



# AUTOMATED NON-CONTACT INSPECTION AND MEASUREMENT

ISO 17025 accredited



**THIRD DIMENSION**  
ADVANCING MANUFACTURING

# REDUCE COSTS, IMPROVE QUALITY, BOOST PRODUCTIVITY

Vectro®2 is an optical profile measurement system for automated measurement and control of critical features in aerospace, automotive, consumer goods, and many other manufactured products.

Deployed as part of an automated cell, Vectro®2 will autonomously acquire accurate and traceable measurement data, 24/7/365. Measurements are taken consistently, in the correct location, while the automated system eliminates operator induced variation. This high integrity data can be used to support robust quality control procedures and drive advanced closed-loop process control. By feeding measurement data back into the upstream production process, real-time adjustments can be made, eliminating defects, improving quality, and reducing costs.

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.

## 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



# INTEGRATION

Vectro®2 provides the integrator with multiple integration options; For a simple cell with basic functionality, the device can be connected directly to the robot controller using TCP/IP to communicate over 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. Vectro also supports digital IO, providing a simple way to trigger the device or send control and status signals to other devices.

Where multiple devices are required to interact in a cell, Vectro®2 can connect directly to a PLC using either TCP/IP socket comms, or the Modbus TCP industrial protocol, to send and receive commands, and output measurement results.

For more complex cells and fully customised solutions, Third Dimension offers the LINK software developers kit (SDK). LINK provides an API that exposes the full functionality of the device, enabling programmers to develop custom software applications within the Windows .NET environment. There are several such applications available commercially from independent Third Dimension partners.

Depending on the method of integration, measurement data can be output directly to a file in CSV format or pre-processed using a custom logger for direct compatibility with commercially available QMS, PMS or SPC software packages.

Vectro may also be utilised as a process control sensor, feeding back real-time measurement data for automatic adjustment of the manufacturing process.



# OEM SOLUTION PACKS

Working closely with the world's leading robot OEMs, Third Dimension has developed off-the-shelf Vectro solutions providing a plug and play experience when automating critical inspection and measurement tasks. These 'OEM Solutions', currently available for the Fanuc CRX and Universal Robots e-Series range of collaborative robots, provide a highly integrated, fully tested solution right out of the box.

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For Fanuc CRX series collaborative robots

Includes plug-in software application, sensor mount kit with ISO9409-1 50mm flange adaptor, 2 piece SMA to BNC cable kit for internal cable routing, Quick Start Guide.

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For Universal robots e-Series

Includes certified URCap software plugin for teach pendant, sensor mount kit with ISO9409-1 50mm flange adaptor, Quick Start Guide, Cable guide kit (optional).

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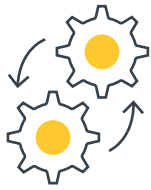
# VECTRO INTEGRATORS

Third Dimension are building a global network of independent Vectro Integrators, or VI's. VI's are automation specialists, robot integrators trained and supported by Third Dimension, who offer complete, turnkey, automated inspection and measurement solutions based on Vectro.

# VERSATILE AND COMPATIBLE

- Uses the latest VChange2 compatible, T-series, sensor heads as GapGun Pro2
- Can be mounted on the robot arm, or a static fixture
- Add value to a non-productive transition or handling phase in the production process.
- Multiple, industry standard integration options
- Plug and Play cobot solutions
- LINK software developers kit (SDK) for creation of custom software applications.





## 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.



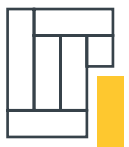
## ACCURATE, REPEATABLE, AND TRACEABLE

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



**Sensor head T60-V**



**Sensor head T15-M**

## T60

Field of view	60mm
Laser	Class 2M, 405nm
Bias / Accuracy	<0.040 (Flush), <0.060 (Gap)
Repeatability (Std. dev.)	<0.010 (Flush), <0.025 (Gap)
Size	41mm x 56mm x 99mm
Weight	170g

## T15

Field of view	15mm
Laser	Class 2M, 405nm
Bias / Accuracy	<0.030 (Flush), <0.030 (Gap)
Repeatability (Std. dev.)	<0.010 (Flush), <0.015 (Gap)
Size	36mm x 60mm x 83mm
Weight	175g

## 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	Range of ISO9409-1 intermediate plates available for popular robots

## COMPATIBLE PC SOFTWARE



### SPC3d Software Pack

For configuring Virtual measurement tools, data logging, reviewing measurements



### Link Software Pack

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



### Inspect Software Pack

For manual and interactive analysis of measurement data



### Inline Software Pack

Allows a large overhead display of measured results

# VECTRO<sup>®</sup>2 TECHNICAL SPECIFICATION

## CONTROLLER

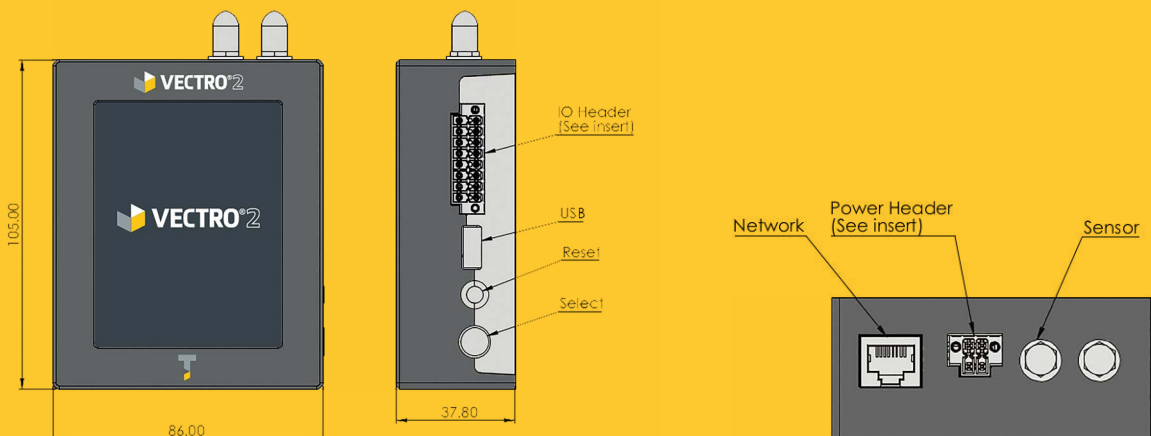
Power rating	6W (12V @ 0.5A)
Screen	97mm (3.8") Daylight readable, full colour, high resolution LCD touchscreen 640 x 480px
User interface	Touchscreen, power/reset button
Feedback	Audio output
Storage capacity	2GB internal storage
Peripheral devices	USB 2.0 port
IP rating	IP50
Ethernet	100Mbps Fast ethernet (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 <sup>®</sup> 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 <sup>®</sup> 2 for Universal Robots User Guide, Cable guide kit (Dresspack) – (optional)

## WARRANTY AND SERVICE

- 12 months warranty as standard on Vectro<sup>®</sup>2 and T-Series sensor heads.
- Maintenance contracts available for hardware and software
- Bespoke software and hardware development
- Please contact your local VI or sales@third.com for more information.



# GET IN CONTACT

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# CUSTOMERS

Third Dimension's distribution network serves customers in 30+ countries worldwide. These include:



ASTON MARTIN



Rolls-Royce

BOMBARDIER



Mercedes-Benz



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

**THIRD DIMENSION**  
ADVANCING MANUFACTURING

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