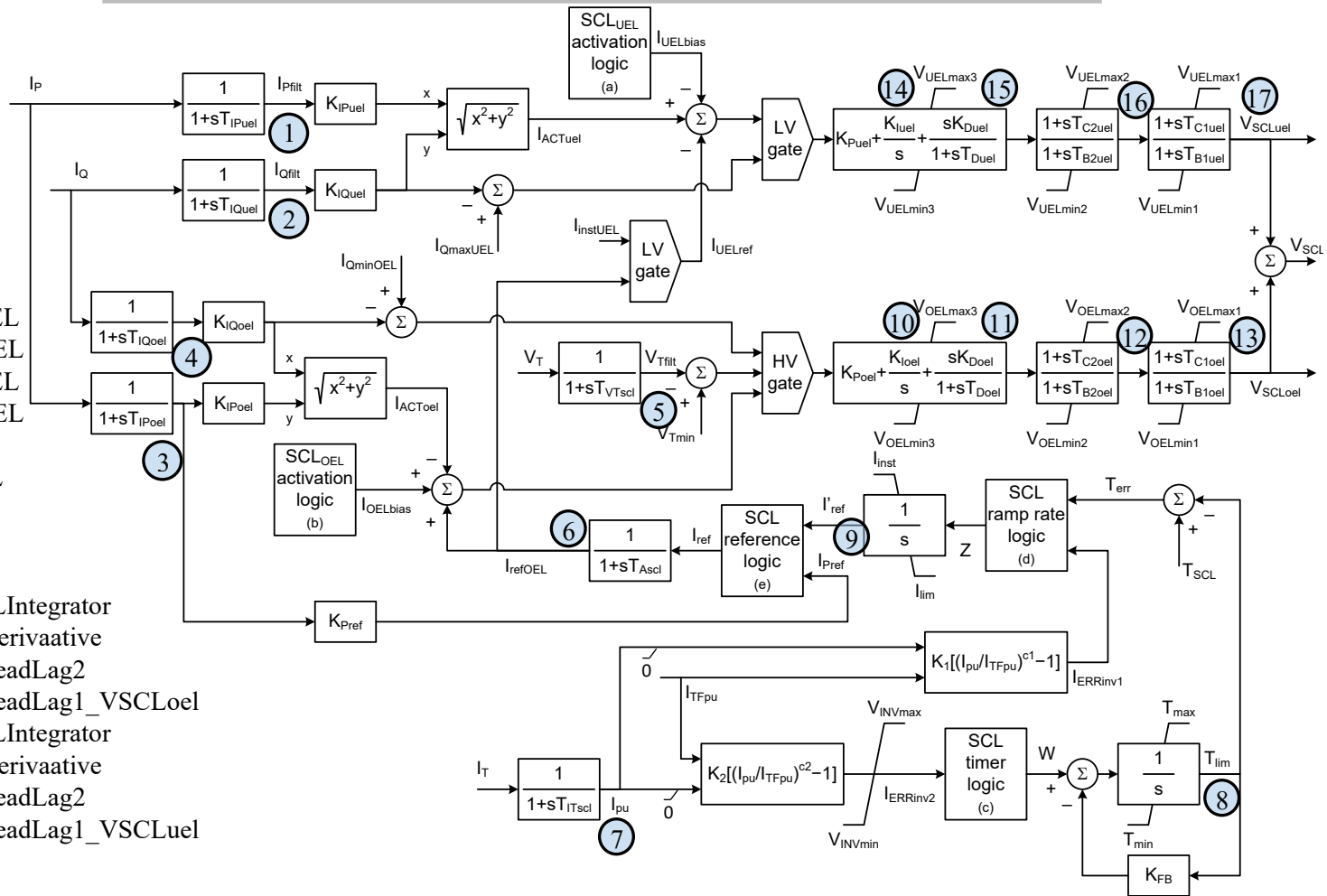


Stator Current Limiter SCL2C

Stator Current Limiter SCL2C IEEE Std 421.5-2016 Stator Current Limiter

States:

- 1 – IPfiltUEL
- 2 – IQfiltUEL
- 3 – IPfiltOEL
- 4 – IQfiltOEL
- 5 – VTfilt
- 6 – IrefOEL
- 7 – Ipu
- 8 – Tlim
- 9 – Ipref
- 10 – KIOELIntegrator
- 11 – OELDerivative
- 12 – OELLeadLag2
- 13 – OELLeadLag1_VSCloel
- 14 – KIUELIntegrator
- 15 – UELDerivative
- 16 – UELLeadLag2
- 17 – UELLeadLag1_VSCLuel



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Footnotes

footnotes:

- (a) SCL_{UEL} activation logic uses user-selected parameters T_{enUEL} , T_{off} , I_{THoff} , I_{reset} and $I_{instUEL}$. It also uses the signals T_{err} , I_{ACTuel} and I_{refUEL} shown in the block diagram. Function can be disabled by setting T_{enUEL} to a large value.
- IF $\{(T_{err} \leq 0) \text{ or } [(I_{ACTuel} > I_{refUEL}) \text{ for longer than } T_{enUEL}]\} \text{ or } (T_{enUEL} = 0)$
enable UEL $\rightarrow I_{UELbias} = 0$
ELSEIF $\{(I_{refUEL} \geq I_{instUEL}) \text{ and } [(I_{refUEL} - I_{ACTuel}) > I_{THoff}]\} \text{ for longer than } T_{off}$
reset OEL $\rightarrow I_{UELbias} = I_{reset}$
- (b) SCL_{OEL} activation logic uses user-selected parameters T_{enOEL} , T_{off} , I_{THoff} , I_{reset} , V_{Treset} and I_{inst} . It also uses the signals T_{err} , I_{actOEL} and I_{refOEL} shown in the block diagram.
- IF $(V_{Tfilt} > V_{Tmin}) \text{ and } \{(T_{err} \leq 0) \text{ or } [(I_{actOEL} > I_{refOEL}) \text{ for longer than } T_{enOEL}]\} \text{ or } (T_{enOEL} = 0)$
enable OEL $\rightarrow I_{OELbias} = 0$
ELSEIF $\{(I_{ref} = I_{inst}) \text{ and } [(I_{refOEL} - I_{actOEL}) > I_{THoff}]\} \text{ for longer than } T_{off} \text{ or } (V_{Tfilt} < V_{Treset})$
reset OEL $\rightarrow I_{OELbias} = I_{reset}$
ENDIF
- (c) SCL timer logic uses user-selected parameters $Fixed_{RU}$, $Fixed_{RD}$ and I_{TFpu} . It also uses the signals I_{pu} and $I_{ERRinv2}$, shown in the block diagram.
- IF $(I_{TFpu} - I_{pu}) \geq 0$
 $W = Fixed_{RU} + I_{ERRinv2}$
ELSE
 $W = Fixed_{RD} + I_{ERRinv2}$
ENDIF
- (d) SCL ramp rate logic uses user-selected parameters SW_1 , K_{ZRU} , T_{SCL} , K_{RU} , K_{RD} and V_{Treset} . It also uses the signals T_{err} , $I_{ERRinv1}$ and V_{Tfilt} shown in the block diagram. The parameter SW_1 is a user-selected logic, which will select fixed ramp rates or a ramp rate function of the field current error.
- IF $SW_1 = 0$ (fixed ramp rates)
 $C = K_{RU}$
 $D = K_{RD}$
ELSE
 $C = I_{ERRinv1}$
 $D = I_{ERRinv1}$
ENDIF
IF $T_{err} \geq K_{ZRU} * T_{SCL}$ (ramp I_{ref} up)
 $Z = C$
ELSEIF $(T_{err} \leq 0) \text{ or } (V_{Tfilt} < V_{Treset})$ (ramp I_{ref} down)
 $Z = D$
ELSE
 $Z = 0$
ENDIF
- (e) SCL reference logic uses user-selected parameter K_{Pref} and it also uses the signals I'_{ref} and I_{Pref} , shown in the block diagram.
- $I_{ref} = I'_{ref}$
IF $K_{Pref} > 0 \text{ and } |I'_{ref}| > |I_{Pref}|$
 $I_{ref} = \sqrt{(I'_{ref})^2 - I_{Pref}^2}$
ENDIF