FREND LIGHTING INDUSTRIES PTY. LTD.
ABN 76 072 502 311

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MANUFACTURERS OF SUPERIOR FLUORESCENT LUMINAIRES

MR SERIES - High Impact High Abuse

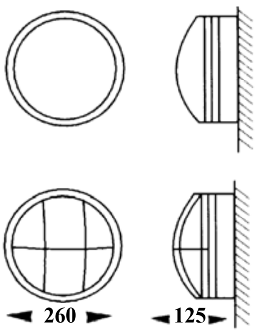
Exterior Range Wall Mounted or Surface Mounted

Attractive

The initial attractiveness of the MR series is a result of many elements - shapes, clean lines, beautiful finishes, concealed hardware and shielded lamps. MR's long-term attractiveness is the result of quality materials, ingenious design and high abuse features capable of withstanding vandalism and the elements.

GR version with grill.

Small

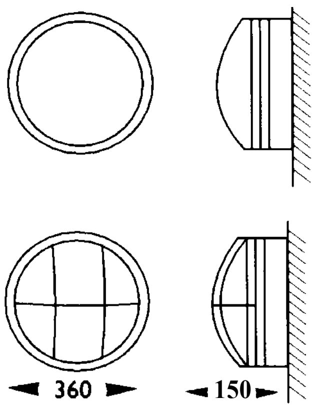


Cat No.

Plain 260mm Diameter
MR 13 1 x 18W PLC
MR 13 1 x 13W PLC
MR 13 60W GLS
Black (standard) or white

Grill 260mm Diameter
MR 13 GR 1 x 18W PLC
MR 13 GR 1 x 13W PLC
MR 13 GR 60W GLS
Black (standard) or white

Large



Cat No.

Plain 360mm Diameter
MR 17 2 x 18W PLC
MR 17 2 x 26W PLC
MR 17 100W GLS
MR 17 50W MV
MR 17 80W MV
MR 17 70W MH
Black (standard) or white

Grill 360mm Diameter
MR 17 GR 2 x 18W PLC
MR 17 GR 2 x 26W PLC
MR 17 GR 100W GLS
MR 17 GR 50W MV
MR 17 GR 80W MV
MR 17 GR 70W MH
Black (standard) or white

- **Die-cast Aluminium Powder Coated Body**
- **Vandal Proof Polycarbonate Diffuser**
- **Silicone Gaskets**
- **Protection Class IP 65**

Lamp & Reflector System

- Series accommodates PLC to 80 Watt HID lamp packages.
- Urethane white powder coat finish with five-step pretreatment 90% reflectivity.
- Lamps and ballasts positioned well away from impact zones.
- Vibration absorbing HID lamp sockets.
- Lamps shielded from viewing angles.

Frend Lighting
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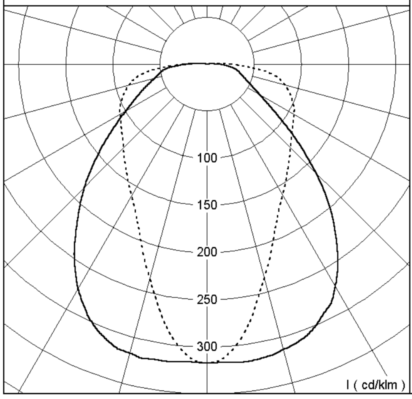
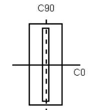
Date : 23/11/99

Light Distribution Curve (LDC)





C0-C180
C90-C270

LOR	
down	74 %
up	1 %
total	75 %

Lamp : 2 x 18w plc

γ	C0	C90	C180
0°	318	318	318
5°	318	305	317
10°	318	273	318
15°	313	235	317
20°	307	203	311
25°	292	177	297
30°	272	160	274
35°	241	147	246
40°	206	135	213
45°	164	125	184
50°	123	117	152
55°	87	111	124
60°	65	107	100
65°	51	101	82
70°	42	94	69
75°	36	86	58
80°	31	75	50
85°	22	51	39
90°	12	24	20

MR17FD15.IES

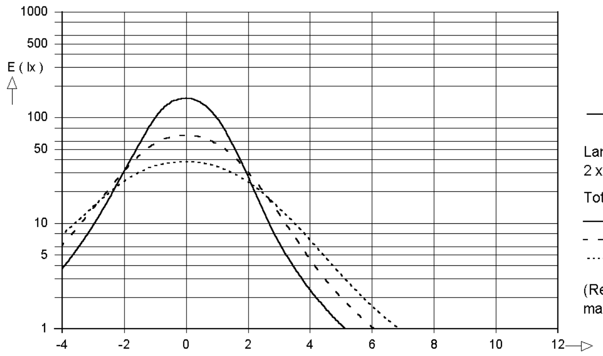
Utilisation Table (TM5)

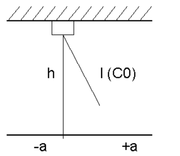
MR17FD15.IES

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	10	40	46	51	55	59	63	65	68	70
70	30	10	34	41	46	50	55	59	61	65	68
70	10	10	30	37	42	45	51	55	58	62	65
50	50	10	39	45	50	53	58	61	63	66	68
50	30	10	34	40	45	48	54	57	60	64	66
50	10	10	30	36	41	45	50	54	57	61	64
30	50	10	38	44	48	51	56	59	61	64	66
30	30	10	33	39	44	47	53	56	59	62	65
30	10	10	30	36	41	44	50	53	56	60	63
0	0	0	28	34	39	42	48	51	54	58	60
BZ-class			5	5	5	5	5	5	5	5	5

SHRnom : 1.00 SHRmax : 1.159

eh Lux at Workplane (one luminaire)





Lamp
2 x 18w plc

Total lumens 2400 lm

h =	2.00 m
h =	3.00 m
h =	4.00 m

(Reflectances : 0 / 0 /0)
maintenance factor = 0.8

MR17FD15.IES

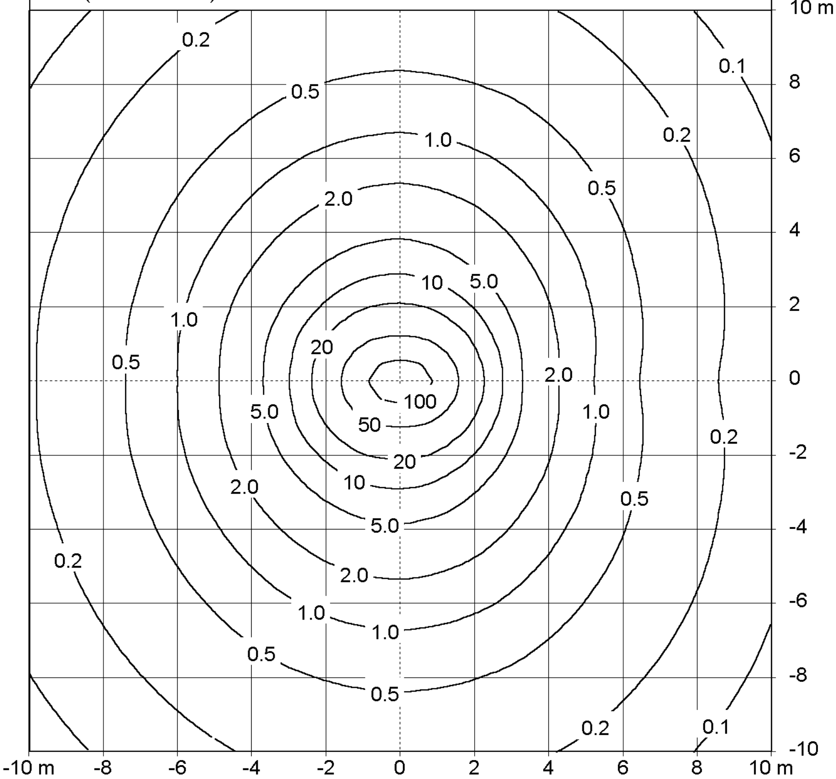
Number of Luminaires in Rooms : (Refl. 30/ 10/ 10)

Em in lx	Lph in m	2 x 18w plc / 2400 lm Room Area / m² 20	30	40	50	70	80	90	100
10	2.00	1	1	1	1	1	1	1	1
	3.00	1	1	1	1	1	1	2	2
	4.00	1	1	1	1	2	2	2	2
40	2.00	2	2	2	3	3	4	4	4
	3.00	2	2	3	3	4	4	5	5
	4.00	2	3	3	4	5	5	5	6
60	2.00	2	3	3	4	5	5	6	6
	3.00	3	3	4	5	6	6	7	7
	4.00	3	4	5	5	7	7	8	8

Maintained eh Lux. (Maintenance Factor = 0.80)

eh Isolux at workplane (one luminaire)

mounting height : 2.00 m
maintenance factor : 0.8



Glare Evaluation to AS1680.1 1990 (TM10)

MR17FD15.IES

ρ-ceiling		70	50	50	30	70	50	50	30
ρ-wall		30	50	30	30	30	50	30	30
ρ-floor		20	20	20	20	20	20	20	20
room size X	Y	viewed crosswise to lamp axis				viewed parallel to lamp axis			
2H	2H	17.3	15.8	17.8	18.2	19.2	17.7	19.7	20.1
	3H	19.1	17.8	19.6	20.1	22.2	20.8	22.6	23.1
	4H	20.0	18.8	20.5	21.0	23.6	22.3	24.1	24.6
	6H	20.9	19.8	21.4	22.0	25.0	23.9	25.5	26.0
	8H	21.3	20.2	21.8	22.4	25.6	24.5	26.1	26.6
	12H	21.6	20.6	22.2	22.7	26.1	25.1	26.6	27.1
4H	2H	18.4	17.1	18.8	19.3	19.9	18.7	20.4	20.9
	3H	20.5	19.5	21.0	21.5	23.1	22.1	23.6	24.1
	4H	21.5	20.7	22.1	22.7	24.7	23.9	25.3	25.8
	6H	22.6	21.9	23.2	23.8	26.3	25.6	26.8	27.4
	8H	23.1	22.5	23.7	24.3	27.0	26.4	27.6	28.2
	12H	23.5	23.0	24.1	24.7	27.6	27.1	28.2	28.9
8H	4H	22.6	22.0	23.2	23.8	25.1	24.6	25.7	26.3
	6H	23.9	23.5	24.5	25.1	26.9	26.6	27.5	28.2
	8H	24.5	24.3	25.2	25.8	27.9	27.6	28.5	29.2
	12H	25.0	24.9	25.7	26.4	28.6	28.5	29.3	30.0
12H	4H	23.0	22.5	23.6	24.2	25.2	24.7	25.8	26.5
	6H	24.4	24.2	25.0	25.7	27.1	26.9	27.8	28.4
	8H	25.1	25.0	25.7	26.4	28.1	28.0	28.7	29.4

Corrected-Values for a Lamp Flux of 2400 lm

All data subject to change without notice

Everybody needs a FREND

Full photometric data is available electronically if required.