



# Handheld Probe Coordinate Measuring Machine XM Series

Portable, Shop Floor CMM

# Application Examples



# Conventional Measuring Instruments

## Coordinate measuring machines

- Difficult to program.
- Requires timely maintenance and calibration.
- Part inspection takes a long time.



## Handheld tools

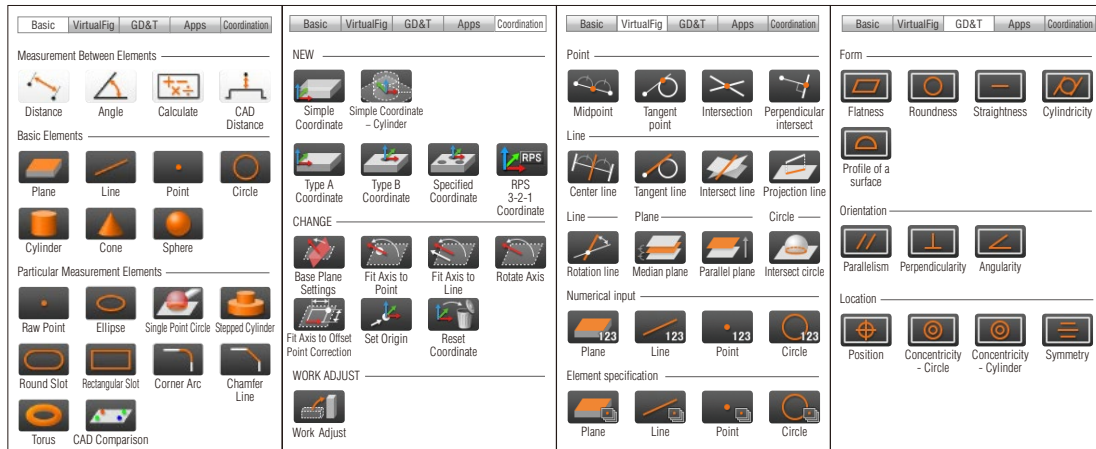
- Difficult to measure complex dimensions.
- GD&T measurements are not possible.
- Manual data recording.



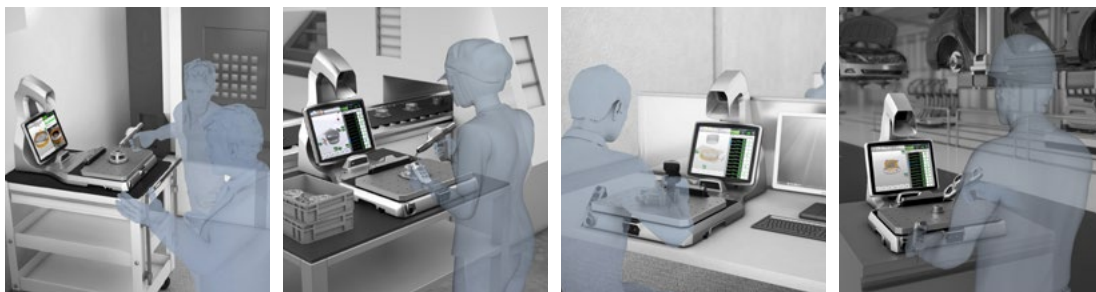
# Handheld Probe Coordinate Measuring Machine



Dimensional measurements, GD&T, and 3D CAD comparisons all with one system.



Measurement can be done by anyone, anywhere.



# Stamping

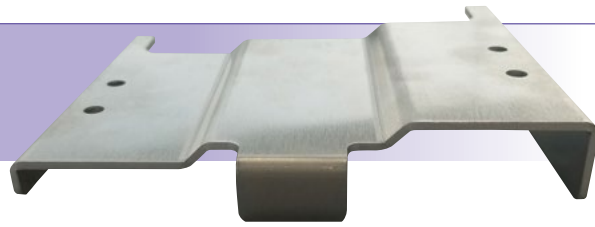
Measurement Example  
**1**



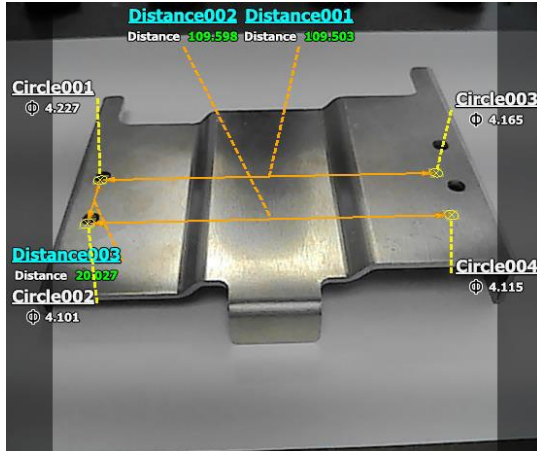
Distance



Angle

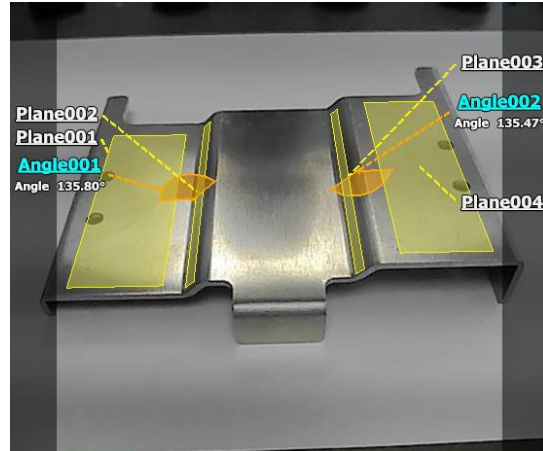


Measurement method



Level difference pitch measurement

The distance between the centers of holes on different levels can be measured.



Bend angle measurement

The bend angle and height difference of a pressed metal plate can be measured.

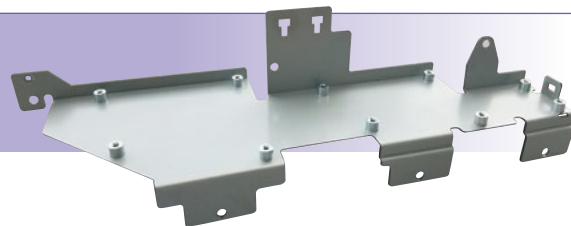
Measurement Example  
**2**



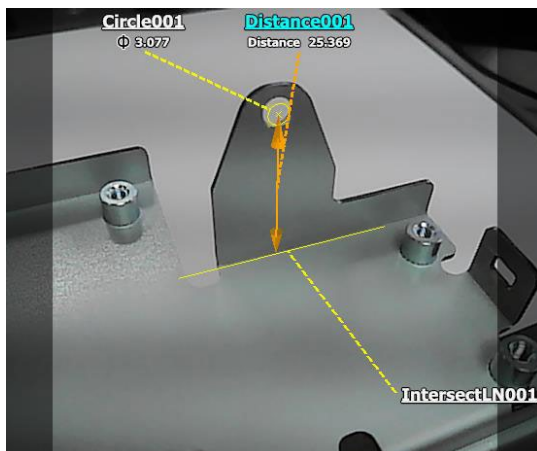
Intersect line



Specified Coordinate

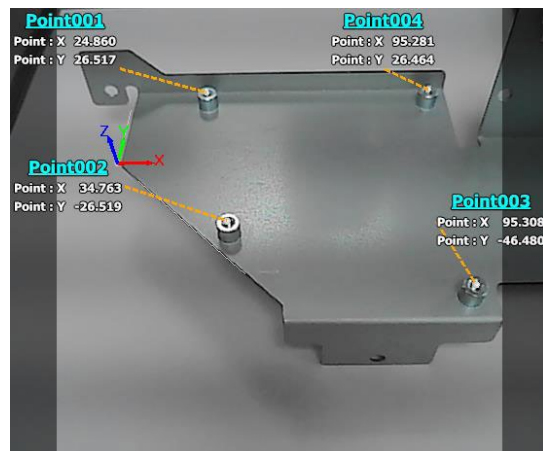


Measurement method



Distance from virtual line to hole position

The distance from a virtual line (the intersecting line between two planes) to a hole position can be measured.



Measurement of the XY coordinates of a boss-shaped screw hole from a virtual point

The XY coordinates of a boss-shaped screw hole on the metal plate can be measured.

# Machining

Measurement Example 1



Circle



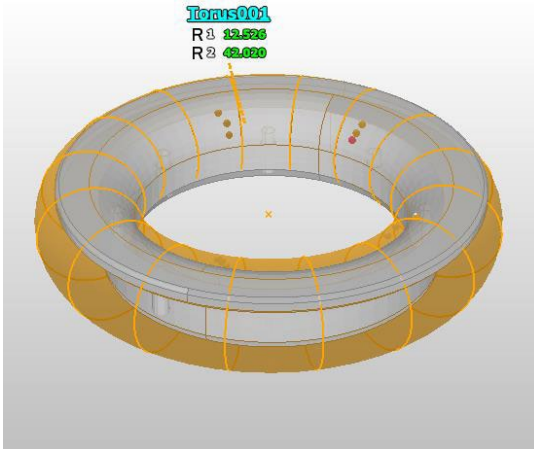
Torus



CAD Comparison

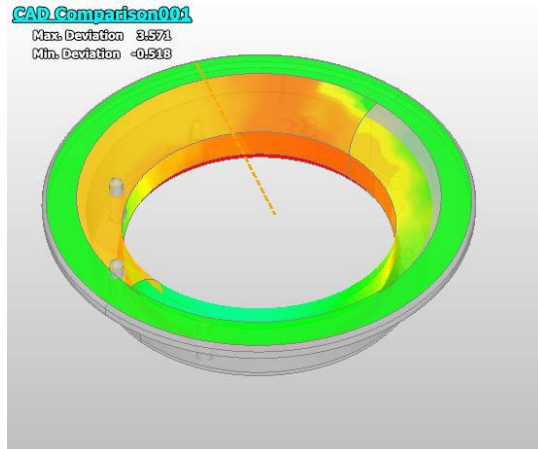


Measurement method



Inner diameter measurement of a curved shape

Curved shapes can be measured.



3D CAD comparison

The difference between the data and the 3D CAD data (the status of the remaining thickness and the parts that remain after trimming) can be quantified and visualized as a color map.

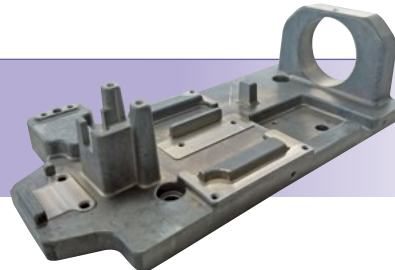
Measurement Example 2



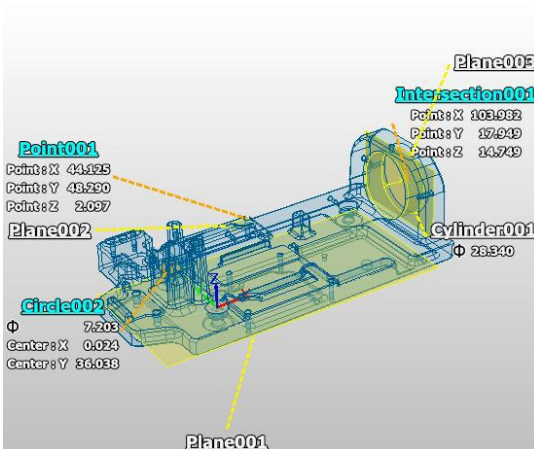
Specified Coordinate



Profile of a surface

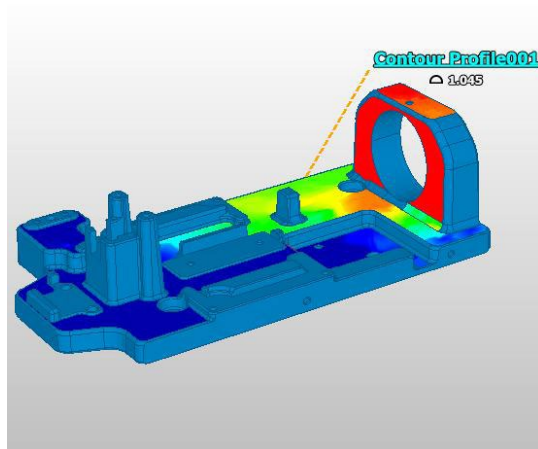


Measurement method



Coordinate measurement

The coordinates from the origin (the distance from the origin in the X, Y, and Z directions) can be measured.



Profile tolerance measurement

The profile tolerance of the processed surface can be measured.

Measurement Example  
**3**



Position



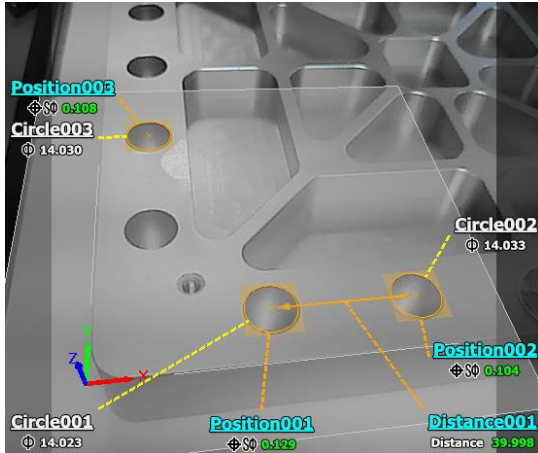
Flatness



Perpendicularity

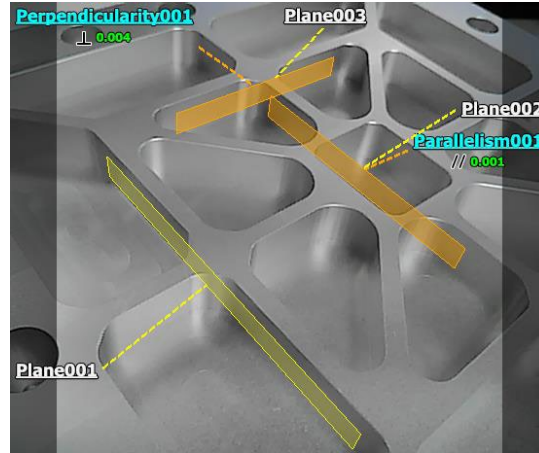


Measurement method



Hole pitch/position measurement

The hole pitch and position can be measured, and measurements can be performed with the XY coordinates of the hole position.



Flatness/parallelism/perpendicularity measurement

The flatness, parallelism, and perpendicularity of the processed surface can also be measured.

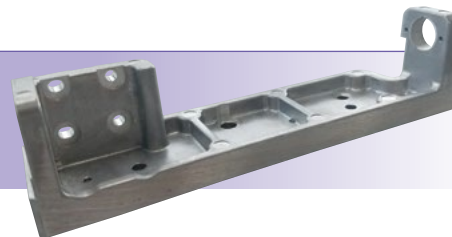
Measurement Example  
**4**



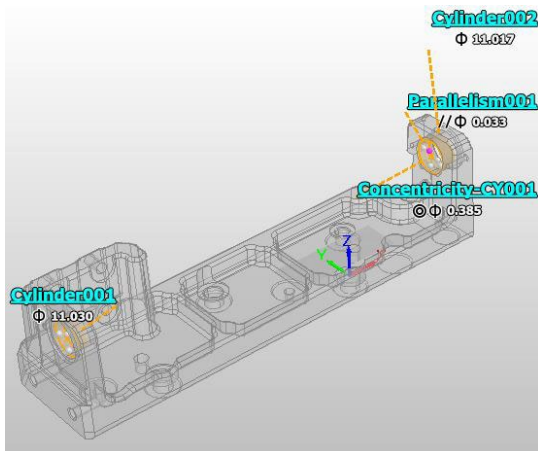
Concentricity - Cylinder



Fit Axis to Offset Point Correction

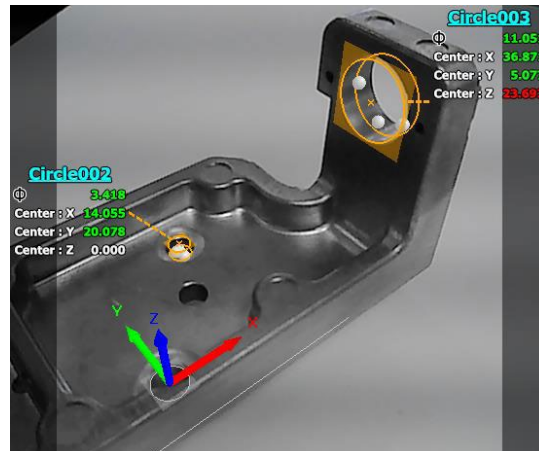


Measurement method



Cylinder concentricity measurement

The misalignment of the center of a circle at a remote position (the cylinder concentricity) can be measured.



Coordinate measurement

Hole positions can be measured with XYZ coordinates during the processing of multiple surfaces.

# Die Casting

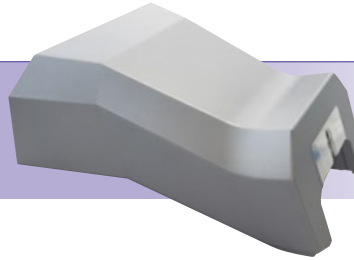
Measurement Example  
**1**



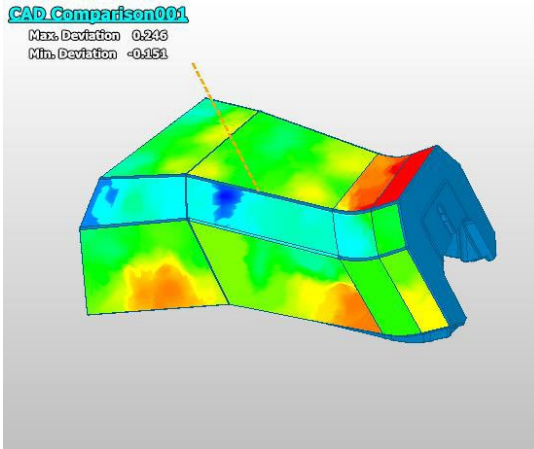
CAD Comparison



Flatness

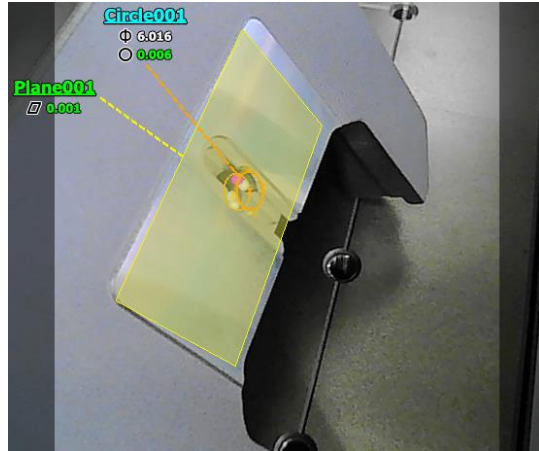


## Measurement method



3D CAD comparison of freeform shapes

CAD comparison measurements are possible for the freely curved surfaces of die cast products.



Flatness measurement

The flatness of the added processed surface can be measured.

Measurement Example  
**2**



Specified Coordinate



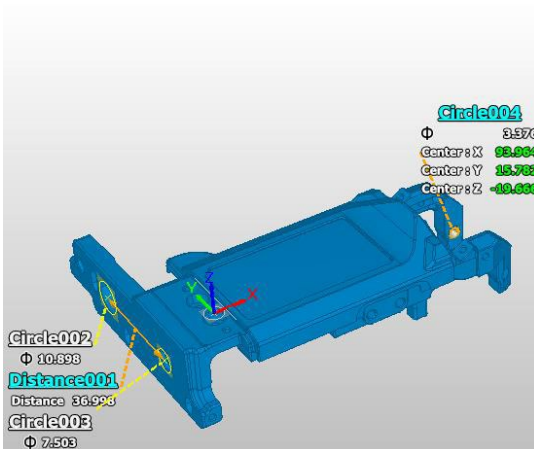
CAD Distance



Profile of a surface

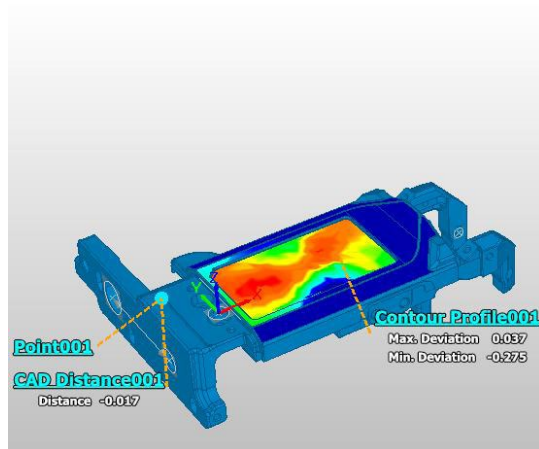


## Measurement method



XY coordinate measurement of a hole position

XY coordinate misalignment can also be measured.



CAD distance/profile tolerance

The hole position, misalignment from the 3D CAD data, and profile tolerance can be measured.

# Injection Molding

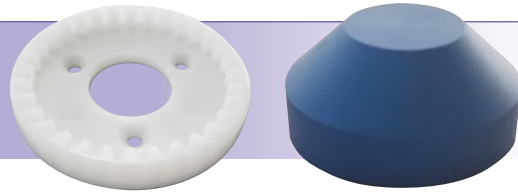
Measurement Example 1



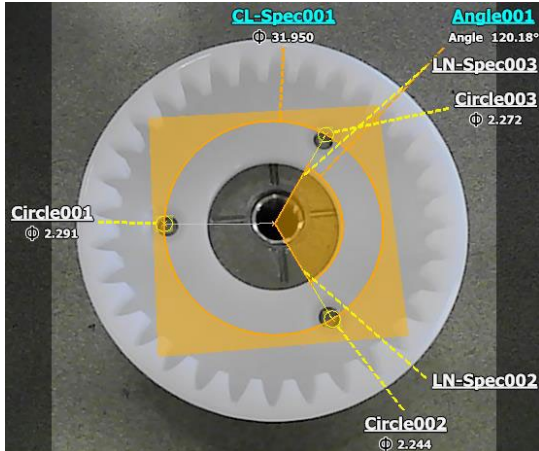
Circle



Cone

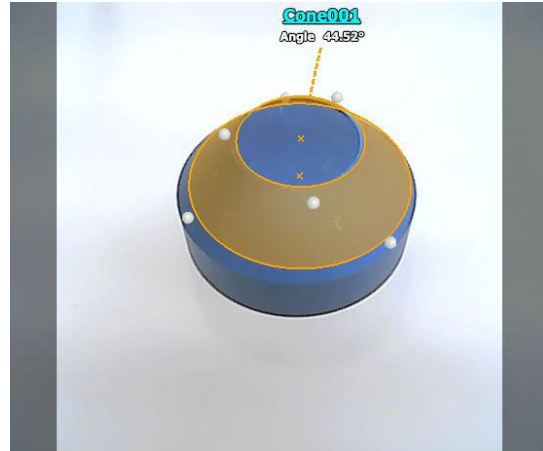


Measurement method



P.C.D./dividing angle measurement

The P.C.D. and the dividing angle can be measured.



Taper measurement

The taper angle can be measured.

Measurement Example 2



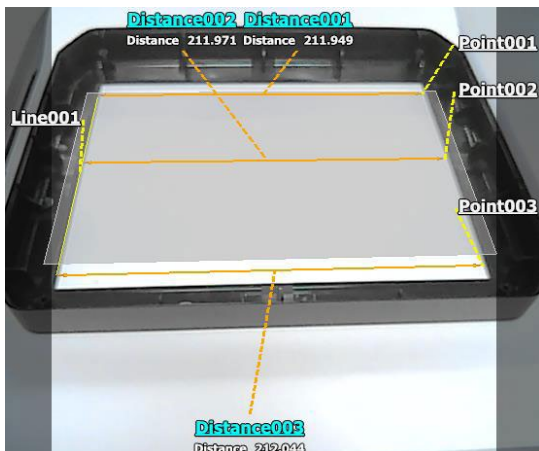
Distance



CAD Comparison

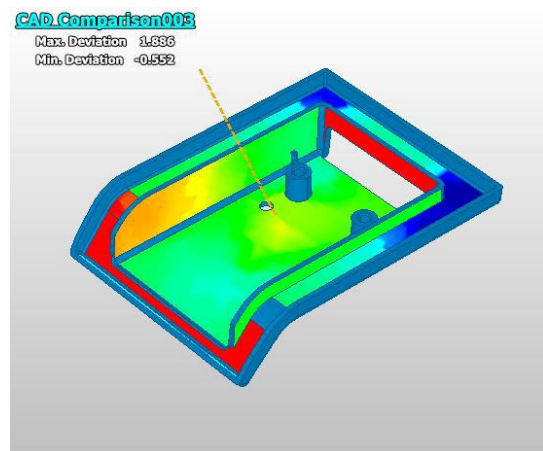


Measurement method



Frame distortion measurement

The frame distortion can be measured at various points.



Warpage/curvature

The warpage and curvature of resin-molded products can be quantified through comparison against the CAD data.



Shop Floor Coordinate Measuring Machine

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KA11-1049

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