

The **EM FIT 60/220-240/350 D CS L CCT** is a 60W, constant-current and IP20 rated Linear non-isolated LED driver that operates from 220 - 240 V input with excellent power factor. Design for various lighting applications including tri-proof, linear luminaire, etc.



Features

- Flexible with 1 driver offers 4 output currents.
- Input Surge Protection: DM 1kV, CM 2kV.
- Low THD < 10% @ full load.
- Lifetime up to 50k hrs @ t_{c_max} .
- Halogen Free.

Application

- Suitable for Industrial Applications
- Suitable for Luminaires with Protection Class I
- Suitable for Build-in Use
- Suitable for Emergency Lighting

Models

Nominal current range (mA)	Default Output Current (mA)	Nominal Output Voltage Range (Vdc)	Maximum Output Power (W)	Typical Efficiency	Power Factor λ	Product Name
200/250/300/350	200	90 - 175	61.25	91.5%	0.7C – 0.95	EM FIT 60/220-240/350 D CS L CCT

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage AC	220 Vac	-	240 Vac	
Input Voltage DC	176 Vdc	-	276 Vdc	
Mains Frequency	0/50/60Hz			
Touch Current	-	-	0.7mA	IEC 60598-1 (mA peak)
Protective Conductor Current	-	-	3.5mA	IEC 60598-1 (mA RMS) (only for Class I)
Nominal Input Current	-	0.30A	-	Measured at 100% load and 230 Vac input.
Suitable for Fixtures with Protection Class	Class I			
Power Factor λ	0.7C	0.95		At 220-240Vac, 50-60Hz, Load (18 – 61.25W)
Total Harmonic Distortion	-	-	30%	
Total Harmonic Distortion Extended Range	-	-	10%	At 230Vac, 50-60Hz, Full load

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Nominal Output Current Range	200/250/300/350mA			
Default Output Current	-	200 mA	-	
Nominal Output Voltage	90 V	-	175 V	
Output Current Tolerance	-5% -7.5%	-	+5% +7.5%	At 300/350mA At 200/250mA
Nominal Output Power Range	18W	-	61.25W	
Output Current Ripple LF	-	-	3%Iomax	At 100% load condition, <1k Hz (pk-pk).
Total Output Current Ripple HF	-	-	10%Iomax	At 100% load condition, >1k Hz (pk-pk).
P _{st} LM	-	-	1.0	Measured at 230Vac input, 100% load
SVM	-	-	0.4	Measured at 230Vac input, 100% load
Startup Overshoot Current	-	-	10%Iomax	At 100% load condition
U _{out}	-	-	250 V	
Galvanic Isolation	Non-isolated			
Emergency Lighting	Yes			EoFi=1
Line Regulation	-	-	± 5%	Measured at 100% load
Load Regulation	-	-	± 5%	
Turn-on Delay Time	-	-	0.5 s	

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 230Vac Input I _o =350 mA	91%	91.5%	-	Measured at 100% load and Steady-state temperature in 25°C ambient:
Device Power Loss	-	4.6W	-	
Operating Case Temperature for Safety tc _s	-30°C	-	+85°C	
Max. Housing Temperature in Case of Fault	-	-	110°C	
Operating Case Temperature for Warranty tc _w	-30°C	-	+85°C	Case temperature for 5 years warranty. Please see Inventronics Warranty Statement for complete details. Humidity: 5% RH to 85% RH, No condensation
Lifetime at tc _w .	-	50,000 Hours	-	Measured at 230Vac input, 100% load. 10% failure rate
Lifetime at tc _w – 10°C.	-	100,000 Hours	-	Measured at 230Vac input. 10% failure rate
Ambient Temperature _{ta}	-30°C	-	+55°C	Measured at 230Vac input, 100% load @ tc _w
Permitted Rel. Humidity During Operation	5%	-	85%	No condensation
Temperature at Storage	-40°C	-	+85°C	Humidity: 5% RH to 85% RH, No condensation
Noise during start	-	-	40db	ISO3743_30cm
Noise during operation	-	-	20db	ISO3743_30cm
Mains Switching Cycles	200,000	-	-	
IP Rating	IP20			
Dimensions (L × W ×H)	168 x 30 x 21 mm			
Net Weight	-	130 g	-	

Inrush Current Waveform

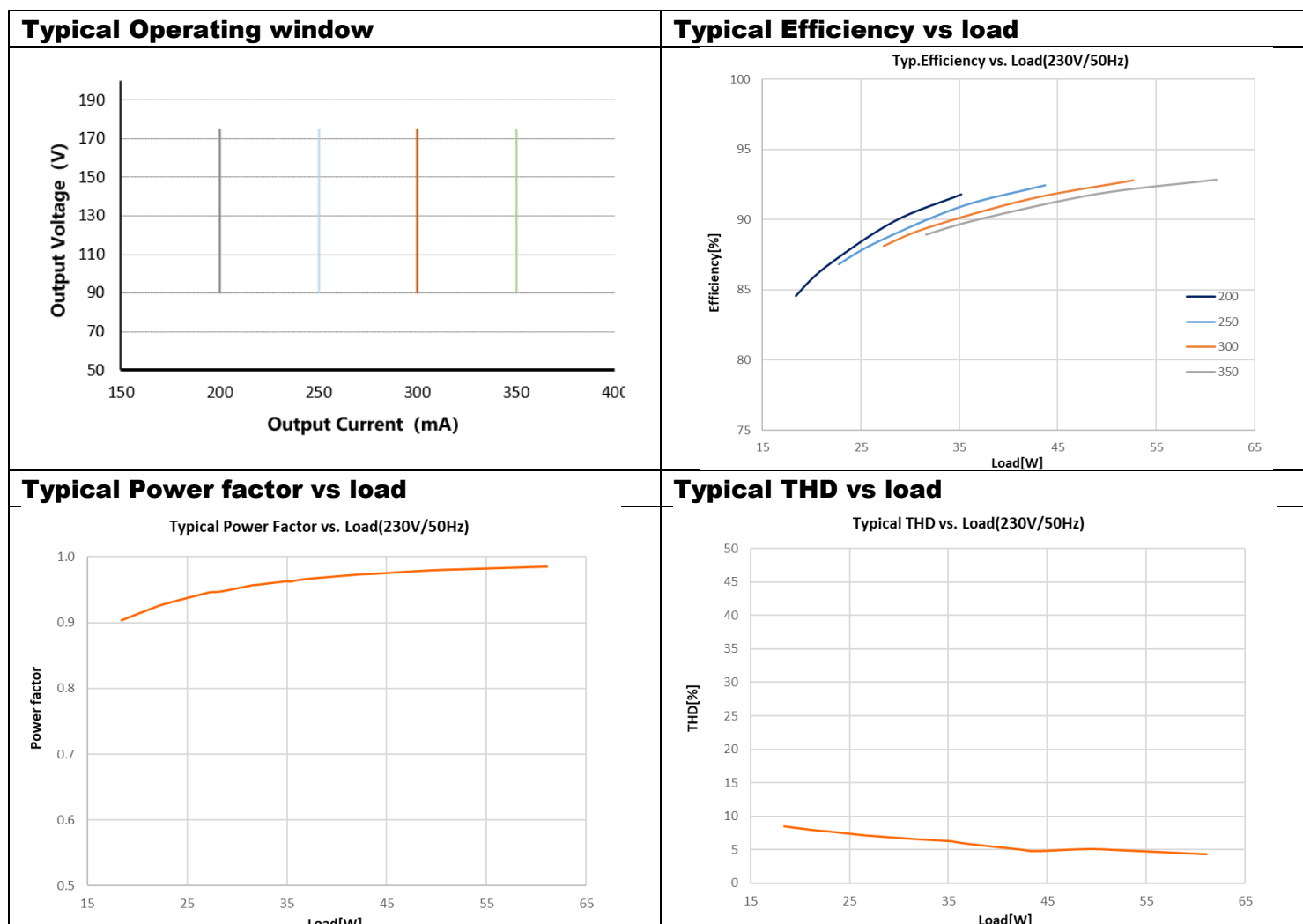
Input AC Voltage	Inrush current I_{peak}	Inrush current width t_{width} (@ 50% I_{peak})	The Number of LED Driver can be Configured (MCB)							
			B10	B16	B20	B32	C10	C16	C20	C25
230 Vac	28.0A	210 us	13	22	34	44	23	37	57	74

Notes: The maximum number of units per circuit breaker is indicative value.

Certificates & standards

Safety Category	Standard
ENEC	EN IEC 61347-1, EN IEC 61347-2-13, EN IEC 62384
CE	EN IEC 61347-1, EN IEC 61347-2-13, EN IEC 55015, EN IEC 61547, EN IEC 61000-3-2, EN 61000-3-3
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB/T 19510.1, GB/T 19510.213, GB/T 17743, GB/T 17625.1
RCM	AS/NZS 61347-1, AS 61347-2-13

Note: This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.



Rated output power and current sets				
I _{out} [mA]	200	250	300	350
U _{min} [V]	90	90	90	90
U _{max} [V]	175	175	175	175
P _{min} [W]	18.0	22.5	27.0	31.5
P _{max} [W]	35.0	43.7	52.5	61.2
t _{a_max} [°C]	55	55	55	55
t _{c_max} [°C]	85	85	85	85
Line Current, nominal@230V_ [A]	0.18	0.22	0.26	0.30
Max Power Loss@230V_ [W]	3.4	3.8	3.9	4.6
Input Power @230V_ [W]	38.4	47.5	56.4	65.8

DIP1	DIP2	Current (mA)
OFF	OFF	200
ON	OFF	250
OFF	ON	300
ON	ON	350
Current selected by Dip switch		

Protection Functions

Over Voltage Protection (OVP)

Limits output voltage at no load and in case the normal voltage limit fails.

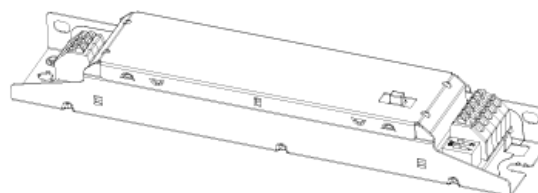
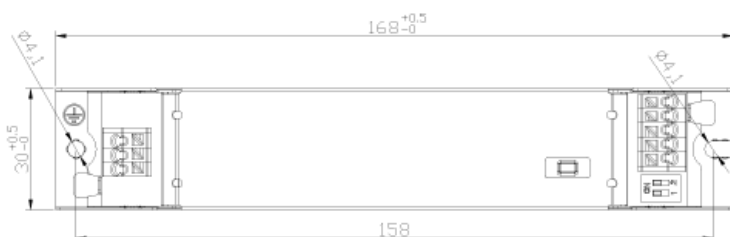
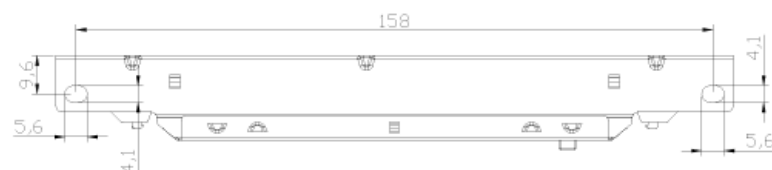
Short Circuit Protection (SCP)

Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed

No Load Protection (NLP)

The driver automatically adjusts the output voltage to the maximum output voltage if no load is connected and switches off its output after some seconds. Hot-plug of the load or external switching on the secondary side is not allowed.

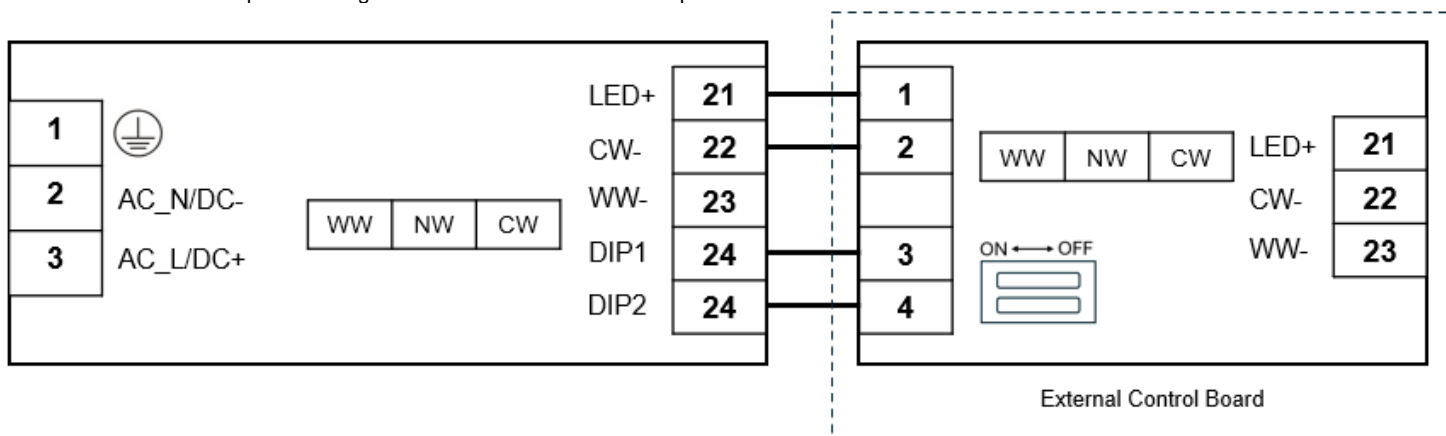
Mechanical Outline



Connection Diagram

Parameter		Min.	Typ.	Max.	Notes
L, N, GND	Wire Cross-section	s:0.5 mm ² f:0.7 mm ²	-	1.5 mm ²	Push-in at 45°angle, solid and stranded wire
	Strip Length	7 mm	-	8 mm	
LED+, LED-	Wire Cross-section	s:0.5 mm ² f:0.7 mm ²	-	1.5 mm ²	Push-in at 45°angle, solid and stranded wire
	Strip Length	7 mm	-	8 mm	
DIP1, DIP2	Wire Cross-section	s:0.5 mm ² f:0.7 mm ²	-	1.5 mm ²	Push-in at 45°angle, solid and stranded wire
	Strip Length	7 mm	-	8 mm	

Hot plug-in or secondary switching of LEDs is not permitted and may cause a very high current to the LEDs. Indication that the lamp controlgear relies upon the luminaire enclosure for protection against accidental contact with live part



- Please make sure the dipswitches on driver,
 - Output Current dipswitch is on min current.
 - CCT dipswitch is on CW mode.
- DIP1 and DIP2 are not need to distinguish between positive and negative poles.
- The dipswitches on control board can 1:1 copy the function of the dipswitches on driver.
- The control board is customized according to customers' luminaire design.

Environmental Compliance

RoHS

Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products.

Eco-design regulation information

Intended for use with LED modules.

The forward voltage of the LED light source shall be within the defined operating window of the control gear in all operating conditions including dimming if applicable.

Separate control gear and light sources must be disposed of at certified disposal companies in accordance with Directive 2012/19/EU (WEEE) in the EU and with Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 in the UK. For this purpose, collection points for recycling centers and take-back systems (CRSO) are available from retailers or private disposal companies, which accept separate control gear and light sources free of charge. In this way, raw materials are conserved and materials are recycled.

Thermally protected controlgear are classified according to the type of thermal protection means as follow:

e)protective method of another type (providing equivalent thermal protection)

The controlgear is provided with internal protection that supports selectivity in the case of installation with fuse gG 16 A.

Product Order Overview

Order Code & Packaging

Order Code (EAN)	Product Version Name	Certification Markings on Product	Packaging Unit (Pieces/Box)	Packing Dimensions (L × W × H)(mm)	Gross Weight (Kg)
6937186176622	EM FIT 60/220-240/350 D CS L CCT	CE, ENEC, RCM, CCC, EL	50	320*183*153	6.45