m...tube powered by MENTOR INNOVATIONS FOR THE FUTURE

Flexible or rigid LED-powered light tubes for low energy, long-life illumination.

- M-Tubes from optoelectronic innovators Mentor GmbH deliver many of the properties of fluorescent or cold cathode technologies but have all of the advantages of LEDs.
- Either standard or hi-brightness LED-sourced light is input at each end of a crystal-clear light guide tube (both rigid and flexible versions are available). A printed reflective strip along the length of the tube delivers even, diffused and targeted light.
- There are no “hot spots” of lights as found with LED strips.
- M-Tubes are suitable for multiple applications including:-
  - Architecture - stairs and edges, emergency lighting, ambience / decorative lighting, cove lighting, lift doors etc.
  - Industrial electronics - switchgear cabinet illumination, service light, danger signals etc.
  - Household - illumination and backlighting of all kinds.•
  - Automotive and marine - light curtains, signal lights, contour illumination , ambience/decorative lighting.
- The light guide tubes can be up to 700mm in length and either 6mm or 10mm diameter.
- Service life of around 50,000 hours to 50% brightness compares with typical tungsten bulb life of around 1,000 hours.
- Brightness level of a 548mm ultra-white hi-brightness M-Tube is 250lx compared with 307lx from a typical 10W 500mm fluorescent tube.
- Energy-efficient with minimal heat generation - in terms of cost per KWh, the hi-brightness version is 63% cheaper than fluorescent tube and 94% cheaper than tungsten bulbs (approximate).
- Service life is unaffected by on/off actuations.
- Immediate full luminosity (no warm-up).
- Impervious to extremes of temperature - operating range -40ºC to +70ºC.
- Available in red, green, blue and up to three Kelvins of white. RGB available on special order.
- Dimmability of all LEDs and RGB colour control are possible using alternative power sources (not supplied).

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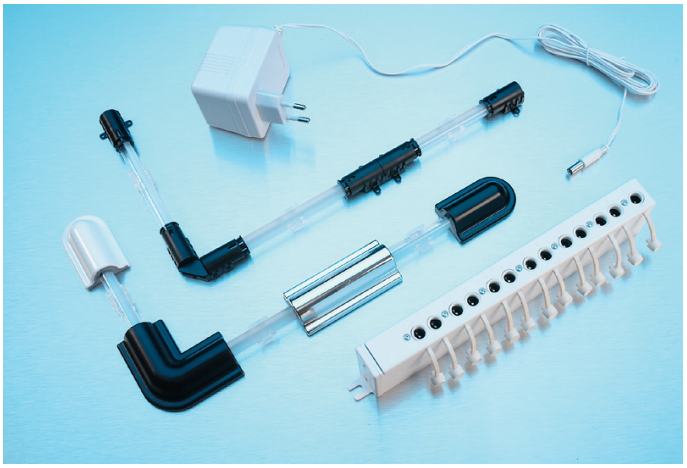
Standard LEDs



- Standard LEDs for lower brightness illumination
- Available in a modular system

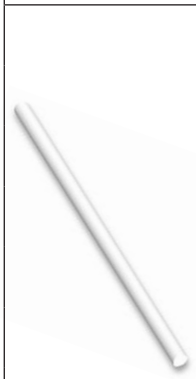
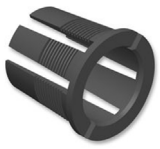
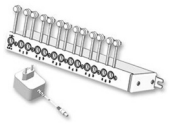
Image	Order Code	Mftrs. List No.	Description
	177-3048	1320.0610	Ø6mm light guide (100mm long)
	177-3049	1320.0630	Ø6mm light guide (300mm long)
	177-3050	1320.0650	Ø6mm light guide (500mm long)
	177-3051	1320.0670	Ø6mm light guide (700mm long)
	177-3052	1320.1010	Ø10mm light guide (100mm long)
	177-3053	1320.1030	Ø10mm light guide (300mm long)
	177-3054	1320.1050	Ø10mm light guide (500mm long)
	177-3055	1320.1070	Ø10mm light guide (700mm long)
	177-3046	1320.0002	Split sleeve for Ø6mm M-Tube
	177-3047	1320.0004	Split sleeve for Ø10mm M-Tube
	Note:- Used to connect the light guide to the M-Tube LED housing. One split sleeve is required for every LED housing.		
	177-3071	1321.1200	● M-Tube housing with red std LED
	177-3072	1321.1400	○ M-Tube housing with white 3,500K std LED
	177-3073	1321.1500	○ M-Tube housing with white 5,600K std LED
	177-3074	1321.1600	● M-Tube housing with blue std LED
	177-3075	1321.1800	● M-Tube housing with green std LED
	177-3076	1321.1201	● M-Tube coupler with red std LED
	177-3077	1321.1401	○ M-Tube coupler with white 3,500K std LED
	177-3078	1321.1501	○ M-Tube coupler with white 5,600K std LED
	177-3079	1321.1601	● M-Tube coupler with blue std LED
	177-3080	1321.1801	● M-Tube coupler with green std LED

Image	Order Code	Mftrs. List No.	Description
	177-3081	1321.1202	● M-Tube corner housing with red std LED
	177-3083	1321.1402	○ M-Tube corner housing with white 3,500K std LED
	177-3084	1321.1502	○ M-Tube corner housing with white 5,600K std LED
	177-3085	1321.1602	● M-Tube corner housing with blue std LED
	177-3086	1321.1802	● M-Tube corner housing with green std LED
	177-3056	1320.0011	M-Tube end shade - Black One plug 1320.0200 for Ø6mm or 1320.0400 for Ø10mm is required for each end shade.
	177-3058	1320.0012	M-Tube coupler shade - Black Two plugs 1320.0200 for Ø6mm or 1320.0400 for Ø10mm are required for each coupler shade.
	177-3059	1320.0013	M-Tube corner shade - Black Two plugs 1320.0200 for Ø6mm or 1320.0400 for Ø10mm are required for each corner shade.
	177-3060	1320.0200	Plug for Ø6mm M-Tube
	177-3061	1320.0400	Plug for Ø10mm M-Tube
	177-3062	1320.0020	Fastening device for Ø6mm M-Tube
	177-3063	1320.0040	Fastening device for Ø10mm M-Tube
	177-3064	1321.1000	Terminal box - use to connect power to up to 12 LED housings (six double-ended M-Tubes).
	177-3065	1321.0100	M-Tube power supply extension cable (3m)
	177-3066	1321.0010	M-Tube terminal box to LED extension cable (3m)
	177-3067	1321.0020	M-Tube terminal box to LED extension cable (5m)
	177-3068	1321.0030	M-Tube terminal box to LED extension cable (10m)
	177-3087	1321.2001	M-Tube System Basic including AC/DC adapter (for use with one double-ended M-Tube).
	177-3088	1321.2002	M-Tube System Basic (supplementary). Up to two of these can be added to 1321.2002 to power a total of three double-ended M-Tubes.

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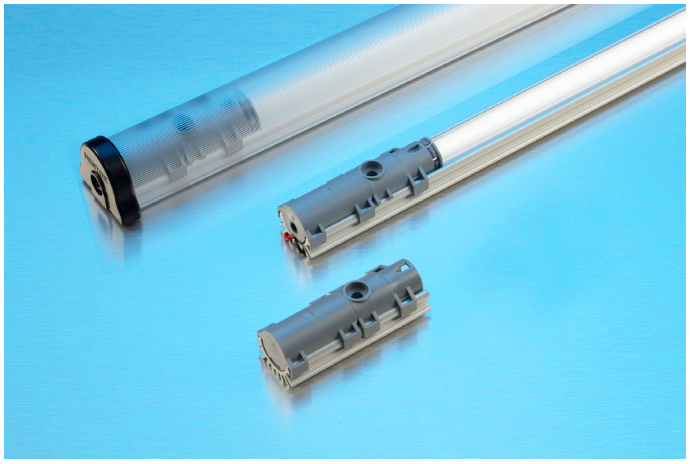
Hi Brightness LEDs



- The Dragon LEDs used in Hi-Brightness M-Tubes deliver an impressive intensity of illumination whilst still retaining the benefits of low-energy and longevity.
- An aluminium profile regulates the thermo-management of these powerful LEDs, whilst at the same time acting as a reflector and an elegant design feature.
- As well as fully assembled units with sockets for power-in, unusual design requirements are accommodated for by the availability of modular components incorporating stranded wires for attachment to suitable power sources.

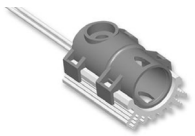
Image	Order Code	Mftrs. List No.	Description
Modular			
M-Tube Hi-Brightness LED and Housing (32.6mm alu) single module with stranded wire and split sleeve for Ø10mm flexible or rigid M-Tube light guides (one required for each unit.)			
	177-3089	1322.1300	☼ Ultra-white (6,500K) Hi-Bright
	177-3090	1322.1400	○ Warm-white (3,500K) Hi-Bright
	177-3091	1322.1500	○ Standard-white (5,600K) Hi-Bright
	177-3092	1322.1600	● Blue Hi-Bright
	177-3093	1322.1800	● Green Hi-Bright
	177-3095	1322.1200	● Red Hi-Bright
M-Tube Hi-Brightness LED and Housing (63.1mm alu) single module with DC/DC converter, stranded wire and split sleeve for Ø10mm flexible or rigid M-Tube light guides (one required for each unit.)			
	177-3096	1322.1301	☼ Ultra-white (6,500K) Hi-Bright
	177-3097	1322.1401	○ Warm-white (3,500K) Hi-Bright
	177-3098	1322.1501	○ Standard-white (5,600K) Hi-Bright
	177-3099	1322.1601	● Blue Hi-Bright
	177-3101	1322.1801	● Green Hi-Bright
	177-3102	1322.1201	● Red Hi-Bright
	177-3052	1320.1010	Ø10mm light guide (100mm long)
	177-3053	1320.1030	Ø10mm light guide (300mm long)
	177-3054	1320.1050	Ø10mm light guide (500mm long)
	177-3055	1320.1070	Ø10mm light guide (700mm long)

Image	Order Code	Mftrs. List No.	Description
	177-3062	1320.0020	Fastening device for Ø6mm M-Tube
	177-3063	1320.0040	Fastening device for Ø10mm M-Tube
Complete Hi-Brightness units with aluminium profiles, DC/DC converters and female plug sockets.			
	448.3 mm long aluminium profile		
	177-3103	1322.1320	☼ Ultra-white (6,500K) Hi-Bright LEDs
	177-3104	1322.1420	○ Warm-white (3,500K) Hi-Bright LEDs
	177-3105	1322.1520	○ Std-white (5,600K) Hi-Bright LEDs
	177-3106	1322.1220	● Red Hi-Bright LEDs
	177-3107	1322.1620	● Blue Hi-Bright LEDs
	177-3108	1322.1820	● Green Hi-Bright LEDs
	548.3 mm long aluminium profile		
	177-3109	1322.1330	☼ Ultra-white (6,500K) Hi-Bright LEDs
	177-3110	1322.1430	○ Warm-white (3,500K) Hi-Bright LEDs
	177-3111	1322.1530	○ Std-white (5,600K) Hi-Bright LEDs
	177-3113	1322.1230	● Red Hi-Bright LEDs
	177-3114	1322.1630	● Blue Hi-Bright LEDs
	177-3115	1322.1830	● Green Hi-Bright LEDs
	748.3 mm long aluminium profile		
	177-3116	1322.1340	☼ Ultra-white (6,500K) Hi-Bright LEDs
	177-3117	1322.1440	○ Warm-white (3,500K) Hi-Bright LEDs
	177-3118	1322.1540	○ Std-white (5,600K) Hi-Bright LEDs
	177-3119	1322.1240	● Red Hi-Bright LEDs
	177-3120	1322.1640	● Blue Hi-Bright LEDs
	177-3121	1322.1840	● Green Hi-Bright LEDs
	948.3 mm long aluminium profile		
	177-3122	1322.1350	☼ Ultra-white (6,500K) Hi-Bright LEDs
	177-3123	1322.1450	○ Warm-white (3,500K) Hi-Bright LEDs
	177-3125	1322.1550	○ Std-white (5,600K) Hi-Bright LEDs
	177-3126	1322.1250	● Red Hi-Bright LEDs
	177-3127	1322.1650	● Blue Hi-Bright LEDs
	177-3128	1322.1850	● Green Hi-Bright LEDs
	177-3129	1322.0020	Diffuser cover with end caps (450mm long)
	177-3130	1322.0030	Diffuser cover with end caps (550mm long)
	177-3131	1322.0040	Diffuser cover with end caps (750mm long)
	177-3132	1322.0050	Diffuser cover with end caps (950mm long)
	177-3133	1322.1000	AC/DC adapter for HB M-Tubes
	177-3134	1322.0100	Power supply extension (3m)

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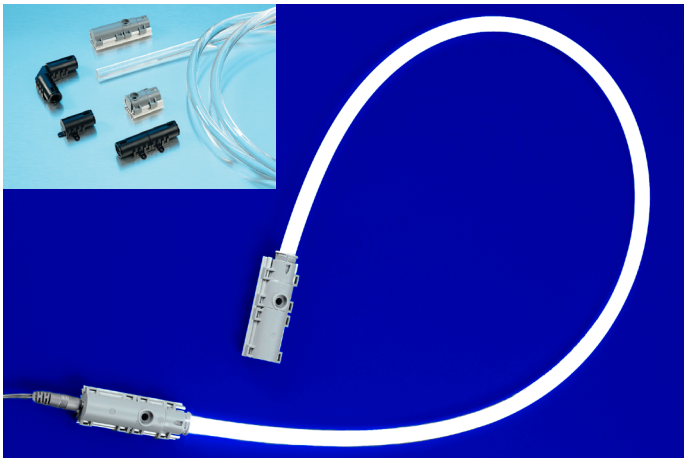
Standard LEDs

Stranded Wire Version

Image	Order Code	Mftrs. List No.	Description
	178-1949	1320.1000	M-TUBE HOUSING, STD, WIRED, EMPTY
	178-1950	1320.1200	M-TUBE HOUSING, STD, WIRED, RED
	178-1951	1320.1400	M-TUBE HOUSING, STD, WIRED, WRM WHT
	178-1952	1320.1500	M-TUBE HOUSING, STD, WIRED, WHT
	178-1953	1320.1600	M-TUBE HOUSING, STD, WIRED, BLUE
	178-1954	1320.1800	M-TUBE HOUSING, STD, WIRED, GREEN
	178-1955	1320.1900	M-TUBE HOUSING, STD, WIRED, RGB
	178-1956	1320.1001	M-TUBE COUPLER, STD, WIRED, EMPTY
	178-1957	1320.1201	M-TUBE COUPLER, STD, WIRED, RED
	178-1958	1320.1401	M-TUBE COUPLER, STD, WIRED, WRM WHT
	178-1961	1320.1501	M-TUBE COUPLER, STD, WIRED, WHT
	178-1962	1320.1601	M-TUBE COUPLER, STD, WIRED, BLUE
	178-1963	1320.1801	M-TUBE COUPLER, STD, WIRED, GREEN
	178-1964	1320.1901	M-TUBE COUPLER, STD, WIRED, RGB

Image	Order Code	Mftrs. List No.	Description
	178-1965	1320.1002	M-TUBE CORNER, STD, WIRED, EMPTY
	178-1966	1320.1202	M-TUBE CORNER, STD, WIRED, RED
	178-1967	1320.1402	M-TUBE CORNER, STD, WIRED, WRM WHT
	178-1968	1320.1502	M-TUBE CORNER, STD, WIRED, WHT
	178-1969	1320.1602	M-TUBE CORNER, STD, WIRED, BLUE
	178-1970	1320.1802	M-TUBE CORNER, STD, WIRED, GREEN



- Simply order these flexible light guides instead of rigid ones to add a twist to your lighting solutions!
- Compatible with both the standard LED and Hi-Brightness LED modules, flexible M-Tubes works on the same principle as rigid ones. LED-sourced light is input at each end and a printed reflective strip ensures even distribution of diffused light along the tube's length.
- There are no "hot spots" of lights as found with LED strips. Low-energy and longevity features remain the same as rigid M-Tubes.
- Choose standard LEDs for a mood-setting glow or hi-brightness LEDs for more intense illumination (dimmability is possible).

Flexible Light Guides

use with Standard or Hi-Brightness LEDs

Image	Order Code	Mftrs. List No.	Description
	177-3135	1320.0631	Ø6mm flexible light guide (300mm long)
	177-3137	1320.0651	Ø6mm flexible light guide (500mm long)
	177-3138	1320.0671	Ø6mm flexible light guide (700mm long)
	Note:- Hi Brightness LED housings are supplied with split sleeves for Ø10mm rigid or flexible light guides. For other combinations of size/LED types, split sleeves should be ordered separately.		
	177-3139	1320.1031	Ø10mm flexible light guide (300mm long)
	177-3140	1320.1051	Ø10mm flexible light guide (500mm long)
	177-3141	1320.1071	Ø10mm flexible light guide (700mm long)
	177-3062	1320.0020	Fastening device for Ø6mm M-Tube
	177-3063	1320.0040	Fastening device for Ø10mm M-Tube

- Flexible M-Tubes can easily be bent into the desired shape and location and are secured by means of transparent holders.
- Potential applications are limitless but include the illumination of round objects, mirrors, displays, advertising, vending machines, curved staircases etc.