

## AC Direct LED Driver IC for LED Arrays

For the replacement of AC-DC converter or SMPS for high power LED Lamps

-Control total power with variable input voltage and input current  
without Capacitor or Inductor

PC-R101B is a constant current IC of supplying current to a load regardless of an input voltage variation. PC-R101A also includes a compensation circuit of an input power for input voltage change as well as a switching circuit by a LED group for the achievement of high power factor (PF). It is the reliably stable and high efficient LED driver for the safety of LED optical components sensitively affected by changes of voltage and current.

### Model No : PC-R101B

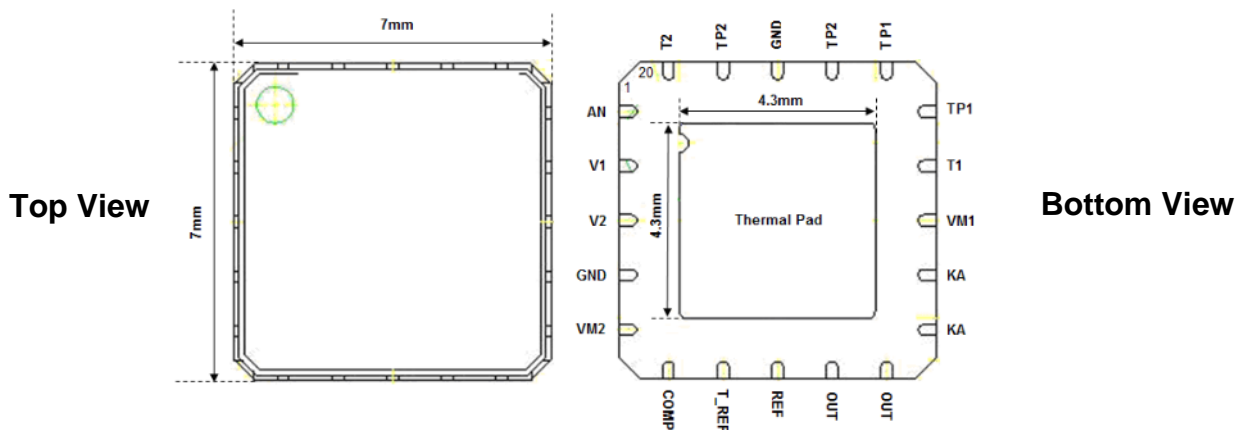


### Features

- Compact Size (IC Chip)
- Minimize the Power fluctuation (from 5% to 10%)
- Power efficiency: App. **83~90% @ 220V**
- High Power factor and Low Harmonic distortion
  - High Power-factor (**>0,99**)
  - Low Harmonic distortion ( $n \geq 11$ , less than 3%)
- Stable and Flexible product (3-30W @ each IC chip) @ FR4 PCB  
(3-40W @ each IC chip) @ Metal PCB
- Long life and low cost solution

### Applications

- Various high power LED lighting module or engine having a difficulty in a stuffing problem in the limited socket space



PC-R101B is designed with unique and innovative LED AC direct technologies (Patent No.: KR0943656, KR0942234, PCT KR2009-005333, PCT KR2009005334) without usage of any complicated circuit, a big capacity of inductor or capacitor as used in general SMPS or AC/DC convertor. It obviously provides longer lifetime than LEDs due to the same manufacturing process of LED chips (Especially for the junction temperature, our IC can resist higher temperature than LED chips) as well as no usage of passive components badly affecting a lifetime of products with LEDs. It can perform above 99% of power factor by optimizing a switching tap of LED group as optional.

## Advantageous features of AC Direct LED Driver

Major features			Description of Login Digital technology
Item	Login Digital specification	Other competitor	
Power factor	> 0,99	0,5 ~0,95	Power factor means the rate of how effectively power works in the electric products. Effective power = $V \times I \times \text{Cos}(\theta)$ and power factor is $\text{Cos}(\theta)$ . Login Digital technology makes power loss caused by power transformation and distribution extremely reduced and help power make the best performance. Higher power factor tends to be required by governmental regulation and in the market.
Power Efficiency	83 ~ 90%	~ 80% (<100W, include SMPS)	In short, power efficiency = total LED consumption / Total power consumption. In General, SMPS over 100W shows high efficiency of over 90%. However, SMPS lower 100W normally shows 80% power efficiency or less. It can increase up to 90% by means of adopting the optimized number of LEDs.
EMI	50/60 Hz	> 30Khz	The Login Digital product does not make any high frequency switching noise due to no adoption of switching mode power supply (SMPS)
Length of Life	50.000 Hours	10.000 Hours	It has much longer life than a converter due to no usage of capacitor or inductor which is easily damaged by heat or tension. In case of a capacitor, it is very easily damaged by heat and its actually life may perform around 20% of logical lifespan. However, the Login Digital driver is so solid enough to resist higher temp. in 150°C than LEDs (100°C). So, it helps LED products maintain extremely longer time than the converter used LED lamp or even LEDs due to no usage of capacitor, but being simply composed of a few solid state semiconductors and resistors.
Dimension	7x7x0,85 mm (IC) + a few diodes and resistors beside - alternative - 25x20 mm (complete driver board)	Limits of space inside lamp holder	The Login Digital driver delivers high flexibility and help your consideration of a spacing design for power in a lamp due to only occupying a incomparable tiny part of the dimension in a lamp. So, you can make the best use of almost no limit of spacing design inside a lamp holder and helps you can flexibly control a lamp figure and heat management stably in designing a fixture especially for lower than 25W product.
Cost Competition	Around 25% of normal 30W converter	---	The Login Digital driver is a low cost solution due to not using DC/DC converter of high power inductor and capacitor, but just being composed of a IC and a few resistors, small ceramic capacitors and bridge diode.
LED Array	Requires AC Direct LED Array	Mainly 10 LED series LED Array and make them parallel lines	It is imperatively advised that use and array 75~90ea LED chips for 220V and 35~45ea LED chips for 110V. It is also required to array direct connection of LEDs and strongly recommended that the optimized number of arraying LED's is 84ea for 220V and 40ea for 110V. In addition, values of power factor, LED efficiency, and THD are adjustable through trade off relations.

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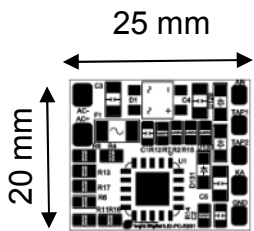
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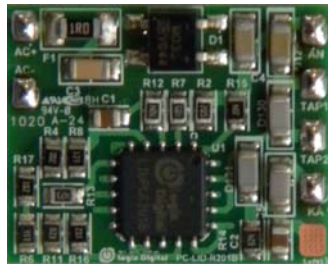
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## Login Digital Driver IC module PC-R201B



Original Size



### Module type

Size 20 x 25 x 2,4 mm

With components

Power 3 ~30W variable @ FR4 PCB

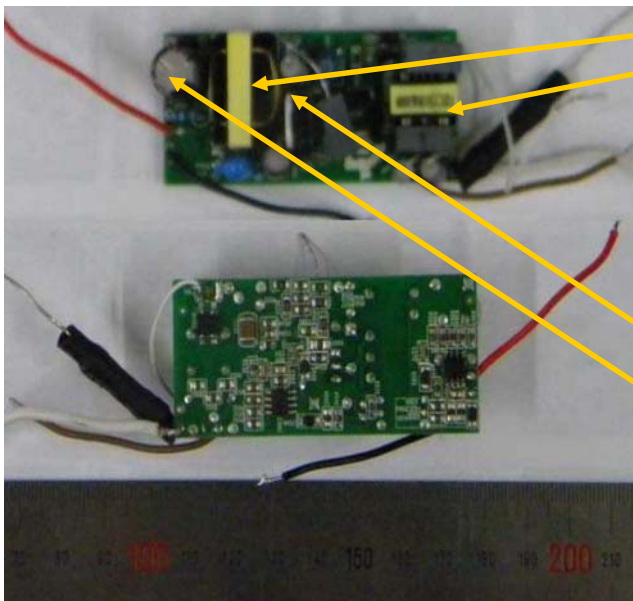
Power 3 ~40W variable @ Metal PCB

### Including :

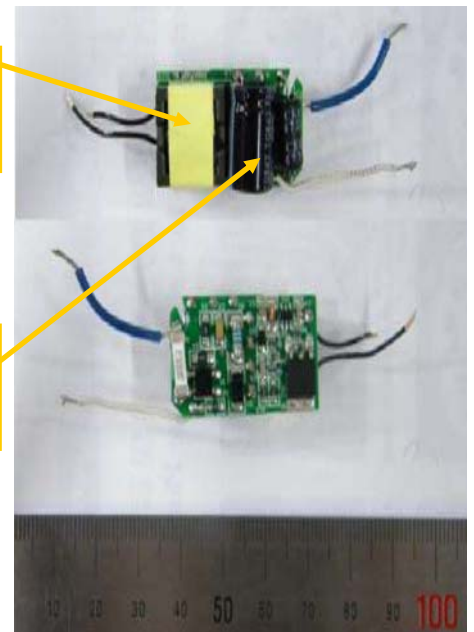
- Bridge Diode
- Resistors
- Small Ceramic Cap

## Other Company Product

Size 70 x 30 x 25 mm  
Power: Max 10W



Size 33 x 18 x 15 mm  
Power: Max 5W

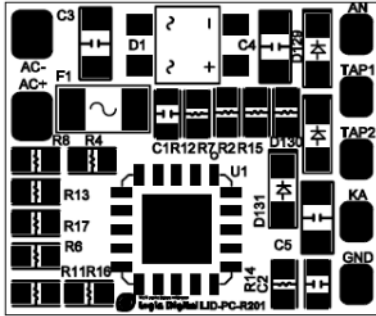


Inductor:  
Size limit

Capacitor:  
Life Cycle Limit

# TEXIM EUROPE SOLUTIONS

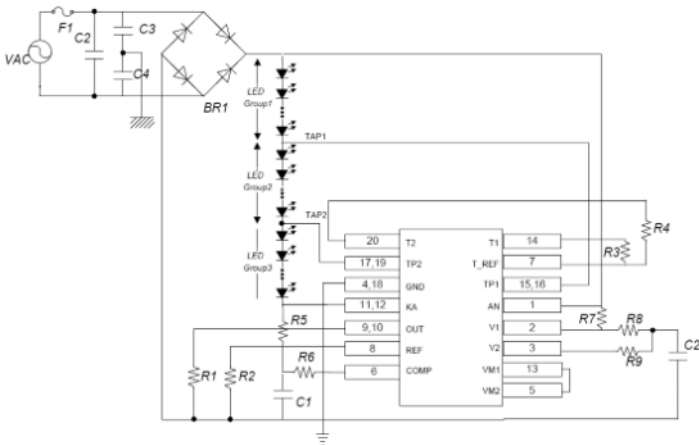
## Pin Description of Driver IC module PC-R201B



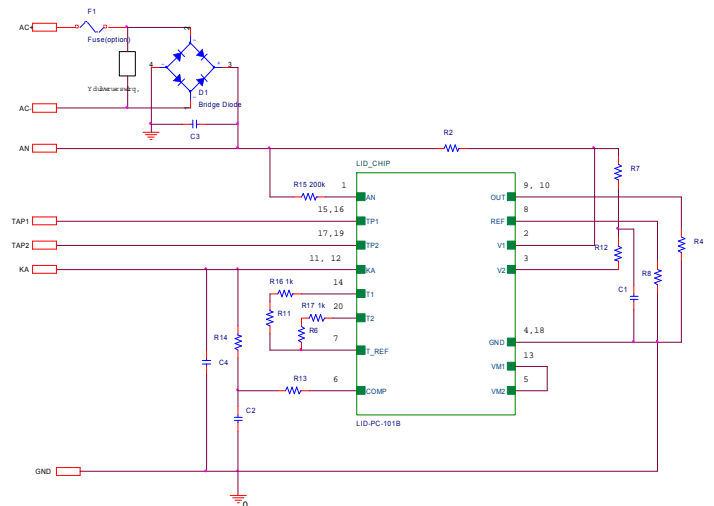
Dimension 20x25x2,4 mm

Pin Name	Description
AC +/-	AC input
AN	The Anode of LED Array group (First LED)
TAP1	The Tap Point between LED Group1 and Group 2
TAP2	The Tap Point between LED Group 2 and LED Group 3
KA	The Cathode of LED Array group (the cathode of last LED)
GND	The signal Ground

## Typical application circuit



## The circuit of PC-R201B



## General AC-DC Converter / SMPS for example



## Login Digital PC-R201B



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