Serial Control PLUS Manual

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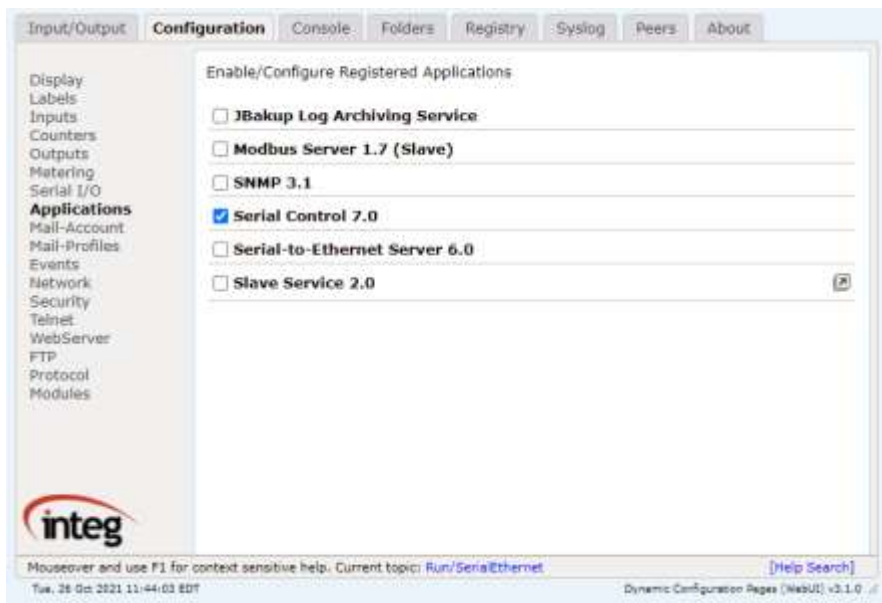# 1 What is Serial Control PLUS?

The Serial Control PLUS function for the JNIOR is a software application that runs on the JNIOR and allows the user to interact with the JNIOR I/O <u>via the serial port and/or an Ethernet connection</u>. (Serial Control PLUS is an enhanced version of the Serial Control program that only worked via the serial port. This manual still applies to the Serial Control program with the exception of the Ethernet connection.) The user can control the relay outputs (on, off, pulse), receive the status of the digital inputs (on, off) and receive the counter values. The user can interact with the JNIOR I/O via the serial port and the Ethernet port at the same time.

2 The Purpose of Serial Control PLUS

The Serial Control PLUS application can be used as a simple way for the user's external devices to communicate over the Ethernet, or via a serial port with small ascii commands to control the JNIOR's I/O. The user's device must be able to send simple ASCII commands to the JNIOR as defined later in this manual.

# 3 Enabling the Serial Control PLUS Software

The <u>Serial Control</u> software is pre-installed on all JNIORs. To activate the software so that it runs on boot up, please launch your JNIOR's web page, go to the Configuration tab and under the Applications section should be where already installed applications. Check the Serial Control box.

4 Configuring the Serial Control PLUS Software

Once the Serial Control PLUS program is running, you can configure the application on how it connects to external devices and what it reports after recieving a command.

The Registry Tab on the JNIOR Main Web page can be used to change any settings for the Serial Control PLUS software program, after you enable the Serial Control PLUS program and it is running after a reboot. The default settings are displayed in the Registry Tab and are as shown below:
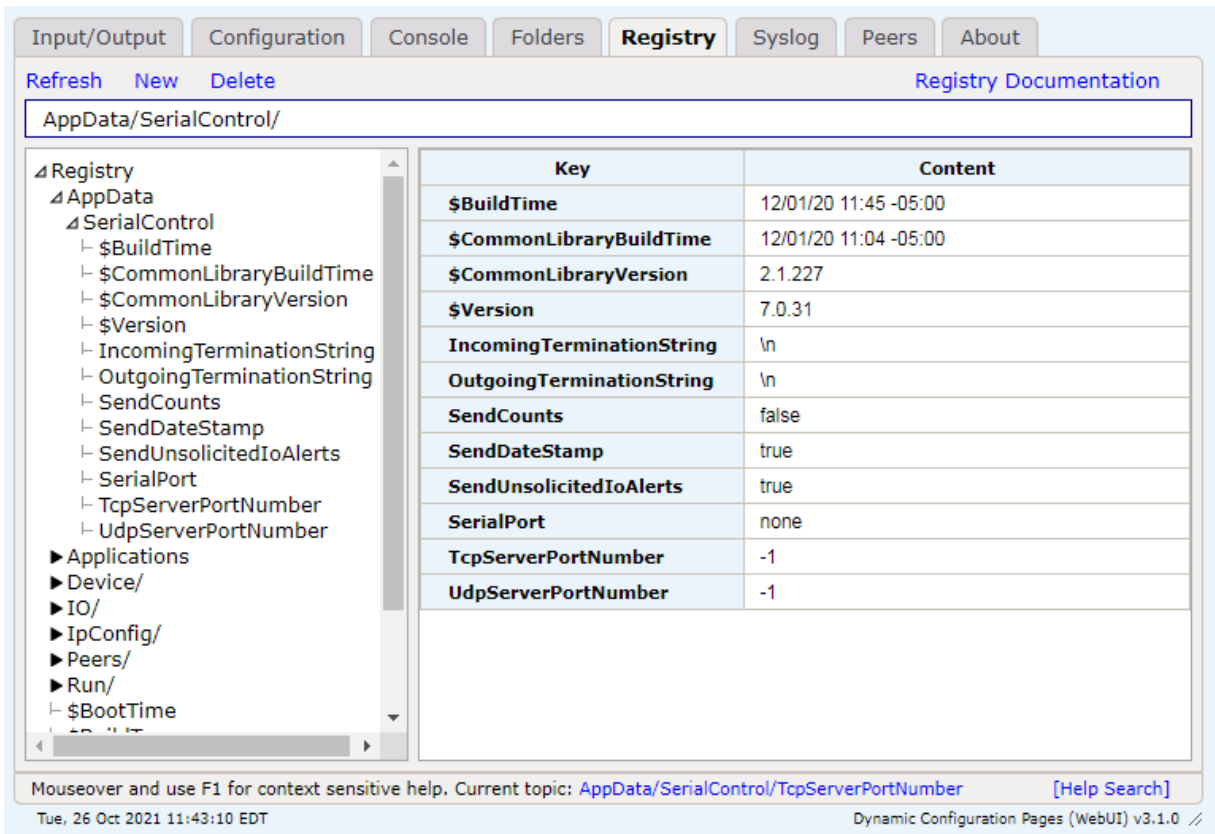
To modify any of the Registry Keys, click on the appropriate key and then change its value. When you click away from the key it should save the change you made. Below are short descriptions for what the registry keys control, and the values that they can be set to.

Registry Key	Default	Valid Settings	Comments
IncomingTerminationString	\n	\r = carriage return	This is the character that signals the

		\n = line feed \r\n = carriage and line feed Any character recognized by the user's program	JNIOR that it is the end of the data
OutgoingTerminationString	\n	\r = carriage return \n = line feed \r\n = carriage and line feed Any character recognized by the user's program	This is the character that signals the DEVICE that it is the end of the data
SendCounts	false	false or true	Setting this key to true will cause the count value to be sent each time the input status message is sent (for example, IN2=1,32)
SendDateStamps	true	false or true	Setting this key to false will no longer include the date stamp with the IO alerts
SendUnsolicatedIOAlerts	true	false or true	Setting this key to false will no longer send alerts of IO changes on the JNIOR
SerialPort	none	AUX or RS232 or none	**Reboot required** – defines the serial port on the JNIOR that the serial device is connected to. (Please see Section 9 of this manual for important information.) Setting to **none** prevents the Serial Control PLUS program from taking over either serial port.
TcpServerPortNumber	-1	Any valid TCP port number not already used	**Reboot required** The port number that the JNIOR will be listening on for incoming ASCII commands
UdpServerPortNumber	-1	Any valid UDP port nymber not already used	**Reboot required** The port number that the JNIOR will be listening on for incoming ASCII commands

5 Serial Control PLUS Commands

After the Serial Control PLUS software is properly configured and running, you can now start to interact with the JNIOR. The JNIOR Model 410 has 8 digital inputs, 8 relay outputs and the capability to add one or two 4 Relay Output Expansion Modules. Adding the expansion modules provides the user with a total of 12 or 16 relay outputs. The expansion module relay outputs can be controlled and monitored via the Serial Control PLUS program.

The 4 Relay Output Expansion Modules are connected to the JNIOR via the Sensor Port. After the expansion modules are connected and you reboot the JNIOR, the JNIOR will assign the external relay outputs as numbers 9 through 16. The number assigned by the JNIOR will be displayed on the Main JNIOR Web page as shown below. This is the order with which you will access the external outputs via the Serial Control PLUS application. Outputs 9 through 16 will be controlled using commands +1 through +8 respectively.
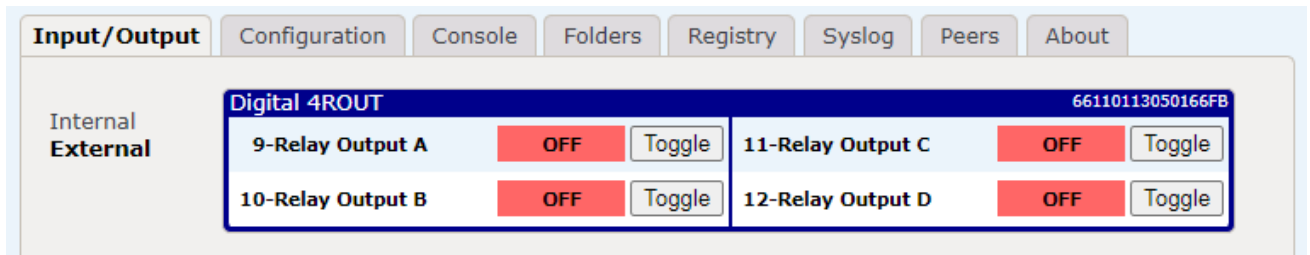
Controlling the Outputs

The following commands are available to control the relay outputs:

cX   **Close the output** (relay is "on" closing the contact)
            where x = 1 through 8 for the internal relay outputs on the JNIOR 310
            and x = +1 through +8 for the external relay outputs on the 4 Relay Output
            Expansion Modules

oX   **Open the output** (relay is "off" opening the contact)
            where x = 1 through 8 for the internal relay outputs on the JNIOR 310
            and x = +1 through +8 for the external relay outputs on the 4 Relay Output
            Expansion Modules

p=yyy   **Pulse duration** (milliseconds) and is used in conjunction with the 'close'
            or 'open' command

            Examples:
            c2p=1000   close output 2 for 1 second and then open again
            c+2p=1000   close output 10 for 1 second and then open again

o3p=10000   open output 3 for 10 seconds and then close again

c*   Close all outputs at the same time (includes internal and external)

o*   Open all outputs at the same time (includes internal and external)

These commands can be abbreviated and used in combination, such as:

c1   close relay output 1
c+1   close relay output 9 (first output on <u>first</u> expansion module)
c+5   close relay output 13 (first output on <u>second</u> expansion module)
c1+1+5   combination of the above all in one command
c1234   close relay outputs 1 through 4
c1368   close relay outputs 1, 3, 6, 8
o125   open relay outputs 1, 2, 5
c1+1p=1000 close relay outputs 1, 9 and pulse each for 1 second simultaneously

<u>Monitoring the Inputs, Outputs and Counters</u>

Whenever an input (or output) changes status (low-to-high or high-to-low), the following is sent out by the JNIOR:

INx=1   Input x (1 – 8) has gone high (on)
OUTx=1   Output x (1 – 16) has gone high (on)
INx=0   Input x (1 – 8) has gone low (off)
OUTx=1   Output x (1 – 16) has gone low (off)

The default setting for the Registry Key **AppData/Serial_Control/SendCounts** is false. If you change this key to true and reboot, with each message stating the input status, a count value will also be included. Whenever an input changes status (low-to-high or high-to-low), the following is sent out by the JNIOR:

INx=1,yyy   Input x (1 – 8) has gone high (on), counter value = yyy
INx=0,yyy   Input x (1 – 8) has gone low (off), counter value = yyy

Note that these monitoring messages are sent out individually over the serial port or Ethernet. The JNIOR does not report the status of more than one input/counter in the same message.

6 Options

The default setting for the Serial Control PLUS software is to utilize the Auxiliary Serial port located along the top edge of the JNIOR. However, it is possible to change this setting to utilize the RS-232 serial port located along the bottom edge of the JNIOR. It is important to understand that the primary purpose of the RS-232 port is to act as the command console for the JNIOR. The command console allows the user to connect to the JNIOR for configuration purposes. And although they are not visible to the user unless connected, the JNIOR will write certain system messages to this port.

If you desire to use this port for your serial device, then you must start the Serial Control PLUS software as described above so that the Registry Keys are displayed. Using the main JNIOR web page, edit the SerialPort key and change the value to RS232. You must reboot the JNIOR (a soft reboot via the Console Tab or a Telnet window is preferred) and when it finishes, the Serial Control PLUS software will now use the RS-232 port.

IMPORTANT: Every time the JNIOR reboots, it waits 1 minute before taking over the RS-232 port for the Serial Control PLUS application. This would allow you some time to connect to the JNIOR via HyperTerminal for an emergency where you no longer knew the JNIOR IP address and had no other way to connect to the JNIOR. You would have 1 minute to log in and type 'ps' at the prompt to list all the running processes and then type 'kill X' where X is the process number for the serialcontrol.jnior program.

The program will stop immediately and you will have time to change your ipconfig or go to the Command Line registry editor and delete the Run key for the Serial Control PLUS software program. When the Run key is deleted, the program will no longer automatically run after boot.

NOTE: You can have both Serial Control PLUS and Serial-to-Ethernet (see the Serial-to-Ethernet Manual) programs running on the same JNIOR at the same time as long as they are using different serial ports. You must start the program first that will be using the RS232 port and change its default setting from AUX to RS232. Then you can start the other program because it will now be able to run and use the Auxiliary Serial port. Having both programs running at the same time with both of them configured for the Auxiliary Serial port could cause unexpected operation of your JNIOR.

Summary

Thank you for purchasing the **JNIOR**. Hopefully this manual made the getting-to-know process of your new **JNIOR** very quick and easy. The **JNIOR** has many more wonderful tools and features available, and are explained in detail in the supplied documents.

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