ViTrox
...innovating vision

V510*i* 3D Series

Advanced 3D Optical Inspection (AOI)

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V510i 3D Series

Advanced 3D Optical Inspection (AOI)

Designed for various size of PCB assemblies to increase production efficiency and cost savings for electronic manufacturing services, communication industry, and etc.

Key Benefits

- High Speed Inspection with Real 3D Measurement
- AI Powered technology for smart, easy & quality programming
- Smart Manufacturing Ready
- Preferred choice by world's top Contract Manufacturers
- Shareable wear & tear spare parts between 3D AOI and 3D API under one similar machine
- Competitive Cost of Ownership

Breakthrough Technologies

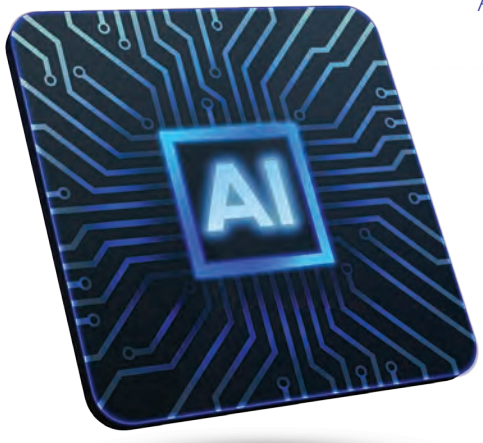
1 AI-Based Smart Technologies

AI Smart Programming

i. Intelligent & automated programming which eliminates human skills dependency & rapidly improve the programming speed

ii. IPC Class Compliance on Algorithm & Parameter

iii. AI Smart programming assures algorithm quality, accuracy & consistency



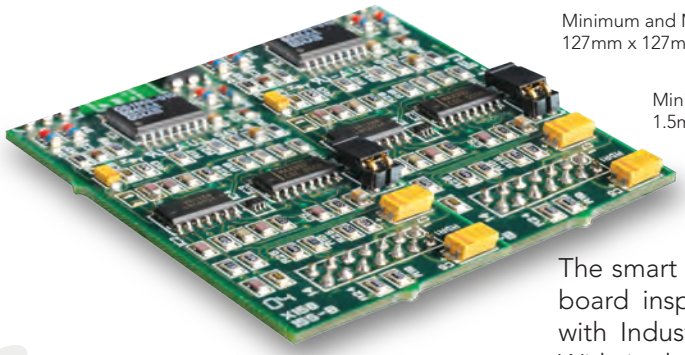
AI Assist Buy Off in Repair Station

i. With the AI Smart Assist feature, the inspection results buy off process can be done at faster speed and higher accuracy.

ii. With AI Smart Assist, it helps to eliminate human judgment mistake.

iii. This new innovation AI feature is fitting the Smart Manufacturing needs as Centralized VVTS buy-off station.

2 Largest Board Size Platform



Minimum and Maximum Panel Size
127mm x 127mm - 1320.8mm x 1320.8mm

Minimum and Maximum Panel Thickness
1.5mm to 10mm

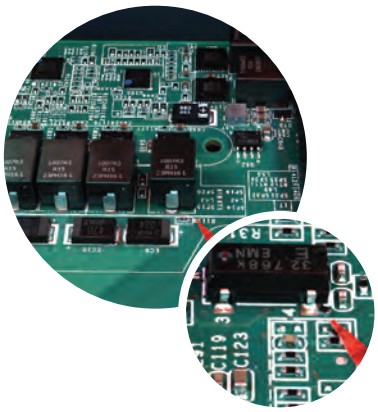
Maximum Panel Weight
25Kg

The smart V510i XLW AOI solution offers the world-class board inspection capabilities and software compatible with Industry 4.0 for quality-assured inspection results. With its latest capability, the largest and heaviest PCB board weighing up to 25kg and up to 1.3m x 1.3m (length x width) in size can be accommodated and inspected.

3 New Added Side Camera

i. SPECKLE Auto Mapping Technology (SAM)

Processes auto mapping on component's lead for side angle inspection.



iii. Algorithm-Driven Inspection

Algorithm-driven inspection in side view cameras.

ii. Ready for Industry 4.0

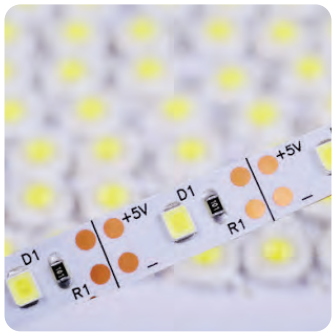
Equipped with essential communication protocol for Industry 4.0.

iv. Adaptive Lighting

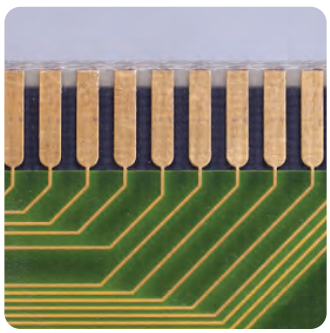
Smart lighting on required inspection direction.

4 Unique and Universal Algorithms for Unconventional Applications

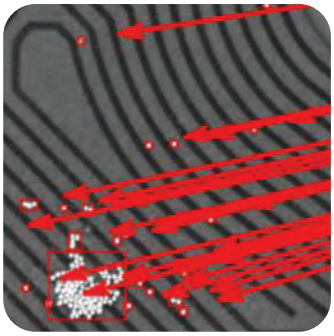
ViTrox AOI system is designed for general SMT and also capable of covering other unique inspection requirements such as Gold finger, Coordinate Measurement & Surface Defects Detection.



LED distance & skew measurement



Golden Finger Dimension measurement

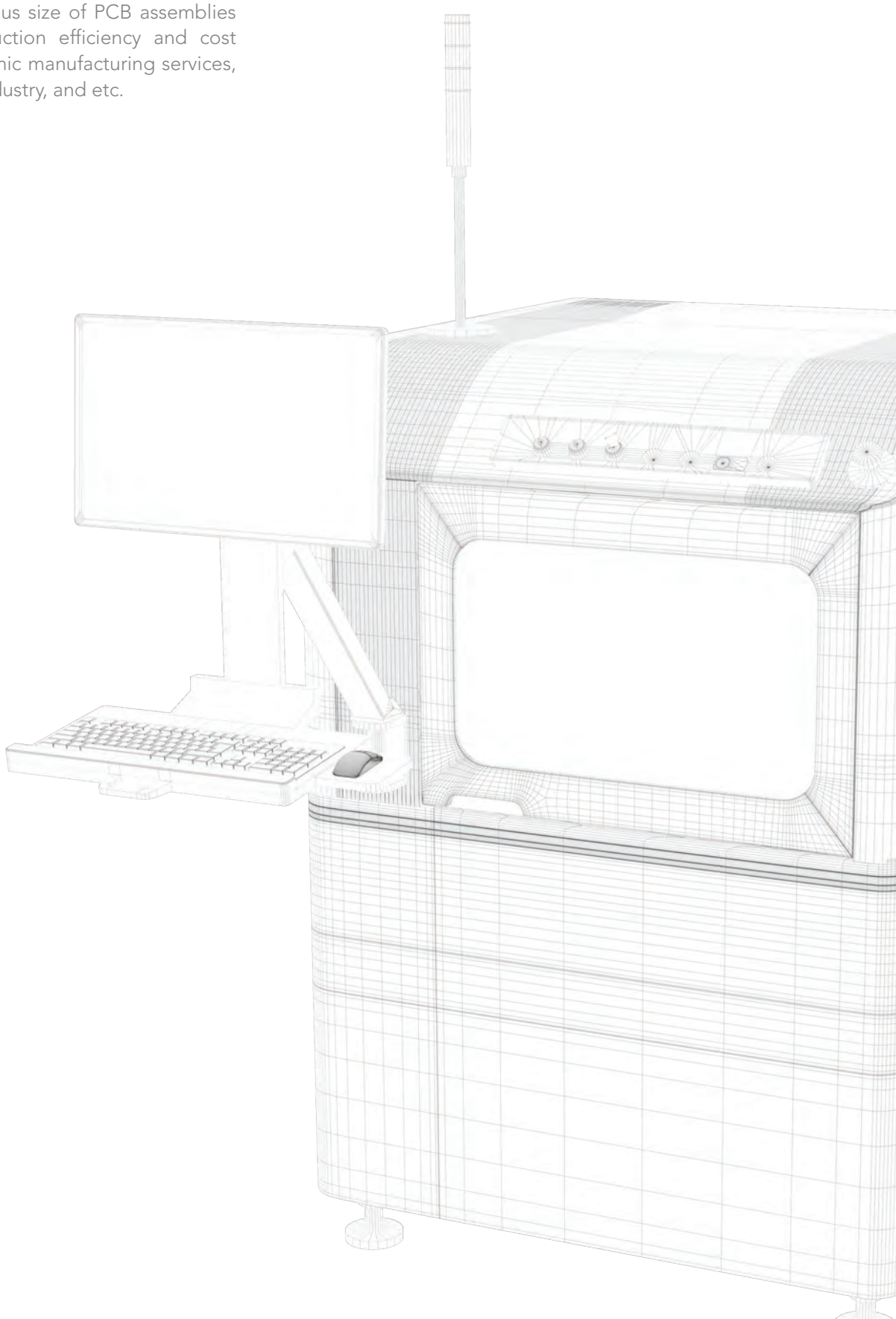


Micro contamination detection and count

V510i 3D Series

Advanced Optimus 3D Optical Inspection (AOI)

Designed for various size of PCB assemblies to increase production efficiency and cost savings for electronic manufacturing services, communication industry, and etc.



V510i Optimus 3D

System Performances	
Inspection Functions	Missing, Offset, Skewed, Polarity, Billboard, Tombstone, Lifted/Bent Leads, Excess/Insufficient Solder, Overturn, Bridging, Wrong Part (OCV Marking), Pin Through Hole (Solderability & Pin Detection), Package Coplanarity, Lifted Lead (Height Measurement), Foreign Material Detection, Polarity Dimple Measurement
Board & Component Level Tracebility	Camera-Read Barcodes; External Barcode Reader Configured; OCR Capability with Batch Code Logging

System Hardware	
Operating System	Windows 10 Pro (64 bit)
Optical Resolution & FOV Size	12MP Coaxpress Camera Default: 60 x 45 mm @ 15 µm telecentric lens* Option: 53 x 39 mm @ 13 µm telecentric lens* Option: 32 x 24 mm @ 8 µm telecentric lens*
Inspection Speed	12MP @ 15um resolution: 45-60cm²/sec
3D Technologies	Phase Shift Profilometry's (PSP) Methodology with 4-way projectors
Lighting Module	Concurrent Lighting Module
X-Y Gantry System	Gantry Robot Systems with Linear Motor and Optical Linear Encoders
Conveyor Width Adjustment	Auto Width Adjustment; Bottom-Up Clamping; In-line SMEMA

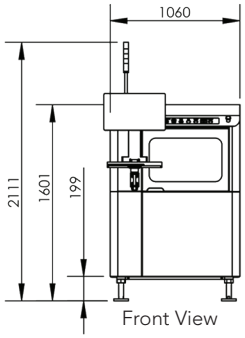
PCB Dimension	Standard	FDL
Maximum PCB Size (L x W)	510mm x 510mm (20"x20")	DL Equal: 510x250mm (20"x9.8") Single Lane: 510x420mm (20"x16.5")
Minimum PCB Size (L x W)	50x50mm (2"x2")	50x50mm (2"x2")
Maximum PCB Inspectable Area (L x W)	510mmx503mm (20"x19.8")	DL Equal: 510mmx243mm (20"x9.5") Single Lane: 510mmx413mm (20"x16.2")
Maximum PCB Thickness	4mm (0.15")	
Minimum PCB Thickness	0.5mm (0.02")	
Maximum PCB Weight	3kg	
Top clearance of PCB	50mm	
Bottom clearance of PCB	70mm	
Panel Edge Clearance	3.5mm	
PCB Transport Height	875mm - 965mm	
PCB Temperature	Ambient operating temperature is ~5°C to 40°C, maximum PCB temperature 80°C.	

* *Based on system configuration.*

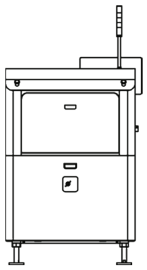
Specifications are subject to change.

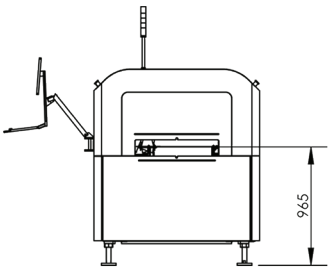
Installation Specification

System footprint (Width X Depth X Height)	1060mm x 1353mm x 2111mm
Weight	~900kgs
Electrical Supplies	100-120 V, 16A/200-240V, 8A Single Phase
Air Requirement	NA

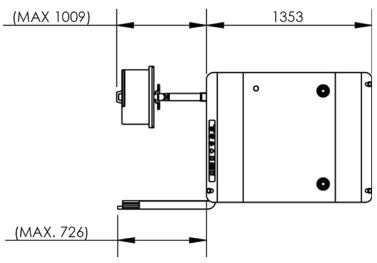


Front View


Back View



Side View



Top View

V510i XL

System Performances	
Inspection Functions	Missing, Offset, Skewed, Polarity, Billboard, Tombstone, Lifted/Bent Leads, Excess/Insufficient Solder, Overturn, Bridging, Wrong Part (OCV Marking), Pin Through Hole (Solderability & Pin Detection), Package Coplanarity, Lifted Lead (Height Measurement), Foreign Material Detection, Polarity Dimple Measurement
Board & Component Level Tracebility	Camera-Read Barcodes; External Barcode Reader Configured; OCR Capability with Batch Code Logging

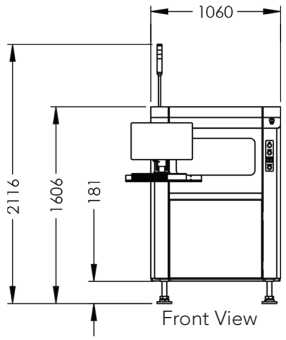
System Hardware	
Operating System	Windows 10 Pro (64 bit)
Optical Resolution & FOV Size	12MP Coaxpress Camera Default: 60 x 45 mm @ 15 µm telecentric lens* Option: 53 x 39 mm @ 13 µm telecentric lens* Option: 32 x 24 mm @ 8 µm telecentric lens*
Inspection Speed	12MP @ 15um resolution: 45-60cm²/sec
3D Technologies	Phase Shift Profilometry's (PSP) Methodology with 4-way projectors
Lighting Module	Concurrent Lighting Module
X-Y Gantry System	Gantry Robot System with Ball Screw, Servo Motor and Magnetic Linear Encoder
Conveyor Width Adjustment	Auto Width Adjustment; Bottom-Up Clamping; In-line SMEMA

PCB Dimension	Standard	FDL
Maximum PCB Size (L x W)	460mm x 690mm (18.1''x27.2'')	DL Equal: 460mm x 325mm (18.1''x12.8'') Single Lane: 460mmx600mm (18.1''x23.6'')
Minimum PCB Size (L x W)	50x50mm (2"x2")	50x50mm (2"x2")
Maximum PCB Inspectable Area (L x W)	460mmx683mm (18.1''x26.8'')	DL Equal: 460mmx318mm (18.1''x12.5'') Single Lane: 460mmx593mm (18.1''x23.3'')
Maximum PCB Thickness	7mm (0.27")	
Minimum PCB Thickness	0.5mm(0.02")	
Maximum PCB Weight	3kg	
Top clearance of PCB	50mm	
Bottom clearance of PCB	100mm	
Panel Edge Clearance	3.5mm	
PCB Transport Height	875mm - 965mm	
PCB Temperature	Ambient operating temperature is ~5°C to 40°C, maximum PCB temperature 80°C.	

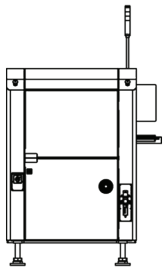
* *Based on system configuration.*

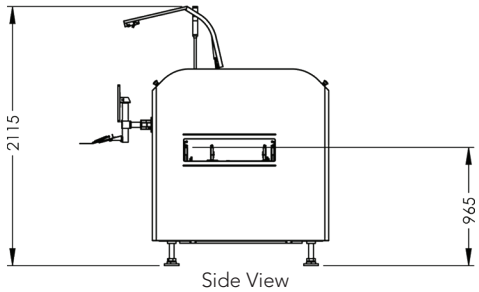
Specifications are subject to change.

Installation Specification	
System footprint (Width X Depth X Height)	1060mm x 1440mm x 2116mm
Weight	~960kgs
Electrical Supplies	100-120 V, 16A/200-240V, 8A Single Phase
Air Requirement	0.6 Mpa/85 psi

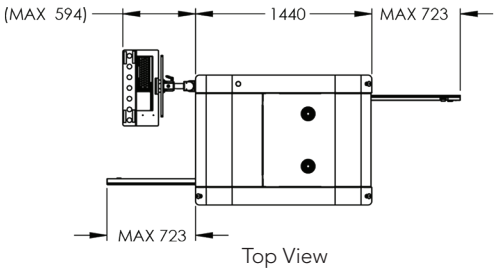


Front View


Back View



Side View



Top View

V510i XXL

System Performances	
Inspection Functions	Missing, Offset, Skewed, Polarity, Billboard, Tombstone, Lifted/Bent Leads, Excess/Insufficient Solder, Overturn, Bridging, Wrong Part (OCV Marking), Pin Through Hole (Solderability & Pin Detection), Package Coplanarity, Lifted Lead (Height Measurement), Foreign Material Detection, Polarity Dimple Measurement
Board & Component Level Tracebility	Camera-Read Barcodes; External Barcode Reader Configured; OCR Capability with Batch Code Logging

System Hardware	
Operating System	Windows 10 Pro (64 bit)
Optical Resolution & FOV Size	12MP Coaxpress Camera Default: 60 x 45 mm @ 15 µm telecentric lens* Option: 53 x 39 mm @ 13 µm telecentric lens* Option: 32 x 24 mm @ 8 µm telecentric lens*
Inspection Speed	12MP @ 15um resolution: 45-60cm²/sec
3D Technologies	Phase Shift Profilometry's (PSP) Methodology with 4-way projectors
Lighting Module	Concurrent Lighting Module
X-Y Gantry System	Gantry Robot Systems with Linear Motor and Optical Linear Encoders
Conveyor Width Adjustment	Auto Width Adjustment; Bottom-Up Clamping; In-line SMEMAA

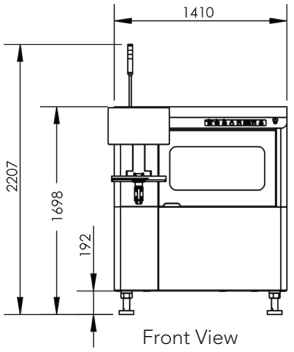
PCB Dimension	Standard	FDL
Maximum PCB Size (L x W)	620mm x 690mm (24.4"x27.2") Option: 1200mmx690mm (47.2"x27.2")	DL Equal: 620x325mm (24.4"x12.8") Single Lane: 620x600mm(24.4"x23.6") Option: DL Equal: 960x325mm (37.8"x12.8") Single Lane: 960x600mm (37.8"x23.6")
Minimum PCB Size (L x W)	50x50mm (2"x2")	50x50mm (2"x2")
Maximum PCB Inspectable Area (L x W)	620mmx683mm (24.4"x27.1") Option: 1200x683mm (47.2"x27.2")	DL Equal: 620mmx318mm (24.4"x12.5") Single Lane: 620mmx593mm (24.4"x23.3") Option:DL Equal: 960mmx318mm (37.8"x12.5") Single Lane: 960mmx593mm (37.7"x23.3")
Maximum PCB Thickness	15mm (0.59")	8mm (0.31")
Minimum PCB Thickness	0.5mm (0.02")	0.5mm (0.02")
Maximum PCB Weight	7kg (Upgradeable option: 15kg)	7kg
Top clearance of PCB	50mm	
Bottom clearance of PCB	70mm	
Panel Edge Clearance	3.5mm	
PCB Transport Height	890mm - 965mm	
PCB Temperature	Ambient operating temperature is ~5°C to 40°C, maximum PCB temperature 80°C.	

* *Based on system configuration.*

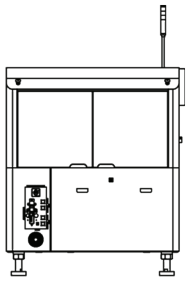
Specifications are subject to change.

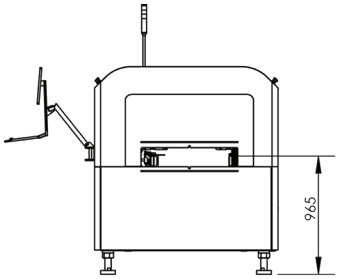
Installation Specification

System footprint (Width X Depth X Height)	1410mm x 1500mm x 2207mm
Weight	~1180kgs
Electrical Supplies	100-120 V, 16A/200-240V, 8A Single Phase
Air Requirement	0.6 Mpa/85 psi

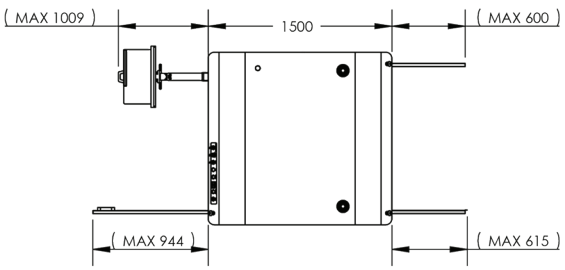


Front View


Back View



Side View



Top View

V510i XLW

System Performances	
Inspection Functions	Missing, Offset, Skewed, Polarity, Billboard, Tombstone, Lifted/Bent Leads, Excess/Insufficient Solder, Overturn, Bridging, Wrong Part (OCV Marking), Pin Through Hole (Solderability & Pin Detection), Package Coplanarity, Lifted Lead (Height Measurement), Foreign Material Detection, Polarity Dimple Measurement
Board & Component Level Tracebility	Camera-Read Barcodes; External Barcode Reader Configured; OCR Capability with Batch Code Logging

System Hardware	
Operating System	Windows 10 Pro (64 bit)
Optical Resolution & FOV Size	12MP Coaxpress Camera Default: 60 x 45 mm @ 15 µm telecentric lens* Option: 53 x 39 mm @ 13 µm telecentric lens* Option: 32 x 24 mm @ 8 µm telecentric lens*
Inspection Speed	12MP @ 15um resolution: 45-60cm²/sec
3D Technologies	Phase Shift Profilometry's (PSP) Methodology with 4-way projectors
Lighting Module	Concurrent Lighting Module
X-Y Gantry System	Gantry Robot Systems with Linear Motor and Optical Linear Encoders
Conveyor Width Adjustment	Auto Width Adjustment; Bottom-Up Clamping; In-line SMEMA

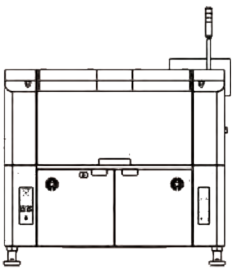
PCB Dimension	Standard
Maximum PCB Size (L x W)	1320.8mm x 1320.8mm (52" x 52")
Minimum PCB Size (L x W)	127mm x 127mm (5" x 5")
Maximum PCB Inspectable Area (L x W)	1310.8mm x 1310.8mm (51.6" x 51.6")
Maximum PCB Thickness	10mm (0.39")
Minimum PCB Thickness	1.5mm (0.06")
Maximum PCB Weight	15kg Option: 25kg
Top clearance of PCB	50mm
Bottom clearance of PCB	70mm
Panel Edge Clearance	5mm Option: 10mm for 25kg
PCB Transport Height	900mm - 965mm
PCB Temperature	Ambient operating temperature is ~5°C to 40°C, maximum PCB temperature 80°C.

* *Based on system configuration.*

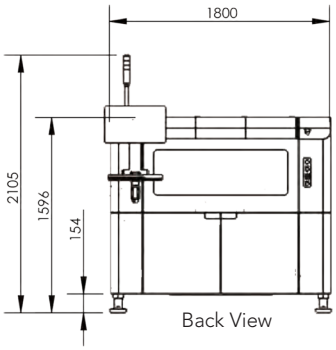
Specifications are subject to change.

Installation Specification

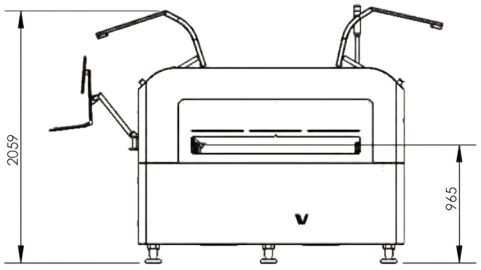
System footprint (Width X Depth X Height)	1800mm x 2174mm x 2105mm
Weight	~2000 kgs
Electrical Supplies	100-120 V, 16A/200-240V, 8A Single Phase
Air Requirement	0.6 Mpa/85 psi



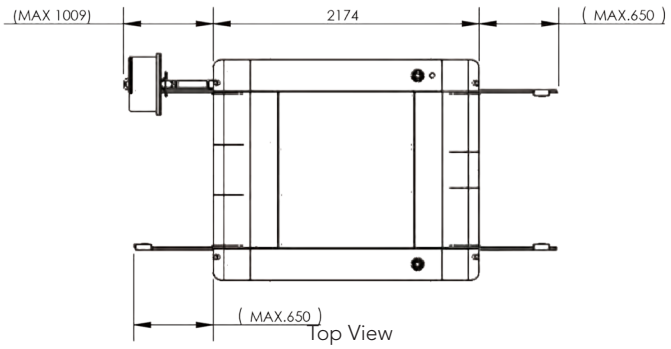
Front View



Back View



Side View



Top View

V510i 4.0

System Performances	
Inspection Functions	Missing, Offset, Skewed, Polarity, Billboard, Tombstone, Lifted/Bent Leads, Excess/Insufficient Solder, Overturn, Bridging, Wrong Part (OCV Marking), Pin Through Hole (Solderability & Pin Detection), Package Coplanarity, Lifted Lead (Height Measurement), Foreign Material Detection, Polarity Dimple Measurement
Board & Component Level Tracebility	Camera-Read Barcodes; External Barcode Reader Configured; OCR Capability with Batch Code Logging

System Hardware	
Operating System	Windows 10 Pro (64 bit)
Optical Resolution & FOV Size	Top: 12MP Coaxpress Camera Angle: 12MP Angle Camera Default: 60 x 45 mm @ 15 µm telecentric len* Option: 53 x 39 mm @ 13 µm telecentric lens*
Inspection Speed	12MP @ 15um resolution: 45-60cm²/sec
3D Technologies	Phase Shift Profilometry's (PSP) Methodology with 4-way projectors
Lighting Module	Concurrent Lighting Module
X-Y Gantry System	Gantry Robot Systems with Linear Motor and Optical Linear Encoders
Conveyor Width Adjustment	Auto Width Adjustment; Bottom-Up Clamping; In-line SMEMA

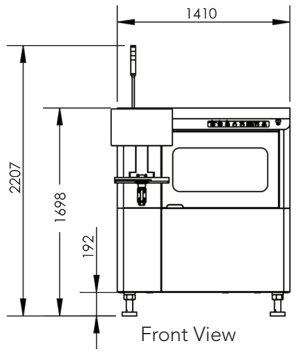
PCB Dimension	Standard
Maximum PCB Size (L x W)	620mmx620mm (24.4"x24.4") Option: 810mmx620mm (31.8"x24.4")
Minimum PCB Size (L x W)	50x50mm (2"x2")
Maximum PCB Inspectable Area (L x W)	620mmx613mm (24.4"x24.1") Option: 810mmx613mm (31.8"x24.1")
Maximum PCB Thickness	7mm (0.27")
Minimum PCB Thickness	0.5mm (0.02")
Maximum PCB Weight	3kg
Top clearance of PCB	50mm
Bottom clearance of PCB	70mm
Panel Edge Clearance	3.5mm
PCB Transport Height	890mm - 965mm
PCB Temperature	Ambient operating temperature is ~5°C to 40°C, maximum PCB temperature 80°C.

** Based on system configuration.*

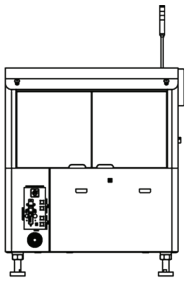
Specifications are subject to change.

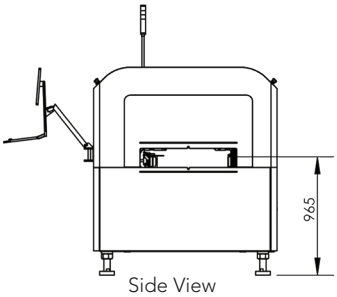
Installation Specification

System footprint (Width X Depth X Height)	1410mm x 1500mm x 2207mm
Weight	~1350 kgs
Electrical Supplies	100-120 V, 16A/200-240V, 8A Single Phase
Air Requirement	0.6 Mpa/85 psi

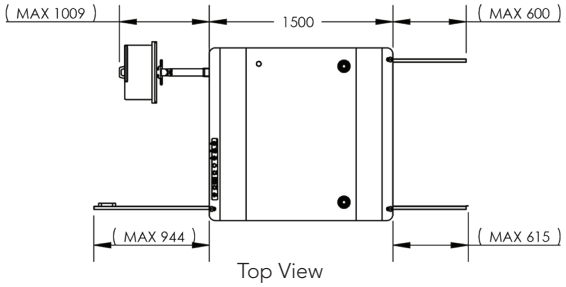


Front View


Back View



Side View



Top View

V510i DUO

System Performances	
Inspection Functions	Missing, Offset, Skewed, Polarity, Billboard, Tombstone, Lifted/Bent Leads, Excess/Insufficient Solder, Overturn, Bridging, Wrong Part (OCV Marking), Pin Through Hole (Solderability & Pin Detection), Package Coplanarity, Lifted Lead (Height Measurement), Foreign Material Detection, Polarity Dimple Measurement
Board & Component Level Tracebility	Camera-Read Barcodes; External Barcode Reader Configured; OCR Capability with Batch Code Logging

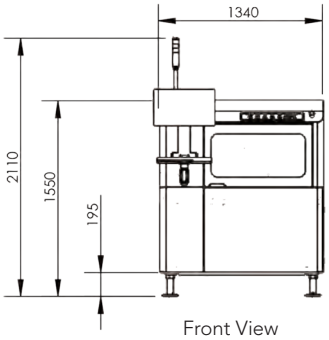
System Hardware	
Operating System	Windows 10 Pro (64 bit)
Optical Resolution & FOV Size	12MP Coaxpress Camera Default: 60 x 45 mm @ 15 µm telecentric lens* Option: 53 x 39 mm @ 13 µm telecentric lens*
Inspection Speed	12MP @ 15µm resolution: 45-60cm²/sec
3D Technologies	Phase Shift Profilometry's (PSP) Methodology with 4-way projectors
Lighting Module	Concurrent Lighting Module
X-Y Gantry System	Gantry Robot Systems with Linear Motor and Optical Linear Encoders
Conveyor Width Adjustment	Auto Width Adjustment; Bottom-Up Clamping; In-line SMEMA

PCB Dimension	Standard	Tranversal
Maximum PCB Size (L x W)	DL Equal: 330mmx235mm (13"x9.2") Single Lane: 330mmx420mm (13"x16.5")	DL Equal: 330mmx235mm (13"x9.2") Single Lane: 330mmx420mm (13"x16.5")
Minimum PCB Size (L x W)	30mmx30mm (1.2"x1.2")	50mmx50mm (2"x2")
Maximum PCB Inspectable Area (L x W)	DL Equal: 330mmx228mm (13"x8.9") Single Lane: 330mmx413mm (13"x16.2")	DL Equal: 330mmx228mm (13"x8.9") Single Lane: 330mmx413mm (13"x16.2")
Maximum PCB Thickness	4mm (0.15")	
Minimum PCB Thickness	0.5mm (0.02")	
Maximum PCB Weight	3kg	
Top clearance of PCB	50mm	
Bottom clearance of PCB	70mm	
Panel Edge Clearance	3.5mm	
PCB Transport Height	875mm - 965mm	
PCB Temperature	Ambient operating temperature is ~5°C to 40°C, maximum PCB temperature 80°C.	

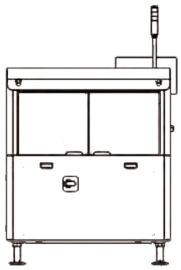
* *Based on system configuration.*

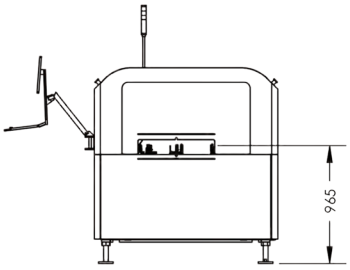
Specifications are subject to change.

Installation Specification	
System footprint (Width X Depth X Height)	1340mm x 1500mm x 2110mm
Weight	~1200 kgs
Electrical Supplies	100-120 V, 16A/200-240V, 8A Single Phase
Air Requirement	NA

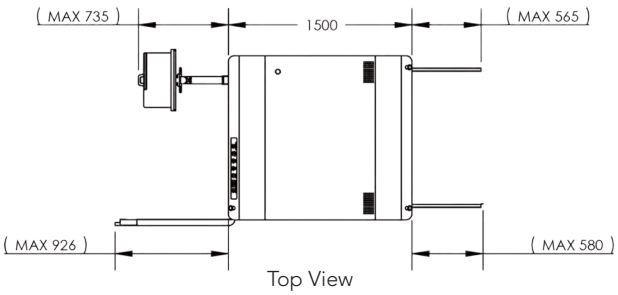


Front View


Back View



Side View



Top View

V510i SE

System Performances	
Inspection Functions	Missing, Offset, Skewed, Polarity, Billboard, Tombstone, Lifted/Bent Leads, Excess/Insufficient Solder, Overturn, Bridging, Wrong Part (OCV Marking), Pin Through Hole (Solderability & Pin Detection), Package Coplanarity, Lifted Lead (Height Measurement), Foreign Material Detection, Polarity Dimple Measurement
Board & Component Level Tracebility	Camera-Read Barcodes; External Barcode Reader Configured; OCR Capability with Batch Code Logging

System Hardware	
Operating System	Windows 10 Pro (64 bit)
Optical Resolution & FOV Size	12MP Coaxpress Camera Default: 60 x 45 mm @ 15 µm telecentric lens* Option: 53 x 39 mm @ 13 µm telecentric lens* Option: 32 x 24 mm @ 8 µm telecentric lens*
Inspection Speed	12MP @ 15µm resolution: 45-60cm²/sec
3D Technologies	Phase Shift Profilometry's (PSP) Methodology with 4-way projectors
Lighting Module	Concurrent Lighting Module
X-Y Gantry System	Gantry Robot System with Ball Screw, Servo Motor and Magnetic Linear Encoder
Conveyor Width Adjustment	Auto Width Adjustment; Bottom-Up Clamping; In-line SMEMA

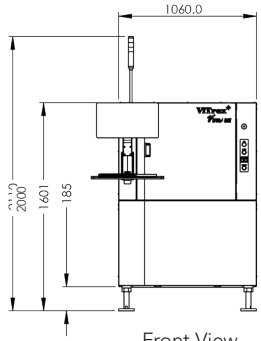
PCB Dimension	Standard
Maximum PCB Size (L x W)	FDL: 510mmx250mm (20"x9.8") Single Lane: 510mmx540mm (20"x21.2")
Minimum PCB Size (L x W)	50x50mm (2"x2")
Maximum PCB Inspectable Area (L x W)	FDL: 510mmx243mm (20"x9.5") Single Lane: 510mmx533mm (20"x20.9")
Maximum PCB Thickness	4mm (0.16")
Minimum PCB Thickness	0.5mm(0.02")
Maximum PCB Weight	3kg
Top clearance of PCB	50mm
Bottom clearance of PCB	100mm
Panel Edge Clearance	3.5mm
PCB Transport Height	875mm - 965mm
PCB Temperature	Ambient operating temperature is ~5°C to 40°C, maximum PCB temperature 80°C.

* *Based on system configuration.*

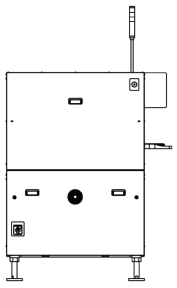
Specifications are subject to change.

Installation Specification

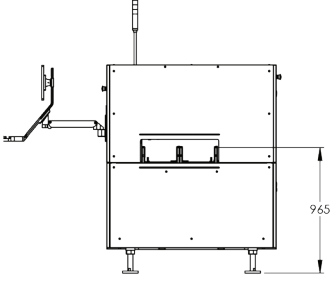
System footprint (Width X Depth X Height)	1060mm x 1303mm x2000mm
Weight	~830 kgs
Electrical Supplies	100-120 V, 16A/200-240V, 8A Single Phase
Air Requirement	NA



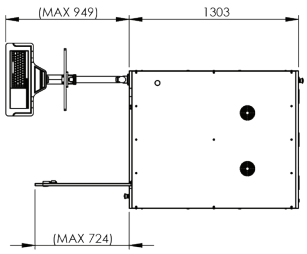
Front View



Back View



Side View



Top View