

# System Description

## MD110 PBX - Features & Capacities

RELEASE BC10.0 (ASB 501 04 R7)



# MD110 PBX

Release BC10.0 (ASB 501 04 R7)

## System Description

Features & Capacities

**Copyright © 1999. Ericsson Business Networks AB. All rights reserved.**

This document contains proprietary information which is protected by copyright. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, or translated into another language, without prior written consent of Ericsson Business Networks AB, Stockholm, Sweden.

The information in this document is subject to change without notice.

Ericsson makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Ericsson shall not be liable for errors contained herein nor for incidental or consequential damages in connection with the furnishing, performance or use of this material.

# Contents

<b>1</b>	<b>Introduction</b>	<b>5</b>
<b>2</b>	<b>LIM features</b>	<b>7</b>
2.1	Extensions	7
2.2	External lines	8
2.3	Miscellaneous	9
<b>3</b>	<b>Exchange features</b>	<b>11</b>
3.1	Possible configurations	11
3.2	Miscellaneous	11
<b>4</b>	<b>Feature overview</b>	<b>13</b>
4.1	Table information	13
4.2	Table	14
<b>5</b>	<b>Additional information about features</b>	<b>31</b>
5.1	Access Agent	31
5.2	Automatic Call Distribution (ACD)	32
5.3	Automatic Network Call Distribution (ANCD)	33
5.4	Call Information Logging (CIL)	34
5.5	Call metering (pulsed charging)	34
5.6	Choice of language	34
5.7	CSTA	35
5.8	Data traffic	35
5.9	Dial by name	36
5.10	Dynamic Route Allocation	36
5.11	Integrated voice mail	37
5.12	I/O board	37
5.13	ISDN extension	38
5.14	Least cost routing	38
5.15	Least cost routing, Time of day	38
5.16	Mobility	39
5.17	Network services (Private Network Routing)	39
5.18	Number analysis	40
5.19	PBX operator	42
5.20	Paging	42
5.21	Recorded voice announcement	43

5.22	Rerouting.....	43
5.23	Voice Compression .....	44
<b>6</b>	<b>System instrument features .....</b>	<b>45</b>
6.1	List of telephone sets .....	45
6.2	Comments to the list of telephone sets.....	47
6.3	Key functions .....	48
<b>7</b>	<b>Ports .....</b>	<b>51</b>
<b>8</b>	<b>Operation and maintenance .....</b>	<b>53</b>
<b>9</b>	<b>System reliability .....</b>	<b>57</b>
<b>10</b>	<b>Traffic capacity .....</b>	<b>59</b>
<b>11</b>	<b>Line lengths .....</b>	<b>61</b>
11.1	General.....	61
11.2	Equipment.....	61
<b>12</b>	<b>Tone and ring signals .....</b>	<b>63</b>

# 1 Introduction

The *MD110 System Description* is divided into three documents:

EN/LZT 102 2973 R1A	System Description, General
EN/LZT 102 2974 R1A	System Description, Features and Capacities
x/1551-ASB 501 04/n Uen	Application System

x = edition, 1 = R1, 2 = R2 etc.

n = application system

This description lists the features, functions and capacities for the MD110 BC10 release.

**Note:** *All capacities are related to SW. This should be considered especially for the number of voice/data extension/LIM where actual space for HW will limit the maximum number.*



## 2 LIM features

### 2.1 Extensions

Directory numbers per LIM	1000
Analogue extensions per LIM (EL6)	640
CAS-extensions per LIM (EL7)	640
Digital POTS per LIM (EL8)	640
Cordless extensions per LIM (CTL)	see Feature overview
Digital System Telephones per LIM (KL1)	640
- Additional directory numbers per LIM	500
- Multiple represented directory numbers per LIM	1000
Dual access extensions (S <sub>0</sub> /DASL) per LIM	see Feature overview
ISDN extensions per LIM (ITL)	see Feature overview

The relationship between different types of digital extensions can be calculated as follows:

$$a + 2b + 3c + 4d = < 1920 \text{ and } a + b + c + d = < 640$$

*a = one key strip extension*

*b = two key strip extension*

*c = three key strip extension*

*d = four key strip extension*

See also section System instrument features.

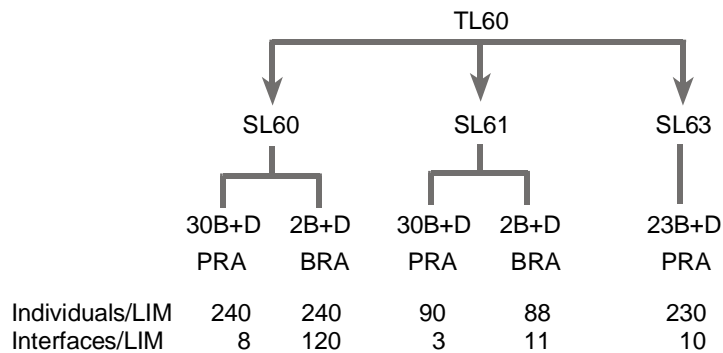
**Note:** *From a SW point of view, the total number of extensions may not exceed 1000. See note in the section Introduction.*

**Note:** *The total number of extensions may not exceed 640 in 1-2 LIMs systems or 450 in 3-124 LIMs systems.*

## 2.2 External lines

External lines per LIM	256
External lines per route	99
Routes per LIM	250
Routes per exchange	250
External lines per exchange	approximately 5000
<b>Channel associated signalling (E1) 2 Mb/s</b>	
- CAS individuals per LIM and TL	90
- CAS interfaces per LIM and TL	3
<b>Channel associated signalling (T1) 1.5 Mb/s</b>	
- CAS individuals per LIM and TL	230
- CAS interfaces per LIM and TL	10
<b>Common channel signalling DPNSS</b>	
- DPNSS individuals per LIM (E1)	240
- DPNSS individuals per LIM (T1)	184
- DPNSS interfaces per LIM	8
<b>APNSS</b>	
- APNSS individuals per LIM	60
- APNSS signalling interfaces (SLU) per LIM	6

### ISDN



**Note:** The total number of interfaces, ISDN boards (PRA, BRA and/or VCU) per LIM is 38 (software limitations).

## 2.3 Miscellaneous

PCM lines to GS per LIM	8
Maximum PCM lines per GSM	31
Maximum PCM lines per system	248
TMU boards per LIM	8
Number of tone message senders for sun-fan connections per LIM	4
Number of Music-on-hold message senders for sun-fan connections per LIM	3
Number of tone message receivers per LIM	24
Number of keycode receivers (DTMF) per LIM	32*)
Number of keycode senders (DTMF) per LIM	224*)
Number of tone message senders for individual connections per LIM	224*)
Number of multi-party individuals per LIM	48*)

\*) These device types are obtained by usage of the multi-purpose individuals on the TMU boards in a LIM. The sum of these four types cannot at any moment exceed 224, which is the sum of the multi-purpose individuals in a LIM equipped with 8 TMU boards (the number of MPUs per LIM is 1; it is not possible to mix with TMU in the same LIM).



## 3 Exchange features

### 3.1 Possible configurations

- 1 LIM
- 2 LIMs without Group Switch (GS)
- 2 LIMs with Group Switch (GS)
- Multi LIM 3-124 LIMs (always with GS)
- Duplicated Group Switch (GS)
- Duplicated LIM processor

### 3.2 Miscellaneous

Directory numbers per exchange* (2 - 5 digit numbers) (The practical total number of extensions in a system is approximately 26 000)	100 000
PBX operators per exchange	250
PCM lines to Group Switch (GS)	248
Different extension line function blocks per exchange *)	4
Number conversion and Bearer Capability substitution entries	16 000

\*) *see Note in the section Introduction*



## 4 Feature overview

### 4.1 Table information

<b>Sales Object</b>	Basic	Included in the basic exchange
	Add-on	Can be bought separately and added to an existing exchange
<b>Service Category</b>	System	The feature is system dependent
<b>Extension Type</b>	ATS	Analogue Telephone Set
	DTS	Digital Telephone System Instrument
	ISDN	ISDN-terminal
	CAS	Channel Associated Signalling Extension
	S <sub>0</sub> -DASL	Interface for ISDN
	Cordless	Cordless Telephone
<p>E in the ISDN column means that the feature is applicable only for ETSI</p> <p>B in the ISDN column means that the feature is applicable only for Bellcore</p> <p>C in the Cordless column means that the feature is instrument dependent and not supported by the exchange</p>		
<b>OPI Type</b>	Symbolic	OPI with symbolic presentation
	Alphanum	OPI with alphanumeric presentation
	OPI 3213	OPI based on the DBC 213 telephone instrument
<p>A in the OPI type column means that the operator can assist an extension to perform this feature</p>		

<b>Signal System</b>	DPNSS	Digital Private Network Signalling System
	ISDN T	Public ISDN Network
	ISDN Q	Private ISDN Network
	Non-CCS	Signalling system not related to common channel signalling
<b>Datacom</b>		Feature possible to use in datacom applications
<b>Capacity</b>		If no value is given in the capacity column, the feature is available to all extensions/all PBX operators if they have the right caterers

For more details about Add-on features, see descriptions xx/1551- for each feature/function.

## 4.2 Table

The table on the following pages lists all features in alphabetical order.

FEATURE	Sales Object		Serv. Cat.	Extension Type							OPI Type			Signal System				Datacom	CAPACITY			
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q	Non-CCS					
<b>16 kbit switching and multiplexing</b>		x	x																			
<b>Abbreviated Dialling</b>	x																					
- Common Abbreviated Numbers					x	x	E	x	x	x	x	x	x							x	12600 per exchange 5000 per LIM 20 digits per number	
- Individual Abbreviated Numbers					x	x	E	x	x		x	x	x							x	640 users per LIM can have 10 individual numbers 20 digits per number	
<b>Absence Information</b> See <i>Message Diversion</i>																						
<b>Access Agent</b>		x	x																			See section <i>Additional Information about Features</i> in this document
<b>Account Code</b>		x			x	x	E	x	x	x	x	x	x							x	20 000 codes per exchange 4 000 codes per LIM 1-15 digits per code	
<b>ACD</b> See <i>Automatic Call Distribution</i>																						
<b>Activation of End to End DTMF</b>	x				x	x	E	x	x	x	x	x	x									
<b>Additional Directory Number (ADN)</b>	x					x			x													500 per LIM
<b>Agent Call Account Buffer (ACAB)</b>		x	x																			
<b>Alarm Extension</b>	x				x	x*			x	x												4 per LIM 7 parties can be connected simultaneously (conference) * only ADN
<b>Alarm Indication</b>	x										x	x	x									5 classes
<b>Alphanumeric Display</b>	x					x	x		x	x		x	x									See section <i>System Instrument Features</i>
<b>Alternative Routing</b> See <i>Routing</i>																						
<b>Analogue DPNSS</b>		x	x																			6 SLUs per LIM 60 individuals per LIM

FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
<b>ANCD</b> See <i>Automatic Network Call Distribution</i>																		
<b>Announcing</b> See <i>Call Announcing</i>																		
<b>Answering Machine</b>																		External equipment
<b>ATA Bus Interface</b>	x		x															Maximum 1 device can be connected to ATA bus. Maximum ATA/EIDE cable length is 400 mm
<b>Authorization Code for Extension</b>		x																
- Common (Central)				x	x	E	x	x	x				x		x		x	4000 per LIM 20000 per exchange Number of digits: 1-7
- Individual (Regional)				x	x	E	x	x	x				x		x		x	1000 per LIM Number of digits: 1-7
<b>Automatic Answer Category</b> See <i>Peripheral Units on Extension Positions</i>																		
<b>Automatic Call Acceptance</b> (Immediate Speech Connection)	x				x			x	C*	x	x	x						* Only applicable when using headset
<b>Automatic Callback</b> See <i>Callback</i>	x																	
<b>Automatic call Distribution (ACD)</b>		x																See section <i>Additional Information about Features</i> in this document
- Agent Unavailable Indication					x			x										
- Clerical Time					x			x										
- Delayed Call Selection					x			x										
- No Answer Handling					x			x										
- Dynamic Queue Length			x															
- False B-answer			x															
- Overflow of Calls			x															
- ACD Group Follow-me			x															

FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
- ACD Group Do Not Disturb			x															
- Supervisor Intrusion					x				x									
- Help Line					x				x									
- Group Name Display					x				x									
- Call Qualification					x				x									
- Member/Queue Display					x				x									
- Multi Member Busy on ADN/ODN					x				x									
- Selection of Free Member			x															
<b>Automatic Extending</b>	x									x	x	x						
<b>Automatic Network Call Distribution (ANCD)</b>		x	x												x			See section <i>Additional Information about Features</i> in this document
<b>Backup</b>	x																	
- Hard Disk Unit			x															Number of hard disks for back-up: 1-5
- PC			x															External equipment
<b>Basic calls</b>	x																	
- Data					x		x	x		x	x		x	x	x	x	x	x
- Voice					x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>Busy Verification</b>	x									x	x	x						
<b>Call Announcing</b>	x									x	x	x						
<b>Callback</b>	x																	
- On Busy Extension					x	x		x	x	x	x	x	x		x			100 call back orders per LIM
- On No Reply					x	x		x	x	x	x	x	x		x			
- On Busy Outgoing Lines					x	x		x	x	x	x	x	x		x			
- On Outgoing Routes					x	x		x	x	x	x	x	x		x			
- On Not Available					x	x		x	x	x	x	x			x			
<b>Call Completion</b>	x																	See <i>Callback</i>
- On Busy Extension					x	x		x	x	x	x	x			x			
- On No Reply					x	x		x	x	x	x	x			x			
- On Not Available					x	x		x	x	x	x	x			x			



FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
<b>Centralized Answering Position (C-OP)</b>	x																	Number of C-OP sites: 3
- Night Service Diversion			x										x		x			
- Notification			x										x		x			64 exchanges
- Rerouting			x										x		x			
<b>Charging</b> See <i>Call Metering</i>																		
<b>Choice of Language</b>		x			x			x*	x									See section <i>Additional Information about Features</i> in this document * only DTS side
<b>CIL</b> See <i>Call Information Logging</i>																		
<b>CIL over Ethernet</b>		x	x															Maximum 10 output devices per Ethernet port
<b>Class of Service (COS)</b>	x		x															One day class of service and one night class of service for extensions and routes.
- Common					x	x	x	x	x	x	x	x					x	64 for non-generic extensions
- Individual					x	x	x	x		x	x	x					x	
- Common Service Profile									x									250 CSP
<b>Clock and Calendar</b>	x				x	x*		x		x	x	x						12 or 24 hour display is available * depending on type of equipment
<b>Common Bell Group</b>	x				x	x		x	x									50 groups per exchange 30 members per group 250 members per exchange Maximum queue length: 30
<b>Conference</b>	x				x	x	x	x	x	x	x	x						3 - 8 participants
<b>Cordless Extension</b> See <i>Mobility</i>		x																
<b>CSTA (Computer Supported Tele-communication Applications)</b>		x																See section <i>Additional Information about Features</i> in this document
- Deflect			x												x			
- Monitoring					x	x		x	x									
- Single Step Transfer			x												x			

FEATURE	Sales Object		Serv. Cat.	Extension Type							OPI Type			Signal System				Datacom	CAPACITY	
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q	Non-CCS			
<b>CT Adapter</b> See TAU-D																				
<b>Customer Centralized Operator (CCOP)</b>	x																		2 CCOP per customer	
- Night Service Diversion			x															x		
- Rerouting			x															x		
<b>Customer Group</b>	x		x																1 customer group 250 customer numbers	
<b>Customer Identity Storage (CID)</b>	x		x	x	x		x	x	x									x	A CID can contain up to 20 digits	
<b>Data Name Selection</b>	x																		x	
<b>Data Privacy</b>	x			x	x	E	x	x	x	A	A	A							x	
<b>Data Traffic</b>		x																	See section <i>Additional Information about Features</i> in this document	
- Connect When Free																				x
- Connection to a Data Terminal																				x
- Data Group Hunting																				x
- Data Name Selection					x															x
- Keyboard Dialling																				x
- Local Mode																				x
- Voice to Data Transfer					x															x
<b>Day and Night Categories for TCD</b>	x		x																	
<b>Day/Night Switching</b>	x																		Maximum 64 exchanges can be notified	
<b>Dial by Function Key</b> See <i>Telephone Name Selection, TNS</i>																				
<b>Dial By Name</b>		x			x				C										See section <i>Additional Information about Features</i> in this document	
<b>Dial Mode</b> See <i>Activating of End to End DTMF</i>																				
<b>Dial During a Connected Call</b> See <i>Activating of End to End DTMF</i>																				

FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
<b>Dialled Name Information Service for ACD</b> See <i>DNIS for ACD</i>																		
<b>Digital Telephone Set</b> See section <i>System Instrument features</i> in this document																		
<b>Direct In-dialling</b>	x		x											x			x	
<b>Direct-in Lines</b>	x		x															All manual lines
<b>DISA (Direct Inward System Access)</b>	x		x															
<b>Diversion</b> See <i>Call Diversion</i>																		
<b>DNIS for ACD</b>		x	x		x			x								x		Maximum of DNIS numbers: 5000 per LIM 5000 per system
<b>Do not Disturb</b>	x																	
- Bypass					x	x	E	x	x	x	x	x						
- Individual					x	x	E	x	x									
- Group					x	x	E	x	x									Master extensions
<b>DPNSS</b>	x												x					8 DPNSS interfaces per LIM 240 DPNSS trunk circuits in each LIM
<b>DRA</b> See <i>Dynamic Route Allocation</i>																		
<b>DSS1 Network Side</b>		x	x											x				One ISDN interface must have the same support for DSS1 network side on all routes if the interface is divided into more than one route
<b>DTMF Dialling</b> See <i>Activating of End to End DTMF</i>																		
<b>Dual Access Extension Interface</b>		x																Maximum number of interfaces: 320 per LIM
- Re-direction						x	x		x									
- Switch-over						x	x		x									
<b>Duplicated Control System</b>		x	x															Switch-over time 60 seconds

FEATURE	Sales Object		Serv. Cat.	Extension Type							OPI Type			Signal System				Datcom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q	Non-CCS		
<b>Dynamic Route Allocation (DRA)</b>		x	x															See section <i>Additional Information about Features</i> in this document	
<b>Electronic Mail</b>		x	x															External equipment needed. Maximum 16 electronic mail systems can be connected directly to the PBX.	
<b>Emergency Calls to Operators</b>	x		x															All extensions and tie lines can call any operator	
<b>Emergency Category</b>	x				x	x	x	x	x	x									
<b>Emergency Extension</b> <i>See Alarm Extension</i>																			
<b>Emergency switching</b>	x									x	x	x							
<b>End to End DTMF</b> <i>See Activating of End to End DTMF</i>																			
<b>Enhanced CAS Interface for Mobility</b> (Freestanding radio exchange)		x						x										30 cordless extensions per 2 Mb/s link 640 cordless extensions per LIM	
<b>Estimated Waiting Time Announcement for ACD</b>		x	x															See <i>Recorded Voice Announcement</i>	
<b>Extending</b> <i>See Automatic Extending or Manual Extending or Extending of Incoming Calls to Other PBX Operators</i>																			
<b>Extending of Incoming Calls to Other PBX Operators</b>	x									x	x	x							
<b>Extension Status Indication</b>	x									x	x	x	x		x	x*		* only certain signalling systems	
<b>External Number Redial</b>	x																		
- Any Number Redial						x			x									x	
- Last External Number Redial					x	x	E	x	x	x	x	x						x	20 digits + Account code or Authorization code
<b>Facility Restriction Level/Travelling Class Mark (FRL/TCM)</b>	x		x		x	x	x	x	x				x		x	x*	x	* only certain signalling systems	

FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
<b>Faultman's Ring Back</b>	x		x	x	x		x	x	x									
<b>FAX III Recognition</b>		x	x															Maximum number of FAX licences to be installed in a pool (in one LIM) is 304
<b>Follow-me</b>	x																	
- Internal				x	x	E	x	x	x	A	A	A	x		x		x	
- External				x	x	E	x	x	x	A	A	A	x		x			Number of digits: 20
<b>Forced Release</b> <i>See Intrusion and Forced Release</i>																		
<b>General Cancellation</b>	x			x	x	E	x	x	x	A	A	A						
<b>Generic Extension</b>	x		x															1000 directory numbers per LIM
<b>GICI over Ethernet</b>		x	x															
<b>Group Hunting</b> <i>See Internal Group Hunting</i>																		
<b>Hot line</b> <i>See Non-dialled Connection</i>																		
<b>IDNX connection</b>	x		x											x	x			
<b>Immediate Speech Connection</b> <i>See Automatic Call Acceptance</i>																		
<b>Incoming Automatic Inter-PBX Calls</b>	x		x										x		x	x		All routes
<b>Incoming Calls via PBX Operator</b>	x									x	x	x						
<b>In-dialling</b> <i>See Direct In-dialling</i>																		
<b>Inquiry</b>	x			x	x	x	x	x	x									
<b>Integrated Voice Mail</b>		x	x															See section <i>Additional Information about Features</i> in this document
<b>Interception Service</b>																		External equipment needed.
- Interception Computer		x	x															Maximum 1 interception computer per exchange Maximum 100 terminals Maximum data transmission speed: 9600 bps

FEATURE	Sales Object		Serv. Cat.	Extension Type							OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q	Non-CCS		
<b>Internal Group Hunting</b>	x		x	x	x		x	x	x									250 members per LIM 75 members per group 500 groups per exchange 100 groups per LIM 30 calls in queue 4 PBX groups per extension	
<b>Intrusion and Forced Release</b>	x																	4 protection levels 4 intrusion capability levels	
- On External Line										x	x	x							
- Forced Release										x	x	x	x			x			
- On Extension				x	x		x	x*	x	x	x	x	x			x		* only DTS side	
<b>Inverter</b>		x	x															Converts AC into DC for e.g. PCs	
<b>I/O</b> See Man-machine Communication																			
<b>I/O Board</b>																		See section <i>Additional Information about Features</i> in this document	
<b>ISDN Extension</b>	x					x												See section <i>Additional Information about Features</i> in this document	
<b>ISDN Trunk Protocol data</b>	x													x	x				
<b>Last Number Redial</b> See <i>External Number Redial</i>																			
<b>Least Cost Routing</b>		x																See section <i>Additional Information about Features</i> in this document	
- Expensive Route Warning Tone (ERWT)			x																
- Off Hook Queuing (on LCR)			x																
<b>Least Cost Routing, Time of day</b>		x	x																
<b>Line Lengths</b> See section <i>Line Lengths</i> in this document																			
<b>Logging</b> See <i>Call Information Logging</i>																			
<b>Malicious Call Tracing</b>	x			x	x	E	x	x	x	x	x	x		x					

FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
<b>Man-machine Communication</b>	x		x															Maximum number of initiated MML terminals in the system: 20 Maximum number of MML terminals logged on to the system: 6 Maximum number of Telnet virtual terminals per I/O board: 6
<b>Manual Answer</b>	x									x	x	x						
<b>Manual Extending</b>	x									x	x	x	x			x		
<b>Manual Message Waiting, MMW</b>	x				x	x	x	x	x	x	x	x						
<b>Manual ringing</b>	x									x		x						Internal
<b>MDM</b> Main Distribution Module		x																416 lines on the exchange side 520 lines on the line side
<b>Message Waiting</b> For manual see <i>Manual Message Waiting</i>	x*		x		x	x	x	x	x				x		x			Each extension can accept MEW notification from a maximum of four different systems. * Interception service required
<b>Message Waiting Indication</b>	x*				x	x	x	x	x									* Interception service required
<b>Message Diversion</b>																		All PBX operators can be answering position, if programmed
- Using the Feature	x				x	x	E	x	x	x	x	x						
- Answering Position					x	x	x	x	x	x	x	x						
<b>Metering</b> See <i>Call Metering</i>																		
<b>MF Equipment</b>																		
- MFC	x		x													x		8 receivers 8 senders
- MFE	x		x													x		
- MFP	x		x													x		
<b>Mobility</b>		x	x															See section <i>Additional Information about Features</i> in this document
<b>Modem Group</b>		x	x														x	100 groups per system, 100 groups per LIM, 500 members per system, 100 members per LIM, 500 members per group
<b>Multi-directory Diversion</b>	x					x			x*									* only DTS side

FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
<b>Multi-PBX</b> See <i>Customer Group</i>																		
<b>Multi Name Selection (MNS)</b>	x			x	x			x*	x									* only DTS side
<b>Multiple Represented Directory Number (MDN)</b>	x			x	x			x*										* only DTS side
<b>Music on Hold (Music on Wait)</b>		x	x															External analogue sources: 3 per LIM
<b>Name and Number Log</b>		x			x*			x*										Maximum 16 names/numbers can be stored per user. Maximum digits for calling number are 20 digits. * only DTS 3213
<b>Name Identity</b>		x																
- Presentation					x			x	x						x			Name presented can be 10 or 20 characters long, depending on which telephone set is used
- Restriction				x	x	x	x	x	x	x	x	x			x			
<b>Network Services</b>		x																See section <i>Additional Information about Features</i> in this document
- Individual Number Translation (within PNR)			x															
- Private Network Routing			x															
<b>Night Service</b>	x																	Destination address maximum 10 digits
- Common			x															
- Flexible (Temporary)				x	x	x	x	x	x	A	A	A						
- Individual			x															
- Universal			x															Queue length: 30 calls in queue
<b>Non-dialled Connection (Hot Line)</b>	x																	20 digits
- Direct Hot Line				x	x	x	x	x										
- Delayed Hot Line				x	x	x	x	x										
<b>Number Analysis</b>	x																	See section <i>Additional Information about Features</i> in this document
- External			x															
- Internal			x															

FEATURE	Sales Object		Serv. Cat.	Extension Type							OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q	Non-CCS		
<b>Number Conversion and Bearer Capability Substitution</b>	x		x																16000 entries per exchange
<b>On Hold</b> See <i>Parking</i>																			
<b>Outgoing Automatic Calls</b>	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
<b>Outgoing Calls via Operator</b>	x		x	x	x	x	x	x	x	A	A	A	x	x	x	x	x	x	
<b>PBX Operator</b>																			See section <i>Additional information about features</i> in this document
- Standard	x									x	x	x							
- With Impaired Vision		x								x									Only together with OPI-II
<b>Paging</b>																			See section <i>Additional Information about Features</i> in this document
- Diversion to Paging		x		x	x	E	x	x											
- Meet Me		x		x	x	E	x	x	x										
<b>Parking</b>	x																		
- Common Hold				x	x		x	x	x										x
- Individual				x	x	E	x	x	x										x
<b>Parking and Retrieval of Parked Calls</b>	x																		
- Automatic										x	x	x							
- Manual										x	x	x							
- Monitoring										x	x	x							
<b>Peripheral Units on Extension Positions</b>	x			x															Specific individual on each ELU-A
<b>Personal Number</b>		x		x	x	x	x	x	x										5 lists with 5 answering positions each
<b>Ports</b>																			See section <i>Ports</i> in this document
<b>Priority Routing</b>	x		x																x
<b>Private Network Routing</b> See <i>Network Services</i>		x																	
<b>Programming from OPI</b>	x									x	x	x							

FEATURE	Sales Object		Serv. Cat.	Extension Type							OPI Type			Signal System				Datacomb	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q	Non-CCS		
<b>Queue Positions for Operators</b>	x																	See section <i>Additional Information about Features</i> in this document; PBX operator	
- Common										x	x	x							
- Individual										x		x							
- Indication										x	x	x							
- Three Call Queues											x	x							
<b>Recall to OPI</b>	x									x	x	x							
<b>Recorded Voice Announcement</b>		x	x															See section <i>Additional Information about Features</i> in this document	
<b>Redial</b> See <i>External Number Redial</i>																			
<b>Refer Back</b>	x			x	x	E	x	x	x										
<b>Release Principles</b>	x																		
- First Party			x										x	x	x	x			
- Calling Party			x										x	x+	x	x*		* only certain signalling systems + only certain application systems	
- Called Party			x										x	x+	x	x*			
<b>Repeater</b>		x																	
- Digital Line Repeater (DLR-3)			x		x				x								x	For DASL	
<b>Repeated Deflection</b>	x		x																
<b>Repeated Individual Diversion (RID)</b>		x			x	x	x	x	x	x								1 list with 5 answering positions	
<b>Rerouting</b>	x																	See section <i>Additional Information about Features</i> in this document	
- Busy			x										x		x				
- Congestion			x										x		x				
- No Answer			x										x		x				
- Vacant			x										x		x				
- Not Available			x										x		x				
<b>Ringing Signals</b>																		See section <i>Tone and Ring Signals</i> in this document	
<b>Route Optimization</b>	x		x										x		x				
<b>Routing</b>	x																		
- Alternative Routing/ Overflow			x															1 primary choice + 7 alternatives Maximum 20 digits	
- Rerouting (Crank Back)			x																
- Return Block			x																
- Repeat Attempt			x																

FEATURE	Sales Object		Serv. Cat.	Extension Type						OPI Type			Signal System				Datacom	CAPACITY
	Basic	Add-on		System	ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q		
SCSI Bus	x		x															1 per NIU board
Semi-permanent Connections (D over B)	x		x															
Serial Calls	x									x	x	x						
Signalling Converter		x														x		
Simplified Interception		x		x	x	E	x	x	x									Can be assigned to all voice extensions
SMDR See <i>Call Information Logging</i>																		
SNMP Agent		x	x															
Static Semi-permanent Connection, SSPC		x	x															64 connections per LIM
Suffix Dialling See <i>Activating of End to End DTMF</i>																		
Supervision (Callback)	x									x	x	x						100 callback orders per LIM
CT-Adapter		x																
Telephone Name Selection, TNS	x				x			x*									x	12000 records of 10 digits. Maximum 20 digits * <i>only DTS side</i>
Through Connection at Power Failure and Processor Breakdown	x		x	x														Analogue lines 2 FTU2s per LIM 8 trunk lines per FTU2
Tone and Ring Signals																		See section <i>Tone and Ring Signals</i> in this document
Traffic Recording		x	x															Simultaneous miscellaneous measurements: 250 per exchange Simultaneous LCR measurements: All Maximum in one measurement: 124 LIMs, or 255 extensions for a stated series
Transfer	x			x	x	x	x	x	x				x		x			
Transit Traffic	x		x															
Trunk Call Discrimination	x																	300 numbers 16 categories
- External			x															10 digits per number
- Internal			x															5 digits per number

FEATURE	Sales Object		Serv. Cat.		Extension Type					OPI Type			Signal System				Datacom	CAPACITY	
	Basic	Add-on	System		ATS	DTS	ISDN	CAS	S0-DASL	Cordless	Symbolic	Alphanum	OPI 3213	DPNSS	ISDN T	ISDN Q			Non-CCS
<b>Universal Cancellation</b> See <i>General Cancellation</i>																			
<b>Virtual Generic Extension</b>	x		x																1000 extension numbers per LIM
<b>Voice Compression</b>		x	x													x			See section <i>Additional Information about Features</i> in this document
<b>Voice Interface</b>		x	x																External equipment needed
<b>Voice mail</b> See also <i>Integrated Voice Mail</i>		x	x																External equipment needed. Maximum 16 VM systems per exchange

## 5 Additional information about features

### 5.1 Access Agent

Maximum number of Telnet sessions connected to the agent at a time	6
Maximum number of FTP sessions connected to the agent at a time	2
Maximum number of user available entries in a routing table	11
Maximum number of PPP units that can be used	8
Maximum number of trap destinations	8
Maximum number of users defined for the agent	255
Maximum number of groups defined for the agent	255
Maximum communication speed on the comports (bits/sec)	38 400

## 5.2 Automatic Call Distribution (ACD)

Maximum number of ACD groups	
- per LIM	16
- per system	128
Maximum number of Agent positions	
- per LIM	75
- per system	1 000
Maximum number of ACD members	
- per ACD group	250
- per LIM	500
- per system	4 000
Maximum number of ACD groups with name display	128
Number of ACD groups an ACD member/ADN can belong to	1
Maximum number of ACD groups	
- per agent position	8
Maximum number of simultaneous calls to an external destination when overflow or External follow-me is active	
- per ACD group	63
Maximum number of calls in queue	
- per ACD group	99
- per LIM	475
Maximum number of callback missions towards an ACD group	
- per LIM	25
Maximum number of queues	
- per LIM	16
- per system	64

Highest constant by which the number of queue positions can be altered - per ACD group	50
Maximum number of selection/queue priorities - per system	32
Maximum number of digits in PIN code	4
Maximum clerical time duration (second)	999
Maximum number of Ethernet interfaces to MIS - per LIM	1
Maximum number of V.24 interfaces to MIS - per system	1
Maximum data transmission rate on the V.24 interface to MIS (bps)	9 600

### 5.3 Automatic Network Call Distribution (ANCD)

Maximum number of ANCD groups - per LIM	4
- per system	64
Maximum number of members - per ANCD group	16
- per LIM	64
- per system	1 024
Number of ANCD groups a satellite ACD/ANCD group can belong to	1
Maximum number of ANCD levels	8
Maximum number of signalling satellite groups/GICI-channel	8
Maximum number of steps for the GICI-channel signalling	3
Maximum data transmission rate on the GICI interface to other nodes (bps)	9 600

## 5.4 Call Information Logging (CIL)

Maximum output devices initiated in a system	10
Maximum active output files per exchange	3
Maximum number of NIUs	
- per LIM	4
- per system	124
Maximum number of SIUs	
- per LIM	2
- per system	5
Maximum number of output criteria	60
Maximum number of simultaneous completed CIL records per LIM	399

## 5.5 Call metering (pulsed charging)

Maximum number of charging groups per system	255
Maximum number of metering pulses per counter (million)	16
Maximum number of simultaneously PBX operator initiated metering calls and recalls per LIM	25
Maximum number of analogue outgoing trunks which can be equipped with metering pulse detector per LIM	64
Number of digital outgoing trunks which can perform metering pulse detection per LIM	All
Maximum number of metering routes	99

## 5.6 Choice of language

Maximum number of languages	10
Delivered languages from EBC	5
Maximum number of languages, cordless internal	12
Maximum number of special characters per language	8
Maximum number of usable special characters per language when calling/connected name identity is loaded	6

## 5.7 CSTA

CSTA ports	
- per application (link group)	1
CSTA applications (link groups)	
- per LIM	4
- per port	4
Monitored extensions per LIM	1 000

The 4 links in a LIM have to share the 1000 monitored extensions, i.e. if one link is used in a LIM, that port can monitor 1000 extensions.

## 5.8 Data traffic

	<b>LIM</b>	<b>Exchange</b>
Data communication directory numbers	640	13 500
Data extensions (DL1) (TAU)	640	12 000
Data extensions (DL2) (Leased lines) (MAU) (Fixed)	255	
Data groups	255	255
Modems in modem pool	100	1 000
Modem groups in modem pool	100	100
Data Name Selection, DNS, records (10 digits)	3 000	
Data Name Selection, DNS, records (20 digits)	1 500	
Maximum number of LIMs scanned before a call is abandoned		20
Connect when free tasks	64	

## 5.9 Dial by name

The Dial by name function can only be used by DTS extensions with soft-keys and alphanumeric display with 3 rows of 40 characters (DBC 203 and DBC 213).

Names for the Dial by name database and for the digital telephone can only be managed as standard characters and in capital letters.

Number of characters (including space) used for stored names in Dial by name database	20
Number of digits used for stored numbers in Dial by name database	20
Number of characters used for stored auxiliary information in Dial by name database	10
Maximum number of stored entries (names, numbers and auxiliary information) in database	30 000

## 5.10 Dynamic Route Allocation

Maximum number of inter-PBX links per LIM	38
Maximum number of individuals in a dynamic route and LIM	240
Maximum number of voice channels per D-channel (D16 or D64)	32
Maximum number of voice channels per D-channel (3B+D)	31
Maximum number of dynamic routes	
- per LIM	250
- per system	250
Maximum number of pool numbers	10
Number length of the pool numbers (digits)	1 - 5

## 5.11 Integrated voice mail

Maximum number of IV systems per LIM	
- per LIM	4
- per system	99
Storage time	
- per IV system (hours)	72
- per LIM (hours)	288
- per system (hours)	7128
- average time per user, approximately (minutes)	14
Maximum number of IV users	
- per IV system	300
- per LIM	1200
- per system	29700
Maximum number of simultaneous voice connections	
- per VMU board	16
- per LIM	64
- per system	1584
Number of possible languages	99

## 5.12 I/O board

The I/O board used in MD110 BC10 is the NIU, Network Interface Unit.

Maximum number of NIU boards	
- per LIM	4
- per system	124
Maximum number of V.24 interfaces per NIU board	3
Maximum number of Ethernet ports per NIU board	1

## 5.13 ISDN extension

The functionality for the terminal depends on the type of terminal and protocol.

Maximum number of S <sub>0</sub> interfaces per LIM	128
Maximum number of interfaces per ELU	4
Maximum number of terminals per interface	8
Number of terminals that can be connected to an interface initiated for point-to-point mode of operation	1
Maximum number of directory numbers per interface	32

## 5.14 Least cost routing

On/off hook queuing	50 missions per LIM
External Number Table (ENT)	1 table of 2000 entries, maximum 16 digits per entry
Number Length Table (NLT)	1 table of 1000 entries, maximum 6 digits per entry
Destination Number Table (DNT)	2 tables of 5000 entries, in which the first has 16 digits per entry and the second 8 digits per entry. Each entry can be barred by the user's TCD class of service.
Fictitious Destination Table (FDT)	9 tables with 72 entries each
Route Choice Table	Maximum 2500 route choices to be shared by LCR, PNR, CUST and Automatic Alternative Routing. One table can contain a maximum of 8 route choices.
Prefix digits	Maximum 20 digits per choice
Deleted digits	Maximum 16 digits
Own Area Code	Maximum 6 digits

## 5.15 Least cost routing, Time of day

In addition to the capacities for Least cost routing above:

Day of week/Time of Day table	1 table with 3 day groups, maximum 3 time zones per day group
-------------------------------	---

## 5.16 Mobility

The following are capacity limitations and recommendations for the DECT system and Cordless extensions:

Maximum number of Cordless extensions initiated in one LIM (given there are no other extension types initiated since the resources are shared), Home Location Registers (HLR)	640
Maximum number of Cordless extensions that may be located in one LIM simultaneously, Home and Visitor location Register (ULR)	1000
Maximum number of ELU31 per LIM	15
Maximum number of Base stations per ELU31 (CORE)	6
Maximum number of Base stations per ELU31 (WORF)	8
Recommended number of portable telephones handled by one ELU31 (at 0.2 Erlang)	45
Recommended number of portable telephones handled by one Base station	20
Maximum number of messages stored in Home Location Register for one user	8
Number of simultaneous calls per Base station	8
Number of simultaneous calls to/from one single ELU 31	16
Number of ELU31 boards per magazine (ACM) with internal power	5
Number of ELU31 boards per magazine (IFM/PSM) with internal power	5
Number of ELU31 boards per magazine (IFM/PSM) with external power	5

## 5.17 Network services (Private Network Routing)

PNR Destination Table	1 table of 5000 entries. Maximum 10 digits/entry
Translation Table	1 table with 64 entries.
Route Choice Table	Maximum 2500 route choices to be shared by PNR, LCR, CUST and Automatic Alternative Routing. One table can contain maximum 8 route choices.
Individual translation, set 1	Truncate 10 digits, prefix 10 digits
Individual translation, set 2	Truncate 10 digits, prefix 16 digits
Prefix digits	Maximum 20 digits per choice
Truncate digits	Maximum 20 digits per choice



### 5.18.3 External, Digit handling

Predigits, incoming external per route	2
--	---

<b>Number of digits per prefix:</b>	
Public unknown	5
Public international	5
Public national	5
Public network specific	5
Public local	5
Private unknown	5
Private local	5
Private regional 1	5

<b>Maximum length:</b>	
Public international	20
Public national	15
Public local and private	10
Private regional 1	10
Private local	10

## 5.19 PBX operator

Maximum number of operator consoles	
- per LIM	10
- per system	250
Maximum number of call origin groups per system	100
Maximum number of internal common number	100
Maximum number of external access numbers (DID) to common operator, of which 25 routes have the possibility to use all 100 access numbers and the remainders can have only one common DID number to operator	100
Maximum number of operators in programming mode concurrently	5
Maximum number of queuing calls in the total queue	255
Maximum number of individual calls per LIM	128
Maximum number of loop keys	
- alphanumeric	6 (+ 1 monitor loop key)
- symbolic	3 (+ 1 monitor loop key)

Operator consoles with symbolic display (including OPI-II), operator console with alphanumeric display, OPI 3213 console, and OWS can operate concurrently in the same system.

## 5.20 Paging

Number of pagable numbers	
- per LIM	640
- per system	10 000
Plus additional and common paging numbers	
- per system	1 000
Paging search areas	16
Simultaneous paging calls	80

## 5.21 Recorded voice announcement

250 messages, for integrated RVA

250 messages per VSU board

4 VSU boards per LIM, 100 VSU per system

Maximum 100 peripheral RVA equipment can be initiated in the system, and maximum 36 per LIM, message time 0.5-120 sec.

Maximum 30 announcements per group

Maximum 15 messages per announcement

	<i>VSU1</i>	<i>VSU1</i>	<i>VSU2</i>	<i>VSU2</i>
	<i>compressed</i>	<i>uncom- pressed</i>	<i>compressed</i>	<i>uncom- pressed</i>
Channels	12	12	12	12
Storage (minutes)	57	12	16	3.5
Board positions	2	2	1	1

## 5.22 Rerouting

Number of rerouting number for calls to vacant number, maximum 5 digits	1
Number of external line specific rerouting number, maximum 5 digits	1
Number of rerouting number for the route (one for day, one for night switched exchange) maximum 5 digits	1+1
Number of central rerouting numbers for the route, maximum 10 digits	3
Number of customer specific rerouting numbers per customer, maximum 10 digits	2

## 5.23 Voice Compression

One compression rate 4 -> 1 using the LD-CELP algorithm (ITU-T rec. G.728).

It is possible to have two compressions (2 x (4 -> 1)) on the VCU2 board.

One D-channel on a VCU board can handle 32 B-channels.

The D-channel on a BRA interface can handle 32 B-channels if the interface is initiated to handle voice compression individuals.

In each LIM it is possible to initiate 30 VCU boards.

In each LIM it is possible to initiate 240 ISDN external line individuals, this resource is shared between BRA/PRA and VCU-inputs.

**Note:** *The VCU output and the signalling terminal on the VCU board requires external line individuals.*

## 6 System instrument features

Five families of the system instruments (telephone sets) are supported, DBA, DBC 500, DBC 600, DBC 199 and DBC 200.

### 6.1 List of telephone sets

The table on the following page lists all telephone sets supported.

Telephone Set	Display Type	No. of Key Strips	Handsfree	Monitor Loudspeaker	Loudspeaking	Selftest	Option Unit	Programmable voice Transm.	Soft-keys	Option Board	Adapter for External Functions	Note
DBA 701	18 digits	1	x	x								
DBA 702	18 digits	3	x	x								
DBA 703	-	8										Datacom
DBA 706	18 digits	1	x									
DBA 707	18 digits	3	x	x								
DBA 180	-	1										
DBC 501	-	1										
DBC 531	-	1		x								
DBC 561	2 x 20	1	x	x							x	
DBC 562	2 x 20	3	x	x							x	
DBC 601	-	1				x						
DBC 631	2 x 20	2	x	x		x				x	x	
DBC 661	4 x 20	2	x	x		x			x	x	x	
DBC 662	4 x 20	3	x	x		x			x	x	x	
DBC 199	-					x						
DBC 201	-	1		x	x	x	x	x				
DBC 202	2 x 20	1		x	x	x	x	x				
DBC 203 No extra key panel	3 x 40	2	x	x	x	x	x	x	x			
DBC 203 + 1 extra key panel	3 x 40	3	x	x	x	x	x	x	x			
DBC 203 + 2 extra key panels	3 x 40	4	x	x	x	x	x	x	x			
DBC 210	-	1		x		x	x	x				
DBC 211	-	1	x	x	x	x	x	x				
DBC 212	2 x 20	1	x	x	x	x	x	x				
DBC 213 No extra key panel	3 x 40	2	x	x	x	x	x	x	x			
DBC 213 + 1 extra key panel	3 x 40	3	x	x	x	x	x	x	x			
DBC 213 + 2 extra key panels	3 x 40	4	x	x	x	x	x	x	x			

## 6.2 Comments to the list of telephone sets

### 6.2.1 Display

All displays are alphanumerical except for the DBA 700 telephones.

### 6.2.2 Key strip

The number of key strips indicates the program data resources needed for the specific telephone type, not the actual number of keys and LEDs.

The total number of key strips addressable is 1920.

### 6.2.3 Key panels

Key panels are separate key units with 17 keys with LED that may be connected to DBC 203 and DBC 213.

### 6.2.4 Handsfree

Duplex speech with voice switching. Enables speaking with both hands free.

### 6.2.5 Monitor loudspeaker

Listen to the line, e.g. during waiting for the B-party to answer.

### 6.2.6 Loudspeaking

Handset speech with B-party monitored in the loudspeaker.

### 6.2.7 Programmable voice transmission

The voice transmission parameters can be adjusted by SW command from the PBX.

## 6.2.8 Option unit (DBC 200)

Attached underneath the telephone. Depending on the generation, the features available are:

- DBC 21x
  - Extra handset, headset or conference unit
  - Tape recorder or PC audio
  - Extra bell or busy signal
  - Normal level or amplified receiving level
- DBC 20x
  - Extra handset
  - Tape recorder
  - Extra bell or busy signal
  - Normal level or amplified receiving level

## 6.2.9 Option board (DBC 631 - 662)

Printed board assembly connected inside the telephone, enabling connection of an adapter for external functions.

## 6.2.10 Adapter for external functions

For DBC 561, 562, 631, 661 and 662.

For connection of tape recorder and extra bell/busy signal.

## 6.3 Key functions

### 6.3.1 Fixed key functions

The fixed key functions are:

- Transfer
- Clear (erase)
- Loudspeaker
- Mute (secrecy)
- Dual access with inquiry (triple access line)

### 6.3.2 Programmable key features (by extension or I/O terminal)

The key feature programmable from extension or I/O terminal is:

- Single key access

The key features only programmable from I/O terminal are:

- Additional (extra directory number)
- Automatic (hands free) answer
- Automatic callback
- Call pick up
- Call waiting
- Conference
- Data directory number
- Data name selection
- Diversion (interception)
- Free on second line
- Individual do not disturb
- Intrusion
- Last external number redial
- Local mode
- Malicious call tracing
- Manual message waiting
- Menu
- Message waiting
- Multiple name selection directory number (line pick up)
- Multiple-represented directory number (line pick up)
- Name and number log
- Own directory number
- Paging
- Programming mode
- Telephone name selection



## 7 Ports

The table below shows the number of ports on extension boards and trunk line boards.

<b>Board</b>	<b>Type</b>	<b>Number of ports</b>
ELU26	Digital extension line ISDN 2B+D	8 (4 x 2B+D)
ELU28	Digital extension line DASL	16
ELU29	Analogue extension line	16
ELU30	Analogue extension line with message waiting	12
ELU31	Base station interface (WORF)	8
ELU31	Base station interface (CORE)	6
TLU21	Analogue trunk line	2
TLU23	Analogue tie line loop AT and MCE	3
TLU25	Analogue tie line local battery (LB)	2
TLU27/6F	Analogue trunk line loop	6
TLU34	Analogue tie line balanced battery	2
TLU54/1	Analogue tie line E&M	3
TLU54/2	Analogue tie line AC 50 Hz WEWA	2
TLU54/3	Analogue tie line AC 2006 Hz TOWA	2
TLU54/4	Analogue tie line local battery (LB)	2
TLU54/5	Analogue tie line Party line	2
TLU75	Analogue trunk line loop	8
TLU76	Digital trunk line E1	30
TLU77	Digital trunk line T1	23
TLU79	Digital trunk line ISDN (2B+D)	8 (4 x 2B+D)
TLU80	Analogue tie line E&M CEPT-L1	4
TLU81	Analogue trunk current feed	8
TLU82	Analogue trunk line, Ground start, Loop start	8
TRUNK-C	Analogue trunk line 3-wire 60 V	2



## 8 Operation and maintenance

### Synchronization from external source

#### Supervision

- Internal LIM supervision
  - Watchdog function
  - Parity check
  - Check sum
  - Write protection
  - Address control
  - Cross address check
  - Signal format control
  - Control system disturbance counter
  - Signal and device processor control
  - LIM switch control
  - PCM system line control
  - Processor load control
  - Pparity circuitry check
  - Watchdog circuitry check
  - Write protection circuitry check
- External LIM supervision
  - LIM to LIM communication
  - Congestion supervision
- Group switch supervision
  - Alarm signals GJUL and GJUG
  - Parity fault in GS
  - Internal clock alarm in GS
  - Clock control alarm in GS
  - Restart in GJUL
  - Frame alignment
  - AIS
  - Slip
  - Error rate
  - Remote end
  - Signal loss in GJUG and GJUL
  - Signal channel

- Other supervisions
  - Tone senders/receivers
  - MFC equipment
  - Ring generator
  - Conference equipment
  - System instruments
  - External lines
  - Terminal adapters
  - Verification of back-up directory

### **Fault searching**

- Print out of fault searching information
  - Alarm log
  - Device status
  - Statistics
  - Call tracing
  - Patch log
  - Fault signal history log
  - Program controlled function tests by means of command
  - Check sum
  - Parity circuitry
  - Tone sender/receiver
  - MFC equipment
  - Conference equipment
  - LIM switch
  - System line (PCM)
  - Group switch
  - Call trace
  - Signal trace
  - Program trace
  - System status dump

### **Fault limitations**

- Automatic reload/restart
  - Device processor restart
  - Program unit reload/restart
  - LIM reload/restart
  - Data reload
- Alarm at automatic dump failure
- Local memory back-up for semipermanent data
- Automatic blocking
- Manual blocking
- Patch
- Change of program units
- Failure transfer

**Input and output functions**

- I/O terminal handling functions
- Command and print out handling
- Back up hard disk handling functions
  - File administration
  - Change of program unit
  - Regeneration of system data on PC
  - Regeneration of system instrument data on PC
- Initial load, by command, of:
  - Exchange
  - LIM
  - Program unit
  - Command file
- Reload, by command, of:
  - Exchange
  - LIM
  - Program unit
- Data
- Dumping of:
  - System (back up dump)
  - Program unit (by command)
- Hard disk handling
  - Creation of back up directory
  - Creation of command file
  - Copy file
  - Print out of file contents

**Alarm and alarm handling**

- New fault indication
  - Per alarm class
  - Per system
- Command file activate
- Alarm log
- Watchdog function
- Alarm classes (0-4)
- Alarm sources
- Alarm displays
  - PBX operators instrument
  - External display
- Retrieving and acknowledgement of alarm

- Possibility to assign fault codes to different alarm classes
- Possibility to assign alarm class or fault codes to unique outlets on ALU
- External alarms

### **Repairman present button**

### **Alarm interface board (ALU)**

### **Traffic recording**

- Initiation
- Printout
  - List of initiated measurements
  - Result
- Storage of result on file
- Interruption of measurement
- Termination of measurement
- Measurement objects
  - Dial tone delay
  - Key code receiver for DTMF
  - Key code sender for DTMF
  - Code receiver for MFC
  - Code sender for MFC
  - Voice extensions
  - Data extensions
  - Internal group hunting groups
  - Call pick-up group
  - System PCM lines
  - External lines
  - PBX operator
  - Common bell groups
  - Modem groups
  - Routes
  - Tone receivers
  - Multi-party units
  - Paging
  - Cordless extension common fixed part
- Traffic supervision

## 9 System reliability

The MD110 is a reliable system.

*MTBF (Mean Time Between Failure)*

This is a predicted value normally calculated for all boards in the system and primarily used for calculating spare parts needed.

*MTBCF (Mean Time Between Catastrophic Failure)*

With MTBCF is meant that more than half of the system is out of order. A typical figure for a fully power backed up, single control 1 LIM system is 12.3 years. For the same system with duplicated control system the figure is 540 years.



## 10 Traffic capacity

The MD110 is designed for a traffic capacity of 0.2 erlang/extension.

BHCC (Busy Hour Call Completion) for the individual LIM = 0.9 calls/second.



# 11 Line lengths

## 11.1 General

Analogue telephones = 9 000 metres when using 0.5 mm twisted pair cable.

Digital telephones, point-to-point, with one telephone set = 1 000 metres when using 0.5 mm twisted pair cable.

## 11.2 Equipment

For details see installation instructions for TELEPHONE EXCHANGE 07/ASB 501 04 and installation instructions for each feature.



## 12 Tone and ring signals

Details under this heading are entirely dependent on the application system employed. The details are to be found in section Tone and ring signals in the relevant application system affiliated system description.



ERICSSON COMMUNICATIONS SOLUTIONS for enterprise networks combine and improve advanced ways of exchanging information via voice, data, video and evolving future media.

This requires a true understanding of how businesses and professionals interact-an understanding that goes far beyond meeting just the technological requirements.

Our customers include owners of small to large enterprise networks, local as well as multinational. We also offer solutions for Internet service providers.

We deliver quality of service over converged networks. We provide staff with full onsite and offsite mobility. We integrate computer and telephony applications on the desktop. We enable coordination of all business interactions over the media of choice. In essence, we help businesses forge enduring relationships with customers.

Ericsson is the leading provider in the new telecoms world, with communications solutions that combine telecom and datacom technologies with the freedom of mobility for the user. With more than 100,000 employees in 140 countries, Ericsson simplifies communications for its customers - network operators, service providers, enterprises and consumers - the world over.

Please visit Ericsson's Press Room at: <http://www.ericsson.se/pressroom>

© Ericsson Business Networks AB 1999

All rights reserved.

For questions regarding the product,  
please contact your local sales representative.

[www.ericsson.se/enterprise](http://www.ericsson.se/enterprise)

EN/LZT 102 2974 R1A