.

The prefixes used to add pause are:

- public network access code
- international access code

The phone number to dial is compared with these fields and due to the result of comparison, Pause is inserted or not during the dialling phase.

Pause duration is programmable to: 2 s or 4 s. Default setting is 2 seconds.

2.4.5 Manual dialling

The user has taken the line and dials. Manual dialling allows digits 0...9, *, #, R (flash key).

No pause is generated automatically.

2.4.6 Semi automatic dialling

Semi automatic dialling allows to dial a whole number. If necessary, the line is taken.

After line seizure, a pause of 2s is inserted. If dial tone detection occurs before end of pause, dialling starts else dialling starts after pause expiration.

2.4.7 Maximum digits of phone number in local permanent memory

Phone number in local permanent memory can have up to **30** digits.

2.5 SUBSCRIBER LINE PROTOCOL OVER LOCAL LOOP FOR DISPLAY SERVICES: DATA LINK AND PRESENTATION LAYERS

This protocol is implemented to offer the features Calling Line Identification Presentation and Message Waiting Indicator in accordance with standards [3] and [4].

If the checksum is not correct, the terminal considers that no information has been received. The treated data link messages are: Call Setup and Message Waiting Indicator.

2.5.1 Call Setup

The message allows to give to the called user the Caller line identification.

~~The "caller identification on call waiting" feature is offered depending of the network provider : it allows the user, already engaged in a telephone call, to be informed of the Caller line identification of incoming calls.~~

The terminal manages the following parameters of the Call Setup message:

- Date and Time
- Calling Line Identity
- Reason of absence of Calling Line Identity
- Network Message System Status

2.5.2 Message Waiting Indicator

Message waiting indicator allows to know if new e–mail or voice mail messages have been received.

The terminal manages the following parameters of the Message Waiting Indicator message:

- Date and Time
- Calling Line Identity
- Reason for absence of Calling Line Identity
- Visual Indicator
- Network Message System Status

3 MODEM

3.1 INTERNET CONNECTION

Modem operates in full duplex, synchronous mode and is conform to **V.34** and **V.8**.

V.8 bis procedures, **V.32 bis** automode procedure, **V.42** and **MNP–4** error corrections and **V.42 bis** and **MNP–5** compressions are supported.

The maximum data signalling rate is **33 600 bit/s**.

In automode, the modem attempts to connect with the highest available speed and decreases speed until successful achievement. The modem also performs auto retrain.

In case of connection failure (no dial tone, busy line, no answer and no carrier), the modem is stopped if necessary, connection failure is indicated to user who can release the line.

3.2 SUBSCRIBER LINE PROTOCOL OVER LOCAL LOOP FOR DISPLAY SERVICES: PHYSICAL LAYER

Asynchronous voice–band **Frequency–Shift Keying** signalling is used to transfer data to the terminal. The terminal implements a demodulator as specified in ITU Recommandation **V.23**.

4 SMART CARD READER

The interface is ISO/IEC 7816–3. The card reader is described in document [32].

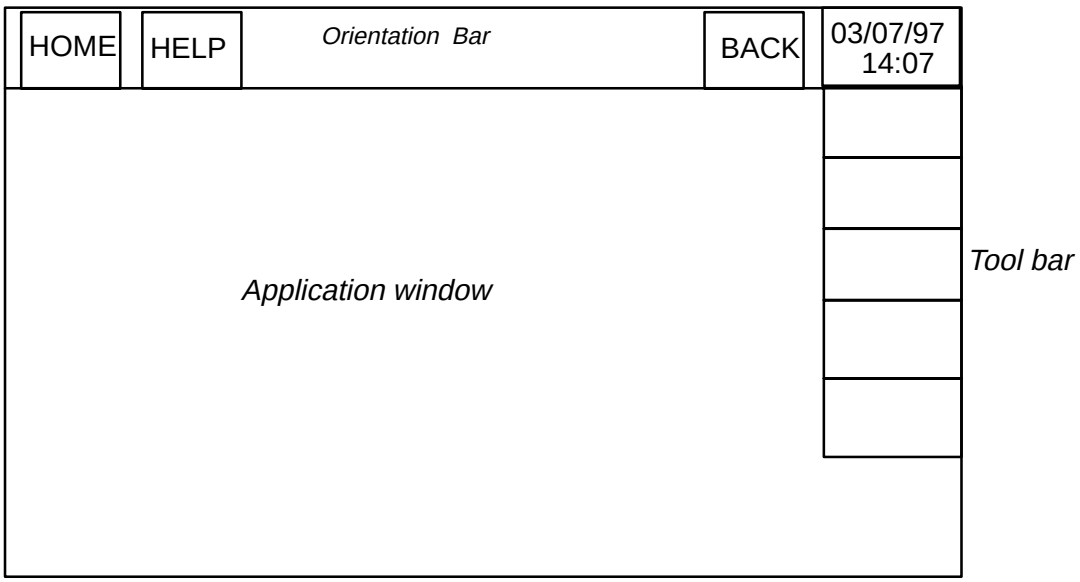
5 GRAPHICAL USER INTERFACE COMPONENTS

5.1 BASIC COMPONENTS

The GUI is composed of the following basic components:

- container
- button
- pattern
- mono–line text field
- multi–line text field
- vertical scrolling tool
- scrollable item collection
- list box
- pop–up or dialog box
- combo box

5.2 GENERAL SCREEN LAYOUT



All the screens displayed have the same layout. A screen layout is composed of 3 panels :

- **application window**. It can be full screen (for the browser only) or reduced by the width of the toolbar if a toolbar is needed. At any moment, only one application uses the whole application window on the screen. Once the application has the focus, the different active components of the application can be selected by using TAB and shift–TAB.
  When a pop–up is opened, the objects of the application window can not be activated but they will keep their appareance (they are not displayed in the disabled state).

- **orientation bar**.The orientation bar is located at the top of the screen. It is used to display the current time & date and information messages. 5 buttons are proposed :

  – push buttons: **HOME** and **BACK** to navigate, and **Time and date** : for direct access to the setup. The Time and date button also displays the connection time when the line is engaged (voice or data).

  – switch buttons: **HELP** to get some help ~~and **TOOLS**~~

  and **label texts** for information messages in the zone between HELP button and Time and date

- **toolba**r. The toolbar is on the right side of the screen. It is a panel which includes :

  – **push buttons**: executes the associated action.

  – **switch button**: switches in the ON state, waits for selection of an object in the application window. Selecting a unexpected object has an application dependent behaviour.

  ~~If the toolbar is not dropped down, **TOOLS** button drops down the toolbar on the application window and gives the focus to the first button of the toolbar. If the toolbar is dropped down, **TOOLS** button closes the toolbar.~~
  The toobar is always present in a pannel, and cannot be removed.

6 HELP FUNCTION

The terminal provides a help function for the displayed objects.

The HELP function has two operating modes:

- **OFF HELP mode** :

  Each time an object gets the focus, its associated help message is displayed in the orientation bar. It is the default mode.

- **ON HELP mode** :

  Each time the user pushes a screen button, a help message is displayed in a pop–up.

7 STANDBY MODE

The terminal can be put into standby mode by the user with the "☼" key . The following actions are performed:

- during an internet call: the call is released, e–mail boxes are locked, browser cache and history are erased and the backlight is cut. The terminal goes back to the Home Page.
- in local mode: if edition is engaged, edition is cancelled, e–mail boxes are locked, browser cache and history are erased and the backlight is cut. The terminal goes back to the Home page.

During a telephone call, the user can not put the terminal in standby mode.

The terminal goes out of standby mode when:

- the user takes the handset off–hook
- the user strokes any key: the associated action is performed
- an incoming call is presented.
- the user puts the finger on the touch screen: no action is performed

8 SCREEN SAVING

When, there is no user action during 20 minutes, the backlight is cut, if edition is engaged it is not lost or if calls are engaged, they remains establlished. The terminal does not change the screen.

The user puts the backlight on when:

- the user takes the handset off–hook
- the user strokes any key: the associated action is performed
- an incoming call is presented.
- the user puts the finger on the touch screen: no action is performed

Chapter 3

TELEPHONE FEATURES

1 MAKING AN OUTGOING CALL

The terminal is off–line.

1.1 USER TAKES THE LINE

Lifting the handset or pressing the  key takes the line.

1.2 MANUAL DIALLING

Manual dialling is available when the line is taken. Each time the user enters a digit, it is sent to the line.

After the line is taken and before dialling a digit, the user can activate " Calling Line Identification Restriction" call by call service.

Semi–automatic dialling can be used to make additional dialling.

1.3 SEMI–AUTOMATIC DIALLING

1.3.1 Preparatory dialling

Preparatory dialling is initiated, if the line is not taken and the user enters a **digit** in a screen without edition fields.

The user can prepare the number, can correct it, and can activate " Calling Line Identification Restriction" service. When the user validates dialling by lifting the handset or pushing the  key or "send" button on the screen, the terminal **takes the line** and the number is dialled.

It is not possible to dial a Pause.

1.3.2 Dialling a number from local permanent memory

Dialling a number from local permanent memory is possible if the line is taken or not. Dialling the selected number is initiated when the user:

- pushes the redial key
- types a letter in a screen without edition fields.~~The address book is opened to display entries beginning with the typed letter.~~ A search popup is open to allow searching a string among the names in the address book, then the user selects a phone number in the corresponding list
- selects an entry in the Last Outgoing Call List or the Last Incoming Call List
- selects an entry in the address book
- selects a shortcut address

If the line is not taken, the terminal takes the line, then the number is dialled.

Depending of the state of the handset, the terminal is in handset mode or handsfree mode.

1.4 CALL PROGRESS

The network indicates call progress with different tones. The terminal does not detect such tones and goes in **conversation state** on expiration of the conversation timer.

2 RECEIVING A CALL

The terminal is off–line.

2.1 SIGNALLING A CALL

A call received on the terminal is **always** presented to the user. To signal the incoming call, the following actions are performed:

- **Ringing** is started if ringing is on in set–up menu.
- **Line led** is blinking according to the call signal : during ringing phase the line LED is ON and during the silence phase the line LED is OFF.
- **Displaying**:
  - if no CLIP is received “someone is trying to reach you”
  - else the Calling Line Identity number. In addition, if CLI corresponds to an entry in the address book, name is displayed and the ringing melody is played according to the melody specified in the address book (selective ringing)

When the terminal is in incoming call state, outgoing call requests are not possible.

2.2 ANSWERING A CALL

To answer a call, the user:

- takes the handset. The terminal is in handset mode
- pushes the  key. The terminal is in handsfree mode

The line is taken, the ringer is stopped and the line LED is turned ON. The call is in conversation state.

2.3 ANSWER LATER

The user can deactivate the ringing while leaving the call unanswered. He has the possibility to answer later.

3 CONVERSATION STATE

3.1 ADDITIONAL DIALLING

Additional dialling is done by entering a digit or by selecting a number from local permanent memory (address book, Last Incoming Call List, Last Outgoing Call List). The additional dialling digits are added to the dispalyed dialled number, but are not stored in the redial number.

3.2 CALL DURATION

During conversation state, the communication counter gives the duration of the call. The counter is started when the conversation state is reached. At end of the call, the counter is stored in the last outgoing call list.

In case of a second outgoing call, the counter starts with the duration of the first call.

4 RELEASING THE LINE

4.1 LOCAL RELEASE

To release the line, the user hangs up the handset or if the terminal is in handsfree mode pushes the  key. The line is released, the terminal goes in local state and the **line** LED is turned OFF.

4.2 REMOTE CALL RELEASE

When the network releases a call, it generates a tone: busy tone if called party is busy , hang–up tone, etc... The terminal remains in conversation state. The user can activate a service, for example CCBS and then release the line as described above.

5 CLASS AND COMFORT SERVICES

5.1 GENERAL DESCRIPTION

The terminal offers predefined services and allows user to add services. Predefined services are preloaded at factury for immediate customer user.

The terminal manages two contexts:

- off–line context: the services available in off–line state are displayed. It is the off–line service list.
- on–line context: the services available in on–line state are displayed depending of the number of calls. It is the on–line service list.

Nertwork service acceptation or rejection is not detected by the terminal. So, the status given to the user is indicative and corresponds to the expected result: it is network service acceptation. It can happen that services are proposed but are not relevant. Services are proposed with the theorical state of the terminal.

A service is defined by:

- a subscription status: only services set to subscribed appears in a service list. By default, all the services are set not subscribed.
- service code to activate, to deactivate, to check, etc...

Predefined services can be bundled in packages. In this case, the subscription status is associated to the package. If a package is subscribed, all the services it contains are automatically subscribed.

The terminal offers the following features:

- to go back to default services set–up loaded at factury time.
- to configure subscription status: on or off.
- to add a new service: service name and user procedures
- to delete a non predefined service. Predefined services can not be deleted.

5.1.1 Off–line services

5.1.1.1 Service Name

The size is up to 24 characters.

The authorized characters are alpha–numerical, space and “–”.

5.1.1.2 Service code: ”To set” , ”to check”, ”to cancel one”, ”to cancel all”

Service code has a size of 20 characters.

The authorized characters are : 0, ... 9, * , #, and the following script commands:

- N : Phone number

  indicates that a phone number entry is required to execute the service. Characters allowed : 0..9, *, #.

- H : Hour

  indicates that a hour entry (hour and minutes) is required to execute the service.

- C : pin Code

  indicates that a pin code entry is required to execute the service. 4 digits (0..9)

- P : Pause

  executes a pause at the execution time

- D : Date

  indicates that a date entry (month and day) is required to execute the service.

- L : Release the line

  indicates that the line must be released at the end of the execution of the service.

- E : enumerated.

  indicates that data entry is required to execute the service. It can be a specific code for enumeration parameter. Format : 1 digit (0..9)

Sevice code is not checked during user entry, it is analysed at execution time. Depending on the script command present in the service code, a pop–up is displayed asking the user to enter all the requested information before service execution is started. Data entry is controlled, depending on which script command is used.

5.1.1.3 Default off–line service list

This list can be customized to suit network provider’s services offer.

- ~~Fixed destination~~
- ~~Outgoing call barring~~
- Call waiting
- Call forwarding unconditional

- ~~Call forwarding on busy~~
- ~~Call forwarding on no reply~~
- Reminder call
- Calling line identification restriction

5.1.2 On–line services

5.1.2.1 Service Name

The name is up to 24 characters.

The authorized characters are alpha–numerical, space and "–".

5.1.2.2 Service code: "To set"

Service code has a size of 20 characters.

The authorized characters are : 0, ... 9, * , #, and the script commands described for the off line services, except the code used to release the line (L). The following code is added to the list of the script commands :

– R : Hook Flash

  allows an hook flash execution

Service code is not checked during user entry, it is analysed at execution time. Depending on the script command present in the service code, a pop–up is displayed asking the user to enter all the requested information before execution of the service is launched. Data entry is controlled, depending on which script command has been used.

5.1.2.3 Default on–line service list

This list can be customized to suit network provider's services offer.

- Take the call waiting
- ~~Take the call waiting and release the first~~
- ~~Take the call waiting and create a conference call~~
- Make a 2nd call
- Switch the calls
- End of current call
- Conference
- ~~Transfer~~

- ~~Completion of calls to busy subscriber~~

When only **one call** exists, the displayed services are:

- Take the call waiting
- ~~Take the call waiting and release the first~~
- ~~Take the call waiting and create a conference call~~
- Make a 2nd call
- ~~Completion of calls to busy subscriber~~

When **two calls** exist, the displayed services are:

- Switch the calls
- End of current call
- Conference
- ~~Transfer~~

5.1.3 CCS activated in address book, last outgoing calls list, last incoming calls list

Service buttons appear in address book, last incoming calls list and last outgoing calls list to activate service that needs a phone number. The services are presented in accordance with off–line and on–line state:

- Call forwarding unconditional
- Make a second call
- Additional dialling

5.1.4 Adding CCS

The terminal allows the provider to add CCS either for on line state or off line state.

The new CCS for on line state cannot be managed in coherence with the line state (one call, 2 call, conference) and will be displayed in all line states.

The API for adding CCS is described in the document “Internet ScreenPhone : Phone services API : 3AL 29555 0005 DSZZA 01)

5.2 CALLING LINE IDENTIFICATION PRESENTATION – CLIP

5.2.1 Standards

This supplementary service makes reference to standards **ETS 300 648** [1] supplementary service and **ETS 300 659 –1** [2] and **–2** [3].

5.2.2 Description

This supplementary service provides the called party to receive the calling party identity, if the calling party allows it.

The internet screen phone displays and registers a calling party identity allowing to call back.

5.2.2.1 Calling side

When making an **outgoing call**, if no calling line restriction is activated by the user or no calling line restriction is subscribed in permanent mode, the network delivers if available the calling line identification to the called user.

5.2.2.2 Called side

5.2.2.2.1 *Displayed indications*

At reception of a Call Setup message, the following indications are given to the the user:

- if the Calling Line Identification number is received the **calling number** is displayed and if the calling line identification number does match with an entry in the address book, the **name** is also displayed.
- else if the reason of absence is received and coded:
  - "unavailable", the internet screen phone indicates "**someone is trying to reach you**"
  - or "private", the internet screen phone indicates "**number restriction**".

5.2.2.2.2 *Matching procedure*

Calling line identification number is compared to entries in the address book. Comparison is done on the **n last digits**.

n is:

- the minimum length for a national number, if length of CLI is greater than minimum length for a national number (origin of call is national or internatial)
- the length of CLI, if length of CLI is less than length for a national number (internal call behind PABX)

Comparison ignores non–numeric characters (i.e. Pause).

At first match, the procedure is stopped.

5.2.3 Service interactions

At reception of Call Setup message, if **date and time** parameter is received, terminal date and time is **updated**.

5.3 CALLING LINE IDENTIFICATION RESTRICTION – CLIR

5.3.1 Standards

This supplementary service makes reference to standard **ETS 300 649** [2] supplementary service.

5.3.2 Description

This supplementary service allows the called party to prevent presentation of its number to the called party, call by call.

5.3.2.1 Calling side

When making an **outgoing call**, the user activates restriction. The internet screen phone dials first the “CLIR” code then the called number.

User activation is not offered for a second call.

Remark: CLIR code can be put in an address book entry.

5.3.2.2 Called side

At reception of a Call Setup message with the reason of absence coded “private”, the internet screen phone indicates ”**number restriction**”.

5.3.3 Set–up

The “CLIR” code is configured in the phone set–up.

5.4 CALL WAITING

5.4.1 Description

Call Waiting allows a user in conversation to be informed of an incoming call.

5.4.2 Receiving the incoming call

5.4.2.1 Signalling the call

If no CLIP is received, the terminal does not detect the call waiting. The user hears a tone.

~~In case of **Caller ID on Call Waiting** , the terminal opens a pop–up and the displayed messages are those described in pragraph CLIP. The call waiting timer is started. At timer expiration, the call is no more signaled. The call waiting timer value is customizable.~~

5.4.2.2 Answering the call

To answer the call, depending on the configured on–line service list, the user can have the following possibilities:

- Take the call waiting and put the current call in hold
- Take the call waiting and release the first call
- Take the call waiting and create a conference call

5.4.3 Service interactions

~~In case of **Caller ID on Call Waiting**, a new entry is created in the Last Incoming Call list.~~

5.5 SECOND CALL

5.5.1 Description

Second call enables a user to hold the existing call and to make a new outgoing call to a third party.

5.5.2 Making a second outgoing call

During phone conversation, the user can push the “make a second call” button, then can dial manually the called number or can select a phone number from local permanent memory with the following procedures:

- typing a letter in a screen without edition fields.The address book is opened to display entries beginning with the typed letter.
- selecting an entry from the Last Outgoing Call List or the Last Incoming Call List
- selecting an entry from the address book
- selecting a shortcut address

Remark: the user has the possibility to make a second call by using the flash key. In this case, the terminal does not determine that a second call is done.

5.5.3 Service interactions

A new entry is created in the Last Outgoing Call list with the second call.

The redial number is updated with the called party of the second call.

5.6 CALL FORWARDING UNCONDITIONAL

5.6.1 Description

Call forwarding unconditional (CFU) allows the user to divert all the incoming calls to another number.

5.6.1.1 Activation

The user enters the diversion number manually or selects an entry in Last Incoming Call List, Last Outgoing Call List or in Address book, and then activates the service.

Activation acceptation is assumed to be done by the network. If the network rejects , the user is informed by hearing a tone or annoucement.

Activation can be done off–hook or on–hook. In case of on–hook, handsfree mode is activated.

5.6.1.2 Desactivation

A button allows to desactivate quickly.

Desactivation acceptation is assumed to be done by the network. If the network rejects , the user is informed by hearing a tone.

Desactivation can be done off–hook or on–hook. In case of on–hook, handsfree mode is activated.

5.6.1.3 Call Forward status

The "**forward**" led is lit on, if the user activates the service by the button proposed on the screen. If another terminal of the line activates/desactivates CFU or the user dials manually the service code, the internet screen phone status becomes false.

5.6.2 Service interactions

The forwarded internet screen phone has always the possibility to make outgoing calls.

All type of diversions can be activated by the user simultaneously. But CFU takes precedence over other diversions.

5.7 OTHER CCS

The sevices not described above and listed in the off–line service list and in the on–line service list, are not functionnaly integrated in the terminal.

6 REDIAL FUNCTION

This service stores some or all of the digits keyed during the current call in redial number when the terminal goes on–line. At next on–line, redial function can be used to initiate a phone call (no internet call). The function can be used in local state or in please dial state.

Redial function is offered through the "⏶" key, a button on the screen or the Last incoming call list (first entry).

Dialling phone numbers from local permanent memory are stored in redial number.

Star and **hash** are stored in redial number.

If the number of dialled digits exceeds the maximum digits of phone number in local permanent memory, the digits exceeding the maximum digits **are not stored in redial number**.

All the digits dialled after the **Flash** key and the **Flash** key itself are not stored in case of manual dialling or selection of a service from service lists.

Exception is made for the **second call service**, when it is used, the number dialled before the service becomes the second entry of the Last Ougoing Call List and the number dialled after the service is stored as redial number. The code of the service is not stored.

Entering conversation state, digits dialled are displayed on the screen, are sent to the line but are not saved in redial number.

CLIR code is not stored in the redial number to allow storage in an address book entry without the CLIR code. But If the redial function is activated, the CLIR code is dialled before sending the redial number.

When the terminal is locked, the redial function is not available.

If the redial number has changed, it is stored in local permanent memory every hour and is therefore not lost if the terminal is turned off.

7 LAST OUTGOING CALLS LIST

The last outgoing calls list offers the management of the **20 last called numbers**. An entry contains:

- the called number, dialled manually or from local permanent memory
- the name ~~and surname~~, if the called number is in the address book
- the date and time of call
- the status of the call: uncompleted (conversation state has not been reached) or conversation
- the call duration

An entry is registered even if the outgoing call has not reached conversation state (uncompleted call).

If more than one uncompleted outgoing call has been made to the same called party only one entry is registered (i.e. the call duration is less than conversation timer).

If the list is **full**, the oldest entry is suppressed to store a new entry.

The **first entry** is the ”redial” number.

The associated features are:

- viewing the list
- selecting an entry to request an outgoing call
- suppressing one entry or all the entries
- creating a new entry in the address book from the selected number

If current list has changed, the list is saved in local permanent memory every hour and is therefore not lost if the terminal is turned off.

8 LAST INCOMING CALLS LIST

The last incoming calls list offers the management of the **30 last incoming calls** and **message waiting indicators**. The list is ordered as following:

- e–mail message waiting indicators
- voice–mail message waiting indicators
- incoming calls

An entry contains:

- the calling number, if the calling number is not in the address book
- the name ~~and surname~~, if the calling number is in the address book
- a status indicating unanswered call, an icon for e–mail or an icon for voice mail
- the number of multiple unanswered calls
- the date and time of call and the call duration

A call is registered for an unanswered or answered call and even if no calling line identification number is received.

If unanswered identical calls are received, the newest call is registered with the number of calls.

Remark: unanswered or answered call is the call state managed by the terminal. No detection is done for a telephone connected on the same line.

a) **Incoming calls**

- if the Calling Line Identification number is received, the **recall number** is displayed, and if the calling line identification number matches with an entry in the address book, the **name** ~~and~~ **~~surname~~** ~~are~~ is also displayed.
- If the reason of absence is received and coded:
  - “unavailable”, the internet screen phone displays ”**unidentified**”
  - or “private”, the internet screen phone displays a ”**secret icon**”.

b) **Message waiting indicators**

Management depends of provider MWI message content and is eventually customizable. The following treatement is based of the parameters described in paragraph 2.5.2.

If no **Calling Line Identification number** is received, MESSAGE is displayed to give the origin of the call.

If **Calling Line Identification number** is received, a search is done to identify the caller identity: voice mail (search in voice mail set–up) or e–mail (search in e–mail set–up). If found, the name of voice–mail or e–mail is displayed.

Visual indicator is “on: when several MWI messages are received from the same caller, it appears once in the list, date and hour are those of the last message and the number of calls is incremented.

Visual indicator is “off”: when MWI message received comes from a caller registered in the list, the entry is deleted.

If the list is **full**, the oldest entry containing an incoming call is suppressed to store a new entry (i.e. message waiting indicator entries are not deleted).

The **first entry** is the newest entry.

The associated features are:

- viewing the list
- selecting en entry to call the registered number.
- suppressing one entry or all the entries
- creating a new entry in the address book from a selected number

If current list has changed, the list is saved in local permanent memory every hour and is therefore not lost if the terminal is turned off.

Chapter 4

INTERNET FEATURES

1 PROTOCOLS

1.1 PROTOCOL STACK

The protocol stack is:

Layer	Standard
Application (5–7)	HTTP, SMTP, POP3, IMAP4, TFTP, DNS, etc...
Transport (4)	Secure Socket Layer = **SSL** Transmission Control Protocol = **TCP**, User Datagram Protocol = **UDP**
Network (3)	Internet Protocol = **IP**
Link layer (2)	Point–to–Point Protocol = **PPP**
Physical layer (1)	**V.8 – V.8 bis – V.34 – V.42 – V.42 bis – MNP–4 – MNP–5**

1.2 LINK LAYER ACCESS POINT

The access protocol used is **PPP** (Point to Point Protocol) over a serial link. This protocol is a level 2 layer protocol in OSI model.

The way of connecting the terminal to the access point is described in a **script file**. The script file is executed after the physical connection with the server has been established (dial up procedure and V34 connection).

PPP script is not necessary in most cases to connect to ISP.

Script

The terminal proposes a default PPP script that can be customized.

The script file must have a main procedure. It enables to send identification and password to the server. Identification and password are configured in internet set–up.

The file contains one command per line.

– **proc main :**

  this is the starting point of the procedure

– **endproc**

  this is the end of the procedure.

– **delay**

  this command starts a timer and waits for the number of seconds given after the instruction. The value must be in the range of 0 to 255.

– **transmit**

  this command send a character string to the server. The character string can be specified after the command and placed between quotes. or can be passed using a variable. In this case, the variable name must be preceded by a $ sign and must be written in uppercase letters.

– **waitfor**

  this command searches for a specific character string from the server. The string to find is specified after the command and is placed into quotes.

If a timeout is needed, it must be implemented outside the script file.

An example of such a script file is given below :

```
proc main

        delay 2
        transmit ”^M^M”
        waitfor ”Identification:”
        transmit ”^M”
        transmit $USERID
        waitfor ”Password:”
        transmit $PASSWORD
        transmit ”^M”
        waitfor ”EASYSTART”
        transmit ”ppp”
        transmit ”^M”
endproc
```

1.3 LINK LAYER – POINT TO POINT PROTOCOL

1.3.1 Link Control Protocol (LCP)

1.3.1.1 Options

During configuration phase, the terminal requests new options as recommanded in RFC “PPP Point–to–Point Protocol” [22]. These requested options and the initial options are given in the table below.

Options	Initial options	Requested options
Maximum–Reception–Unit	1500 octets	1500 octets
Magic Number	No	No
Quality monitoring	No	No
Address and contol field compression	No	No
Protocol field compression	No	No
Authentication Protocol	No	No

The Maximum–Transmit–Unit is 1500 octets.

1.3.1.2 Authentication protocol

The terminal implements the authentication protocols: **P**assword **A**uthentication **P**rotocol (**PAP**) and **Ch**allenge **A**uthentication **P**rotocol (**CHAP**) as defined in RFCs:

PPP Authentication protocols [20]
PPP Challenge Handshake Authentication Protocol [27]

If the server requests authentication option, the terminal accepts the requested protocol CHAP or PAP.

Identification and password configured in internet set–up are used for authentication in accordance with the provider rules and authentication protocol:

- **CHAP**:
  Algorithm = CHAP with **MD5** described in RFC “The MD5 Message–Digest Algorithm” [18]
  Name = identification of internet set–up
  Secret = password of internet set–up

- **PAP**:
  Peer–ID = identification of internet set–up
  Password = password of internet set–up

1.3.2 Internet Protocol Control Protocol (IPCP)

IPCP makes reference to PPP Internet Protocol Control Protocol [19]. The following set–up options are used:

- IP address (dial–up line): dynamic IP address affectation.
- DNS: internet setup allows to configure IP addresses of DNS1 and DNS2. If no DNS address is configured, the terminal performs method of RFC “PPP Internet Protocol Control Extensions for Name Server Addresses” [25], to obtain primary and secondary Domain Name System addresses.

1.4 NETWORK LAYER

IP is Internet Protocol **version 4** (IPv4) [14].

1.5 SECURE SOCKET LAYER

Security of web transactions is provided through Secure Socket Layer, version 3. This layer is accessible by the browser itself, through the URL method https, and by trusted applets opening secure socket.

Features supported are:

- SSL client version
- server authentication
- user authentication
- cryptography

1.5.1 Algorithms

The supported algorithms are:

- key exchange algorithn: RSA (512), DHE_DSS
- encryption algorithm: NULL, DES 40, RC4 with or without CBC
- digest: SHA, MD5

1.5.2 Cipher suites

The cipher suites are:

- SSL DH_anon_EXPORT_WITH_DES_40_CBC_SHA
- SSL DHE_DSS_EXPORT_WITH_DES_40_CBC_SHA
- SSL RSA_EXPORT_WITH_RC4_40_MD5
- SSL RSA_WITH_NULL_MD5
- SSL RSA_WITH_NULL_MD5
- SSL DH_anon_EXPORT_WITH_RC4_40_MD5

1.5.3 SSL certificate management

All the certificate sites are trusted at each HTTPS connection. Authorities extend automatically trust to all certificate issued by this authority.

If the terminal is connected to a secure site, a special information is displayed.

In case of untrusted site (unknown certificate) the terminal requests to the user if he accepts to bypass the untrusted situation. If not, the connection is canceled.

The terminal does not allow to introduce new certificates by the user or to consult the cerificate list.

2 INTERNET SET–UP

The following informations are related to internet set–up:

- Internet Access Provider Phone number
- Provider name
- Home page URL
- DNS1, ~~DNS2 informations,~~ if DNSs are not negociated
- Proxy
- PPP script
- Identification (User specific informations)
- Password (User specific informations)

3 CONNECTION TO SERVER

3.1 DATA CALL PROTECTION

To avoid transmission disturbation in the transmit path to the server (acknowledge of CIDCW) and in the reception path (CW or CIDCW), the user can desactivate the feature CW before making the internet call and the user reactivates the feature when desired.

3.2 CONNECTION REQUEST

A connection request to a server (HTTP, SMTP, POP3 or IMAP4) can be made by using:

- the **Internet** key of the base or of the alphanumeric keyboard
- an **URL** in an entry of the directory
- the **Outbox** function (send mail)
- the **Inbox** function (read mail).
- the **internet** button on the screen

If no internet set–up is configured, before the connection is established, the terminal requests set–up.

A connection request is valid only in local state. When the line is already taken, the request is ignored.

As soon as a connection to a server is established, the “**Internet**” LED is turned ON. The “**line**” LED is OFF.

3.3 CONNECTION PROGRESS

Terminal connection to server is followed in a pop–up through different steps of connection process. The user has the possibility to abort connection process.

3.4 CONNECTION END

The connection can be canceled by using the **Internet** key. A pop–up is displayed, the user must give confirmation to cancel the connection.

4 BROWSER

4.1 HTTP/HTML PROTOCOLS

4.1.1 Html

HyperText Markup Language [29] version is **3.2** .

Annex A gives the HTML elements supported by the terminal. The following elements are not supported:

- JavaScript are not executed and tag <SCRIPT> is not supported
- Multiple windows. A new window creation request has no effect.

4.1.2 Http

The **HyperText Transfer Protocol** [28] version is **1.1**.

The treated URLs are: **http**, **mailto, https**. An untreated URL is underlined and if the user activates an undefined URL an information is displayed.

Terminal identification containing the Software, Rom and Hardware release is sent in the User Agent HTTP Header field.

4.2 MEDIA TYPES

The supported media types are:

- **text**
  text/plain charset=US–ASCII or ISO 8859–1
  text/html
- **audio**
  audio/basic
  audio/x–wav
- **image**
  image/jpeg
  image/gif

4.3 CHARACTER FONTS

- 3 fonts: Courier (non proportional), Thames and Helvetica (proportional)

- 3 sizes: **12**, **14**, **20**
- 4 styles: regular, bold, italic, italic and bold
- Underlined or not

4.4 ACCESS TO BROWSER

The browser can be accessed either in local mode or in connected mode.

4.4.1 Local access

The user initiates local browsing when he:

- cancels the internet connection during browsing ~~and does not leave the browser~~
- views HTML documents received as attachment to an e–mail

4.4.2 Connected access

When an URL is not found in the cache or when the user requests an internet connection, the terminal requests a connection.

If the user has not entered the password in the internet set–up, the terminal requests the password.

At connection, if connection was requested to find an URL, the URL is displayed, else the home page of the provider is displayed.

4.4.3 At connection

In parallel with a HTTP session, a SMTP session is opened in order to send all the mail messages that are in the state ”to be sent”. If the mailboxes are locked, no password is required to send the mails.

During the session, the user has the possibility to cancel the session. He is informed of the total number of mail to be sent and the number of mail already sent.

After the SMTP session, a POP3 or IMAP4 session is opened in parallel with the HTTP session. POP3 session checks the number of mails. If the number received is different from the last number of mails memorized during the last POP3 session, then “new e–mails” icon is displayed in the browser.

IMAP4 session checks the number of new mail available on the server. If new e–mails are available, then “new e–mails” icon is displayed in the browser.

4.5 INTERNET DISCONNECTION

4.5.1 User disconnection

The user has the possibility to disconnect the terminal from the server. In this case, the current sessions opened are closed and then the line is released. Before disconnecting, a confirmation pop–up is displayed.

At least, disconnection is obtained by using the **Internet** key of the base or of the alphanumeric keyboard.

4.5.2 Server disconnection

In case of provider disconnection, the user is informed. The terminal remains on–line until the user releases the line.

4.6 CACHE

The browser has a cache located in RAM. The cache is used to store the last accessed pages.

When a request is made to an URL, it is first searched in the cache. If it is in the cache and the expiration date is not over, the content of the cache is displayed. If it is not in the cache or if the expiration date is over, then a connection to the provider is launched.

All the URL available in cache have their title kept in a history. History is used as a stack of the last URLs. The last page received is put on top of the stack. History is used to perform back and previous functions that allows to browse in the cache.

When the browser is left, cache and history are kept in memory, allowing off line browsing in the cache.

The cache contains also data like GIF, JPEG, audio file, etc...

To store the current page, when no space is available, objects are erased with the following priority: images, applets, image map, pages.

4.7 FEATURES

In the orientation bar, the user acceeds to the features :

- **Home :** Acces to home page of terminal
- **Help :** help function
- **Text zone :** Displays help topics, informations related to active area in HTML pages, loading gauge, ...
- **Back**: to display the previous page in history list. When on top of history, go back to preceding application
- **Forward**: to display the next page in history list.
- **Date/Time :** displays connection duration when connected, else displays date and time
- **Logs :** Access to log list of internet calls.

In the browser functions bars, the user accesses the features :

- **Home**: to display the home page of the provider defined by the user in internet set–up.
- **Stop**: to interrupt the current transfer.
- **Reload page**: to load the last URL.
- **Save**: to store the current URL in Address book. A new entry is proposed and the name of the entry is the title of the web page.

- **Load images**: to configure if an entire page contents is loaded or only the text part of the page. When only the text part is loaded, the user can load an image by selecting the associated icon, or load all the images by changing the configuraton and then request “reload”.
- **Goto**: to enter an URL or to choose an URL from all URLs in the Address book (bookmark and search engine). The search is a search string among names and URL in address book
- **Send mail**: to write an e–mail with title and URL of the current page inserted in the text content of the e–mail.
- **Read mail** : When the Inbox has changed on server at connection time, an icone allows to go and check for new mails.
- **Security :** A lock is displayed when accessing secured server.
- **Text zone :** Displays the title of the current page and when it has the focus, displays the URL.
- **Method mailto**: to write an e–mail with the TO field set to the content of the URL.

During browsing in connected mode, following indications are displayed:

- call duration
- location: current URL (address or title)
- cookie loading
- new e–mails indication
- Start and stop of secured transactions

4.8 FULL SCREEN MODE

Using the Zoom key on the keypad, the user can switch to full–screen mode where only Html page and horizontal and vertical scroll bars are visible. He can switch back using the ZOOM key, the Back key, or the ESC key.

4.9 BOOKMARK AND SEARCH ENGINE

Bookmarks and search engines can be saved in the Address book as an entry.

4.10 COOKIES

Cookies management make reference to RFC “HTTP State Management Mechanism [30].

The terminal manages two types of cookies depending of cookie lifetime:

- cookies with a long lifetime(permanent cookies including a date parameter) a maximum of 30 cookies are stored in local permanent storage. When 30 cookies are stored, each new cookie replaces the oldest one.

- cookies with a short lifetime (session cookies with no date parameter) are stored in RAM and are lost at the end of the session.

A cookie can not exceed 4 kB.

Each time a cookie is received by the terminal, the user is asked if he accepts cookie loading.

4.11 APPLET

The terminal allows to run **Java Applets** compliant with pJava 1.0.

Java's sandbox protects the terminal from applet hostile code. In the default security manager , two levels of rights are defined: "super user" with all permissions and "user" with restricted permissions. Trusted applets have the "super user" status, non trusted applets have the "user" status.

A style guide for developping Personal Java Applets and dedicated to the consumer market is available.

5 E–MAIL

5.1 PROTOCOLS

5.1.1 SMTP

Simple Mail Transfer Protocol make reference to RFC [16] and allows to transfer mail reliability and efficiently.

The implemented commands, dedicated to SMTP client, are: HELO, MAIL, RCPT, DATA, QUIT.

5.1.2 POP3 – IMAP4

Post Office Protocol Version **3** [26] and **Internet Message Access Protocol** Version **4** [23] propose commands to manange a mailbox located on a server.

The user selects the appropriate protocol in e–mail set–up.

The implemented commands are:

- **POP3**: USER name, PASS string, QUIT, STAT, LIST msg, RETR msg, DELE msg, NOOP, RSET.
- **IMAP4**: LOGIN, SELECT, CREATE, DELETE, RENAME, LIST, CHECK, CLOSE, EXPUNGE, FETCH, STORE, COPY, NOOP, LOGOUT.

5.1.3 MIME

The terminal is compliant with **Multipurpose Internet Mail Extensions** version **1.0**. [21]

MIME is a mechanism for specifying and describing the format of Internet message bodies.

At reception, the terminal manages the following header fields:

- MIME version header field.
- Content–type header field. The following Content–types, subtypes and parameters are recognized by the terminal:
  - **text**
    text/plain charset=US–ASCII or ISO–8859–1
    text/html
  - **multipart**
    multipart/mixed

– **audio**
  audio/basic
  audio/x–wav

– **image**
  image/jpeg
  image/gif

- Content–Transfer–Encoding: 7bit, quoted–printable, base64, 8bit, binary
- Content–Descriptor header field: the character set is assumed to be US–ASCII.

At emission, the terminal sends a text entered by the user with following codings:

- MIME version header field = 1.0
- Content–type header field = text/plain charset= ISO–8859–1
- Content–Transfer–Encoding = 7bit

5.2 E–MAIL SET–UP

The following set–up is user specific and is related to e–mail:

- Mail name + password
- Incoming E–mail server
- Outgoing E–mail server
- Protocol: POP3 or IMAP4
- IMAP4 mailbox name

5.3 MAILBOXES

5.3.1 Inbox

The terminal manages one **server mailbox** associated with one ISP, it is the **inbox**. This box is only displayed during internet connection. A POP3 or IMAP4 session is started for each inbox consultation and closed at end of consultation.

5.3.2 Outbox

Outbox contains mail created by the user that are either ready to be sent or in standby (being saved to sent later). The outbox is accessible locally.

5.3.3 Stored box

This box contains mails with attachments received from the network, which the user has choosen to store locally. The stored box is accessible locally.

5.3.4 Management

If stored box or outbox are full, the user has to delete mails to store new mails.

600 kbytes are available in local permanent memory for stored box and outbox and address book.

5.3.5 Restricted access

The user has the possibility to restrict access to the mail boxes. So, the terminal offers a local ~~nickname and~~ password set–up.

Once a local mail password has been defined as part of the terminal set–up, restricted access to the mail boxes is managed by the terminal.

When the user tries to read a mail box, the password is requested to unlock.

The mail boxes remain unlocked until the terminal goes in standby mode.

5.4 E–MAIL SESSION

Internet connection is established if no connection is established and the user requests **to read inbox** or **to send e–mail messages**. Then e–mail session is started.

If the user has configured restricted access in e–mail set–up, the terminal requests local password.

5.5 E–MAIL SERVER DISCONNECTION

The terminal disconnects automatically the internet call when all the e–mail messages have been sent and if no http session is running and no reading inbox is in progress.

5.6 MESSAGE WAITING INDICATOR

5.6.1 New messages

When an e–mail is received on the server, the server notifies the terminal. The MWI message is treated and the relevant informations are stored in the Last Incoming Call List. The ✉ led is blinking and the message icon of the terminal home page is displayed in the home page.

5.6.2 All e–mails are read

When all the e–mails have been read, the server notifies the terminal. The MWI message is treated and the correspondant entry in the Last Incoming Call List is updated. If, no new voice mails are available, the ✉ led is lit off and the message icon of the terminal home page is not displayed in the home page.

5.7 E–MAIL CHECK

During an internet connection (email), the user can activate a check procedure to retrieve new mails.

If new e–mails has been received, the corresponding headers are transfered.

If e–mails are ready to be sent in the Outbox, they are sent to the server.

5.8 READING INBOX

5.8.1 Reading e–mail

The terminal reads the header fields of all the messages present on the server and displays the list of headers. A header is composed of:

- mail read or unread status
- sender address: e–mail address or name
- date and time: it is the date when the message has been sent. The date is displayed in local time.
- size of mail in bytes
- subject of the mail. If the subject length is greater than the length of the subject field,a part of the subject is displayed in the subject fields and the whole subject is displayed in the body.

E–mails are ordered according to time and date.

If the user selects a header, the terminal downloads the message body with recognized attached files (unrecognized files are not downloaded, but a string is displayed indicated unknown). The transmission can take a few seconds depending on body length. Downloading can be aborted by the user. If the user goes back to the header list, the downloaded body is lost, i.e. the terminal has no e–mail cache.

If a message is red, the message is always available on the server mailbox. The terminal **deletes** the message on the server on **user explicit request**.

The following functions are possible on a selected e–mail:

- **Reply**: starts writing an e–mail and presets fields
- **Reply all**: starts writing an e–mail and presets fields
- **Forward**: starts writing an e–mail and presets fields
- **Delete**: deletes a message on the server
- **Save**: copies a selected mail from the server to the stored box

- **Add:** adds the sender's e–mail address to address book.

5.8.2 Reading attachments

Attachments are displayed as a reference in a message body. The reference is:

- an icon to be pushed by the user to activate the correspondant viewer
- a type: given by the content type field. If type is unknown, unknown is displayed
- a name: given by name field in content type field

When the user wants to read an HTML attachment, the browser is launched and the HTML page is displayed but no URL or no location is associated to this page.

When the user wants to hear an audio attachment, the sound player is started. Loudspeaker level is adjustable.

5.9 WRITING EMAIL

5.9.1 Initialization

The terminal initializes message composition on user request:

- to write a new message
- to reply, to reply all or to forward a message from stored box or inbox.

5.9.2 Message composition

The user can set the fields: primary recipient, additional recipients, subject field and text field.

The primary and additional recipients can be set manually or using the address book. The search in the address book is a search string among names and Email addresses.

The text and subject fields editor is word wrap editor.

If message composition is initialized by reply, reply all or forward, the fields are preset with the received mail as follows:

- Primary recipient:
  action **reply**: received sender address
  action **reply all**: received sender address
  action **forward**: no preset

- Additional recipients:
  action **reply**: no preset
  action **reply all**: received additional recipients
  action **forward**: no preset

- Subject:
  action **reply**: RE: received subject
  action **reply all**: RE: received subject
  action **forward**: FWD: received subject

- Text:
  action **reply**: received text appears as quoted text and text line identifies the received attachment
  action **reply all**: received text appears as quoted text and text line identifies the received attachment
  action **forward**: no preset

- Attachments:
  action **reply**: no attachment
  action **reply all**: no attachment
  action **forward**: attachment composed of received text and received attachments

5.9.3 Delivery ways

In local mode, the terminal offers the possibilities:

- **send now**: a connection is created and the mail and the content of the outbox is sent to server
- **send later**: the mail is saved in Outbox with status “ready to sent”
- **save**: the mail is saved in Outbox with status “standby”
- **cancel**: the mail is lost

In connected mode, the terminal offers the possibilities:

- **send**: the mail is sent to the server
- **save**: the message is stored in the outbox with status “standby”
- **cancel**: the mail is lost

5.10 MANAGING OUTBOX

The headers of messages in the Outbox are displayed and the user can:

- **send** all the e–mails that are marked as ready to send
- **modify** an e–mail. Its status is set to “standby” and the user must set it explicitely to “to be sent”
- **delete** an e–mail
- **create** an e–mail

5.11 MANAGING STORED BOX

Mails stored in Stored box are displayed in a list with the same information as the inbox list.

The user may select a mail and display its contents.

The functions on a selected e–mail are the same as for the Inbox, exept the save function that is not offered.

5.12 SENDING TO THE SERVER

5.12.1 On user request

If no internet communication is established, the terminal establishes the connection. Then the terminal sends the messages.

The user has the possibility to cancel sending. Once an e–mail is sent, it disappears from the Outbox.

When all the messages are sent and the user was not reading his email's on the server, the terminal releases the connection.

If the internet connection fails, the user must try to send e–mails later.

5.12.2 Automatically

A connection to transfer mail from the **Outbox** to the server is initiated automatically when a connection to the ISP is established, for example by opening the Inbox or connecting to ISP for browsing.

The user has the possibility to cancel sending. Once an e–mail is sent, it disappears from the Outbox.

6 INTERNET CALL LOG LIST

The internet call log list offers the management of the **40 last internet connections.** An entry contains:

- the date and time of call and the call duration
- the provider name

If the list is **full**, the oldest entry is suppressed to strore a new entry.

The internet call log list is stored in local permanent memory.

7 CUMULATIVE CALL LOG

A 3 month log stores cumulated information about connections and durations. The cumulative Call Log is stored in local permanent memory each hour.

Chapter 5

VOICE MAIL

1 ACCESSING VOICE MAIL

It concerns a Voice Mail service provided by an operator.

The user accesses the voice mail by dialling the phone number or by using the voice mail entry of the Last Incoming Call List.

2 MESSAGE WAITING INDICATOR

2.1 NEW MESSAGES

When a voice mail is received on the server, the server notifies the terminal. The MWI message is treated and the relevant informations are stored in the Last Incoming Call List. The ✉ led is blinking and the message icon of the terminal home page is displayed in the home page.

2.2 ALL VOICE MAILS ARE READ

When all the voice mails have been read, the sever notifies the terminal. The MWI message is treated and the correspondant entry in the Last Incoming Call List is updated. If no new e–mails mails are available, the ✉ led is lit off and the message icon of the terminal home page is not displayed in the home page.

3 VOICE–MAIL SET–UP

The voice mail set–up is:

- call number for the voice mail. The information is used by the terminal to identify the origin of the Message Waiting Indicator as coming from the voice mail.
- voice mail identification and password: these informations are indicative.

Chapter 6

ADDRESS BOOK

1 CONTENTS

An address book entry contains:

- a **name** of maximum 20 characters. The first character must be [A–Z]. The name is **mandatory**.
- ~~a **surname** of maximum 20 characters. The first character must be [A–Z].~~
- a **comment** of maximum1000 characters
- **phone numbers**
- **e–mail addresses**
- **URL's addresses**
- a **melody** to have selective ringing for any of the telephone numbers in an entry.

1.1 PHONE NUMBERS

Each phone number has the following attributes:

- a number of maximum 30 digits
- a label of maximum 30 characters.
- an extension number of 10 digits
- one of two phone incons

1.2 E–MAIL ADDRESSES

Each email address has the following attributes:

- an email address of maximum 60 characters. No control on the value

- a label of maximum 30 characters
- e–mail icon

1.3 URL ADDRESSES

Each URL address has the following attributes:

- an URL address of maximum 256 characters. No control on the value
- a label of maximum 30 characters
- URL icon

1.4 ADDRESS BOOK SIZE

600 Kbytes are reserved in the local permanent memory for address book, stored box and outbox. The **maximum** entries depends on the amount of information stored for each entry.

2 FEATURES

2.1 ENTRY CREATION

A new entry is created if at least a name is given. The name must not begin with a digit. The entry is validated if not another entry has the same name.

2.2 ENTRY DELETION

An entry is deleted by the delete button on the touch screen or by deleting the name of the entry.

2.3 SEARCH FOR PATTERN IN ENTRY/ADDRESS

The user can search an entry giving a **search pattern** to be found in all the fields of the entries. The search is done on alphanumeric characters.

2.4 SEARCH BY NAME, ~~CHARACTER BY CHARACTER~~

~~The user enters the first character of the entry name searched for. The entries which correspond are progressively filtered as more characters are entered.~~

The search by name function is done as a search string among the name of the address book. This allows to found out all “James” in files having “James” in first position or not (only one field for name and surname)

2.5 ITEM ACTIVATION

The address book is used to activate different services offered on the terminal. When selecting item is:

- e–mail address, writing an e–mail is initialized
- telephone number, a voice call is initiated
- www URL address, browser is started and a connection is made if necessary

2.6 SPECIAL ENTRY – SHORTCUTS

A special entry exists in the Address book which cannot be deleted by the user. This entry is designed for storing emergency numbers or frequently called numbers (as the user chooses).

The first 3 items in this entry are displayed in the home page of the terminal and can be directly activated.

When the terminal is locked, any of the items of this entry that is a telephone number can be dialled.

This entry is found at the end of the Address Book and is empty until the user creates item for it. The user can add/modify/delete items in this entry but the entry itself cannot be deleted.

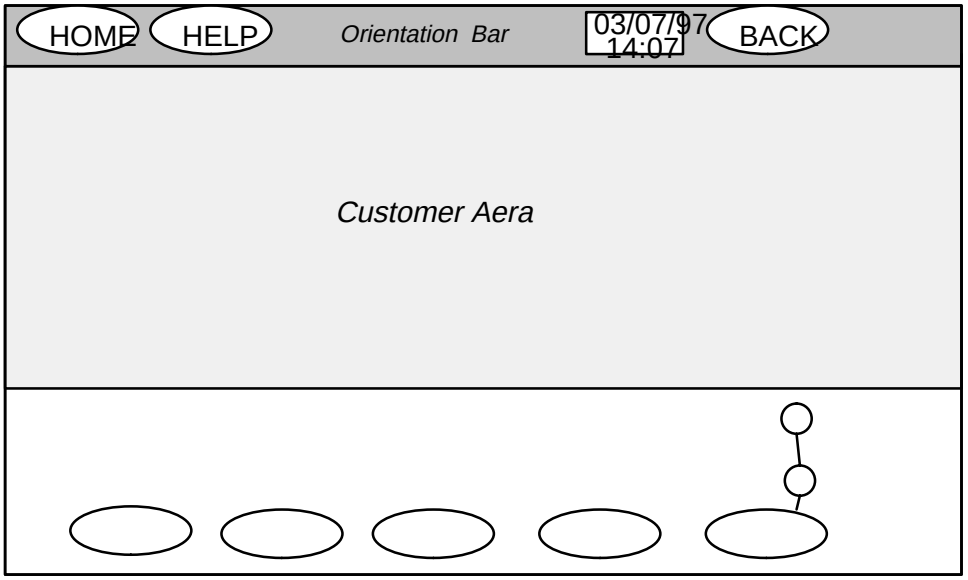
The entry can be customized and preloaded at factury.

Chapter 7

DYNAMIC HOME TOP

This service allows the customer to add push buttons in the terminal home page, also called “Home Top”, which give quick accesses to favorite www sites.

The customer aera has a size of 1/2 VGA (640x240 pixels).



The customer manages the aera, defines the buttons. A button has the following properties:

- a name
- an action: access to browser with connection to the specified URL
- a position
- a name of a GIF file: the GIF file contains the images of the button

Buttons are updated by software upgrade during internet connection with the provider.

If the terminal is locked, buttons are disabled.

Chapter 8

SOFTWARE UPGRADE

1 SOFTWARE EVOLUTIONS

Software upgrade procedures are used:

- to modify existing software (bug correction)
- to add new services in the terminal

they are based of: in the first step of transfer of the files and in a second step write of the files in local permanent memory (flash). The maximum file size is 1,8 Mbytes.

1.1 PROCEDURE IN NORMAL MODE

1.1.1 User notification

The user is notified of an upgrade possibility by the Internet Service Provider by using existing services: sending an e–mail or indicating upgrade possibility in a provider HTML page.

1.1.2 Upgrade server set–up

No specific user interface is provided to configure upgrade server site.

The upgrade site has a standard HTTP URL. This URL can be given by the provider in an e–mail or in a provider HTML page.

The user can create an entry in the address book to connect to the Software Upgrade Site.

1.1.3 Software upgrade procedure

When the user connects on the upgrade server site using address book entry or using URL selection in an HTML page, terminal identification containing the Software, Rom and Hardware release is sent in the User Agent HTTP Header field. On response of the server, the requested page is received with a trusted applet corresponding to the terminal platform.

The applet requests to open a TFTP socket to download a C Upgrade Agent. Then the applet deactivates all the application and activates the C agent. The C agent examines the current software release and processes all the necessary changes.

The terminal restarts with the new software at the end of the upgrade.

During downloading phases (C agent and new software files), the user can abort the upgrade procedure without terminal disturbation, but software upgrade is canceled.

During permanent memory modification (software files are modified in permanent memory), if the user aborts the upgrade procedure, the terminal accepts the request. The modification phase is finished: the software upgrade is completed.

During upgrade procedure, a gauge is displayed to give an indication of remaining files size to download.

1.2 PROCEDURE IN DEGRADED MODE

If software upgrade procedure has not finished normaly, due to mains failure, line disconnection, the permanent memory is damaged and the terminal goes in a **degraded mode** offering a restricted set of functions.

The degraded mode is indicated in all the displayed screens, when the backlight is lit on.

1.2.1 User interfaces

1.2.1.1 Lcd

Ascii characters are displayed, with one font: fixed , width of 10×8 pixels, black characters on white background.

The following indications are displayed on the top of the screen:

- degraded mode
- possibility to go off hook with handset and dial manually
- possibility to press **Internet** key to start upgrade

Telephone call status and upgrade procedure are indicated on the screen:

- ringing state (incoming call)
- off hook state and dialled number
- follow–up of connection and upgrade

1.2.1.2 Touch screen

No selection is offered through the touch screen.

1.2.1.3 Keys

Dialling keypad, pull–out keyboard and the following keys are managed:

- 3 **screen** adjustments keys:
  : lights the screen on or off
  , "**+**" and "**–**": adjusts the screen brightness
- 1 **communication** function key:
  "**Internet**": establishes/releases an internet call

1.2.1.4 Leds

Only "power" and "internet" leds are managed. All the other leds are lit off.

1.2.1.5 Audio

The following audio modes are offered:

- handset mode
- ringing with the default melody and default volume level and not adjustable by the user during ringing

1.2.1.6 Standby mode

After 5 minutes of inactivity and if no call is engaged, the backlight is lit off.

1.2.2 Functions in degraded mode

1.2.2.1 Telephone calls

The user can make an **outgoing telephone call** by lifting the handset. It is on–line dialling.

The user takes an **incoming call** by lifting the handset.

1.2.2.2 Internet call – upgrade

The user can call the upgrade server by pressing the "internet" key as suggested by a message on the screen. **The upgrade server access set–up is stored in a specific file in local permanent memory and is set in factory.**

A C degraded mode Upgrade Agent is then loaded and activated. This agent examines the current software release and processes all the necessary changes. The terminal automatically restarts with the new software at end of the upgrade.

During downloading phases (C agent and new software files), the user can abort the upgrade procedure without terminal disturbation, but software upgrade is canceled.

During permanent memory modification (software files are modified in permanent memory), if

the user aborts the upgrade procedure, the terminal accepts the request. The modification phase is finished: the software upgrade is completed.

During upgrade procedure, a gauge is displayed to give an indication of remaining files size to download.

TCP/IP and TFTP protocols are used for this type of upgrade.

1.2.2.3 Local features

No access to local features are offered: redial function, call log lists, dial by name, address book modification, etc...

1.2.2.4 Degraded mode upgrade server set–up

The following informations are configured at factory:

- phone number
- server name
- DNS1
- identification
- password
- C agent path

2 DYNAMIC HOME TOP

When the terminal connects to the server a trusted applet is downloaded.

APIs are provided to trusted applets to read and modify the files of the dynamic Home Top.

3 SET–UP DATA

This possibility allows to read and write set–up data and terminal system data (for exemple X509 certificate) on the terminal by downloading a trusted applet.

APIs are provided to trusted applets to read and write set–up data.

3.1 WRITE AND READ FUNCTION

The following table gives the status write/read of data on the terminal by the different means:

WRITE/READ: DATA	AT FACTORY: write	BY THE USER MANUALLY	BY SOFTWARE UPGRADE
Internet set–up	yes	yes	yes
E–mail set–up	no	yes	yes
Phone set–up	yes	yes, exept loud-speaker level	yes
Audio set–up	yes	yes	yes
Time&date: Timzone and sommer time	yes	yes	yes
Screen	yes	yes	no
CCS	yes	yes	yes
Voice mail set–up	no	yes	yes
Terminal password	no	yes	no
Maintenance pass-word	yes	no	no
Degraded mode upgrade server	yes	no	yes
Current Operating Serial Number	no	no	yes
X509 certificate	yes, certified authori-ties	no	yes for site and user certificates

3.2 READ FUNCTION

The following informations can only be read by a server and can not be written:

- Default operating serial number
- Terminal ID card

4 USER DATA – ADDRESS BOOK

Address book can be downloaded by trusted applets from a server. APIs are provided to trusted applets to read, modify, add, delete entries in the Address book.

Chapter 9

SECURITY

1 X509 CERTIFICATE DATABASE

The terminal supports and stores X509.v3 certificates:

- certified authorities: Netscape list (20)
- site certificate: first contact server and software upgrade server certificate
- user certificate and private keys: by default, none. A user certificate can be downloaded by the software upgrade server.

No possibility is given to the user to add or remove a certificate in the certificate database.

2 SSL

The SSL stack provides HTTPS URL for the browser and applets. See chapter 4 INTERNET FEATURES – paragraph 1.5.

3 SOFTWARE UPGRADE

Software and user data in the terminal are kept secure using a security model describing rights for external downloaded software (java applets when Web browsing, native or Java software during software or datas upgrade). Every piece of code loaded from the local File System is considered as secure.

The security model is based on “trusting” downloaded software, using standard tools in JavaOS or HotJava Browser. Every resource access (data file, peripheral as smart card reader, ...) is protected with the security manager.

Trusting software is provided through a signature, using X509.v3 certificate. A list of certificate for Certified Authorities is provided with the terminal.

Chapter 10

TERMINAL INITIALISATION AND SET–UP

1 SET–UP

1.1 INTERNET

To browse www sites, the following set–ups must be done:

- Internet Access Provider Phone number
- Provider name
- Home page URL
- DNS1, DNS2 informations, if DNSs are not negociated
- proxy
- PPP script
- Identification (user specific)
- Password (user specific)

1.2 E–MAIL

To have e–mail services, the following set–ups must be done:

- Mail name + password
- Incoming E–mail server
- Outgoing E–mail server
- Protocol: POP3 or IMAP4
- IMAP4 mailbox name

1.3 PHONE

- Dialling mode: pulse mode and DTMF mode

- Flash: short or long
- Pause: 2s or 4s
- Behind PABX: yes or no
- Network access prefix: up to 7 characters
- National access prefix: up to 7 characters, default value 0
- International access prefix: up to 7 characters, default value 00
- Country code: up to 7 characters
- CLIR service code: up to 7 characters
- Loudspeaker default level

1.4 AUDIO

- Ringing on/off
- Ringing melody, default melody 3
- Ringing level, default value 3
- Touch screen click: on or off, default on

1.5 TIME AND DATE

- Values
- Display format
- Timezone and summer time (yes or no)

1.6 SCREEN

- Touch screen calibration

1.7 VOICE MAIL

- Phone number of voice mail
- Voice mail ID + password

1.8 TERMINAL PASSWORD

The terminal password is used by the user to lock the terminal.

The user has the possibility to create or modify the terminal password.

2 LOCKING THE TERMINAL

The terminal can be locked by the user by entering a password. When locked, the only actions: possible are:

- making an outgoing call by manual dialling of a shortcut address or selecting a short-cut address of the home page
- receiving a call
- unlocking the terminal by the password
- resetting the password: “maintenance” password is entered, then user password can be reseted.

3 CONSULTING LOCAL STORAGE CAPACITY

A display is provided to the user showing available memory for local storage of user data:

- capacity used by the addess book
- capacity used by e–mail

4 INTROSPECTION

The terminal is identified by a terminal ID card that can be read by a server (see chapter 11 MAINTENANCE) and operating serial numbers. They are two operating serial numbers:

- Default OSN: this number is put in the terminal at factury and is unique
- Current OSN: this number is put in the terminal by the Upgrade server.

5 INITIALISATION

The internet screen phone makes a hardware reset on mains connection, the network line being connected or not; then a boot process is started. During boot an indication “in service” is given to the user.

At boot, a valadity check of software stored in Flash is performed. If there are incoherences, the terminal goes in **degraded mode**.

Chapter 11

MAINTENANCE

1 MAINTENANCE SERVICES

Maintenance services are offered trough a special page. This page displays the terminal ID card and requests the maintenance password to access to maintenance services.

1.1 TERMINAL ID CARD

Terminal ID Card identifies the product and the version release of the main components. This ID card can also be read by a “maintenance” server.

The main components are:

- CPU
- Modem
- Screen
- NEC software: keyboard
- Modem
- Operating system CHORUS
- Rom software
- Properties (language)
- GUI
- Hotjava
- Mailer
- JavaOs
- JTAPI

- Security API

1.2 PASSWORD RESET

This service allows to reset user terminal password.

1.3 REINITIALIZATION

All set–up informations are set back to a default value and the internet screen phone software is started again as for the hardware reset.

2 AUTOTEST

Autotest is started when a special sequence key is detected at reset.

Autotest uses a simple terminal display mode, where characters are displayed with one color and one background color, except LCD tests where more complex images can be used.

The possible tests are:

- Flash memory: check reading and writing to flash and file system integrity
- LCD panel: display specific images in order to check correct connection of LCD panel signals and correct behavior of LCD panel. Check contrast adjustment
- Spi: check communication between host and Nec controller
- Keyboard: check correct scanning of every key on the PC keyboard and phone key-pad. Check of leds.
- Smart card: check connection to smart card contact through writing and reading in a card
- Touch screen: perform touch screen calibration

3 SERIAL LINK

The internet screen phone allows access to a serial link supporting a proprietary protocol for test purposes.

Chapter 12

APIs

1 JAVA APIs

The following Java APIs are implemented:

- JTAPI
- Security API

2 PRIVATE APIs

The following private APIs are offered:

- Address book API
- Set–up API
- Dynamic Home Top API

Annex A

HTML ELEMENTS

1 HEAD

The HEAD element and its children:

- <HEAD>
- <TITLE>
- <ISINDEX>
  Attributs:
  PROMPT
- <BASE>
  Attributs:
  HREF
- <META>
  Attributs:
  HTTP–EQUIV
  NAME
  CONTENT
- <LINK>
  Attributs:
  HREF
  REL
  REV
  TITLE

2 FRAME

The FRAME element and its children:

- <FRAME>
  Attributs:
  - ALIGN
  - BORDERCOLOR
  - FRAMEBORDER
  - MARGINHEIGHT
  - MARGINWIDTH
  - NAME
  - NORESIZE
  - SCROLLING
  - SRC

- <FRAMESET>
  Attributs:
  - BORDER
  - BORDERCOLOR
  - FRAMEBORDER
  - ROWS

- <NOFRAME>

3 BODY

The BODY element and its children:

- <BODY>
  Attributs:
  BACKGROUND
  BGCOLOR
  TEXT
  LINK
  VLINK
  ALINK

- <A>
  Attributs:
  NAME
  HREF
  REL
  REV
  TITLE

- <ADDRESS>

- <APPLET>
  Attributs:
  CODEBASE
  CODE
  ALT
  NAME
  WIDTH
  HEIGHT
  ALIGN
  HSPACE
  VSPACE
  Parameters:
  NAME
  VALUE

- <B>

- <BASEFONT>
  Attributs:
  SIZE
  COLOR
  NAME

- <BIG>

- <BLOCKQUOTE>

-
  Attributs:
  CLEAR
- <CENTER>
- <CITE>
- <CODE>
- <COMMENT>
- <DFN>
- <DIR>
- <DIR>
- <DIV>
  Attributs:
  ALIGN
- <DL>
  Contains elements: <DT>
  <DD>
- <FONT>
  Attributs:
  COLOR
  SIZE
- <FORM>
  Attributs:
  ACTION
  ENCTYPE
  METHOD
- <INPUT>
  Attributs:
  TYPE (=TEXT | PASSWORD | CHECKBOX| RADIO | SUBMIT | RESET | FILE| HIDDEN | IMAGE)
  NAME
  VALUE
  CHECKED
  SIZE
  MAXLENGHT
  SRC
  ALIGN
- <H1> to <H6>
  Attributs:
  ALIGN
- <HR>
  Attributs:

ALIGN
NOSHADE
SIZE
WIDTH

- <I>>

- <IMG>
  Attributs:
  SRC
  ALT
  ALIGN
  WIDTH
  HEIGHT
  BORDER
  HSPACE
  VSPACE
  USEMAP
  ISMAP

- <KEUBD>

- <LI>
  Attributs:
  TYPE
  VALUE

- <OL>
  Attributs:
  COMPACT
  START
  TYPE

- <P>
  Attributs:
  ALIGN

- <PLAINTEXT>

- <PRE>

- <S>

- <SAMP>

- <SMALL>

- <STRIKE>

- <STRONG>

- <SUB>

- <SUP>

- <TABLE>
  Attributs:
  ALIGN
  WIDTH
  BORDER
  CELLSPACING
  CELLPADDING
  Contains elements: <CAPTION>:
  Attributs:
  ALIGN
  <TR>
  Attributs:
  HALIGN
  VALIGN
  <TD>:
  Attributs:
  NOWRAP
  ROWSPAN
  COLSPAN
  HALIGN
  VALIGN
  WIDTH
  HEIGHT

- <TT>

- <U>

- <UL>
  Attributs:
  COMPACT
  TYPE

- <VAR>

- <XMP>

END OF DOCUMENT