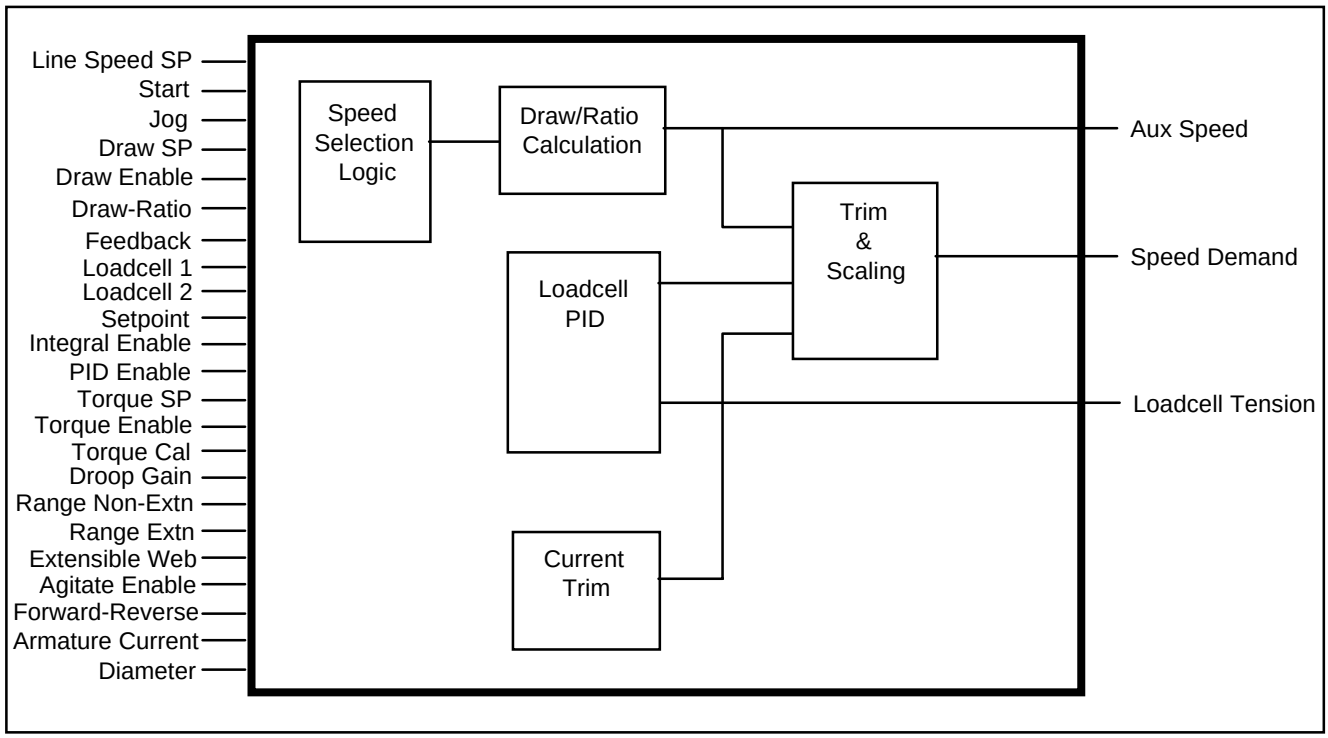
Line Drive/Section Control

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", "Loadcell PID", and "Current Trim". See the *Line Drive/Loadcell PID* data sheet (RG354173) for a description of the Loadcell PID. The other blocks are described below. Unless otherwise noted, all parameters are persistent, can be preset, and have set and get methods.

Speed Selection Logic

This block selects the input speed. The **Start** and **Jog** select wether the **Line Speed** or the **Jog Speed** is input into the ramp. If either **Start** or **Jog** is true, **Run Delta** is use 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.

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 Loadcell PID 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.
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%.
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%.
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 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 P Exponent	Returns the current state: Ordinal 1 to 10.
Get P Max Gain	Returns the current state: Value between 0% and 100%.
Get P Min Gain	Returns the current state: % of Max Gain.
Get Preset Enable	Returns the current state: Enabled (true) or Disabled (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%.