

M-TUBES



FEATURES

- High-quality light guide bars, available in wide range of sizes
- For interior ambience, electrical enclosure/system lighting, emergency lighting, backlighting, signal lighting, etc.
- Light guide lengths: 100 mm; 300 mm; 500 mm; 700 mm
- Diameter of light guide: 5 mm; 6 mm; 8 mm; 10 mm
- Various lighting effects, angles, brightness, and colors available
- Low energy consumption and long lasting
- Custom versions available

The unique M-TUBE LED light systems unite progress and modern times: Low energy consumption, extremely long life time without expensive servicing and the really minimal heat generation permit a use in almost every sphere of activity.

As a specialist for optoelectronics and light guide systems Elma has in a revolutionary way worked LED technology into its new product line M-TUBE. Whether M-TUBE Standard, M-TUBE System or M-TUBE High Brightness: All three variant types have the basic function of the aimed light reflection in a crystal-clear light guide bar in common.

The light of the LED is passed homogeneously to the surroundings along a printed reflector surface area so that the angle of departure can be adjusted independently depending on the alignment of the light guide bar.

Unusual lighting concepts and effective light architecture: Besides decorative and creative accentuation as well as indirect ambience illumination the flexible use of M-TUBES permits also security-relevant light solutions.

Immerse into the fascination M-TUBE and let yourself be inspired on the following pages by a LED light system which newly defines an atmospheric illumination with the claim to the greatest possible individuality. The unique M-TUBE LED light systems unite progress and modern times: Low energy consumption, extremely long life time without expensive servicing and the really minimal heat generation permit a use in almost every sphere of activity.

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M-TUBES



M-TUBE | STANDARD

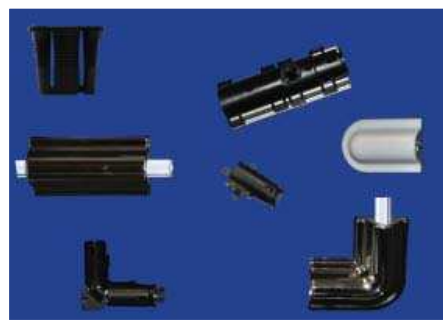
This modular LED light system consists of the individual components light guide, accompanying clamping sleeve and two casings. Used for launching the light on both sides with two LED casings or for the one-sided launching with one LED casing and one empty case. The launching with two LED casings is recommended especially for the homogeneous radiation of greater light guide lengths. The system is completed by corner and coupler casings which allow also geometric lines over longer distances or around corners. For the harmonious integration of the M-TUBE, especially with a direct guidance of light, covers are offered in black, white and chrome colors for the different LED casings.

- Light guide lengths: 100 mm; 300 mm; 500 mm; \700 mm
- Diameter of light guide: 5 mm; 6 mm; 8 mm; 10 mm
- Luminous paint
- Connection The routing of the stranded wire can be executed fully enclosed downwards by means of corresponding passages or also by branching off backwards.
- Power supply When putting into operation maximum electric current must be guaranteed by selecting the right operational voltage and voltage dropping resistor.
- Fixing screw joint, caulking, by means of clips at the LED casings, optionally at the tabs which are attached at the sides
- Corner and coupler casing for geometrical lines over longer distances or around corners
- Cover black white chrome

Application examples:

- Light architecture: lighting of stairs and edges, emergency lighting, interior decoration
- Industrial electronics: switchgear cabinet illumination, service light, danger signals
- Household goods and furniture: illumination and back lighting of all kind
- Automobile: light curtains, signal lights, contour illumination, ambience lighting.

M-TUBES



M-TUBE | SYSTEM PREMIUM

The M-TUBE System Premium is based on the seminal idea of the M-TUBE Standard, however, it was developed further for a customer friendly use according to the plug-and-play principle. The M-TUBE are plugged in over LED casings with plug connector into a cable terminal box, which is simply connected to the conventional power supply by means of a socket.

The M-TUBE System Premium offers comfortable connection positions for up to six M-TUBEs. In this way decorative lighting effects in the form of direct or indirect illumination can be realized without the slightest effort. With the covers for the LED casings in black, white or chrome color the System is not only given an elegant appearance; the covers guarantee splash water protection according to IP 44 at the same time, so that the System can be used in damp locations such as bathrooms.

- Light guide lengths 100 mm; 300 mm; 500 mm; 700 mm
- Diameter of light guide 5 mm; 6 mm; 8 mm; 10 mm
- Luminous paint
- Power supply socket, 220 V
- M-TUBE System Premium terminal box with ports for up to 6 M-TUBEs
- Corner and coupler casing for geometrical lines
- Cover black white chrome

Application examples:

- Indoor ambience illumination
- Design accentuation in living rooms and bedrooms
- Lighting of closets, showcases, shelves
- Lighting of edges and contour illumination, e.g. stairs and handrails
- Back lighting and illumination of all kind

M-TUBES



M-TUBE | HIGH BRIGHTNESS

The M-TUBE High Brightness is impressive because of its very strong brightness which is achieved by use of two high-efficiency Dragon LEDs – designed for applications with the highest demands on the LED light intensity. It consists of a continuous aluminium reflector, which regulates the thermo-management of the powerful Dragon LEDs and simultaneously serves as a design element, a light guide, two LED casings as well as an integrated electronic control unit.

To also be able to come up to the special customer preferences, a modular variant type of the M-TUBE High Brightness is also offered next to the fully assembled standard version. Here, selecting from the different light guide lengths, the customer can compile an M-TUBE High Brightness himself, which is equipped with or without an electronic control unit or also available with a DC input socket.

- Standard lengths MT HB Alu 448.3 mm; 548.3 mm; 748.3 mm; 948.3 mm
- Standard diameter light guide 10 mm (other sizes on request)
- Modular MT HB LED casing (alloy 32.6 mm)
- Modular MT HB LED casing with DC/DC (alloy 63.1 mm)
- Modular lengths light guide 100 mm; 300 mm; 500 mm; 700 mm
- Luminous paint
- Connection facility standard- and modular construction each available with stranded wire or socket

Application examples:

- Indoor illumination
- Design accentuation in living rooms and bedrooms
- Local lighting of workplaces
- Lighting and illumination of all kind

M-TUBES- Technical Info

M-TUBE Standard

Light guide material	PMMA UL94
Housing material	PC UL94
Available colours	white, red, green, blue
Cover	white, black, chrome
Operating temperature	-40°C ... +80°C
Operating voltage	3,6V ... 4,1V (white, green, blue) 2,1V ... 2,65V (red)
max. current at 80°C	100mA
max. current at 30°C	220mA

M-TUBE System Premium

Light guide material	PMMA UL94
Housing material	PC UL94
Light guide length	100, 300, 500, 700 mm
Light guide diameter	10 mm
Available colours	white, red, green, blue
Cover	white, black, chrome
Extension cable	3/5/10 m

Power supply:

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Operating voltage	230V AC / 50Hz / max. 140mA
Output	12V DC / 750mA
Operating temperature	-40°C ... 70°C
Protection class	II
Weight	ca. 500g

Terminal box:

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Operating voltage	11V ... 24V DC
Power consumption	max. 750mA
Operating temperature	-40°C ... 70°C
Protection class	IP 44
Output	6 * 100mA constant current (max. 9V per port)

M-TUBES- Technical Info

M-TUBE High Brightness

Light guide material	PMMA UL94
Housing material	PC UL94
Available colours	white, red, green, blue

M-TUBE-HB – Power supply (1322.1000):

Input Voltage	230V AC / 50Hz / 6W
Output Voltage	12V DC / 500mA
Operating temperature	-40°C ... +70°C
Protection class	II
Weight	ca. 500g

M-TUBE-HB with DC/DC:

Operating voltage	11V ... 15V DC
Power consumption	max. 500mA
Operating temperature	-40°C ... +70°C
LED current	600mA per LED
Visible light guide length	350mm ... 950mm
Light guide diameter	10mm
Weight	ca. 150g ... 400g

M-TUBE-HB with LED:

Operating temperature	-40°C ... +70°C
Operating voltage	2,1V ... 3,3V (red) 2,9V ... 4,3V (white, green, blue)
max. current at 70°C	600mA
max. current at 30°C	1000mA
Light Output per LED	68 Lumen (white) (at 600mA) 42 Lumen (red, green) 12 Lumen (blue)
Weight	ca. 15g

M-TUBES- Order Info

M-TUBE Standard



Part Number

90-1320-0001
90-1320-0002
90-1320-0003
90-1320-0004

Description

Split sleeve 05
Split sleeve 06
Split sleeve 08
Split sleeve 10



90-1320-0510
90-1320-0530
90-1320-0550
90-1320-0570
90-1320-0610
90-1320-0630
90-1320-0650
90-1320-0670
90-1320-0810
90-1320-0830
90-1320-0850
90-1320-0870
90-1320-1010
90-1320-1030
90-1320-1050
90-1320-1070

Light guide 05 100mm
Light guide 05 300mm
Light guide 05 500mm
Light guide 05 700mm
Light guide 06 100mm
Light guide 06 300mm
Light guide 06 500mm
Light guide 06 700mm
Light guide 08 100mm
Light guide 08 300mm
Light guide 08 500mm
Light guide 08 700mm
Light guide 10 100mm
Light guide 10 300mm
Light guide 10 500mm
Light guide 10 700mm

M-TUBES- Order Info

M-TUBE Standard



Part Number	Description
90-1320-1000	LED receptacle socket empty
90-1320-1200	LED receptacle LED red
90-1320-1500	LED receptacle LED white
90-1320-1600	LED receptacle LED blue
90-1320-1800	LED receptacle LED green



90-1320-1001	Coupler casing
90-1320-1201	Coupler casing LED red
90-1320-1501	Coupler casing LED white
90-1320-1601	Coupler casing LED blue
90-1320-1801	Coupler casing LED green



90-1320-1002	Corner casing
90-1320-1202	Corner casing LED red
90-1320-1502	Corner casing LED white
90-1320-1602	Corner casing LED blue
90-1320-1802	Corner casing LED green

M-TUBES- Order Info

M-TUBE Standard



Part Number
90-1320-0011
90-1320-0014
90-1320-0017

Description
Edge shade black
Edge shade chrome
Edge shade white



90-1320-0012
90-1320-0015
90-1320-0018

Coupler shade black
Coupler shade chrome
Coupler shade white



90-1320-0013
90-1320-0016
90-1320-0019

Corner shade black
Corner shade chrome
Corner shade white



90-1320-0100
90-1320-0200
90-1320-0300
90-1320-0400

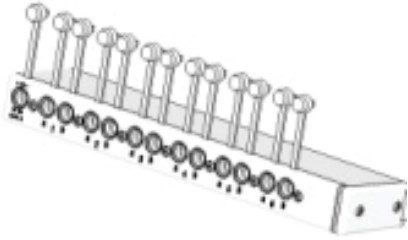
M-Tube 05 plug
M-Tube 06 plug
M-Tube 08 plug
M-Tube 10 plug



90-1320-0010
90-1320-0020
90-1320-0030
90-1320-0040

M-Tube 05 fastening device
M-Tube 06 fastening device
M-Tube 08 fastening device
M-Tube 10 fastening device

M-TUBES- Order Info



M-TUBE Standard

Part Number	Description
90-1321-1000	M-Tube System Premium



90-1321-1200	LED receptacle LED red
90-1321-1500	LED receptacle LED white
90-1321-1600	LED receptacle LED blue
90-1321-1800	LED receptacle LED green



90-1321-1201	Coupler casing with plug, LED red
90-1321-1501	Coupler casing with plug, LED white
90-1321-1601	Coupler casing with plug, LED blue
90-1321-1801	Coupler casing with plug, LED green



90-1321-1202	Corner casing with plug, LED red
90-1321-1502	Corner casing with plug, LED white
90-1321-1602	Corner casing with plug, LED blue
90-1321-1802	Corner casing with plug, LED green



Cabling	
90-1321-0100	3m extension power supply 3m



90-1321-0010	3m extension M-Tube power supply 3m
90-1321-0020	5m extension M-Tube power supply 5m
90-1321-0030	10m extension M-Tube power supply 10m

M-TUBES- Order Info

M-TUBE High Brightness

**Part Number**

90-1322-1200
90-1322-1500
90-1322-1600
90-1322-1800

Name

M-Tube HB LED red (Alloy 32, 6mm)
M-Tube HB LED white (Alloy 32, 6mm)
M-Tube HB LED blue (Alloy 32, 6mm)
M-Tube HB LED green (Alloy 32, 6mm)



90-1322-1201

M-Tube HB LED red (Alloy 63, 1mm); DC/DC converter w/stranded wire

90-1322-1501

M-Tube HB LED white (Alloy 63, 1mm); DC/DC converter w/stranded wire

90-1322-1601

M-Tube HB LED blue (Alloy 63, 1mm); DC/DC converter w/stranded wire

90-1322-1801

M-Tube HB LED green (Alloy 63, 1mm); DC/DC converter w/stranded wire

90-1322-1210

M-Tube HB LED red (Alloy 63, 1mm); DC/DC converter w/socket

90-1322-1510

M-Tube HB LED white (Alloy 63, 1mm); DC/DC converter w/socket

90-1322-1610

M-Tube HB LED blue (Alloy 63, 1mm); DC/DC converter w/socket

90-1322-1810

M-Tube HB LED green (Alloy 63, 1mm); DC/DC converter w/socket

M-TUBES- Order Info

M-TUBE High Brightness



Part Number	Name
90-1322-1202	M-Tube HB LED red (Alloy 448, 3mm); DC/DC converter w/stranded wire
90-1322-1502	M-Tube HB LED white (Alloy 448, 3mm); DC/DC converter w/stranded wire
90-1322-1602	M-Tube HB LED blue (Alloy 448, 3mm); DC/DC converter w/stranded wire
90-1322-1802	M-Tube HB LED green (Alloy 448, 3mm); DC/DC converter w/stranded wire
90-1322-1220	M-Tube HB LED red (Alloy 448, 3mm); DC/DC converter w/socket
90-1322-1520	M-Tube HB LED white (Alloy 448, 3mm); DC/DC converter w/socket
90-1322-1620	M-Tube HB LED blue (Alloy 448, 3mm); DC/DC converter w/socket
90-1322-1820	M-Tube HB LED green (Alloy 448, 3mm); DC/DC converter w/socket



90-1322-1203	M-Tube HB LED red (Alloy 548, 3mm); DC/DC converter w/stranded wire
90-1322-1503	M-Tube HB LED white (Alloy 548, 3mm); DC/DC converter w/stranded wire
90-1322-1603	M-Tube HB LED blue (Alloy 548, 3mm); DC/DC converter w/stranded wire

Related Products from Elma Electronic:

- LEDs
- Light Guides



Did you know we also offer with these M-Tubes:

- *Customization Services*
- *LED Test Products (Contact sales for more information)*

System
Platforms

Backplanes

Enclosures &
Components

Cabinets

Rotary
Switches

ELMA
Your Solution Partner