Description

3/4-500HP
F7/Configured

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. Any Power option must be preceded by (P); any Control Option by (T), and Software Option by (S). No more than seven options may be selected. The letters P, T or S must be deleted if no options of that type are selected.

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: F7 Configured package **(F7CB)** with a 480V, 40 Amp **(B040)**, with Circuit Breaker and 3% Bus reactor (**P** followed by **CX**), Profibus-DP network communications capability (**T** followed by **H**) and no software option (delete the **S**). Model number is:

F7CBB040PCXTH

BASE NUMBER	OPTIONS		
	POWER	CONTROL	SOFTWARE
F 7 C _ _ ___	P_____	T_____	S _

Enclosure	
B	NEMA 12 FVFF
T	NEMA Type 12

Voltage	
A	230/240V
B	480V

Current
Rated Amps Code (Ex.: "040" = 40A)

S Option (Software)		
1	Electronic Lineshaft	Choose None or One
2	1500 Hz High Freq.	
3	Enhanced PID	
4	Power Loss Braking	
5	Orientation	
6	Output Voltage PID	
7	OV Suppression	
8	Enhanced PID for Air Compressor	

P Options (Power)		
C	Circuit Breaker/MCP	Choose None or One
D	Disconnect	
F	Input Fuses	Choose None or One
H	3% Output Reactor	Choose None or One
R	3% Input Reactor	
X	3% Bus Reactor (1)	
N	Cap Filter	Choose None or One
B	Dynamic Braking (5)	Choose None or One
J	DB w/ OH Shutdown (4), (5)	

T Options (Control and Communications)		
G	DeviceNet (2)	Choose None or One
H	Profibus	
J	Modbus Plus (2)	
L	LonWorks (2), (3)	
D	EtherNet/IP	
Q	Modbus TCP/IP	
N	Analog Output	Choose None or One
R	Analog Output, Isolated	
U	Digital Output, Dual	
V	120VAC Interface	Choose None or One
W	Trim Pot	Choose None or One
X	PG-X2 Feedback Card	Choose None or One
Y	PG-W2 Feedback Card	

(1) 3% Bus Reactors are only available as an option on base numbers up to and including F7C_A068 and B034; larger drives have a Bus Reactor as standard

(2) When this option is selected, port 3CN "Control Output" options **N** and **U** cannot be used

(3) When this option is selected, port 4CN "Feedback" options **X** and **Y** cannot be used

(4) When this option is selected, Power options **C** and **D** are not available

(5) Resistors for Dynamic Braking are NOT included, NOT factory-mounted. Price from DB section.

Configured Option Descriptions:

Enclosure Options

(B) NEMA 12 FVFF: The drive and configured controls are provided in a NEMA 12 (IP22, UL Type 1) force-ventilated fan-filtered enclosure, large enough to accommodate any or all of the configured package options.

(T) NEMA 12: The drive and configured controls are provided in a NEMA 12 (IP54, UL Type 1) enclosure, large enough to accommodate any or all of the Configured package options.

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.

(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.

(R) Input Reactor: No form of input impedance is normally required for the Configured Drive. A 3% line reactor is available if additional impedance is desired (usually to reduce the effects of line-side transients and input THD).

(X) DC Bus Reactor: No form of bus impedance is normally required for the Configured Drive. A 3% bus reactor is available if additional impedance is desired (usually to reduce the effects of line-side transients and input THD).

(H) Output Reactor: No form of output impedance is normally required for the Configured Drive. A 3% load reactor is available if additional output impedance is desired (usually for long lead-lengths or noise reduction).

(N) Input Filter: The standard configuration does not include a filter. The cap filter is a delta-wye capacitive network.

(B) Dynamic Braking: This option is used to enhance the drive's ability to brake/stop the motor. The braking transistor module is included in the Configured package, and is sized for standard duty (10-15%). This option does NOT include DB resistors or any other DB resistor overtemp protection. See Dynamic Braking Section to select DB resistor.

(J) Dynamic Braking with Overtemp Shutdown: This option is used to enhance the drive's ability to brake/stop the motor. The braking transistor module is included in the Configured package along with a shunt trip MCP and power circuitry to disconnect the input power from the drive, should the DB resistor overtemperature switch activate. The braking transistor is sized for standard duty (10-15%). This option does NOT include DB resistors, and cannot be ordered with Power Options (C) or (D). See Dynamic Braking Section to select DB resistor.

T Options (Control and Communications)

(G) DeviceNet: This option complies with the ODVA (Open DeviceNet Vendor Association) specifiation 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. (CM056)

(H) 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 teminations 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.(CM061)

Configured Option Descriptions (continued):

T Options (Control and Communications) (continued)

(J) 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. (CM071)

(L) 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. (CM048)

(D) 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. (CM092)

(Q) 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. (CM090)

(N) Analog Output, Bi-polar, 12 Bit: This option provides 2 signals for remote metering of any two of the drive's "U1" monitors. These are in addition to the two standard analog outputs.
Signal levels (individually selectable): ±10VDC (20kOhm), 11 bit + sign (AO-12)

(R) Analog Output, Isolated, Bi-polar, 12 Bit: This option provides 2 isolated signals for remote metering of any two of the drive's "U1" parameters. These are in addition to the two standard analog outputs.
Signal levels (individually selectable): 0 to ±10VDC (20kOhm), 0/4 to 20mADC (500Ohm max), 11 bit + sign (AO-001)

(U) Digital Output, Dual Relay: This option provides 2 additional digital outputs for use in monitoring the status outputs of the drive. These are in addition to the 5 standard digital outputs.
Signal levels: 2 channels, Form C, 250VAC, 30VDC, 1A (DO-02C)

(V) 120VAC Input: This option attaches directly to the control board terminal strip to all of the digital input (24VDC) terminals (S1 thru S8). External 120VAC control inputs can now be used with the drive. (DI-001)

(W) Analog Input Trim Pot: This option provides a 5kOhm potentiometer for use as a dropping resistor for maximum or minimum analog input trim. This voltage in turn can be used to supply a remote speed pot. (AI-001)

(X) Single Encoder Feedback: This option provides velocity and direction feedback from an encoder. This is primarily used for motor speed feedback in closed loop flux vector control. A 5VDC buffered output is also included. Signal levels: 5 or 12VDC differential line driver with compliments, maximum input frequency of 300kHz, phases A and B (Z required with some custom software). (PG-X2)

(Y) Dual Encoder Feedback: This option provides velocity and direction feedback from 2 encoders. This card is used for 2-motor operation with standard software and for some custom software titles. A 5VDC buffered output is also included. Signal levels: 5 or 12VDC differential line driver with compliments, maximum input frequency of 300kHz, phases A and B (Z required with some custom software). (PG-W2)

Configured Option Descriptions (continued):

S Options (Software)

(1) Electronic Lineshaft ELS (064): This software option allows the Drive to act as a follower, controlling its motor's velocity and phase with respect to a master encoder signal. This software provides error (drift) free tracking of the master signal. Features include Advance, Retard, Lineshaft Disable, Registration Control, Alignment Control, and multiple preset gear ratios. The phase loop can be disabled thus making the drive a digital velocity follower. A PG-W2 Dual Encoder Feedback Card is required. The encoder must output a quadrature, line driver signal.

(2) 1500 Hz High Frequency (056): This software option allows the Drive to operate at an output frequency of up to 1500 Hz for high-speed spindle applications. It is available in V/Hz control mode only, and uses different drive current ratings and overload settings as compared to standard software. Therefore, the software manual (TM.F7SW.056.1500HzHighFrequency) must be consulted to properly size the drive for the application.

(3) Enhanced PID (058): This software option allows the Drive to trim the speed reference with a PID feedback control loop. The feedback device, such as a dancer, is monitored with regard to its setpoint. Any error is sent to the PID and then the output of the PID is added to the frequency reference. Other features include PID feedback alarms, Accel/Decel control, and differential control.

(4) Power Loss Braking (060): This software option allows the Drive to automatically stop at the loss of input power. This function monitors the DC bus, and will automatically decelerate the motor to a stop, when the DC bus falls below a preset level. The stored kinetic energy of the machine is used to maintain the DC bus while stopping.

(5) Orientation (063): This software option allows the Drive to stop (or orientate) a machine to the same position every time the machine is stopped. This feature is designed for machine tools and punch/stamping presses where the machine must always stop at the same position to allow for automatic tool changing. An encoder feedback option card is always required. The machine configuration will determine which card, the PG-X2 or the PG-W2, is required.

(6) Output Voltage PID (061): This software option allows the Drive to regulate its output voltage using a PID feedback loop. This function is useful for applications like uninterruptible power supplies (UPS) and vibratory welders. An external voltage-measuring device is required to provide the voltage feedback signal. This software is available in V/Hz control mode only.

(7) OV Suppression (062): This software option allows the Drive to prevent overvoltage fault trips in cyclic applications like punch presses, shaker tables, and pump jacks (beam pumps) without the need for a dynamic braking resistor. This feature only works at constant speed and is not applicable for stopping the machine.

(8) Enhanced PID for Air Compressors (096): This software option allows the Drive to provide optimum control of non-reciprocating rotary screw air compressors. The Drive will regulate the air pressure in an air compressor using a PID control loop. The pressure feedback device is monitored with regard to its setpoint and any error is corrected. Other features include PID feedback alarms, "blowdown valve" control, improved, scalable monitors with selectable display units, and an improved sleep function.