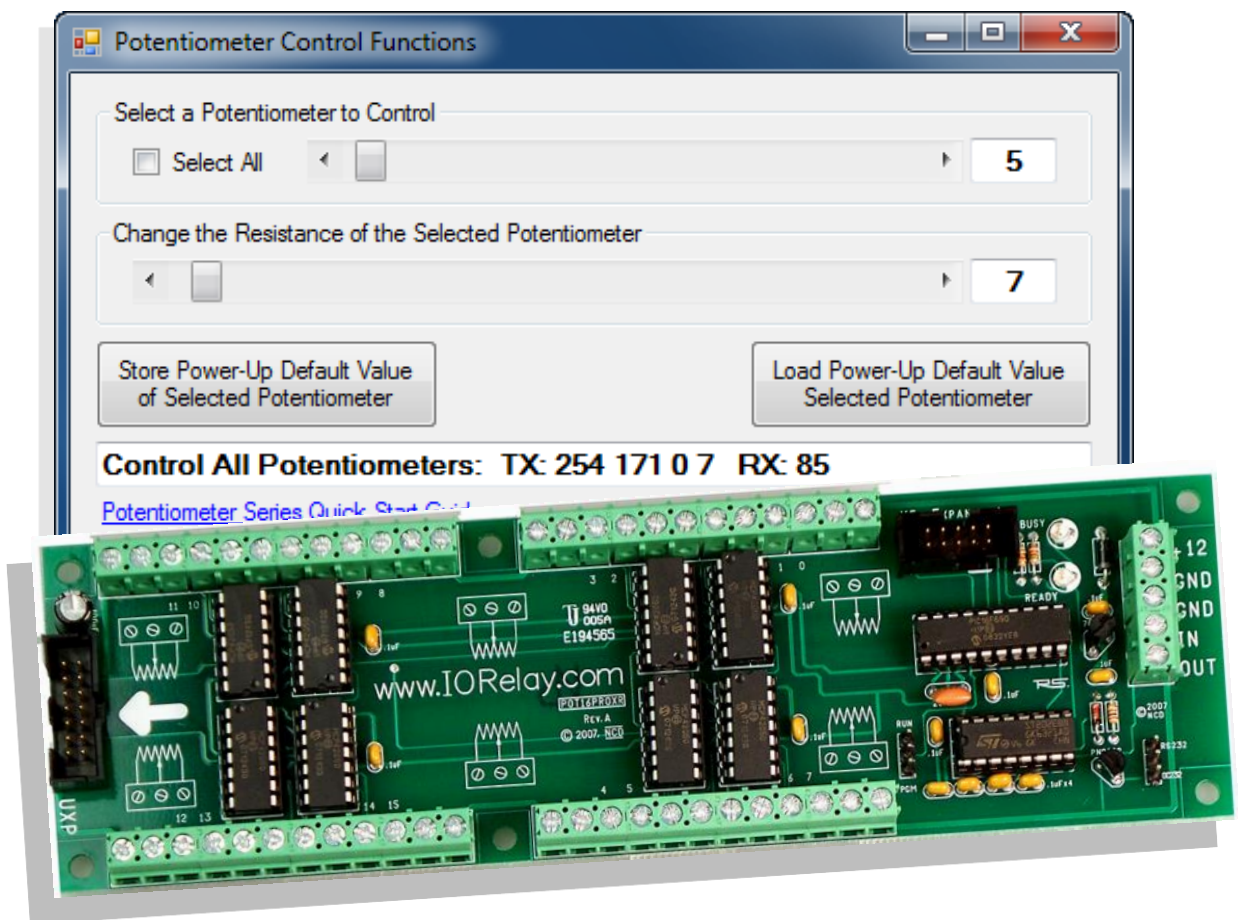


NATIONAL CONTROL DEVICES

Potentiometer Quick Start Guide



Control Up to 256 Channels of Potentiometer Outputs

NATIONAL CONTROL DEVICES

Potentiometer

Control Up to 256 Channels of Potentiometer Outputs

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Notice: Portions of this manual require internet access.

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Hardware Diagram

RS-232 Programmable Potentiometer

RS-232 **16-Channel** Programmable Potentiometer + XR Expansion Port
 Product Code: POT16PROXR

WARNING:

Potentiometer Outputs Operate in the 0-5VDC Voltage Range ONLY. Up to 1ma of current may pass through the potentiometer. **NEVER EXCEED** 1ma or the potentiometer chip will be damaged.

XR Expansion Port:

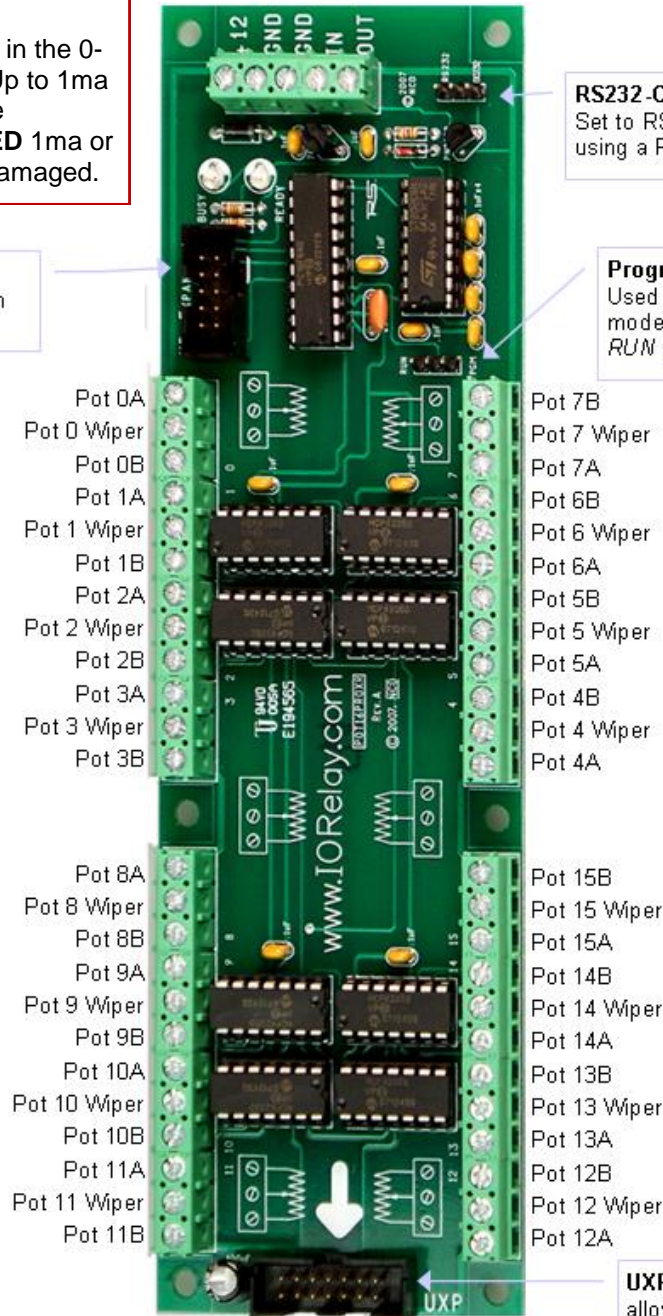
Connect XR Relay Expansion Devices to this Port.

RS232-0C232:

Set to RS-232 unless you are using a RSB Serial Booster

Program Run Jumper:

Used to change operating modes. For daily use set to *RUN* position.



UXP Expansion Port:

allows to add more potentiometer outputs

RS-232 Programmable Potentiometer

RS-232 24-Channel Programmable Potentiometer + XR Expansion Port.

Product Code: POT24PROXR

WARNING:

Potentiometer Outputs Operate in the 0-5VDC Voltage Range ONLY. Up to 1ma of current may pass through the potentiometer. **NEVER EXCEED** 1ma or the potentiometer chip will be damaged.

XR Expansion Port:

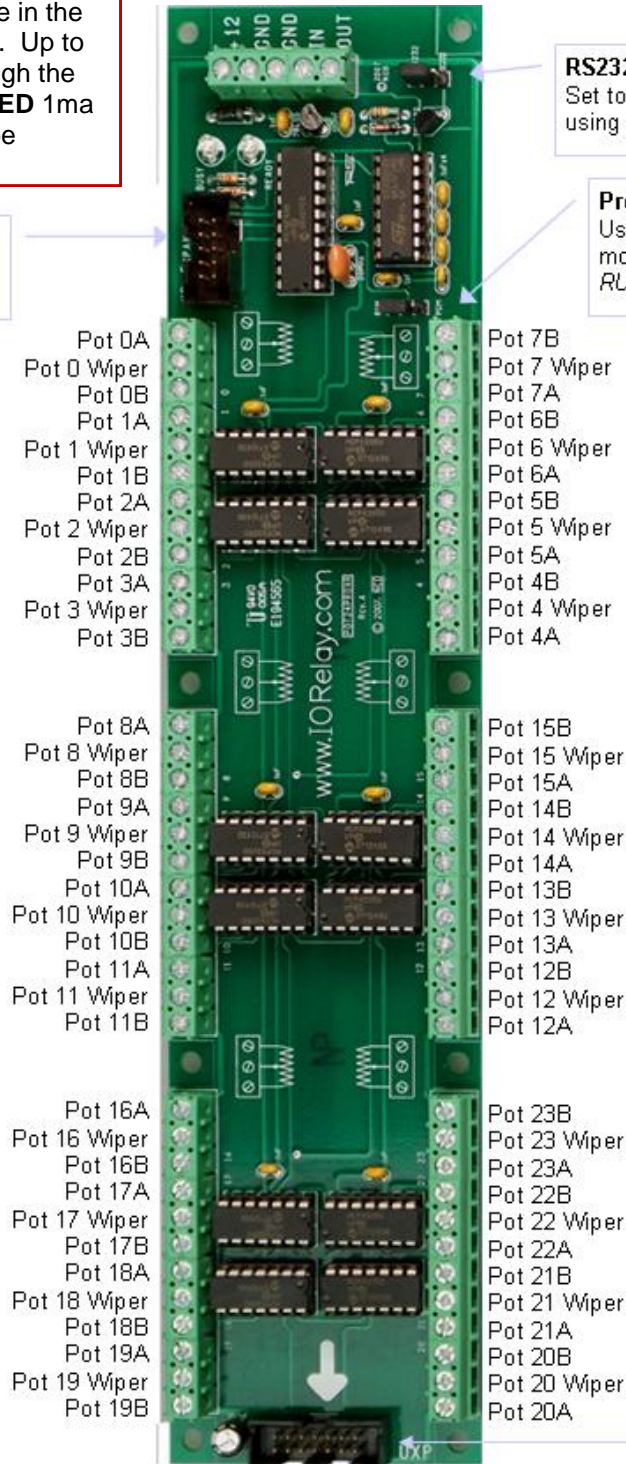
Connect XR Relay Expansion Devices to this Port.

RS232-OC232:

Set to RS-232 unless you are using a RSB Serial Booster

Program Run Jumper:

Used to change operating modes. For daily use set to *RUN* position.



Pot 0A
Pot 0 Wiper
Pot 0B
Pot 1A
Pot 1 Wiper
Pot 1B
Pot 2A
Pot 2 Wiper
Pot 2B
Pot 3A
Pot 3 Wiper
Pot 3B

Pot 8A
Pot 8 Wiper
Pot 8B
Pot 9A
Pot 9 Wiper
Pot 9B
Pot 10A
Pot 10 Wiper
Pot 10B
Pot 11A
Pot 11 Wiper
Pot 11B

Pot 16A
Pot 16 Wiper
Pot 16B
Pot 17A
Pot 17 Wiper
Pot 17B
Pot 18A
Pot 18 Wiper
Pot 18B
Pot 19A
Pot 19 Wiper
Pot 19B

Pot 7B
Pot 7 Wiper
Pot 7A
Pot 6B
Pot 6 Wiper
Pot 6A
Pot 5B
Pot 5 Wiper
Pot 5A
Pot 4B
Pot 4 Wiper
Pot 4A

Pot 15B
Pot 15 Wiper
Pot 15A
Pot 14B
Pot 14 Wiper
Pot 14A
Pot 13B
Pot 13 Wiper
Pot 13A
Pot 12B
Pot 12 Wiper
Pot 12A

Pot 23B
Pot 23 Wiper
Pot 23A
Pot 22B
Pot 22 Wiper
Pot 22A
Pot 21B
Pot 21 Wiper
Pot 21A
Pot 20B
Pot 20 Wiper
Pot 20A

UXP Expansion Port:

allows to add more potentiometer outputs

RS-232 Programmable Potentiometer

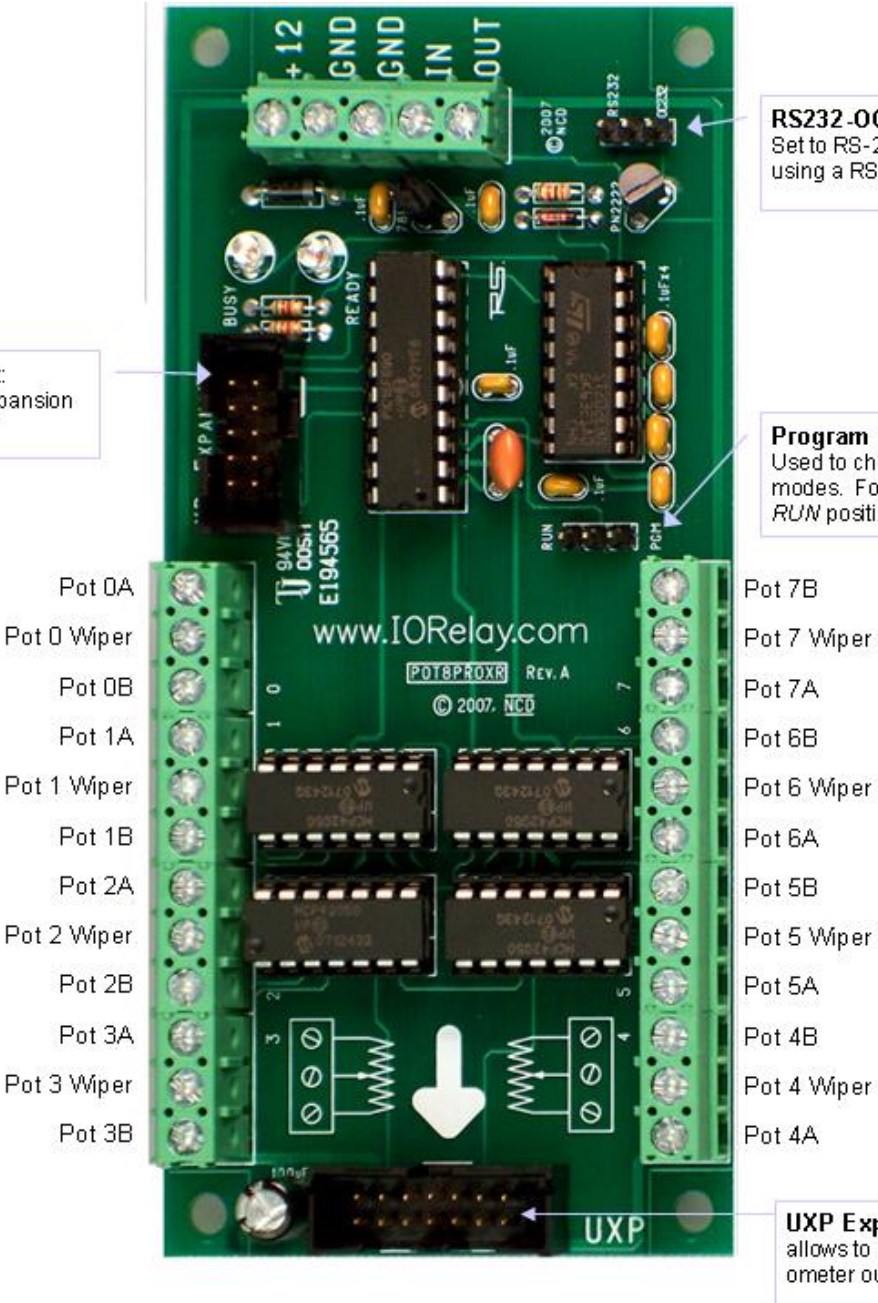
RS-232 8-Channel Programmable Potentiometer + XR Expansion Port. Product Code: POT8PROXR

WARNING:
 Potentiometer Outputs Operate in the 0-5VDC Voltage Range ONLY. Up to 1ma of current may pass through the potentiometer. **NEVER EXCEED** 1ma or the potentiometer chip will be damaged.

XR Expansion Port:
 Connect XR Relay Expansion Devices to this Port.

RS232-0C232:
 Set to RS-232 unless you are using a RSB Serial Booster

Program Run Jumper:
 Used to change operating modes. For daily use set to *RUN* position.

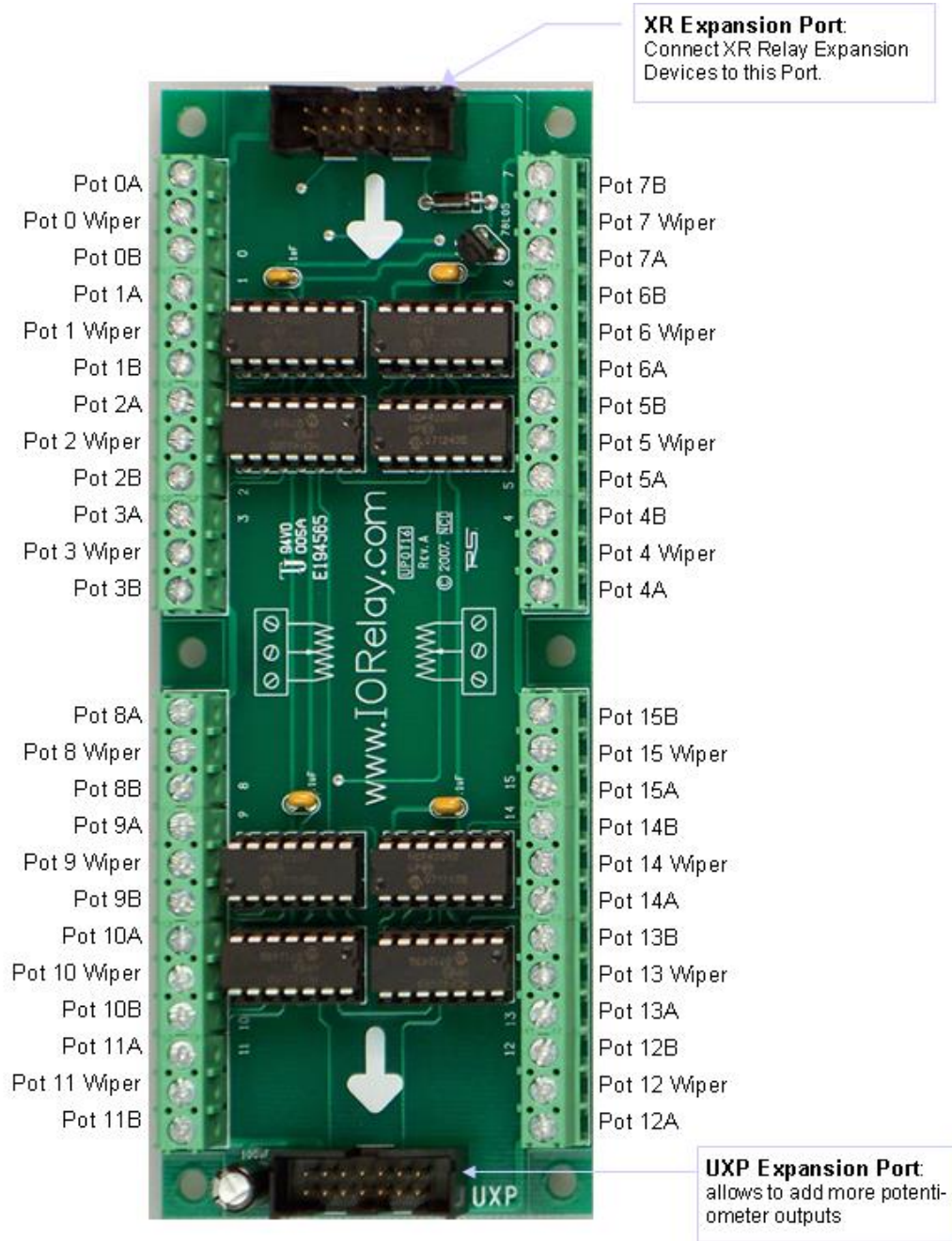


UXP Expansion Port:
 allows to add more potentiometer outputs

Programmable Potentiometer Expansion Module

16-Channel Programmable Potentiometer Expansion Module. Product Code: UPOT16

WARNING:
 Potentiometer Outputs Operate in the 0-5VDC Voltage Range ONLY. Up to 1ma of current may pass through the potentiometer. **NEVER EXCEED** 1ma or the potentiometer chip will be damaged.

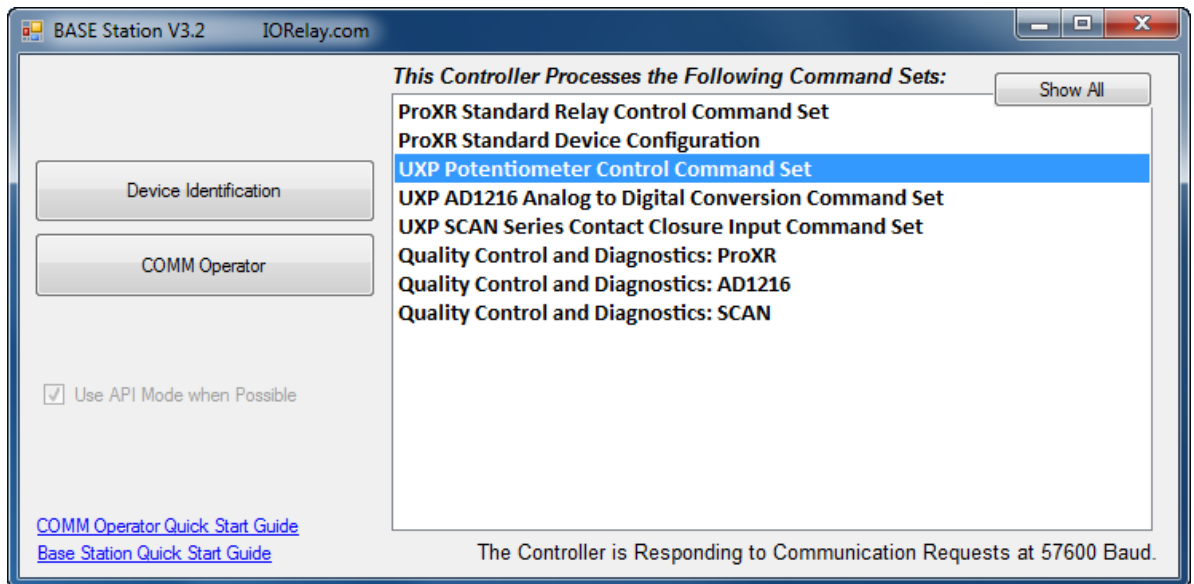


Base Station Software

In order to communicate with the Potentiometer, run the [NCD Base Station](#) software.

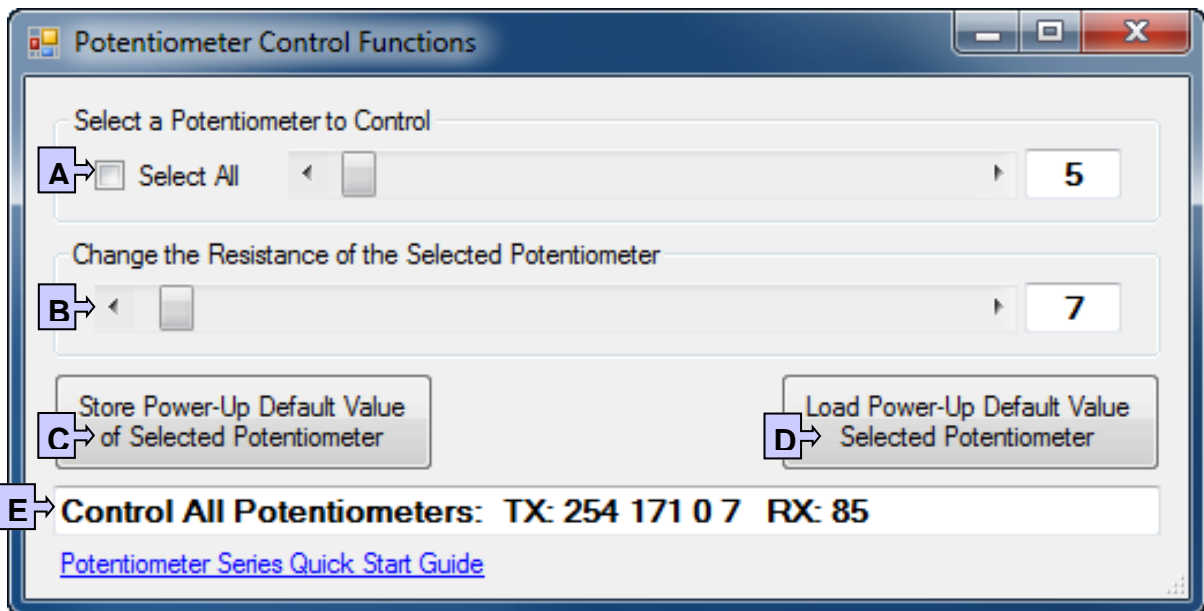
- Connect the Potentiometer to your computer using your favorite interface technology.
- Run the NCD Base Station software
- Select the appropriate COM port or IP Address
- Click OK.

When the dialog box appears, choose '*UXP Potentiometer Control Command Set*' as shown in the screen shot below.



To control functions of the Potentiometer:

- A. This option allows you to select which potentiometer you would like to control. Check the “Select All” box to control all potentiometers simultaneously.
- B. This slider is used to change the resistance of the potentiometer output.
- C. This option stores the power-up default potentiometer values. This command is NOT supported by all potentiometer devices.
- D. This option loads the power-up default potentiometers and refreshes the potentiometer outputs to the startup values. This command is NOT supported by all potentiometer devices.
- E. Command dialog box. Reads commands send and device responses in decimal format.



POT Command Set

Potentiometer Control Commands

The POT Command Set is used to control up to 256 channels of potentiometer outputs with 8-bit resolution per channel. This command set is compatible with all ProXR controllers with a UXP Expansion Port. This command set may also be used with part numbers that contain the letters POT.

Digital Potentiometers are limited to 1ma of current and have a working voltage from 0 to 5VDC. Exceeding this working voltage or current may permanently damage the potentiometer chip.

Set a Single Potentiometer

This command will set a single Potentiometer to a specified value where POT is the channel number and value is the new value of the potentiometer.

Send Bytes:	Byte 1:	Byte 2:	Byte 3:	Byte 4:
Function:		Command	POT	Value
Decimal Values:	254	170	0-255	0-255
Hex Values	0xFE	0xAA	0x00-0xFF	0x00-0xFF
Receive Byte:	Decimal:	85		
	Hex:	0x55		

NCD Component Library Command Method:

Not Yet Implemented

Set All Potentiometers

This command will set all Potentiometers to a specified value where value is the new value of all potentiometers.

Send Bytes:	Byte 1:	Byte 2:	Byte 3:
Function:	Command		Value
Decimal Values:	254	171	0-255
Hex Values	0xFE	0xAB	0x00-0xFF
Receive Byte:	Decimal:	85	
	Hex:	0x55	

NCD Component Library Command Method:

Not Yet Implemented

Store a Startup Value for a Specific Potentiometer

This command will store a Startup Value for a specific potentiometer. Where POT is the potentiometer to store and Value is the value to be stored. Only the first 32 Potentiometers may be stored by ProXR Enhanced Controllers.

Send Bytes:	Byte 1:	Byte 2:	Byte 3:	Byte 4:
Function:	Command		POT	Value
Decimal Values:	254	172	0-31	0-255
Hex Values	0xFE	0xAC	0x00-0x1F	0x00-0xFF
Receive Byte:	Decimal:	85		
	Hex:	0x55		

NCD Component Library Command Method:

Not Yet Implemented

Read the Startup Value for a Specific Potentiometer

This command will read the startup value for a specific potentiometer. Where POT is the potentiometer to read. The value will be returned as a number from 0 to 255.

Send Bytes:	Byte 1:	Byte 2:	Byte 3:
Function:	Command		POT
Decimal Values:	254	173	0-31
Hex Values	0xFE	0xAD	0x00-0x1F
Receive Byte:	Decimal:	0-255	
	Hex:	0x00-0xFF	

NCD Component Library Command Method:

Not Yet Implemented

Accessing Port 2 with Fusion Controller

Potentiometer Control Commands

The POT Command Set is used to control up to 256 channels of potentiometer outputs with 8-bit resolution per channel. This command set is compatible with all ProXR controllers with a UXP Expansion Port. This command set may also be used with part numbers that contain the letters POT.

Digital Potentiometers are limited to 1ma of current and have a working voltage from 0 to 5VDC. Exceeding this working voltage or current may permanently damage the potentiometer chip.

Set a Single Potentiometer (Fusion Port 2)

This command will set a single Potentiometer to a specified value where POT is the channel number and value is the new value of the potentiometer. This command example accesses Port 2 on the Fusion Series Controllers if available.

Send Bytes:	Byte 1:	Byte 2:	Byte 3:	Byte 4:	Byte 5:
Function:	Command	POT	Value		Port 2
Decimal Values:	254	170	0-255	0-255	2
Hex Values	0xFE	0xAA	0x00-0xFF	0x00-0xFF	0x02

Receive Byte: Decimal: 85
Hex: 0x55

NCD Component Library Command Method:

Not Yet Implemented

Set All Potentiometers (Fusion Port 2)

This command will set all Potentiometers to a specified value where value is the new value of all potentiometers. This command example accesses Port 2 on the Fusion Series Controllers if available.

Send Bytes:	Byte 1:	Byte 2:	Byte 3:	Byte 4:
Function:	Command	Value		Port 2
Decimal Values:	254	171	0-255	2
Hex Values	0xFE	0xAB	0x00-0xFF	0x02

Receive Byte: Decimal: 85
Hex: 0x55

NCD Component Library Command Method:

Not Yet Implemented

Store a Startup Value for a Specific Potentiometer (Fusion Port 2)

This command will store a Startup Value for a specific potentiometer. Where POT is the potentiometer to store and Value is the value to be stored. Only the first 32 Potentiometers may be stored by ProXR Enhanced Controllers. This command example accesses Port 2 on the Fusion Series Controllers if available.

Send Bytes:	Byte 1:	Byte 2:	Byte 3:	Byte 4:	Byte 5:
Function:	Command	POT	Value		Port 2
Decimal Values:	254	172	0-31	0-255	2
Hex Values	0xFE	0xAC	0x00-0x1F	0x00-0xFF	0x02
Receive Byte:	Decimal:	85			
	Hex:	0x55			

NCD Component Library Command Method:

Not Yet Implemented

Read the Startup Value for a Specific Potentiometer (Fusion Port 2)

This command will read the startup value for a specific potentiometer. Where POT is the potentiometer to read. The value will be returned as a number from 0 to 255. This command example accesses Port 2 on the Fusion Series Controllers if available.

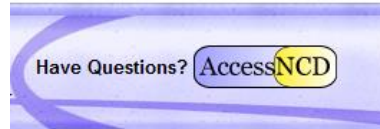
Send Bytes:	Byte 1:	Byte 2:	Byte 3:	Byte 4:
Function:	Command	POT		Port 2
Decimal Values:	254	173	0-31	2
Hex Values	0xFE	0xAD	0x00-0x1F	0x02
Receive Byte:	Decimal:	0-255		
	Hex:	0x00-0xFF		

NCD Component Library Command Method:

Not Yet Implemented

Technical Support

Technical support is available through our website, controlanything.com. **AccessNCD** is the way we connect NCD engineers to our customers.



*Click on the **AccessNCD** button located on the top right of the header of each page of our website.*

For technical support and application information, contact Travis Elliott, our technical engineer. If you feel that you have discovered a bug in the firmware of our controllers, contact Ryan Sheldon, our hardware developer. If you have programming-related questions or have discovered a bug in our software, please contact Shirui Xu, our software engineer.



Click the 'Tech Support Staff' tab and click on the appropriate engineer link for assistance. Click on our 'Forum' tab if you would like to post publicly or review problems that other customers have had and our recommended solutions.

Our engineers monitor questions and respond continually throughout the day. Before requesting telephone technical support, we ask that customers please try to resolve their problems through **AccessNCD** first. However, for persistent problems, NCD technical support engineers will schedule a phone consultation.

Contact Information

National Control Devices, LLC
PO Box 455
Osceola, MO 64776
417-646-5644 phone
866-562-0406 fax
Open 9 a.m. - 4 p.m. CST

All orders *must* be placed online at our website, www.controlanything.com

Notice:

The only authorized resellers of NCD products are

- www.controlanything.com
- www.relaycontrollers.com
- www.relaypros.com
- www.amazon.com

All other websites are not authorized dealers; we have noticed some retailers offering our products fraudulently.