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Release Notes

Product: chroma+scan 3X00 Family
New Version: 4.11.11.31 (previous version: 4.11.6.22)

Compatibility Overview:

4.11.6.x to 4.11.11.x

- The *Settings.xml* schema version has changed from "2" to "3". Changes in version 3 are noted below. The server continues to accept version 2 settings files in this release, but this support may eventually be removed.
- The calibration file format and file extension have changed. Refer to the User's Manual for details.
- Support for versions 1 and 2 of the *Calibration Completed* message has been eliminated.
- The interpretation of the *yOrigin* and encoder fields in Detection messages have changed somewhat in this release. See below for details.

New Features:

64-bit Windows support

We now support stations running 64-bit Windows OS.

Web mode

Web mode is a new system operation mode that aims to decrease transmission latency from stations to client computers. Web mode is similar to Detection mode, but does not implement a detection state machine. Instead, Web mode streams small tiles of profile/vision/tracheid data as soon as they become available, regardless of whether a target object is present. System calibration (if present), is applied in Web mode and digital inputs from the FireSync Master are included in Web mode data messages. However, some of the post-processing options available in Detection mode that require a complete object to be present in station memory (e.g. edge filtering, vision background filtering) are not available in Web mode.

Improved FireSync Client data visualizations

The data controls used in FireSync Client have been re-implemented for better performance and features. This is most noticeable in Detection mode, as you can now create horizontal/vertical profile windows to plot a cross-section of data (data profiling mode is controlled via a toolbar). Tracheid displays now have three layers (Angle, Scatter, Area), which can be turned on/off via a right-click on the data. The new data controls support zooming with the mouse wheel (or ctrl-click to zoom in, ctrl-shift-click to zoom out), and panning via mouse drag. We have changed the default colorization of the profile display from rainbow to greyscale, but the rainbow color-mapping can be accessed by right-clicking on the data control.





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<i>Calibration status</i>	The Calibration Tab in FireSync Client now reports the current calibration status of the system (i.e. whether each connected station contains a valid calibration record). Alongside the calibration status, a Clear button is now provided so that calibration can be removed without logging into a FireSync Station.
<i>Travel Orientation and Y Orientation settings</i>	Server setup now includes three fields related to the y-orientation of the system. These settings are all defined from the perspective of an observer standing "in front" of the system (either side can be the "front"). The <i>Travel Orientation</i> setting defines the direction of the conveyor: <i>Moving Toward</i> (the observer) or <i>Moving Away</i> (from the observer). The <i>Top Y-Orientation</i> and <i>Bottom Y-Orientation</i> settings define the mounting orientation of the sensors: <i>Facing Toward</i> (the observer) or <i>Facing Away</i> (from the observer). Sensors are considered to be facing toward the observer if their logos and labels are visible.
<i>Calibration feedback</i>	In previous releases, very little diagnostic feedback was provided by the calibration process. In this release, calibration sends a list of issues (errors and warnings) as well as scans of the calibration bar re-processed using the calibration results.
<i>Obstruction definitions</i>	In previous releases, obstruction definitions were required prior to calibration in order to mask out chainways. In this release, obstruction definitions are no longer required for calibration. Obstruction setup can be omitted altogether if obstructions are not required by your application. Additionally, in 4.11.6.22, obstruction and section definitions could not be modified after creation (had to be deleted and recreated). This release supports editing existing obstructions and sections.
<i>Improved vision calibration robustness</i>	Vision gain calibration now includes some filtering to reduce the impact of small defects in the calibration bar (e.g. scratches). The filter area is limited to 1000 mils wide by 150 mils high; defects larger than half the filter size are not likely to be removed. Future releases will continue to improve on the filtering approach.
<i>Vision calibration R,G,B intensities</i>	Vision calibration now accepts individual target values for Red/Green/Blue intensity. This accommodates calibration bars that are not strictly grey, or tweaking the RGB values to produce a custom color balance.
<i>Multiple station support</i>	Previously, when using multiple stations, all settings had to be entered separately for each station in FireSync Client. In this release, most of the per-station configuration is now consolidated at the System level (i.e. the root node in the FireSync Client device tree). Changes made in System configuration pages are automatically saved to each connected station. Note: firmware upgrades and operations such as backup/restore must still be performed separately for each station.
<i>Start Delay scaled to system size</i>	Previously, the value returned by the FireSync Host Protocol <i>Get Server Start Delay</i> command was the field <i>StartDelay</i> in kServer.xml (located in the server storage directory). We now scale the start delay to the size of the system using two fields in kServer.xml: <i>StartDelay</i> , and <i>SensorStartDelay</i> , where the start delay returned by <i>Get Server Start Delay</i> is calculated by:





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	$Delay = StartDelay + (number\ of\ sensors) * SensorStartDelay.$
<i>Start time expiry warning</i>	Previously, if the start time expired before the server had completed initialization, no warning was produced and the system would not start correctly (lights or lasers would flash). In the new release, the system start will fail if the start time expires, and an error will be produced in the server's dashboard.
<i>Data beyond nominal sensor field-of-view (x-axis) now accessible</i>	This release allows access to profile/vision/tracheid data from beyond the nominal field-of-view of each sensor (i.e., beyond the stated 24" field-of-view). This can provide a small amount of additional profile/vision/tracheid data at system boundaries, or in between sensors if they are mounted with additional space between each unit. In 4.11.6.22, if an output section was defined from x=-1000 to x=24000, the data from x=-1000 to x=0 would have been empty (null). In this version, if the sensor can detect material beyond its strict 24" field-of-view, then that information is available in the transmitted web or detection output.
<i>Bottom Y Orientation setting</i>	There are now separate settings for top and bottom y-orientation, which enables bottom sensors to be mounted in a direction opposite from top sensors.
<i>Use X Centres setting</i>	This setting for each sensor specifies its mounting position along the length of the system (x-axis). When this feature is enabled, the station will place the data from each sensor at the specified location within the overall system. This feature might be used with systems that have unusual sensor spacing, or to fine-tune sensor x-positions in systems that cannot use calibration bar locator holes (e.g. vision-less systems).
<i>Overlap Blend setting</i>	This release provides the ability to blend data from adjacent cameras, when can be beneficial in cases where camera fields-of-view overlap. The <i>OverlapBlend</i> setting provides control over the maximum blend size, in mils.
<i>Gap Fill setting</i>	This release provides a setting to control the maximum gap size, in mils, that can be filled by connecting adjacent data along the x-axis. This affects two situations: the maximum gap that will be filled between adjacent valid laser dots within a single profile/tracheid camera, and the maximum gap that will be filled between adjacent profile/tracheid/vision cameras. We recommend leaving this setting at the default (1500 mils), as this provides a reasonable balance between filling in laser gaps at near range and obscuring actual holes in the object surface. However, this setting can be decreased (leaving it up to the receiver to decide if/when to fill gaps) or increased (automatically filling larger field-of-view gaps).
<i>Profile Interpolation setting</i>	This release provides a new setting to control the profile resampling method (nearest neighbor vs. linear interpolation). 4.11.6.22 used linear interpolation by default. The use of nearest-neighbor resampling may be preferred if linear interpolation is believed to introduce undesirable artifacts.
<i>Obstruction Filter settings</i>	This release provides a new setting to control whether profile data from within obstruction regions is included in transmitted web and detection mode output. This enables obstructions to be defined somewhat generously (can err on the side of larger obstructions), in order to facilitate reliable calibration





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	and object triggering, but without sacrificing any of the profile data transmitted to a web-mode or detection-mode client.
<i>Trigger Style setting</i>	This release provides a new setting to control the way in which the <i>TriggerLength</i> threshold is applied (global vs. local trigger). With a global trigger, the total target material present along the x-axis is considered. With a local trigger, the target material must be connected (contiguous) along the x-axis. 4.11.6.22 used global triggering by default.
<i>Background Filter setting</i>	This release provides a new setting to control whether vision and tracheid pixels are masked out where there is no corresponding profile data. 4.11.6.22 masked out these vision/tracheid pixels by default.
<i>Simulated speed</i>	It is now possible to simulate forward motion via a software setting. This is useful when testing without an encoder, or to simulate station processing at maximum speed. In FireSync Client, this feature is enabled by entering the encoder resolution using a special format. E.g. "4.165@40000" is interpreted as 4.165 mils per pulse at 40000 mils per second (simulated speed). When this input format is used in FireSync Client, an optional XML field (<i>Setup/SimulatedSpeed</i>) is written into the server settings to express simulated speed information. Speed simulation works in all modes, but only affects the encoder values transmitted in data messages - health messages and event messages will contain real encoder values rather than simulated values.
<i>Improved FireSync Client settings validation</i>	In 4.11.6.22, FireSync Client was more permissive with respect to entering invalid settings. This release provides more input checks and also prevents settings from being modified at an inappropriate time. One important consequence is that some settings can no longer be edited while the system has a valid calibration record.
<i>Improved settings flexibility after calibration</i>	In previous releases, some settings (e.g. sampling resolutions) could not be changed after calibration. This release reduces the number of settings that cannot be changed while the system is calibrated.
<i>Tracheid sensitivity adjustment</i>	The tracheid sensitivity specifies a global modifier for all the Top or Bottom sensors' tracheid thresholds applied at the raw image level (applies only to systems with Tracheid cameras). Increasing this value raises the threshold and tends to increase the dot independence. This helps increase the accuracy of near horizontal Angle measurements. Increasing this value can cause 45 degree dots to appear rounder in the Aspect Ratio output. Decreasing this value lowers the threshold and tends to increase the scatter signal processed, resulting in a stronger Aspect Ratio. Lowering this value too much begins including more noise in the dot data.
<i>Improved serial assignment</i>	In previous releases, as sensors are assigned serial numbers, the list of possible serials did not change. In this release, the list is sorted and does not contain assigned serials. Additionally, detection of duplicate serial number assignments across different groups in FireSync Client has been fixed.
<i>Defaults for adding sections</i>	The defaults when adding new sections have been changed such that the ID does not need to be manually incremented after the first section is





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	entered, and the section width is determined based on the number of sensors in that group.
<i>Additional profile Y resolution options</i>	FireSync Client options for 0.005" and 0.010" profile Y resolution have been added.
<i>FireSync Client display of Web and Detection messages</i>	In 4.11.6.22, FireSync Client could only receive/display detection messages sent on channel zero. FireSync client can now receive/display Web and Detection messages sent on any channel (0-63).
<i>Improved FireSync Client data capture performance/reporting</i>	The FireSync Client Capture feature, used in support situations, has been improved in this release. Data is now buffered in client memory, making the speed of the client disk less of a bottleneck. Also, recording statistics are now displayed in a data tab during each capture. The most useful statistic is "Messages Dropped", which should normally be zero after a successful capture. If "Messages Dropped" is not zero, it is usually a sign that the capture reduction factor should have been larger (network is saturated). Together, these changes should reduce data capture problems and improve the turn-around time for support.
<i>More health indicators integrated into FireSync Dashboard</i>	This version integrates more of our internal error/warning checks into the FireSync Dashboard, so that it can now report a wider variety of issues.





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Changes:

Performance differences

In 4.11.6.22, the FireSync Server application could effectively make use of up to two processor cores. In this release, we have re-structured our FireSync Server application to use all available processor cores. As such, CPU and memory utilization may be different in this release, depending on modes/settings. In most cases, CPU utilization will be slightly higher overall (but lower per core) and memory utilization slightly lower. Please review/monitor performance on station computers after upgrading and ensure CPU usage is below approximately 65%.

Apply/Discard buttons removed from FireSync Client

In 4.11.6.22, settings were not confirmed/saved until the Apply button was pressed. FireSync Client now automatically ensures that settings are saved before the system is started or when the client disconnects.

Calibration file format finalized and published

The calibration file format has been finalized and documented in the User's Manual.

Calibration file extension changed from "klab" to "xml"

The calibration file extension has been changed in this release. This is noteworthy only if your application software programmatically clears calibration by sending a command to delete the calibration file.

FireSync Host Protocol message changes

- Client/server support for calibration message versions 1 and 2 has been removed. Only version 3 is supported in this release.
- Calibration mode now sends Detection messages (calibration bar scans) in addition to the Calibration Completed message.
- The yOrigin field in Detection messages is now relative to encoder zero (no longer zeroed by each server on start).
- Encoder values in Detection messages are now always uncalibrated. For calibration-aligned coordinates, use the yOrigin field.
- Private (undocumented) health indicators have been changed. Some new indicators added, some old indicators removed.

Settings.xml changes

- Updated *schemaVersion* attribute from "2" to "3"
- Removed *Setup/EncoderOffset* setting
- Added *Setup/TravelOrientation* setting
- Renamed *YOrientation* setting to *TopYOrientation*
- Changed interpretation of *Detection/MaximumWidth* setting: the *Detection/EdgeMargin* amount is no longer included in this setting
- Moved *TileWidth* and *ObstructionFilter* settings from *Web* and *Detection* tabs to *Sampling* tab
- Removed *Web* tab
- Replaced *Calibration/VisionIntensity* fields with *VisionIntensityR*, *VisionIntensityG*, *VisionIntensityB*





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- Added *Calibration/XAdjustment* and *Calibration/YAdjustment* fields
 - Removed *Calibration/ResponseVersion* fields (only version 3 supported in this release)
 - Removed Detection *YOrigin* setting (only system y-origin supported in this release)
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Application minimize/close behaviour

FireSync station-based applications (Server, Management, Dashboard) now minimize to the tray when the 'X' icon is clicked. To close these applications, right-click on the tray icon and select "Close". Note: the Server, Management, and Dashboard applications are updated with each server upgrade. The Watchdog application can only be updated by running the FireSync Station Installer from the station computer.

Sampling and Web tabs merged

The FireSync Client Sampling and Web tabs have been merged. The combined tab is called "Web" and can be used to exercise Web mode.





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Fixes:

<i>Dashboard shows all detected masters</i>	In previous releases, the dashboard would only show primary masters and not secondary masters (slaved). This has been fixed. Additionally, a warning is produced if multiple non-slaved masters are detected.
<i>Excessive "out of range" values sometimes reported after calibration</i>	In 4.11.6.22, if the calibration bar was significantly skewed when scanned, the resulting calibration would sometimes cause "out-of-range" values to be reported where valid data was present. This issue has been resolved.
<i>Server start bug when command connection is closed</i>	Previously, the server could not be run after a command connection was closed while the server was running. This bug has been addressed in this release.
<i>FireSync Management issue</i>	Previously, FireSync Management was being killed by FireSync Watchdog on systems where Windows Explorer is not used as the shell. This bug has been addressed in this release.
<i>Driver installation fix</i>	Previous releases contained a bug where the FireSync driver did not install correctly, resulting in no sensors being detected after the upgrade had completed. This has been fixed for all supported operating systems.
<i>Upgrade package failure</i>	Previously, occasional upgrades would produce the error "Device S/N XXXX requires a minimum version of X.X.X.X. Package version is 0.0.0.0." even if the correct package version was used. This has been fixed.
<i>Zen Api zResult_Size fixed</i>	A bug in zResult_Size has been fixed; this function now executes correctly.
<i>FireSync Client data visualizations synchronization fix</i>	In 4.11.6.22, we sometimes observed that one or more data displays in FireSync Client were not update when a board was scanned (displayed old data). This issue has been resolved.
<i>FireSync Client runtime error</i>	Previously, FireSync Client would produce a runtime error when the server storage contained files with names exceeding 63 characters (including the folder name within the storage directory). This has been fixed.
<i>System start with missing sensors</i>	Previously, the system would not start properly if sensors were missing but not disabled. This has been fixed.

