



AJA Ki Pro Ultra (Ethernet) Module Application Guide

Description

This module allows you to control many aspects of the AJA Ki Pro Ultra, Ki pro Ultra Plus, and Ki Pro Ultra 12G device using the RESTful IP interface.

This module provides a wide variety of functionality for control of and status feedback from a supported Ki Pro Ultra, Ultra Plus and Ultra 12G including:

- System configurations
- Preset saving and recalling
- Timecode settings
- Input selections and configurations
- Playback controls
- Record controls
- Signal Generators
- Clip and Transport controls

This module was developed and designed to work with the AJA Ki Pro Ultra, and Ki Pro Ultra Plus, however, not all functions are supported on all Ki Pro models or firmware versions. This module is not supported on the Ki Pro Rack and older Ki Pro models.

Supported Processors

A 3 or 4 series processor with Ethernet is required. This module is not supported on 2-series or earlier processors.

Compatibility			Processor Requirements	
			 Ethernet REQUIRED	 REMOVABLE MEDIA NOT REQUIRED

Contents

Description	1
Supported Processors	1
Module Application	3
Signal and Parameter Descriptions	4
DIGITAL INPUTS	4
ANALOG INPUTS	5
SERIAL INPUTS	5
DIGITAL OUTPUTS	5
ANALOG OUTPUTS	8
SERIAL OUTPUTS	8
PARAMETERS	8
Support	9
Distribution Package Contents	9
Revision History	10
ControlWorks Consulting, LLC Module License Agreement.....	11

Module Application

- Communications
 - The Crestron processor must be able to communicate with the KiPro over the network via TCP port 80.
 - Enter the IP address of the KiPro Ultra in the "IP Address or Hostname" parameter.
 - If desired, you can set a dynamic address using the [ip_address_or_hostname_override\$]. This field allows you to override the IP Address or Hostname parameter if a dynamically settable option is required.
- Polling
 - You do not need to poll for any of the inputs to function. Polling is only required for feedback of the device.
 - The module will start polling when the [start_polling] input is pulsed, and stop when [stop_polling] is pulsed. It is recommended to poll only when needed.
 - When polling is enabled, the module actively watches for play status. When the KiPro is playing, the poll frequency is significantly increased to ensure timecode is correct. It is recommended to only poll when feedback is needed.

Signal and Parameter Descriptions

Bracketed signals such as "[signal_name]" are optional signals

DIGITAL INPUTS

[enable_debug]	While high will print debugging information and status messages to the processor console. In most cases this signal should be left undefined or low.
[start_polling].....	Pulse to enable periodic polling of the KiPro for status updates. The polling interval is changed automatically based on of the KiPro is idle or running (for example, playing back, fast forwarding, rewinding, etc.)
[stop_polling]	Pulse to disable periodic polling of the KiPro for status updates. While polling is disabled the module's outputs may not represent the actual state of the KiPro.
[panel_lock_on]/[panel_lock_off]	Pulse to lock (disable) or unlock (unlock) the front panel controls on the KiPro
[change_slot_next_slot_request]	Pulse to request the KiPro to change to the next available storage slot (e.g. from Slot 2 to Slot 1 or Slot 1 to Slot 2). It is not possible to specify a specific slot.
[encode_multi_channel].....	Pulse to configure the KiPro to encode multiple channels when recording.
[encode_single_channel].....	Pulse to configure the KiPro to encode a single channel when recording'
[record_2/3/4_channels]	Pulse to configure the KiPro to record the specified number of channels when in multi-channel recording mode.
[sdi_monitor_all_channels]	Configure the SDI monitor output to receive all channels
[sdi_monitor_channel1...4]	Configure the SDI monitor output to receive the specified channel.
[hdmi_monitor_all_channels]	Configure the HDMI monitor output to receive all channels
[hdmi_monitor_channel1...4]	Configure the HDMI monitor output to receive the specified channel.
[timecode_burn_off].....	Pulse to disable "burning" the timecode into the video outputs of the KiPro
[timecode_burn_on_sdi_monitor].....	Pulse to enable "burning" the timecode into the SDI video output of the KiPro
[super_position_...].	Pulse to configure the super (timecode burn) in the corresponding location of the video frame (bottom center, bottom left, bottom right, top center, top left, or top right)
[lcd_super_opacity_...%]	Pulse to configure the opacity of the super box on the front panel of the KiPro between 25% and 100%
[video_source_...].	Pulse to configure the KiPro to use the specified video input when recording. Note: Not all KiPro models support all possible input options.
[audio_source_...].	Pulse to configure the KiPro to use the specified audio input when recording. Note: Not all KiPro models support all possible input options.
[audio_channels_2/8/16]	Pulse to configure the KiPro to record 2, 8, or 16 channels of audio.
[headphones_and_vu_meters_monitor_channels_...].	Pulse to select a pair of channels to monitor on the KiPro headphone output and VU meters (1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, or 15-16)

[play_media_behavior_...]	.....Determines how media is playback (e.g. single clip, all clips, or playlist contents)
[looped_playback_on/off]	.....Pulse to turn looped playback on or off. When looped playback is on clips will continue playing in repeat; otherwise clips will play only once.
[looped_playback_toggle]	.....Pulse to toggle looped playback mode on or off.
[record_captions_track_enabled/disabled]	.....Pulse to enable or disable recording a captions track when recording video content.
[record_loss_of_video_stop/continue]	.....Pulse to configure the behavior if a loss of video is detected while recording. If "stop" is selected, recording will be stopped, otherwise recording will continue.
[video_signal_generator_...]	.....Pulse to disable (off) or enable and configure the output of the internal video signal generator (black video, 75% bars or 100% bars)
[audio_signal_generator...]	.....Pulse to disable (off) or enable and configure the output of the internal audio signal generator (silence, or 1KHz tone)
[transport_command_play]	.....Pulse to start playback.
[transport_command_record]	.....Pulse to start recording.
[transport_command_stop]	.....Pulse to stop playback or recording
[transport_command_fast_forward]	.....Pulse to fast forward playback
[transport_command_fast_reverse]	.....Pulse to fast reverse (rewind) playback
[transport_command_single_step_forward]	.....Pulse to advance playback a single step forward
[transport_command_single_step_reverse]	.....Pulse to advance playback a single step backwards
[transport_command_next_clip]	.....Pulse to advance to the next clip in the sequence or playlist.
[transport_command_previous_clip]	.....Pulse to change to the previous clip in the sequence or playlist
[transport_command_variable_speed_play]	.....Pulse to change the transport to variable speed play mode.
[transport_command_preroll]	.....Pulse to change the transport to preroll mode

ANALOG INPUTS

[recall_preset_(1-20)]	.....Will recall the specified KiPro system preset (from 1 to 20) on any change.
[save_preset_(1-20)]	.....Will store the current KiPro settings as a preset (from 1 to 20) on any change.
[go_to_playlist_index]	.....Will attempt to load the clip at the specified index in the KiPro playlist. Typically the index starts at 0 where 0 is the first item in the list.

SERIAL INPUTS

[ip_address_or_hostname_override\$]	.....Allows you to override the IP Address or Hostname parameter if a dynamically settable option is required.
[system_name\$]	.....Sets the system name for the KiPro being controlled.
[current_playlist_name\$]	.....Sets the name for the currently selected playlist on the KiPro

DIGITAL OUTPUTS

[polling_active_fb]High when polling for the KiPro's current status is enabled. Module feedback will accurately represent the state of the KiPro.
---------------------	-------------------------------------------------------------------------------------------------------------------------------------

[polling_inactive_fb].....	High when polling for the KiPro's current status is disabled. Module feedback may not accurately represent the state of the KiPro
[panel_lock_on_fb]	When high indicates that the KiPro front panel buttons are locked (disabled)
[panel_lock_off_fb]	When high indicates that the KiPro front panel buttons are unlocked (enabled)
[change_slot_result...]	High to indicate the results of a change slot request. Note nuances of a slot change failure may be explained in more detail in AJA KiPro documentation.
[storage_alarm_..._fb].....	High to indicate the presence of a storage alarm (none, invalid media in the selected slot, or formatting of the selected slot failed)
[selected_slot_no_media_fb].....	High to indicate that the currently selected slot does not have (valid) media present.
[selected_slot_is_..._fb].....	High to indicate that the corresponding slot (S1, S2, or D1) is the currently selected slot.
[media_loading_operation_complete_fb].....	High to indicate that the media loading operation (mounting or unmounting) has completed.
[media_loading_media_mounting_fb].....	High to indicate that the KiPro is currently mounting (loading) media.
[media_loading_media_unmounting_fb]	High to indicate that the KiPro is currently unmounting (unloading) media.
[storage_command_..._fb].....	High to indicate that the KiPro is executing the corresponding storage command (none, acquire, release, rollover, or erase)
[encode_multi_channel_fb]	High indicates the KiPro is configured to encode multiple channels when recording.
[encode_single_channel_fb]	High indicates the KiPro is configured to encode a single channel when recording
[record_2/3/4_channels_fb]	High indicates the KiPro is configured to record the specified number of channels when in multi-channel recording mode.
[sdi_monitor_all_channels_fb].....	High indicates the KiPro is configured to route all channels to the SDI monitor.
[sdi_monitor_channel1...4_fb].....	High indicates the KiPro is configured to route the specified channel to the SDI monitor.
[hdmi_monitor_all_channels]	Configure the HDMI monitor output to receive all channels.
[hdmi_monitor_channel1...4]	High indicates the KiPro is configured to route the specified channel to the SDI monitor.
[timecode_burn_off_fb]	High indicates that "burning" the timecode into the video outputs of the KiPro is disabled
[timecode_burn_on_sdi_monitor_fb]	High indicates that "burning" the timecode into the SDI video output of the KiPro is enabled.
[super_position_..._fb]	High indicates that the super (timecode burn) is configured in the corresponding location of the video frame (bottom center, bottom left, bottom right, top center, top left, or top right)
[super_opacity_...%_fb]	High indicates the opacity of the super (timecode burn) is configured for the corresponding value (between 25% and 100%)
[video_source_..._fb]	High indicates the KiPro is configured to use the specified video input when recording. Note: Not all KiPro models support all possible input options.
[audio_source_..._fb]	High indicates the KiPro is configured to use the specified audio input when recording. Note: Not all KiPro models support all possible input options.

[audio_channels_2/8/16_fb].....	High indicates the KiPro is configured to record 2, 8, or 16 channels of audio.
[headphones_and_vu_meters_monitor_channels_..._fb]	High indicates the corresponding pair of channels is configured to be monitored on the KiPro headphone output and VU meters (1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, or 15-16)
[play_media_behavior_..._fb]	Determines how media is played back (e.g. single clip, all clips, or playlist contents)
[looped_playback_on/off_off_fb].....	Indicates that looped playback is on or off. When looped playback is on clips will continue playing in repeat; otherwise clips will play only once.
[record_captions_track_enabled/disabled_fb]	Indicates that recording captions track while recording video is enabled or disabled.
[record_loss_of_video_stop/continue_fb]	Indicates the behavior if a video input is lost while recording. If "stop" is selected, recording will be stopped, otherwise recording will continue.
[video_signal_generator_..._fb]	Indicates the status and configuration of the video signal generator (off or black video, 75% bars or 100% bars)
[audio_signal_generator..._fb]	Indicates that status and configuration of the audio signal generator (off, silence, or 1KHz tone)
[current_playlist_name_set_error_fb].....	Pulsed to indicate that an error was encountered setting the playlist name (in response to a change of [current_playlist_name\$])
[transport_state_uninitialized_fb]	Indicates that the transport has not been initialized
[transport_state_idle_fb]	Indicates that the transport is idle.
[transport_state_recording_fb]	Indicates that the transport is recording
[transport_state_playing_forward_fb].....	Indicates that the transport is playing in forward mode
[transport_state_forward_2x/4x/8x/16x_fb].....	Indicates that the transport is playing in fast forward mode at the specified speed (2x, 4x, 8x, or 16x)
[transport_state_forward_step_fb].....	Indicates that the transport is playing in forward step mode
[transport_state_playing_reverse_fb]	Indicates that the transport is playing in reverse mode.
[transport_state_reverse_2x/4x/8x/16x_fb]	Indicates that the transport is playing in fast reverse mode at the specified speed (2x, 4x, 8x, or 16x)
[transport_state_paused_fb]	Indicates that the transport is paused (still)
[transport_state_error_in_idle_fb]	Indicates that the transport state was idle but encountered an error.
[transport_state_error_in_record_fb]	Indicates that the transport state was recording but encountered an error while recording.
[transport_state_error_in_play_fb]	Indicates that the transport state was playback but encountered an error while playing.
[transport_state_error_in_pause_fb]	Indicates that the transport was paused but encountered an error while paused.

ANALOG OUTPUTS

[recall_preset_(1-20)_fb]	.....Indicates that the corresponding KiPro system preset has been recalled.
[save_preset_(1-20)_fb]	.....Indicates that the corresponding KiPro system preset has been saved.
[current_media_space_available%_fb]	.....Indicates the percentage of space currently unused on the selected media.
[current_playlist_index_fb]	.....Indicates the index of the current clip in the currently loaded playlist.
[current_clip_name_fb\$]	.....Indicates the name of the currently loaded clip.
[display_timecode_fb\$]	.....Indicates the currently displayed timecode value
[input_timecode_fb\$]	.....Indicates the timecode at the currently selected input.

SERIAL OUTPUTS

[system_name_fb\$]	.....Indicates the currently configured name for the KiPro system
[current_volume_name_fb\$]	.....Indicates the name of the current media volume (disk) loaded by the KiPro
[current_playlist_name_fb\$]	.....Indicates the name of the current playlist loaded by the KiPro

PARAMETERS

IP Address or Hostname	.....The IP address or hostname to use when connecting to the KiPro REST interface. If it is necessary to change this value at runtime use the [ip_Address_or_hostname_override\$] input
Authentication Required	.....Indicate yes or no if authentication is required. If Yes, a password must be supplied in the Password parameter. Authentication errors are logged in the processors Error Log.
Password	.....Enter the password for the device if Authentication is enabled. If no authentication is required, this field is not used. ControlWorks recommends using "" as this field must have a value.

Support

This module is supported by ControlWorks Consulting, LLC. Should you need support for this module please email support@controlworks.com or call us at 440-449-1100. ControlWorks normal office hours are 9 AM to 5 PM Eastern, Monday through Friday, excluding holidays.

Before calling for support, please ensure that you have loaded and tested operation using the included demonstration program and touchpanel(s) to ensure that you understand the correct operation of the module. It may be difficult for ControlWorks to provide support until the demonstration program is loaded.

Updates, when available, are automatically distributed via Email notification to the address entered when the module was purchased. In addition, updates may be obtained using your username and password at <http://www.thecontrolworks.com/customerlogin.aspx>.

Distribution Package Contents

The distribution package for this module should include:

AJA_KiPro_Ultra_Demo_V1.2_(ControlWorks).smw	Demonstration Program
AJA_KiPro_Ultra_V1.2_(ControlWorks).umc	Main User Module
AJA_KiPro_Ultra_v1.2_(ControlWorks).usp	SIMPL+ for use inside main module
AJA_KiPro_Ultra_Engine_v1.2_(ControlWorks).ush	SIMPL+ header file, for use inside main module
aja_kipro_ultra.clz	SIMPL# module for use in SIMPL+ module
AJA_KiPro_Ultra_TSW1060_Demo_v1.2_(ControlWorks).vtp	Demonstration TSW-1060 file
AJA_KiPro_Ultra_v1.2_(ControlWorks)_Help.pdf	This help file.

Revision History

V1.2 caleb@controlworks.com 2024.11.21
Module now supports authentication.

V1.1 caleb@controlworks.com 2020.09.03
-Recompile for Database 200.

V1.0 lincoln@controlworks.com 2019.10.09
-Initial Version

Development Environment

This module version was developed on the following hardware and software. Different versions of hardware or software may or may not operate properly. If you have questions, please contact us.

AJA Hardware	Software Version
AJA KiPro Ultra	5.2.0.14
Crestron Hardware	Firmware Version
Crestron CP4 Processor	v2.8003.00049
Software	Software Version
Crestron SIMPL Windows	4.30
Crestron Vision Tools Pro-e	6.2.02
Crestron Database	225.00
Device Database	200.350

ControlWorks Consulting, LLC Module License Agreement

Definitions:

ControlWorks, *We*, and *Us* refer to ControlWorks Consulting, LLC, with headquarters located at 8228 Mayfield Road, Chesterland Ohio, 44026. *You* and *Dealer* refer to the entity purchasing the module. *Client* and *End User* refer to the person or entity for whom the Crestron hardware is being installed and/or will utilize the installed system. *System* refers to all components described herein as well as other components, services, or utilities required to achieve the functionality described herein. *Module* refers to files required to implement the functionality provided by the module and may include source files with extensions such as UMC, USP, SMW and VTP. *Demo Program* refers to a group of files used to demonstrate the capabilities of the Module, for example a SIMPL Windows program and VisionTools Touchpanel file(s) illustrating the use of the Module but not including the Module. *Software* refers to the Module and the Demo Program.

Disclaimer of Warranties

ControlWorks Consulting, LLC software is licensed to You as is. You, the consumer, bear the entire risk relating to the quality and performance of the Software. In no event will ControlWorks Consulting, LLC be liable for direct, indirect, incidental or consequential damages resulting from any defect in the Software, even if ControlWorks Consulting, LLC had reason to know of the possibility of such damage. If the Software proves to have defects, You and not Us must assume the cost of any necessary service or repair resulting from such defects.

Provision of Support

We provide limited levels of technical support only for the most recent version of the Module as determined by Us. We do not provide support for previous version of the module, modifications to the module not made by Us, to persons who have not purchased the module from Us. In addition, we may decline to provide support if the Demo Program has not been utilized. We may withdraw a module from sale and discontinue providing support at any time and for any reason, including, for example, if the equipment for which the Module is written is discontinued or substantially modified. The remainder of your rights and obligations pursuant to this license will not be affected should ControlWorks discontinue support for a module.

Modification of Software

You may not decrypt (if encrypted), reverse engineer, modify, translate, disassemble, or de-compile the Module in whole or part. You may modify the Demo Program. In no event will ControlWorks Consulting, LLC be liable for direct, indirect, incidental or consequential damages resulting from You modifying the Software in any manner.

Indemnification/Hold Harmless

ControlWorks, in its sole and absolute discretion may refuse to provide support for the application of the Module in such a manner that We feel has the potential for property damage, or physical injury to any person. Dealer shall indemnify and hold harmless ControlWorks Consulting LLC, its employees, agents, and owners from any and all liability, including direct, indirect, and consequential damages, including but not limited to personal injury, property damage, or lost profits which may result from the operation of a program containing a ControlWorks Consulting, LLC Module or any component thereof.

License Grant

Software authored by ControlWorks remains the property of ControlWorks. ControlWorks grants You the non-exclusive, non-transferable, perpetual license to use the Software authored by ControlWorks as a component of Systems programmed by You. This Software is the intellectual property of ControlWorks Consulting, LLC and is protected by law, including United States and International copyright laws. This Software and the accompanying license may not be transferred, resold, or assigned to other persons, organizations or other Crestron Dealers via any means.

The use of this software indicates acceptance of the terms of this agreement.

Copyright (C) 2019-2020 ControlWorks Consulting, LLC All Rights Reserved – Use Subject to License.
US Government Restricted Rights. Use, duplication or disclosure by the Government is subject to restrictions set forth in subparagraphs (a)-(d) of FAR 52.227-19.