

LED EVENT 2016 Design en engineering trends voor LED-applicaties	BE WOENSDAG 30 NOVEMBER 2016 TECHNOPOLIS, MECHELEN NL DONDERDAG 1 DECEMBER 2016 CONGRESCENTRUM 1931 BRABANTHALLEN, DEN BOSCH
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“DIGITAL COMMUNICATIONS IN LED DRIVERS PLATFORMS”



Giacomo Mazzullo
Regional Manager
MEAN WELL EUROPE

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AGENDA



- About MEAN WELL
- Our Target
- Light Source Evolution
- MEAN WELL Drivers Evolution
- Dimming
 - 0-10
 - DALI
 - KNX
 - ZigBee
 - ENOCEAN
 - LIFI
- MEAN WELL and the FUTURE STANDARDS
- CONCLUSIONS

ABOUT MEAN WELL



MEAN WELL ENTERPRISES CO., LTD

Established in 1982

in New Taipei City, Taiwan



**SZMW
2006**



**MWEU
2006**



**GZMW
1993**



Headquarters



**MWUSA
1999**



**GZ New Factory
(MWHW)
2013**

- **Total Employees: ~2500 persons**
- **Products: Standard Switching Power Supplies
(AC/DC, DC/DC, DC/AC)**
- **Group Turnovers: USD 703m (2015)**
- **Production capacity : 100m pcs per year**

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OUR TARGET



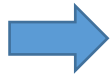
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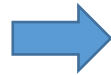
LIGHT SOURCE EVOLUTION



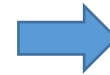
incandescent



fluorescent

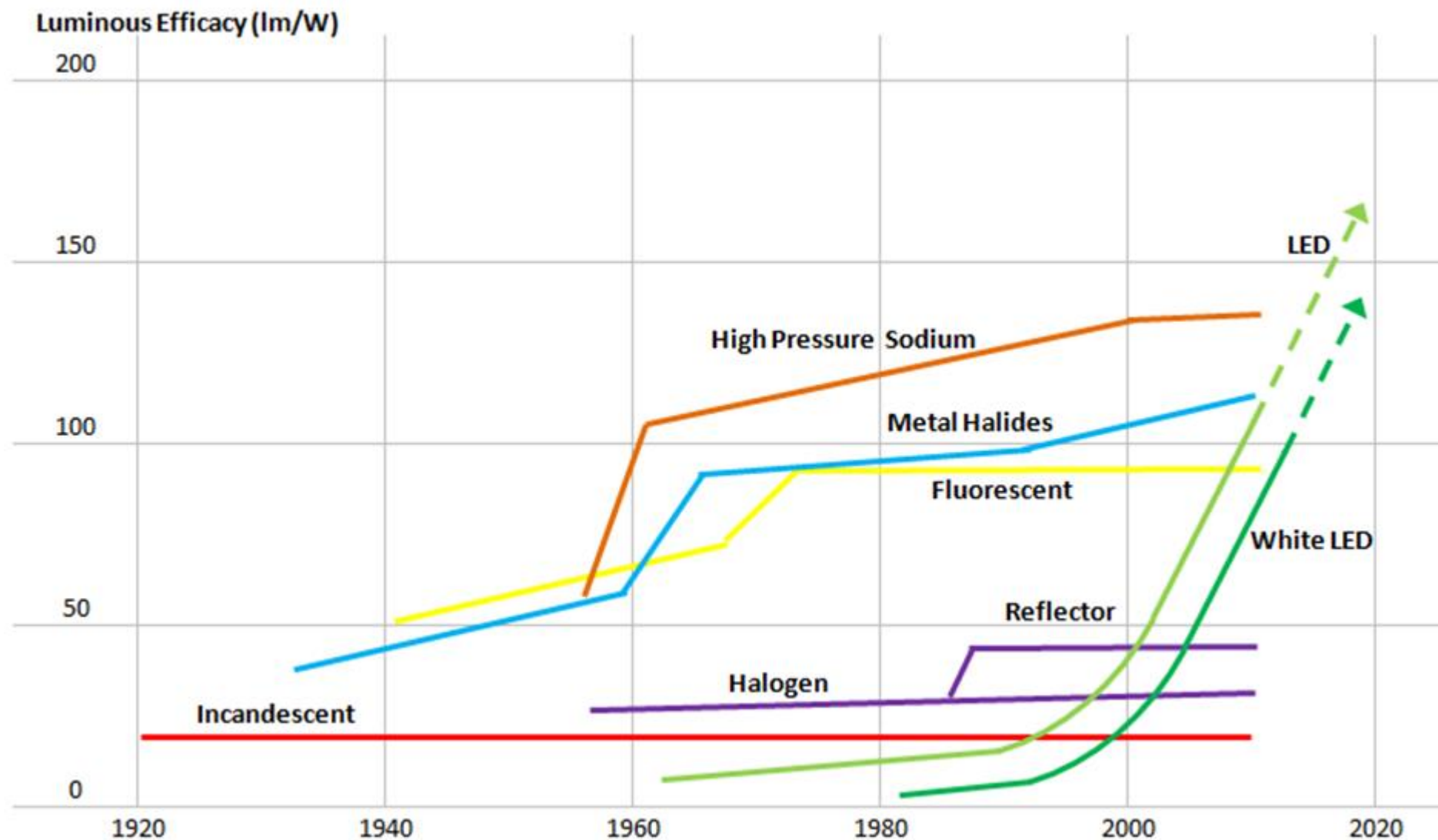


Low power LED chips

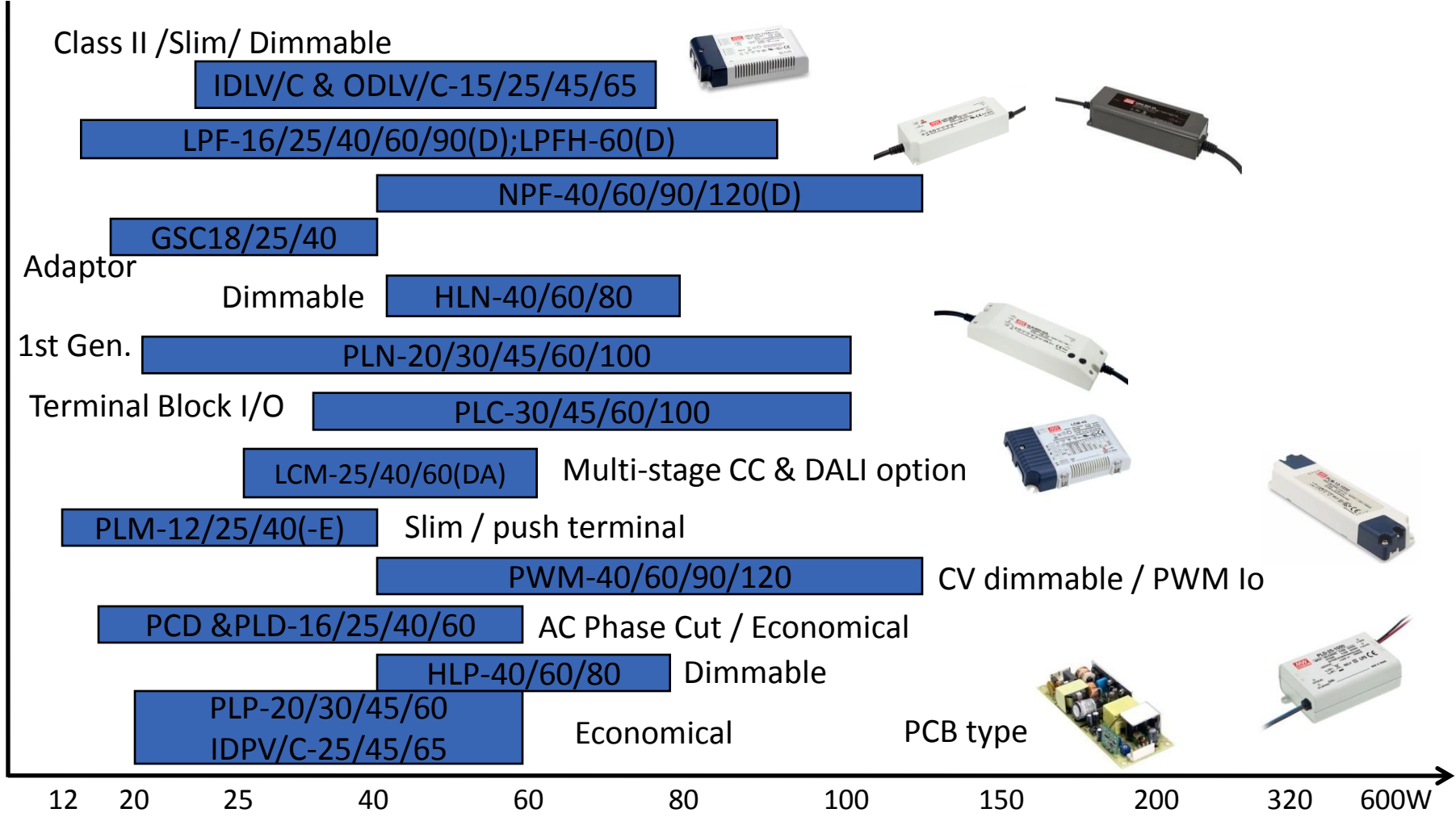


COB – High Power LED chips

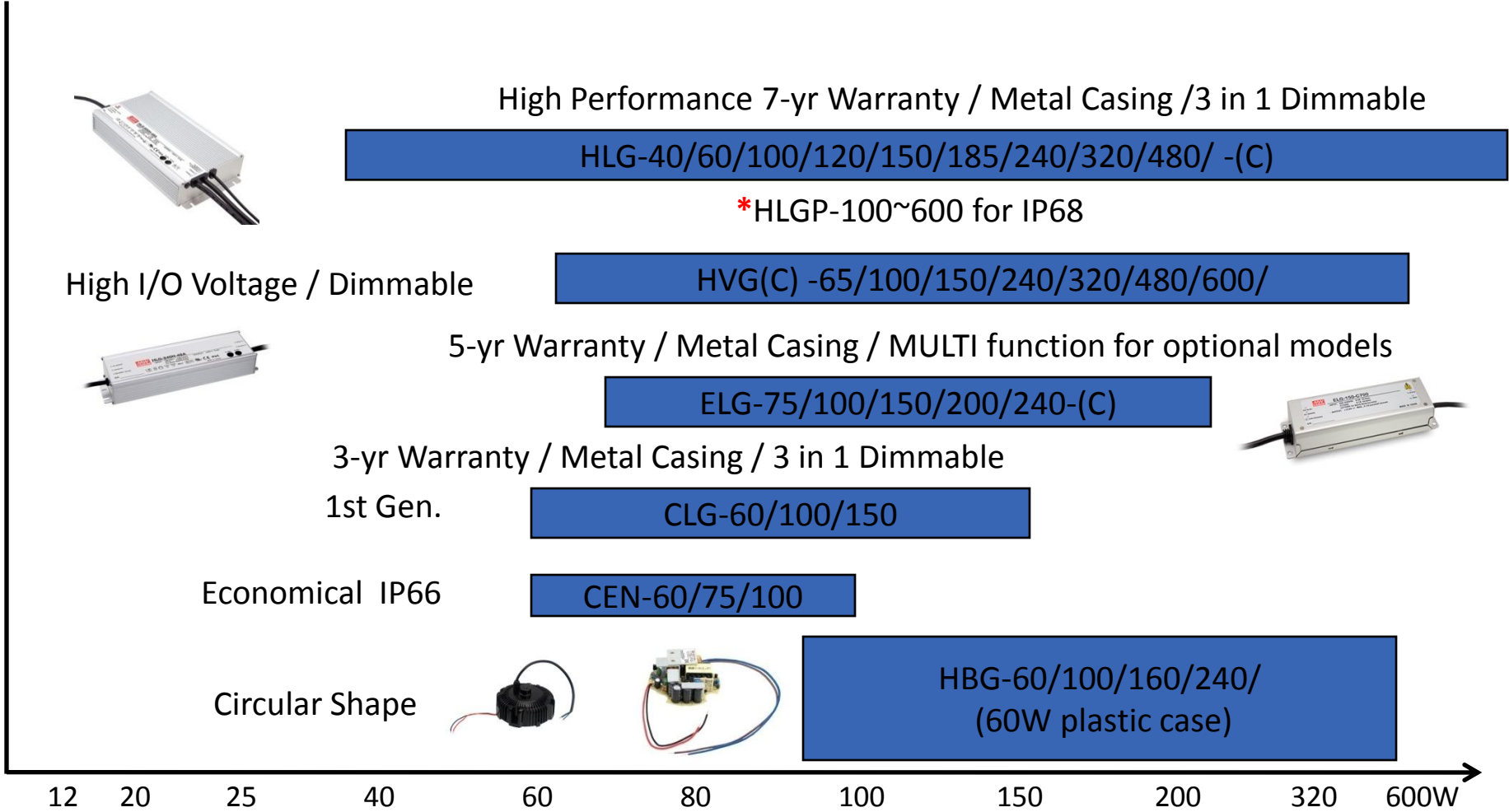
LIGHT SOURCE EVOLUTION



MEAN WELL DRIVERS EVOLUTION (Plastic Case)



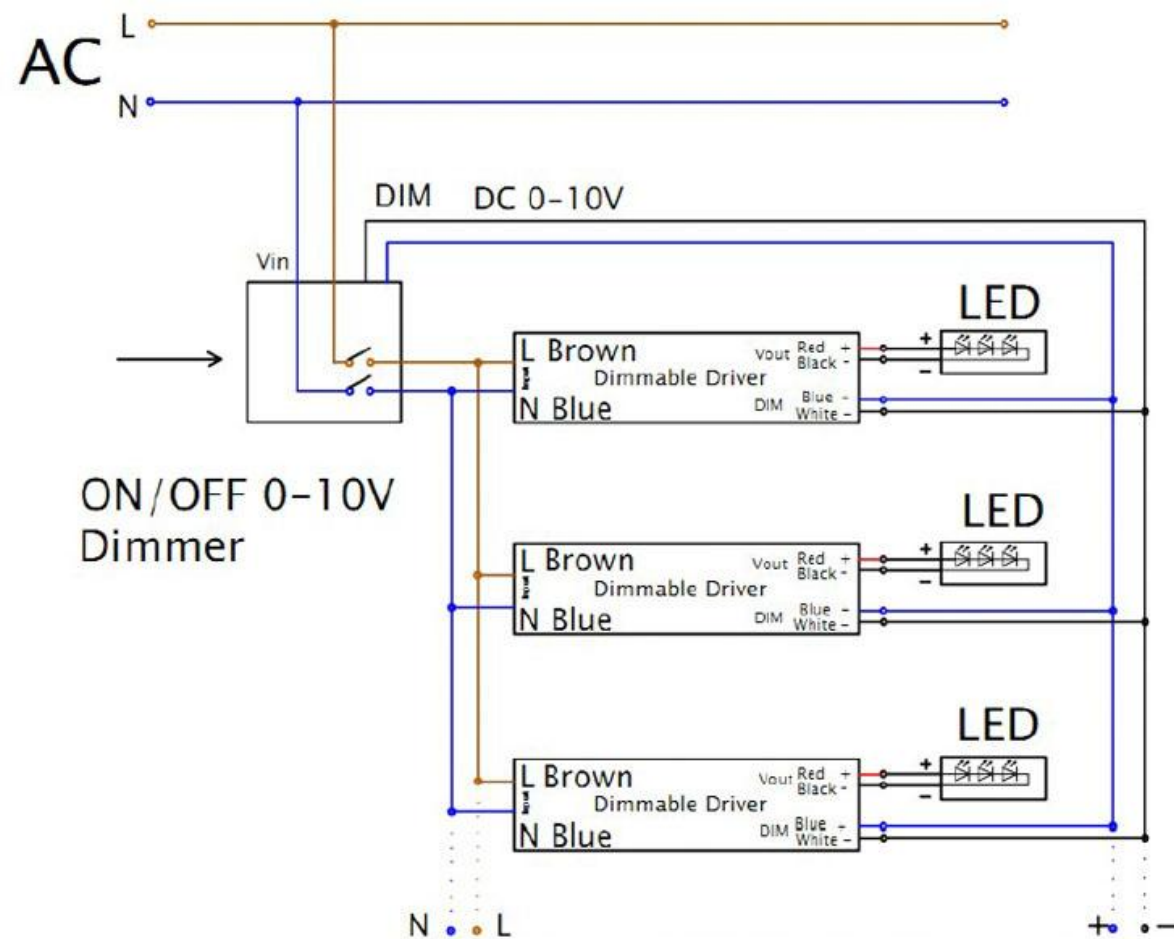
MEAN WELL DRIVERS EVOLUTION (Metal Case)

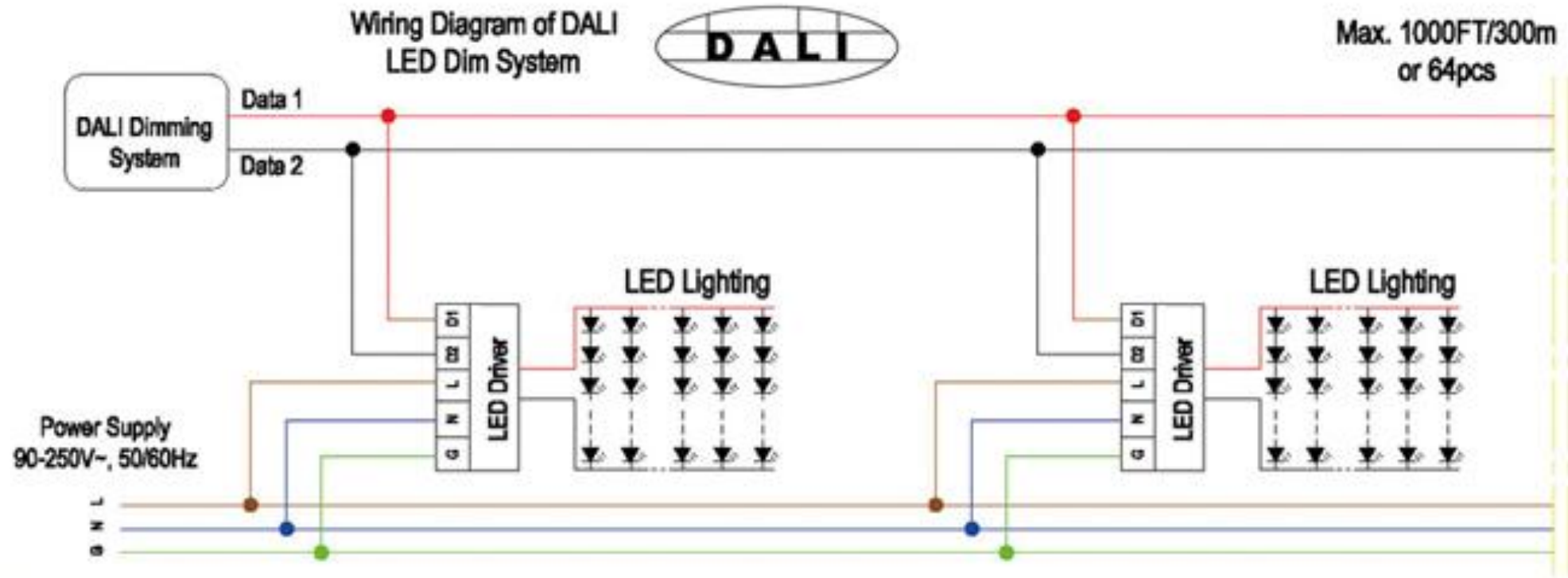




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0-10V dimming





MW Series with DALI integrated: ELG – HLG-320 – LCM

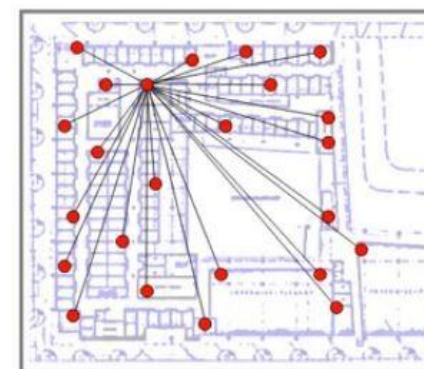
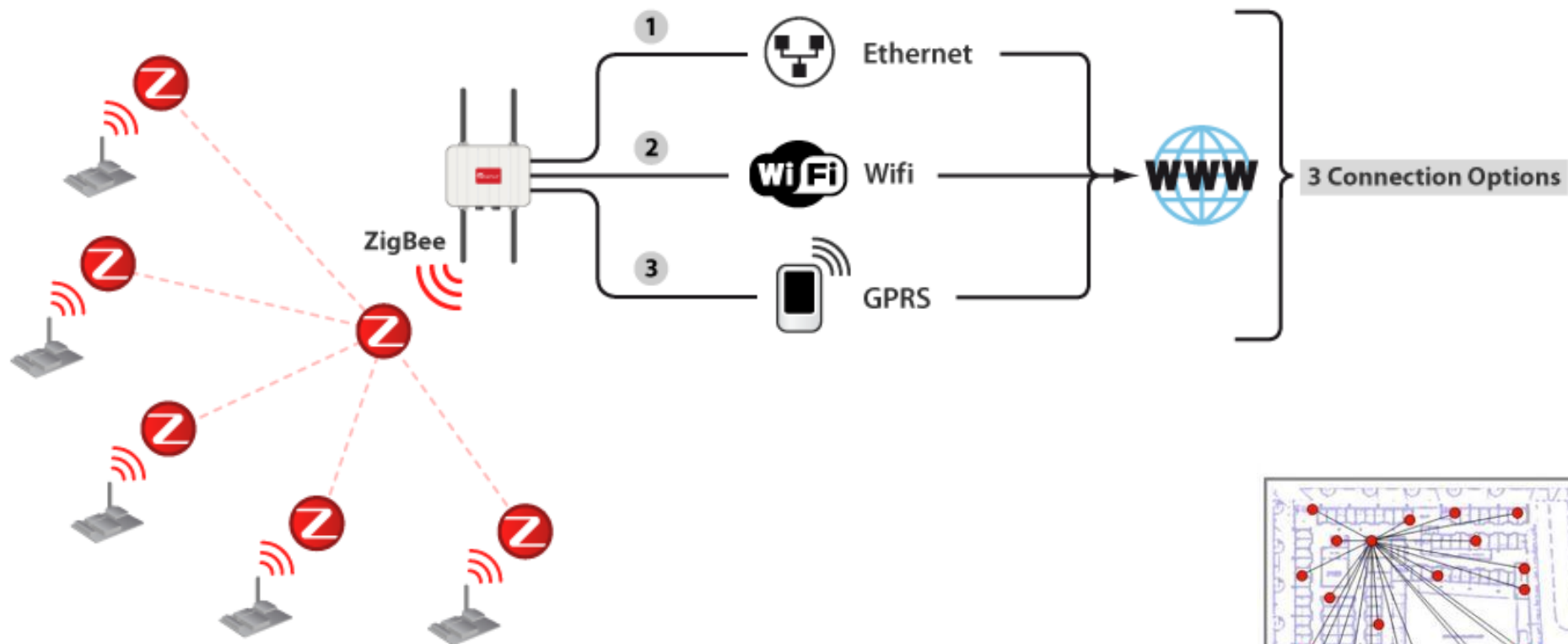
MW Series with DALI Integrated (under development): PWM – NPF

Converters: DAP-04 (DALI -> PWM)

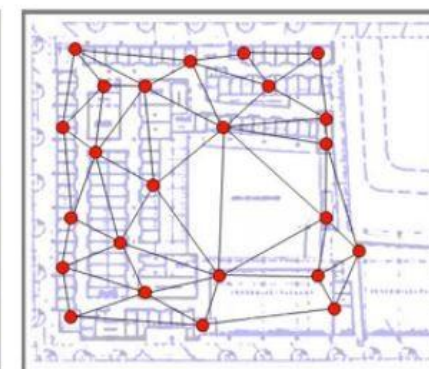


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Star Network
(e.g. 802.11)

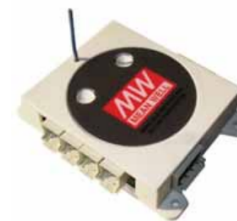


Mesh Network
(e.g. ZigBee)



Wireless DC multi-channel PWM dimmer

WPD-06



■ Features :

- Easy configuration & installation
- 6 protected output channels
- Independent dimming control on each channel
- Up to 128 wireless batteryless switches connected possible
- Built-in wire push dimming function*
- Suitable for constant voltage lighting application
- Possible for constant current lighting application(optional)
- Multiple dimmer application via CANBus possible(optional)
- Up to 30 meter wireless distance
- Conformal coating for harsh and high humidity environment
- 5 year warranty

■ Description :

WPD-06 is a wireless dimming device for 12/24V LED strips working with batteryless switches with mounting plate which can be perfectly fitted into the wall for standard household application. No more dimming wires need to be installed.



EnOcean USB gateway

NWC-300

■ Features :

- Work with NAVIGAN software for wireless commissioning
- Receive messages from self-powered switches and sensors
- Send messages and control actuators
- Supports EnOcean security telegrams
- Virtual COM Port driver (FTDI) for Microsoft Windows, Linux, Apple OS, Raspberry Pi and others



Wireless 60W Multiple-Stage Output Current LED Power Supply LCM-60EO series



■ Features :

- Wireless LED driver with integrated EnOcean module
- Output current level selectable by DIP S.W.
- 180-295VAC input only
- Built-in active PFC function
- Protections: Short circuit / Over voltage / Over temperature
- Cooling by free air convection
- Class II power unit, no FG
- Built-in 0-10Vdc or PWM signal or resistance dimming function(NTC is not used)
- Fully isolated plastic case
- IP20 design
- Temperature compensation function by external NTC
- Power supplies synchronization function up to 10 units
- Suitable for indoor LED lighting applications
- 3 years warranty



Wireless 120W PWM output LED power supply

PWM-120EO series





Server

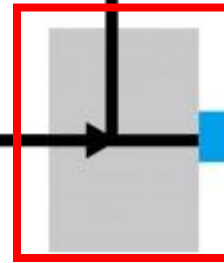


Internet

Streaming Content

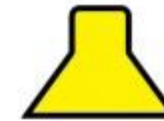
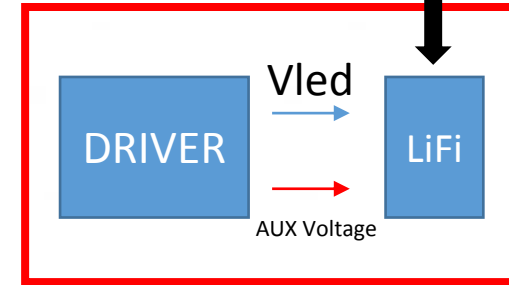


Power



Lamp Driver

STREAMING CONTENT



LED Lamp



84~150W Constant Voltage + Constant Current LED Driver ELG-150 series



SELV IP65 IP67

■ Features

- Constant Voltage + Constant Current mode output
- Metal housing design
- Built-in active PFC function
- No load / Standby power consumption <0.5W
- IP67 / IP65 rating for indoor or outdoor installations
- Function options: output adjustable via potentiometer; Smart timer dimming; DALI;

■ Applications

- LED street lighting
- LED architectural lighting
- LED bay lighting
- LED floodlighting
- Type "HL" for use in Class I, Division 2 hazardous (Classified) location.

- Auxiliary DC output
- Typical lifetime>50000 hours
- 5 years warranty



Receiver Dongle

Photo
Detector

Received App Data

Amplification &
Processing

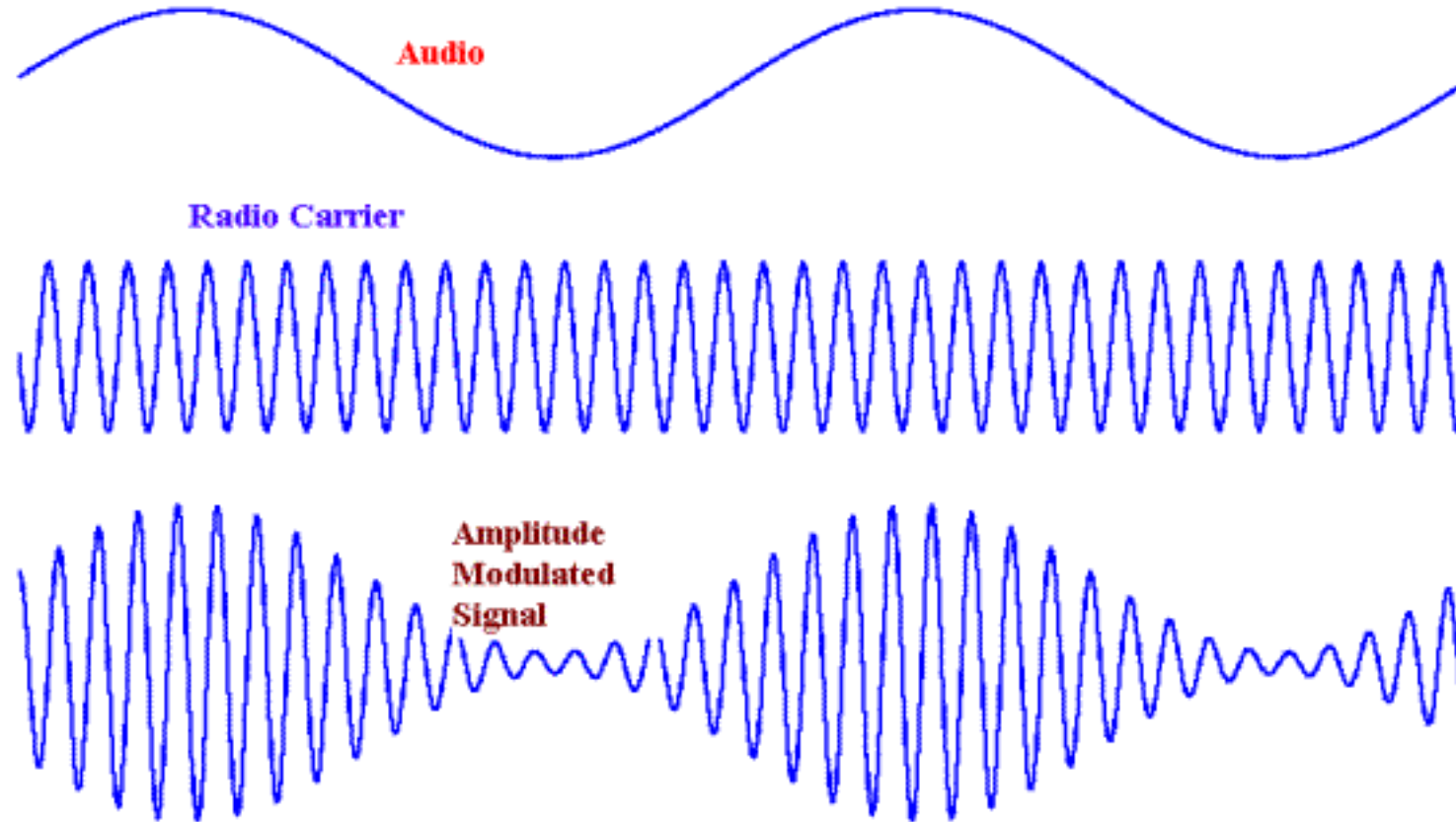
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Amplitude Modulation

Li-Fi modulation is similar to AM modulation (but uses more complex modulation)





RIPPLE & NOISE

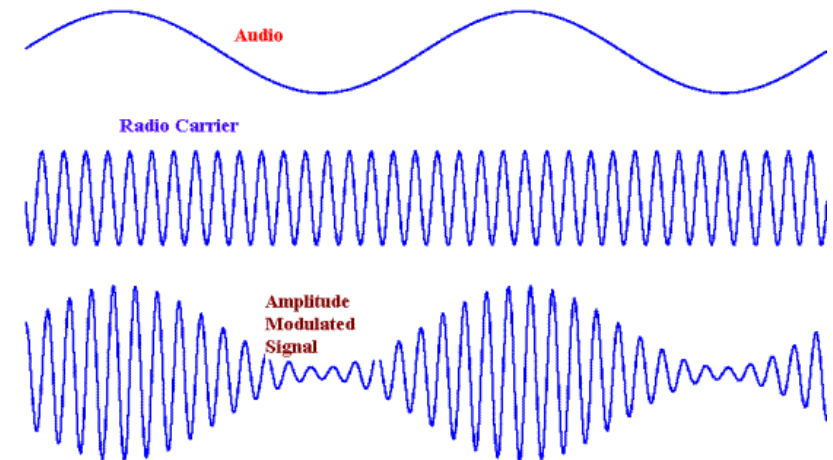


84~150W Constant Voltage + Constant Current LED Driver **ELG-150** series

SPECIFICATION

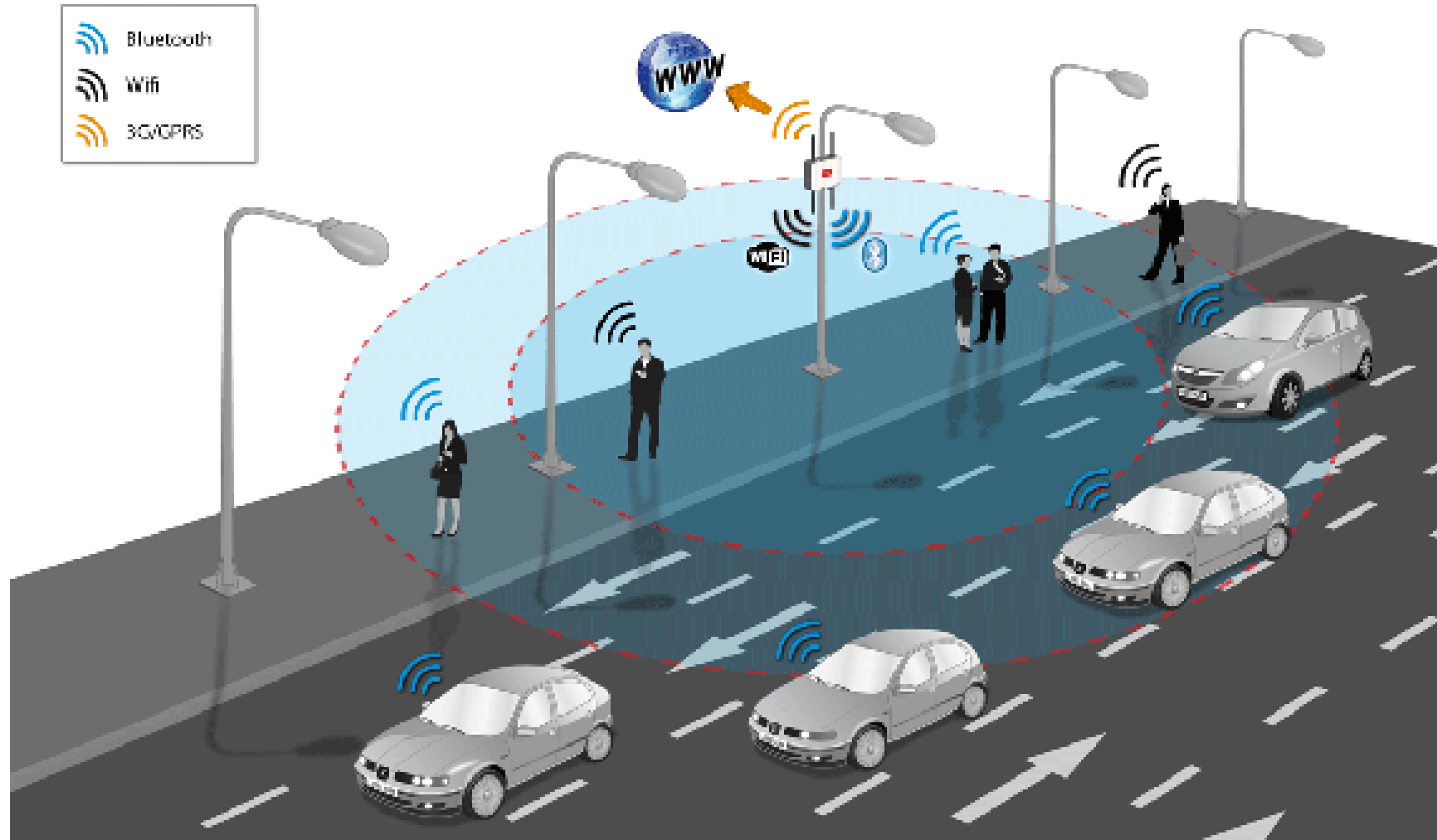
MODEL		ELG-150-12□	ELG-150-24□	ELG-150-36□	ELG-150-42□	ELG-150-48□	ELG-150-54□
OUTPUT	DC VOLTAGE	12V	24V	36V	42V	48V	54V
	CONSTANT CURRENT REGION <small>Note.2</small>	6 ~ 12V	12 ~ 24V	18 ~ 36V	21 ~ 42V	24 ~ 48V	27 ~ 54V
	RATED CURRENT	10A	6.25A	4.17A	3.57A	3.13A	2.8A
	RATED POWER	200VAC ~ 305VAC					
		120W	150W	150.1W	150W	150.2W	151.2W
		100VAC ~ 180VAC					
		84W	105W	105W	105W	105W	105W
	RIPPLE & NOISE (max.) <small>Note.3</small>	150mVp-p	200mVp-p	250mVp-p	250mVp-p	250mVp-p	350mVp-p
	VOLTAGE ADJ. RANGE	Adjustable for A-Type only (via the built-in potentiometer)					
		10.8 ~ 13.2V	21.6 ~ 26.4V	32.4 ~ 39.6V	37.8 ~ 46.2V	43.2 ~ 52.8V	49 ~ 58V
	CURRENT ADJ. RANGE	Adjustable for A-Type only (via the built-in potentiometer)					
		5 ~ 10A	3.2 ~ 6.25A	2.1 ~ 4.17A	1.8 ~ 3.57A	1.56 ~ 3.13A	1.4 ~ 2.8A
	VOLTAGE TOLERANCE <small>Note.4</small>	±3.0%	±3.0%	±2.5%	±2.5%	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±2.0%	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%
	AUXILIARY DC OUTPUT	Nominal 15V(deviation 11.5~15.5V)@0.4A for BE-Type only					
	SETUP, RISE TIME <small>Note.6</small>	1600ms, 80ms/115VAC 500ms, 100ms/230VAC					
	HOLD UP TIME (Typ.)	10ms/115VAC, 230VAC					
	VOLTAGE RANGE <small>Note.5</small>	100 ~ 305VAC 142 ~ 431VDC (Please refer to "STATIC CHARACTERISTIC" section)					
FREQUENCY RANGE		47 ~ 63Hz					

Amplitude Modulation



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MEAN WELL and the FUTURE STANDARDS



84~150W Constant Voltage + Constant Current LED Driver **ELG-150** series



■ Features

- Constant Voltage + Constant Current mode output
- Metal housing design
- Built-in active PFC function
- No load / Standby power consumption <0.5W
- IP67 / IP65 rating for indoor or outdoor installations
- Function options: output adjustable via potentiometer; 3 in 1 dimming (dim-to-off); Smart timer dimming; DALI; Auxiliary DC output
- Typical lifetime >50000 hours
- 5 years warranty

■ Applications

- LED street lighting
- LED architectural lighting
- LED bay lighting
- LED floodlighting
- Type "HL" for use in Class I, Division 2 hazardous (Classified) location.

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CONCLUSIONS



- First step for Lighting was to move in the direction of energy saving
- Second step was in the direction of “Dimming Capability”
- Third step was in the direction of “High Power”
- Today we are living the integration of the “remote dimming capability”
- In the next future, most probably, light source will be used for Data Transmission (i.e. Li-Fi)
- MEAN WELL is already designing its platform for the new standards
- MEAN WELL is already focused on providing products that use open standards platform



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