



ELECTRONICS MANUFACTURER PROFILE

MÁY GẮN LINH KIỆN
ĐIỆN TỬ AC-30S
MOUNTER MACHINE: AC-30S

THIẾT BỊ GẮN LINH KIỆN SMD TỰ ĐỘNG
AC-30S

Hãng sản xuất:	UNIVERSAL
Mô hình:	AC30 Máy năm 2016
Chức năng:	Đặt hàng gắn và lắp ráp linh kiện SMD Đặt hàng lắp ráp và hàn SMD Chạy bộ gắn các loại SMD khác nhau Lắp ráp linh kiện ở nhiệt độ 200°C và 250°C

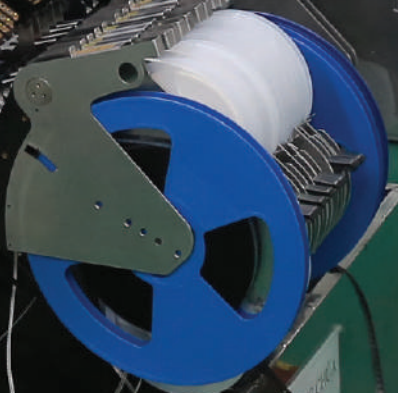
HƯỚNG DẪN VẬN HÀNH

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BIỂU KIỂM TRA CÔNG ĐOẠN

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ADVANTIS



PHÒNG CÔNG NGHỆ
KỸ THUẬT
LƯU Ý

CONTENT

Overview	4
Equipment & Production capacity	6
Surface Mount Devices (SMD)	6
Automated Insertion Machine (AI)	
Dissimilar component assembly lines	14
Electronic product assembly lines	16
Quality Management System	19
Design capacity	19
Quality management system	20
Product Highlight	25
LED modules	25
DOB modules	25
Drivers/ SMPS	26

OVERVIEW

- Full Company Name: **RANG DONG LIGHT SOURCE AND VACUUM FLASK JOINT STOCK COMPANY**
- Business Company Name: RALACO
- Established: 1961
- Stock Symbol: RAL on HOSE
- Company type: Public
- Business activities:
 - + Manufacturing General lighting products, HCL (Human Centric Lighting)
 - + Professional ODM/ OEM service for Lighting products, and **Electronic modules**
 - + Manufacturing and Trading Product and service Ecosystems 4.0 of Smart Home, Smart City, Smart Farm.
 - + Producing and Trading High-tech agriculture lighting, Fishery lighting and Renewable energy lighting products
 - + Producing and Trading Vacuum flasks and Household appliances.



Head office and Factory No.1
 Located 87-89 Ha Dinh Str., Thanh Xuan Dist., Hanoi, Vietnam
 Area: 57,000 m2



Factory No.2
 Located Que Vo Industrial Zone, Bac Ninh Province
 Area: 82,000 m2



Research and Development Centers
 + LED Lighting R&D Center (LRDC)
 + Digital R&D Center (DRDC)
 + Business Model R&D Center (BMRDC)



LED Lighting for cusumers: 100 million units/ year
 LED Lighting for professionals: 05 million units/ year
 Vacuum Flasks & Glass Refills: 32 million units/ year



<https://rangdong.com.vn>
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RangDong Vietnam, Vacuum Flask-Rang Dong



Ralacoexport.trustpass.alibaba.com



International Management System



Member of ILAC / APLAC MRA

ACCREDITED LABORATORY VILAS 126
 (Conformed with requirements of ISO/IEC 17025:2017)

276
 Accredited tests



MISSION

- Pioneering enterprise providing a synchronous solution system based on core technologies of Lighting and IoT, contributing to the creation of smart home, smart city, hi-tech agriculture and precision agriculture, promoting life in harmony with nature - smart - happiness, accompanying the nation to build a prosperous Vietnam.



VISION

- By 2025, envisaging to become a leading high-tech enterprise in the Vietnamese lighting market, pioneering in the field of providing Ecosystem 4.0 to realize the aspiration of "Make in Vietnam".
- By 2030, becoming a billion-dollar enterprise, bringing Rang Dong brand to the regional level.
- Keeping the development path of the business based on Science, Technology, Innovation and Kindness.
- Building a company having a creative, cultural, civilized, professional and happy working environment.



CORE VALUE

- Solidarity, Proactiveness, Creativity, Rapidity and Professionalism.



ACTION MOTTOS

- Serving customers, creating knowledge for resonating value

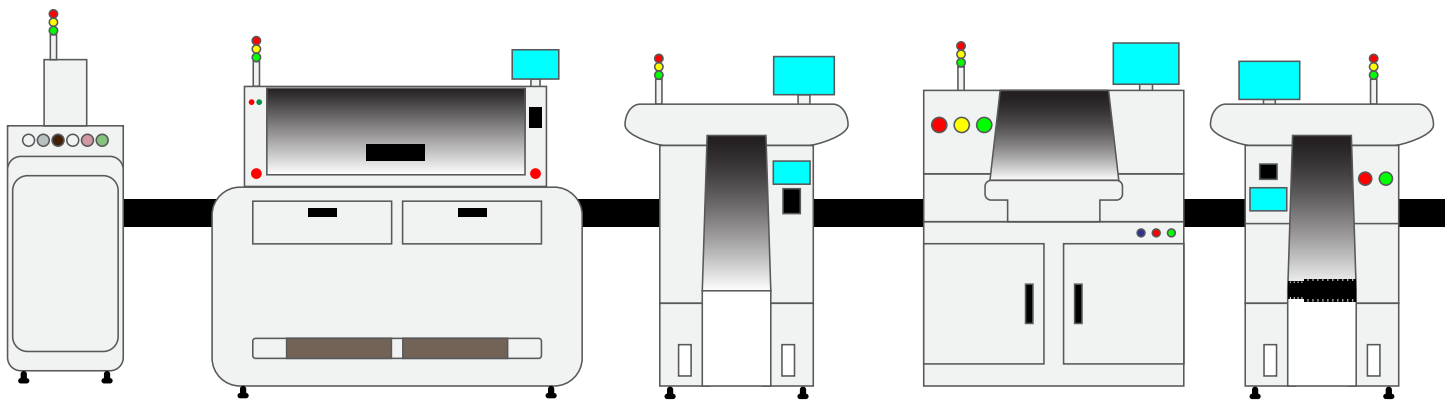


HUMAN VALUE

- Dedication - Endeavor - Self-consciousness - Self-confidence - Self-respect - Honesty
- Same orientation - Same behavior - Shared work - Shared benefit
- New Qualities: Tectonic - Adaptive - Creative - Professional

EQUIPMENT & PRODUCTION CAPACITY

SURFACE MOUNT DEVICES (SMD)

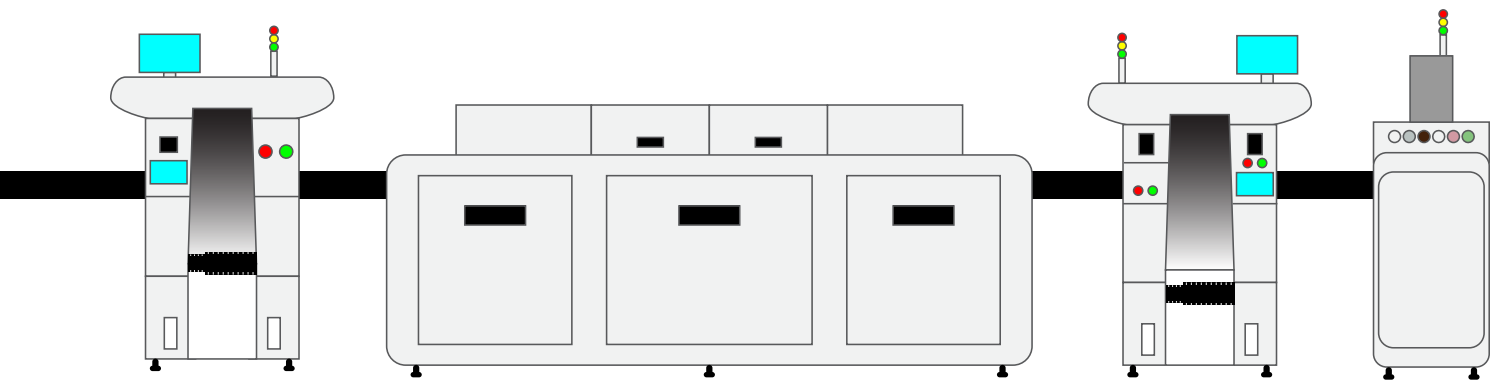


Screen
Printer

Solder
Paste
Inspection
(SPI)

Chip
Placement

#1 Component
Placement



#2 Component Placement

Reflow Oven

Automatic Optical Inspection (AOI)

PRODUCTION CAPACITY:

- Number of production lines: 24 lines
- Total capacity: 6.6 billion dots/year
- Soldering the smallest components (0402), dimension (LxWxH): 1.0x0.5x0.35 (mm)
- Soldering the biggest components, dimension: 6.0x6.0x20 (mm)
- PCB size range:
 - + Length (L): 50 ÷ 1200 (mm)
 - + Width (W): 50 ÷ 550 (mm)
 - + Height (H): 0.2 ÷ 2.0 (mm)
- SMT process 1-sided or 2-sided

The device can produce many other types of PCB: FR1 / FR4/ CEM/ MCPCB/ FPC (Flexible Printing Circuit), etc.

Applying SCADA, QMS, etc. Programs to control and evaluate product quality on the production line.



MAIN PROCESS



STEP 1: Automatic Loader/ Unloader

- Using Programmable logic controller (PLC) - robotics communication via the console screen.
- Flexibly change programs for different printed circuit sizes, and easily change models.
- Can load boards with a length of ~ 1200 mm which is not available on the market.

STEP 2: Solder Printing

- PCB size: ~1200 x 300 (mm)
- Scan speed: from 20 to 120 mm/s



Manufactured by PANASONIC, Japan



Manufactured by SAKI, Japan

STEP 3: Solder Paste Inspection Machine

1. Scanning 3D Image which is captured according to Gerber standard opening printed with solder paste, automatic response to stop printer if print quality is not satisfactory, image report, excel file format tail, csv, SPC precision analysis, etc.

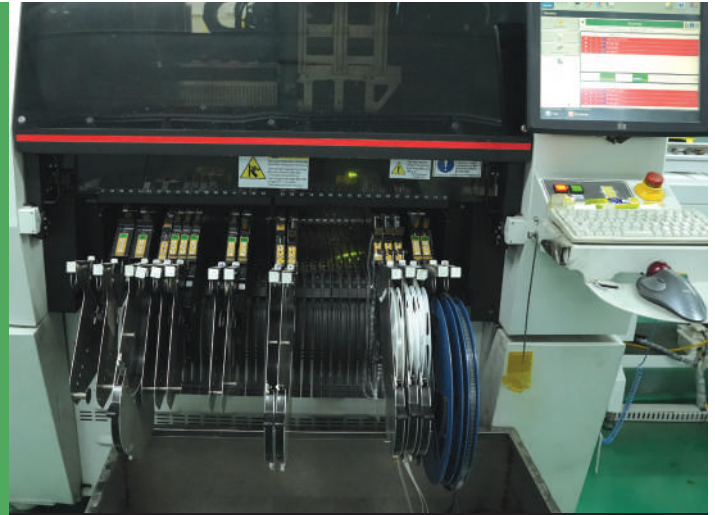
2. Checking and responding in cases:

- Tin stick - Bridge
- No tin - Missing
- Tin deflection - Slip
- Lack of tin - Solder fewer
- Excess tin - Solder Over
- Foreign objects - Foreign Material
- Tin splashed- Scatter.

STEP 4: Mounter Machine

Advantis® AC-60 LED

- Smallest component size 0.4x0.2 to 30x30 (mm)
- Largest PCB size 1300 x 350 (mm)
- Special Components:
- IC-BGA must be mounted exactly 6 sigma.
- Speed of machine: 60,000 cph (chip/h/ 30 suction heads)



Manufactured by UNIVERSAL, USA



Manufactured by PANASONIC, Japan

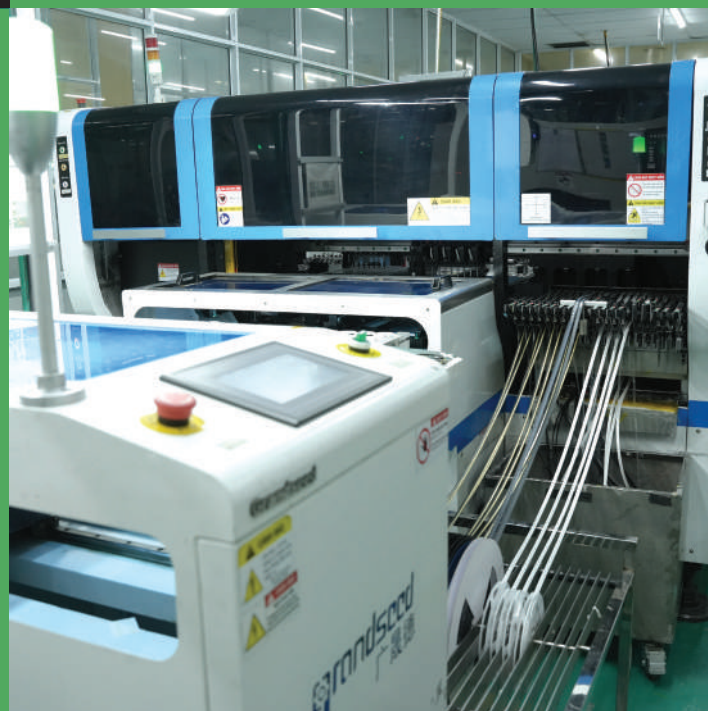
Panasonic NPM

- Smallest component size 1x0.5x0.35 to 32x32x12 (mm)
- PCB size from 50x50 to 750x550 (mm)
- Special Components: IC- BGA must be mounted exactly 6 sigma, Components high/ thickness from 2 to 33 (mm)
- Speed of machine: 59,300 cph (chip/h/ 24 suction heads)

ETON-E8D

Optimal component size 2.0x1.3 to special components height ~18 + 2 (mm)

- PCB size from 100x10 to 1200x350 (mm)
- Accuracy: ±0.02 (mm)
- Special components: Filter coil, capacitor..., Inductor: has a dedicated feeder/ nozzle.
- Speed of machine: 80,000 cph (chip/h)



STEP 5: LENS Mounter (optional)

- Components: LED/impeller/ capacitor/ IC from 2.0x1.3 to special components height 18 + 2 (mm), dedicated is LENS
- PCB size from 50x50 to 1200x350 (mm) Accuracy: ± 0.02 (mm)
- Speed of machine: 30,000 cph (chip/h)



Manufactured by VITRONICS SOLTEC, Japan

STEP 6: Air reflow Machine

- Number of heat zones: 10 zones, cooling/cooling: 3 zones.
- Setting temperature: range 60°C~350°C
- Nitrogen: True N2/ Air Switch: O₂ concentration < 1000 PPM
- Conveyor form: rail and grid.
- Conveyor rail width: ~300 (mm). Total oven length: 486 ~557 (cm)
- There is an option for the N2 system to dispel Oxygen in the heat chamber to make the solder joints shiny for high-quality electronic circuits.

STEP 7: Hot Testing Machine

- Online reliable evaluation of the line: high current and high temperature (~160°C for LED module)



Manufactured by ESSVISSION, Korea

STEP 8: AOI (Automated Optical Inspection)

Camera range resolution: Top View
Camera 4/9/ 12 Mpix

- Camera light: Lighting Multi-phase RGB+W LED; (the led color wide strip)
- Camera head segmentation: 6 or 10 or 15 μm (initial installation)
- Image processing: Animation
- Printed circuit size: PCB size from 50 x 50 mm to 500 x 510 mm x 2 ranges
- Program made on Gerber + product file, teaches algorithms
- Components: Missing/ skewed/ tilted/ wrong components
- Welds: low tin/ Tin sticky/ Oxidized (dirty)
- Image processing data, .csv reporting, and data retrieval of production batches.
- 12 cm^2/s line scan speed with high-band Vision camera.



Manufactured by SAKI, Japan

AUTOMATED INSERTION MACHINE (AI)

PRODUCTION CAPACITY:

- Quantity: 14 machines
- Total capacity: 300 million dots/year
- Specializing in vertical components: Capacitors, 3-pin ICs, fuses, resistors, etc.

EQUIPMENTS

Install resistor, Diodes, Varistor, etc.

- Plug in lying/standing hole-piercing components: Diodes, resistors, fuses, and jumps (tape form).
- PCB size from 50x50 to 450x450 (mm)
- The angle of folding the component legs into the welding pad: 10°~35°
- Speed of machine: 14,000~16,000 pcs/h (components/h)



DISSIMILAR COMPONENT ASSEMBLY LINES

PRODUCTION CAPACITY:

- Number of lines: 5 lines
- Total capacity: 350 million dots/year
- Assembling dissimilar electronic components that is difficult to automate.

ASSEMBLY LINES

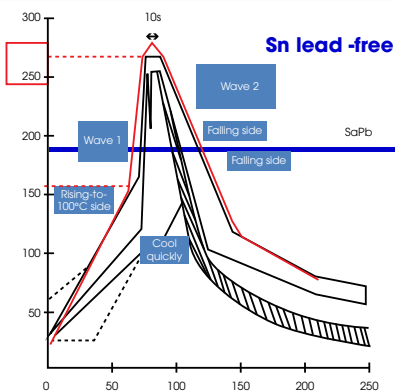


Assembly tape meets ESD -ROHS electronic standards

Installing components through the hole lying/standing: Diodes, resistors, fuses, jumps, ICs, jacks, etc.

PCB size: 50 x50 to 300 x 300 (mm)

PRODUCTION LINE MAIN EQUIPMENTS



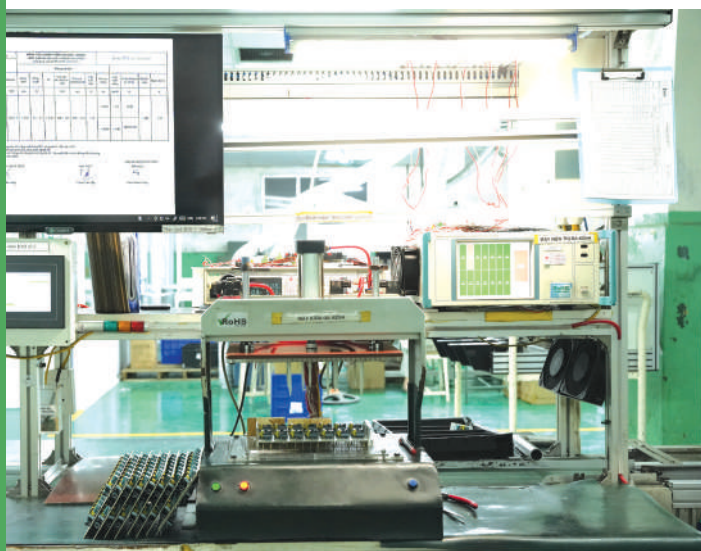
Manufactured by MANNCORP, USA

Wave soldering

- Characteristic:
 - + Heating zone (preheat): 3 independent zones;
 - + Large tank welding area: Soldering Pb Free: 1 tank (~420kg tin/ tank)
 - + Automatic Flux injection
- Wave width: 410 (mm)
- Wave height: 10 (mm)
- Preliminary dryer length: 1800 (mm)
- Conveyor width: 50 - 400 (mm) (auto-correction)
- Maximum PCB size: 400 x 400 (mm)
- Conveyor speed: 0.5 - 2.2 m/ minute
- Conveyor Angle: 4° đến 7° (custom)
- Install: Pre heat ~120 °C; Soldering ~260°C
- Cumulative cooling: (> 3.5°C/s)
- **create good weld structure**

Electric parameter checking

- Number of channels: 60 simultaneous tests
- Parameters: U, I, P, Pf, Lamp output: I_{ra}, P_{ra}, Pf, ripple rms
- Activation mode: manual, external switch (automatic)
- Automatic sound and light alerts when the limit is wrong.
- Testing time of 0~99.9 seconds is set arbitrarily, automatically locking the test data.
- Accuracy level: ± (0.4% read + 0.1% range + 1 digit)
- Keep: data to PC/ Server



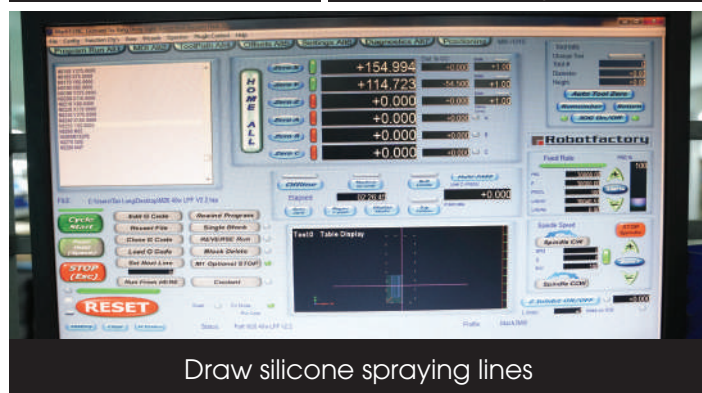
Silicone spray chamber



PCB running on conveyor

Moisture-proof silicone coating (IP)

Full automatic vacuum glue potting process



Draw silicone spraying lines

ELECTRONIC PRODUCT ASSEMBLY LINES**PRODUCTION CAPACITY:**

Number of lines: 1 line

Capacity:

- Power \geq 100W: 1.2 million pcs per year
- Power $<$ 100W: 3.6 million pcs per year

**MAIN PROCESS****FCT Test (Functional Circuit Test)**

AC-DC wire soldering



Automatic screw feeder



Potting



Aging test



Automatic inspection machine



Packaging



QUALITY MANAGEMENT SYSTEM CAPACITY

DESIGN CAPACITY

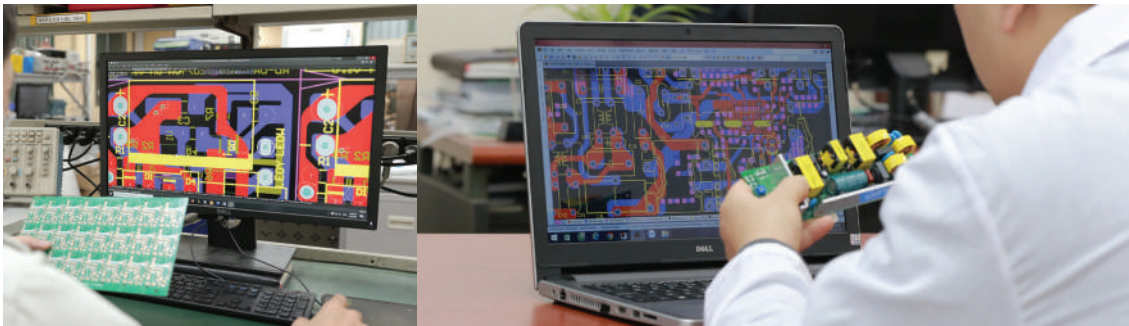
Rang Dong Lighting R&D Center (LRDC) has been issued certificate of registration for science and technology activities by Hanoi department of science and technology



3D INDUSTRIAL STYLE DESIGN



ELECTRONIC CIRCUIT DESIGN/SIMULATION/OPTIMIZATION

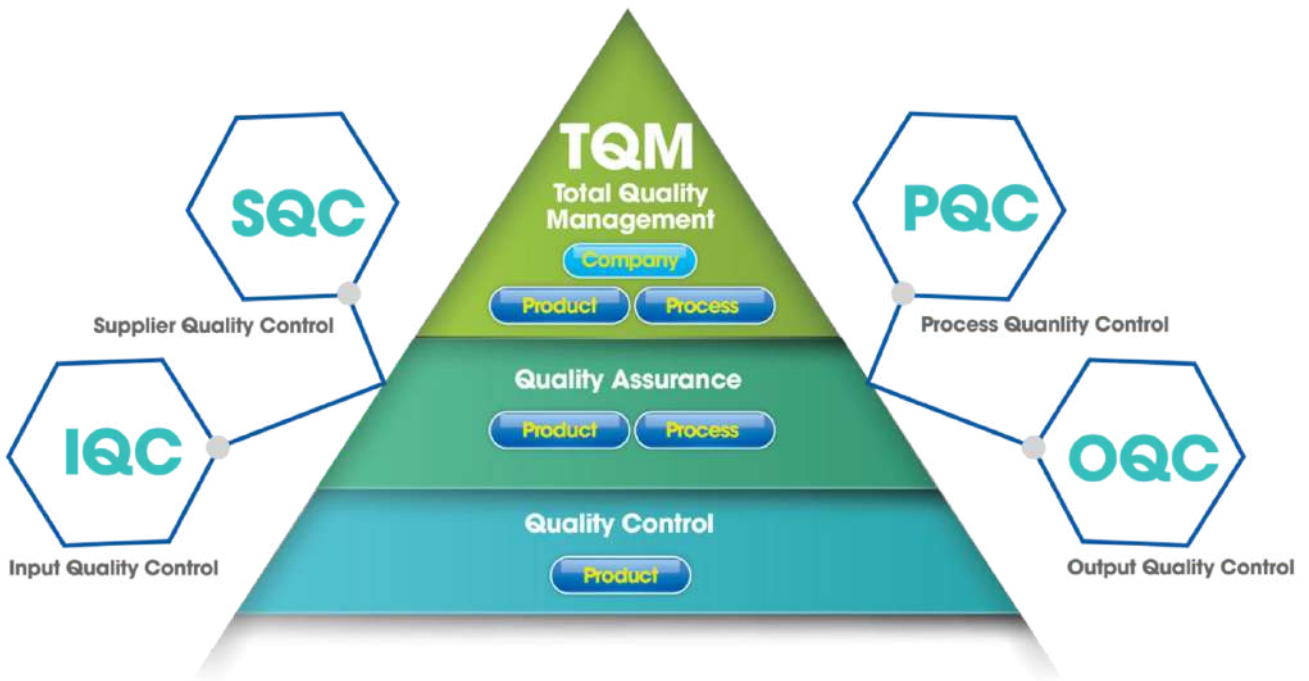


MECHANICAL, THERMAL AND OPTICAL SIMULATION/OPTIMIZATION



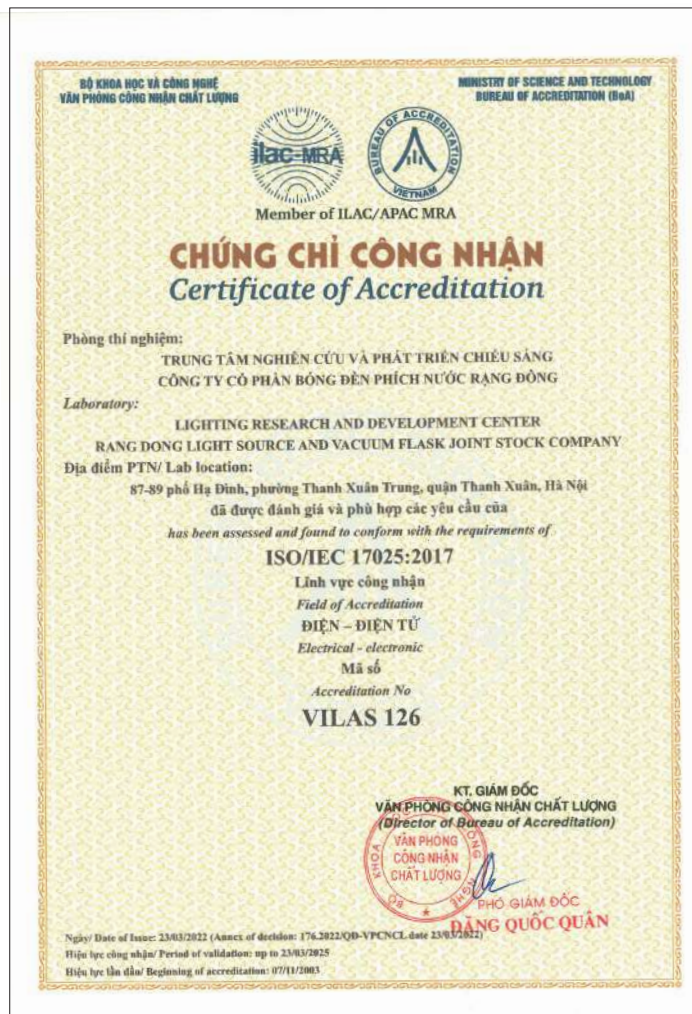
QUALITY MANAGEMENT SYSTEM

- Rang Dong always applies the latest versions of quality management systems (ISO): 9001:2015, 14001:2015, 50001:2005.
- Building a system of processes, regulations and guidelines based on ISO and industry standards.
- Implementing control from Supplier Quality Control (SQC) to Input Quality Control (IQC) to Process Quality Control (PQC) and Output Quality Control (OQC). Moving towards applying Total Quality Management (TQM).
- The equipment and machinery used to evaluate and control the process are periodically inspected annually.
- Quality managers are regularly trained and evaluated to improve their qualifications.



VILAS 126

Evaluate and certify products that meet safety, performance, and reliability requirements in the field of Electricity and Electronics



LIST OF ACCREDITED TESTS
VILAS 126

Field of Testing: **Electrical - Electronics**

No.	Materials or product used	The name of specific tests	Limit of quantification of uncertainty of measurement	Test method
17		Classification		
18		Marking - durability marking check		
19		Protection against accidental contact with live parts test		
20	LED	Terminals check	0.2 - 10 N.m to 200 N to 10 A to 100 V 0.01% 98.99% 99 0.01mm 0.01% up to 92.7%	
21	Particular requirements for DC or AC supplied electronic control gear for LED modules	Provisions for protective earthing check	to 600 V	
22		Moisture resistance and insulation test	0.1 MΩ 0.1	
23		Electric strength test		
24		Fail conditions test		
25		Abnormal operation condition test		
26		Construction check		
27	LED	Croepage distances and test		
28	Particular requirements for DC or AC supplied electronic control gear for LED modules	Screws, current-carrying connections check		
29		Resistance test		
30		Resistance test		

Abb: -
 - DC: AC (alternating) or Rectifying device / Luminaire impedance
 - DC: DC (Direct Current) / Power supply
 - DC: DC (Direct Current) / Power supply
 - DC: DC (Direct Current) / Power supply
 - DC: DC (Direct Current) / Power supply

AFI 0112 Issued No: 100 Revised: -

SUPPLIER QUALITY CONTROL (SQC)

MAIN SUPPLIERS



INPUT QUALITY CONTROL (IQC)

Input electronic components quality evaluation

Input electronic supplies: resistors, capacitors, inductors, ICs, diodes, transistor, etc.

Bonded inspection & component parameters (voltage, withstand current)

- Check driver-load LED meter coordination parameters (P, U, I, Pf)
- LED Chip: Feature evaluation

Harsh purpose:

- High voltage endurance rating ~ 6KV
- Humid microclimate tests the ability to tropicalize components.



PROCESS QUALITY CONTROL (PQC)

Xray check - evaluation of non - destructive xray welds



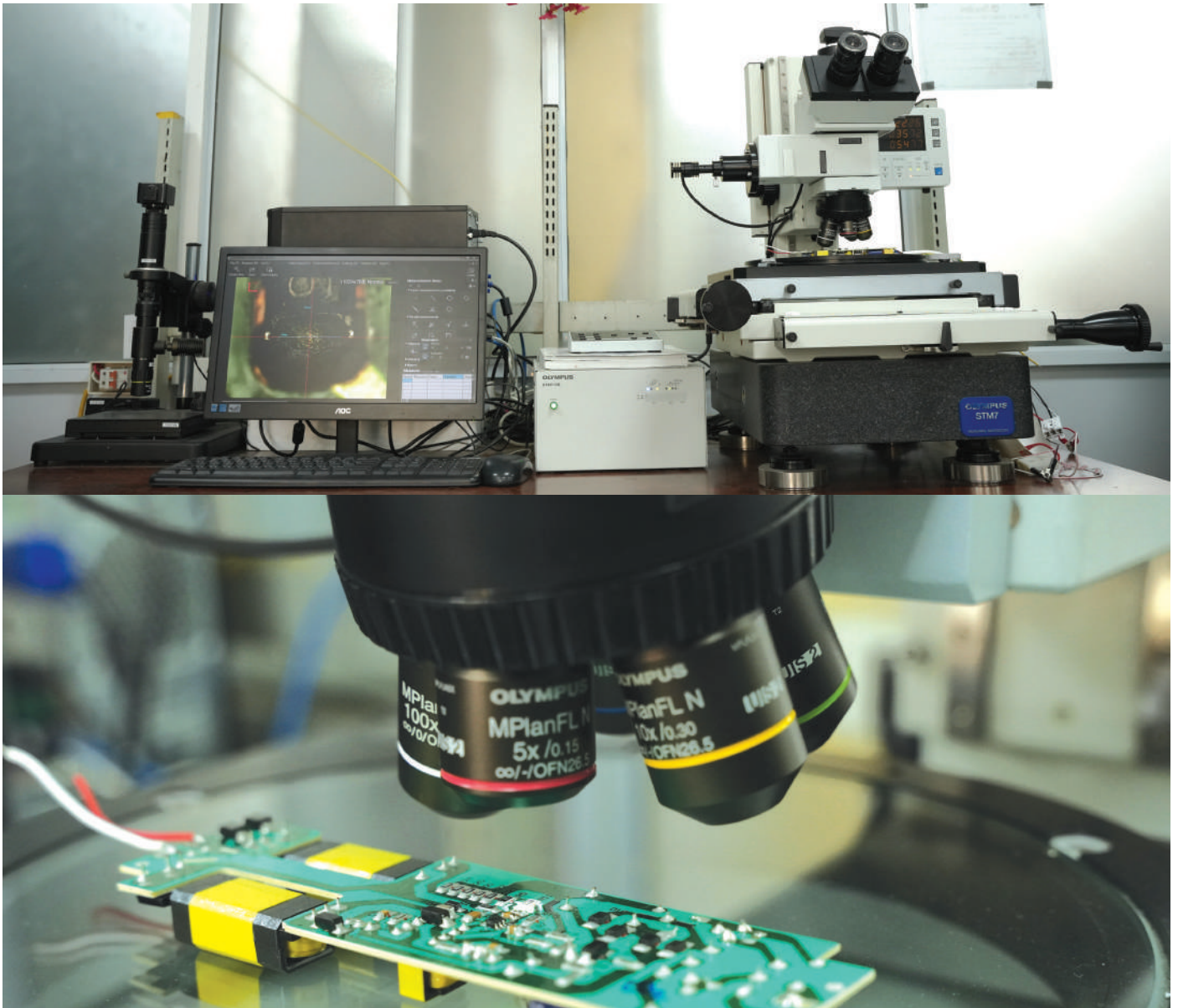
Characteristics:

Traditional inspection methods including optical, ultrasonic and thermal imaging are not enough because PCBs have higher density with hidden solder joints and voids requiring X-ray system, non-destructive evaluation. Check the quality of the weld.

- Quality control of SMT welds / wave solder joints
- Quality ICs in the form of BGAs QFNs, etc. PCB boards

OUTPUT QUALITY CONTROL (OQC)

Smart microscope appearance evaluation



Electrical parameter evaluation

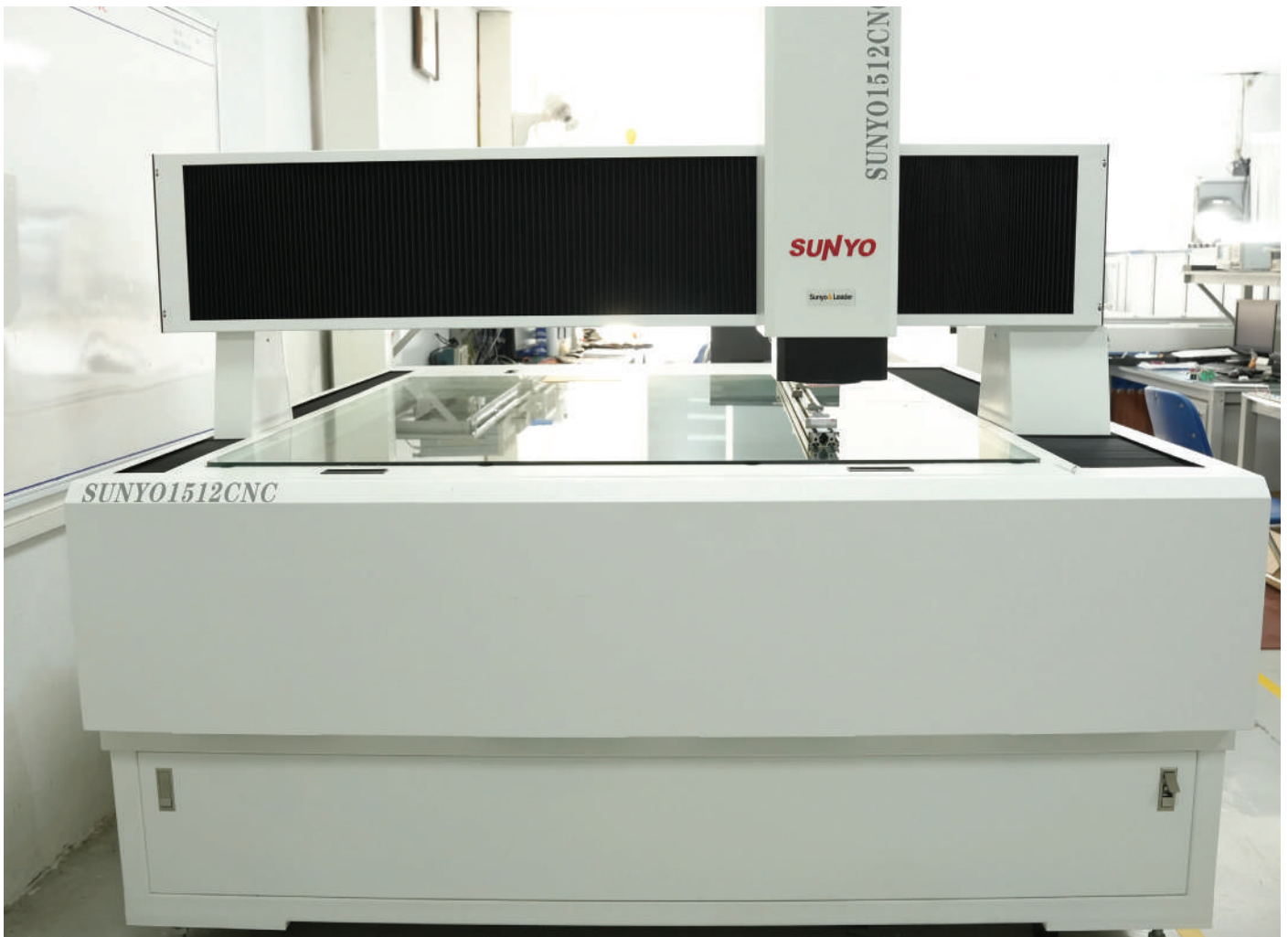


Performing final control of Driver/LED Module output electronic products.

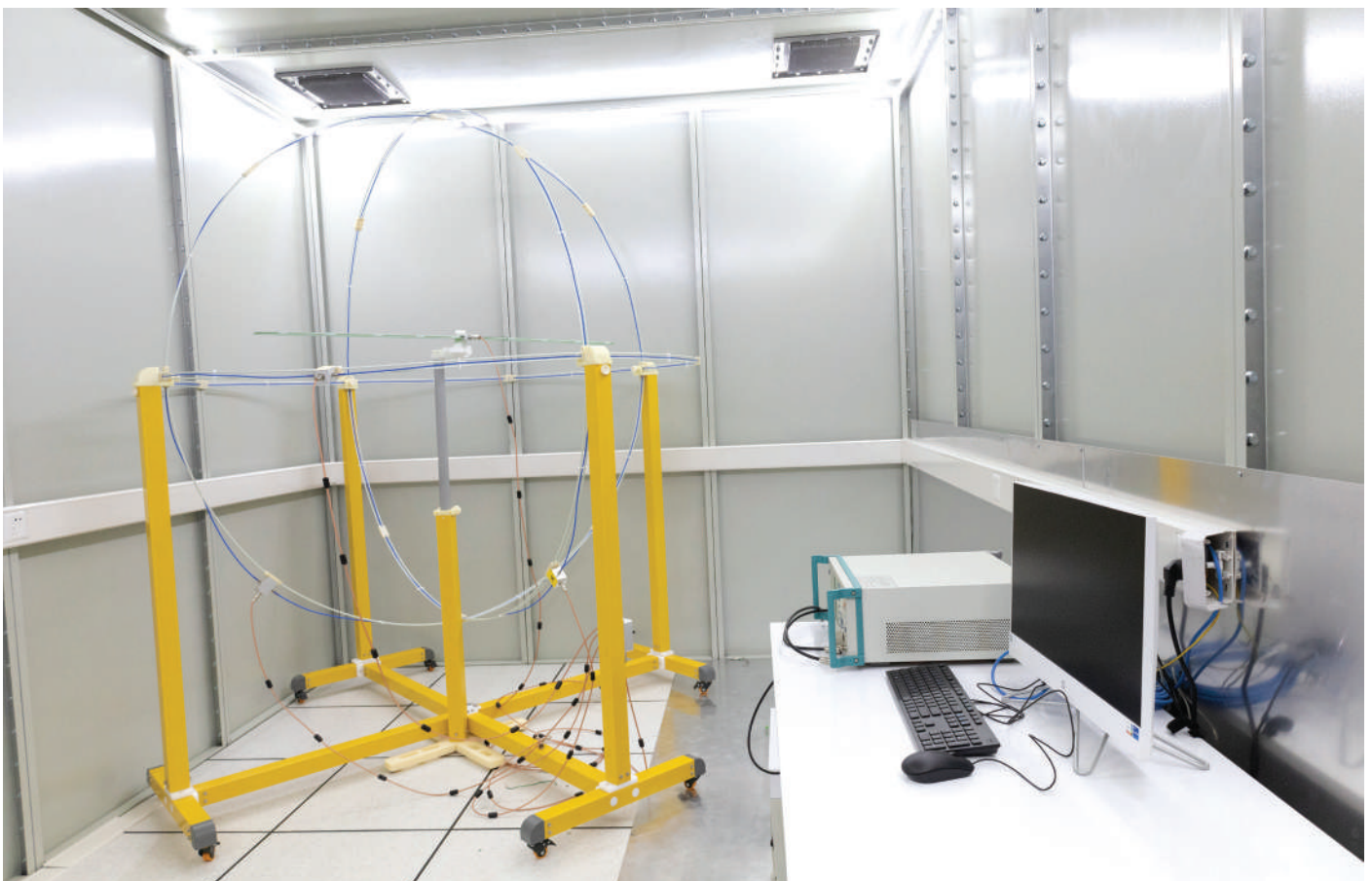
- Driver & LED coordination parameters
- Measure the Driver's starting waveform
- Check the reliability of installing the finished product.

Taking photos of the evaluation device with high power lights/ Flood lights/ street lights

Module size 3D testing device



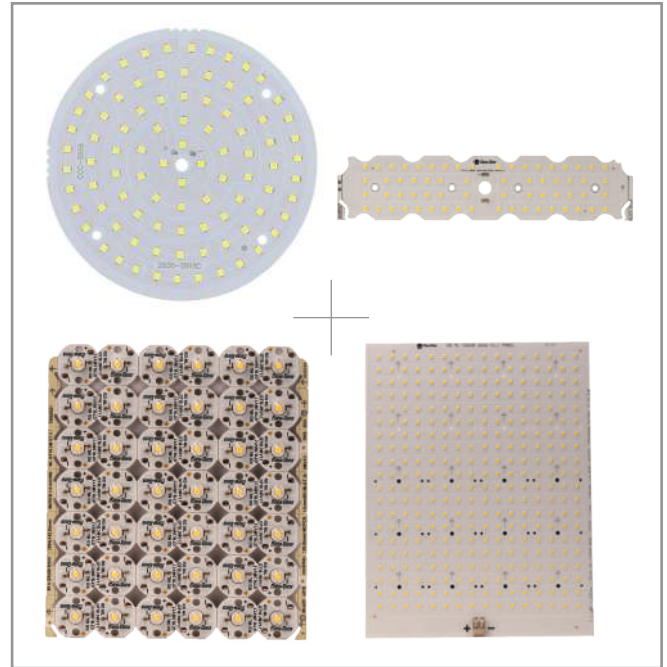
EMC evaluation



PRODUCT HIGHLIGHTS

LED MODULES

- Power: 3 W ÷ 300 W
- PCB Diameter (L): 80 ÷ 1200 (mm)
- PCB Diameter (Φ): 76 ÷ 300 (mm)
- PCB Height (H): 0.3 ÷ 1.6 (mm)
- PCB Material: CEM / AL / FR4.
- Types of electronic components can be mounted on the PCB: LED (3528/3030/5050), impeller, capacitor (0402, 0603, 0805, 1206), Lens (Φ 10 ÷ 15mm).
- LED package type: Samsung/ Nichia/ Seoul Semiconductor/ Lumiled/ Osram/ Bridgelux, etc.
- Color temperature: 3000/4000/5000/5700/6500/8000/12000 K



DOB MODULES

MATERIAL

- PCB Dimension (LxW): 600 x 1200 (mm)
- PCB Dimension (Φ): 76 ÷ 300 (mm)
- Max PCB Height (H): 1.0 ÷ 1.6 (mm)
- PCB Material: FR4/ AL/ CEM/ FR1, etc.
- Types of electronic components can be mounted on the PCB: Capacitor, Inductor, Resistor, Diodes, IC, Fuse, Transistor, LED chip.
- LED package type: Samsung/ Nichia/ Seoul Semiconductor/ Lumiled Osram/ Bridgelux, etc.
- Color temperature: 3000/4000/5000/5700/6500/8000/12000K

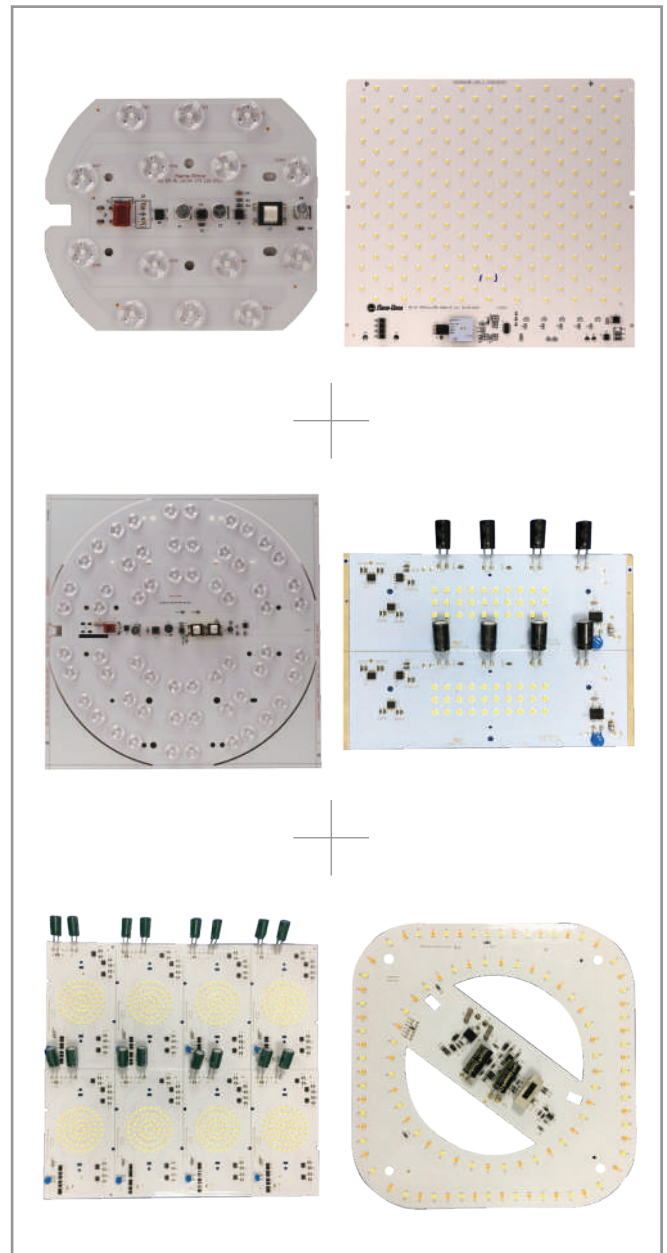
PRINCIPLE: Buck/ Boost/ Linear, etc.

Input:

- Input voltage: 110/220 (VAC)
- Frequency Range: 50/60 (Hz)
- THD @ full load: < 25%
- Power factor @ full load: 0.5/0.9
- Efficiency @ full load: 76 - 95%

Output:

- Output current: 30 - 5000 (mA)
- Output voltage: 15 - 200 (VDC)
- Output ripple current: 1% - 5%
- Output power: 1- 200 (W)
- Over voltage protection: Yes
- Over load protection: Yes
- Output short-circuit protection: Yes
- Surge protection: up to 6kV
- Flicker free: yes/ no
- Lifespan: 20,000 ÷ 30,000 (hrs)
- Warranty: 2 years



DRIVERS/ SMPS

MATERIAL

- Max PCB dimension (LxW): 80 ÷ 400 (mm)
- PCB Material: CEM / FR4
- Types of electronic components can be mounted on the PCB: Capacitor, Inductor, Resistor, Diodes, IC, Fuse, Transistor ...

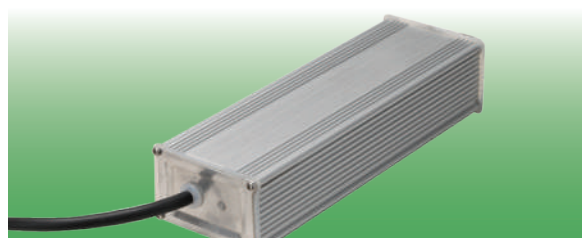
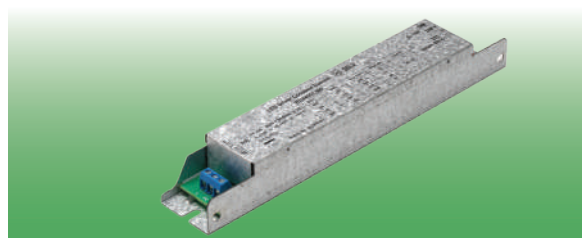
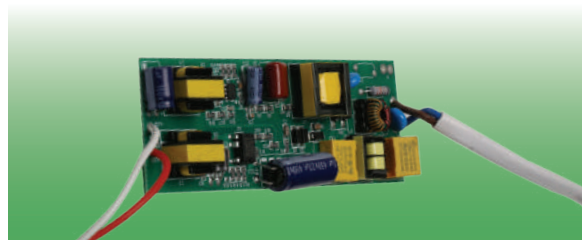
PRINCIPLE : Flyback/ Buck/ Boost/ LLC/ Linear, etc.

Input:

- Input voltage: 110/ 220 (VAC)
- Frequency Range: 50/ 60 (Hz)
- Input current: 0.05 ÷ 5 (A)
- THD @ full load: <10 ÷ < 200 (%)
- Power factor @ full load: 0.5 ÷ 0.9
- Efficiency @ full load: 76 ÷ 95 (%)

Output:

- Output current: 50 ÷ 5000 (mA)
- Output voltage: 15 ÷ 430 (VDC)
- Output ripple current : 5%/ 1%
- Output power: 3W ÷ 250W
- Over voltage protection: Yes
- Over load protection: Yes
- Output short-circuit protection: Yes
- Surge protection: up to 20 kV
- Flicker free: yes/ no
- Lifespan: 20,000 ÷ 50,000 hrs
- IP: up to 65
- Warranty: 2 ÷ 5 years





Contact us

RANG DONG LIGHT SOURCE AND VACUUM FLASK JOINT STOCK COMPANY

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