MagneTek

GPD 503
Technical Manual

GPD 503 SIMPLIFIED START-UP PROCEDURE

This procedure will quickly get you up and running by Digital Operator keypad or user supplied remote operator control. It assumes that the GPD 503 and motor are correctly wired (see pages 1-8 thru 1-15), and start-up is to be performed without any changes to factory set constants. Detailed information on the many other features of this drive will be found in later sections of this manual.

INSTALLATION

1. Be certain your input voltage source, motor, and drive name plates are all marked either 230V, 460V, or 575V. Other voltages can be used, but require additional programming, see Section 2.
2. Mount drive on a vertical surface with adequate space for air circulation.
3. Remove front cover, fit conduit to bottom plate, and connect power and ground wires as shown.

CAUTION

Be certain you connect input power to terminals L1, L2, and L3 only, or serious damage will result. Connect motor to terminals T1, T2, and T3 only.

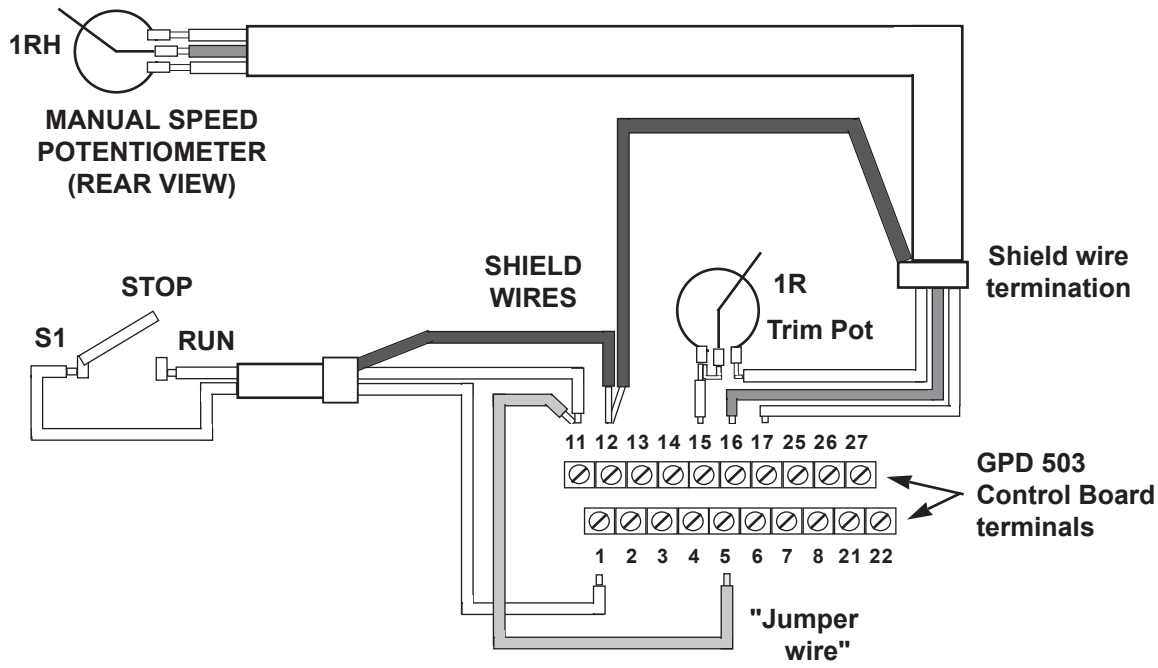
KEYPAD OPERATION

1. **Replace cover and apply input power** - keypad display shows "***F00.00*** "; **DRIVE**, **FWD**, and **STOP** lamps are on. Press and hold **JOG** key, noting direction of motor rotation. If it is incorrect, remove power, wait for "CHARGE" light to go out, then switch wires between terminals T1, and T2. Replace cover, and apply input power.
2. **Run, Stop, and Frequency (Speed) -** Here, the terms frequency and speed are used interchangeably. A value of 60.00 (Hz) in the "***F00.00*** " display equals full speed (frequency) for common motors. Press **RUN** key; **RUN** lamp lights, **STOP** lamp flashes (to indicate drive is running at zero speed). Note flashing "**0**" in "***F00.00*** " display. Press "up arrow" key one time to increase display frequency value to **10.00.** Press **DATA/ENTER** key to enter speed data, noting that motor shaft begins to turn. Repeat this procedure using "up arrow", "down arrow" and "right arrow" (**RESET**) keys to introduce various speeds, noting that the drive responds to each new value only after the **DATA/ENTER** key is pressed. The "***F00.00*** " display indicates the frequency command the drive is looking at, whether it is running or not.
3. **Reversing** - can be selected while stopped, or while running. With the drive stopped, press **FWD/REV** key and note the **REV** lamp lights and **FWD** lamp goes out. If drive is running when this key is pressed, the drive will decelerate the motor to 0 Hz, then accelerate the motor to the same speed in the opposite direction. You can try this while running, provided your machine can be operated in reverse direction without damage.
4. **Displays** - With drive stopped, each time the **DISPL** (display) key is pressed, a different function appears. The first function on power up is the "***F00.00*** " display, discussed above. Press **DISPL** and "***0.00 ***" appears; this is a display of output frequency (speed) and is recognized as the only display without alpha characters. The next is "***0.0A ***"; the "**A**" indicates this display is output amps. For other display information, refer to Section 3.
5. **Faults** - If an unacceptable operating condition such as code **Ou** (over voltage), **Uu** (under voltage), **OC** (over current), etc. occurs, the drive will trip, and the motor will coast to a stop. The appropriate fault code will be displayed. Examine fault code; consult Sections 6 & 7 for fault correction procedure.

INSTALLATION OF EXTERNAL RUN/STOP SWITCH AND SPEED POTENTIOMETERS

IMPORTANT: Complete the INSTALLATION and KEYPAD OPERATION instructions before attempting external control.

1. Disconnect power, remove cover, and wait for “CHARGE” light to go out.
2. Refer to the diagram below and connect a switch to terminals 1 and 11 using two conductor shielded wire. This circuit is 24Vdc, very low current; use a quality rotary or toggle switch (all wire should be 14-18AWG). Connect the shield to terminal 12 on the drive end only.
3. Install a single conductor “jumper” wire between drive terminals 5 and 11.
4. Connect a manual speed potentiometer rated 2000-3000 ohms, 1 watt minimum, using three conductor shielded wire, with shield connected at terminal 12. Connect wires to the potentiometer as shown, viewing potentiometer from the back. Trace wire shown closest to the top in diagram (right side of potentiometer) and connect to terminal 17. Trace center wire of potentiometer through and connect to terminal 16. The remaining wire will be connected to the trim pot in step 5.
5. Connect a trim potentiometer rated 2000-3000 ohms, 1 watt minimum, as close to the drive terminals as possible. Viewing the potentiometer from the back, connect a single conductor wire from the left terminal to terminal 15 of the drive. Connect a short jumper wire between the center and left terminals. Connect remaining wire from manual speed pot as shown.



IMPORTANT: Programming is required to set up the drive for operation from external terminals.

6. Replace cover, make sure remote switch S1 is in "Stop" position, then apply power. Note that the **DRIVE** lamp is on. Press **DRIVE/PROGRAM** key, noting the **DRIVE** lamp goes out, indicating drive is in the "Program mode". The display will show "***Sn-01 ",*** which is a constant (address). Press the "up arrow" (**RESET**) key three times to change constant to "***Sn-04*** ". Press the **DATA/ENTER** key; the display will show "***0011*** ", and the left **0** will be flashing. Using the same procedure used in setting the speed in "KEYPAD OPERATION", move to the first **1** and change it to **0**; then move to the remaining **1** and also change it to **0**. The display should now read "***0000*** ". Press the **DATA/ENTER** key to change the contents of constant Sn-04 to this new value. Display will momentarily show "***End*** ".

7. Press **DRIVE/PROGRAM** key, noting **DRIVE** lamp turns on; you have returned to the "Drive mode".

8. Calibrate manual speed pot for maximum speed at maximum rotation. With switch S1 in the "Stop" position, press **DISPL** key repeatedly, stopping at the "***FXX.XX "*** display. The display will be indicating the combined setting of the trim, and manual speed pots. Turn manual speed pot (as viewed from the front) to the right (maximum) setting. Turn trim pot slowly until "***F59.00*** " is displayed, then advance just enough to display "***F60.00*** ".

9. Press **DISPL** key to move to output frequency display, turn switch S1 to "Run", and adjust motor speed with manual speed pot.

QUICK REFERENCE FOR GPD 503 CONSTANTS (FACTORY SET)

CONSTANT NUMBER	FACTORY SETTING	USER SETTING
An-01	0.00	
An-02	0.00	
An-03	0.00	
An-04	0.00	
An-05	0.00	
An-06	0.00	
An-07	0.00	
An-08	0.00	
An-09	6.00	
bn-01	10.0	
bn-02	10.0	
bn-03	10.0	
bn-04	10.0	
bn-05	100.0	
bn-06	0	
bn-07	1.0	
bn-08	0.0	
bn-09	80	
bn-10	1	
bn-11	1.00	
bn-12	0.50	
Sn-01	*(1)*	
Sn-02	01	
Sn-03	0000	
Sn-04	0011	
Sn-05	0000	
Sn-06	0000	
Sn-07	0000	
Sn-08	0100	
Sn-09	0000	
Sn-10	0000	
Sn-11	0000	
Sn-12	0100	
Sn-13	0100	
Sn-14	0000	
Sn-15	03	
Sn-16	04	
Sn-17	06	
Sn-18	08	
Sn-19	00	
Sn-20	00	
Sn-21	01	

CONSTANT NUMBER	FACTORY SETTING	USER SETTING
Sn-22	02	
Sn-23	00	
Sn-24	00	
Sn-25	0000	
Sn-26	0000	
Sn-27	0010	
Sn-28	0100	
Cn-01	230.0 (230V) or 460.0 (460V) or 575.0 (575V)	
Cn-02	*(2)*	
Cn-03	*(2)*	
Cn-04	*(2)*	
Cn-05	*(2)*	
Cn-06	*(2)*	
Cn-07	*(2)*	
Cn-08	*(2)*	
Cn-09	*(1)*	
Cn-10	1.5 *(2)*	
Cn-11	50	
Cn-12	0.0	
Cn-13	0.0	
Cn-14	100	
Cn-15	0	
Cn-16	0.0	
Cn-17	0.0	
Cn-18	0.0	
Cn-19	1.0	
Cn-20	0	
Cn-21	0.0	
Cn-22	2.0	
Cn-23	*(4)*	
Cn-24	*(4)*	
Cn-25	00	
Cn-26	160	
Cn-27	0.1	
Cn-28	170	

CONSTANT NUMBER	FACTORY SETTING	USER SETTING
Cn-29	50	
Cn-30	160	
Cn-31	*(4)*	
Cn-32	*(4)*	
Cn-33	*(4)*	
Cn-34	30 *(3)*	
Cn-35	2.0	
Cn-36	0	
Cn-37	*(4)*	
Cn-38	150	
Cn-39	2.0 *(4)*	
Cn-40	*(4)*	
Cn-41	100	
Cn-42	0.3	
Un-01	N/A	N/A
Un-02	N/A	N/A
Un-03	N/A	N/A
Un-04	N/A	N/A
Un-05	N/A	N/A
Un-06	N/A	N/A
Un-07	N/A	N/A
Un-08	N/A	N/A
Un-09	N/A	N/A
Un-10	N/A	N/A

(1) Setting depends on GPD 503 rating. See Table A3-1.
(2) Initial value is related to V/f curve selected by Sn-02 setting.
(3) Motor rated current (Cn-09) is set at 100% level. Setting range: 10 to 200% of GPD 503 rated capacity.
(4) Initial value differs depending on GPD 503 capacity.

Horsepower Range

RATED INPUT	HORSEPOWER		MODEL NO.
	CT (150% OL)	VT (125% OL)	
230V	1	1	DS305
	2	2	DS302
	3	3	DS306
	5	5	DS307
	7.5	7.5/10	DS308
	10	15	DS309
	15	20	DS310
	20	25	DS311
	25	30	DS322
	30	40	DS323
	40	50	DS2040
	40/50	50	GPD503-2L40
	50	60	DS2050
	60	60	GPD503-2L50
	60	75	DS2060
	60	75	GPD503-2L60
	75	100	DS2075
	75	100	GPD503-2L75
	100	150	DS2100
	100	125	GPD503-2L100
460V	1	1	DS313
	2	2	DS304
	3	3	DS314
	5	5	DS315
	7.5	7.5/10	DS316
	10	15	DS317
	15	20	DS318
	20	25	DS326
	25	30	DS325
	30	40	DS330
	40	50	DS340
	50	60	DS350
	60	75	DS360
	75	100	DS075
	75/100	100	GPD503-4L75
	100	150	DS100
	100	150	GPD503-4L100
	150	200	DS150
	150	200	GPD503-4L150
	200	250	DS200
	200	250	GPD503-4L200
	250	300	DS250
	300	400	DS303
	400	500	DS400
575V	2	3	DS5003
	3	3	DS5004
	5	5	DS5006
	7.5	7.5	DS5009
	10	10	DS5012
	15	15	DS5017
	20	20	DS5022
	25	25	DS5027
	30	30	DS5032
	40	40	DS5043
	50	50	DS5054
	60	60	DS5064
	75	75	DS5081
	100	100	DS5112
	125	150	DS5130
	150	200	DS5172
	200	200	DS5202

Section 1. INSTALLATION

1.1 GENERAL

The GPD 503 is a high performance sine-coded pulse width modulated AC motor drive which generates an adjustable voltage/frequency three phase output for complete speed control of any conventional squirrel cage induction motor. Automatic stall prevention and voltage boost prevents nuisance tripping during load or line side transient conditions. The GPD 503 will not induce any voltage line notching distortion back to the utility line and maintains a displacement power factor of not less than 0.95 throughout its speed range.

When properly installed, operated and maintained, the GPD 503 will provide a lifetime of service. It is mandatory that the person who operates, inspects, or maintains this equipment thoroughly read and understand this manual before proceeding.

This manual primarily describes the GPD 503, but contains basic information for the operator control station as well. For details of the operation of other units in the drive system, refer to their respective manuals.

1.2 RECEIVING

The GPD 503 is thoroughly tested at the factory. After unpacking, verify the part numbers with the purchase order (invoice). Any damages or shortages evident when the equipment is received must be reported immediately to the commercial carrier who transported the equipment. Assistance, if required, is available from your sales representative.

1.3 PHYSICAL INSTALLATION

Location of the GPD 503 is important to achieve proper performance and normal operating life. The unit should be installed in an area where it will be protected from:

- Direct sunlight, rain or moisture.
- Corrosive gases or liquids.
- Vibration, airborne dust or metallic particles.

For effective cooling as well as proper maintenance, a wall mount style GPD 503 must be installed vertically to the ground using four mounting screws. There MUST be a MINIMUM 6 in. clearance above and below the GPD 503. A MINIMUM 2 in. clearance is required on each side on the GPD 503.

A free-standing style GPD 503 must be installed with enough clearance for opening the door of the cabinet; this will ensure sufficient air space for cooling.

1.4 ELECTRICAL INSTALLATION

All basic interconnections (using the Digital Operator) are shown in Figures 1-3 through 1-6.

1.4.1 Main Circuit Input/Output

Complete wiring interconnections for the main circuit according to Tables 1-1 and 1-2, while observing the following:

CAUTION

Use only factory supplied instructions to install dynamic braking resistors. Failure to do so may cause equipment damage or personal injury.

• Use 600 V vinyl-sheathed wire or equivalent. Wire size should be determined considering voltage drop of leads.

• NEVER connect AC main power to output terminals T1 (U), T2 (V), and T3 (W).

• NEVER allow wire leads to contact the GPD 503 enclosure. Short-circuit may result.

• NEVER connect power factor correction capacitors or noise filter to GPD 503 output.

• SIZE OF WIRE MUST BE SUITABLE FOR CLASS I CIRCUITS.

• Use UL listed closed loop connectors or CSA certified ring connectors sized for the selected wire gauge. The connectors are to be installed using the correct crimp tool recommended by the connector manufacturer.

WIRE SIZE		TERMINAL SCREW	CLOSED-LOOP CONNECTOR	CLAMPING TORQUE			
				STEEL		COPPER	
AWG	mm^2			lb-in	N-m	lb-in	N-m
20	0.5	M3.5	1.25 - 3.5	7.8	0.9	7.0	0.8
18	0.75	M4	1.25 - 4	13.0	1.5	10.4	1.2
16	1.25	M4	1.25 - 4	13.0	1.5	10.4	1.2
14	2	M4	2 - 4	13.0	1.5	10.4	1.2
		M5	2 - 5	26.1	20.9	3.1	2.4
12	3.5	M4	3.5 - 4	13.0	1.5	10.4	1.2
		M5	3.5 - 5	26.1	20.9	3.1	2.4
10	5.5	M4	5.5 - 4	13.0	1.5	10.4	1.2
		M5	5.5 - 5	26.1	20.9	3.1	2.4
8	8	M5	8 - 5	26.1	20.9	3.1	2.4
		M6	8 - 6	40.9	34.8	4.8	4.1
6	14	M6	14 - 6	40.9	34.8	4.8	4.1
4	22	M8	22 - 8	100.0	82.6	11.7	10.7
2	38	M8	38 - 8	100.0	82.6	11.7	10.7
		M10	38 - 10	182.6	156.5	21.4	18.4
1/0	60	M10	60 - 10	182.6	156.5	21.4	18.4
3/0	80	M10	80 - 10	182.6	156.5	21.4	18.4
4/0	100	M10	100 - 10	182.6	156.5	21.4	18.4
		M12	100 - 12	313.0	191.3	36.7	23.1
MCM300	150	M12	150 - 12	313.0	191.3	36.7	23.1
MCM400	200	M12	200 - 12	313.0	191.3	36.7	23.1
MCM650	325	M12	325 - 12	313.0	191.3	36.7	23.1

Table 1-1. Wire Sizing For Main Circuit

SECTION A. 230V				
DRIVE MODEL NO.	TERMINAL SYMBOL	TERMINAL SCREW	WIRE SIZE AWG	WIRE SIZE mm^2
DS305	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W), G (E)	M4	14 - 10	2 - 5.5
DS302, DS306	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M4	14 - 10	2 - 5.5
	G (E)	M4	12 - 10	3.5 - 5.5
DS307	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W), G (E)	M4	10	5.5
DS308, DS309	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M5	8	8
	G (E)	M5	10	5.5
DS310	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M6	4	22
	G (E)		8 - 2	8 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	14 - 10	2 - 5.5
DS311	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	3 - 1/0	30 - 60
	G (E)		8 - 2	8 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	14 - 10	2 - 5.5
DS322	L1 (R), L2 (S), L3 (T), B0/–, B1/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	2 - 1/0	38 - 60
	G (E)		6 - 2	14 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	14 - 10	2 - 5.5
DS323	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	1/0	60
	G (E)		6 - 2	14 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	14 - 10	2 - 5.5
DS2040	L1 (R), L2 (S), L3 (T), –, +1, +3, T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
GPD503-2L40	L1 (R), L2 (S), L3 (T), – (N), +3 (P3), T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
DS2050	L1 (R), L2 (S), L3 (T), –, +1, +3, T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
GPD503-2L50	L1 (R), L2 (S), L3 (T), – (N), +3 (P3), T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
DS2060	L1 (R), L2 (S), L3 (T), –, +1, +3, T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
GPD503-2L60	L1 (R), L2 (S), L3 (T), – (N), +3 (P3), T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
DS2075	L1 (R), L2 (S), L3 (T), –, +1, +3, T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		3 - 2	30 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
GPD503-2L75	L1 (R), L2 (S), L3 (T), – (N), +3 (P3), T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
DS2100	L1 (R), L2 (S), L3 (T), –, +1, +3, T1 (U), T2 (V), T3 (W)	M12	4/0 - MCM400	100 - 200
	G (E)		1 - 2/0	50 - 67
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2
GPD503-2L100	L1 (R), L2 (S), L3 (T), – (N), +3 (P3), T1 (U), T2 (V), T3 (W)	M12	4/0 - MCM400	100 - 200
	G (E)		1 - 2/0	50 - 67
	ℓ1 (r), ℓ2 (ɹ)	M4	20 - 14	0.5 - 2

indicates terminal uses a pressure lug.

("L") (06/22/95)

Table 1-1. Wire Sizing For Main Circuit - Continued

Section B. 460V				
DRIVE MODEL NO.	TERMINAL SYMBOL	TERMINAL SCREW	WIRE SIZE AWG	WIRE SIZE mm^2
DS313, DS304, DS314	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W), G (E)	M4	14 - 10	2 - 5.5
DS315	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M4	14 - 10	2 - 5.5
	G (E)	M5	12 - 10	3.5 - 5.5
DS316	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M4	12 - 10	3.5 - 5.5
	G (E)	M5	12 - 10	3.5 - 5.5
DS317	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M4	10	5.5
	G (E)	M5	10	5.5
DS318, DS326	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M5	8	8
	G (E)		10 - 2	5.5 - 38
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS325	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M6	6 - 4	14 - 22
	G (E)		8 - 2	8 - 38
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS330	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M6	4	22
	G (E)		8 - 2	8 - 38
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS340	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	3 - 1/0	30 - 60
	G (E)		8 - 2	8 - 38
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS350	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	2 - 1/0	38 - 60
	G (E)		6 - 2	14 - 38
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS360	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	1/0	60
	G (E)		6 - 2	14 - 38
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS075, DS100	L1 (R), L2 (S), L3 (T), –, B1/+, B2, +3, T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 200 (𝓇200), ℓ2 400 (𝓇400), x, y	M4	20 - 14	0.5 - 2
GPD503-4L75, GPD503-4L100	L1 (R), L2 (S), L3 (T), – (N), +3 (P3), T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		4 - 2	22 - 38
	ℓ1 (r), ℓ2 200 (𝓇200), ℓ2 400 (𝓇400), x, y	M4	20 - 14	0.5 - 2
DS150	L1 (R), L2 (S), L3 (T), –, B1/+, B2, +3, T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		3 - 2	30 - 38
	ℓ1 (r), ℓ2 200 (𝓇200), ℓ2 400 (𝓇400), x, y	M4	20 - 14	0.5 - 2
GPD503-4L150	L1 (R), L2 (S), L3 (T), –, B1/+, B2, +3, T1 (U), T2 (V), T3 (W)	M10	2 - 4/0	38 - 100
	G (E)		3 - 2	30 - 38
	ℓ1 (r), ℓ2 200 (𝓇200), ℓ2 400 (𝓇400), x, y	M4	20 - 14	0.5 - 2
DS200	L1 (R), L2 (S), L3 (T), –, B1/+, B2, +3, T1 (U), T2 (V), T3 (W)	M12	4/0 - MCM400	100 - 200
	G (E)		1 - 2/0	50 - 67
	ℓ1 (r), ℓ2 200 (𝓇200), ℓ2 400 (𝓇400), x, y	M4	20 - 14	0.5 - 2
GPD503-4L200	L1 (R), L2 (S), L3 (T), – (N), +3 (P3), T1 (U), T2 (V), T3 (W)	M12	4/0 - MCM400	100 - 200
	G (E)		1 - 2/0	50 - 67
	ℓ1 (r), ℓ2 200 (𝓇200), ℓ2 400 (𝓇400), x, y	M4	20 - 14	0.5 - 2
DS250, DS303	L1 (R), L2 (S), L3 (T), –, +1, +3, T1 (U), T2 (V), T3 (W)	M12	MCM650 x 2P	325 x 2P
	G (E)		1/0 - 2/0	54 - 67
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	20 - 14	0.5 - 2
DS400	L1 (R), L2 (S), L3 (T), –, +1, +3, T1 (U), T2 (V), T3 (W)	M12	MCM650 x 2P	325 x 2P
	G (E)		2/0	67
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	20 - 14	0.5 - 2

indicates terminal uses a pressure lug.

Table 1-1. Wire Sizing For Main Circuit - Continued

Section C. 575V				
DRIVE MODEL NO.	TERMINAL SYMBOL	TERMINAL SCREW	WIRE SIZE	
			AWG	mm^2
DS5003, DS5004	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M4	14 - 10	2 - 5.5
	G (E)	M4	14 - 10	2 - 5.5
DS5006	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M4	14 - 10	2 - 5.5
	G (E)	M5	14 - 10	2 - 5.5
DS5009, DS5012	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M4	12 - 10	3.5 - 5.5
	G (E)	M5	12 - 10	3.5 - 5.5
DS5017	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M5	10 - 8	5.5 - 8
	G (E)		12 - 2	3.5 - 30
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS5022	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M6	8 - 6	8 - 14
	G (E)		12 - 2	3.5 - 30
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS5027	L1 (R), L2 (S), L3 (T), –, B1/+, B2, T1 (U), T2 (V), T3 (W)	M6	8 - 6	8 - 14
	G (E)		10 - 2	5.5 - 30
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS5032	L1 (R), L2 (S), L3 (T), B0/–, B1/+, B2, T1 (U), T2 (V), T3 (W)	M6	8 - 6	8 - 14
	G (E)		10 - 2	5.5 - 30
	ℓ1 (r), ℓ2 (𝓇)	M4	14 - 10	2 - 5.5
DS5043	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	6 - 1	14 - 38
	G (E)		10 - 2	5.5 - 30
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5
DS5054	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	4 - 1	22 - 38
	G (E)		8 - 2	8 - 30
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5
DS5064	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	3 - 1/0	27 - 50
	G (E)		8 - 2	8 - 30
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5
DS5081	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	1 - 2/0	38 - 60
	G (E)		8 - 2	8 - 30
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5
DS5112	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M8	2/0 - 3/0	60 - 80
	G (E)		6 - 2/0	14 - 60
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5
DS5130	L1 (R), L2 (S), L3 (T), B0/–, B1/+, T1 (U), T2 (V), T3 (W)	M10	3/0 - 300	80 - 150
	G (E)		6 - 2/0	14 - 60
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5
DS5172	L1 (R), L2 (S), L3 (T), –, B1/+, B2, +3, T1 (U), T2 (V), T3 (W)	M12	3000 - 400	150 - 200
	G (E)		4 - 2/0	22 - 60
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5
DS5202	L1 (R), L2 (S), L3 (T), –, B1/+, B2, +3, T1 (U), T2 (V), T3 (W)	M12	300 - 400	177 - 200
	G (E)		4 - 2/0	22 - 60
	ℓ1 (r), ℓ2 (𝓇), x, y	M4	14 - 10	2 - 5.5

indicates terminal uses a pressure lug.

Table 1-2. Terminal Functions and Voltages of Main Circuit

SECTION A. 230V

TERMINAL	FUNCTION		
	1 - 10HP (CT)	15 - 30HP (CT)	40 - 100HP (CT)
L1 (R) L2 (S) L3 (T)	Three phase Main circuit input power supply 200 / 208 / 220V at 50 Hz; 200 / 208 / 220 / 230V at 60 Hz		
T1 (U) T2 (V) T3 (W)	Three phase AC output to motor 0V to max. input voltage level		
ℓ1 (r) ℓ2 (𝓇)	– – – – – –	Power for heat sink fan 200-230 Vac, single phase – two lines from input power	
B0/– B1/+ B2 – [– (N)]** +3 (P3) +1 (P1)	– – – – – – DB Unit terminals (B1/+ & B2) * DC bus terminals (B1/+ & –) – – – – – –	DB Unit terminals * DC bus terminals – – – – – –	– – – – – – DB Unit terminals (+1 & –) [(+3 & –)]** DC bus terminals (+1 & –) [(+3 & –)]**
x y	– – – – – –		Power supply output for options (220 Vac, 30 VA)
G (E)	Ground terminal (100 ohms or less)		

SECTION B. 460V

TERMINAL	FUNCTION			
	1 - 10HP (CT)	15 - 20HP (CT)	25 - 60HP (CT)	75 - 400HP (CT)
L1 (R) L2 (S) L3 (T)	Three phase Main circuit input power supply 380 / 400 / 415 / 460V at 50/60 Hz			
T1 (U) T2 (V) T3 (W)	Three phase AC output to motor 0V to max. input voltage level			
ℓ2 (𝓇) ℓ1 (r)	– – – – –	Power for heat sink fan 230 Vac single phase		– – – – –
ℓ2 200 (𝓇200) ℓ2 400 (𝓇400)	– – – – –			Power for heat sink fan: ℓ1 to ℓ2 200: 230 Vac ℓ1 to ℓ2 400: 460 Vac
B0/– B1/+ B2 – [– (N)]** +3 (P3) +1 (P1)	– – – – – DB Unit terminals (B1/+ & B2) * DC bus terminals (B1/+ & –) – – – – –	DB Unit terminals (B1/+ & B2) DC bus terminals (B1/+ & B0/–) – – – – –	DB Unit Terminals * DC bus terminals – – – – –	– – – – – DB Unit Terminals (+1 & –) * [(+3 & –)]** DC bus terminals (+1 & –) [(+3 & –)]**
x y	– – – – –			Power supply output for options (220 Vac, 30 VA)
G (E)	Ground terminal (100 ohms or less)			

– – – – – indicates that terminals are not present.

* For installation of DB (Dynamic Braking) Units, see Appendix 7.

** indicates terminal marking or connection difference for units with "L" in Model No.

("L") (04/27/95)