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High-Power Digital Servo Drive

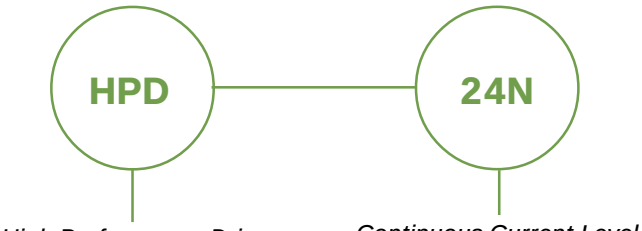
The HPD (High Power Drive) is a digital servo drive that accepts up to 480V input and provides up to 67 Amps of continuous current (RMS). This equates to 33kW of power. The HPD also accepts standard drive signals – ±10V analog and step & direction signals.

In addition to standard drive operation, the HPD has 8 inputs, 7 outputs and control capabilities that include preset moves, acceleration control, following and even an internal simple PLC. All of these features can be programmed via the keypad interface integrated into the drive.

HPD Features

- Up to 67A continuous (RMS)
- Resolver feedback
- 90-480VAC input, 3-phase voltage range
- ±10V input for velocity and torque control
- Step & direction input for position control
- Keypad interface for drive configuration, monitoring and application commands
- Optional 24V Keep Alive
- RS422/485 serial interface
- CE (EMC & LVD)

HPD Part Numbering System



High Performance Drive Series

Continuous Current Level

2N	16N	35N
5N	20N	45N
8N	24N	67N
	25N	

Example: HPD24N

Additional Control Features

In addition to basic drive functionality, the standard HPD drive also offers the following features:

- Position-preset mode – drive can be set up to perform simple trapezoidal moves.
- Wire-checking mode – this trouble-shooting mode provides various tests to check drive wiring.
- Following (digital locking) – drive can ratio against encoder signal; acceleration and slip speeds can also be set.
- Up to 8 programmable inputs and 7 programmable outputs; can be used as general purpose, in the PLC mode or used as an optional 4-digit thumbwheel.
- Internal PLC – can be programmed via the keypad or programmed with a ladder diagram system.
  - Scan time: 6.144 microseconds
  - Timers: 2
  - Instructions: 15
  - Stack depth: 1
  - Program steps: 64
  - Mathematics operation: 16/32 bits
  - Fast inputs (fast copy): 3 - 512 microseconds
- Inter-Drive Communication – specific configuration of the serial port makes it possible to interchange parameters between two or more units.

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HPD Common Specifications

	HPD2N	HPD5N	HPD8N	HPD16N	HPD20N
Drive Input Power					
Voltage Phase	90 - 480V 3∅	90 - 480V 3∅	90 - 480V 3∅	90 - 480V 3∅	90 - 480V 3∅
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Drive Output Power					
Bus voltage @ 480VAC	680VDC	680VDC	680VDC	680VDC	680VDC
PWM	8kHz	8kHz	8kHz	8kHz	8kHz
Continuous current (peak of sine)	2.8A	7.1A	11.3A	22.6A	28.3A
Continuous current (RMS)	2	5	8	16	20
Peak current* (peak of sine)	5.7A	14.1A	22.6A	45.2A	91.9A
Peak current* (RMS)	4	10	16	32	65
Commutation	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal
Performance					
Feedback	Resolver	Resolver	Resolver	Resolver	Resolver
Inputs					
Command velocity and torque mode	±10V (15 bit)	±10V (15 bit)	±10V (15 bit)	±10V (15 bit)	±10V (15 bit)
Command position mode	Step/dir input 800kHz max	Step/dir input 800kHz max	Step/dir input 800kHz max	Step/dir input 800kHz max	Step/dir input 800kHz max
Digital inputs (8 inputs)	24V	24V	24V	24V	24V
Encoder input	200kHz max	200kHz max	200kHz max	200kHz max	200kHz max
Analog input - Aux	±10V (10 bit)	±10V (10 bit)	±10V (10 bit)	±10V (10 bit)	±10V (10 bit)
Outputs					
Digital outputs (6 inputs)	24V/100mA/PNP	24V/100mA/PNP	24V/100mA/PNP	24V/100mA/PNP	24V/100mA/PNP
Voltage-free output	1	1	1	1	1
Encoder output	450Hz max	450Hz max	450Hz max	450Hz max	450Hz max
Analog output - Aux	±10V (8 bit)	±10V (8 bit)	±10V (8 bit)	±10V (8 bit)	±10V (8 bit)
Communication					
Type	RS422/485	RS422/485	RS422/485	RS422/485	RS422/485
Daisy chain	Up to 32 units	Up to 32 units	Up to 32 units	Up to 32 units	Up to 32 units
Power Dissipation					
Control stage	18W	18W	18W	18W	18W
Power stage	25W	60W	89W	158W	200W
Internal braking resistor	120W	120W	120W	120W	240W
Environmental					
Temperature	45°C	45°C	45°C	45°C	45°C
Protection					
Grade	IP20	IP20	IP20	IP20	IP20
Compumotor Motors	Contact factory	Contact factory	Contact factory	M Series	M Series

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HPD Common Specifications

	HPD24N	HPD25N	HPD35N	HPD45N	HPD67N
Drive Input Power					
Voltage Phase	90 - 480V 3∅	90 - 480V 3∅	90 - 480V 3∅	90 - 480V 3∅	90 - 480V 3∅
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Drive Output Power					
Bus voltage @ 480VAC	680VDC	680VDC	680VDC	680VDC	680VDC
PWM	8kHz	8kHz	8kHz	8kHz	8kHz
Continuous current (peak of sine)	33.9A	35.4A	49.5A	63.6A	94.7A
Continuous current (RMS)	24	25	35	45	67
Peak current* (peak of sine)	70.7A	70.7A	74.9A	94.7A	141.4A
Peak current* (RMS)	50	50	53	67	100
Commutation	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal
Performance					
Feedback	Resolver	Resolver	Resolver	Resolver	Resolver
Inputs					
Command velocity and torque mode	±10V (15 bit)	±10V (15 bit)	±10V (15 bit)	±10V (15 bit)	±10V (15 bit)
Command position mode	Step/dir input 800kHz max	Step/dir input 800kHz max	Step/dir input 800kHz max	Step/dir input 800kHz max	Step/dir input 800kHz max
Digital inputs (8 inputs)	24V	24V	24V	24V	24V
Encoder input	200kHz max pre-quad	200kHz max pre-quad	200kHz max pre-quad	200kHz max pre-quad	200kHz max pre-quad
Analog input - Aux	±10V (10 bit)	±10V (10 bit)	±10V (10 bit)	±10V (10 bit)	±10V (10 bit)
Outputs					
Digital outputs (6 outputs)	24V/100mA/PNP	24V/100mA/PNP	24V/100mA/PNP	24V/100mA/PNP	24V/100mA/PNP
Voltage-free output	1	1	1	1	1
Encoder output	450Hz max	450Hz max	450Hz max	450Hz max	450Hz max
Analog output - Aux	±10V (8 bit)	±10V (8 bit)	±10V (8 bit)	±10V (8 bit)	±10V (8 bit)
Communication					
Type	RS422/485	RS422/485	RS422/485	RS422/485	RS422/485
Daisy chain	Up to 32 units	Up to 32 units	Up to 32 units	Up to 32 units	Up to 32 units
Dissipation					
Control stage	18W	30W	30W	30W	30W
Power stage	246W	250W	297W	370W	470W
Internal braking resistor	240W	400W	400W	400W	400W
Environmental					
Temperature	45°C	45°C	45°C	45°C	45°C
Protection					
Grade	IP20	IP20	IP20	IP20	IP20
Compumotor Motors	M Series	M Series	M Series	M Series	M Series

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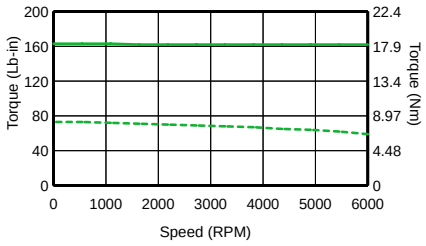
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Motor Speed-Torque Performance Curves

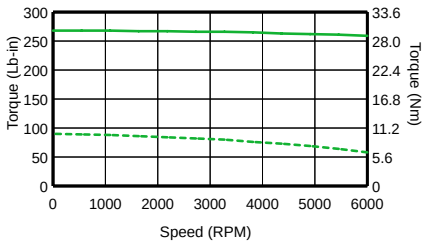
HPD with M Series motors, 105mm, 145mm, and 205mm frame, resolver feedback, 480 VAC

For complete M Series motor and cable information, please refer to the Servo Motor section.

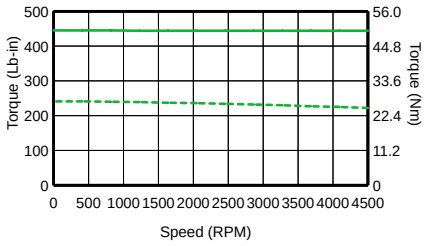
M1053KR/HPD16



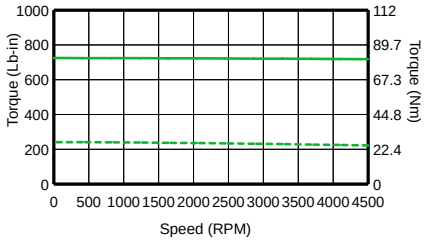
M1054KR/HPD24



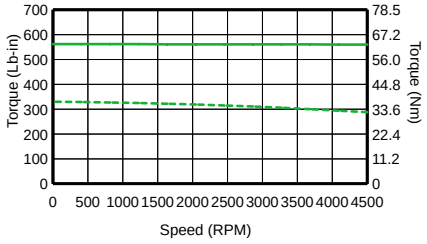
M1453LR/HPD35



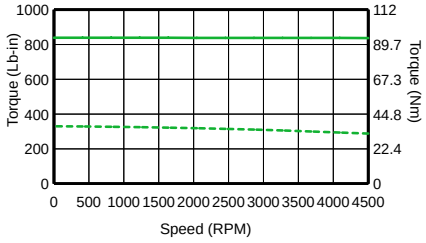
M1453LR/HPD67



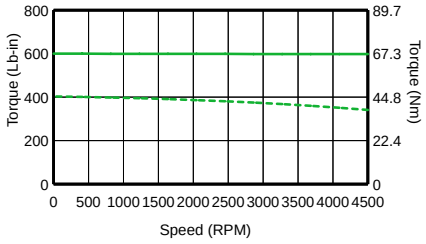
M1454NR/HPD45



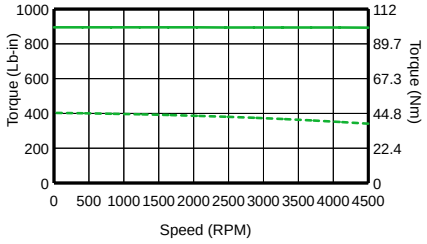
M1454NR/HPD67



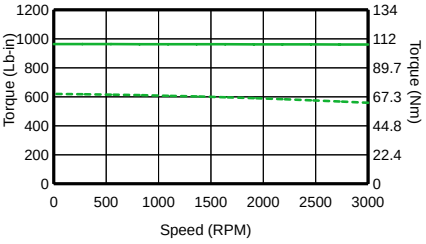
M1455PR/HPD45



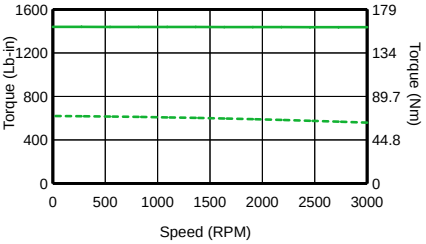
M1455PR/HPD67



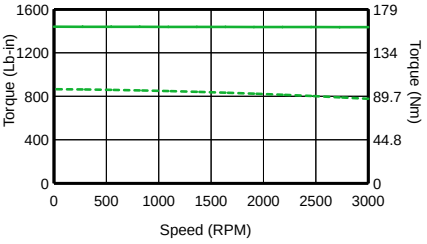
M2052PR/HPD45



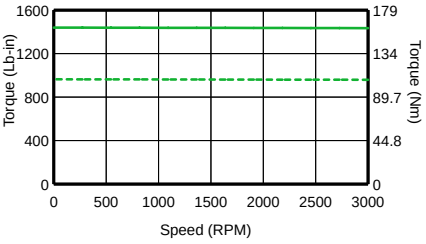
M2052PR/HPD67



M2053RR/HPD67



M2054SR/HPD67



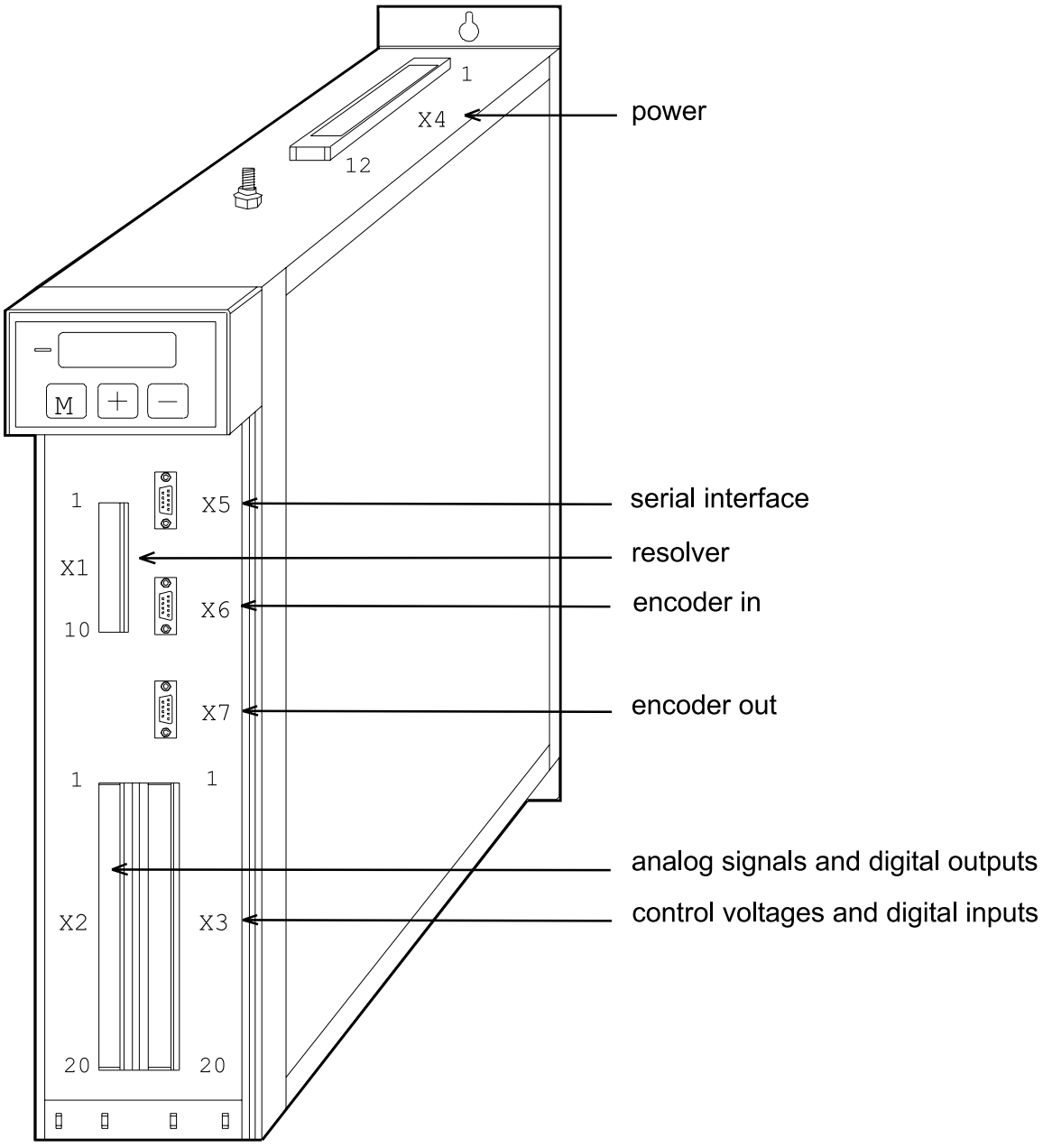
CONTINUOUS PEAK (680V)

For complete motor and cable information, please refer to the Motor Cable Table at the end of the Servo Motors section.

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HPD2N - HPD24N

Front view



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Terminal Board X1

1	Motor PTC + (24V)
2	Motor PTC -
3	Resolver excitation phase high
4	Resolver excitation phase low
5	Resolver Sin high
6	Resolver Sin low
7	Resolver Cos high
8	Resolver Cos low
9	0 V
10	0 V

Terminal Board X4

1	LIVE 1 (L1)
2	LIVE 2 (L2)
3	LIVE 3 (L3)
4	U PHASE
5	V PHASE
6	W PHASE
7	A-BUS
8	B-BUS
9	BRAKE COMMAND
10	INTER. BRAKE RESISTOR
11	+ DC BUS
12	- DC BUS

Terminal Board X2

1	Reference high
2	Reference low
3	0 V
4	Auxiliary reference high
5	Auxiliary reference low
6	0 V
7	Auxiliary analog output
8	0 V
9	Tacho output
10	0 V
11	Digital out 0
12	Digital out 1
13	Digital out 2
14	Digital out 3
15	Digital out 4
16	Digital out 5
17	Digital out 6 A
18	Digital out 6 B
19	+ 24V - OUT 200 mA
20	0 V

Terminal Board X3

1	+ 10V @ 10 mA max
2	0 V
3	- 10V @ 10 mA max
4	0 V
5	+ 24 V - IN
6	0 V
7	0 V
8	+ V backup
9	- V backup
10	0 V
11	Drive enable
12	Digital input 1
13	Digital input 2
14	Digital input 3
15	Digital input 4
16	Digital input 5
17	Digital input 6
18	Digital input 7
19	+ 24V OUT @ 200 mA
20	0 V

D Type X5 (DB9 female)

1	TX
2	RX
3	/TX
4	/RX
5	N.C.
6	+BR
7	-BR
8	0 V
9	0 V

D Type X6 (DB9 female)

1	A
2	/A
3	B
4	/B
5	-BRA
6	+BRB
7	0 V
8	-BRB
9	+BRA

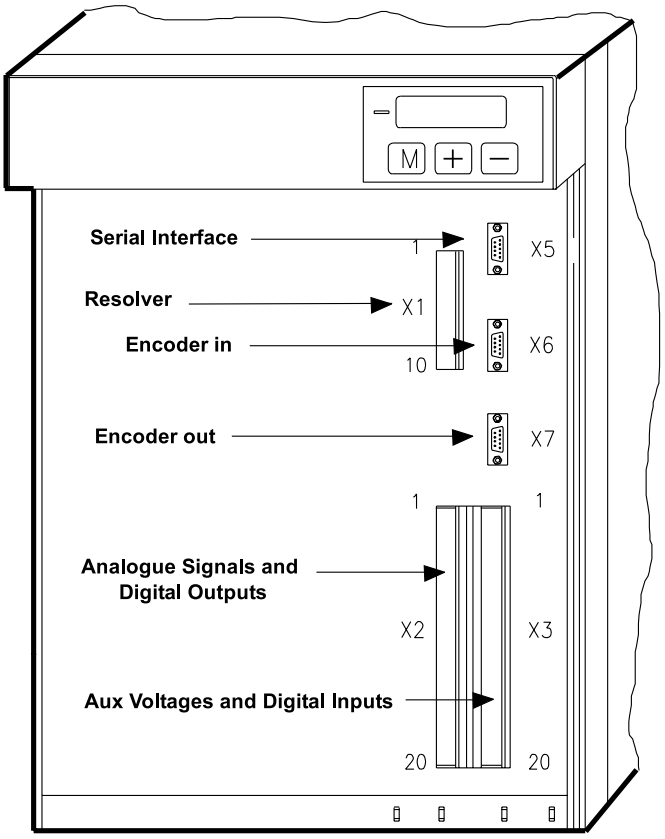
D Type X7 (DB9 female)

1	PHA
2	/PHA
3	PHB
4	/PHB
5	PHC
6	/PHC
7	0 V
8	N.C.
9	N.C.

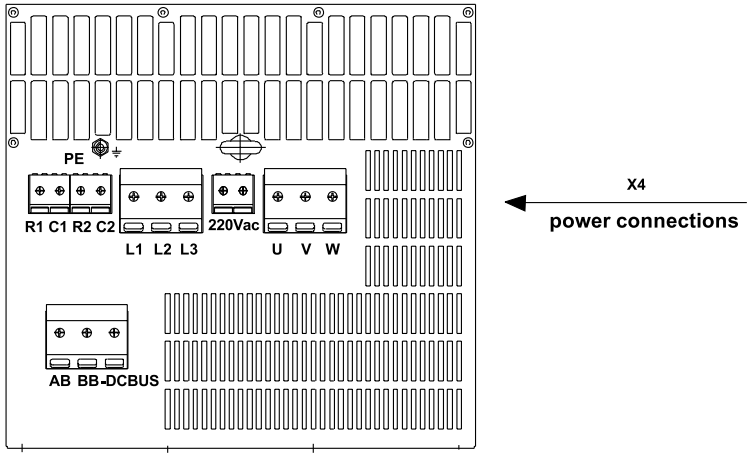
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HPD25N - HPD67N

Front view



Rear view



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Terminal Board X1

1	Motor PTC + (24V)
2	Motor PTC -
3	Resolver excitation phase high
4	Resolver excitation phase low
5	Resolver Sin high
6	Resolver Sin low
7	Resolver Cos high
8	Resolver Cos low
9	0 V
10	0 V

Terminal Board X4

L1	LIVE 1 (L1)	-DC BUS	
L2	LIVE 2 (L2)	R1	
L3	LIVE 3 (L3)	C1	
U	Motor, phase	R2	
V	Motor, phase	C2	
W	Motor, phase	220V~AUX a	Auxiliary voltage
AB		220V~AUX b	Auxiliary voltage
BB			

Terminal Board X2

1	Reference high
2	Reference low
3	0 V
4	Auxilary reference high
5	Auxilary reference low
6	0 V
7	Auxilary analog output
8	0 V
9	Tacho output
10	0 V
11	Digital out 0
12	Digital out 1
13	Digital out 2
14	Digital out 3
15	Digital out 4
16	Digital out 5
17	Digital out 6 A
18	Digital out 6 B
19	+ 24V - OUT 200 mA
20	0 V

Terminal Board X3

1	+ 10V @ 10 mA max
2	0 V
3	- 10V @ 10 mA max
4	0 V
5	+ 24 V IN
6	0 V
7	0 V
8	+ V backup
9	- V backup
10	0 V
11	Drive enable
12	Digital input 1
13	Digital input 2
14	Digital input 3
15	Digital input 4
16	Digital input 5
17	Digital input 6
18	Digital input 7
19	+ 24V OUT @ 200 mA
20	0 V

X5 (DB9 female)

1	TX
2	RX
3	/TX
4	/RX
5	N.C.
6	+BR
7	-BR
8	0 V
9	0 V

X6 (DB9 female)

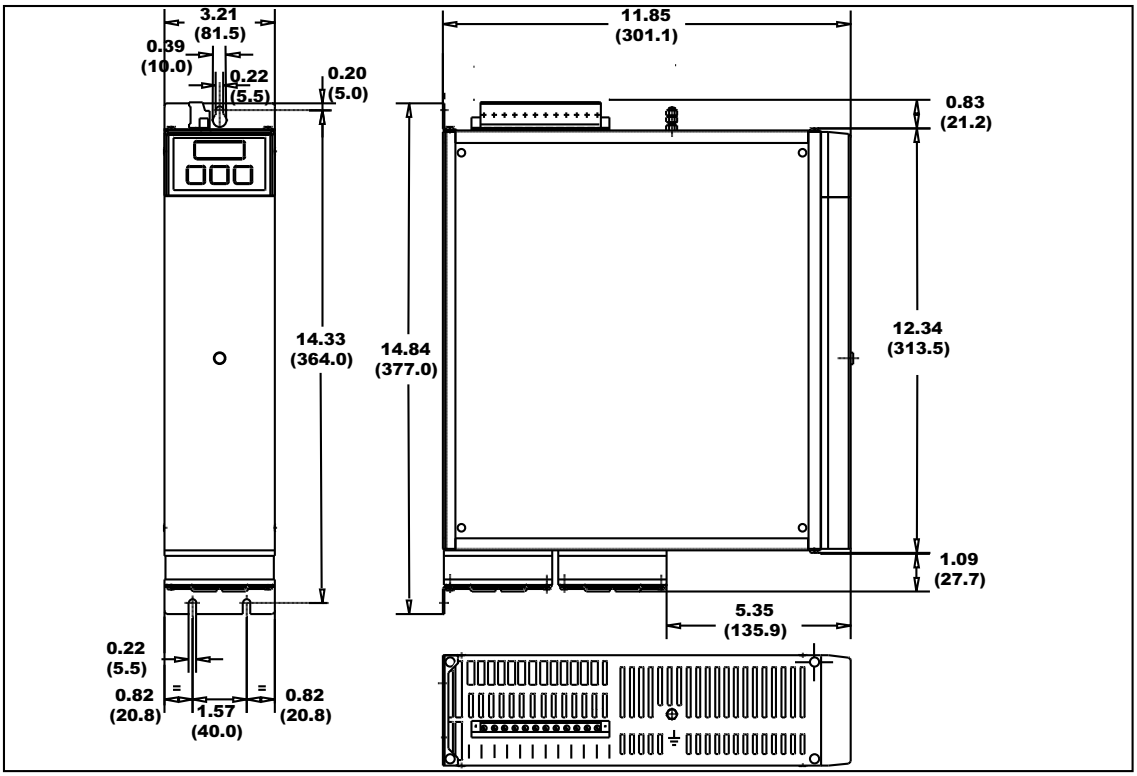
1	A
2	/A
3	B
4	/B
5	-BRA
6	+BRB
7	0 V
8	-BRB
9	+BRA

X7 (DB9 male)

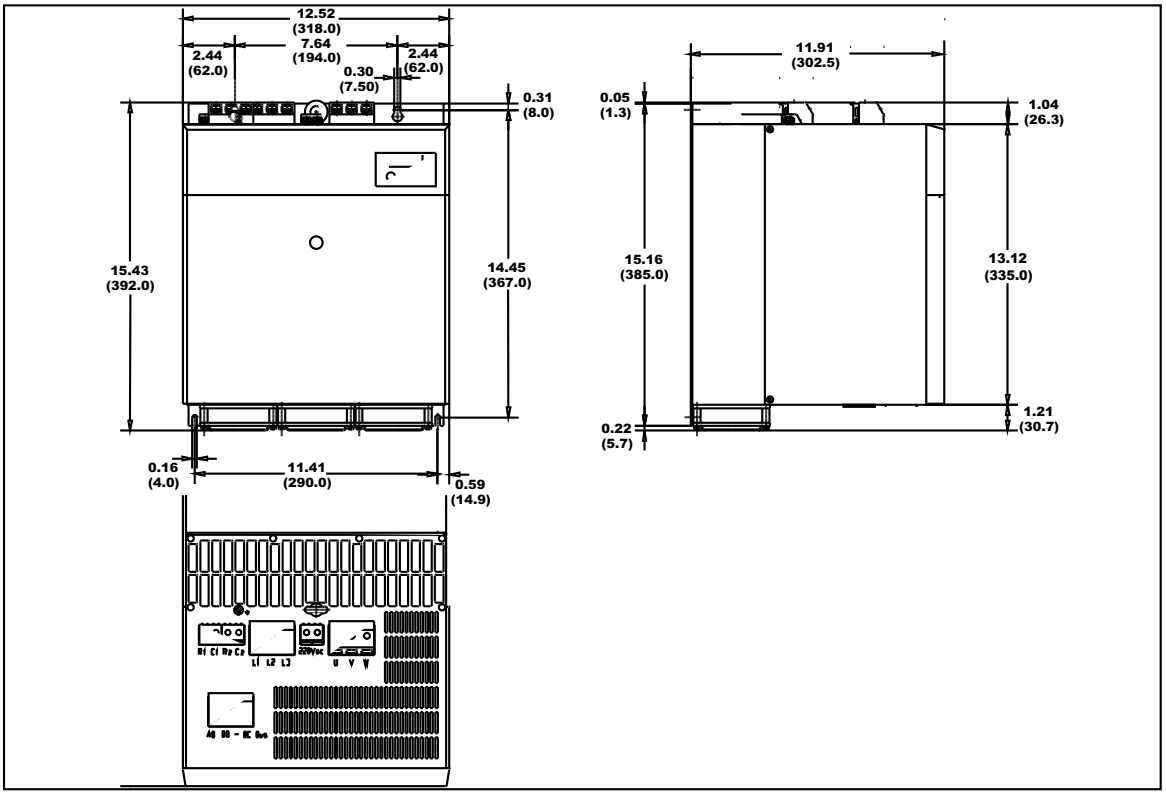
1	PHA
2	/PHA
3	PHB
4	/PHB
5	PHC
6	/PHC
7	0 V
8	N.C.
9	N.C.

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HPD2N-24N Dimensions in inches (mm)



HPD25N-67N Dimensions in inches (mm)



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