Variable Frequency Drive

TECO

N310 Series

ISO 14001 BSMI TÜV CERT ISO 9001 UL c UL CE RoHS COMPLIANCE

Product Features

- Wide power range from 0.5~215HP(0.4~160kW)
- Built-in advanced Flux Vector Control, speed control range1:100(0.5~50Hz)
- Ultra Low Noise Operation with Built-in SOFT-PWM
- Higher reliability and environment immunity with coated PCB.
- Built-in RS485 communication.
- Global communication options such as: Profibus DP, DeviceNetTM
- 5 digit 7 segment removable keypad with standard RJ45 interface
- Copy unit option, is available for parameter copy.
- PID Control Function is Built-in.

Definition of model

N310 – 2 001 – H – □

Series

Supply voltage
2:200V class
4:400V class

Horsepower

2P5:0.5 HP	015:15 HP
001:1 HP	020:20 HP
002:2 HP	030:30 HP
003:3 HP	050:50 HP
005:5 HP	060:60 HP
008:7.5 HP	075:75 HP
010:10 HP	

*Note:100~215HP are under development

Specification
H:Standard Type
S:Small Type

Power Supply
3:Three Phase
Blank:Common model for single/three phase

NF – 2 – 010

N310 series option filter

Input voltage
2:220V
4:440V

Input current

010:10A	050: 50A
020:20A	080: 80A
025:25A	120:120A

Application

Flat Knitting Machine

Socks Knitting Machine

Application for Textile Machine

- **High Environment Immunity**
  - 5.5Kw below, Heat sink outside designing for textile environment
  - Less trip at Low Voltage
  - Coated PCB for Higher Reliability
- **High Performance**
  - High braking ability without optional braking resistor
  - High torque at low speed
  - Fast response time
- **Economic**
  - Remote keypad with popular RJ-45 Cable

Gloves Knitting Machine

Comber Machine

CNC Grinding Machine

Application for Cutting Machine

- **High Performance**
  - 32 Bits CPU Control
  - 0~400Hz Output
  - Vector Control, high torque at low speed, output frequency smoothly
  - V/F mode & Vector mode switching
  - Remote keypad with popular RJ-45 Cable
  - AVR Function
- **High Environment Immunity**
  - 5.5Kw below, Heat sink outside designing for humid environment
  - Less trip at low voltage
  - Excellent Stall Prevention

Lathes, Automatic Machine

Carving Machine

Saw Machine

Product Specifications

Single / Three phase, 200-240V model

N310-□□□□-□□	20P5	2001	2002	2003
Horsepower (HP)	0.5	1	2	3
Max Applicable Motor Output (KW)	0.4	0.75	1.5	2.2
Rated Output Current (A)	3.1	4.5	7.5	10.5
Rated Capacity (KVA)	1.2	1.7	2.9	4.0
Max. Input Voltage	Single/Three Phase: 200~240V +10% -15%, 50/60Hz±5%			
Max. Output Voltage	Three Phase: 200~240V			
Input Current (A)	8.5/4.5	12/6.5	16/11	23.9/12.5
Net Weight (KG)	1.4	1.4	2.5	4.0
Allowable momentary power loss time (second)	1.0	1.0	2.0	2.0

Three phase, 380 - 480V model

N310-□□□□-□□	4001	4002	4003	4005	4008	4010	4015
Horsepower (HP)	1	2	3	5	7.5	10	15
Max Applicable Motor Output (KW)	0.75	1.5	2.2	3.7	5.5	7.5	11
Rated Output Current (A)	2.3	3.8	5.2	8.8	13.0	17.5	25
Rated Capacity (KVA)	1.7	2.9	4.0	6.7	9.9	13.3	19.1
Max. Input Voltage	Three phase:380~480V +10% -15%, 50/60Hz±5%						
Max. Output Voltage	Three Phase: 380~480V						
Input Current (A)	4.2	5.6	7.3	11.6	17	23	31
Net Weight (KG)	2.4	2.5	3.8	4.0	4.0	7.0	7.0
Allowable momentary power loss time (second)	1.0	1.0	2.0	2.0	2.0	2.0	2.0

N310-□□□□-□□	4020	4030	4040	4050	4060	4075
Horsepower (HP)	20	30	40	50	60	75
Max Applicable Motor Output (KW)	15	22	30	37	45	55
Rated Output Current (A)	32	48	64	80	96	128
Rated Capacity (KVA)	27.4	41	54	68	82	110
Max. Input Voltage	Three phase:380~480V +10% -15%, 50/60Hz±5%					
Max. Output Voltage	Three Phase: 380~480V					
Input Current (A)	38	56	75	92	112	142
Net Weight (KG)	12	13	30	30	46	46
Allowable momentary power loss time (second)	2.0	2.0	2.0	2.0	2.0	2.0

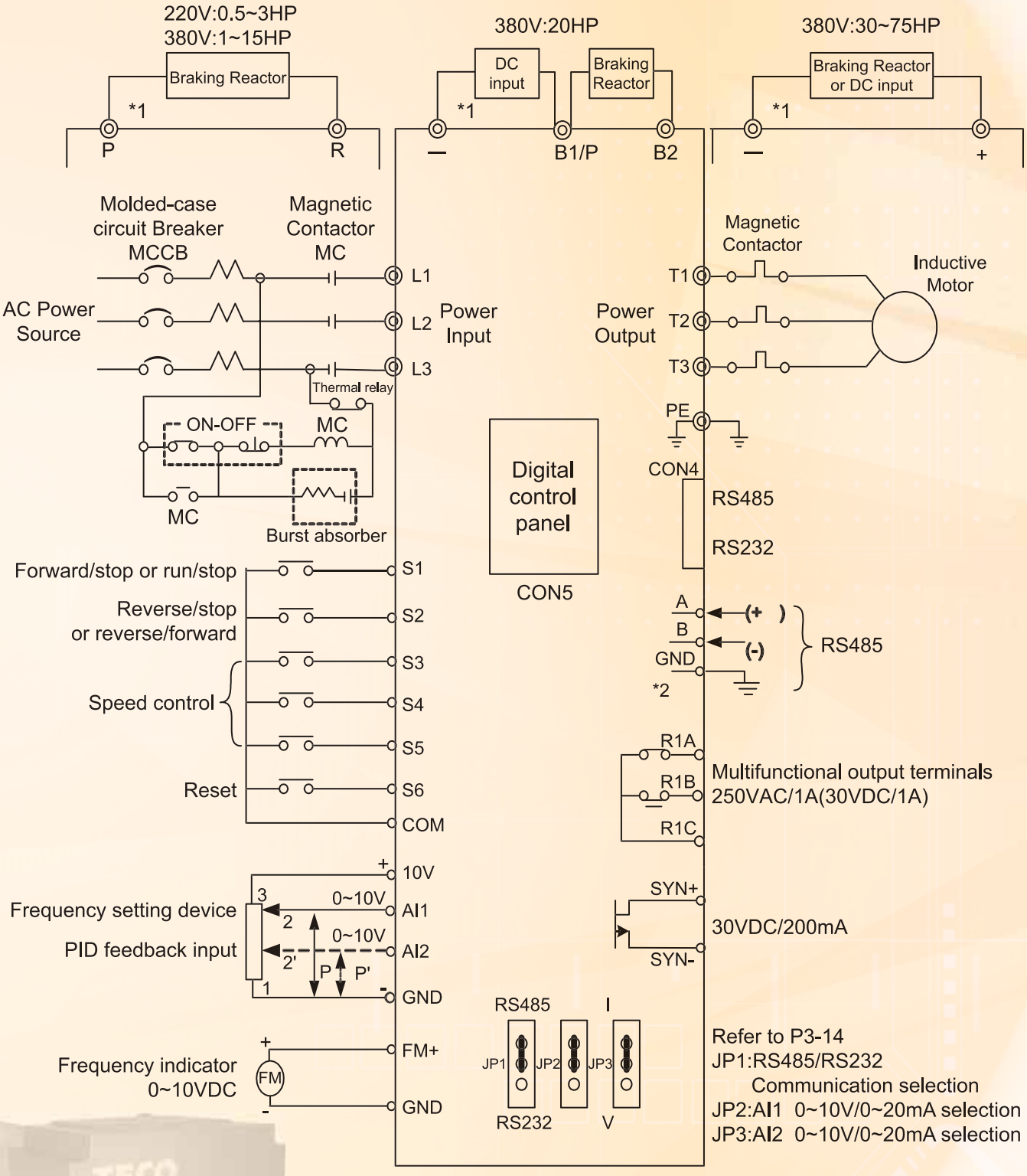
※ Note:100~215HP are under development

General Specifications

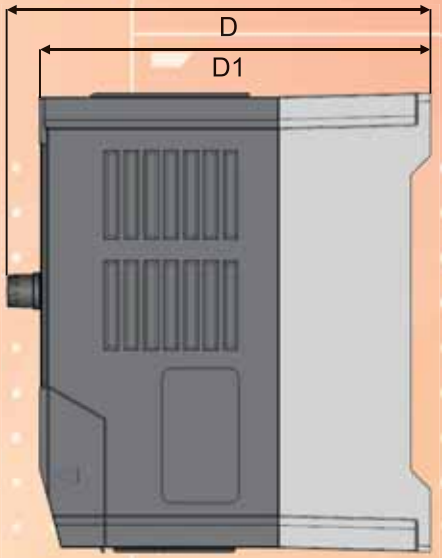
Item		N310 TYPE
Control Mode		V/F or Current Vector Control
Frequency Control	Range	0.01~400.00 Hz
	Start control torque	150%/1Hz (Vector)
	Speed control range	1:100 (Vector)
	Speed Control Precision	±0.5% (Vector)
	Setting resolution	Digital: 0.01Hz (Note*1), Analog: 0.06Hz/ 60Hz (10bits)
	Keypad setting	Set directly with▲▼keys or the VR on the keypad
	Display Function	Five digital LED and status indicator; display frequency/ line speed/ DC voltage/ Output voltage/ Current/ Rotation direction/ Inverter parameter/ Fault Log/ Program Version/ Heat sink temperature/PID feed back
	External signal setting	External potentiometer 0-10V/ 0-20mA Provides up/down controls, speed control or automatic procedure control with multifunctional contacts on the terminal block (TM2)
	Frequency Limit Function	Upper/lower frequency limits and three programmable skip frequencies
General Control	Carrier frequency	1 ~ 15 kHz
	V/F pattern	18 fixed patterns, 1 programable curve
	Acc/Dec control	Two-stage Acc/Dec time (0.1 - 3,600 seconds) and four-stage S curves (refer to descriptions on 10-07..)
	Multifunction analog output	5 functions (refer to description on 2-12)
	Multifunction input	23 functions (refer to description on 01-00~01-05)
	Multifunction output	14 functions (refer to description on 01-09~01-10)
	Other Functions	Momentary Power Loss Restart, Speed Search, Overload Detection,16 preset speeds. Acc/Dec Switch (2 Stages), S Curves, 3-wire Control, PID control, torque boost, Slip Compensation, Frequency Upper/ Lower Limit, Auto energy saving, Modbus slave and PC/PDA Link, Auto Restart, Encoder input.
Communication Control		Control by RS232 or RS485 One to one or one to many (RS485 ONLY) control. BAUD RATE/STOP BIT/PARITY/bit can be set
Braking Torque		About 20%, the model below 20HP with built-in braking transistor and the specified external braking resistors can provide 100%
Operation temperature		14-120°F (-10 ~ 50°C) (Note*2)
Storage temperature		4-140°F (-20 ~ 60°C)
Humidity		0-95% Relative Humidity (Non-condense)
Vibration		1G (9.8m/s^2)
Enclosure		IP20
Protective Functions	Overload protection	The relays to protect the motor (the curve can be set) and the inverter (150 % / 1 min)
	Over Voltage	200V class: DC Voltage＞410V 400Vclass: DC Voltage＞820V
	Under Voltage	200V class: DC Voltage＜190V 400Vclass: DC Voltage＜380V
	Momentary Power Loss Restart	Restart can be initiated with spin start after momentary power loss in Max 2 sec.
	Stall Prevention	Stall prevention for Acceleration/ Deceleration/ Operation.
	Short-circuit output terminal	Electronic Circuit Protection
	Grounding Fault	Electronic Circuit Protection
	Other Function	Protection for overheating of heat sink, over torque detection, error contact control, reverse prohibit, prohibit for direct start after power up and error recovery, parameter lock up.

※ Note 1: Frequency control resolution up to 0.01 Hz.
※ Note 2: 14-120°F (-10 ~ 50°C) without dustproof cover, 14-104°F (-10 ~ 40°C) with dustproof cover.

Wiring diagram



Dimension



Unit:mm(inch)

Model	W	H	D	W1	H1	D1	Cooling	
							Natural	Fan
N310-20P5-H	107(4.21)	162(6.37)	150(5.9)	96(3.78)	150(5.9)	138.5(5.45)	V	
N310-2001-H	107(4.21)	162(6.37)	150(5.9)	96(3.78)	150(5.9)	138.5(5.45)	V	
N310-2002-H	149(5.86)	184(7.24)	164.3(6.46)	138(5.43)	174(6.85)	153(6.02)	V	
N310-2003-S	149(5.86)	184(7.24)	164.3(6.46)	138(5.43)	174(6.85)	153(6.02)		V
N310-4001-H	149(5.86)	184(7.24)	164.3(6.46)	138(5.43)	174(6.85)	153(6.02)	V	
N310-4002-H	149(5.86)	184(7.24)	164.3(6.46)	138(5.43)	174(6.85)	153(6.02)	V	
N310-4003-H	149(5.86)	184(7.24)	164.3(6.46)	138(5.43)	174(6.85)	153(6.02)	V	
N310-4005-S	149(5.86)	184(7.24)	164.3(6.46)	138(5.43)	174(6.85)	153(6.02)	V	
N310-2003-H	185(7.28)	215(8.46)	173.8(6.84)	174(6.85)	205(8.07)	162.2(6.38)		V
N310-4005-H	185(7.28)	215(8.46)	173.8(6.84)	174(6.85)	205(8.07)	162.2(6.38)		V
N310-4008-H	185(7.28)	215(8.46)	173.8(6.84)	174(6.85)	205(8.07)	162.2(6.38)		V
N310-4010-S	185(7.28)	215(8.46)	173.8(6.84)	174(6.85)	205(8.07)	162.2(6.38)		V
N310-4010-H	200(7.88)	300(11.81)	199(7.83)	186(7.32)	286(11.26)	187(7.36)		V
N310-4015-H	200(7.88)	300(11.81)	199(7.83)	186(7.32)	286(11.26)	187(7.36)		V
N310-4020-H	265(10.43)	360(14.17)	249.6(9.82)	245(9.64)	340(13.38)	237.5(9.35)		V
N310-4030-H	265(10.43)	360(14.17)	249.6(9.82)	245(9.64)	340(13.38)	237.5(9.35)		V
N310-4040-H	269.2(10.59)	553.1(21.77)	303.8(11.96)	Top:210(8.26) Botton:180(7.08)	530(20.86)	291.9(11.49)		V
N310-4050-H	269.2(10.59)	553.1(21.77)	303.8(11.96)	Top:210(8.26) Botton:180(7.08)	530(20.86)	291.9(11.49)		V
N310-4060-H	308.2(12.13)	652.6(25.69)	308.8(12.15)	Top:250(9.84) Botton:220(8.66)	630(24.8)	296.9(11.68)		V
N310-4075-H	308.2(12.13)	652.6(25.69)	308.8(12.15)	Top:250(9.84) Botton:220(8.66)	630(24.8)	296.9(11.68)		V

Braking unit and braking resistor

Single / Three phase, 200~240V / 380~480V model

Inverter Model	Braking Unit		Suitable Motor Capacity (HP)	Suitable Motor Capacity (KW)	Braking resistor Specification			Braking resistor Duty Cycle (%)	Braking torque (%)
	Model	Number used			(W)	(Ω)	Number used		
20P5	-	-	0.5	0.375	60	200	-	8	218
2001	-	-	1	0.75	60	200	-	8	119
2002	-	-	2	1.5	150	100	-	10	119
2003	-	-	3	2.2	200	70	-	9	116
4001	-	-	1	0.75	60	750	-	8	125
4002	-	-	2	1.5	150	400	-	10	119
4003	-	-	3	2.2	200	250	-	8	128
4005	-	-	5	3.7	300	150	-	8	127
4008	-	-	7.5	5.5	500	100	-	8	125
4010	-	-	10	7.5	600	80	-	8	119
4015	-	-	15	11	1200	50	-	8	125
4020	-	-	20	15	1600	50	-	10	100
4030	TBU-430	1	30	22	4800	27.2	1	10	120
4040	TBU-430	1	40	30	6000	20	1	10	120
4050	TBU-430	2	50	37	4800	16	2	10	120
4060	TBU-430	2	60	45	9600	13.6	2	10	120
4075	TBU-430	2	75	55	6000	20	2	10	120

TECO INVERTER

- EV series：0.25～1HP(110V),0.25～3HP(220V),1～3HP(440V)
- CV series：0.5～40HP(220V),1～75HP(440V)
- MA series：1～40HP(220V),1～75HP(440V)
- GS series：25～100HP(220V),25～400HP(440V)

EV

CV

MA

GS

TECO PLC / PLR

- TP03 series：14/20/26/30/36/40/60
  I/0 MAX256points
- SG2 series：10/12/20points

TP03

SG2

TECO SERVO

- JSDA series：100W～15KW(220V)
- JSDE series：50W～2KW(220V)

JSDA

JSDE

Distributor

TECO Electric & Machinery Co., Ltd.
10F, No.3-1, Yuan Cyu St., Nan-Kang District, Taipei 115, Taiwan
TEL:886-2-66159111Ext.1721 FAX:886-2-66151033
E-mail:tonyyeh@teco.com.tw http://www.teco.com.tw

GJ-47-00 2009-08-20