



**ULTRA-SLIM FLUORESCENT LAMPS
FOR NEW AND UNUSUAL LIGHTING APPLICATIONS**

THE OSRAM FM[®] MINIATURE LIGHTING SYSTEM

THERE IS LIGHT. AND THERE IS OSRAM.

OSRAM

**OSRAM FM® - THE
MINIATURE SYSTEM FOR
INNOVATIVE LIGHTING**

**SMALL DIMENSIONS WITH
A BIG FUTURE IN A WIDE
RANGE OF APPLICATIONS**

The dimensional and photometric advantages of the FM® miniature lighting system open up a wealth of new applications in high-quality object and effect lighting. Particularly for displaying goods and for trade fairs and exhibitions.

**TUBE DIAMETER
OF ONLY 7 MM**

Thanks to their tube diameter of only 7 mm, FM® lamps generate a luminance which is unusually high for fluorescent lamps. The light from these lamps is therefore exceptionally brilliant.

**EXCELLENT COLOUR
RENDERING**

The LUMILUX® fluorescent material ensures excellent colour rendering (Group 1 B). FM® lamps are available in the following colour temperatures: 3000, 4000 and 6000 K.

HIGH LUMINOUS EFFICACY

OSRAM FM® lamps come in four wattages: 6, 8, 11 and 13 W, and in lengths from 218 to 523 mm. This constitutes a versatile range of high-performance miniature lamps. What's more, they have a high luminous efficacy of over 50 lm/W.



Photo: tielsa®-die exklusive Küche

Shelf lighting as you've never seen it before. FM® lamps are built into the undersides of the shelves to provide unobtrusive light without the need for surface mounted fittings.

*Create an impression:
the FM® system can be used to
produce eye-catching effects.*



PERFECT FOR MODERN ILLUMINATED ACRYLIC DISPLAYS

The extra thin FM® fluorescent lamps are ideal as light sources for illuminated acrylic displays. With their diameter of only 7 mm, they direct a high proportion of their luminous flux at the edges of the plexiglass sheets which act as a light guide.

As part of a system with the extremely low-profile QUICKTRONIC®-FM® electronic control gear, they allow designers to produce exceptionally shallow fittings yet still able to accommodate the lamp, its control gear and the lampholders.

Display cabinets in stores, on trade fair stands or in museums are another important area in which this miniature lighting system can be used. But wherever they are used – in mirror lights, built-in furniture luminaires, picture lights, in ultra compact tubetrack systems or in desktop lights – FM® lamps offer enormous scope for creating lighting solutions which are as unconventional as they are reliable and economical.

6 W
8 W



Conventional bulky box-type signs look really dated. With FM® lamps, extremely low-profile illuminated displays are possible. The ECG can be easily incorporated in the fitting.



**PERFECTLY MATCHED:
LAMP AND ECG**

FM® miniature fluorescent lamps need a high lamp voltage. This means that they can only be operated reliably from electronic control gear. OSRAM has developed the slim, low-profile QUICKTRONIC® QT-FM® control gear specifically for these lamps.

TWO VERSIONS

There is a choice of the slim casing version with cable clamps, terminal cover and through-wiring for normal applications, or the ultra-slim space-saving circuit board version with insulating foil and a depth of only 13 mm for extra small lighting systems.



Showing the way: the FM® system provides new ways of saving energy in display, emergency and advertising lighting.



Compared with traditional double-capped tubular lamps, the FM® system offers more uniform illumination, lower power consumption and reduced thermal load.



ECG Board

**QUICKTRONIC®
QT-FM 1x11/230-240 L**

Lampe	U _N (V)	f _N (Hz)	I _N (A)	λ	t _a (°C)
OSRAM FM 11 W	230-240	50-60	0,06	0,91 c	+5...50

$t_c = 70^\circ\text{C max.}$
 EN 55015
 EN 61547
 EN 60928
 EN 60929

230-240V
 max. = 1 mm²
 EN 61000-3-2

QUICKTRONIC® QT-FM®



INTEGRATED THREEFOLD SAFETY SHUTDOWN

The integrated threefold safety shutdown system features overtemperature protection to prevent the lamp from overheating. It will reliably shut down the lamp at the end of its life.

ENERGY-SAVING OPERATION

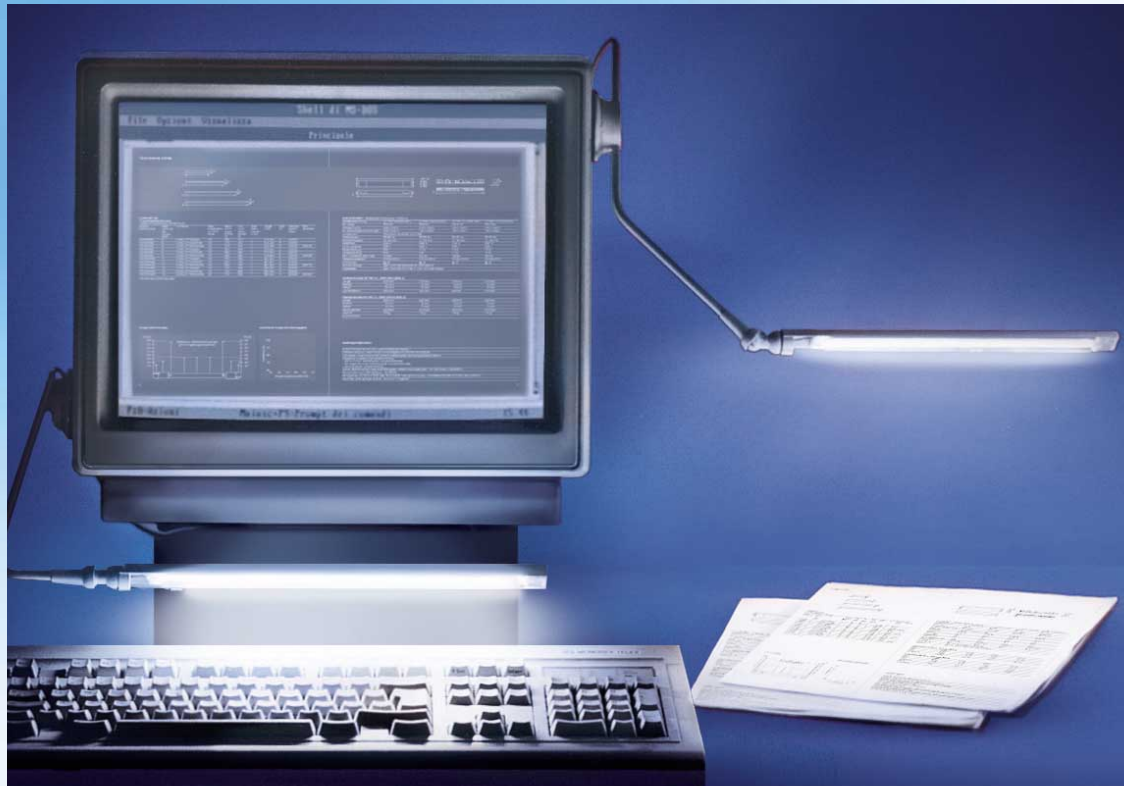
The high luminous efficacy of the FM® lamp and the low power loss of the QUICKTRONIC® ECG make the FM system an economic solution for all areas of application in which miniaturised lighting is an important factor. Compared with conventional lighting with incandescent lamps, OSRAM FM® lamps can achieve energy savings of up to 80%.

HIGH SAFETY STANDARDS

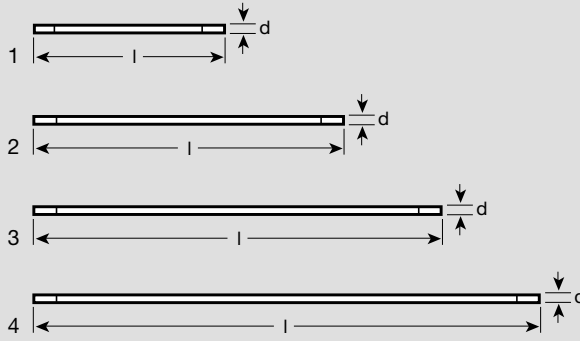
With its high safety standards, the FM® system is ideal for luminaires built into furniture. QT-FM® ECG is CE masked to show it meets all European standards governing safety, operation and electromagnetic compatibility.



*Employee-friendly:
luminaires with FM® lamps take up very little space and bring clarity to the workplace.*



TECHNICAL DATA

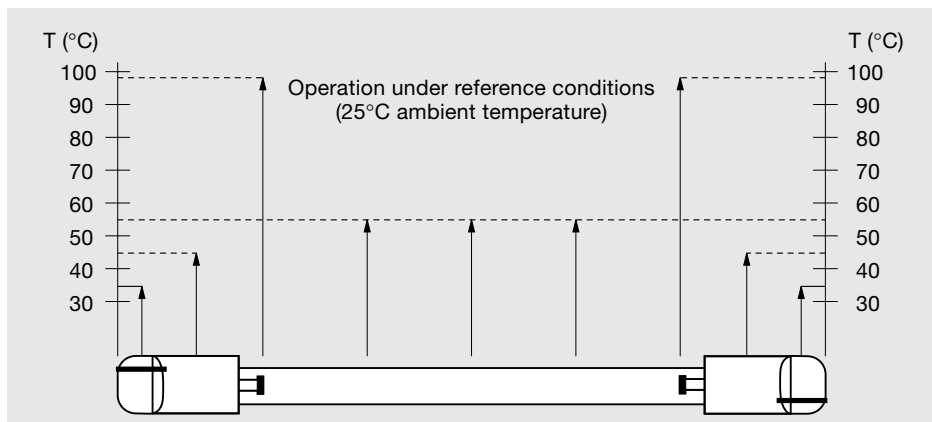


LUMILUX® FM® 7 mm tube diameter LUMILUX® Model, W 4.3 base

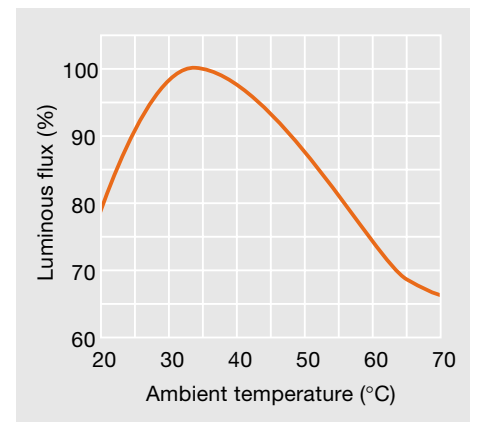
Lamp reference	Rated lamp wattage Watt	Colour appearance	Colour rendering group	Rated luminous flux (25°C) lm	Max. luminous flux (33°C)* lm	Tube diameter d mm	Length l mm	Fig. no.	Standard pack	EAN 40 50300
FM 6W/860	6	LUMILUX® Daylight	1B	250	310	7	218.3±1	1	20/200	
FM 6W/840	6	LUMILUX® Coolwhite	1B	275	330	7	218.3±1	1	20/200	
FM 6W/830	6	LUMILUX® Warmwhite	1B	275	330	7	218.3±1	1	20/200	338132
FM 8W/860	8	LUMILUX® Daylight	1B	420	500	7	319.9±1	2	20/200	
FM 8W/840	8	LUMILUX® Coolwhite	1B	450	540	7	319.9±1	2	20/200	
FM 8W/830	8	LUMILUX® Warmwhite	1B	450	540	7	319.9±1	2	20/200	338156
FM 11W/860	11	LUMILUX® Daylight	1B	570	680	7	421.5±1	3	20/200	
FM 11W/840	11	LUMILUX® Coolwhite	1B	620	750	7	421.5±1	3	20/200	
FM 11W/830	11	LUMILUX® Warmwhite	1B	620	750	7	421.5±1	3	20/200	338170
FM 13W/860	13	LUMILUX® Daylight	1B	710	860	7	523.1±1	4	20/200	
FM 13W/840	13	LUMILUX® Coolwhite	1B	770	930	7	523.1±1	4	20/200	
FM 13W/830	13	LUMILUX® Warmwhite	1B	770	930	7	523.1±1	4	20/200	338194

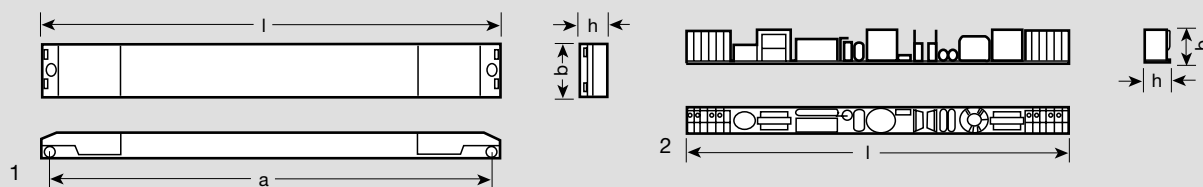
* For information, not for measurements

Temperature distribution



Luminous flux with ambient temperature





QUICKTRONIC® – single lamp design with casing

Reference	QT-FM 1x6/230–240 L	QT-FM 1x8/230–240 L	QT-FM 1x11/230–240 L	QT-FM 1x13/230–240 L
For lamp	FM 6 W	FM 8 W	FM 11 W	FM 13 W
Line voltage	230 V–240 V	230 V–240 V	230 V–240 V	230 V–240 V
Permissible voltage fluctuations	198 V–254 V	198 V–254 V	198 V–254 V	198 V–254 V
Lamp start	Warm start within 2 s			
Line frequency	50–60 Hz	50–60 Hz	50–60 Hz	50–60 Hz
Operating frequency	approx. 45 kHz	approx. 45 kHz	approx. 45 kHz	approx. 45 kHz
Line current	0.04 A	0.05 A	0.06 A	0.07 A
Power factor	0.97 c	0.97 c	0.97 c	0.97 c
System wattage	9 W	11 W	14 W	16 W
Lamp wattage	6 W	8 W	11 W	13 W
Max. luminous flux (830, 840)	330 lm	540 lm	750 lm	930 lm
Temperature range	5°C to 50°C	5°C to 50°C	5°C to 50°C	5°C to 50°C
Approval marks	△ Ⓢ	△ Ⓢ	△ Ⓢ	△ Ⓢ
Radio interference suppression	Complies with DIN VDE 0875/CISPR 14/EN 55015			
Harmonics	Complies with DIN VDE 0712 Part 23 /IEC 355-2/EN 60929			

Note: Not suitable for DC operation. Isolate from mains supply for lamp replacement to ensure reliable starting of new lamps.

Casing version QT-FM® 1 x.../230-240 L (Fig. 1)

Length l	276 mm	276 mm	276 mm	276 mm
Width b	32 mm	32 mm	32 mm	32 mm
Height h	16 mm	16 mm	16 mm	16 mm
Fixing centres a	263 mm	263 mm	263 mm	263 mm

Board version QT-FM® 1 x.../230-240 LB (Fig. 2)

Length l	225 mm	225 mm	225 mm	225 mm
Width b	18 mm	18 mm	18 mm	18 mm
Height h	13 mm	13 mm	13 mm	13 mm
Standard pack	20	20	20	20
Weight	130 g	130 g	130 g	130 g
EAN 40 50300				

Ballast specifications

QUICKTRONIC® for miniature fluorescent lamps FM® (T2)

Fully electronic silent control gear for OSRAM FM® lamps

Optimised warm start, high resistance to voltage transients, no off period necessary

Integrated safety shutdown

- if the lamp electrodes stop emitting
- if the temperature of the lamp electrodes rises excessively
- if the lamp wattage rises

Active electronic harmonic filter to counter mains pollution according to IEC 555-2 or EN 60555-2

Radio interference suppressed according to VDE 0875 or EN 55015

For luminaires with ∇ and ∇∇ or ∇ and ∇∇ labels according to EN 60598/DIN VDE 0710 and DIN VDE 0711

Maximum cable length between lamp and ECG: tested up to 1 m

**OSRAM INFORMATION
SERVICE FOR OTHER
MATTERS RELATING TO
THE FM® SYSTEM**

**Operating and
installation instructions**

For luminaire manufacturers and users interested in lighting technology, OSRAM can offer detailed technical product documentation for the miniature lighting system. Here you'll find a great deal of useful information on designs and applications.

To obtain the information you need, contact your regional OSRAM sales office.

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