

Appendix: VFD500 Special version to Synchronous motor

This parameter is only used for AC synchronous motor with special Synchronous software version

Function code	Parameter name	Description	Default	Property
10 Group encoder type				
P10.01	Encoder type	0: ABZ 1: ABZUVW 2: Rotary/resolver 3: sin/cos encoder ➤ Consult factory when need PG card	0	★
P10.02	Encoder line number	1~65535 Rotary pulse number: 1024× rotary pair of poles	1024	★
P10.03	AB pulse direction	0: forward, 1: reverse ➤ If control mode is VC (with PG card) we can get this value by auto tuning for motor ➤ We can run motor with open loop, and observe r10.12 and r27.00 if they are in the same direction, if not, then change this value	0	★
P10.04	UVW phase	0: forward, 1: reverse This value is typically obtained by encoder self-learning (P11.10=3 or 13).	0	★
P10.05	Z pulse angle	0.0 ~ 359.9	0.0	★
P10.06	UVW angle	0.0 ~ 359.9	0.0	★
P10.09	Encoder offline detection time	0.0(not detecting)~10.0s	2.0	★
P10.11	Encoder rotation filter time	0~32 speed loop control cycle	1	★
r10.12	encoder feedback rotating speed	Current rotating speed by measuring, unit: 0.01Hz/1Rpm ➤ unit set by P21.17。 ➤ no symbolic number, Function code r27.02:Bit5 for direction; keypad indicator 【REV】 indicate direction	-	•
r10.13	Encoder current position	0 ~ 4*encoder pulse number -1 encoder current position refer Z pulse as zero point, motor forward running and one cycle to Z pulse, then position to zero	-	•
r10.14	Z pulse marking value	0 ~ 4*encoder pulse number -1 (it is used to monitor encoder slipping and AB being disturbed)	-	•

Appendix: VFD500 Special version to Synchronous motor

11 Group Motor 1 Parameter				
P11.00	Motor type	1: AC synchronous motor	1	•
P11.02	Motor rated power	0.1kW~800.0kW > when power is less than 1kw ,0.75kw set to 0.8 as per round up principle ,0.55kw motor set 0.6 > when change motor rated power,AC drive will automatically set other parameter of motor name plate and motor model parameter be careful to use	Depend	★
P11.03	Motor rated voltage	10V~2000V	Depend	★
P11.04	Motor rated current	P11.02<30kW: 0.01A P11.02>=30kW: 0.1A	Depend	★
P11.05	Motor rated frequency	1.00Hz~600.00Hz	50.00Hz	★
P11.06	Motor rated RPM	1~60000rpm	Depend	★
P11.07	Motor rated power factor	0.500~1.000	Depend	★
r11.08	Motor rated torque	Read only,0.1Nm(P11.02<30KW); 1Nm(P11.02>30KW)	-	•
r11.09	Number of motor 1 pairs of pole	Read only, It will auto calculate as per motor rated frequency and rated rotating speed	-	•
P11.10	Auto-tune	Unit's digit: auto tuning mode 0: no auto tuning 1: Stationary auto tuning of Asynchronous motor 2: Rotational auto tuning of Asynchronous motor 3: Encoder auto tuning Ten's digit: Auto tuning loading type 0:empty load or light duty 1:heavy duty or with braking	0	★

1: Static self-learning

During self-learning, the motor shaft can rotate up to half a turn. After static self-learning, the resistance and inductance parameters P11.19 ~ P11.21 can be learned, and the back electromotive force of the synchronous motor cannot be learned.

2: Rotating self-learning

During self-learning, the motor rotates first and then rotates. After learning, P11.19 ~ P11.22 can be obtained.

When rotating self-learning, the motor will rotate forward and the speed can reach 50% ~ 100% of the rated speed.

3. Encoder self-learning

When the ten's digit is set to 0, the motor rotates slowly, and P10.03 ~ P10.06 can be learned.

When the ten's digit is set to 1, only P10.04 ~ P10.06 can be learned.

The results of the no-load self-learning are more accurate than those with the brake or heavy-duty learning;

Appendix: VFD500 Special version to Synchronous motor

the self-learning of the loaded encoder must be performed in the vector control mode.

note:

Please confirm that the motor nameplate parameters have been set before self-learning. For closed-loop control, you should also set the encoder parameters!

Motor self-learning is only possible when the command source selects the keyboard!

After setting this parameter, press the "RUN" button on the keyboard to start self-learning. After the self-learning is completed, the inverter will stop automatically.

P11.19	Stator resistor of synchronous motor	Unit:0.001Ω(P11.02<30kW) Unit:0.01mΩ(P11.02≥30kW)	Depend	★
P11.20	Synchronous motor d-axis inductance	Unit:0.001Ω(P11.02<30kW) Unit:0.01mΩ(P11.02≥30kW)	Depend	★
P11.20	Synchronous motor q-axis inductance	Unit:0.01mH(P11.02<30kW) Unit:0.001mH(P11.02≥30kW)	Depend	★
P11.21	Mutual inductance of synchronous motor	Unit:0.1mH(p11.02<30kW) Unit:0.01mH(P11.02≥30kW)	Depend	★
P11.22	Synchronous motor back electromotive force	0.0V ~ 2000.0V Induced electromotive force at rated speed	Depend	★
12 Group Motor 1 VF control parameter				
P12.13	Oscillation suppression gains	0~2000	300	☆
P12.16	Current limit level	20%~180% drive rated current	150%	☆
P12.36	Synchronous motor no-load current 0	1.0% ~ 100.0%	30.0%	☆
P12.37	Synchronous motor no-load current 1	1.0% ~ 100.0%	15.0%	☆
P12.38	Synchronous motor no-load current 2	1.0% ~ 100.0%	10.0%	☆
P12.39	High efficiency control time constant	0.01s~10.00s	0.5s	☆
P12.41	back EMF Compensation amount	0%~100%	0%	☆
P12.42	Back EMF compensation cutoff frequency	1.0%~100%	20.0%	☆
P12.43	Voltage drop compensation gain	0%~100%	100%	☆
P12.44	Pressure drop compensation time	0.001s~1.000s	0.010s	☆

Appendix: VFD500 Special version to Synchronous motor

17 Group Synchronous Motor control parameter				
P17.00	Initial position identification mode	0:mode 1 1:mode 2	0	★
P17.01	Initial position identification current	50%~180%	100%	★
P17.03	Low speed zone definition	0.1% ~ 60.0%	10.0%	★
P17.07	High frequency injection amplitude	5% ~ 50.0%	30.0%	☆
P17.11	SVC controls operation mode in low speed	0: normal way 1: High frequency injection operation	10.0%	★
P17.18	Maximum torque current ratio control	0:disable 1:enable	0	☆