M A
L I G H T I N G

Catalogue

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Control

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Dimming

References

About us

Opening Ceremony Summer Olympics 2008, Beijing, China; Lighting Design: Sha Xiao Lan; Photo: ©Paul Collison

The whole is much greater than the sum of its parts

MA Lighting presents its fully integrated system. The system consists of MA components from control, network and dimming.

Individually, each element is fully developed, powerful and extremely competitive. They are DMX compatible and thus can be used in stand-alone environments. However, as a complete MA system the MA components build a synergy that is absolutely unequalled on the market. This is based on two sections – the grandMA lighting controls at the heart and the MA-Net as internal system language.

Whereas the grandMA lighting controls have developed from conventional lighting desks into flexible multimedia controls, the system's MA-Net with enormous speed and capacity is responsible for the time synchronous and steady output of the widest data flow. Moreover the MA-Net enables the complete integration of the software tools grandMA 3D and grandMA video and can also be used for bi-directional communication with the digital installation dimmer dimMA.

Thus MA is the only fully-integrated system on the market which is unrivalled.
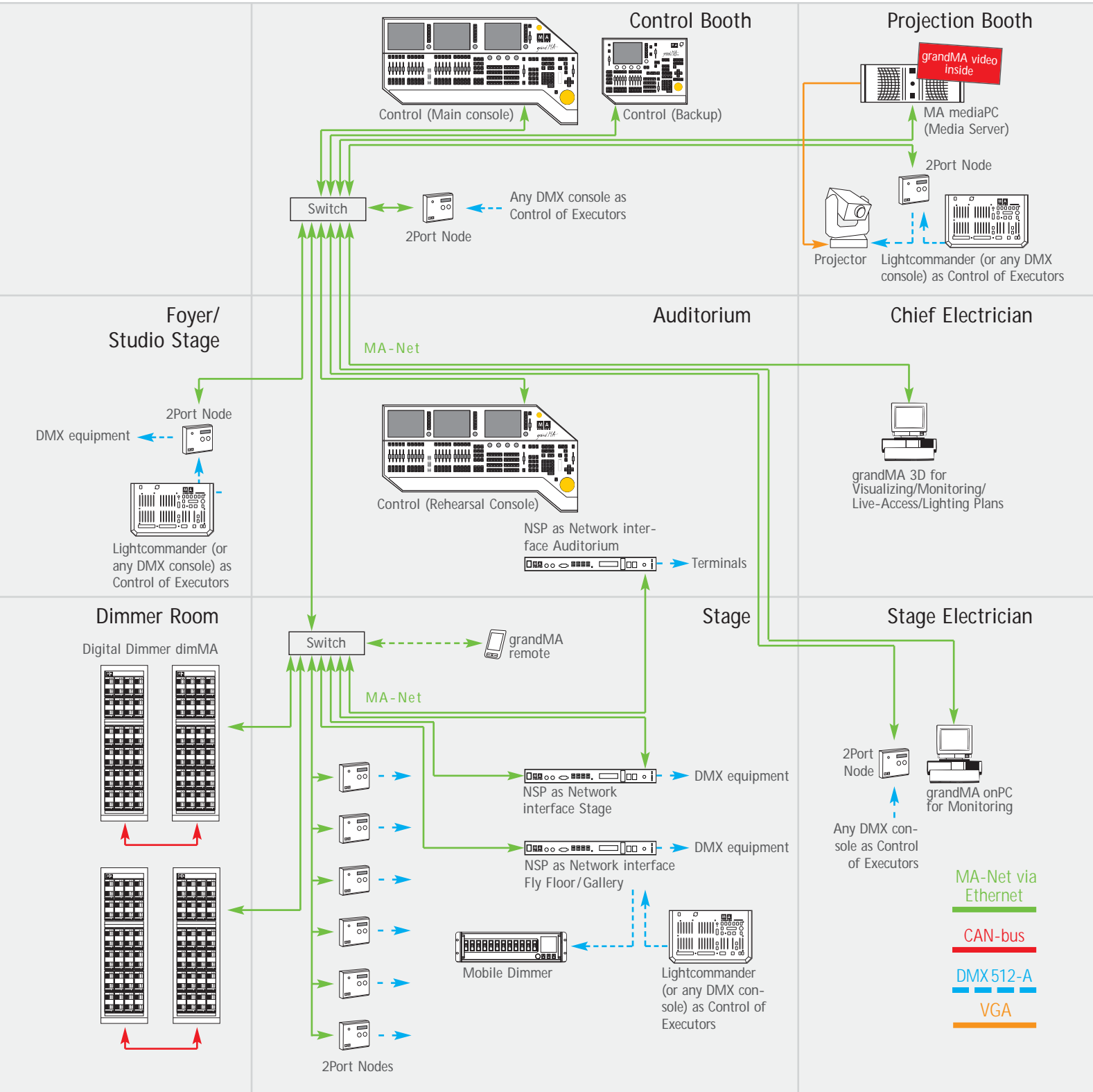
The MA System Solution

With the grandMA consoles, media server grandMA video, the Network Signal Processor (NSP) and the digital installation dimmer dimMA MA Lighting offers a fully integrated MA system that has unrivalled solutions for sophisticated projects with complex system requirements. All system components communicate via MA-Net (Ethernet), so that the different types of signals do not need to run on different systems. (However, the components of the integrated MA system are also extremely powerful when used as stand-alone products each having their own direct DMX outputs.)

Control

Video/Media

Dimming

Network

MA-Net via Ethernet
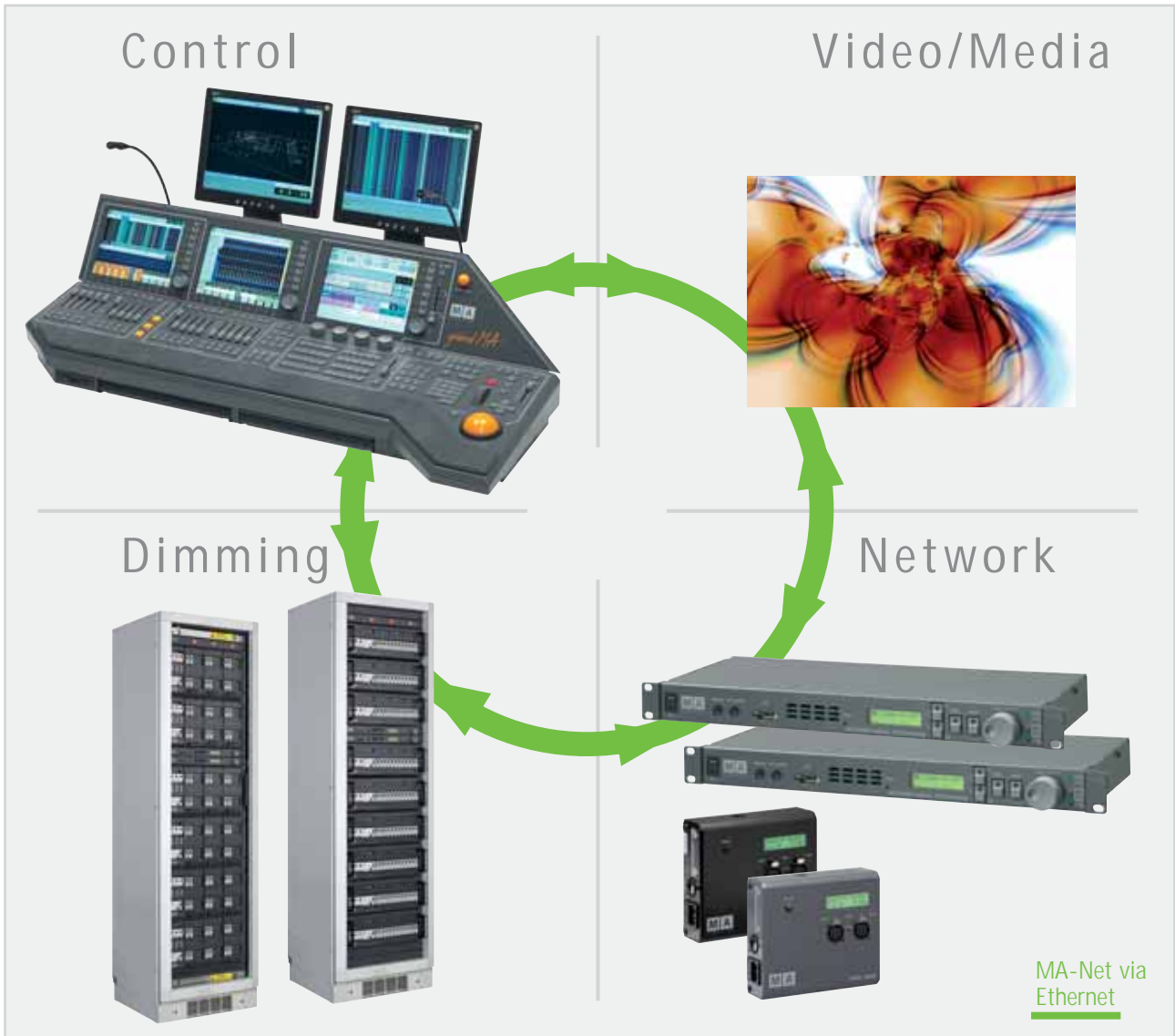
Next to the products and system elements, MA Lighting offers a variety of further reknown products for control, dimming and DMX processing. They are all extremely reliable and many of them marked milestones. Among them are the Scancommander and Lightcommander series as well as the popular touring dimmers which are now also available in a special wall-mount version.

Schematic drawing of a integrated MA system for control, video, dimming and networking

Control Booth

Control (Main console)

Control (Backup)

Projection Booth

grandMA video inside

MA mediaPC (Media Server)

2Port Node

Switch

Any DMX console as Control of Executors

2Port Node

Projector

Lightcommander (or any DMX console) as Control of Executors

Foyer/ Studio Stage

2Port Node

DMX equipment

Lightcommander (or any DMX console) as Control of Executors

Auditorium

MA-Net

Control (Rehearsal Console)

NSP as Network interface Auditorium

Terminals

Chief Electrician

grandMA 3D for Visualizing/Monitoring/ Live-Access/Lighting Plans

Dimmer Room

Digital Dimmer dimMA

Switch

grandMA remote

MA-Net

Stage

NSP as Network interface Stage

DMX equipment

NSP as Network interface Fly Floor/Gallery

DMX equipment

Mobile Dimmer

Lightcommander (or any DMX console) as Control of Executors

2Port Nodes

Stage Electrician

2Port Node

grandMA onPC for Monitoring

Any DMX console as Control of Executors

MA-Net via Ethernet

CAN-bus

DMX 512-A

VGA

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grandMA
System Integration

- Total control of Dimmers, Effects, Moving Lights, LEDs, and Media Servers
- Intuitive programming as well as fast and direct access
- Completely configurable console and views for every application: Theatre, TV, Concert Touring, Architectural

- Nimble control of LED fixtures
- Bitmap Effects
- Matrix-Layout

- Thumbnail preview of the Media Server Content
- Scaleable and assignable views

- 100 MBit MA Net for frame-synchronous, real-time control and playback
- Div. show protocols in parallel
- Ethercon socket (option)

- DMX directly from the console
- Moving Lights, Conventionals, LED, Media Servers etc.

grandMA onPC   grandMA ultra-light   grandMA replay unit   grandMA light   grandMA full-size

Parameter Expansion

- Up to 64 DMX universes per session, using NSPs
- Decentralized Signal Processing and Distribution

Signal Distribution

Dimmer Integration

- Configuration via console
- Feedback
- Backup / Master / Slave

Network Dimmer

grandMA video

Multi-User and Backup

MA Networking

User Profiles

Preprogramming and Visualisation

- Multi-User Environment
- Tracking Backup
- Up to 32 stations per session

FTP Showfile Server

Switch

〉〉

Remote Control

Singapore National Day Parade 2008; Lighting Design: Paul Collison; Photo: ©Paul Collison

Control

Welcome to the Family
same same... but different!

Complete system solution

- Incl. motorized faderwing, dedicated software tools and powerful network components

Same system philosophy

- Different hardware solutions but one software, one showfile, one network environment per series

Compatibility

- grandMA2 can read 'series 1'-showfiles (upward compatibility)

- Special 'series 1'-mode to run grandMA2 consoles in 'series 1'-sessions (downward compatibility)

- 'Series 1' will still be available and further developed in the future

Same command line

- Absolutely identical syntax as in grandMA 'series 1'

- All commands / functions accessible via command line

grandMA2 faderwing

grandMA2 full-size

grandMA2 light

grandMA2 ultra-light

grandMA2

Distinctive characteristics and remarkable improvements

- Up to 65,536 parameters per session in connection with MA NPUs (up to 256 DMX universes)

- Up to 32 sessions possible; 200 stations per session

- All command keys stay in the same place with the different consoles

- Enhanced multi-user mode; enhanced user-interface

- Additional command screen built in; SVGA 9" multi-touch*

- Renowned but "cleaner" grandMA software, newly designed views

- Intuitive programming control

- Improved hardware, stylish finish

- Diagnostic tools / online help via F1

- Built in keyboard drawer* (grandMA2 full-size and grandMA2 light)

*Patent pending

grandMA2 replay unit

Network Processing Unit (NPU)

Welcome to
the Family

The grandMA consoles are the core of the fully integrated MA system. This product family offers six different hardware platforms and provides immediate solutions ready for all kinds of applications – including theatres, musical events, concert touring, television, clubs, amusement parks or cruise ships. The grandMA consoles are able to control – in the most elegant manner – moving lights, conventional lights, and effects, as well as LEDs and video – even when working in real time with maximum channel count. Additionally MA offers powerful tools like the media server grandMA video which bridge the lighting and video worlds. Direct access to media servers from the grandMA console is now as simple as accessing a fixture. The grandMA 3D software is capable of real-time rendering visualization. The reliable and proven operational philosophy allows a direct, flexible and intuitive way of working.

MAIN FEATURES:

- Same software for console compatibility: one system – one operating philosophy
- Direct and fast access; real-time control for up to 64 DMX universes (16,384 parameters)
- Completely configurable for every application: Theatre, TV, Concert Touring, Entertainment, etc.
- Elegant programming and control of moving lights, dimmers, LEDs, effects and media servers
- Extensive networking functionality including Multi-User, Backup, Parameter Expansion, Remote Control*
- Mature software and hardware – extensively field tested – provide unmatched stability and reliability

      * Does not apply to the grandMA micro/pico.

THE CONSOLES:

grandMA full-size

grandMA light

grandMA replay unit

grandMA full-size	grandMA light	grandMA replay unit
2,048 HTP- or LTP-parameters (4,096 with expansion chip), 4 direct DMX outputs	2,048 HTP- or LTP-parameters (4,096 with expansion chip), 4 direct DMX outputs	2,048 HTP- or LTP-parameters (4,096 with expansion chip), 4 direct DMX outputs
Full networking performance and expansion for up to 16,384 parameters (32,768 channels; 64 DMX universes)	Full networking performance and expansion for up to 16,384 parameters (32,768 channels; 64 DMX universes)	Full networking performance and expansion for up to 16,384 parameters (32,768 channels; 64 DMX universes)
3 internal, high-resolution TFT color touch screens	1 internal, high-resolution TFT color touch screen	5 faders, 15+5 executor buttons (on 128 pages)
2 external SVGA connectors	2 external SVGA connectors	1 external SVGA connector
20 motorized faders, 60+40 executor buttons (on 128 pages)	10 motorized faders, 30+20 executor buttons (on 128 pages)	19" rack-mount
Keyboard and mouse included	Uninterruptable Power Supply (UPS) built-in	Uninterruptable Power Supply (UPS) built-in
Uninterruptable Power Supply (UPS) built-in		

SOFTWARE SOLUTIONS:

- ■ Comprehensive software for standard PC hardware
- ■ Integrated solutions with bi-directional data exchange
- ■ Free software downloads: www.malighting.com

grandMA remote

- ■ *Powerful software for PDAs as well as iPod touch/iPhone*
- ■ Remote Control for all grandMA consoles
- ■ All grandMA functions directly accessible
- ■ Up to six remotes per console*
- ■ Individual programmer (command line) and cue lists per remote

* Does not apply to the grandMA micro/pico.

grandMA 3D

- ■ *Free pre-programming studio*
- ■ 3D visualizer
- ■ Easy set-up and visualization of 3-dimensional stage layouts
- ■ Direct access to fixtures
- ■ Real-time rendering
- ■ Show-file Backup

grandMA onPC

- ■ Both offline editor or live control – also in Multi-User sessions*
- ■ Optimised for fast use and direct access to all grandMA functions
- ■ For standard PCs and notebooks, or tablet PCs with touch screen
- ■ Powerful show controller or backup system for smaller applications
  - • 4,096 HTP- or LTP-parameters (using 2 NSPs)
  - • 2,048 HTP- or LTP-parameters (using 1 NSP)
  - • 1,024 HTP- or LTP-parameters (using the 2Port Node onPC PRO)
  - • 512 HTP- or LTP-parameters (using the 2Port Node onPC)

grandMA video

- ■ *PC-software for controlling videos, graphics and 3D-objects in real-time*
- ■ Complete integration of video and image projections as part of light shows and designs
- ■ Videos, graphics and 3D objects are freely scaleable with multiple simultaneous full effects capabilities such as positioning, coloring, scaling etc.
- ■ Dedicated software for grandMA consoles, completely integrated in the network protocol
- ■ Easy to use with minimum set-up time
- ■ Optimized for 'off-the-shelf' PC hardware

New: ultra-light with 2,048 parameters

grandMA ultra-light

- ■ 2,048 HTP- or LTP-parameters, 2 direct DMX outputs
- ■ Full networking performance and expansion for up to 16,384 parameters (32,768 channels; 64 DMX universes)
- ■ 1 internal, high-resolution TFT color touch screen
- ■ 1 external SVGA connector
- ■ 10 faders, 30+20 executor buttons (on 128 pages)

grandMA micro

- ■ Stand-alone grandMA
- ■ 1,024 channels, 2 direct DMX outputs
- ■ Software- showfile- and operation-compatible with all grandMA consoles
- ■ Basic network performance
- ■ 1 internal, high-resolution TFT color touch screen
- ■ 10 faders, 10+20 executor buttons (on 128 pages)

grandMA pico

- ■ Stand-alone grandMA, optimized for smaller theatres
- ■ 1,024 channels, 2 direct DMX outputs
- ■ Software- showfile- and operation-compatible with all grandMA consoles
- ■ Basic network performance
- ■ 1 internal, high-resolution TFT color touch screen
- ■ 5 faders, all important command buttons

grandMA
more than just a lighting console

The grandMA range combines experienced operational structures, nimble design and first-class quality combined with innovative ideas and modern technology. It is a software-oriented system which is aggressively developed in response to demands of its users. Via free software updates, the extent of functions is constantly being increased and the highest possible reliability is guaranteed. **Find out more: www.malighting.com**

Stable Hardware for Optimal Handling

- Reliable operation system (VXWorks) with large hard disk
- Nearly unlimited capacity for presets, cues, cue lists and effects
- Integrated, high-resolution color touch screens (10.4") with TFT-Active-Matrix Technology and extremely wide viewing angle
- Motorized faders for fast access when changing pages*
- Uninterruptable Power Supply (UPS)*

Flexible and Intuitive Operation

- Logically structured console layout
- Completely configurable console for any application: theatre, TV, concert touring, entertainment, etc.
- Ergonomic and flexible operating interface
- Show file compatibility within the grandMA range

*Does not apply to the grandMA ultra-light and grandMA micro/pico.

Direct Access and Delay-Free Signal Output

- Instant Live Access from any point in the software
  – without predefined navigation structure

- Real-time performance with up to 16,384 parameters (via 16 NSPs)

- 200 individual views per touch screen and 128 pages
  for executor-faders and buttons

- Comprehensive fixture library, easy creation of custom fixtures

Reliability and Functionality guaranteed: grandMA Software

grandMA means fast, direct and reliable programming and control of shows. Via regular updates the grandMA desk software is enhanced with new functions so that the powerful system is constantly improving. All touch displays and menus are characterized by uniform design and consistent structure to provide clear and simple working options for beginners as well as experienced users.
You can find the latest software downloads at: www.malighting.com

Network Connection

Bitmap Effects

Fixture Setup

grandMA – the DVD

grandMA – the DVD is invaluable as a reference library for the grandMA system, covering all consoles in the range. It contains a Quick Start introduction, and has advanced tutorials so you can work at your console or on the off-line software while viewing the DVD. The DVD also contains software downloads, manuals and other helpful documentation.

Order your DVD online: www.malighting.com

grandMA – Awards

A number of international awards for the grandMA range prove the highly innovative power of these products and indicate its excellent characteristic features.

Eddy Award USA

PLASA Product Excellence Award UK

Moreover:

- Special mention of grandMA at the LDI Awards 1999
- Special mention of grandMA video at the ShowTech Awards 2005

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grandMA
networking —

MA Lighting takes increasing user demands into account with our commitment and the power of innovation, and designs forward-thinking solutions. The grandMA product range and integrated systems have established new international standards. With the comprehensive network functionality of the grandMA range available today one can envision limitless potential for future lighting technology.

Networking is a new dimension in the lighting industry. Therefore new and innovative ways, innovative ways need to be used to keep the increasing need of DMX channels and controlling of different media solutions in account. Networking needs a new base of thinking and counting. For this reason the next pages explain the new way of control in comparison to the conventional way and its advantages.

grandMA Multi-User

With the unique multi-user functionality, up to 32 grandMA consoles* or PCs with grandMA onPC, grandMA 3D and grandMA video can be linked together to program or control one single show. Each console operates with its own independent screens and command line, while sharing their combined processing power to create the show. Software updates are possible across the whole network via Ethernet. 32 of these sessions can be started in just one physical network.

This means that every single operator can control the complete show or just a sub-section from his console. Also each console can share six independent remote PDAs (grandMA micro / pico only one remote). This gives a totally new meaning to "multi-user" programming. For example in a TV show different operators work on the same show file. One operator may be controlling the camera lights (key lights), one controlling the moving-lights, one controlling some LEDs and another operator controlling the grandMA video. This gives a new meaning to the word cross-networking, especially to the world of media.

- Simultaneous programming and control of shows with up to 32 consoles* or other components online offers sophisticated Backup and Control solutions
- Control of parameters, cues, etc. within virtual partitioned areas ("Worlds")
- Customized preferences for several operators incl. individual screen layouts ("User Profiles")
- Auto-save of show file in real-time within the whole network; parallel backup also at FTP-Server
- Hassle-free disconnection and reconnection of network sessions without requiring reset – but with show upload
- Master/Slave-assignment within the network via priorities

* Does not apply to the grandMA micro/pico.

grandMA Ethernet Connectivity

	Multi-User Playback Tracking Full Tracking Backup ('Session-Mode')	Remote Control (independent from Session)	grandMA 3D grandMA video	dimMA	FTP-File Server (independent from Session)	Midi Show Control (independent from Session)
grandMA full-size grandMA light grandMA replay unit	32 Stations (incl. Master)[1]	6 Remotes per Console	•	•	•	•
grandMA ultra-light	32 Stations (incl. Master)[1]	6 Remotes per Console	•	•	•	•
grandMA micro/pico	only 'stand alone mode'	1 Remote	•	•	•	•
grandMA onPC	32 Stations (incl. Master)[1]	6 Remotes per onPC/offline	•	•	•	•

[1] A station can be any console of the grandMA range, incl. grandMA onPC as Backup   • = supported
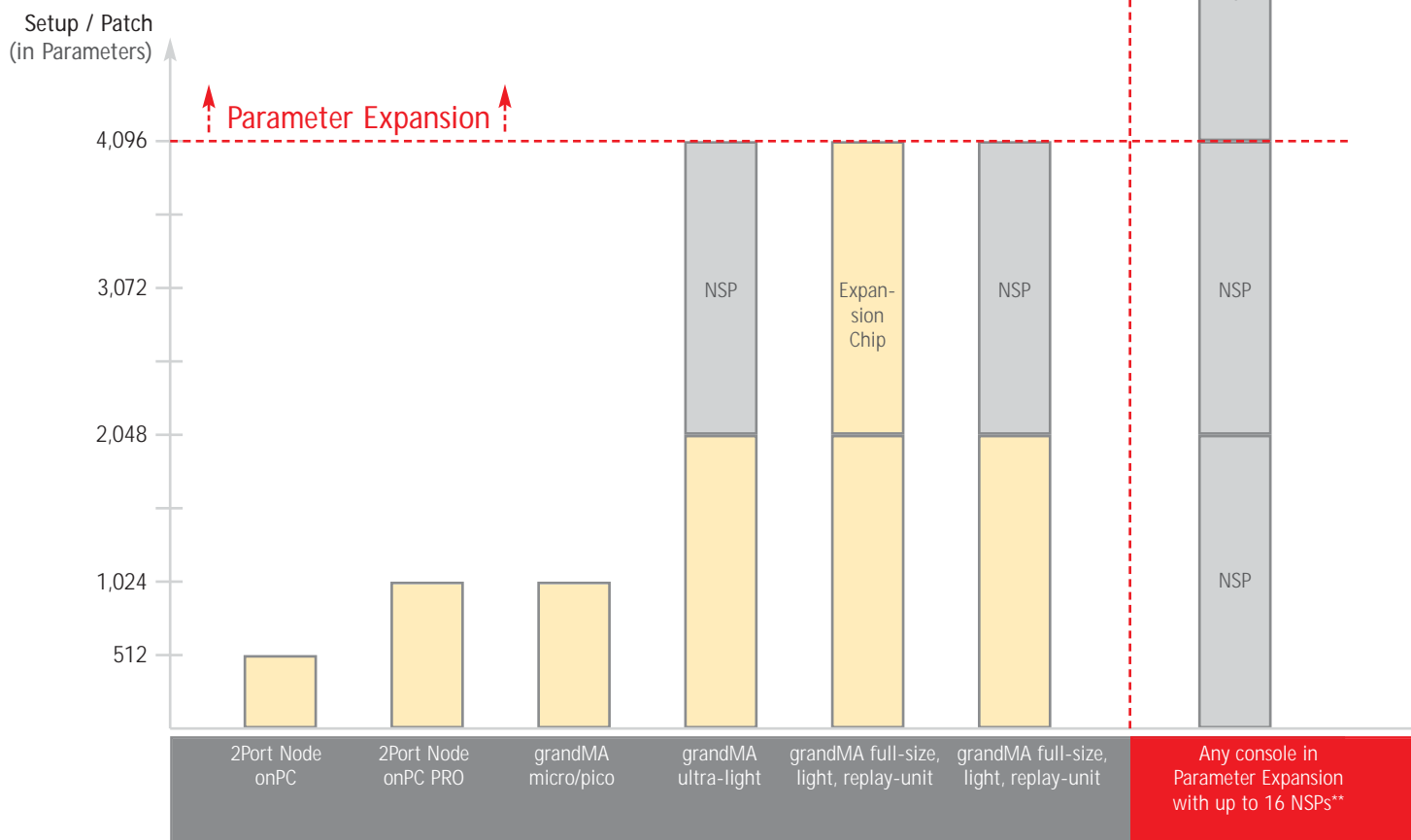
grandMA
networking –
Parameter Expansion

The highly developed networking capability is one of the most important elements of the grandMA system* and allows for, among other things, channel expansion up to 64 DMX universes. Different types of network protocols can be used in the grandMA system. Using the MA-Net protocol exclusively ensures stability and synchronicity of DMX operations in real time without any delays – even at maximum capacity.

- Control for up to 16,384 parameters (64 DMX universes) via a stand-alone grandMA or a Multi-User environment
- No compromise in performance through external channel processing
- Up to 16 Network Signal Processors (NSPs) to use as nodes
- Shared Usage of grandMA remote, grandMA 3D, grandMA onPC/offline, grandMA video

grandMA Parameter Handling

To control more than 4,096 parameters, NSPs must be used to calculate the additional DMX channel data. Using NSPs within a network means that data processing is now decentralized over Ethernet. The use of NSPs increases data processing speed and capacity for better performance over the whole system. In other words: The bigger the whole system is, the higher is the performance. Many combinations are possible.

If any help is needed to design a large networking system, please contact our local distributor or the technical service.

Setup / Patch (in Parameters)

Parameter Expansion

| 4,096 |
| 3,072 |
| 2,048 |
| 1,024 |
| 512 |

| 2Port Node onPC | 2Port Node onPC PRO | grandMA micro/pico | grandMA ultra-light | grandMA full-size, light, replay-unit | grandMA full-size, light, replay-unit | Any console in Parameter Expansion with up to 16 NSPs** |

(bars: grandMA ultra-light — NSP; grandMA full-size light replay-unit — Expansion Chip; grandMA full-size light replay-unit — NSP; Any console — NSP, NSP, NSP)

*Does not apply to the grandMA micro/pico   ** except grandMA micro/pico; grandMA onPC only as Backup

The New Way of Counting: Channels or Parameters

The grandMA calculates internally all functions (parameters) in 16 Bit resolution and processes those – depending on the application – as single DMX channel in 8 Bit resolution (e.g. brightness) or as two DMX channels per function in 16 Bit resolution (e.g. pan and tilt). A maximum of 16,384 parameters can be distributed in one Multi-User-environment, while up to 32,768 DMX channels (64 DMX lines, 16 NSPs) may be required for their processing. One parameter inside the console will always stay the same (e.g. dimmer, pan, tilt, gobo, etc.), but on the output it can vary due to the resolution of the fixture. This means that one parameter can be an 8 Bit or a 16 bit DMX channel. That's the reasons why 4,096 parameters can require more than 8 DMX universes!

New: ultra-light with 2,048 parameters

grandMA DMX output		Up to 4,096 Parameters			Parameter Expansion: Up to 16,384 Parameters
DMX Output directly at the console and/or via Art-Net, Pathport, Port All, ETC Net2, MA NSPs or 2Port Nodes		no NSP	w/1 NSP	w/2 NSPs	1 - 16 NSPs
grandMA full-size grandMA light	DMX Universes (max.)	4(8)[1]	8(12)[1]	12(16)[1]	4 - 64
grandMA replay unit	DMX via various Ethernet protocols[2]	4(8)[1]	8(8)[1]	8(8)[1]	8
	DMX via ETC Net2[3]	4(8)	8(12)	12(16)	4 - 64
grandMA ultra-light	DMX Universes (max.)	4[4]	8	12	4 - 64
	DMX via various Ethernet protocols[2]	4	8	12	8
grandMA micro/pico	DMX Universes (max.)	2	./.	./.	./.
	DMX via various Ethernet protocols[2]	2	./.	./.	./.
grandMA onPC	DMX Universes (max.)	./.	4	8	8
	DMX via various Ethernet protocols[2]	./.	./.	./.	./.
Performance		**	***	****	*****

[1] With Expansion Chip inserted. Four DMX-Outputs at the console; max. DMX output only via various Ethernet protocols.

[2] Free assignable, but parallel to console DMX. Supported ethernet protocols are Art-Net, Port All, Pathport and ETC Net2

[3] Dongle required!
[4] Two DMX-Outputs at the console

./.= not possible

Multi protocols on grandMA – now with ETC-Net2

With the implementation of a special chip-dongle into your grandMA full-size, light or replay unit your grandMA console will be able to speak ETC-Net2. This dongle is available free of charge but needs to be requested by MA in order to take into consideration that those installations needs to be carefully configured.

grandMA is able to output all parameters over Ethernet. The console speaks different protocols at the same time. Fully implemented are: MA-Net and ETC-Net2 (both max. 64 DMX universes / 16,384 parameters*) further there are Art-Net / Pathport / Portall. Maybe more protocols will come up in the future!

*Due to the mode (parameter expansion or not)

grand**MA** *full-size*

- Real-time control for up to 64 DMX universes (Expansion Mode)
- Extensive networking functionality incl. Multi-User, Backup, Parameter Expansion, etc.
- 2,048 HTP- or LTP-parameters built-in (4,096 with expansion chip) in stand-alone mode
- 3 internal, high-resolution TFT color touch screens

- 2 external SVGA connectors
- 20 motorized faders, 60+40 executor buttons (on 128 pages)
- Keyboard and mouse included
- Uninterruptable Power Supply (UPS) built-in

The grandMA full-size is the extensive integration of conventional lighting control technology and moving light control in one console – the reliable operating philosophy has now been further developed and transferred to the fields of LED, visualisation and video.

The grandMA full-size is the original console in the range providing a truly flexible and comfortable programming and operating environment. It is also the largest console, capable of controlling huge numbers of devices in an elegant manner. Three color touch screen displays, two external displays, twenty motorized faders, 60+40

physical playback buttons (on 128 pages), an internal uninterruptible power supply and 2,048 DMX channels on-board, expandable to 4,096 DMX channels using an upgrade chip, makes this a luxurious environment for any console programmer. Combined with free visualization software, support for up to six remotes and 16,384 parameters (32,768 channels) with additional hardware for DMX universe expansion – the MA Network Signal Processor, the grandMA is not just the largest console of the range, but a large console in stature and features.
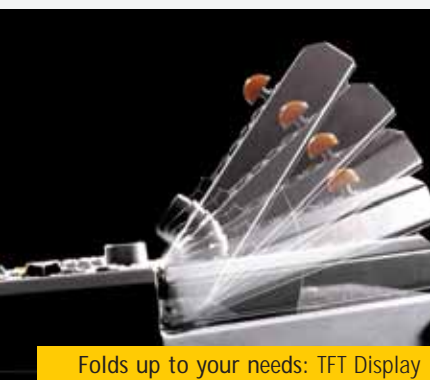
Folds up to your needs: TFT Display

TFT Display

- Three full colour TFT touch displays 10,4" with TFT-Active-Matrix Technology
- Brilliant contrast and wide viewing angle

Easy Handling: Trackball & Level Wheel

Trackball & Level Wheel

- King size trackball for precise working
- Built-in digital level wheel for dipless intensity control

Flexible and generous: connectivity

Connections

Output:

- 4 DMX-512A-connections, a MIDI-interface and a connection to the 10/100 Base-T/TX Ethernet
- SVGA connection for two additional monitors and a service monitor

Input:

- DMX Input signal, MIDI, SMPTE, Sound-to-Light and voltage controlled switching inputs (0-10V)

Delivered with built-in keyboard, power cable, 2 LED-goose necks, dust cover, English Manual and grandMA – the DVD. Without monitor.

We recommend to purchase the console with its robust flightcase to avoid any damages during transportation.

grandMA – the DVD

grandMA – the DVD is invaluable as a reference library for the grandMA system, covering all consoles in the range. It contains a Quick Start introduction, and has advanced tutorials so you can work at your console or on the off-line software while viewing the DVD. The DVD also contains software downloads, manuals and other helpful documentation.

Order your DVD online: www.malighting.com

Art. No.	Article
120301	grandMA full-size Console
120312	Expansion up to 4,096 Channels
120307	grandMA Remote Control Package
130101	NSP (Network Signal Processor), 110 V - 240 V
120330	grandMA video, incl. Dongle for 1 Video Station
129712	Mini-Keyboard PS2 for all grandMA and NSP, USA
120315	External Mouse, 3 Buttons
120310	Dust Cover; spare
120342	LED Desklamp; spare
121008	Flightcase (incl. wheels)

Art. No.	Dimensions (width x height x depth)	Weight
120301	1200 x 150 x 670 mm	47 kg
	47.3 x 5.9 x 26.4 inch	104 lbs

MA Lighting consoles now equipped with LED gooseneck desk lamp

Since start of 2005, all MA Lighting consoles have been technically upgraded and are now delivered with a specially developed LED gooseneck desk lamp. These lamps are of a better quality and brighter than the previous model because of their two special-LEDs and offer a string of advantages, a maximum service life and a bright, tungsten-similar light output. The LED gooseneck desk lamp can also be purchased alone.

grandMA
light

- Real-time control for up to 64 DMX universes (Expansion Mode)
- Extensive networking functionality incl. Multi-User, Backup, Parameter Expansion, etc.
- 2,048 HTP- or LTP-parameters (4,096 with expansion chip) in stand-alone mode
- 1 internal, high-resolution TFT color touch screen
- 2 external SVGA connectors
- 10 motorized faders, 30+20 executor buttons (on 128 pages)
- Uninterruptable Power Supply (UPS) built-in

The grandMA light is, essentially, a compact version of the full-size grandMA console. One color touch screen display, two external displays, ten motorized faders, 30+20 physical playback buttons (on 128 pages), an uninterruptible power supply and 2,048 DMX channels on-board, expandable to 4,096 DMX channels using an upgrade chip, still makes this a luxurious environment for any console programmer, but in a compact size. An ideal backup console to the full sized grandMA, the grandMA light is a powerful yet portable console that a single person can carry. The grandMA light has free visualization software, support for up to six remotes and up to 16,384 parameters with additional hardware for DMX universe expansion via NSP. A "light" grandMA console in name only.

Delivered with LED-goose neck, dust cover, power cable, English Manual and grandMA – the DVD. Without monitor, flightcase, keyboard and mouse.

Ideal position and viewing angle

Art. No.	Article
120302	grandMA light Console
120312	Expansion up to 4,096 Channels
120307	grandMA Remote Control Package
130101	NSP (Network Signal Processor), 110 V - 240 V
120330	grandMA video, incl. Dongle for 1 Video Station
129712	Mini-Keyboard PS2 for all grandMA and NSP, USA
120315	External Mouse, 3 Buttons
120313	Dust Cover; spare
120341	LED Desklamp; spare
121009	Flightcase (excl. Wheels)

Art. No.	Dimensions (width x height x depth)	Weight
120302	730 x 120 x 510 mm	20.0 kg
	29 x 5 x 20 inch	44.1 lbs

grandMA
replay unit

- Real-time control for up to 64 DMX universes (Expansion Mode)
- Extensive networking functionality incl. Multi-User, Backup, Parameter Expansion, etc.
- 2,048 HTP- or LTP-parameters built-in (4,096 with expansion chip) in stand-alone mode
- 5 faders, 15+5 executor buttons (on 128 pages)
- 1 external SVGA connector
- 19" rack-mount
- Uninterruptable Power Supply (UPS) built-in

The grandMA replay unit is a full grandMA console in a three unit high, rack-mounting chassis. One external display, five manual faders, 15+5 physical playback buttons (on 128 pages), an internal uninterruptible power supply and 2,048 DMX channels on-board, expandable to 4,096 DMX channels using an upgrade chip, makes for more than just a simple show control unit. The grandMA replay unit comes with free visualization software, support for up to six remotes and up to 16,384 parameters with additional hardware for DMX universe expansion via NSP. It can act as a stand-alone con-

sole, a triggered show control unit and as a backup for another grandMA console from the range as well as be part of a Multi-User programming environment. The grandMA replay unit is not just a replay box.

Delivered with uninterruptable Power Supply (UPS) built-in, power cable, English Manual and grandMA – the DVD.

Rear connections

Art. No.	Article
120305	grandMA replay unit
120312	Expansion to 4,096 Channels
120307	grandMA Remote Control Package
130101	NSP (Network Signal Processor), 110 V - 240 V
120330	grandMA video, incl. Dongle for 1 Video Station
129712	Mini-Keyboard PS2 for all grandMA and NSP, USA
120315	External Mouse, 3 Buttons
ACD-4HE	Flightcase (19" 4 U)

Art. No.	Dimensions (width x height x depth)	Weight
120305	485 x 130 x 430 mm	11.0 kg
	19 x 5 x 17 inch	24.3 lbs

grandMA
ultra-light

- Real-time control for up to 64 DMX universes (Expansion Mode)
- Extensive networking functionality incl. Multi-User, Backup, Parameter Expansion, etc.
- 2,048 HTP- or LTP-parameters in stand-alone mode
- 1 internal, high-resolution TFT-color touch screen
- 1 external SVGA connector
- 10 faders, 30+20 executor buttons (on 128 pages)

New: ultra-light with 2,048 parameters

The grandMA ultra-light is a hardware reduced version of the grandMA light console that has all of the software features of the larger consoles. These features include: one color touch screen display, one external display, ten manual faders, 30+20 physical playback buttons (on 128 pages), 2,048 DMX channels, free visualization software, support for up to six remotes and all the software features of the larger grandMA and grandMA light consoles including DMX universe expansion with up to 16,384 parameters (32,768 DMX channels or 64 DMX universes) via NSPs.

The grandMA ultra-light brings all the user programmability of a top of the line console to some of the smallest shows. High-end features such as Multi-User programming and backup ability are also included with the grandMA ultra-light, making it the perfect console for professional programmers working on smaller or budget constrained productions or a smaller console as part of a larger system.

Delivered with LED-goose neck, dust cover, power cable, Manual and grandMA – the DVD. Without monitor, flightcase, keyboard and mouse.

Rear connections

Art. No.	Article
120303	grandMA ultra-light Console
120307	grandMA Remote Control Package
130101	NSP (Network Signal Processor), 110 V - 240 V
120330	grandMA video, incl. Dongle for 1 Video Station
129712	Mini-Keyboard PS2 for all grandMA and NSP, USA
120315	External Mouse, 3 Buttons
120316	Dust Cover; spare
120341	LED Desklamp; spare
121021	Flightcase (excl. Wheels)

Art. No.	Dimensions (width x height x depth)	Weight
120303	635 x 157 x 490 mm	12.9 kg
	25 x 6.2 x 19.3 inch	28.5 lbs

grandMA micro

- Stand-alone grandMA console
- Real-time control for up to 1,024 DMX channels
- Showfile-compatibility within the grandMA range
- Comprehensive PC-compatible freeware available, incl. grandMA remote and grandMA 3D
- 1,024 HTP- or LTP channels
- 1 internal, high resolution TFT-color touch screen
- 10 faders, 10+20 executor buttons (on 128 pages)

The grandMA micro is the smallest console in the range. One color touch screen display, ten manual faders, 10+20 physical playback buttons (on 128 pages), 1,024 DMX channels, free visualization software and support for one remote make the grandMA micro the perfect introductory console, since it utilizes the same syntax and many of the same windows and menus as the larger consoles. However, even though it does not support network functionalities such as Multi-User, parameter expansion or tracking backup, its tiny footprint and highly competitive price tag allows for grandMA control in environments not normally associated with top of the line control systems.

Delivered with LED-goose neck, dust cover, power cable, Manual and grandMA – the DVD. Without monitor, trackball, flightcase, keyboard and mouse.

Stand-alone desk with multiple control options

Art. No.	Article
120304	grandMA micro Console
120307	grandMA Remote Control Package
120330	grandMA video, incl. Dongle for 1 Video Station
129712	Mini-Keyboard PS2 for all grandMA and NSP, USA
120315	External Mouse, 3 Buttons
120502	External Trackball
120325	Dust Cover; spare
120341	LED Desklamp; spare
121022	Flightcase (excl. Wheels)

Art. No.	Dimensions (width x height x depth)	Weight
120304	480 x 150 x 435 mm	8.1 kg
	18.9 x 5.9 x 17.1 inch	17.9 lbs

grandMA
pico

- Stand-alone grandMA – optimized for smaller theatres
- Real-time control for up to 1,024 DMX channels
- Showfile-compatibility within the grandMA range
- Comprehensive PC-compatible freeware available, incl. grandMA remote and grandMA 3D
- 1,024 HTP- or LTP channels
- 1 internal, high resolution TFT-color touch screen
- 5 faders, all important command buttons

The grandMA pico is identical to the grandMA micro. But with five Playback faders, it also has many essential command buttons especially needed in the theatre style of programming. One color touch screen display, five manual faders, five physical playback buttons (on 128 pages), 1,024 DMX channels, free visualization software and support for one remote make the grandMA pico the perfect introductory console for smaller theatres, since it utilizes the same syntax and many of the same windows and menus of the larger consoles. Even though it does not support network functionalities such as Multi-User, parameter expansion or tracking backup, its tiny footprint and highly competitive price tag allows for grandMA control in environments not normally associated with top of the line control systems.

Delivered with dust cover, LED-goose neck, power cable, manual and grandMA – the DVD. Without monitor, trackball, flightcase, keyboard and mouse.

Many command buttons – optimized for theatre style of programming

Art. No.	Article
120309	grandMA pico Console
120307	grandMA Remote Control Package
120330	grandMA video, incl. Dongle for 1 Video Station
129712	Mini-Keyboard PS2 for all grandMA and NSP, USA
120315	External Mouse, 3 Buttons
120502	External Trackball
120325	Dust Cover; spare
120341	LED Desklamp; spare
121022	Flightcase (excl. Wheels)

Art. No.	Dimensions (width x height x depth)	Weight
120304	480 x 150 x 435 mm	8.1 kg
	18.9 x 5.9 x 17.1 inch	17.9 lbs

grandMA remote

- Convenient remote control for the grandMA range
- Bi-directional communication via wireless LAN
- Long distances and safe use with all grandMA consoles
- Up to 6 remote control units can be used with each console or station*

- Delivered as a complete package including iPod touch and wireless LAN access point
- Software is available free of charge from www.malighting.com or www.applestore.com

As moving lights are a standard in the market, the use of remote control units together with lighting control systems has become increasingly important. The solution of using a pocket PC or an iPod touch/iPhone connected across a network together with the grandMA console now offers several new operating possibilities. All important functions of the grandMA plus changes to the patching and the chat window can be accessed via the remote control. The grandMA remote can also be easily used with grandMA onPC.

The bi-directional communication between grandMA and the remote control makes it possible to show intensities and positions or attributes of moving lights in real-time. The grandMA remote software becomes a practical remote display. All members of the grandMA "family" support the use of the pocket PC, iPod touch or iPhone as a fully integrated designer's remote control. The grandMA remote can be connected to every single console or grandMA station in a multi-user system.

Up to six remote control units can be used with one console simultaneously.* The grandMA remote control package is delivered including iPod touch and a latest access point station - all ready to go. Updates can be downloaded from our website - www.malighting.com - for pocket PCs, and from www.applestore.com for the iPod touch and iPhone software.

Depending on the environment, distances from 60 up to 300 metres can be covered. Based on the IEEE 802.11b standard, multiple remote controls can share one access point, which establishes the LAN connection across the console network. It is also possible to set up a WiFi network with more than one access point covering the whole (and larger) areas.

* grandMA micro/pico support 1 grandMA remote

Art. No.	Article
120141	grandMA remote control package, sophisticated access point and iPod touch (8GB), incl. software

Lancom 54g

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grandMA
onPC

- Supports all functions of the grandMA on graphical PC display
- Optimised presentation and surface for using all grandMA function on your PC
- Ideal possibility to use it as grandMA live show controller or backup system in connection with the Network Signal Processor or 2Port Node onPC/onPC PRO*
- Communication via Ethernet with the grandMA in a Multi-User system is possible
- Can be used as user-friendly designer remote control for all grandMA consoles*
- grandMA onPC can be linked with the visualisation software grandMA 3D as well as with grandMA video

As a consequent further development of the offline editor grandMA onPC is a valuable tool for lighting designers and operators who are able to work with this software live.

The onPC software is not only a PC emulation of a complete grandMA console for the editing and processing of show data, but together with NSPs or 2Port Nodes onPC, it can also control up to 4,096 parameters live. The high performance PC software requires Windows® XP operating system. It plays back and displays show data and programs as if you were operating a real full console. The functionality as well as the displaying is the same as on all grandMA consoles, so that there is no need for "rethinking" or get to used to a new software.

Together with the visualization software grandMA 3D the grandMA onPC becomes a complete design studio that enables the efficient pre-programming of complete shows without using a real console. Additionally grandMA onPC can be linked via Ethernet with any grandMA console (with exception of the grandMA micro/pico) or the grandMA replay unit in a Multi-User network system. Thus it can read the shows of the consoles and put them easily into archives. With the possibilities of the Multi-User system the onPC can be used as a full featured lighting control desk for the programming of large shows or just as a comfortable desinger remote control with the same display as the main console.

The grandMA onPC software is available for a free download at www.malighting.com.

* Does not apply to the grandMA micro/pico.

General system requirements for grandMA onPC

- For the latest system requirements please have a look at our website: www.malighting.com.

Live-Control with NSP

grandMA
2Port Node onPC and onPC PRO

- Rig-mounted box version for flexible use in trusses or mobile applications
- MA 2Port Node onPC runs with grandMA onPC:
  - Powerful show controller for smaller applications
  - Handy backup solutions for reduced budgets
  - 512 parameters (2Port Node onPC) or 1,024 parameters (2Port Node onPC PRO)
  - DMX-in for fader wings or merging of DMX signals
- Clever tool for flexible DMX distribution on stages and in theatres, studios or clubs

- Integrated part of the grandMA system
- Speaks MA-Net and Art-Net (both 100 Mbit/s)
- Stand-alone use with MA-Net and any Art-Net system
- Runs with power over Ethernet or internal power supply
- Remote control of backlight and LEDs
- Easy, comfortable remote configuration incl. in/out assignment
- Also available for flushmount use in fixed installations

The MA 2Port Node onPC is the latest member of the grandMA family and supplements MA Lighting's product range for networking and integrated system solutions.

They address amongst others the need of theatres and rental companies to flexibly distribute DMX on stage or in rigs. If used standalone with grandMA onPC the 2Port Node onPC outputs also 512 parameters of DMX (1,024 parameters as 2Port Node onPC PRO) and becomes a powerful show controller for smaller applications. Also handy backup solutions become possible for reduced budgets. The "onPC" versions are available with integrated power supply, but they will also run with power over Ethernet, and thread to put a coupler as well as a safety connection point.

Two green LEDs will indicate if DMX traffic is generated or received. Both, DMX LEDs and Backlight, can be switched off remotely. The 'Finder Functionality' will give you an elegant solution and way of working – the console can indicate a chosen node by flashing the backlight, but also a button press on the MA 2Port Node onPC will indicate the chosen one in the console. With the 2Port Node onPC MA Lighting fulfils the need of Lighting Designers, Programmers and Operators to offer an additional tool within the grandMA family.

All MA 2Port Nodes are fully integrated into the grandMA family. That means easy, comfortable configuration incl. in/out assignment of each node from any grandMA console or onPC. It's also possible to use the nodes with other systems, because they speak MA-Net and Art-Net, both 100 Mbit/s, which can be chosen remotely.

The grandMA onPC software is available for a free download at www.malighting.com.

Art. No.	Article
130191	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, "EU version", 2x DMX in
130192	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, "EU version", 2x DMX out
130193	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, "EU version", 1x DMX in / 1x DMX out
130196	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, "US version", 2x DMX in
130197	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, "US version", 2x DMX out
130198	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, "US version", 1x DMX in / 1x DMX out

Art. No.	Dimensions (width x height x depth)	Weight
120304	160 x 145 x 50 mm	1.1 kg
	6.3 x 5.7 x 1.9 inch	2.3 lbs

Art. No.	Article
130171	2Port Node onPC PRO, 1,024 Parameters, Rig-mounted touring version incl. power supply, "EU version", 2x DMX in
130172	2Port Node onPC PRO, 1,024 Parameters, Rig-mounted touring version incl. power supply, "EU version", 2x DMX out
130173	2Port Node onPC PRO, 1,024 P., Rig-mounted touring version incl. power supply, "EU version", 1x DMX in / 1x DMX out
130176	2Port Node onPC PRO, 1,024 Parameters, Rig-mounted touring version incl. power supply, "US version", 2x DMX in
130177	2Port Node onPC PRO, 1,024 Parameters, Rig-mounted touring version incl. power supply, "US version", 2x DMX out
130178	2Port Node onPC PRO, 1,024 P., Rig-mounted touring version incl. power supply, "US version", 1x DMX in / 1x DMX out

grandMA 3D

- Real-time 3D visualisation of all important functions and effects of luminaires, moving lights & LEDs
- Bi-directional exchange of data with the grandMA consoles of all series – using the same setup
- Live and blind programming
- Follow mode for live-positioning of fixtures from the 3D to the console or vice versa
- Import of 3ds-files

- Multiple cameras are available that can be selected re-angled or repositioned during visualisation
- Multiple windows for visualisation of same scenarios in different viewing angles at the same time
- Record the visualisation as a video clip
- Pre-programming of a show just with grandMA onPC & grandMA 3D
- Precise and realistic reproduction of shadows & colour beams in realtime

MA Lighting's 'free' visualiser and pre-programming studio – the PC software grandMA 3D – is a unique user interface for the visualisation as well as the design of three-dimensional stage layouts in conjunction with any grandMA console or grandMA onPC.

grandMA 3D allows a straight forward design and set up of any custom stage or scenery layout with its 2D drawing facilities and a library of basic graphical elements. Multiple windows both in 2D or 3D view with any camera angle can be opened at the same time and will be updated live. All the stage elements can be positioned in x/y/z directions and can also be rotated around the various axes. Custom textures for the surface of these elements can be imported from any bitmap file or may be chosen from the built in library. Also video files in AVI format can be used as a texture and be controlled from any

grandMA console. Via DMX controlled position and rotational parameters for objects and cameras within 3D, any stage equipment can be moved within the scenery by the connected grandMA.

The grandMA 3D application runs as an independent station on an external PC in any grandMA multi-user network.

Most of the functions of the installed lights are remotely controlled by grandMA and can be programmed in live and blind. The follow mode can be used in grandMA 3D or in the grandMA stage view, a built in wireframe visualiser. This can save a lot of time and work within the pre-programming of complex shows or even when using moving lights as real follow spots.

Visualisation of the "Sydney Harbour Bridge", Australia

With grandMA 3D MA Lighting sets a new standard in pre-program-ming and visualisation and adds another unmatched advantage to its complete system solutions. The softwareautomatically takes over all relevant showfile information from the setup and displays what is needed. Even better the 3D environment is stored in the same show-file. It does not matter where you are and what type of console you are using or what equipment is there – you always have the full show-file with you!

The grandMA 3D Software for Windows® can be downloaded free of charge from our website www.malighting.com.

For the creation of complex stage models and as project support MA Lighting International offers a 3D modelling service. If you need more information about this service please contact your local distributor.

General system requirements grandMA 3D:

■ For the latest system requirements please have a look at our website: www.malighting.com.

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grandMA
video

New Release

grandMA video – the sMArt way of video control

With the integration of video, digital lighting, LED and visual media in shows and set-designs, new fields of entertainment technologies have evolved.

These are pioneering a new generation of lighting design and paving the way for a wide array of astonishingly creative ideas.

With grandMA video you are at the heart of these systems.

Designed to optimize and complement the MA-System, grandMA video easily and seamlessly bridges the worlds of lighting and video. grandMA video is a fully integrated element of the MA-Network and enables real-time control and quick, nimble programming of video content from any grandMA console. This powerful software just requires a standard computer running Windows® XP or Vista operating systems.

Due to MA Lighting's roots, it goes without saying that the grandMA video follows the demands of lighting designers and programmers. Direct and complete access to most media devices from any grandMA console is as simple as accessing a fixture.

- Bidirectional communication with the grandMA console
  - Minimum setup and configuration time required
  - Direct access to the full functionality of grandMA video from the console
  - Smart backup solution with just one additional grandMA video station
  - Internal synchronized output by the MA-Net – frame and DMX synchronous

- Multiple simultaneous full HD playbacks
- Dynamic colour key and alpha key
- Frame interpolation and smooth speed control
- Frame indexing
- X-file support for 3D objects
- Sound output
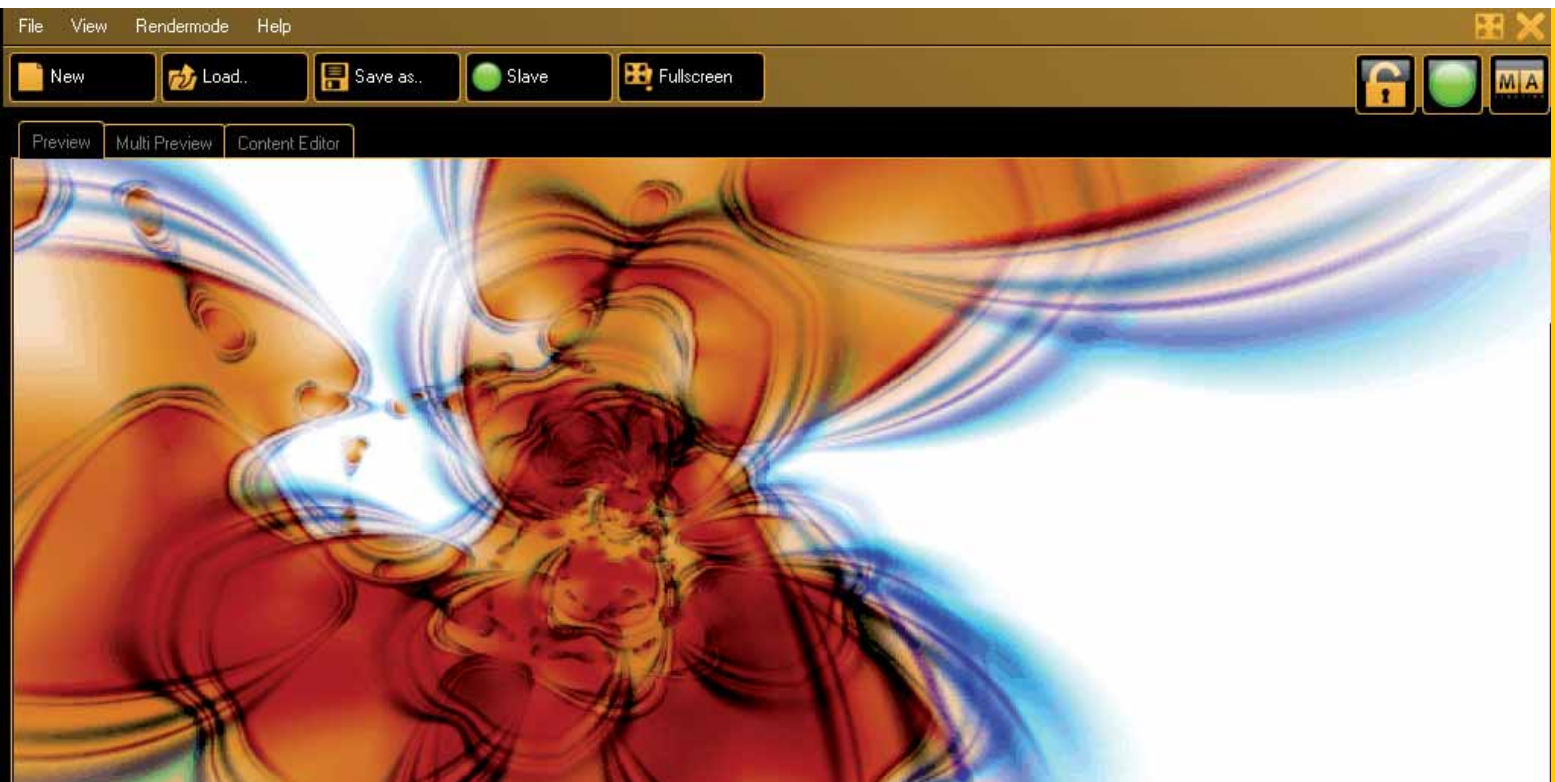
Feeling at home – our understanding of integration

grandMA video provides intuitive programming with the grandMA range of consoles as the user interface. In addition, grandMA video is an active part of the MA-Network.

This allows minimum setup and configuration time for the grandMA programmer due to the bidirectional communication between the console and the grandMA video software.

The network integration provides direct access to the whole functionality of grandMA video from any grandMA console, like content browsing, previewing movies and displaying the content as thumbnails in the presets. Moreover, grandMA video profits from all functions and features of the grandMA consoles that can be easily applied to the video parameter, such as colour picker or the effects. The MA-Net ensures the automatic synchronisation of all grandMA video applications within one session, and frame synchronicity of both lights and video.

But that's still not all. The clever integration allows a backup server to take over the show element of any other grandMA video stations in use. As the show information is distributed across the whole network, any grandMA video station can be assigned as any video fixture.

And, don't forget about the following: grandMA video allows you not only to save or backup the show to your laptop, but even to pre-program most of it wherever you are. Simply download the software – no dongle/licence required.

Another grandMA video station, e.g. your laptop at the FOH, allows any video fixture to be selected and used in the show – for easily over-viewing of all 3D-video-layer content. This FOH video station can also be used for blind programming the next cue without changing the current output – again: no need for a dongle!

- Up to 32 3D-video-layers with full effect capabilities
- Content upload without restarting the system
- FOH-Blind-Programming and content browsing directly from the console
- 4x video-in to integrate live cameras or other sources

- Horizontal and vertical softedge blending and keystone correction
- Dual Head output
- Effects such as blur, sepia, b/w, waves etc.; contrast, saturation, hue
- Extended pixelmapping functionality with Art-Net and MA-Net
- Incl. extensive media library

Pixel Mapper

With grandMA video in Pixel Mapper-mode it is possible to display video content on any DMX-Matrix. While video on plasma screens or video walls is caught in a defined ratio, LED fixtures can use all kinds of measurements. The picture can be aligned on pixels which don't have fixed aspect ratios.

Similar to the desk fixture types the attributes of the LED panels are defined in text files located in a folder of the grandMA video media server. LED fixtures can be easily created. Intensity and colour information of each video pixel is translated into DMX values and directly sent from the PC to the LED fixture via Ethernet using the Art-Net protocol. grandMA video allows for outputting 256 Art-Net universes – with only one system.

An invaluable feature is the possibility to change between Pixel Mapper-mode and "Standard"-mode from any grandMA console, says outputting video content via projectors or plasma screens.

Example of output

Screenshot of Pixel Mapper
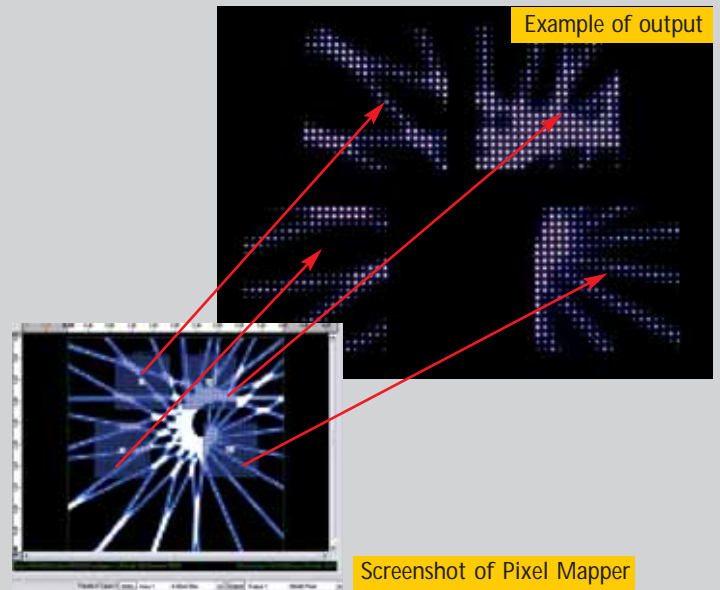
The Software Features in Detail

At its most basic level, grandMA video allows for the control of several still or moving images simultaneously. Videos and still images can be combined, mixed and controlled like a regular multi-parameter fixture by using any grandMA console. 3D-objects can be textured with videos or images and manipulated in multiple ways. For combining and mixing videos as well as still images, up to 32 3D-video-layers are available plus several master layers for keystoning, shapers and an additional layer for softedge controlling. All videos, still images and 3D-objects can be scaled, positioned, tiled, colored and manipulated.

Softedging

An advanced feature is the softedge blending function, used to assemble a seamless projection with multiple projectors in use. The softedge layer features four blades that can be positioned independently using one channel, while an additional channel is utilised to control the intensity of the blades. grandMA video supports this functionality for still images as well as video clips.

Keystoning

The keystone correction recalculates the image so that it is shown correctly aligned to the projection surface correcting the projector´s position. In addition to that the projection can be scaled across the X- and Y-direction to correctly distribute the content on the canvas.

3D-Objects

grandMA video offers the possibility of choosing any three dimensional object as a surface for video or still images. Cubes, cylinders, spheres, extruded logos or any other three-dimensional shape can be "textured" with complimentary images or videos. The position and orientation of these three dimensional objects are fully controllable from the grandMA console. You could start with a cube rotating and progress to a three-dimensional logo flying around, but from then on, you are only limited by your imagination.

4 x video input

grandMA video allows the input of four independent live video streams. So it becomes possible to integrate live cameras into the show or to simply use another device as a media player e.g. a DVD player. These video inputs can be handled as any other video clip, i.e. they can be scaled, rotated, tiled, colored and textured on any 3D-object. Whatever capture or playback device Microsoft Windows® detects and accepts can be assigned as a video input device. In the most basic case this could be a plug & play firewire camera up to the more professional solution with a capture card, e.g. DeckLink.

Multi Output

The grandMA video user interface is equipped with the helpful Multi Output: This menu provides an overview of the layers, the master layers – each for keystone and softedge – and the output layer showing the sum of all layers. It also allows the user to alter and control all channels. Within the layer windows the content or function (e.g. shaping) is shown and parameters and values can be accessed by using the control menu. Says, while one programmer works on the content, another programmer could do the keystoning and softedging for the output projections independently and in parallel.

18 MA mediaPC with the grandMA video software were used for EVA, El Gran Musical Argentino.

MA – the hardware solution

grandMA video is software based. The speed and capacity of the PC running the software directly influences the efficiency of the grandMA video software and by that the performance. The market asked for a reliable hardware solution for their grandMA video application which MA Lighting follows in offering complete system solutions for on-the-road-use.

Special requirements for TV productions

For TV productions your media server has to meet special conditions. The common broadcast signal is SDI - this could be required for the output of grandMA video to sync with the TV cameras. Scanconverters accepts a wide range of video input signals and process them into a number of different signal formats to meet the video requirements of virtually any application. MA recommends the following solutions:

➞ The Folsom ImagePRO-HD as a high performance video scaler, scan converter and switcher

➞ The TV-One C2-5200 Series as another standard converter

General system requirements grandMA video:

◼ For the latest system requirements please have a look at our website: www.malighting.com.

Art. No.	Article

For detailed information please feel free to contact us.
We gladly assist you.
You might also look in the dedicated grandMA video brochure that can be downloaded from our website www.malighting.com.
This brochure contains even more detailed information on grandMA video as well as system overviews, schematic drawings, etc.

MA
Lightcommander II

- Housing made of a robust steel-coated plate with solid side profiles
- Channel doubling in wide mode
- Live and blind mode for programming and modifying
- Master-Slave function and MIDI
- Sequences can be recalled via X-Fader in complete graphic presentation

- Storing of programmes on RAM card
- Softpatch with 255 DMX channels
- Chart flow of programmes with free eligible times
- Learn Speed button for direct input of the moving light rate

When considering control for modern lighting systems you may think that many consoles look similar to each other. Preset single channel faders, memory faders, page switches, moving light and programming section and then several special functions.

Only when having a closer look at the Lightcommander will it become clear why this MA lighting desk is one of the most sold lighting consoles worldwide in its class. Its list of helpful detailed solutions as well as the intuitive logical operating way of the console have maintained its popularity.

Features of the MA Lightcommander II 24/6 and 48/6 :
- solid, robust and reliable
- easy to understand
- fast and precise to operate
- flexible operating structure

The unit is delivered with keyswitch, desklamp, connection cable, dust cover and operating manual.

Lightcommander II 24/6

Art. No.	Article
120202	Lightcommander II 48/6
120201	Lightcommander II 24/6
120341	LED Desklamp
010205	Desklamp; spare
120501	Cue Card 256 KB
120603	Cue Card 128 KB
121001	Flightcase for Lightcommander II 24/6
121002	Flightcase for Lightcommander II 48/6
129923	Dust Cover (spare) for LC II 24/6
129924	Dust Cover (spare) for LC II 48/6
130502	-10 analogue Converter Kit LC for II 24/6
130503	-10 analogue Converter Kit LC for LC II 48/6

Fast System Configuration

The internal softpatch allows you to freely connect channels of the board with dimmer channels. To simplify this process, the selected dimmer will be switched on automatically. This saves you from having to write channel lists and makes the softpatch easy and effective. The 'BLIND' key turns this option off, allowing you to change patch during a show.

X-Fade

The X-Fade Section allows to recall preprogrammed scenes with individual In- and Outfade times per scene. 'DIPLESS X FADE' helps to avoid brightness drops by linearly crossfading between the old and new values. Using the 'GO' key, preprogrammed fade times or even the manual X fader, sequences with up to 99 steps can be recalled. Single scenes can be joined with chase effects. The 'GO–' key and the possibility to skip or insert steps allows direct access in playback mode.

Preview Modify

Besides the single channels that can be activated via the presets at all times, the 'PREVIEW MODIFY' function of the Lightcommander allows you to correct scenes even when already on stage. Further programs can be stored blindly via the channel LED during the show. Because of the well designed designation of user elements, only those functions will be blocked that are necessary to store the programs.

Art. No.	Dimensions (width x height x depth)	Weight
120202	1190 x 135 x 620 mm	24.0 kg
	46.9 x 5.3 x 24.4 inch	53.0 lbs
120201	740 x 135 x 620 mm	16.0 kg
	29.1 x 5.3 x 24.4 inch	35.3 lbs

Art. No.	Dimensions (width x height x depth)	Weight
130503	162 x 92 x 37 mm	1.0 kg
	6.4 x 6.6 x 1.5 inch	2.2 lbs
130502	162 x 92 x 37 mm	2.0 kg
	6.4 x 6.6 x 1.5 inch	4.4 lbs

MA
Lightcommander 12/2

- Guidance through the menu via LCD-display
- Channel doubling in wide mode
- Live and blind mode for programming and modifying
- Master-Slave function and MIDI
- Sound to Light-control with Memories and Chaser

- Storing on RAM card
- Softpatch with 99 DMX channels
- Chart flow of programmes with free eligible times
- Learn Speed button for direct input of the moving light rate

More than 7,500 Lightcommander consoles have been sold! This is conclusive proof of the outstanding quality of MA Lighting´s operating philosophy as well as for the whole product concept. All other MA desks are mainly developed for the medium- and high level show business. The quality of lighting control is not only characterized by the number of single channels.

Especially when working with only a small number of channels the creativity of the designer and the flexibility of the equipment are of paramount importance. The strongest point of the Lightcommander is its versatility. Due to its extensive special features the Lightcommander is not only used in discotheques, for Live-shows, but also in theatres and for interior lighting. The Lightcommander

has got all functions that the user requires when working with a MA lighting control desk:
- very user-friendly
- extensive special functions
- built-in LCD display for the documentation of current working steps
- excellent quality
- best support and fastest service

...as always all available at a very good price-performance ratio

Unit is delivered with connection cable and operating manual.


Lightcommander 12/2, 19" Version

Art. No.	Article
120204	Lightcommander 12/2 Pult version
120203	Lightcommander 12/2 19" version
120341	LED Desklamp
010204	Desklamp; spare
120501	Cue Card 256 KB
120603	Cue Card 128 KB
121006	Flightcase
129925	Dust Cover

| Art. No.	Dimensions (width x height x depth)	Weight
120204	530 x 90 x 340 mm	5.6 kg
	20.9 x 3.5 x 13.4 inch	12.3 lbs
120203	450 x 90 x 310 mm	5.3 kg
	17.7 x 3.5 x 12.2 inch	11.7 lbs

Free selection of working mode

The chaser section offers a broad variety of operation modes. During programming a chase, the encoder wheel can be used to test, delete or overwrite the already programmed steps. Programs can be recalled with adjustable speed, via sound or via step button. X-fade time can be set on line. The same X-fader can also be used to change manually from one step to the next. By the INSERT function it is also possible to fade to any memory selected by its Flash button.
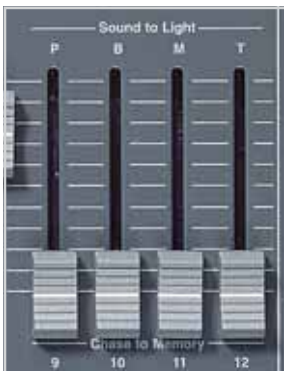
Chase-to-Memory and Sound-to-Light Effect

Memory fader 9 to 12 can be assigned to control chases, where all chases can run simultaneously with individual speeds. A learn speed button allows to set the speed of the chase by simply pressing the button in time with the music.

Bass, Mid, Treble and Pause of the sound input can be selected to control intensity of memory fader 9 to 12. Both effects can be used in parallel and will generate a sound controlled light show.
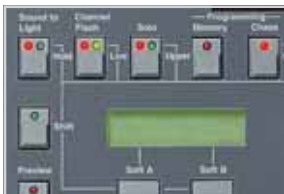
Wide function to double the number of channels

By the combination of Shift+Upper button the desk controls 12 additional channel faders and flash buttons. By this way the console offers control about total of 24 channels that can be manually faded and saved as memories or chaser steps.

Console	grandMA full-size	grandMA light	grandMA replay unit	grandMA ultra-light	grandMA micro	grandMA pico
Control Capacity						
DMX Console Outputs	2,048	2,048	2,048	1,024	1,024	1,024
Parameters (Max)	16,384	16,384	16,384	16,384	1,024	1,024
Parameters (Inside)	2,048 (4,096 optional)	2,048 (4,096 optional)	2,048 (4,096 optional)	2,048	1,024	1,024
Number of Fixtures	16,384	16,384	16,384	16,384	1,024	1,024
Cue Capacity	unlimited	unlimited	unlimited	unlimited	unlimited	unlimited
Playback						
Executor Faders	20, motorised	10, motorised	5	10	10	5
Executor Buttons	60 + 40	30 + 20	15 + 5	30 + 20	10 + 20	5
Playback Faders	2,560, via 128 pages	1,280, via 128 pages	640, via 128 pages	1,280, via 128 pages	1,280, via 128 pages	640, via 128 pages
Playback Buttons	12,800, via 128 pages	6,400, via 128 pages	2,560, via 128 pages	6,400, via 128 pages	3,840, via 128 pages	640, via 128 pages
Silent Playback Keys	3	3				3
Channel Faders	16,384	16,384	16,384	16,384	16,384	16,384
Channel Flash Buttons	16,384	16,384	16,384	16,384	16,384	16,384
Time Code Shows	500	500	500	500	500	500
Programming						
Effects	899	899	899	899	899	899
Bitmap Effects	998	998	998	998	998	998
Groups	999	999	999	999	999	999
Presets	9,999	9,999	9,999	9,999	9,999	9,999
Macros	999	999	999	999	999	999
Profiles	4,096	4,096	4,096	4,096	4,096	4,096
Display						
TFT Touch-Screens	3	1		1	1	1
External VGA Screens	2	2	2	1 + 1		
Dot-Matrix Display			LED, 2 rows, 16 char			
Remote control						
Hand Held Remote	6 Pocket PC	6 Pocket PC	6 Pocket PC	6 Pocket PC	1 Pocket PC	1 Pocket PC
Touchboard/ Switches	16 buttons, analogue	16 buttons, analogue	16 buttons, analogue	16 buttons, analogue	16 buttons, analogue	16 buttons, analogue
DMX-In	192 faders or buttons	192 faders or buttons	192 faders or buttons	192 faders or buttons	192 faders or buttons	192 faders or buttons
Connectivity						
Trackball Connection	build-in trackball	build-in trackball	build-in trackball	build-in trackball	external/Atari Standard	external/Atari Standard
DMX512-A Ports	4 out / 1 in / 1 thru	4 out / 1 in / 1 thru	4 out / 1 in / 1 thru	2 out / 1 in	2 out / 1 in	2 out / 1 in
MIDI Connection	in / thru / out	in / thru / out	in / thru / out	in / out	in / out	in / out
Timecode	SMPTE (LTC) / MIDI	SMPTE (LTC) / MIDI	SMPTE (LTC) / MIDI	SMPTE (LTC) / MIDI	SMPTE (LTC) / MIDI	SMPTE (LTC) / MIDI
Audio/Sound (mono)	>20 mV, 6.3mm socket	>20 mV, 6.3mm socket	>20 mV, 6.3mm socket	>20 mV, 6.3mm socket	>20 mV, 6.3mm socket	>20 mV, 6.3mm socket
Printer	parallel	parallel	parallel	parallel		
EtherNet Network	10/100 Base-T/TX	10/100 Base-T/TX	10/100 Base-T/TX	10/100 Base-T/TX	10/100 Base-T/TX	10/100 Base-T/TX
@-Keyboard	built-in (US/D layout)	on-screen / optional	on-screen / optional	on-screen / optional	on-screen / optional	on-screen / optional
Mouse	built-in (3 buttons)	built-in Trackball, Mouse optional	Mouse optional	built-in Trackball, Mouse optional	ext. Mouse optional	ext. Mouse optional
Desk Lamp	2 LED Goosenecks (dimmable)	1 LED Gooseneck (dimmable)		1 LED Gooseneck (switched levels)	1 LED Gooseneck (switched levels)	1 LED Gooseneck (switched levels)
System						
Operation System	Wind River Systems® VXWorks	Wind River Systems® VXWorks	Wind River Systems® VXWorks	Wind River Systems® VXWorks	Wind River Systems®, VXWorks	Wind River Systems®, VXWorks
Archive Options	Flashdisk Harddisk External File Server USB 3.5″ Floppy Drive	Flashdisk Harddisk External File Server USB 3.5″ Floppy Drive	Flashdisk Harddisk External File Server USB 3.5″ Floppy Drive	Flashdisk Harddisk External File Server USB 3.5″ Floppy Drive	Flashdisk 3.5″ Floppy Drive	Flashdisk 3.5″ Floppy Drive
Power Supply	UPS (15 minutes) 90-230 V, 50-60 Hz	UPS (15 minutes) 90-230 V, 50-60 Hz	UPS (15 minutes) 90-230 V, 50-60 Hz	90-230 V, 50-60 Hz	90-230 V, 50-60 Hz	90-230 V, 50-60 Hz
Power Consumption	200 VA	130 VA	75 VA	60 VA	35 VA	35 VA
Dimensions	1,200 x 150 x 670 mm (47.3 x 5.9 x 26.4 inch)	730 x 120 x 510 mm (29 x 4.7 x 20 inch)	485 x 130 x 430 mm (19 x 5.1 x 17 inch)	635 x 157 x 490 mm (25 x 6.2 x 19.3 inch)	480 x 157 x 440 mm (18.9 x 6.2 x 17.3 inch)	480 x 157 x 440 mm (18.9 x 6.2 x 17.3 inch)
Weight	47 kg / 104 lbs	20 kg / 44.2 lbs	11 kg / 24.3 lbs	12.9 kg / 28.5 lbs	8.1 kg / 17.9 lbs	8.1 kg / 17.9 lbs

grandMA onPC / offline	Lightcommander II 48/6	Lightcommander II 24/6	Lightcommander 12/2 – 19″
4,096 512-4,096* 4,096 unlimited	48+6/96+6 192	24+6/48+6 192	12/24+2 120
20, "on-screen" 60 + 40 2,560, via 128 pages 12,800, via 128 pages 3 500	16 via 8 pages 96 48	16 via 8 pages 48 24	12 via 10 pages 24 12
899 998 999 9,999 999 4,096	2	2	2
3 sub-windows 2 sub-windows			
6 Pocket PC 192 faders or buttons			
uses PC mouse via EtherNet parallel depends on PC PC-Keyboard PC-Mouse	1 out in / thru / out SMPTE (LTC) >20 mV, 6.3mm socket 2 Goosenecks	1 out in / thru / out SMPTE (LTC) >20 mV, 6.3mm socket 1 Gooseneck	1 out in / thru / out >20mV, Chinch socket opt. 1 Gooseneck
Windows® XP depends on PC (40 MB Harddisk space required) External File Server USB	Memorycard 110 or 230 V, 50-60 Hz 25 VA 1190 x 135 x 620 mm (46.9 x 5.3 x 24.4 inch) 24 kg / 53 lbs	Memorycard 110 or 230 V, 50-60 Hz 20 VA 740 x 135 x 620 mm (29.1 x 5.3 x 24.4 inch) 16 kg / 35.3 lbs	Memorycard 110 or 230 V, 50-60 Hz 15 VA 530 x 90 x 340 mm (20.9 x 3.5 x 13.4 inch) 5.3 kg / 11.7 lbs

* (requires 2Port Node or NSP)

Eurovision Song Contest 2008, Belgrade, Serbia; Lighting Design: Per Sundin; Photo: ©PROCON Event Engineering GmbH

Network/Signal Processing

Network and Signal Processing

Today the installation of complex lighting systems is nearly impossible without digital signal processing. Here MA Lighting is also setting standards. In addition to its well-known Demultiplexers, Boosters and Mergers MA Lighting is now offering new perspectives based on the EtherNet technology in the lighting management. The Network Signal Processor (NSP) is the highlight and core of the fully integrated MA network system, joined by the 2Port Nodes for flexible data distribution in both fixed installations and on stages.

Ethernet networking technology provides the ideal platform for lighting data distribution. The standardised communication over a wide range of equipment and protocols creates the best environment for lighting control solutions. On the one hand, the use of industrial components meets the ever increasing reliability and on the other hand it gives the possibility to connect diverse control and protocol solutions.

The MA Network Philosophy
The main idea of using standard networking equipment is the field tested reliability of common network products and also the data distribution over a wide range of equipment and protocols. Higher speed, more bandwith, well equipped hardware to fullfill all modern needs of the lighting industry. MA Lighting once again set a new standard: how to distribute the lighting information for the various parts of the lighting rig in realtime throughout self-designed networks. Even with more than one operator / programmer and different consoles throughout the network, all needed information will be provided and transformed into the right protocol (such as DMX) in realtime.

Use of sophisticated Network Components
Compared with a human body the network represents the nerves of the body while the lighing console shows up as the brain of the system. If one part of this system fails, the complete system might fail. Therefore the most sensitive parts in the network environment are:
- all connections (EtherCon connections recommended)
- the cables
- the switches

MA Lighting highly recommends to only use high quality sophisticated networking equipment. The basic need is a reliable network structure. There is no "master" solution but some basic suggestions how to design a network for the lighting industry. MA Lighting features HP Procurve switches which have been field-tested on many large shows and network environments during the years. Please contact us for further information and specifications.
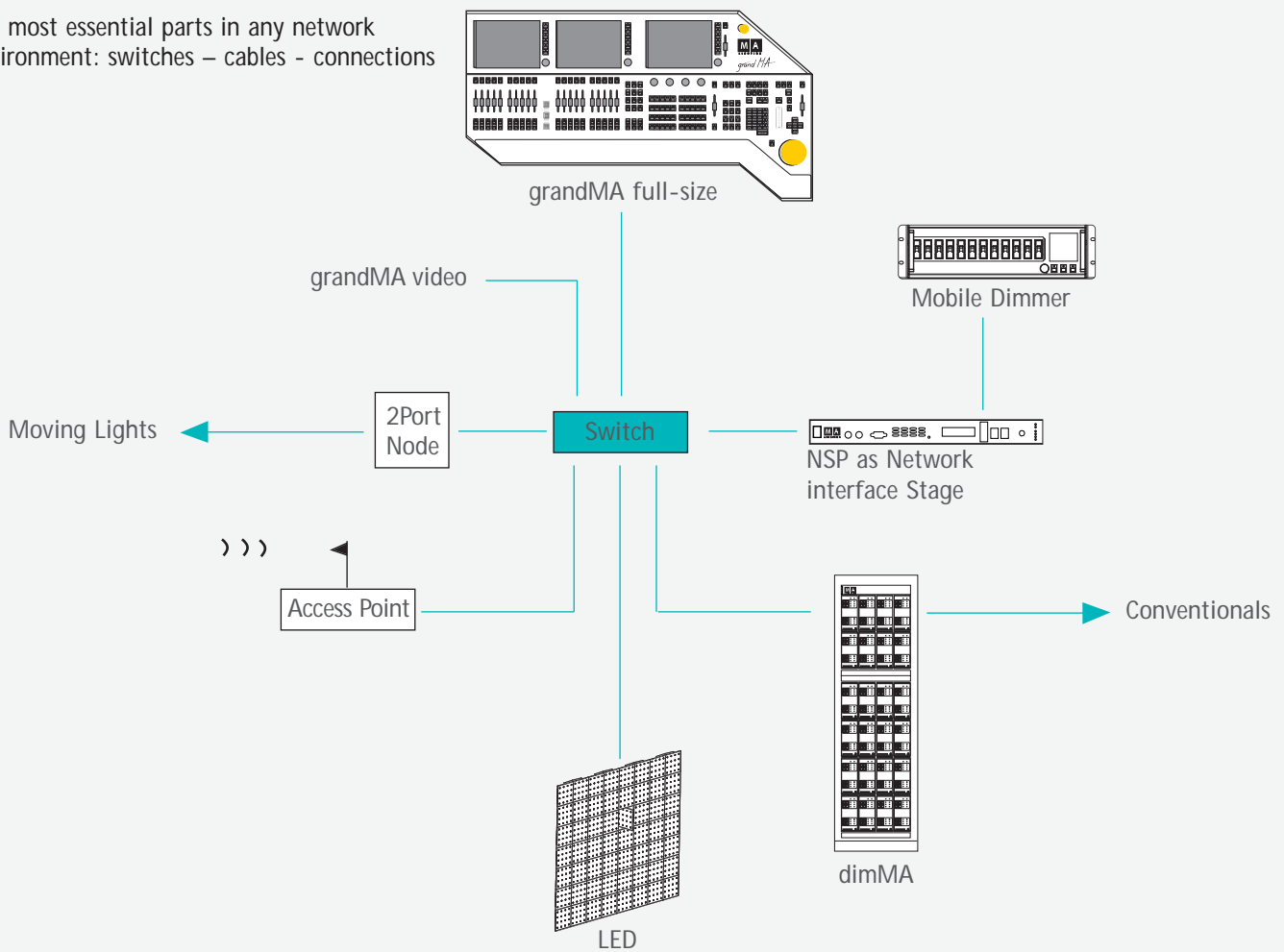
Reliable Backup recommended
Depending on the show structure and the venue a backup solution should always be set up and tested. There is nothing worse than having a non working backup system. Networking environments do not behave like well known backup solutions of the "older days" of the lighting industry. Please refer to the case studies of MA Lighting or ask for technical service concerning network structures during the planning stage of bigger projects.

Wireless Networking
When it comes to wireless networking there is no solution that can provide realtime data guaranteed not to have any drop-outs. Hence MA Lighting introduced the MA Remote package and recommend a Lancom access point. Although some PDAs have been tested during the last years to work as a focus unit or riggers remote.
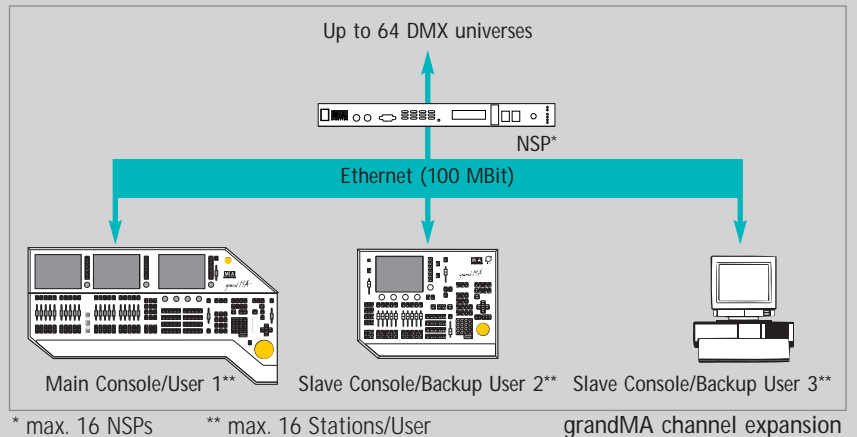
For further information, please visit us at www.malighting.com.

The most essential parts in any network
environment: switches – cables - connections

grandMA full-size

grandMA video

Mobile Dimmer

Moving Lights

2Port
Node

Switch

NSP as Network
interface Stage

Access Point

Conventionals

dimMA

LED

NSP
Network Signal Processor

- External channel expansion for grandMA systems (Parameter Expansion)

- DMX output in combination with grandMA onPC

- Can be controlled via MA-Net or Art-Net

- Supports four independent DMX universes, two of which can be used as inputs (in Art-Net-Mode)

- Connectors for external VGA monitor, mouse and keyboard

- LED indicators for network and DMX activities

Up to 64 DMX universes

NSP*

Ethernet (100 MBit)

Main Console/User 1**   Slave Console/Backup User 2**   Slave Console/Backup User 3**

* max. 16 NSPs   ** max. 16 Stations/User   grandMA channel expansion

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The Network Signal Processor (NSP) is the link between the world of Ethernet and DMX controlled devices. It's also possible to use the NSP for additional control applications; its full capabilities are visible when it is operated in a MA Net. There are three different modes.

High speed for your data

For decentralised DMX networks, the Network Signal Processor (NSP) converts the incoming Ethernet data into DMX 512 data. To convert DMX data, two different Ethernet protocols are supported, MA-Net and Art-Net.

Data is transmitted by four independent DMX connectors, two of which can also be configured as DMX inputs. The NSP features an intuitive menu structure, four function keys and an encoder wheel for easy configuration on site. A backlit LCD display with two lines of text shows all of the important information and the operating status.

For professional application and maximum flexibility, the NSP is built in a 19-inch housing which is only 1U in height.

Uplink to the World –
the three operational modes of the Network Signal Processor:

You may choose between three modes of operation when using the Network Signal Processor. Depending on your application, a NSP can convert DMX inputs and outputs in an Ethernet, serve as a DMX merger or booster, or even expand your grandMA system by additional parameters.

More channels for everyone –
Circuit expansion and multi processing

In an MA-Net network, the NSP can be used as a decentralised channel expansion for all grandMA consoles (except grandMA micro/pico). For this purpose, not only the DMX signals are distributed among the NSPs, but so are all calculations necessary. With NSPs, the grandMA console becomes a powerful multi-processor system.

The fast, bidirectional data exchange between the grandMA console and the NSPs ensures that DMX output on all NSP units is perfectly synchronized.

Each NSP can calculate 2,048 channels. A maximum of 16 NSPs can be used for the output of 64 DMX lines (32,768 channels).

Three different applications of the Network Signal Processor

Mode 1: extended / multiple DMX outputs of the console	Mode 2: Parameter expansion	Mode 3: Art-Net mode
All calculation power remains in the console, but the NSP takes over the multiple and free assignable output of DMX. Tech. Tip: Easier to realize with the MA 2Port nodes.	The real power of the MA-Net. With more than 4096 parameters used in one showfile the NSPs take over the shared calculation power. Unique to MA: the larger the system, the more NSPs added and therefore the more processing power availabe in the complete system. The NSPs are calculating in parallel the showfile and are freely assignable which DMX universes they should output.	In Art-Net mode the NSP behaves like any Art-Net node. It transcieve Ethernet to DMX or vice versa. Possible configurations are 4 outputs, 3 outputs and 1 input or 2 outputs and 2 inputs.

Multi-User and backup systems –

The NSP as the centrepiece for shared use and backup systems

In a network, several consoles share the NSPs available. This easily allows the shared use of DMX enabled devices as well as providing a redundant mode of operation without additional components such as DMX mergers. Why is a NSP more stable than a console in the network? Because it has no user interface. Any part of a network with a heavy used user-interface may have errors. But network parts like NSPs (e.g. Switches) do not fail due to no or nearly no user interface. Hence the NSP as the shared DMX output of two consoles (main and backup) is the best backup solution available on the market without using additional Merger and Booster and so on.

Offline becomes "Online"! NSP – More than just a dongle

Any NSP connected to grandMA onPC allows the offline software to send "real" DMX data. A total of two NSPs can be connected to a grandMA onPC (grandMA offline).
This possibility turns grandMA onPC into a full-featured lighting control system for up to 8 DMX lines.
When used in a shared network with a grandMA lighting console and one or more NSPs, grandMA onPC becomes a full-tracking backup system for up to 16,384 parameters (32,768 channels).

Technical Details Network Signal Processor (NSP)	
Parameter count:	2,048
DMX circuit capacity:	4 outputs / 2,048 circuits
External VGA monitor:	1
DMX512-A ports:	4 outputs, or 3 outputs and 1 input*, or 2 outputs and 2 inputs*
Ethernet network:	10/100 base-T/X
PC keyboard:	external keyboard optional
Mouse connection:	external PC mouse optional
Operating system:	Wind River Systems®, VXWorks
Permanent memory:	64 MB CF-Card Flashcard
Processor:	AMD LX 500 MHz
Main memory:	256 MB
Power supply:	110/240 V, 50-60 Hz

Supplied with power cord and plug, without keyboard and mouse

* Only in Art-Net-Mode

Art. No.	Article
130101	MA Network Signal Processor, 2,048 channels
129712	Mini-Keyboard PS2 for all grandMA and NSP, USA

Art. No.	Dimensions (width x height x depth)	Weight
130101	483 x 44 x 180 mm	3.3 kg
	19 x 1.7 x 7 inch	7.3 lbs

MA
2Port Nodes

The MA 2Port Nodes supplements MA Lighting's product range for networking and integrated system solutions. As a built-in or Rigging-box solution it is an additional part of the networking range to transform Ethernet protocols to DMX or vice versa. MA

2Port Node onPC and 2Port Node onPC PRO have the same functionality as the MA 2Port Nodes. Their additional advantage is the possibility to generate DMX in combination with grandMA onPC the free available software of MA.

The 2Port Node transforms the configured DMX universe from Ethernet to DMX or from DMX to Ethernet. It even can do this standalone or in combinations with any grandMA console. So the MA 2Port Node itself gives a lot more flexibility in distributing the used DMX universes over Ethernet. Two main hardware versions: one will be the "flush-mounted" version that is available in two different sizes (EU and US) and the other will be a surface mounted box. The flush-mounted version will fit into a 80mm standard installation box as the European (EU) version while the 'US version' will fit into a two-gang-box. Both versions are available in three socket configurations: two DMX input connectors,

two DMX output connectors or one in- and one output connector. The 2Port Node onPC address amongst others the need of theatres and rental companies to flexibly distribute DMX on stage or in rigs. If used standalone with grandMA onPC the 2Port Node onPC outputs also 512 parameters of DMX. The 2Port Node onPC PRO outputs 1,024 parameters of DMX. They become a powerful show controller for smaller applications. Also handy backup solutions become possible for reduced budgets. The 'onPC' versions are available with integrated power supply. All 2Port Nodes will run with power over Ethernet too. Also they got a thread to put a coupler as well as a safety connection point.

The Flush-mounted versions

- Integrated part of the grandMA system
- Speaks MA-Net and Art-Net (both 100 Mbit/s)
- Stand-alone use with MA-Net or any Art-Net system
- Runs with power over Ethernet
- EU and US Flush-mounted versions
- Hardware configurations available: 2 DMX outputs, 2 DMX inputs, 1 DMX in/1 DMX out
- Remote control of backlights and LEDs
- Easy, comfortable remote configuration incl. in/out assignment

Art. No.	Article
130181	2Port Node, Flush-mounted 'EU version', 2x DMX in
130182	2Port Node, Flush-mounted 'EU version', 2x DMX out
130183	2Port Node, Flush-mounted 'EU version', 1x DMX in/ 1x DMX out
130186	2Port Node, Flush-mounted 'US version', 2x DMX in
130187	2Port Node, Flush-mounted 'US version', 2x DMX out
130188	2Port Node, Flush-mounted 'US version', 1x DMX in/ 1x DMX out

Art. No.	Dimensions (width x height x depth)	Weight
130181	100 x 100 x 45 mm	0.2 kg
	3.9 x 3.9 x 1.7 inch	0.4 lbs
130186	114 x 114 x 45 mm	0.2 kg
	4.5 x 4.5 x 1.7 inch	0.4 lbs

Rig-mounted box versions:
2Port Node onPC and onPC PRO

Flush-mounted "US Version"

Flush-mounted "EU Version"

Two green LEDs will indicate if DMX traffic is generated or received. DMX LEDs and Backlight can be switched off remotely. The 'Finder Functionality' will give you an elegant solution and way of working – the console can indicate a chosen node by flashing the backlight, but also a button press on the MA 2Port Node will indicate the chosen one in the console. With the 2Port Node MA Lighting fulfils the need of lighting designers, programmers and operators to offer an additional tool for more flexibility in DMX handling within the MA family.

All MA 2Port Nodes are fully integrated into the MA family. That means easy, comfortable configuration incl. in/out assignment of each node from any grandMA console or onPC. It's also possible to use the nodes with other systems, because they speak MA-Net and Art-Net, both 100 Mbit/s, which can be chosen remotely. All 2Port Nodes cannot be used as a Parameter Expansion.

The Rig-mounted box versions

- Rig-mounted box version for flexible use in trusses or mobile applications
- 2Port Node onPC runs with grandMA onPC
  - Powerful show controller for smaller applications
  - Handy backup solutions for reduced budgets
  - 512 parameters (2Port Node onPC) or 1,024 parameters (2Port Node onPC PRO)
  - DMX-in for fader wings or merging of DMX signals
- Clever tool for flexible DMX distribution on stages and in theatres, studios or clubs
- Runs with power over Ethernet or internal power supply

Art. No.	Article
130192	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, 'EU version', 2x DMX out
130197	2Port Node onPC, 512 Parameters, Rig-mounted touring version incl. power supply, 'US version', 2x DMX out
130172	2Port Node onPC PRO, 1,024 Parameters, Rig-mounted touring version incl. power supply, 'EU version', 2x DMX out
130177	2Port Node onPC PRO, 1,024 Parameters, Rig-mounted touring version incl. power supply, 'US version', 2x DMX out

Adapter-sockets and further hardware options (2x in; 1x in/1x out) on request.

Art. No.	Dimensions (width x height x depth)	Weight
130192	160 x 145 x 50 mm	1.1 kg
	6.3 x 5.7 x 1.9 inch	2.3 lbs

Network /
Signal Processing
Booster, Splitter and Merger

Nowadays installations can have a heavy use of multiple DMX universes and often cable length exceed 200m or more with up to 30 receivers on one line. Even when using quality cables and a Line-End-Plug the signal may be affected by strong electromagnetic interference. By using a Line-Booster to refresh the DMX signal half way down, you are no longer limited to the recommended maximum.

On large scale installations it makes sense to place a Booster with multiple outputs on center stage and split the DMX line configured, reducing the length and load of the single lines. But keep in mind to use special, shielded DMX cable and selects shortest cable run, but separate from power supply and load cables of dimmers.

MA DMX Booster/Splitter

■ The booster receives one DMX signal and sends seven / eight amplified identical DMX signals

■ Seven-way DMX Booster with XLR 5pin connectors and separated power supply for each output

■ Eight-way Booster with RJ45 computer network connectors for CAT5 distribution

■ Selective termination for incomming DMX signal

■ Control LED for incomming DMX signal and selective end of line termination

■ DMX lines optically isolated and over-voltage protected

The MA DMX Booster distributes DMX signals easily and provides a high quality operation reliability by electrically isolating the input and output.

All outputs are amplified except the DMX line „thru" where the original dmx in line will be available. The MA Booster is the ideal tool for star shaped splitted DMX lines for installations in theater or TV Stations as on stages. It provides a reliable DMX network with reduced length and load of single DMX lines.

Every single DMX line is powered by a seperate power supply and electrically isolated. output sockets are available as XLR 5pin or RJ 45 network connectors. The input signal is optically isolated and has a selective termination.

Will be delivered with 19" housing with built in power connection.

Art. No.	Article
130419	DMX Booster 1 in 8 (RJ 45 connectors)
130417	DMX Booster 1 in 7 (XLR 5pin)
130415	DMX Booster 1 in 8 (RJ 45 Esta pin assignment)

Art. No.	Dimensions (width x height x depth)	Weight
130419	483 x 44,5 x 170 mm	4.0 kg
	19 x 1.8 x 6.7 inch	8.8 lbs
130417	483 x 44,5 x 170 mm	4.0 kg
	19 x 1.8 x 6.7 inch	8.8 lbs
130415	483 x 44,5 x 170 mm	4.0 kg
	19 x 1.8 x 6.7 inch	8.8 lbs

MA DMX Merger

MA Optoisolator Box

- Combines the outputs of two consoles on one DMX line

- Latest-takes-precedence or highest-takes-precedence merging

- Built-in, optional DMX signal termination

- Incoming-DMX signal LED indicator

- All DMX connections are optically isolated and protected from over voltage

The MA DMX Merger combines two DMX inputs into one DMX output. The inputs and outputs are optically isolated from each other and protected from over voltage. The second DMX input can be offset from the first DMX input if required. All input and output connections use five pin XLR connectors. Incoming DMX signals can be terminated inside the unit.

The unit is housed in a 19-inch rack-mounting case and has a built-in power connection.

- The DMX connections are optically isolated and protected from over voltage

The Optoisolator Box provides a separated and amplified DMX output from a DMX input. The best way of extending the length of a DMX cable, the Optoisolator Box also eliminates over-voltage spikes.

The unit has a power cable input, while the housing is made of PVC. The input and output connections use five pin XLR connectors.

Art. No.	Article
130418	MA DMX Merger
130421	MA Optoisolator Box

Art. No.	Dimensions (width x height x depth)	Weight
130418	483 x 44,5 x 170 mm	4.0 kg
	19 x 1.8 x 6.7 inch	8.8 lbs
130421	80 x 55 x 150 mm	0.5 kg
	3.2 x 2.2 x 5.9 inch	1.1 lbs

Network/
Signal Processing
Demultiplexer Boxes

MA Demultiplexers receive DMX 512 signals and convert them into an analogue control voltage of 0 to +10 V. As a Demultiplexer is only one link in a chain, all units are equipped with a DMX outlet socket to forward the signal to the next receiver or for daisy-chain wiring. For reasons of data integrity, any tapping of DMX signals on MA units is optically screened and protected against over-voltage.

All MA Demultiplexers feature input and DMX test indicator LEDs. The analogue outputs are fused by diodes for parallel operation and function as short-circuit protection. The maximum rating per output is 8mA. All units and PC boards are available for 230V AC/50 Hz or 110V AC/60 Hz.

Art. No.	Article
130405	Demux 2 Box
130402	Demux 1-6 Box (Relay Outputs), Sub-D Connector
130401	Demux 1-6 Box (Relay Outputs), Wago Terminals

Art. No.	Dimensions (width x height x depth)	Weight
130405	130 x 175 x 50 mm	2.0 kg
	5.1 x 6.9 x 2 inch	0.9 lbs
130402	225 x 167 x 45 mm	2.0 kg
	8.9 x 6.6 x 1.8 inch	0.9 lbs
130401	225 x 167 x 45 mm	2.0 kg
	8.9 x 6.6 x 1.8 inch	0.9 lbs

1/6 - CHANNEL - SWITCH - DEMULTIPLEXER

- ■ Will be delivered in steel housing with main power cable. Input and output connection via XLR 5pin.

- ■ User-friendly functionality

- ■ DMX lines optically isolated and over-voltage protected

- ■ Cases are available

MA DMX Demultiplexer 2 Channel Box

MA DMX Demultiplexer 1-6 Box

Unit to convert DMX 512 into 2 analogue control signals with 0-10V with simultaneously free control of two switching relay with up to 16A per output.
Input via XLR 5pin and output via Wieland GST 18 and 2 XLR 3pin for 0-10 V.

Will be delivered in steel housing with main power cable.

With one or six seperatly channels controlled relays for voltage free control of six switching effects with 24 V / 1A or 230 V / 16 A.
Input connection via XLR 5pin. startaddress will be set by three rotary knobs.

Will be delivered in steel housing with main power cable.

Network /
Signal Processing
Demultiplexer and Optoisolator Boards

MA Demultiplexers are also available as PC-boards for building into effects or custom items. The board comes with all the necessary technical information; however, the installation should be handled by a qualified professional. All the required connectors are included with the unit.

The four basic rules for trouble-free DMX are:
- Use specialized and shielded DMX cable.
- Select the shortest cable route that is separated from power cables connected to dimmers.
- Use a terminator plug, with a 100 Ohm resistor between pins two and three, in the DMX output of the last device in the DMX chain.
- Never Y-split a DMX line – use a specialized DMX splitter.

A line Booster is strongly recommended to refresh the DMX in the middle of long DMX runs and in case of any problems on the DMX line.

- Available with the rotary controls on the side or on top – depending on the needs of the installation.
- The DMX start address is selected by using three rotary controls.
- Disconnection of ballast with four SRC Relay
- Built-in colour chaser with variable speed control.
- Connection by Wago connectors without the need for tools.

MA Demux 4 PCB, DUX-LS4
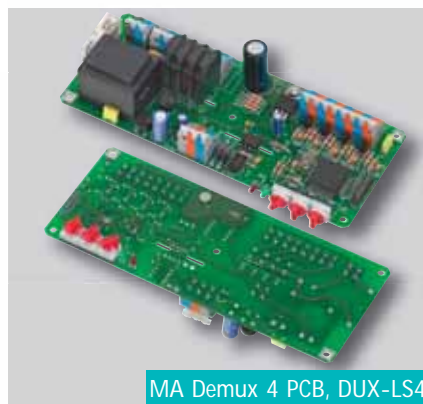
Demux PCB for 1-4 fluorescent lamps. This PCB controls the electronic ballasts of fluorescent lamps with 1 to +10 V. Restlight will be switched of by SCR relays.

Each unit comes with a power supply but without a housing.

- PCB with integrated power supply
- High-quality Wago connectors used for all connections

**MA Demultiplexer 1-6 PC-Board (Relay Output)**
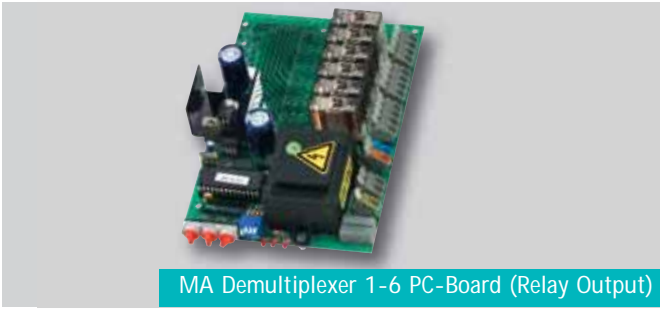
One to six channel controlled relays for voltage-free control of up to six switching effects: 230 V / 16 A.
DMX input connection is via a five pin XLR connector. The start address is set using three rotary controls.

MA Demultiplexer 2 "Maxi" / "Mini" PC-Board
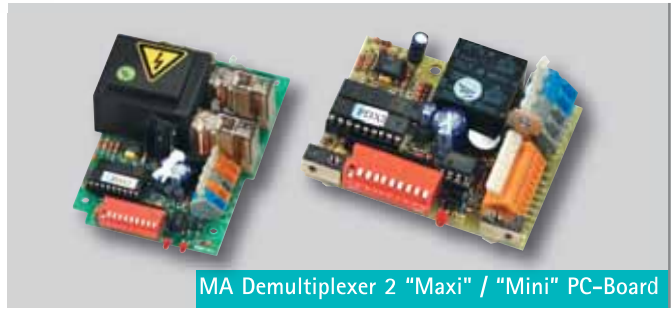
PCB unit to convert DMX into two analogue 0 to + 10 V control signals with simultaneous control of two switching relays for up to 16 A (24 V / 3 A)* per output.
Input and output connections via Wago connectors. "Mini" PC-board is supplied with a power supply.

*16 A: "Maxi"; 24 V / 3 A: "Mini"

- Optoisolator PCB with electrically isolated Input and output for DMX lines
- Analouge inverter for conversion of positiv control signals
- Converts 0-10 V to negative voltage

MA DMX Optoisolator PC-Board
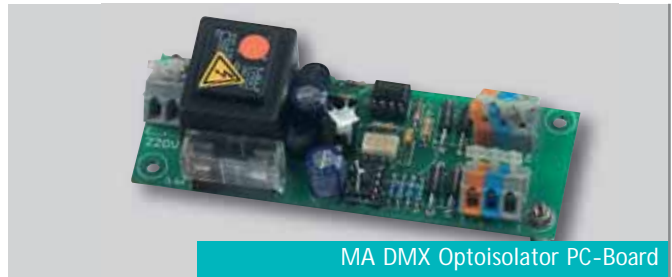
MA optoisolator PC Board. Refreshes the DMX signal and works like a line Booster with optical isolation between incoming and outgoing DMX line. This way it even eliminates over voltage spikes. It also extends the possible length of single DMX lines or can be used as Y-splitter for DMX line branches. Best tool for fixed installations and DMX distribution networks.

Art. No.	Article
130423	Demux 4 PCB, DUX-LS4 1-10 V, address switches on solder side
130424	Demux 4 PCB, DUX-LS4 1-10 V, address switches sideways
130403	Demux 1-6 PC Board
130404	Demux 2 PC Board Maxi
130407	Demux 2 PC Board Mini
130420	DMX Optoisolator PC Board

Art. No.	Dimensions (width x height x depth)	Weight
130423	160 x 60 x 35 mm	0.4 kg
	6.3 x 2.4 x 1.4 inch	0.9 lbs
130403	118 x 164 x 47 mm	1.0 kg
	4.6 x 6.5 x 1.9 inch	2.2 lbs
130404	105 x 75 x 47 mm	0.4 kg
	4.1 x 3 x 1.9 inch	0.9 lbs
130407	75 x 55 x 19 mm	0.3 kg
	3 x 2.2 x 0.7 inch	0.7 lbs
130420	155 x 44 x 40 mm	0.5 kg
	4.5 x 1.7 x 1.6 inch	1.1 lbs

ETHERNET and DMX NETWORK				
Unit Article Name	130101 NSP – Network Signal Processor	2Port Node, Flush-mounted version	2Port Node onPC, Rig-mounted version	2Port Node onPC PRO, Rig-mounted version
Housing				
19"	•			
Housing			•	•
PCB Kit		•*		
Input-Signals				
EtherNet Ports	1	1	1	1
DMX Circuits	1,024	1,024	1,024	1,024
Analogue 0 to +10 V				
MIDI				
Output-Signals				
DMX Circuits	2,048	1,024**	1,024**	1,024**
Analogue 0 to +10 V				
Analogue 0 to -10 V				
Switch Contact				
Servo Drive				
MIDI				
Options				
Note		*with Front Panel **in MA-Net Mode	**in MA-Net Mode	**in MA-Net Mode

DMX - ANALOGUE and MIDI CONVERTERS

130418 DMX Merger	130419 DMX Eight Way Booster (RJ45 connectors)	130417 DMX Seven Way Booster (XLR5pin)	130415 DMX Eight Way Booster (RJ45 Esta)	130421 DMX Opto-isolator Box	130420 DMX Opto-isolator PCB	130405 Demulti-plexer 2 Channel Box	130404 Demulti-plexer 2 Channel PCB Maxi	130407 Demulti-plexer 2 Channel PCB Mini	130401 Demulti-plexer 1/6 Box 230V/16A Wago Terminal	130403 Demulti-plexer 1/6 PCB Switch	130402 Demulti-plexer 1/6 Box Sub-D 25-pol.
•	•	•	•	•		•			•		•
					•		•	•		•	
2 x 512	512	512	512	1	1	1	1	1	1	1	1
512	8 x 512	7 x 512	8 x 512	512	512	2	2	2	2		
						2x (230V/16A)[1]	2x (230V/16A)[1]	2x (24V/3A)[1]	6x (230V/16A)[1]	6x (230V/16A)[1]	6x (24V/1A)[1]
	RJ45 Connector		RJ45 Connector ESTA Pin Assignment			Analogue Output and Switch Contacts work parallel	Analogue Output and Switch Contacts work parallel	Analogue Output and Switch Contacts work parallel			

[1]Resistive load with full current, magnetic load with max. half current

Queensland Performing Arts Centre, Brisbane, Australia

Dimming

Dimming Solutions

For two decades the MA dimmers have been known for their relia-bility and functionality. Throughout the dimming range of MA pro-ducts they are proven "workhorses" in many shows as well as in some of the most important installations in the world. While the MA touring dimmers are already milestones in their range, the dimMA system in combination with the grandMA console are rapidly catching up in their popularity.

Any combination is possible
Any combination of dimming systems can be used together within an installation as they have the same dimmercurve and reactiontime. It does not matter which dimming product are chosen or combined – all fit together perfectly and work harmonised in any combination.

All dimmers can be controlled by any DMX source. Due to the idea of networking the dimMA system for fixed installations will be equipped with an Network Dimmer Processor (known as NDP) that is able to receive and send different Ethernet protocols as well as DMX.

Therefore the NDP will reach and provide a new level of control and system integration. As soon as the grandMA console or any other control system is switched off the NDP can take over control and reacts as the "heart" of the complete network. This intelligent fun-ctionality in combination with all provided feedback and fault information will give a perfect overview and control of the (com-plete) installation. Everything can be centrally organized with full control from all parts of the network.

MA Dimmer Technology and how they are built...
Nowadays thyristor dimmer technology can be found everywhere. The important argument for any dimmer and any customer will be the rise time with the thyristor technology. It provides an idea of how fast the "jump" from zero to the actual voltage will be. This jump can cause "lamp noise" - better filtering can lower the noise. The rise time for TV and theatre application should be at least 280μs. The MA solution gives you the same rise time across different MA dimmer models, so various combinations of different MA dimmer types are possible. Please refer for more information to the rise time table above.

Forward phase control with rise time of 280 μs
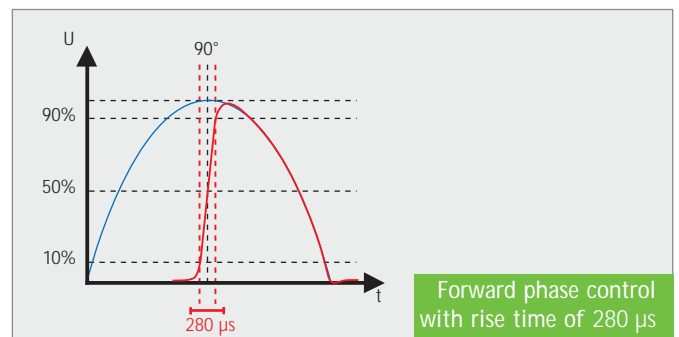
dimMA

dimMA compact

dimMA compact RCBO

Digital Dimmer "Wallmount"

Digital Dimmer Touring

Dimmer Rise-Times

Dimmers	Ampere	Module Rise-Time (10-90% at 90° firing angle)
Touring 12x2.3 kVA	10	280 µs
Touring 12x3.7 kVA	16	280 µs
dimMA compact 12 x 3 kVA dimMA compact/RCBO	13	280 µs
dimMA compact 6 x 5.7 kVA dimMA compact/RCBO	13	280 µs
Touring 6x5.7 kVA	12.5	400 µs
Touring 12x3.7 kVA	16	300 µs
Touring 12x2.3 kVA TV3	10	360 µs

Dimmers	Ampere	Module Rise-Time (10-90% at 90° firing angle)
dimMA 3 kVA	13	280 µs
dimMA 3 kVA HR	13	400 µs (720 µs)
dimMA 5.7 kVA	25	400 µs (720 µs)
dimMA 11.5 kVA	50	400 µs
Wallmount 3 kVA	13	280 µs
Wallmount 3 kVA HR	13	400 µs
Wallmount 5.7 kVA	25	400 µs

MA Sinewave Dimming

During the last few years many developers have focused on a technology called sinewave dimming. It is certainly not a new technology. This dimming solution has been well known for decades but nowadays the technology is developed enough to be used with the required level of current. So there is nothing new and it is constant development of dimming solutions. While the thyristor technology just needs a "low noise" filter the sinewave dimming technology needs a lot of filtering because of the high frequencies that are used. Also there is a difficult question of safety to be answered because of the short-circuit-risk safety. MA will offer a sinewave solution that fits perfectly to the dimMA solution: dimMA modules of the same type will be interchangeable.

The new dimMA sine-wave dimmers will be available as 4 x 3,000 VA or 2 x 6,000 VA modules; they employ high-frequency pulse-width modulation with 40 kHz to achieve a uniform waveform output. The sine-wave dimmer modules are fully compatible with thyristor modules and can be mixed with thyristor modules in the same rack or also in their place.

The advantages of the sine-wave dimmer technology are audible, or rather "inaudible", noise as the modules produce no harmonic distor-

50%

High-frequency pluse-width modulation
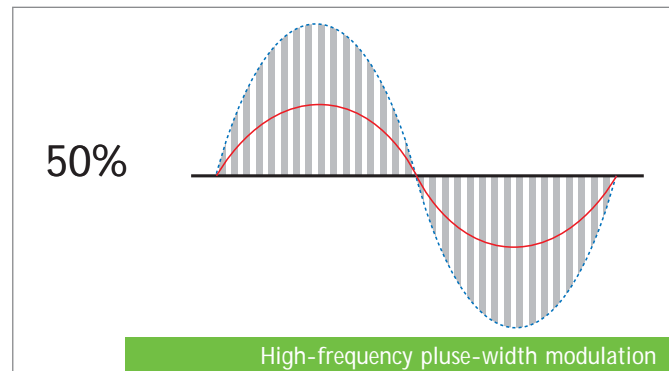
tion at the line output which could cause noise from the filament or choke coil. The electronic fuse is able to reliably distinguish between a short circuit and a cold bulb and uses a relay contact to permanently switch off the dimmer feed in case of a short circuit.

To comply with mandatory European safety standards, this fuse must be reset manually on the dimmer module. Of course the sine-wave dimmers also offer all the other features and advantages of the dimMA system.

What's the best dimming solution?

The best dimming solution will be the one that fits the customers requirements as well as the customers needs of technology. In most cases the thyristor technology will be more than good enough. In some special cases inaudible solutions are required in a way that thyristor technology can not offer. In this case the sinewave dimming solution will be best. Besides the advantages of no EMC noise and inaudible dimming the sinewave dimmers will be a highly sophisticated solution. It has always been a little bit more expansive to have the more exclusive solution. The best result for any standard dimming system will be the thyristor technology because of its field tested reliability. On the following pages all the dimming solutions MA can offer will be given. All dimming products can be combined because of the same rise time range for permanent installations and touring solutions. All dimmers have the same high quality filtering and a user friendly interface beginning at the touring dimmers with a built-in display and ending at the dimMA system with its unique configuration and feedback functionality right onto the screens of the grandMA consoles.

dimMA
Digital dimming system for permanent installations

Key features (mechanical and electrical)

- Sturdy dimmer cabinet with a footprint of only 600 x 600 mm for 72 dimmer modules
- Easy installation and access to the connectors from the front using a 19″ swivel frame
- Plug-in dimmer modules with three power ratings of 3,000 VA, 5,700 VA or 11,500 VA
- Cabinets can be populated with a variety of modules of different types and loads
- A mains switch and a residual current device for each dimmer crate are fitted as standard

Key features (control)

- All dimmers are fitted with current sensing and fault feedback functions via Ethernet as standard
- Load check, control checking and fault indication with LEDs for each dimmer circuit
- Two independent signal inputs via Ethernet and/or DMX with individual patch
- LTP-, HTP- and backup link of the control input possible
- Two separate DMX inputs A + B with Thru output for additional cabinets
- Conversion and output of two DMX lines when controlled via Ethernet
- Second processor as a synchronous backup system available as an option

dimMA – Digital dimming system for permanent installations
With the new and innovative digital dimming system dimMA, the well-known reliability of the MA touring dimmers is now also available for permanent installations. The new MA installation dimming system uses 19″ rack cabinets that are made by the renowned manufacturer Rittal and have a foot print of only 0.36 m^2 so that they can be packed tightly. All connections and outgoing lines are located on the inside of the cabinet. A swivel frame which operates similar to a huge front door provides easy and convenient access from the front and makes unnecessary any additional load terminals or patch fields. Power feed and outgoing cables can either be routed from the top or the bottom of the cabinet.

Standard / cabinet versions

Number of Crates	Number of Modules	Dimmer Circuits	Backup NDP	Nominal Load	Mains Feed
6	18 (3 per crate)	72x 13 A (4 per module)	optional	72x 3,000 VA	230/400 V 400 A / Phase
6	18 (3 per crate)	36x 25 A (2 per module)	optional	36x 5,700 VA	230/400 V 400 A / Phase
6	18 (3 per crate)	18x 50 A (1 per module)	optional	18x 11,500 VA	230/400 V 400 A / Phase

Dimmer Modules

Dimmer Circuits	Load	Module Rise-Time (10-90% at 90° firing angle)	Module Processor
4x 13 A	3,000 VA	280 µs / 400 µs	16 Bit, CAN-bus interface, independent power supply
2x 13 A	3,000 VA	720 µs	16 Bit, CAN-bus interface, independent power supply
2x 25 A	5,700 VA	400 µs	16 Bit, CAN-bus interface, independent power supply
1x 25 A	5,700 VA	720 µs	16 Bit, CAN-bus interface, independent power supply
1x 50 A	11,500 VA	400 µs	16 Bit, CAN-bus interface, independent power supply

Rugged cabinet construction

The swivel-frame cabinet with its 18 plug-in slots (a maximum of 72x 3,000 VA) can be fitted with modules of 4x 3,000 VA, 2x 5,700 VA or 1x 11,500 VA loads. Each rack can be populated with modules of different types.

All Modules are available with different rise times for their specific needs. All modules of the same power rating will fit into the slot and therewith all modules in the same power rating are exchangeable without any additional installations e.g. as sinewave or relay modules. Many options can be chosen to create a dimming installation on customers request and to fullfill the needs of the installtion.

For feeding (TN-S net), there is an integrated three-phase bus-bar system with a load capacity of 400 A per phase, which also allows easy cross wiring, if the cabinets are installed next to each other.

Upon request, the cabinets can be equipped with special components such as mains switches, auxiliary contactors, additional, parallel output terminals, RCD per channel or DMX and network distributors.

Dimmer modules

The plug-in modules for the dimMA digital dimming system are available with load ratings of 4x 3,000 VA, 2x 5,700 VA or 1x 11,500 VA. The dimmer modules are available with rise times from 280µs to 400 µs and up to 720 µs depending on the load rating.* This allows us to offer the optimal solution for every kind of application while also taking economic aspects into consideration. Each dimmer module features a separate single-PCB computer with power supply and communicates with the Network Dimmer Processor of the cabinet via a CAN-bus interface. Dimmer modules of the same rating may be freely exchanged; any assigned settings such as dimmer number, dimming curve,

non-dimming operation, and special and/or panic functions remain linked to plug-in slot and apply to any new module inserted.

Each module is cooled with a temperature-controlled fan activated only, if the module is actually in use. This reduces drastically the amount of noise produced by the dimming system because only those components are cooled that need it. Via the NDP, each dimmer circuit provides the lighting control system with detailed information about current and voltage, the status of the load connected, and about any faults occurring.

Module racks – known as dimmer crates

All dimmer modules are designed as plug-ins, separate by phase, and mounted in 19″ crates with separate feeds for three modules at a time. Each crate (when fully fitted, a maximum of six crates per cabinet is possible) are equipped with a combined mains fuse and switch and a residual current device (RCD) as standard. In order to comply with DIN 15565-8, the RCDs per rack are configured so that they are all shut off when tripped, if multi-core is used.

Replacing dimmer modules during operation or switching off individual groups of dimmers is therefore possible and permitted without shutting off the entire cabinet.

dimMA compact

Compact digital dimming system for permanent installations

Key features (mechanical and electrical)

- Sturdy dimmer cabinet with a footprint of only 600 x 600 mm for 9 dimmer modules
- Screwed-in dimmer modules with two power ratings of 3,000 VA or 5,700 VA
- Cabinets can be populated with a variety of modules of different types and loads
- A mains switch and a residual current device for each dimmer module are fitted as standard

Key features (control)

- All dimmers are fitted with current sensing and fault feedback functions via Ethernet as standard
- Load check, control checking and fault indication with LEDs for each dimmer circuit
- Two independent signal inputs via Ethernet and/or DMX with individual patch
- LTP-, HTP- and backup link of the control input possible
- Two separate DMX inputs A + B with Thru output for additional cabinets
- Conversion and output of two additional DMX lines when controlled via Ethernet
- Second processor as a synchronous backup system available as an option

dimMA compact – the easy way of dimming

With the new and innovative digital dimming system dimMA compact, the well-known reliability of the MA touring dimmers in combination with the outstanding features of the dimMA system is now available for permanent installations. All features of the dimMA system are the same as for the dimMA compact. It is just called compact due to the fact that the cabinet density increased. Because the last years of development showed that single channel-modules are no longer necessary any more due to amazing reliability of the dimming system and the best electronic protection systems. So the logical conclusion is the compact module with only 4 units high and 12 channel fitting. This allows 108 channels in a dimMA cabinet, which is a Rittal rack, and have a foot print of only 0.36 m² so that they can be packed tightly. All connections and outgoing lines are located on the inside of the

cabinet. A modular connection system of the backside of the modules makes it easy to change modules or get access to the inside terminals and makes unnecessary any additional load terminals or patch fields. Power feed and outgoing cables can either be routed from the top or the bottom of the cabinet.

Rugged cabinet construction

The cabinet can be fitted with 9 modules of 12 channels (a maximum of 108x 3,000 VA) or 9 modules of 6 channels (a maximum of 54x 5,700 VA). Each cabinet can be populated with modules of different types.

In addition switch modules (with relay) that are compatible with phase-cut modules are also available. Thus the digital dimming system for installations is ready for the future and based on proven and rugged technology.

For power input (TN-S net), there is an integrated three-phase bus-bar system with a load capacity of 400 A per phase, which also allows easy cross wiring, if the cabinets are installed next to each other.

Upon request, the cabinets can be equipped with special components such as mains switches, auxiliary contactors, additional, parallel output terminals, RCD per channel or DMX and network distributors.

Dimmer modules

The plug-in modules for the dimMA digital dimming system are available with load ratings of 12x 3,000 VA or 6x 5,700 VA with a rise time of 280 µs.* Each dimmer circuit has high quality thyristors and filter suppression.

This allows us to offer the optimal solution for every kind of application while also taking economic aspects into consideration. Each dimmer module features a separate single-PCB computer with power sup-

ply and communicates with the Network Dimmer Processor of the cabinet via a CAN-bus interface. Dimmer modules of the same rating may be freely exchanged; any assigned settings such as dimmer number, dimming curve, non-dimming operation, and special and/or panic functions remain linked to the plug-in slot location and apply to any new module inserted.

Each module is cooled with two temperature-controlled fans activated only if the module is actually in use. This reduces drastically the amount of noise produced by the dimming system because only those components are cooled that need it. Via the NDP, each dimmer circuit provides the lighting control system with detailed information about current and voltage, the status of the load connected, and about any faults occurring.

Additional dimMA options, extract (prices on request)
Switch modules (e.g. 12 x 13A, 6 x 25A)
RCD modules (single RCD per channel
Dual MCB per dimmer module (e.g. 4 x 3kVA, 2x 5.7kVA)
Test modules (e.g. 4x 13A, 2 x 13A)
Dual power supply with phase lamps
Main contactor 250A
Clamp options (e.g,16mm² single clamp, 6mm² triple-deck clamp, double clamp, spring-type terminal)

If you have any questions, please feel free to contact our project department who will help to develop the dimmer solution for your individual purposes!

Standard / cabinet versions

Number of Crates (Modules)	Dimmer Circuits	Backup NDP	Nominal Load	Mains Feed
9	108x 13 A	optional	108x 3,000 VA	230/400 V 400 A / Phase
9	54x 25 A	optional	54x 5,700 VA	230/400 V 400 A / Phase

Dimmer Modules

Dimmer Circuits	Load	Module Rise-Time (10-90% at 90° firing angle)	Module Processor
12x 13 A	3,000 VA	280 µs	16 Bit, CAN-bus interface, independent power supply
6x 25 A	5,700 VA	280 µs	16 Bit, CAN-bus interface, independent power supply

dimMA compact RCBO

Compact digital dimming system with single RCBO per channel for permanent installations

Key features (mechanical and electrical)

- Sturdy dimmer cabinet with a footprint of only 600 x 600 mm for 96 dimmer channels
- Screwed-in dimmer modules with two power ratings of 3,000 VA or 5,700 VA
- Single RCBO per channel
- Cabinets can be populated with a variety of modules of different types and loads
- A mains switch for each dimmer module is fitted in an additional power distribution module

Key features (control)

- All dimmers are fitted with current sensing and fault feedback functions via Ethernet as standard
- Load check, control checking and fault indication with LEDs for each dimmer circuit
- Two independent signal inputs via Ethernet and/or DMX with individual patch
- LTP-, HTP- and backup link of the control input possible
- Two separate DMX inputs A + B with Thru output for additional cabinets
- Conversion and output of two additional DMX lines when controlled via Ethernet
- Second processor as a synchronous backup system available as an option

dimMA compact RCBO – the easy way of dimming

With the new and innovative digital dimming systems dimMA and dimMA compact MA Lighting combined the well-known reliability of their touring dimmers with both the MA-Net network architecture and outstanding features for permanent installations.

As the last years of development of MA Lighting showed that cost intensive single channel-modules are no longer necessary due to highest reliability and packing density, MA focuses on the attractive dimMA compact solution and consequently develops this further – also taking into consideration the variety of international regulations and requirements. With the latest member of the dimMA range, the dimMA compact RCBO, every channel is protected with single RCBO (combination of RCD and MCB), to reach a new level of safety and to ensure the operation of the remaining channels even if a single channel causes an earth leakage or over-current.

Every dimMA compact RCBO module comes in a solid 4 units housing and single RCBO per channel. This allows up to 96 channels in a cabinet, which is a Rittal rack, and have a foot print of only 0.36 m² so that they can be packed tightly. dimMA compact RCBO offers the same features as the well known dimMA/dimMA compact system and provides the same easy accessibility of all load terminals and connections from the frontside of the cabinet. Due to this it is easy to install. The modular connection system on the backside of the modules makes it easy to change modules and makes any additional load terminals or patch fields unnecessary. All connections and outgoing lines are located on the inside of the cabinet. Power feed and outgoing cables can either be routed from the top or the bottom of the cabinet.

Rugged cabinet construction

The cabinet can be fitted with 8 modules of 12 channels (a maximum of 96x 3,000 VA) or 8 modules of 6 channels (a maximum of 48x 5,700 VA). Each module is equipped with single RCBO (C13/30 mA) per channel. Every cabinet is equipped with one centralised power distribution module which contains the mains switches for each dimmer module. In addition switch modules (without semiconductors) that are compatible with phase-cut modules are available. Thus the digital dimming system for installations is ready for the future and based on proven and rugged technology.

For power input (TN-S net), there is an integrated three-phase screw type terminal with a load capacity of 230 A per phase. Upon request, the cabinets can be equipped with special components such as main contactor, auxiliary contactors, additional, parallel output terminals, or DMX and network distributors.

Dimmer modules

The plug-in modules for the dimMA compact RCBO digital dimming system are available with load ratings of 12x 3,000 VA or 6x 5,700 VA with a rise time of 280 µs.* Each dimmer circuit has high quality thyristors and filter suppression.

This allows us to offer the optimal solution for every kind of application while also taking economic aspects into consideration. Each dimmer module features a separate single-PCB computer with power supply and communicates with the Network Dimmer Processor of the cabinet via a CAN-bus interface. Dimmer modules of the same rating may be freely exchanged; any assigned settings such as dimmer number, dimming curve, non-dimming operation, and special and/or panic functions remain linked to the plug-in slot location and apply to any new module inserted.

Each module is cooled with two temperature-controlled fans activated only if the module is actually in use. This reduces drastically the amount of noise produced by the dimming system because only those components are cooled that need it. Via the NDP, each dimmer circuit provides the lighting control system with detailed information about current and voltage, the status of the load connected, and about any faults occurring.

Additional dimMA compact options (prices on request)
Switch modules (e.g. 12 x 13A, 6 x 25A)
Main contactor 230A
Clamp options (e.g.16mm² single clamp, 6mm² triple-deck clamp, double clamp, spring-type terminal)

If you have any questions, please feel free to contact our project department who will help to develop the dimmer solution for your individual purposes!

Standard / cabinet versions dimMA compact RCBO

Number of Crates (Modules)	Dimmer Circuits	Backup NDP	Nominal Load	Mains Feed
8	96 x 13 A	optional	96 x 3,000 VA	230/400 V 230 A / Phase
8	48 x 25 A	optional	48 x 5,700 VA	230/400 V 230 A / Phase

Dimmer Modules

Dimmer Circuits	Load	Module Rise-Time (10-90% at 90° firing angle)	Module Processor
12x 13 A	3,000 VA	280 µs	16 Bit, CAN-bus interface, independent power supply
6x 25 A	5,700 VA	280 µs	16 Bit, CAN-bus interface, independent power supply

NDP_
Network Dimmer Processor

The Network Dimmer Processor (NDP) is the heart of the dimMA dimming system. The NDP is the active link between the different Ethernet signal standards, the dimMA digital dimming system and the DMX world. In addition to controlling and supervising up to 144 dimmer circuits, up to 1024 channels can also be converted from the respective Ethernet protocol and outputted to two electrically isolated DMX universes. Two separate DMX lines are also available as inputs in order to integrate those control systems into the MA network which were previously not included in the signalling network. In this way, the number and length of cables can be reduced and greater distances can be bridged. Just like the consoles of grandMA range, the Network Dimmer Processor (NDP) supports various protocols for transmitting DMX data via Ethernet as a standard feature and therefore does not depend on the consoles of any manufacturer in particular.

The NDP uses a CAN-bus interface to communicate with the individual dimmer modules. This interface can also be used to synchronise the NDP with a second, optional NDP used as a backup system. For configuring and operating the NDP "on site", each unit has a two-line, backlit LCD display, four menu keys and an encoder. When connected to an external keyboard, a mouse and a VGA monitor, configuring the NDP is especially easy and convenient to do.

FUNCTIONS OF THE DIGITAL DIMMING SYSTEM:

With its comprehensive operating functions, the dimMA dimmer for installation provides all possibilities for the installation of centralised or decentralised dimming systems either controlled via network or separately. Here are some key features of the system:

- Control via DMX and/or Ethernet (MA-Net or Art-Net protocol) with two control inputs ("control slots") which can be combined per HTP, LTP, A over B, A-only or B-only
- Dimmer resolution of 8 or 16 bits, additional timing channel per dimmer as an option
- Automatic patch for the entire cabinet; starting address for both control inputs can be set individually
- Individual patch for each of the two control inputs per individual dimmer
- Setting the minimum and maximum voltage per dimmer (in volts)
- Automatic preheat feature adjustable per dimmer (switches off, if control signal is >0%)

- Response time adjustable per dimmer (in milliseconds)
- Backup cue in case of control system failure
- Two lighting cues (Panic and Control) can be activated independent from the dimmer processor; special/emergency lighting systems in accordance with VDE 0108 can be easily and economically realised
- Six dry-contact inputs for activating backup cues, direct or binary coded for 64 cues
- Cue memory for 1,000 Cues (backup cues) with running time, numbered by sequence and cue number
- Eight pre-defined, further to be configured dimmer curves, selectable per dimmer (can be edited using a grandMA console or grandMA onPC software)

Eight dry contacts make it possible to activate functions such as backup/emergency cues by means of any external buttons or switches. Two of these analogue inputs are used as a panic function to activate two cues directly in the dimmer modules, i.e. independent from the NDP. The housing which is constructed from sheet metal is one unit high and designed for rack mounting; it comes complete with a built-in, three-phase power supply. All signal connectors are pluggable and routed within the dimmer cabinet.

FAULT MESSAGES AND FEEDBACK (EXTRACT):

The dimMA digital dimming system is equipped with a comprehensive monitoring and diagnostic system which detects the operational status of each individual dimmer and transmits this information to a monitoring PC or a grandMA lighting control system. Detected faults and messages show up in plain language on the NDP's display and fault memory. The following faults are detected and reported:

- Excessive temperature per module (average temperature of cabinet will be displayed in console)
- Overload of the dimmer (load rating of the dimmer exceeded)
- Loss of phase on feed supply
- Over-current on neutral connection (with optional sensor)
- Excess direct current on dimmer output
- Load failure (no load connected)
- Failure of one or both control signals (DMX or Ethernet)
- RCD trip per rack
- Trip of the dimmer's automatic circuit breaker
- Failure of a dimmer module (module feed or electronics defective)

All faults are recorded and, together with the date and time of the fault, are entered into the fault list, which can be retrieved on the NDP itself, on a grandMA console or with a PC using Telnet or grandMA offline software. All dimmer cabinets can also be remotely configured via a grandMA console or a PC.
A grandMA console or a PC via FTP or NFS can be used to update the NDP's software. Such an update is also possible without a PC by replacing the CF-Flashcard on the NDP. The software of the individual dimmer modules is updated automatically; there is no need to remove or open the modules.

MA Digital Dimmer
Touring and 'WM'

- Robust coated 19" sheet steel housing including interior chassis

- Special versions with single or two-pole breaker, optionally also available with RCD protection switch

- Two temperature controlled fans

- Automatic turn off and over-temperature warning

- Phase angle control by thyristors and wide spectrum filter suppression

- All inputs and outputs have high frequency interference suppression

- Full load and short circuit safe dimmer with magnetic circuit breaker (C-profile)

- All operating functions via menu and graphic LCD display

- Preheat and output limit fully adjustable options for each channel

- 3 flexible and fully editable dimmer curves, plus a switched function

- Internal memory of 12 scenes and one chaser with separate fade times

- Block or single channel patch for DMX

- Individual versions according to customers´ specifications available on request; e.g. with earth leak protection switch

With their digital dimmers MA Lighting have a strong history especially for the touring business. This is mainly based on the proven reliability of these "busy workhorses" sized 19"/3 Units. For the first time MA Lighting is now also offering their first-class dimmer technology in a robust housing to be able to mount it on the wall (Wall Mount) for fixed installations. With special rails this digital dimmer WM can also be built-in a 19" rack.

The MA digital dimmers are controlled by high power microcontrollers with "time-processing-units", for digital adjusting of the firing time of the phase control. All data and stored memories are filed in the EPROM. It is possible to change the operating system via EPROM for later software upgrades. DMX control with single channel or sequence patch and hold on memory of the dimmer output data can be selected in advanced in the event of DMX breakdown.

Display
The large graphic display on the MA digital dimmer lists all important status values and allows access to numerous functions. Errors like broken lamps, overvoltage or overheating are also further displayed by LEDs and a buzzer.

Phase Angle Control

MA Lighting Dimmers use thyristors running under phase-angle control. The dimmer's power components and circuit breakers are tuned so that the internal electronics are safe from short circuits. In addition, the power spike associated with turning on halogen lamps will not trigger the dimmer's circuit breakers.
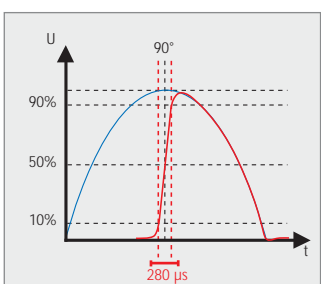
Electronic Control

Digital control throughout the dimmer ensures error-free operation. Changes in the internal temperature of the dimmer, caused by differing load situations, will not influence the dimming characteristics of the dimmer. The dimmer will notify the console operator before it overheats, e.g. when a fan is blocked, and will ultimately shut down if ignored. The input voltage is closely monitored, and the dimmer will automatically shutdown in case of the wrong polarity or a missing neutral – protecting equipment from over voltage.

Dimmer Noise

Special-filtering ring-core chokes, and the cleverly designed housing of the new "WM" digital dimmer with interior chassis, ensures that "dimmer buzz" is kept to an absolute minimum. From a distance of one meter, sound from the dimmer measures only 46 dB meaning that it can be installed virtually anywhere.

Heat Control

When electronic waves are dampened, magnetic fields and heat are produced. At a duty cycle of 12x2.3 kVA inside a three unit housing, the loss of 1.5% corresponds to a medium-sized heating coil. In the MA Digital Dimmer, the build up of heat has been reduced considerably by using special coil core materials.

The remaining heat is dissipated by using powerful, temperature-controlled fans. It is because of these features that the MA Digital Dimmer is rated for a 100% duty cycle.

Interference suppression

Phase-angle control produces harmonic waves that can cause distortion in other electronic equipment and that are highly undesirable in audio applications. The specially-developed filters of the MA Digital Dimmer not only suppress these frequencies in the range required by law, but also suppress frequencies in the audio range up to 20 kHz. Although rise times are not the only way to measure interference suppression, the MA Digital Dimmer qualifies with its 280 µs rise time (10-90% at full load) as one of the market leaders.

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MA Digital Dimmer
Wallmount

- Two different versions with permanent load of 3,000 or 5,700 VA
- A partially casted split-ring choke make it even more light-weight for the „touring" version
- 280 µs rise time (3 kVA), 400 µs rise time (5,7 kVA) – between 10% and 90% at a phase angle of 90°; special ring core throttle
- Dimmer with special filter technology and interference suppression especially for TV business available as 3kVA version; rise time: 400 µs
- Phase control display for glow lamps
- Special versions with two-way breaker and special wiring for use with delta network (without RCD) – e.g. on cruise ships

- 8 contact inputs for the recall of internal stored looks; 8 outputs with LED feedback
- Robust coated 19" 14 Units steel housing for mounting on walls
- With special rails the dimmer can be built-in a 19" rack
- Optional cable input access, either on top and/or bottom
- Socapex or Harting output possible
- All typical MA features according to pp. 70/71

Inside view

MA Digital Dimmer 'WM' 12 x 3 kVA

A wall-mountable digital dimmer with 12 single dimmers 3,000 VA without RCD. Rise time 280 µs between 10% and 90% at a phase angle of 90°; ring core suppression.
Large graphic display listing status values and special functions as well as phase control display. Further versions with RCD (63A/30mA), mains breaker with earth leak protection or real two-way breaker and special wiring for cruise ships (delta-network) also available.

MA Digital Dimmer 'WM' 12 x 3 kVA TV3

Wall-mountable digital dimmer with 12 single dimmers 3,000 VA with special filter technology and a rise time of 400 µs between 10% and 90% at a phase angle of 90°. Designed especially for TV studios, excellent interference suppression can be guaranteed. Large graphic display listing status values and special functions as well as phase control display. Further versions with RCD (63A/30mA), mains breaker with earth leak protection or real two-way breaker and special wiring for cruise ships (delta-network) also available.

MA Digital Dimmer 'WM' 6 x 5,7 kVA

Wall-mountable digital dimmer with 6 single dimmers 5,700 VA without RCD. Rise time 400 µs between 10% and 90% at a phase angle of 90°; ring core suppression.

Large graphic display listing status values and special functions as well as phase control display. Further versions with RCD (63A/30mA), mains breaker with earth leak protection or real two-way breaker and special wiring for cruise ships (delta-network) also available.

Art. No.	Article
140521	Digital Dimmer WM 12 x 3 kVA
140522	Digital Dimmer WM 12 x 3 kVA with RCD
140525	Digital Dimmer WM 12 x 3 kVA Delta
140527	Digital Dimmer WM 12 x 3 kVA TV3 interference suppression
140528	Digital Dimmer WM 12 x 3 kVA neutral-disconnect
140529	Digital Dimmer WM 12 x 3 kVA double-clamp
140530	Digital Dimmer WM 12 x 3 kVA with 6mm^2 clamps
140532	Digital Dimmer WM 12 x 3 kVA RCD per channel
140523	Digital Dimmer WM 6 x 5.7 kVA
140524	Digital Dimmer WM 6 x 5.7 kVA with RCD
140526	Digital Dimmer WM 6 x 5.7 kVA Delta
140581	Digital Dimmer WM 6 x 5.7 kVA RCD per channel
140582	Digital Dimmer WM 6 x 5.7 kVA neutral-disconnect
140583	Digital Dimmer WM 6 x 5.7 kVA double-clamp

Art. No.	Dimensions (width x height x depth)	Weight
140521	440 x 610 x 154 mm*	33.5 kg / 73.9 lbs
140522	440 x 610 x 154 mm*	34.0 kg / 75.0 lbs
140525	440 x 610 x 154 mm*	34.0 kg / 75.0 lbs
140527	440 x 610 x 154 mm*	37.5 kg / 82.7 lbs
140528	440 x 610 x 154 mm*	34.0 kg / 75.0 lbs
140529	440 x 610 x 154 mm*	34.0 kg / 75.0 lbs
140530	440 x 610 x 154 mm*	33.5 kg / 73.9 lbs
140532	440 x 610 x 154 mm*	34.0 kg / 57.0 lbs
140523	440 x 610 x 154 mm*	34.0 kg / 75.0 lbs
140524	440 x 610 x 154 mm*	34.5 kg / 76.0 lbs
140526	440 x 610 x 154 mm*	34.5 kg / 76.0 lbs
140581	440 x 610 x 154 mm*	34.5 kg / 76.0 lbs
140582	440 x 610 x 154 mm*	34.5 kg / 76.0 lbs
140583	440 x 610 x 154 mm*	34.0 kg / 75.0 lbs

* Or 17.3 x 24 x 6 inch. Dimensions without support rail. With rail additional 30 mm (1.2 inch) per side.

MA Digital Dimmer
Touring Packs

- Rock solid 19" steel housing with internal frame
- Three available power ranges with 2,3kVA 3,7kVA and 5,7kVA
- Special noise filtering and rise time for TV applications available

- Master Slave mode for simultanously programmstart with MIDI
- Analogue input via 0-10 V possible
- More technical information on page 70/71

Highest availability and practical relevance of their digital touring dimmer as well known and reliabale "work horses" made MA Lighting technology famous around the world. Controlled and monitored by a 32 Bit time processor unit which can store cue memories and all settings in a EPROM ensures an error free operation. Upgrading the dimmer working software is no problem by using an EPROM. DMX control with a single patch or sequence patch, Master/Slave operation and hold output on DMX error are just a few more highlights.

MA Digital Dimmer 12 x 2,3kVA

MA Digital Dimmer 12 x 2,3 kVA TV3

A rack-mountable Digital Dimmer unit in a 19" 3U housing with 12 single dimmers 2,300 VA. The rack is controlled by a high power micro controller with 'time processing-unit' – digital adjusting of the ignition time of the phase control. All data and stored memories are filed in the EEPROM. It is possible to change the operating system via EPROM for later software upgrades. DMX control with single channel or sequence patch, and hold or memory of the dimmer output data can be selected in advanced in the event of DMX breakdown. Master/Slave connection with other dimmers (e.g. in a dimmer rack) is possible. The dimmer is delivered with mounted supply H07RN-F 5G 6 mm², without plug.

A rack-mountable Digital Dimmer unit in a 19" 3U housing with 12 single dimmers 2,300 VA with special filter technology and a rise time of 360 µs between 10% and 90% at a phase angle of 90°. Designed especially for TV studios, excellent interference suppression can be guaranteed. Further functions and equipment as the MA Digital Dimmer 12 x 2.3kVA. The dimmer is delivered with mounted supply H07RN-F 5G 6 mm², without plug.

MA Digital Dimmer 12 x 2,3 kVA RCD

A rack-mountable Digital Dimmer unit in a 19" 3U housing with 12 single dimmers 2,300 VA and built-in RCD breaker rated at 30 mA mounted on the front. Further functions and equipment as the MA Digital Dimmer 12 x 2.3kVA. The dimmer is delivered with mounted supply H07RN-F 5G 6 mm², without plug.

MA Digital Dimmer 6 x 5,7 kVA

A rack-mountable Digital Dimmer unit in a 19" 3U housing with 6 single dimmers 5.7 kVA for very high loads. Protection by one or two breakers. Further functions and equipment as the MA Digital Dimmer 12 x 2.3kVA. Delivery includes mounted supply H07RN-F 5G 10 mm², without plug.

MA Digital Dimmer 12 x 3,7 kVA

A rack-mountable Digital Dimmer unit in a 19" 3U housing with 12 single dimmers 3,700 VA for higher loads. Further functions and equipment as the MA Digital Dimmer 12 x 2.3 kVA. The dimmer is also available with integrated RCD breaker rated at 30mA. Delivery includes mounted supply H07RN-F 5G 10 mm², without plug.

MA Digital Dimmer 6 x 5,7 kVA RCD

A rack-mountable Digital Dimmer unit in a 19" 3U housing with 6 single dimmers 5.7 kVA for very high loads. Protection by one or two breakers, also with built-in RCD breaker rated at 30mA mounted on the front. Further functions and equipment as the MA Digital Dimmer 12 x 2.3 kVA.Delivery includes mounted supply H07RN-F 5G 10 mm², without plug.

MA Digital Dimmer 12 x 2.3kVA – Harting

MA Digital Dimmer 12 x 2.3kVA – Socapex

MA Digital Dimmer 12 x 2.3kVA - Hotpatch

Art. No.	Article
140501	MA Digital Dimmer 12 x 2.3 kVA (Harting HAN16E)
140502	MA Digital Dimmer 12 x 2.3 kVA (Socapex EF 419)
140503	MA Digital Dimmer 12 x 2.3 kVA (Wieland Hotpatch 12/2)
140512	MA Digital Dimmer 12 x 2.3 kVA TV3 (Harting HAN16E)
140601	MA Digital Dimmer 12 x 2.3 kVA RCD (Harting HAN16E)
140602	MA Digital Dimmer 12 x 2.3 kVA RCD (Socapex EF 419)
140603	MA Digital Dimmer 12 x 2.3 kVA RCD (Wieland Hotpatch 12/2)
140612	Digital Dimmer 12 x 2.3 kVA TV3 RCD (Harting HAN16E)

Art. No.	Article
140504	MA Digital Dimmer 12 x 3.7 kVA (Harting HAN16E)
140505	MA Digital Dimmer 12 x 3.7 kVA (Socapex EF 419)
140604	MA Digital Dimmer 12 x 3.7 kVA RCD (Harting HAN16E)
140605	MA Digital Dimmer 12 x 3.7 kVA RCD (Socapex EF 419)
140508	MA Digital Dimmer 6 x 5.7 kVA (Harting HsB6)
140507	MA Digital Dimmer 6 x 5.7 kVA (Harting HsB6) with 2-way Breakers
140608	MA Digital Dimmer 6 x 5.7 kVA RCD (Harting HsB6)
140607	MA Digital Dimmer 6 x 5.7 kVA RCD (Harting HsB6) with 2-way Breakers

Art. No.	Dimensions (width x height x depth)	Weight
140501	483 x 132 x 410 mm	23.0 kg
	19 x 5.2 x 16.1 inch	50.7 lbs
140512	483 x 132 x 410 mm	22.0 kg
	19 x 5.2 x 16.1 inch	48.5 lbs
140601	483 x 132 x 410 mm	23.0 kg
	19 x 5.2 x 16.1 inch	50.7 lbs

Art. No.	Dimensions (width x height x depth)	Weight
140504	483 x 132 x 410 mm	28.0 kg
	19 x 5.2 x 16.1 inch	61.8 lbs
140508	483 x 132 x 410 mm	34.0 kg
	19 x 5.2 x 16.1 inch	75.0 lbs
140608	483 x 132 x 410 mm	34.0 kg
	19 x 5.2 x 16.1 inch	75.0 lbs

MA Digital Dimmer
Touring Racks

- Digital Dimmer, tailored by MAJOR
- Equipped with power distribution 63A or 125A by CEE 3P+N+PE connector and 2m cable or Powerlock distribution 250A with powerlock connectors for the 48 x 3,7kVA rack
- Every single dimmer protected by RCD and fuses
- Four additional direct power out for the 48x3,7kVA rack

- MAJOR Hotpatch unit with LED desk lamp, Output via Harting HAN 16E connectors at the rear or optional ICP/Socapex, CEE17 or Schukoplugs
- 30mA RCD protection for each dimmer
- Amptown case with built in ABS chassis for optimal safety during transport and drawer for hotpatch cable and accessories

With the MA Digital Dimmer Racks MA Lighting is answering the need of the market to have complete assembled dimmer racks for the touring business. The especially sturdy MA dimmer racks are tailored by MAJOR. Dimmer racks with MA dimmer in an Amptown case are available with two, three or four MA Digital Dimmer units of different capacities, and are all equipped with an integrated MAJOR power distribution (CEE or Powerlock) including all required RCD and main circuit breakers. For the touring version a MAJOR Hotpatch panel complete with a test plug and desk lamps are integrated as standard. The dimmer racks are available in different sizes from 24 x 2.3kVA up to 48 x 3.7kVA with Hotpatch. 5.7kVA dimmers can also be built-in to the racks without Hotpatch. Special custom-made dimmer racks are also available on request.

Customers may also specify power outputs in the form of Harting HAN16E, ICP/Socapex, CEE17 or Schuko plugs. The whole system is rounded off by the excellent ABS cases for optimum safety during transport and also with additional heavy duty rollers on the back for easy manouvering.

Stable flightcases
Each dimmer rack will be an Amptown ABS rack. These racks are well known as the world leading touring racks. MAJOR Hotpatch unit and dimmers are placed in a special inner frame inside the flightcase for optimal safety "on the road".

Hotpatch unit
MAJOR Hotpatch with four or two outputs per dimmer channel. Earth is directly connected to the output that means even without any patch cable connected the output is earth protected.

Outputs
Outputs are Harting HAN 16E connectors with six channels per connector.

Digital-Dimmerrack 24 x 2.3 kVA TV3

The MA 24 channel dimmer rack TV is equipped with two Digital Dimmer units 12 x 2.3kVA TV3 with special filter technology and a rise time of 360 µs measured between 10% and 90% at a phase angle of 90°. Designed especially for use in TV studios, excellent interference suppression can be guaranteed. This rack is equipped with 63A MAJOR power distribution, but with 4 HAN 16 and 24 parallel Schuko outputs and is delivered completely wired and in full working order. All dimmer units are protected with 32A breakers per phase. The special shock-proof case offers optimal safety during transport. The rack is delivered with two Digital Dimmer units 12 x 2.3 kVA TV and 63A MAJOR power distribution.

MA Digital Dimmer Rack 24 x 2.3 kVA TV3

Digital-Dimmerrack 48 x 2.3 kVA with MAJOR Hotpach 48/2

The MA 48 channel Dimmer rack is equipped with four MA Digital Dimmer units 12 x 2.3 kVA. This rack is equipped with 125A MAJOR power distribution, all required RCD and mains breaker, a 48/2 MAJOR hotpatch panel and 16 Harting HAN 16E outputs and is delivered completely wired and in full working order. All dimmer units are protected with 32A breakers per phase. The special shock-proof case offers optimal safety during transport. Rollers are also mounted on the rear for improved transportation. The rack is delivered with 4 MA Digital Dimmer units 12 x 2.3kVA, 125A MAJOR power distribution and includes a desk lamp and drawer for accessories, but no hotpatch cables.

Digital-Dimmerrack 24 x 2.3 kVA with MAJOR Hotpach 24/4

The MA 24 channel dimmer rack is equipped with two Digital Dimmer units 12 x 2.3kVA. This rack is equipped with 63A MAJOR power distribution including all required RCD breakers, a 24/4 MAJOR hotpatch panel and 16 Harting HAN16E outputs is delivered completely wired and in full working order. All dimmer units are protected with 32A breakers per phase. The special shockproof case offers optimal safety during transport. The dimmer rack is delivered inclusive of 2 MA Digital Dimmer units 12 x 2.3kVA, 63A MAJOR power distribution, a desk lamp and drawer for accessoires, but excludes hotpatch cable.

MA Digital Dimmer Rack 48 x 2.3 kVA
with MAJOR Hotpatch 48/2

MA Digital Dimmer Rack 24 x 2.3 kVA
with MAJOR Hotpatch 24/4

Art. No.	Article
140804	MA Digital Dimmerrack 48 x 2.3 kVA
140803	MA Digital Dimmerrack 24 x 2.3 kVA
140853	MA Digital Dimmerrack 24 x 2.3 kVA TV

Art. No.	Dimensions (width x height x depth)	Weight
140804	154 x 60 x 95 cm *	260 kg
	60.6 x 23.6 x 37.4 inch *	573 lbs
140803	120 x 60 x 80 cm *	163 kg
	47.2 x 19.7 x 31.5 *	360 lbs
140853	120 x 60 x 80 cm *	140 kg
	47.2 x 19.7 x 31.5 *	308 lbs

* incl. wheels

Digital-Dimmerrack 48 x 3.7 kVA with MAJOR Hotpatch 24/4 + 24/2

The MA 48 Channel Dimmer Rack comes equipped with four 12 x 3.7kVA MA Digital Dimmer units. This rack is fitted with a 250A MAJOR Powerlock distribution panel, RCD protection, a mains breaker, a 24/4 and 24/2 hotpatch panel, as well as 24 Harting HAN 16E outputs. The rack is delivered completely wired and in full working order. The dimmer units are protected with a 63A MAJOR breaker on each phase. The shock-proof case offers optimal safety during transport, and castors are mounted on the rear for easy handling. The MAJOR hotpatch panel includes a test plug, constant current outputs and a desk lamp. The rack is delivered with four 12 x 3.7kVA MA Digital Dimmer units and 250A MAJOR Powerlock distribution connectors. Hotpatch cables are not included.

Digital-Dimmerrack 24 x 3.7 kVA compact version with MAJOR Hotpatch 24/4

A space-saving, compact dimmer rack, the MA 24 Channel Dimmer Rack comes complete with two 12 x 3.7 kVA RCD Digital Dimmer units. The rack is fitted with a MAJOR power distribution panel, a mains breaker, a 24/4 MAJOR hotpatch panel and 16 Harting HAN 16E outputs. The rack is delivered completely wired and in full working order. The dimmer units are protected with a 32A breaker on each phase, and two additional outlets with permanent power are available. The shock-proof case offers optimal safety during transport, and castors are mounted on the rear for easy handling. The MAJOR hotpatch panel includes a test plug, constant current outputs and a desk lamp. The rack is delivered with two 12 x 3.7kVA RCD MA Digital Dimmer units and 125A power distribution. Hotpatch cables are not included.

Digital-Dimmerrack 12 x 5.7 kVA

The MA 12 Channel Dimmer Rack comes complete with two 6 x 5.7kVA MA Digital Dimmer units. This rack is equipped with 125A MAJOR power distribution and 12 Harting HsB6 outputs with CEE 32A L+N+PE outputs. The rack is delivered completely wired and in full working order. The rack is delivered with two 6 x 5.7kVA MA Digital Dimmer units and 125A MAJOR power distribution. Hotpatch cables are not included.

Digital-Dimmerrack 48 x 2.3 kVA compact version with MAJOR Hotpatch 48/2

A space-saving, compact dimmer rack, the MA 48 Channel Dimmer Rack comes complete with four 12 x 2.3 kVA, MA Digital Dimmer units. The rack is equipped with an 125A MAJOR power distribution panel, RCD protection, a mains breaker, a 48/2 MAJOR hotpatch panel and 16 Harting HAN 16E outputs. The rack is delivered completely wired and in full working order. Each dimmer unit is protected with a 32A breaker on each phase. The shock-proof case offers optimal safety during transport, and castors are mounted on the rear for easy handling. The rack is delivered with four 12 x 2.3kVA, MA Digital Dimmer units and 125A MAJOR power distribution. The rack includes a desk lamp and drawer for accessories. Hotpatch cables are not included.

Digital-Dimmerrack 36 x 2.3 kVA compact version with MAJOR Hotpatch 36/4

A space-saving, compact dimmer rack, the MA 36 Channel Dimmer Rack comes complete with three 12 x 2.3kVA RCD Digital Dimmer units. This rack is fitted with a MAJOR power distribution panel, a mains breaker, a 36/4 MAJOR hotpatch panel and 24 Harting HAN 16E outputs. The rack is delivered completely wired and in full working order. Each dimmer unit is protected with a 32A breaker on each phase. Two additional outlets with permanent power are also available. The shock-proof case offers optimal safety during transport, and castors are mounted on the rear for easy handling. The MAJOR hotpatch panel includes a test plug, constant current outputs and a desk lamp. The rack is delivered with three 12 x 2.3 kVA RCD MA Digital Dimmer units and 125 A power distribution. Hotpatch cables are not included.

MA Digital Dimmer Rack 36 x 2.3 kVA compact version with MAJOR Hotpatch 36/4

Art. No.	Article
140851	MA Digital Dimmer Rack 48 x 3.7 kVA
140850	MA Digital Dimmer Rack Compact Version 24 x 3.7 kVA
140854	MA Digital Dimmer Rack 12 x 5.7 kVA
140855	MA Digital Dimmer Rack Compact Version 48 x 2.3 kVA
140852	MA Digital Dimmer Rack Compact Version 36 x 2.3 kVA

Art. No.	Dimensions (width x height x depth)	Weight
140851	154 x 60 x 95 cm	280 kg
	60.6 23.6 37.4 inch	617 lbs
140850	89 x 60 x 95 cm	168 kg
	35 x 23.6 x 37.4 inch	370 lbs
140854	77 x 60 x 80 cm	140 kg
	30 x 23.6 x 31.5 inch	308 lbs
140855	120 x 60 x 95 cm	250 kg
	47.2 x 23.6 x 37.4 inch	551 lbs
140852	107 x 60 x 95 cm	205 kg
	42.1 x 23.6 x 37.4 inch	451 lbs

Dimming

MA DIGITAL DIMMER and MA DIGITAL DIMMER with RCD – TOURING | Wallmount

	140501 12 x 2.3 kVA (Harting) [140601 RCD]	140512 TV3 12 x 2.3 kVA (Harting) [140612 RCD]	140502 12 x 2.3 kVA (Socapex) [140602 RCD]	140511 12 x 2.3 kVA 120 V (Socapex)	140503 12 x 2.3 kVA (Hotpatch) [140603 RCD]	140504 12 x 3.7 kVA (Harting) [140604 RCD]	140505 12 x 3.7 kVA (Socapex) [140605 RCD]	140507 6 x 5.7 kVA (Wieland), with 2-pole breakers [140607 RCD]	140508 6 x 5.7 kVA (Wieland) [140608 RCD]	140521 6 x 3.0 kVA [140522 RCD]	140523 6 x 3.0 kVA [140524 RCD]
Power											
Power per Channel (kVA)	2.3	2,3	2.3	2.3	2.3	3.7	3.7	5.7	5.7	3.0	5.7
Dimmer Channels	12	12	12	12	12	12	12	6	6	12	6
Supply											
Cable (mm^2)	6	6	6	10	6	10	10	10	10		
No. of phases	3	3	3	3	3	3	3	3	3		
Control											
DMX	•	•	•	•	•	•	•	•	•	•	•
Analogue	•	•	•	•	•	•	•	•	•	•	•
MIDI	•	•	•	•	•	•	•	•	•		
Cues	12	12	12	12	12	12	12	12	12	12	12
Function	•										
Non-dim		•	•	•	•	•	•	•	•	•	•
Curves	3	3	3	3	3	3	3	3	3	3	3
Outputs											
Harting HAN 16E	2	2				2				0	
Socapex			2	2			2			0	
Hotpatch					2*12						
Harting HsB6								2	2		0
Schuko											
Fuse Rating	C10A	C10A	C10A	C25A	C10A	C16A	C16A	C25A	C25A	C13A	C25A
RCD (A)	[40]	[40]	[40]		[40]	[63]	[63]	[63]	[63]	[63]	[63]

MA DIGITAL DIMMER RACKS

	140803 24 x 2.3 kVA	140853 24 x 2.3 kVA »TV«	140852 36 x 2.3 kVA	140804 48 x 2.3 kVA	140850 24 x 3.7 kVA	140851 48 x 3.7 kVA	140854 12 x 5.7 kVA
Power							
Power per Channel (kVA)	2,3	2,3	2,3	2,3	3,7	3,7	5,7
Channels	24	24	36	48	24	48	12
Inputs							
Powerlock						250	
CEE 17	63	63	125	125	125		125
Outputs							
Hotpatch	4x		4x	2x	4x	4x	
HAN 16E	16	4	24	16	16	24	
HsB6							12
Schuko		24					
CEE 32A L+N+PE							12
Permanent Power (Schuko)	2	2	3	3	2	3	2
RCD	40	40	40	40	63	63	63
Rack (U)	13	11	15	24	11	26	11
Accessories (drawer)	•			•			
Special		interference suppression 360µs					

grandMA
– leading products for great shows and famous venues

International reference list (extract)
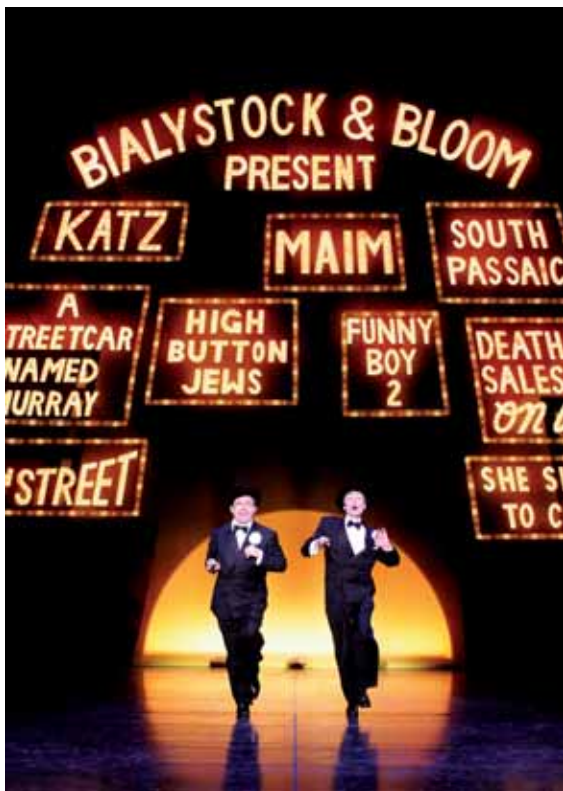
The Producers, Vienna Austria; Lighting Design: Pia Virolainen;
Photo: ©VBW / Oliver Hadji

Theatres – Musicals

- The Little Mermaid – New York, USA
- Mary Poppins – London, UK
- Into the Hoods – London, UK
- Esplanade: Theatres on the Bay – Singapore
- National Centre for the Performing Arts – Beijing, China
- Ronacher Theatre – Vienna, Austria
- Tjumen Theatre – Tjumen, Russia
- Victoria Theatre – Singapore
- Wicked – London, UK / Los Angeles, USA / New York, USA / Stuttgart, Germany
- Arena di Verona – Verona, Italy
- Lord of the Rings – London, UK
- Teatro Lirico di Cagliari – Cagliari, Italy
- A Class Act – London, UK
- Queensland Performing Arts Centre – Brisbane, Australia
- Never Forget – UK
- Cirque du Soleil: Love – Las Vegas, USA
- Cirque du Soleil: Corteo – Touring Show
- Cirque du Soleil: Delirium – Touring Show
- Cirque du Soleil: Kooza – Touring Show
- Cirque du Soleil: Saltimbanco – Touring Show
- Cirque du Soleil: Wintuk – Touring Show
- Schouwburg – Rotterdam, Netherlands
- The Drowsy Chaperone – London, UK
- Operaen – Copenhagen, Denmark
- Lyric Theatre – Johannesburg, South Africa
- High School Musical: The Concert – USA
- Friedrichstadtpalast – Berlin, Germany
- Avenue Q – London, UK / New York, USA
- Barbican Concert Hall – London, UK

TV – Studios – Shows

- American Gladiators – USA
- Millions Poet – Abu Dhabi, UAE
- ECHO 2008 – Berlin, Germany
- Night at the Museum: Battle of the Smithsonian Movie - USA
- MTV Australia Awards – Sydney Australia
- MTV Europe Music Awards – Munich, Germany
- MTV Video Awards – New York, USA
- Prince Of Poets – Abu Dhabi, UAE
- ORF - Vienna, Austria
- VMA Awards – New York, USA
- Saturday Night Live, NBC Studios – New York, USA
- ABC Studios – New York, USA
- CNN Studios – Los Angeles, USA
- German Pop Idol – Cologne, Germany
- DR Byen – Copenhagen, Denmark
- Plazamedia – Munich, Germany
- Star Quiz – Hamburg, Germany
- Celebrity Big Brother – UK
- RTL Belgium – Luxembourg
- ZDF – Mainz, Germany

Concert Touring – Live Events

Concert Touring

- Bon Jovi "Lost Highway" – World Tour
- Celine Dion "Taking Chances" – World Tour
- Radiohead – World Tour
- Madonna – World Tour
- Linkin Park "Project Revolution" – World Tour
- Spice Girls "Return of the Spice Girls" – World Tour
- R.E.M. "Accelerate" – World Tour
- Carlos Santana "Live Your Light" – World Tour
- Jay-Z & Mary J Blige "Heart of the City" – US Tour
- The Jonas Brothers "Look me in the Eyes" – World Tour
- Foo Fighters at Wembley Stadium – London, UK
- Bruce Springsteen "Magic" – World Tour
- Prince – London
- The Police – World Tour
- Genesis "Turn it on again" – World Tour

- Led Zeppelin Live at O2 Arena – London, UK
- Take That "Beautiful World" – European Tour
- Billy Talent – World Tour
- Apocalyptica "Worlds Collide" – World Tour
- Bryan Adams – Tour
- Beyoncé – World Tour
- Faithless – UK Tour

Live Events

- Opening & Closing Ceremony Summer Olympics, Beijing, China
- National Day Parade – Singapore
- Eurovision Song Contest – Athens, Greece / Helsinki, Finland / Belgrade, Serbia
- Rock in Rio – Madrid, Spain / Lisbon, Portugal
- Nelson Mandela 90th Birthday Concert – London, UK
- Barack Obama's Victory Speech – Chicago, USA
- Québec City's 400th Anniversary – Québec, Canada

- Dancing on Ice – UK Tour
- Red Bull X- Fighters – Warsaw, Poland
- Desert Rock Festival – Dubai, UAE
- Capital Inicial: 48th Anniversary of Brasilia – Brasilia, Brazil
- World Cup Fan Zone – Vienna, Austria
- Festival de Verao – Salvador, Brazil
- Mayday – Dortmund, Germany
- WrestleMania XXIV – Orlando, USA
- Live Earth – Hamburg, Germany / Sydney, Australia / New York, USA / Johannesburg, South Africa
- Pan American Games – Rio de Janeiro, Brazil
- 125th Birthday of Brooklyn Bridge – New York, USA
- Rock am Ring – Nürburg, Germany
- Super Bowl XLI Concerts – USA
- V Festival – Chelmsford / Staffordshire, UK
- Expo Central China Opening Ceremony – Zhengzhou, China

Architainment – Venues – Cruise Ships

- Westfield London Shopping Centre – London, UK
- Swarovski Kristallwelten – Wattens, Austria
- BMW Welt – Munich, Germany
- Stadion Center – Wien, Austria
- World Of Coca Cola – Atlanta, USA
- Republic Polytechnic – Singapore
- Burj Al Arab – Dubai
- Venetian Casino – Macau

- A Symphony of Lights - Hong Kong, China
- Time Warner Center – New York, USA
- Wynn Resort Hotel & Casino – Las Vegas, USA
- Tivoli – Copenhagen, Denmark
- Radisson SAS – Djerba, Tunesia
- Cliffs Pavilions – Southend, UK
- AIDAdiva – Germany

- Queen Elisabeth 2, Cunard - UK
- Queen Mary 2, Cunard - UK
- Carnival Cruise Lines - USA
- Color Fantasy, Color Line - Norway
- P&O Arcadia - UK
- P&O Aurora - UK

MA Lighting

– The international standard for control, dimming, networking and video/media

MA Lighting Technology, Waldbuettelbrunn

MA Lighting International, Paderborn

Products that set the standard

Since its foundation in 1983, MA Lighting has expanded to become an international leader for computer-controlled lighting consoles, networking components and digital dimming systems. This success is based on solid reasons: With its commitment and power to innovate, MA Lighting meets the growing demands of a constantly changing industry and develops product solutions for tomorrow. With integrated system solutions and the grandMA product family, international standards were set. These Award winning products offer convenience of use and excellent quality, meeting the highest demands of professional users worldwide.

With the convergence of video, LED, digital lighting and the associated media implementation in shows and set-designs, new fields of entertainment technologies have evolved. The heart of such systems are grandMA consoles with their scaleable and flexible control approach. grandMA video is a powerful media server software tool that follows the demands of lighting and visual designers and programmers to bridge the lighting and video worlds.

Two strong partners for your success

The leading international position of **MA Lighting** rests on two columns – **MA Lighting Technology** in Waldbuettelbrunn, the centre for production, research and development and **MA Lighting International** in Paderborn – the marketing, distribution and technical support hub. We are faithful to our motto "The whole is much bigger than the sum of its parts". Our products are fully and individually developed, powerful and extremely competitive, but as a complete MA system, the aggregate MA components built a synergy that is absolutely unequalled on the market.

MA Lighting – Support and service

MA Lighting not only produces and sells products but its dedicated, Paderborn-based service team also offers excellent support for complex solutions on projects and networked lighting systems. Within a global service network, fast customer service and professional sales partners are ready to help users with advice and hands-on support when needed.

With training programs MA Lighting strives to give its customers the best qualifications available. This has particular importance when it comes to console training, however it permeates throughout everything we do. Our trainers are the best in their fields, teaching first-hand knowledge. The topics are presented at large and are illustrated in detail. Further details regarding the training are explained on our website. If you wish to take your first steps into the grandMA world please order grandMA - the DVD, it provides a basis for the training.

In order to round out its service and support activities, MA Lighting makes available additional, constantly updated technical information such as operating manuals, datasheets, texts for invitations to tender and further information about the products.

Thus, you are always kept up to date – **simply visit us at** www.malighting.com
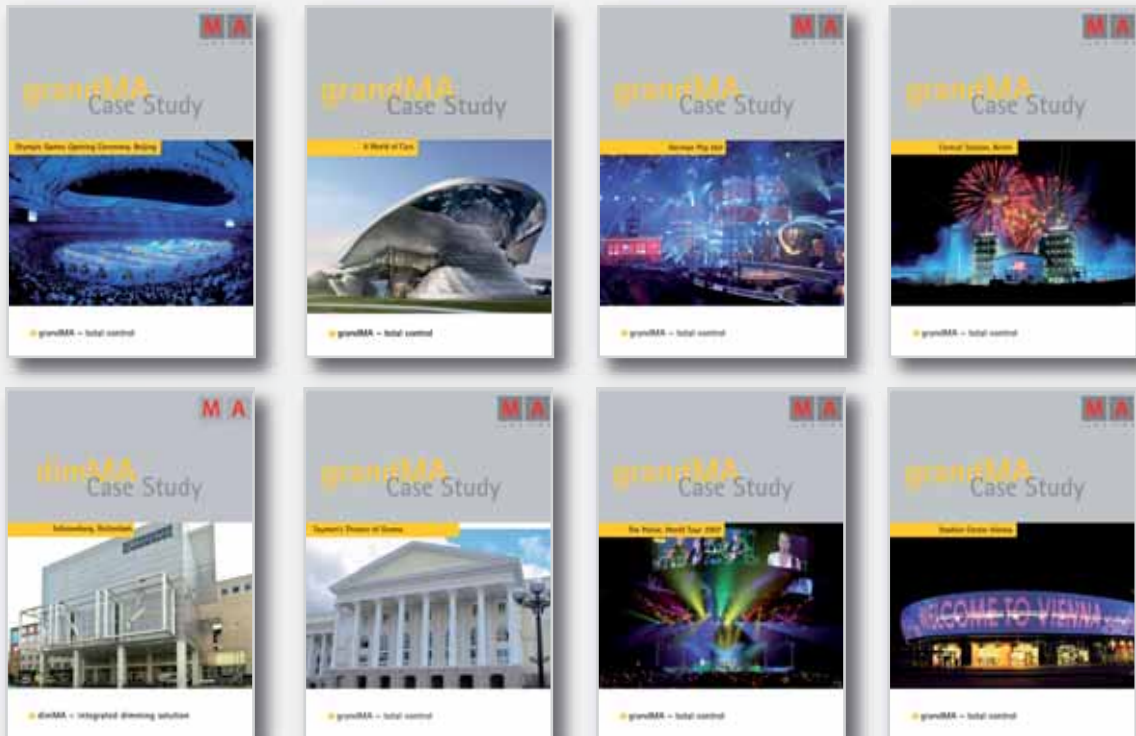
Our case studies and further literature can be downloaded from our website: www.malighting.com