LMI TECHNOLOGIES

Gocator Firmware 6.0 – Release Notes

Firmware Version 6.0.19.28

Document Revision C

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

Tools diagram	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.
Multiple measurement display	Pin measurements to a data viewer to allow watching multiple measurements from different tools. Show and hide them easily.
Multi-window data viewer	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.
Data viewer in Dashboard	The dashboard now includes a data viewer, allowing even Technician users to see multiple measurement results visualized on the scan results.

HEADQUARTERS

📞 +1 604 636 1011   ✉ info@lmi3D.com   9200 Glenlyon Parkway
🖨 +1 604 516 8368   🌐 www.lmi3D.com   Burnaby, BC V5J 5J8
                                                      Canada

Surface Blob tool	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.
Mixed-model buddy systems	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.
G3 Fast Interreflective upgrade package	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.
G2 Robot integration support	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

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

Reduced UDP traffic from SDK	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 GoSystem_EnableDiscoveryCompatibility() to enable discovery of sensors with older firmware.
Accelerated sensor UDP discovery replies	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.
G3 Video mode without projection	With the "Projector Off" pattern, it is now possible to see the camera image when the project is not emitting light.

Measurement Tool Improvements

Flexible regions in more tools	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.
Z Angle anchoring	The ability to anchor tool regions with a Z Angle has been added to: Surface OCR and Surface Segmentation.
Top and Bottom data	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.
Surface Edge tool outputs Profile	You can now measure the edge profile from the Surface Edge tool using Profile measurement tools.
Surface OCR	Surface OCR now operates more reliably on G2 scan data with a high X/Y resolution ratio.
Surface Segmentation Intensity	The Surface Segmentation tool now operates on intensity data from an input surface.
Segmentation tool with background present	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.
Surface Section	Points are now generated at positions in the profile where the Averaging Width includes more than a specified percentage of valid points.
Surface Circular Edge Min/Max Error	Added Min/Max Error measurements to provide information on the points furthest inside and outside the fitted circle.

Bug fixes

ASCII output crash	With an accelerated sensor and ASCII output in Asynchronous mode a crash could occur.
Large emulator scenarios	In some cases, large emulator scenarios with many tools would fail to load.
EtherNet/IP connection close	On requesting closing an explicit EtherNet/IP connection with Forward Close, a simultaneous implicit connection could be closed as well.
Data processing error	Enabling Y filtering on an existing emulator scenario could cause data processing errors.
Matching job name	If a job was uploaded with a name matching the current loaded job, the UI would falsely indicate that the job was loaded when current settings are actually unaffected.
GoAccelerator fail to start	Certain Windows security settings could cause the accelerator to fail to start.
Buddy system sensor crash	A sensor crash could occur when removing buddy sensors from a buddy system.
G2 High Y resolution	Several issues could occur with a G2 sensor in surface mode if the Y resolution was high (High scan rate with low motion speed, or low Encoder Spacing). This included missing profiles from a surface without drops reported.
Z scale change	The Z scale of data in an emulator scenario could change if an old scenario from 4.6 firmware is exported as new support file from a more recent emulator.
Measurement names	After a specific sequence of enabling and disabling measurements and duplicating tools, the names of measurements in the output page could be incorrect.
Language switching	Switching languages in the UI was not functional when accessing a PC-accelerated sensor via the http://localhost address instead of by the IP address.
Not initialized error	An error "Tool Data Output [0] has not been initialized in tool X" could appear when a tool with data output is anchored to an invalid measurement.
No Video mode image	When setting a Y offset, X Angle or Z Angle, and error would be shown and the video data was shown.
Save Job button	If the browser window width was reduced, the Save Job button may not be clickable.
G2500 processing drops	Processing drops could occur at high speeds on accelerated G2500 two sensor buddy systems at 1900Hz.

EtherNet/IP connection path	Implicit EtherNet/IP connection paths formatted with 2 bytes per element were not handled correctly. This resulted in specific devices such as a Yaskawa robot controller not being able to establish an implicit EIP connection.
Digital output count	When outputting digital output with exposure start or exposure end, the count of digital output events can become out of sync with the scan count. It is expected that on stopping, not all trigger events result in scans though.
Measurement Tools	
Surface Section	Under some circumstances, the Profile output from the Surface Section tool was not visible.
Surface Opening	A hang could occur with Surface Opening, after enabling reference region and selecting "1 Region"
SDK	
Missing .NET SDK API	The equivalent function for GoSystem_EnableDiscoveryCompatibility() was missing in the .NET SDK wrapper.
GoEthernet_AddSource()	If GoEthernet_AddSource() was called more than once for a specific source, it was necessary to remove that source multiple times to fully disable the output.
GoSystem.AddSensor()	Issues in GoSystem.AddSensor() prevented using through the .NET SDK wrapper. Now it can be used to connect to sensors without using the sensor discovery system.
SDK acceleration	Accelerating sensors with SDK without specifying ports was not allowing accelerating more than one sensor.
StreamOptionCount	The StreamOptionCount value in the .NET SDK could be incorrect.

Known Issues

Internet Explorer 11	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.
"Old" Edge Browser	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.

Translations incomplete	Not all English text is translated in every language.
Surface Track	The Surface Track tool is not supported on the GoMax device.
G3504 with Interreflection Material	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.
Script Tool	Memory leaks can occur when using *arrays* and *structs* within a script. Workaround: Avoid using arrays and structs or test thoroughly to ensure stability.

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	`samples/C/ConsoleExample`	New sample demonstrating GDK tool configuration (moved from GDK package)
Added	`samples/C/MultiSensorLayout` `samples/C#/MultiSensorLayout`	New sample for configuring multiple sensors in a buddy system.

Moved	`Samples/C/ReceivePartSegments`
	`Samples/C/ReceiveSurfaceFlatness`
	`Samples/C/ReceiveSurfaceTrack`
		Moved from "Other" folder for better visibility.

Added	`GoFx(kBool)` `GoVideoMsg_IsTransposed(GoVideoMsg msg)`	Indicates whether the video message data is transposed
Added	`GoMeshMsg`	Support for the Mesh data type
Removed	`GoSetup_Material()`	Use GoSetup_Advanced() instead.
Added	`GO_HEALTH_CUDA_STATUS`	Health indicator for whether CUDA is supported on an accelerating device.

Configuration and Protocol changes

Action	Type	Name	Description of change
Modified	Configuration	Setup/Devices/Device/DataSource Streams/StreamSource/Id Output/Ethernet <Measurement_tool_node>/Source	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	ToolOptions		Added DefinedSourcesOptions element.
Modified	Configuration	[*measurement_tool_node*]/Features /[*feature_node*]Pinned [*measurement_tool_node*]/ Measurements/[*measurement_node*]/Pinned		Whether the feature or measurement is pinned to the main data viewer.
Modified	Protocol (Gocator)	Start Exposure Auto-set command		Added support for device index 2-31.
Added	Protocol (Gocator)	Data messages: Null Message Mesh		Added new public data message types.
Added	Protocol (Gocator)	Stamp message		Added ptpTimestamp field.
Modified	Protocol (Gocator)	In the following data messages, in *source* 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.
Added	Protocol (Gocator)	Video message		Added *transposed* field. Indicates whether the video data must be transposed to match up with profile data.
Added	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.
Added	Protocol (Gocator)	CUDA status health message		Indicates whether CUDA is supported on an accelerating device.

GDK

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

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