Rotary Actuator Quick Start Guide

Contents

Revision History

| Author	Date	Description
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Materials

- Power Source (24V / 5A)
- USB to RS422 adaptor
- Actuator
- 8 Pin Subsea cable with female connector (provided with the actuator)

Electrical Connections

Connect the actuator transmit lines (T+ = 3, T-=4) to adaptor receive lines; and actuator receive lines (R+=5, R-=6) to adaptor transmit lines. Connect the power (Actuator + = 1, Actuator – (GND) = 2)
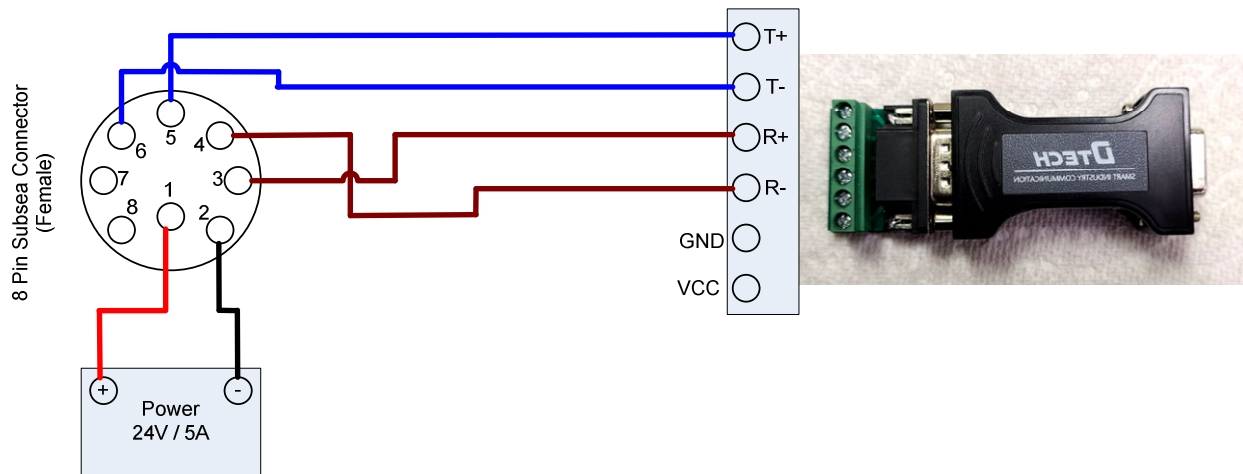

PC Settings

1. 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.
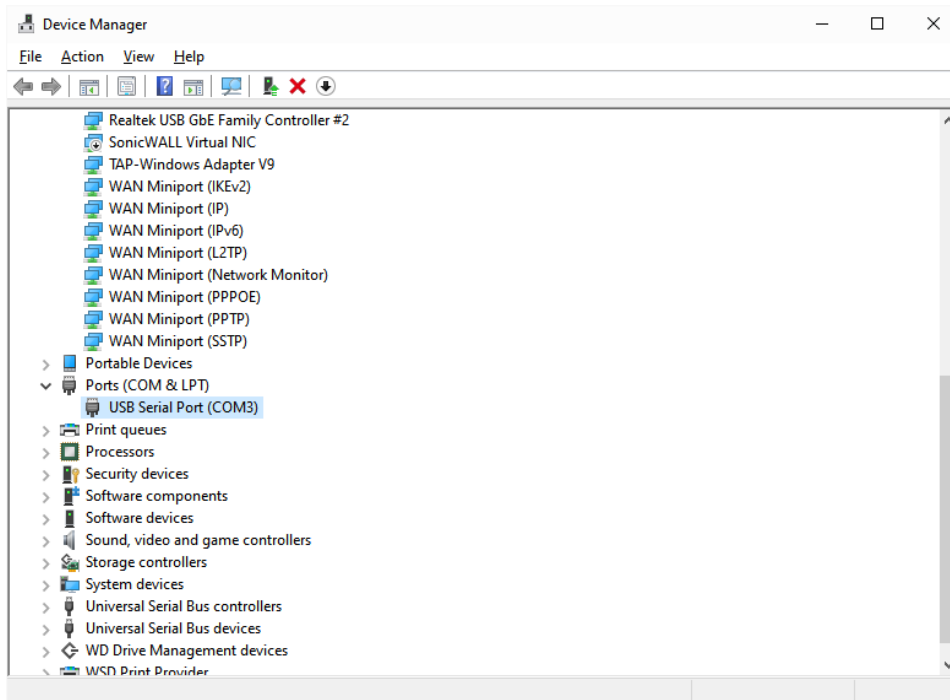
2. Setup the communication parameters: 19200, 8, N, 1 (Right click on the com port and select "Properties". Select the tab "Port Settings"
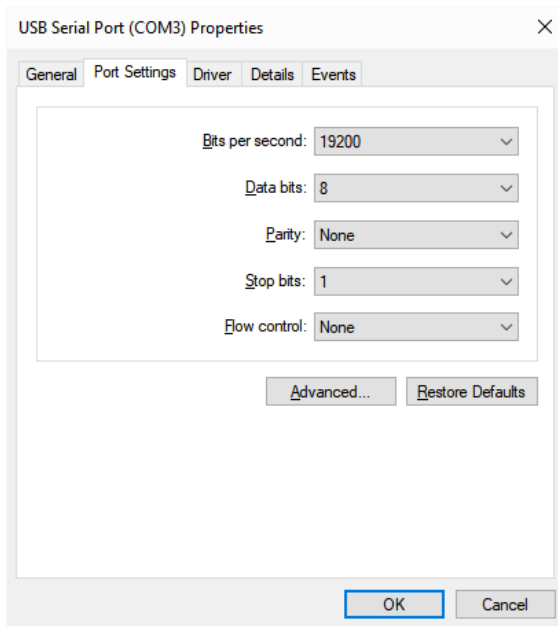
3. Connect the actuator to the serial communication device, power up the actuator and start the windows application. On the application interface select the COM port from the drop down list. You should see status messages coming from the actuator.

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. If the actuator is not powered on, 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"
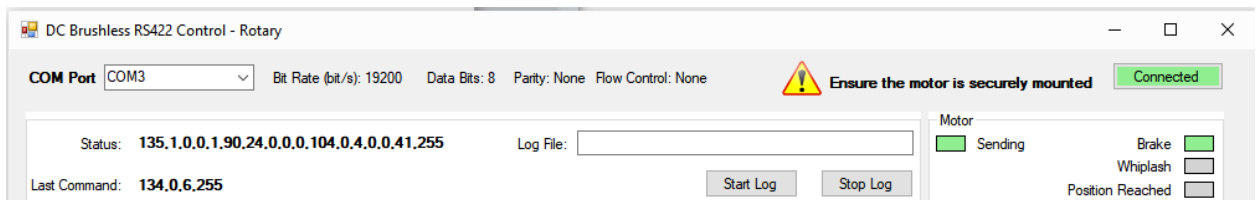
Windows Application Overview

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 "Rotary Actuator with Absolute Encoder - Interface and Integration" document first.

User Interface Description

Operation Tab

Configuration Tab

Operation Tab

Message Area:

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:

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

Allows for cycling through a list of values (comma separated). The values are specified in degrees.

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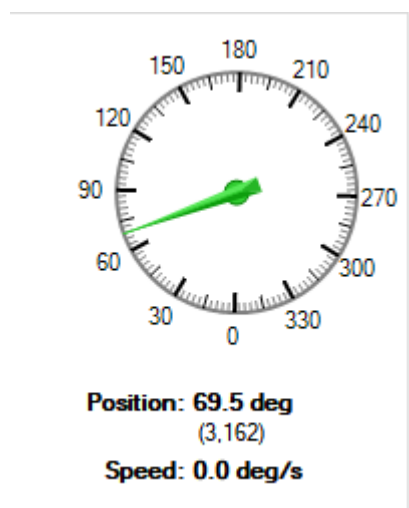
Provides position feedback (extracted from the status message), as well as the actual speed of the actuator. The value in brackets represents the position info in encoder counts.

The graphic representation of the position feedback displays only the position on the current turn. The position info represented by the text below represents the actual position including the number of turns x 360 degrees. The position command will be executed at the speed indicated in the Duty box – position control.

Jog Area:

Allows for turning the actuator rod manually. The right pointing arrows will rotate the shaft clockwise (CW) (increase position value). Left pointing arrows will rotate the shaft counter-clockwise (CCW) / 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 use the respective "clear" buttons.

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.
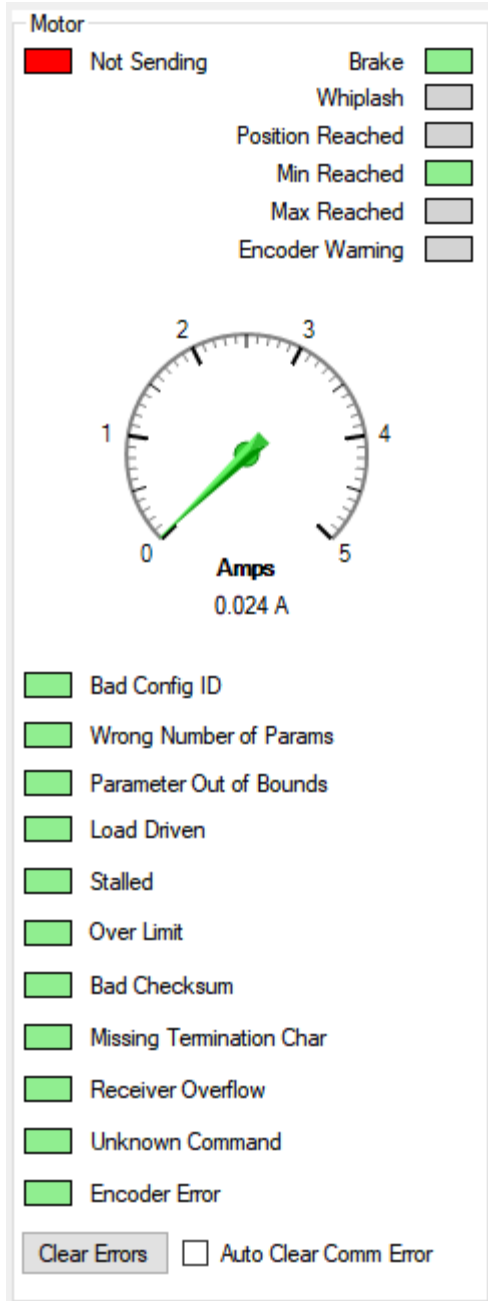
Configuration Tab

Please refer to "Rotary 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 degrees (transformed to encoder counter – brackets value)

The button "Get All" reads all configuration values.

Motor Status Area

Motor

🟥 Not Sending	Brake 🟩
	Whiplash ⬜
	Position Reached ⬜
	Min Reached 🟩
	Max Reached ⬜
	Encoder Warning ⬜

Amps

0.024 A

🟩 Bad Config ID

🟩 Wrong Number of Params

🟩 Parameter Out of Bounds

🟩 Load Driven

🟩 Stalled

🟩 Over Limit

🟩 Bad Checksum

🟩 Missing Termination Char

🟩 Receiver Overflow

🟩 Unknown Command

🟩 Encoder Error

[Clear Errors] ☐ Auto Clear Comm Error

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 "Rotary Actuator with Absolute Encoder - Interface and Integration" document for each flag / error bit description.