

Type U



Size: 8in x 4.66in x 1.65in

Type E



Size: 9.03in x 4.66in x 1.69in

Type F



Size: 8in x 4.66in x 2.60in

OPTIONS

- High Efficiency OR-ing FET Diode Current Share
- Mechanical Build:
 - U-Chassis
 - Enclosed with Rear Side Fan
 - Enclosed with Top Fan
- Current Share Paralleled Wire

FEATURES

- Active PFC
- Single Output
- 90~264VAC Input Voltage Range
- 500W with Forced Airflow
- 83% Efficiency
- RoHS Compliant
- +5Vsb/0.25A Convection Cooling, 1.0A Forced Air Cooling
- +12V/1A DC Fan Output
- Remote Inhibit Function Optional High Efficiency OR-ing FET Diode Current Share Option
- Short Circuit, Over Load, Over Temperature, and Over Voltage Protection
- 3 Mechanical Options Available: U-Chassis, Enclosed with Rear Side Fan, Enclosed with Top Fan
- UL60601-1, CSA-C22.2 No.60601-1, EN60601-1, and IEC EN60601-1, (3rd edition) Medical Approvals

DESCRIPTION

The PSM500 series of medical AC/DC switching power supplies consists of U-chassis (U type), enclosed with rear-side built-in (E type), and enclosed with top-side built-in fan (F type) models. Built-in fan models offer 500W of output power and U-chassis models offer 360W of output power with convection cooling and 500W with 30CFM forced airflow. All units have a single output, 90~264VAC full range input, and active PFC. These supplies also have UL60601-1, CSA-C22.2 No.60601-1, EN60601-1, and IEC EN60601-1 (3rd edition) medical approvals. All models are protected against short circuit, over load, over voltage, and over temperature conditions. This series also has a current sharing option (suffix "D").

MODEL SELECTION TABLE

Model Number ⁽¹⁾	Input Voltage Range	Output Voltage	Output Current			Ripple & Noise ⁽³⁾	Output Power	
			Min Load	Max Load (Convection) ⁽²⁾	Max Load (Forced Air)		Convection Cooling (U Models)	Forced Air ⁽²⁾
PSM500B-1Y12-X (D)	90~264VAC	12V	0A	30A	41.67A	120mV	360W	500W
PSM500B-1Y24-X (D)		24V	0A	15A	20.84A	240mV	360W	500W
PSM500B-1Y30-X (D)		30V	0A	12A	16.67A	300mV	360W	500W
PSM500B-1Y36-X (D)		36V	0A	10A	13.89A	360mV	360W	500W
PSM500B-1Y48-X (D)		48V	0A	7.5A	10.42A	480mV	360W	500W
PSM500B-1Y54-X (D)		54V	0A	6.67A	9.26A	540mV	360W	500W
PSM500B-1Y57-X (D)		57V	0A	6.32A	8.78A	570mV	360W	500W
-		5Vsb	0A	0.25A	1A ⁽⁴⁾	50mV	360W	500W
-		+12V Fan	-	-	1A	-	-	-

SPECIFICATIONS

All specifications tested at 25°C unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
INPUT SPECIFICATIONS					
Input Voltage Range	Full Range 50/60Hz	90	115/230	264	VAC
Line Frequency		47	50/60	63	Hz
Input Current	@115VAC			6	A
Inrush Current	@230VAC, Cold Start			50	A
Power Factor	@115/230VAC, Full Load	0.9			
OUTPUT SPECIFICATIONS					
Output Voltage		See Table			
Load Regulation ⁽⁴⁾	12V~57V Models		±1		%
	+5VSB Models		±5		%
Line Regulation			±0.5		%
Output Power	U-Chassis Model, @+40°C Convection Cooling			360	W
	U-Chassis Model, 30CFM Forced Air			500	
	Built-In Fan Models			500	
Output Current		See Table			
Minimum Load		0			A
Ripple & Noise		See Table			
Hold-Up Time	Typical input conditions, 70% loading	20			mS
Overshoot at Turn On/Turn Off	Any overshoots during turn-on/turn-off should be less than ±10% of the nominal output voltage values. No voltage of opposite polarity shall be present on output during turn-on or turn-off.				
Temperature Coefficient			±0.04		%/°C
Transient Response	By 10% to full load deviation, recovery time <10ms 10% max.				
ADDITIONAL FUNCTIONS					
Remote Control (INHIBIT)	Logic Level LOW (0-0.5V) Logic Level HIGH or Floating (3.5-5.25V)	Output is Disabled Output is Enabled			
Power Good Output	Logic Level HIGH Logic Level LOW	Indicates DC Output is Good and Within Regulation Output Voltage Falls Below its Under Voltage Threshold			
Current Share (Option)	Single wire current sharing function and up to 4 units can be paralleled within 10% accuracy at full load. Each power module should be loaded 65Watts (approx.. 13% of rate load) minimum to reach current sharing balance mode. Output load less than 65Watts of each module condition, output current is drawn regularly from each power module.				
Remote Sensing	Power supply provides remote sensing function when CN3's pin5 (-Sense) and pin6 (+Sense) are connected. It doesn't support this function when current share function is activated.				
Fan Speed Control	FAN1 CONNECTOR: Fan output provides constant 12VDC output for external DC fan. Fan connected to this connector will run at 100% speed.				
	FAN2 CONNECTOR: Output consists of 2 operation modes, Speed Control Mode (SCM) and Full Speed Mode (FSM). SCM and FSM could be configured on CN5 y short or open pin #2 and #3 to set fan operation mode at SCM or FSM. A 2.54mm pitch mini-jumper may be needed for this setting. (Short=FSM, Open=SCM)				
	Speed Control Mode (SCM)		Full Speed Mode (FSM)		
	The Speed Control Mode (SCM) is set initially as factory default for acoustic control and longer fan life. The reliable microchip controlled SCM circuitries will suspend fan operation when measured temperature of T2 main transformer is below 40°C and turn-on the fan when T2 reaches 50°C automatically. A threshold detector under T2 is to detect T2 winding wire temperature. The proportional PWM fan speed control circuit will accelerate speed when load or ambient temperature increases.				
	FAN2 is only available for U-Chassis type				
Fan Fault Output	Logic Level HIGH	FAN works in normal operation			
	Logic Level LOW	FAN Fault			

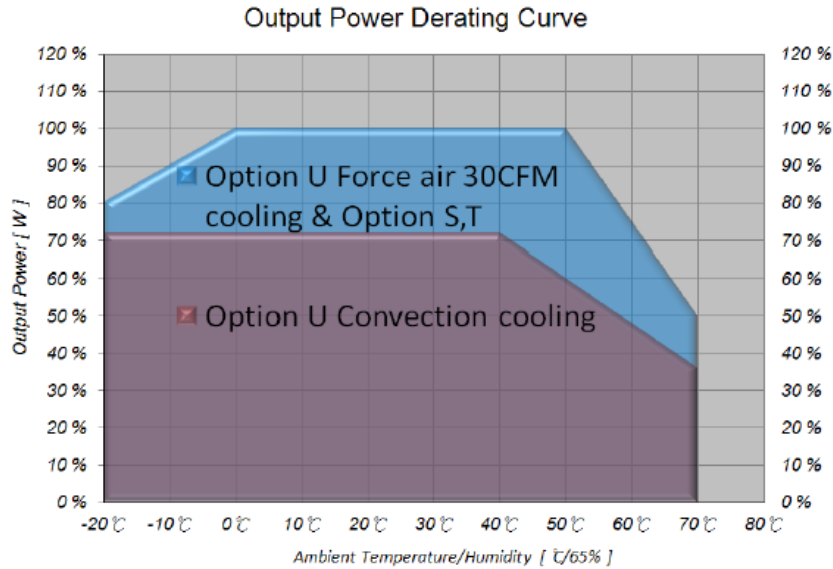
SPECIFICATIONS					
All specifications tested at 25°C unless otherwise noted. We reserve the right to change specifications based on technological advances.					
SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
PROTECTION					
Short Circuit Protection	Short circuit will cause power supply to shut down without damage.	Automatic recovery when short circuit removed			
Over Load Protection	Automatic Recovery	110		150	%
Over Voltage Protection	If over voltage occurs, power supply will turn OFF when the output voltage is within the voltage range limits. The power supply will not be automatically recovered after the over voltage fault is removed. A manual power reset is necessary or INHIBIT pin is reset.	PSM500B-1Y12-X (D)	13.2		15.6
		PSM500B-1Y24-X (D)	26.4		31.2
		PSM500B-1Y30-X (D)	33.0		39.0
		PSM500B-1Y36-X (D)	39.6		46.8
		PSM500B-1Y48-X (D)	52.8		62.4
		PSM500B-1Y54-X (D)	59.4		70.2
Over Temperature	Over temperature is typically a result of current over loading or inadequate air circulation. When the thermistor senses a temperature inside the power supply that is above normal, the unit will automatically shut down.	Power supply will recover when the thermistor temperature returns to a normal value and after the INHIBIT pin is reset.			
		PSM500B-1Y57-X (D)	62.7		74.1
ENVIRONMENTAL SPECIFICATIONS					
Operating Temperature	See derating curve	-20		70	°C
Storage Temperature		-20		85	°C
Relative Humidity	Non-Condensing	5		90	%
Altitude		≤3000m (9,842ft) max.			
MTBF (Bellcore TR-332)	@Max. Load, 25°C	100,000			Hours
Shipping & Storage	Temperature	-20		+85	°C
	Relative Humidity, Non-Condensing	0		90	%
GENERAL SPECIFICATIONS					
Efficiency	@Full Load, 115/230VAC		83/86		%
Switching Frequency	@Full Load	90		100	KHz
Leakage Current ⁽⁵⁾	Earth Leakage Current @264VAC		270		uA
	Enclosure Leakage Current @264VAC		50		
Dielectric Withstand (Hi-Pot)	Primary to Secondary	5656VDC for 2 Sec.			
	Primary to Frame Ground	2121VDC for 2 Sec.			
	Secondary to Frame Ground	707VDC			
Insulation Resistance	Primary to Secondary	20 Meg. Ohms Min. 500VDC			
	Primary to Frame Ground	20 Meg. Ohms Min. 500VDC			
Burn-In Test	100% Burn-In tested under 40±5°C				
Electromagnetic Compatibility	Tests for conformance will be performed with host system.				
PHYSICAL SPECIFICATIONS					
Weight	U-Chassis Type	1.90lbs (0.86kgs)			
	End Fan Type	2.16lbs (0.98kgs)			
	Top Fan Type	2.18lbs (0.99kgs)			
Dimensions (L x W x H)	U-Chassis Type	8 x 4.66 x 1.65in (203.2 x 118.5 x 42mm)			
	End Fan Type	9.03 x 4.66 x 1.69in (229.4 x 118.5 x 43mm)			
	Top Fan Type	8 x 4.66 x 2.60in (203.2 x 118.5 x 66mm)			
Cooling	+5VSB/0.25A Convection Cooling, 1.0A Forced Air Cooling +12V/1A DC Fan Output				
DC Fan	End Fan	40mm x 40mm x 20mm			
	Top Fan	60mm x 60mm x 15mm			
Connectors and Pin Assignments	CN2 P2.5-2P Molex P/N: 48152-0210 or Equivalent	PIN1	5Vsb		
		PIN2	GND		
	CN3 P2.5-6P (Option) Molex P/N: 48152-0610 OR Equivalent	PIN1	Current Share (Optional)		
		PIN2	Inhibit		
		PIN3	GND		
		PIN4	5Vsb		
		PIN5	-Sense		
		PIN6	+Sense		
	FAN1 P2.5-2P Molex P/N:48153-0210 or Equivalent	PIN1	12V FAN +		
		PIN2	12V FAN -		
FAN2 P2.5-2P (with speed control) Molex P/N: 48152-0210 or Equivalent	PIN 1	12V FAN +			
	PIN2	12V FAN -			
SAFETY CHARACTERISTICS					
Safety Approvals ⁽⁹⁾	UL60601-1/CSA-C22.2 No.601.1-M90/EN 60601-1 /IEC 60601-1				
FCC Requirements	FCC Part 18				
CE Requirements	EN60601-1-12 & EN55011 Class B				

NOTES

1. "X" in model number indicates case type. "X" can be "U" for U-chassis type, "E" for enclosed type with rear-side built-in fan, "F" for enclosed type with top-side built-in fan, and the "D" is for current sharing option.
2. Option U: Max output 360W @+40°C ambient max.
 Max output 500W at 50°C ambient temp and 30CFM forced air Cooling.
3. Option E & F: Max output 500W, +50°C ambient temperature.
4. 20MHz bandwidth ripple and noise measured by using 0.1uF C.C. & 10uF 50V E.C. bypassed at the output connector at 5% to 100% full load and nominal line.
5. 5Vsb 1A at INHIBIT control pin is LOW or force air cooling.
6. At 25°C including initial tolerance, line voltage, load currents, and output voltages adjusted to factory settings.
7. Preset accuracy should be less than 1% of nominal output voltage at 60% Full Load.
8. Regulation shows the percentage of allowable output voltage variation from the nominal output voltage.
9. Leakage current measurement is made in accordance with safety agency requirements.
9. This product is Listed to applicable standards and requirements by UL.

**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVE

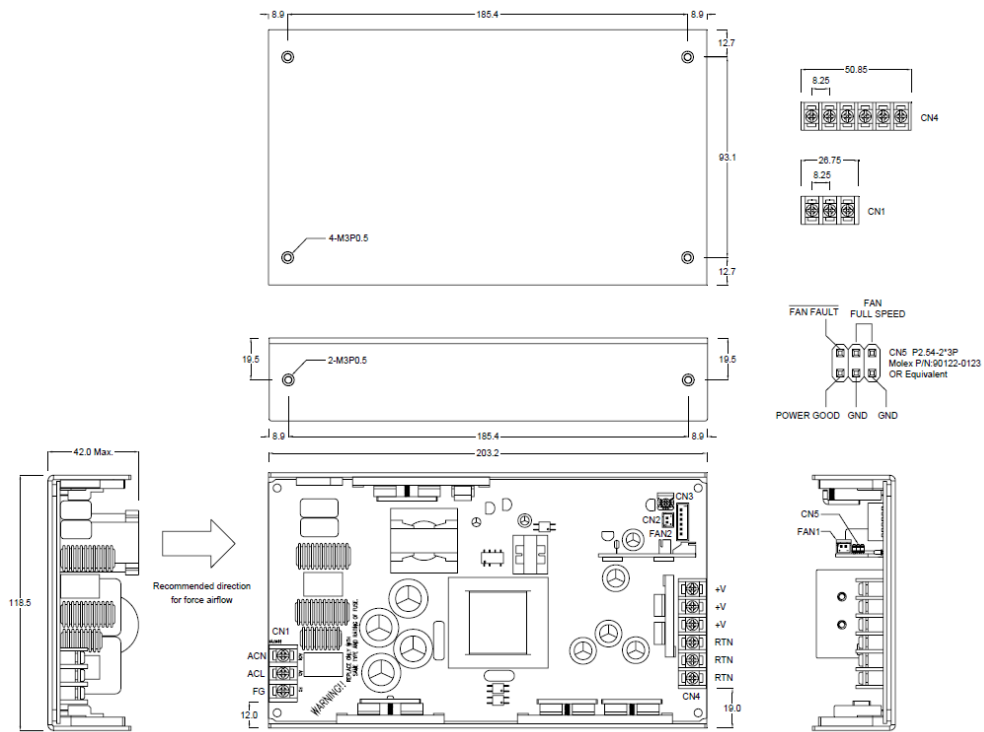


Thermal Considerations

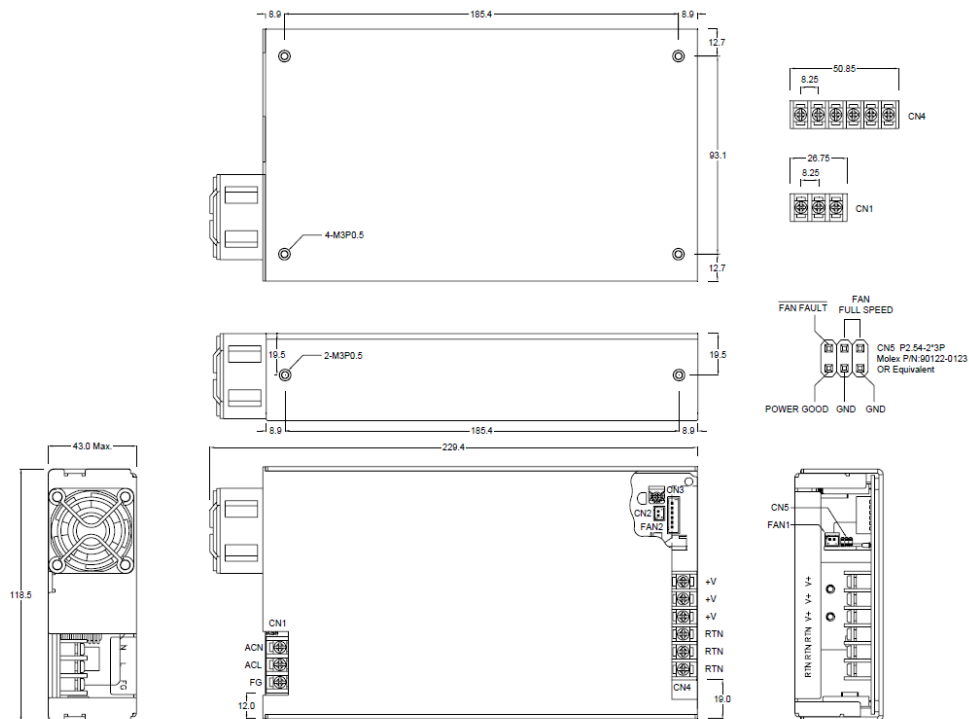
Component	Recommended Max. Temperature
HS1 near Q2	95°C
HS3 in between Q6 and Q7	95°C
T2 Coil	100°C

MECHANICAL DRAWINGS

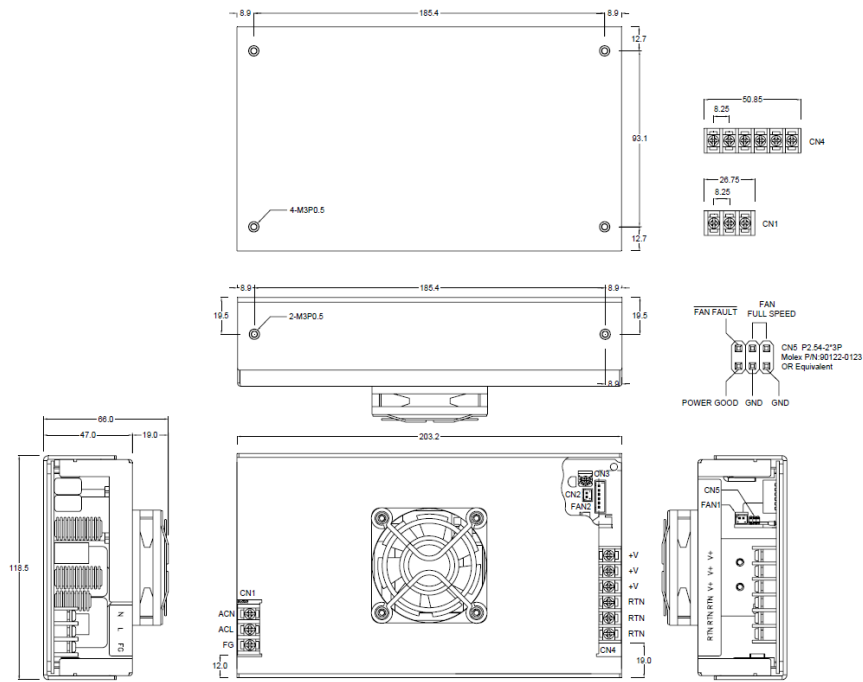
U-Chassis Mount ("U" Type)



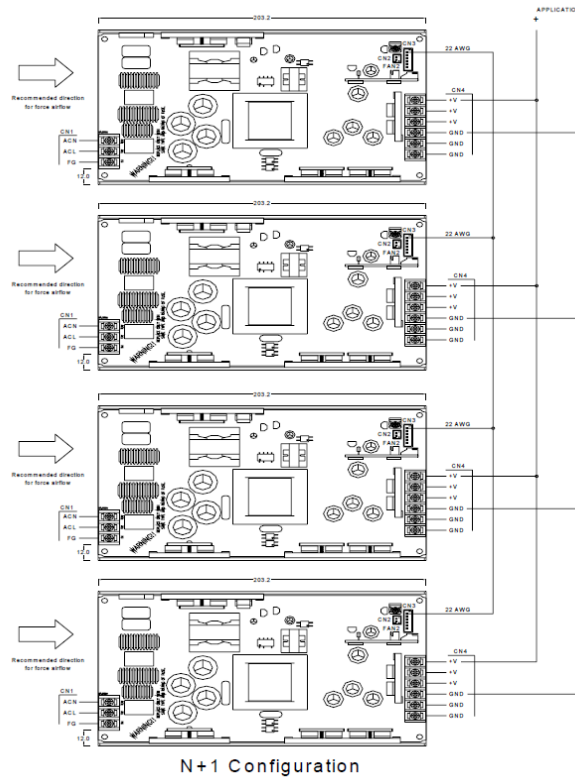
End Fan Mount ("E" Type)



Top Fan Mount ("F" Type)



N+1 Configuration



N+1 Configuration

MATCHING CONNECTORS

CN1: Input Connector

3-Pole Terminal Block Pitch: 8.25mm rate 20A/300V

Pin #	Signal
1	AC Neutral
2	AC Line
3	F.G.

CN2: +5VSB Output Connector

JST B2B-XH-A pitch: 2.5mm or equivalent, mates with female housing JST XHP-2 or equivalent

Pin #	Signal
1	+5VSB
2	GND

CN3: Remote Sense Connector

JST B6B-XH-A pitch: 2.5mm or equivalent, mates with female housing JST XHP-6

Pin #	Signal
1	Sense +
2	Sense -
3	+5VSB
4	GND
5	INHIBIT (Remote Control)
6	Current Share

INHIBIT: Logic level HIGH (+5V): Enable, Logic level LOW: Disable (0V)

CN4: Main Output Connector

6-Pole Terminal block pitch: 8.25mm rate 20A/300V

Pin #	Signal
1	+Vo
2	+Vo
3	+Vo
4	RTN
5	RTN
6	RTN

CN5: Fan control & Power Good Signal Connector

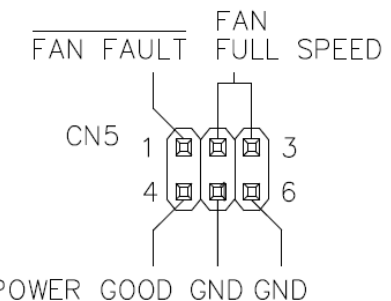
JST RF-H062TD-1130 pitch: 2.54mm or equivalent, mates with female housing JST RF-06 or equivalent

Pin #	Signal
1	FAN FAULT
2,3	FAN FULL SPEED
4	POWER GOOD
5	GND
6	GND

FAN FAULT: Fan status indication, Fan Good: Logic level HIGH (+5V), Fan Fault: Logic Level LOW (0V)

FAN FULL SPEED: Short these 2 pins (#2 and #3) with mini-jumper to get highest fan speed

POWER GOOD: Power Good: Logic level HIGH (+5V), Power Fault; Logic LOW (0V)



COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

Phone: ☎ (603)778-2300
Toll Free: ☎ (888)597-9255
Fax: ☎ (603)778-9797
E-mail: sales@wallindustries.com
Web: www.wallindustries.com
Address: 37 Industrial Drive
Exeter, NH 03833

©2019 Wall Industries, Inc. Specifications subject to change without notice. Wall Industries is not responsible for typographical errors. The information contained herein is for informational purposes only. This information is provided by Wall Industries and we make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the information contained in this document for any purpose. All product and manufacturer names are trademarks or registered trademarks of their respective companies.