

Gocator Firmware 6.0 – Release Notes

Firmware Version 6.0.19.28

Document Revision A

Compatibility

- The web interface requires Chrome, Firefox or the “new” Microsoft Edge (version 79 or later) browser.
- IE 11 and the “old” Edge (version 44 or earlier) browser are only supported in a limited fashion (see known issues for details).
- New measurement tools and PROFINET are not available on G2300 A and B revisions
- Gocator 1300 and 3100 series sensors are not supported
- Gocator support (.gs) and recording files (.rec) from G2 sensors with 6.0 firmware cannot be loaded in a 5.3 and earlier emulator.
- The 6.x releases are compatible with 4.x and 5.x SDK.
- The Surface Flatness and Surface Mask measurement tools will return slightly different measurement values compared to 5.3 firmware. This is due to an adjustment in the way points are considered included in the measurement region.
- The format of output from the Surface Flatness and Surface Track “Output Measurement” has changed. This causes the SDK sample code from 5.3 and earlier not to be able to read data from this output. The updated sample code from the 6.0 SDK must be used.

New Features

<i>Tools diagram</i>	The new tools diagram panel allows you to more easily manage a larger set of tools for complex applications. See connections between tools and create new ones with drag-and-drop.
<i>Multiple measurement display</i>	Pin measurements to a data viewer to allow watching multiple measurements from different tools. Show and hide them easily.
<i>Multi-window data viewer</i>	Pop out additional data viewer windows to allow inspecting scan data and measurements in separate views. See full surface data and cross sections side-by-side.
<i>Data viewer in Dashboard</i>	The dashboard now includes a data viewer, allowing even Technician users to see multiple measurement results visualized on the scan results.

<i>Surface Blob tool</i>	The new Surface Blob tools allows identifying surface defects and finding randomly located features. Compared to Surface Segmentation, it is not targeted for general part segmentation with overlap but is faster and provides additional filtering features.
<i>Mixed-model buddy systems</i>	Combine different G2 models from the same series in a single buddy system. Use high resolution sensors where needed while covering large areas with low resolution models.
<i>G3 Fast Interreflective upgrade package</i>	The Interreflective scan engine improves scan results on concave targets where interreflection of the projector light would otherwise cause dropouts. With 6.0 firmware, a new upgrade package is available for G3 which optimizes the performance of this scan engine on sensor.
<i>G2 Robot integration support</i>	The URCap for integration with Universal Robots and the GoRobot library has been expanded to include support for G2 line profile sensors. Sensor on robot arm calibration can be run fully automatically through URCap programming nodes.

Improvements

<i>G3 accelerated performance</i>	The maximum framerate of G3 sensors accelerated by GoMax or PCs with compatible CUDA graphics cards has significantly increased.
<i>Realistic data viewer</i>	Intensity data from surface mode scans can now be visualized together with the pseudocolor heightmap. Intensity visualization is now controlled by a toggle button. In Mesh visualization mode of uniform surface data, vertical surfaces can be drawn with an optional "Show Sidewalls" mode.
<i>Improved emulator scenario selection UI</i>	Find scenarios more easily with a larger scenario list. Open scenarios with a double-click.
<i>Gocator protocol always on</i>	The Gocator Ethernet output protocol stays enabled when selecting PROFINET, EtherNet/IP, Modbus or ASCII. This allows simultaneous connection via Gocator SDK and PLC.
<i>Universal Robots integration</i>	In addition to manual calibration, G3 sensors now support fully automatic calibration using the URCap programming nodes analogous to the G2 calibration support.
<i>Middle-mouse button to pan</i>	The middle mouse button (scroll wheel click) can now be used to pan even when the cursor is over a region.
<i>Individual sensor Profile Point Cloud output</i>	With Uniform Spacing disabled on a G2 buddy system, it is now possible to measure and output individual sensor's profile data.



<i>Reduced UDP traffic from SDK</i>	The SDK now broadcasts fewer UDP packets for discovery of sensors. SDK applications will now no longer discover any sensors with firmware 4.2 or earlier by default. Use <code>GoSystem_EnableDiscoveryCompatibility()</code> to enable discovery of sensors with older firmware.
<i>Accelerated sensor UDP discovery replies</i>	Accelerated sensors on a PC with multiple network adapters now only reply to UDP discovery requests from the SDK on the adapter from which the request was received.
<i>G3 Video mode without projection</i>	With the “Projector Off” pattern, it is now possible to see the camera image when the project is not emitting light.

Measurement Tool Improvements

<i>Flexible regions in more tools</i>	Use circular and polygon regions directly from some tools instead of having to use Surface Mask. The measurement tools affected are: Surface Filter, Surface Direction Filter, Surface Flatness, Surface OCR, and Surface Segmentation.
<i>Z Angle anchoring</i>	The ability to anchor tool regions with a Z Angle has been added to: Surface OCR and Surface Segmentation.
<i>Top and Bottom data</i>	The following tools now accept Bottom data: Surface Barcode, Surface Transform, Surface Circular Edge, Surface Curvature, Surface Direction Filter, Surface Extend, Surface OCR, Surface Segmentation, Surface Sphere, and Surface Vibration Correction.
<i>Surface Edge tool outputs Profile</i>	You can now measure the edge profile from the Surface Edge tool using Profile measurement tools.
<i>Surface OCR</i>	Surface OCR now operates more reliably on G2 scan data with a high X/Y resolution ratio.
<i>Surface Segmentation Intensity</i>	The Surface Segmentation tool now operates on intensity data from an input surface.
<i>Segmentation tool with background present</i>	The Surface Segmentation tool now supports background data being present in the region. Parts surrounded by other segments can be included in the results with the new Hierarchy parameter, using the “All Parts” option.
<i>Surface Section</i>	Points are now generated at positions in the profile where the Averaging Width includes more than a specified percentage of valid points.
<i>Surface Circular Edge Min/Max Error</i>	Added Min/Max Error measurements to provide information on the points furthest inside and outside the fitted circle.



Known Issues

<i>Internet Explorer 11</i>	Several issues exist with Internet Explorer 11: • Launching and using additional data viewers is very slow. • When using large data may not be possible due to browser memory limitations. Workaround: Refer to the Gocator user manual for IE 11 specific instructions to work around some of the issues.
<i>“Old” Edge Browser</i>	Launching and using additional data viewers is very slow with Microsoft Edge version 44 or earlier. Workaround: Upgrade to the “New” Microsoft Edge https://www.microsoft.com/en-us/edge .
<i>Translations incomplete</i>	Not all English text is translated in every language.
<i>Surface Track</i>	The Surface Track tool is not supported on the GoMax device.
<i>G3504 with Interreflection Material</i>	The G3504 does not support the Interreflection Material setting at full field of view due to memory limitations. Workaround: Use the new Interreflective firmware, reduce the field of view, or reduce the scan resolution.
<i>Script Tool</i>	Memory leaks can occur when using <i>arrays</i> and <i>structs</i> within a script. Workaround: Avoid using arrays and structs or test thoroughly to ensure stability.

SDK and Protocol changes

Protocol version 101.15

Protocol version is specified as [Major].[Minor]. Firmware releases with the same Protocol Major version are backward compatible and users do NOT need to recompile their applications unless features in the newer version are used.

The 6.0 SDK will not discover any sensors with firmware 4.2 or earlier by default. Use `GoSystem_EnableDiscoveryCompatibility()` to enable discovery of sensors with older firmware.

`GoSurfaceTool` now inherits from `GoTool` rather than `GoExtTool`. This is considered a bug fix since `GoSurfaceTool` was intended to be used for non-GDK based measurement tools but `GoExtTools` is for GDK-based tools.



SDK

Action	Name	Description of change
Added	<code>samples/C/ConsoleExample</code>	New sample demonstrating GDK tool configuration (moved from GDK package)
Added	<code>samples/C/MultiSensorLayout</code> <code>samples/C#/MultiSensorLayout</code>	New sample for configuring multiple sensors in a buddy system.
Moved	<code>Samples/C/ReceivePartSegments</code> <code>Samples/C/ReceiveSurfaceFlatness</code> <code>Samples/C/ReceiveSurfaceTrack</code>	Moved from “Other” folder for better visibility.
Added	<code>GoFx(kBool)</code> <code>GoVideoMsg_IsTransposed(GoVideoMsg msg)</code>	Indicates whether the video message data is transposed
Added	<code>GoMeshMsg</code>	Support for the Mesh data type
Removed	<code>GoSetup_Material()</code>	Use <code>GoSetup_Advanced()</code> instead.
Added	<code>GO_HEALTH_CUDA_STATUS</code>	Health indicator for whether CUDA is supported on an accelerating device.

Configuration and Protocol changes

Action	Type	Name	Description of change
Modified	Configuration	<code>Setup/Devices/Device/DataSource</code> <code>Streams/StreamSource/Id</code> <code>Output/Ethernet</code> <code><Measurement_tool_node>/Source</code>	Added support for values 100 to 131. Represents G2 buddy sensor device indices for configurations with 2 to 31 buddy G2 sensors to identify a particular sensor’s scan data. Main sensor is 100. First buddied sensor is 101. Second buddied sensor is 102 and so on.
Modified	Configuration	<code>ToolOptions</code>	Added <code>DefinedSourcesOptions</code> element.
Modified	Configuration	<code>[measurement_tool_node]/Features</code> <code>/[feature_node]Pinned</code> <code>[measurement_tool_node]/</code> <code>Measurements/[measurement_node]/Pinned</code>	Whether the feature or measurement is pinned to the main data viewer.
Modified	Protocol (Gocator)	<code>Start Exposure Auto-set command</code>	Added support for device index 2-31.
Added	Protocol (Gocator)	<code>Data messages:</code> <code>Null Message</code>	Added new public data message types.



Mesh			
<i>Added</i>	Protocol (Gocator)	Stamp message	Added ptpTimestamp field.
<i>Modified</i>	Protocol (Gocator)	In the following data messages, in <i>source</i> field: Video, Profile Point Cloud, Profile Intensity	Added support for values 100 to 131. Represents G2 buddy sensor device indices for configurations with 2 to 31 buddy G2 sensors to identify a particular sensor's scan data. Main sensor is 100. First buddied sensor is 101. Second buddied sensor is 102 and so on.
<i>Added</i>	Protocol (Gocator)	Video message	Added <i>transposed</i> field. Indicates whether the video data must be transposed to match up with profile data.
<i>Added</i>	Protocol (Gocator)	In the following data messages: Profile Point Cloud Uniform Profile Profile Intensity Uniform Surface Surface Point Cloud Surface Intensity	Added reserved fields before the ends of the messages. Consult the Gocator user manual for the offsets of any shifted fields.
<i>Added</i>	Protocol (Gocator)	CUDA status health message	Indicates whether CUDA is supported on an accelerating device.

GDK

<i>Individual sensor Surface Point Cloud information</i>	GDK tools receiving raw Surface data can now access information on the originating G2 sensor in a buddy system.
<i>Add-On tool .tar package</i>	The GDK can now produce Add-On tool .tar packages with the "AddOnPackage.py <Project Name> <Configuration>" script.
<i>Samples using GdkTool_MessageAlloc</i>	The samples now use GdkTool_MessageAlloc() instead of kObject_Alloc(). This is now recommended for improved performance.
<i>Samples .c to .cpp</i>	The samples have been converted to use the .cpp extension exclusively.



Action	Name	Description of change
<i>Renamed</i>	GdkAppSample	Renamed from GdkSampleApp
<i>Added</i>	TestMesh	New example for Mesh datatype I/O
<i>Moved</i>	GdkSampleClient	Moved to the SDK package
<i>Added</i>	GdkToolOutput_InitMeshAt()	Output of new mesh data type
<i>Added</i>	GdkFile_*()	Expanded file API
<i>Added</i>	GDK_DATA_TYPE_MESH	Mesh data type

