

ORBIT® GAUGE SOFTWARE 5

Measurement Templates in OGS5

Measurement/Scaled Field/Input Definition

Measurement

Measurements record scalar part characteristics. OGS 5 includes a comprehensive library of measurement templates used to configure the required measurement calculations. OGS 5 supports both bilateral and unilateral measurements.

Each measurement has accept/reject limits, approach warning limits, and a nominal value.

Intermediate measurements can also be created. These are not recorded against a part but can be used as inputs to other measurements or for functions such as ensuring that a part is correctly located before beginning inspection.

Scaled Field

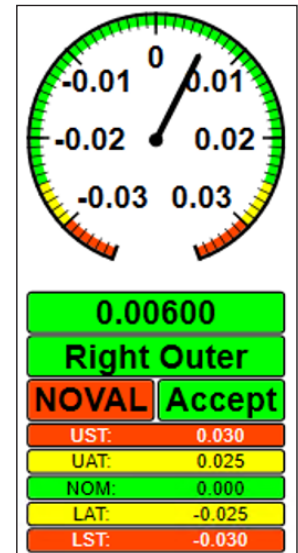
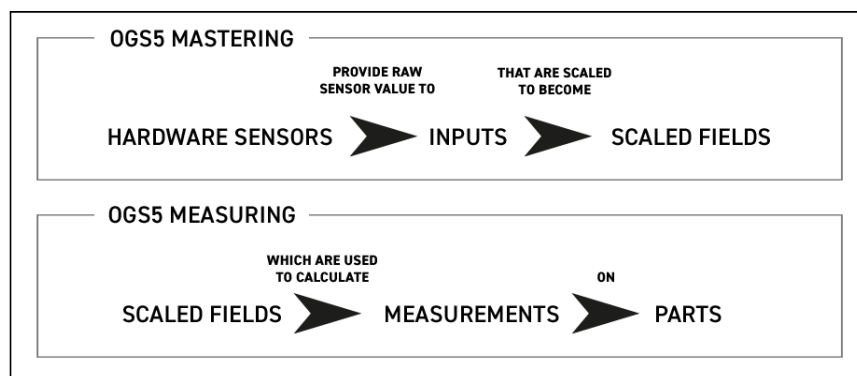
OGS 5 scaled fields are updated from inputs by applying mastering. They provide calibrated values derived from raw inputs, which are then used to calculate measurements. OGS 5 can automatically create and link scaled fields and inputs for each probe when new Orbit probes are added on the hardware screen, significantly reducing setup time.

Input

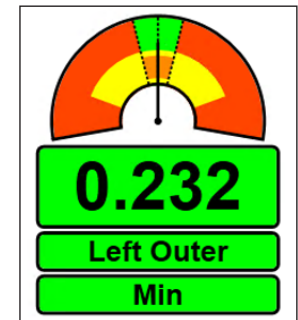
OGS 5 inputs provide the interface between scaled fields and hardware sensors. Scaled fields use raw input values to generate calibrated values for measurement calculations. Inputs are generic and all share the same properties, and they are mapped to incoming hardware data. Hardware inputs can originate from Orbit, serial ports, or USB/Bluetooth virtual COM ports via an RS232 parser, OPC, or hardware plug ins.

Attributes

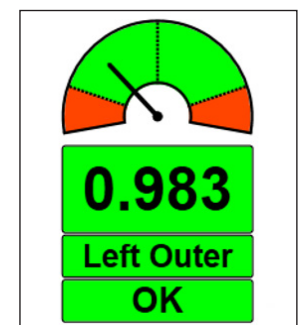
OGS 5 attributes record non-scalar part characteristics, such as simple go/no-go gauges and features that fall into several discrete categories. Attributes can be read from discrete inputs, recorded through user selection, or generated from a mathematical calculation.



Measurement



Scaled Field



Input



Attributes

Measurement Templates

OGS 5 includes Measurement Templates that provide an easy way to configure part-characteristic measurements using pre-defined mathematics required for the measurement calculations. OGS 5 offers templates for general math, form, profile, orientation, and location characteristics. Templates can also be imported and exported, enabling a library of measurement calculations to be built for quick implementation in new inspection applications

General Templates

OGS 5 General measurement templates perform basic mathematical operations including addition, subtraction, multiplication, division, exponents, running average and absolute values. Trigonometry templates and inverse trigonometric templates perform sine, cosine, arc tangent etc. Angle calculations can be performed in both degrees and radians depending on the application configuration.

	Taper (Size) - With Direction	
	TaperSizeDirection(P1,P2,P3,P4)	Form

$D1 = P1$
 $D2 = P2$
 $\delta = D1 - D2$
 $\delta * (P4 / P3) = D4 - D3$

Description	UOM Type: Length
Calculates taper of a bore or cylinder over a specified distance. Sign is preserved to indicate direction of taper.	
P1: Top level diameter measurement. P2: Bottom level diameter measurement. P3: Distance between upper and lower measurements. P4: Total distance over which taper should be calculated. This is normally the length of the bore or cylinder.	

	Arc Tan	
	Arctan(P1)	Trigonometry

$P1 = O/A$
 $\alpha = \arctan(P1)$

Description	UOM Type: Angle
Returns the ArcTangent of P1	

Form Templates

OGS 5 Form templates control the shape of a part characteristic. Templates are available for evaluating flatness, roundness, and taper.

OGS 5 also includes built in geometric algorithms that generate best fit planes and circles from a collection of points, providing the foundational calculations used by these templates.

Orientation Templates

OGS 5 Orientation templates control the angle of a part characteristic relative to a datum. Templates are available for evaluating the perpendicularity of an axis to a bore or face, as well as line to line, line to plane, and plane to plane intersection angles. OGS 5 also includes built in geometric calculations capable of generating best fit lines and planes in 3D space from a cloud of points, providing the foundation for these orientation measurements.

⊥	Axis Perpendicularity	☆
✓	AxisPerpendicularity(P1,P2,P3,P4,P5,P6)	Orientation

Description	UOM Type: Length
Calculates the perpendicularity using four inputs that are at the top and bottom of a bore or cylindrical part.	
P1: Top level input. P2: Top level opposing input. P3: Bottom level input. P4: Bottom level opposing input. P5: Distance between upper and lower levels. P6: Distance over which perpendicularity should be calculated. This is normally the length of the bore or cylinder.	

⊙	Centre Line Location	☆
✓	CentreLineLocation(P1,P2)	Location

Description	UOM Type: Length
Calculates the center point from two opposing values.	

Location Templates

OGS 5 Location templates control the displacement of a part characteristic relative to a datum. Templates are available for evaluating true position, concentricity, centre-line location, as well as performing point-to-point, point-to-line, and point-to-plane distance calculations. Best-fit circle algorithms enable the calculation of a circular feature's location from a cloud of points in 2D space.

Runout Templates

OGS 5 Runout templates provide calculations that return the difference between the maximum and minimum displacement during a measurement operation of a feature such as a cam. Total Indicated Reading(TIR), as well as maximum value, minimum value and centre line runout templates are provided

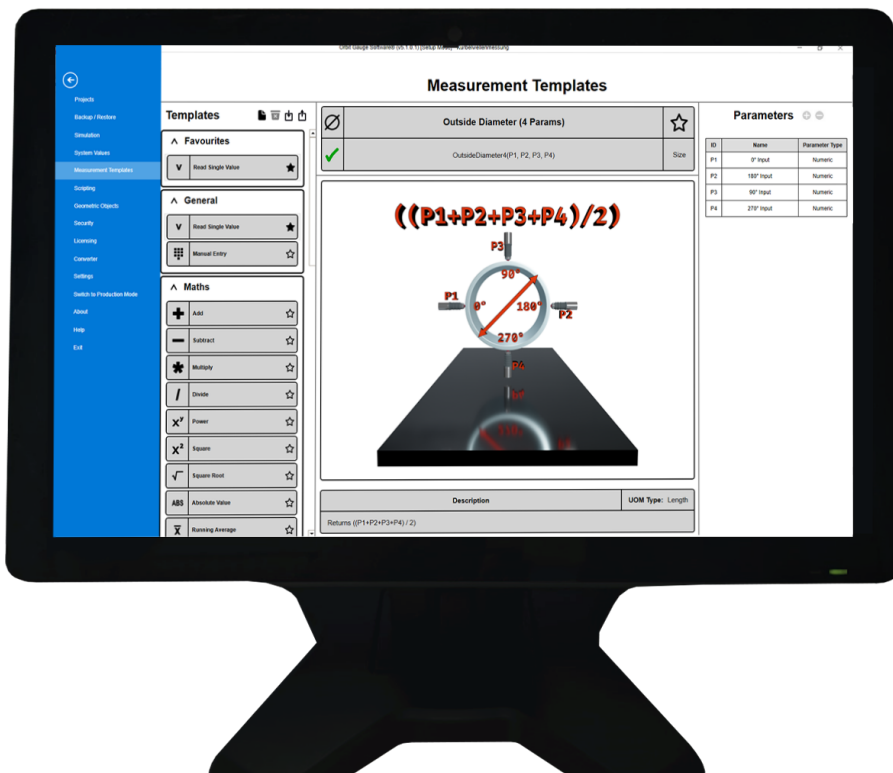
SI 8500

Solartron delivers a high-power readout featuring a 15.6-inch capacitive touchscreen, connectivity for up to 200 sensors, and OGS5 software for a wide range of applications.

	TIR (Total Indicated Reading)	
	TIR(P1)	Run-Out

TIR = Max - Min

Description	UOM Type: Length
Returns total indicated reading of operand. (Largest value - Smallest value)	





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