

Catalog CA.P7.01
P7 Drives for Industrial Automation

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YASKAWA

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- DeviceNet™, trademark of ODVA.
- Profibus®, trademark of PROFIBUS International
- Modbus®, trademark of Schneider Automation, Inc.

Other Documents and Manuals are available to support special use or installation of this product. These documents may be provided with the product or upon request. Contact Yaskawa Electric America, Inc. or visit www.yaskawa.com, as required. Documents may include the following:

- TM.P7.01... Drive Technical Manual included on CD ROM with product
- TM.P7.02... Programming... Drive Programming Manual included on CD ROM with product
- TM.AFD.12... Profibus-DP... Manual included on CD ROM with product
- TM.AFD.13... DeviceNet... Manual included on CD ROM with product
- TM.AFD.26... EtherNet/IP... Included on CD ROM with product
- DriveWizard... Software and Manual... Included on CD ROM with product
- Options Instructions... Included on CD ROM with product

REVISIONS

Change	Page
Changed revision date	all pages
Updated Remote Operator Kit information	10
Added BACnet information	11
Minor text changes	4-6, 8-9, 12-14, 16-17, 20-21, 27, 29, 34-35, 37, 48-49, 53, 60-61
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Updated model numbers in table	17
Added P7S section	27-34
Updated Step 2 in P7CR Model Number Configuration	36
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Updated Dimensions and Data tables	24-25, 56-59
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Updated DeviceNet model number	11



For industrial applications such as centrifugal fans and pumps, the P7 drive is an ideal choice. The drive is provided in Normal Duty ratings with 110% overload capability. V/f control mode, network communication options, and an array of input/output options are available.

This drive is designed for tough industrial environments. It is rugged and reliable, with an MTBF of 28 years. A variety of enclosure options provide the right environmental protection. Providing the right power requirements is also easy with 208/240 and 480 volt ratings, built-in bus choke above 30 HP, common bus capability, and other energy savings options.

The P7 supports communications choices such as DeviceNet, Profibus-DP and others. Drive coordination with other equipment is simplified with inputs and outputs for 4 to 20 mA, 0-10V and an assortment of programmable contacts.

With an optional phase-shifting input transformer, the P7 dual-diode bridge can be operated in 12-pulse rectification mode, reducing input current harmonic distortion factor by over 90%. With lower EMI/RFI emission and lower total harmonic distortion contribution, the P7 meets or exceeds the generally accepted power quality standards.

The P7 has been designed to provide the features and options commonly needed for fan and pump applications.

Performance Features

- Ratings: 5-150 HP, 208 VAC
5-150 HP, 230 / 240 VAC
5-500 HP, 480 VAC
- Overload capacity: nominal 110% for 60 sec. (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current-limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque-limiting: 30-180%
- Energy Saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Sleep function
- Run-permissive input

Protective Features

- Current-limited stall prevention
- Heat sink over-temperature, speed fold-back
- Bi-directional start into rotating motor
- Current-limiting DC bus fuse
- Optically-isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Short circuit withstand rating: 100K RMS
- Electronic motor overload: UL
- Current limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Reverse prohibit selectability

Service Conditions

- Ambient Temperature: -10°C to 40°C
NEMA 1, 45°C protected chassis (14° F to 104° F, 113° F)
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

Design Features

- LCD keypad display, 5 lines x 16 characters, backlit, 6 languages, copy function
- Multi-step speed settings: 5 available
- Setpoint (PI) control
- 32-bit microprocessor logic
- Non-volatile memory, program retention
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-500 HP, 480 VAC; optional on lower ratings
- 24 VDC control logic, PNP / NPN selectable
- Transmitter/Option power supply
- Input/output terminal status
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus protocol
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- NEMA 1 or protected chassis
- UL, cUL listed and CE marked; IEC 146;
- MTBF: exceeds 28 years
- DriveWizard™ upload/download and monitoring/graphing software

Inputs and Outputs

- Output contacts: One form C and two programmable form A
- Input terminals: 5 programmable multifunction input terminals
- Fault input: Programmable
- Remote speed command: 0-10 VDC or 4-20mA, direct or reverse-acting
- Analog outputs: Programmable, two, 0-10 VDC

Options

- Remote digital operator kit
- Input and/or output reactor
- Twelve-pulse rectification with input transformer: 30 -150 HP at 240 VAC, 40-500 HP at 480 VAC
- Communication Interface: DeviceNet, Profibus, LonWorks, Ethernet, and Modbus Plus
- RFI/EMI filter / EMC
- Pressure transducer, 3-15 PSI
- Analog outputs: programmable, two, 4-20 mA

P7

Standard Drives

P7 Drives - 5-500HP, 208-230/240 and 480V, 3-phase⁽¹⁾ input, NEMA 1 or protected chassis enclosure

Rated Input Voltage	Drive Model Number CIMR-P7U	Rated Output Current (Amps)	Nominal HP ⁽²⁾	Standard Enclosure	Drive List Price \$
208V	23P71	16.8	5	NEMA 1	
	25P51	23	5 ⁽³⁾		
	27P51	31	7.5	NEMA 1	
		31	10		
	20111	46.2	15	NEMA 1	
	20151	59.4	20	NEMA 1	
	20181	74.8	25		
	20221	88	30	NEMA 1	
	20301	115	40		
	20370	162	50	Protected Chassis	
20450	192	60			
20550	215	75	Protected Chassis		
20750	312	100			
20900	360	125	Protected Chassis		
21100	415	150			
240V	23P71	16.8	5	NEMA 1	
	25P51	23	7.5		
	27P51	31	10	NEMA 1	
	20111	46.2	15		
	20151	59.4	20	NEMA 1	
	20181	74.8	25		
20221	88	30	NEMA 1		
20301	115	40			
230V	20370	162	50	Protected Chassis	
		162	60		
	20450	192	75	Protected Chassis	
	20550	215	75 ⁽³⁾		
	20750	312	100	Protected Chassis	
		312	125		
20900	360	150	Protected Chassis		
21100	415	150 ⁽³⁾			

(1) For single-phase input applications, consult Yaskawa Drives Applications Engineering for proper sizing

(2) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(3) Check motor FLA for proper drive sizing

P7 Drives (Continued)

Rated Input Voltage	Drive Model Number CIMR-P7U	Rated Output Current (Amps)	Nominal HP ⁽²⁾	Standard Enclosure	Drive List Price \$
480V	43P71	7.6	5	NEMA 1	
	44P01	8.7	5 ⁽³⁾	NEMA 1	
	45P51	12.5	7.5	NEMA 1	
	47P51	17	10	NEMA 1	
	49P01	21	15	NEMA 1	
	40111	27	20	NEMA 1	
	40151	34	25	NEMA 1	
	40181	40	30	NEMA 1	
	40221	50.4	30 ⁽³⁾	NEMA 1	
	40241	52	40	NEMA 1	
	40301	67.2	50	NEMA 1	
	40371	77	60	NEMA 1	
	40451	96	75	NEMA 1	
	40551	125	100	NEMA 1	
	40750	156	125	Protected Chassis	
	40900	180	150	Protected Chassis	
	41100	240	200	Protected Chassis	
	41320	260	200 ⁽³⁾	Protected Chassis	
41600	304	250	Protected Chassis		
41850	414	300 350	Protected Chassis		
42200	515	400 450	Protected Chassis		
43000	675	500	Protected Chassis		

- (1) For single-phase input applications, consult Yaskawa Drives Applications Engineering for proper sizing
- (2) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (3) Check motor FLA for proper drive sizing

P7

Ring Kit Options

Ring Kit - These kits allow installation of the drive into a customer's enclosure with the heatsink mounted out the back to reduce overall enclosure size. Each kit includes all of the necessary components, including hardware and instructions.

Rated Input Voltage	Drive Model Number CIMR-P7U	Kit Model No. UDA00417-	Kit List Price \$
208-230/240V	20P41 thru 25P51	D	
	27P51	C	
	20111		
	20151	B	
	20181		
	20221	F	
	20301	E	
20370 thru 21100		Not Available	
480V	40P41 thru 45P51	D	
	47P51 thru 40111	C	
	40151	B	
	40181		
	40221 thru 40301	E	
	40371 thru 40551	A	
40750 thru 43000		Not Available	

Enclosure Options

End Cap Kit
Leg Kit



End Cap Kit, NEMA 1 - This option consists of a top and bottom cover to convert a protected chassis drive to a NEMA 1 enclosed unit. This option DOES NOT provide additional space for mounting auxilliary components (i.e. circuit breaker, input fuses, reactor, etc.).

Rated Input Voltage	Drive Model Number CIMR-P7U	Kit Model No. UDA00365-	Overall Drive Dimensions			Kit List Price \$
			Height (in.)	Width (in.)	Depth (in.)	
208-230/240V	20P41 thru 20301		Not Required			
	20370	C	32.24	15.55	No Change	
	20450					
	20550	E	40.83	18.43	No Change	
	20750					
	20900	F	49.33	20.43	No Change	
	21100		Not Available			
480V	40P41 thru 40551		Not Required			
	40750	E	40.83	18.43	No Change	
	40900					
	41100	F	49.33	20.43	No Change	
	41320					
	41600	P	52.52	23.39	No Change	
	41850	Q	70.00	27.95	No Change	
	42200					
	43000	R	76.00	36.06	No Change	

Freestanding Leg Kit, NEMA 3R - This option allows the NEMA 3R wall-mount enclosures to be mounted on legs so that the control can be freestanding and off the ground. Either kit can be used on any of the wall-mount enclosures. (All floor-mount enclosures come standard with freestanding legs.)

12" Leg Kit

Model No. UDA00548-1 List \$

30" Leg Kit

Model No. UDA00548-2 List \$

Reactor, 3% and 5% Impedance - May be used on either the input or output of a drive to reduce the effect of load or line side transients on the drive. The three-phase reactors are provided in a separate NEMA 1 enclosure.

Rated Input Voltage	Drive Model Number CIMR-P7U	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	3% Enclosed Reactor					5% Enclosed Reactor				
				Part Number 05P00620-	List Price \$	Dimensions (in.)			Part Number 05P00620-	List Price \$	Dimensions (in.)		
						H	L	W			H	L	W
208V	23P71	16.8	5	0041		13.0	13.0	13.0	0036		8.0	8.0	6.0
	27P51	31	7.5	0041		13.0	13.0	13.0	0047		13.0	13.0	13.0
			10	0046					0051				
	20111	46.2	15	0054		13.0	13.0	13.0	0055		13.0	13.0	13.0
	20151	59.4	20	0058					0059				
	20181	74.8	25	TBD		13.0	13.0	13.0	0058		13.0	13.0	13.0
	20221	88	30						0067				
	20301	115	40	0066		13.0	13.0	13.0	0067		13.0	13.0	13.0
	20370	162	50	URX000206					0073				
	20450	192	60	0077		13.0	13.0	13.0	0078		13.0	13.0	13.0
	20550	215	75	TBD					0083		24.0	17.0	17.0
20750	312	100	TBD		24.0	17.0	17.0	0088		24.0	17.0	17.0	
20900	360	125	TBD		TBD			0092		24.0	17.0	17.0	
21100	415	150			TBD			0096					
240V	23P71	16.8	5	0036		8.0	8.0	6.0	0037		8.0	8.0	6.0
	25P51	23	7.5	0041		13.0	13.0	13.0	0042		13.0	13.0	13.0
	27P51	31	10	0046					0047				
	20111	46.2	15	0050		13.0	13.0	13.0	0055		13.0	13.0	13.0
	20151	59.4	20	0054					0059				
	20181	74.8	25	0058		13.0	13.0	13.0	0058		13.0	13.0	13.0
	20221	88	30	TBD					0058				
20301	115	40	0066		13.0	13.0	13.0	0067		13.0	13.0	13.0	
230V	20370	162	50	0066		13.0	13.0	13.0	0067		13.0	13.0	13.0
			60	URX000206					0073				
	20450	192	75	0077		13.0	13.0	13.0	0078		13.0	13.0	13.0
	20750	312	100	TBD		13.0	13.0	13.0	0083		24.0	17.0	17.0
		125	TBD		24.0	17.0	17.0	0088					
20900	360	150	TBD		TBD			0092		24.0	17.0	17.0	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

Reactor, 3% and 5% Impedance (continued for 480V)

Rated Input Voltage	Drive Model Number CIMR-P7U	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	3% Enclosed Reactor					5% Enclosed Reactor				
				Part Number 05P00620-	List Price \$	Dimensions (in.)			Part Number 05P00620-	List Price \$	Dimensions (in.)		
						H	L	W			H	L	W
480V	43P71	7.6	5	0033		8.0	8.0	6.0	0029		8.0	8.0	6.0
	45P51	12.5	7.5	0037		8.0	8.0	6.0	0034		8.0	8.0	6.0
	47P51	17	10	0037					0038		13.0	13.0	13.0
	49P01	21	15	0042		13.0	13.0	13.0	0043		13.0	13.0	13.0
	40111	27	20	0047					0048				
	40151	34	25	0047		13.0	13.0	13.0	0048		13.0	13.0	13.0
	40181	40	30	0051					0052				
	40241	52	40	0055		13.0	13.0	13.0	0056		13.0	13.0	13.0
	40301	67.2	50	0059					0060				
	40371	77	60	0062		13.0	13.0	13.0	0063		13.0	13.0	13.0
	40451	96	75										
	40551	125	100	0067		13.0	13.0	13.0	0068		13.0	13.0	13.0
	40750	156	125	0073					0074				
	40900	180	150	0078		13.0	13.0	13.0	0079		13.0	13.0	13.0
	41100	240	200	0083		24.0	17.0	17.0	0084		24.0	17.0	17.0
	41600	304	250	0088		24.0	17.0	17.0	0089		24.0	17.0	17.0
41850	414	300 & 350	0092					0093					
42200	515	400 & 450	0100		24.0	17.0	17.0	URX000205		24.0	17.0	17.0	
43000	675	500	0104		30.0	24.0	24.0	0105		30.0	24.0	24.0	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors



Control Options

Control Options - These cards, cables and devices add control functionality to the standard drive. Items are shipped loose, unmounted. See Configured Section for factory mounted and wired control.

Analog Input Options

Trim Potentiometer. This option provides a 5kOhm potentiometer for use as a dropping resistor for maximum or minimum analog input trim.

Mounts to control terminal strip

Model No. AI-001List \$

3-15PSI Transducer. This option provides for the interface of a 3 to 15PSI pneumatic signal, and provides a 4 to 20mA output signal proportional to the input signal to the drive.

Mounts to control terminal strip

Model No. AI-010List \$

Analog Output Options

Analog Output Monitor, 4-20mA. The standard drive provides two programmable 0-10VDC outputs. This option will convert either, or both, of these outputs to 4-20mA output signals. It can be used for remote metering of any of the "U1" parameters, including: output frequency, output current, DC bus voltage, etc.

This option replaces and mounts in the same location as the drive's standard terminal PCB.

Model No. ETC618121List \$

Digital Input Options

120VAC Logic Interface (7-Input). This option provides for the interface of 120VAC control logic circuits to the drive. This option is used for digital inputs S1 to S7.

Mounts to control strip

Model No. DI-002..... List \$

Digital Operator Options

Digital Operator (LCD). This option is the standard digital operator found on the drive. This option is only needed if the original keypad is lost or damaged.

Features include:

LCD keypad display, 5 lines x 16 characters, backlit

7 languages

Copy function

Mounts to keypad port

Model No. 300-018-974 List \$

Digital Operator (LCD) Outdoor Viewing. This option is the standard digital operator supplied on all NEMA 3R packaged drives. This keypad is only needed if the original keypad is lost or damaged.

Features include:

LCD keypad display

Copy function

Mounts to keypad port.

Model No. UOP000013..... List \$

UL Rated Remote Operator Kits. This option is used to extend the existing Digital Operator to the wall of a separately priced, oversized UL Type 1, 3R,4, 4X, or 12 enclosure (IPX6 environment). Price includes a faceplate bezel with digital operator carrier and membrane to cover the operator cutout in the enclosure door, a 3-foot cable, a 10-foot cable, and a 1:1 template for cutting the necessary cutouts in the enclosure. Keypad can be removed after kit installation. When using this option for NEMA 3R (outdoor) applications, use digital operator UOP000013 (purchased separately).

Mounts to keypad port and enclosure wall.

Model No. UUX000458 (Blank Membrane)..... List \$

Model No. UUX000459 (Yaskawa Logo Membrane) List \$

Remote Operator Kit. This option is used to extend the existing Digital Operator to the wall of a separately priced, oversized NEMA 1 enclosure (No UL rating). Price includes a faceplate membrane to cover the operator cutout in the enclosure door, a 3-foot cable, a 10-foot cable, a remote digital operator carrier, and a 1:1 template for cutting the necessary cutouts in the enclosure.

Note: Keypad cannot be removed after initial installation.

Mounts to keypad port and enclosure wall.

Model No. UUX000444 (Yaskawa Logo Membrane) List \$



Communications Options - These communications options are provided loose, unmounted. Network communications are available for most popular protocols.

DeviceNet. This option complies with the ODVA (Open DeviceNet Vendor Association) specification and AC drive profile. All parameter, diagnostics and operational commands are accessible via DeviceNet. The option board provides a DeviceNet standard open tap connector. Each DeviceNet network supports up to 63 drives. Controllers are available from many PLC and/or PC suppliers. Electronic Data Sheets may be downloaded from www.yaskawa.com to assist with network configuration and drive setup.

Mounts at option connector 2CN. Covers 3CN.

Model No. CM012List \$

Profibus DP. This option complies with the Profibus DP protocol specification. All parameters, diagnostics and operational commands are accessible via Profibus. The option board provides convenient Phoenix-type terminations for landing the shielded, twisted-pair wiring. Each Profibus network supports up to 99 drives. This option supports all of the Profibus data rates from 9.6 Kbps to 12 Mbps. Up to 32 bytes of input data and 32 bytes of output data are provided per message transaction. GSD files may be downloaded from www.yaskawa.com to assist with network configuration and drive setup.

Mounts at option connector 2CN.

Model No. CM061List \$

LonWorks. This option is compatible with the Lon Mark Interoperability Association and complies with the Functional Profile for a Variable Frequency Motor Drive. The option board features the FFT-10A Free Topology Twisted-Pair Transceiver. Network connectivity is facilitated by either a Phoenix-style screw termination or RJ-45 connector. The kit includes a 12-inch pigtail (UWR00567-1) for interface wiring of the phoenix terminal block. Optional longer pigtail assemblies are available for use when drive is mounted within another enclosure. The 20-inch cable is for wall mount enclosures. The 78-inch cable may be used with any enclosure and may be cut to any length required.

Mounts at option connector 2CN. Covers 3CN. Blocks 4CN.

Model No. CM048List \$

Model No. UWR00567-2 (20-inch cable)List \$

Model No. UWR00567-3 (78-inch cable)List \$

Modbus Plus. This option complies with Modicon's ModConnect Partners program and provides a seamless interface to Quantum, 984 and Compact PLCs. All parameters, diagnostics and operational commands are accessible via Modbus Plus. The option board provides a 9-pin D-shell connector for easy wiring and communicates via a 1 Mbps, twisted-pair, Local Area Network. Each Modbus Plus network supports up to 63 drives.

Mounts at option connector 2CN. Covers 3CN.

Model No. CM071List \$

Modbus TCP/IP. This option complies with the Modbus TCP/IP protocol specification. This allows for communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host or from a BootP host. All parameters, diagnostics and operational commands are accessible via Modbus TCP/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program. This option supports up to 10 simultaneous PLC/PC connections.

Mounts at option connector 2CN.

Model No. CM090List \$

EtherNet/IP. This option complies with the EtherNet/IP protocol specification. This allows for communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host or from a BootP host. All parameters, diagnostics and operational commands are accessible via EtherNet/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program.

Mounts at option connector 2CN.

Model No. CM092List \$

BACnet. This option complies with the BACnet protocol specification. This allows for communication over MS-TP (RS-485) BACnet networks. All parameters, diagnostics and operational commands are accessible via BACnet. BACnet is supported and maintained by ASHRAE Standing Standard Project Committee. The kit includes a 12-inch pigtail (UWR00567-1) for interface wiring of the drive Modbus terminals. Optional longer pigtail assemblies are available for use when drive is mounted within another enclosure. The 20-inch cable is for wall mount enclosures. The 78-inch cable may be used with any enclosure and may be cut to any length required.

Mounts at option connector 2CN.

Model No. CM049List \$

Model No. UWR00567-2 (20-inch cable)List \$

Model No. UWR00567-3 (78-inch cable)List \$

Rated Input Voltage	Drive Model Number CIMR-PU	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Standard Enclosure	Dimension Drawing Number ⁽³⁾	Heat Loss (watts) ⁽⁴⁾		
				H	W	D				Heatsink	Internal	Total
208V	23P71	16.8	5	11.02	5.51	7.09	8.8	NEMA 1	DD.P7.FR2.N1.01	110	74	184
	27P51	31.0	7.5 & 10	11.81	7.87	7.87	13.2		DD.P7.FR3A.N1.01	219	113	332
	20111	46.2	15	12.20	7.87	7.87	15.4		DD.P7.FR3B.N1.01	357	168	525
	20151	59.4	20	13.78	9.45	8.27	24.2	Protected Chassis	DD.P7.FR4A.N1.01	416	182	598
	20181	74.8	25	14.96			DD.P7.FR4C.N1.01		472	208	680	
	20221	88	30	21.06	10.00	10.24	53		DD.P7.FR5.N1.01	583	252	835
	20301	115	40	24.21	10.98		59		DD.P7.FR6A.N1.01	883	333	1216
	20370	162	50	23.62	14.76	11.81	125		DD.P7.FR7.IP00.01	1010	421	1431
	20450	192	60			12.99	139		DD.P7.FR8.IP00.01	1228	499	1727
	20550	215	75	28.54	17.72	13.78	189		DD.P7.FR10.IP00.01	1588	619	2207
20750	312	100				191		1956	844	2800		
20900	360	125	33.46	19.69	14.17	238	DD.P7.FR11.IP00.01	2194	964	3158		
21100	415	150	34.84	22.64	14.96	330	DD.P7.FR12.IP00.01	2733	1234	3967		
240V	23P71	16.8	5	11.02	5.51	7.09	8.8	NEMA 1	DD.P7.FR2.N1.01	110	74	184
	25P51	23.0	7.5						164	84	248	
	27P51	31.0	10	11.81	7.87	7.87	13.2		DD.P7.FR3A.N1.01	219	113	332
	20111	46.2	15	12.20			15.4		DD.P7.FR3B.N1.01	357	168	525
	20151	59.4	20	13.78	9.45	8.27	24.2	DD.P7.FR4A.N1.01	416	182	598	
	20181	74.8	25	14.96				DD.P7.FR4C.N1.01	472	208	680	
230V	20221	88	30	21.06	10.00	10.24	53	NEMA 1	DD.P7.FR5.N1.01	583	252	835
	20301	115	40	24.21	10.98		59		DD.P7.FR6A.N1.01	883	333	1216
	20370	162	50 & 60	23.62	14.76	11.81	125	Protected Chassis	DD.P7.FR7.IP00.01	1010	421	1431
	20450	192	75			12.99	139		DD.P7.FR8.IP00.01	1228	499	1727
20750	312	100 & 125	28.54	17.72	13.78	191	DD.P7.FR10.IP00.01	1956	844	2800		
20900	360	150	33.46	19.69	14.17	238	DD.P7.FR11.IP00.01	2194	964	3158		
480V	43P71	7.6	5	11.02	5.51	7.09	8.8	NEMA 1	DD.P7.FR2.N1.01	80	68	148
	45P51	12.5	7.5						127	81	208	
	47P51	17.0	10						193	114	307	
	49P01	21.0	15	11.81	7.87	7.87	13.2		DD.P7.FR3A.N1.01	210	140	350
	40111	27.0	20						232	158	390	
	40151	34.0	25	13.78	9.45	8.27	22		DD.P7.FR4B.N1.01	296	169	465
	40181	40.0	30					DD.P7.FR4A.N1.01	389	201	590	
	40221	50.4	30					420	233	653		
	40241	52	40	21.06	10.98	10.24	53	NEMA 1	DD.P7.FR6B.N1.01	510	260	770
	40301	67.2	50						691	298	989	
	40371	77	60	25.00					DD.P7.FR9A.N1.01	801	332	1133
	40451	96	75	28.15	12.95	11.22	88		DD.P7.FR9B.N1.01	901	386	1287
	40551	125	100	28.15					1204	478	1682	
	40750	156	125					Protected Chassis	DD.P7.FR10.IP00.01	1285	562	1847
	40900	180	150	28.54	17.72	13.78	196		DD.P7.FR10.IP00.01	1614	673	2287
	41100	240	200	33.46	19.69	14.17	224		DD.P7.FR11.IP00.01	1889	847	2736
	41320	260	200				264			2388	1005	3393
41600	304	250	36.06	22.64	14.96	352		DD.P7.FR13.IP00.01	2791	1144	3935	
41850	414	300 & 350					Protected Chassis	DD.P7.FR14.IP00.01	2636	1328	3964	
42200	515	400 & 450	51.38	27.95	16.34	616			3797	1712	5509	
43000	675	500	58.07	36.06	16.34	891		DD.P7.FR15.IP00.01	5838	2482	8320	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This data represents the drive weight only, not shipping weight.
- (3) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.
- (4) Total Heat Loss is the amount of heat dissipated by the drive at full load. This data is separated into "Heatsink" and "Internal" values. The value in the "Heatsink" column is the amount of heat dissipated by the heatsink, and would not need to be considered when calculating the enclosure size for applications that may require mounting the heatsink out the back of the enclosure using the Ring Kit option.



The P7/Configured package provides a P7 in a NEMA 1 or NEMA 12 FVFF enclosure, with space for several commonly used options, such as reactors, RFI filters, circuit breakers, etc. The P7 and P7/Configured have been designed for flexibility in providing the features and options commonly demanded by facility designers.

The P7 Drive is a variable torque AC drive, designed specifically for industrial applications. A new benchmark for size, cost, performance, benefits and quality, the P7 includes numerous built-in features such as Network Communications, PI control and energy-savings functions.

The P7 has embedded communications for Modbus. An optional interface card is also available for DeviceNet, Profibus, EtherNet, and LonWorks.

Performance Features

- VT Ratings: 5-150 HP, 208 VAC
5-150 HP, 230/240 VAC
5- 500 HP, 480 VAC
- Overload capacity: 110% for 60 sec. (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque limiting: 30-180%
- Energy Saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Customizable monitor display
- Sleep function
- Run permissive input
- Ramp-to-stop or coast-to-stop selection
- Runtime changes in control and display
- Project-specific parameter reinitialization

Service Conditions

- Ambient Temperature: -10°C to 40°C (14°F to 104°F)
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

Protective Features

- Current limited stall prevention
- Heat sink over-temperature, speed fold-back
- Cooling fan operating hours recorded
- Bi-directional start into rotating motor at synchronized speed
- DC bus charge indicator
- Current limiting DC bus fuse
- Optically-Isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Electronic motor overload: UL
- Current and torque limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Program security code
- "Hunting" prevention logic
- Reverse prohibit selectability

Configured Options

- Circuit breaker / Motor circuit protector
- RFI/EMI filter
- Input fuses
- Input reactor
- Output reactor
- Engraved nameplates
- Speed potentiometer
- Pressure/electrical transducer
- Analog outputs: 2 programmable, 4-20 mA
- HOA Selector Switch
- 200VA Control Transformer (fused)
- Communication Interface: DeviceNet, Profibus, EtherNet, LonWorks, Johnson Controls METASYS N2, and Siemens APOGEE FLN
- DriveWizard™ upload/download and monitoring/graphing software

Design Features

- 32-bit microprocessor logic
- Flash upgradeable firmware
- Non-volatile memory, program retention
- Surface-mount devices
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect, removable
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-500 HP, 480 VAC; optional on lower ratings
- Keypad Operator: built-in copy feature, 6 languages
- LCD display: 5 lines, 16 characters each
- 24 VDC control logic
- Transmitter/Option power supply
- Output contacts: One form C and two programmable form A
- Input/output terminal status
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Diagnostic fault indication in selected language
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Multi-speed settings: 5 available
- Remote speed command: 0-10 VDC or 4-20 mA, direct or reverse-acting
- Setpoint (PI) control with inverse or square root input, differential control via two feedback capability
- Feedback signal: low pass filter
- Speed command: bias and gain
- Analog outputs: Programmable, two, 0-10 VDC
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- Output Current Transformers, qty 3
- NEMA 1 or NEMA 12 FVFF enclosure
- UL, cUL listed; CE marked; IEC 146
- MTBF: exceeds 28 years



Description
5-500HP
P7/Configured
NEMA 1/12 FVFF

Model Number Configuration & Pricing:

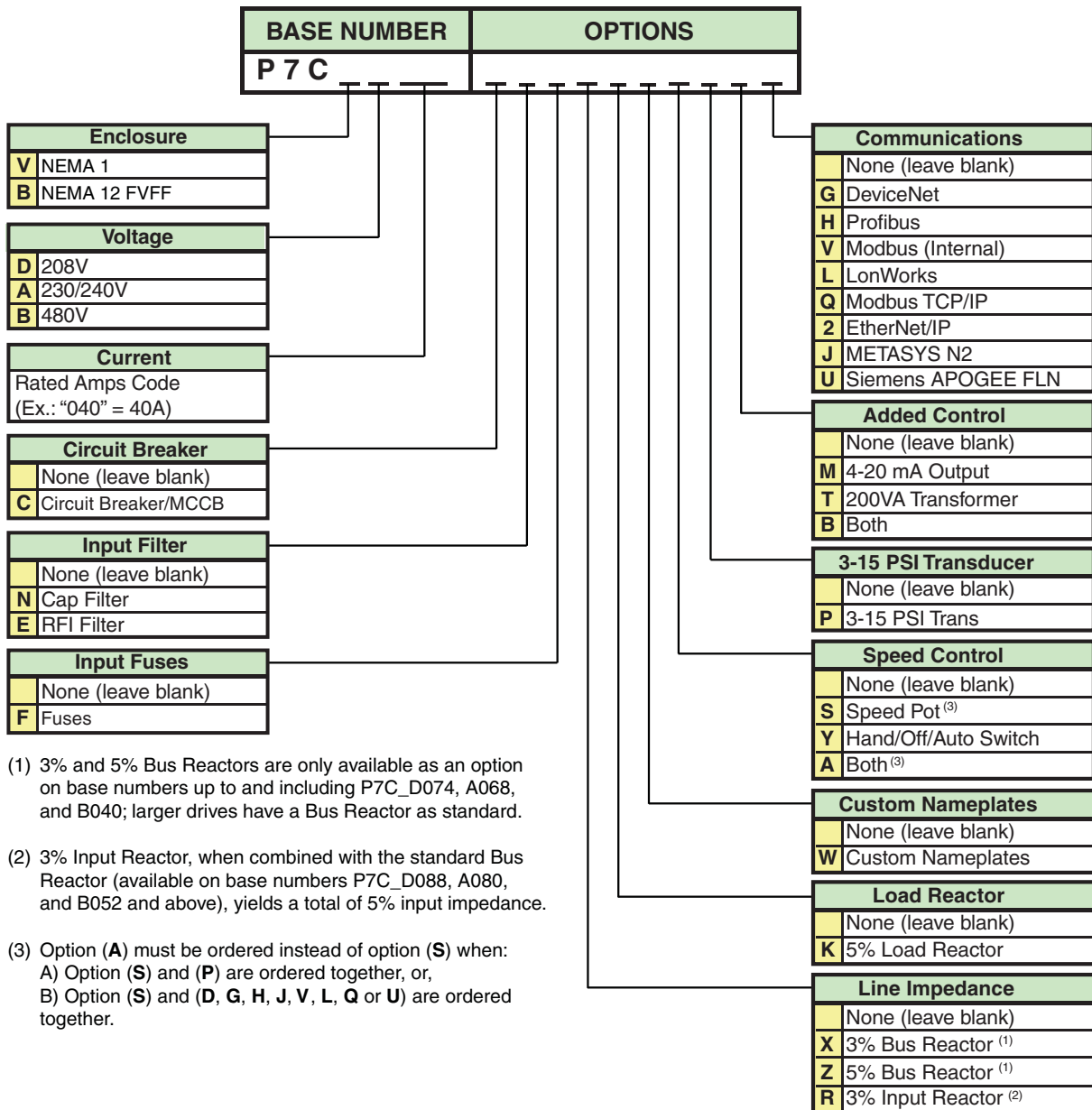
Step 1. First complete the Base Number for the required enclosure type, voltage and current rating.

Step 2. Add the Option code letter for each required option. If an option is not wanted, no character is inserted.

Step 3. Find the list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: P7 Configured package (**P7CV**) with a 40 Amp, 480V drive (**B040**), with Circuit Breaker (**C**), 3% Bus reactor (**X**), door-mounted speed pot (**S**) and Profibus communication capability (**H**). Model number is:

P7CVB040CXSH



- (1) 3% and 5% Bus Reactors are only available as an option on base numbers up to and including P7C_D074, A068, and B040; larger drives have a Bus Reactor as standard.
- (2) 3% Input Reactor, when combined with the standard Bus Reactor (available on base numbers P7C_D088, A080, and B052 and above), yields a total of 5% input impedance.
- (3) Option (**A**) must be ordered instead of option (**S**) when:
 - A) Option (**S**) and (**P**) are ordered together, or,
 - B) Option (**S**) and (**D, G, H, J, V, L, Q** or **U**) are ordered together.

Configured Option Descriptions:

(V, B) Enclosure: The drive and options are provided in either a NEMA Type 1 (V) ventilated or NEMA 12 FVFF (force ventilated fan filter) (B) enclosure, large enough to accommodate any or all of the package options. Enclosures for Base Numbers up to, and including, D114 (40HP, 208V), A104 (40HP, 240V), and B124 (100HP, 480V) are wall-mounted; larger drives are in floor-mount enclosures.

Options (Power)

(C) Circuit Breaker: The standard configuration provides no branch short circuit protection or input disconnecting means. This option provides a thermal-magnetic circuit breaker that meets NEC branch circuit protection requirements, with a flange-mounted operating handle.

(N, E) Input Filter: The standard configuration does not include a filter. The cap filter, option (N), is a delta-wye capacitive network, while the RFI filter (E) provides noise attenuation to help meet CE requirements. This option requires the addition of the add-on box - see Dimensions and Data.

(F) Input Fuses: The standard configuration does not include Drive Input Fuses. This option provides high-speed semi-conductor drive input fuses, rated for 200,000 amp RMS symmetrical interrupting capacity, that provides both drive input I²T protection and NEC approved branch circuit and short circuit protection.

(X, Z, R) Line Impedance: Drives above Base Numbers D074 (25HP, 208V), A068 (25HP, 240V) and B040 (30HP, 480V) include a 3% DC bus reactor in the standard package and do not provide any additional impedance. Option (X), 3% impedance, and option (Z), 5% impedance, are not available for ratings larger than these. To achieve a 5% total input impedance, select option (R) - this 3% input reactor is available only for the HP ratings greater than the HP's listed above, and combines with the drive's standard DC bus reactor. If this option is combined with a drive that includes a bus reactor, the add-on box is required - see Dimensions and Data.

(K) Load Reactor: No form of output impedance is normally required. A 5% load reactor, option (K), is available if additional output impedance is desired (usually for long lead-lengths or noise reduction). This option may require the add-on box for wall-mount enclosures - see Dimensions and Data.

Options (Control and Communications)

(W) Custom Nameplates: Custom engraved nameplates with white lettering on black lamincoid are available with option (W), for special tagging purposes (Example: "AHU #1"). Note that this option requires the text to be specified by the customer. Leave this field blank if no special nameplates are required.

(S, Y, A) Speed Control: The drive's digital operator is always brought out to the front of the Configured panel, so it is available for speed control - this is the standard configuration. A door-mounted 2.5K ohm speed potentiometer is available for manual speed control with option (S). This also includes a 2.5K ohm trim pot and is suitable for NEMA 1 and NEMA 12 installations. A door-mounted Hand/Off/Auto Switch is available when option (Y) is specified, and both a speed pot and HOA switch are provided with option (A).

(P) 3-15 PSI Transducer: No transducer is provided with the standard configuration. To add an optional transducer that accepts a 3-15 PSI pneumatic signal and converts it to a 4-20mA signal that is sent to the drive, specify option (P).

(M, T, B) Added Control: The standard Configured package provides two programmable 0-10VDC outputs. To convert these outputs to 4-20mA output signals, specify option (M). Option (T) adds a 200VA control transformer, to provide more control circuit capacity. Option (B) can be selected if both options are desired.

(G, H, L, Q, 2, V, J, U) Communications: All configurations provide the hardware and software required for network communications, but these are not enabled in the standard configuration. Option (V) provides the programming and jumpers necessary to enable Modbus communications at no additional cost. DeviceNet option (G), Profibus option (H), Lonworks option (L), Modbus TCP/IP option (Q), and EtherNet/IP option (2) all require the addition of an optional board. Option (J) Johnson Controls METASYS N2 and option (U) Siemens APOGEE FLN require a software change, but no hardware change.



Configured Drives and Options

NEMA 1

P7 Configured Drives - 5-500HP, 208-230/240 and 480V, 3-phase input, NEMA 1 enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 1 Configured		Circuit Breaker	Input Filter		Input Fuses	Line Impedance			Load Reactor	
					C=MCP	N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%	
			P7CV	Base List \$	C List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$	Z List \$	R List \$	K List \$ ⁽²⁾	
208V	16.7	5	D016								N/A		
	24.2	7.5	D024										
	30.8	10	D030										
	46.2	15	D046										
	59.4	20	D059										
	74.8	25	D074										
	88	30	D088										
	114	40	D114										
	143	50	D143										
	169	60	D169							3% DC Bus Reactor is included as standard			
	211	75	D211										
273	100	D273											
343	125	D343											
396	150	D396											
240V	15.2	5	A015								N/A		
	22	7.5	A022										
	28	10	A028										
	42	15	A042										
	54	20	A054										
	68	25	A068										
230V	80	30	A080										
	104	40	A104										
	130	50	A130								3% DC Bus Reactor is included as standard		
	154	60	A154										
	192	75	A192										
248	100	A248											
312	125	A312											
360	150	A360											

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options

Configured Drives and Options

NEMA 1



P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Custom Name-plates	Speed Control				Transducer	Added Control				Communications							Uses Drive Model Number CIMR-P7U
			W=NP	S=Speed Pot Y=HOA Switch A=Both				P=3-15 PSI	M=4-20mA T=200VA B=Both				G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN							
			List \$	S List \$	Y List \$	A List \$	P List \$	M List \$	T List \$	B List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$		
208V	16.7	5																	23P71	
	24.2	7.5																	27P51	
	30.8	10																	27P51	
	46.2	15																	20111	
	59.4	20																	20151	
	74.8	25																	20181	
	88	30																	20221	
	114	40																	20301	
	143	50																	20370	
	169	60																	20450	
211	75																	20550		
273	100																	20750		
343	125																	20900		
396	150																	21100		
240V	15.2	5																	23P71	
	22	7.5																	25P51	
	28	10																	27P51	
	42	15																	20111	
	54	20																	20151	
	68	25																	20181	
	80	30																	20221	
104	40																	20301		
230V	130	50																	20370	
	154	60																	20370	
	192	75																	20450	
	248	100																	20750	
	312	125																	20750	
360	150																	20900		

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) Included in the Base Price



Configured Drives and Options

NEMA 1

P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 1 Configured		Circuit Breaker	Input Filter		Input Fuses	Line Impedance			Load Reactor
					C=MCP	N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%
			P7CV	Base List \$	C List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$	Z List \$	R List \$	K List \$ ⁽²⁾
480V	7.6	5	B007									
	11	7.5	B011								N/A	
	14	10	B014									
	21	15	B021									
	27	20	B027									
	34	25	B034									
	40	30	B040									
	52	40	B052								3% DC Bus Reactor is included as standard	
	65	50	B065									
	77	60	B077									
	96	75	B096									
	124	100	B124									
	156	125	B156									
	180	150	B180									
	240	200	B240									
	302	250	B302									
361	300	B361										
414	350	B414										
477	400	B477										
515	450	B515										
590	500	B590										

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options

Configured Drives and Options

NEMA 1



P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Custom Name-plates	Speed Control				Trans-ducer	Added Control				Communications							Uses Drive Model Number CIMR-P7U
			W=NP	S=Speed Pot Y=HOA Switch A=Both				P=3-15 PSI	M=4-20mA T=200VA B=Both				G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN							
			List \$	S List \$	Y List \$	A List \$	P List \$	M List \$	T List \$	B List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$		
480V	7.6	5																	43P71	
	11	7.5																	45P51	
	14	10																	47P51	
	21	15																	40111	
	27	20																	40151	
	34	25																	40181	
	40	30																	40301	
	52	40																	40371	
	65	50																	40451	
	77	60																	40551	
	96	75																	40750	
	124	100																	40900	
	156	125																	41100	
	180	150																	41600	
	361	300																	41850	
	414	350																	41850	
477	400																	42200		
515	450																	42200		
590	500																	43000		

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) Included in the Base Price



Configured Drives and Options

NEMA 12 FVFF

P7 Configured Drives - 5-500HP, 208-230/240 or 480V, 3-phase input, NEMA 12 enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 12 FVFF Configured		Circuit Breaker	Input Filter		Input Fuses	Line Impedance			Load Reactor
					C=MCP	N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%
					P7CB	Base List \$	C List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$	Z List \$
208V	16.7	5	D016									
	24.2	7.5	D024								N/A	
	30.8	10	D030									
	46.2	15	D046									
	59.4	20	D059									
	74.8	25	D074									
	88	30	D088									
	114	40	D114								3% DC Bus Reactor is included as standard	
	143	50	D143									
	169	60	D169									
	211	75	D211									
273	100	D273										
343	125	D343										
396	150	D396										
240V	15.2	5	A015									
	22	7.5	A022								N/A	
	28	10	A028									
	42	15	A042									
	54	20	A054									
	68	25	A068									
230V	80	30	A080									
	104	40	A104									
	130	50	A130								3% DC Bus Reactor is included as standard	
	154	60	A154									
	192	75	A192									
248	100	A248										
312	125	A312										
	360	150	A360									

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options

Configured Drives and Options

NEMA 12 FVFF



P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Custom Name-plates	Speed Control				Transducer	Added Control				Communications							Uses Drive Model Number CIMR-P7U
			W=NP	S=Speed Pot Y=HOA Switch A=Both				P=3-15 PSI	M=4-20mA T=200VA B=Both				G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN							
			List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	List \$	
208V	16.7	5																	23P71	
	24.2	7.5																	27P51	
	30.8	10																	20111	
	46.2	15																	20151	
	59.4	20																	20181	
	74.8	25																	20221	
	88	30																	20301	
	114	40																	20370	
	143	50																	20450	
	169	60																	20550	
211	75																	20750		
273	100																	20900		
343	125																	21100		
396	150																			
240V	15.2	5																	23P71	
	22	7.5																	25P51	
	28	10																	27P51	
	42	15																	20111	
	54	20																	20151	
	68	25																	20181	
	80	30																	20221	
104	40																	20301		
230V	130	50																	20370	
	154	60																	20450	
	192	75																	20750	
	248	100																	20750	
	312	125																	20750	
360	150																	20900		

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) Included in the Base Price



Configured Drives and Options

NEMA 12 FVFF

P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 12 FVFF Configured		Circuit Breaker	Input Filter		Input Fuses	Line Impedance			Load Reactor
					C=MCP	N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%
					P7CB	Base List \$	C List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$	Z List \$
480V	7.6	5	B007									
	11	7.5	B011								N/A	
	14	10	B014									
	21	15	B021									
	27	20	B027									
	34	25	B034									
	40	30	B040									
	52	40	B052								3% DC Bus Reactor is included as standard	
	65	50	B065									
	77	60	B077									
	96	75	B096									
	124	100	B124									
	156	125	B156									
	180	150	B180									
	240	200	B240									
302	250	B302										
361	300	B361										
414	350	B414										
477	400	B477										
515	450	B515										
590	500	B590										

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options

Configured Drives and Options

NEMA 12 FVFF



P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Custom Name-plates	Speed Control				Trans-ducer	Added Control				Communications							Uses Drive Model Number CIMR-P7U
			W=NP	S=Speed Pot Y=HOA Switch A=Both				P=3-15 PSI	M=4-20mA T=200VA B=Both				G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN							
			List \$	S List \$	Y List \$	A List \$	P List \$	M List \$	T List \$	B List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$		
480V	7.6	5																	43P71	
	11	7.5																	45P51	
	14	10																	47P51	
	21	15																	40111	
	27	20																	40151	
	34	25																	40181	
	40	30																	40301	
	52	40																	40371	
	65	50																	40451	
	77	60																	40551	
	96	75																	40750	
	124	100																	40900	
	156	125																	41100	
	180	150																	41600	
	240	200																	41850	
	302	250																	41850	
361	300																	42200		
414	350																	42200		
477	400																	43000		
515	450																			
590	500																			

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) Included in the Base Price

P7C

Dimensions and Data NEMA 1/12 FVFF

Rated Input Voltage	Configured P7CR	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽⁴⁾	Dimension Drawing Number (w/ Add-on Box) ^(3, 4)
				H	W	D			
208V	D016	16.7	5	29.00	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.A0
	D024	24.2	7.5				127		
	D030	30.8	10						
	D046	46.2	15	40.00	25.63	14.66	208	DD.AFD.088.01	DD.AFD.088.01.A0
	D059	59.4	20				221		
	D074	74.8	25						
	D088	88	30						
	D114	114	40	84.00	37.75	27.00	847	DD.AFD.183.06	N/A
	D143	143	50				943		
	D169	169	60				1214		
D211	211	75	1330						
D273	273	100	1423						
D343	343	125							
D396	396	150							
240V	A015	15.2	5	29.00	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.A0
	A022	22	7.5				127		
	A028	28	10						
	A042	42	15	40.00	25.63	14.66	208	DD.AFD.088.01	DD.AFD.088.01.A0
	A054	54	20				221		
	A068	68	25						
A080	80	30	84.00	37.75	27.00	847	DD.AFD.183.06	N/A	
A104	104	40				943			
A130	130	50				1214			
A154	154	60				1330			
230V	A192	192	75				1376		
	A248	248	100						
	A312	312	125						
	A360	360	150						

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) Add-on box (required with specified options - see options description) adds up to 15" to 'H' dimension and 91 lbs. Max. to total drive weight.
- (4) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

Dimensions and Data

NEMA 1/12 FVFF



Rated Input Voltage	Configured P7CV or P7CB	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽⁴⁾	Dimension Drawing Number (w/ Add-on Box) ^(3, 4)
				H	W	D			
480V	B007	7.6	5	29.00	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.A0
	B011	11	7.5				127		
	B014	14	10				142		
	B021	21	15						
	B027	27	20	40.00	25.63	14.66	203	DD.AFD.088.01	DD.AFD.088.01.A0
	B034	34	25				232		
	B040	40	30				241		
	B052	52	40						
	B065	65	50	84.00	37.75	27.00	943	DD.AFD.183.06	N/A
	B077	77	60						
	B096	96	75	84.00	37.75	27.00	1240	DD.AFD.183.06	N/A
	B124	124	100				1352	DD.AFD.183.06	
	B156	156	125		1740		DD.AFD.184.08		
	B180	180	150		1800		DD.AFD.184.08		
	B240	240	200	84.00	73.25	27.00	1800	DD.AFD.184.08	N/A
	B302	302	250				2125		
B361	361	300	84.00	73.25	27.00	2125	DD.AFD.184.08	N/A	
B414	414	350				2125			
B477	477	400							
B515	515	450							
B590	590	500							

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) Add-on box (required with specified options - see options description) adds up to 15" to 'H' dimension and 91 lbs. Max. to total drive weight.
- (4) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

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The P7S/Configured package provides an P7 in a NEMA 1 enclosure, with space for several commonly used options, such as reactors, input filters, circuit breakers, etc. The P7 and P7S/Configured have been designed for flexibility in providing the features and options commonly specified by facility designers.

The P7 Drive is a variable torque AC drive, designed specifically for industrial applications. A new benchmark for size, cost, performance, benefits, and quality, the P7 includes numerous built-in features and energy-savings functions.

Performance Features

- VT Ratings: 5-40 HP, 208 VAC
5-100 HP, 480 VAC
- Overload capacity: 110% for 60 sec (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque limiting: 30-180%
- Energy Saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Customizable monitor display
- Sleep function
- Run permissive input
- Ramp-to-stop or coast-to-stop selection
- Runtime changes in control and display
- Project-specific parameter reinitialization

Service Conditions

- Ambient Temperature:
-10°C to 40°C (14°F to 104°F) NEMA 1
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

Protective Features

- Current limited stall prevention
- Heat sink over-temperature, speed fold-back
- Cooling fan operating hours recorded
- Bi-directional start into rotating motor at synchronized speed
- DC bus charge indicator
- Current limiting DC bus fuse
- Optically-Isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Electronic motor overload: UL
- Current and torque limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Program security code
- "Hunting" prevention logic
- Reverse prohibit selectability

Configured Options

- Circuit breaker 65 kA or 100 kA
- Input filter
- DC bus reactor
- Engraved nameplates
- Pressure/electrical transducer
- Analog outputs: 2 programmable, 4-20 mA
- Communication Interface: LonWorks, BACnet, EtherNet/IP, Metasys N2, APOGEE FLN, Devicenet, Profibus, and Ethernet Modbus TCP/IP.
- DriveWizard™ upload/download and monitoring/graphing software

Design Features

- 32-bit microprocessor logic
- Flash upgradeable firmware
- Non-volatile memory, program retention
- Surface-mount devices
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect, removable
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-40 HP, 208/240 VAC; 40-100 HP, 480 VAC; optional on lower ratings
- Keypad Operator: Start/Stop/Jog, built-in copy feature, 7 languages
- LCD display: 5 lines, 16 characters each
- 24 VDC control logic
- Transmitter/Option power supply
- Output contacts: One form C and two programmable form A
- Input/output terminal status
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Diagnostic fault indication in selected language
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Multi-speed settings: 5 available
- Remote speed command: 0-10 VDC or 4-20 mA, direct or reverse-acting
- Feedback signal: low pass filter
- Speed command: bias and gain
- Analog outputs: Programmable, two, 0-10 VDC
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- Output Current Transformers, qty 3
- NEMA 1
- UL, cUL listed; CE marked; IEC 146
- MTBF: exceeds 28 years
- Input line disconnect switch



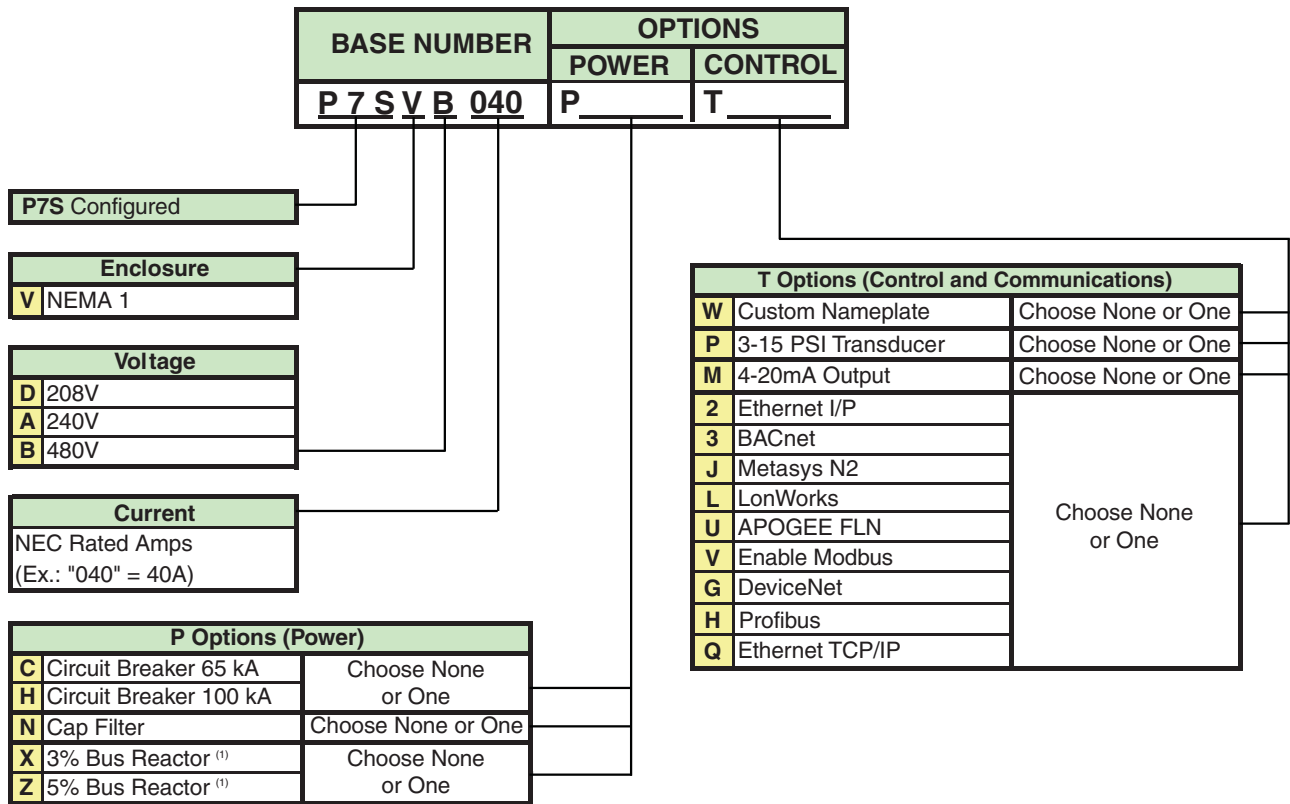
Description
5-100HP
P7 Slim Configured

Model Number Configuration & Pricing:

- Step 1.** To construct the complete Configured model number, first find the Base Number for the required enclosure type, voltage and current rating.
- Step 2.** Add the Option code letter for each required option. Choose options, in order, starting at the top of the option table and working toward the bottom. Any Power option must be preceded by **(P)**; any Control & Communications option by **(T)**. No more than eight options may be selected.
- Step 3.** Find the corresponding list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: The Model Number for a NEMA 1 Configured package (**P7SV**) with a 480V, 40 Amp P7 drive (**B040**), with a 3% bus reactor (**X**), 4-20 mA Output (**M**) and LonWorks communications card (**L**), would be **P7SVB040PXTML**.

P7SVB040PXTML



(1) 3% and 5% Bus Reactors are only available as an option on base numbers up to and including P7C_D074 and B040; larger drives have a Bus Reactor as standard.

Configured Option Descriptions:

(V) Enclosure: The drive and Configured options are provided in a NEMA Type 1 (V) ventilated enclosure, large enough to accommodate any or all of the Configured package options. Configured enclosures are intended for wall mounting.

P Options (Power)

- (C, H) Circuit Breaker:** The standard configuration, provides a line input disconnect switch, but no branch short circuit protection. Circuit breaker options are available. Option (C) is a 65 kA interrupting rated circuit breaker, and option (H) is a 100 kA interrupting rated circuit breaker. When option (C) is specified, the configured drive package will be rated at 65 kA. When option (H) is specified, the configured drive package will be rated at 100 kA.
- (N) Input Filter:** The standard configuration, does not include a filter. The cap filter, option (N), is a passive delta-wye capacitive network.
- (X, Z) Line Impedance:** The standard configuration does not provide any additional impedance. P7 Drives above Base Numbers D074 (25HP, 208V) and B040 (30HP, 480V) include a 3% bus reactor as standard. Therefore, option (X), 3% impedance, and option (Z), 5% impedance, apply only to these ratings and below.

T Options (Control and Communications)

- (W) Custom Nameplates:** Custom engraved nameplates with white lettering on black lamicaid are available with option (W), for special tagging purposes (Example: "AHU #1"). Note that this option requires the text to be specified by the customer.
- (P) 3-15 PSI Transducer:** No transducer is provided with the standard configuration. To add an optional transducer, which accepts a 3-15 PSI pneumatic signal and converts it to a 4-20mA signal that is sent to the drive, specify option (P).
- (M) 4-20mA Output:** The standard Configured package, provides two programmable 0-10VDC outputs. To convert these outputs to 4-20mA signals, specify option (M).
- (2, 3, J, L, U, V, G, H, Q) Communications:** All configurations provide the hardware and software required for Modbus network communications, but this protocol is not enabled in the standard configuration. Option (V) provides the programming and jumpers necessary to enable this protocol, at no additional cost. LonWorks option (L), EtherNet/IP option (2), BACnet option (3), DeviceNet option (G), Profibus option (H), Ethernet Modbus TCP/IP option (Q), Metasys N2 option (J) and APOGEE FLN option (U), requires the addition of an optional board and or software.

P7S

Configured Drives and Options

NEMA 1, 208/240V

P7 Slim Configured Drives - 5-100HP, 208-240 and 480V, 3-phase input, NEMA 1 enclosure, with factory-installed and wired options.

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 1 Configured		Circuit Breaker		Input Filter	Line Impedance	
					C=65kA H=100kA		N=Cap	X=3% Bus Reactor Z=5% Bus Reactor	
					P7SV	Base List \$	C List \$	H List \$	N List \$
208V	16.7	5	D016						
	24.2	7.5	D024						
	30.8	10	D030						
	46.2	15	D046						
	59.4	20	D059						
	74.8	25	D074						
	88	30	D088					3% Bus Reactor is included as standard	
240V	15.2	5	A015						
	22	7.5	A022						
	28	10	A028						
	42	15	A042						
	54	20	A054						
	68	25	A068						
	80	30	A080					3% Bus Reactor is included as standard	
	104	40	A104						

(1) Horsepower rating is based on standard NEMA B 4-pole motor design and NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

Configured Drives and Options

NEMA 1, 208/240V



P7 Slim Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Custom Name-plates	3-15 PSI Trans-ducer	4-20 mA	Communications										Uses Basic Drive Model Number CIMR-P7U	
			0=None W=NP	0=None P=3-15 PSI	M=4-20mA	2=Ethernet I/P, 3=BACnet J=N2, L=LonWorks U=APOGEE, V=Modbus G=DeviceNet, H=Profibus Q=Ethernet Modbus TCP/IP											
			W List \$	P List \$	M List \$	2 List \$	3 List \$	J List \$	L List \$	U List \$	V ⁽³⁾ List \$	G List \$	H List \$	Q List \$			
208V	16.7	5															23P71
	24.2	7.5															27P51
	30.8	10															27P51
	46.2	15															20111
	59.4	20															20151
	74.8	25															20181
	88	30															20301
114	40															20301	
240V	15.2	5															23P71
	22	7.5															25P51
	28	10															27P51
	42	15															20111
	54	20															20151
	68	25															20181
	80	30															20301
104	40															20301	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design and NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(3) Included in the Base Price



Configured Drives and Options
NEMA 1, 480V

P7 Slim Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 1 Configured		Circuit Breaker		Input Filter	Line Impedance	
					C=65kA H=100kA		N=Cap	X=3% Bus Reactor Z=5% Bus Reactor	
					P7SV	Base List \$	C List \$	H List \$	N List \$
480V	7.6	5	B007						
	11	7.5	B011						
	14	10	B014						
	21	15	B021						
	27	20	B027						
	34	25	B034						
	40	30	B040						
	52	40	B052						3% Bus Reactor is included as standard
	65	50	B065						
	77	60	B077						
96	75	B096							
	124	100	B124						

(1) Horsepower rating is based on standard NEMA B 4-pole motor design and NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

Configured Drives and Options

NEMA 1, 480V



P7 Slim Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Custom Name-plates	3-15 PSI Transducer	4-20 mA	Communications										Uses Basic Drive Model Number CIMR-P7U	
			0=None W=NP	0=None P=3-15 PSI	M=4-20mA	2=Ethernet I/P, 3=BACnet J=N2, L=LonWorks U=APOGEE, V=Modbus G=DeviceNet, H=Profibus Q=Ethernet Modbus TCP/IP											
			W List \$	P List \$	M List \$	2 List \$	3 List \$	J List \$	L List \$	U List \$	V ⁽³⁾ List \$	G List \$	H List \$	Q List \$			
480V	7.6	5															43P71
	11	7.5															45P51
	14	10															47P51
	21	15															40111
	27	20															40111
	34	25															40151
	40	30															40181
	52	40															40301
	65	50															40301
	77	60															40371
96	75															40451	
124	100															40551	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design and NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(3) Included in the Base Price

Rated Input Voltage	P7SV	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number	
				H	W	D			
208V	D016	16.7	5	35	9	11.6	45	DD.T1W17S.01	
	D024	24.2	7.5	36.5	10	12.6	56	DD.T1W27S.01	
	D030	30.8	10						
	D046	46.2	15	36.5	12.5	13.6	59	DD.T1W37S.01	
	D059	59.4	20						
	D074	74.8	25						
240V	D088	88	30	38.5	14.5	13.9	100	DD.T1W47S.01	
	D114	114	40						
	480V	A015	15.2	5	35	9	11.6	45	DD.T1W17S.01
		A022	22	7.5	36.5	10	12.6	56	DD.T1W27S.01
		A028	28	10					
		A042	42	15	36.5	12.5	13.6	59	DD.T1W37S.01
A054		54	20						
A068		68	25						
480V	A080	80	30	38.5	14.5	13.9	100	DD.T1W47S.01	
	A104	104	40						
	B007	7.6	5	35	9	11.6	45	DD.T1W17S.01	
		B011	11						7.5
	B014	14	10	36.5	10	12.6	56	DD.T1W27S.01	
		B021	21						15
	B027	27	20	36.5	12.5	13.6	59	DD.T1W37S.01	
		B034	34						25
B040	40	30	38.5	14.5	13.9	100	DD.T1W47S.01		
	B052	52						40	
B065	65	50	42.5	16.5	14.5	137	DD.T1W57S.01		
	B077	77						60	
B096	96	75	124						
	B124	124						100	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design and NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) Data represents the total approximate weight of the drive with all possible standard options, not shipping weight.



The P7/Configured package provides a P7 in a NEMA 3R enclosure, with space for several commonly used options, such as reactors, circuit breakers, etc. The P7 and P7/Configured have been designed for flexibility in providing the features and options commonly demanded by facility designers.

The P7 Drive is a variable torque AC drive, designed specifically for industrial applications. A new benchmark for size, cost, performance, benefits and quality, the P7 includes numerous built-in features such as Network Communications, PI control and energy-savings functions.

The P7 has embedded communications for Modbus. An optional interface card is also available for DeviceNet, Profibus, EtherNet, and LonWorks.

This P7 package has a **UL Type 3R rating**.

Performance Features

- VT Ratings: 5-150 HP, 208 VAC
5-150 HP, 230/240 VAC
5- 500 HP, 480 VAC
- Overload capacity: 110% for 60 sec. (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque limiting: 30-180%
- Energy Saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Customizable monitor display
- Sleep function
- Run permissive input
- Ramp-to-stop or coast-to-stop selection
- Runtime changes in control and display
- Project-specific parameter reinitialization

Service Conditions

- Ambient Temperature: -10°C to 40°C (14°F to 104°F)
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

Protective Features

- Current limited stall prevention
- Heat sink over-temperature, speed fold-back
- Cooling fan operating hours recorded
- Bi-directional start into rotating motor at synchronized speed
- DC bus charge indicator
- Current limiting DC bus fuse
- Optically-Isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Electronic motor overload: UL
- Current and torque limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Program security code
- "Hunting" prevention logic
- Reverse prohibit selectability

Configured Options

- Circuit breaker
- Input fuses
- Input reactor
- Output reactor
- Engraved nameplates
- Pressure/electrical transducer
- Analog outputs: 2 programmable, 4-20 mA
- HOA Selector Switch
- Communication Interface: DeviceNet, Profibus, EtherNet, LonWorks, Johnson Controls METASYS N2, and Siemens APOGEE FLN
- DriveWizard™ upload/download and monitoring/graphing software
- Surge suppressor
- Space heater
- Keypad viewing window
- 50°C ambient
- Leg kits (shipped loose)

Design Features

- 32-bit microprocessor logic
- Flash upgradeable firmware
- Non-volatile memory, program retention
- Surface-mount devices
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect, removable
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-500 HP, 480 VAC; optional on lower ratings
- Keypad Operator: built-in copy feature, 6 languages
- LCD display: 5 lines, 16 characters each
- 24 VDC control logic
- Transmitter/Option power supply
- Output contacts: One form C and two programmable form A
- Input/output terminal status
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Diagnostic fault indication in selected language
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Multi-speed settings: 5 available
- Remote speed command: 0-10 VDC or 4-20 mA, direct or reverse-acting
- Setpoint (PI) control with inverse or square root input, differential control via two feedback capability
- Feedback signal: low pass filter
- Speed command: bias and gain
- Analog outputs: Programmable, two, 0-10 VDC
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- Output Current Transformers, qty 3
- UL Type 3R rating
- MTBF: exceeds 28 years
- Thermostatically controlled cabinet fans
- Lifting eyes
- Padlock hasp



Description

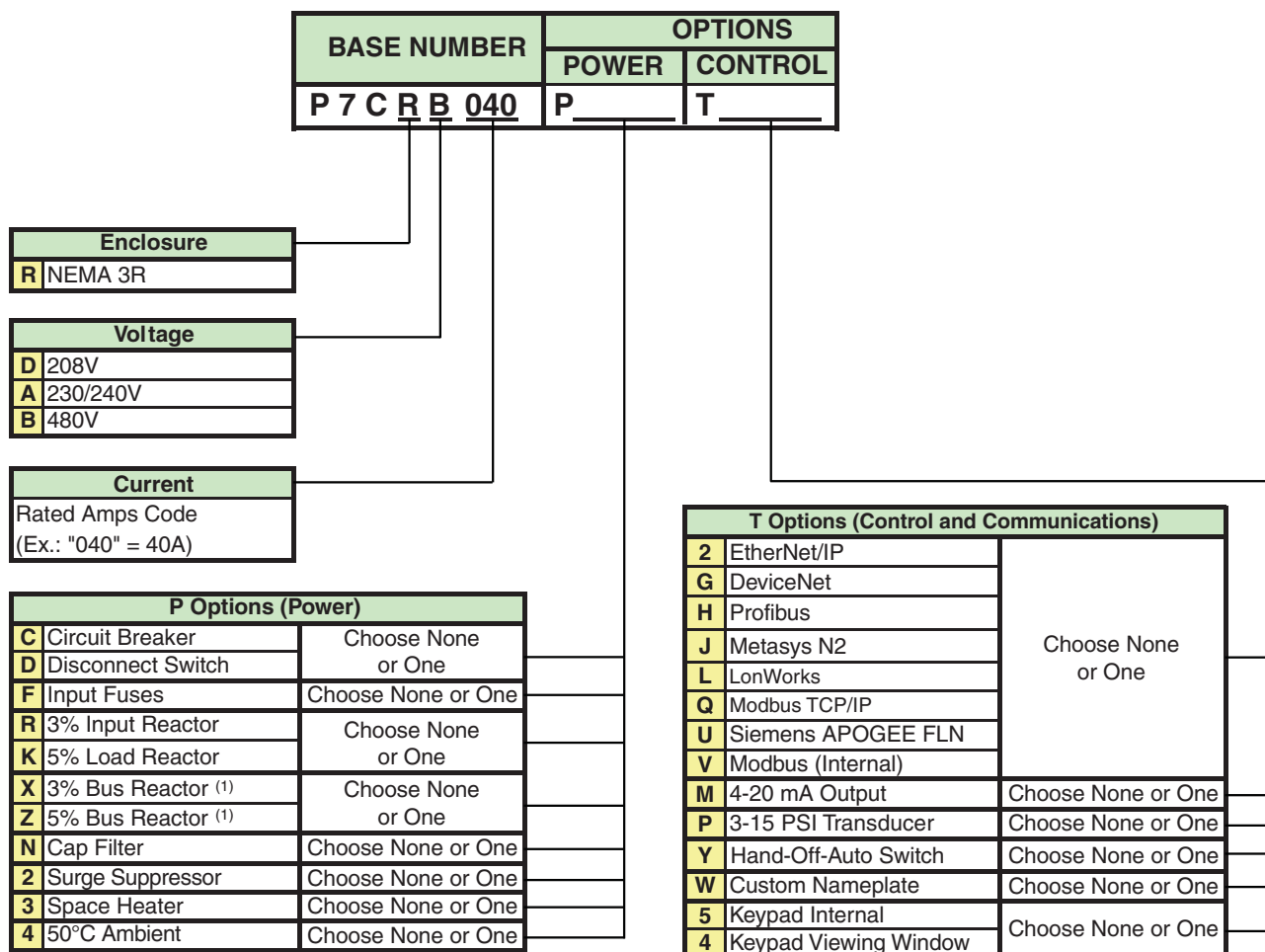
**5-500HP
P7/Configured
NEMA 3R**

Model Number Configuration & Pricing:

- Step 1.** To construct the complete Configured model number, first find the Base Number for the required enclosure type, voltage and current rating.
- Step 2.** Add the Option code letter for each required option. Choose options, in order, starting at the top of the option table and working toward the bottom. Any Power option must be preceded by **(P)**; any Control & Communications option by **(T)**. No more than eight options may be selected.
- Step 3.** Find the corresponding list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: P7 NEMA 3R Configured package (**P7CR**) with a 480V, 40 Amp P7 drive (**B040**), with Circuit Breaker and a 3% Bus reactor (**P** followed by **CX**), Ethernet/IP communications capability (**T** followed by **2**). Model number is:

P7CRB040PCXT2



(1) 3% and 5% Bus Reactors are only available as an option on base numbers up to and including P7CR_D074, A068 and B040; larger drives have a Bus Reactor as standard.



Configured Option Descriptions:

- (R) **Enclosure:** The drive and options are provided in a NEMA Type 3R ventilated enclosure, large enough to accommodate any or all of the package options. Enclosures for Base Numbers up to, and including, D114 (40HP, 208V), A104 (40HP, 240V), and B124 (100HP, 480V) are wall-mounted; larger drives are in floor-mount enclosures.

P Options (Power)

- (C) **Circuit Breaker:** The standard configuration provides no branch short circuit protection or input disconnecting means. This option provides a thermal-magnetic circuit breaker that meets NEC branch circuit protection requirements, with a flange-mounted operating handle.
- (D) **Disconnect:** The standard configuration provides no input disconnecting means. This option provides a non-fused disconnect with a flange-mounted operating handle.
- (N) **Input Filter:** The standard configuration does not include a filter. The cap filter, option (N), is a delta-wye capacitive network.
- (F) **Input Fuses:** The standard configuration does not include Drive Input Fuses. This option provides high-speed semi-conductor drive input fuses, rated for 200,000 amp RMS symmetrical interrupting capacity, that provides both drive input I²T protection and NEC approved branch circuit and short circuit protection.
- (X, Z, R) **Line Impedance:** Drives above Base Numbers D074 (25HP, 208V), A068 (25HP, 240V) and B040 (30HP, 480V) include a 3% DC bus reactor in the standard package and do not provide any additional impedance. Option (X), 3% impedance, and option (Z), 5% impedance, are not available for ratings larger than these. To achieve a 5% total input impedance, select option (R) - this 3% input reactor is available only for the HP ratings greater than the HP's listed above, and combines with the drive's standard DC bus reactor.
- (K) **Load Reactor:** No form of output impedance is normally required. A 5% load reactor, option (K), is available if additional output impedance is desired (usually for long lead-lengths or noise reduction).
- (2) **Surge Suppressor:** This option will offer some degree of protection from transient surges coming through the power line cables. Lightning strikes are the most common source of surges.
- (3) **Space Heater:** This option maintains the internal cabinet temperature to reduce condensation.
- (4) **50°C Ambient:** This option will allow the enclosure to be operated in an ambient temperature of 50°C (122°F). The standard basic design is rated for 40°C ambient.

T Options (Control and Communications)

- (W) **Custom Nameplates:** Custom engraved nameplates with white lettering on black lamicaid are available with option (W), for special tagging purposes (Example: "AHU #1"). Note that this option requires the text to be specified by the customer. Leave this field blank if no special nameplates are required.
- (Y) **Hand/Off/Auto:** The drive's digital operator is always brought out to the front of the Configured panel, so it is available for speed control - this is the standard configuration. A door-mounted Hand/Off/Auto Switch is available when option (Y) is specified.
- (P) **3-15 PSI Transducer:** No transducer is provided with the standard configuration. To add an optional transducer that accepts a 3-15 PSI pneumatic signal and converts it to a 4-20mA signal that is sent to the drive, specify option (P).
- (M) **4-20mA Output:** The standard Configured package provides two programmable 0-10VDC outputs. To convert these outputs to 4-20mA output signals, specify option (M).
- (G, H, L, Q, 2, V, J, U) **Communications:** All configurations provide the hardware and software required for network communications, but these are not enabled in the standard configuration. Option (V) provides the programming and jumpers necessary to enable Modbus communications at no additional cost. DeviceNet option (G), Profibus option (H), Lonworks option (L), Modbus TCP/IP option (Q), and EtherNet/IP option (2) all require the addition of an optional board. Option (J) Johnson Controls METASYS N2 and option (U) Siemens APOGEE FLN require a software change, but no hardware change.
- (5) **Drive Keypad Internal:** The digital drive keypad will be mounted inside the NEMA 3R enclosure, on the drive.
- (4) **Keypad Viewing Window:** The digital drive keypad is mounted on the outside of the NEMA 3R enclosure door. This option provides a viewing window which is hinged and lockable.



Configured Drives and Options

NEMA 3R

P7 Configured Drives - 5-500HP, 208-230/240 and 480V, 3-phase input, NEMA 3R enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 3R Configured		Circuit Breaker		Input Filter	Input Fuses	Line Impedance			Load Reactor
					C=CB D=Disconnect		N=Cap	F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%
					P7CR	Base List \$	C List \$	D List \$	N List \$	F List \$	X List \$	Z List \$
208V	16.7	5	D016									
	24.2	7.5	D024								N/A	
	30.8	10	D030									
	46.2	15	D046									
	59.4	20	D059									
	74.8	25	D074									
	88	30	D088									
	114	40	D114									
	143	50	D143									
	169	60	D169						3% DC Bus Reactor is included as standard			
	211	75	D211									
273	100	D273										
343	125	D343										
396	150	D396										
240V	15.2	5	A015									
	22	7.5	A022								N/A	
	28	10	A028									
	42	15	A042									
	54	20	A054									
	68	25	A068									
230V	80	30	A080									
	104	40	A104									
	130	50	A130								3% DC Bus Reactor is included as standard	
	154	60	A154									
	192	75	A192									
248	100	A248										
312	125	A312										
360	150	A360										

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

Configured Drives and Options

NEMA 3R



P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Other			Name-plates	HOA Switch	Transducer	4-20mA Output	Communications								Keypad		Uses Drive Model Number CIMR-P7U						
			2=Surge Suppressor 3=Space Heater 4=50°C Ambient							W=NP	Y=HOA Switch	P=3-15 PSI	M=4-20 mA	G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN								5=Keypad Internal 4=Viewing Window				
			2 List \$	3 List \$	4 List \$	W List \$	Y List \$	P List \$	M List \$					G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$		J List \$	U List \$	5 List \$	4 List \$		
208V	16.7	5																							23P71A	
	24.2	7.5																								27P51A
	30.8	10																								27P51A
	46.2	15																								20111A
	59.4	20																								20151A
	74.8	25																								20181A
	88	30																								20221A
	114	40																								20301A
	143	50																								20370A
	169	60																								20450A
211	75																								20550A	
273	100																								20750A	
343	125																								20900A	
396	150																								21100A	
240V	15.2	5																							23P71A	
	22	7.5																							25P51A	
	28	10																							27P51A	
	42	15																							20111A	
	54	20																							20151A	
	68	25																							20181A	
	80	30																							20221A	
104	40																							20301A		
230V	130	50																							20370A	
	154	60																							20370A	
	192	75																							20450A	
	248	100																							20750A	
	312	125																							20750A	
360	150																							20900A		

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) N/A = Consult Factory
- (3) Included in the Base Price



Configured Drives and Options

NEMA 3R

P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 3R Configured		Circuit Breaker		Input Filter	Input Fuses	Line Impedance			Load Reactor
					C=CB D=Disconnect		N=Cap	F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%
					P7CR	Base List \$	C List \$	D List \$	N List \$	F List \$	X List \$	Z List \$
480V	7.6	5	B007									
	11	7.5	B011								N/A	
	14	10	B014									
	21	15	B021									
	27	20	B027									
	34	25	B034									
	40	30	B040									
	52	40	B052								3% DC Bus Reactor is included as standard	
	65	50	B065									
	77	60	B077									
	96	75	B096									
	124	100	B124									
	156	125	B156									
	180	150	B180									
	240	200	B240									
	260	200	B260									
302	250	B302										
361	300	B361										
414	350	B414										
477	400	B477										
515	450	B515										
590	500	B590										

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors



P7 Configured Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nom. HP ⁽¹⁾	Other			Name-plates W=NP	HOA Switch Y=HOA Switch	Transducer P=3-15 PSI	4-20mA Output M=4-20mA	Communications								Keypad		Uses Drive Model Number CIMR-P7U
			2=Surge Suppressor 3=Space Heater 4=50°C Ambient							G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN								5=Keypad Internal 4=Viewing Window		
			2 List \$	3 List \$	4 List \$					W List \$	Y List \$	P List \$	M List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	
480V	7.6	5																		43P71
	11	7.5																		45P51
	14	10																		47P51
	21	15																		40111
	27	20																		40151
	34	25																		40181
	40	30																		40301
	52	40																		40371
	65	50																		40451
	77	60																		40551
	96	75																		40750
	124	100																		40900
	156	125																		41100
	180	150																		41320
	240	200																		41600
	260	200																		41850
	302	250																		41850
361	300																		42200	
414	350																		42200	
477	400																		43000	
515	450																		43000	
590	500																		43000	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) N/A = Consult Factory
- (3) Included in the Base Price



Dimensions and Data

NEMA 3R

Rated Input Voltage	Configured P7CR	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽³⁾
				H	W	D		
208V	D016	16.7	5	32	24	17.5	230	DD.AFD.198.01
	D024	24.2	7.5					
	D030	30.8	10					
	D046	46.2	15	40	32	17.5	365	DD.AFD.199.01
	D059	59.4	20					
	D074	74.8	25	46	42	17.5	429	DD.AFD.200.01
	D088	88	30					
	D114	114	40					
	D143	143	50	91	37	36	775	DD.AFD.189.01
	D169	169	60				850	
D211	211	75	975					
D273	273	100	91	74	36	1100	DD.AFD.190.01	
D343	343	125				1150		
D396	396	150						
240V	A015	15.2	5	32	24	17.5	230	DD.AFD.198.01
	A022	22	7.5					
	A028	28	10					
	A042	42	15	40	32	17.5	365	DD.AFD.199.01
	A054	54	20					
	A068	68	25	46	42	17.5	429	DD.AFD.200.01
A080	80	30						
A104	104	40						
230V	A130	130	50	91	37	36	775	DD.AFD.189.01
	A154	154	60				875	
	A192	192	75				1000	
	A248	248	100	91	74	36	1200	DD.AFD.190.01
	A312	312	125					
A360	360	150						

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

Freestanding Leg Kit, NEMA 3R - This option allows the NEMA 3R wall-mount enclosures to be mounted on legs so that the control can be freestanding and off the ground. Either kit can be used on any of the wall-mount enclosures. (All floor-mount enclosures come standard with freestanding legs.)

12" Leg Kit
Model No. UDA00548-1 List \$

30" Leg Kit
Model No. UDA00548-2 List \$



Rated Input Voltage	Configured P7CR	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽³⁾
				H	W	D		
480V	B007	7.6	5	32	27	17.5	230	DD.AFD.198.01
	B011	11	7.5					
	B014	14	10					
	B021	21	15					
	B027	27	20	40	35	17.5	365	DD.AFD.199.01
	B034	34	25					
	B040	40	30					
	B052	52	40					
	B065	65	50	46	48	17.5	429	DD.AFD.200.01
	B077	77	60					
	B096	96	75					
	B124	124	100					
	B156	156	125	91	37	36	775	DD.AFD.189.01
	B180	180	150					
	B240	240	200					
	B260	260	200					
B302	302	250	91	74	36	875	DD.AFD.190.01	
B361	361	300						
B414	414	350						
B477	477	400						
B515	515	450	91	74	36	1500	DD.AFD.190.01	
B590	590	500						
							1500	
							1700	
							1900	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

NEMA 3R Filters - Replacement filters for enclosure fans.

Wall Mount Enclosures

Model No. UFL00002-9..... List \$

Floor Mount Enclosures (40 and 50°C)

Model No. UFL00002-20..... List \$

Floor Mount Enclosures (50°C)

Model No. UFL00002-21..... List \$

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The P7/Bypass package is a 3-contactor style bypass, allowing motor operation from either the drive or across the line. This facilitates drive maintenance while the motor continues to operate. The P7 and P7/Bypass have been designed for flexibility in providing the features and options commonly demanded by facility designers.

The P7 Drive is a variable torque AC drive, designed specifically for industrial applications. A new benchmark for size, cost, performance, benefits and quality, the P7 includes numerous built-in features such as Network Communications, H/O/A, PI control and energy savings functions.

The P7 has embedded communications for Modbus. An optional interface card is also available for DeviceNet, Profibus, EtherNet and LonWorks.

Performance Features

- Input, output, and bypass contactors
- Circuit breaker disconnect (MCP), with interlocked, through-the-door operating mechanism
- Thermal motor overload relay, class 20
- 115 VAC control transformer, fused
- Drive/Bypass selector switch
- Hand/Off/Auto selector switch
- Normal/Test selector switch
- Pilot lights, 22mm LED, for Control Power, Drive Run, Drive Fault, Bypass Run, Motor OL/Safety Fault and Smoke Purge
- Switch selectable auto transfer to bypass on drive fault
- Switch selectable remote transfer to bypass via contact closure
- Switch selectable smoke purge function
- Run mode and Fault contacts
- Control and safety circuit terminal strip
- Damper circuit safety interlock

Bypass Options

- Input reactor
- Twelve-pulse rectification with input transformer: 25 -150 HP, 208 VAC; 30-150 HP, 230/240 VAC; 40-250 HP, 480 VAC
- Communication Interface: DeviceNet, Profibus, EtherNet, LonWorks, Johnson Controls METASYS N2, and Siemens APOGEE FLN
- RFI/EMI filter
- Pressure/electrical transducer
- Multiple motor operation logic
- Speed potentiometer
- Engraved nameplates
- DriveWizard upload/download and monitoring/graphing software
- Analog outputs: 2 programmable, 4-20 mA

Service Conditions

- Ambient Temperature: -10°C to 40°C (14°F to 104°F) NEMA 1
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz \pm 5%
- 3-phase, 3-wire, phase sequence insensitive

Performance Features

- VT Ratings: 5-150 HP, 208 VAC
5-150 HP, 230/240 VAC
5-500 HP, 480 VAC
- Overload capacity: 110% for 60 sec. (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/dec: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque limiting: 30-180%
- Energy Saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Customizable monitor display
- Sleep function
- Run permissive input
- Ramp-to-stop or coast-to-stop selection
- Runtime changes in control and display
- Project-specific parameter reinitialization

Protective Features

- Current limited stall prevention
- Heat sink over-temperature, speed fold-back
- Cooling fan operating hours recorded
- Bi-directional start into rotating motor at synchronized speed
- DC bus charge indicator
- Current limiting DC bus fuse
- Optically-Isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Electronic motor overload: UL
- Current and torque limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Program security code
- "Hunting" prevention logic
- Reverse prohibit selectability

Design Features

- 32-bit microprocessor logic
- Flash upgradeable firmware
- Non-volatile memory, program retention
- Surface-mount devices
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect, removable
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-500 HP, 480 VAC; optional on lower ratings
- Keypad Operator: built-in copy feature, 6 languages
- LCD display: 5 lines, 16 characters each
- 24 VDC control logic
- Transmitter/Option power supply
- Output contacts: One form C and two programmable form A
- Input/output terminal status
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Diagnostic fault indication in selected language
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Multi-speed settings: 5 available
- Remote speed command: 0-10 VDC or 4-20 mA, direct or reverse-acting
- Setpoint (PI) control with inverse or square root input, differential control via two feedback capability
- Feedback signal: low pass filter
- Speed command: bias and gain
- Analog outputs: Programmable, two, 0-10 VDC
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- Output Current Transformers, qty 3
- NEMA 1 or NEMA 12 FVFF enclosure
- UL, cJUL listed; CE marked; IEC 146
- MTBF: exceeds 28 years



Description

**5-500HP
P7/Bypass**

Model Number Configuration & Pricing:

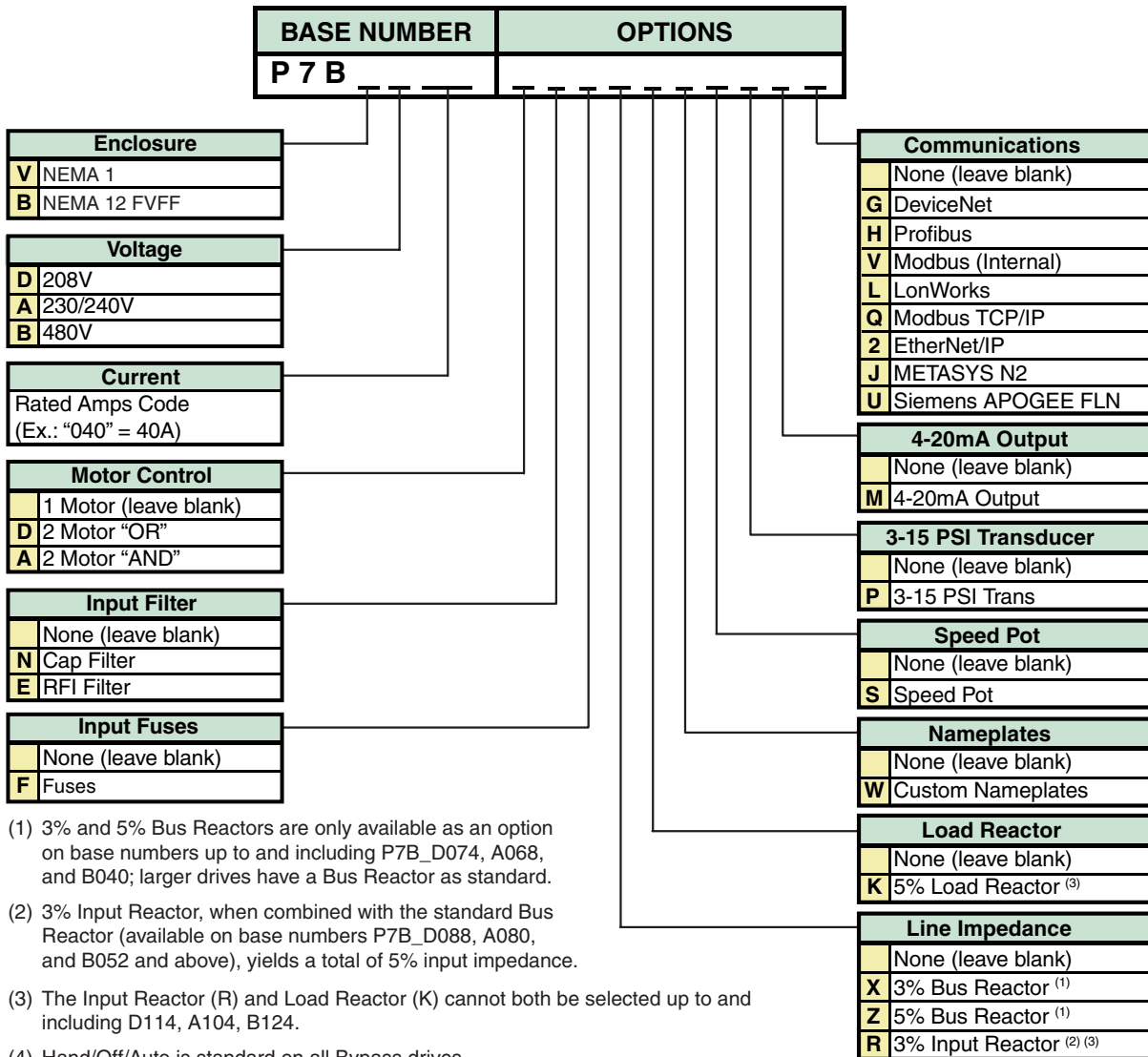
Step 1. First complete the Base Number for the required enclosure type, voltage and current rating.

Step 2. Add the Option code letter for each required option. If an option is not wanted, no character is inserted.

Step 3. Find the list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: P7 Bypass package (**P7BV**) with a 40 Amp, 480V drive (**B040**), 3% Bus reactor (**X**), door-mounted speed pot (**S**) and Profibus communication capability (**H**). Model number is:

P7BVB040XSH



Bypass Option Descriptions:

(V, B) Enclosure: The drive and options are provided in either a NEMA Type 1 (V) ventilated or NEMA 12 FVFF (force ventilated fan filter) (B) enclosure, large enough to accommodate any or all of the package options. Enclosures for Base Numbers up to, and including, D114 (40HP, 208V), A104 (40HP, 240V), and B124 (100HP, 480V) are wall-mounted; larger drives are in floor-mount enclosures.

Options (Power)

(D, A) Motor Control: The standard configuration is for single motor control. Either one of two motors can be controlled with the 'OR' configuration, option (D). Simultaneous control of two identical motors is possible with the 'AND' configuration, option (A). Total motor FLA must not exceed the package rating. This option may require an oversized enclosure - see Dimensions and Data.

(N, E) Input Filter: The standard configuration does not include a filter. The cap filter, option (N), is a delta-wye capacitive network, while the RFI filter (E) provides noise attenuation to help meet CE requirements. This option requires the addition of the add-on box - see Dimensions and Data.

(F) Input Fuses: The standard configuration does not include Drive Input Fuses. This option provides high-speed semi-conductor drive input fuses, rated for 200,000 amp RMS symmetrical interrupting capacity, that provides both drive input I2T protection and NEC approved branch circuit and short circuit protection.

(X, Z, R) Line Impedance: Drives above Base Numbers D074 (25HP, 208V), A068 (25HP, 240V) and B040 (30HP, 480V) include a 3% DC bus reactor in the standard package and do not provide any additional impedance. Option (X), 3% impedance, and option (Z), 5% impedance, are not available for ratings larger than these. To achieve a 5% total input impedance, select option (R) - this 3% input reactor is available only for the HP ratings greater than the HP's listed above, and combines with the drive's standard DC bus reactor. If this option is combined with a drive that includes a bus reactor, the add-on box is required - see Dimensions and Data.

(K) Load Reactor: No form of output impedance is normally required. A 5% load reactor, option (K), is available if additional output impedance is desired (usually for long lead-lengths or noise reduction). This option may require the add-on box for wall-mount enclosures - see Dimensions and Data.

Options (Control and Communications)

(W) Custom Nameplates: Custom engraved nameplates with white lettering on black lamicaid are available with option (W), for special tagging purposes (Example: "AHU #1"). Note that this option requires the text to be specified by the customer. Leave this field blank if no special nameplates are required.

(S) Speed Pot: The drive's digital operator is always brought out to the front of the panel, so it is available for speed control - this is the standard configuration. A door-mounted 2.5K ohm speed potentiometer is available for manual speed control with option (S). This also includes a 2.5K ohm trim pot and is suitable for NEMA 1 and NEMA 12 installations.

(P) 3-15 PSI Transducer: No transducer is provided with the standard configuration. To add an optional transducer that accepts a 3-15 PSI pneumatic signal and converts it to a 4-20mA signal that is sent to the drive, specify option (P).

(M) 4-20mA Output: The standard Configured package provides two programmable 0-10VDC outputs. To convert these outputs to 4-20mA output signals, specify option (M).

(G, H, L, Q, 2, V, J, U) Communications: All configurations provide the hardware and software required for network communications, but these are not enabled in the standard configuration. Option (V) provides the programming and jumpers necessary to enable Modbus communications at no additional cost. DeviceNet option (G), Profibus option (H), Lonworks option (L), Modbus TCP/IP option (Q), and EtherNet/IP option (2) all require the addition of an optional board. Option (J) Johnson Controls METASYS N2 and option (U) Siemens APOGEE FLN require a software change, but no hardware change.

P7B

Bypass Drives and Options

NEMA 1

P7 Bypass Drives - 5-500HP, 208-230/240 and 480V, 3-phase input, NEMA 1 enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 1 Bypass		Motor Control		Input Filter		Input Fuses	Line Impedance		
					D="OR" ⁽³⁾ A="AND" ⁽³⁾		N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
			P7BV	Base List \$	D List \$	A List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$	Z List \$	R List \$ ⁽²⁾
208V	16.7	5	D016									N/A
	24.2	7.5	D024									
	30.8	10	D030									
	46.2	15	D046									
	59.4	20	D059									
	74.8	25	D074									
	88	30	D088									
	114	40	D114									
	143	50	D143									
	169	60	D169									
211	75	D211									3% DC Bus Reactor is included as standard	
273	100	D273										
343	125	D343										
396	150	D396										
240V	15.2	5	A015									N/A
	22	7.5	A022									
	28	10	A028									
	42	15	A042									
	54	20	A054									
	68	25	A068									
230V	80	30	A080									3% DC Bus Reactor is included as standard
	104	40	A104									
	130	50	A130									
	154	60	A154									
	192	75	A192									
248	100	A248										
	312	125	A312									
	360	150	A360									

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) When this option is specified the enclosure may be larger than shown in the standard dimension table. Use the dimension tables for "P7/Bypass Package With OR/AND Option"

P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Load Reactor	Custom Name-plates	Speed Pot	Transducer	4-20mA Output	Communications								Uses Drive Model Number CIMR-P7U	
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN									
			K List \$	W List \$	S List \$	P List \$	M List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$		
208V	16.7	5															23P71
	24.2	7.5															27P51
	30.8	10															
	46.2	15															20111
	59.4	20															20151
	74.8	25															20181
	88	30															20221
	114	40															20301
	143	50															20370
	169	60															20450
211	75															20550	
273	100															20750	
343	125															20900	
396	150															21100	
240V	15.2	5															23P71
	22	7.5															25P51
	28	10															27P51
	42	15															20111
	54	20															20151
	68	25															20181
	80	30															20221
104	40															20301	
230V	130	50															20370
	154	60															
	192	75															20450
	248	100															20750
	312	125															20750
360	150															20900	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$115 list from all but one of these options
- (3) Included in the Base Price



Bypass Drives and Options

NEMA 1

P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 1 Bypass		Motor Control		Input Filter		Input Fuses	Line Impedance		
					D="OR" ⁽³⁾ A="AND" ⁽³⁾		N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
			P7BV	Base List \$	D List \$	A List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$	Z List \$	R List \$ ⁽²⁾
480V	7.6	5	B007									N/A
	11	7.5	B011									
	14	10	B014									
	21	15	B021									
	27	20	B027									
	34	25	B034									
	40	30	B040									3% DC Bus Reactor is included as standard
	52	40	B052									
	65	50	B065									
	77	60	B077									
	96	75	B096									
	124	100	B124									
	156	125	B156									
	180	150	B180									
	240	200	B240									
	302	250	B302									
361	300	B361										
414	350	B414										
477	400	B477										
515	450	B515										
590	500	B590										

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) When this option is specified the enclosure may be larger than shown in the standard dimension table. Use the dimension tables for "P7/Bypass Package With OR/AND Option"



P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Load Reactor	Custom Name-plates	Speed Pot	Transducer	4-20mA Output	Communications								Uses Drive Model Number CIMR-P7U	
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN									
			K List \$	W List \$	S List \$	P List \$	M List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$		
480V	7.6	5															43P71
	11	7.5															45P51
	14	10															47P51
	21	15															40111
	27	20															40111
	34	25															40151
	40	30															40181
	52	40															40301
	65	50															40301
	77	60															40371
	96	75															40451
	124	100															40551
	156	125															40750
	180	150															40900
	240	200															41100
	302	250															41600
361	300															41850	
414	350															41850	
477	400															42200	
515	450															42200	
590	500															43000	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) Included in the Base Price

P7B

Bypass Drives and Options NEMA 12 FVFF

P7 Bypass Drives - 5-500HP, 208-230/460V, 3-phase input, NEMA 12 FVFF enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 12 FVFF Bypass		Motor Control		Input Filter		Input Fuses	Line Impedance		
					D="OR" ⁽³⁾ A="AND" ⁽³⁾		N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
					P7BB	Base List \$	D List \$	A List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$
208V	16.7	5	D016									N/A
	24.2	7.5	D024									
	30.8	10	D030									
	46.2	15	D046									
	59.4	20	D059									
	74.8	25	D074									
	88	30	D088									
	114	40	D114									
	143	50	D143									
	169	60	D169									
211	75	D211									3% DC Bus Reactor is included as standard	
273	100	D273										
343	125	D343										
396	150	D396										
15.2	5	A015										N/A
22	7.5	A022										
28	10	A028										
42	15	A042										
54	20	A054										
68	25	A068										
80	30	A080									3% DC Bus Reactor is included as standard	
104	40	A104										
130	50	A130										
154	60	A154										
192	75	A192										
248	100	A248									3% DC Bus Reactor is included as standard	
312	125	A312										
360	150	A360										

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) When this option is specified the enclosure may be larger than shown in the standard dimension table. Use the dimension tables for "P7/Bypass Package With OR/AND Option"



P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Load Reactor	Custom Name-plates	Speed Pot	Transducer	4-20mA Output	Communications								Uses Drive Model Number CIMR-P7U	
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN									
			K List \$	W List \$	S List \$	P List \$	M List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$		
208V	16.7	5															23P71
	24.2	7.5															27P51
	30.8	10															27P51
	46.2	15															20111
	59.4	20															20151
	74.8	25															20181
	88	30															20221
	114	40															20301
	143	50															20370
	169	60															20450
	211	75															20550
273	100															20750	
343	125															20900	
396	150															21100	
240V	15.2	5															23P71
	22	7.5															25P51
	28	10															27P51
	42	15															20111
	54	20															20151
	68	25															20181
	80	30															20221
104	40															20301	
230V	130	50															20370
	154	60															20370
	192	75															20450
	248	100															20750
	312	125															20750
360	150															20900	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$115 list from all but one of these options
- (3) Included in the Base Price



Bypass Drives and Options

NEMA 12 FVFF

P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 12 FVFF Bypass		Motor Control		Input Filter		Input Fuses	Line Impedance		
					D="OR" ⁽³⁾ A="AND" ⁽³⁾		N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
					P7BB	Base List \$	D List \$	A List \$	N List \$	E List \$ ⁽²⁾	F List \$	X List \$
480V	7.6	5	B007									N/A
	11	7.5	B011									
	14	10	B014									
	21	15	B021									
	27	20	B027									
	34	25	B034									
	40	30	B040									3% DC Bus Reactor is included as standard
	52	40	B052									
	65	50	B065									
	77	60	B077									
	96	75	B096									
	124	100	B124									
	156	125	B156									
	180	150	B180									
	240	200	B240									
	302	250	B302									
361	300	B361										
414	350	B414										
477	400	B477										
515	450	B515										
590	500	B590										

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) When this option is specified the enclosure may be larger than shown in the standard dimension table. Use the dimension tables for "P7/Bypass Package With OR/AND Option"



P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Load Reactor	Custom Name-plates	Speed Pot	Transducer	4-20mA Output	Communications								Uses Drive Model Number CIMR-P7U	
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN									
			K List \$	W List \$	S List \$	P List \$	M List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$		
480V	7.6	5															43P71
	11	7.5															45P51
	14	10															47P51
	21	15															40111
	27	20															40111
	34	25															40151
	40	30															40181
	52	40															40301
	65	50															40301
	77	60															40371
	96	75															40451
	124	100															40551
	156	125															40750
	180	150															40900
	240	200															41100
	302	250															41600
361	300															41850	
414	350															41850	
477	400															42200	
515	450															42200	
590	500															43000	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT \$100 list from all but one of these options
- (3) Included in the Base Price

P7B

Dimensions and Data ⁽⁵⁾ NEMA 1/12 FVFF

Rated Input Voltage	Configured P7BV or P7BB	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number	Dimension Drawing Number (w/ Add-on Box) ^(3, 4)
				H	W	D			
208V	D016	16.7	5	29.50	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.A0
	D024	24.2	7.5				127		
	D030	30.8	10				127		
	D046	46.2	15	40.50	25.63	14.66	208	DD.AFD.088.01	DD.AFD.088.01.A0
	D059	59.4	20				221		
	D074	74.8	25				221		
	D088	88	30				221		
	D114	114	40	84.00	37.75	27.00	847	DD.AFD.183.06	N/A
	D143	143	50				943		
	D169	169	60				1214		
D211	211	75	1214						
D273	273	100	84.00	73.25	27.00	1330	DD.AFD.184.08	DD.AFD.184.08	
D343	343	125				1423			
D396	396	150				1423			
240V	A015	15.2	5	29.50	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.A0
	A022	22	7.5				127		
	A028	28	10				127		
	A042	42	15	40.50	25.63	14.66	208	DD.AFD.088.01	DD.AFD.088.01.A0
	A054	54	20				221		
	A068	68	25				221		
A080	80	30	84.00	37.75	27.00	847	DD.AFD.183.06	N/A	
A104	104	40				943			
A130	130	50				1214			
A154	154	60				1214			
230V	A192	192	75	84.00	73.25	27.00	1330	DD.AFD.184.08	DD.AFD.184.08
	A248	248	100				1376		
	A312	312	125	1376					
	A360	360	150	1376					

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) All options are available in this size enclosure except E (RFI Filter), R (3% Line Reactor), and K (5% Output Reactor). Only option E combined with either option R or option K can be installed in the add-on enclosure. Options R and K together require an increase in the size of the P7 Bypass Enclosure. Contact the factory if all three options are required.
- (4) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.
- (5) If option D (2 Motor "OR") or A (2 Motor "AND") is supplied, use dimensions table for P7/Bypass with "OR/AND" option.

Dimensions and Data ⁽⁵⁾

NEMA 1/12 FVFF



Rated Input Voltage	Configured P7BV or P7BB	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number	Dimension Drawing Number (w/ Add-on Box) ^(3, 4)
				H	W	D			
480V	B007	7.6	5	29.50	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.A0
	B011	11	7.5				127		
	B014	14	10				142		
	B021	21	15						
	B027	27	20	40.50	25.63	14.66	203	DD.AFD.088.01	DD.AFD.088.01.A0
	B034	34	25				232		
	B040	40	30				241		
	B052	52	40						
	B065	65	50	84.00	37.75	27.00	943	DD.AFD.183.06	N/A
	B077	77	60				1240		
	B096	96	75				1352		
	B124	124	100						
	B156	156	125	84.00	73.25	27.00	1740	DD.AFD.184.08	N/A
	B180	180	150				1800		
	B240	240	200				1854		
	B302	302	250						
B361	361	300	84.00	108.75	27.00	1900	TBD	N/A	
B414	414	350				2150			
B477	477	400							
B515	515	450							
B590	590	500							

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) All options are available in this size enclosure except E (RFI Filter), R (3% Line Reactor) and K (5% Output Reactor). Only option E, combined with either option R or option K, can be installed in the add-on enclosure. Options R and K together require an increase in the size of the P7 Bypass Enclosure. Contact the factory if all three options are required.
- (4) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.
- (5) If option D (2 Motor "OR") or A (2 Motor "AND") is supplied, use dimensions table for P7/Bypass with "OR/AND" option.

P7B

Dimensions and Data

With "OR/AND" Option
NEMA 1/12 FVFF

Rated Input Voltage	Configured P7BV or P7BB	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽⁴⁾	Dimension Drawing Number (w/ Add-on Box) ^(3, 4)
				H	W	D			
208V	D016	16.7	5	29.50	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.AO
	D024	24.2	7.5				127		
	D030	30.8	10				40.50		
	D046	46.2	15						
	D059	59.4	20	84.00	37.75	27.00	820	DD.AFD.183.06	N/A
	D074	74.8	25				847		
	D088	88	30				943		
	D114	114	40	84.00	73.25	27.00	1343	DD.AFD.184.08	N/A
	D143	143	50				1614		
	D169	169	60				84.00		
	D211	211	75	1823					
D273	273	100							
D343	343	125	29.50	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.AO	
D396	396	150				127			
240V	A015	15.2	5	40.50	25.63	14.66	208	DD.AFD.088.01	DD.AFD.088.01.AO
	A022	22	7.5				221		
	A028	28	10				84.00		
	A042	42	15	943					
	A054	54	20	A080 "OR"	80	30		847	
	A068	68	25						
230V	A104	104	40	84.00	37.75	27.00	943	DD.AFD.183.06	N/A
	A130	130	50				1214		
	A154	154	60				1330		
	A192	192	75	A360	360	150	1376		
	A248	248	100						

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) All options are available in this size enclosure except E (RFI Filter), R (3% Line Reactor) and K (5% Output Reactor). Only option E, combined with either option R or option K, can be installed in the add-on enclosure. Options R and K together require an increase in the size of the P7 Bypass Enclosure. Contact the factory if all three options are required.
- (4) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

Dimensions and Data

With “OR/AND” Option
NEMA 1/12 FVFF



Rated Input Voltage	Configured P7BV or P7BB	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽⁴⁾	Dimension Drawing Number (w/ Add-on Box) ^(3, 4)
				H	W	D			
480V	B007	7.6	5	29.50	19.00	13.66	115	DD.AFD.087.01	DD.AFD.087.01.AO
	B011	11	7.5						
	B014	14	10						
	B021	21	15						
	B027	27	20						
	B034	34	25	40.50	25.63	14.66	142	DD.AFD.088.01	DD.AFD.088.01.AO
	B040	40	30						
	B052	52	40						
	B065	65	50	84.00	37.75	27.00	203	DD.AFD.183.06	N/A
	B077	77	60						
	B096	96	75	84.00	73.25	27.00	840	DD.AFD.184.08	N/A
	B124	124	100						
	B156	156	125						
	B180	180	150	84.00	TBD	27.00	943	TBD	N/A
	B240	240	200						
B302	302	250	84.00	TBD	27.00	1640	TBD	N/A	
B361	361	300							
B414	414	350							
B477	477	400	84.00	TBD	27.00	1852	TBD	N/A	
B515	515	450							
B590	590	500							

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) All options are available in this size enclosure except E (RFI Filter), R (3% Line Reactor) and K (5% Output Reactor). Only option E, combined with either option R or option K, can be installed in the add-on enclosure. Options R and K together require an increase in the size of the P7 Bypass Enclosure. Contact the factory if all three options are required.
- (4) Please refer to Yaskawa’s website at www.yaskawa.com for dimension drawings.

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The P7/Bypass package in a NEMA 3R enclosure is a 3-contactor style bypass, allowing motor operation from either the drive or across the line. This facilitates drive maintenance while the motor continues to operate. The P7 and P7/Bypass have been designed for flexibility in providing the features and options commonly demanded by facility designers.

The P7 Drive is a variable torque AC drive, designed specifically for industrial applications. A new benchmark for size, cost, performance, benefits and quality, the P7 includes numerous built-in features such as Network Communications, H/O/A, PI control and energy savings functions.

The P7 has embedded communications for Modbus. An optional interface card is also available for DeviceNet, Profibus, EtherNet and LonWorks.

This P7 package has a **UL Type 3R rating**.

Performance Features

- Input, output, and bypass contactors
- Circuit breaker disconnect (MCP), with interlocked, flange-mount operating mechanism
- Thermal motor overload relay, class 20
- 115 VAC control transformer, fused
- Drive/Bypass selector switch
- Hand/Off/Auto selector switch
- Normal/Test selector switch
- Pilot lights, 22mm LED, for Control Power, Drive Run, Drive Fault, Bypass Run, Motor OL/Safety Fault and Smoke Purge
- Switch selectable auto transfer to bypass on drive fault
- Switch selectable remote transfer to bypass via contact closure
- Switch selectable smoke purge function
- Run mode and Fault contacts
- Control and safety circuit terminal strip
- Damper circuit safety interlock

Bypass Options

- Input reactor
- Communication Interface: DeviceNet, Profibus, EtherNet, LonWorks, Johnson Controls METASYS N2, and Siemens APOGEE FLN
- Pressure/electrical transducer
- Engraved nameplates
- DriveWizard upload/download and monitoring/graphing software
- Analog outputs: 2 programmable, 4-20 mA
- Surge suppressor
- Space heater
- 50°C ambient
- Keypad viewing window
- Leg kits (shipped loose)
- Input fuses

Service Conditions

- Ambient Temperature: -10°C to 40°C (14°F to 104°F)
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

Performance Features

- VT Ratings: 5-150 HP, 208 VAC
5-150 HP, 230/240 VAC
5- 500 HP, 480 VAC
- Overload capacity: 110% for 60 sec. (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque limiting: 30-180%
- Energy Saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Customizable monitor display
- Sleep function
- Run permissive input
- Ramp-to-stop or coast-to-stop selection
- Runtime changes in control and display
- Project-specific parameter reinitialization

Protective Features

- Current limited stall prevention
- Heat sink over-temperature, speed fold-back
- Cooling fan operating hours recorded
- Bi-directional start into rotating motor at synchronized speed
- DC bus charge indicator
- Current limiting DC bus fuse
- Optically-Isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Short circuit withstand rating: 65K RMS, 100K RMS with bus reactor
- Electronic motor overload: UL
- Current and torque limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Program security code
- "Hunting" prevention logic
- Reverse prohibit selectability

Design Features

- 32-bit microprocessor logic
- Flash upgradeable firmware
- Non-volatile memory, program retention
- Surface-mount devices
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect, removable
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-500 HP, 480 VAC; optional on lower ratings
- Keypad Operator: built-in copy feature, 6 languages
- LCD display: 5 lines, 16 characters each
- 24 VDC control logic
- Transmitter/Option power supply
- Output contacts: One form C and two programmable form A
- Input/output terminal status
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Diagnostic fault indication in selected language
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Multi-speed settings: 5 available
- Remote speed command: 0-10 VDC or 4-20 mA, direct or reverse-acting
- Setpoint (PI) control with inverse or square root input, differential control via two feedback capability
- Feedback signal: low pass filter
- Speed command: bias and gain
- Analog outputs: Programmable, two, 0-10 VDC
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- Output Current Transformers, qty 3
- UL Type 3R rating
- MTBF: exceeds 28 years
- Thermostatically controlled cabinet fans
- Lifting eyes
- Padlock hasp



Description

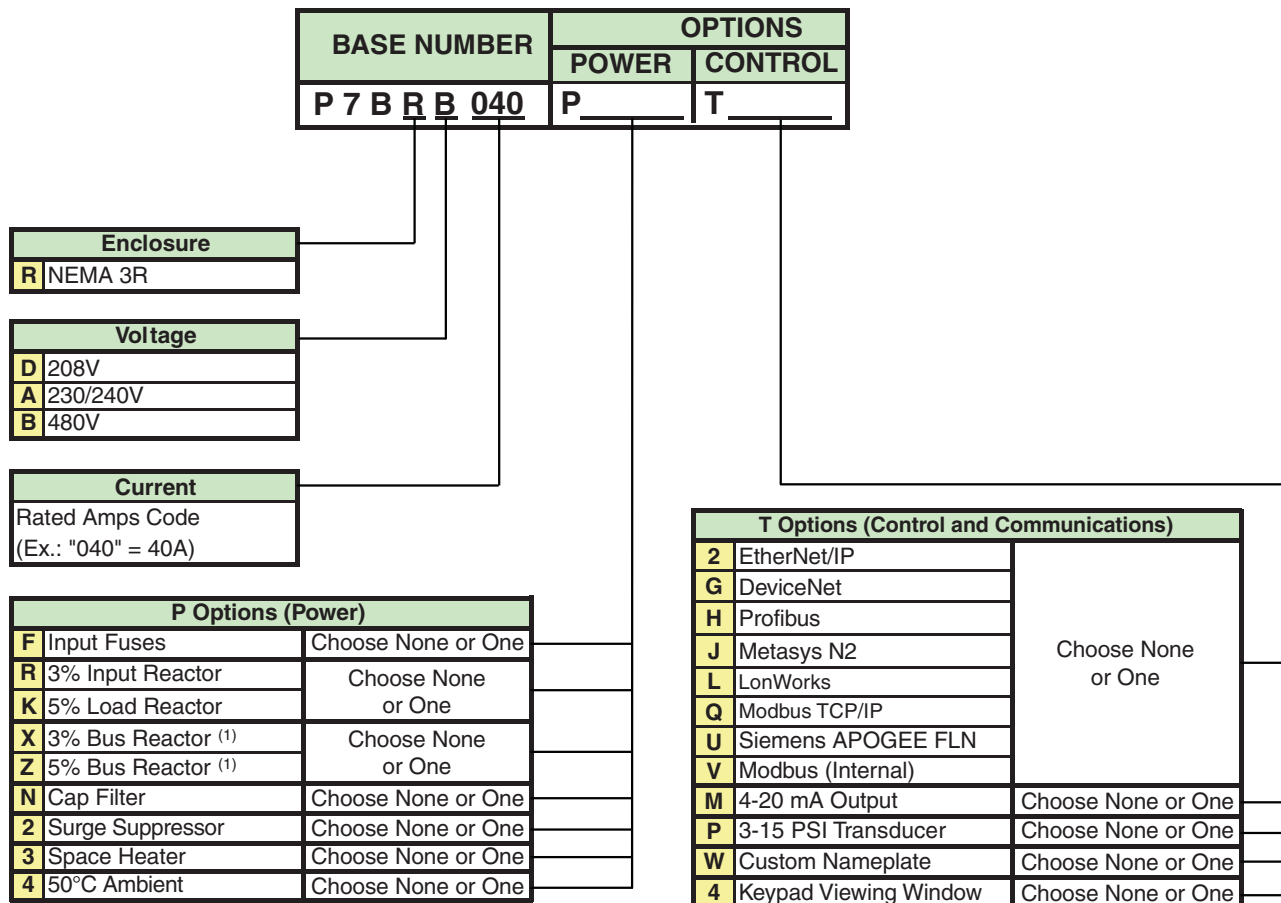
5-500HP
P7/Bypass
NEMA 3R

Model Number Configuration & Pricing:

- Step 1.** To construct the complete Configured model number, first find the Base Number for the required enclosure type, voltage and current rating.
- Step 2.** Add the Option code letter for each required option. Choose options, in order, starting at the top of the option table and working toward the bottom. Any Power option must be preceded by **(P)**; any Control & Communications option by **(T)**. No more than eight options may be selected.
- Step 3.** Find the corresponding list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: P7 NEMA 3R Bypass package (**P7BR**) with a 480V, 40 Amp P7 drive (**B040**), with Input Fuses and a 3% Bus reactor (**P** followed by **FX**), LonWorks communications capability (**T** followed by **L**). Model number is:

P7BRB040PFXTL



(1) 3% and 5% Bus Reactors are only available as an option on base numbers up to and including P7BR_D074, A068 and B040; larger drives have a Bus Reactor as standard.

Description

5-500HP
P7/Bypass
NEMA 3R



Bypass Option Descriptions:

- (R) **Enclosure:** The drive and options are provided in a NEMA Type 3R ventilated enclosure, large enough to accommodate any or all of the package options. Enclosures for Base Numbers up to, and including, D114 (40HP, 208V), A104 (40HP, 240V), and B124 (100HP, 480V) are wall-mounted; larger drives are in floor-mount enclosures.

P Options (Power)

- (N) **Input Filter:** The standard configuration does not include a filter. The cap filter, option (N), is a delta-wye capacitive network.
- (F) **Input Fuses:** The standard configuration does not include Drive Input Fuses. This option provides high-speed semi-conductor drive input fuses, rated for 200,000 amp RMS symmetrical interrupting capacity, that provides both drive input I2T protection and NEC approved branch circuit and short circuit protection.
- (X, Z, R) **Line Impedance:** Drives above Base Numbers D074 (25HP, 208V), A068 (25HP, 240V) and B040 (30HP, 480V) include a 3% DC bus reactor in the standard package and do not provide any additional impedance. Option (X), 3% impedance, and option (Z), 5% impedance, are not available for ratings larger than these. To achieve a 5% total input impedance, select option (R) - this 3% input reactor is available only for the HP ratings greater than the HP's listed above, and combines with the drive's standard DC bus reactor.
- (K) **Load Reactor:** No form of output impedance is normally required. A 5% load reactor, option (K), is available if additional output impedance is desired (usually for long lead-lengths or noise reduction).
- (2) **Surge Suppressor:** This option will offer some degree of protection from transient surges coming through the power line cables. Lightning strikes are the most common source of surges.
- (3) **Space Heater:** This option maintains the internal cabinet temperature to reduce condensation.
- (4) **50°C Ambient:** This option will allow the enclosure to be operated in an ambient temperature of 50°C (122°F). The standard basic design is rated for 40°C ambient.

T Options (Control and Communications)

- (W) **Custom Nameplates:** Custom engraved nameplates with white lettering on black lamicaid are available with option (W), for special tagging purposes (Example: "AHU #1"). Note that this option requires the text to be specified by the customer. Leave this field blank if no special nameplates are required.
- (P) **3-15 PSI Transducer:** No transducer is provided with the standard configuration. To add an optional transducer that accepts a 3-15 PSI pneumatic signal and converts it to a 4-20mA signal that is sent to the drive, specify option (P).
- (M) **4-20mA Output:** The standard Configured package provides two programmable 0-10VDC outputs. To convert these outputs to 4-20mA output signals, specify option (M).
- (G, H, L, Q, 2, V, J, U) **Communications:** All configurations provide the hardware and software required for network communications, but these are not enabled in the standard configuration. Option (V) provides the programming and jumpers necessary to enable Modbus communications at no additional cost. DeviceNet option (G), Profibus option (H), Lonworks option (L), Modbus TCP/IP option (Q), and EtherNet/IP option (2) all require the addition of an optional board. Option (J) Johnson Controls METASYS N2 and option (U) Siemens APOGEE FLN require a software change, but no hardware change.
- (4) **Keypad Viewing Window:** The digital drive keypad is mounted on the outside of the NEMA 3R enclosure door. This option provides a viewing window which is hinged and lockable.



Bypass Drives and Options

NEMA 3R

P7 Bypass Drives - 5-500HP, 208-230/240 and 480V, 3-phase input, NEMA 3R enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 3R Bypass		Input Filter	Input Fuses	Line Impedance			Load Reactor	Other								
					N=Cap	F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%	2=Surge Suppressor 3=Space Heater 4=50°C Ambient								
					P7BR	Base List \$	N List \$	F List \$	X List \$	Z List \$	R List \$	K List \$	2 List \$	3 List \$	4 List \$				
208V	16.7	5	D016																
	24.2	7.5	D024							N/A									
	30.8	10	D030																
	46.2	15	D046																
	59.4	20	D059																
	74.8	25	D074																
	88	30	D088																
	114	40	D114							3% DC Bus Reactor is included as standard									
	143	50	D143																
	169	60	D169																
211	75	D211																	
273	100	D273																	
240V	15.2	5	A015																
	22	7.5	A022							N/A									
	28	10	A028																
	42	15	A042																
	54	20	A054																
	68	25	A068																
	80	30	A080																
104	40	A104																	
230V	130	50	A130							3% DC Bus Reactor is included as standard									
	154	60	A154																
	192	75	A192																
	248	100	A248																
	312	125	A312																
360	150	A360																	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors



P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Custom Name-plates	Transducer	4-20mA Output	Communications								Keypad	Uses Drive Model Number CIMR-P7U	
			W=NP	P=3-15 PSI	M=4-20mA	G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN								4=Viewing Window		
			W List \$	P List \$	M List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$	4 List \$		
208V	16.7	5														23P71
	24.2	7.5														27P51
	30.8	10														20111
	46.2	15														20151
	59.4	20														20181
	74.8	25														20221
	88	30														20301
	114	40														20370
	143	50														20450
	169	60														20550
211	75														20750	
273	100														20900	
343	125														21100	
396	150															
240V	15.2	5														23P71
	22	7.5														25P51
	28	10														27P51
	42	15														20111
	54	20														20151
	68	25														20181
	80	30														20221
104	40														20301	
230V	130	50														20370
	154	60														20450
	192	75														20750
	248	100														20750
	312	125														20900
360	150															

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) N/A = Consult Factory
- (3) Included in the Base Price



Bypass Drives and Options

NEMA 3R

P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	NEMA 3R Bypass		Input Filter	Input Fuses	Line Impedance			Load Reactor	Other								
					N=Cap	F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor			K=5%	2=Surge Suppressor 3=Space Heater 4=50°C Ambient								
			P7BR	Base List \$	N List \$	F List \$	X List \$	Z List \$	R List \$	K List \$	2 List \$	3 List \$	4 List \$						
480V	7.6	5	B007																
	11	7.5	B011							N/A									
	14	10	B014																
	21	15	B021																
	27	20	B027																
	34	25	B034																
	40	30	B040																
	52	40	B052							3% DC Bus Reactor is included as standard									
	65	50	B065																
	77	60	B077																
	96	75	B096																
	124	100	B124																
	156	125	B156																
	180	150	B180																
	240	200	B240																
	302	250	B302																
361	300	B361																	
414	350	B414																	
477	400	B477																	
515	450	B515																	
590	500	B590																	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors



P7 Bypass Drives (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Custom Name-plates	Transducer	4-20mA Output	Communications								Keypad	Uses Drive Model Number CIMR-P7U	
			W=NP	P=3-15 PSI	M=4-20mA	G=DeviceNet, H=Profibus V=Modbus, L=LonWorks Q=Modbus TCP/IP, 2=EtherNet/IP, J=METASYS N2 U=APOGEE FLN								4=Viewing Window		
			W List \$	P List \$	M List \$	G List \$	H List \$	V ⁽³⁾ List \$	L List \$	Q List \$	2 List \$	J List \$	U List \$	4 List \$		
480V	7.6	5														43P71
	11	7.5														45P51
	14	10														47P51
	21	15														40111
	27	20														40111
	34	25														40151
	40	30														40181
	52	40														40301
	65	50														40301
	77	60														40371
	96	75														40451
	124	100														40551
	156	125														40750
	180	150														40900
	240	200														41100
	302	250														41600
361	300														41850	
414	350														41850	
477	400														42200	
515	450														42200	
590	500														43000	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) N/A = Consult Factory
- (3) Included in the Base Price

Rated Input Voltage	Bypass P7BR	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽³⁾
				H	W	D		
208V	D016	16.7	5	32	24	17.5	250	DD.AFD.198.01
	D024	24.2	7.5					
	D030	30.8	10					
	D046	46.2	15	40	32	17.5	365	DD.AFD.199.01
	D059	59.4	20					
	D074	74.8	25	46	42	17.5	480	DD.AFD.200.01
	D088	88	30					
	D114	114	40					
	D143	143	50	91	37	36	850	DD.AFD.189.01
	D169	169	60				950	
D211	211	75	1100					
D273	273	100	1330					
D343	343	125	91	74	36	1400	DD.AFD.190.01	
D396	396	150						
240V	A015	15.2	5	32	24	17.5	250	DD.AFD.198.01
	A022	22	7.5					
	A028	28	10					
	A042	42	15	40	32	17.5	365	DD.AFD.199.01
	A054	54	20					
	A068	68	25	46	42	17.5	480	DD.AFD.200.01
A080	80	30						
A104	104	40						
230V	A130	130	50	91	37	36	850	DD.AFD.189.01
	A154	154	60				950	
	A192	192	75				1100	
	A248	248	100				1330	
	A312	312	125	91	74	36	1400	DD.AFD.190.01
	A360	360	150					

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.

(3) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.



Rated Input Voltage	Bypass P7BR	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Dimension Drawing Number ⁽³⁾
				H	W	D		
480V	B007	7.6	5	32	24	17.5	250	DD.AFD.198.01
	B011	11	7.5					
	B014	14	10					
	B021	21	15					
	B027	27	20	40	32	17.5	365	DD.AFD.199.01
	B034	34	25					
	B040	40	30					
	B052	52	40					
	B065	65	50	46	42	17.5	480	DD.AFD.200.01
	B077	77	60					
	B096	96	75					
	B124	124	100					
	B156	156	125	91	37	36	800	DD.AFD.189.01
	B180	180	150					
	B240	240	200				900	
	B302	302	250					
	B361	361	300	91	74	36	1600	DD.AFD.191.01
	B414	414	350					
B477	477	400	91				110	
B515	515	450						
B590	590	500		2100				

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (3) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

Software, Drawings, Manuals

efesotomasyon.com

Software

DriveWizard Software Kit. This software package allows uploading and downloading of parameters via a PC for data storage and for programming of a drive. The software includes graphing and monitoring tools. It is a Windows-based program designed to make startup, commissioning and troubleshooting of Yaskawa drives as simple as possible. Refer to our website at www.yaskawa.com for more information, including minimum system requirements. This kit includes the DriveWizard program on CD and a PC interface cable.
Model No. DWST616-C2 \$

DriveWizard Software. Software CD only. The software can also be downloaded for free on our website www.yaskawa.com.
Model No. CD.DW.01 \$

PC Interface Cable. This 6 foot cable interconnects the drive keypad port to the 9-pin communications port on a PC. This cable is used in conjunction with DriveWizard software.
Model No. UWR00468-2 \$

Drawings

Approval/Special Drawings. Pricing for drives and options is based on standard documentation, which consists of one Technical Manual, standard Instruction Sheets, Wiring Diagrams and Outline Drawings. When approval or special drawings must be prepared and submitted to the customer, a Drawing Price Addition must be made for each different drive being offered. Material procurement and manufacture will not commence until written drawing approval is received by the factory.

Manuals/CDs

Technical Manuals. One manual and CD-ROM is included with each drive at no charge when shipped from the factory.
Additional copies of Manual or CD-ROM:
Part No. TM.P7.01 \$
Part No. CD.AFD7.01

In today's world of global competition, it is impossible for a company to survive without "state-of-the-art" technically trained associates and customers. Yaskawa Technical Training Services (TTS) is comprised of engineers who are specialists in their field.

Yaskawa Electric America has three training facilities in the United States. The primary training facility is in Yaskawa Electric America's North American Headquarters in Waukegan, Illinois (45 miles north of Chicago, 50 miles south of Milwaukee). This facility has six training rooms; two lecture halls, two training rooms and two training labs.

Besides the possibility of attending training classes in Waukegan and Los Angeles, Yaskawa Electric America can also bring training to the customer. On-site classes are available in two varieties. The first is to duplicate the official training classes at the customer's location. Full functioning demo units, data projector, computer and documentation can be shipped to recreate the official class on-site. The second variety is road show training. Road show training is a one-day training class that is specifically tailored to the students' needs and questions. Only basic demos are used and the topics covered in class are generated by the students in attendance.

The Yaskawa Virtual Training Room is another training option. All you need is an Internet connection and a telephone. This is a live, interactive training class, which gives you the ability to talk to the instructor as well as other students. The Internet connection allows us to show slides and demonstrate software packages. The telephone is for the audio portion of the training class. Web classes can be found on the Yaskawa formal training schedule and can also be done on-demand, per the time and preference of the customer.

Training Classes Available

P7 Sales/Web Class

Short, information packed class designed to present ample, specific product information in a short amount of time, typically 1-3 hours. Can be done live or over the web.

P7 Level 1 Class

A hands on class specifically designed for Service Mechanics and end users. Physical and electrical installation, and start-up procedures are covered for both P7 and P7 Bypass in this 2-day class.

P7 Basic Class

An in-depth look at the functions and programming parameters of the product. Basic training is highly detailed and takes 2-3 days.

P7 Troubleshooting Class

This 1-day class is designed to provide a better understanding of how the products work, and is designed primarily for technicians. Topics covered include unit checks with and without power and fault code explanations.

To enroll, contact Technical Training Services.

Phone: 1-800-Yaskawa (1-800-927-5292) and (then dial 2 for "Drives" and 4 for "Training")

Fax: 847-785-2724

E-mail: training@yaskawa.com

Check out the latest class schedule and cut sheets at www.yaskawa.com

Terms and Conditions

efesotomasyon.com

YASKAWA AMERICA, INC. ("YAI"), DRIVES & MOTION DIVISION - TERMS AND CONDITIONS OF SALE

1. GENERAL:

(a) All sales of products or services by Yaskawa America, Inc., Drives & Motion Division (hereinafter "D&M"), is governed exclusively by these Terms and Conditions of Sale ("Terms"), which supersede all inconsistent or additional terms on Buyer's purchase order or any other document. These Terms constitute the final, complete and exclusive agreement between the parties as to the subject matter hereof. These Terms may be amended only in writing signed by an authorized representative of D&M.

(b) Orders must be submitted in the form of a written purchase order or letter from Buyer, setting forth all information necessary for D&M to fill the Order, if accepted. All proposals, quotations or similar communications from D&M are considered invitations to submit an Order. A binding sales contract will result only when D&M accepts Buyer's Order, at D&M's office in Waukegan, Illinois or such other place as designated by D&M.

2. PRICES:

(a) D&M's quoted prices are firm for thirty (30) days from the date of D&M's written proposal. Thereafter, the applicable prices are those in effect at the time Buyer's Order is placed with D&M. D&M will notify Buyer of any price changes for incorporation into a revised Order prior to acceptance by D&M. Pricing based on volume discounts is subject to adjustment by D&M if actual shipping volumes do not meet minimum volume requirements of agreement. Clerical errors in any element of a proposal, purchase order, invoice or contract are subject to correction by D&M.

3. TERMS OF PAYMENT:

(a) All payments are due within thirty (30) days from date of D&M's invoice. Payment shall be made at the agreed time, to the place specified, and in the currency indicated on D&M's invoice. D&M reserves the right to require payment in advance, or satisfactory security, for any shipment or sale. D&M reserves the right to seek any other remedy available at law or equity and Buyer shall be liable for all expenses, including attorneys' fees, relating to the collection of past due amounts. Buyer's default constitutes a waiver of Buyer's right to demand D&M's performance under the contract.

(b) When an amount becomes past due according to its payment terms, Buyer shall pay interest on the balance due, at the greater of 1.50% per month (18% per annum) or the maximum permitted by law, until paid in full.

(c) If delivery and/or payment in installments is accepted by D&M, Buyer's failure to pay any installment when due shall give D&M the right to suspend work or delivery until such payment is made. In the event that any such default by Buyer continues for more than fifteen (15) days, D&M may then cancel the contract by written notice to Buyer.

(d) All duties, tariffs, fees, costs and other charges connected with shipment, insurance, exportation and importation of the products are the responsibility of Buyer, and, if paid by D&M, such expenses may be recovered by D&M from Buyer, and Buyer shall indemnify D&M against claims for the same. Buyer is responsible for all taxes applicable or related to this transaction, including all sales, use and excise taxes.

4. SECURITY INTEREST:

To secure any indebtedness due and owing from Buyer from time to time, Buyer hereby grants to D&M, and D&M hereby reserves, a continuing purchase money security interest in all Yaskawa-brand and other products heretofore or hereafter sold and delivered to Buyer by D&M, and all related parts, components and accessories therefor, and all proceeds arising from the sale or other disposition of the foregoing, including, but not limited to, cash, accounts, contract rights, accounts receivable, instruments and chattel paper.

Buyer shall at no time grant any security interest that conflicts with that granted to D&M herein. Buyer shall cooperate with D&M, and hereby appoints D&M as its attorney-in-fact, to execute and file, on Buyer's behalf, any documents necessary to evidence and perfect D&M's security interest. D&M reserves all rights and remedies available to it under the Uniform Commercial Code and other applicable law in the event of Buyer's default.

5. SHIPMENT, FORCE MAJEURE, AND ERROR:

(a) Shipment/delivery dates are approximations only. D&M shall not be liable to pay any penalty or damages, including consequential damages, for any delay in shipment.

(b) All shipments are F.O.B. D&M's (or its suppliers') manufacturing plant or warehouse. D&M will, at Buyer's expense, arrange for the transportation of the products from the manufacturing plant or warehouse designated by D&M. All products shall be packaged for domestic shipment in accordance with D&M's standard specifications. If special packaging is required, it must be clearly requested on Buyer's Order. The price for any special packaging shall be billed to Buyer. Buyer is responsible to timely procure all necessary export and import licenses and all permits required for the consummation of the transaction and to obtain insurance coverage on all shipments of products supplied by D&M. Risk of loss and/or damage to the products shall pass to Buyer upon delivery thereof to Buyer or its representative, or to a carrier for shipment to Buyer or its designated customer, as the case may be, at the FOB point.

(c) D&M shall not be liable for any damages, including consequential damages, caused by delays or non-performance resulting from or related to force majeure or other causes beyond D&M's reasonable control, including, but not limited to, war, blockade, civil disturbances, strikes and lockouts, labor shortages, fire and other casualties, acts of nature, accidents and governmental acts (including regulations concerning export and import licensing and currency exchange). In case of non-delivery, D&M's obligation shall be limited to the refund of any advance payment received from Buyer.

(d) All claims for loss of or damage to products, whether concealed or obvious, must be made, in writing, to the carrier and to D&M by Buyer as soon as possible after receipt of shipment, and in no case beyond 30 days of shipment, or such claims shall be deemed waived. D&M will render reasonable assistance in providing information necessary for Buyer to process such damage claims with the carrier or any insurance company.

(e) Buyer agrees to accept delivery within fifteen (15) days following the anticipated date of delivery. If Buyer refuses to take delivery within the fifteen (15) day period, D&M reserves the right to charge Buyer for storage charges plus interest.

6. RETURNS/CANCELLATION CHARGES:

Buyer shall not return products to D&M without the written consent of, and upon terms agreed to, by D&M. If Buyer refuses to accept delivery, or improperly revokes acceptance of product, Buyer shall be responsible for D&M's cancellation charges and expenses. Before any returns, a Return Merchandise Authorization ("R.M.A.") number must be obtained from D&M. Products returned without an R.M.A. number clearly marked on the outside of the shipping carton will be refused. Except for approved warranty returns, D&M will only accept for return and credit new, unused, undamaged, current stock items, in the original packaging. Buyer shall be responsible for all freight charges, import/export charges, duties, tariffs, taxes, insurance and risk of loss/damage regarding return shipment to D&M.

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7. DRAWINGS/MEASUREMENTS:

All ratings, drawings, tables, graphs and the like submitted by D&M or set forth in written materials or on the company's website are approximations only. Weights, measurements, capacities and all other particulars of products or services offered by D&M are approximations only. D&M is not responsible for such approximations, including, in particular, based on data supplied by Buyer.

8. LIMITED WARRANTY:

(a) At the time of shipment, new and unused product sold by D&M shall be free from defects in materials and workmanship. D&M warrants that for a period of one (1) year from the date the product is first used by Buyer, or 18 months from the date of shipment, whichever occurs first, if any product or part is found by D&M to be defective, D&M will, at its sole discretion and as Buyer's exclusive remedy, either repair, replace or return the purchase price paid to D&M; provided that the subject product is used under normal conditions for which it was designed and installed, operated and maintained in accordance with D&M's instructions and in accordance with generally accepted industrial practices. Products repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period or ninety (90) days from date of the repair or shipment of the replacement, whichever is longer. D&M warrants, for a period of ninety (90) days, that services shall be performed in a workmanlike manner. Buyer's sole remedy for a breach of this service warranty is limited to further service or a refund or credit of amounts paid by Buyer, at Seller's option.

(b) D&M's warranty obligation shall be conditioned upon receipt by D&M of written notice of any alleged defects within sixty (60) days after discovery. D&M will not be responsible for unauthorized repairs to any products, even if defective. D&M shall not be responsible for any products which have been altered, abused, misused, or improperly installed or repaired, or for any loss, damage, defect, claim or non-performance resulting from or attributable to Buyer's specifications. D&M does not guarantee production rates or the quality of goods made using D&M's products or services, nor shall any longer warranty periods apply, except as agreed in writing signed by an authorized D&M representative.

(c) Where Buyer orders non-stock products or parts manufactured by a third-party, D&M will, to the extent permitted, pass through to Buyer any warranty of the manufacturer. As to such items, Buyer's sole remedy for breach of warranty shall be the remedy offered by and available from the manufacturer, if any.

(d) **D&M'S WARRANTY HEREIN IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES OF D&M AND ANY PARENT OR AFFILIATED COMPANIES OF D&M. D&M DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE OR USE.**

(e) **UNDER NO CIRCUMSTANCES SHALL D&M, OR ANY PARENT OR AFFILIATED COMPANY OF D&M, BE LIABLE TO BUYER OR ANY ENTITY FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER ARISING FROM BREACH OF CONTRACT, TORT, NEGLIGENCE, MISREPRESENTATION, STRICT LIABILITY OR OTHERWISE, INCLUDING FOR LOST PROFITS, IMPAIRMENT OF GOODS, WORK STOPPAGE OR OTHERWISE, IN ANY WAY ARISING OUT OF OR RELATED TO PRODUCTS OR SERVICES SUPPLIED BY D&M OR ANY TRANSACTION TO WHICH THESE STANDARD TERMS APPLY. THE MAXIMUM LIABILITY OF D&M, INCLUDING, BUT NOT LIMITED TO, WITH RESPECT TO THE DESIGN, MANUFACTURE, SALE, DELIVERY, RESALE, INSPECTION, ASSEMBLY, INSTALLATION, TESTING, REPAIR, REPLACEMENT, MAINTENANCE OR USE OF ANY PRODUCT OR THE PERFORMANCE OF ANY SERVICE, SHALL NOT EXCEED THE PURCHASE PRICE PAID TO D&M.**

9. INFRINGEMENT:

The liability of D&M, any parent or affiliated company for patent infringement is limited to D&M's defense of proceeding brought against Buyer based on a claim that products, when employed in the manner intended by D&M, constitutes an infringement of any U.S. patent. If Buyer's use of the products in the manner intended by D&M is finally enjoined in such action, D&M shall, at its option, procure for Buyer the right to continue using the products, replace the same with non-infringing products, modify the products so that they become non-infringing equivalent products, or refund the purchase price (less allowance for use, damage or obsolescence). D&M makes no warranty against patent infringement resulting from portions of the products made to Buyer's specifications or the use of products in combination with any other goods or in the practice of any process, and if a claim is brought against D&M or any parent or affiliate of D&M, Buyer shall defend, indemnify and hold D&M (and its parent/affiliates) harmless from and against any and all claims, losses or damages arising therefrom.

10. GOVERNING LAW, FORUM AND JURY WAIVER:

These Terms and the relationship of the parties are governed by the internal laws of the State of Illinois, U.S.A., without regard to its choice of law rules. For all claims or disputes arising out of or relating to the sale of products or services by D&M and/or the relationship of the parties, Buyer shall file any and all lawsuits or claims exclusively in the state or federal courts located in Cook County, Illinois. Buyer hereby submits to the personal jurisdiction of said courts and waives any claim of improper or inconvenient venue. To the fullest extent permitted by law, Buyer hereby agrees to waive the right to trial by jury for all claims or disputes arising out of or relating to the sale of products or services by D&M and/or the relationship of Buyer and D&M. The parties agree that U.N. Convention of Contracts for the International Sale of Goods shall not apply to their relationship or the sale of products by D&M.

11. EXPORT CONTROL:

Buyer acknowledges that the products and related software and technology may be subject to export controls of the U.S. Government, including the Export Administration Regulations of the U.S. Department of Commerce. Buyer shall comply with all applicable laws, regulations, treaties and agreements regarding the use, import, export or re-export of the products and shall be solely responsible for obtaining all required licenses or approvals. The products are not intended for use in any nuclear, chemical or weapons production or environmental damage or for export, re-export, or distribution to any restricted or embargoed country or to a person or entity whose privilege to participate in exports has been denied or restricted by the U.S. Government. Buyer shall indemnify, hold harmless and defend D&M, its parent and affiliated companies from any violation of this section by Buyer or its employees, consultants, agents and customers.

12. MISCELLANEOUS:

(a) Failure on the part of D&M to enforce any of its rights derived from these Terms shall never be construed as a waiver of any of D&M's rights.

(b) The invalidity of one or more of the clauses herein shall not affect the validity of the other clauses, which for this purpose are considered severable.

(c) Any use by Buyer of any YAI trademark must be approved by YAI in writing.

(d) Buyer may not delegate its performance or assign its rights under these Terms except upon the express written consent of D&M. In any case, these Terms shall be binding upon the successors and legal representatives of Buyer.

Model/ Part Number	Description	List Price \$	Old Model/Part Number
05P00620-0029	Reactor, 600V, 8A, Enclosed		
05P00620-0033	Reactor, 600V, 12A, Enclosed		
05P00620-0034	Reactor, 600V, 12A, Enclosed		
05P00620-0036	Reactor, 600V, 18A, Enclosed		
05P00620-0037	Reactor, 600V, 18A, Enclosed		
05P00620-0038	Reactor, 600V, 18A, Enclosed		
05P00620-0041	Reactor, 600V, 25A, Enclosed		
05P00620-0042	Reactor, 600V, 25A, Enclosed		
05P00620-0043	Reactor, 600V, 18A, Enclosed		
05P00620-0046	Reactor, 600V, 35A, Enclosed		
05P00620-0047	Reactor, 600V, 35A, Enclosed		
05P00620-0048	Reactor, 600V, 35A, Enclosed		
05P00620-0051	Reactor, 600V, 45A, Enclosed		
05P00620-0052	Reactor, 600V, 45A, Enclosed		
05P00620-0054	Reactor, 600V, 55A, Enclosed		
05P00620-0055	Reactor, 600V, 55A, Enclosed		
05P00620-0056	Reactor, 600V, 55A, Enclosed		
05P00620-0058	Reactor, 600V, 80A, Enclosed		
05P00620-0059	Reactor, 600V, 80A, Enclosed		
05P00620-0060	Reactor, 600V, 80A, Enclosed		
05P00620-0062	Reactor, 600V, 100A, Enclosed		
05P00620-0063	Reactor, 600V, 100A, Enclosed		
05P00620-0066	Reactor, 600V, 130A, Enclosed		
05P00620-0067	Reactor, 600V, 130A, Enclosed		
05P00620-0068	Reactor, 600V, 130A, Enclosed		
05P00620-0072	Reactor, 600V, 160A, Enclosed		
05P00620-0073	Reactor, 600V, 160A, Enclosed		
05P00620-0074	Reactor, 600V, 160A, Enclosed		
05P00620-0077	Reactor, 600V, 200A, Enclosed		
05P00620-0078	Reactor, 600V, 200A, Enclosed		
05P00620-0079	Reactor, 600V, 200A, Enclosed		
05P00620-0082	Reactor, 600V, 250A, Enclosed		
05P00620-0083	Reactor, 600V, 250A, Enclosed		
05P00620-0084	Reactor, 600V, 250A, Enclosed		
05P00620-0087	Reactor, 600V, 320A, Enclosed		
05P00620-0088	Reactor, 600V, 320A, Enclosed		
05P00620-0089	Reactor, 600V, 320A, Enclosed		
05P00620-0092	Reactor, 600V, 400A, Enclosed		
05P00620-0093	Reactor, 600V, 400A, Enclosed		
05P00620-0096	Reactor, 600V, 500A, Enclosed		
05P00620-0100	Reactor, 600V, 600A, Enclosed		
05P00620-0101	Reactor, 600V, 600A, Enclosed		
05P00620-0104	Reactor, 600V, 750A, Enclosed		
05P00620-0105	Reactor, 600V, 750A, Enclosed		

Model/ Part Number	Description	List Price \$	Old Model/Part Number
AI-001	Analog Input Trim Potentiometer Kit		UTC000043
AI-010	Analog Input 3-15 PSI Transducer Kit		USNN0001
CD.DW.01	DriveWizard Software CD		
CM048	LonWorks Communication Kit		
CM058	DeviceNet Communication Kit, P7		
CM061	Profibus DP Communication Kit (Includes Profibus II)		SI-P1
CM071	Modbus Plus Communication Kit		
CM090	Modbus TCP/IP Communication Kit		
CM092	EtherNet/IP Communication Kit		
DI-002	120VAC Logic Interface Kit (7 Inputs)		
DWST616-C2	DriveWizard Kit (Software and Cable)		
ETC618121	Analog Output Monitor, 4-20mA		
UDA00365-C	End Cap Kit		
UDA00365-E	End Cap Kit		
UDA00365-F	End Cap Kit		
UDA00365-P	End Cap Kit		
UDA00417-A	Ring Kit		
UDA00417-B	Ring Kit		
UDA00417-C	Ring Kit		
UDA00417-D	Ring Kit		
UDA00417-E	Ring Kit		
UDA00417-F	Ring Kit		
UOP000008	LCD Digital Operator (Same as Supplied with Drive)		
UOPN0005	Remote Operator Kit (Cable, Carrier, and Membrane)		
UWR00468-2	Computer Interface Cable, 6 feet (2 meter)		
UWR0051	Remote Operator Cable, 3 feet (1 meter)		DS071
UWR0052	Remote Operator Cable, 10 feet (3 Meter)		DS073

P7 Drives Catalog

Data Subject to change without notice.



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