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Operation Instructions

SER-HUB-C1 Serial Control System

- 1 – KP2B-HUB - Serial Keypad (2nd is optional)



- 1 - Ser-Hub-2 - Programmable Serial Hub

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Description

The SER-HUB-C1 Serial Control System is a custom/field programmable serial device controller. It can control any 2 serial devices and has 5 discrete outputs and 2 discrete inputs. The SER-HUB-C1 product is comprised of 2 hardware items plus an optional 3rd item and a Windows™ software GUI. The 2 hardware items are the following:

- 1. Model SER-HUB-2 Serial Hub
- 2. KP2B-HUB Serial Keypad
 - 2nd KP2B-HUB Serial Keypad (optional)

When a key is pressed on either KP2B-HUB Serial Keypad, the Serial Hub sends a serial string to the first serial device and then another serial string to the second serial device. It will then set the 5 discrete outputs to the levels that were programmed. The Serial Hub is custom/field programmable using the SER-HUB-C1 Windows™ software GUI. This allows the user to specify any command or set of commands to be issued to the first and second serial device when a specific button is pressed on either keypad. It also allows the user to specify the levels of the discrete outputs for each keypad button. The SER-HUB- Windows™ software GUI also allows the user to set the state of each individual for each key pressed. The commands sent to the 2 serial devices can be any combination of ASCII characters, hexadecimal bytes, wait times, and <CR>'s.

Features

- 1. Compact, Rugged, Reliable, and Economical
- 2. Extremely flexible and customizable control system
- 3. Up to 128 character strings to the serial devices
- 4. Controls 2 separate serial devices with 2 separate baud rates
- 5. 5 Discrete Outputs
- 6. 2 Discrete Inputs
- 7. Full control over individual LED's on each keypad
- 8. Custom programmable serial commands for each button
- 9. Intuitive Operation
- 10. Comes with Windows™ GUI software for programming
- 11. Made in USA

Setup to Use SER-HUB-C1

- 1. Connections to Serial Hub
 - a. Attach a KP2B-HUB to either Keypad port



Serial Hub



- b. Attach a crossover Female-to-Female DB9 Serial cable from the OUT 1 port to the first serial device.
- c. Attach a crossover Female-to-Female DB9 Serial cable from the OUT 2 port to the second serial device.
- d. Connect the Discrete Outputs to any discrete devices you choose.

Pinout of the Discrete Output/Input DB9 connector

- Pin 1 = Discrete Output #1
- Pin 2 = Discrete Output #2
- Pin 3 = Discrete Output #3
- Pin 4 = Discrete Output #4
- Pin 5 = Ground
- Pin 6 = Discrete Output #5
- Pin 7 = Discrete Input #1
- Pin 8 = Discrete Input #2



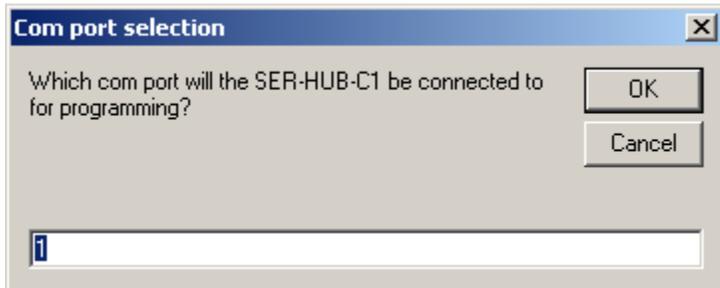
Serial Hub

Operation

1. The SER-HUB-C1 Serial Control System is designed to control 2 serial devices and up to 5 contact closure devices all with the touch of one button on a keypad. The Serial Hub listens to the 2 KP2B-HUB keypads and when it gets a command indicating a button was pressed, it then sends out to the first serial device the serial string corresponding to that keypad button, a serial string to the second serial device, and then the Discrete Output levels are set. The Serial Hub then sends 10 commands to each Keypad telling the keypad how to light each LED. All these commands are pre-programmed into the memory of the Serial Hub using the SER-HUB-C1 Windows™ GUI software. The Serial Hub listens to the keypads and responds to the key pressed by reading the strings and commands out of memory and sending them out to the correct devices.

How To Use The Serial Hub Programmer

The first step to programming the Serial Hub with the Serial Hub Programmer is to connect the Serial Hub to the computer that is running the SER-HUB-C1 Programmer via the COM port you will select when you start the SER-HUB-C1 Programmer software. The COM ports the Serial Hub Programmer supports are COM1 thru COM10.

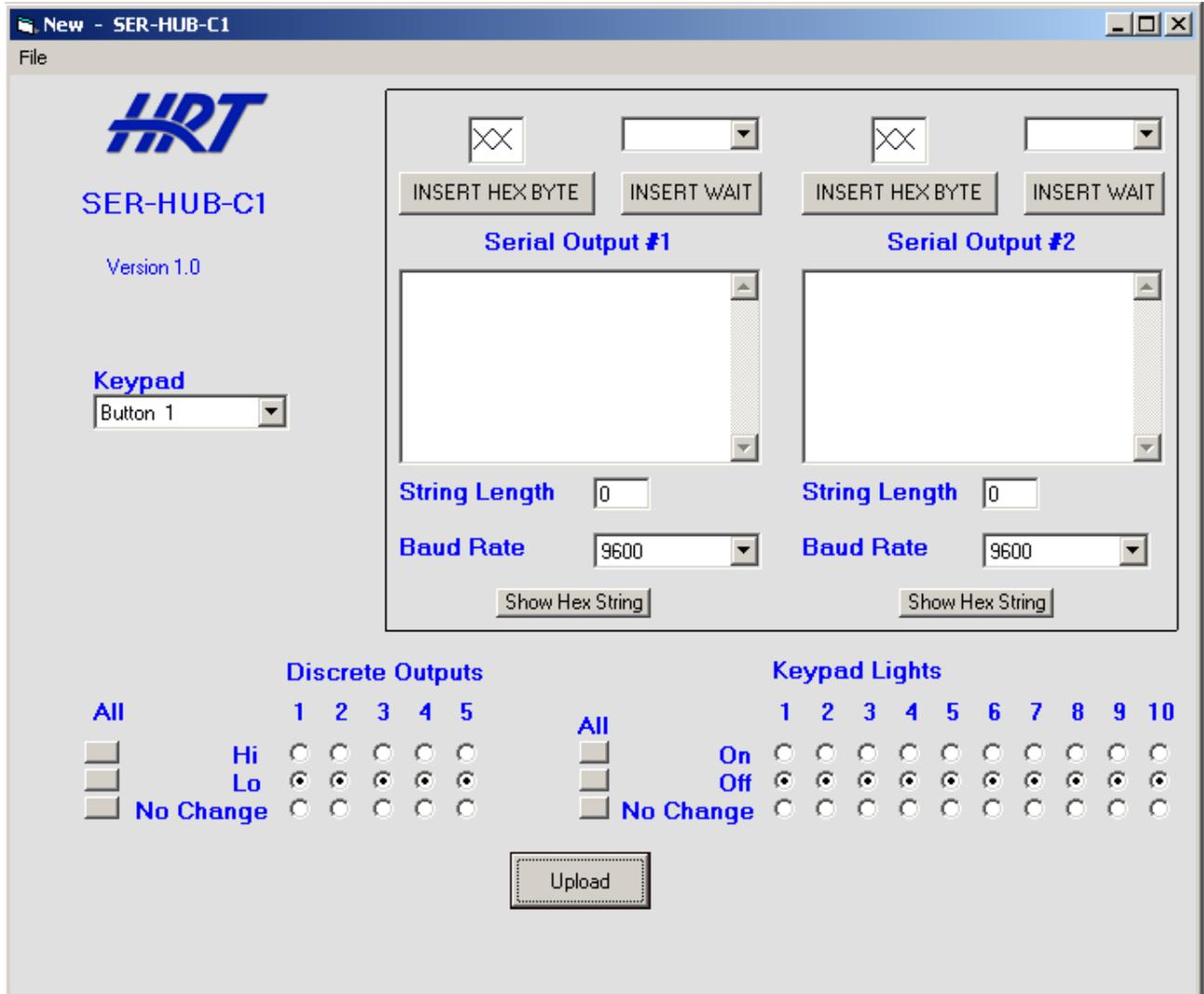


After selecting a COM port, you will need to decide if you want to edit an existing configuration file or create a new configuration file. A configuration file is all the information that will be uploaded to the Serial Hub. Configuration files will have the file extension of ".hrt"



Selecting the Keypad Button to program

The drop down menu on the left will have all the choices for the 10-keypad buttons and the 2 Discrete Inputs. The Discrete Inputs function exactly like a button on a keypad when they transition from a Hi to a Lo state.



When the drop down menu is activated, all the settings on the right for the serial strings, LED's, and Discrete Outputs are saved into the currently selected button.

When a new button is selected via the drop down menu, all the settings associated with that button are displayed on the right in their appropriate fields.

Specifying the baud rate for each serial device

Each serial device can have its own baud rate independent of the other serial device. For each serial string, select the baud rate for that serial device using the Baud Rate drop down menu.

Specifying the LED states

		Keypad Lights									
All		1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	On	<input type="radio"/>									
<input type="checkbox"/>	Off	<input checked="" type="radio"/>									
<input type="checkbox"/>	No Change	<input type="radio"/>									

For each keypad button and discrete input, the state of every LED can be specified. An LED can only be in 1 state at a time so check the radio button for the state desired. The No Change state means that when the selected button is pressed, it will not change the current state of an LED set to the No Change state. If that LED is on, it will remain ON. If that LED is Off, it will remain Off. To set all the LED's on a keypad to On, Off, or No Change, use the All buttons on the left.

Specifying the Discrete Output states

		Discrete Outputs				
All		1	2	3	4	5
<input type="checkbox"/>	Hi	<input type="radio"/>				
<input type="checkbox"/>	Lo	<input checked="" type="radio"/>				
<input type="checkbox"/>	No Change	<input type="radio"/>				

For each keypad button and discrete input, the state of every Discrete Output can be specified. A Discrete Output can only be in 1 state at a time so check the radio button for the state desired. The No Change state means that when the selected button is pressed, it will not change the current state of a Discrete Output set to the No Change state. If that Discrete Output is Hi, it will remain Hi. If that Discrete Output is Lo, it will remain Lo. To set all the Discrete Outputs to Hi, Lo, or No Change, use the All buttons on the left.

Creating the Serial Strings

The strings to the serial devices can be comprised of ASCII characters, hexadecimal bytes, and wait times embedded in the strings. The length of each serial string must not exceed 128 bytes. The current length of each string will be displayed in the String Length box.

Entering ASCII characters into the serial strings

The screenshot shows a software interface for configuring serial output. It is divided into two columns, 'Serial Output #1' and 'Serial Output #2'. Each column has a header area with a crossed-out 'X' icon and a dropdown menu. Below this are two buttons: 'INSERT HEX BYTE' and 'INSERT WAIT'. The main area of each column is a text box containing the string 'abcdefg' for Serial Output #1 and 'ABCDEFGH' for Serial Output #2. Below the text boxes are two input fields for 'String Length', both set to '7', and two dropdown menus for 'Baud Rate', both set to '9600'. At the bottom of each column is a 'Show Hex String' button.

Just start typing in either Serial Output text box to enter ASCII characters. You cannot paste text and you cannot delete more than 1 character at a time.

Entering hexadecimal bytes into the serial strings

The screenshot shows the same software interface as above, but now configured for hexadecimal input. The header area of each column contains a text box with a hexadecimal value: '03' for Serial Output #1 and 'EF' for Serial Output #2. The 'INSERT HEX BYTE' buttons are visible. The main text boxes now contain the escaped hexadecimal strings: '%h03' for Serial Output #1 and '%hEF' for Serial Output #2. The 'String Length' fields are set to '1' and the 'Baud Rate' dropdowns are set to '9600'. 'Show Hex String' buttons are at the bottom of each column.

Enter Hexadecimal bytes by typing the hexadecimal byte into the box above the "Insert Hex Byte" button. Then click "Insert Hex Byte" button. The Hexadecimal byte will be inserted at the end of the current string.

Entering wait times into the serial strings

The screenshot shows a software interface for configuring serial outputs. It is divided into two columns, 'Serial Output #1' and 'Serial Output #2'. Each column has a '1 sec' dropdown menu and an 'INSERT WAIT' button. Below these are text input fields containing the strings 'abcd 'WAIT 1 sec' efghijklmnop' and 'ABCD 'WAIT 5 min' EFGHIJKLMNOP'. At the bottom of each column are 'String Length' (set to 18) and 'Baud Rate' (set to 9600) dropdowns, and a 'Show Hex String' button.

Waits can be entered into the serial strings by choosing the wait duration from the drop down menu then clicking "Insert Wait" button. Each wait uses the space of 3 ASCII characters in the overall string length. In this example, the ASCII characters "abcd" will be sent out to the first serial device. Then there will be a 1 second wait and then the ASCII characters "efghijklmnop" will be sent out to the first serial device. Then the ASCII characters "ABCD" will be sent out to the second serial device. Then there will be a 5-minute wait and then the ASCII characters "EFGHIJKLMNOP" will be sent to the second serial device.

Entering Carriage Returns into the serial strings

The screenshot shows the same software interface as above, but with carriage returns (<CR>) entered into the serial strings. The 'Serial Output #1' string is 'abcdefg <CR> 'ijkl <CR>' mnop' and the 'Serial Output #2' string is 'ABCDEFGFG <CR> 'HIJKL <CR>' MNOP'. All other settings, including 'String Length' (18) and 'Baud Rate' (9600), remain the same.

To enter a Carriage Return <CR> into the serial string, just press the "Enter" key on your keyboard.

Setup to Program Serial Hub

1. Install the SER-HUB-C1 Programmer software on the PC.
2. Connect the provided power supply to the power port on the back right side of the Serial Hub.
3. Connect a straight through serial cable (provided) from the PC to the Serial Hub Keypad A/Prgm serial port.
4. Disconnect all other serial connections to the Serial Hub.
5. Startup the SER-HUB-C1 program. (Located in Start menu)
6. Create a New file or Edit an existing file.
7. Do the following actions for each key on each keypad: Edit string commands for Serial 1, Serial 2, set the Discrete Output levels, set LED states.
8. **IMPORTANT!** You must wait 10 seconds after powering on the Serial Hub before you can upload to the Serial Hub.
9. **IMPORTANT!** You must not have any other programs running when you upload the configuration to the Serial Hub. This may result in a failure to upload to the Serial Hub.
10. Save file and Upload

Uploading to the Serial Hub

To upload to the Serial Hub, make sure the Serial Hub is connected to the PC and is powered on then simply click on the Upload button.

Loading or Saving Configurations

You can save or load a configuration file by clicking on the File menu and choosing the appropriate icon. You can also create a new configuration file from the File menu.

Putting the SER-HUB-C1 into Operation

After you have successfully uploaded a configuration to the Serial Hub, disconnect the Serial Hub from the computer and power it off. Connect the necessary devices to the Serial Hub as specified above and apply power to the Serial Hub. You will see the LED's on each keypad light and then turn off 1 at a time in sequence 1-10. The Serial Hub is now ready to receive commands from a keypad and send out the serial strings to each serial device and to transition the Discrete Outputs.

Federal Communications Commission Statement

This equipment generates, uses and radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. This equipment has been tested and found to comply with the limits for a Class A computing device, pursuant to Part 15 of the FCC rules. Harmful interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are necessary to correct the interference.

If necessary, you should consult the place of purchase or an experienced radio/television technician for additional suggestions.

Warranty

HRT warrants that the supplied equipment is free from defective workmanship and material. Subject to the agreements set forth, will repair or replace, at its option, the defective components for a period of 2 years after purchase. The following conditions apply to the Warranty:

Warranty void if item subject to improper use, negligence, or unauthorized modification

Instructions must be followed in obtaining RMA number as explained below

Any defective part should be returned, insured and freight prepaid, to Hall Research, with the following:

- Return Material Authorization Number (RMA#)
- Description of failure, as detailed as possible
- Shipping address and contact name and phone number

Limited Liability

IN NO EVENT SHALL THE DIRECT VENDOR'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT OR ITS DOCUMENTATION



Products Designed and Made in the USA

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