Linear Actuator with Absolute Encoder – Windows Utility

Contents

Revision History

Author	Date	Description
Jon Voiculescu	03/27/2021	Draft 1
Jon Voiculescu	04/02/2021	Added requirement for MS .NET version 4

Overview

A windows application is provided (including source code) for testing the actuator as well as changing the default configuration.

The application does not require setup, just unzip the provided folder and run the DCBL_ABS_Control_Lin_N.exe file (N is the version number). MS .NET framework version 4 is required.

It is best if you get familiar with the "Linear Actuator with Absolute Encoder - Interface and Integration" document first.

Getting Started

1. Materials:
    a. Serial Com Port (usually an USB to RS422 adaptor).
    b. 24 V Power
    c. Actuator
2. Identify the Com Port Number
    Plugin the USB to serial adaptor and open the device manager. Expand "Ports (COM & LPT)" and retain the COM number). If you have multiple COM ports, you may want to unplug and plug the adaptor again to identify the new item in the list.
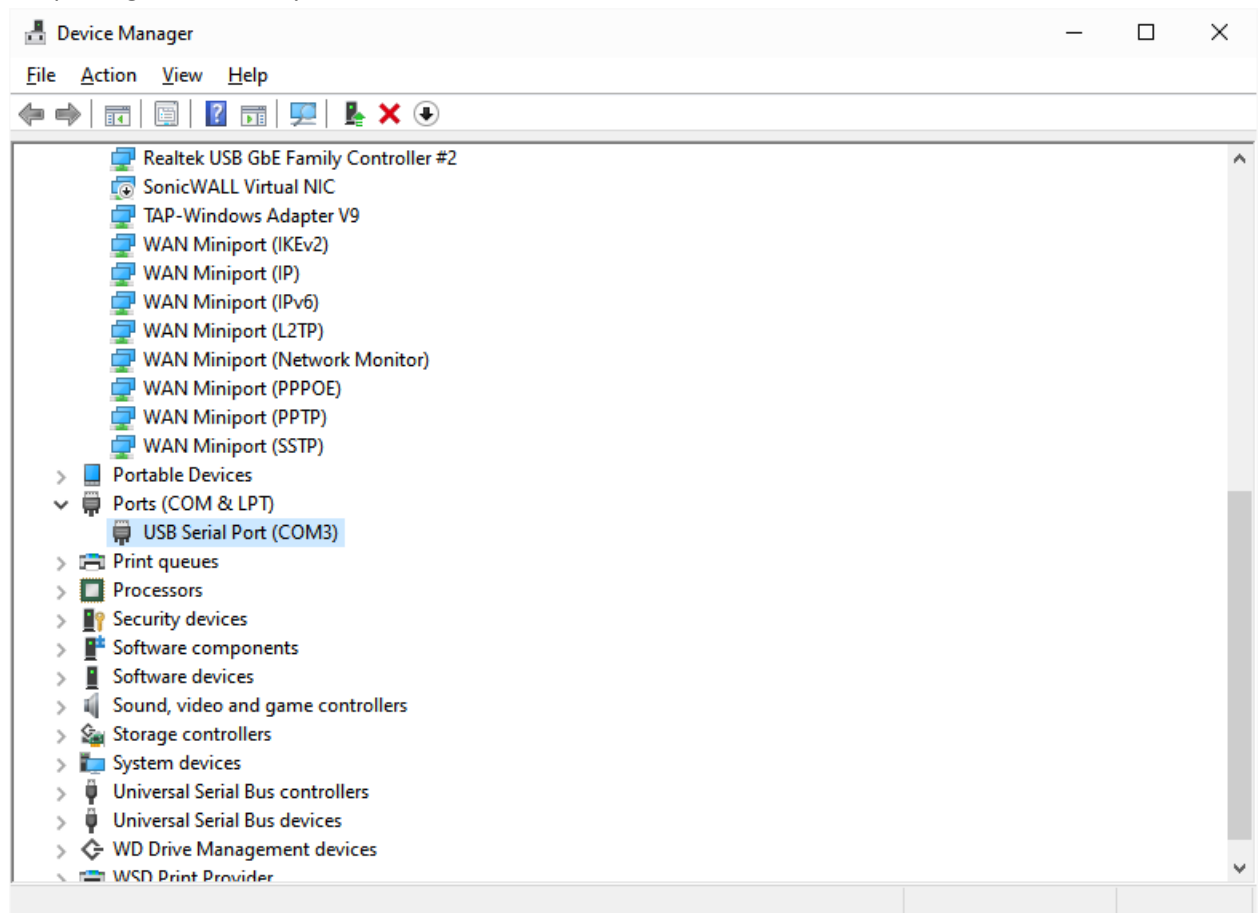
3. Setup the communication parameters: 19200, 8, N, 1 (Right click on the com port and select "Properties". Select the tab "Port Settings"
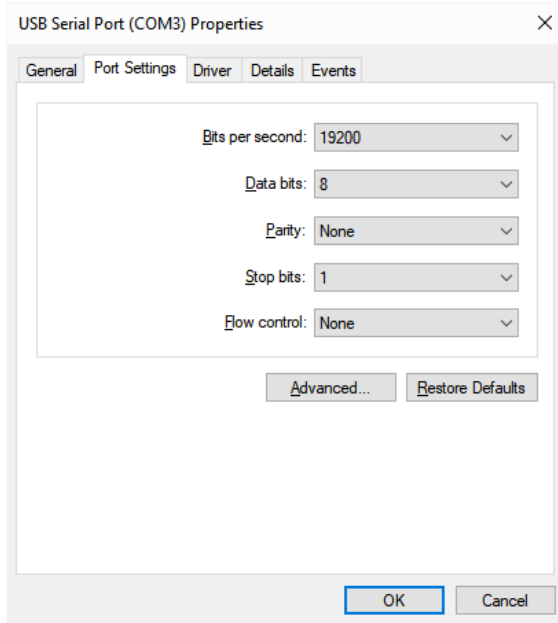
4. Connect the actuator to the serial communication device, power up the actuator and start the windows application. On the application interface select the COM port from the drop down list. You should see status messages coming from the actuator.

Note: It is best if you power up the actuator first, then connect the application (Com Port drop down). Immediately after connecting, the application attempts to read the EEPROM content from the actuator. You will get an error message that the EPPROM cannot be read. If this happens, select the com port again after power up, or go the "Configuration" tab and click on "Get All"
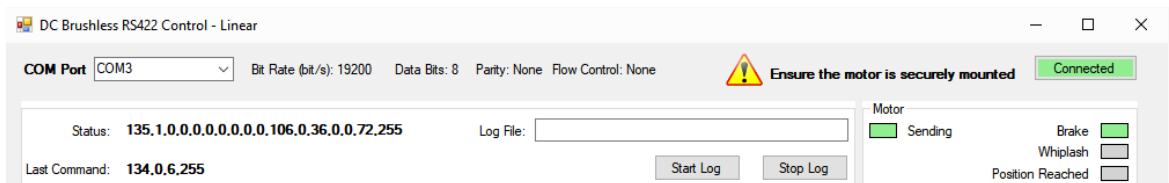
User Interface Description

Operation Tab

Configuration Tab

Operation Tab

Message Area:

Status: **135.1.0.0.0.1.0.0.0.0.105.0.36.0.0.74.255**	Log File:	
Last Command: **134.0.6.255**	Start Log	Stop Log

Displays the last received status message and the last sent command in decimal notation.

Provides for logging of the communication between the application and the actuator (CSV text). If needed, provide a file name in the text box and click "Start Log". The file location is in the same folder as the executable. If the file exists it will append to the existing file. The Header row refers to the received lines only.

Position Control Area:

Position Control

| Absolute ⌄	Target: 0 (0)	mm	Duty: 20 0 to 127	Go	Stop
	☐ Auto Run		Values: 60,100		

The "Go" button will issue the position command with the parameters entered in the text boxes. The target value is entered in the current unit of measure value (mm above). The program calculates the encoder counter value equivalent (displayed in brackets below the text box).

☐ Auto Run   Values: 60,100

Allows for cycling through a list of values (comma separated). The values are specified in the current unit of measure.

If configuration "Talk Back Interval" (TBI) is set to zero (no status broadcast), each position command will be repeated every 100 milliseconds until the next position in the list is issued. Only position commands are repeated. Other commands (e.g. "stop", "clear errors", etc.) are issued only once, then "get status" commands are repeated every 100 milliseconds.

Position Info Area:
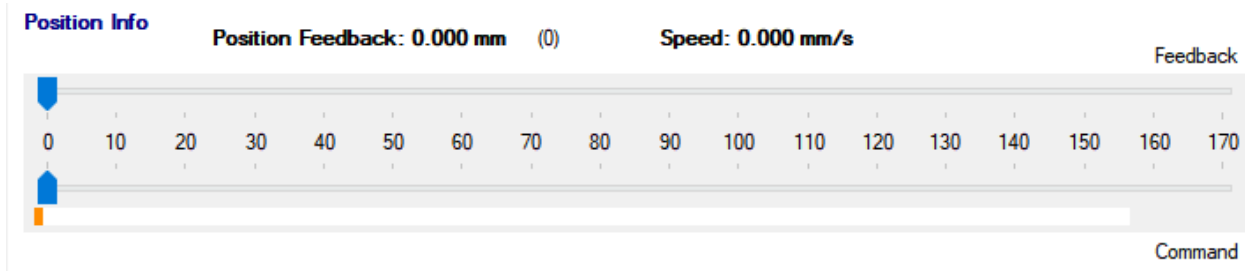
Provides position feedback (extracted from the status message), as well as the actual speed of the actuator. The value in brackets represents the position info in encoder counts.

The upper slider is a graphic representation of the position feedback. The lower slider can be used to issue position commands (just click and drag the slider to the desired position). The exact value while moving the slider is displayed in the Target box – position control. The position command will be executed at the speed indicated in the Duty box – position control.

The white band below the lower slider represents the allowed range for actuator motion. (The range between Minimum (Virtual SW1) and Maximum (Virtual SW2)). The whole band turns green when "Position reached" flag is raised. The end limits of the band turn orange when the respective limit switches are reached.

Jog Area:
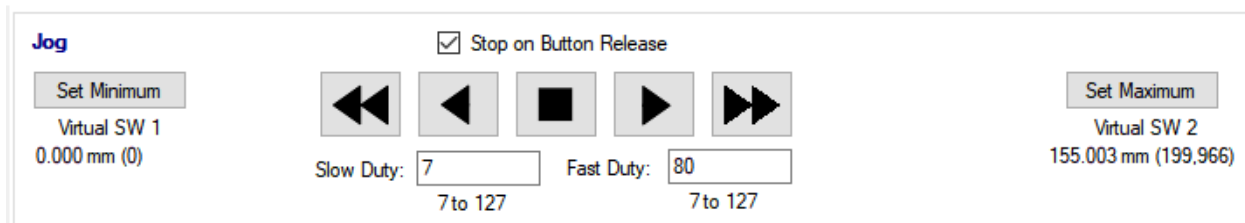
Allows for expanding / retracting the actuator rod manually. The right pointing arrows will expand the actuator rod (increase position value). Left pointing arrows will retract / decrease the position.

The double arrows will move the actuator fast (using the value entered in "Fast Duty"), while the single arrows will move the actuator slow ("Slow Duty" value). The square button will issue a "Stop" command. By default the motion will end as soon as you release any of the buttons. If the checkmark "Stop on Button Release" is cleared a single click is enough to set the actuator in motion. The motion will continue until you click on "Stop" (or until limits are reached).

Set Minimum / Maximum will set the current position of the actuator as minimum (maximum – respective). The setting is written to the actuator EEPROM and takes effect immediately. To clear the values you will need to go to the "Configuration" tab and set manually.

Test Command Area:

Provides a facility to enter commands manually (decimal values) and verify / send them to the actuator. The check sum is calculated by the program and updated on the GUI (can be left zero). The "disable validation" checkmark allows for sending commands without validation (checksum must be calculated manually). Useful for testing error messages.

Configuration Tab

Please refer to "Linear Actuator with Absolute Encoder - Interface and Integration" document for each setting details. Note that switching between operation and configuration tabs issues start / stop configuration commands automatically.

The disabled fields represent constructive constants that are set at the time of the actuator assembly. Each setting can be "get" or "set". The values entered are in the current unit of measure (transformed to encoder counter – brackets value)

The button "Get All" reads all configuration values.

Motor Status Area
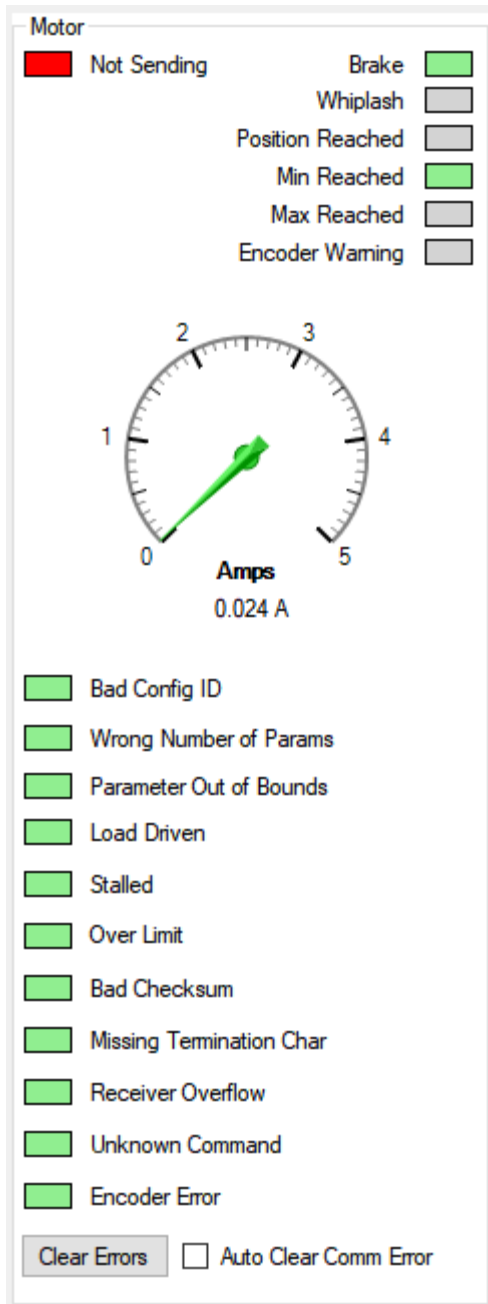
Provides a graphical representation for the Flags byte, error bytes and the value of the current consumption.

The "Motor Not Sending" is normal during configuration settings – status broadcast is disabled.

The checkmark "Auto Clear Comm Error" will automatically repeat the last command in case of communication error.

Please refer to "Linear Actuator with Absolute Encoder - Interface and Integration" document for each flag / error bit description.