

Objective

To Upload / Download a ConfigEd Lite configuration to or from your PC.

Equipment

A computer with ConfigEd Lite software installed and communications cable (CM351909).

Procedure

Upload a Configuration from the Drive into the computer

1. Launch ConfigEd Lite on the computer. Refer to ConfigEd Lite manual RG352747.
2. Connect the communications cable from the comm port on the computer to the P3 port on the drive.
Note: In the CE Lite software verify the baud rate is 9600 under Command::Comms
3. Verify communications to the drive by going under COMMAND::GET INFO. After clicking on GET INFO
The drive you are connected should be shown on the scratch pad.
Note: If an error message appeared when you clicked on GET INFO, verify comm port and settings.
4. Under FILE::NEW, open the default configuration for the drive that appeared in the scratch pad.
(Example: 590 Version 4 (not running) - choose DEFAULT4.590.)
5. Under the Command menu click on "update."
6. After the program has finished updating, Save the file.
Note: Do not change the extension of the file.

Download a Configuration to the drive

1. Launch ConfigEd Lite on the computer. Refer to ConfigEd Lite manual RG352747.
2. Under FILE::OPEN, open the desired configuration to install.
(Example: Winder1.590)
Note: In the CE Lite software verify the baud rate is 9600 under Command::Comms.
3. Under the Command menu click on "full install."

If you have questions, please call the Product Support Group at (704) 588-3246.

Objective

To configure the DC regenerative drive for a Forward / Reverse input to change the direction of the motor.

Description

In this example, an operator wishes to control direction of the motor. Since the format of the Digital Input VALUE FOR TRUE and VALUE FOR FALSE parameters is in percent, 0 is equal to 0.00% and 1 is equal to 0.01%.

When 24Vdc is applied to Digital Input 1 the sign of Setpoint Sum 1 will reverse the motor direction

Analog Input 1 (A2) is the Line speed input.

0vdc on Digital Input 1 (C6) the speed demand from the Setpoint Sum 1 block will be positive (forward).

24vdc on Digital Input 1 (C6) the speed demand from the Setpoint Sum 1 block will be negative (reverse).

Equipment

590+ / 590 Series DC drive(> 3.2 firmware), computer with ConfigEd Lite or DSELite installed.

Procedure for Figure 1 using drive firmware versions 3.2 to 5.x. For firmware version 7.x to 8.x see Figure 2.

1. Launch ConfigEd Lite or DSELite on the computer.
2. Under File:New, open the default configuration for the drive style that you are trying to configure.
(Example for a 590 Series DC drive with Version 4 firmware - Default4.590)
3. Delete the output connection from Digital Input 1, then reconnect the output of the Digital Input 1 to Sign 1 of the Setpoint Sum 1.
4. Delete the output connection from Analog Input 3 block.
5. Delete the SPT. SUM output connection from the Setpoint Sum 1 block, then reconnect the SPT. SUM output of the Setpoint Sum 1 block to the Ramp Input of the Ramp block.

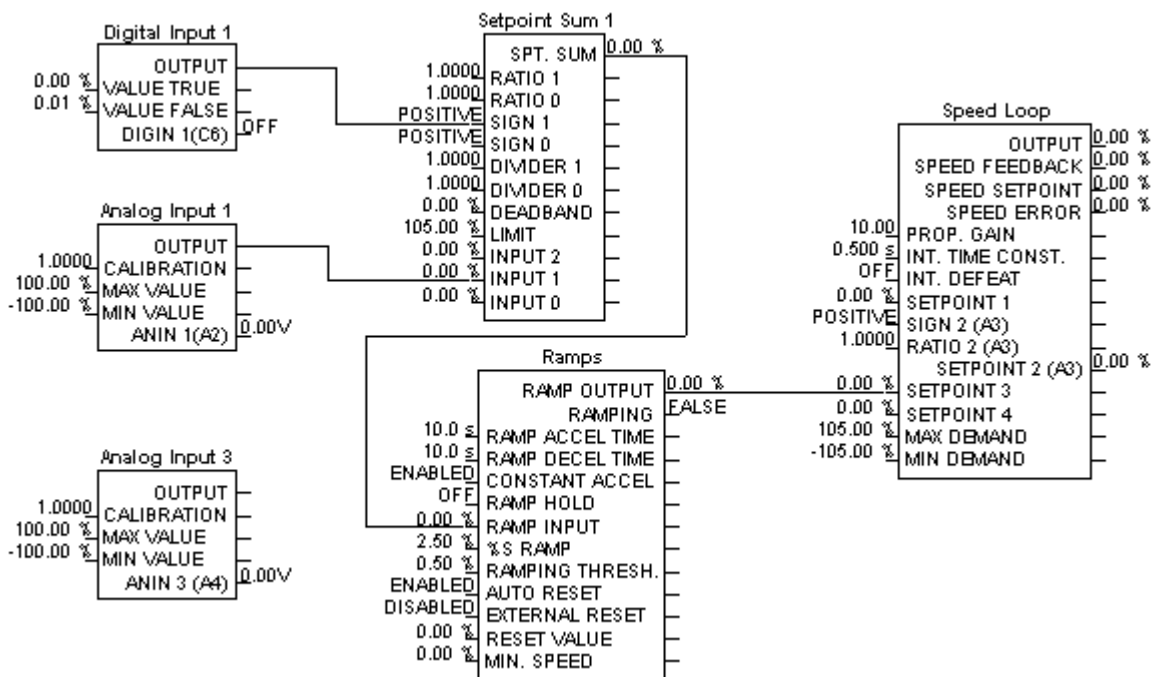


Figure 1. For drive firmware version 3.2 to 5.x

If you have questions, please call the Product Support Group at (704) 588-3246.

Procedure for Figure 2 using drive firmware version 7.x and 8.x

- Using ConfigEd Lite or DSELite reconfigure *Digital Input 2* so it is connected to the *Invert* parameter as shown below.

Move the default connection from RAMP HOLD to INVERT. When DIGITAL INPUT 2 goes True the drive will go Reverse

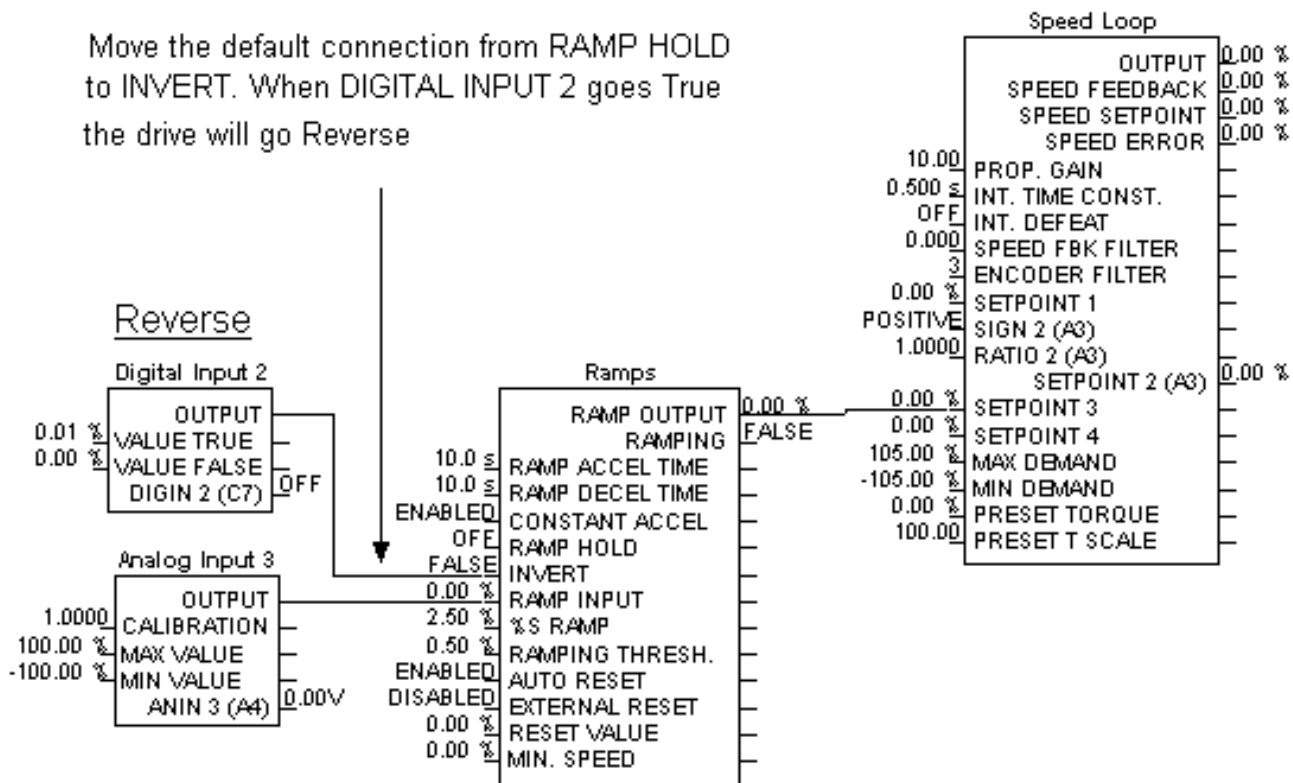


Figure 2. For 590+ drive firmware version 7.x and 8.x

If you have questions, please call the Product Support Group at (704) 588-3246.

Objective

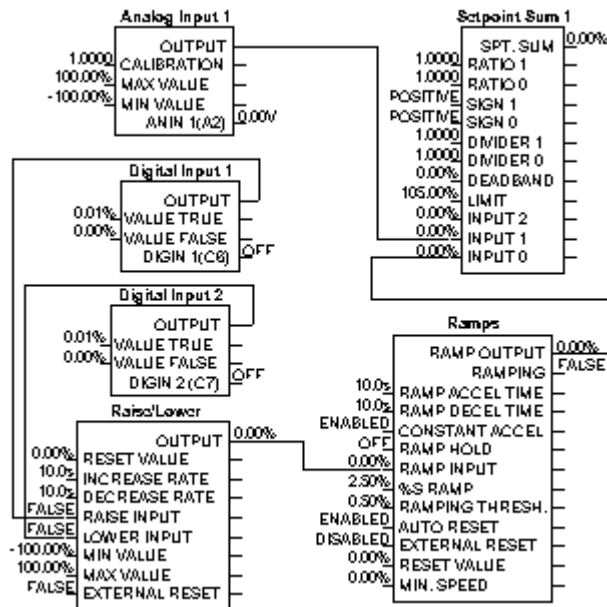
To configure the 590 drive to raise or lower analog value using a digital input to select.

Equipment

590 / 590+ DC drive (> v3.2), computer with ConfigEd Lite (> v.4.02) installed.

Procedure

1. Launch ConfigEd Lite on the computer. For details, see ConfigEd Lite manual RG352747
2. Under **File::New**, open the default configuration of the drive you have, (example: default4.590). Ensure that the name on the lower left corner matches the drive you are working on.
3. **Delete the Analog Input 3 output connection.**
4. **Delete the Digital Input 2 output connection.**
5. **Delete the Output of the Ramp Block**
6. **Delete the Digital Input 1 output connection.**
7. **Connect the Digital Input 1 output to the Raise Input of the Raise/Lower Block**
8. **Connect the Digital Input 2 output to the Lower Input of the Raise/Lower Block**
9. **Connect the Raise/Lower output to the Ramp Input of the Ramp Block**
10. **Connect the Ramp Output to Input 0 of the Setpoint Sum 1 block**



If you have questions, please call the Product Support Group at (704) 588-3246.

Objective

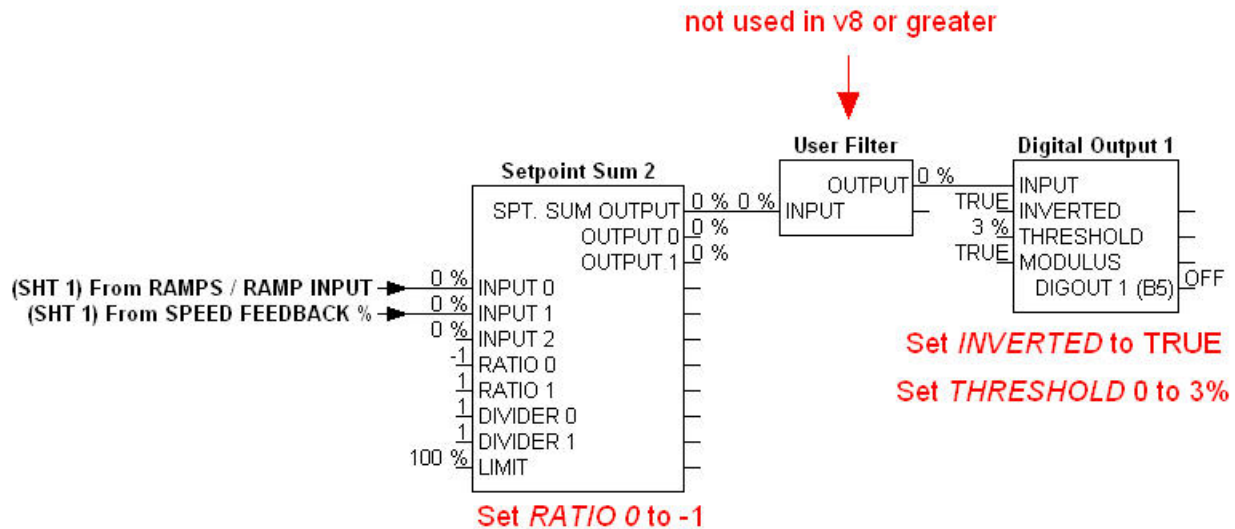
To configure the 590 or 590+ drive to indicate “at speed”.

Equipment

590 / 590+ DC drive firmware version (> 3.2) , computer with the software DSELite.

Procedure

1. Launch DSELite.
2. Under **File::New**, open up the default configuration of the drive you have; (example: default8.590). Ensure that the name on the lower left corner matches the drive you are working on.
3. Using DSELite configure the drive as shown below. Use any free Digital Output
4. The *User Filter* must be used as shown (on drive firmware version 7 or less), to ensure proper triggering of the function blocks. Drives using firmware version 8 or greater, do not need or have this *User Filter*.
5. Set the *THRESHOLD* % to the desired level.
6. Digital Output will go True, when the Speed Demand and the Speed Feedback are within the *THRESHOLD* % setting. Thus if the Speed Demand is 50%, and the *THRESHOLD* % is 3%, the Digital Output will go true when the Speed Feedback is in the range of 47% - 53%.



If you have questions, please call the Product Support Group at (704) 588-3246.

Objective

Drive Setup for Field Weakening

Equipment

590 or 590+ Drive, Field-weakening motor, external speed feedback

NOTE: Field weakening requires external feedback from the motor such as a tachometer generator, wire-ended or Microtach encoder speed feedback.

Procedure

1. Calibrate the motor field current

Note: Calibrate the motor field as described in Chapter 3 (HA352494). Most field-weakened motors give the field current as two values; a minimum and a maximum, indicating the field weakened range of the motor. Calibrate the motor field for the larger of these two values.

2. Change Setup Parameters::Field Control::Field CTRL Mode to Current Control.

3. Verify Setup Parameters::Field Control::Field Enable is Enabled.

4. Change Setup Parameters::Field Control::Fld Current Vars::Fld Weak Vars::Fld Weak Enable to Enabled.

5. Ensure that Setup Parameters::Field Control::Fld Current Vars::Fld Weak Vars::Min Fld Current is set correctly for the motor to reach top speed. Min Fld Current is calculated using the formula below:

Note: Min Fld Current is calculated using the formula: (minimum field current ÷ maximum field current) × 90%. This sets Min Fld Current 10 percent lower than the field calculated to reach full speed. The 10 percent cushion should overcome any inaccuracies in the nameplate data.

6. Verify Setup Parameters::Field Control::Fld Current Vars::Fld Weak Vars::Max Volts is set 100.

Note: Monitor Diagnostics::Terminal Volts to verify that the armature voltage is approximately equal to the value calculated in the previous step.

7. Increase speed above base speed by adjusting the speed potentiometer.

Note: Verify the motor armature volts remain constant while the field gradually decreases.

8. Gradually increase to the maximum speed, while monitoring armature volts at maximum speed.

9. Adjust the speed feedback using the appropriate speed feedback calibration parameters.

Note: Adjust Analog Tach Cal when using analog tachometer generator feedback.

10. For regenerative drives, check the maximum reverse speed.

Note: Correct any asymmetry in a reversing drive by adjusting Setup Parameters::Calibration::Zero Spd::Offset.

11. Stop the drive and SAVE PARAMETERS.

If you have questions, please call the Product Support Group at (704) 588-3246.

Objective

To configure the 590 / 590+ drive to run two separate feedback modes using a digital input.

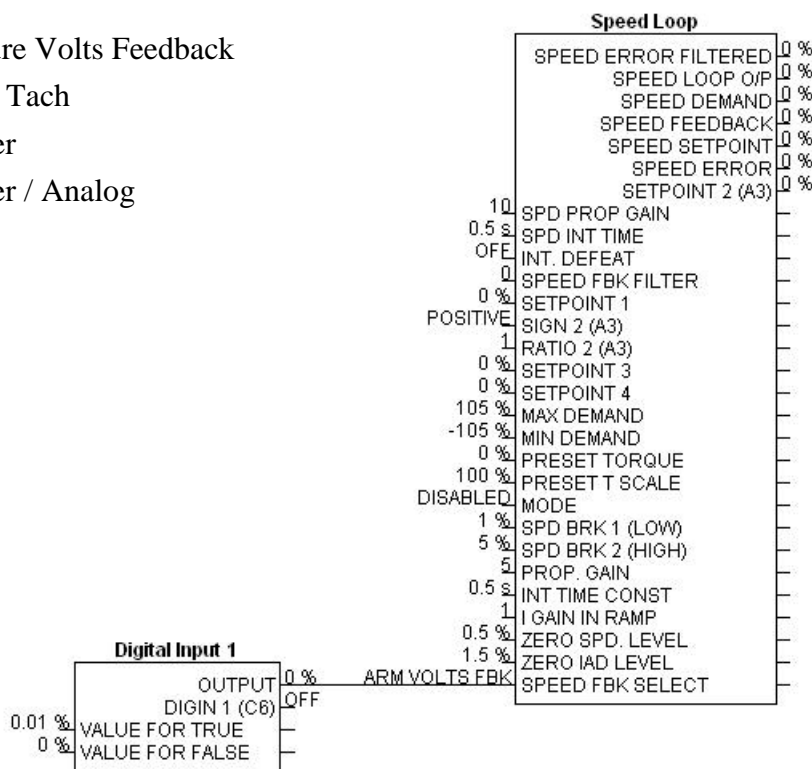
Equipment

590 / 590+ DC drive with firmware > v3.2, a computer with the software DSELite installed.

Procedure

1. Launch DSELite Lite on the computer.
2. Under **File::New**, open the default configuration of the drive you have, (example: default8.590). Ensure that the name on the lower left corner matches the drive you are working on.
3. Using any free *Digital Input*, connect it to the *Speed FBK SEL* of the *Speed Loop* block.
4. Using the information below set the *Value True / False* as a percentage to select the required speed feedback mode.
5. When the Digital Input toggles between True / False, the feedback devices will switch.

- .00% – Armature Volts Feedback
- .01% – Analog Tach
- .02% -- Encoder
- .03% -- Encoder / Analog



If you have questions, please call the Product Support Group at (704) 588-3246.

Objective

Configure a digital DC drive to operate at two separate speeds using a Digital Input.

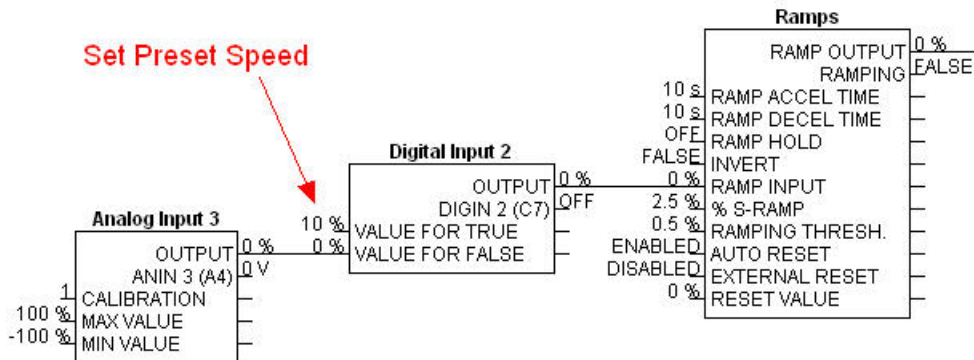
Equipment

590 / 590+ DC drive and a computer with DSELite installed.

Procedure

1. Launch DSELite on the computer.
2. Under **File|New**, open up the default configuration of the drive you have, (example: default8.590). Ensure that the name on the lower left corner matches the drive you are working on.
3. Using a free Digital Input, configure the template as shown below.
4. Set the desired Preset Speed as shown below.

24 VDC on Digital Input = Preset Speed
 0 VDC on Digital Input = Analog Input reference.



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Objective

To configure the DC drive to toggle between Analog and Raise/Lower speed control.

Description

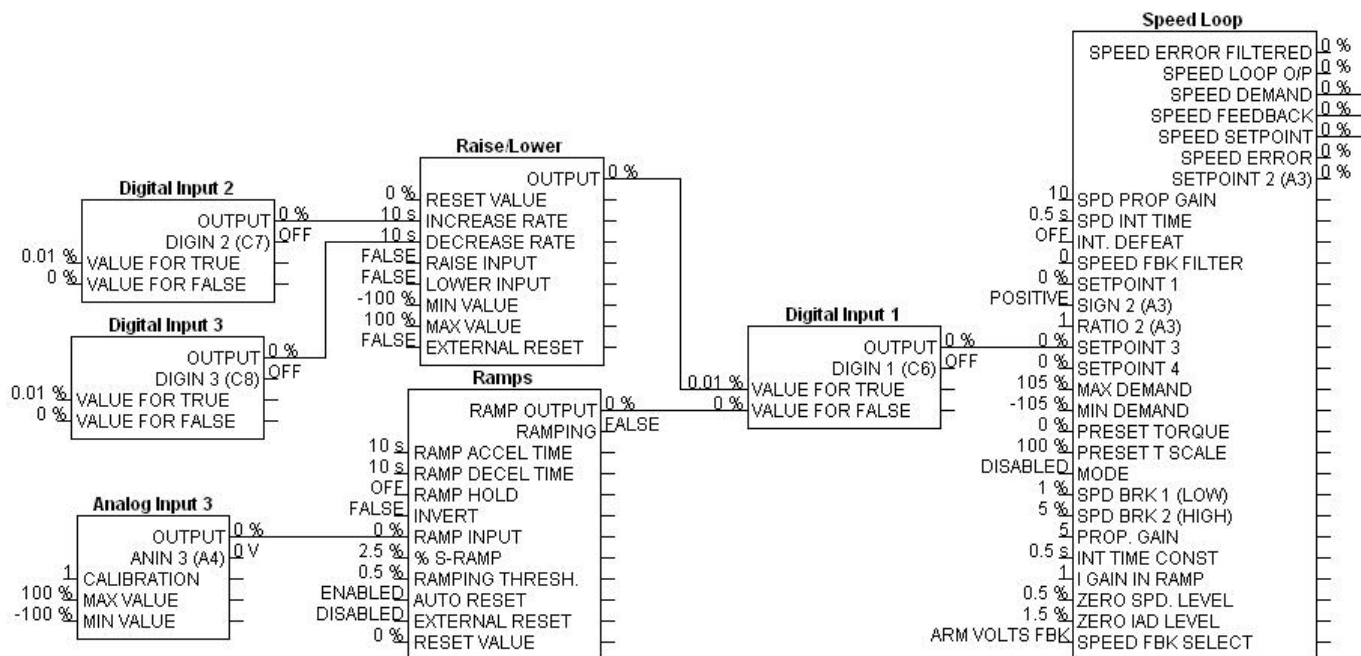
In this example, an operator wishes to choose between a digital or analog speed reference for the drive speed. When 24Vdc is applied to Digital Input 2 (C7) the digital speed reference will increase. When 24Vdc is applied to Digital Input 3 (C8) the digital speed reference will decrease. When 24Vdc is applied to Digital Input 1 the drive speed will be controlled by the digital inputs to the raise or lower input. When 0Vdc is applied to Digital Input 1 the drive speed will be controlled by the Analog Input voltage.

Equipment

590 / 590+ Series DC drive with the software DSELite installed.

Procedure

1. Launch DSELite.
2. Under File:New, open up the default configuration of the drive you have. (Example for a 590+ Series DC Drive with version 8 firmware – “Default8.590”).
3. Using free Analog and Digital Inputs, configure the template as shown below.



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Objective

Configure the DC drive to use a Digital Input to select between two separate Analog Inputs.

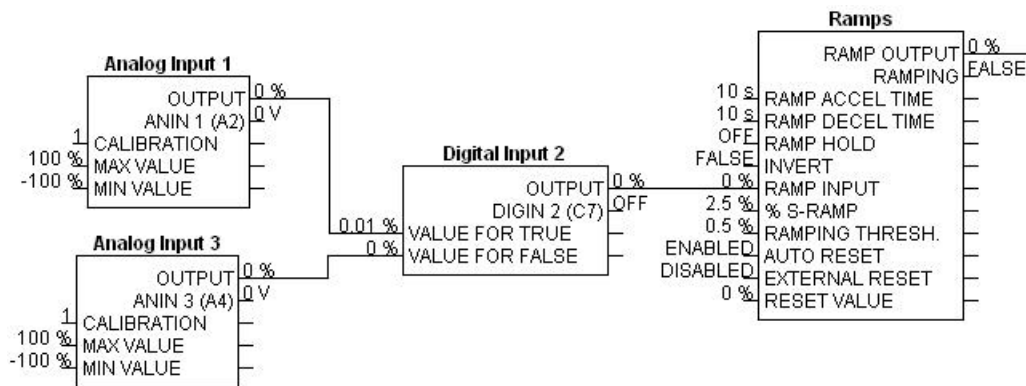
Equipment

590 / 590+ Series DC drive and a computer with DSELite installed.

Procedure

1. Launch DSELite on the computer.
2. Under **File|New**, open up the default configuration of the drive you have, (example: default8.590). Ensure that the name on the lower left corner matches the drive you are working on.
3. Using a free *Digital Input* and *Analog Input*, configure the template as shown below.

24 VDC on Digital Input = Analog Input 1
0 VDC on Digital Input = Analog Input 3



If you have questions, please call the Product Support Group at (704) 588-3246.

Objective

To configure the 590 drive to select three separate analog inputs using digital inputs.

Note: The speed setpoint will be the sum of all the analog inputs connected to the digital inputs that are ON. To ensure that only one analog input is used, external control logic is required for the digital inputs.

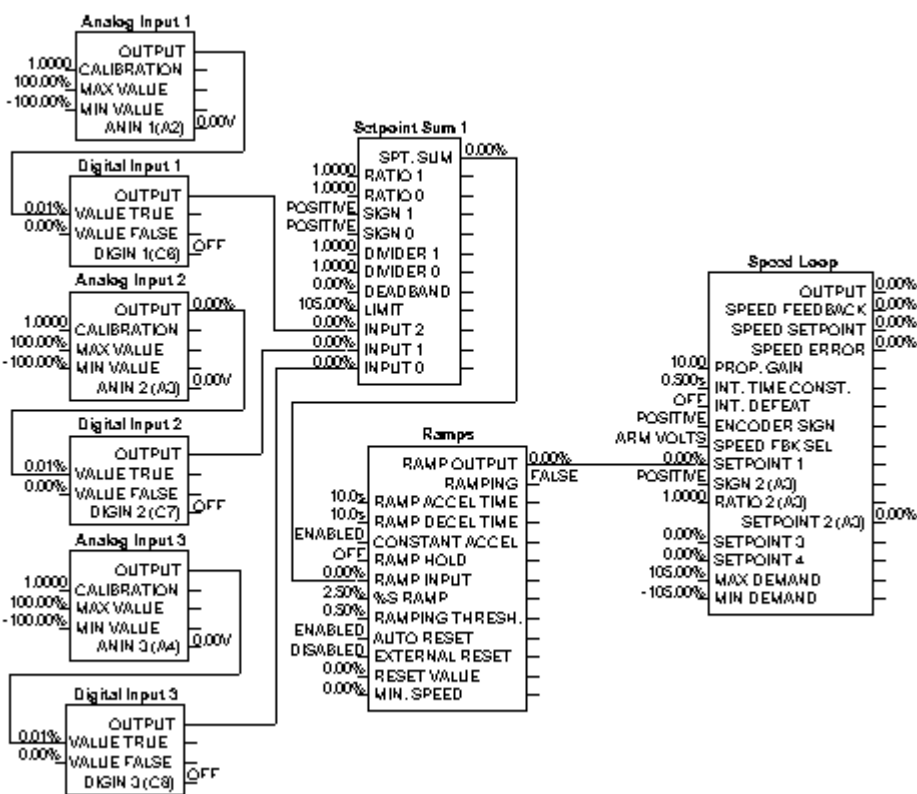
Equipment

590 / 590+ DC drive (> v3.2), computer with ConfigEd Lite (> v.4.02) installed

Procedure

1. Launch ConfigEd Lite on the computer. For details, see ConfigEd Lite manual RG352747
2. Under FILE::NEW, open the default configuration of the drive you have, (example: DEFAULT4.590). Ensure that the name on the lower left corner matches the drive you are working on.
3. Delete the Analog Inputs 1, 2, and 3 OUTPUT connections.
4. Delete the Digital Inputs 1, 2, and 3 OUTPUT connections.
5. Delete the Setpoint Sum 1 OUTPUT connection.
6. Delete the Ramp OUTPUT connection.
7. Arrange blocks to allow the Analog and Digital Inputs to be connected in the same area.
8. Connect the Analog Input 1 OUTPUT to the Digital Input 1 VALUE TRUE.
9. Connect the Analog Input 2 OUTPUT to the Digital Input 2 VALUE TRUE.
10. Connect the Analog Input 3 OUTPUT to the Digital Input 3 VALUE TRUE.
11. Connect the Digital Input 1 OUTPUT to the Setpoint Sum 1 block INPUT 2.
12. Connect the Digital Input 2 OUTPUT to the Setpoint Sum 1 block INPUT 1.
13. Connect the Digital Input 3 OUTPUT to the Setpoint Sum 1 block INPUT 0.
14. Connect the Setpoint Sum 1 OUTPUT to the Ramp block RAMP INPUT.
15. Connect the Ramp block RAMP OUTPUT to the Speed Loop block SETPOINT 1.

The figure at the right shows the final configuration.



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Objective

Configure the 590 V4 or 590 Plus V5 drive for Torque control with selectable Speed control mode

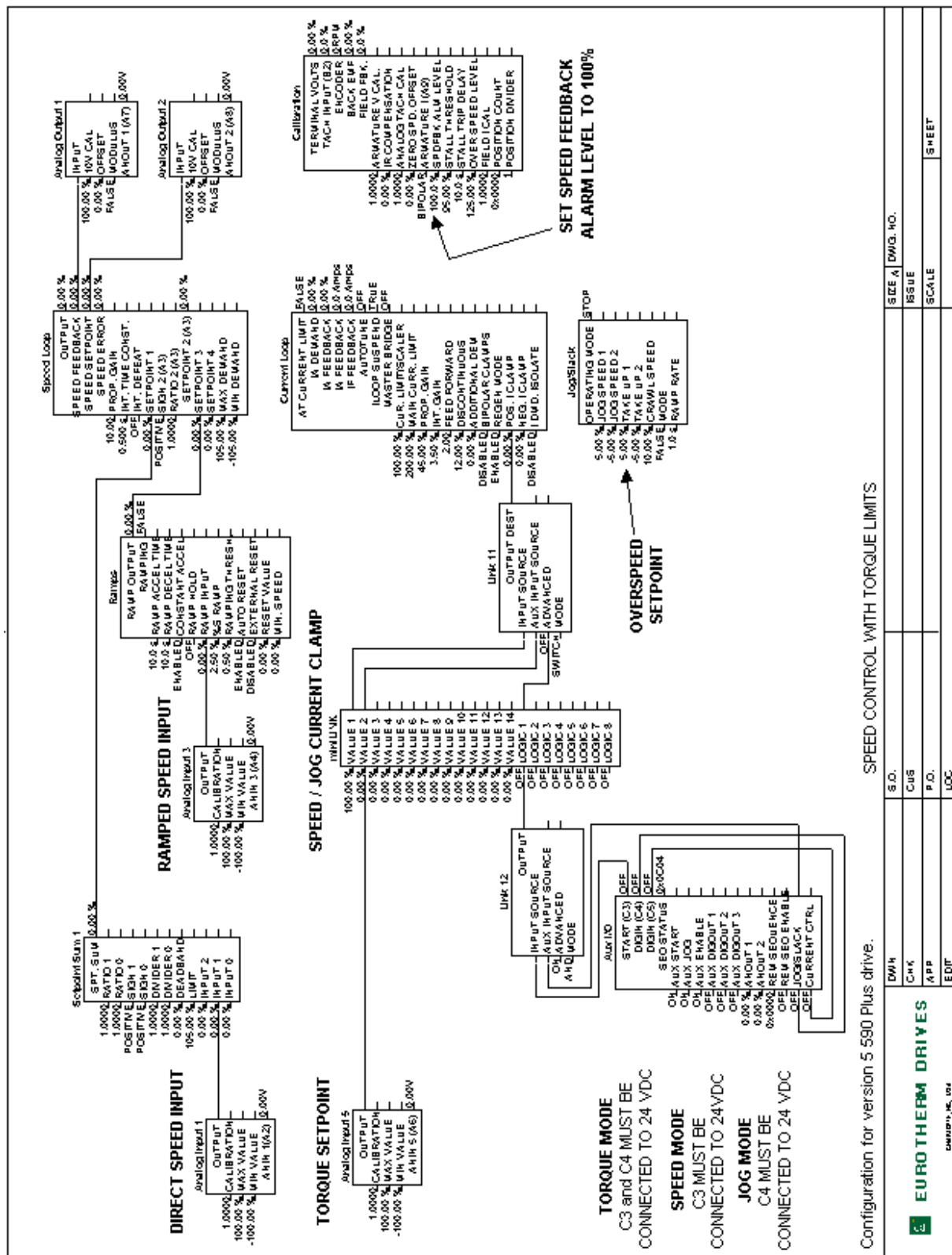
Equipment

590 / 590+ DC drive, computer with ConfigEd Lite (> v.5.08) installed.

Procedure

1. Launch ConfigEd Lite on the computer. For details, see ConfigEd Lite manual RG352747.
2. Under FILE::NEW, open up the default configuration of the drive you have, (example: default5.590).
Note: Ensure that the name on the lower left corner matches the drive.
3. Transfer the miniLINK, LINK 11 and LINK 12 function blocks on page 2 to page 1 (the miniLINK is being used as a staging post / triggering block.). It may be necessary to clear some space on the page 1 prior to transferring the blocks.
4. Program miniLINK Value 1 with a value of 100%. This will be the current clamp when using the Speed mode or Jog mode.
5. Connect the output of Analog Input 5 to the miniLINK Value 2. This will be the current clamp when in the torque mode.
6. Connect Value 1 and Value 2 of the miniLINK to the LINK 11 INPUT SOURCE (Value 1) and LINK 11 AUX INPUT SOURCE (Value 2).
7. Program LINK 11 mode to SWITCH.
8. Connect the LINK 11 output to Current Loop::POS I CLAMP.
9. Connect Logic 1 of the miniLINK to the ADVANCED input of LINK 11.
10. Connect C3 input on the Aux. I/O block to the INPUT of LINK 12.
11. Connect JOG/SLACK (make the connection on the right side of the block) input on the Aux. I/O block to the AUX. INPUT of LINK 12. The existing Jog input connection will remain connected.
12. Program LINK 12 mode as an AND gate, and the ADVANCED mode to ON.
13. Connect the output of LINK 12 to Logic 1 of the miniLINK.
14. Select either Analog input 1 (A2) or Analog input 3 (A4) for your speed reference input. If Analog input 1 is selected the speed reference will go directly to the Speed Loop. If Analog input 3 is selected the speed reference will go through the Ramps block before it connects to the Speed Loop. *Additionally if both analog signals are used they will sum together and cause an incorrect speed reference setpoint. Unused analog inputs should have the calibration values set to 0.00% (this will negate any signal present on the analog input).*
15. The drive will operate in the SPEED mode when C3 is energized with 24 vdc.
16. The drive will operate in the JOG mode when C4 is energized with 24 vdc.
17. The drive will operate in the TORQUE mode if C3 and C4 are both energized. An overspeed setpoint is required to cause the speed loop to saturate. The overspeed (Take Up 1) setpoint is in the Jog/Slack function block. Using this method of control the motor will only be allowed to reach the speed reference plus the amount of overspeed programmed in the Jog/Slack function block.
18. Refer to the ConfigEd Lite drawing attached for more detail.

If you have questions, please call the Product Support Group at (704) 588-3246.



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Objective

545,546,547,548,550,551, 570,571 and 590A analog drive conversion to 590+

Note: This chart is a guidance only. Since the various drives are not exactly the same, the wiring between the various model numbers, will vary. Some technical knowledge of drives will be required to convert the wiring logic, if needed.

Equipment

Hand tools, 590+ chassis drive or DRV package, Product manual, system schematics, motor specifications, or computer to program using the software DSELite.

Procedure

- 1) Disconnect all power to the drive.
- 2) Remove all terminal connections making note of the old terminal numbers on the schematics of the drive system. If schematics are not available create a chart showing all the connections including any pertinent description.
- 3) Remove the old drive and associated hardware.

Note: The 590+DRV drives from 35 amps to 165 amps have an internal three phase AC contactor and fuses in the incoming power circuit. 590+DRV drives above 166 amps come with either a three phase incoming AC contactor or a DC motor contactor. The regenerative (4 quadrant) 590+DRV drives also include an armature fuse.

590+ chassis drives above 166 amps are delivered without contactors or fuses.

It may be necessary to reuse some of the old hardware.

- 4) Install the new drive.
- 5) Using the chart below to convert from the old terminal numbers to the new terminal numbers.
- 6) Reconnect the power and controls terminations.

If you have questions, please call the Product Support Group at (704) 588-3246.

Conversion Table for 545/546/570/590A to 590+

| Terminal Description | 545/6/7/8/ 550/551 Terminal # | 590/1A Terminal # | 570/1 Terminal # | 590+/591+ Terminal # |
|-----------------------------|-------------------------------------|----------------------|---------------------------------|---------------------------------|
| 0 V Common | A1 | 4 | A1 | A1 |
| Buffered Armature Current | A2 | 5 | A9 | A9 |
| Ramp Reset | A3 | 6 | N/A | Programmable |
| Ramp Input | A4 | 7 | A4 | A4 (default) |
| Ramp Output | A5 | 8 | N/A | Programmable |
| Direct Reference Input #1 | A6 | 9 | A2 | A2 (default) |
| Direct Reference Input #2 | A7 | 10 | N/A | Programmable |
| Inverted Total Reference | A8 | 11 | N/A | N/A |
| Direct Reference Input #3 | A9 | 12 | N/A | Programmable |
| Total Reference Setpoint | A10 | 13 | A8 | A8 (default) |
| +10 vdc reference | A11 | 14 | B3 | B3 |
| -10 vdc reference | A12 | 15 | B4 | B4 |
| 0 V Common | B1 | 16 | B1 | B1 |
| DC Tachometer Input | B2 | 3 | B2 | G3 (tach feedback board) |
| Current Demand Isolate | B3 | 18 | C8 | C8 (default) |
| Current Demand Output | B4 | 19 | N/A | Programmable |
| Auxiliary Current Input | B5 | 20 | A3 | A3 |
| Select Auxiliary Input | B6 | 21 | Refer to Current Demand Isolate | Refer to Current Demand Isolate |
| Auxiliary Current Limit (+) | B7 | 22 | A6 | A6 (default) |
| Main Current Limit | B8 | 23 | Selectable | Selectable |
| +10 vdc reference | B9 | 24 | B3 | B3 |
| Auxiliary Current Limit (-) | B10 | 25 | A5 | A5 |
| Buffered Tachometer | B11 | 26 | A7 | A7 (default) |
| Buffered Current | B12 | 27 | A9 | A9 |

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Conversion Table for 545/546/570/590A to 590+

| Terminal Description | 545/6/7/8/ 550/551 Terminal # | 590/1A Terminal # | 570/1 Terminal # | 590+/591+ Terminal # |
|------------------------------|-------------------------------------|----------------------|---------------------|-------------------------|
| 0 V Common | C1 | 28 | C1 | C1 |
| Thermistor Input | C2 | 29 | C2 | TH1, TH2 |
| Auxiliary Enable | C3 | 30 | N/A | Programmable |
| Start Supply | C4 | 31 | N/A | N/A |
| Enable | C5 | 32 | C5 | C5 |
| Stop | C6 | 33 | N/A | N/A |
| Start | C7 | 34 | C3 | C3 |
| Ready Relay Drive | C8 | 35 | B7 | B7 (default) |
| Zero Speed Relay Drive | C9 | 36 | B5 | B5 (default) |
| Health Relay Drive | C10 | 37 | B6 | B6 (default) |
| +24 vdc | C11 | 38 | C9 | C9 |
| External Fault Reset | C12 | 39 | N/A | Programmable |
| Ext. AC Field Supply | D1 | D1 | D1 | D1 (FL1) |
| Ext. AC Field Supply | D4 | D2 | D2 | D2 (FL2) |
| Field +ve | D5 | D4 | D4 | F+ |
| Field -ve | D8 | D3 | D3 | F- |
| Auxiliary Supply Live | D9 | D8 | D8 | D8 (L) |
| Auxiliary Supply Neutral | D10 | D7 | D7 | D7 (N) |
| Contactors Supply Neutral | D11 | D6 | D6 | D6 (4/N) |
| Contactors Supply Live | D12 | D5 | D5 | D5 (3/L) |

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Objective

To configure the 590 drive with PID trim to line speed.

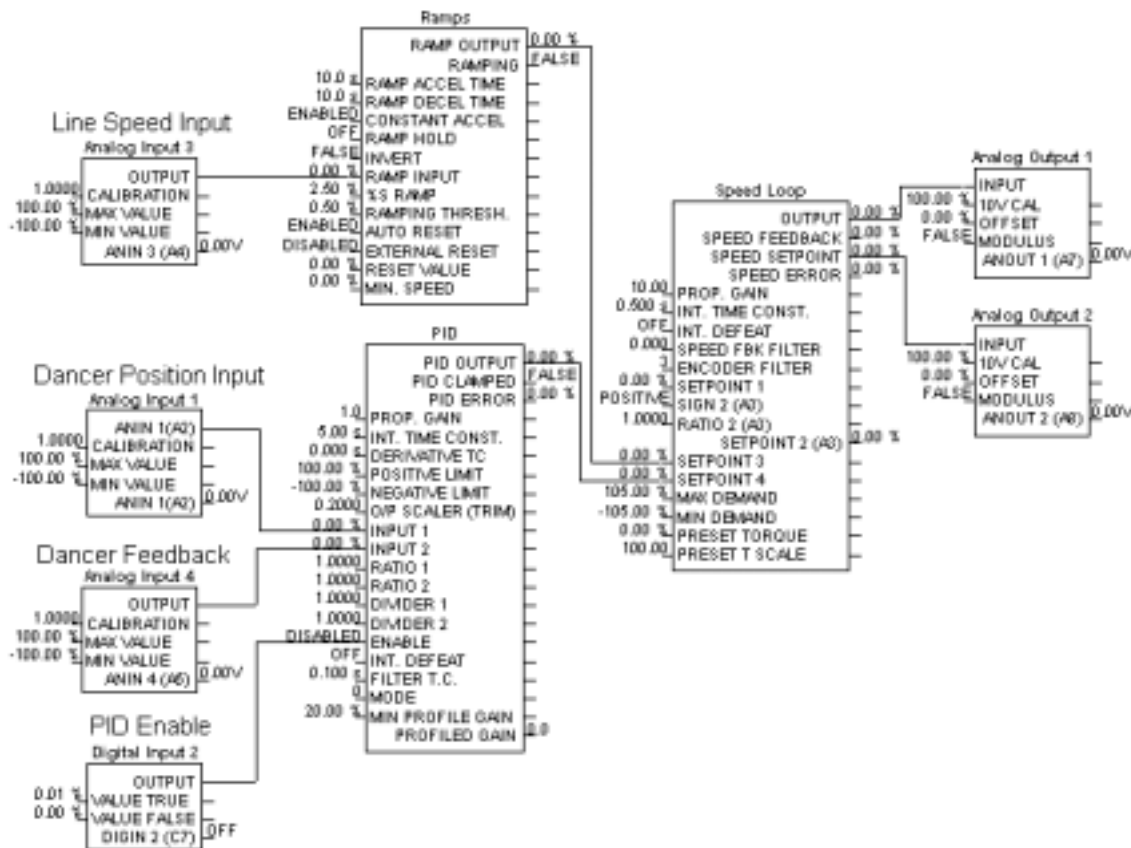
Equipment

590 / 590+ DC drive (> v3.2), computer with ConfigEd Lite (> v.4.02) installed

Procedure

1. Launch ConfigEd Lite on the computer. For details, see ConfigEd Lite manual RG352747
2. Under FILE::NEW, open the default configuration of the drive you have, (example: DEFAULT5.590). Ensure that the name on the lower left corner matches the drive you are working on.
3. Delete the Analog Inputs 1, and 4 OUTPUT connections.
4. Delete the Digital Input 2 OUTPUT connections.
5. Connect the Analog Input 1 OUTPUT to the PID::Input 1.
6. Connect the Analog Input 4 OUTPUT to the PID::Input 2.
7. Connect the Digital Input 2 OUTPUT to the PID::Enable.
8. Connect the PID::Output to Speed Loop::Setpoint 4.

Note: The PID O/P Scaler can be adjusted to limit the PID output. The gains of the PID block can be adjusted for the desired performance.



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