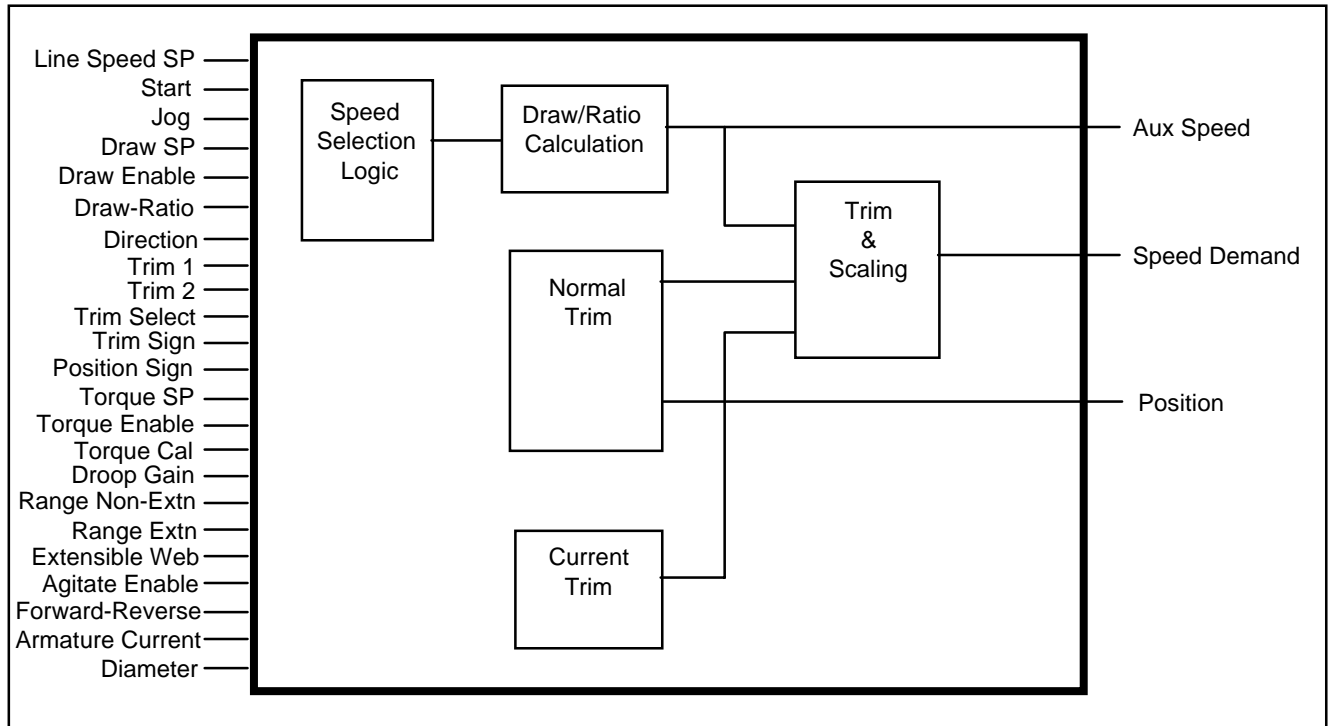


Custom/Speed Control

This function block implements a line section speed demand calculation. A simplified block diagram is shown below; detailed drawings can be found in the appendix.



This function block is made up of five sub-function blocks: "Speed Selection Logic", "Draw/Ratio Calculation", "Trim & Scaling", "Normal Trim", and "Current Trim". All parameters are persistent (except **Line Speed SP**, **Start**, **Jog**, **Torque SP**, **Torque Enable**, **Armature Current**, **Diameter**, **Forward-Reverse**, **Speed Cal** and **Aux Speed SP**), can be preset, and have set and get methods.

Speed Selection Logic

This block selects the input speed. The **Start** and **Jog** select whether the **Line Speed SP** or the **Jog Speed** is input into the ramp. The sign of the input to the ramp can be changed by **Direction**. If either **Start** or **Jog** is true, **Run Delta** is used as the ramp rate, otherwise, **Stop Delta** is used for the stop rate and the ramp input is zero. The ramp output is used as the input to the **Draw/Ratio Calculation** block.

Draw/Ratio Calculation

This block is used to perform a ratio or draw calculation. If **Draw Enable** is true, the input is multiplied by **Draw SP** and **Draw Range** otherwise it is multiplied by zero. If

Draw-Ratio is in ratio, the input to this block then added to that result to generate the **Aux Speed** output.

Normal Trim

This block calculates a speed trim based on the **Trim 1** and **Trim 2** inputs. **Trim Select** specifies which input is selected. The **Trim 2** input, if selected, is converted from a range of 0% to 100% to a range of -100% to 100%. The selected trim can be inverted with the **Trim Sign** input and is then clamped to **Trim Max** and **Trim Min**. The selected trim can also be inverted with the **Position Sign** input to generate the **Position** output. Both **Trim 1** and **Trim 2** are not persistent. Both the **Speed Demand** and the **Position** outputs are triggered by the selected trim input.

Current Trim

This block calculates a speed trim based on the **Armature Current** input. This trim is calculated by taking the difference of the signed **Armature Current** and the product of **Torque SP** and **Torque Cal**. This result is scaled by **Droop Gain** to generate the current trim.

Trim & Scaling

This block takes the output of the Draw/Ratio Calculation, trims (adds) it with the output of the Normal Trim block or Current Trim block depending on **Torque Enable** (the selected trim is multiplied by **Range Non-Extn** or **Range Extn** depending on **Extensible Web** first), clamps it to **Min Speed** or **Agitate Speed** depending on **Agitate Enable**, and then scales it by **Speed Cal** and **Diameter** to generate the **Speed Demand** output.

Operation	Description
Agitate Enable	Expects Enabled (true) or Disabled (false).
Agitate Speed	Expects a value between -120% and 120%.
Armature Current	Expects a value between -200% and 200%.
Aux Speed SP	Expects a value between -120% and 120%.
Diameter	Expects a value 0.1% to 100% Full Roll.
Direction	Expects Positive (true) or Negative (false).
Draw Enable	Expects Enabled (true) or Disabled (false).
Draw Range	Expects a number between -10 and 10.
Draw SP	Expects a value between -100% and 100%.
Draw-Ratio	Expects Draw (true) or Ratio (false).
Droop Gain	Expects a number between -10 and 10.
Extensible Web	Expects Enabled (true) or Disabled (false).
Forward-Reverse	Expects Forward (true) or Reverse (false).
Jog	Expects Enabled (true) or Disabled (false).
Jog Speed	Expects a value between -120% and 120%.
Line Speed SP	Expects a value between -120% and 120%.
Min Speed	Expects a value between -120% and 120%.
Position Sign	Expects Positive (true) or Negative (false).
Range Extn	Expects a value between -120% and 120%.
Range Non-Extn	Expects a value between -120% and 120%.
Run Delta	Expects a value between 0 and 100%.
Speed Cal	Expects a value between -100% and 100%.
Start	Expects Enabled (true) or Disabled (false).
Stop Delta	Expects a value between 0 and 100%.
Torque Cal	Expects a value between -100% and 100%.
Torque Enable	Expects Enabled (true) or Disabled (false).

Torque SP	Expects a value between -100% and 100%.
Trim 1	Expects a value between -100% and 100%.
Trim 2	Expects a value between 0% and 100%.
Trim Max	Expects a value between -100% and 100%.
Trim Min	Expects a value between -100% and 100%.
Trim Select	Expects Trim 2 (true) or Trim 1 (false).
Trim Sign	Expects Positive (true) or Negative (false).
Get Agitate Enable	Returns the current state: Enabled (true) or Disabled (false).
Get Agitate Speed	Returns the current state: Enabled (true) or Disabled (false).
Get Aux Speed	Returns the current state: Value between -120% and 120%.
Get Clamp Speed	Returns the current state: Value between -120% and 120%.
Get Diameter	Returns the current state: % (Full Roll = 100%).
Get Direction	Returns the current state: Positive (true) or Negative (false).
Get Draw Enable	Returns the current state: Enabled (true) or Disabled (false).
Get Draw Range	Returns the current state: Number between -10 and 10.
Get Draw SP	Returns the current state: Value between -100% and 100%.
Get Draw-Ratio	Returns the current state: Draw (true) or Ratio (false).
Get Droop Gain	Returns the current state: Number between -10 and 10.
Get Extensible Web	Returns the current state: Enabled (true) or Disabled (false).
Get Forward-Reverse	Returns the current state: Forward (true) or Reverse (false).
Get Jog	Returns the current state: Enabled (true) or Disabled (false).
Get Jog Speed	Returns the current state: Value between -120% and 120%.
Get Line Speed SP	Returns the current state: Value between -120% and 120%.
Get Min Speed	Returns the current state: Value between -120% and 120%.
Get Other Enable	Returns the current state: Enabled (true) or Disabled (false).
Get Over-Under	Returns the current state: Over (true) or Under (false).
Get Position	Returns the current state: Value between -100% and 100%.

Get Position Sign	Returns the current state: Positive (true) or Negative (false).
Get Ramped Speed	Returns the current state: Value between -120% and 120%.
Get Range	Returns the current state: Value between -120% and 120%.
Get Range Extn	Returns the current state: Value between -120% and 120%.
Get Range Non-Extn	Returns the current state: Value between -120% and 120%.
Get Rewind-Unwind	Returns the current state: Rewind (true) or Unwind (false).
Get Run Delta	Returns the current state: Value between 0% and 100%.
Get Speed Cal	Returns the current state: Value between -100% and 100%.
Get Speed Demand	Returns the current state: Value between -120% and 120%.
Get Torque Cal	Returns the current state: Value between -100% and 100%.
Get Torque Enable	Returns the current state: Enabled (true) or Disabled (false).
Get Torque SP	Returns the current state: Value between -100% and 100%.
Get Trim	Returns the current state: Value between -100% and 100%.
Get Trim 1	Returns the current state: Value between -100% and 100%.
Get Trim 2	Returns the current state: Value between -100% and 100%.
Get Trim Max	Returns the current state: Value between -100% and 100%.
Get Trim Min	Returns the current state: Value between -100% and 100%.
Get Trim Select	Returns the current state: Trim 2 (true) or Trim 1 (false).
Get Trim Sign	Returns the current state: Positive (true) or Negative (false).