

AOI Information Sheet



The typical SMT production line comprises a paste printer, component placer and oven

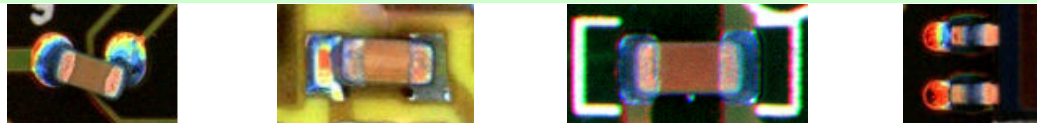


Omron AOI products	Post Paste		Post Placement		Post Solder		
	RNS-P		RNS-Z		RNS-S	VT-WIN2	RNS-pt
Features	10, 15 or 20µm camera resolution		10, 15 or 20µm camera resolution		10, 15 or 20µm camera resolution	J-lead, Zoom	Desktop, pattern matching
PCB Size (mm)	M	50x50 to 255x333		50x50 to 255x333		50x80 to 255x333	
	L	50x80 to 460x510		50x80 to 460x510		50x80 to 460x510	

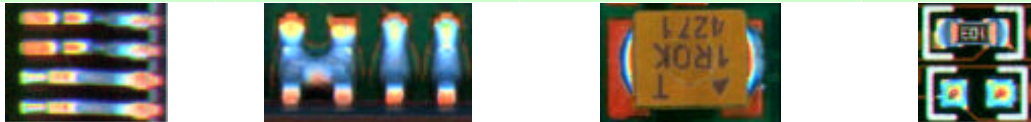


Typical defects captured	Post paste measures accuracy of paste applicator	Post placement measures accuracy of placement machine	Post solder AOI is the most cost effective place for AOI as it provides an holistic view of the process	
	Paste Area	Missing Component	Missing Component	Lifted Lead
	Paste Shift	Component Shift	Component Shift	Solder Bridge
	Paste Bridge	Component Skew	Incorrect Component	Solder Ball*
	Paste Smudge	Incorrect Component	Wrong Polarity	Insufficient Solder
	Insufficient Paste	Wrong Polarity	Tombstone	Excessive Solder
	Excessive Paste		Bill Board	Poor Solder Wetting

Some example of post solder defects



Shifted component Partial tombstone Solder ball Lead tip non-wetting



Lifted lead Bridge Non-wetting both lands Missing Component

* Not available with RNS-pt model

OMRON employ unique patented RGB colour highlight technology combined with a high-resolution colour camera to achieve advanced component and solder inspection capabilities. Images are processed in colour.



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Colour highlight explained	<p>Omron's colour highlight technology makes it possible to measure 3D information from a single high-resolution true colour camera. The use of a single camera simplifies programming and maintenance. With Omron's post solder inspection systems, solder shape is highlighted in red, green and blue as illustrated below.</p>			
	<p>The same resistor is viewed with 3 different lighting and camera techniques below.</p>			
Advantages of the Omron technology	<p>Chip resistor viewed with greyscale camera</p>			
	<p>Chip resistor viewed with a colour camera, no colour highlight</p>		<p>Chip resistor viewed with Omron's colour highlight system and true colour camera</p>	
	<p>There are many advantages gained with Omron's colour highlight technology and true colour camera. Here are some illustrations</p>			
Advantages of the Omron technology	<p>Component detection and the measurement of positional accuracy is dependant on the background contrast. Omron processes the image in colour and is able to enhance contrast</p>			
	<p>Enhancing the colour image enables low contrast features such as polarity marks to be easily measured</p>			
	<p>Colour highlight technology enables traditionally difficult solder defects to be detected with ease such as lifter leads and the partial tombstone illustrated</p>			
	<p>Bright stencil printing around components can reduce the ability of AOI to detect defects such as bridging and solder balls. Colour highlight techniques avoid this problem completely</p>			
Optional peripherals	<p>Off-line teaching provides remote program creation and tuning without stopping production. Process improvement is simplified with the available real time data. Requires separate PC supplied by customer or 3rd party.</p>			
	<p>2D/Bar code systems and repair stations are available for all in-line AOI solutions from Omron.</p>			
	<p>2D reading with RNS camera</p>	<p>External 2D/bar code system</p>	<p>Repair station</p>	
<p>Optional 2D code reading as part of the inspection process. Simple solution for single or multi-panel boards.</p>	<p>Optional external conveyor mounted 2D or bar code reading for automatic program launch.</p>	<p>Review and repair defects found during inspection. Requires separate PC supplier by customer or 3rd party.</p>		
Typical in-line system				
	<p>Machine Body RNS-P/Z/S or VT-WIN2</p>	<p>Off-line teaching CTS or RTS s/w (plus PC)</p>	<p>Repair Station Repair s/w (plus PC)</p>	<p>2D/Bar Code reading Internal or External</p>