

# THE GAPGUN PRO

## A REVOLUTIONARY STEP IN LASER MEASUREMENT.







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# THE GAPGUN PRO PROVIDES UNRIVALLED LEVELS OF PERFORMANCE AND PROFILE MEASUREMENT CAPABILITIES.

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## ULTRA FAST MEASUREMENT CAPABILITY

GapGun Pro's superfast processor means that measurements can be collected faster than ever before, with speed improvements of up to 20x over manual techniques, reducing cycle time and increasing efficiency.

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## UNRIVALLED CONNECTIVITY OPTIONS

GapGun Pro stores data internally as it measures and automatically connects to WI-FI for seamless productivity. Results can be downloaded at any time using integrated wireless link, USB port, docking station or Ethernet.

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## BEST USER INTERFACE ON THE MARKET

Full colour graphical checkplans show operators how and where to measure. On-screen compass and colour coding guides positioning relative to the part, whilst sounds and vibrations alert operators of in/out tolerance conditions.

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## COMPLETELY PORTABLE FOR OPERATOR FLEXIBILITY

GapGun Pro can operate completely standalone for around 4 hours with its high capacity internal battery, taking measurements with the same accuracy, reliability and performance as when tethered to a PC. For a further 6.5 hours autonomous use, simply attach it to its lightweight clip on battery pack.

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## HIGH RESOLUTION & PRECISION MEASUREMENT CAPABILITY

GapGun Pro can be specified with multiple field of view and resolution VChange sensor, to take a wide range of measurements. GapGun Pro RET (Resolution Enhancement Technology) uses over 4000 data points per measurement to give real world repeatability of 10µ or maximum feature size of 50mm.

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## ROBUST CONSTRUCTION

GapGun Pro's evolved, rugged design with shock protection sensor jacket makes it durable for a wide range of challenging and unique manufacturing environments.

# THE GAPGUN PRO COMES EQUIPPED WITH A MARKET LEADING RANGE OF FEATURES.



## HIGH RESOLUTION TOUCH SCREEN

The GapGun Pro's large colour touch screen is highly responsive, easy to navigate and best on the market, with 4x the resolution than that of previous GapGun models. Readable in a huge array of conditions, the high definition screen displays measurement instructions, results and analysis.



## VCHANGE SENSORS WITH HI-RANGE CAPABILITY

VChange sensors have a Hi-Range measurements capability which dynamically adjusts laser output to allow measurement on multiple surface conditions. GapGun Pro can measure anything from carbon fibre to high gloss black paint and chromes.



## AUTOMATIC SYNCRHONISATION

Set up the GapGun Pro either using its built-in teach mode, or via the GapGun Pro checkplan software on the PC. Thereafter, the GapGun Pro automatically synchronises both checkplans and measurement data in real-time with your corporate network, PC or laptop.



## FULLY CUSTOMISABLE TO YOUR REQUIREMENTS

The GapGun Pro comes ready configured to measure a wide variety of common applications. You can create your own infinite variations on these initial building blocks.



## STRAIGHTFORWARD SYSTEM GUIDES

The GapGun Pro menu system guides operators through even the most complex tasks. You can also easily customise the complete menu system to match your exact requirements and workflow.



## ON SCREEN RESULTS ANALYSIS

View cross sections of the measurement area and results analysis on-screen using standard red/green colouring conventions and warning sounds to indicate "go/no go" conditions.



## EXPORT RESULTS EASILY

GapGun Pro can fully customise its output and export results easily to Excel, CSV, PDF, SQL, XML and other file formats, as well as interface with most leading SPC packages such as QDAS.



## SHARE MEASUREMENT PLANNING

GapGun Pro connects to SPC3d and shares with multiple GapGuns, to create bespoke Virtual Tools and graphical measurement checkplans for complex applications.



## WI-FI CAPABILITY

GapGun Pro interfaces with your PC by Wi-Fi feeding results into automatic measurement reports.

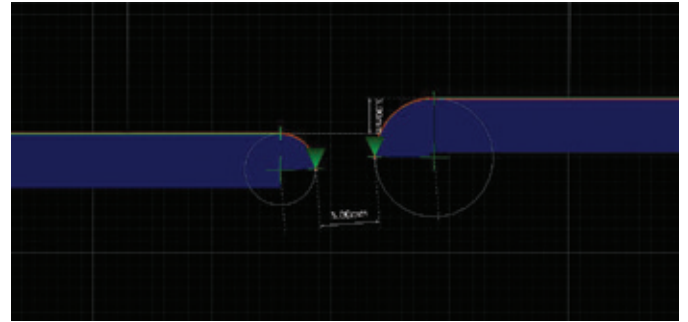




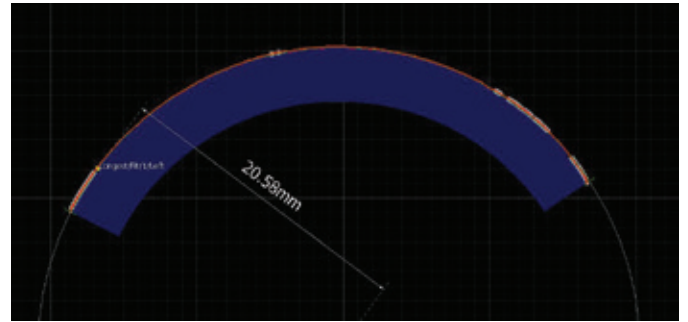




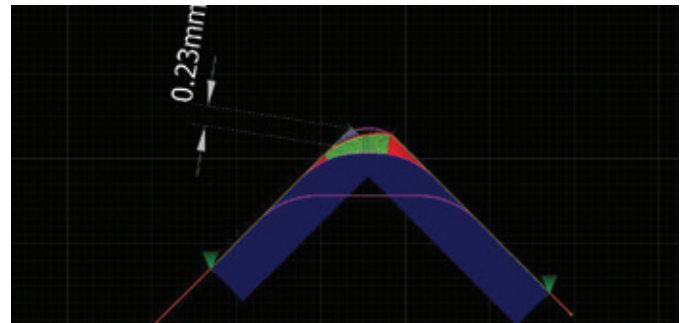
GAP & FLUSH



RADIUS



EDGE BREAK

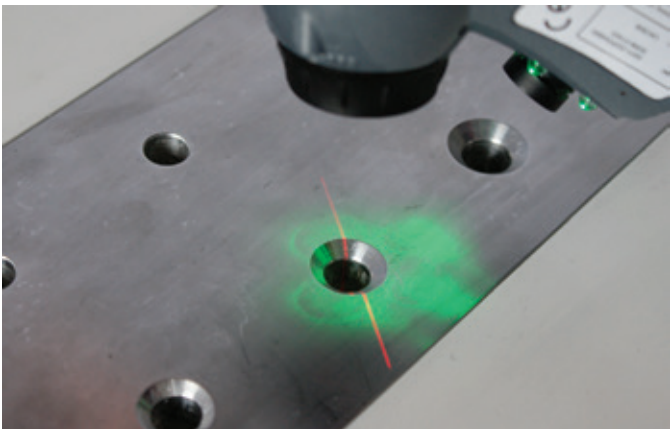
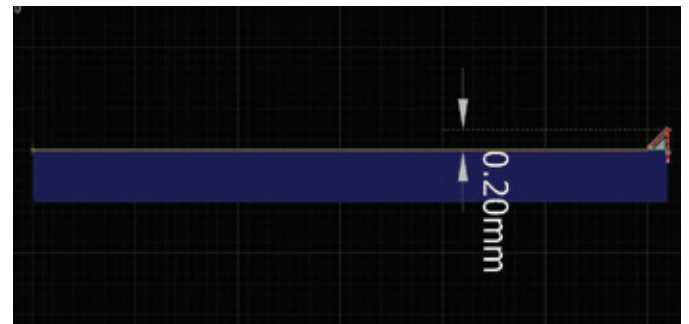


SCRATCH

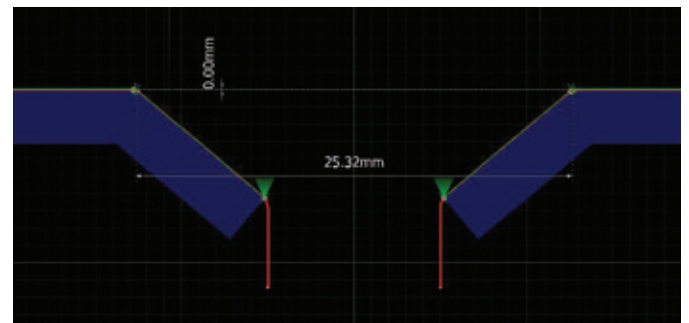




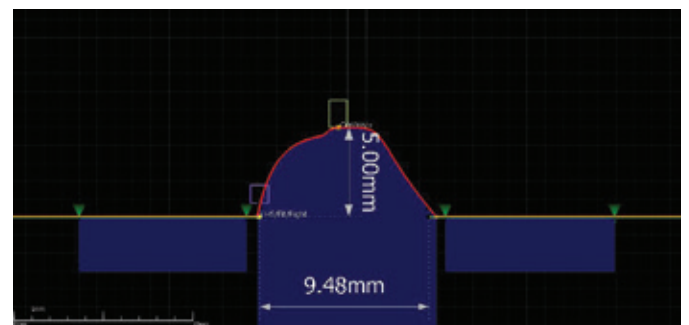
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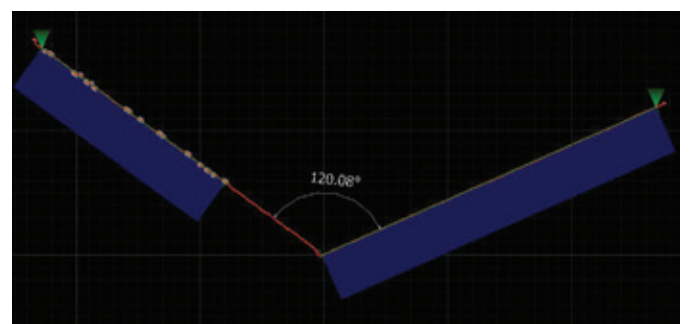
COUNTERSINK



WELD & SEAL



ANGLE









# MAXIMISE YOUR ACCURACY AND REPEATABILITY.

The GapGun Pro system comes equipped to operate either non-contact (no stand-offs) or contact (with stand-offs). Because adding or removing the standoffs takes only seconds, you can maximise performance by selecting the best method for each measurement point.

## USE THE GAPGUN PRO WITHOUT STAND-OFFS (NON-CONTACT)

- Where accuracy and repeatability are critical
- On any surfaces that are soft, plastic, or may move
- Where surface damage is a concern
- For hard to reach, concave, or restricted areas.



Non-contact measuring

## OTHERWISE, USE THE GAPGUN PRO WITH STAND-OFFS (CONTACT)

- Where speed is more important than accuracy (contact is approximately 15% faster)
- For measuring at arms length or on small complex features
- Where an application specific stand-off is used
- To train new operators.



Contact measuring

## FULLY INTEGRATED WI-FI CAPABILITY

GapGun Pro has a fully integrated Wi-Fi connection for totally autonomous measurement capability. This means it's possible to achieve instant results access direct to the PC with no additional hardware or cables required, giving operators enhanced portability and convenience on the shop floor.



Wi-Fi

## MULTIPURPOSE DESK DOCK

Used to download measurement plans and upload results data between the PC and the GapGun Pro, the desk dock is also an ideal place to dock and charge the GapGun Pro whilst not in use.



Desk dock

# SENSOR SPECIFICATION

## SENSOR TYPES

A vast range of measurements can be collected using just one system and Third Dimension's extensive range of interchangeable VChange sensors.

GapGun Pro's uniquely modular design enables the customer to interchange sensors for 4 different fields of view.



### 1. SUPER HIGH RESOLUTION: 7MM

Field of view: 6.5mm (0.26")  
RET resolution: 3 $\mu$  (0.0001")

Scratches, defects, fasteners, chamfers and profiles, turbine blades, small gap and flush, radii.

### 2. HIGH RESOLUTION: 15MM

Field of view: 25mm (1.0")  
Max gap & flush: 10mm (0.4")  
RET resolution: 11 $\mu$  (0.0004")

Aerospace high accuracy gap and flush, large fasteners.

### 3. STANDARD: 40MM

Field of view: 55mm (2.2")  
Max gap & flush: 25mm (1")  
RET resolution: 24 $\mu$  (0.0010")

Generic, automotive or aerospace gap and flush, interiors, sealants, ring gauges.

### 4. WIDE ANGLE: 80MM

Field of view: 90mm (3.5")  
Max gap & flush: 50mm (2")  
RET resolution: 40 $\mu$  (0.0016")

Large gap and flush, profile measurement, CAD verification.

## THE VCHANGE SENSORS

GapGun Pro includes Third Dimension's ergonomic VChange sensor interface, which allows the sensor to remove, swap and reattach sensors, in just seconds, making multiple sensor use on the shop floor easier than ever before.



The VChange sensor system

## ADJUSTABLE LASER CAP

Third Dimension's Hi-Range sensor technology enables a multitude of challenging surface finishes to be measured. Its patented adjustable laser cap can uniquely shorten or split the laser line to measure a range of complex features.



Split laser line adjustment, small laser line adjustment, long laser line.



# TECHNICAL SPECIFICATION

## MEASUREMENT CAPABILITY

Accuracy	GapGun Pro systems meet Cg, Cgk, 6-Sigma and VDA5 standards for their intended applications. Please contact us for detailed performance figures for your application.
Repeatability	Proven to <15% QS9000-MSA for a wide variety of measurement sections.
Output format	Customisable, including millimetres, inches and thousandths of an inch.
Surfaces	Measures all known automotive paints, carbon fibre, unpolished and galvanised metals including steel and aluminium, plastics and soft furnishings. Glass and mirrored surfaces can also be measured.
Operating principle	Laser triangulation with Resolution Enhancement Technology (RET).

## SOFTWARE

Virtual Toolkit™	Extensive toolkit that allows measurement of virtually any gap, flush, radius, scratch, chamfer, fastener, seal or profile. Add-on packs for specialised aerospace and automotive applications are available.
SPC	Use the GapGun Pro's built in SPC or link directly to your existing SPC software.
Data input	CAD data from file. Checkplans from MS Excel.
Results output	Freely customisable, including DMIS, QDAS, MS Excel, plain text, CSV, point cloud, MeasurLink, CM4d, SPC3d.
User interface	Simple creation of menus and graphics for GapGun Pro LCD.
Language	English, French, German, Spanish, Italian, Japanese, Korean, Chinese, etc.
Integration	Optional developers' SDK allows integration with third party software.

## MEASUREMENT SENSORS

Weight	150g (5oz)
Dimensions	65 x 105 x 60mm (2.6 x 4.1 x 2.4") W x D x H
Laser	Class 2M with automatic laser intensity adjustment.
Standoff	20mm (0.9") from front of head for Super High Resolution head. 50mm (2") from front of measurement head for all other head types.

## HANDLE

Weight	480g (17oz)
Dimensions	90 x 135 x 190 mm (3.5 x 5.3 x 7.5") W x D x H
Storage	2GB + 2GB internal MicroSD card.
Screen	97mm (3.8") Daylight readable, full colour, high resolution LCD touchscreen 640 × 480 pixel.
Input devices	Click and drag touchscreen, trigger and power/reset button.
User feedback	Dual audio output and vibrator for high noise environments.
Sensor rotation	Measurement sensor can be angled through +/-90 degrees, maximising accessibility and comfort.
Sensor Interface	Rotating quick release VChange interface.

## SYSTEM

Environment	IP50
Operation	0-40°C (32 -104°F) onboard temperature sensing.
Storage	-20 - 60°C (14 -104°F)
Connectivity	Connect directly to MS Windows™ networks via 100MBPS Fast Ethernet or 802.11 wireless LAN provided as standard, with optional radio link. Data download and interchange also available using USB.
Shock protection	Shock protecting cover on sensor and body, high impact plastic housing and internal shock sensor.
Included accessories	Wrist loop, belt clip, calibration check artefact, training artefact, standoff sets, clip on battery pack and battery charger.

## WARRANTY AND SERVICE

Maintenance and service	Agreements available from your local distributor.
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# WANT TO KNOW MORE ABOUT OUR MARKET LEADING GAPGUN PRO RANGE?

CALL : 03333 443 000

EMAIL : [info@third.com](mailto:info@third.com)

VISIT : [www.third.com](http://www.third.com)

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## OUR CUSTOMERS

Our distribution network serves customers in 25 countries worldwide. These include:



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GapGun systems are designed,  
developed and manufactured by

**THIRD DIMENSION**  
ADVANCING MANUFACTURING

For more information please visit: [www.third.com](http://www.third.com)



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Authorised dealer



# edge break +

Bring precision chamfer and radius inspection to the shop floor



- ▶ Gap
- ▶ Step
- ▶ Mismatch
- ▶ **Chamfers**
- ▶ Flush
- ▶ CAD Profiles
- ▶ Seals
- ▶ **Radii**
- ▶ Fasteners
- ▶ Scratches
- ▶ Rivets
- ▶ Weld Profiles

Edge Break inspection is a critical area of turbine manufacture. Sharp edges must be smoothed down to radii or chamfers of precise dimensions to ensure the correct and safe operation of components within a turbine. It is critical to ensure that there is no undue stress during operation that might reduce the working life of a component.

It is also a complex and difficult area to inspect. Historically, bespoke contact measurement systems have been slow and cumbersome, with the only shop floor alternative being imprecise manual gauges which rely on an operator's judgment rather than measured values, preventing any kind of traceability.

**The revolutionary and cutting edge GapGun® Edge Break+ system finally brings precision chamfer and radius inspection to the shop floor.**

*edge break*



#### **Ergonomics: The hidden innovation**

World leading ergonomics are incorporated into GapGun Edge Break+, making shop floor integration fast and simple as well as dramatically reducing training time for new operators.

GapGun Edge Break+ can be supplied with multiple, interchangeable standoffs that mirror measurable surfaces ensuring correct positioning and increasing operator comfort whilst maintaining measurement confidence. These standoffs replicate actual components for a comfortable fit and are made of a rugged yet non marring material, ensuring surface finish remains immaculate.

#### **Total traceability means total confidence**

Every measurement head is uniquely identifiable and supplied with a traceable calibration certificate along with a UKAS certified calibration artefact, ensuring you can be confident that every measurement you take is accurate.

Additionally, GapGun Edge Break+ includes a wide array of data logging options, allowing for limitless records of measurements. From logging images of profiles to integration with third party SPC software, full capability is offered meaning that any components inspected are dimensionally recorded forever.

#### **Industry proven hardware, global coverage**

Based on the industry proven GapGun<sub>3</sub>, Edge Break+ is fast, yet accurate, robust, yet ergonomic. Furthermore, with over 10 years of continual development and hundreds of installations worldwide, GapGun systems are an industry recognised shop floor standard.

With a network of distributors spread across more than 20 countries globally, local sales and support are easily available. To find out more information or to arrange a demonstration from a local distributor please visit [www.third.com](http://www.third.com).





## Customisation options create the perfect shop floor solution

Ergonomics can be further improved with a range of customisation options to ensure the installed solution closely matches your requirements. Not only can standoffs be customised to suit your measured product, but the modular design that is central to all GapGun products means that measurement heads are interchangeable and remotely operable.

Additionally, communication standards are also configurable to allow integration with corporate networks, allowing measurement data to be stored anywhere within your facility.

## Speed and accuracy come as standard

Using optical measurement techniques and laser triangulation, GapGun Edge Break+ can measure an edge feature on bright machined surfaces to accuracies as great as  $10\mu/0.0004"$  in as little as 2 seconds!

Inspection processes that have previously taken hours or even days can now be completed in a matter of minutes to repeatedly high accuracy, finally empowering operators on the shop floor to make decisions based on reliable dimensional data.

## How it works

GapGun Edge Break+ is an optical measurement system that uses a uniquely configured laser stripe as a datum measurement surface. Cutting edge software analyses the image data of the surface and checks the measured profile against dynamically created CAD data, showing the operator exactly how the part compares to nominal dimensions and warning when parts enter a "no go" condition. The profile of the surface, along with the upper and lower allowable profiles are shown on the GapGun Edge Break+'s large, colour touch screen providing instant feedback and allowing decisions to be made with confidence faster than ever before.

# Specifications

Field of view	7mm/0.3"
Resolution	Accuracy to 10µ/0.0004" (measurement capability)
Measurement speed	Typically 2 seconds per section
Weight	Approximately 0.5kg (1.1lb)
Dimensions	76x117x165mm (3.0x4.6x6.5")
PC interface	Wireless (802.11a, b or g) or Ethernet. Supports WEP, WPA-PSK, WPA2-PSK, IEEE 802.11x
Laser	1M or 2M, with automatic intensity adjustment
Storage	2Gb: Near limitless measurement capacity
Screen	Daylight readable 3.5" TFT full colour touch screen, 240x320 pixel
Sensor head features	Head can be removed or rotated for ease of access
Standoff	Multiple, interchangeable, customisable standoffs available. Measurement distance 20mm from surface to measurement head
Input devices	Touch screen and trigger, integrated USB port for input peripheral attachment
User feedback	Audio and visual indicators given, including colour coded go/no-go conditions
Environmental	IP50
Operation	0-40°C (32-104°F) with onboard temperature sensor
Storage	-10-40°C (14-104°F)
Warranty and service	12 months manufacturer's warranty, further maintenance and service agreements available from your local distributor

For more information please visit [www.gapgun.com](http://www.gapgun.com)

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# PRECISION AUTOMATED FEATURE MEASUREMENT

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FASTER, EASIER AND MORE COST  
EFFECTIVE THAN EVER BEFORE

**THIRD DIMENSION**  
ADVANCING MANUFACTURING



# VECTRO. DESIGNED FOR AUTOMATION

Vectro automates the advanced non-contact feature measurement capabilities of the GapGun Pro, Third Dimension's bestselling handheld laser measurement system.

It's simpler and faster delivering increased levels of accuracy and excellent returns on investment.



## For fast throughput of production quality checks

- Vectro and sensor mounted on a robot arm move to enable measurement of a part.



## For high precision break sharp edge applications

- Vectro and sensor mounted on a fixture, measuring a fixed part.
- Vectro and sensor mounted on a fixture, with a robot bringing the part to be measured.



## For offline metrology testing for research and development

- Vectro and sensor mounted in any fixtured or robotic configuration.

# VERSATILE AND COMPATIBLE

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Vectro works either robot mounted or in fixtured applications. The system includes a mounting plate that can be attached to your choice of robot.



# REDUCE COSTS, IMPROVE QUALITY AND INCREASE PRODUCTIVITY

Vectro improves productivity by enabling greater throughput, cutting inspection costs and reducing rework. All of this with the added benefit of improved quality.





01

**Fast and efficient**

Vectro measures quickly and automatically, allowing more to be manufactured every hour, without sacrificing quality.

02

**Accurate, repeatable and reliable**

Consistent positioning with fixtured or robotically guided measurements eliminates human error and ensures accurate results every time. VChange sensors come with full calibration certificates, traceability and a 3 year warranty.

03

**Automatic manufacturing decisions**

Vectro automates checking of parts against their dimensional specification with real-time go/no-go decisions, or statistical analysis.

04

**Modular and versatile**

Vectro is compatible with the full range of VChange sensor heads, allowing the measurement of a diverse range of feature shapes, sizes and surface types. For even greater versatility, Vectro is tool changer compatible to dynamically switch sensor heads.

05

**Easy to integrate**

Vectro can be built into any application with Third Dimension's easy-to-use Link integration software. Simple commands trigger measurements and retrieve results, leaving more time to focus on the production process.

06

**Dynamic user interface**

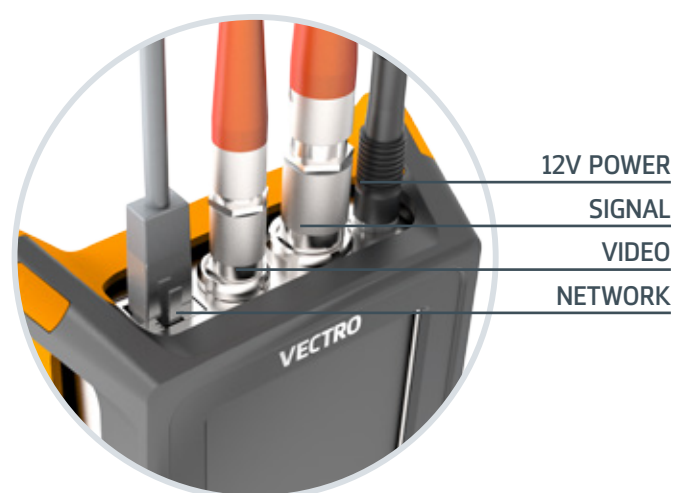
The Vectro display presents live profile information and measured values, making it even easier to focus on improving the quality of products.



# Automated feature measurement from a fully integrated system.

## THE VECTRO BASE SYSTEM INCLUDES:

- Vectro data collector
- Power converter
- Head mount
- GapGun 7.6 or later software to run on Vectro
- VChange sensor head(s) as required
- Controller to head mount cables
- Mains power leads
- Software pack(s) as required



## SENSOR TYPES

A vast range of measurements can be collected using just one system and Third Dimension's extensive range of interchangeable VChange sensors:

### 1. SUPER HIGH RESOLUTION: 7mm

Field of view: 6.5mm (0.26")  
RET resolution: 3μ (0.0001")



### 2. HIGH RESOLUTION: 15mm

Field of view: 25mm (1.0")  
Max gap & flush: 10mm (0.4")  
RET resolution: 11μ (0.0004")



### 3. STANDARD: 40mm

Field of view: 55mm (2.2")  
Max gap & flush: 25mm (1")  
RET resolution: 24μ (0.0010")



### 4. WIDE ANGLE: 80mm

Field of view: 90mm (3.5")  
Max gap & flush: 50mm (2")  
RET resolution: 40μ (0.0016")



# VECTRO TECHNICAL SPECIFICATION

## VECTRO CONTROLLER

Product Code	GG16-0614
Power Rating	6W (12V @ 0.5A)
Screen	97mm (3.8") Daylight readable, full colour, high resolution LCD touchscreen 640 x 480px
User interface	Click and drag touchscreen, trigger and power/reset button
Feedback	Audio output and Haptic feedback
Storage capacity	2GB internal storage
Peripheral devices	USB 2.0 port
IP Rating	IP 50
Ethernet	100MBPS Fast Ethernet (100BaseTX)
Operating Temperature	0 to 40°C (32 to 104°F)
Storage temperature	-20°C to 60°C (-4 to 140°F)
Size	116 x 134 x 46.5mm (4.5 x 5.3 x 1.8") L x W x D
Weight	460g (16oz)
Software	GapGun 7.6 or later (included)






## HEAD MOUNT

Product code	GG16-1488
Compatibility	Any VChange sensor: FOV7, FOV15, FOV40 or FOV80
IP Rating	IP50

## CONTROLLER TO HEAD MOUNT CABLES

Length	3000mm
Connector type	LEMO locking connectors

## COMPATIBLE PC SOFTWARE

GG17-0056	<b>SPC3d Software Pack:</b> for configuring Virtual measurement tools, data logging, reviewing measurements	
GG17-0067	<b>Inline Software Pack:</b> allows a large overhead display of measured results	
GG17-0078	<b>Link Software Pack:</b> allows custom .NET programs to be written controlling the Vectro	
GG17-0089	<b>Link remote tool Software Pack:</b> as above, with remote tool capability	
GG17-0090	<b>Inspect Software Pack:</b> for manual and interactive analysis of measurement data	

## POWER SUPPLY

Product code	GG04016
Voltage	12V

## SYSTEM

Standards	CE declaration of conformity
Measurement capability	Defined by specification D05031. Sensor heads include a calibration and certificate.

## WARRANTY AND SERVICE

Maintenance and service	Agreements available from your local distributor.
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# WANT TO KNOW HOW VECTRO CAN HELP REDUCE COSTS AND IMPROVE QUALITY?

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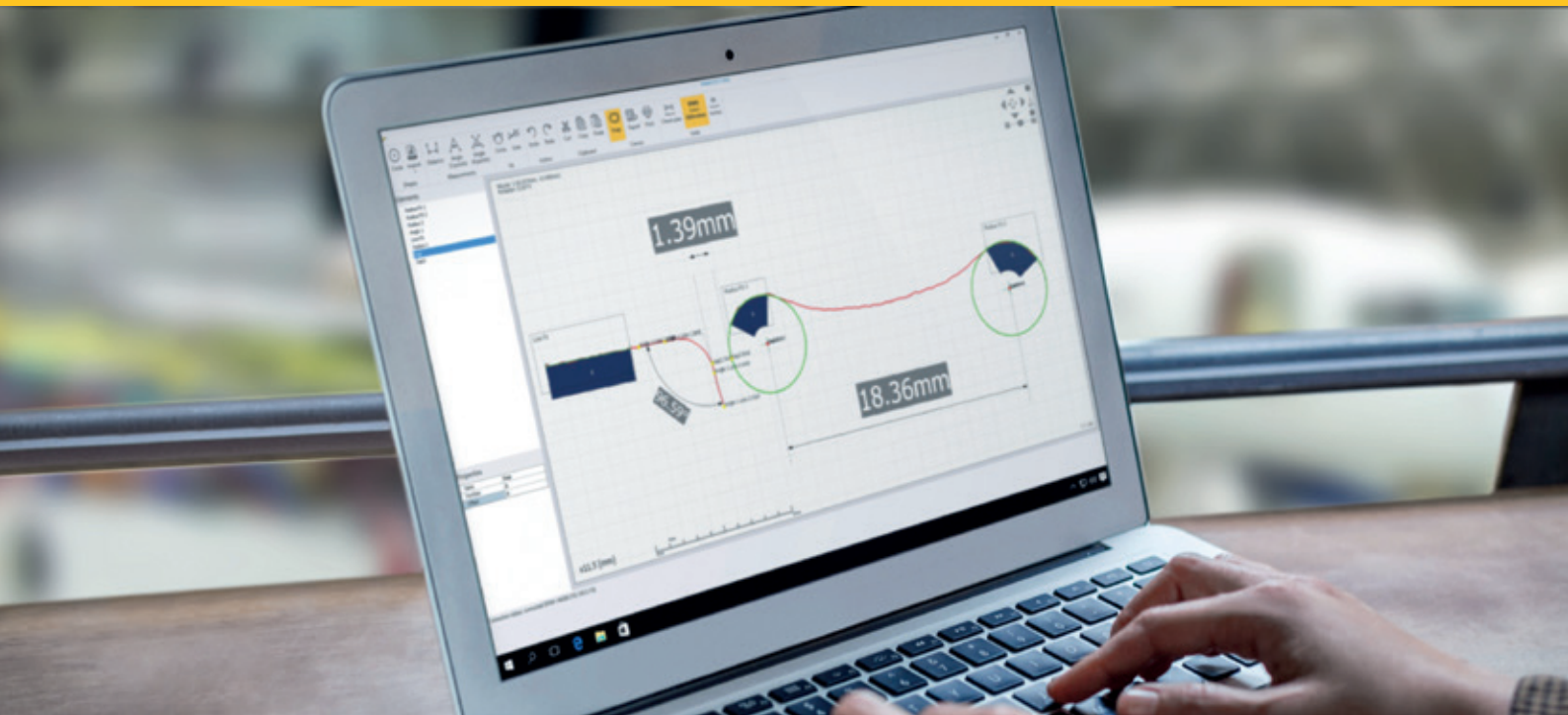
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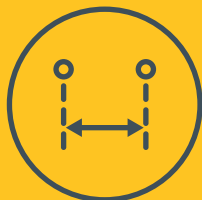
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# ULTRA-FLEXIBLE QUALITY INSPECTION SOFTWARE

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OPTIMISED FOR QUICK AND EASY ANALYSIS  
OF PARTS MEASURED BY GAPGUN OR VECTRO.  
SIMPLY CLICK, DRAG AND DROP.



Measure  
distances



Measure  
angles



Fit circles

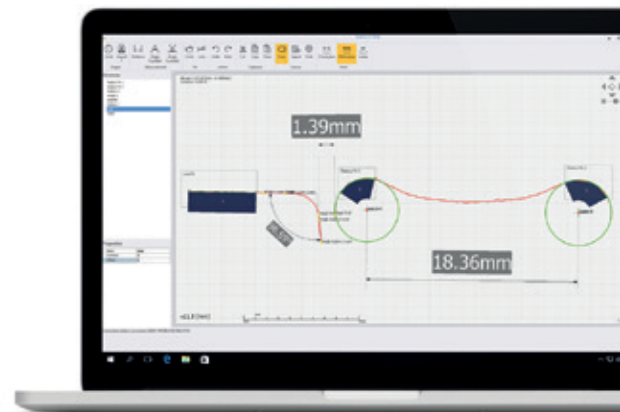


Fit lines



Compare  
against CAD

# INSPECT. THE ULTIMATE ANALYSIS TOOL



Inspect is the ideal tool for replacing old contracer or shadowgraph techniques.

Use Inspect with GapGun or Vectro laser measurement systems to easily perform offline metrology checks. Inspect enables live analysis of complex shapes that include aero engine parts such as, fan blades and compressor discs.

Inspect offers simple, digital inspection that can be completed in just seconds. Automatically record results that are traceable and repeatable. Generate reports that enable quick decisions to be made with confidence.

## 01

### Digital, accurate and reliable

Obtain and record traceable and accurate results that are superior to interpretive contracer and shadowgraph techniques.

## 02

### Intuitive, quick and easy

Use simple tools for instant analysis post measurement. Inspect also eliminates the need for tool configuration in SPC3d and minimises user training.

## 03

### Flexible

Freely define and extract dimensions in as many different ways as is required.

## 04

### Definitive

Check the part is built to specification by comparing directly against the original CAD design data.

#### TECHNICAL SPECIFICATION

Measurement functions	Distance, 3 point angle, 4 point angle
Fitting functions	Circle fit, line fit
Comparison functions	IGES CAD file (2D), Circle
Export functions	PNG image, Print (supports PDF printers)
Supported units	Millimetres or inches
Compatible data collectors	GapGun Pro, GapGun MX+, Vectro
Compatible software	System software v7
Compatible sensor heads	Any VChange sensor head
Supported operating systems	Windows 7-10
Interface	Drag/drop interface, unlimited undo/redo, click to measure, live measurements

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