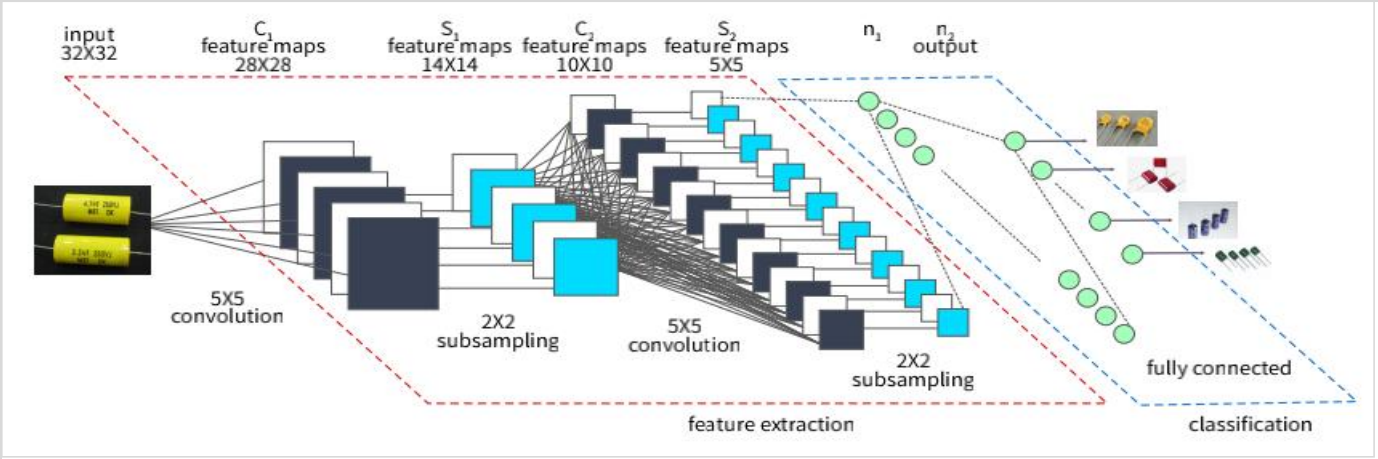
**I.C.T SMT Online AOI AI-5146**


I.C.T SMT AOI captures board image in real time by high precision color industrial camera. Adopt Convolution Neural Network (CNN) algorithm to process images. Judge components defects and soldering defects intelligently.

**Features:**

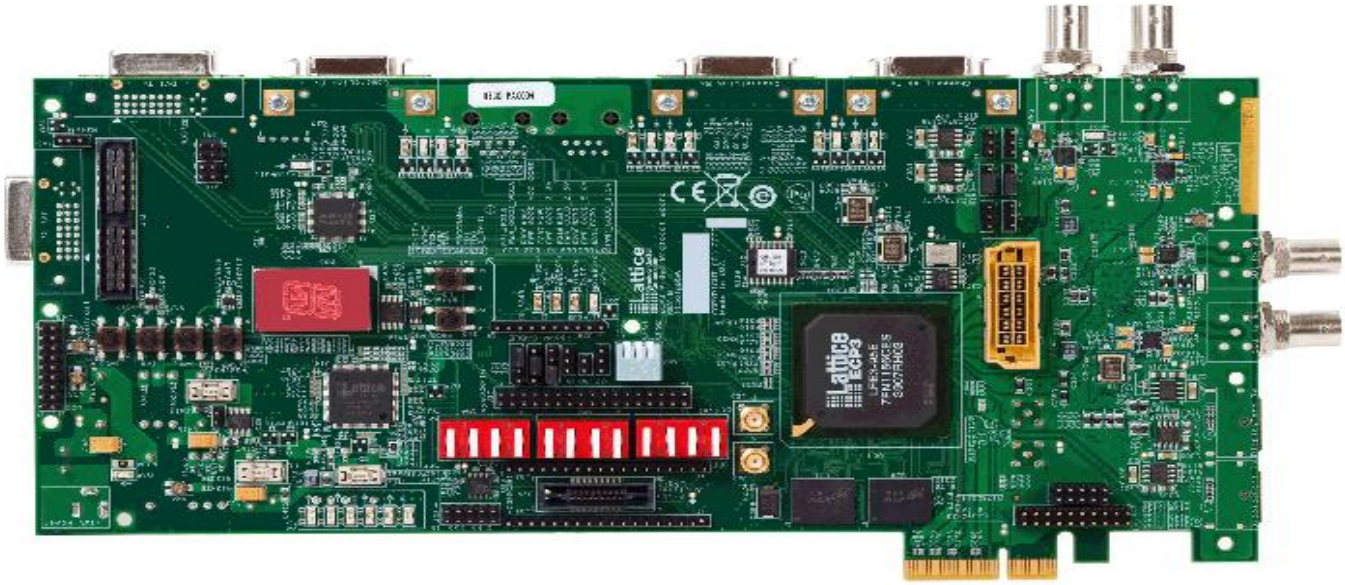
1. For SMT pre-reflow, post-reflow inline inspection.
2. High inspection rate and low false alarm rate.
3. Granite platform, greatly improve machine precision and stability.
4. Programmable RGB+W LED lighting source. Bilateral telecentric lens, low distortion and high depth of field .
5. Simplified programming flow, very simple interface. Support batch modifying parameters with one-key.
6. Centralized control. Interconnection between multiple equipment.
7. Multiple configurations meet different inspection demands.
8. Inspection ability: insufficient, short, soldering hole, solder covering pin, contamination, misalignment, missing part, skewed, billboard, mounting on side, overturn, wrong part, damaged, float, polarity, pseudo soldering, empty solder, excessive glue etc.
9. Good stability(GR&R<10% @6 Sigma, CPK>1.33) Test deviation accuracy less than ±0.25mm.
10. PCB warpage compensation: total Mark compensation calibration, component position frame compensation.
11. Data is traceable. Support SPC alarm, LOG automatic collecting and storage function, NG warning/alarm function, Remote programming&debugging.

**Advantage:**



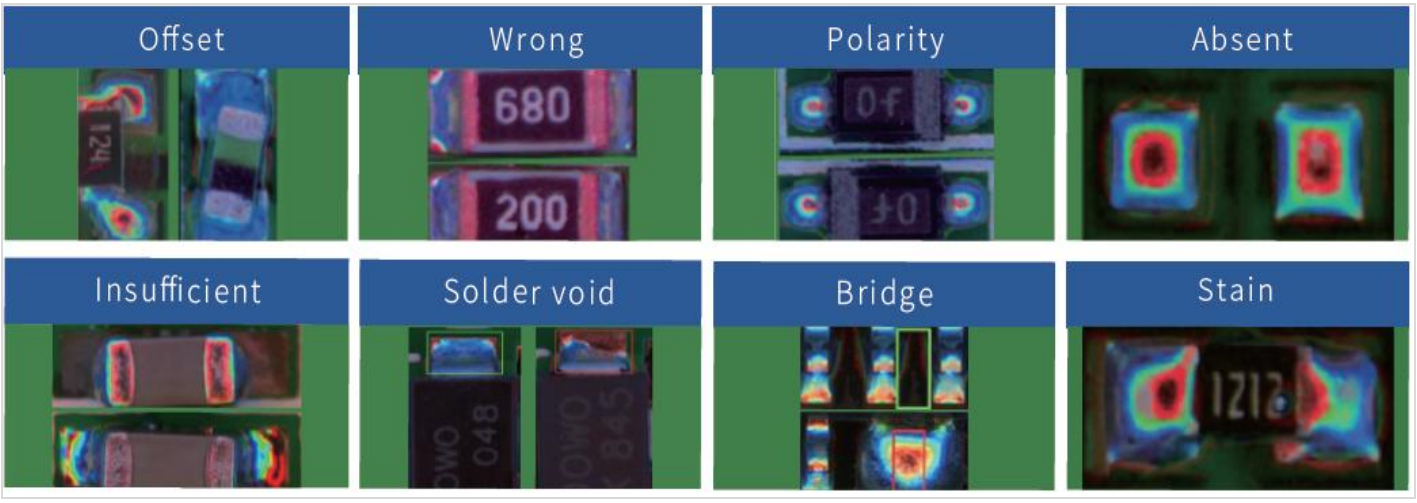

**Deep Learning Algorithm**

I.C.T AOI by applying deep learning algorithm, big data optimization and intelligent minimalist programming in industrial inspection, I.C.T enables intelligent judgment by one-click automatic identification of components and solder joints, thus addressing the two major pain points of traditional algorithms, namely, long programming time and high false alarm rate.



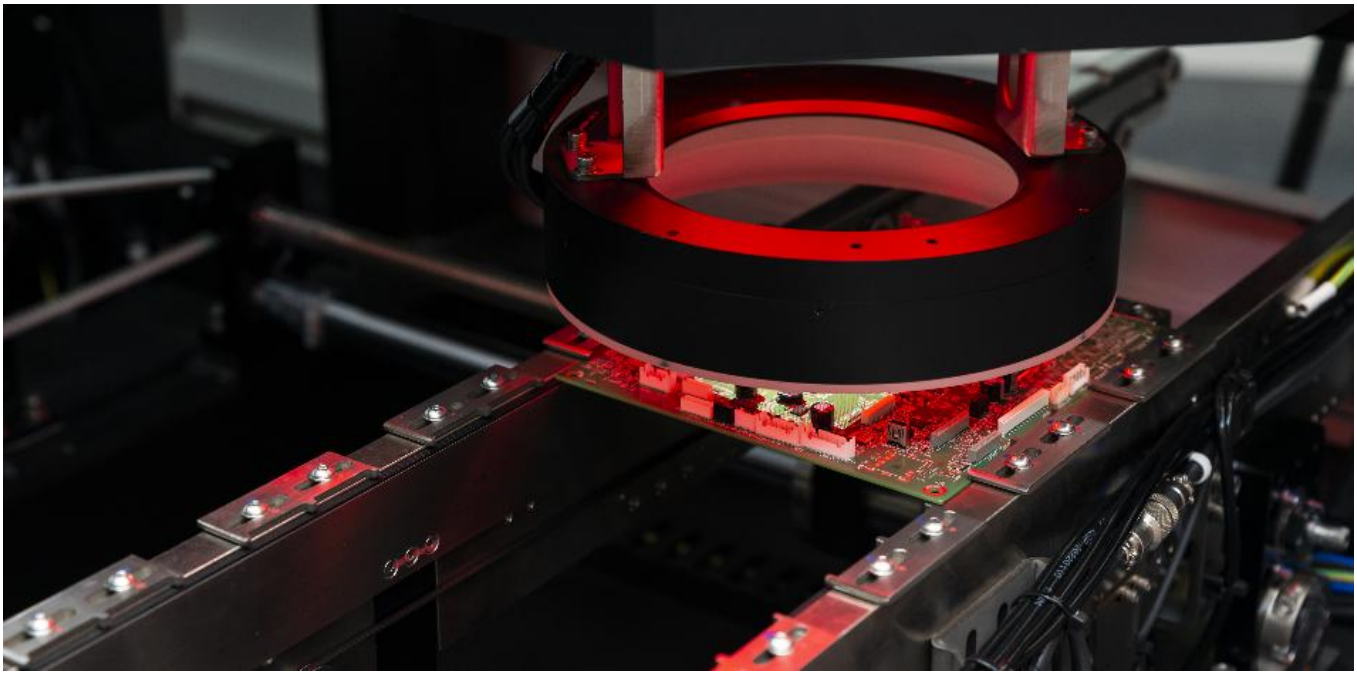
**Flexible procedures**

1. Intelligent judgment: Automatically check resistance, capacitance, diode and other components.
2. Offline programming: Support off-line programming. Convenient for modification and debugging.
3. Online programming: Optimize and adjust equipment parameters without stop of production line.
4. Quick changeover: Files of existing formats can be called directly without repeated adjustment.
5. Intuitively remind: SPC reminds item number, wrong device and its type with both pictures and characters.




**Strong Intelligent Inspection Capability**

1. Model is trained based on big data. High identification accuracy of components and soldering tin.
2. Correct alarm caused by components overhang and soldering tin deviation. Reduce false alarm. For fuzzy feature, it has strong identification capability.
3. Effectively inspect defects without being interfered by color of board and change of characters on device
4. Irregular parts inspection is strong. Automatically generate IC pin inspection checkbox. Judge multiple defects with one checkbox.
5. Strong generalization ability. Device deviation, normal through high precision identification but slight overhang of itself, slight color difference, irregular arranged devices and other complicated situation are compatible. Thus, low false alarm rate can be realized.



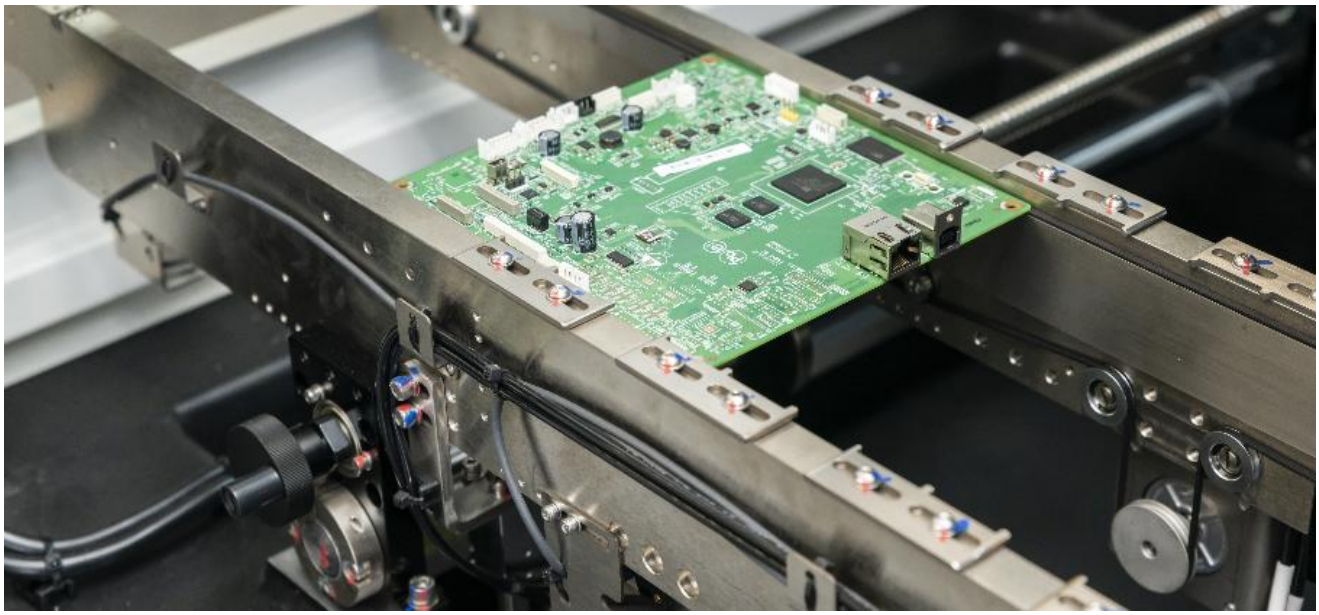
**Quick Inspection Speed**

1. Adopt photographing inspection mode of top high precision intelligent camera. Flexibly deal with high capacity PCB.

2. Adopt deep alignment control system and maintain ultrafast moving speed.

3. Real-time computation. Shoot next FOV. Meanwhile compute last FOV solder joint.

4. Path planning. Automatically plan path movement inspection.



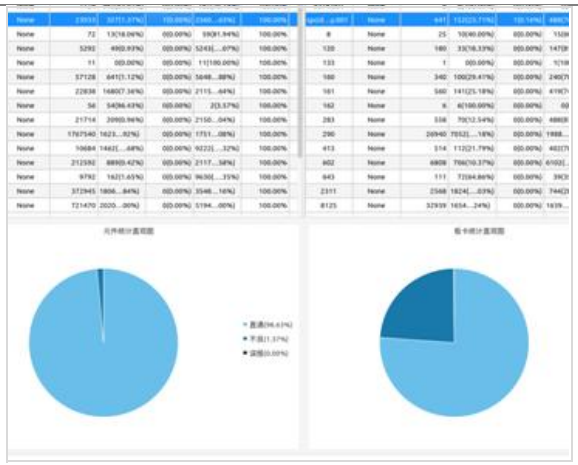
**Multiple Inspection Modes**

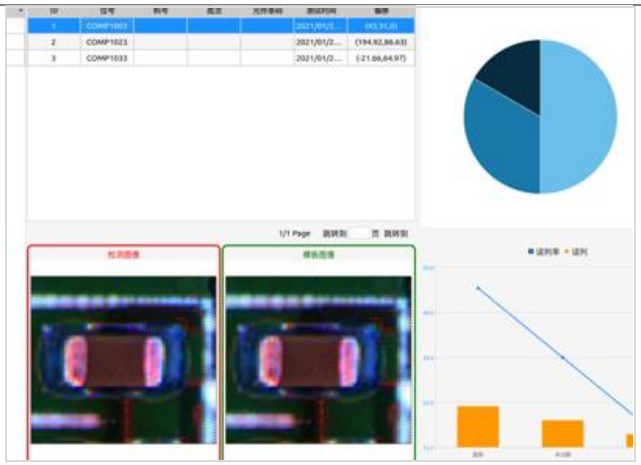
1. Multiple inspection modes can be designed by combining multiple production modes of factories.

2. Support multi-type machine production mode, substitute material mode and other modes.

3. Support joint-board inspection, Support mixed board inspection, Support mixed material inspection, Support multiple MARK(including Bad Mark function), Support automatic identification A/B program.

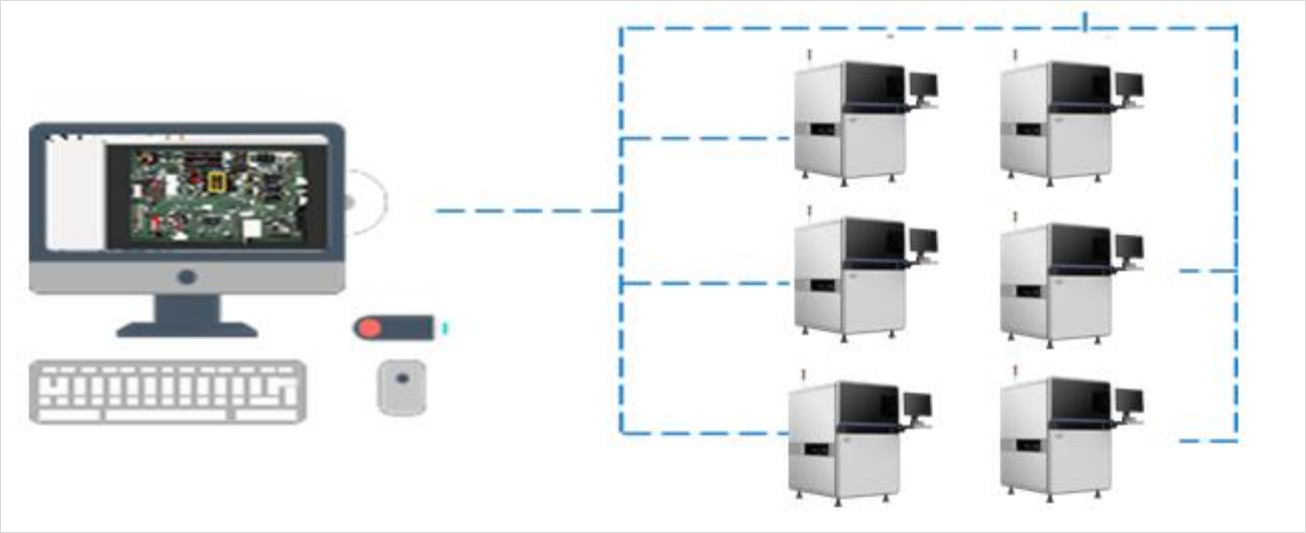
4. Multiple inspection scenarios. Support board inspection with/without fixtures.





**MES System Data Report**

1. Data is retained in real time and can be exported, which is beneficial to process improvement and production tracing.
2. Camera automatically reads code (bar code and QR code).
3. Complete data, including overall statistic data and all inspection information of each board inspected.
4. Support one-key export, which is convenient for traceback. Data can be effectively applied in MES system.



**Centralized Management and flexible Service**

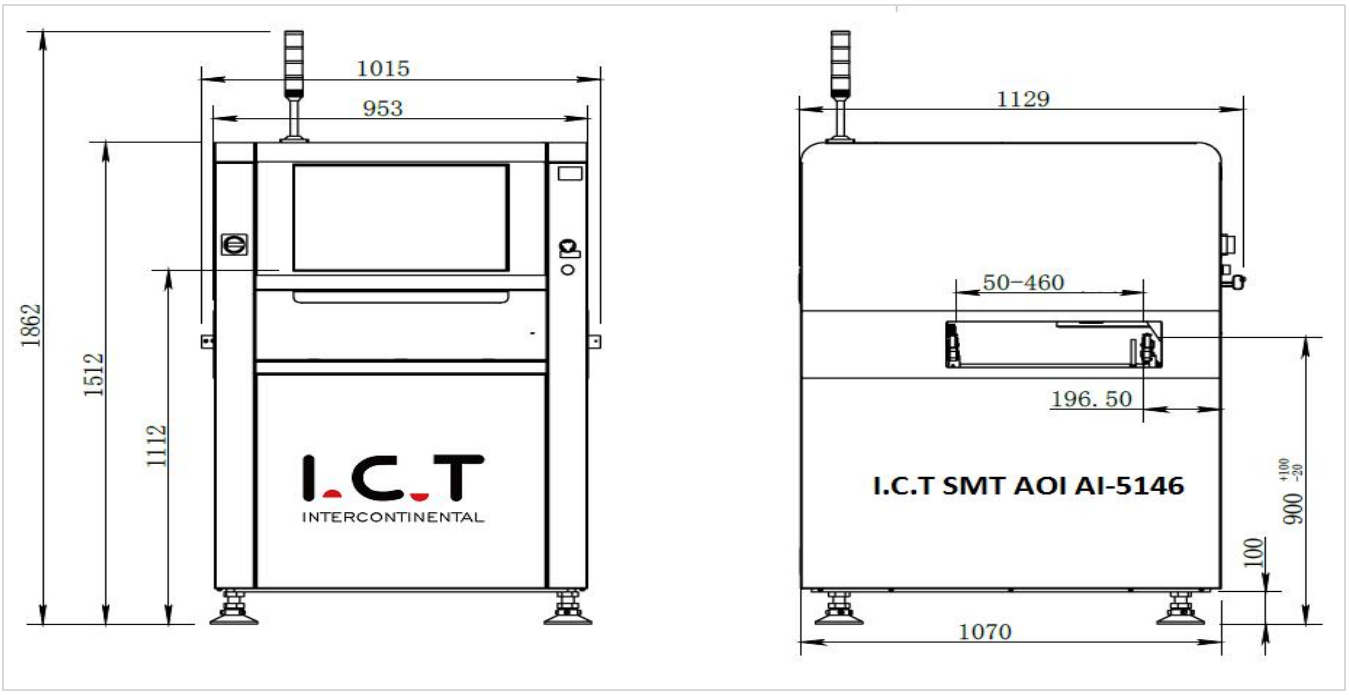
1. Support remote programming, debugging and management. Save changeover time. Support one-to-many judgment.
2. Remote regulation, centralized management. Reduce suspension of work. Enhance production efficiency.
3. Remote offline programming, which will not affected inspection.
4. Remote support. Quick response and maintenance.
5. Multi-judgment work station realizes one-to-many judgment.

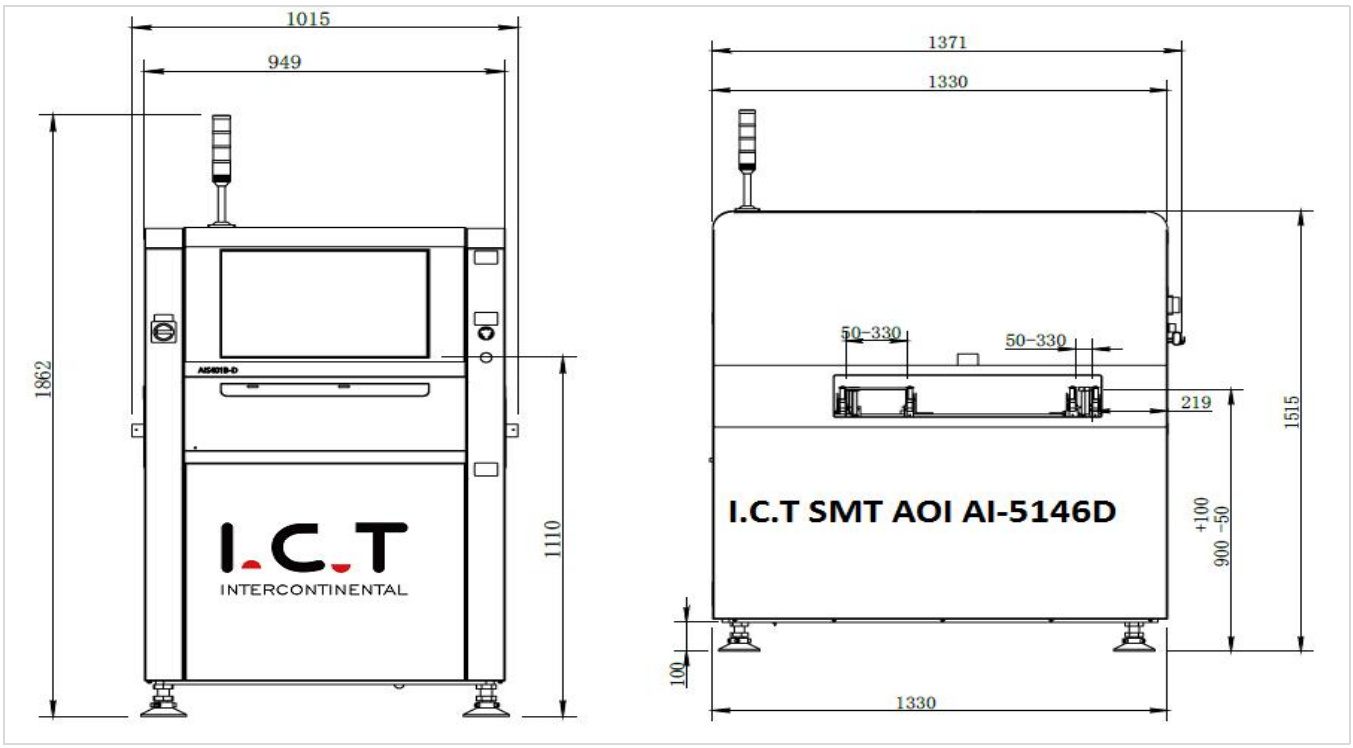
**Specification:**

| Model | I.C.T AI-5146 | I.C.T AI-5146D | I.C.T AI-1251 |
|---|---|---|---|
| Mini Component | 01005chip, 0.3pitch IC and Special shaped | | |
| Resolution@FOV | 10um@40*30mm | 10um@40*30mm | 15um@60*45mm |
| Camera | 12M pixel intelligent digital industrial camera | | |
| Lens | Telecentric lens | | |
| Light | RGB+W4 color integral | | |
| Inspection Speed | 0.23sec/FOV | | |

| | | | |
|---|---|---|---|
| Inspection Algorithm | CNN, Color contrast, Outline recognition, Offset inspection, Template matching, Character comparison, OCR, etc. | | |
| Inspection Item | Component: Absent, Reversed, Mis-alignment, Broken, Extra, Foreign matter, Stained, etc.<br>Solder: Insufficient solder, excessive solder,bridging,pseudo solder etc.<br>Other: Bar code Recognition/QR code Recognition/OCR. | | |
| Mixing PCB inspection | Support calling program automatically. | | |
| PCB Size | 50*50mm~510*460mm<br>(Large board mode:<br>Left to right: max 730*460mm<br>Right to left: max 640*460mm) | 50*50mm~510*610mm(Single rail operation)<br>50*50mm~510*330mm(Dual rail operation) | 50*50mm~1200*510mm |
| Rail | Single rail | Dual rail | Single rail |
| PCB Height | Top: 25mm, Bottom: 80mm | Top: 25mm, Bottom: 30mm | Top: 25mm, Bottom: 30mm |
| PCB Thickness | 0.3~6.0mm | | 0.5~6.0mm |
| PCB Edge | 3.7mm | | 5mm |
| PCB Warpage | ±3.0mm | | |
| PCB Weight | Max 3KG | | ≤10KG |
| Conveyor Height | 900±20mm | | |
| With Adjustment | Manual&Auto | | |
| Conveyor Direction | L~R or R~L | | |
| Motion Driver | AC servo driver + Ballscrew, repeat accuracy 0.01mm | | |
| Platform | Granite | | |
| Operation System | Ubuntu 18.04 LTS 64bit<br>Remote control, remote assistance, CAD file import and user-defined model training | | |
| PC | CPU: Intel i5<br>Display card: NVIDIA GTX1050Ti<br>Memory: 32G DDR, 240G SSD+2T Mechanical Hard Disk<br>Network: 1000M Wired Network Card | CPU: Intel i5<br>Display card: NVIDIA GTX1050Ti<br>Memory: 64G DDR, 240G SSD+2T Mechanical Hard Disk<br>Network: 1000M Wired Network Card | CPU: Intel i5<br>Display card: NVIDIA GTX1050Ti<br>Memory: 32G DDR, 240G SSD+2T Mechanical Hard Disk<br>Network: 1000M Wired Network Card |
| Display | 23.8 inch FHD display | | |
| Data Output | Autogenerated statistic analysis SPC | | |
| Special Function | Automatic search of elements and quick programming | | |
| Power | AC220 50/60Hz,5A | | |
| Rated Power | 380W | | 1200W |
| Compressed Air | 0.4~0.6Mpa | | |
| Communication | SMEMA | | |
| Weight | 750Kg | 790Kg | 1600KG |
| Dimension | L1015*W1086*H1539mm (excluding the light) | L1015*W1370*H1539mm (excluding the light) | 2100*1670*1376mm (excluding the light) |

**Dimension:**




* I.C.T keeps working on quality and performance, specifications and appearance may be updated without particular notice.

**Thanks for choosing I.C.T.**

**I.C.T looks forward to win-win cooperation.**

**Thanks.**