SIMPLWINDOWS NAME: Compool CP3800

CATEGORY: Miscellaneous

VERSION: 1.0

SUMMARY: This module implements Version 0.1 of the Compool Protocol Definition. Control is accomplished by sending a single control packet, consisting of 16 bytes, to the Power Center of the Compool system (LX-3xxx). The protocol consists of two types of packets: a "basic control packet," and a "basic acknowledgement packet."

The basic control packet allows the Crestron control system to:

1. Toggle on/off state of the Spa, Pool, Aux 1-7
2. Enable or disable the Spa side remote(s)
3. Cancel any current circuit delays (not recommended)
4. Change/cancel heat source/method for Spa or Pool
5. Change/set desired temperature for Spa and/or Pool
6. Control dimmers (if unit has dimmers installed)

The basic acknowledgement packet allows the Crestron control system to determine:

1. Current state of the Spa, Pool, Aux 1-7
2. Current state of Heater and Solar for both Spa and Pool
3. Whether the LX-3xxx is in Service Mode (no commands should be sent)
4. Current state of Spa side remote(s)
5. Current heat source selection
6. Solar presence
7. Freeze protection mode
8. Current water and solar temperature for Spa and Pool
9. Desired/set temperature for Spa and Pool
10. Air temperature (for Freeze sensor; not intended to be accurate measure of air temp)
11. Status of temperature sensors
12. Current time of day stored in LX-3xxx unit

The hardware interface is a simple half duplex RS-485 differential pair.

GENERAL NOTES: Carefully follow the directions in the "Compool Cp3800 Installation & Operating Instructions" for wiring power and temperature sensors. If your temperature sensors are not wired correctly, you will see an error number appear in the CP3800 control panel; refer to the Compool manual for assistance in determining the nature of the error and in resolving the difficulty.

Please note that this module was written to handle and display all temperature values in degrees Fahrenheit. There is a digital input to the module specifying a toggle display between Fahrenheit and Celsius, but this input will only effect the temperature display on the CP-3800 control panel.

Also note that not all outputs will be valid for all models of the Power Center. Make sure to only use those outputs that are valid for the model you are actually controlling.

The following inputs have different functions depending

on the model of the Compool system:

	3x00/3830	3810	3820
Spa_Toggle	Spa	High	Aux1
Pool_Toggle	Pool	Low	Aux2
Aux1_Toggle	Aux1	Aux1	Aux3
Aux2_Toggle	Aux2	Aux2	Aux4
Aux3_Toggle	Aux3	Aux3	Aux5
Aux4_Toggle	Aux4	Aux4	Aux6
Aux5_Toggle	Aux5	Aux5	Aux7
Aux6_Toggle	Aux6	Aux6	Aux8

Note that Aux4, 5, 6, and 7 are not available on the 3400.
Aux6 and 7 are not available on the 3600.

During normal operation, the "basic acknowledgement packet" is transmitted to the Crestron controller approximately every 2.5 seconds. This can be viewed as a "keep alive" packet, or a system heartbeat. Every time a "basic control packet" is sent from the Crestron controller, it is answered immediately by an ACK packet if received intact, or a NACK packet if it was not. This module has been designed to resend the control data packet if a NACK is received.

CRESTRON HARDWARE REQUIRED:
2-Series Processor
C2COM-3
CNMSX
CNXCOM
ST-COM

SETUP OF CRESTRON HARDWARE:
Baud Rate - 9600
Parity - None
Data Bits - 8
Stop Bits - 1
RS-485 protocol

VENDOR FIRMWARE: Tested with version 2.7

VENDOR SETUP: The CP-3800 Control Panel should be connected to the LX-3xxx Power Center using the 6-conductor wire provided with the panel.

Correct time should be set using the "Hours" and "Minutes" buttons on the CP-3800 panel.

Temperature sensors should be connected to the Power Center, paying particular attention to the placement of the green and red wires.

CABLE NUMBER: (none)

The pinout for the control cable is as follows:

" - Data" : Tie pins 1 & 9 on Crestron
-----> Pin 4 on RJ12 for Compool

" + Data" : Tie pins 4 & 6 on Crestron
-----> Pin 3 on RJ12 for Compool

GND : Pin 5 on Crestron
-----> Pin(s) 1 and/or 6 on RJ12 for Compool

PARAMETERS: There are three parameters for the setting of the desired pool temperature, and three parameters for the setting of the desired spa temperature. These

parameters should be entered as decimal values, representing a temperature in degrees Fahrenheit. Please note that, for each target, the "High_Temp+1" value should be entered as one unit higher than what you will expect to see on the analog output of the module (in other words, in the sample program, since the desired high temp for the pool was 80 degrees F, the correct parameter value to use was 81d).

CONTROL:

Spa_Toggle	D	Toggles power/control of Spa
Pool_Toggle	D	Toggles power/control of Pool
Aux(X)_Toggle	D	Toggles power to aux devices 1 - 7
Spa_Remote_Toggle	D	Enable/disable remote control panel located at Spa
Display_C/F_Toggle	D	Toggles temperature display between Celsius (C) & Fahrenheit (F); only affects Cp3xxx display
Delay_Cancel	D	Disables circuit delays (not recommended)
Spa_Heat_(Off/On)_ Pool_Heat_(Off/On)	D	Selects Off/On for spa and pool heater
Spa_Temp(X)	D	Digits 0-9 for spa temperature keypad (value in degrees F)
Spa_Temp_Clear	D	'Clear' for spa temperature keypad; sets value to "Spa_Low_Temp"
Spa_Temp_Up	D	Raise temp on spa temperature keypad (value in degrees F)
Spa_Temp_Down	D	Lower temp on spa temperature keypad (value in degrees F)
Spa_Temp_Enter	D	'Enter' for spa temperature keypad (value in degrees F)
Pool_Temp(X)	D	Digits 0-9 for pool temperature keypad (value in degrees F)
Pool_Temp_Clear	D	'Clear' for pool temperature keypad; sets value to "Pool_Low_Temp"
Pool_Temp_Up	D	Raise temp on pool temperature keypad (value in degrees F)
Pool_Temp_Down	D	Lower temp on pool temperature keypad (value in degrees F)
Pool_Temp_Enter	D	'Enter' for pool temperature keypad (value in degrees F)
Spa_Dimmer_Switch	D	Presses switch for spa dimmer control
Pool_Dimmer_Switch	D	Presses switch for pool dimmer control
Aux(X) _Dimmer_Switch	D	Presses switch for Aux(X) dimmer control
From_Device$	S	Routed from COM port for command strings received from Compool

FEEDBACK:

Spa_On	D	Real feedback indicating spa circuit is on
Pool_On	D	Real feedback indicating pool circuit is on
Aux(X)_On	D	Real feedback indicating Aux(X) circuit is on
Remotes_Enable	D	When high/active, indicates spa side

		remote is on
C/F	D	When high/active, indicates that Cp3xxx display is in degrees C
Spa_Heater_On	D	Real feedback indicating heat source for spa is on
Pool_Heater_On	D	Real feedback indication heat source for pool is on
Freeze_Mode	D	When high/active, indicates LX-3xxx has entered protective freeze mode
Solar_Present	D	When high/active, will allow user to select solar as a heat method (if Model 3830, indicates pool solar present)
Solar_State	D	When high/active, indicates solar is on (if Model 3830, this is the pool solar state)
Heater_State	D	When high/active, indicates heater is on (if Model 3830, this is the pool heater state)
Service_Mode	D	When high/active all controller commands are ignored and only local switches at the LX-3xxx equipment pad are honored
Solar_Spa_Heater_On	D	When high/active, indicates solar spa heater is on
Solar_Pool_Heater_On	D	When high/active, indicates solar pool heater is on
Spa_Solar_Present	D	When high/active, will allow user to select solar as the heat method for the spa
Cleaner_Delay_On	D	Indicates that the cleaner is being forced off by the delay function to allow water to fill the pipes
Pool_Delay_On	D	Indicates that the pump is being forced on by the delay function to allow the heater to cool down
Spa_Delay_On	D	Indicates that the pump is being forced on by the delay function to allow the heater to cool down
Air_Sensor_OK	D	When high/active indicates that the freeze sensor is functioning properly
Solar_Sensor_OK	D	When high/active indicates that the solar sensor is functioning properly; solar heating will not be allowed if low/inactive
Water_Sensor_OK	D	When high/active indicates that the water sensor is functioning properly; heating will not be allowed if low/inactive (ignored on Model 3820)
Aux3_Is_Dimmer	D	When high/active indicates Aux3 is configured as a dimmer rather than a standard relay circuit; requires a special dimmer module; on Model 3820, this circuit is referred to as Aux5
Aux4_Is_Dimmer	D	When high/active indicates Aux4 is configured as a dimmer rather than a standard relay circuit; requires a special dimmer module; on Model 3820, this circuit is referred to as Aux6
Floor_Cleaner_On	D	When high/active indicates floor cleaner system is active
Backwash_State	D	When high/active indicates that a programmed Backwash Cycle is taking place; requires that Aux7 has been configured and programmed as a backwash circuit
Freeze_Present	D	When high/active indicates at least 1 circuit has been configured to protect the equipment during a freeze

Error_5	D	When "high" indicates that an error has been detected at the spa side remote (like it has been disabled)
Spa_Heater_On_ (Model_3830)	D	When high/active, indicates that the spa heater for Model 3830 is on
Spa_Solar_On_ (Model_3830)	D	When high/active, indicates that the spa solar for Model 3830 is on
Model_3(XXX)	D	Real feedback indicating Compool model that you are communicating with
Pool_Temp_Desired(F)	A	Real feedback indicating current desired control temp of pool water
Solar_Temp(F)	A	Current solar temperature in degrees Fahrenheit
Spa_Temp_Desired(F)	A	Real feedback indication current desired control temp of spa water
Spa_Solar_Temp(F)	A	Current spa solar temp in degrees Fahrenheit (Model 3830 only)
Pool_Temp(F)	A	Current water temp in degrees Fahrenheit
Spa_Temp(F)	A	Current spa water temp in degrees Fahrenheit (Model 3830 only)
Air_Temp(F)	A	Current air temp in degrees Fahrenheit; used to determine freeze mode conditions
To_Device$	S	Routed to COM port for command strings sent to Compool

OPS USED FOR TESTING:	3.015
COMPILER USED FOR TESTING:	SimplWindows Ver 2.03.12
SAMPLE PROGRAM:	Compool CP3800 Demo
REVISION HISTORY:	None