ADLINK
Leading EDGE COMPUTING

Application Story

One-stop SMT solutions for motion, vision and I/O control using ADLINK ATX Industrial Motherboards



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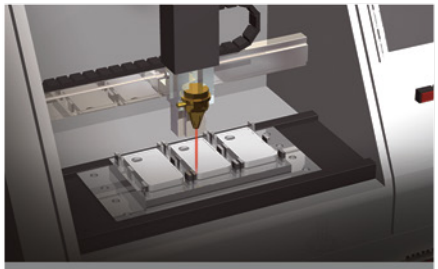
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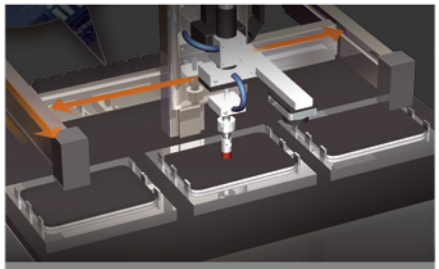
One-stop SMT solutions for motion, vision and I/O control minimize risks and maximizes yields

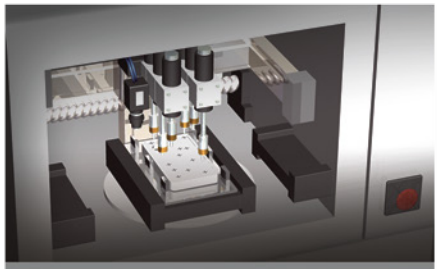
There is no doubt that surface mount technologies (SMT) have been instrumental in the development of the electronics manufacturing industry. Every step carried out during the SMT process, including glue dispensing, coating, solder paste inspection (SPI) and automated optical inspection (AOI), plays a critical role in the successful production of each device. Any machine malfunction or component failure could result in poor performance or even a production halt. In either case, the consequences unacceptable to equipment suppliers and end users.

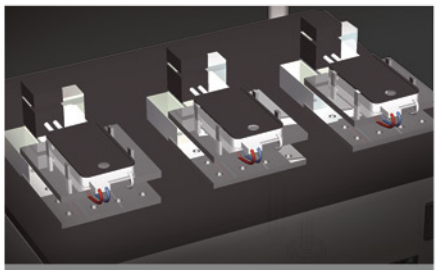
Each step of the SMT process, from PCB printing, SPI, component mounting, reflow, to AOI, imposes different automation control requirements. During the printing stage, motion control cards are used to precisely control the movement of spray nozzles. Image recognition systems can check if solder paste has been properly coated according to standards during SPI. In the case of any anomalies, an alert in the form of DIO or M2M messages can be sent to data centers for analysis. For component placement, automation equipment is also used to control pre-heating, temperature, and reflow procedures. Image data collected during AOI need to be transmitted at a high speed without errors, which calls for image recognition systems with flexibility. These interconnected steps are all essential for an SMT process to be properly conducted.

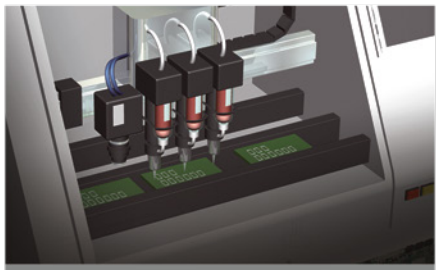
A well-known machinery supplier based in China was developing SMT equipment incorporating industrial PCs (IPC), motion control cards and image control systems from different manufacturers and encountered serious compatibility problems. The production line was constantly plagued by minor failures such as a machine getting stuck or a screen going blank. Production was hit particularly hard by failures during AOI, which demands a high degree of precision. To overcome such reliability issues, the supplier decided to replace the IPC—the brain of industrial automation—and other critical components including motion control cards, image control systems, I/O interface and Fieldbus components all at once.

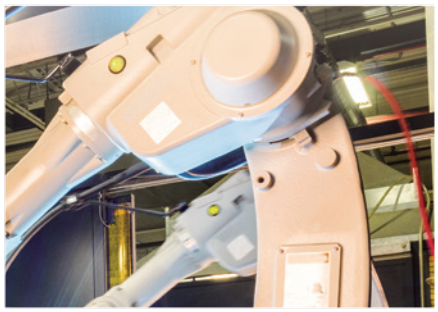

Laser cutting

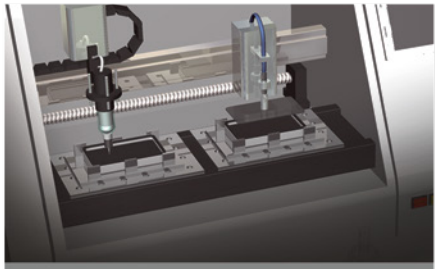

Touch panel testing

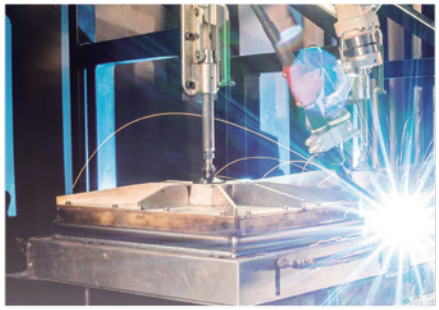

Screw fastening

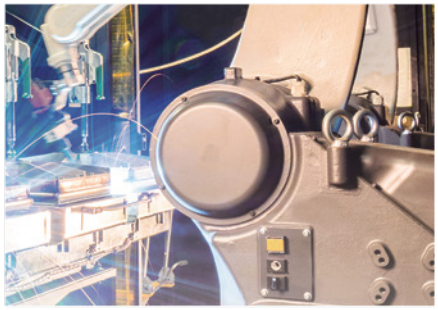

Dispensing


Video testing




Lamination



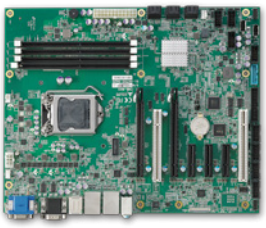


Designed with usability in mind, compatible one-stop SMT solutions satisfy customer requirements

ADLINK proposed two solutions that addressed the customer's two major challenges: smooth operation along the production line and high equipment reliability. By providing complete and optimized solutions including industrial PCs, motion cards, vision cards and I/O controllers, ADLINK's "one-stop service" allows customers to build a fully compatible and reliable SMT production line to handle the production process from PCB printing, SPI, component mounting, reflow through to AOI.

First, ADLINK recommended the use of the IMB-M43H industrial-grade ATX motherboard, powered by the 6th generation Intel® Core™ processor and supporting Windows 7. This would provide both forward and backward compatibility with current automation software as well as legacy PS/2, COM and VGA I/O ports to enable a painless upgrade process for existing systems. For motion and I/O control, the IMB-M43H has one PCI Express x16 Gen3, one PCI Express x4 Gen2 and five PCI expansion slots for users to flexibly add image capture cards, digitizers, high-resolution dynamic signal acquisition modules or general-purpose modules. Users can therefore easily build a system with the specific configuration required to meet the needs of their automation applications.

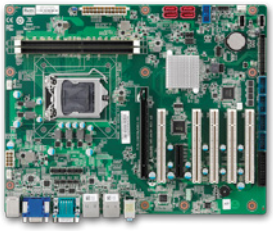
The second proposed solution was the IMB-M43 industrial-grade ATX motherboard, designed with intelligent PCIe bifurcation to support a wide selection of multi-channel industrial cameras for image detection and meet the needs of various usage scenarios. The IMB-M43 also features a rugged and reliable I/O interface design ideally suited to SMT production lines.



IMB-M43

Industrial-grade ATX motherboard equipped with 6th/7th Generation Intel® Core™ processors and up to five PCIe slots

- Up to 64 GB Dual-channel DDR4 2133/2400 MHz
- IEC 61000-4-2~6 (Performance Criterion A), CE/FCC class B certified



IMB-M43H

Industrial-grade ATX motherboard equipped with 6th/7th Generation Intel® Core™ processors and up to five PCI slots

- 6th Gen Intel® Core™ i7/i5/i3 processors support, compatible with Windows® 7
- Up to 32 GB Dual-channel DDR4 2133/2400 MHz
- IEC 61000-4-2~6 (Performance Criterion A), CE/FCC class B certified

Last but not least, to meet SMT process requirements, ADLINK's industrial-grade motherboards are tested to comply with IEC 61000-4-2 to IEC 61000-4-6 (Performance Criterion A) electrostatic discharge immunity standards as well as EN 55032 Class B-EMI standards. Both standards guarantee minimum electromagnetic interference on peripheral equipment and ensure signal stability during the production process. In addition, ADLINK motherboards have a unique power design that provides a stable 5V ±5% at each USB port to ensure that power supplies of different brands or low-voltage power supplies can still work well with peripheral equipment and power all connected USB devices at full load. They also have edge contacts with 15 microinch gold plating to provide enhanced protection against corrosive gases.

ADLINK gets to the root of customer's problem with synergy of premium hardware quality and professional service

ADLINK provides a complete portfolio of IPC automation systems in addition to motion control, data transmission and machine vision solutions that guarantee 100% compatibility so that SMT equipment can maintain smooth operation at all times in to meet customer demand for high reliability. Furthermore, ADLINK has built up customer trust with its prompt and high-quality testing and after-sales support services. For example, if a customer encounters a problem with their ADLINK platform, ADLINK technical services will be on hand to help resolve the issue, regardless of whether it is hardware or software related.

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WORLDWIDE OFFICES

ADLINK Technology, Inc. (Headquarters – Taiwan)

9F, No.166 Jian Yi Road, Zhonghe District,
New Taipei City 235, Taiwan
新北市中和區建一路166號9樓
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.

5215 Hellyer Avenue, #110 San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology Singapore Pte. Ltd.

84 Genting Lane #07-02A, Cityneon Design Centre,
Singapore 349584
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

ADLINK Technology Singapore Pte Ltd. (Indian Liaison Office)

#50-56, First Floor, Spearhead Towers
Margosa Main Road (between 16th/17th Cross)
Malleswaram, Bangalore - 560 055, India
Tel: +91-80-65605817, +91-80-42246107
Fax: +91-80-23464606
Email: india@adlinktech.com

ADLINK Technology Japan Corporation 東京本社 (Tokyo Office)

〒101-0045 東京都千代田区神田鍛冶町3-7-4
ユニゾ神田鍛冶町三丁目ビル4F
Unizo Kanda Kaji-cho 3 Chome Bldg. 4F, 3-7-4 Kanda Kajicho,
Chiyoda-ku, Tokyo 101-0045, Japan
Tel: +81 3 4455-3722
Fax: +81 3 5209-6013
Email: japan@adlinktech.com

西日本支社 (Nagoya Office)

〒450-0002 愛知県名古屋市中村区名駅5-31-10
リンクス名駅ビル3F
LINKS Meieki Bldg. 3F, 5-31-10 Meieki, Nakamura-ku,
Nagoya-city, Aichi 450-0002, Japan
Tel: +81 52 589-9018
Fax: +81 52 583-2807
Email: japan@adlinktech.com

ADLINK Technology, Inc. (Korean Liaison)

경기도 성남시 분당구 수내로46번길4 경동빌딩 2층
(수내동 4-4번지) (우) 13595
2F, Kyungdong B/D, 4 Sunae-ro 46 beon-gilBundang-gu,
Seongnam-si, Gyeonggi-do, Korea, 13595
Toll Free: +82-80-800-0585
Tel: +82 31 786-0585
Fax: +82 31 786-0583
Email: korea@adlinktech.com

ADLINK Technology (China) Co., Ltd.

上海市浦东新区张江高科技园区芳春路300号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5192-3588
Email: market@adlinktech.com

ADLINK Technology Beijing

北京市海淀区上地东路1号盈创动力大厦E座801室(100085)
Rm. 801, Power Creative E, No. 1 Shang Di East Rd.
Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8626
Email: market@adlinktech.com

ADLINK Technology Shenzhen

深圳市南山区科技园南区高新南七道数字技术园A1栋2楼C区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

ADLINK Technology GmbH

Hans-Thoma-Straße 11
D-68163 Mannheim, Germany
Tel: +49 621 43214-0
Fax: +49 621 43214-30
Email: germany@adlinktech.com

Ulrichsbergerstraße 17
D-94469 Deggendorf, Germany
Tel: +49 991 290 94-10
Fax: +49 991 290 94-29
Email: germany@adlinktech.com

ADLINK Technology, Inc. (French Liaison Office)

6 allée de Londres, Immeuble Ceylan 91940 Les Ulis, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

ADLINK Technology, Inc. (Israel Liaison)

SPACES OXYGEN
62 Medinat, Ha-yehudim st. 4673300, Herzliya, Israel
P.O.Box – 12960
Tel: +972 54 632 5251
Fax: +972 77 208 0230
Mobile: +972 546325251
Email: israel@adlinktech.com

ADLINK Technology, Inc. (UK Liaison)

First Floor West Exeter House,
Chichester fields Business Park.
Tangmere, West Sussex,
PO20 2FU. United Kingdom
Tel: +44 1243-859677
Email: uk@adlinktech.com

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