

PRO MATRIX SYSTEM

Innovative products for permanent installations

PRO MATRIX SYSTEM



DYNACORD®



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CENTRAL STATION BREMEN



DEUTSCHE BANK FRANKFURT



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MUSICAL THEATER STUTTGART

DYNACORD is the German affiliate of the worldwide operating EVI Audio Corporation, a company that is best known for its innovative developments in audio technology setting new standards today that are leading the way into a new millennium. In the field of "permanent installations" **DYNACORD** is an important competitor when it comes to the development and distribution of integrated solutions for the whole sound reinforcement market. The collection of systems spreads from a simple electro-acoustics system with mixing-amplifiers to the unique "solution for nearly any problem" – the compact system CPA 2000 – to the highly complex ProSound- and alarm-systems. The requirements of the market result in a growing demand for integrated complete solutions. Installations at theaters, multi-functional halls, musical theaters, stadiums, cruise ships, hotels, cinemas, etc. nowadays demand for a sound reinforcement system which provides ProSound quality and at the same time has to offer "way-leading" emergency announcement and evacuation alarm systems that direct spectators, guests and employees to the nearest exit. This means, to comply with the IEC 849 regulations – stating the requirements of electro-acoustic warning systems in cases of danger or accidents – i. e. gapless operation of the systems on an emergency power supply, alert-signals according to the DIN33404 standards, surveillance, control

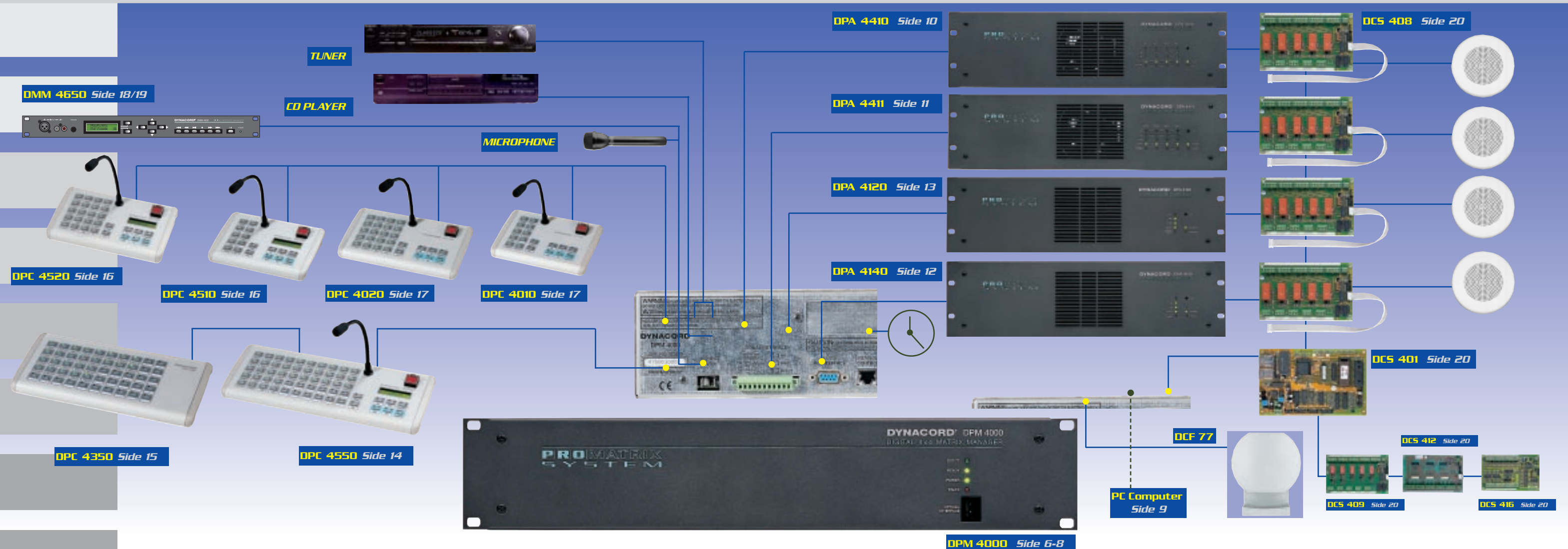
engineering incorporating digital networks between main- and sub-control-centers, etc., etc. Within the last few years **DYNACORD** set milestones especially in the market of emergency announcement installations. With the module system DEM200 and the digital control system DEC2000 customers have been provided with tailor-made solutions to their fullest satisfaction. Installation venues include: Neue Messe Leipzig; Lufthansa hangars in Hamburg, Munich and Frankfurt; Deutsche Bahn AG and the main train stations at Bremen and Leipzig; Deutsche Bank AG in Frankfurt and Eschborn; as well as the momentary most luxurious cruise liners: Mercury, Galaxy, and Century; Norddeutscher Rundfunk at Hamburg and Hannover (broadcasting station); the mail order houses: Neckermann, Quelle, and Otto; soccer stadiums at Bremen, the Carl-Benz stadium at Mannheim; skating arena/sport center Oberhaching and the Sport Paradise Gelsenkirchen; multi functional hall: Bördelandhalle in Magdeburg; racing track: Motopark Oschersleben. A lot of other projects were established at banks, insurance companies, industrial enterprises, in sports and leisure centers, etc. Upon request we gladly send you the needed reference.

Today's solutions ask for **digital technology**. More and more tasks are realized in the digital domain – not only in the complex field of signal switching, controlling, and routing but also in the generation and real-time proceeding of NF-audio signals, which includes the easy configuration via graphical user interfaces. And all of this is offered at an outstanding price/performance ratio. This is one of the recipes to survive in today's aggressive market. The customer who chooses this innovative solution is presented with these exact advantages: easy to operate, high functionality standards, and features that allow the comfortable adjustment of the appliance.

DYNACORD introduces its new digital **PROMATRIX SYSTEM** – the innovative solution in sound reinforcement: the integration of product, service and competence. The **PROMATRIX SYSTEM** has been developed and is getting manufactured, in accordance with the ISO 9000 regulations, at our manufacturing site in Straubing (Germany), the **DYNACORD** headquarters that also furnishes the complete range of electro acoustics and Pro-Sound PA-systems. Further, **DYNACORD** offers the continuing support and service for all previously established projects.

DYNACORD's highest aim is to satisfy our customers. One of the main reasons for our success is the knowledge, that every client has individual requirements and that we are prepared to provide him with the ultimate, uncompromising solution. To reach this goal, our wide range of products and services – not alone from **DYNACORD** but including the brands **Altec Lansing, Electro-Voice, Klark-Teknik, and Midas/DDA** – is of major importance. Our engineers are to be found at regional support-centers and in the company headquarters at Straubing, providing their expertise and user-support in soft- and hardware questions already during the planning stage.

System description & table of contents



The digital **PROMATRIX SYSTEM** for electro acoustic and ProSound applications consists of five groups of appliances:

- ProMatrix Manager DPM 4000
- ProMatrix Amplifier DPA 4000
- ProMatrix Consoles DPC 4000
- ProMatrix Control System DCS 400
- Message Manager DMM 4650

The second group of the **PROMATRIX SYSTEM** are the **DPA 4000** series power amplifiers. Four different models are available:

- DPA 4410 4 x 100 watts
- DPA 4411 4 x 100 watts including remote control*
- DPA 4120 1 x 200 watts
- DPA 4140 1 x 400 watts

(*available approx. with the beginning of 1999)

The **PROMATRIX SYSTEM**'s microphone terminals are available incorporating different features:

- DPC 4010 10 selection keys
- DPC 4020 20 selection keys
- DPC 4510 10 selection keys, LC-display
- DPC 4520 20 selection keys, LC-display
- DPC 4550 50 selection keys, LC-display
- DPC 4350 50 selection keys to extend any of the above mic terminals by another 50 selection keys**

** available approx. with the beginning of 1999)

The **PROMATRIX DPM 4000** represents the core of the system. Its input slots can be equipped with several different analog inputs: microphone terminal, microphone, CD-Player, AM/FM-tuner, cassette decks, etc.. 18-bit A/D-converters are utilized to transform the audio signals to the digital domain: the digital "NF"-Matrix (DPM 4000: 4 x 4 matrix; DPM 4001*: 12 x 12 matrix). The output slots are equipped with 20-bit D/A-converters providing the analog signals to feed the **DPA 4000** series power amplifiers. Signal control within the **DPM 4000** is taken care of by an integrated 8 x 8 logic control matrix.

(*available approx. in 1999)

All microphone terminals have their own micro processor which controls all of their functions. The selection keys can be freely configured; e. g. for single zones, group calling, as well as for internal and external control tasks that not necessarily have to be directly related to sound reinforcement tasks.

Through the software it is possible to control the whole system including all of its performance features from single, defined microphone terminals. The individual status is shown on the terminal's display. A great amount of routine functions is automated and therefore simplified. When the microphone terminals are incorporated in alert systems, it is possible to provide messages of the necessary measures to the listener. Probably received fault-messages are well considered and easy to understand. Experience has shown, that the operating personal of complex systems is faced with an enormous amount of stress when it has to handle alert situations. This tension, which often enough results in the misinterpretation of incoming messages as well as mistakes or delays when passing them on, is widely reduced when the **PROMATRIX SYSTEM** "is at work", since wrongly interpreted or delayed messaging belong to history.

The last group includes all parts of the **PROMATRIX** control system **DCS 400**, which are needed to build entire rack-systems:

- DCS 401 controller module
- DCS 408 relays assembly board 100 V
- DCS 409 relays assembly board NF
- DCS 412 logic-input assembly board
- DCS 416 analog in/out assembly board

Rounding off the **PROMATRIX SYSTEM** is the

DMM 4650 Message Manager, a signal processor for the digital recording and playback of speech and music and the generation of gong and alarm signals.

DPM 4000 *Digital Manager*



DPM 4000 Digital PROMATRIX Manager



BACK

The digital **PROMATRIX MANAGER DPM 4000** is a modular configured, processor-controlled multi-channel audio control and signal routing system that includes a 4 x 4 audio-mixing matrix, designed to be incorporated in a wide range of electro acoustics applications (alert systems) as well as in the field of ProSound installations. Because of its outstanding technical specifications – as there are: a dynamic range >100 dB, an excellent overall frequency response, extensive sound shaping facilities, output delays, etc. – including the system in ProSound applications is easily achieved.

The PC-software for the on-line or off-line configuration of all performance features runs under Windows 95™. The graphic user interface provides easy editing and, when on-line, automatically recognizes the connected hardware components. The shown block diagram allows manual editing. Different level password-protection excludes any unauthorized manipulation and reduces the risk of faulty programming. Additionally, a potential-free 8 x 8 logic control matrix is integrated: using macro instructions, logic combinations and program flows are easily established. Several audio-input modules – e. g. for the connection of up to 16 microphone terminals, microphones, CD-players, AM/FM-tuners, cassette decks, etc. – are available. Each channel is equipped with a comfortable audio processor that provides the following filters:

- Lo/Hi Shelving EQ
- Lo/Hi Cut parametric equalizer

All changes are displayed on the screen and can be acoustically controlled in real time. Optimizing the transmission quality (e. g. linearization, intelligibility, music reproduction) and reducing feedback can be easily achieved.

Security features:

According to the IEC849 regulations for electro acoustic emergency alert systems, the digital ProMatrix Manager monitors itself. Furthermore, all connected microphone terminals, power amplifiers, the internal cabling, and the loudspeaker lines are being

guarded. A RS485 port is employed to control the power amplifiers and output relays. The optional control and surveillance of the power amplifiers (remote control) gets also performed via this terminal and as an additional option, an automatic error protocol can be included.

On a customer's demand, remote maintenance and servicing the system is possible. Changing the configuration and control functions as well as possible software updates can also be performed via modem. The optionally available line-surveillance module* controls and guards the speaker cabling and the corresponding loudspeaker systems. Measuring criteria are: earth fault according to the DIN VDE 0800 regulations, line interrupt, line fault, and impedance.

The single speaker line monitoring module, which is going to be available with the beginning of 1999, additionally controls and guards the primary and secondary sides of the 100 volts transformer and the speaker system's voice coil. For this option to work, it is necessary to furnish every single loudspeaker system with an electronic assembly board that transmits the speaker's corresponding status back to the central control unit. Until this surveillance solution is available we are able to support our customers with the successfully proven digital speaker line surveillance **DEC 2300** or the digital single speaker line surveillance **DEC 2600** modules.

(* available approx. with the beginning of 1999)

Via the central system processor the **PROMATRIX** Manager controls messages for several zones at the same time, optionally pre-gong signals or voice messages, and the automatic attenuation of background music during messages (the period of time for the music signal to regain its former volume setting can be adjusted). Output delays can be set to values between 0 and 240 ms respectively between 0 and 112 meters. In case some lines are busy, a message gets recorded and stored. After the lines are open again the message is being transmitted (option: message-stacking).

The factory-configuration includes:

- digital tone generator for national and international alert signals, e. g. alerts according to the DIN 33404 regulations, mail service alerts, Slow- Whoop, etc.
- digital tone generator for gong signals (2, 3, and 4 times gong), attention gong
- sine generator for adjustment purposes
- pilot tone generator for internal monitoring and power amplifier monitoring purposes
- RS 232 interface port for the connection of a computer
- RS 485 interface port for the connection of microphone terminals, power amplifiers, and the control system DCS 400
- infra-red interface according to the IrDA-standard
- monitor bus system and monitor amplifier, to listen to the output signals of the power amplifiers as well as to the signals of the internal in/outputs
- status LED indicators for Error, Power, Ready, and DCF 77
- system main clock, quartz-controlled, direct connection of up to 40 sub-clocks possible
- control-processor, 500 individual control and switching events can be comfortably programmed

Additional options are:

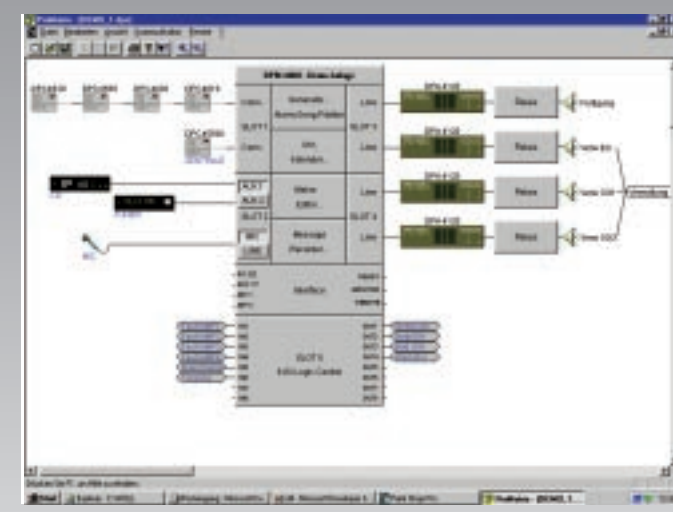
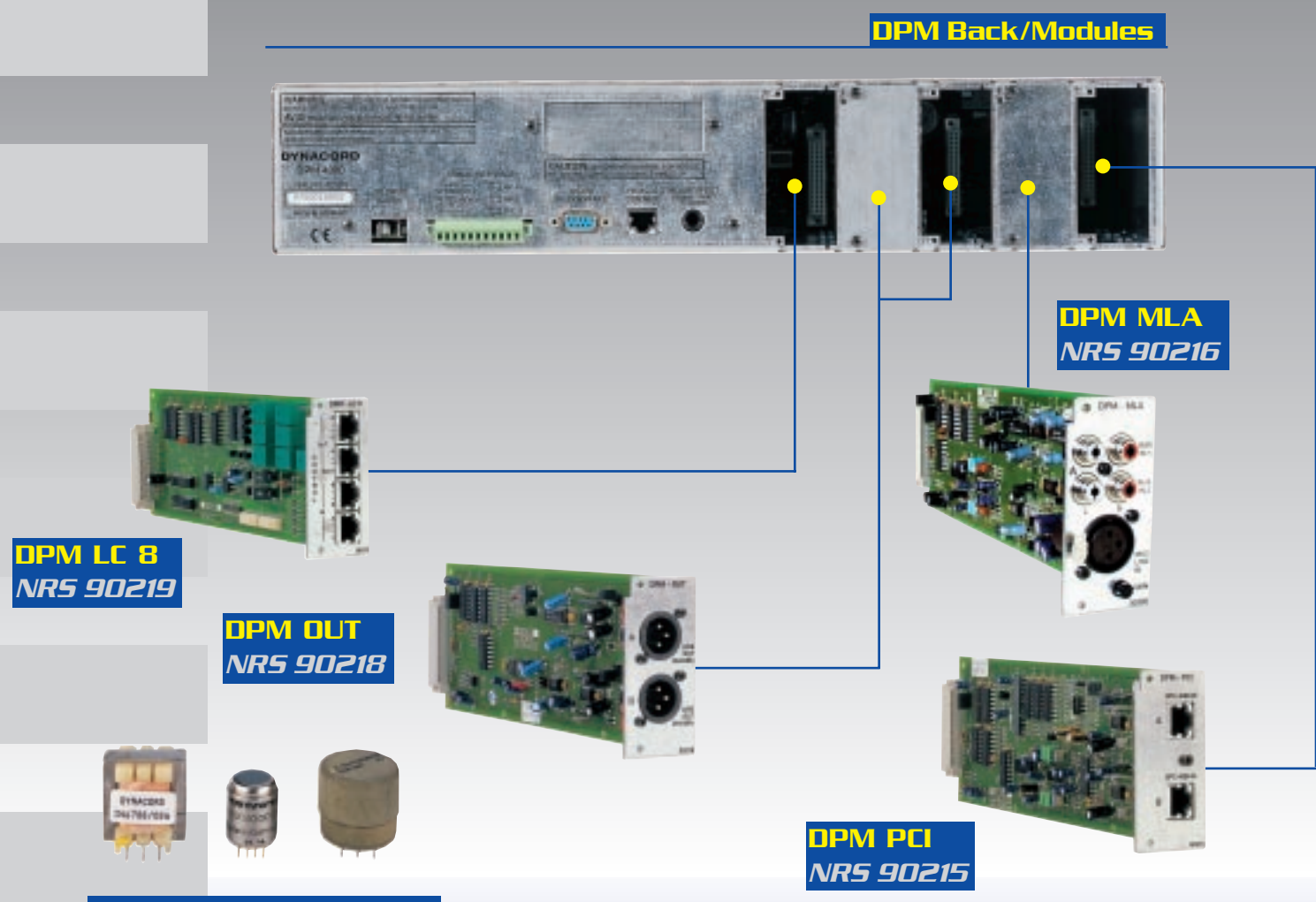
- direct digital recording and reproduction of messages with a length of up to 4 minutes
- DCF 77 control for the main clock

In addition, the digital **PROMATRIX Manager DPM 4001*** providing 4 input slots, 4 output slots, and a 12 x 12 matrix can be cascaded. Thus offering the possibility to establish huge and most complex installation configurations as well as digital networks between the main and sub-central units. Furthermore, this central technology allows the integration of the system into building-management-systems. Copper wiring as well as optical conductors can be used for the cabling. To accomplish an immediate realization of these applications, we install our proven digital network system **DEC 2050** for the interim stage. (Available by the middle of 1999)

Specifications DPM 4000 PROMATRIX Manager

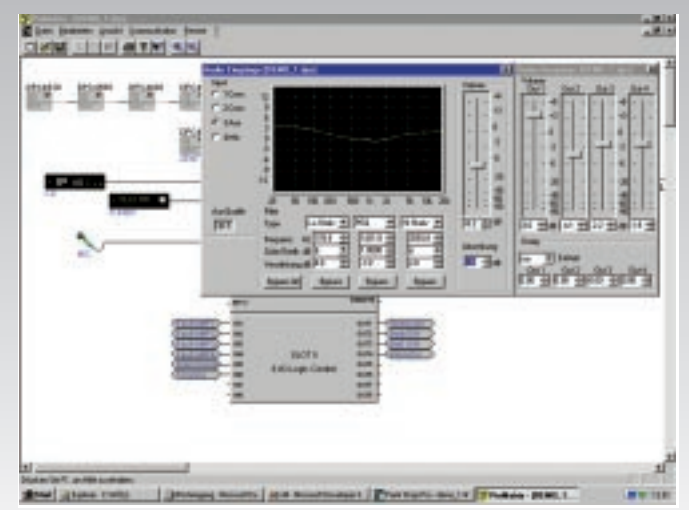
Power requirements	24 V DC, -10/+30 %
Power consumption	20 W
Characteristics	
audio inputs:	
electronically balanced	
nominal input level	DPC 1.55 V / +6 dBu
	MIC / LINE 1.6 mV..5V / -54..+16 dBu
	AUX 290 mV..3 V / -9..+12 dBu
nominal input impedance	DPC 20 kΩ
	MIC / LINE 10 kΩ
	AUX 22 kΩ
Characteristics	
audio outputs:	
electronically balanced	
nominal output level	775 mV / 0 dBu oder 1.55 V / +6 dBu
nominal output impedance	100 Ω
Transmission response	20 Hz .. 20 kHz ± 0.5 dB
Distortion rate at 1kHz	< 0.01 %
Interference voltage (A)	-96 dBu

Monitor characteristics:	
	Phones, unbalanced, speaker, bridged-mode, balanced 2 V / +8.2 dBu
Input	
Output power handling	0.5 W / 8 Ω
Min. load impedance	4 Ω
Interface port characteristics:	
Control inputs	UIN ≤ ± 5V = Low UIN ≥ ± 10V = High
Control outputs	off-ground relay contacts 1A bei 24 V DC
Sub-clock output	24 V DC, 400 mA, short-circuit protected
Serial interface ports	RS-232, RS-485, IrDA
Environmental temperature	
	+5 °C .. +40 °C
Dimensions (B x H x T)	483 x 88.1 x 340 mm
Installation depth without connectors	336 mm
Max. installation depth w/connectors	410 mm
Weight	about 7 kg
Finish	anthracite



PROMATRIX PC user interface

Programming, configuration and documentation of the **PROMATRIX** system can be most conveniently and comfortably accomplished using the software interface which runs on a PC under Windows 95™. Altering the configuration is possible at any time without the need to change the actual system installation. The configuration can be saved and restored at any time. The integrated multi-level password protection prevents unauthorized access and erroneous operation.



Inputs and outputs

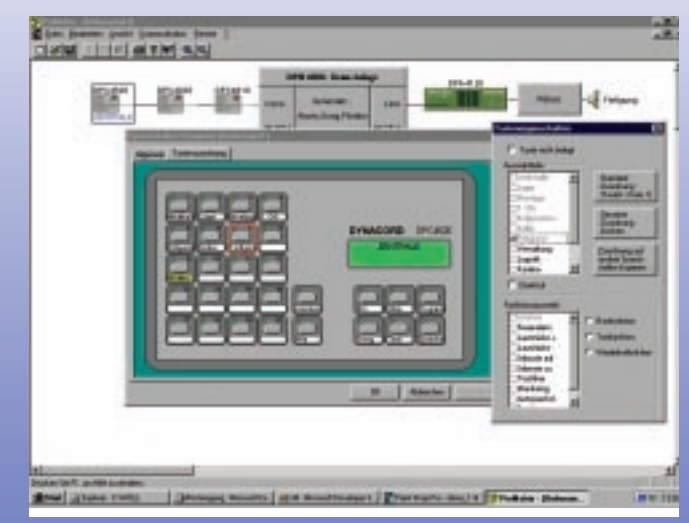
If one of the following modules is inserted, the **DPM 4000**'s two input slots provide automatic assembly board-ID detection:

- microphone terminal input module for the connection of 2 x 4 paging stations
- microphone/line level module, 2 channels, with compressor, limiter, electronically balanced, optionally with input transformer, pilot tone, monitor bus system
- AUX-module, 2 channels, for the connection of CD-Players, AM/FM-tuners, tape decks, pilot tone, monitor bus system

The **DPM 4000**'s two output slots provide automatic assembly board-ID recognition as well, whether one of the maximally two possible output modules, of which each can be a 2 channel-module, is inserted. Additionally, the **PROMATRIX** Manager employs a control slot for insertion of the control module, which provides 8 galvanic-separated input and outputs.

Configuring the system is possible in on-line or off-line operation. Programming the system on-line provides the advantage that the installed **DPM 4000** modules as well as all connected hardware components are recognized and a block diagram is generated automatically. It is further possible to transfer the parameters and incorporate them directly into the software. The displayed block diagram can be manually edited. Parameters are to be set for all blocks in their individual windows. The configuration gets automatically checked by the software which makes erroneous operation virtually impossible.

The personal computer needs to be connected to the system only for direct data communication with the system - loading, changing a configuration - while during regular operation it can be disconnected. Anyway the PC provides you with additional features of the system, like detailed indication of status informations, hard copy protocols, and via modem even remote diagnosis and remote maintenance.



Extension kits for the DPM 4000			
NRS 90215	2-Channel microphone terminal input module	NRS 90208	Input transformer DPC
NRS 90216	Mic/Line + 2 Aux input module	NRS 90233	Input transformer Mic / Line
NRS 90217	2-Kanal Mic/Line input module	NRS 90227	Output transformer
NRS 90228	2-Kanal Aux input module	NRS 90205	Message memory extension
NRS 90218	2-Kanal Line output module	NRS 90193	DCF 77 antenna for reception
NRS 90219	8 I/O Logic control module		

DPA 4000 *Power amplifiers*



DPA 4410 4 x 100W Amplifier



DPA 4411 4 x 100W Amplifier with Remote



The **PROMATRIX** power amplifier **DPA 4410** is four-channel amplifier following the newest topology, providing 4 x 100 watts output power capacity according to the IEC 268-3 standard. The **DPA 4410** provides the opportunity to drive high-impedance and low-impedance loudspeaker systems at the same time; i. e. the simultaneous operation of 100 V and 4Ω speaker systems is possible. The "intelligent" output design allows nearly any configuration of the four power outputs:

- 4 x 100 watts or optionally
- 1 x 200 watts and 2 x 100 watts or optionally
- 2 x 200 watts

The four electronically balanced inputs are provided as XLR-type connectors (0 dBu) and can be optionally retrofitted with input transformers. Also provided are routing switches, allowing input coupling. Remote-starting the power amplifier is possible when it is operated on the mains supply or on 24 VDC emergency power supply. It employs an initial current inrush limiter. When incorporating the **DPA 4410** in a rack system, to avoid noise-loops, in most cases it is inevitable to separate the circuitry ground from the enclosure. Thus a ground-lift switch is provided. Thermal stability is obtained by an active, temperature-controlled, extremely silently running ventilation system, allowing to operate the power amplifier even in a control-room. Of course, the power amplifiers are idle-protected and short-circuit-proof. The four output transformers for the balanced, floating loudspeaker network can be optionally internally matched to 100 V, 70 V, 50 V, and

even 4Ω operation. LED indicators displaying the amplifier's momentary status (operation (ready), standby, earth fault, and test) as well as LED-meter instruments (-13 dB to 0 dB and "over") are to be found on the front panel of the **PROMATRIX** power amplifiers.

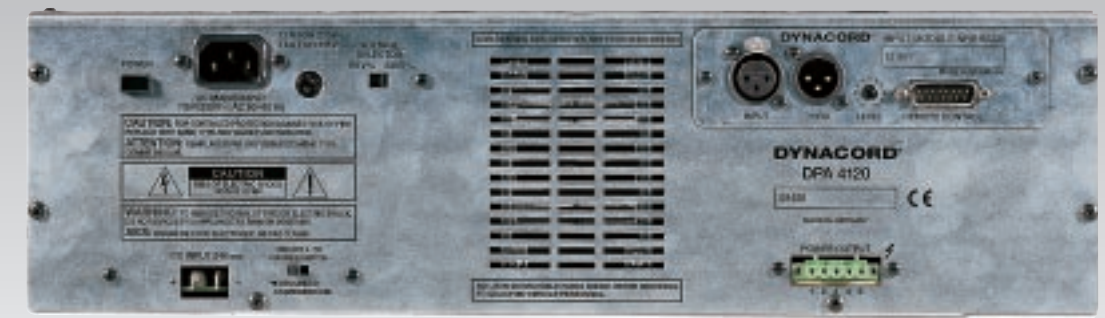
Security features:

To include the amplifiers in alarm sound reinforcement systems, it is necessary that in case of probable fault they deliver a message which is in accordance to the IEC 849 standard. Additionally, the DIN VDE 0800 regulations require ground fault surveillance for off ground potential, balanced 100 V speaker networks. The secure floating operation of **DPA 4000** series power amplifiers is ensured by pilot tone monitoring of the system. This signal is also the result criteria for the automatic reserve-switching of the power amplifiers; i. e. when one amplifier shows failure operation another power amplifier automatically takes over the tasks of the first.

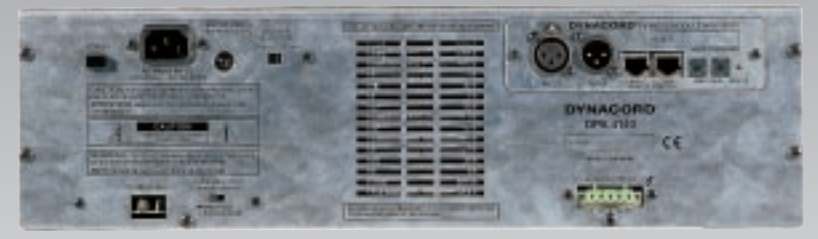
In electro acoustic emergency announcement and evacuation alarm systems it is unavoidable that the power amplifiers' operational state is guaranteed even in cases of a mains power outage. Since there are only very few cases where an emergency power generator takes over the power supply, the amplifiers must provide the opportunity for battery-based operation. All power amplifiers of the **PROMATRIX** series succeed these requirements.

Specifications	DPA 4410	DPA 4411
Power supply:		
Mains	115 V / 230 V~ AC, ±10 %	115 V / 230 V~ AC, ±10 %
Mains frequency	50 - 60 Hz	50 - 60 Hz
Battery	24 V DC, -10/+30 %	24 V DC, -10/+30 %
Security class	I	I
Mains power consumption	1010 VA at nominal power 377 VA bei -10 dB output 62 VA without Signal	1015 VA at nominal power 380 VA bei -10 dB output 65 VA without Signal
24 V DC battery power consumption	18 A bei at nominal power 7.5 A bei -10 dB- output 1.0 A ohne Signal / 12 mA in Standby	18 A at nominal power 7.5 A bei -10 dB- output 1.0 A ohne Signal / 12 mA in Standby
Input characteristics:	electronically balanced	electronically balanced
Nominal input level	775 mV / 0 dBu	775 mV / 0 dBu
Nominal input impedance	≥ 10 kΩ	≥ 10 kΩ
Power output characteristics:	balanced, off-ground potential	balanced, off-ground potential
Nominal output at mains operation	4 x 100 W (acc. IEC 268-3) 2 x 200 W configurable 1 x 200 W + 2 x 100 W configurable	4 x 100 W (acc. IEC 268-3) 2 x 200 W configurable 1 x 200 W + 2 x 100 W configurable
Nominal load impedance	100 Ω / 100V 50 Ω / 70 V 25 Ω / 50 V 4 Ω / 20 V	100 Ω / 100V 50 Ω / 70 V 25 Ω / 50 V 4 Ω / 20 V
Transmission response	60 Hz .. 20 kHz	60 Hz .. 20 kHz
Distortion rate at 1 kHz and nominal output	≤ 1 %	≤ 1 %
Interference voltage (A)	≤ 1.2 mV / -56 dBu	≤ 1.2 mV / -56 dBu
Monitor output characteristics:	unbalanced	electronically unbalanced
Nominal output voltage	2 V / + 8.2 dBu	2 V / + 8.2 dBu
Nominal load impedance	600 Ω	600 Ω
Environmental temperature	+5 °C .. +40 °C	+5 °C .. +40 °C
Dimensions (B x H x T)	483 x 132 x 345 mm	483 x 132 x 345 mm
Installation depth without connectors	340 mm	340 mm
Installation depth including connectors	max. 410 mm	max. 410 mm
Weight	22.3 kg	25 kg
Finish	anthracite	anthracite

Extension kits for the DPA 4410 / DPA 4411
 NRS 90206 Pilot tone-surveillance (for four amplifiers)
 NRS 90207 Earth-fault surveillance (for four amplifiers)
 NRS 90208 Input transformer (for one input)
 NRS 90227 Output transformer (off-ground potential, balanced monitor outputs) for the DPA 4411



DPA 4140 1 x 400 Watt Amplifier



DPA 4120 1 x 200 Watt Amplifier

The **PROMATRIX** amplifier series is completed by two single channel power amplifiers – the **DPA 4120** with an output of 200 watts and the **DPA 4410** providing 400 watts output power capacity, IEC 268-3. Because these power amplifiers offer identical performance features as the four-channel model, they can be included into any electro acoustic sound reinforcement system. In case they are utilized in monitored installations, the standard input module is easily exchanged by the remote control module, which provides fully support of their remote-start and remote surveillance features. Both features are accomplished through the **DPM 4000 PROMATRIX** Manager's RS 485 remote interface.

The **PROMATRIX** 4-channel power amplifier **DPA 4411*** follows basically the same design as the **DPA 4410**. Additionally, remote control and surveillance of the power amplifier (remote control) are factory-included. It's operation is also controlled and monitored by the **PROMATRIX Manager DPM 4000**.

(*available approx. with the beginning of 1999)

The following remote-functions are supplied by the single channel models – **DPA 4120** and **DPA 4140** – and the 4-channel power amplifier - **DPA 4411**:

- Control:**
- **Input level by the use of a programmable level control mute function**
 - **Mains ON/OFF with programmable, delayed switching battery supply ON/OFF**
 - **Routing of the monitor signal to the monitor bus system**
 - **Pilot tone ON/OFF**
- Surveillance:**
- **Thermal overload of the power supply unit**
 - **Thermal overload of the power amplifier stage**
 - **Input level**
 - **Ground fault**
 - **Pilot tone**
 - **Output voltage**
 - **Output current**
 - **Loudspeaker lines**

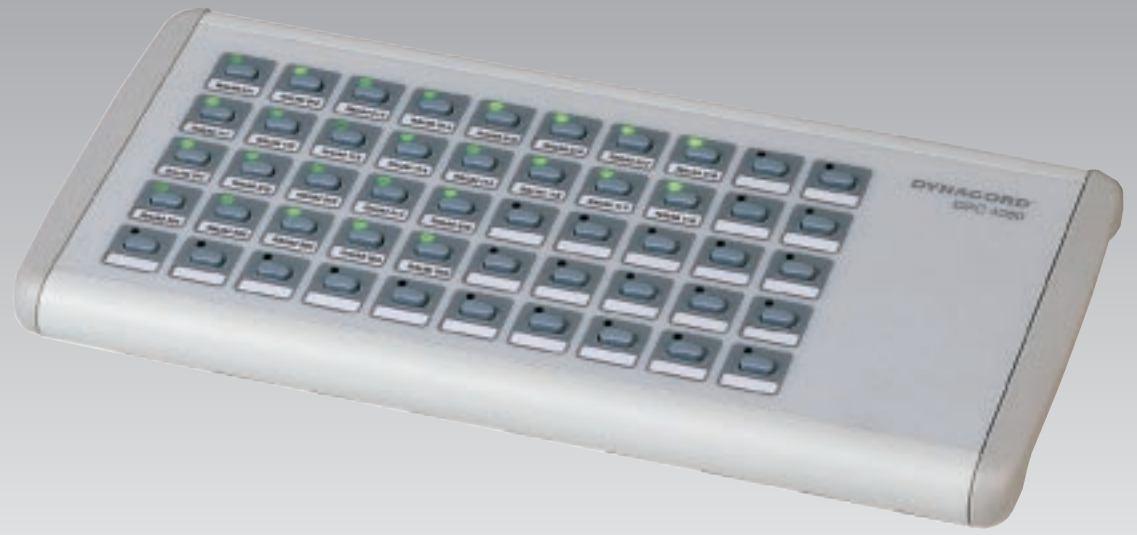
Specifications	DPA 4120	DPA 4140
Power supply:		
Mains	115 V / 230 V~ AC, ±10 %	115 V / 230 V~ AC, ±10 %
Mains frequency	50 - 60 Hz	50 - 60 Hz
Battery	24 V DC, -10/+30 %	24 V DC, -10/+30 %
Security class	I	I
Mains power consumption	520 VA at nominal power 200 VA at -10 dB Output 40 VA without signal	1020 VA at nominal power 380 VA at -10 dB Output 65 VA without signal
24 V DC battery power consumption	9 A at nominal power 4 A bei -10 dB- Output 0,8 A without Signal / 12 mA in Standby mode	18 A at nominal power 7.5 A bei -10 dB- Output 1 A without Signal / 12 mA in Standby mode
Input characteristics:	electronically balanced	electronically balanced
Nominal input level	775 mV / 0 dBu	775 mV / 0 dBu
Nominal input impedance	≥ 10 kΩ	≥ 10 kΩ
Power output characteristics:	electronically balanced	electronically balanced
Nominal output voltage	200 W (acc IEC 268-3)	400 W (acc IEC 268-3)
Nominal load impedance	50 Ω / 100V 25 Ω / 70 V 12.5 Ω / 50 V 4 Ω / 28 V	25 Ω / 100V 12.5 Ω / 70 V 6.25 Ω / 50 V 4 Ω / 40 V
Transmission response	60 Hz .. 20 kHz	60 Hz .. 20 kHz
Distortion rate at 1kHz and nominal output	≤ 1 %	≤ 1 %
Interference voltage (A)	≤ 2mV / -52 dBu	≤ 2mV / -52 dBu
Monitor output characteristics:	electronically balanced	electronically balanced
Nominal output voltage	2 V / + 8.2 dBu	2 V / + 8.2 dBu
nominal load impedance	600 Ω	600 Ω
Environmental temperature	+5 °C .. +40 °C	+5 °C .. +40 °C
Dimensions (W x H x D)	483 x 132 x 345 mm	483 x 132 x 345 mm
Installation depth without connectors	340 mm	340 mm
Installation depth including connectors	max. 410 mm	max. 410 mm
Weight	ca. 16 kg	ca. 20 kg
Finish	anthracite	anthracite

- Extension kits for the DPA 4120 / DPA 4140
- NRS 90208 Input transformer (off-ground potential, balanced input)
 - NRS 90222 Remote Module
 - NRS 90224 Pilot tone & ground-fault surveillance
 - NRS 90225 Standard input module
 - NRS 90227 Output transformer (off-ground potential, balanced monitor output)

DPC 4000 *Paging stations*



DPC 4550



DPC 4350

The paging stations of the **PROMATRIX SYSTEM** are in compliance with all technical requirements of modern communication systems. Their rigid metal enclosures with plastic side-panels are perfectly suitable for their integration into any modern office environment. The handling is according to ergonomic standards and through their grid design, the paging stations are easily integrated into a console or 19" rack system.

All microphone terminals of the **PROMATRIX** series employ micro processors controlling their internal functions and the data communication with the central unit. The paging stations embody the self-surveilling "watchdog"-circuitry which is in compliance with the IEC 849 regulations; the necessary generator for the analog NF-stage is built-in.

The microphone amplifier for the Back-Electret-Condenser includes compressor/limiter circuitry as well as an offering-logic. The sensitive microphone itself is mounted on a black gooseneck and provides an integrated pop-filter. The paging station offers an additional input for the connection of an external PTT microphone (Push-To-Talk = handheld microphone with talk-switch) with priority function. If necessary, the input can also be set to 0 dB.

Reliable protection of the microphone terminals against unauthorized access is provided through password protection. Malfunctioning or erroneous operation is brought to the user's attention through a sound signal that gets generated by the internal piezo. Intercom functions between individual paging terminals can be achieved through connecting an optional loudspeaker which, in case it is included within the software-configuration of the system, can also be used for monitoring purposes.

The select-buttons of the microphone stations have status LED-indicators and are freely configurable. Following parameters are to be set: zones, groups, priorities, message and background music volume levels, program-assignment, and blocking functions.

The paging stations of the DPC 45xx series additionally employ LC-displays that display plain language messages like: status messages, (multi-lingual) directives, external fault messages, zone and group selections, and custom-configured surveillance messages. In addition, a password-protected service- and maintenance program can be activated allowing to check the system's proper operation.

The IEC 849 standard requires a closed-circuit-surveilled and against erroneous operation protected alarm-button. Thus, the alarm-buttons on all DPC-series paging stations have a protective cover that can optionally be sealed. Optionally incorporating an additional alarm-button and/or key-lock switch is also possible.

Data communication with the central unit is established via the RS 485 port and gets continuously monitored through polling. Connection is performed via a RJ 45 socket. Function keys for talking, gong signal, text, all (collective call), erase, ON, and program as well as LED-indicators for busy and system power-on complete the paging stations' user interface.

One critical point with most paging terminals is the labeling of the buttons. They are supposed to be small in size but also robust to allow their use outside of offices. Mostly, space for the attachment of easy to read and clear to understand labels that, especially in cases of emergency prevent mistakenly hitting the wrong key, is not sufficient. Nevertheless, we provide you with an ideal solution: easy labeling through label-strips that are inserted in special, see-through guiding-rails on the front panel. You can design and print your own label-strips using the supplied pre-formatted form-documents for the MS-WORD™ program (MS-WORD™ - Microsoft Word).

Specifications	DPC 4550	DPC 4350
Power requirements	24 V DC -10 / +30 %	24 V DC -10 / +30 %
Power consumption	90 mA	90 mA
NF - Input external		
PTT - microphone		
(A & B bridged)	-52 dBu	-
Line (default)	0 dBu	-
NF-Output		
(electronically balanced)	+6 dBu	-
Alarm button with cover		
sealable	Yes	-
Extension slot		
DPC 4350	Yes	-
Connection technique	RJ-45	RJ-45
Connection cord		
included	3 m	0.5 m
LC-Display	2 x 16 Zeichen	-
Environmental temperature	+5° C ... 40° C	+5° C ... 40° C
Dimensions		
(W x H x D)	405 x 160 x 65	335 x 160 x 65
Goose neck	ø 8 x 200mm	ø 8 x 200mm
Weight	2.5 kg	1.9 kg
Finish	gray-white RAL 9002 micro-structure	gray-white RAL 9002 micro-structure

- Accessories :
- NRS 90229 Key-lock switch ø 18 mm
 - NRS 90230 Button ø 18 mm
 - NRS 90231 Switch ø 18 mm
 - NRS 90209 Speaker
 - NRS 90232 Transformer balanced

DPC 4520



DPC 4510



DPC 4010



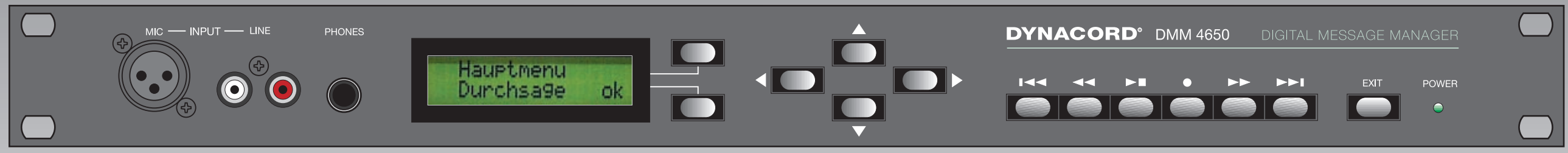
DPC 4020



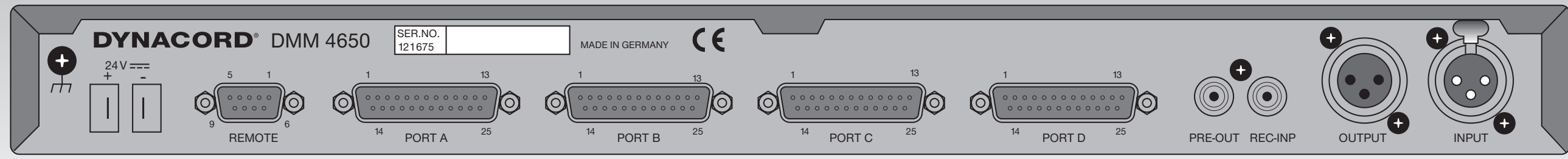
Specifications	DPC 4510	DPC 4520
Power requirements	24 V DC -10 / +30 %	24 V DC -10 / +30 %
Power consumption	80 mA	85 mA
NF - Input external PTT - Microphone (A & B bridged)	-52 dBu	-52 dBu
Line (default)	0 dBu	0 dBu
NF-Output (electronically balanced)	+6 dBu	+6 dBu
Alarm button covered sealed	Yes	Yes
Extension slot DPC 4350	Yes	Yes
Connection technique	RJ-45	RJ-45
Connection cord included	3 m	3 m
LC-Display	2 x 16 Characters	2 x 16 Characters
Environmental temperature	+5° C ... 40° C	+5° C ... 40° C
Dimensions, enclosure (W x H x D)	225 x 16 x 65	270 x 160 x 65
Goose neck	ø 8 x 200 mm	ø 8 x 200 mm
Weight	1.5 kg	1.7 kg
Finish	gray-white RAL 9002 Micro-structure	gray-white RAL 9002 Micro-structure

Specifications	DPC 4010	DPC 4020
Power requirements	24 V DC -10 / +30 %	24 V DC -10 / +30 %
Power consumption	80 mA	85 mA
NF - Input external PTT - Microphone (A & B bridged)	-52 dBu	-52 dBu
Line (default)	0 dBu	0 dBu
NF-Output (electronically balanced)	+6 dBu	+6 dBu
Alarm button with cover sealed	Yes	Yes
Extension slot DPC 4350	Yes	Yes
Connection technique	RJ-45	RJ-45
Connection cord included	3 m	3 m
LC-Display	-	-
Environmental temperature	+5° C ... 40° C	+5° C ... 40° C
Dimensions, enclosure (W x H x D)	225 x 160 x 65	270 x 160 x 65
Goose neck	ø 8 x 200 mm	ø 8 x 200 mm
Weight	1.5 kg	1.7 kg
Finish	gray-white RAL 9002 Micro-structure	gray-white RAL 9002 Micro-structure

DMM 4650 *Digital Message Manager*



DMM 4650 Front



DMM 4650 Back

The **DMM 4650**, a digital signal processor with message manager, rounds off the **PROMATRIX system**. The 19"-enclosure with 1HU houses the message recorder, alarm signal and gong signal generator, and an extremely versatile sequencer. The message manager employs a flash-memory that is absolutely maintenance-free and provides the possibility for direct digital recording and reproduction of at least 100 different sound and speech signals. This circumstance guarantees fully compliance with the IEC 849 requirements. Depending on the installed storage capacity, the maximum recording time reaches up to 16 minutes. The user can choose from different resolution qualities, where the maximum bandwidth is 16 kHz. A microphone can be directly connected to the appliance. Anyway, the input is also adjustable for line level sensitivity. Remote controlling the recording can be achieved without a problem.

The digital alert signal generator provides all commonly used national and international alert signals, including: alarm signals according to the DIN 33404 standard; SOLAS, German Lloyd and IMO (International Maritime Organization) ship alarm signals; alarm BVS (Bundesamt für den Bevölkerungsschutz); alarm KTA – Kerntechnische Anlagen (radioactive radiation alert); alarm signals of the Deutsche Post AG (German mail services).

The digital gong signals generator provides several different signals, including: pre-gong, 2, 3, and 4-sound cinema/theater gong.

To be able to fulfill specific requirements of our customers, the most important performance feature are automatic, system-controlled macro instruction procedures, which can consist alerts, texts, gongs, and "live"-messages (e. g. coming from a company fire brigade) in a free configuration.

To make the handling of such a complex system as easy as possible, several macro instruction sets are pre-programmed and stored within factory-presets, which include: at least 15 acoustical alarm signals, 6 different gong signals and the necessary control procedures.

Security features:

- **Self-monitoring in compliance with the IEC 849 standard; with fault message output**
- **Password protection over several levels**
- **RS 232 interface for data backup and servicing purposes**
- **Integrated service and maintenance program software**

The **PROMATRIX Message Manager DMM 4650** is micro processor-controlled and employs a separate digital signal processor. The easy readable LC-display provides the user with all important status informations and guides him during configuration through the comfortably structured program menus. Additionally, it displays the amount of used memory. The priority of all procedures is freely definable. In addition to the factory-presets 40 user-configurable presets are provided. All parameters can be edited. The **DMM 4650** provides electronically balanced inputs and outputs that optionally can be retrofitted with transformers.

Specifications DMM 4650 Digital Message Manager

Power requirements	24 V DC, -10/+30 %	
Power consumption	18 W (without NRS extension kit 90204)	
Input voltage	Input	775 mV / 0 dBu
	Line, Rec Input	775 mV / 0 dBu
	Mic Input	1.4 mV / -54 dBu
Max. input voltage	Input	3.8 V / +14 dBu
	Line, Rec Input	30 V / +32 dBu
	Mic Input	50 mV / -24 dBu
Input impedance	Input	20 kΩ
	Line, Rec Input	20 kΩ
	Mic Input	1.4 kΩ
Output voltage	Output	0.775 V / 0 dBu
	Pre-Output, Phones	3.2 V / +12 dBu
Max. output voltage	Output	3.8 V / +14 dBu
	Pre-Output, Phones	9 V / +21 dBu
Output impedance	Output	136 Ω
	Pre-Output, Phones	220 Ω

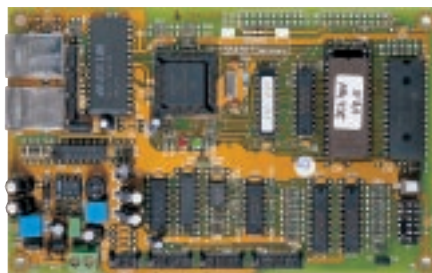
Frequency response	Input > Output	20 Hz .. 20 kHz
		-3 / 0 dB
	Mic-Input	20 Hz .. 16 kHz
		-18 / -3 dB
	Others	20 Hz .. 16 kHz
		+0 / -3 dB
S/N Ratio	Input > Output	>108 dB (A)
	Message	>90 dB (A)
Distortion rate	Input > Output	< 0,03 % (bei 1kHz)
	Message	< 0,05 % (bei 1kHz)
Data format	AD / DA Wandler	16 Bit linear
	DSP intern	24 Bit
Resolution (sampling rate)		35 kHz
Control inputs	U _{IN} ≤ ±5 V = Low	
	U _{IN} ≥ ±10 V = High	
Control outputs	off-ground potential relay contacts 1A at 24 V DC	
Dimensions (W x H x D)	483 x 43.6 x 225.19", 1HE	
Weight	4 kg	

- Accessories for the DMM 4650
- NRS 90204 4 Control inputs and outputs for the ports O/D
 - NRS 90205 Message memory extension
 - NRS 90210 Output transformer
 - NRS 90211 Input transformer

DCS 400 Control System

DCS 401 Surveillance module

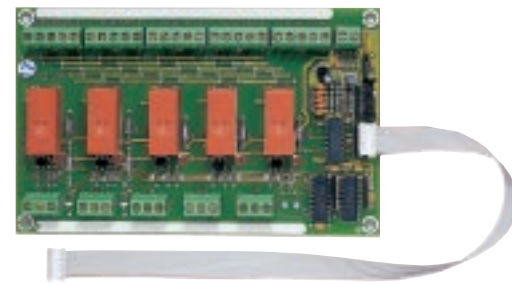
Operating voltage	24 V DC, -10/+30 %
Operating current	25 mA .. 65 mA
Operating temperature	+5° C .. +40° C
Dimensions (W x H x D)	160 x 25 x 100 mm
Weight	135 gr.



DCS 401 Surveillance Module

DCS 408 Relay module 100V

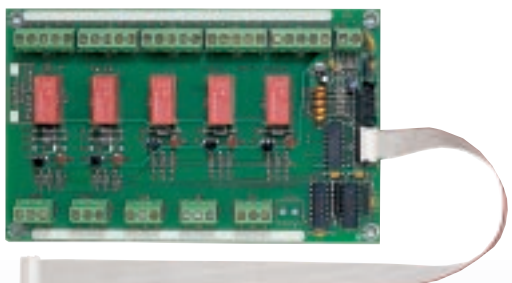
Operating voltage	24 V DC, -10/+30 %
Operating current, relay off	5.2 mA .. 7.8 mA
Operating current, relay on	87 mA .. 130 mA
Relay characteristics :	
number of contacts	2 double-throw contacts
contact material	AgNi 90/10
contact load (ohmic load)	2000 VA
contact current, maximum	8 A
contact tension	100 V~
Operating temperature	+5° C .. +40° C
Dimensions (Wx H x D)	160 x 20 x 100 mm
Weight	200 gr.



DCS 408 Relay module 100 V

DCS 409 Control relay module

Operating voltage	24 V DC, -10/+30 %
Operating current, relay off	5.2 mA .. 7.8 mA
Operating current, relay on	55 mA .. 80 mA
Relay characteristics :	
number of contacts	2 double-throw contact
contact material	AgPd + 10 µ Au
contact load (ohmic load)	1 A / 24 V DC
contact current, maximal	2 A
Operating temperature	+5° C .. +40° C
Dimensions (W x H x D)	160 x 17 x 100 mm
Weight	155 gr.



DCS 409 Control relay module

DCS 412 logic input module

Operating voltage	24 V DC, -10/+30 %
Operating current	
all inputs open	2.6 mA .. 8.2 mA
all inputs on 24 V terminal	60 mA .. 83 mA
Input level :	
voltage for inputs off (Low)	U _{IN} < ± 5V
voltage for inputs on (High)	U _{IN} > ± 10 V
maximum input voltage	U _{IN max} = ± 31 V
Power source 24 V :	
maximum output current	I _{OUT max} = 90 mA
Operating temperature	+5° C .. +40° C
Dimensions (W x H x D)	160 x 17 x 100 mm
Weight	110 gr.



DCS 412 Logic input module

DCS 416 analog in/output module

Operating voltage	24 V DC, -10/+30 %
Operating current,	
all inputs open	55 mA
all inputs on 24 V terminal	72 mA
Inputs:	
voltage range (Min .. Max)	0 V .. 10 V
resistance range, external (Min .. Max)	0 Ω .. 10 kΩ
max. output load	2 kΩ
Reference power source :	
output voltage	10 V
output current	30 mA
Resolution in/outputs	8 Bit
Operating temperature	+5° C .. +40° C
Dimensions (W x H x B)	160 x 17 x 100 mm
Weight	110 gr.



DCS 416 Analog in/output module

PROMATRIX Control System DCS 400

For the installation of a complete electro-acoustic system and to get it into an operational, ready-for-use state, next to the rack-shelf system it takes additional module units, which are provided by the **PROMATRIX Control System DCS 400** ; possible are:

- 100 V-Relays for the line offering
- Control relays for conference calling and obligatory reception
- Switching NF-levels
- Increasing the amount of logic outputs to include additional control relays
- Increase the amount of logic outputs, galvanic separated
- Control and reception of returned messages of external, analog levels for controlling purposes; lights, etc...

The individual assembly boards are being connected to the **DPM 4000** via the RS 485 interface port and by any means of an own controller (**DCS 401**). They are controlled and monitored by the **DPM 4000**.

