

# Description

## 3/4-500HP

### F7/Configured

F7C



The F7/Configured package provides an F7 in a NEMA 12 FVFF or NEMA type12 enclosure, with space for several commonly used options, such as reactors, RFI filters, circuit breakers, etc. The F7/Configured has been designed for flexibility in providing the features and options commonly demanded by industrial control designers.

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. Patented high slip braking can eliminate the need for dynamic braking resistors for high inertia loads.

To provide the optimum control method, the F7 can operate in conventional V/f, V/f with encoder feedback, open loop vector, or closed loop vector mode. Drive performance can be further enhanced for a specific application with optional drive software.

The F7 supports a variety of communications protocols and input/output control cards.

#### Performance Features

- Ratings: 0.5 to 150HP, 208 to 230/240 VAC  
0.75 to 500HP, 480 VAC
- Overload capacity:
- 150% for 1 min heavy duty, 110% for  
1 min normal duty, 200% peak
- Starting torque, heavy duty:  
150% at 0.5 Hz (open loop), at 0.3 Hz  
(closed loop)
- Starting torque, normal duty:  
120% at 1.5 Hz (V/f)
- Output frequency: 0.01 to 300Hz for heavy  
duty, 400Hz for normal duty
- Controlled speed range:  
40:1 (V/f), 50:1 (V/f with PG), 200:1 (open  
loop), 1000:1 (closed loop)
- Speed regulation:  
2-3% (V/f), 0.5-1% (V/f with PG), 0.2%  
(open loop), 0.01% (closed loop)
- Speed/frequency resolution: 0.01% with dig-  
ital reference, 0.1% with analog reference
- Electronic reversing
- Adjustable accel/decel: 0.1 to 6000 sec
- Stall prevention
- Drive efficiency: 96 to 98%
- Displacement power factor: 0.98
- Power loss ride-thru: 2 sec
- Inertial ride-thru
- Selectable auto restart after momentary  
power loss
- Programmable auto restart  
(0 to 10 attempts) on re-settable fault
- Critical frequency rejection: 3 selectable,  
adjustable bands

#### Protective Features

- DC bus CHARGE indicator
- Optically-Isolated controls
- Phase-to-phase / phase-to-neutral short  
circuit protection
- Ground fault protection
- Electronic motor overload (UL, cUL, NEC)
- Current and torque limit
- Over-torque / under-torque detection
- Fault circuit: over-current, over-voltage,  
and over-temperature
- Input/output phase loss

#### Service Conditions

- Ambient service temperatures:  
-10 to 40°C (104°F) NEMA-1, to 45°C  
(113°F) protected chassis
- Humidity: non-condensing 95%
- Altitude: to 3300 feet (1000 meter)
- Service Factor: 1.0
- Input voltage: +10% / -15%, 200 to  
240VAC, 380 to 480VAC
- Enclosure: NEMA 1 or protected chassis  
(other options)
- Input frequency: 50/60Hz ± 5%
- 3-phase, 3-wire phase insensitive
- Vibration: 1G (10 to 20Hz), 0.2G, (20 to  
50Hz)

#### Design Features

- LCD keypad display, 5 lines x 16 charac-  
ters, backlit, 7 languages, copy function
- Multi-speed settings: 17 available
- Setpoint (PID) trim control
- Signal follower: bias and gain
- Up / down / hold reference (digital M.O.P.)
- Timer function; on/off delay
- 32-bit microprocessor logic
- Easy access, quick start parameter groups
- Non-volatile memory/program retention
- Flash memory for update and custom  
applications
- 24VDC control logic
- DC injection braking, adjustable level
- Dynamic braking (25HP and below)
- Ramp to stop or coast to stop
- High-slip braking
- Dual motor parameter sets
- Synchronized start into rotating motor
- Motor auto-tuning, static and dynamic
- Common bus capability
- DC link choke: 30 to 150HP at 240VAC, 30  
to 500HP at 480VAC
- Twelve-pulse rectification with optional  
input transformer: 30 to 150HP at 240V, 30  
to 500HP at 480V
- Terminal strip, quick disconnect
- Split cover for ease of wiring
- Plug-in heat sink fan

#### Inputs and Outputs

- Analog input: -10 to +10VDC (20K ohms)  
or 4 to 20 mA (250 ohm)
- Analog output: -10 to +10VDC or 4-20mA  
proportional to output parameters
- Digital pulse train input/output (32KHz  
max)
- Digital Inputs: 8 multi-function
- Programmable outputs: Three form A
- Fault contact: one form C
- RS-485/422 communication terminals

#### Additional Features for V/f

- Torque boost: full range, auto
- V/f ratio: 15 preset, one adjustable
- Slip compensation

#### Standards & Reliability

- UL 508C (Power Conversion)
- CSA 22.2 No. 14-95  
(Industrial Control Equipment)
- UL, cUL listed; CE marked
- UL 1995 (Plenum)
- EN 50178 (LVD)
- EN 61800-3 (w/ External Filter)
- IEC 529, 146
- FCC CFR 47 Part 15 Subpart B  
(w/ External Filter)

#### Configured Options

- Various feedback cards
- Various output cards
- DriveWizard™ software (upload / down-  
load)
- DeviceNet, Profibus-DP, and other proto-  
cols
- Custom drive software
- Input breaker
- Input disconnect
- Input fuses
- 115 VAC interface
- Trim pot
- Input/output reactors
- Input filters
- DC link choke (25HP and below)
- Dynamic braking



# Description

**3/4-500HP  
F7/Configured**

## Model Number Configuration & Pricing:

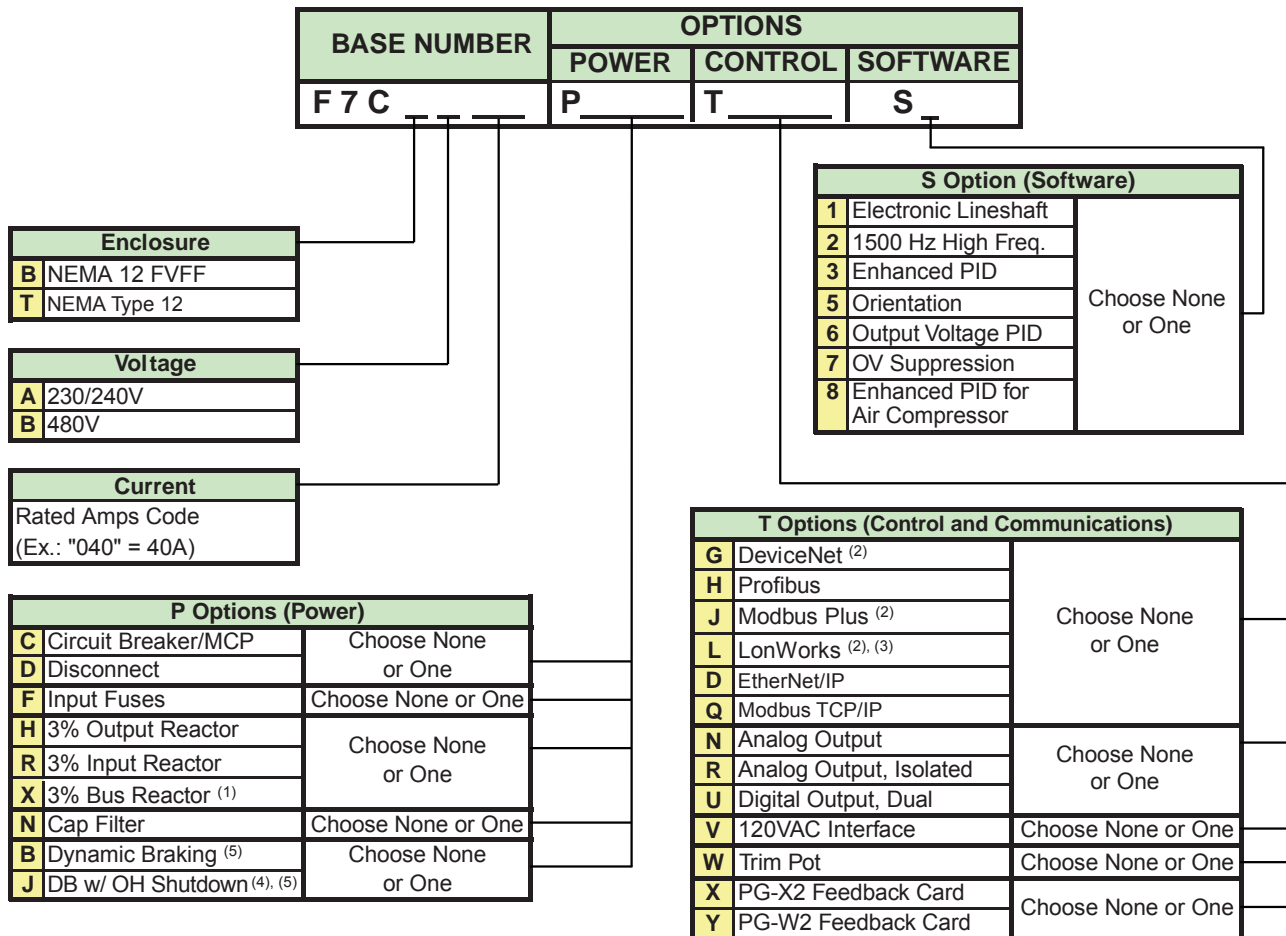
**Step 1.** First complete the Base Number for the required enclosure type, voltage and current rating.

**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**



(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 12) 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) 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 Yaskawa website 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 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 Yaskawa website to assist with network configuration and drive setup.(CM061)



## Description

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### 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):  $\pm 10\text{VDC}$  (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  $\pm 10\text{VDC}$  (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.
- (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.

# F7C

## Configured Drives and Options

**F7 Configured Drives** - 3/4-500HP, 208-230/240 and 480V, 3-phase input, NEMA 12 enclosure, with factory-installed and wired options

| Rated Input Voltage | Rated Output Current (Amps) <sup>(2)</sup> | Nom. HP <sup>(1)</sup> | Base Number                      |              |      |              | P Options (Power) |               |             |   |           |           |               |   |           |  |  |
|---------------------|--|------------------------|----------------------------------|--------------|------|--------------|-------------------|---------------|-------------|---|-----------|-----------|---------------|---|-----------|--|--|
|                     |  |                        | Configured Enclosure             |              |      |              | Circuit Breaker   |               | Input Fuses | Line Impedance  |           |           | Input Filter  | Dynamic Braking <sup>(3)</sup>                          |           |  |  |
|                     |  |                        | B=NEMA 12 FVFF<br>T=NEMA Type 12 |              |      |              | C= MCP            | D= Disconnect | F= Fuses    | H=3% Output Reactor<br>R=3% Input Reactor<br>X=3% Bus Reactor |           |           | N= Cap Filter | B=Standard Duty<br>J=Standard Duty w/ Overtemp Shutdown |           |  |  |
|                     |  |                        | F7CB                             | Base List \$ | F7CT | Base List \$ | C List \$         | D List \$     | F List \$   | H List \$   | R List \$ | X List \$ | N List \$     | B List \$   | J List \$ |  |  |
| 240V                | 3.2  | 3/4                    | ---                              |              | A003 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 4.2  | 1                      | ---                              |              | A004 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 6.8  | 2                      | ---                              |              | A006 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 9.6  | 3                      | ---                              |              | A009 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 15.2                                       | 5                      | ---                              |              | A015 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 22   | 7.5                    | ---                              |              | A022 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 28   | 10                     | ---                              |              | A028 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 42   | 15                     | ---                              |              | A042 |              |                   |               |             |   |           |           |               |   |           |  |  |
| 230V                | 54   | 20                     | ---                              |              | A054 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 68   | 25                     | ---                              |              | A068 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 80   | 30                     | ---                              |              | A080 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 104  | 40                     | ---                              |              | A104 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 130  | 50                     | A130                             |              | ---  |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 154  | 60                     | A154                             |              | ---  |              |                   |               |             |   |           |           |               |   |           |  |  |
| 480V                | 192  | 75                     | A192                             |              | ---  |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 248  | 100                    | A248                             |              | ---  |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 312  | 125                    | A312                             |              | ---  |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 360  | 150                    | A360                             |              | ---  |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 1.6  | 3/4                    | ---                              |              | B001 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 2.1  | 1                      | ---                              |              | B002 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 3.4  | 2                      | ---                              |              | B003 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 4.8  | 3                      | ---                              |              | B004 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 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 |              |                   |               |             |   |           |           |               |   |           |  |  |
|                     | 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 is the maximum rated output for the configured drive package, not the drive's output current rating.  
 (3) See Dynamic Braking Section to select DB resistors.

# Configured Drives and Options



## F7 Configured (Continued)

| Rated Input Voltage | Rated Output Current (Amps) <sup>(4)</sup> | Nom. HP <sup>(1)</sup> | T Options (Control and Communication)   |           |           |           |           |           |  |           |           |                     |            |                    | S Options  |               | Uses Drive Model Number CIMR-F7U |                 |
|---------------------|--|------------------------|---|-----------|-----------|-----------|-----------|-----------|--|-----------|-----------|---------------------|------------|--------------------|--|---------------|----------------------------------|-----------------|
|                     |  |                        | Network Communications  |           |           |           |           |           | Control Outputs  |           |           | Term. 1             | Terminal 2 | Encoder Feedback   | Software   |               |                                  |                 |
|                     |  |                        | G=DeviceNet<br>H=Profibus<br>J=Modbus Plus <sup>(2)</sup><br>L=LonWorks <sup>(2)(3)</sup><br>Q=Modbus TCP/IP<br>D=EtherNet/IP |           |           |           |           |           | N=Analog Output<br>R=Analog Output, Isolated<br>U=Digital Output |           |           | V=120 VAC Interface | W=Trim Pot | X=PG-X2<br>Y=PG-W2 | 1=ELS<br>2=1500Hz<br>3=PID, 5=ORI<br>6=OV PID<br>7=OV SUP<br>8=AIR PID |               |                                  |                 |
|                     |  |                        | G List \$   | H List \$ | J List \$ | L List \$ | Q List \$ | D List \$ | N List \$  | R List \$ | U List \$ | V List \$           | W List \$  | X List \$          | Y List \$  | 1,5,7 List \$ |                                  | 2,3,6,8 List \$ |
| 240V                | 3.2  | 3/4                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20P41           |
|                     | 4.2  | 1                      |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20P71           |
|                     | 6.8  | 2                      |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 21P51           |
|                     | 9.6  | 3                      |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 22P21           |
|                     | 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   |                        |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20300           |
| 230V                | 130  | 50                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20370           |
|                     | 154  | 60                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20450           |
|                     | 192  | 75                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20550           |
|                     | 248  | 100                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20750           |
|                     | 312  | 125                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 20900           |
| 360                 | 150  |                        |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               | 21100                            |                 |
| 480V                | 1.6  | 3/4                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40P41           |
|                     | 2.1  | 1                      |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40P71           |
|                     | 3.4  | 2                      |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 41P51           |
|                     | 4.8  | 3                      |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 42P21           |
|                     | 7.6  | 5                      |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 43P71           |
|                     | 11   | 7.5                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 45P51           |
|                     | 14   | 10                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 47P51           |
|                     | 21   | 15                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40111           |
|                     | 27   | 20                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40151           |
|                     | 34   | 25                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40181           |
|                     | 40   | 30                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40221           |
|                     | 52   | 40                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40301           |
|                     | 65   | 50                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40371           |
|                     | 77   | 60                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40451           |
|                     | 96   | 75                     |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40551           |
|                     | 124  | 100                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40751           |
|                     | 156  | 125                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40900           |
|                     | 180  | 150                    |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               |                                  | 40900           |
| 240                 | 200  |                        |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               | 41320                            |                 |
| 302                 | 250  |                        |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               | 41600                            |                 |
| 361                 | 300  |                        |   |           |           |           |           |           |  |           |           |                     |            |                    |  |               | 41850                            |                 |
| 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) When this option is selected, port 3CN "Control Output" options (N, U) cannot be used
- (3) When this option is selected, port 4CN "Encoder Feedback" options (X, Y) cannot be used
- (4) This is the maximum rated output for the configured drive package, not the drive's output current rating.



# Heatsink Filter Kit Options

**Heatsink Filter Kit Option** (only for Configured product) - The filter kit is mounted to the back of the enclosure, providing additional protection to the exposed drive heatsink and fan assemblies. It has been designed for extremely dirty or dusty environments in which cooling fans and heatsink fins could easily become clogged. The kit contains a duct and a pair of filters, which can be removed and cleaned, increasing fan life and cooling efficiency.

| Rated Input Voltage | Configured Package<br>Model Number<br>F7CT____ | Heatsink Filter Kit |               | Replacement Filter |               |
|---------------------|--|---------------------|---------------|--------------------|---------------|
|                     |  | Heatsink Filter Kit | List Price \$ | Model Number       | List Price \$ |
| 208-230/240V        | A003 thru A015                                 | UFL00003-1          |               | UFL00002-1         |               |
|                     | A022, A028                                     | UFL00003-2          |               | UFL00002-2         |               |
|                     | A042, A054                                     | UFL00003-3          |               | UFL00002-3         |               |
| 480V                | B001 thru B011                                 | UFL00003-1          |               | UFL00002-1         |               |
|                     | B014, B021                                     | UFL00003-2          |               | UFL00002-2         |               |
|                     | B027, B034                                     | UFL00003-3          |               | UFL00002-3         |               |

# Dimensions and Data



| Rated Input Voltage | Configured F7CB or F7CT | Rated Output Current (Amps) <sup>(2)</sup> | Nominal HP <sup>(1)</sup> | Physical Dimensions (in.) |       |       | Weight (lbs) <sup>(3)</sup> | Configured Enclosure | Dimension Drawing Number <sup>(4)</sup> |
|---------------------|-------------------------|--|---------------------------|---------------------------|-------|-------|-----------------------------|----------------------|---|
|                     |                         |  |                           | H                         | W     | D     |                             |                      |   |
| 240V                | A003                    | 3.2  | 3/4                       | 28.50                     | 17.50 | 11.75 | 87                          | NEMA 12              | DD.F7C.W1.N12.01                        |
|                     | A004                    | 4.2  | 1                         |                           |       |       | 87                          |                      |   |
|                     | A006                    | 6.8  | 2                         |                           |       |       | 90                          |                      |   |
|                     | A009                    | 9.6  | 3                         |                           |       |       | 92                          |                      |   |
|                     | A015                    | 15.2                                       | 5                         | 102                       |       |       |                             |                      |   |
|                     | A022                    | 22   | 7.5                       | 34.50                     | 20.00 | 15.00 | 128                         | NEMA 12              | DD.F7C.W2.N12.01                        |
|                     | A028                    | 28   | 10                        | 138                       |       |       |                             |                      |   |
|                     | A042                    | 42   | 15                        | 39.50                     | 25.00 | 15.50 | 192                         | NEMA 12              | DD.F7C.W3.N12.01                        |
|                     | A054                    | 54   | 20                        | 225                       |       |       |                             |                      |   |
|                     | A068                    | 68   | 25                        | 52.00                     | 29.00 | 19.75 | 301                         | NEMA 12              | DD.F7C.W4.N12.01                        |
| A080                | 80                      | 30   | 346                       |                           |       |       |                             |                      |   |
| A104                | 104                     | 40   | 335                       |                           |       |       |                             |                      |   |
| 230V                | A130                    | 130  | 50                        | 84.00                     | 37.75 | 27.00 | 804                         | NEMA 12 FVFF         | DD.F7C.F1.N1.01                         |
|                     | A154                    | 154  | 60                        |                           |       |       | 820                         |                      |   |
|                     | A192                    | 192  | 75                        |                           |       |       | 880                         |                      |   |
|                     | A248                    | 248  | 100                       |                           |       |       | 880                         |                      |   |
|                     | A312                    | 312  | 125                       | 84.00                     | 73.25 | 27.00 | 1340                        | NEMA 12 FVFF         | DD.F7C.F2.N1.01                         |
| A360                | 360                     | 150  | 1450                      |                           |       |       |                             |                      |   |
| 480V                | B001                    | 1.6  | 3/4                       | 28.50                     | 17.50 | 11.75 | 87                          | NEMA 12              | DD.F7C.W1.N12.01                        |
|                     | B002                    | 2.1  | 1                         |                           |       |       | 87                          |                      |   |
|                     | B003                    | 3.4  | 2                         |                           |       |       | 88                          |                      |   |
|                     | B004                    | 4.8  | 3                         |                           |       |       | 96                          |                      |   |
|                     | B007                    | 7.6  | 5                         | 93                        |       |       |                             |                      |   |
|                     | B011                    | 11   | 7.5                       | 101                       |       |       |                             |                      |   |
|                     | B014                    | 14   | 10                        | 34.50                     | 20.00 | 15.00 | 134                         | NEMA 12              | DD.F7C.W2.N12.01                        |
|                     | B021                    | 21   | 15                        | 138                       |       |       |                             |                      |   |
|                     | B027                    | 27   | 20                        | 39.50                     | 25.00 | 15.50 | 178                         | NEMA 12              | DD.F7C.W3.N12.01                        |
|                     | B034                    | 34   | 25                        | 196                       |       |       |                             |                      |   |
|                     | B040                    | 40   | 30                        | 52.00                     | 29.00 | 19.75 | 295                         | NEMA 12              | DD.F7C.W4.N12.01                        |
|                     | B052                    | 52   | 40                        |                           |       |       | 295                         |                      |   |
|                     | B065                    | 65   | 50                        |                           |       |       | 366                         |                      |   |
|                     | B077                    | 77   | 60                        |                           |       |       | 370                         |                      |   |
|                     | B096                    | 96   | 75                        | 387                       |       |       |                             |                      |   |
|                     | B124                    | 124  | 100                       | 84.00                     | 37.75 | 27.00 | 890                         | NEMA 12 FVFF         | DD.F7C.F1.N1.01                         |
|                     | B156                    | 156  | 125                       |                           |       |       | 890                         |                      |   |
|                     | B180                    | 180  | 150                       |                           |       |       | 890                         |                      |   |
| B240                | 240                     | 200  | 925                       |                           |       |       |                             |                      |   |
| B302                | 302                     | 250  | 84.00                     | 73.25                     | 27.00 | 1075  | NEMA 12 FVFF                | DD.F7C.F2.N1.01      |   |
| B361                | 361                     | 300  |                           |                           |       | 1740  |                             |                      |   |
| B414                | 414                     | 350  |                           |                           |       | 1800  |                             |                      |   |
| B477                | 477                     | 400  |                           |                           |       | 1800  |                             |                      |   |
| B515                | 515                     | 450  |                           |                           |       | 2125  |                             |                      |   |
| B590                | 590                     | 500  |                           |                           |       | 2125  |                             |                      |   |

- (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 is the maximum rated output for the configured drive package, not the drive's output current rating.
- (3) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (4) Please refer to Yaskawa's website for dimension drawings.