

# ***ATHENA***

3D Automated Optical Inspection System  
3D自动光学检测系统

[www.pemtron.com](http://www.pemtron.com)  
See the Invisible World.

## Technology and Features 技术特性

### Advanced High Speed Inspection and Measurement Technology 先进的高速检测和测量技术

#### Shadowfree Phase Measuring Profilometry 无影相测量检测技术

ATHENA Series 10Mp 8+4 projector 3D AOI inspect 100% of the PCB in 2D and 3D. Provide a complete optical inspection of a PCB Shadow free and low false call maintaining a high flexibility in system functionally.

ATHENA系列配备10Mp的相机和多角度投射对PCB进行100%的2D和3D全检。保障完全无影光学检测和低误报率，并保持高度灵活性的系统功能。

#### Moiré Technology

Over 15 years of integrating phase measuring profilometry technology into our TROI solder paste inspection systems has proven the most advanced 3D technology available.

在Pemtron锡膏检测系统中已使用超过15年，相位轮廓测量技术足以证明3D技术的先进性及有效性。



- 8+4 Projection + Three stage 2D lighting
- 2D and 3D simultaneous inspection algorithms
- Telecentric lens provide higher accuracy and detection
- High speed GPU and image processing
- User friendly graphical interface
- Built in library management system
- Offline real time debug system (option)
- 8+4投射+3层2D光源
- 2D和3D同步检测算法
- 远心镜头提供高精度的检测
- 高配置GPU和图像处理
- 简单明了的用户界面
- 标准元件库管理系统
- 离线实时调试系统 (选配)

#### High Speed Inspection Technology 高速度检测技术

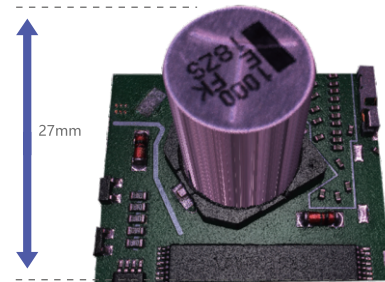
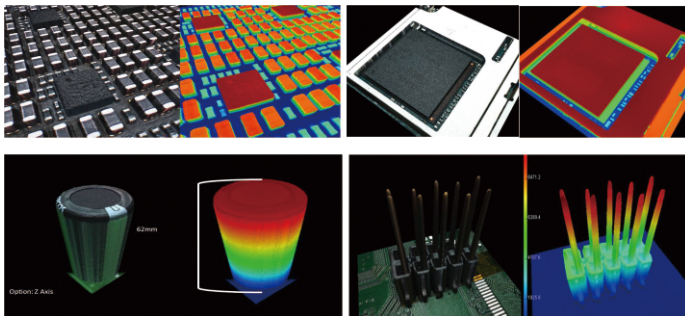
ATHENA high speed option inspect in 41cm<sup>2</sup>/s by utilizing an advanced network of more powerful GPU, controller boards and our proprietary developed 10MP 15um 180fps camera with telecentric lens.

采用独立自主的专业软件设计和高性能工控主机，拥有高效的运算能力及全面的硬件选配，进行最高效和稳定的测试。

#### High Component Inspection Technology 高元件检测技术

ATHENA new 8+4 way option projection technology provide 100% 3D inspection of 27mm and this is the first in the yield.

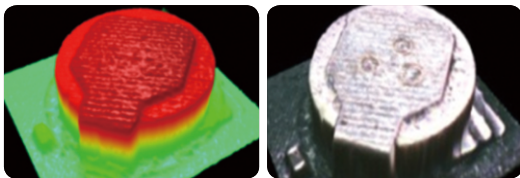
ATHENA选用全新的8+4方向的3D投射技术，可提供业界领先的27mm元件高度的全方位3D检查，选配Z Axis最高可以检查60mm器件。



#### Shadowfree 3D Technology 无影3D技术

Eliminates shadow issues on highly populated PCBs and tall components.

环状光源和多投射头能完全消除PCB测试时高密度阴影和高器件底部阴影所产生的影响。



#### Optical Character Recognition 光学字体核对

Recognizes component part characters by using color and pattern algorithms. Ability to add & modify OCR font to optimize inspection condition.

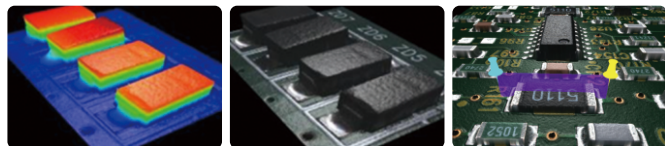
利用彩色调色及建立样板对比的原理识别元件的Part Name 能够增力晰修改OCR字体来优化Part Name的检测条件，更好的识别字体。



#### 3D Solder & Height Measurement 3D焊锡高度测量

Using our advanced 3D technology, the ATHENA is able to take inspection to levels that are limited by conventional 2D system. Adding solder height, volume and part coplanarity inspection provides enhanced defect detection capabilities.

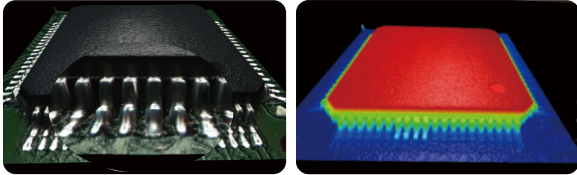
利用我们先进的3D技术，ATHENA Series能够检测到传统2D AOI无法到达的领域。增加了焊锡高度、体积以及元件共面性的测试项目，大大提高了对不良产品的检测能力。



## 3D Lead Inspection 3D引脚检测

3D measurement algorithms enable the ATHENA to measure lead height and volume of solder proving full-high quality 3D images.

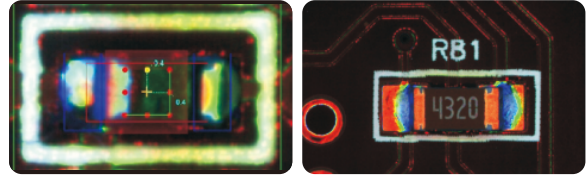
ATHENA Series检测原理：能够检测引脚的焊锡高度和体积，并且提供高质量、真彩色3D图像。



## 2D RGB Algorithms 2D RGB算法

Through the RGB distinguish, operator can easily confirm the failures, such as cold joint and lift lead.

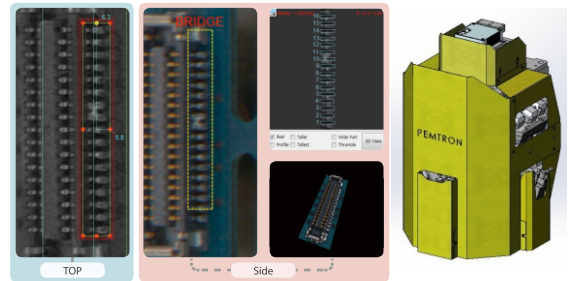
通过RGB颜色区分，使操作者更轻易的区分空焊、翘脚等不良。



## Completely 3D Measurement Solution 完美的3D测量方案

An accurate and convenient inspection by using side camera. 使用侧面相机可更精准和便捷的测试

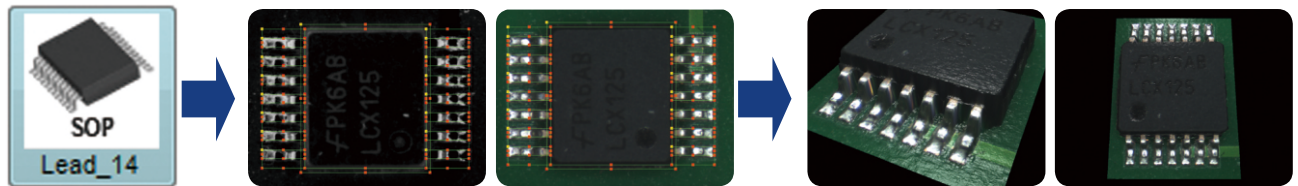
- 4-Way side camera (option)
- Possible to detect inside bridge which it cannot detect with top camera
- Possible to detect connector inside area
- Convenient teaching by using existing algorithm
- 4方向侧面相机（选配）
- 可检测到只使用正面相机无法检测的引脚内部短路
- 可检测到连接器内部区域
- 使用已有的算法快捷教学



Ease of programming (Auto Teach Function) 编程简易（自动教学功能）

Advanced 3D imaging technology allows us to measure and recognize the geometric shapes of PCB components and automatically link them to our built in parts library.

先进的3D图像处理技术能够精准识别和测量任何几何形状的元素并自动更新到标准元件库内。编程简单，调试快速。



## Real-Time Process Management Quality Management Solutions 实时监控和质量管控方案

Statistical Process Control 制程统计控制

- Pemtron's SPC module collects and analyses the inspection data, calculates and displays the data at a glance. A robust SQL driven database lends the user the flexibility of sorting and exporting the desired production results in a multitude of ways.
- The optional SPC Server collects data from multiple inspection systems over SMT lines, all in one system and interface.
- Pemtron's SPC可收集和分析检验结果，并一目了然的显示给用户。灵活多变的SQL可以给用户提供各种用户需要的报告、结果。
- 服务器选项可集中多台设备的在线监测结果、在SPC中实时反映产线的生产状况。



SMT LINE 1

SMT LINE 2

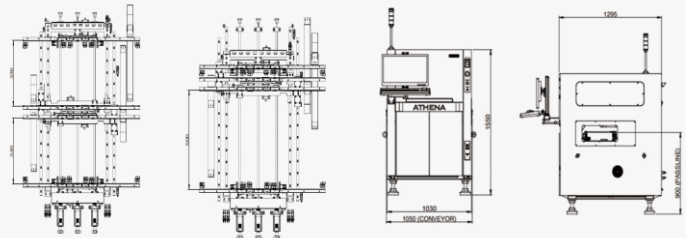
SMT LINE 3



# ATHENA Series

## SPECIFICATIONS

Configuration	Standard Version			Pro Version		
Camera	10MP			12MP		
X/Y Pixel Resolution	10um	15um	18um	10um	15um	18um
Inpsection Speed	19.2cm <sup>2</sup> /Sec	43.2cm <sup>2</sup> /Sec	61.5cm <sup>2</sup> /Sec	24cm <sup>2</sup> /Sec	54cm <sup>2</sup> /Sec	77.7cm <sup>2</sup> /Sec
FOV (Field Of View)	32X30 mm	48X45 mm	57X54 mm	40x30 mm	60x45 mm	72X54 mm
Model	ATHENA	ATHENA L	ATHENA D	ATHENA DL		
Max. PCB Size	330*330mm	510*510mm	Dual : 330*280mm		Dual : 510*330mm	
			Single : 330*500mm		Single : 510*600mm	
Min. PCB Size	50*50mm					
Dimension/Weight	1050*1295*1550mm 900kg	1230*1485*1550mm 1100kg	1050*1780*1565mm 1150kg	1230*1825*1565mm 1250kg		
Electrical Requirements	220 ~ 240 Vac , 1 Phase, 50/60Hz					
Conveyor Type	1 Stage Standard		3 Stage & Extension Rail Support			
Power Consumption	3.5KW(16.0A Max )		Equipment Size			
Thickness	0.4 ~ 7.0 mm					
Top Clearance	50 mm					
Bottom Clearance	50 mm					
Height Range	0-27mm/15um (Option Z Axis)					
Height Accuacy	+/-3%					
Max PCB Warpage	+/- 3 mm					
Motor Type	XY Linear Servo Motor					
Special Size Requirement Max.PCB Size	ATHENA XL 690*650mm	ATHENA UXL 850*650mm	ATHENA YXL 1200*650mm	ATHENA ZXL 1500*650mm		



\* Specifications subject to change without notice.



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