

DRV-09 Control Mode : Sets the control mode at No. 2 V/F PG. Operation is carried out with the speed controller added to No. 0 V/F control mode. The reference of the speed controller is the set frequency and the feedback is the encoder input.

CON-45 PG P-Gain, CON-46 PG I-Gain : Sets the proportional gain of the speed controller(PG P-Gain) and integral gain(PG I-Gain). The higher the proportional gain is set, the faster the responsive characteristic is, but if it is set too high, the speed controller might be unstable. For the integral, the lower it is set, the faster the response is. If it is set too low, the speed controller might be unstable.

CON-47 PG Slip Max % : The percentage value of the rated slip(BAS12:Rated Slip). The set value is used for the maximum compensation slip. For example, if this function code is set at 90% and the rated slip(BAS12:Rated Slip) is 30rpm, the maximum compensation slip is $30 * 0.9 = 27$ rpm.

8.1.11 Sensorless (I) vector control

| Group | Code No. | Function Display | Setting Display | | Unit |
|-------|----------|------------------|-----------------|--------------|------|
| DRV | 09 | Control Mode | 3 | Sensorless-1 | - |
| | 10 | Torque Control | 0 | No | - |
| | 14 | Motor Capacity | x | x.xx | kW |
| BAS | 11 | Pole Number | - | 4 | - |
| | 12 | Rated Slip | - | 2.00 | rpm |
| | 13 | Rated Curr | - | 3.6 | A |
| | 14 | Noload curr | - | 0.7 | A |
| | 15 | Rated Volt | - | 220 | V |
| | 16 | Efficiency | - | 83 | % |
| | 20 | Auto Tuning | 2 | Rs+Lsigma | - |
| CON | 21 | ASR-SL P Gain1 | - | 100.0 | % |
| | 22 | ASR-SL I Gain1 | - | 200 | mSec |

 **Caution**

The parameter of the motor connected to the output terminal of the inverter should be measured for high-performance operation. Measure the parameter using auto tuning(BAS-20 Auto Tuning) before vector operation. For high-performance control of sensorless(I) vector control, the inverter capacity should be equal to that of the motor. If the motor capacity is lower than the inverter capacity by more than 2 phases, there might be a problem with the control characteristic, so change the control mode to V/F control. In addition, in case of sensorless(I) vector control operation, do not connect more than one motor to the inverter output.

Chapter 8 Applied Functions

Before auto tuning, enter the items on the motor plate first.

DRV-14 Motor Capacity (motor capacity)

BAS-11 Pole Number (number of poles)

BAS-12 Rated Slip (rated slip)

BAS-13 Rated Curr (rated current)

BAS-15 Rated Volt (rated voltage)

BAS-16 Efficiency (efficiency)

Auto tuning with motor static : If the load connected to the motor axis is hard to remove, set the auto tuning item(BAS-20 Auto Tuning) at No. 2 Rs+Lsigma for the motor parameter to be measured with the motor static. For the no-load current of the motor, the default value is used. When auto tuning finishes, the measured values of the motor stator resistance(Rs) and leak inductance(Lsigma) are saved in BAS-21 and BAS-22.

Auto tuning with motor rotating : If the load connected to the motor axis can be removed, set the auto tuning item at No. 1 All after separating the load for the motor to measure the parameter while rotating. When auto tuning finishes, the measured values of the motor stator resistance(Rs), leak inductance(Lsigma) and no-load current(Noload Curr) are saved.

CON-21 ASR-SL P Gain1, CON-22 ASR-SL I Gain1 : The speed controller gain of the sensorless(I) vector control can be changed. The controller gain is set according to the default motor parameter and Acc/Dec time.



Caution

The controller gain can be adjusted according to the load characteristic. However, motor overheat of system instability might occur according to the controller gain setting.

DRV-10 Torque Control : Selects and uses the speed control mode and torque control mode from the sensorless(I) vector control mode. If you set the torque control(DRV-10) at Yes, change into torque control mode occurs before operation. For details on the torque control mode, see 8.1.14 Torque control.



Caution

Torque control is not available during low speed regeneration region and low speed with light load. Please, choose vector control.

When using torque control, do not switch over commands of forward and reverse rotation are during operation. It may cause over current or deceleration error of reverse direction. When controlling with vector control, please set Speed Search in case that there is possibility to operate during motor free run.

(CON-71 Speed Search = set Speed Search during acceleration(0001))