

# MD110 Convergence Communication System



*Ericsson's MD110 business communication system delivers a new architecture to support an increasingly mobile work force. The MD110 is a converged communication system, offering powerful solutions for today's and tomorrow's networks. This unique system combines Ericsson's world-leading expertise in switching, networks and mobile communications to deliver the benefits that users demand.*

## **The Converged Communication System**

Based on a modular and distributed architecture, the MD110 provides the foundation for a network that supports voice, data and multimedia applications. Because of its distributed architecture, the MD110 provides a high degree of fault tolerance and excellent scalability, from 50 up to 30,000 or more networked users in an office, campus or enterprise environment.



MD110 may be built with one to four stackable modules, placed side-by-side or back-to-back.

## The Mobile Enterprise

With the MD110 the vision of the Mobile Enterprise is materialized. Mobility through integration of cellular mobile phones (Mobile Extension) or unlicensed DECT for local radio coverage is available along with the wealth of mobility features and functionality provided on the MD110 platform.

Ericsson's MD110 stands out as an exceptional system that prepares you for the future while providing a cost-effective solution for today's business communication needs. Whatever your requirements are, today or tomorrow, a MD110 solution will exceed your expectations. Today, there are more than 20 million business users who rely on the MD110 and who have placed their confidence in Ericsson to protect their investment in the future through continuous system enhancements.

## The Distributed Concept of MD110

The cornerstone of the MD110 is its distributed architecture. The system architecture is built around self-contained modules, which are interconnected to create systems for more than 30,000 extensions. The basic module of the MD110 is the Line Interface Module, LIM.

Each LIM is totally self-supporting since it is equipped with its own processor and software, switching and device units, such as extensions and trunks. An MD110 system may consist of one LIM in a stand-alone configuration or several interconnected LIMs. The MD110 operates with fully distributed processing power and all the LIMs have the same software. The LIMs cooperate on an equal basis and form a single, homogeneous system.

All telephony and system features are transparent, which means they are available throughout the entire system.

The connection between the LIMs is made via a standard 2 Mbit transmission interface. This means that LIMs can be installed back-to-back in the same location or in a dispersed fashion, for example within a building or scattered over a geographic area. The entire organization is served by one single communications system with full feature and system transparency. Administration is the same and thus streamlined; moves and changes are easy to perform.

Since each LIM is self-contained, it will continue to work even if communication with the rest of the system is disrupted.

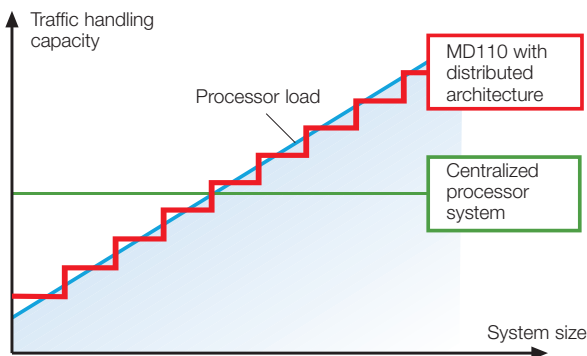
This means that the risk for total system outage is practically eliminated, making the system extremely robust. Telephony services in a local/branch office, served by a remotely distributed LIM, will continue to function, even if contact with the main office is disrupted. Internal and external calls can still be made.

In a building, LIMs can be distributed between floors to minimize cabling, or be installed remotely via 2 Mbit links, private or public, but still remain a module in a homogeneous MD110 system.

The capacity of the LIM is 640 wired extensions and up to 1000 combinations of IP, DECT or Mobile Extensions. For larger installations, more LIMs are added — up to 124 LIMs or 30,000 extensions.

Two LIMs can be interconnected back-to-back. For three LIMs or more, a second important building block of MD110 — the Group Switch — is needed.

The Group Switch provides connectivity between the LIMs and distributes the necessary synchronization of the clock system. It is fully controlled by the LIMs. The Group Switch is also built on a modular structure, starting with one and ending with a maximum of eight modules (GSMs) corresponding to 248 2Mbit links.



MD110 distributed architecture provides flexible processor power, allowing you to dimension traffic handling capacity and system size to exactly match your requirements.



## Power consumption

	Internal power	External power
Alternative solution per fully equipped stack, including digital telephones	150–1,400 W	150–1,800 W
Heat dissipation per fully equipped stack, including digital telephones	115–180 W	115–350 W

## Dimensions and weight

	1 module	2 modules	3 modules	4 modules
Height (mm/in)	630/24.8	1030/40.5	1430/56.3	1830/72.0
Width (mm/in)	598/23.5	598/23.5	598/23.5	598/23.5
Depth (mm/in)	355/14.0	355/14.0	355/14.0	355/14.0
Weight (kg/lbs)	45/99	85/187	125/275	165/363

## Key Characteristics

These key design principles and the modular system structure give the MD110 its unique benchmarks and provide customers with benefits in terms of:

- scalability
- flexibility
- reliability and availability
- decentralization

### Scalability

The modular and distributed concept makes MD110 extremely scalable. You can start with a small system and upgrade as the need arises.

You can easily reconfigure your system as you prefer. Thanks to the modular concept, you can move equipment from one site, where you decrease activities, to a site that is expanding. Investments already made are protected and new expenditure is avoided.

### Flexibility

With distributed processing and switching, there is always enough power in the system to provide the required performance to end users in an optimized manner, independent of system size.

### Reliability and availability

Since full processing and switching power is distributed to all LIMs, a fault in hardware or software only affects services within the malfunctioning LIM, not the entire system. The processing and switching power in the LIMs may optionally be duplicated to ensure even greater reliability. Similarly the Group Switch may be fully duplicated.

### Distributed system on the premises or campus

The modules can be flexibly distributed over a campus or office area, maintaining 100 percent feature transparency.

## System Functionality

### Mobile Extension – integration of cellular mobile phones

Wireless access, allowing you to move around and still be able to be reached, is a fundamental element of mobility.

But supporting mobile behavior requires much more. You need access, but you also need applications, services, support, and flexibility.

The MD110 Mobile Extension is a unique function, fully integrated into the software of the MD110. This extension will bring you both wireless access and the services needed to allow your employees to become truly mobile.

A mobile subscriber, be it 2G, 2.5G or 3G or any standard GSM, CDMA, DAMPS or UMTS, can be made an extension in MD110. The same applies to any fixed line subscription supporting touch-tone signaling and calling line identification. This means that today's frustration of not having full access to the corporate network when using the cellular phone, or when being out of the office, is eliminated.

The mobile extension is more than just call forwarding. For your secretary, for your operators, for your colleagues and for any incoming calls you are simply another MD110 extension. This means that services such as abbreviated dialing, camp-on, intrusion, callback or conference all work for both the mobile user and the other MD110 users.

The company will save money on international calls made from mobile phones by routing all calls through the MD110. By offering strong SIM-card authentication procedures using caller ID verification (CLI) or optional PIN code verification, security is guaranteed.

### Home working solutions

The Mobile Extension operates with any public phone providing calling line identification, making it an ideal solution also for home workers. Thus, home workers may use the normal home telephone (e.g. analogue or ISDN based) as their office extension. The multiplicity feature of the mobile extension enables the home worker to use their cellular mobile phone, their home telephone or other predetermined public telephones at their convenience.

The MD110 IP telephony allows home workers with an office data connection for the home PC/laptop, to reduce cost of voice communication by use of IP terminals. The Ericsson IP terminals, IP telephones or SoftPhone, connect easily to the office MD110 IP extension over high speed data connections, e.g. a xDSL connection.

Home workers may also make use of Digital Telephones using a Remote Digital Extender to connect to the MD110 Digital extension.

### Cordless Mobility with unlicensed DECT

The integrated cordless phone (DECT) solution takes full advantage of the distributed MD110 architecture and supports up to 30,000 cordless users in one system.

## Personal number



Users are thus mobile anywhere in the coverage area of the office base stations, which may include multiple sites. Roaming and seamless handover are supported by the system. With the MD110 Personal Number service, mobility can be enhanced to entail other systems in the company network, allowing the cordless phone users to respond to business calls wherever they are.

### Alarm messaging

MD110 offers the possibility of building DECT-based SMS (Short Message Services), thus enabling transmission of text messages from/to the cordless terminals. Messages can also be generated automatically based on events or alarms. Customized applications can be made for a variety of connections, including the Internet or other external interfaces: e-mail, alarm inputs or contacts. These applications are intended for organizations that need to alert special teams, for example, in case of an emergency. Typical environments for these applications are production plants, the processing industry and hospitals – in general, organizations where the staff may need to be alerted in case of emergencies. In hotels, guests or managers can send urgent messages to service personnel when an immediate response is required. It can also be the other way around.

Cordless phones equipped with alarm functions can send alarm messages to the messaging modules. It is now also possible to add the location of the host base station, that is, the base station the cordless phone is registered on at the moment the alarm is generated. The user can either manually add the location information or an approximate position can be given by the host base station.

### Personal Number – one number on your business card

Callers do not have to search for the called person on home, mobile and office phones. Instead, they simply have to remember one personal number.

Personal Number is an enterprise service for mobile communications that combines different access methods (wired extensions, business cordless, cellular, PSTN, pager, voice mail and colleagues or assistants) with a new generation of personal services to support mobility and to help user manage their calls.

The Personal Number service keeps track of where to locate the user. Each user may have up to five personal profiles, which may be activated according to the situation (in the office, traveling, at home). The profile determines what happens to incoming calls and which calls will be forwarded to different telephones in a predefined order or transferred to a back-up service. Users may activate a specific profile via a dial-up service over the telephone, over the Internet using the web based Ericsson Communication Assistant, using the cellular mobile phone and the WAP based DNA Mobile Executive or the IP SoftPhone client, or the Ericsson Communication Client user interface. Personal Number is a system function in the MD110 software, available throughout the system.

### Ericsson Communication Assistant (ECA) – control your calls

By using the Ericsson Communication Assistant CTI software, call handling for any MD110 extension (analogue, digital, cordless, mobile or IP), becomes easier as functions and serv-

ices become accessible through a web browser.

Calls can be handled straight from the directory. The ECA also facilitates setting up the Personal Number profile. Services like call scheduling and message diverting can also be performed on screen.

### Free Seating – log on to any phone

Free Seating or “desk sharing” targets the needs of companies with a mobile workforce which only occasionally works from the office. A typical example would be a consulting company.

When free-seating users need to work from the office, they simply log on to any free telephone. This telephone then has the toll-bearing class, message waiting indications and a call log of all outgoing calls for that logged-on user. When calls are made from this telephone, the user's name and number are displayed to the called parties.

Incoming callers will only see the virtual number and name (not the telephone that the user is seated at). When the user leaves the office, he or she simply logs out.

### Integrated voice mail

The MD110 communications system offers integrated voice mail functionality as a system option. Each card supports up to 300 mailboxes and 16 simultaneous sessions. Up to 72 hours of voice-mail messages can be stored on a separate hard disk. The functionality includes storing, scrolling, retrieving and deleting of messages. Users may record personal greetings.

**Telephony over IP – routed directly on the LAN**

MD110 IP telephony is an excellent solution for integrating a dispersed workforce across the IP network. Employees located at small offices or home workers can use the rich feature set of the MD110 in a cost-effective way. The MD110 IP extension supports any H.323 compliant IP terminal.

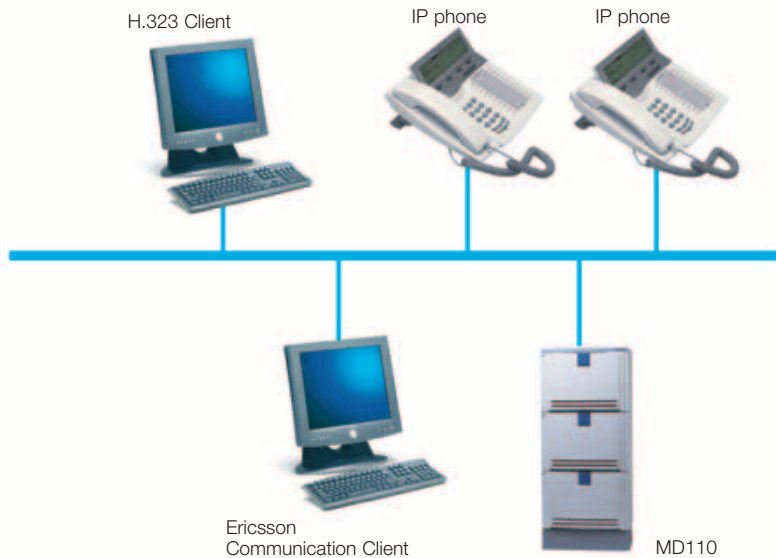
For MD110 IP telephony solutions, we recommend The Ericsson IP telephones and the SoftPhone, the Ericsson Communication Client (ECC), PC based IP client, supporting the full IP extension feature set.

The MD110 monitors the IP extensions and controls the call setup but leaves the media stream to be routed directly on the LAN once the call is established.

In this way, quality of service is preserved without distortions and the media stream is no longer limited to speech but can also be used for video connections.

The distributed architecture is the key to the outstanding scalability of MD110. You can start to introduce IP telephony on a small scale at selected locations and expand it as your business expands. MD110 fully supports an office environment where IP telephony predominates.

The main scenarios foreseen are home working/remote working and small to medium sized branch offices with up to 100 users.



IP Telephony in the Office

**Ericsson Communication Client – the easy to use IP phone client**

With Ericsson Communication Client (ECC) you can make and receive calls directly from your PC just as easily as from your office phone. All you need, in addition to a headset, a microphone and a sound card, is to be connected to your corporate LAN/WAN. From its easy-to-use graphical user interface it is also possible to have access to the corporate directory, manage your message diversions and personal profile. Using ECC office assistants can even monitor and perform call handling for other users (MD110 extensions).

**Networking**

The MD110 is specially designed to provide the foundation for a unified network that supports integrated voice, data and multimedia applications. Full transparency throughout the network and across multiple sites for all voice, data and multimedia services has always been a defining feature of the MD110.

Please refer to the datasheet ‘MD110 Networking’ for a detailed description of the MD110 networking functionalities.

**From call center to contact center**

The MD110 with Automatic Call Distribution (ACD) software provides an ideal platform for large organizations that handle hundreds or thousands of calls daily. This function not only routes incoming calls to the correct person and department but also organizes extensions into call groups, which may be in the same office or in different locations.

Depending on your requirements, various options are available for call-group supervisors and agents, including Call Center Manager and Agent Desktop applications. The call center solutions from Ericsson Enterprise are the traditional MD110 call center and the state-of-the-art contact center Solidus eCare™.

**Open interfaces**

The MD110 is based on standards and open interfaces. Open interfaces make it possible to supplement MD110 with numerous applications, developed by us or together with or by third parties. Examples are call center solutions, unified messaging and customer-specific developments. In the latest release, SMS-based alarm messaging can be added to the list of applications. MD110 supports all generally available standards like CTI/CSTA, TAPI, TSAPI and SNMP. A number of specific open interfaces are also available for the development of applications by third parties. Examples are billing systems, voice mail and operator support systems. Connectivity is normally provided over IP/Ethernet, in some cases V.24 is used.

**Network administration**

The standardized management system for the entire network is based on the industry standard SNMP (simple network management protocol) using TCP/IP and PPP (over the LAN or via modem). Management tools provided by the Dynamic Network Administration suite (D.N.A.) includes Directory Manager, Extension



Dialog 4425 IP Vision



Sony Ericsson T68i



*MD110 is prepackaged for small to medium-sized companies and branch offices.*

**Dimensions and weight**  
(with cover)

Height: (mm/in.) 460/18.1  
 Width: (mm/in.) 598/23.5  
 Depth: (mm/in.) 355/14  
 Weight:  
 (excl. batteries) 35 kg (77 lbs.)  
 (incl. batteries) 55 kg (121 lbs.)

**Power consumption**

1 cabinet 320 VA  
 2 cabinets 640 VA  
 Heat dissipation: 70–120 W per Cabinet

Manager, Performance Manager, Node Manager and Event Manager, as well as the D.N.A. server, which is common to all applications.

**Module structure of MD110**

The MD110 is built on a module structure that allows a high degree of flexibility. The mechanical structure is based on stackable modules that can be mounted in a number of ways in order to adapt an installation to the available room or floor space.

The modules can be mounted on top of each other, adapting the height to the ceiling. If preferable, the modules can be wall-mounted, separately or side by side. It is possible to mount modules on a wall at a distance from each other, so that they blend with the interior of the room.

**ACM – All-Contained Module**

The All-Contained Module is adapted to the needs of small and medium sized companies or branch offices with up to 200 extensions. The ACM (All-Contained Module) has all of the functionality you expect from a large, state-of-the-art communications system, but a size adapted to the needs of smaller enterprises or branch organizations.

The ACM is a compact version of the MD110 for small to medium-sized companies or branch offices. Please refer to the configuration examples in the box below. It is based on the standard stackable mechanical structure of the MD110, but comes prepackaged and supplemented with integrated power unit and integrated batteries. You benefit from the full functionality of the MD110 but with a size that is adapted to the needs of smaller enterprises or branch offices. The ACM based MD110 is the ideal solution when space is scarce; it blends nicely into existing localities.

**System structure and configuration**

*The MD110 All-Contained Module can be configured*

- as a stand-alone main business switch for small to medium-sized companies with high performance or high-density requirements. Open for future integration with a larger system configuration.
- as a branch node in a larger system, using networking based on Q-SIG plus VPN, ISDN call-by-call or D-over-B-signaling.
- as a campus node or building hub, fully integrated with the MD110, providing 100 percent feature transparency.

**Typical MD110 All-Contained Module Configurations<sup>1</sup>**

	1 cabinet	2 cabinets
<i>Stand-alone or branch node</i>		
<b>Digital trunks</b>	30	60
Analog + digital extensions	80 + 16	192 + 16
Cordless + analog + digital extensions	170 + 16 + 16	340 + 32 + 132
<b>Analog trunks</b>	16	40
Analog + digital extensions	80 + 16	170 + 16
Cordless + analog + digital extensions	170 + 16 + 16	340 + 32 + 32
<i>Campus node or building hub</i>	1 cabinet	
Feature links/channels	2/60	
Analog + digital extensions	80 + 16	
Cordless + analog + digital extensions	160 + 16 + 16	

1) The stand-alone configuration includes interface boards for S&NM and a hard-disk unit for software back-up.

**Technical Specifications**  
(see previous communication System for BC11)



The illustration shows an example of how the stackable modules can be arranged for a 3-LIM exchange.

**Technical Specifications**

**MD110 stackable modules**

**PSM – Processor Switch Module**

- Common control, including processing, switching (1,024 time slots), and OS/AS (Operating System/Application Software)
- Flash memory or hard disk software back-up media
- 10 free accessible universal board positions for interfaces of any type of internal or external access
- Interface for S&NM

**IFM – Interface Module**

- Switching for 256 time slots
- 17 free accessible board positions

**PWM – Power Module**

- 2 x 12.5 A x 48 V (nominal) 1,200 W
- Cost-effective power for up to 600 digital extensions
- One PWM can support up to four modules (PSM or IFM)
- 26 Ah optional battery back-up built in

**PBM – Power Back-up Module**

- 2 x 26 Ah

**OAM – Optional Application Module**

- an empty module for optional hardware or other applications using 19-in. building practice

**GSM – Group Switch Module**

- Built-in magazine for a maximum of 31 MD110 PBX feature links. The Group Switch can be expanded to a maximum of 8 GSM modules

**PDM – Power Distribution Module for External Power**

- Includes current limiting units for 10, 20 or 30 modules

**ACM – All Contained Module**

- Contains both the PSM, power supply and battery back-up. In the ACM, the power supply, cable chute and batteries are mounted in the base to make optimal use of space.

**MDM – Main Distribution Module**

- A small-system internal MDF alternative to the external MDF. The module capacity is 416 lines on the exchange side (digital and/or analog telephone and/or trunk line extensions) and 520 lines on the line side of the MDF.

**Mains supply**

115–230 V AC, ±15%, 50–60 Hz

Complies with IEC 950

**Storage**

DRAM. Integrated Flash memory or hard disk for memory back-up.

**Environment data**

**During operation**

Temperature: +5°C to +40°C (41°F to 104°F)

Relative humidity: 20–80%

No forced cooling required.

**Line protection**

Interface protected by transformers.

**Analog extension line data**

Current feed resistance  
2x400 ohms, 48V

Loop resistance  
1,800 ohms, including telephone

Recall button signaling  
Timed break pulse or grounding one speech wire

**Environmental performance**

**Substances** – The MD110 Communication System complies with Ericsson’s policy on the use of banned and restricted substances.

**End of Life Treatment** – Ericsson offers recycling services for old Ericsson products to all our certified partners in the EU, Norway and Switzerland. After the material has arrived at our collection point, we will take care of disposal free of charge through approved recycling companies in compliance with EU or other national legislation.

**Digital extension line data**

**Two wires**

Line length 1,000 m (3,280 ft.)

**Switching network**

Time Division Multiplex (TDM)

Single-stage physical non-blocking switch

**Analog trunk-line data**

**Loop resistance**

Lines to public exchange  
1,800 ohms

Tie lines 2,000 ohms

**Transmission data**

Market adaptable impedance and relative levels

Coding A-law PCM coding according to CCITT G.711

Crosstalk attenuation  
According to CCITT Q.517

**Multi-node networking**

Full facility transparency using feature link, standard 2 Mb, PCM, G.703

**MD110 configurations**

LIM consisting of a typical stack of 4 modules can support up to 640 extensions (cordless, digital or analog) or up to 1000 users with Mobile Extension or IP extensions and 256 trunk lines.

**MD110 application servers**

The MD110 PBX has a modern system architecture that supports the connection of special purpose servers for such applications as voice mail, mobility services (Business Personal Communication Services) and other equipment for group functions.

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Ericsson is shaping the future of Mobile and Broadband Internet communications through its continuous technology leadership. Providing innovative solutions in more than 140 countries, Ericsson is helping to create the most powerful communication companies in the world.

**Asia Pacific**

Ericsson Enterprise  
3420 Persiaran Sepang  
63000 Cyberjaya  
Selangor Darul Ehsan  
Malaysia  
Phone: +60 3 8314 6000  
[enterprise.asiapacific@ericsson.com](mailto:enterprise.asiapacific@ericsson.com)

**Americas**

Ericsson Enterprise  
6300 Legacy Drive  
Plano, TX 75024  
USA  
[enterprise.americas@ericsson.com](mailto:enterprise.americas@ericsson.com)

**Europe, Middle East, Africa**

Ericsson Enterprise  
Avenue du Bourget 44 Bourgetlaan  
B-1130 Brussels  
BELGIUM  
Phone: +32 2 745 12 11  
[enterprise.europe@ericsson.com](mailto:enterprise.europe@ericsson.com)

**Nordic**

Ericsson Enterprise  
LM Ericssons väg 8  
126 25 Stockholm  
SWEDEN  
Phone: +46 8 579 18 000  
[enterprise.nordic@ericsson.com](mailto:enterprise.nordic@ericsson.com)