Pentair IntelliCenter v1.0
Module Application Guide

Description

This Module allows control of a Pentair IntelliCenter via TCP/IP. This module supports 4 bodies of water and their filter circuits, 60 Circuits, 4 IntelliChem's, 4 IntelliChlor's .

This Module uses a Module Instance License that can be obtained at www.controlworks.com. Each module requires a separate license in order to function. See below for detailed instructions on ordering and activation.

Supported Processors

Any 2-series 3-series processor that supports Ethernet and Direct Sockets.

Compatibility			Processor Requirements	
3 COMPATIBLE	**2** SERIES COMPATIBLE	Crestron Studio™ COMPATIBLE		REMOVABLE MEDIA NOT REQUIRED

Module Instance License

This Module requires a Module Instance License that can be obtained at www.controlworks.com. Each module in a program requires a separate license in order to function. Licenses are tied to the Crestron processor and DoorBird combination.

Steps for Purchasing a License.

Since Licenses are tied to the Crestron Processor and DoorBird combination, the steps below should be performed on the installed hardware.

1. Ensure the IntelliCenter is on the LAN and can be reached by the Crestron processor.

2. Ensure the [reboot_finished] signal on the module is being **latched high** after boot. See the demo program for an example.

3. Open Text Console in toolbox

4. Ensure the processor has DNS servers by using the command [LISTDNS].
    a. If no DNS servers are present, add them by using [ADDDNS <DNS server>] or using the Ethernet Addressing dialog box.
    b. You can also test your DNS server by using the command [TESTDNS www.controlworks.com]
    c. If your processor is not connected to the internet, please contact us by phone.

5. Load your program to the processor.

6. After the program has been loaded, in text console, use the command [UCMD:<program slot number> "GET ACTIVATION INFO"]. i.e UCMD:2 "GET ACTIVATION INFO" This will provide you with an activation key.

7. In a web browser, browse to www.controlworks.com and select the license to purchase. The website will prompt you for the activation key. Enter the activation key and click the proceed button.

8. Once the transaction has completed, issue the command [UCMD:<program slot number> "RETRYAUTH"], or restart the program, and the module will attempt to contact the activation server for authentication. Once activated, the [module_authorized] will be high.

The module only reaches out to the activation server if the module hasn't been previously activated on program restarts or if you clear NVRAM contents/shift NVRAM contents and the program restarts.

If your processor is not connected to the internet, 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. You will need to provide the key noted in step 7.

Module Application

Locating device on your LAN
From the touchscreen located on the IntelliCenter, select Settings -> Advanced System Configuration -> Network and WiFi setup. On that page, the IP address will be displayed.

Reading Configuration and Unsolicited Responses
The Pentair IntelliCenter provides unsolicited responses to requested values. After the module validates authentication, and is connected to the IntelliCenter, the module will read the configuration, and setup subscriptions to receive change of state messages. If your configuration changes on the pool controller, pulsing the [refresh_config] input will query the pool controller, and setup subscriptions.

This is also true if the TCP/IP connection drops and reconnects for any reason, i.e. removing and restoring link, rebooting a switch, etc.

Circuits
The IntelliCenter assigns aux relays to circuits dynamically throughout the product line. To determine what circuit your aux relay is attached to, place the main Pentair_IntelliCenter_v1.0(ControlWorks) module in your program, compile and load.

Once the module has read the configuration, in debugger, view the [circuit#_available] and [circuit#_name$] to determine where your desired aux has been placed.

Next, insert a Pentiar_Intellicenter_aux_circuirts_v1.0_(ControlWorks) into your program. The Pentiar_Intellicenter_aux_circuirts_v1.0_(ControlWorks) allows you to control circuits as needed. Tie the corresponding [to_circuit_module#$] on the main module to the from_intellicenter input on the aux circuit module. Additionally tie to_intellicenter on the aux module to the [from_circuit_modules$] on the main module.

Knowledge Base
Please be sure to visit our Knowledge Base for additional information that can assist in developing your solutions. http://controlworks.com/ResourceLibrary/KnowledgeBase.aspx

Signal and Parameter Descriptions (Pentair_IntelliCenter_v1.0)

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

DIGITAL INPUTS

[reboot_finished]_(latch_high).....................Latch this signal high after your reboot is complete. Do not use a 1. The module will evaluate its activation status when this input goes high. If no activation status was found, the module will attempt to connect the activation server. After activation, this signal will manage the connection to the pool controller. When high, it will connect, if low the module will disconnect.

[refresh_config] ....This signal does not need to be used in most circumstances. Pulsing will tell the module to read the configuration from the pool controller. This is useful when debugging and if the installer adds or removes features.

[body#_on]...pulse to turn the filter pump on for the specified body of water.

[body#_off]..pulse to turn the filter pump off for the specified body of water.

[body#_heating_setpoint+/-]....................pulse to increment or decrement the heating setpoint by 1 degree.

[body#_cooling_setpoint+/-]....................pulse to increment or decrement the cooling setpoint by 1 degree.

[body#_intellichlor_primary_body_duty_cycle+/-] ....pulse to increment or decrement the target duty cycle for chlorination. This is how strongly the user wants to turn the chlorinator for this body of water. Typically this is the pool body.

[body#_intellichlor_secondary_body_duty_cycle+/-]......pulse to increment or decrement the target duty cycle for chlorination. This is how strongly the user wants to turn the chlorinator for this body of water. Typically this is the spa body.

[body#_intellichlor_superchlor_on/off] ....pulse to turn on or off the SuperChlorinator.

[body#_intellichem_ph_setpoint+/-]...........pulse raise or lower the target ph setpoint of the IntelliChem.

[body#_intellichem_orp_setpoint+/-].........pulse raise or lower the target ORP setpoint of the IntelliChem.

[body#_intellichem_calcium_hardness_setpoint+/-]......pulse raise or lower the target calcium hardness ppm setpoint of the IntelliChem.

[body#_intellichem_cyanuric_acid_setpoint+/-] ....pulse raise or lower the target cyanuric acid setpoint of the IntelliChem.

[body#_intellichem_total_alkalinity_setpoint+/-]..........pulse raise or lower the target total alkalinity ppm setpoint of the IntelliChem.

ANALOG INPUTS

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SERIAL INPUTS

[from_circuit_modules$]...........................connect to to_IntelliCenter signal on all circuit modules.

DIGITAL OUTPUTS

[module_authorized] ....Latched high after the module is authorized. The module will not function if this output is low.

[connected_to_IntelliCenter_fb].................................High when the module is connected to the IntelliCenter.

[body#_on_fb] ....High when the IntelliCenter reports the body's filter pump is on.

[body#_off_fb] ....High when the IntelliCenter reports the body's filter pump is off.

[body#_intellichlor_defined_fb] ....High when the IntelliCenter reports there is an IntelliChlor defined for this body of water.

[body#_intellichlor_superchlor_on_fb].........................High when the IntelliCenter reports that the IntelliChlor's SuperChlorinator is active.

[body#_intellichlor_device_error_fb] ....High when the IntelliChlor reports a generic error.

[body#_intellichlor_salt_low_fb] ....High when the IntelliChlor reports a low salt reading.

[body#_intellichlor_very_low_salt_fb] ....High when the IntelliChlor reports a very low salt reading.

[body#_intellichlor_over_currrent_fb] ....High when the IntelliChlor reports an over current error.

[body#_intellichlor_voltage_error_fb]..........................High when the IntelliChlor reports a voltage error.

[body#_intellichlor_communication_error_fb]................High when the IntelliCenter reports a general RS485 Communication error with the IntelliChlor.

[body#_intellichem_defined_fb]..................................High when the IntelliCenter reports there is an IntelliChem defined for this body of water.

[body#_intellichem_no_flow_fb]..................................High when the IntelliChlor reports the no flow error.

[body#_intellichem_ph_high _fb]................................High when the IntelliChlor reports a pH high error.

[body#_intellichem_ph_low _fb].................................High when the IntelliChlor reports a pH low error.

[body#_intellichem_orp_high _fb] ....High when the IntelliChlor reports a ORP high error.

[body#_intellichem_orp_low _fb].................................High when the IntelliChlor reports a ORP low error.

[body#_intellichem_ph_container _fb].........................High when the IntelliChlor is reporting to check the pH container.

[body#_intellichem_orp_container _fb] ....High when the IntelliChlor is reporting to check the ORP container.

[body#_intellichem_probe_failure _fb] ....High when the IntelliChlor is reporting a probe failure.

[body#_intellichem_ph_lockout _fb] ....High when the IntelliChlor is reporting pH lockout.

[body#_intellichem_ph_feed_limit _fb].........................High when the IntelliChlor is reporting pH feed limit.

[body#_intellichem_invalid_setting _fb] ....High when the IntelliChlor is reporting an invalid setting has been entered.

[body#_intellichem_comm_failure_fb].........................High when the IntelliCenter is reporting a peripheral communication error, communication to IntelliChlor failed.

[body#_intellichem_general_rs485_communication_error_fb]   High when the IntelliCenter is reporting a general RS485 communication error with the IntelliChlor.

[body#_intellichem_memory_failure_fb].......................High when the IntelliChlor reports a memory failure.

[body#_intellichem_calibration_failure_fb]...................High when the IntelliChlor reports a calibration failure.

[circuit#_avalilable] ....High when the IntelliChlor reports that a circuit exists in that position.

ANALOG OUTPUTS

[body#_temperature_fb] ....Indicates the temperature as reported by the IntelliCenter.

[body#_heating_setpoint_fb] ....indicates the heating setpoint as reported by the IntelliCenter.

[body#_cooling_setpoint_fb].....................................indicates the cooling setpoint as reported by the IntelliCenter.

[body#_intellichlor_primary_body_duty_cycle_fb] ....indicates the IntelliChlor's target duty cycle for the specified body.

[body#_intellichlor_secondary_body_duty_cycle_fb] ......indicates the IntelliChlor's target duty cycle for the specified body.

[body#_intellichlor_superchlor_timeout_fb] ....indicates the IntelliChlor's time remaining for the SuperChlorinator.

[body#_intellichlor_salt_level_fb] ....indicates the IntelliChlor's salt level in ppm/50.

[body#_intellichem_ph_setpoint_fb] ....indicates the IntelliChem's pH setpoint. Range is 720d – 760d with in hundredths. To display on a touchpanel, use a formatted text object, insert a dynamic text object, select analog, and select a floating point. Adjust the CIP tag to display one whole number, and two decimal places by using %1.2f.

[body#_intellichem_ph_reading_fb] ....indicates the IntelliChem's pH reading. Valid range is 40d-100d in tenths. To display on a touchpanel, use a formatted text object, insert a dynamic text object, select analog, and select a floating point. Adjust the CIP tag to display one whole number, and two decimal places by using %1.1f.

[body#_intellichem_ph_tank_level_fb] ....indicates the IntelliChem's pH tank level. Valid range is 1d-7d. 1=0% 7d = 100%.

[body#_intellichem_ph_feedings_fb]...........................indicates the IntelliChem's pH feedings. Valid range is 0d-2d. Dosing=0, Mixing=1, Monitor=2.

[body#_intellichem_ph_feed_time_fb].........................indicates the IntelliChem's pH feed time in seconds. 1d = 1 second.

[body#_intellichem_ph_feed_volume_fb].....................indicates the IntelliChem's pH feed volume in ml. 1d = 1ml.

[body#_intellichem_ORP_setpoint_fb].........................indicates the IntelliChem's ORP setpoint in mv. Range is 650d – 800d

[body#_intellichem_ORP_reading_fb]..........................indicates the IntelliChem's ORP reading in mv. Range is 0d – 9999d

[body#_intellichem_ORP_tank_level_fb].......................indicates the IntelliChem's ORP tank level. Valid range is 1d-7d. 1=0% 7d = 100%.

[body#_intellichem_ORP_feedings_fb].........................indicates the IntelliChem's ORP feedings. Valid range is 0d-2d. Dosing=0, Mixing=1, Monitor=2.

[body#_intellichem_ORP_feed_time_fb] ....indicates the IntelliChem's ORP feed time in seconds. 1d = 1 second.

[body#_intellichem_ORP_feed_volume_fb] ....indicates the IntelliChem's ORP feed volume in ml. 1d = 1ml.

[body#_intellichem_total_alkalinity_setpoint_fb] ....indicates the IntelliChem's total alkalinity setpoint in ppm. Valid range is 25d-800d.

[body#_intellichem_cyanuric_acid_setpoint_fb].............indicates the IntelliChem's cyanuric acid setpoint. Valid range is 0d-201d.

[body#_intellichem_calcuim_hardness_setpoint_fb].......indicates the IntelliChem's calcium hardness setpoint in ppm. Valid range is 25d-800d.

[body#_intellichem_saturation_index_fb] ....indicates the IntelliChem's saturation index. Valid range is -99d-99d.

[body#_intellichem_salt_reading_fb]...........................indicates the IntelliChem's salt reading in ppm/50.

SERIAL OUTPUTS

[body#_name_fb$] ....indicates the name that is given to the associated body of water.

[body#_heat_mode_fb$] ....indicates the current heat mode for the associated body.

[body#_heat_source_fb$]...indicates the current heat source for the associated body.

[body#_intellichlor_name_fb$] ....indicates the name of the IntelliChlor for the associated body.

[body#_intellichem_name_fb$] ....indicates the name of the IntelliChem for the associated body.

[to_circuit_module#$]...tie to aux circuit module. Each circuit you are using in a system should have its own aux circuit module. One serial output should be tied to the corresponding circuit modules from_intellicenter input.

[circuit#_name$]..indicates the name of the associated circuit as defined in the IntelliCenter.

PARAMETERS

IP Address of IntelliCenter...Enter the IP address of the IntelliCenter.

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

DIGITAL INPUTS

[circuit_on/off] ....pulse to turn the circuit on or off. Valid for all circuits.

[dimmer_off/%]..pulse to set the level of a light. Only valid if circuit is defined as aux_type_dimmer_fb.

[globrite_color_x] ....pulse to set the light to the specified mode. Only valid if circuit is defined as aux_type_globrite_color_fb.

[globrite_white_off/%] ....pulse to set the light to the specified level. Only valid if circuit is defined as aux_type_globrite_white_fb.

[intellibrite_x]...pulse to set the light to the specified mode. Only valid if circuit is defined as aux_type_intellibrite_fb.

[magic_stream_x]...pulse to set the light to the specified mode. Only valid if circuit is defined as aux_type_magic_stream_fb.

[color_cascade_x] ....pulse to set the light to the specified mode. Only valid if circuit is defined as aux_type_color_cascade_fb.

ANALOG INPUTS

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SERIAL INPUTS

from_IntelliCenter..connect to IntelliCenter circuit output i.e. if this module is controlling circuit 2, tie [to_circuit_module2$] to this input.

DIGITAL OUTPUTS

[aux_type_x_fb] ....High when circuit is of the defined type.

[circuit_on/off_fb]...High when the IntelliCenter reports the circuit is on or off.

[circuit_delay_on/off_fb]...................................High when the IntelliCenter reports the circuit is in delay.

[circuit_override_on/off_fb]..............................High when the IntelliCenter reports the circuit is in override.

[dimmer_off/%_fb] ....High when the IntelliCenter reports the circuit set to the indicated level.

[globrite_color_x_fb]...High when the IntelliCenter reports the circuit set to the indicated mode.

[globrite_white_off/%] ....High when the IntelliCenter reports the circuit set to the indicated mode.

[intellibrite_x]..High when the IntelliCenter reports the circuit set to the indicated mode.

[magic_stream_x]..High when the IntelliCenter reports the circuit set to the indicated mode.

[color_cascade_x] ....High when the IntelliCenter reports the circuit set to the indicated mode.

ANALOG OUTPUTS

SERIAL OUTPUTS

to_intellicenter..tie to [from_circuit_modules$].

PARAMETERS

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 https://www.controlworks.com/Customers/Login.aspx.

Distribution Package Contents

The distribution package for this module should include:

Pentair_IntelliCenter_V1.0_(ControlWorks).umc ....Crestron User Module
Pentair_IntelliCenter_Engine_v1.0_(ControlWorks).usp ..SIMPL+ file used within the processor module
Pentair_IntelliCenter_Engine_v1.0_(ControlWorks).ush ..SIMPL+ header file
Pentair_IntelliCenter_Aux_Circuits(ControlWorks).umc ...Crestron User Module for aux circuits.
Pentair_IntelliCenter_V1.0_(ControlWorks).vtp ....Demo touchpanel for TSW-1052
Pentair_IntelliCenter_V1.0_(ControlWorks).smw ....Demo program for PRO3 processor

Revision History

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.

Manufacturer Hardware	Software Version
i5P	0.032
Crestron Hardware	**Firmware Version**
Crestron AV3 Processor	1.501.0013
Software	**Software Version**
SIMPL Windows	4.04.03
Vision Tools Pro-e	6.0.07
Smart Graphics Controls	2.09.06.01
Crestron Database	58.00.002.00
Device Database	77.02.001.00

ControlWorks Consulting, LLC Module Instance License Agreement

Definitions:
ControlWorks, *We*, and *Us* refer to ControlWorks Consulting, LLC, with headquarters located at 701 Beta Drive, Suite 22 Mayfield Village, Ohio 44143-2330. *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 Instance License refers to a module license that is granted to a specific combination of a Crestron Processor and a single controlled device (for example, based on the respective serial numbers); a separate Module Instance License must be purchased for each such combination. *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.

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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. Any modifications to the Module shall immediately terminate any licenses purchased with respect thereto. You may, however, 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.

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License Grant

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