



The OSRAM FM[®] miniature lighting system

Ultra-slim fluorescent lamps

for new and unusual lighting applications

SEE THE WORLD IN A NEW LIGHT

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. They are particularly suitable for displaying goods and for trade fairs and exhibitions.

Tube diameter of only 7 mm

Thanks to a 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 1B). 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 shelves to provide unobtrusive light without the need for surface mounted fittings.

*Create an impression:
the FM® system can be used
for 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 fittings that are exceptionally shallow 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

ECG board and circuit

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 slim low-profile QUICKTRONIC®-ECGs specifically for this purpose.

Three versions

Three different versions are available:

- Slim board version with insulating foil and a height of only 13 mm for extra small lighting systems.
- Casing version with cable clamp, suitable for through-wiring.
- New built-in unit in a slim compact plastic casing.



*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®

QUICKTRONIC® ECONOMIC QT-ECO FM®

230 - 240 V
□ max. = 1 mm²

EMV
EN 61000-3-2

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

$t_c = 70^\circ\text{C max.}$

$t_c = \text{max. } 70^\circ\text{C}$

Lamp	U _N (V)	f _N (Hz)	I _N (A)	λ	t _a (°C)
FM 11W	220-240	50	0,10	0,6	-15...50
FM 13W			0,12		

OSRAM



Integrated safety shutdown

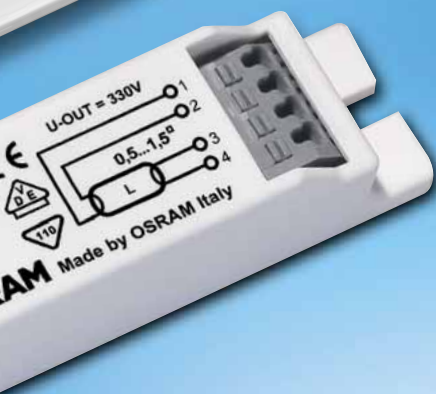
The integrated safety shutdown circuit features over-temperature protection to prevent the lamp from overheating. It will reliably shut down the lamp at the end of its life.

Energy-saving operation

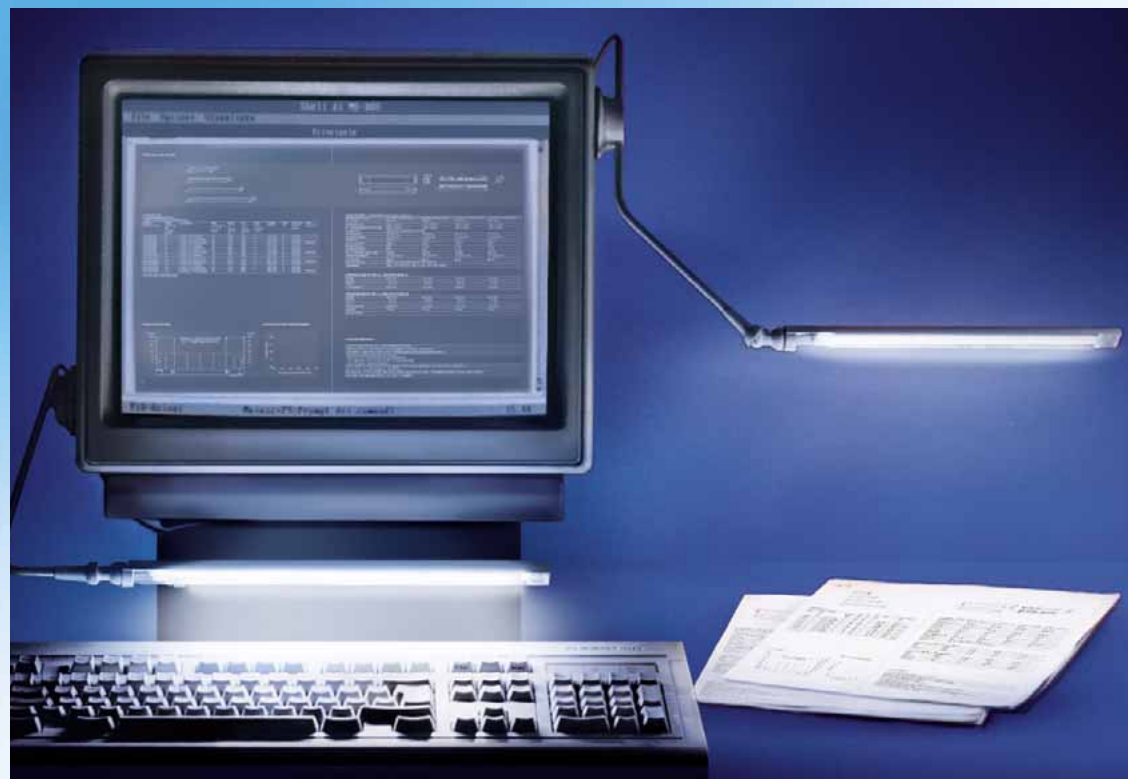
The high luminous efficacy of the FM® lamp and the low power loss of the QUICKTRONIC®-ECG make the FM system an economic solution for all areas of application in which miniaturised lighting is an important factor. Compared with conventional lighting with incandescent lamps, OSRAM FM® lamps can achieve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

High safety standards

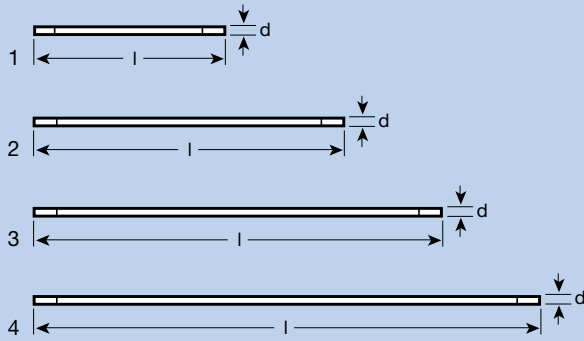
With its high safety standards, the FM® system is ideal for luminaires built into furniture. QUICKTRONIC®-ECG meet all European standards governing safety, operation and electromagnetic compatibility.



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



Technical Data



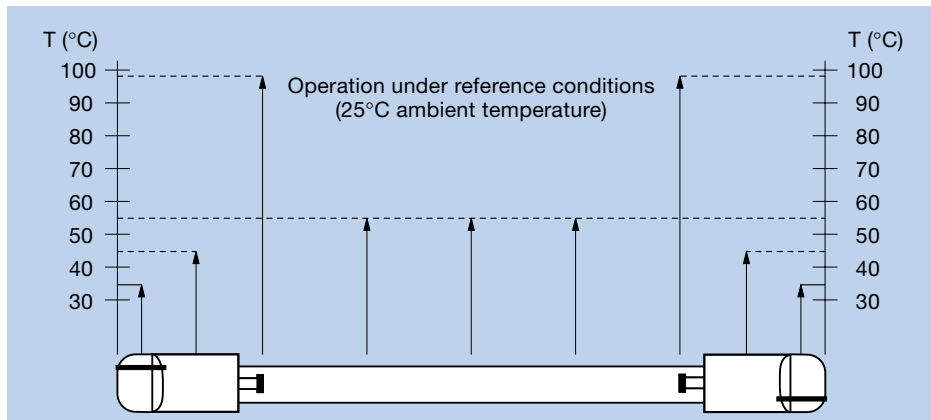
LUMILUX® FM® 7 mm tube diameter LUMILUX® version, W 4.3 base

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	2B	250	310	7	218.3±1	1	20/200	
FM 6W/840	6	LUMILUX® Coolwhite	2B	275	330	7	218.3±1	1	20/200	
FM 6W/830	6	LUMILUX® Warmwhite	2B	275	330	7	218.3±1	1	20/200	338132
FM 8W/860	8	LUMILUX® Daylight	2B	420	500	7	319.9±1	2	20/200	
FM 8W/840	8	LUMILUX® Coolwhite	2B	450	540	7	319.9±1	2	20/200	
FM 8W/830	8	LUMILUX® Warmwhite	2B	450	540	7	319.9±1	2	20/200	338156
FM 11W/860	11	LUMILUX® Daylight	2B	570	680	7	421.5±1	3	20/200	
FM 11W/840	11	LUMILUX® Coolwhite	2B	620	750	7	421.5±1	3	20/200	
FM 11W/830	11	LUMILUX® Warmwhite	2B	620	750	7	421.5±1	3	20/200	338170
FM 13W/860	13	LUMILUX® Daylight	2B	710	860	7	523.1±1	4	20/200	
FM 13W/840	13	LUMILUX® Coolwhite	2B	770	930	7	523.1±1	4	20/200	
FM 13W/830	13	LUMILUX® Warmwhite	2B	770	930	7	523.1±1	4	20/200	338194

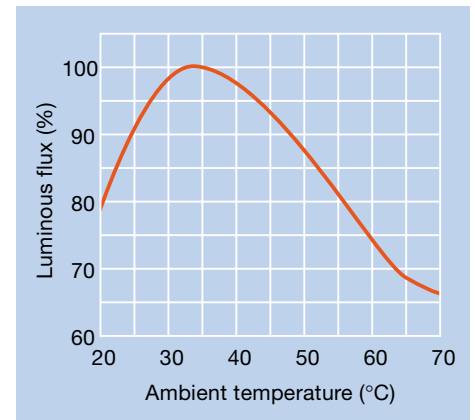
* For information, not for measurements

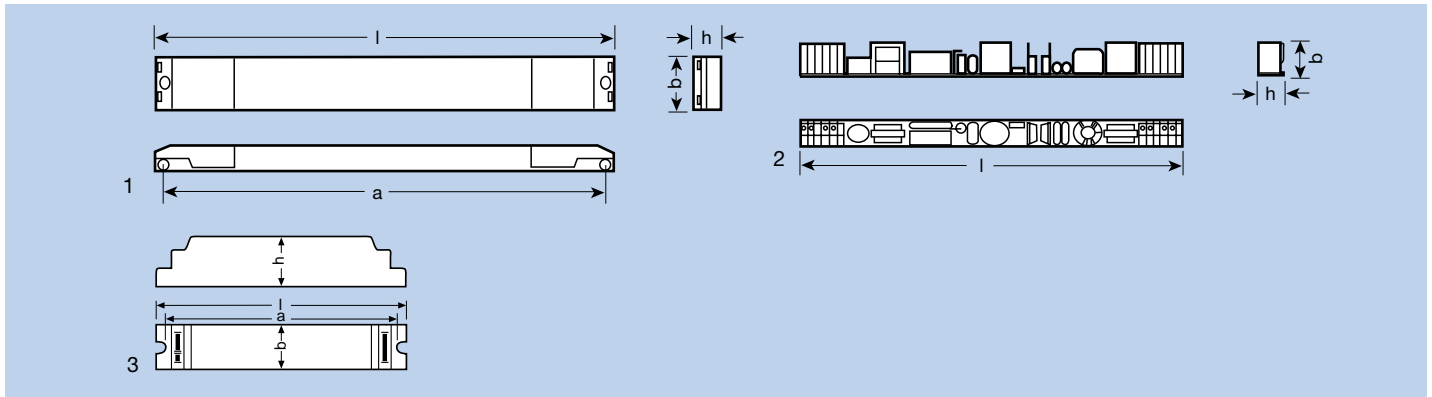
** T2 FM® lamps to be operated only with ECG

Temperature distribution



Luminous flux as a function of ambient temperature





ECG QUICKTRONIC®

Reference	QT-FM 1x6/230–240 L	QT-FM 1x8/230–240 L (LB)	QT-FM 1x11/230–240 L (LB)	QT-FM 1x13/230–240 L (LB)
for lamp	FM 6 W	FM 8 W	FM 11 W	FM 13 W
Mains voltage	230 V–240 V	230 V–240 V	230 V–240 V	230 V–240 V
Lamp start	Warm start within 1.5 s			
Mains frequency	50–60 Hz	50–60 Hz	50–60 Hz	50–60 Hz
Mains 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

QT-FM® 1 x.../230–240 L (Fig. 1) – with plastic casing and cable clamp

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
Hole distance a	263 mm	263 mm	263 mm	263 mm

QT-FM® 1 x.../230–240 LB (Fig. 2) – without casing, long board, with insulating foil

Length l	–	225 mm	225 mm	225 mm
Width b	–	18 mm	18 mm	18 mm
Height h	–	13 mm	13 mm	13 mm

ECG QUICKTRONIC® ECONOMIC QT-ECO FM® 1 x.../220–240 (Fig. 3) – built-in unit with plastic casing

Reference	QT-ECO FM 1x6-8/220–240	QT-ECO FM 1x6-8/220–240	QT-ECO FM 1x11-13/220–240	QT-ECO FM 1x11-13/220–240
for lamp	FM 6 W	FM 8 W	FM 11 W	FM 13 W
Mains voltage	220 V–240 V	220 V–240 V	220 V–240 V	220 V–240 V
Lamp start	Warm start within 1.5 s			
Mains frequency	50 Hz	50 Hz	50 Hz	50 Hz
Mains current	0.06 A	0.07 A	0.10 A	0.12 A
Power factor	0.6 c	0.6 c	0.6 c	0.6 c
System wattage	7.5 W	10 W	13 W	16 W
Lamp wattage	6 W	8 W	11 W	13 W
Max. luminous flux	330 lm	540 lm	750 lm	930 lm
Length l	150 mm	150 mm	150 mm	150 mm
Width b	22 mm	22 mm	22 mm	22 mm
Height h	22 mm	22 mm	22 mm	22 mm
Hole distance a	140 mm	140 mm	140 mm	140 mm

OSRAM information service for further information about 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, please contact your regional OSRAM sales office.

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