

2.18 Vector control

Function diagrams

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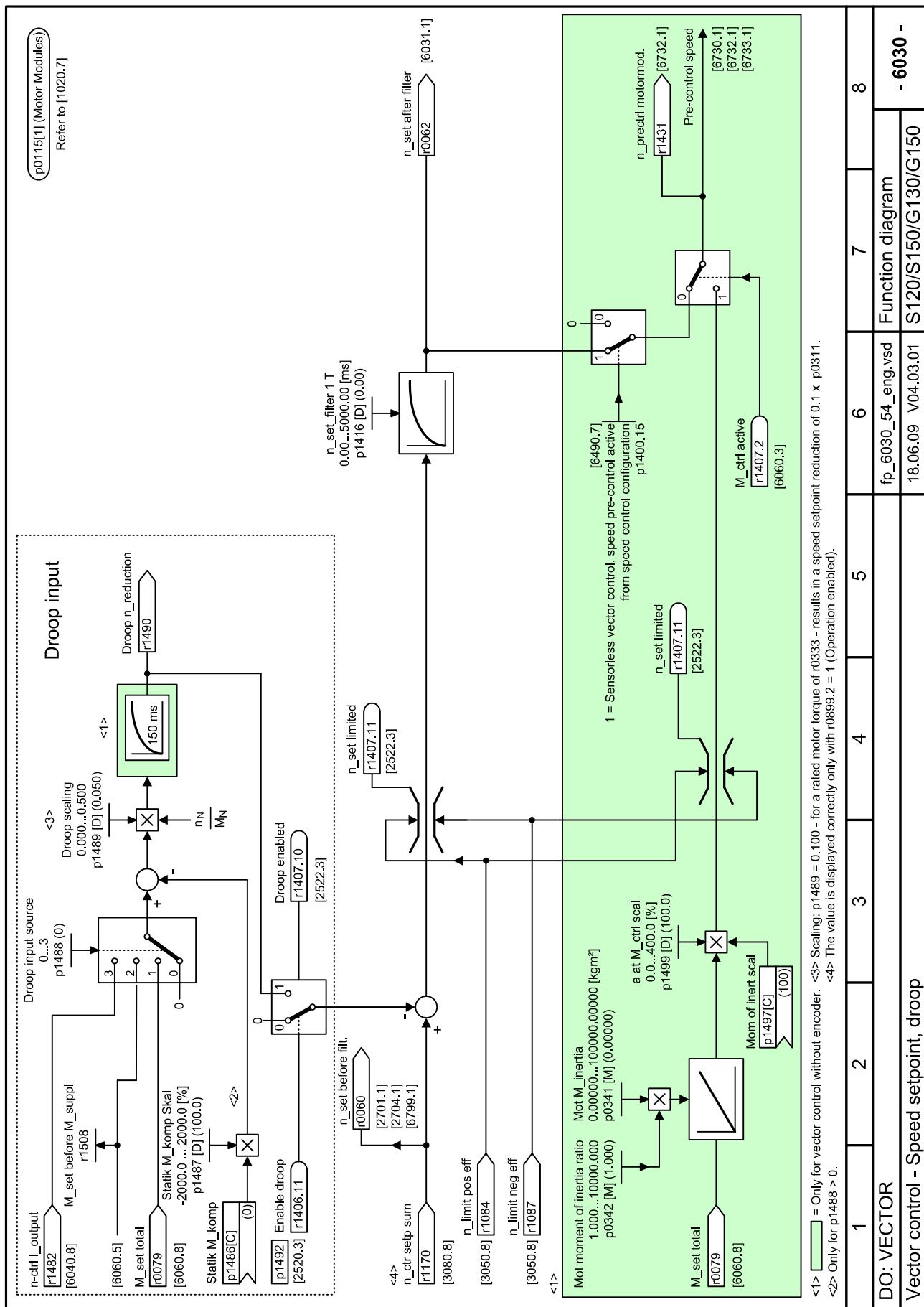
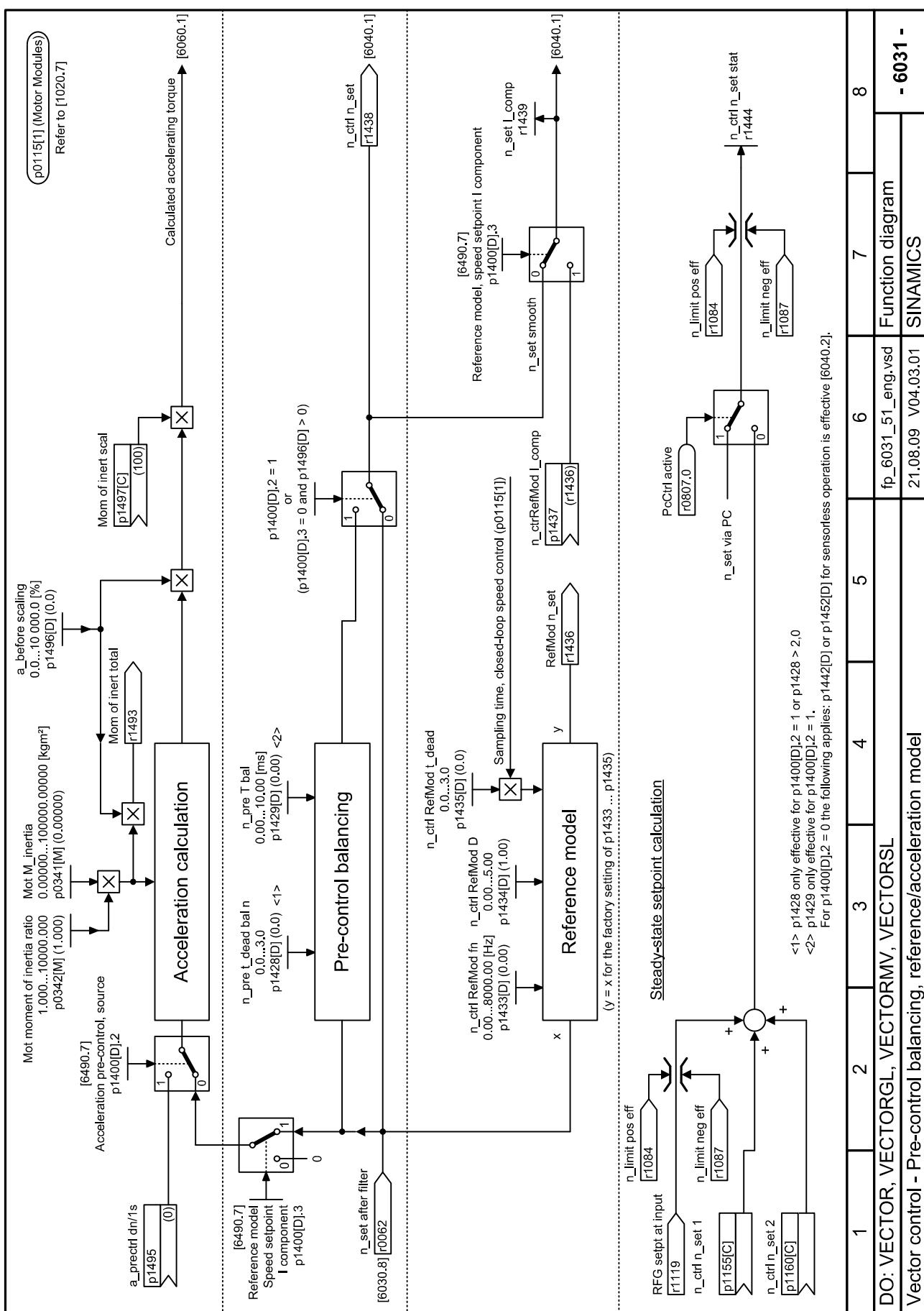


Fig. 2-182 6030 – Speed setpoint, droop

2-1584

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Function diagrams

Vector control

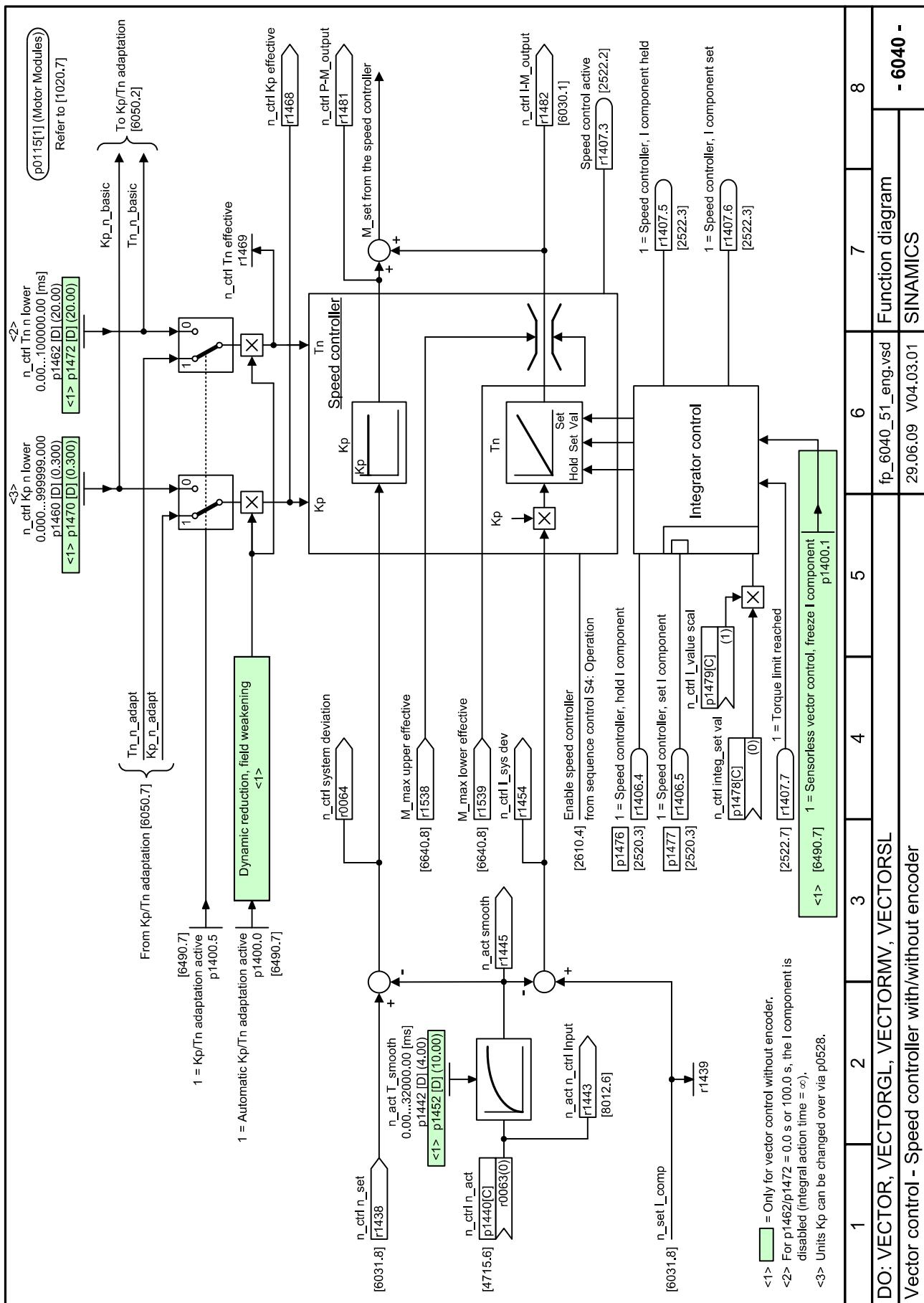


Fig. 2-184 6040 – Speed controller with/without encoder

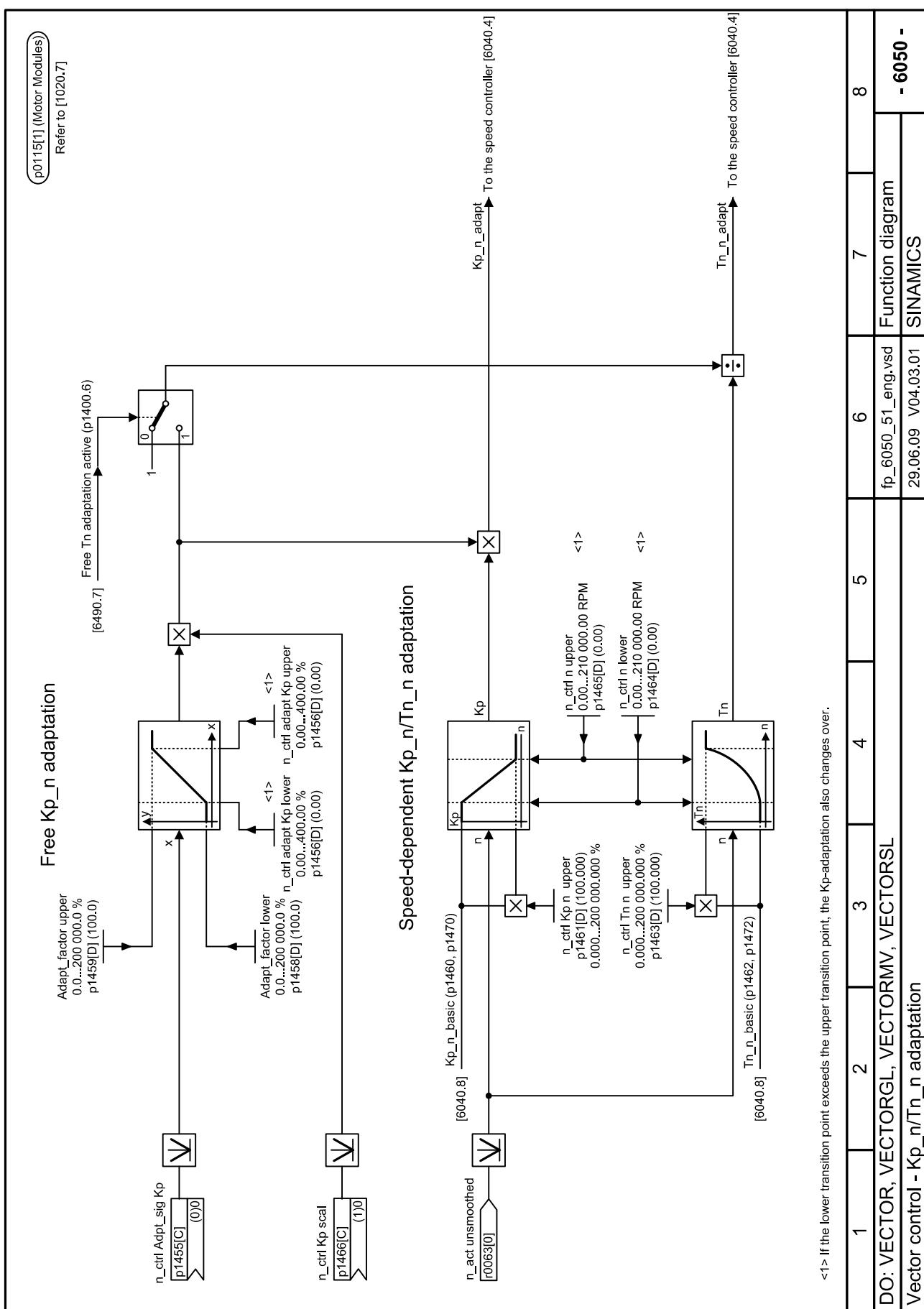


Fig. 2-185 6050 – Kp_n-/Tn_n adaptation

Function diagrams

Vector control

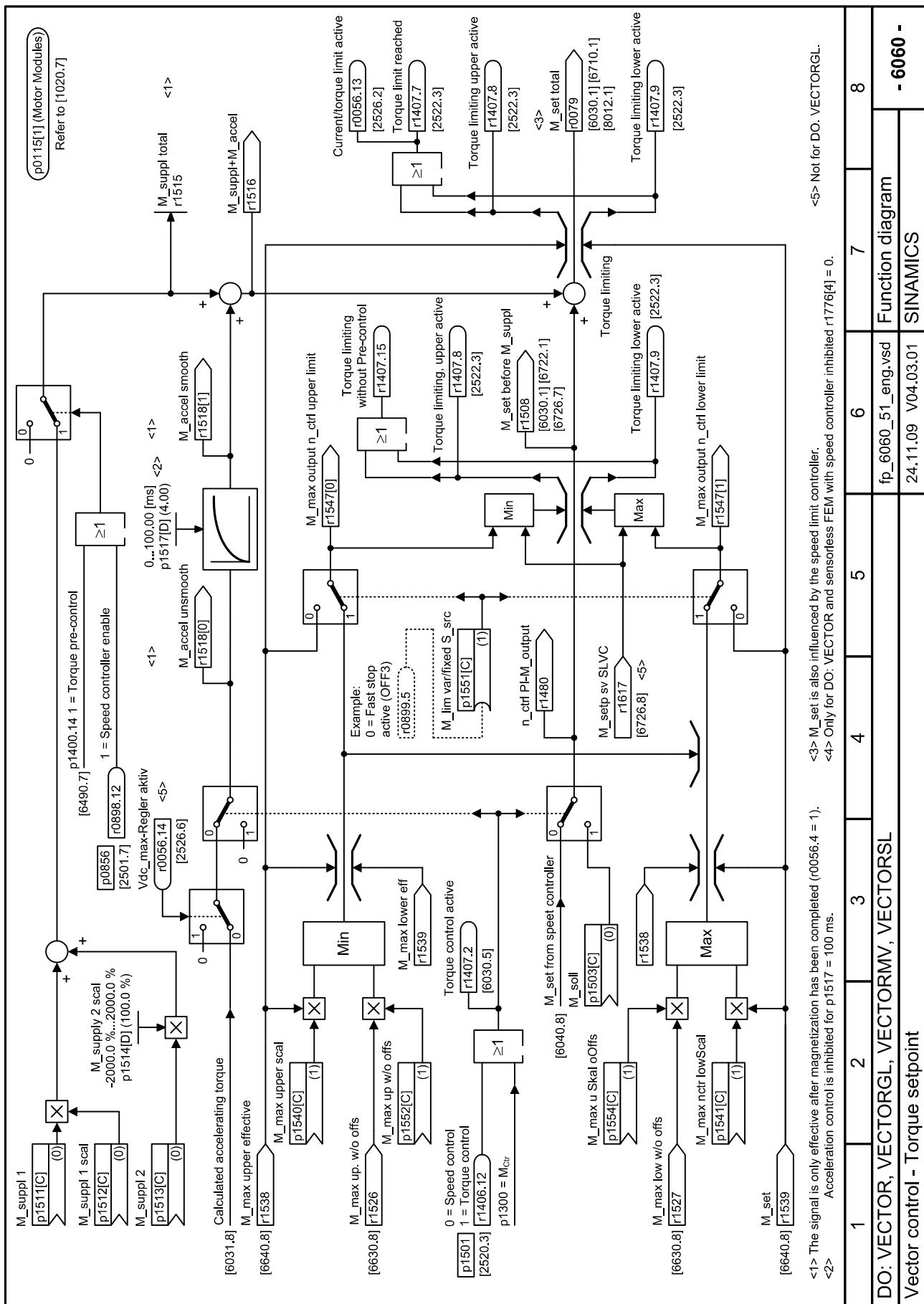


Fig. 2-186 6060 – Torque setpoint

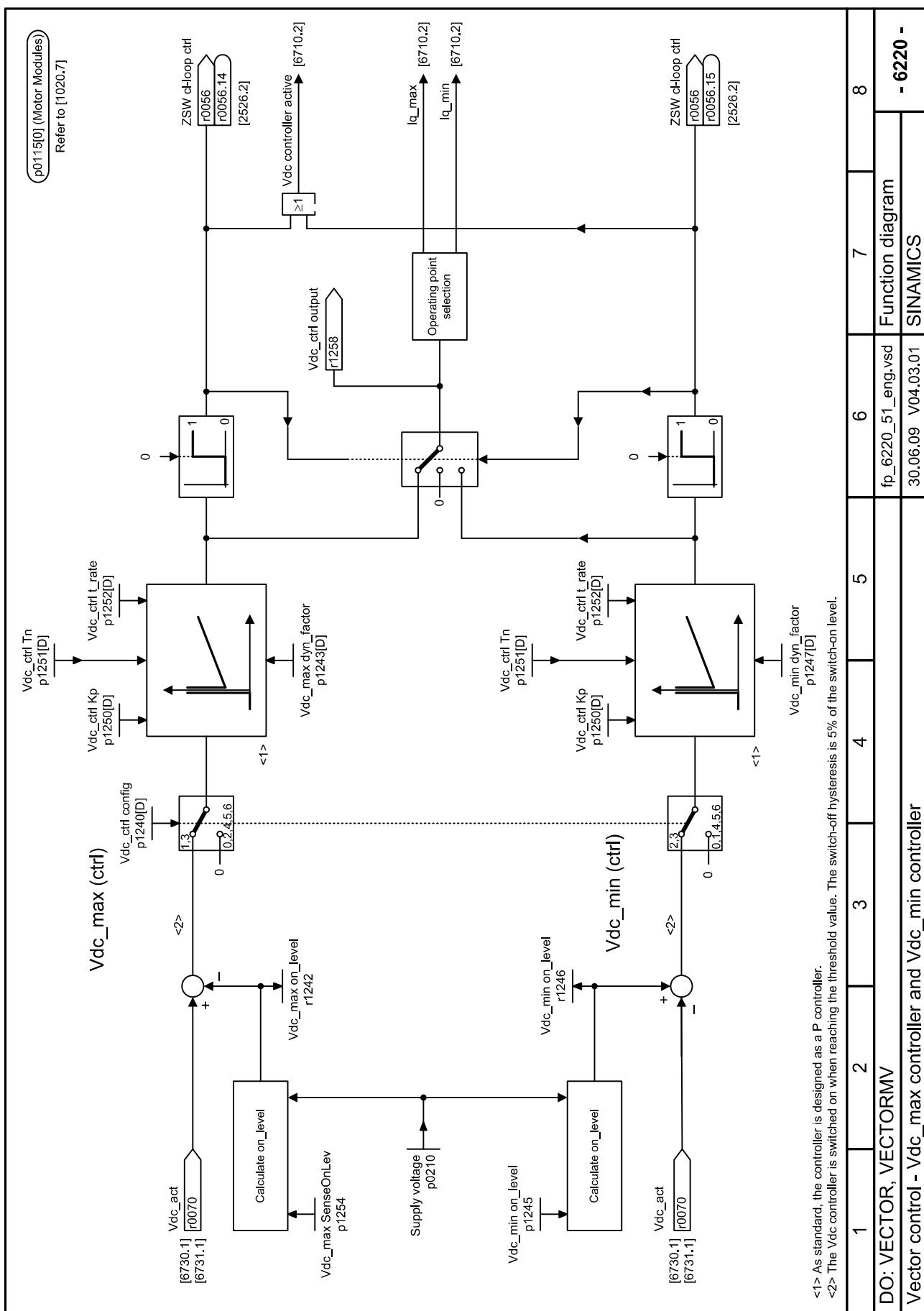
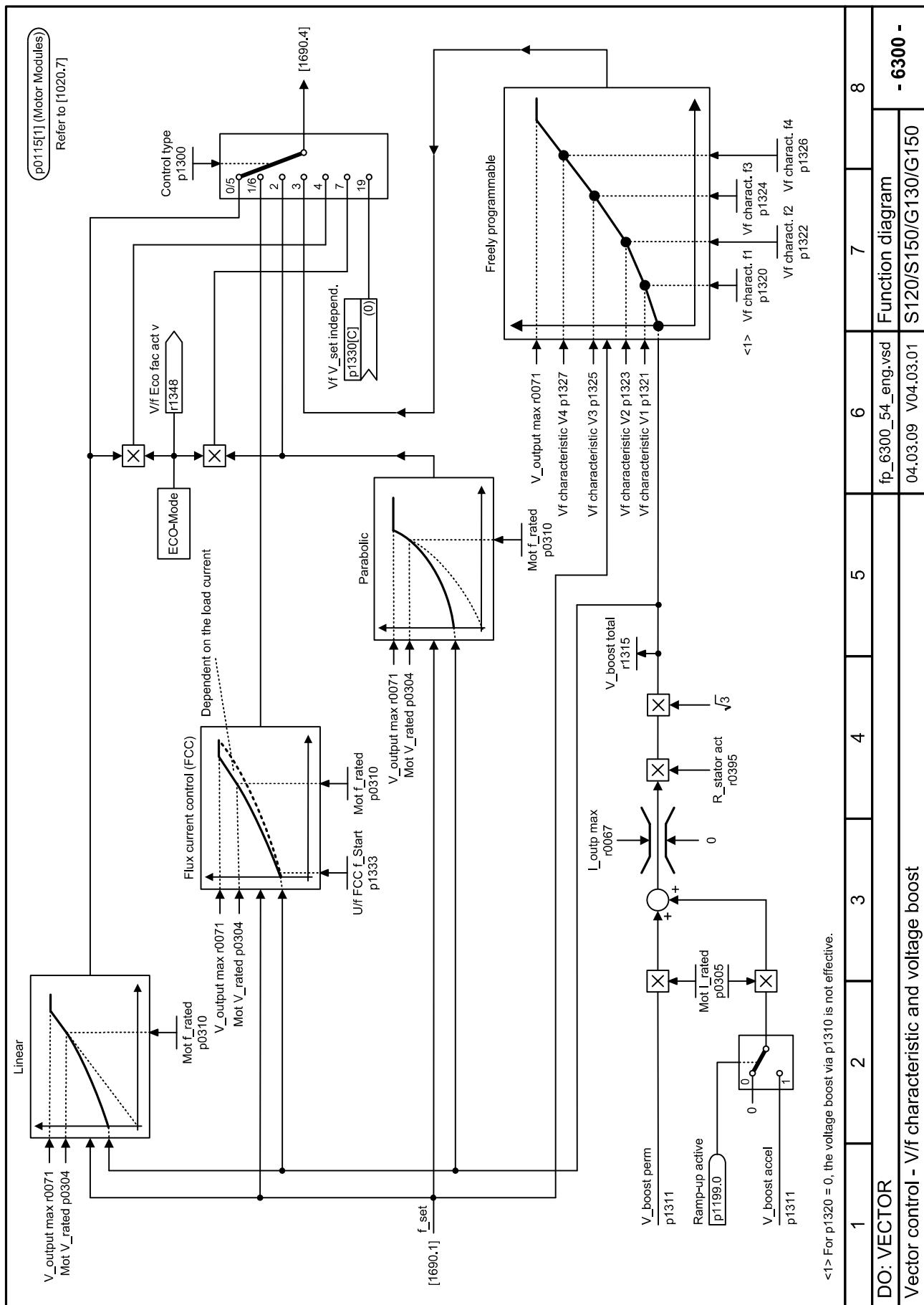


Fig. 2-187 6220 – Vdc_max controller and Vdc_min controller

Function diagrams

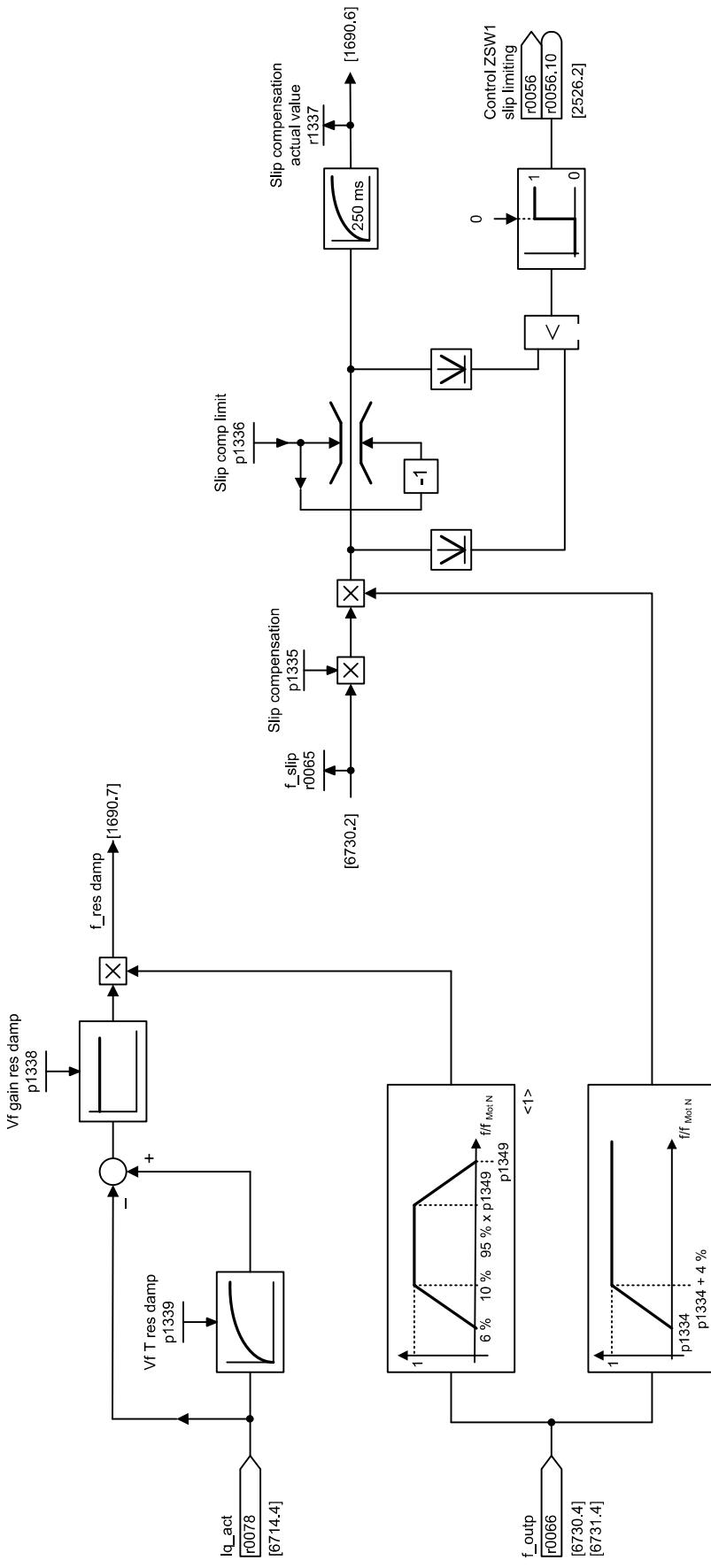
Vector control



p0115[1] (Motor Modules)

Refer to [1020.7]

V/f resonance damping



<1> If p1349 = 0: the limit is $0,95 \times f_{\text{MotN}} \leq 45 \text{ Hz}$.

DO: VECTOR

Vector control - Resonance damping and slip compensation

Fig. 2-189 6310 – Resonance damping and slip compensation

Function diagrams

Vector control

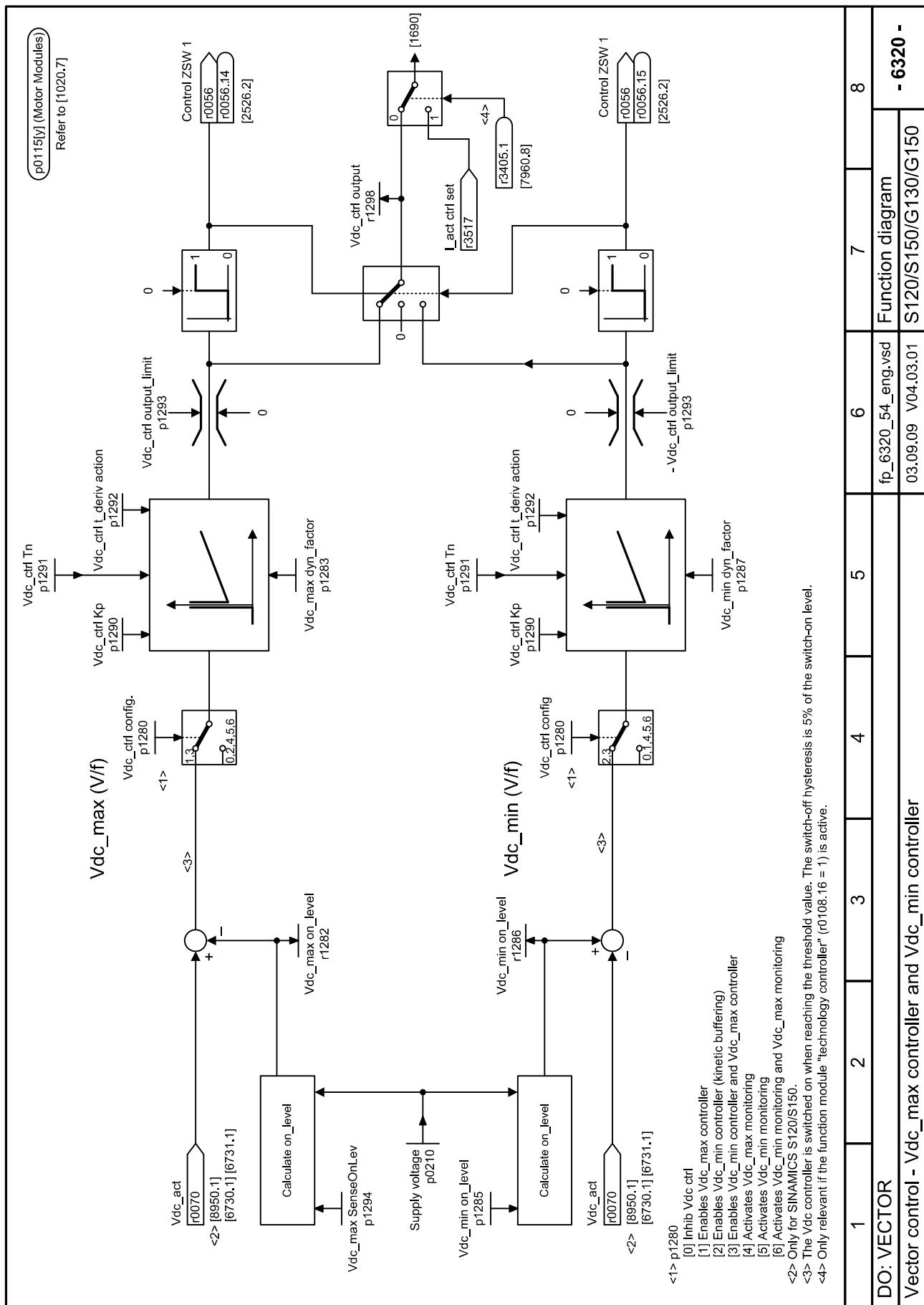


Fig. 2-190 6320 – Vdc_max controller and Vdc_min controller

| Speed control configuration | | DO: VECTOR, VECTORGL, VECTORMV, VECTORSL | | Function diagram | | 8 | |
|-----------------------------|--|--|--------------------|------------------|--|----------|--|
| n_ctrl config p1400[D] | | Vector control - Speed control configuration | | SINAMICS | | - 6490 - | |
| Bit No. | Meaning | | | | | | |
| 0 | 1 = Automatic Kp/Tn adaptation active | 1 | [6040..3] | | | | |
| 1 | 1 = Sensorless vector control, freeze I component | 0 | [6040..3] | | | | |
| 2 | 1 = Acceleration pre-control, external source (p1495) 0 = Acceleration pre-control, internal source (n_set) | 0 | [6031..2] | | | | |
| 3 | 1 = Reference model, speed setpoint I component ON | 0 | [6031..1][6031..7] | | | | |
| 4 | Reserved | | | | | | |
| 5 | 1 = Kp/Tn adaptation active | 1 | [6040..3] | | | | |
| 6 | 1 = Free Tn adaptation active | 0 | [6050..6] | | | | |
| 7 | Reserved | | | | | | |
| 8 | Reserved | | | | | | |
| 9 | Reserved | | | | | | |
| 10 | Reserved | | | | | | |
| 11 | Reserved | | | | | | |
| 12 | Reserved | | | | | | |
| 13 | Reserved | | | | | | |
| 14 | 1 = Torque pre-control always active 0 = Torque pre-control for n_ctrl enabled | 0 | [6060..4] | | | | |
| 15 | 1 = Sensorless vector control, speed pre-control active | 1 | [6030..5] | | | | |

Fig. 2-191 6490 – Speed control configuration

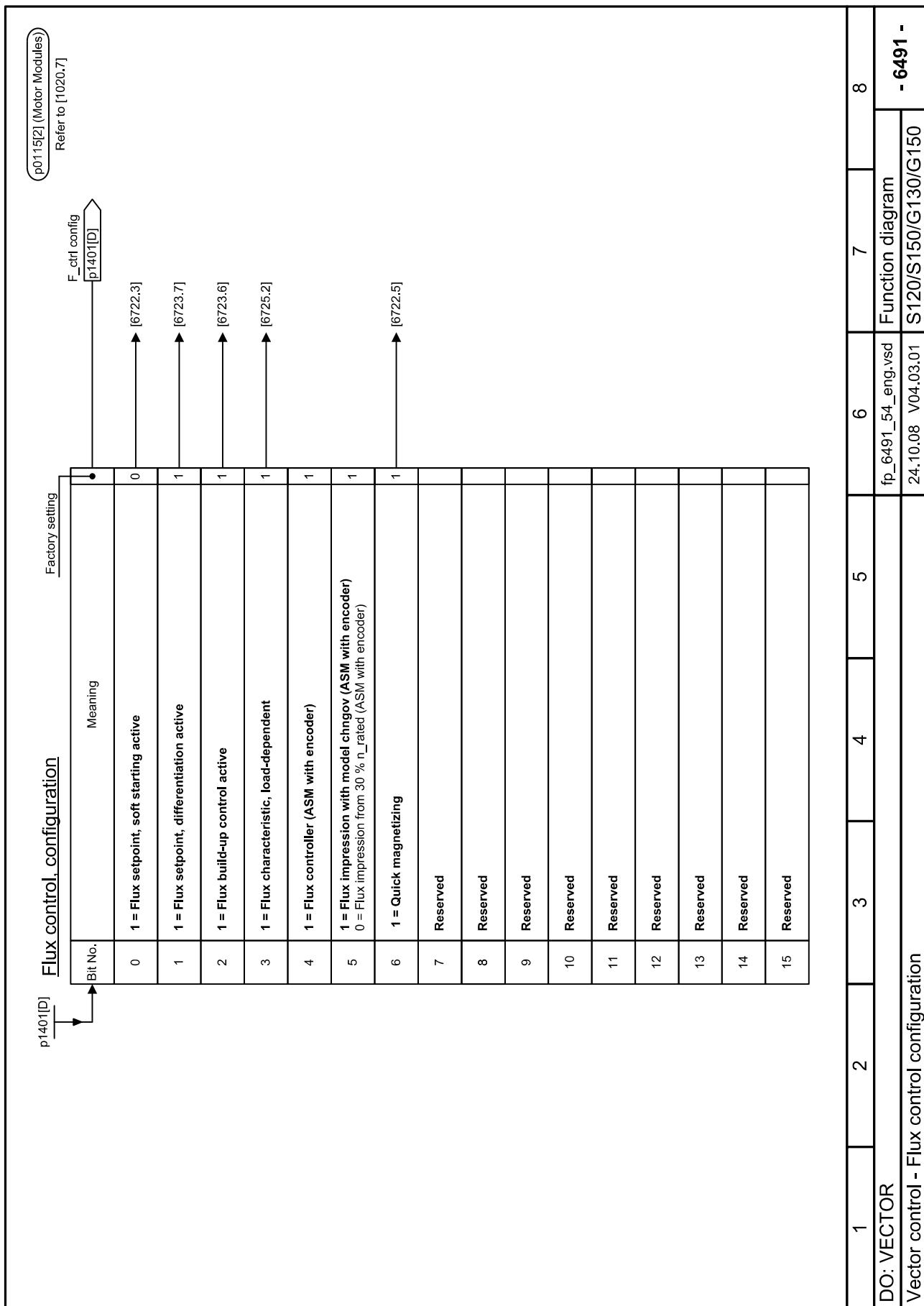
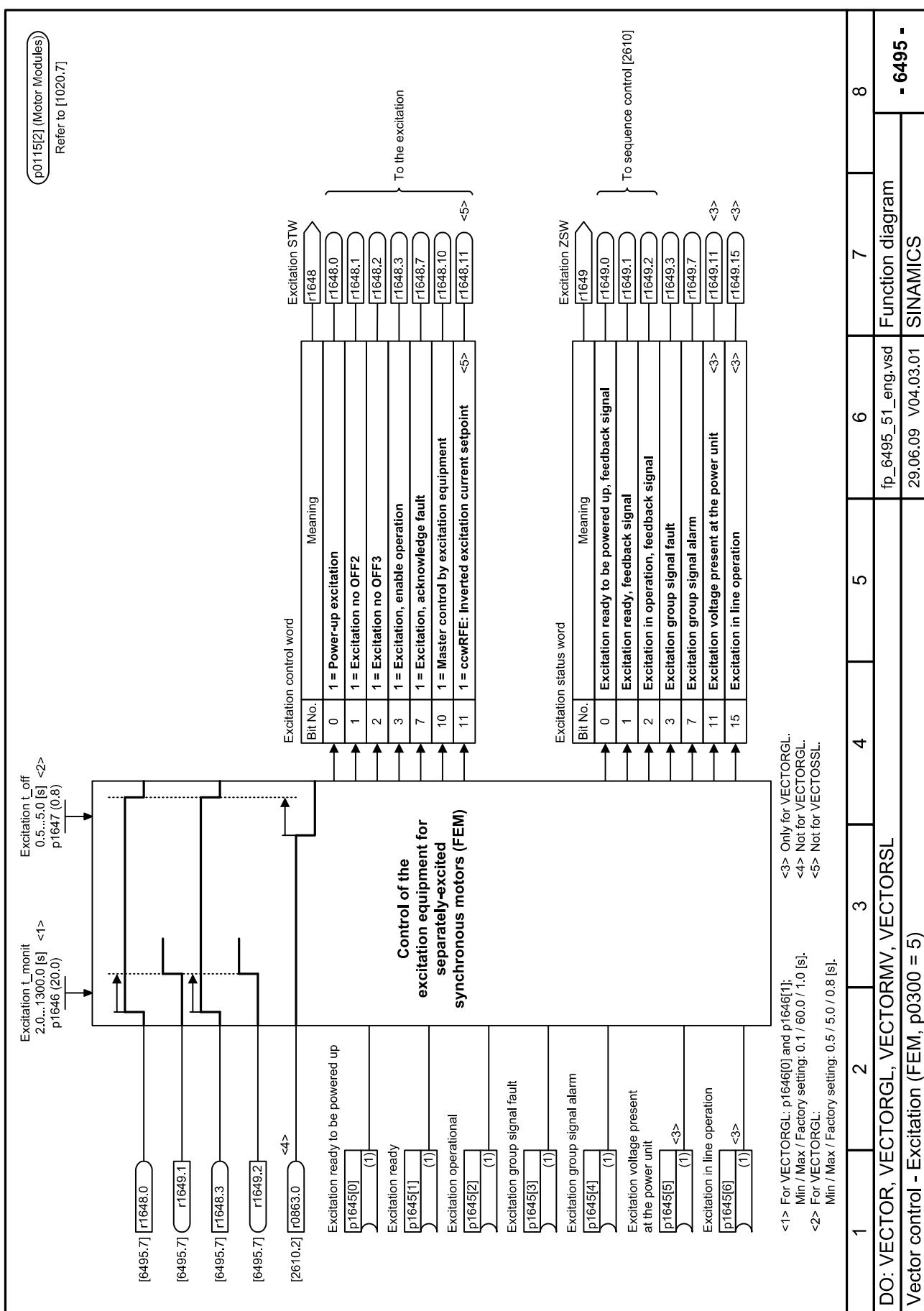


Fig. 2-192 6491 – Flux control configuration



Function diagrams

Vector control

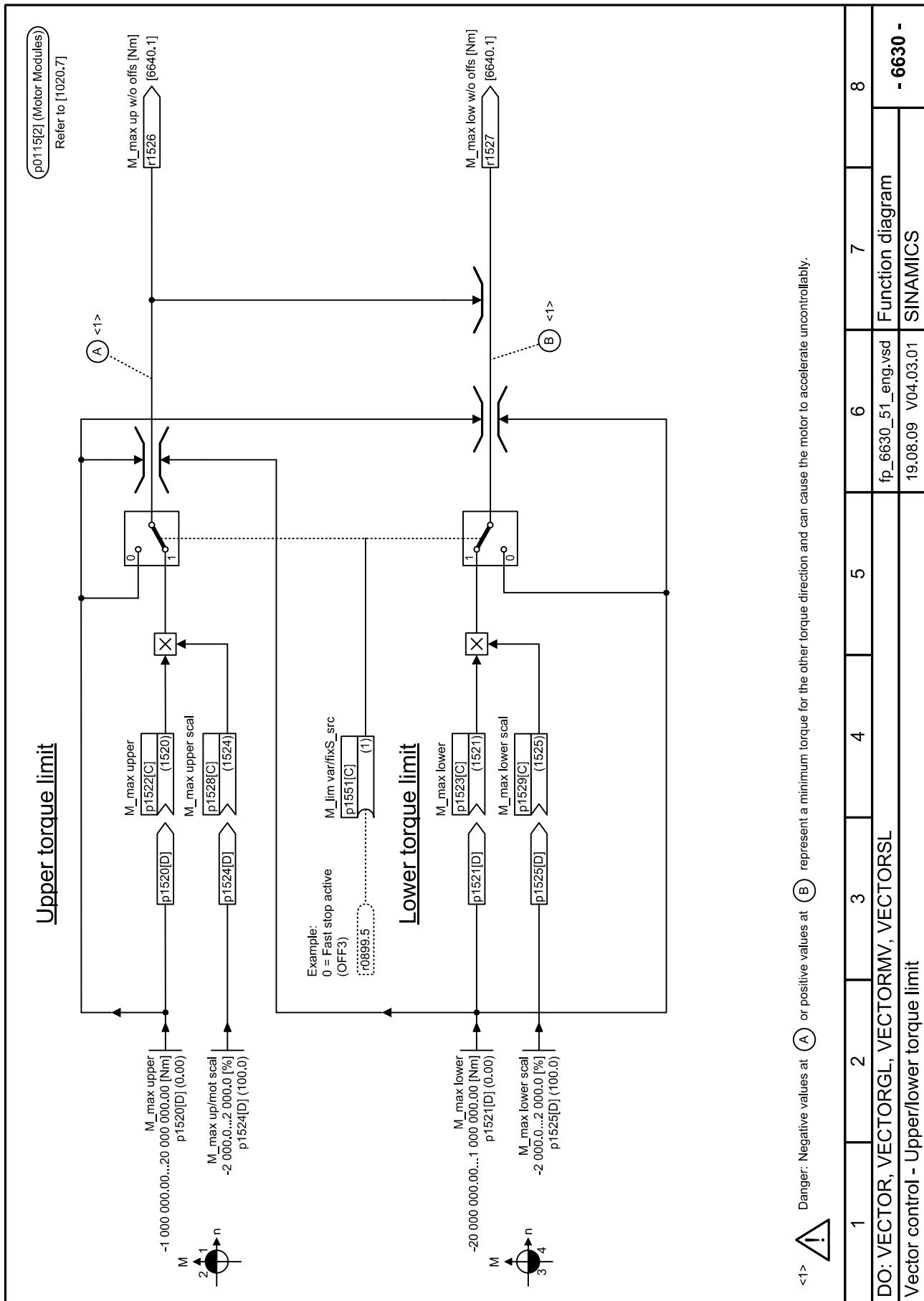


Fig. 2-194 6630 – Upper/lower torque limit

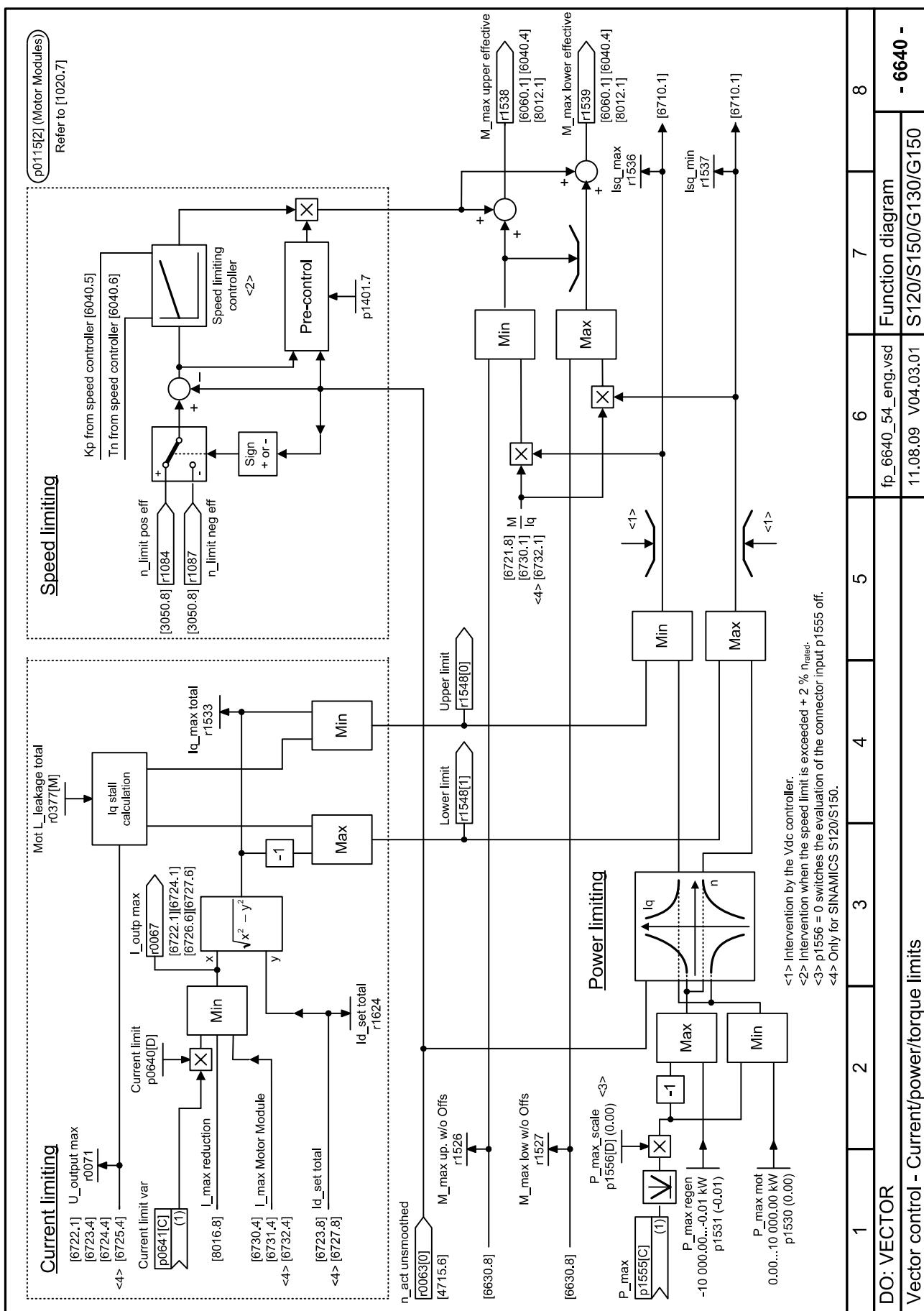
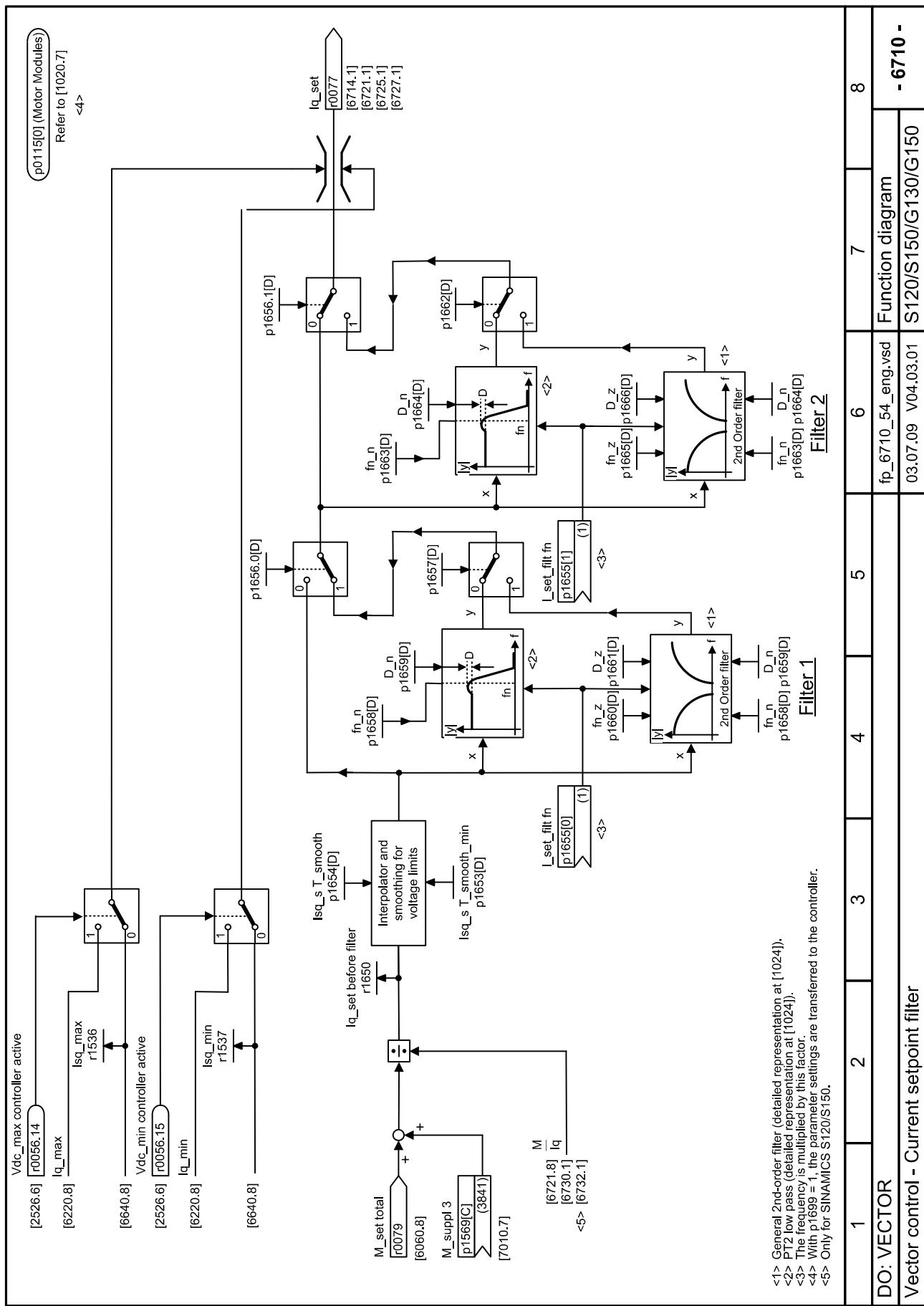
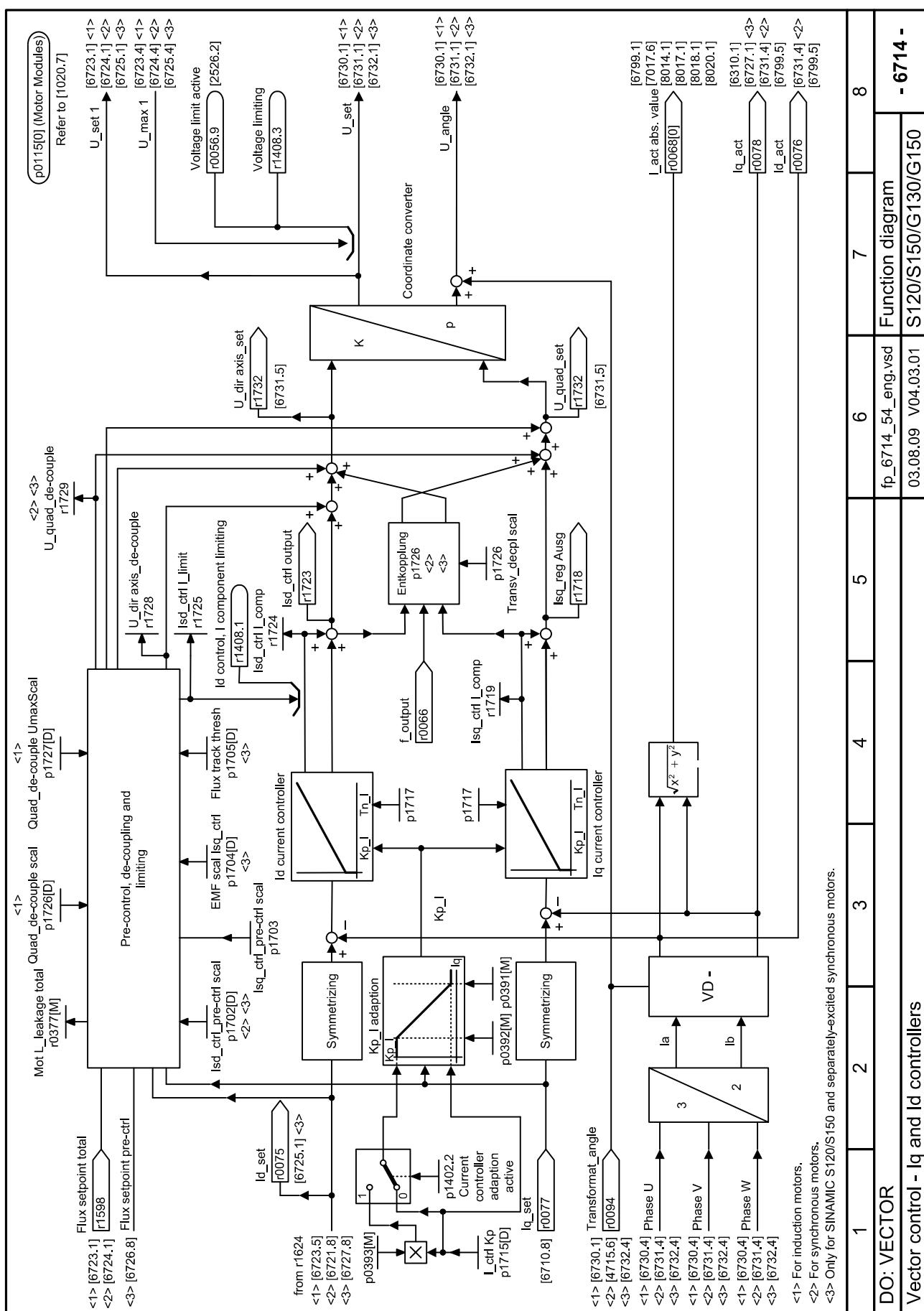


Fig. 2-195 6640 – Current/power/torque limits

Function diagrams

Vector control





Function diagrams

Vector control

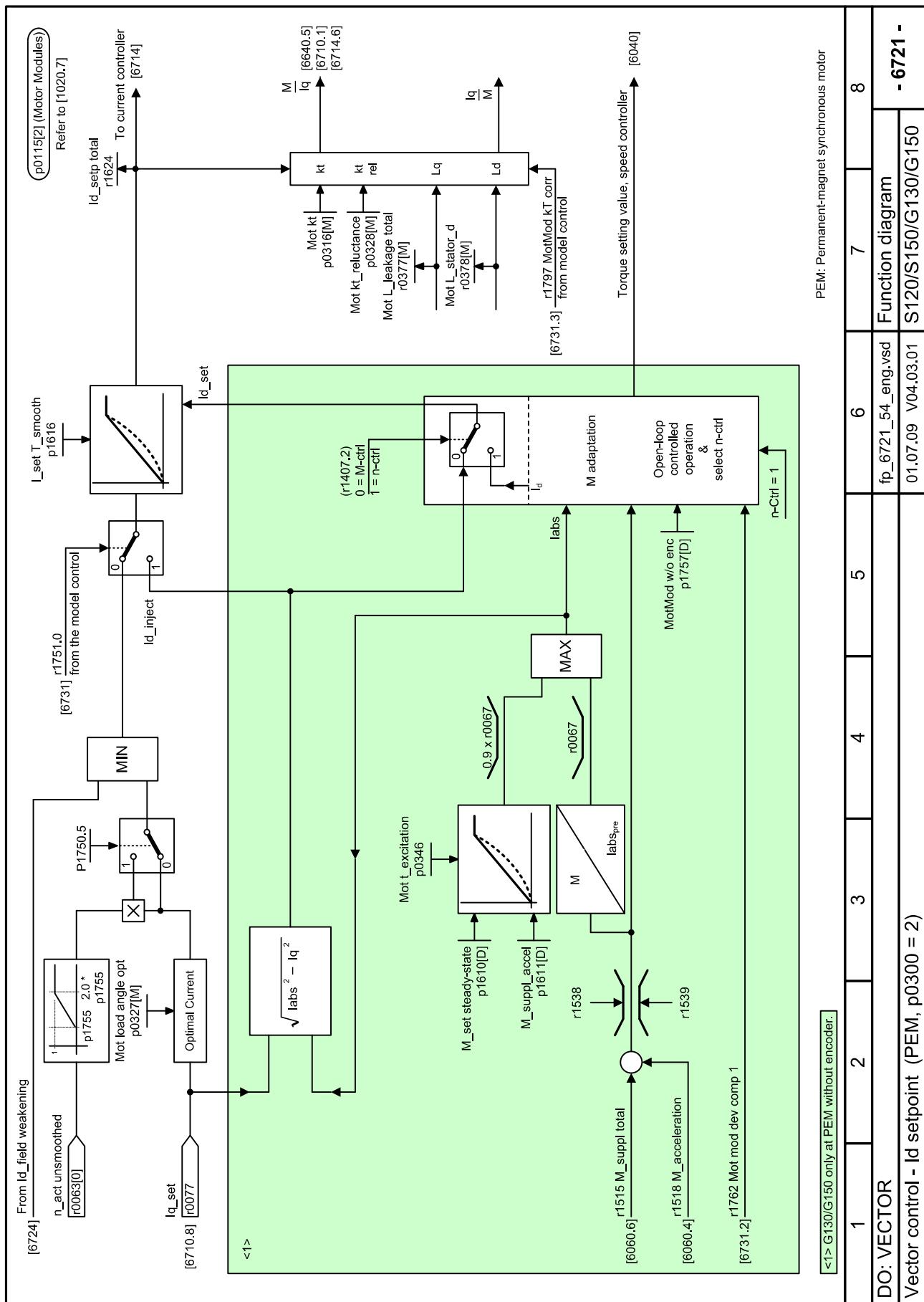


Fig. 2-198 6721 – Id setpoint (PEM, p0300 = 2)

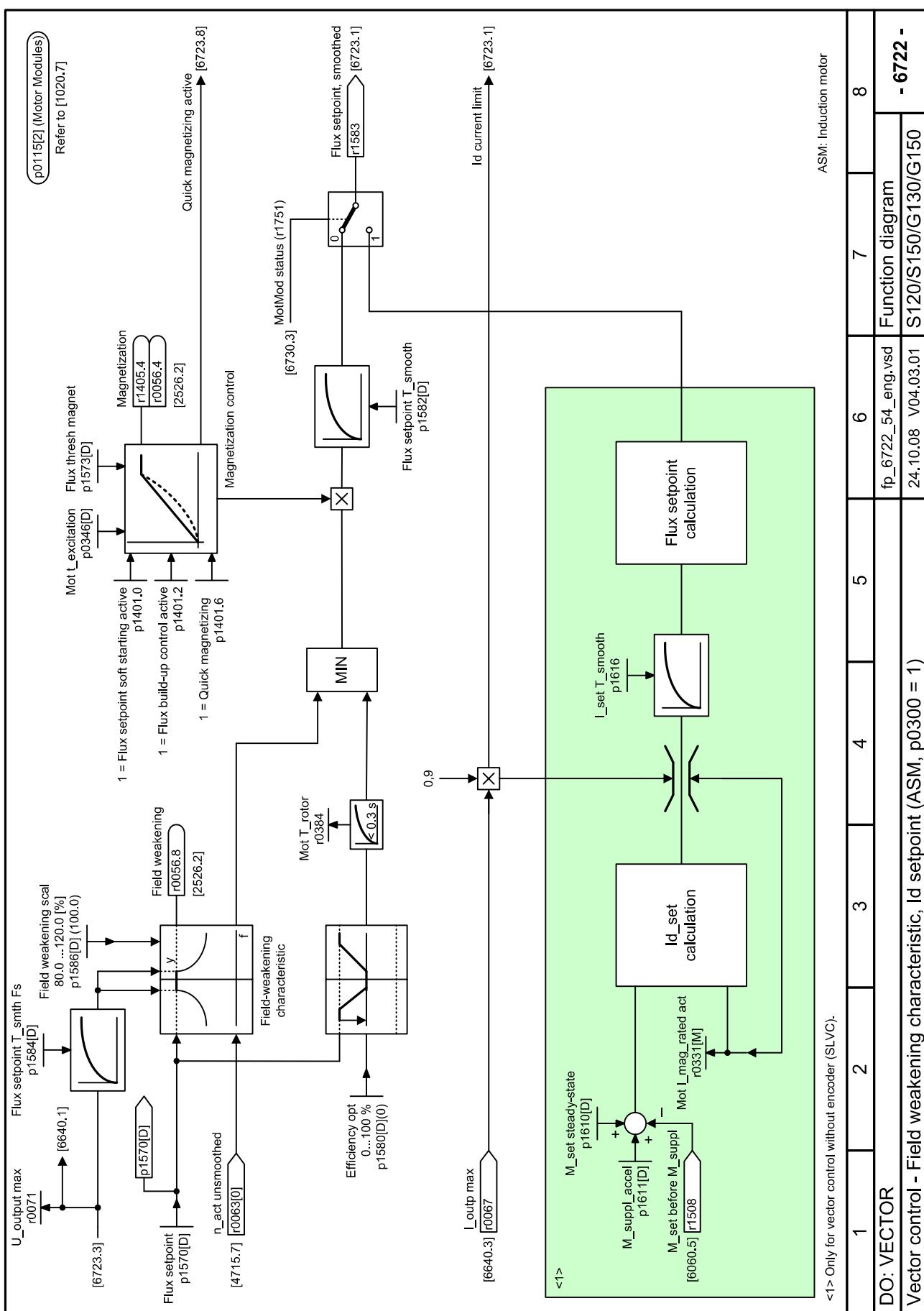


Fig. 2-199 6722 – Field weakening characteristic, Id setpoint (ASM, p0300 = 1)

Function diagrams

Vector control

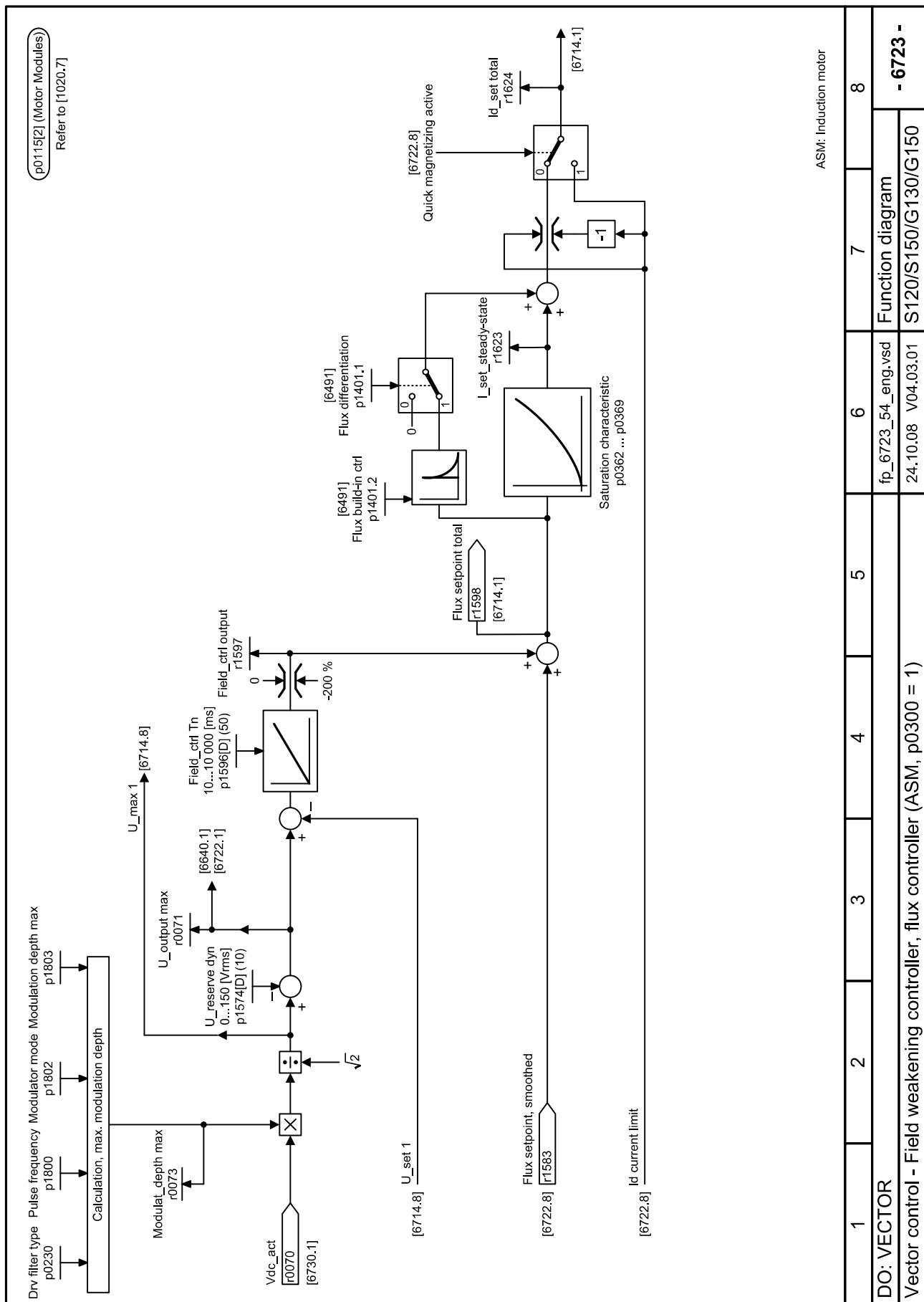


Fig. 2-200 6723 – Field weakening controller, flux controller (ASM, p0300 = 1)

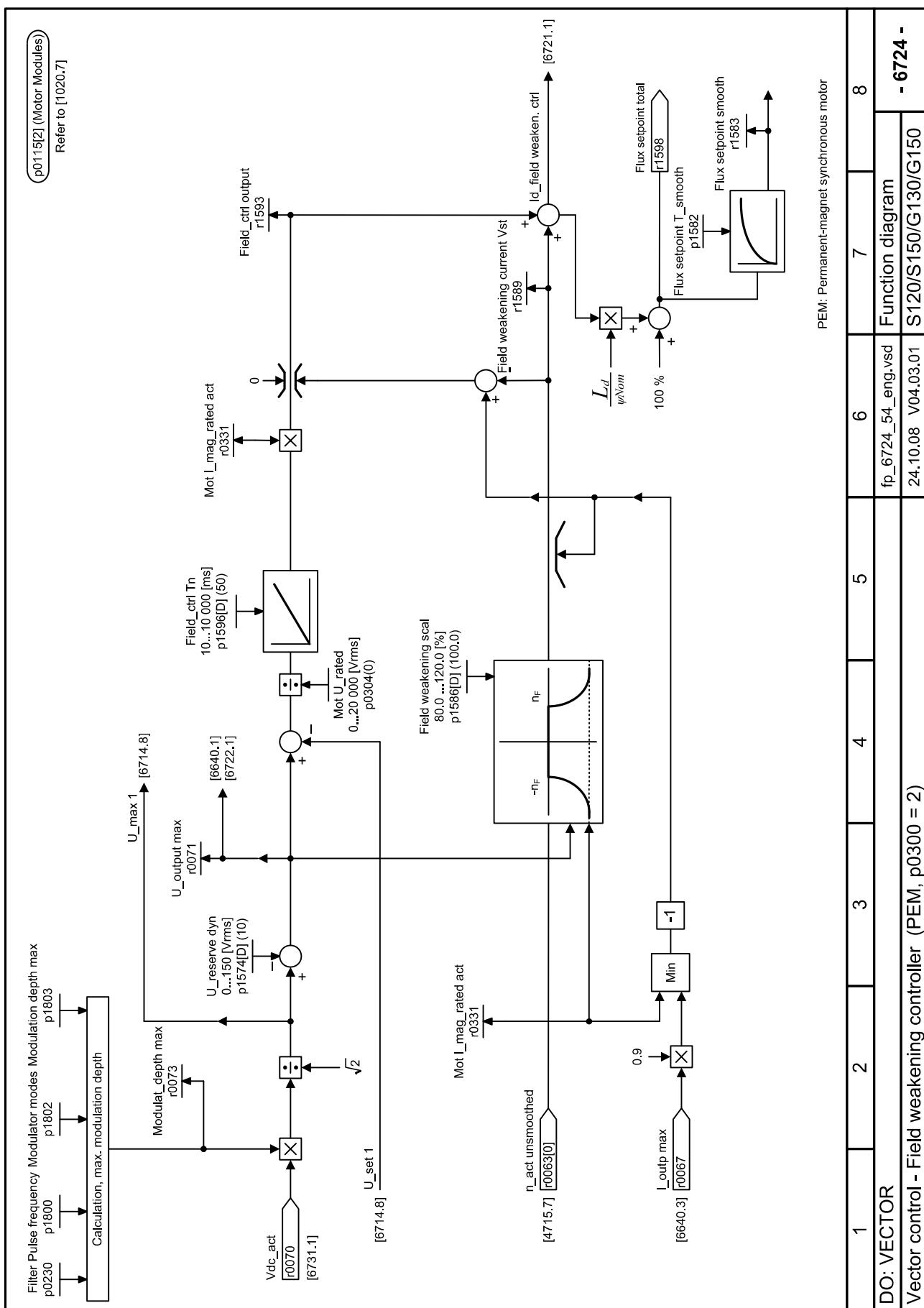


Fig. 2-201 6724 – Field weakening controller (PEM, p0300 = 2)

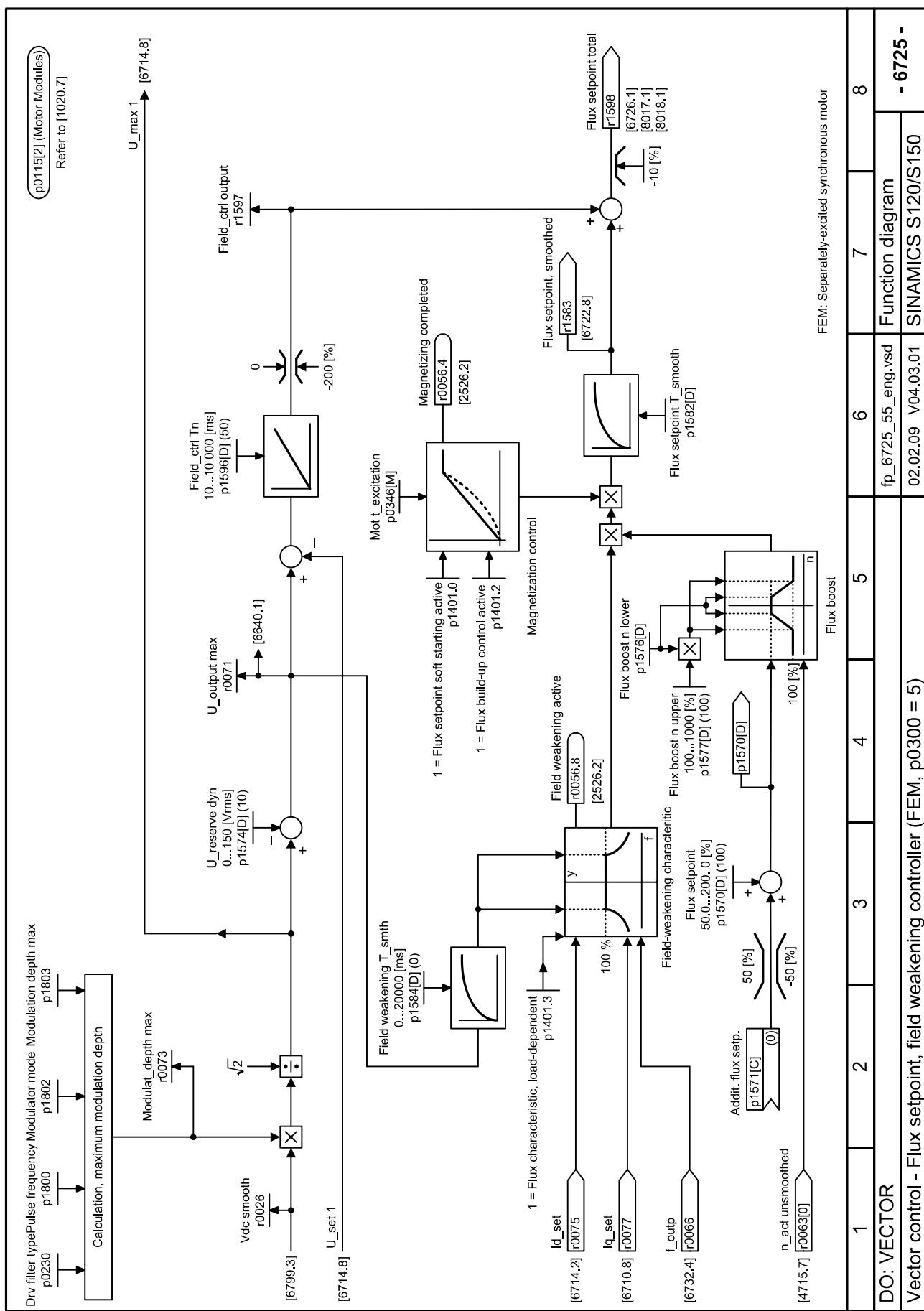


Fig. 2-202 6725 – Flux setpoint, field weakening controller (FEM, p0300 = 5)

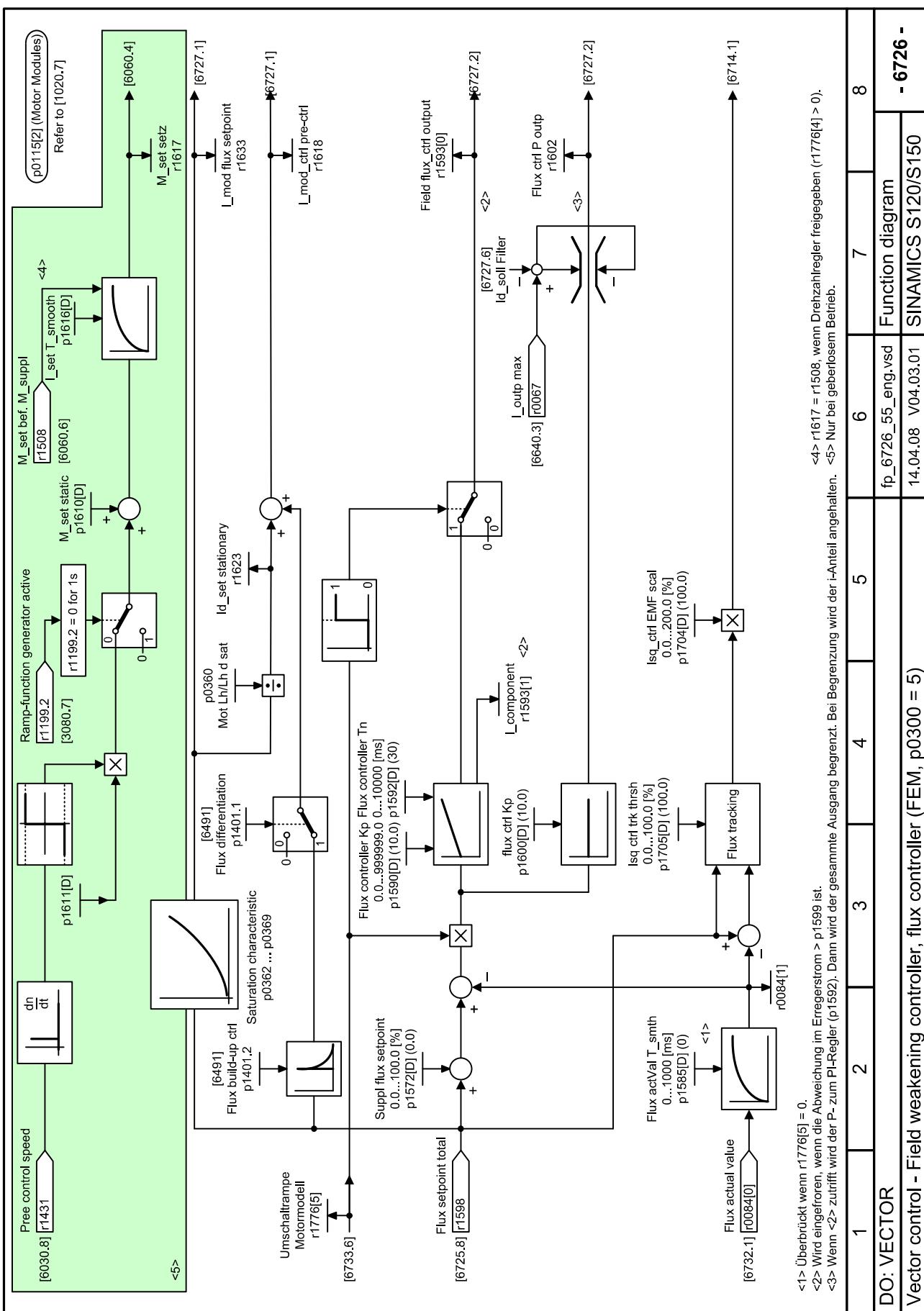


Fig. 2-203 6726 – Field weakening controller, flux controller (FEM, p0300 = 5)

Function diagrams

Vector control

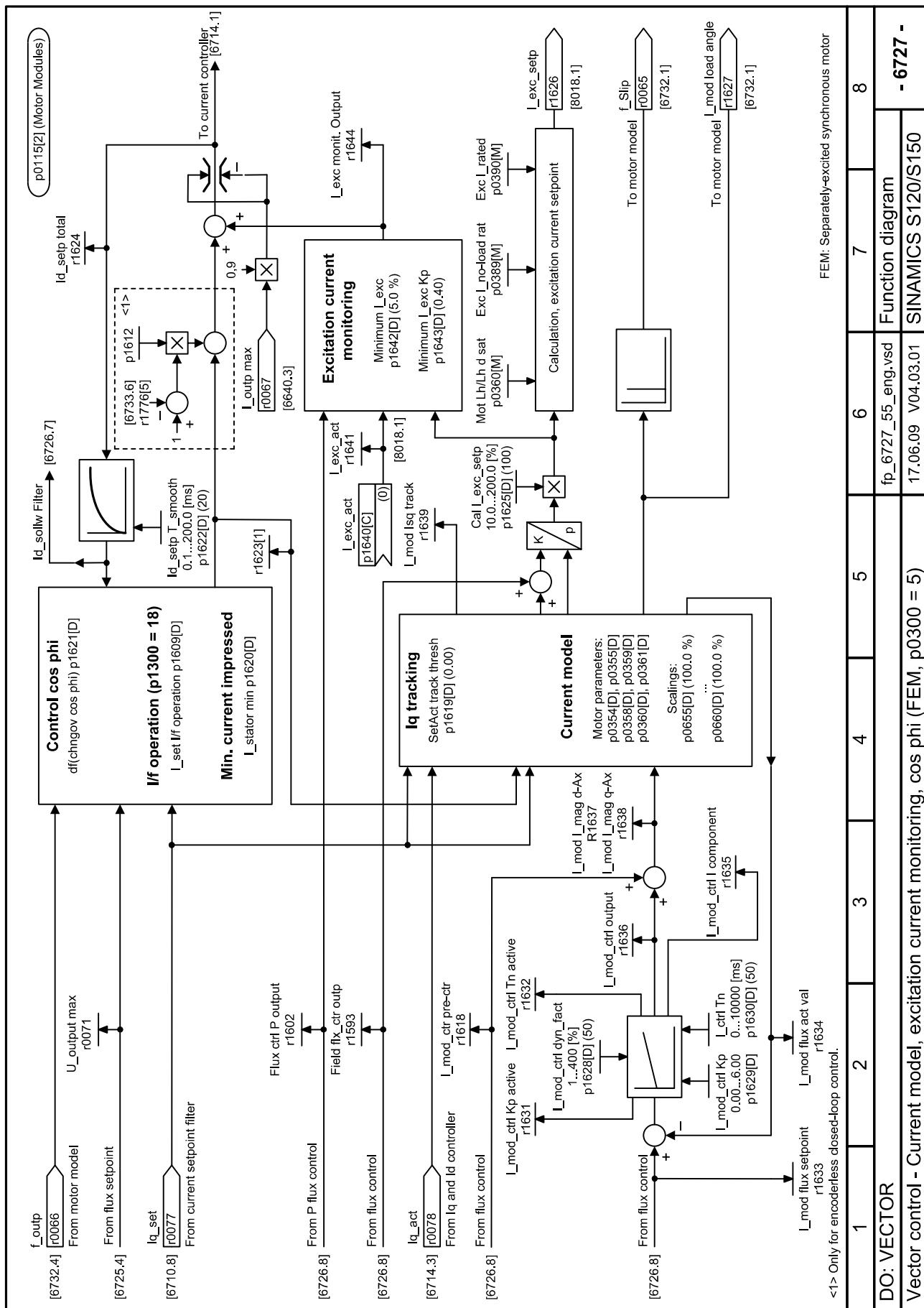


Fig. 2-204 6727 – Current model, excitation current monitoring, control cos phi (FEM, p0300 = 5)

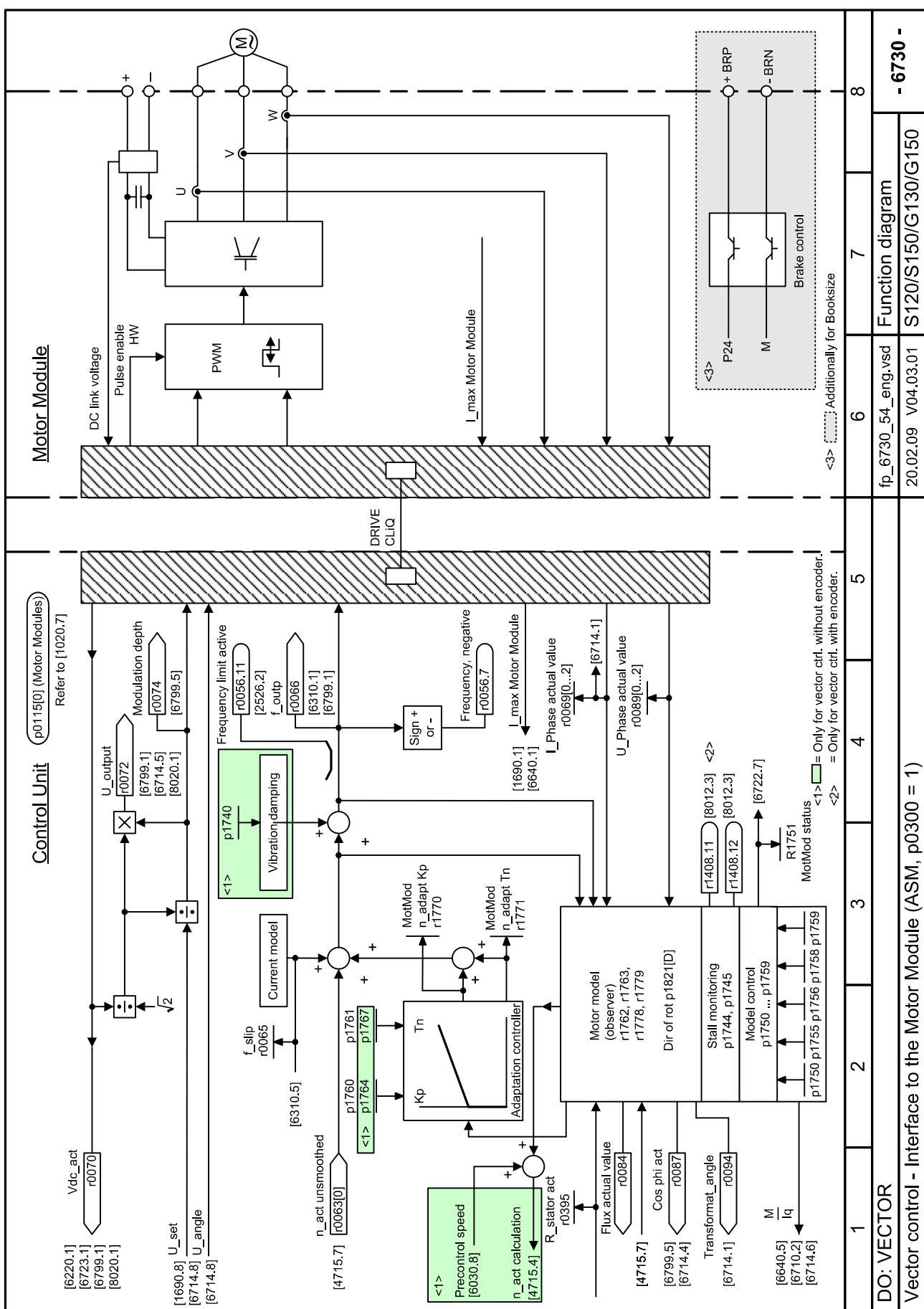


Fig. 2-205 6730 – Interface to Motor Module (ASM, p0300 = 1)

Function diagrams

Vector control

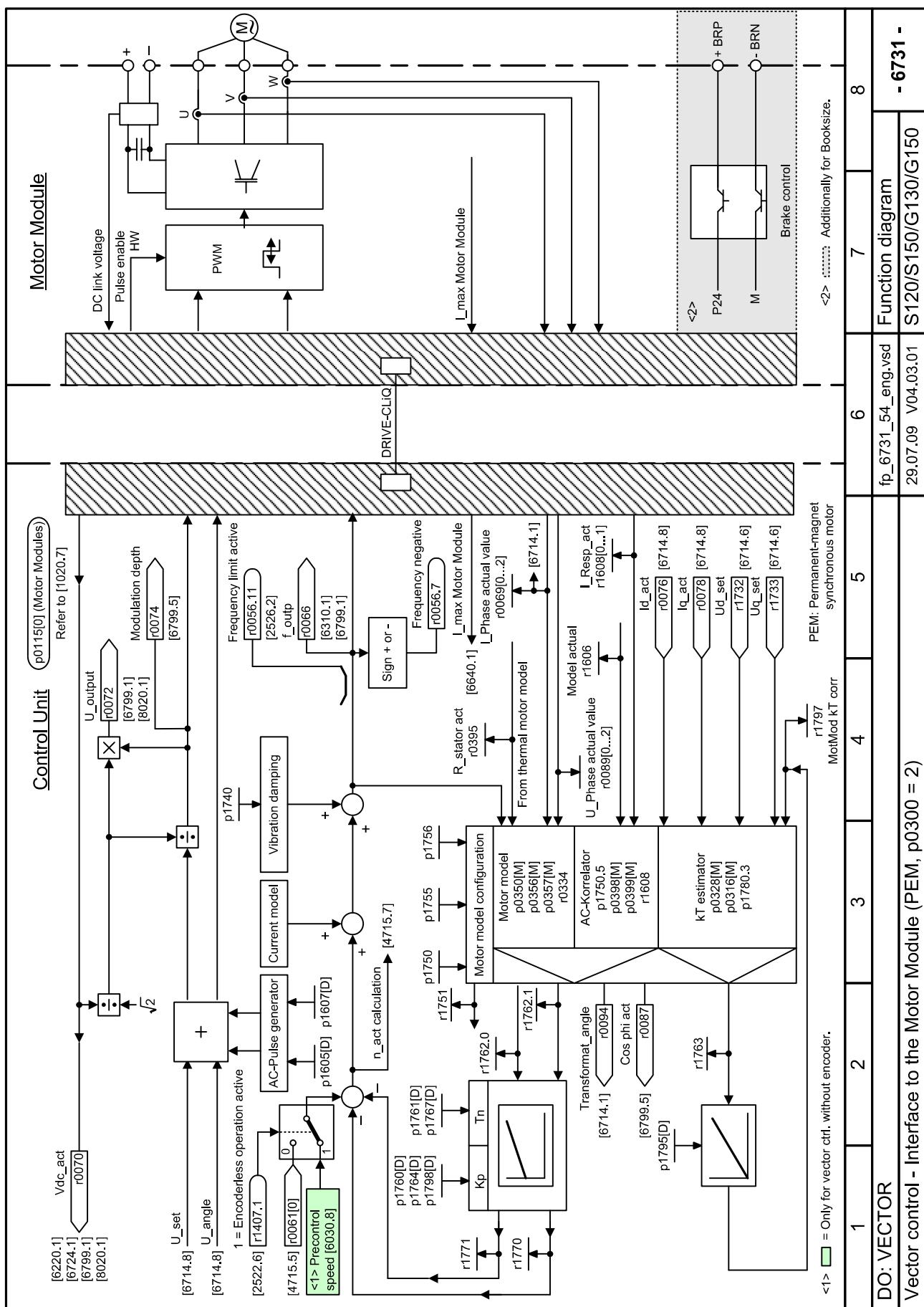


Fig. 2-206 6731 – Interface to the Motor Module (PEM, p0300 = 2)

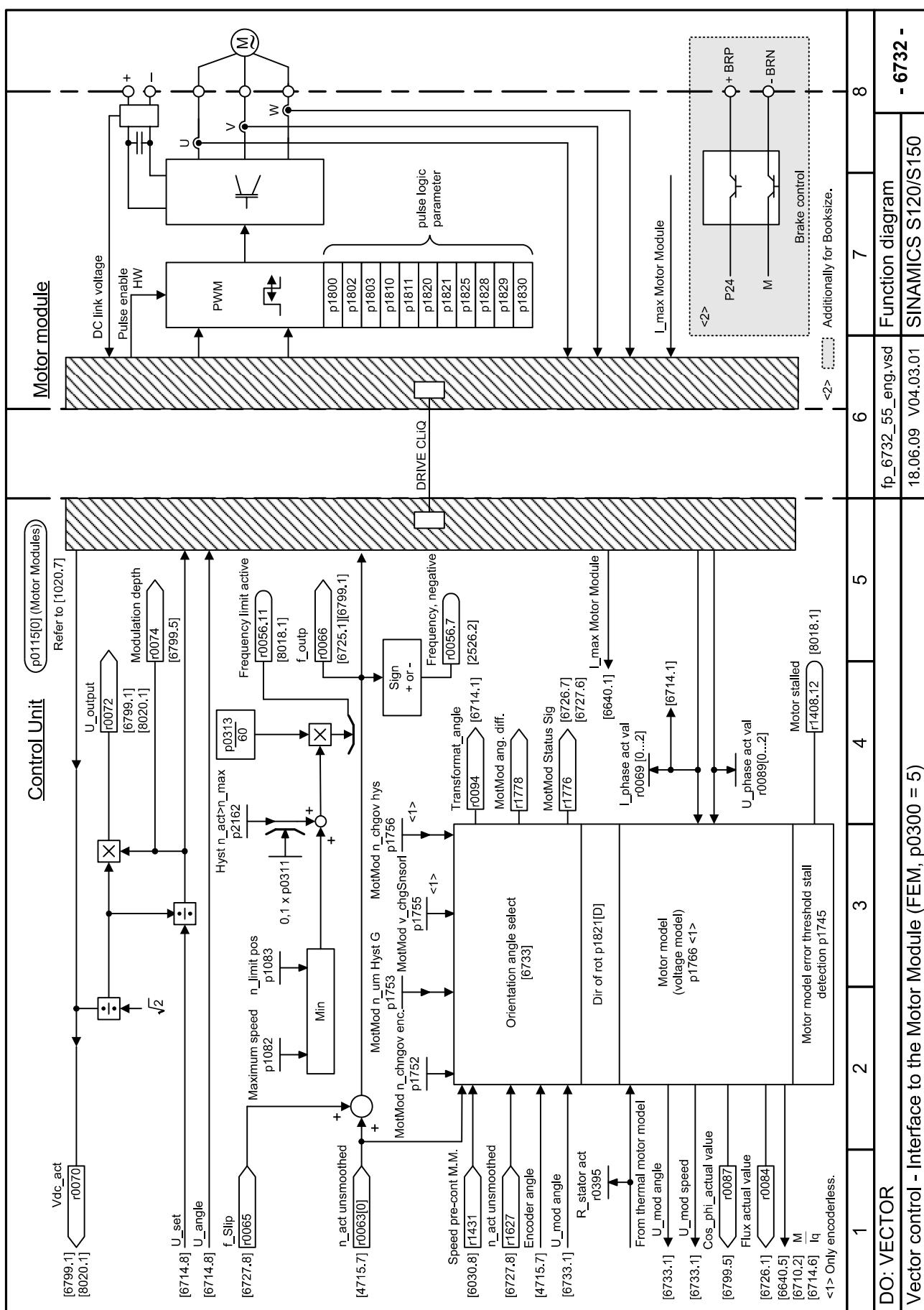


Fig. 2-207 6732 – Interface to Motor Module (FEM, p0300 = 5)

| DO: VECTOR | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Function diagram | SINAMICS S120/S150 | - 6732 - |
|---|---|---|---|---|--------------------|--------------------|--------------------|--------------------|--------------------|----------|
| Vector control - Interface to the Motor Module (FEM, p0300 = 5) | | | | | fp_6732_55_eng.vsd | fp_6732_55_eng.vsd | fp_6732_55_eng.vsd | 18.06.09 V04.03.01 | | |

Function diagrams

Vector control

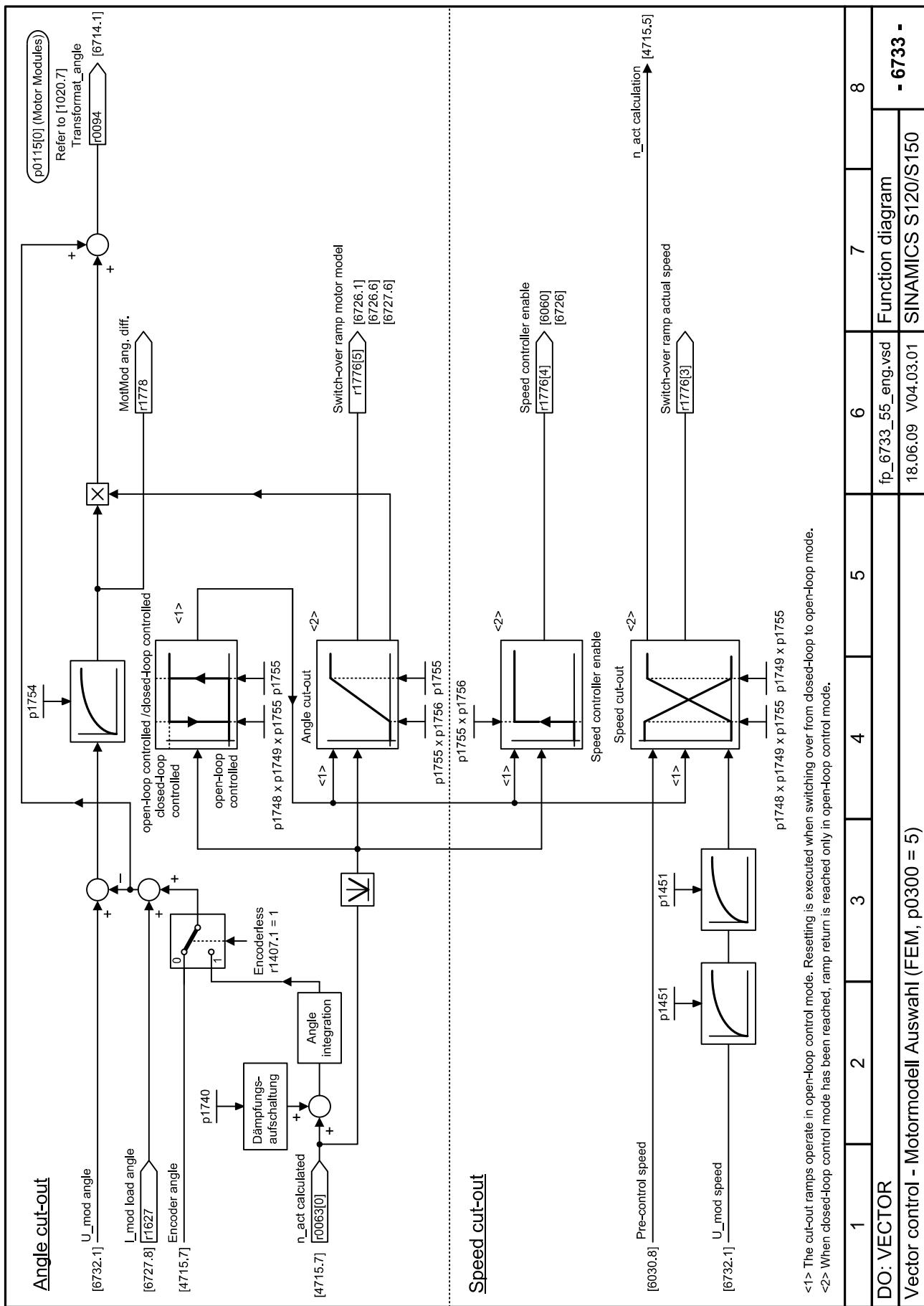


Fig. 2-208 6733 – Motor model selection (FEM, p0300 = 5)

