VECTRO®2

AUTOMATED NON-CONTACT INSPECTION AND MEASUREMENT

ISO 17025 accredited

THIRD DIMENSION
ADVANCING MANUFACTURING

REDUCE COSTS, IMPROVE QUALITY AND INCREASE PRODUCTIVITY

Vectro2® is an optical profile measurement system for robotised measurement and control which offers significant improvement in:

- Traceability
- Repeatability
- Cost saving.

Vectro®2 can autonomously acquire accurate and traceable measurement data, 24/7/365. Furthermore, the repeatable nature of using a robot ensures measurements are taken consistently, in the correct location, and are not dependent on a human operator's skill and judgment. This is of particular importance where strict quality management programs are in place and/or where traceability is required.

By feeding measurement data back into the upstream production process, defects can be identified and rectified early, quality ensured, and waste eliminated. In addition, the inspection and measurement process itself can be adjusted in real time to optimise the process.

DESIGNED FOR AUTOMATION

Vectro®2 integrates with both conventional industrial robots and the latest generation of collaborative robots (cobots). When deployed on the latter, Vectro®2 provides an advanced automated non-contact inspection and measurement system that can function safely alongside human operators without the need for fences, light curtains, or other cumbersome safety devices.

For some of the most popular collaborative robots, such as the Fanuc CRX range, or the Universal Robots e-series, 'plug-in' software is available that fully integrates Vectro functionality into the graphical user interface (GUI) on the teach pendant. Vectro commands can simply be dropped into the program tree, and output results can quickly be configured to meet the user's needs.

POWERFUL 2D PROFILE MEASUREMENT CAPABILITY

In conjunction with a T-Series sensor, Vectro®2 measures and inspects discrete 2D profiles in a wide range of industrial applications in aerospace, automotive, power generation and consumer goods manufacturing facilities. Vectro®2 uses an advanced laser triangulation sensor to capture the profile of the feature under test from which the required measurement data is obtained. Using a standard set of virtual tools, Vectro®2 quickly and accurately measures features such as:

- Gap and flush
- Radii
- Chamfers
- Angles
- Welds
- Burrs

INDUSTRIAL COMMUNICATIONS PROTOCOLS

In many applications, Vectro®2 can be connected directly to the robot controller using TCP/IP to communicate over standard Ethernet hardware using Third Dimension's proprietary 'Direct' protocol.

In our 'plug and play' OEM solutions, this is all pre-configured, but for users wishing to deploy Vectro®2 on robots without a plugin, the widespread use of TCP/IP and the simplicity of Direct means that a competent integrator can quickly configure a custom solution for your needs.

In more complex cells, where multiple devices are required to interact, Vectro®2 can connect directly to a PLC and use either TCP/IP socket comms, or the Modbus TCP industrial protocol, to send and receive commands, and output measurement results.

Users wishing to create custom software applications to integrate Vectro®2 can take advantage of the optional **Link** software developers kit (SDK). **Link** provides all the tools and sample code necessary to rapidly develop powerful custom software applications within the .NET environment.

Measurement results can be stored locally or sent directly to a network location for archival and analysis in a QMS, PMS or SPC system, or fed back to other systems for real-time process control.

VERSATILE AND COMPATIBLE APPLICATION

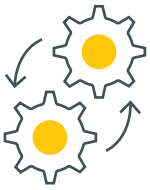
Vectro®2 uses Third Dimension's latest T-series compatible sensor heads, and work in both robots mounted and fixtured applications. For example, sensors can be mounted on the end of the robot arm so that it can inspect a stationary object such as a vehicle body, aerostructure or domestic appliance. Alternatively, the object under test can be held by the robot and presented to a static sensor, an approach typically used in CNC machine tending applications, or when there is a desire to add value to an otherwise non-productive transition or handling phase in the production process.

- Robot can take VChange2 sensor heads to the workpiece, or the workpiece to the VChange2 sensor heads.
- Measure and inspect parts without impacting value added production.
- Supports industry standard TCP/IP and Modbus TCP communications over standard Ethernet hardware.
- **Link** SDK available for custom software development.

OEM SOLUTIONS

Third Dimension design and manufacture GapGun® (hand-held) and Vectro® (robotic) noncontact precision measurement systems. Established in 1995, we have a long track record of supplying non-contact optical measurement equipment and services to the largest names in aerospace, automotive and energy sectors worldwide.

Working closely with the world's leading robot OEMs, Third Dimension has developed off-the-shelf Vectro solutions providing you with a plug and play experience when automating critical inspection and measurement tasks. These 'OEM Solutions' include everything you need to deploy Vectro®2 on a particular robot, and provide a highly integrated, fully tested solution right out of the box.



DESIGNED FOR AUTOMATION

Compatible with the latest generation of industrial and collaborative robots from the world's leading OEMs.

PRE-CONFIGURED SOLUTIONS

All-in-one packages of hardware and software, pre-configured for deployment on specific collaborative and industrial robots.

ACCURATE, REPEATABLE, AND TRACEABLE

Robotically guided measurements eliminate human error and ensure accurate results every time. T-series sensor heads come with full calibration certificates for proper traceability.

AUTOMATIC MANUFACTURING DECISIONS

Vectro®2 automates checking of parts against their dimensional specification with real-time, data-driven, decisions for QC and process control actions.

MODULAR AND VERSATILE

Vectro®2 is compatible with the new VChange2 sensor heads, allowing the measurement of a diverse range of feature shapes, sizes and surface types.

EASY AND QUICK TO INTEGRATE

Buy a pre-configured OEM solution pack for rapid deployment or create a custom software application in the .NET environment using the LINK SDK.

SENSOR SPECIFICATION

T60

DETAIL	FEATURE
Size (inc. protective jacket)	W x D x H 56 x 99 x 41 mm (1½ x 4 x 2¼ ")
Field of view	60 mm (2.36")
Laser	Violet: Class 2M, 405nm
Operating temperature	0°C – 40°C (32°F - 104°F)
Shock protection	Shock protection jacket on sensor
Size of features that can be measured	0.3 – 25 mm (0.01 – 0.98") Gap 1 – 25 mm (0 – 0.98") Flush Defined by specification D19-034. Sensor head include ISO 17025 calibration and certificate
Storage temperature	-20°C to 60°C (-4°F to 140°F)
Weight	170g (5.9oz)

SENSOR MOUNT	
Sensor attachment	VChange2
Sensor compatibility	T-Series only
Sensor mount cable (power and data)	SMA cable, 3m, 5m, or 10m
Robot flange compatibility	Robot specific intermediate plate required

COMPATIBLE PC SOFTWARE

SPC3d

SPC3d Software Pack

For configuring Virtual measurement tools, data logging, reviewing measurements

LINK

Link Software Pack

Allows custom .NET programs to be written controlling the Vectro®2 Devices

INSPECT

Inspect Software Pack

For manual and interactive analysis of measurement data

INLINE

Inline Software Pack

Allows a large overhead display of measured results

VECTRO®2 TECHNICAL SPECIFICATION

CONTROLLER

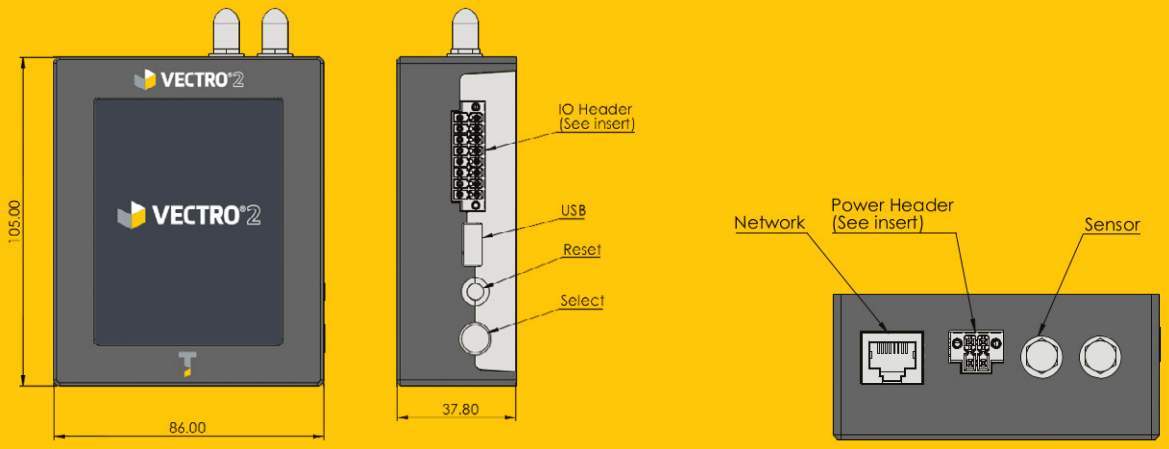
Power rating	6W (12V @ 0.5A)
Screen	97mm (3.8”) Daylight readable, full colour, high resolution LCD touchscreen 640 x 480px
User interface	Touchscreen, power/reset button
Feedback	Audio output
Storage capacity	2GB internal storage
Peripheral devices	USB 2.0 port
IP rating	IP50
Ethernet	100Mbps Fast ethernet (100BaseTX)
Operating temperature	0 to 40C (32 to 104F)
Storage temperature	-20 to 60C (-4 to 140F)
Size	116 x 134 x 46.5mm (5.3 x 1.8 x 4.5”) W x D x H
Weight	460g (16oz)
Software	GapGun version 8 software
Supported network protocols	TCP/IP, Modbus TCP

OEM SOLUTION PACKS

Vectro for FANUC	Includes KAREL program, plug-in software application for the tablet, teach pendant (CRX range), custom sensor mount kit, Vectro®2 for Fanuc User Guide, cable guide kit (optional)
Vectro for Universal Robots	Includes certified URCap software plugin for teach pendant, custom sensor mount kit, Vectro®2 for Universal Robots User Guide, Cable guide kit (Dresspack) – (optional)

WARRANTY AND SERVICE

Maintenance and service	1-year warranty as standard. Further options and details available from your local distributor



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Authorised Distributor

CUSTOMERS

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GapGun and Vectro systems are designed, developed and manufactured by:

THIRD DIMENSION
ADVANCING MANUFACTURING

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