LMI TECHNOLOGIES
3D MEASUREMENT AND CONTROL, MADE EASY™

Revision: B

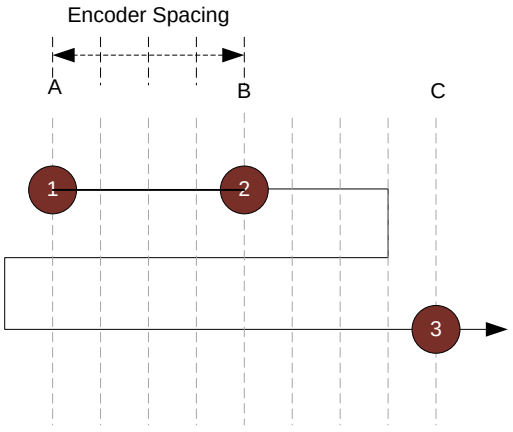
Gocator 20XX Release Notes
Version 2.2.0.52

New Features:

Difference Area	A built-in profile tool to measure the difference in cross-sectional area (mm^2) between a live profile and a registered template. Limits can be set to establish pass and fail conditions for inspection decisions. This tool is useful in determining if an object is of the correct overall shape.
Difference Peak	A built-in profile tool to measure the maximum difference (mm) between a live profile and a registered template. Limits can be set to establish pass and fail conditions for inspection decisions.
Dynamic Exposure Control	An exposure control mode that continuously self-adapts to varying surfaces over time. This can be valuable when the surface being measured continuously changes in colour or reflectivity.
Multiple Sensor Synchronization (via SDK)	Function calls have been added to the Gocator SDK to allow for full flexibility in configuring sensor timing. This is useful in a system with multiple sensors to eliminate cross-talk by preventing one sensor from seeing the other sensors' laser. See SDK documentation for Go2Sensor_SetExposureDelay().
Raw Profile Output	An operational mode to acquire unprocessed range data from the sensor. This raw data is delivered as (x,z)-coordinate pairs. All post processing is disabled to achieve the highest possible speed.
Scheduled Output	Ability to configure a delay for the Digital and Analog output channels. These channels can now be setup to go active at a specified future time (or position if using encoder), as measured from the start of camera exposure. It is also possible to schedule an output by a software command. This is useful to track parts on a conveyor until arrival at a reject or sorting position.

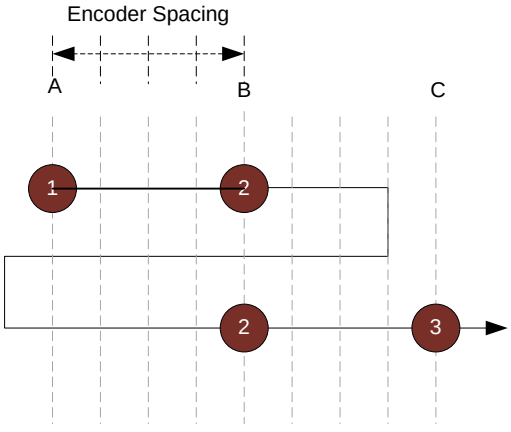
Improvements:

Alert is displayed when Flash prevents loading of the web interface	When loading the web interface, there may be occasions when Flash on the user's PC blocks loading of the web interface. When this occurs, the alert message: "*Unable to load Flash components. This may be because of a Flash-blocker installed in your browser*" is displayed. To correct this issue, check the settings on your browser and modify as required.
Number of valid data points now shown in the 'Health' message	On the Dashboard page, the number of valid data points along the laser line is displayed as the 'Valid Point Count'. This is also sent out on the health channel when the SDK is used. This is useful in determining how much of the laser line is being detected on an object to determine if the exposure needs to be adjusted.
Eliminated the need for serial numbers in sensor configuration	Sensor configuration no longer requires an explicit sensor serial number. The Main sensor is referenced as '0' and the Buddy sensor is referenced as '1'. This allows a configuration to be shared amongst several systems involving different serial numbers without changes.
The profile for each sensor is displayed in a unique colour in Dual-Sensor System	In a Dual-Sensor System, the profiles from the Main and Buddy sensors are each displayed in a unique colour on the viewer to differentiate them. This is useful in all dual sensor orientations, but especially in 'wide' mode when the two profiles are combined into a single profile.
Sensor Calibration values can be manually edited	The 'Calibration' function (Setup Page) generates the parameters that translate sensor coordinates to world coordinates. Within the 'Transformations' tab, these parameters can now be manually edited to fine tune this transformation.
The frame rate can be set to a specific value	Frame Rate (Setup Page / Frame Rate) can now be set to a specific value. In previous versions the frame rate was set as a % of the Maximum Scan rate.
The frame rate can be forced to the maximum rate	The Frame Rate (Setup Page / Frame Rate) can be set to run at the Maximum rate available, using a check box. This will override the setting of the specific Frame Rate (see above).
No limit on the number of Measurement Tools	On the Measurement Page there is no limit placed on the number of built-in measurements tools that can be added to the list. However, it's still the user's responsibility to manage CPU load!
Frame Drop indication in Metric Panel	The Metric Panel is improved to alert the user whenever there are frame drops, which can be caused by CPU over-utilization or an external input rate that is too high.
Encoder Forward Triggering	Encoder forward triggering behaviour is changed such that after moving in reverse, the sensor will trigger on forward motion as soon as the transport system moves forward by at least one encoder spacing. See below for description of the behaviour.



Release 2.0 Encoder Forward Behavior

Trigger Point



Release 2.2 Encoder Forward Behavior

Fixes:

SKD supports multiple sensors.	The SDK can now use multi-sensor system commands, such as ScheduledStart().
Overlap Selection.	An issue was corrected that caused incorrect operation when 'overlap' was enabled in Dual-Sensor system and a sensor exposure value was larger than ½ the scan period.
Field of View (FOV) value corrected.	The Field of view is now calculated correctly after calibration. In previous versions the FOV would clip the data inside of the valid data region after calibration.
Web Interface Cache.	It is no longer required to clear the browser's cache after upgrading the software.

Known Issues:

Composite Exposure handling in the SDK in dual-sensor setup	The SDK does not ensure that the exposure steps that are set for composite exposure are the same between the Main and Buddy sensors in Dual Sensor Mode. User must ensure that they are the same.
Exposure mode must be the same on both sensors in dual-sensor setup	The exposure modes (Single, Multiple, Dynamic) must be the same on the Main and the Buddy sensor or they will fail to start. User must ensure that they are the same.
Frame Drops at High Frame Rate	The Gocator could occasionally drop frames at high frame rate even though resources are available. The rate of drop is approximately once every 24000 frames. A fix has been developed and will be released shortly.
Exposure Training Failed with some targets on Gocator 2020	Exposure training could fail on some highly reflective targets with the Gocator 2020. User might need to manually tune the exposure for these targets.

Protocol Changes:

The following applies to the SDK and require updates to SDK-based software to function correctly on 2.2 or higher

Action	Type	Name	Id	Description of change
Add	Command	ScheduledStart	0x101D	Schedules the system to start at a specific time or encoder count
Change	Command	GetSystemInfo	0x4002	The CalibrationState parameter now has the enumeration: 0 – None 1 – Auto 2 – Manual
Add	Command	ScheduleDigitalOutput	0x4518	Schedule a digital output activation event
Add	Command	ScheduleAnalogOutput	0x4519	Schedule an analog output activation event
Add	Config option	DifferenceArea	0x23	New measurement type for calculating the area between the live profile and the registered template
Add	Config option	DifferencePeak	0x24	New measurement type for calculating the maximum difference between the live profile and the registered template
Add	Config option	Sensor		'role' attribute 0 – Main 1 – Buddy
Add	Config option	FrameRate		Specifies the frame rate for the sensor, as a float
Add	Config option	FrameRateMin		Specifies the minimum frame rate, as a float
Add	Config option	FrameRateMax		Specifies the maximum frame rate, as a float
Add	Config option	FullFrameRateEnable		When set, the sensor ignores the value of FrameRate and runs at max speed
Add	Config option	Sensor/Profiling/ExposureDelay		Determines the amount of delay this sensor should wait from a trigger point until actually performing its exposure. Primarily used in multi-sensor systems
Add	Config option	DifferenceArea	0x23	New measurement type for calculating the area between the live profile and the registered template
Add	Config option	Outputs/Analog/InvalidCurrentEnable		When set to 1, the output will follow the InvalidCurrent setting when results are invalid. When set to 0, the output will hold the last analog output when results are invalid.
Add	Config option	Ethernet /RawProfile		List of selected raw profile sources
Add	Config option	Ethernet /RawProfileOptions		List of the acceptable raw profile options
Add	Config option	DigitalOutput/Delay		Delay digital output activation, as measured from the time of camera exposure. Value must be higher than the processing latency
Add	Config option	DigitalOutput/SignalType		Specifies the behaviour of the output. 0 – Pulsed 1 – Continuous
Add	Config option	DigitalOutput/Event		Specifies the event source of the digital output. 1 – Data 2 – Software
Add	Config option	DigitalOutput/ScheduleEnable		Select immediate or scheduled behaviour.
Add	Config option	Analog/Delay		Delay analog output activation, as measured from the time of camera exposure. Value must be higher than the processing latency
Add	Config option	Analog/Event		Specifies the event source of the analog output. 1 – Data 2 – Software
Add	Config option	Analog/ScheduleEnable		Select immediate or schedule behaviour.

Add	Config option	Trigger/SystemDomain		Specifies the units (us or mm) for external input or software trigger source
Add	Removed	Trigger/TriggerDelayMode		Replaced by Trigger/SystemDomain
Change	Config option	<Measurement>/Source		No longer accepts serial numbers. Now accepts list of: 0 – Main 1 – Buddy 2 – Combined (if layout permits)
Change	Config option	Outputs/Ethernet/Profile		No longer accepts serial numbers. Now accepts list of: 0 – Main 1 – Buddy 2 – Combined (if layout permits)
Remove	Config option	Sensor		'id' attribute
Remove	Config option	SpeedRatio		This configuration parameter is no longer available
Remove	Config option	SpeedMax		This configuration parameter is no longer available
Change	Data	Top-level attributes		**Added** - encoderIndex **Removed** - temperature
Change	Data	Video Block attributes		**Added** - exposure **Removed** - width - height - type
Change	Data	Profile Block attributes		**Added** - exposure
Add	Transform format	transform.xml		A new file is now available which exposes the coordinate transformations applied to the Main and Buddy sensors.

Table 2: SDK Protocol Changes.