



PCB ASSEMBLY | CABLE ASSEMBLY | PRODUCT  
ASSEMBLY | MATERIAL PROCUREMENT | ELECTRICAL  
TESTING | PROJECT MANAGEMENT | CONFORMAL  
COATING | ENCAPSULATION | CONTROL PANEL  
ASSEMBLY | WIRING HARNESS ASSEMBLY



**EC ELECTRONICS**  
manufacturing services \_\_\_\_\_

UK • Romania • Hong Kong



# Company Overview

Established in 1984 as a UK based Contract Electronic Manufacturing Services provider, we now operate internationally servicing a wide range of customers with Printed Circuit Board, Cable and Harness and Electronic Product Assemblies.

Our Head Quarters is based in the UK, along with a manufacturing operation that provides new product introduction (NPI) services for initial design and production validation. Higher volume production is manufactured at our wholly owned facilities located in Romania and Hong Kong, servicing customers in Europe and Worldwide.

Our guiding principle is to provide the highest levels of service and quality, with the aim of becoming our customers' preferred manufacturing and supply chain partner over the long term.

Producing quality product is paramount at EC, with manufacturing processes at our UK and Romanian factories being ISO 9001: 2008 approved and workmanship carried out to internationally recognised IPC standards. In addition, we hold UL approval certifications for wiring harness supply to North America.

We provide totally customer focused services with minimal environmental impact. Our environmental initiatives embrace the principles of reducing carbon emissions, energy consumption and recycling waste material. This has been the corner stone of our environmental policy for many years, culminating in the achievement of ISO 14001: 2004 certification in 2012.

Based in Hong Kong, our Supply Chain operation provides material cost down solutions to our customers and has a high level of procurement and logistics expertise in the South East Asian region. We regularly audit suppliers to ensure adherence to internationally recognised standards for manufacturing and social responsibility.

Low Pressure overmoulding is the latest service offered by EC, it is a cost effective, technically efficient process which can protect electronic components from dust, vibration and water damage. EC Electronics are the first contract electronics manufacturer in the UK to offer low pressure overmoulding as a complete turnkey service.



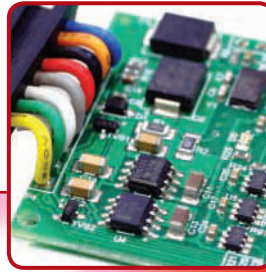
**EC ELECTRONICS**  
manufacturing services \_\_\_\_\_



**EC ELECTRONICS MANUFACTURING SRL**  
manufacturing assembly services \_\_\_\_\_

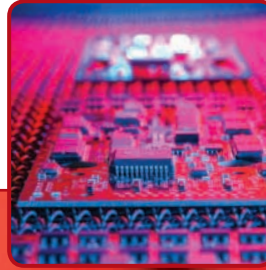


**EC SUPPLY CHAIN SOLUTIONS**  
procurement services \_\_\_\_\_



- Printed Circuit Board Assembly
- PCB Design and New Product Introduction (NPI)
- Cable and Harness Assembly with UL ZPWF Approval
- Full Product Assembly
- Control Panel Assembly
- Test Repair and End of Life Services
- Procurement and Supply Chain Solutions
- ISO 9001: 2008 & ISO 14001: 2004 Accreditations
- IPC 610 & 620 Workmanship Standards
- Low Pressure Overmoulding and encapsulation of PCB & Cable Assemblies





### Print Circuit Board Assembly

Our Surface Mount assembly lines provide quick set-up and a flexible solution for either single or double sided precision placement of up to 200,000 components per day. We have the capability to handle projects with both large and small batch sizes where components range from fine pitch QFPs, BGAs and QFNs to 0402 chips.

The assembly of complex Surface Mount PCBs requires a controlled screen printing and soldering process. Our dedicated computer controlled screen printers virtually eliminate the possibility of misaligned solder paste prints. Our pure convection reflow ovens are programmable to obtain the required profile that ensures an exact controlled soldering process.

Through-hole components are formed, populated and soldered to PCBs by hand or where possible by utilising our wave soldering processes.

Our PCB processes are fully supported by experienced IPC trained technicians who use the latest technology for process set-up and verification. This enables us to process a wide variety of PCB substrate materials including FR4, flexi, flexi-rigid, aluminium and PTFE.

### Cable & Harness Assembly

State of the art cable preparation equipment and highly experienced staff form the basis of our Cable Assembly operations.

We operate a fully automated Komax 255 wire processing centre that forms the heart of our crimping processes.

This incorporates digital crimp height monitoring and crimp force analysis on every termination, ensuring the highest quality finished product.

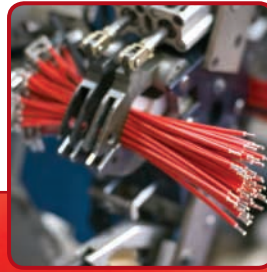
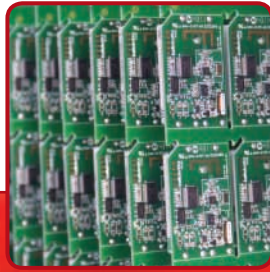
In addition we operate a wide range of modern semi automatic crimping, wire preparation and marking equipment that is used for lower volume, more bespoke assemblies. We carry a wide range of automatic connector and crimp tooling applicators for all major manufacturers, including, Tyco, Molex, JST, Cannon, Deutsch, and Hirose.

Our preferred cable assembly supplier status embraces UL approval to ZPFW2 & ZPFW8 and has been earned by a commitment to training and continuous staff development. We consistently work to the internationally recognised 'industry best practice standard' IPC/WHMA-620 Class 3 for Cable Assembly manufacture and continually embrace new technology in order to achieve continuous improvement in quality standards.

### Final Product Assembly

To complement our core skills in PCB and cable assembly, our final product assembly team provides complete integration of these sub-assemblies into their plastic or metal work enclosures. On completion, we can undertake the loading of firmware and carry out a complete functional test if required.

These products can then be packaged to a customer's point of sale specification, incorporating logistics planning and end user delivery if required.



# Manufacturing Services

Automatic Optical Inspection



SMD Assembly



Control Panel Assembly



Cable & Harness Assembly



Potting, Conformal Coating & Encapsulation



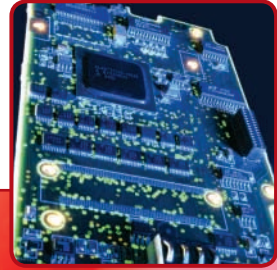
Final Product Assembly



PCB Assembly



Electrical Test and Inspection



## Control Panel Assembly

Our engineers have considerable experience in the manufacture of factory assembled Control Panels, utilising a variety of DIN rail mounted PLCs, fuses and control equipment. This combines the core electrical / electronic skills of PCB Assembly, Cable Assembly and Mechanical Assembly.

Our product build specialists offer a single source, dedicated integrated assembly service, including the mounting and integration of PCBs, associated power and electrical equipment, interconnect cabling and wiring, component marking and electronic testing.

## Low Pressure Overmoulding, Encapsulation and Potting

Low Pressure overmoulding (LPO) is an innovative encapsulation process positioned between traditional potting and injection moulding technologies. It does not replace all potting applications and typically does not compete with traditional injection moulding.

LPO is an injection process whereby an electrical component – e.g. a PCB board – is placed in a specially manufactured aluminium mould tool, and completely surrounded (overmoulded) with a polyamide material that effectively forms the housing for the device. LPO's excellent adhesive properties forms a watertight seal (IP 67 rated) around the component without any chemical reaction, ensuring that no toxic fumes are produced and unlike traditional potting applications, there is no need for a separate housing.

EC Electronics are the first contract manufacturer in the UK to offer LPO as a complete turnkey service for the encapsulation and protection of PCB and Cable Assemblies and is a key added value service within our Electronic Manufacturing Services business.

In addition, EC offer a variety of back potting and encapsulation processes to provide protection from environmental hazards and product design security. Our specialist semi-automatic Meter Mix mixing and dispensing machines enables us to encapsulate or back pot a wide range of PCBs as well as cable connectors with a high level of accuracy and control.

## Electrical Test and Inspection

Our dedicated inspection and test team operates across all disciplines of the business and is headed by our Engineering Test Manager.

AOI (Automated Optical Inspection) is carried out in-house on assembled PCBs as standard practice. Further electronic testing can be specified including In-circuit, JTAG, Flying Probe, X-Ray and full functional testing.

Our cabling test team is equipped with the latest in automatic cable testing equipment incorporating high voltage flash testing with controlled impedance and insulation breakdown testing if specified.

Our test engineering department can design and manufacture a test solution incorporating hardware and software to match your end product requirements.



# Quality • Logistics • Design



## Quality Control

Approval to ISO 9001: 2008 and UL ZPFW2 & ZPFW8 ensures that our quality system has a comprehensive set of documented operating procedures. This enables control over our manufacturing processes to unrivalled standards.



In addition, workmanship is carried out to internationally recognised 'best practice' standards IPC-A-610 for PCB Assembly and IPC/WHMA-620 for Cable Assembly, ensuring that our manufacturing teams deliver the highest degree of product quality and reliability.



All our manufacturing personnel are trained to the highest standards by our fully accredited internal IPC trainers. We encourage and expect all our staff to understand that Quality, Continual Improvement and Customer Satisfaction are personal responsibilities.



Our environmental initiatives embrace the principles of reducing carbon emissions, energy consumption and the recycling of waste material. This has been the corner stone of our environmental policy for many years, culminating in the achievement of ISO 14001: 2004 certification in 2012.

## Materials and Logistics Management

Our experienced materials team provide a full or part procurement service or can work on a free issue basis.

Buying materials at the right price and delivery is essential to supporting our manufacturing business and requires the appropriate contacts and market knowledge. Our procurement team has extensive experience in the purchase of all types of materials and is supported by our MRP system and supply chain services team in Hong Kong.

Our Uniplan MRP system tracks every component from order to despatch, offering full traceability if required. In-house kitting is aided by a computerised stock carousel that enables our materials team to pick stock at high levels of speed and accuracy.

From single drop delivery to Kanban/JIT or buffer stocking, our Materials and Logistics Team can provide a tailored solution to your requirements. This enables you to offload the time consuming procurement and order expedition process and reduce your inventory costs.

We operate our own regularly scheduled transport between our UK and Romanian factories ensuring that the transfer of materials and finished product is carried out on time and in a careful manner.



## PCB Design and Layout

To complement our manufacturing services, our electronic design and layout facilities enable us to manage your product introduction from concept to realisation.

Creation of complex PCB Assemblies requires CAD design and layout skills and system firmware expertise at the highest level. Therefore we work with a small number of electronic product design partners to ensure that your new product receives the highest level of specialist skills it deserves.

Our skilled engineers support these partners to ensure that your product is best prepared for manufacture and test, via our Design for Manufacturability (DFM) and Design for Test (DFT) service.

DFM advice on existing product designs is also available.





# EC Supply Chain Solutions

EC Supply Chain Solutions Ltd is a wholly owned subsidiary of EC Electronics.

From our base in Hong Kong, EC Supply Chain Solutions sources products and services from fully audited manufacturers. It provides customers with a direct 'upstream' supply chain service for virtually any available product or service, focusing on:



PCB Bare Boards



PCB Assemblies



Cable & Wire  
Harness Assemblies



Complete Product  
Assemblies



Metal & Plastic  
Fabrications



Power Cords



Injection Moulded  
Parts



Coils &  
Transformers

Our supply chain service allows customers worldwide to take advantage of the economic benefits of offshore Asian supply, but with the added benefit of a secure and established managed service that minimises the associated risks.

As with many businesses trading in Asia, Hong Kong's location is a key factor in our operation. It is bordered by the Shenzhen Special Economic Zone to the North and has a total area of some 1,100 square kilometres.

It is a few hours flight from major cities including Beijing, Shanghai, Tokyo, Seoul and Singapore. Our Hong Kong location means that we are best placed to keep abreast of new and emerging manufacturing bases in the Asian Region that would benefit our supply chain.

We have experience of suppliers not only in China, but also South Korea, Philippines, Malaysia and Thailand. In an ever changing global market, this flexibility means that we can offer a multitude of supply chain options to our customers.

Our Hong Kong operation is headed by a UK national who has many years experience in the EMS industry and has gained a great deal of local market knowledge, having lived and worked in Asia for several years.

EC Supply chain solutions, along with EC UK and EC Romania are also independently accredited to ISO9001 standard.





## **EC ELECTRONICS LIMITED**

**UNIT 4 NEWTON COURT  
RANKINE ROAD  
BASINGSTOKE  
HAMPSHIRE, UK  
RG24 8GF**

*This is a multi-site certificate, additional site details are listed in the appendix to this certificate*

*Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below*

### *Standards*

## **BS EN ISO 9001:2008**

### *Scope of certification*

**DESIGN AND MANUFACTURE OF ELECTRICAL PRODUCTS, SURFACE-MOUNT AND THROUGH HOLE PCB ASSEMBLY, CABLE, OVERMOULDED LEAD AND HARNESS ASSEMBLY.  
DISTRIBUTION OF ELECTRONIC COMPONENTS AND ENCLOSURES.**

Certification cycle start date: **18 JULY 2015**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **17 JULY 2018**

Original certification date: **03 DECEMBER 1994**

**Certificate No. UK6940**

Version 1, Revision date: **28 JULY 2015**

**Ken Smith**  
Managing Director



*Certification body address: 5<sup>th</sup> Floor, 66 Prescott Street, London, E1 8HG, United Kingdom.  
Local office: 5<sup>th</sup> Floor, 66 Prescott Street, London, E1 8HG, United Kingdom.*

*Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.*

*To check this certificate validity please call: 02076610760*



## EC ELECTRONICS LIMITED

*Standards*

### BS EN ISO 9001:2008

*Scope of Certification*

**DESIGN AND MANUFACTURE OF ELECTRICAL PRODUCTS, SURFACE-MOUNT AND THROUGH-HOLE PCB ASSEMBLY, CABLE, OVERMOULDED LEAD AND HARNESS ASSEMBLY. DISTRIBUTION OF ELECTRONIC COMPONENTS AND ENCLOSURES.**

**Site**

**EC ELECTRONICS LIMITED**  
UNIT 4 NEWTON COURT  
RANKINE ROAD  
BASINGSTOKE  
HAMPSHIRE, UK  
RG24 8GF

**Scope**

MANUFACTURE OF ELECTRICAL PRODUCTS, SURFACE-MOUNT AND THROUGH-HOLE PCB ASSEMBLY, CABLE, OVERMOULDED LEAD AND HARNESS ASSEMBLY, DISTRIBUTION OF ELECTRONIC COMPONENTS AND ENCLOSURES.

**S.C. EC ELECTRONICS MANUFACTURING SERVICES S.R.L.**

4, STADIONULUI STREET, 332060  
PETROSANI, HUNEDOARA COUNTY,  
ROMANIA

MANUFACTURE OF ELECTRICAL PRODUCTS, SURFACE-MOUNT AND THROUGH HOLE PCB ASSEMBLY, CABLE, OVERMOULDED LEAD AND HARNESS ASSEMBLY. DISTRIBUTION OF ELECTRONIC COMPONENTS AND ENCLOSURES.

**EC SUPPLY CHAIN SOLUTIONS LTD**

107B WAH WAI CENTRE  
38-40 AU PUI WAN STREET  
FO TAN  
HONG KONG

DISTRIBUTION OF ELECTRONIC COMPONENTS AND ENCLOSURES.

Version 1, Revision date: **28 JULY 2015**

**Ken Smith**  
Managing Director



008

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Local office: 5<sup>th</sup> Floor, 66 Prescott Street, London, E1 8HG, United Kingdom.*

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*To check this certificate validity please call: 02076610760*



**BUREAU VERITAS**  
Certification



## **EC ELECTRONICS LIMITED**

**UNIT 4  
NEWTON COURT  
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HAMPSHIRE  
RG24 8GF**

*Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below*

*Standards*

## **BS EN ISO 14001:2004**

*Scope of certification*

**DESIGN AND MANUFACTURE OF ELECTRICAL PRODUCTS, SURFACE-MOUNT AND THROUGH HOLE PCB ASSEMBLY, CABLE, OVER MOULDED LEAD AND HARNESS ASSEMBLY. DISTRIBUTION OF ELECTRONIC COMPONENTS AND ENCLOSURES.**

Certification cycle start date: **19 JANUARY 2015**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **18 JANUARY 2018**

Original certification date: **19 JANUARY 2012**

**Certificate No. UK003533**

Version 1, Revision date: **15 JANUARY 2015**

**Ken Smith**  
Managing Director



008

Certification body address: 5<sup>th</sup> Floor, 66 Prescot Street, London, E1 8HG, United Kingdom.  
Local office: 5<sup>th</sup> Floor, 66 Prescot Street, London, E1 8HG, United Kingdom.

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## Head Office

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