1 - 150HP, 230V, 460V OR 575V, THREE PHASE, IP20

TD350 SERIES

HIGH PERFORMANCE
MULTI-FUNCTION
CONTROL DRIVES

Product Overview

The Topdrive350 series is a high performance and high precision VFD compatible with asynchronous and permanent magnet synchronous motors. The TD350 series provides wide voltage ranges and several different methods (MODBUS, PROFIBUS-DP, CANopen, and EtherNet/IP) to communicate with the VFD. The TD350 relies upon a 32-bit DSP and utilizes an advanced vector control algorithm to provide a high performance and high precision motor control.

POWER RANGE

3AC 200-240V: **220V**	**1 - 75HP**
3AC 380-480V: **460V**	**2 - 150HP**
3AC 525-600V: **575V**	**1 - 150HP**
50/60Hz	Allowed range: 47 ~ 63Hz

Standard Features

- V/F (SVPWM), Sensorless Vector (SVC), Vector Control (VC) Closed Loop
- Asynchronous AC induction motors and PM motor control
- High precision speed, position and torque control and fast speed response
- Advanced PID functions
- High performance removable LCD graphic keypad, max length 200m.
- Overload capability 200% 1s, 180% 10s, 150% 60s
- Wall mount or panel mounting flange kits available (fins out)
- Embedded braking units from 1.5 - 30kW inverters, braking resistors optional
- C3 input filters standard for better EMC performance, C2 input filters optional
- Multiple braking modes
- Continuous running in instant power loss

Operating Parameters

- IP20 standard, NEMA 1/IP21 kits available
- -10~40°C, de-rate 1% for every additional 1°C to 50°C
- Installation up to 1000 MASL (3300 ft.)

Communication Protocols

- Modbus RTU/RS485 built in (standard)
- Profibus-DP (optional card)
- CANopen (optional card)
- Profinet (optional card)
- EtherNet/IP (optional card)

Technical Specifications

FUNCTIONS		SPECIFICATIONS
Power Input	Input voltage (V)	3PH 200V–240V Rated voltage: 220V 0.75~55kW (1~75HP) 3PH 380V–480V Rated voltage: 460V 1.5~110kW (2~150HP) 3PH 520V–600V Rated voltage: 575V 0.75~110kW (1~150HP) Allowable voltage fluctuation: -15%–+10%
	Input frequency (Hz)	50Hz or 60Hz, allowable range: 47–63Hz
Power Output	Output voltage (V)	0–input voltage
	Output frequency (Hz)	0-400Hz
Technical Control Features	Control Mode	SVPWM control, SVC, VC (Closed Loop)
	Motor type	Asynchronous motor, permanent-magnet synchronous motor
	Speed ratio	Asynchronous motor 1:200 (SVC); Synchronous motor 1:20 (SVC), 1:1000(VC)
	Speed control accuracy	±0.2% (SVC), ±0.02% (VC)
	Speed fluctuation	± 0.3% (SVC)
	Torque response	<20ms (SVC), <10ms (VC)
	Torque control accuracy	10% (SVC), 5% (VC)
	Starting torque	Asynchronous motor: 0.25Hz/150% (SVC) Synchronous motor: 2.5 Hz/150% (SVC) 0Hz/200% (VC)
	Overload capability	G type: 150%: 60s 180%: 10s 200%: 1s P type: 120%: 60s 150%: 10s 180%: 1s
Running Control Features	Frequency Setting	Digital, analog, pulse frequency, multi-step speed running, simple PLC, PID, Modbus communication, PROFIBUS communication, etc.
	Auto-adjustment of the voltage	Keeps the output voltage constant when grid voltage changes
	Fault protection	Provides over 30 kinds of fault protection functions: overcurrent, overvoltage, undervoltage, over-temperature, phase loss and overload, etc.
	Restart after rotating speed tracking	Impact-free starting of the motor in powerloss. Available for power ratings ≥4kW
Peripheral Interface	Analog input	2 inputs, AI1: 0~10V/0~20mA; AI2: -10~10V
	Analog output	1 output, AO1: 0–10V/0–20mA
	Digital input	4 regular inputs; max. frequency: 1kHz; internal impedance: 3.3k 2 high-speed inputs; max. frequency: 50kHz; supports quadrature encoder input
	Digital output	1 high-speed pulse output; max. frequency: 50kHz 1 Y terminal open collector output
	Relay output	2 programmable relay outputs. Contact capacity: 3A/AC250V, 1A/DC30V
	Safety Function	STO (Safe Torque OFF), SIL2
	Extension Inferface	Three extension inferfaces: SLOT1, SLOT2, SLOT3 Expandable PG card, programmable extension card, comm. card, I/O card, Master/Slave card, etc.
Others	Mountable method	Wall and flange mountable
	Temperature of the running environment	-10–50°C (Derating is required if the ambient temperature exceeds 40°C)
	Protective degree	IP20 standard, NEMA 1/IP21 kits available
	Cooling	Air-cooling
	Free Software	Topdrive Workshop (available at www.techtopcanada.com)
	Braking unit	Built-in for VFDs of 220V (≤15kW) and 460V (≤30kW); Optional for VFDs of 220V (18.5–55kW), 460V (≥37kW), and 575V
	Braking resistor	Optional
	EMC filter	The VFDs of 220V and 460V are configured with built-in C3 filters, meeting the requirements of IEC61800-3 C3.

Model Designation

TD350 - 022G - 4
(1) (2) (3)

FUNCTION	NO.	DESCRIPTION	DETAILED CONTENT
Abbreviation	1	Product Abbreviation	**TD350:** Topdrive350 series
Power Range	2	Power Range	**022G: 22kW, G:** Constant torque
Voltage Degree	3	Voltage Degree	**2:** AC 3PH 200~240V Rated Voltage: 220V **4:** AC 3PH 380~480V Rated Voltage: 460V **6:** AC 3PH 520~600V Rated Voltage: 575V

Puchasing Data

HEAVY DUTY (HD) CT 150% OL 1MIN		NORMAL DUTY (ND) VT 120% OL 1MIN					TD350 IP20 VFD		NEMA 1/IP21 KIT	
HP	OUTPUT CURRENT (A)	HP	OUTPUT CURRENT (A)	FRAME SIZE	WEIGHT (LB)	DIMENSIONS (MM) WXHXD	MODEL	LIST PRICE	MODEL	LIST PRICE
AC 3PH 200~240V Rated Voltage: 220V										
1	4.5	--	--	1	4.4	126*186*185	**TD350-0R7G-2**	$ 720	**TD350N1KIT-1**	$ 35
2	7	--	--	2	7.7	146*256*192	**TD350-1R5G-2**	$ 870	**TD350N1KIT-2**	$ 42
3	10	--	--	2	7.7	146*256*192	**TD350-2R2G-2**	$ 967	**TD350N1KIT-2**	$ 42
5	16	--	--	3	13.2	170*320*219	**TD350-004G-2**	$ 1,101	**TD350N1KIT-3**	$ 49
7.5	20	--	--	3	13.2	170*320*219	**TD350-5R5G-2**	$ 1,310	**TD350N1KIT-3**	$ 49
10	30	--	--	4	17.2	230*330*217	**TD350-7R5G-2**	$ 1,670	**TD350N1KIT-4**	$ 56
15	42	--	--	5	20.9	255*400*242	**TD350-011G-2**	$ 2,805	**TD350N1KIT-5**	$ 70
20	55	--	--	5	20.9	255*400*242	**TD350-015G-2**	$ 2,927	**TD350N1KIT-5**	$ 70
25	70	--	--	6	66.1	270*555*325	**TD350-018G-2**	$ 3,614	**TD350N1KIT-6**	$ 147
30	80	--	--	6	66.1	270*555*325	**TD350-022G-2**	$ 4,185	**TD350N1KIT-6**	$ 147
40	110	--	--	6	66.1	270*555*325	**TD350-030G-2**	$ 4,784	**TD350N1KIT-6**	$ 147
50	130	--	--	7	102.5	325*680*365	**TD350-037G-2**	$ 5,960	**TD350N1KIT-7**	$ 147
60	160	--	--	7	102.5	325*680*365	**TD350-045G-2**	$ 7,362	**TD350N1KIT-7**	$ 147
75	200	--	--	7	102.5	325*680*365	**TD350-055G-2**	$ 8,259	**TD350N1KIT-7**	$ 147
AC 3PH 380~480V Rated Voltage: 460V										
2	3.7	--	--	1	4.4	126*186*185	**TD350-1R5G-4**	$ 763	**TD350N1KIT-1**	$ 35
3	5	--	--	1	4.4	126*186*185	**TD350-2R2G-4**	$ 827	**TD350N1KIT-1**	$ 35
5	9.5	7.5	14	2	7.7	146*256*192	**TD350-004G-4**	$ 967	**TD350N1KIT-2**	$ 42
7.5	14	10	18.5	2	7.7	146*256*192	**TD350-5R5G-4**	$ 1,230	**TD350N1KIT-2**	$ 42
10	18.5	15	25	3	13.2	170*320*219	**TD350-7R5G-4**	$ 1,632	**TD350N1KIT-3**	$ 49
15	25	20	32	3	13.2	170*320*219	**TD350-011G-4**	$ 2,051	**TD350N1KIT-3**	$ 49
20	32	25	38	4	17.2	230*330*217	**TD350-015G-4**	$ 2,540	**TD350N1KIT-4**	$ 56
25	38	30	45	4	17.2	230*330*217	**TD350-018G-4**	$ 3,118	**TD350N1KIT-4**	$ 56
30	45	40	60	5	20.9	255*400*242	**TD350-022G-4**	$ 3,620	**TD350N1KIT-5**	$ 70
40	60	50	75	5	20.9	255*400*242	**TD350-030G-4**	$ 4,547	**TD350N1KIT-5**	$ 70
50	75	60	92	6	66.1	270*555*325	**TD350-037G-4**	$ 5,264	**TD350N1KIT-6**	$ 147
60	92	75	115	6	66.1	270*555*325	**TD350-045G-4**	$ 6,553	**TD350N1KIT-6**	$ 147
75	115	--	--	6	66.1	270*555*325	**TD350-055G-4**	$ 7,595	**TD350N1KIT-6**	$ 147
100	150	125	180	7	102.5	325*680*365	**TD350-075G-4**	$ 9,963	**TD350N1KIT-7**	$ 147
125	180	150	215	7	102.5	325*680*365	**TD350-090G-4**	$ 12,009	**TD350N1KIT-7**	$ 147
150	215	--	--	7	102.5	325*680*365	**TD350-110G-4**	$ 13,755	**TD350N1KIT-7**	$ 147
AC 3PH 520~660V Rated Voltage: 575V										
1	2.1	--	--	2	6.6	146*256*192	**TD350-0R7G-6**	$1,100	**TD350N1KIT-2**	$42
2	3.2	--	--	2	6.6	146*256*192	**TD350-1R5G-6**	$1,215	**TD350N1KIT-2**	$42
3	4.5	--	--	2	6.6	146*256*192	**TD350-2R2G-6**	$1,233	**TD350N1KIT-2**	$42
5	6.5	--	--	3	12.7	170*320*219	**TD350-004G-6**	$1,598	**TD350N1KIT-3**	$49
7.5	9	--	--	3	12.7	170*320*219	**TD350-5R5G-6**	$1,729	**TD350N1KIT-3**	$49
10	12	--	--	3	12.7	170*320*219	**TD350-7R5G-6**	$1,965	**TD350N1KIT-3**	$49
15	16	--	--	4	15.8	230*330*217	**TD350-011G-6**	$2,440	**TD350N1KIT-4**	$56
20	21	--	--	4	15.8	230*330*217	**TD350-015G-6**	$2,785	**TD350N1KIT-4**	$56
25	27	--	--	4	15.8	230*330*217	**TD350-018G-6-01**	$3,680	**TD350N1KIT-4**	$56
25	27	--	--	6	66.1	270*555*325	**TD350-018G-6**	$ 5,110	**TD350N1KIT-6**	$ 147
30	35	--	--	6	66.1	270*555*325	**TD350-022G-6**	$ 5,145	**TD350N1KIT-6**	$ 147
40	45	--	--	6	66.1	270*555*325	**TD350-030G-6**	$ 5,893	**TD350N1KIT-6**	$ 147
50	52	--	--	6	66.1	270*555*325	**TD350-037G-6**	$ 7,589	**TD350N1KIT-6**	$ 147
60	62	--	--	7	102.5	270*555*325	**TD350-045G-6**	$ 8,794	**TD350N1KIT-7**	$ 147
75	86	--	--	7	102.5	325*680*365	**TD350-055G-6**	$ 10,604	**TD350N1KIT-7**	$ 147
100	98	--	--	7	102.5	325*680*365	**TD350-075G-6**	$ 14,439	**TD350N1KIT-7**	$ 147
125	120	--	--	7	102.5	325*680*365	**TD350-090G-6**	$ 16,025	**TD350N1KIT-7**	$ 147
150	150	--	--	7	102.5	325*680*365	**TD350-110G-6**	$ 17,858	**TD350N1KIT-7**	$ 147

Dimensional Drawings IP20

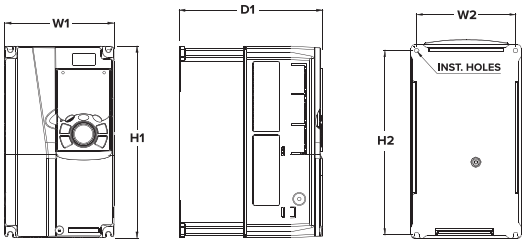


Figure 1 - Wall Mount Frames 1 - 5

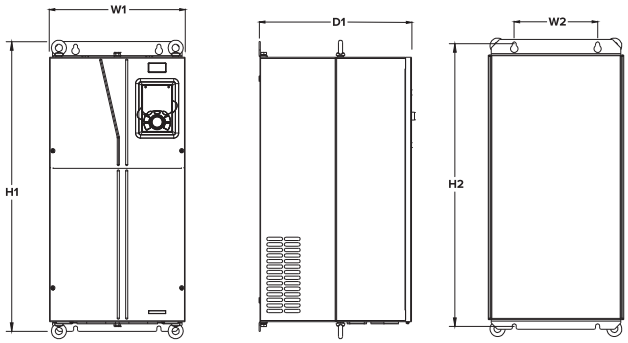


Figure 2 - Wall Mount Frames 6 - 7

FRAME	W1	W2	H1	H2	D1	INSTALLATION HOLES
1	126	115	186	175	185	4-Ø5
2	146	131	256	243.5	192	4-Ø5
3	170	151	320	303.5	219	4-Ø6
4	230	210	330	311	217	4-Ø6
5	255	237	400	384	242	4-Ø7
6	270	130	555	540	325	4-Ø7
7	325	200	680	661	365	4-Ø9.5

Dimensions are in **mm**

Dimensional Drawings NEMA 1/IP21 Kit

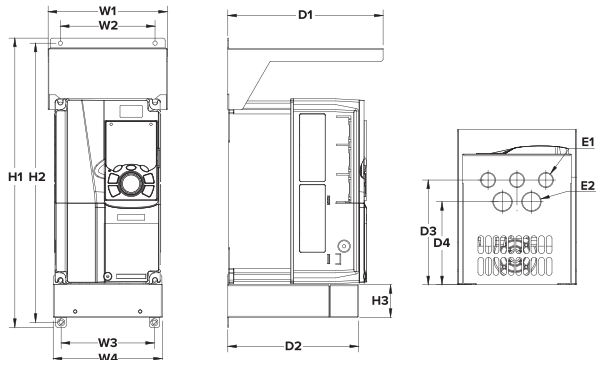


Figure 1 - Wall Mount Frames 1 - 5

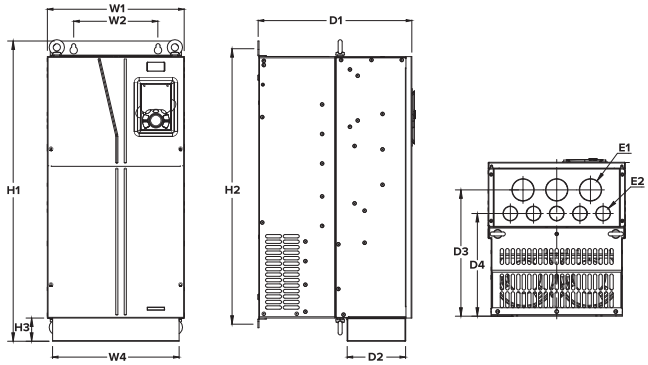
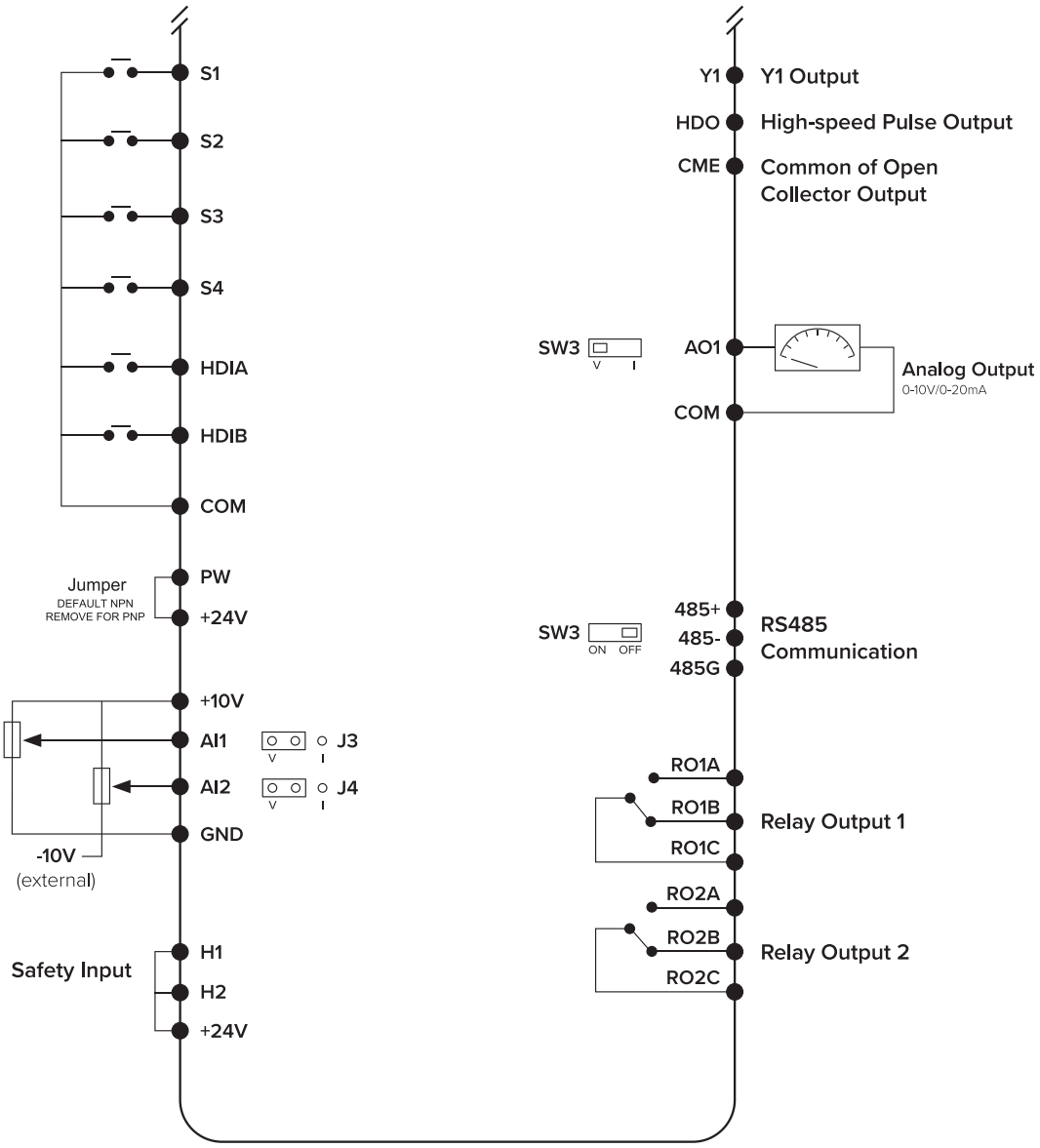


Figure 2 - Wall Mount Frames 6 - 7

FRAME	W1	W2	W3	W4	H1	H2	H3	D1	D2	D3	D4	E1	E2
1	146	115	110	130	332	318	45	200	176	133	108	3-Ø16	2-Ø21
2	165	131	129	151	400.5	386.5	45	215	181	145	115	3-Ø21	2-Ø27
3	185	151	145	171	520.5	506	45	245	208.9	177	147	4-Ø21	3-Ø27
4	249	210	206	231	537.5	518.5	45	245	204	170	132	4-Ø27	3-Ø35
5	275	236	232	257	605.5	589.5	45	280	230	192	152	4-Ø35	3-Ø41
6	270	130	--	240	582.5	540	45	325	119.6	277.8	225.8	4-Ø41	3-Ø35
7	325	200	--	300	712	661	55	365	139	318.5	262.5	5-Ø35	3-Ø53

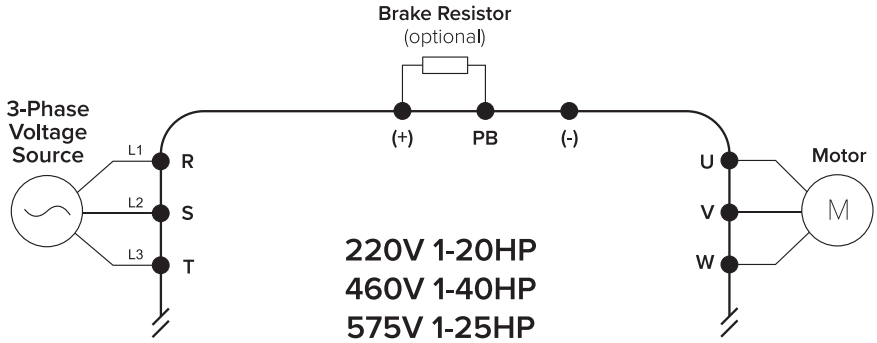
Dimensions are in **mm**

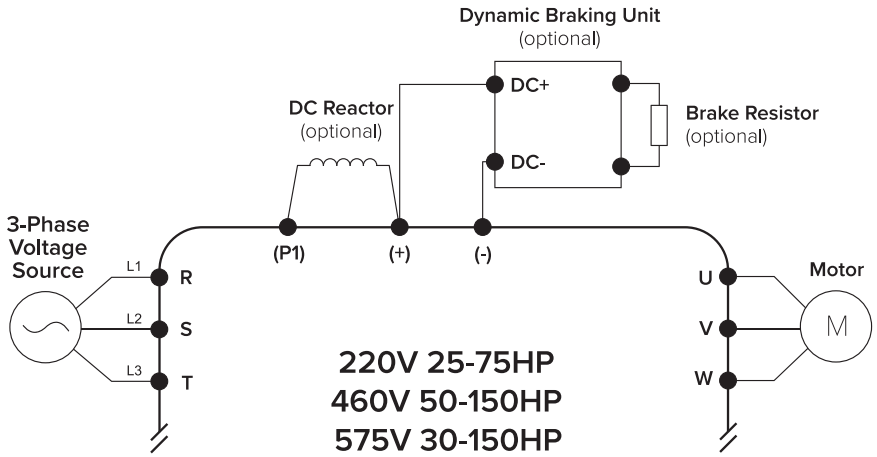
Control Circuit Wiring Diagram



I/O Terminals

INPUT/OUTPUT	TYPE	QUANTITY	DESCRIPTION
Input	Digital input	4 (S1-S4)	1kHz, NPN and PNP
	High speed pulse input	2 (HDIA, HDIB)	50kHz, NPN and PNP
	Analog input	2 (AI1-AI2)	0~20mA, -10V~+10V
Output	ON-OFF output	1 (Y1)	Maximum output frequency: 1kHz
	High speed pulse output	1 (HDO)	Maximum output frequency: 50kHz
	Analog output	1 (AO1)	0~10V, 0~20mA
	Relay output	2 (RO1-RO2)	3A/250VAC, 1A/30VDC, NO+NC





Power Terminals

POWER TERMINALS	220V ≤20HP 460V ≤40HP	220V≥25HP 460V ≥50HP 575V≥25HP	FUNCTION
R, S, T (L1, L2, L3)	Power input of the main circuit	Power input of the main circuit	Three phase AC input terminals which are generally connected with the power supply.
U, V, W	Power output of the VFD	Power output of the VFD	Three phase AC output terminals which are generally connected to the motor.
P1	N/A	DC Reactor Terminal 1	• P1 and (+) are connected with the terminals of DC reactor. • (+) and (–) are connected with the terminals of brake unit. • PB and (+) are connected with the terminals of brake resistor.
(+)	Brake Resistor Terminal 1	DC reactor terminal 2, Brake unit terminal 1	
(–)	N/A	Brake unit terminal 2	
PB	Brake Resistor Terminal 2	N/A	
PE	Protective grounding terminals, every machine is provided 2 PE terminals as the standard configuration. These terminals should be grounded with proper techniques.		Protective grounding terminal.