

Gocator Firmware 4.6 - Release Notes

Firmware Version 4.6.7.5

Document Revision C

Compatibility

Gocator 4.x firmware is NOT compatible with Gocator 3.x firmware. Users need to setup their configurations using the Gocator 4.x firmware. SDK users need to update their software to work with the Gocator 4.x SDK.

The [Gocator 4.x Setup migration guide](#) and [SDK migration guide](#) explain how to migrate from Gocator 3.x firmware to Gocator 4.x firmware.

Sensors upgraded to the Gocator 4.x firmware can downgrade back to Gocator 3.x firmware.

Users should back up their sensors before upgrading from Gocator 3.x firmware to Gocator 4.x firmware.

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

New Features

<i>Expanded Multi-sensor support</i>	Instead of being limited to two sensors, you can now connect three or more matching sensors together in a system and have Gocator output combined results. This allows you to easily perform measurements on the merged data within the Gocator system.
<i>Geometric features</i>	Most tools now produce geometric features (Points and Lines). Features can be taken in by other tools such as the Feature Intersect and Feature Dimension tools to perform measurements.
<i>Surface Edge Tool</i>	Fits a line to edges in height or intensity data. Angle and position of the edge can be measured and other tools can be anchored to the measurements.
<i>Feature Intersect Tool</i>	Determines the intersect point of two line features. This can be useful as an anchor point or to measure distances from.
<i>Feature Dimension Tool</i>	Adds the ability to measure point-to-point and point-to-line distances between various features without needing to write a script function.
<i>Angle Anchoring</i>	Rotate tool regions dependent on an input angle. This allows precise tracking of parts that are changing in orientation.
<i>Continuity spot selection</i>	Allows filtering reflections or noise by preferring continuity along a profile for G2 sensors.
<i>"Duplicate Tool" capability</i>	Easily duplicate an existing tool with its configuration using a single click in the tools list.

<i>Independent Exposure control</i>	Gocator 3xxx series sensors now support independent control of the two camera's exposure times. This balances intensity for reflective surfaces where more light is reflected into one camera than the other.
<i>Imager Gain</i>	Gocator 3xxx series sensors now support control of the imager gain value. This allows reducing exposure time while reducing scan quality.

Improvements

<i>Accelerator on G2 sensors</i>	The speed of G2 sensors using the GoX Accelerator has been improved significantly by offloading more processing onto the PC. Perform surface scans at up to 7kHz.
<i>Rotated regions</i>	Surface tool regions can now be rotated by a set amount on the Surface Dimension and Surface Position tools. For features which are at an angle, this can ensure only the full desired region is covered.
<i>G2 Surface Mode "External Input" trigger</i>	Surface mode on G2 sensors can now be triggered using an External Input (digital input).
<i>Profile Line Fitting regions</i>	The Profile Line tool now allows specifying separate fitting regions allowing separation of line fitting region and region on which the measurements are performed.
<i>Profile Line Measurements</i>	The Profile Line tool can now measure offset (Z axis intersection) and angle (relative to X). The positions of Max and Min Error have also been added.
<i>Surface Plane Normal Vector</i>	The Surface Plane tool now outputs normal vector measurements to eliminate need for scripts or off-sensor functions to compute vectors from existing measurements.
<i>Part Detection Height Threshold</i>	The Part Detection "Height Threshold" value no longer prevents running the sensor when the value is outside the active area range. For example, a low height threshold can be kept even when active area or transformation changes are being made.
<i>"Range" in Dashboard</i>	The dashboard now displays the range of measurement values (Max-Min)
<i>Tool execution time</i>	Tool execution time is now shown in the dashboard.
<i>Scan page for technicians</i>	Technician users can now see the scan page visualization while still being restricted from modifying settings
<i>Intensity data control</i>	On G3 sensors, added the ability to select which camera and exposure intensity information is obtained from.
<i>HD Mode</i>	Previous limitations of 3D rendering level of detail are removed after zooming in to a high resolution scan and enabling HD mode.
<i>Video Mode BMP export</i>	A bitmap image can now be saved from Video mode for lossless storage and analysis.



<i>Accelerator Part Length limit</i>	When using the Accelerator, there is now no limit on the maximum part length or Y resolution of the surface.
<i>Accelerator & Emulator side-by-side</i>	It is now possible to have an accelerator and emulator instance running in parallel.
<i>Emulator /browser option</i>	Added a command line option "/browser" to open the emulator in the default browser as well as the standard window.
<i>Recording through SDK</i>	The SDK now supports the ability to record directly to PC. This allows creating large recordings over long run times compared to recording locally on a Gocator sensor.
<i>GDK tool frame information</i>	GDK tools can now access frame information. Added "frameInfo" struct to GdkInputItem with time, encoder, encoderIndex, and frame # and digitalInputStatus.
<i>CSV converter SURF format</i>	Added support for converting .csv files to SURF format (.sur) for importing into DigitalSurf MountainsMap.
<i>CSV Converter spectrum BMP</i>	CSV converter now supports output of a 24-bit bitmap using a colour scale for heightmap visualization, similar to the default visualization in the Gocator Web UI.
<i>Video mode spot visualization</i>	Improved the rendering of spots in Video mode to match more closely with the Profile mode results.

Fixes

<i>Emulator CSV export</i>	In some cases CSV export from the Emulator could fail.
<i>Incorrect height values</i>	When mousing over a surface height map or intensity data, the values shown in the tooltip could be from neighboring points rather than the closest under the cursor.
<i>Multiplexing Interference</i>	Some interference of laser lines could interfere when multiplexing Gocator 2400 series sensors.
<i>ASCII protocol sensor crash</i>	Under some circumstances after enabling Ethernet ASCII protocol through the Gocator protocol immediately after enabling Ethernet protocol, the sensor could crash.
<i>ASCII protocol formatting</i>	An extra delimiter was present in the ASCII output, formatting the measurement ID as "M,00" when it should have been "M00".
<i>SDK compatibility</i>	The latest SDK releases were unable to connect to sensors with earlier firmware versions.
<i>Part Frame of Reference</i>	Display of surface data could be affected when Part Detection Frame of Reference was set to Part.



<i>Surface Hole</i>	When the height of the measurement region was very small or close to the origin, the Surface Hole could fail to detect some holes.
<i>Profile Intersect memory leak</i>	The Profile Intersect tool with no data in its regions could leak memory leading to unexpected behaviour of a sensor and potential crash.
<i>Gocator 2375</i>	Sensor could power up with error “Could not load default job” after naming the default configuration and saving as a new default job.
<i>Anchoring error</i>	Under some circumstances after deleting all tools a sensor could still produce an anchoring error and fail to start.
<i>Emulator launch</i>	Emulator would not launch and not report error when placed in a path with unicode characters. Now an error is reported indicating the cause.
<i>GDK tools with accelerator</i>	A default job with GDK tools was not listing the GDK tools after the sensor is accelerated.

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 visualizer view (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>Translations incomplete</i>	Not all English text is translated in every translation.

SDK and Protocol Changes

Protocol Version 101.9

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 4.5 and Release 4.6. 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> GoSetup_SetTriggerBurstEnabled GoSetup_TriggerBurst*	Added trigger burst mode (advanced mode feature, in beta)
<i>Added</i> GoSetup_LayoutMultiplexingBankUsed GoSetup_LayoutMultiplexingBank GoSetup_LayoutGridUsed GoSetup_LayoutGridDirectionSystemValue	Added ability to set grid layout and direction and multiplexing bank
<i>Added</i> GoSetup_EnableTemperatureSafety	Enable temperature safety



<i>Added</i>	GoSetup_OcclusionReductionAlg GoSetup_SetOcclusionReductionAlg GoSetup_OcclusionReductionAlgUsed	Occlusion reduction selection
<i>Added</i>	GoSetup_EnableFlickerFreeMode GoSetup_FlickerFreeModeEnabled GoSetup_FlickerFreeModeAvailable	Flicker free mode
<i>Added</i>	GoSetup_BarHoleCountUsed GoSetup_BarHoleCountValue GoSetup_BarHoleDistanceUsed GoSetup_BarHoleDiameterUsed	Alignment configuration parameters for expanded multi-sensor support
<i>Added</i>	GoSetup_Advanced	Set advanced
<i>Added</i>	GoSetup_IndependentExposuresUsed GoSetup_EnableIndependentExposures GoSetup_IndependentExposuresEnabled	Independent exposure configuration
<i>Added</i>	GoSetup_FrontCameraExposureLimitMax GoSetup_FrontCameraExposureLimitMin GoSetup_SetFrontCameraExposure GoSetup_BackCameraExposureLimitMax GoSetup_BackCameraExposureLimitMin GoSetup_SetBackCameraExposure GoSetup_BackCameraExposure	Independent exposure configuration
<i>Added</i>	GoSetup_IntensitySource GoSetup_SetIntensitySource GoSetup_IntensitySourceOptionAt GoSetup_IntensitySourceOptionCount	Intensity source selection
<i>Added</i>	GoSensor_IsCompatible GoSensorInfo_buddyableStatus GoSensorInfo_MainId GoSensorInfo_BuddyableStatus	Expanded multi-sensor support
<i>Added</i>	GoExtMeasurement_CustomParameterAt GoExtMeasurement_CustomParameterCount	Custom parameter control
<i>Added</i>	GoExtTool_YAnchorSupportEnabled GoExtTool_ZAnchorSupportEnabled GoExtTool_ZAngleAnchorSupportEnabled GoExtTool_ZAngleAnchorOptionCount GoExtTool_ZAngleAnchorOptionAt GoExtTool_ZAngleAnchor GoExtTool_SetZAngleAnchor GoExtTool_ZAngleAnchorEnabled	Added new region anchoring support
<i>Added</i>	GoExtParams_ParameterCount GoExtParams_ParameterAt GoExtParams_FindParameterById	Extensible tool parameters
<i>Added</i>	GoFeature_*	Added new geometric features
<i>Added</i>	GoExtFeature_CustomParameterCount GoExtFeature_CustomParameterAt	Access custom parameters and custom parameter count
<i>Added</i>	GoMeasurement_XSmoothingPreserveInvalidEnabled	Preserves invalid values



	GoMeasurement_SetXSmootherPreserveInvalidEnabled	
Added	GoTool_FeatureOutputCount GoTool_FeatureOutputAt GoTool_FindFeatureOutputByType	Tool feature outputs
Added	GoTool_AddMeasurement GoTool_AddExtMeasurement GoTool_RemoveMeasurement GoTool_ClearMeasurements	Measurement configuration
Added	GoToolUtil_ParseStreamOptions	Reads stream options
Added	GoToolOption_FeatureOptionCount GoToolOption_FeatureOptionAt	Access Feature options and feature option count
Added	GoSurfaceTool_ZAngleAnchorOptionCount GoSurfaceTool_SetZAngleAnchor GoSurfaceTool_ZAngleAnchorEnabled GoSurfaceTool_ZAngleAnchor	Z rotation angle anchoring support
Added	GoSurfacePlane_*	Added new normal and distance measurements
Added	GoExtParamFeature_Value	Returns value of the feature
Added	GoProfileArea_CenterPoint	Returns the center point of the profile area
Added	GoProfileIntersect_LineFeature GoProfileIntersect_BaseLineFeature	Profile Intersect feature out
Added	GoProfileLine_FittingRegions	FittingRegions and new measurements
Added	GoControl_GetSensorInfoV2	
Added	GoControl_AssignBuddies GoControl_RemoveBuddiesByld GoControl_RemoveBuddies	Buddy management
Added	GoAdvanced_*	Advanced settings including spot threshold, spot width max etc.
Added	GoAccelerator_SetAcceleratorUpdateHandler	
Added	GoSurfaceRegion2d_SetZAngle GoSurfaceRegion2d_ZAngle	Z rotation angle for regions
Added	GoRegion3d_SetZAngle GoRegion3d_ZAngle	Z rotation angle for regions
Added	GoProfileLineOffset GoProfileLineMinErrorX GoProfileLineMinErrorZ GoProfileLineMaxErrorX GoProfileLineMaxErrorZ	New Profile Line measurements
Added	GoProfilePanelLeftGapX GoProfilePanelLeftGapZ GoProfilePanelLeftFlushX GoProfilePanelLeftFlushZ GoProfilePanelLeftSurfaceAngle	Profile Panel measurements



	GoProfilePanelRightGapX GoProfilePanelRightGapZ GoProfilePanelRightFlushX GoProfilePanelRightFlushZ GoProfilePanelRightSurfaceAngle	
<i>Added</i>	GoSurfacePlaneXNormal GoSurfacePlaneZNormal GoSurfacePlaneDistance	Surface Plane measurements
<i>Added</i>	GoSurfaceEdgeX GoSurfaceEdgeY GoSurfaceEdgeZ	Surface Edge measurements

Configuration and Protocol changes

Action Type	Name	Description of change
<i>Added</i> Configuration	Setup/ProfilePanel/Measurements/<Gap Flush> Setup/ProfilePanel/Measurements/<SurfaceAngle>	Profile Panel measurements for left/right and x/z gap or flush Profile Panel measurements for left/right surface angle
<i>Added</i> Configuration	Setup/Stream/Stream/Source/AdditionalRegions Setup/Streams/Stream/Source/AdditionalRegions/Region	Collection of additional source regions
<i>Added</i> Configuration	Setup/FlickerFreeModeEnabled Setup/FlickerFreeModeEnabled.used	Flicker free mode
<i>Added</i> Configuration	Setup/Triggers/EncoderSpacing/used	"used" encoder spacing attribute
<i>Added</i> Configuration	Setup/Triggers/BurstEnabled Setup/Triggers/BurstEnabled.used Setup/Triggers/BurstCount Setup/Triggers/BurstCount.used Setup/Triggers/BurstCount.max	Burst capture feature
<i>Added</i> Configuration	Setup/Layout	Buddied sensors system grid layout
<i>Added</i> Configuration	Setup/Alignment/Bar	Parameters for buddy alignment
<i>Added</i> Configuration	Setup/Devices/Device/Layout	Buddied sensor grid layout
<i>Added</i> Configuration	Setup/Devices/Device/Exposure/used	"used" exposure attribute
<i>Added</i> Configuration	Setup/Devices/Device/Material/SpotContinuitySorting	Spot continuity sorting feature
<i>Added</i> Configuration	Setup/ToolOptions/FeatureOptions	Tool option feature options
<i>Added</i> Configuration	Setup/Tools/<Tool>/Source Setup/Tools/<Tool>/Features Setup/Tools/<Tool>/Anchor/ZAngle Setup/Tools/<Tool>/StreamOptions Setup/Tools/<Tool>/Stream	Tool data source Tool output feature (some tools) Tool Z angle Tool streaming options Tool stream source



<i>Added</i>	Configuration	Setup/Tools/Tool.type="SurfaceEdge" Setup/Tools/Tool.type="FeatureIntersect" Setup/Tools/Tool.type="FeatureDimension"	New tools
<i>Added</i>	Data Message	Tool Runtime	Health Message
<i>Added</i>	Data Message	Feature Point, Feature Line, Feature Plane, Feature Circle	Public Message
<i>Added</i>	Protocol	Get System Info v2	Updated system info message
<i>Added</i>	Protocol	Assign Buddies Remove Buddies	Buddy control commands

