



**TECO**

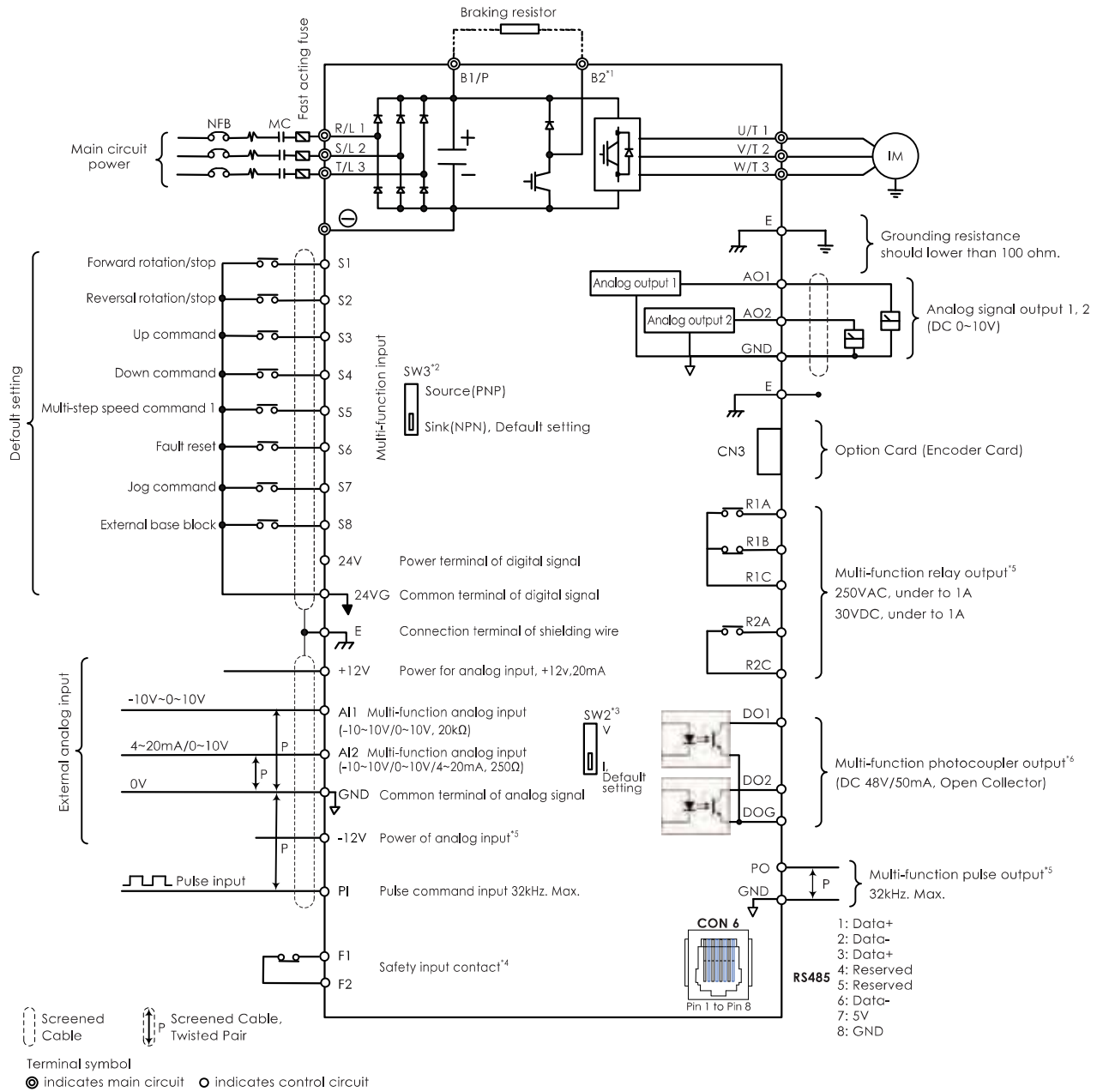
# A510

Advanced Current Vector Control Drive



**TAIWAN  
EXCELLENCE  
2012**

# WIRING DIAGRAM



# BASIC SPECIFICATIONS

## 200V Class

Inverter Capacity (HP)		1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150		
Output Rating <sup>2</sup>	HD <sup>3</sup>	Rated Output Capacity (KVA)	1.9	3	4.2	6.7	9.5	12.6	17.9	22.9	27.8	32.4	43.8	55.3	68.6	81.9	108	132	158	
		Rated Output Current (A)	5	8	11	17.5	25	33	47	60	73	85	115	145	180	215	283	346	415	
		Maximum Applicable Motor <sup>1</sup> HP (KW)	1 (0.75)	2 (1.5)	3 (2.2)	5 (3.7)	7.5 (5.5)	10 (7.5)	15 (11)	20 (15)	25 (18.5)	30 (22)	40 (30)	50 (37)	60 (45)	75 (55)	100 (75)	125 (90)	150 (110)	
	ND <sup>4</sup>	Rated Output Capacity (KVA)	2.3	3.7	4.6	8.0	11.4	15.2	21.3	26.3	30.1	41.9	52.6	64.4	76.2	95.3	118.9	137.2	172	
		Rated Output Current (A)	6	9.6	12	21	30	40	56	69	79	110	138	169	200	250	312	400	450	
		Maximum Applicable Motor <sup>1</sup> HP (KW)	1.5 (1.1)	3 (2.2)	4 (3)	7.5 (5.5)	10 (7.5)	15 (11)	20 (15)	25 (18.5)	30 (22)	40 (30)	50 (37)	60 (45)	75 (55)	100 (75)	125 (90)	150 (110)	175 (130)	
Maximum Output Voltage (V)		Three-Phase, 200V to 240V																		
Maximum Output Frequency (Hz)		Based on parameter setting 0.1~400.0 (1200.0) Hz																		
Input Power	Rated Voltage, Frequency		Single/Three-Phase, 200V to 240V, 50/60Hz			Three-Phase, 200V to 240V, 50/60Hz														
	Allowable Voltage Fluctuation		-15% ~ +10%																	
	Allowable Frequency Fluctuation		±5%																	
Braking Transistor		Built-in									Option (Braking Module)									
Frame Size		1	2	3	4	5	6	7	8											

## 400V Class

Inverter Capacity (HP)		1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175	215	250	300	375	425		
Output Rating <sup>2</sup>	HD <sup>3</sup>	Rated Output Capacity (KVA)	2.6	3.2	4.2	7	11.3	13.7	18.3	23.6	29.7	34.3	45.7	57.2	69.3	89.9	114	137	165	198	225	282	343	400	461	
		Rated Output Current (A)	3.4	4.2	5.5	9.2	14.8	18	24	31	39	45	60	75	91	118	150	180	216	260	295	370	450	523	585	
		Maximum Applicable Motor <sup>1</sup> HP (KW)	1 (0.75)	2 (1.5)	3 (2.2)	5 (4)	7.5 (5.5)	10 (7.5)	15 (11)	20 (15)	25 (18.5)	30 (22)	40 (30)	50 (37)	60 (45)	75 (55)	100 (75)	125 (90)	150 (110)	175 (132)	215 (160)	250 (185)	300 (220)	375 (280)	425 (315)	
	ND <sup>4</sup>	Rated Output Capacity (KVA)	3.1	4.1	5.3	8.5	13.3	17.5	23.6	29.0	33.5	44.2	54.9	67.1	78.5	111	126	159	191	226	250	332	393	446	446	
		Rated Output Current (A)	4.1	5.4	6.9	11.1	17.5	23	31	38	44	58	72	88	103	145	165	208	250	296	328	435	515	585	585	
		Maximum Applicable Motor <sup>1</sup> HP (KW)	2 (1.5)	3 (2.2)	4 (3)	7.5 (5.5)	10 (7.5)	15 (11)	20 (15)	25 (18.5)	30 (22)	40 (30)	50 (37)	60 (45)	75 (55)	100 (75)	125 (90)	150 (110)	175 (132)	215 (160)	250 (185)	270 (200)	335 (250)	425 (315)	425 (315)	
Maximum Output Voltage (V)		Three-Phase, 380V to 480V																								
Maximum Output Frequency (Hz)		Based on parameter setting 0.1~400.0(1200.0) Hz																								
Input Power	Rated Voltage, Frequency		Three-Phase, 380V to 480V, 50/60Hz																							
	Allowable Voltage Fluctuation		-15% ~ +10%																							
	Allowable Frequency Fluctuation		±5%																							
Braking Transistor		Built-in									Option (Braking Module)															
Frame Size		1	2	3	4	5	6	7	8																	

### Notes:

- \*1. Based on the standard 4-pole induction motor. The selected inverter must have a higher output current rating than the motor.
- \*2. The default setting of A510 takes HD (heavy duty mode) as the base. To switch A510 to ND (normal duty mode) set parameter (00-27) to 1.
- \*3. The default setting of carrier frequency in HD mode is shown in right side table, if the setting value is higher than default setting, de-rating may be required.
- \*4. The default setting of carrier frequency in ND mode is 2kHz, if the setting value is higher than default setting, de-rating may be required.
- \*5. If control mode is set to SLV mode and maximum frequency is larger than 80Hz, the carrier frequency range is 2~8kHz.

Inverter Voltage and Capacity		HD mode carrier freq range	HD mode carrier freq default setting
200V class	400V class		
1~20HP	1~30HP	2~16kHz	8kHz
25HP	-	2~12kHz	6kHz
30~40HP	40~50HP	2~12kHz <sup>5</sup>	5kHz
50~100HP	60~175HP	2~10kHz <sup>5</sup>	5kHz
-	215HP	2~8kHz	3kHz
125~150HP	-	2~5kHz	5kHz
	250~375HP	2~5kHz	4kHz
	425HP	2~5kHz	2kHz

## GENERAL SPECIFICATIONS

Control Characteristics	Display	LED keypad with 5-digits seven-segment display (LCD keypad option)
	Control Modes	V/F, V/F+PG, SLV, SV, PMSV, PMSLV <sup>*1</sup> (SVPWM Modulation)
	Output Frequency	0.1Hz~400.0Hz <sup>2</sup>
	Frequency Accuracy	Digital references: $\pm 0.01\%$ (-10 to +40°C), Analog references: $\pm 0.1\%$ (25°C $\pm 10^\circ\text{C}$ )
	Speed Control Accuracy	$\pm 0.1\%$ (Sensor Vector Control Mode, SV) <sup>*3</sup> + $\pm 0.5\%$ (Sensorless Vector Control Mode, SLV) <sup>*3</sup>
	Frequency Setting Resolution	Digital References:0.01Hz, Analog References: 0.06Hz at 60Hz
	Output Frequency Resolution	0.01Hz
	Overload Tolerance	Heavy Duty Mode (HD.) : 150% rated current for 60sec, 200% rated current for 2 sec. (Factory default) Normal Duty Mode (ND.) : 120% rated current for 60sec
	Frequency Setting Signal	0 to +10V , 4 to 20mA, -10V to +10V or pulse train input
	Acceleration / Deceleration Time	0.0~6000.0 sec (separately set acceleration and deceleration time )
	Voltage / Frequency Characteristics	15 fixed and one customized v/f pattern
	Braking Torque	Approximate 20%
	Main Control Functions	Auto Tuning, Zero Servo, Torque Control, Position Control, Droop, Soft-PWM, Over-Voltage Protection, Dynamic Braking, Speed Search, Frequency Traversing, Momentary Power Loss Restart, PID Control, Automatic Torque Compensation, Slip Compensation, RS-485 Communication, Close Loop Control with PG, Simple PLC Function <sup>*4</sup> , Two Analog Output, Safety input contact
Other Functions		Records of Power ON and Operation Time, Four Fault History Records and Latest Fault State Record, Energy-Saving Function, Phase Loss Protection, DC Braking, Dwell, S Curve Acceleration and Deceleration, Up / Down Operation, Modbus Communication Protocol, Output of Pulse Multiple, Display of Engineering Unit, SINK / SOURCE Selection
Protection Functions	Stall Prevention	Current level can be adjusted. (In acceleration or constant speed, it can be set separately. In deceleration, it can be set with or without stall protection)
	Over Current (OC) and Output Short-Circuit (SC) Protection	It stops when the current exceeds 200% of the inverter rated current.
	Inverter Overload Protection (OL2)	Inverter will be stopped when the output is higher than below conditions. Heavy Duty Mode (HD.) : 150% rated current for 60sec, 200% rated current for 2 sec. (Factory default), Carrier frequency is from 2kHz to 8kHz. Normal Duty Mode (ND.) : 120% rated current for 60sec, Carrier frequency is 2kHz.
	Motor Overload Protection (OL1)	Electrical overload protection curve
	Over Voltage Protection (OV)	If the main circuit DC voltage is over 410V (200V class) / 820V (400V class), the motor stops running.
	Under Voltage (UV)	If the main circuit DC voltage is under 190V (200V class) / 380V (400V class), the motor stops running.
	Momentary Power Loss Restart	Power loss exceeds 15ms You can set the function of momentary power loss restart to up to 2 sec
	Overheat Protection (OH)	Thermistor sensor on heatsink
	Ground Fault Protection (GF)	Protection by current detection circuit
	Charge Indicator	When main circuit DC voltage $\geq 50\text{V}$ , the CHARGE LED is on.
	Output Phase Loss Protection (OPL)	If the OPL function acts, the motor stops rotation automatically
Location	Indoor (Protected from corrosive gases and dust)	
Environment Specification	Ambient Temperature	-10 to +40°C without de-rating (IP20/NEMA1), -10 to +50°C (IP00), with de-rating, its maximum operation temperature is 60°C
	Storage Temperature	-20~+70°C
	Humidity	95%RH or less ( no condensation )
	Altitude and Vibration	Altitude of 1000 meters or lower ; 1.0G, in compliance with IEC 60068-2-6
Communication Function	Built-in RS-485 as standard (Modbus protocol with standard RJ45)	
Electromagnetic Interference (EMI)	In compliance with EN61800-3 standard, 400V 60HP or below can be built in.	
Electromagnetic Compatibility (EMS)	In compliance with EN61800-3 standard	
Certification	CE	In compliance with EN61800-3 (CE & RE) and EN61800-5-1 (LVD)
	UL	UL508C
Option Card	Open collector type(IM) , line driver type(IM) and Line driver type for PM motor	

### Notes:

- \*1. PM sensorless(PMSLV) control mode is under development.
- \*2. The maximum output frequency of each control modes is different, please read user manual for more details.
- \*3. Speed control accuracy will be influenced when the motor and installation condition are different.
- \*4. The A510 dedicated model is not built-in this function.