

## Gocator Firmware 4.7.12.47 - Release Notes

Firmware Version 4.7.12.47

Document Revision A

### Compatibility

The Gocator 4.x web interface requires IE 9 or newer, Firefox or Chrome. Adobe Flash version 11 or above is also required.

The .rec and .gs file formats have changed between 4.6 and 4.7 releases so it is not possible to load recordings and Gocator support files generated from 4.7 firmware on sensors or emulator instances with 4.6 or earlier. Recordings and support files from 4.6 can be loaded on 4.7 as usual though.

### New Features

<i>Support for G210, G230 and G250</i>	Gocator 210, 230, and 250 multi-point profile sensors are supported with this firmware version. With these sensors you can create a modular scanning system that allows you to mix 3D profiles, tracheid detection (wood only), and color vision.
<i>Expanded alignment Options</i>	Sensors can now be placed in various orientations and Gocator can compensate for the position. Specifically support has been added for: <ul style="list-style-type: none"> <li>- Y Offset: This enables staggered layout of multi-sensor systems. In side-by-side mounting scenarios, you can now achieve full coverage for models such as G2410 and G2420.</li> <li>- Z Angle, X Angle: Sensors can be mounted at an angle and the sensor will compensate for the angle in its height measurements.</li> </ul>
<i>Multi-sensor point-cloud support</i>	It is now possible to disable uniform spacing with multi-sensor systems. Scan overhangs and achieve 360-degree coverage with multiple sensors without the trade-offs of uniform spacing. All data from each sensor is preserved by combining the raw data without resampling. <p>Previously this was only possible through the Gocator SDK with additional programming effort to combine point cloud data from independent sensors.</p>
<i>Part detection status</i>	A new diagnostics panel under the Part Detection panel allows you to see details on the status of the part detection engine. This can be used to diagnose why parts are not being detected during setup.
<i>Surface &amp; Profile output from tools</i>	The GDK framework has been expanded to allow output of profiles and surfaces from GDK tools. Resulting data can be visualized and output. This allows implementing a powerful set of new tools including filters, transformations, flexible profile extraction from surfaces, and many other algorithms.
<i>Plane geometric</i>	A plane geometric feature can now be output from the Surface Plane tool and

<i>feature</i>	read into other tools. In combination with the enhanced Feature Dimension tool, this allows simple zero-plane distance calculations.
<i>Interreflection engine on G3 sensors</i>	Gocator 3000 series sensors now support a new interreflection scan engine, which provides improved results on targets where interreflection of light is present.
<i>Tool re-ordering</i>	You can reorder tools to organize your tool list, making complex measurement tool configurations more manageable.
<i>Quick Edit mode</i>	When working with large configurations or slow measurement tools, it is now possible to more quickly make configuration changes by entering the new Quick Edit mode. Measurement calculations are not performed, reducing the delay between individual changes.
<i>Laser safety goggle mode</i>	Ability to toggle line color to ensure visibility with laser safety goggles.
<i>MountainsMap integration</i>	A new tool, MMTransfer, has been added to the tools package to allow integration of Gocator 2000 and 3000 series sensors with MountainsMap software.

## Improvements

<i>New toolbar buttons</i>	New buttons were added to allow easy switching between Heightmap, Grayscale, Uniform, and Intensity rendering.
<i>Multiple emulator sessions</i>	Now multiple emulator instances can be launched at the same time enabling comparison of different emulator scenarios or firmware versions.
<i>Acceleration of multiple sensors on a single PC</i>	The GoAccelerator.exe tool now supports accelerating multiple independent sensors on one PC. The SDK has also been expanded to be able to connect to sensors on non-standard ports.
<i>Surface Edge Tool</i>	Three improvements were made to the Surface Edge tool: <ul style="list-style-type: none"> <li>- Up to four regions are supported</li> <li>- In addition to the current absolute threshold, it is now possible to add a relative threshold.</li> <li>- Fixed angles allow the user to constrain the direction of edges to only determine the location.</li> </ul>
<i>Point-plane distance</i>	With the addition of Plane geometric features, the Feature Dimension tool now supports point-plane distance measurements.
<i>Line-plane intersection</i>	The Feature Intersect tool now supports Line-Plane intersections.
<i>Surface Plane four-region support</i>	The Surface Plane tool now supports up to four regions.
<i>Performance tab on Dashboard</i>	Tool execution times have been moved to a separate panel in the Dashboard page and statistics have been added.
<i>G2342 new Bridge Value measurements</i>	New measurements are included in the Profile Bridge Value tool that are used on the Gocator 2342 sensor to determine whether the current tracking window needs to be reset.



<i>Modbus protocol on GoX accelerator</i>	The Modbus protocol is now supported with the GoX Accelerator.
<i>G3210 support for 24V</i>	When supplying the Gocator 3210 sensor with 24V power, the 24V power and cable length can now be specified to ensure the sensor runs optimally under all conditions.
<i>G3506 and G3210 heat warning</i>	An overheat warning message and dashboard indicators have been added for Gocator 3210 and 3506 sensors.
<i>Implicit EtherNet/IP Job Load</i>	Added a Load Job command to the Implicit EtherNet/IP command set
<i>Reversal Distance for Bi-Directional</i>	A new parameter has been added to the Trigger configuration under Encoder triggering when using Bi-Directional mode. This new Reversal Distance parameter can be set to clearly specify what distance the target must travel before a direction change is triggered.
<i>Geometric feature SDK output</i>	Geometric features can now be output from the Gocator and received through the SDK.
<i>SDK .Net assemblies</i>	SDK .NET assemblies are now strong-named, allowing integration with other strong-named .NET assemblies.
<i>Unsaved changes</i>	The web interface now warns users before performing an upgrade that their unsaved changes will be lost.
<i>GDK tool IP protection</i>	Added access to serial number and files on sensor to allow implementation of a protection scheme to prevent firmware being copied to sensors not authorized to run a GDK tool. A license file can be written by an SDK application and read by the GDK tool to validate that the tool is allowed to run on that sensor.
<i>Filters panel</i>	The Filters panel is now hidden when no filters are available.
<i>CSV export filename</i>	The default file name for CSV export has been shortened.
<i>GenTL ClearData command</i>	The GenTL driver now provides a ClearData command that calls the SDK function GoSystem_ClearData. This is useful to ensure data buffers are cleared. The command can be invoked in Halcon with <code>set_framegrabber_param(AcqHandle,'XmlCommand','GenTL/ClearData\n')</code> .

## Fixes

<i>Surface Edge X measurement</i>	The X position measurement from the Surface Edge tool was incorrect under some circumstances.
<i>Intensity data output</i>	Intensity data could be output over Gocator protocol even when Intensity was not enabled.
<i>Trigger source change via SDK</i>	Tool regions could become deactivated if a trigger source change was initiated by an SDK application.
<i>Alignment with</i>	Alignment could fail when Continuity was selected as the spot selection



<i>Continuity spot selection</i>	method.
<i>Continuous processing drops</i>	A G2 sensor could stop producing data altogether after a long period of only processing drops.
<i>G3 exposure values</i>	The exposure value in data messages output from G3 sensors could be incorrect.
<i>Surface Bounding Box</i>	A large number of Surface Bounding Box tools could cause the sensor to become unstable.
<i>Tracking in Surface mode</i>	With tracking in Surface mode at high speeds, trigger drops could occur.
<i>Include one-sided data</i>	Part Detection in an opposite buddy system was not including data that only came from one side. There is now a mode to include one-sided data.
<i>Recording with part matching</i>	Under some circumstances recording would fail with Part Matching enabled.
<i>Tracking with Spot Selection set to None</i>	Tracking was not possible when Spot Selection was set to None.
<i>Tools with Spot Selection set to None</i>	Some tools did not function correctly when Spot Selection was set to None. These tools were changed to no longer be available when Spot Selection is set to None.
<i>G1 EtherNet/IP alignment</i>	Performing stationary alignment on a G1 sensor over EtherNet/IP could cause the sensor to hang.

## Known Issues

<i>Scroll wheel in Microsoft Edge browser</i>	At the time of the release, the mouse scroll wheel did not work as expected in the data viewer (zoom in/out) when using the Microsoft Edge browser under Windows 10. A workaround is to hold down the right mouse button and scroll.
<i>.NET SDK wrapper</i>	Manual freeing of objects using Dispose() is necessary since the .NET SDK wrapper does not automatically free memory. If this is not done, memory leaks will occur.
<i>Translations incomplete</i>	Not all English text is translated in every translation.



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. Note that these are protocol and SDK changes between Release 4.6 SR3 and Release 4.7. Refer to the Gocator 4.x SDK migration guide for details on how to port your 3.x application to Gocator 4.x firmware.

## SDK

Action Name	Description of change
<i>Added</i> GoSensor_*ControlPort ( 0 Offset) GoSensor_*UpgradePort (+2 Offset) GoSensor_*DataPort (+4 Offset) GoSensor_*HealthPort (+6 Offset)	Get/Set for Control, Upgrade, Data and Health ports, allowing access to accelerated or emulated sensors on non-standard ports.  Default offsets from base port are as listed.
<i>Added</i> GoSensor_*Voltage	Get/Set voltage for G3210 24V support
<i>Added</i> GoSensor_*QuickEdit	Get/Set for QuickEdit
<i>Added</i> GoSetup_*LaserSleep*	Laser Sleep control functions for G200 sensors
<i>Added</i> GoSetup_*ReversalDistance	Bi-directional reversal distance functions
<i>Added</i> GoSetup_*BarDegreesOfFreedom*	Degrees of freedom selection for Bar alignment
<i>Added</i> Go*Msg_StreamStep Go*Msg_StreamStepId	Data stream accessors for profile and surface types
<i>Added</i> GoExtTool_ToolDataOutputCount GoExtTool_ToolDataOutputAt	GDK tool data output access
<i>Added</i> GoExtToolDataOutput	GDK tool data output functions
<i>Added</i> GoFeatures_*	Geometric feature functions
<i>Added</i> GoProfilePosition_EnableRegion GoProfilePosition_RegionEnabled	Profile Position tool region enable
<i>Added</i> GoProfileLineRegion_SetRegionCount	Number of regions for Profile Line tool
<i>Added</i> GoSurfacePlane_Plane	Plane feature
<i>Added</i> GoToolOption_ToolDataOutputOption*	Legacy tool data output
<i>Added</i> GoAdvanced_*SurfaceEncoding	Get/Set for Surface Engine Encoding
<i>Added</i> GO_HEALTH_OVERHEAT*	Overheating related health IDs
<i>Added</i> GO_ALIGNMENT_*DOF_*	Degree of freedom for alignment
<i>Added</i> GO_DATA_STEP_*	New data step IDs for profiles, surfaces, tracheid, and tool data output.



## Configuration and Protocol changes

Action	Type	Name	Description of change
Added	Configuration	Setup/Triggers/ReversalDistance	Encoder reversal threshold (for jitter handling).
Added	Configuration	Setup/Triggers/LaserSleepMode	Turns laser off after specified period of time. Wakes laser after specified minimum amount of encoder movement.
Added	Configuration	Setup/Alignment/Bar/DegreesOfFreedom	Degrees of freedom to align. For full details, see the user manual.
Added	Configuration	Setup/Devices/Device/Material/Type Setup/Devices/Device/Material/Type.options Setup/Devices/Device/Material/SurfaceEncoding Setup/Devices/Device/Material/SurfacePhaseFilter	New Reflective material type. List of available material type. Surface encoder type. Surface phase filter (correction type)
Modified	Configuration	Streams/Stream/Cadenceld Streams/Stream/ColorEncoding	Renamed TempoGroup to Cadenceld Added color encoding type.
Added	Configuration	Output/Ethernet/SurfaceSections	Selected surface section sources
Added	Configuration	Output/Ethernet/SurfaceSectionIntensities	Selected surface section intensity sources
Added	Configuration	Output/Ethernet/Tracheids	Selected tracheid sources.
Added	Configuration	Output/Ethernet/Features	Selected feature sources.
Added	Configuration	Output/Ethernet/ToolData	Selected tool data sources.
Added	Configuration	SurfaceEdge/RegionCount SurfaceEdge/Region1 SurfaceEdge/Region2 SurfaceEdge/Region3 SurfaceEdge/UseFixedAngle SurfaceEdge/FixedAngleValue SurfaceEdge/UseRelativeThreshold SurfaceEdge/RelativeThreshold	Added settings for 4-region support, fixed angle, and relative threshold.
Added	Configuration	SurfacePlane/Features/Plane	Plane geometric feature added.
Added	Protocol (EtherNet/IP)	Job Load	New command.



<i>Added</i>	Protocol (Gocator)	Get Runtime Variables Set Runtime Variables	Retrieves runtime variable values. Sets runtime variable values.
<i>Added</i>	Protocol (Gocator)	Get Voltage Settings	Command to get the sensor's voltage and cable length settings.
<i>Added</i>	Protocol (Gocator)	Set Voltage Settings	Command to set the sensor's voltage and cable length settings.
<i>Added</i>	Protocol (Gocator)	First Log Id Last Log Id	Health messages containing the first and last available log entries.
<i>Added</i>	Protocol (Gocator)	Part Total Emitted Part Length Limit Part Min Area Drops Part Backtrack Drops Parts Currently Active Part Length Part Start Y Part Tracking State Part Capacity Exceeded Part X Position	Health messages containing part diagnostics.
<i>Added</i>	Protocol (Gocator)	Resampled Profile Surface	Added streamStep and streamStepId fields to these data result messages.
<i>Added</i>	Protocol (Gocator)	Profile Intensity	Added cameraIndex field to this data result message.
<i>Added</i>	Protocol (Gocator)	Resampled Profile Intensity	New data result message.
<i>Added</i>	Protocol (Gocator)	Tracheid	New data result message.
<i>Added</i>	Protocol (Gocator)	Feature Plane	New data result message.
<i>Added</i>	Protocol (Gocator)	Set Quick Edit Enabled Get Quick Set Enabled	New control commands.
<i>Added</i>	Protocol (Gocator)	Controlled Trigger Drops Surface Processing Time Max Frame Rate	New health messages.



## GDK Changes

More recent 3<sup>rd</sup> party tools are required to build GDK tools. Please see the GDK manual for details.

<b>Action</b>	<b>Name</b>	<b>Description of change</b>
<i>New Feature</i>	Tool Data Output	Enables output of Profile and Surface from a measurement tool to be used by other tools.
<i>New Samples</i>	ProfileDynamicAlignment SurfaceDynamicAlignment	Shows the power of the Tool Data Output feature. Dynamically align the Profile/Surface using a specific region.
<i>Function Added</i>	GdkToolInfo_AddParam	Add Input Parameter. Choose parameter type from an enumeration.
<i>Function Added</i>	GdkToolInfo_AddInput	Add data input. For input of geometric features / profiles / surfaces.
<i>Function Added</i>	GdkToolInfo_AddOutput	Add data output. For output of measurements / geometric features / profiles / surfaces.
<i>Function Added</i>	GdkToolOutput_Init*At	Return an output message, to which the output should be attached. Measurement / Feature / Profile / Surface
<i>Function Deprecated</i>	GdkParamsInfo_Add*	Replaced by GdkToolInfo_AddParam(.., GDK_PARAM_TYPE_*, ..)
<i>Function Deprecated</i>	GdkToolVersionInfo_AddMeasurement	Replaced by GdkToolInfo_AddOutput(.., GDK_DATA_TYPE_MEASUREMENT, ..)
<i>Function Deprecated</i>	GdkToolOutput_SetResult	Setting an output message is now being done through GdkToolOutput_InitMeasurementAt(..)

