YASKAWA

Catalog for GPD 305/J7 General Purpose AC Drive and GPD 315/V7 Open Loop Vector AC Drive

GPD 305/J7 General Purpose AC Drive, 1/8 - 5 HP

The GPD 305/J7 is a fully featured, low cost, compact drive. It's digital operator provides 3-digit LED status display with a built in analog speed potentiometer, as well as digital programming of 79 parameters suitable for many applications. The four standard multifunction inputs can be programmed to allow for 9 preset speeds. The GPD 305/J7 also has an analog input, a multifunction output, two multifunction open collector outputs, and an analog output as standard.

Performance Features

- Ratings: 1/8 to 5 HP at 230 VAC, 1/2 to 5 HP at 460 VAC
- Constant torque overload rating: 150% for 1 min. (250% peak)
- DC injection braking, ramp to stop
- Electronic reversing
- Adjustable accel/decel: 0.1 to 999 seconds
- Controlled speed range: 40:1
- Speed Regulation ± 0.5 to 1% with slip compensation
- Drive efficiency: 95%
- Displacement power factor: 0.98
- Output frequency: 1.5 to 400 Hz
- Frequency resolution: 0.01 Hz with digital reference 0.06 / 60 Hz with analog reference
- Frequency accuracy: 0.01% with digital command 0.5% with analog command
- Volts / hertz ratio: infinitely adjustable pattern
- DC Injection braking: adjustable amplitude, duration, current limited
- Torque boost: full range, auto
- Power loss ride-thru: 0.5 sec.
- Speed search
- Auto restart
- 2 Critical frequency rejection settings
- Slip compensation

Design Features

- 16-bit microprocessor logic
- Digital keypad operator with analog speed pot
- LED status display
- Copy Keypad Function
- Remote Mount Keypad Capability
- 4 multifunction digital inputs
- Programmable form C output contact for customer use: 1A at 250 VAC or 30 VDC
- 24 VDC control logic compatible with sourcing or sinking outputs (PNP or NPN)
- Carrier frequency: 10 kHz maximum
- 8 multi-speed settings plus jog speed
- Remote speed reference: 0-10 VDC (20 kohms) or 4-20 mA (250 ohms)
- Signal follower: bias and gain
- Analog monitor output: 0-10 VDC proportional to output frequency or output current
- 79 parameters
- Cooling fan controlled by drive run/stop
- UL and cUL listed; CE approved
- UL recognized electronic overload
- MTBF: exceeds 28 years
- Protected chassis

Protective Features

- Current limit, stall prevention during accel, decel, and run
- Motor and drive overload
- Over voltage
- Instantaneous over current
- Short circuit
- Under voltage
- Heatsink overheat
- Ground fault protection
- Over torque

Service Conditions

- Ambient service temperature: -10° to 50°C (14° to 122°F)
- Ambient storage temperature: -20° to 60°C (-4° to 140°F)
- Humidity: to 95% non-condensing
- Altitude: to 3280 ft; higher by derating
- Service factor: 1.0
- Input voltage: -15% to +10% 200 to 230 VAC, 380 to 460 VAC
- Input frequency: +/-5%; 50/60 Hz
- Phase sequence insensitive

Options

- Access to DC bus terminals
- Input circuit breaker / disconnect
- Remote operator station
- RS232 Port
- External DC link reactor
- RS485/RS422 Modbus RTU port (up to 32 nodes). Baud rate of 19.2 kbps

Standard and Optional Rating. Please select the GPD 305/J7 drive based on required input voltage and motor output current requirements. Nominal HP ratings for 1800 rpm motors are listed for reference. Output current ratings are RMS current. 3 Phase input and 1 Phase input ratings are listed for 230 V models. For 1 Phase input on 460 V models, select the drive by ensuring that 1/2 of the drive's continuous output current rating is ≥ the motor's full load amp rating.

DIN Rail Mounting Kits. The DIN rail attachment kit allows the drive to be mounted on a 75 mm DIN rail. The DIN rail is not included.
Option kit for customer mounting

RFI (Radio Frequency Interference) Filter. An RFI Filter is used to attenuate possible drive-generated noise. An input filter with proper shielding, routing and grounding between itself and the drive is designed to reduce line conducted noise levels within the limits of FCC regulations, part 15, subpart J, for Class A devices, when the drive's output conductors are properly routed and shielded in grounded steel conduit all the way to the motor. Filters should always be mounted as close to the drive as possible. RFI Filters for separate mounting are CE approved.
Factory installed. Engineered Drives program
Option kit for customer mounting

Operator Cable, Remote. This cable is used to connect the Remote Operator and/or Copy Unit. These cables are available in one (1) or three (3) meter lengths.
Option kit for customer mounting

Operator, Digital Remote. This option allows the drive to operate from a remote location. This option is used in conjunction with the Remote Interface and a cable, each sold separately.
Option kit for customer mounting

Operator, Kit Without Potentiometer, NEMA 4/12 Rating. This option provides all necessary components to allow for remote mounting of a Digital Operator.
Option kit for customer mounting

Operator, Remote Carrier. This option allows an Operator to be mounted remotely from the drive, 1-3 meters, to allow for programming of the drive.
Option kit for customer mounting

Remote Interface – RS232. This option allows for RS232 communication to a Remote Operator or PC software.
Option kit for customer mounting

Remote Interface RS422/485. This option allows the drive to realize RS485/422 serial communication with Modbus protocol.
Option kit for customer mounting

Computer Interface Software For Parameter Upload and Download. This option allows the drive to be interfaced to a PC to allow for upload, download, and storage of drive parameters for programming multiple drives. Kit includes Software CD and required interface cables and connectors.
Option kit

Computer Interface Cable. Required for implementation of upload/download software for GPD 305/J7.
Option kit

Approval / Special Drawings. Pricing for Drives and options are based upon 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.
Price Addition: 3% of list price for Drive and all included options, or $1000 list, whichever is greater.

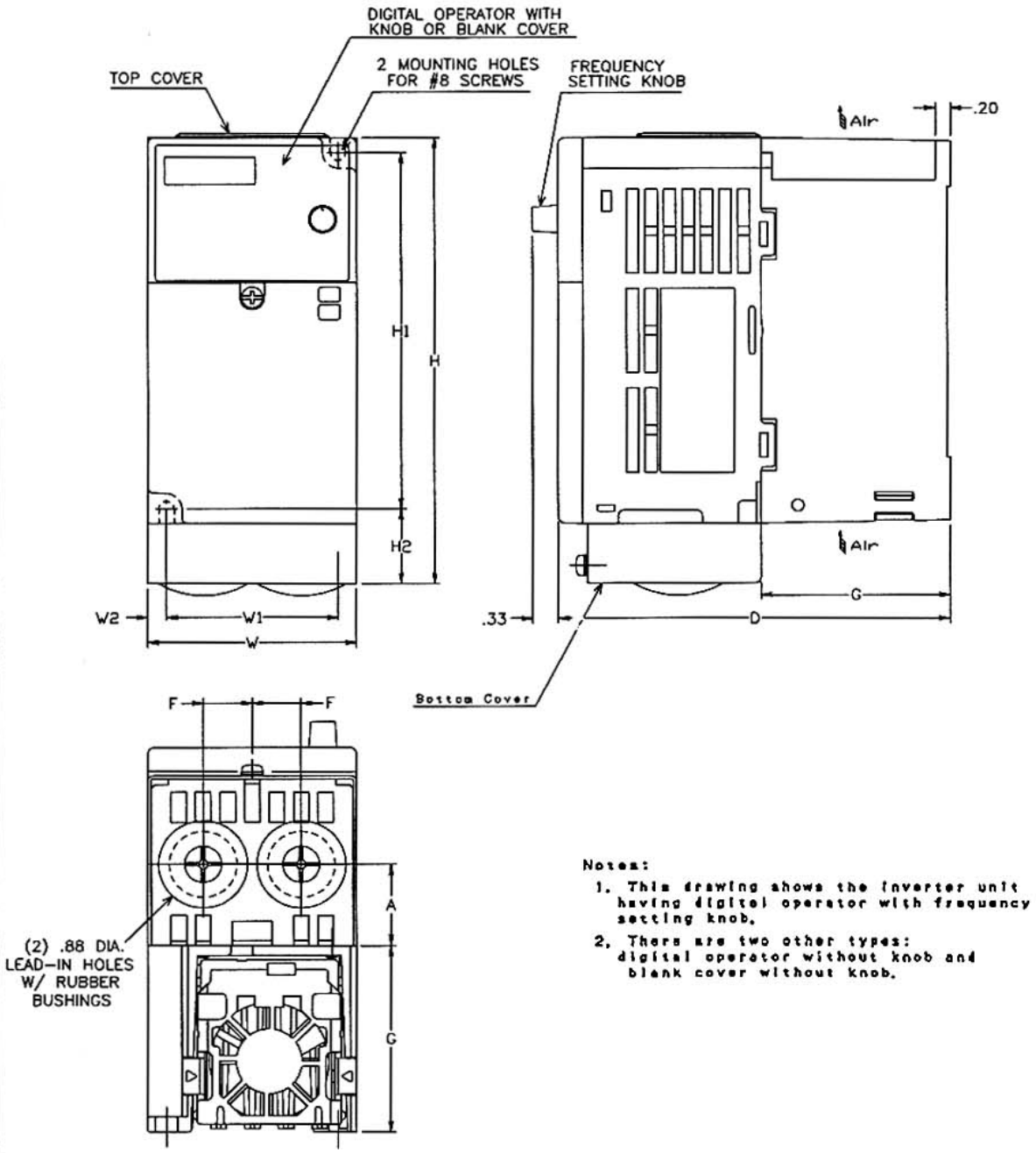
Technical Manuals. One manual is included with each drive at no charge when shipped from the factory.
List Price for additional paper copies: $15
List Price for additional CD copies: No charge

Rated Input	Phase Input	RMS Amps Cont. Rating	OL Amps, 60 Sec. (150% OL Use)	HP Based On 1800 RPM Motor	Basic Drive Old Model Number	Basic Drive New Model Number	Std. Encl.	Basic Drive Price
230 V	3	0.8	1.2	0.125	JDA001	20P10	Protected Chassis	
	3	1.6	2.4	0.25	JDA002	20P20	Protected Chassis	
	3	3.0	4.5	0.5	JDA003	20P40	Protected Chassis	
	3	5.0	7.5	1	JDA005	20P70	Protected Chassis	
	3	8.0	12.0	2	JDA008	21P50	Protected Chassis	
	3	11.0	16.5	3	JDA011	22P50	Protected Chassis	
	3	17.5	26.3	5	JDA017	23P70	Protected Chassis	
230 V	1	0.8	1.2	0.125	JDA002	20P20	Protected Chassis	
	1	1.5	2.3	0.25	JDA003	20P40	Protected Chassis	
	1	2.5	3.8	0.33	JDA005	20P70	Protected Chassis	
	1	4.0	6.0	0.75	JDA008	21P50	Protected Chassis	
	1	5.5	8.3	1	JDA011	22P20	Protected Chassis	
	1	8.7	13.1	2	JDA017	23P70	Protected Chassis	
460 V	3	1.2	1.8	0.5	JDB001	40P20	Protected Chassis	
	3	1.8	2.7	0.75	JDB002	40P40	Protected Chassis	
	3	3.4	5.1	2	JDB003	40P70	Protected Chassis	
	3	4.8	7.2	3	JDB005	41P50	Protected Chassis	
	3	5.5	8.3	3	JDB006	42P20	Protected Chassis	
	3	8.6	12.9	5	JDB009	43P70	Protected Chassis	

Option Description	Basic Drive Model Number	Option Part Number	Option Price
Enclosure Modifications			
DIN Rail Kit	JDA001	72606-EZZ08122A	
	JDA002	72606-EZZ08122A	
	JDA003	72606-EZZ08122A	
	JDA005	72606-EZZ08122A	
	JDA008	72606-EZZ08122A	
	JDA011	72606-EZZ08122B	
	JDA017	72606-EZZ08122C	
	JDB001	72606-EZZ08122B	
	JDB002	72606-EZZ08122B	
	JDB003	72606-EZZ08122B	
	JDB005	72606-EZZ08122B	
	JDB009	72606-EZZ08122C	
Filtering			
RFI Filters	JDA001	FIL001093	
	JDA002	FIL001093	
	JDA003	FIL001093	
	JDA005	FIL001093	
	JDA008	FIL001094	
	JDA011	FIL001094	
	JDA017	FIL001102	
	JDB001	FIL001103	
	JDB002	FIL001103	
	JDB003	FIL001103	
	JDB005	FIL001104	
	JDB009	FIL001105	
Operator Interface			
Operator Cable, Remote, 1 Meter	All	UWR00051	
Operator Cable, Remote, 3 Meter	All	UWR00052	
Operator Carrier, Remote	All	72606-EZZ08386A	
Operator, Remote	All	JVOP-146	
Operator Kit, Remote, 1 Meter, NEMA 4/12	All	DS031	
Operator Kit, Remote, 3 Meter, NEMA 4/12	All	DS033	
Remote Interface - RS-232	All	SI-232/J7	
Remote Interface - RS-422/485	All	SI-485/J7	
Computer Interface Software & Cables			
Software CD	All	CD.J7V7.01	
Interface Cable	All	UWR00468-2	

DIMENSIONS: GPD315/V7 BASIC DRIVE NEMA 1

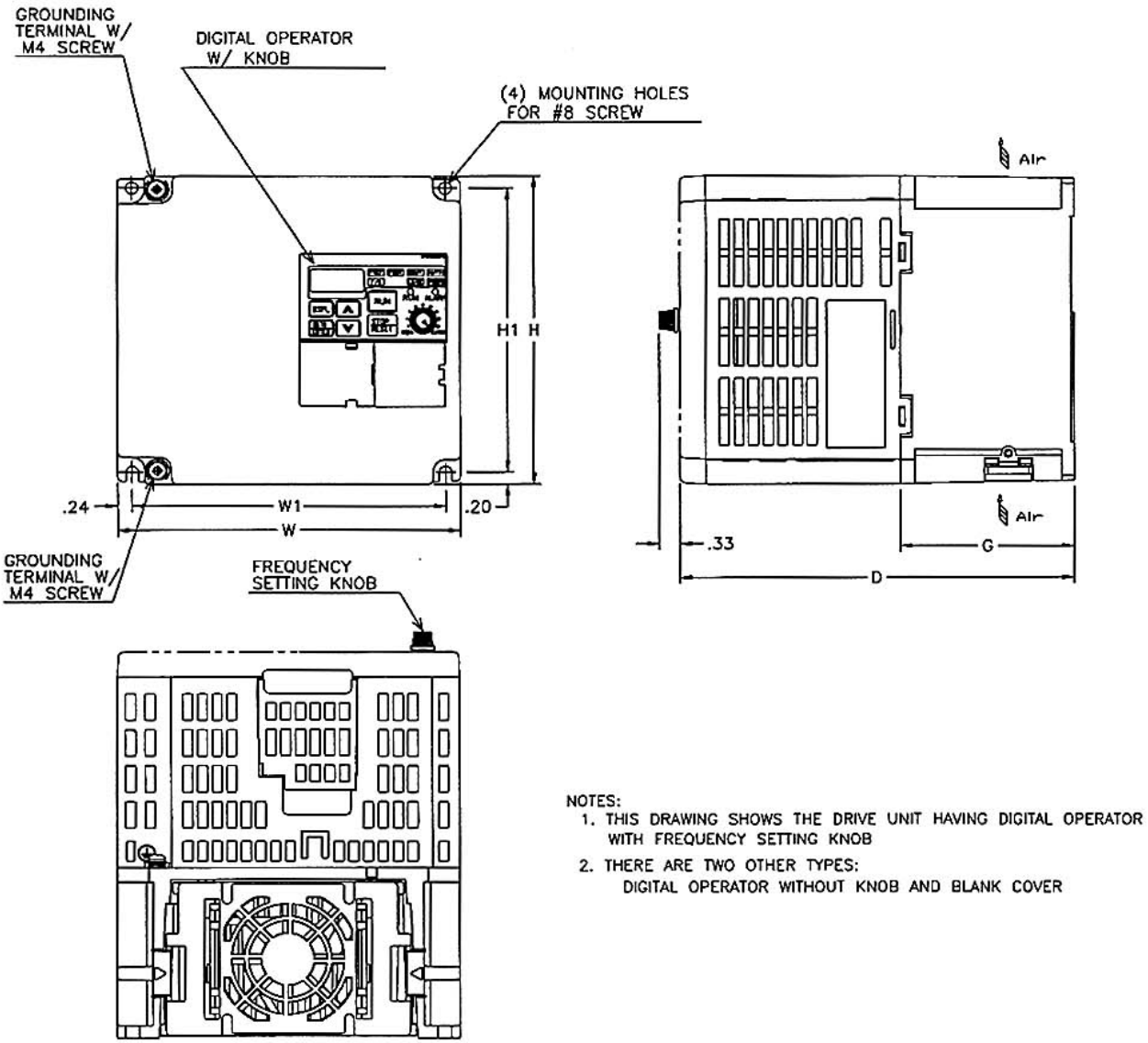
S - 5487



Notes:
1. This drawing shows the inverter unit having digital operator with frequency setting knob.
2. There are two other types: digital operator without knob and blank cover without knob.

VOLTAGE	MODEL# GPD305-	OUTPUT CURRENT RATING (AMPS)	HP	DIMENSIONS IN INCHES						APPROX. WEIGHT (LBS)
				MOUNTING		H	W	D	G	
				H1	W1					
230	JDA001	0.8	1/8	4.65	2.20	5.04	2.68	2.75	.39	1.1
	JDA002	1.6	¼	4.65	2.20	5.04	2.68	2.75	.39	1.1
	JDA003	3.0	½	4.65	2.20	5.04	2.68	4.02	1.65	1.7
	JDA005	5.0	¾-1	4.65	2.20	5.04	2.68	4.80	2.44	2.0

DIMENSIONS: GPD305/J7 BASIC DRIVE PROTECTED CHASSIS S - 5486



NOTES:
1. THIS DRAWING SHOWS THE DRIVE UNIT HAVING DIGITAL OPERATOR WITH FREQUENCY SETTING KNOB
2. THERE ARE TWO OTHER TYPES:
   DIGITAL OPERATOR WITHOUT KNOB AND BLANK COVER

VOLTAGE	MODEL# GPD305-	OUTPUT CURRENT RATING (AMPS)	HP	DIMENSIONS IN INCHES						APPROX WEIGHT (LBS.)
				MOUNTING		H	W	D	G	
				H1	W1					
230	JDA008	8.0	2	4.65	3.78	5.04	4.25	5.08	2.52	2.9
	JDA011	11.0	3	4.65	3.78	5.04	4.25	6.06	2.52	3.3
	JDA017	17.5	5	4.65	5.04	5.04	5.51	6.34	2.80	4.6
460	JDB001	1.2	1/2	4.65	3.78	5.04	4.25	3.19	.63	2.2
	JDB002	1.8	3/4	4.65	3.78	5.04	4.25	3.90	1.34	2.4
	JDB003	3.4	1 & 2	4.65	3.78	5.04	4.25	5.08	2.52	3.3
	JDB005	4.8	3	4.65	3.78	5.04	4.25	6.06	2.52	3.3
	JDB009	8.6	5	4.65	5.04	5.04	5.51	6.34	2.80	4.6

GPD 315/V7 Open Loop Vector AC Drive, 1/8 - 10 HP

The GPD 315/V7 is a fully featured, low cost, compact drive. It's digital operator provides 4-digit LED status display with a built in analog speed potentiometer, as well as digital programming of almost 200 parameters suitable for many applications. The digital pulse train input provides a precise frequency input, and is the perfect solution for speed/ follower applications. The seven standard multifunction inputs can be programmed to allow for 17 preset speeds. The GPD 315/V7 also has an analog input, a multifunction output, two multifunction open collector outputs, and an analog output as standard.

Performance Features

- Ratings:
  1/8 to 10 HP at 230 VAC,
  1/2 to 10 HP at 460 VAC
- Constant torque overload rating:
  150% for 1 min. (250% peak)
- DC injection braking, ramp to stop
- Electronic reversing
- Adjustable accel/decel:
  0.01 to 6000 seconds
- Controlled speed range:
  40:1(1) 100:1(2)
- Speed Regulation
  ± 0.5 to 1% with slip compensation(1) ± 0.2%(2)
- Drive efficiency: 95%
- Displacement power factor: 0.98
- Output frequency: 1.0 to 400 Hz
- Frequency resolution:
  0.01 Hz with digital reference
  0.06 / 60 Hz with analog reference
- Frequency accuracy:
  0.01% with digital command
  0.5% with analog command
- Volts / hertz ratio:
  infinitely adjustable pattern
- Open loop vector control
- DC Injection braking:
  adjustable amplitude, duration, current limited
- Torque boost: full range, auto
- Power loss ride-thru: 0.5 sec.
- Speed search
- Auto restart
- 3 Critical frequency rejection settings
- Slip Compensation
- Energy Savings Function
- PID with loss of feedback function

Design Features

- 16-bit microprocessor logic
- Digital keypad operator with analog speed pot
- LED status display
- Copy Keypad Function
- Remote Mount Keypad Capability
- RJ-45 Style Digital Operator Connector
- 7 multifunction digital inputs
- Programmable form C output contact for customer use: 1A at 250 VAC or 30 VDC
- 24 VDC control logic compatible with sourcing or sinking outputs (PNP or NPN)
- Carrier frequency: 10 kHz maximum
- 16 multi-speed settings plus jog speed
- Remote speed reference:
  0-10 VDC (20 kohms) or
  4-20 mA (250 ohms)
- Signal follower: bias and gain
- 2 programmable open collector outputs
- Analog monitor output:
  0-10 VDC proportional to output frequency or output current
- Approximately 200 parameters
- Digital pulse train input (30 kHz max.)
- Cooling fan controlled by drive run/stop
- RS485/RS422 serial communication port
  (up to 32 nodes)
- Baud rate of 19.2 kbps
- UL and cUL listed; CE approved
- UL recognized electronic overload
- MTBF: exceeds 28 years
- Dynamic Braking Transistor
- NEMA 1 enclosures

Protective Features

- Current limit, stall prevention during accel, decel, and run
- Motor and drive overload
- Over voltage
- Instantaneous over current
- Short circuit
- Under voltage
- Heatsink overheat
- Ground fault protection
- Over/under torque

Service Conditions

- Ambient service temperature:
  -10° to 40°C (14° to 105°F)
- Ambient storage temperature:
  -20° to 60°C (-4° to 140°F)
- Humidity: to 95% non-condensing
- Altitude: to 3280 ft; higher by derating
- Service factor: 1.0
- Input voltage: -15% to +10%
  200 to 230 VAC, 380 to 460 VAC
- Input frequency: +/-5%; 50/60 Hz
- Phase sequence insensitive

Options

- Dynamic Braking resistor (external)
- Input circuit breaker / disconnect
- Remote operator station
- Serial Communications
- External DC link reactor

(1) V/Hz Mode

(2) Open Loop Vector Mode

Standard and Optional Rating. Please select the GPD 315/V7 drive based on required input voltage and motor output current requirements. Nominal HP ratings for 1800 rpm motors are listed for reference. Output current ratings are RMS current. 3 Phase input and 1 Phase input ratings are listed for 230 V models. For 1 Phase input on 460 V models, select the drive by ensuring that 1/2 of the drive's continuous output current rating is ≥ the motor's full load amp rating.

Enclosures. The GPD 315/V7 is available in two enclosure designs. NEMA 1 or NEMA Type 4X/12. The NEMA 4X/12 is suitable for washdown environment and also carriers an IP/66 class rating. Options may be utilized with either NEMA 1 or NEMA 4X/12 enclosures. Suggested option application based on installation plus/or environmental factors are listed as a guide for proper selection and use. Consult factory if you have specific questions.

Adapter Plates. Adapter plates provide for easy mounting conversion of existing GPD333 series AC drives to GPD 315/V7 AC drives. NEMA 1 only.
Option kit for customer mounting

DIN Rail Mounting Kits. The DIN rail attachment kit allows the drive to be mounted on a DIN rail. The DIN rail is not included. NEMA 1 only.
Option kit for customer mounting

External Heat Sink Provision Bracket. This option is used to mount the drive with the heat sink external to the auxiliary enclosure. All kit mounting hardware is included. NEMA 1 only.
Option kit for customer mounting

Analog Input, Bipolar. This option mounts internally to the control terminal block on the drive and allows the drive to interface to a bipolar (+/- 10V) speed reference. NEMA 1 or NEMA 4X
Option kit for customer mounting

Analog Input Connector, Cable Assembly. This option allows for one additional analog input (0-10 V or 4-20 mA) to the drive. The option kit includes a 3-foot cable with a mini-connector that plugs into the CN2 connector on the Digital Operator.
Option kit for customer mounting

115 Vac Logic Interface. This option mounts directly to the control terminal block on the drive and allows the use of 115 Vac control logic circuits to produce multi-function control input signals for the drive. NEMA 1 or NEMA 4X
Option kit for customer mounting

RFI (Radio Frequency Interference) Filter. An RFI Filter is used to attenuate possible drive-generated noise. An input filter with proper shielding, routing and grounding between itself and the drive is designed to reduce line conducted noise levels within the limits of FCC regulations, part 15, subpart J, for Class A devices, when the drive's output conductors are properly routed and shielded in grounded steel conduit all the way to the motor. Filters should always be mounted as close to the drive as possible. RFI Filters for separate mounting are CE approved. Suitable for NEMA 1 only.
Option kit for customer mounting

DeviceNet™. Each DeviceNet network supports up to 63 drives. Controllers are available from many PLC and/or PC suppliers. The DeviceNet network communications option board is designed to comply with all pertinent aspects of the ODVA (Open DeviceNet Vendor Association) specification and AC drive profile. All parameter, diagnostics, and operational commands are accessible via DeviceNet. The DeviceNet satellite board mounts integrally in the drive and provides a DeviceNet standard open tap connector. Shipment includes Electronic Data Sheets on 3.5" disk to assist with network configuration and drive setup. NEMA 1 or NEMA 4X. NEMA 4X requires optional ring kit.
Option kit for customer mounting

Profibus. This option supports all of the Profibus data rates from 9.6 Kbaud to 12 Mbaud. All parameters, diagnostics and operational commands are accessible over this network link. This option allows for addressing from 1 to 99 drives, and provides a convenient Phoenix-type terminations for landing the shielded, twisted-pair wiring. Up to 32 bytes of input data and 32 bytes of output data are provided per message transaction. This option complies with all pertinent aspects of the Profibus-DP specification and installs integrally to the drive. Shipment includes a .gsd file for configuration on a 3.5" disk. NEMA 1 or NEMA 4X. NEMA 4X requires optional ring kit.
Option kit for customer mounting

Blank Cover. This option is used to replace the digital operator when constant setting and run command with digital operator is not required.
Option kit for customer mounting

Operator Cable, Remote. This cable is used to connect the Remote Operator and/or Copy Unit. These cables are available in one (1) or three (3) meter lengths. NEMA 1 only.
Option kit for customer mounting

Operator, Remote Carrier. This option allows an Operator to be mounted remotely from the drive, 1-3 meters, to allow for programming of the drive. NEMA 1 or NEMA 4X
Option kit for customer mounting

Operator, Digital Remote. This option allows the drive to operate from a remote location. This option is used in conjunction with the Remote Interface cover and a cable, each sold separately. NEMA 1 only.
Option kit for customer mounting

Operator, Digital With Potentiometer. The Digital Operator is provided with a potentiometer. NEMA 1 only.
Option kit for customer mounting

Operator, Digital Without Potentiometer. The Digital Operator is provided without a potentiometer. NEMA 1 only.
Option kit for customer mounting

Operator, Kit Without Potentiometer, NEMA 4/12 Rating. The option kit includes a Remote Operator (DS072), an Operator Interface Cover (DS074), and either a one (1) meter cable (DS071) or three (3) meter cable (DS073) depending on the kit selected. NEMA 1 only.
Option kit for customer mounting

Operator, Kit Digital With Potentiometer, NEMA 1 Rated. The option kit allows a Digital Operator to be mounted remotely from the drive. The option kit include a Remote Operator Carrier (DS079), an Operator Interface Cover (DS074), and either a one (1) meter cable (DS071) or three (3) meter cable (DS073) depending on the kit selected. NEMA 1 only.
Option kit for customer mounting

Remote Interface Cover. This option mounts in place of the standard Digital Operator when a Remote Operator is used with the drive. NEMA 1 only.
Option kit for customer mounting

Computer Interface Software For Parameter Upload and Download. This option allows the drive to be interfaced to a PC to allow for upload, download, and storage of drive parameters for programming multiple drives. Kit includes Software.
Option kit

Computer Interface Cable. Required for implementation of upload/download software for GPD 315/V7.
Option kit

Braking Modules. A braking transistor is included on the drive as standard. The standard braking transistor will support 3%, 10%, 50% and 100% Duty Cycle Resistors for the ratings.

3% Duty Cycle DB Resistors. Please refer to the Braking Module description. Heat Sink DB resistors are rated for 3% duty cycle over a 100 second interval. Braking torque for each rating is listed. NEMA 1 only.
Option kit for customer mounting only

10% Duty Cycle DB "Resistors Units". Please refer to the Braking Module description.
Remote Mount DB "Resistor Units" are provided in a separate vented enclosure designed for customer mounting and are rated for 10% duty cycle over a 100 second interval. NEMA 1 only.
Option kit for customer mounting only

50% and 100% Duty Cycle DB "Resistors Units". Please refer to the Braking Module description. Consult Yaskawa Application Engineering for sizing and assistance. Remote Mount DB "Resistor Units" are provided in a separate vented enclosure designed for customer mounting and are rated for 50% and 100% duty cycle over a 100 second interval. NEMA 1 only.
Option kit for customer mounting only

Approval / Special Drawings. Pricing for Drives and options are based upon 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.
Price Addition: 3% of list price for Drive and all included options, or $1000 list, whichever is greater.

Technical Manuals. One manual is included with each drive at no charge when shipped from the factory.
List Price for additional paper copies: $15
List Price for additional CD copies: No charge

Rated Input	Phase Input	RMS Amps Cont. Rating	OL Amps, 60 Sec. (150% OL Use)	HP Based On 1800 RPM Motor	Basic Drive Old Model Number	Basic Drive New Model Number CIMR-V7AM	Std. Encl.	Basic Drive List Price
230 V	3	0.8	1.2	0.125	MVA001	20P11	NEMA 1	
	3	1.6	2.4	0.25	MVA002	20P21	NEMA 1	
	3	3.0	4.5	0.5	MVA003	20P41	NEMA 1	
	3	5.0	7.5	1	MVA005	20P71	NEMA 1	
	3	8.0	12.0	2	MVA008	21P51	NEMA 1	
	3	11.0	16.5	3	MVA011	22P21	NEMA 1	
	3	17.5	26.3	5	MVA017	23P71	NEMA 1	
	3	23.0	34.5	7.5	MVA025	25P51	NEMA 1	
	3	33.0	49.5	10	MVA033	27P51	NEMA 1	
230 V	1	0.8	1.2	0.125	MVA002	20P21	NEMA 1	
	1	1.5	2.3	0.25	MVA003	20P41	NEMA 1	
	1	2.5	3.8	0.33	MVA005	20P71	NEMA 1	
	1	4.0	6.0	0.75	MVA008	21P51	NEMA 1	
	1	5.5	8.3	1	MVA011	22P21	NEMA 1	
	1	8.7	13.1	2	MVA017	23P71	NEMA 1	
	1	11.5	17.3	3	MVA025	25P51	NEMA 1	
	1	16.5	24.8	5	MVA033	27P51	NEMA 1	
460 V	3	1.2	1.8	0.5	MVB001	40P21	NEMA 1	
	3	1.8	2.7	0.75	MVB002	40P41	NEMA 1	
	3	3.4	5.1	1 & 2	MVB003	40P71	NEMA 1	
	3	4.8	7.2	3	MVB005	41P51	NEMA 1	
	3	5.5	8.3	3	MVB006	42P21	NEMA 1	
	3	8.6	12.9	5	MVB009	43P71	NEMA 1	
	3	14.8	22.2	7.5 / 10	MVB015	45P51	NEMA 1	
	3	18.0	27.0	10	MVB018	47P51	NEMA 1	

V74X Open Loop Vector AC Drive, 1/8 - 15 HP

This drive is a version of the standard V7, in an integral enclosure that meets NEMA type 4X/12 indoor use requirements, UL type 4X/12 standards, and the IP66 rating of IEC 529. This enclosure provides the protection required in tough wash down or dust-tight environments, common in Food and Beverage Processing, Packaging, Metal Machining, Woodworking, Pumping, Refrigeration, and Printing. The cast enclosure is powder-coated to protect against the harmful effects of sanitizing chemicals commonly used in food industries. Performance and features are identical to the standard V7, in NEMA 1 enclosure. Two control methods, V/Hz and open loop vector, allow speed/torque performance to suit the application. In addition to tighter speed regulation, open loop vector control provides higher torque at lower speeds.
This V74X was previously named GPD 315/V74X.

Performance Features
- Ratings: 1/8 to 10 HP at 230 VAC, 1/2 to 15 HP at 460 VAC
- Constant torque overload rating: 150% for 1 min. (250% peak)
- DC injection braking, ramp to stop
- Electronic reversing
- Adjustable accel/decel: 0.01 to 6000 seconds
- Controlled speed range: 40:1(1) 100:1(2)
- Speed Regulation ± 0.5 to 1% with slip compensation (1) ± 0.2% (2)
- Drive efficiency: 95%
- Displacement power factor: 0.98
- Output frequency: 0.1 to 400 Hz
- Frequency resolution: 0.01 Hz with digital reference 0.06 / 60 Hz with analog reference
- Frequency accuracy: 0.01% with digital command 0.5% with analog command
- Volts / hertz ratio: infinitely adjustable pattern
- Open loop vector control
- DC Injection braking: adjustable amplitude, duration, current limited
- Torque boost: full range, auto
- Power loss ride-thru: 0.5 sec.
- Speed search
- Auto restart
- 3 Critical frequency rejection settings
- Slip Compensation
- Energy Savings Function
- PID with loss of feedback function

Design Features
- 16-bit microprocessor logic
- Digital keypad operator
- LED status display
- Copy Keypad Function
- Remote Mount Keypad Capability
- RJ-45 Style Digital Operator Connector
- 7 multifunction digital inputs
- Programmable form C output contact for customer use: 1A at 250 VAC or 30 VDC
- 24 VDC control logic compatible with sourcing or sinking outputs (PNP or NPN)
- Carrier frequency: 10 kHz maximum
- 16 multi-speed settings plus jog speed
- Remote speed reference: 0-10 VDC (20 kohms) or isolated 4-20 mA (250 ohms)
- Signal follower: bias and gain
- 2 programmable open collector outputs
- Analog monitor output: 0-10 VDC proportional to output frequency or output current
- Approximately 200 parameters
- Digital pulse train input (30 kHz max.)
- Cooling fan controlled by drive run/stop
- RS485/RS422 serial communication port (up to 32 nodes)
- Baud rate of 19.2 kbps
- UL and cUL listed; CE approved
- UL recognized electronic overload
- MTBF: exceeds 28 years
- Dynamic Braking Transistor
- NEMA Type 4X/12 enclosure

Protective Features
- Current limit, stall prevention during accel, decel, and run
- Motor and drive overload
- Over voltage
- Instantaneous over current
- Short circuit
- Under voltage
- Heatsink overheat
- Ground fault protection Service Conditions
- Ambient service temperature: -10° to 40°C (14° to 105°F)
- Ambient storage temperature: -20° to 60°C (-4° to 140°F)
- Humidity: to 95% non-condensing
- Altitude: to 3280 ft; higher by derating
- Service factor: 1.0
- Input voltage: -15% to +10% 200 to 230 VAC, 380 to 460 VAC
- Input frequency: +/-5%; 50/60 Hz

Options
- Remote operator station, NEMA 4
- Network Communications
- CASE Software
- DriveWizard Software
- 800 Hz output via software

(1) V/Hz Mode
(2) Open Loop Vector Mode

Rated Input	Drive Model Number CIMR-V7CU	RMS Amps Cont. Rating	Nominal HP [2]	Basic Drive Price
230 V[1]	**20P14**	0.8	0.125	
	20P24	1.6	0.25	
	20P44	3.0	0.5	
	20P74	5.0	1	
	21P54	8.0	2	
	22P24	11.0	3	
	23P74	17.5	5	
	25P54	25.0	7.5	
	27P54	33.0	10	
460 V	**40P24**	1.2	0.5	
	40P44	1.8	0.75	
	40P74	3.4	1 & 2	
	41P54	4.8	3	
	43P74	8.6	5	
	45P54	14.8	7.5 & 10	
	47P54	21	15[3]	

(1) For single-phase input, select drive by ensuring that 50% of the drive's continuous output current rating is equal to or greater than the motor's full load ampere rating

(2) Horsepower rating is based on standard NEMA B 4-pole motor

(3) Current rating of 21A and nominal horsepower rating of 15HP has an overload rating of 120% for 60 sec.

V7N Open Loop Vector AC Drive, 1/8 - 10 HP

Embedding DeviceNet into the control card of the highly successful V7 drive created this drive. It provides amazing performance in a small package, and at significant cost benefit compared to drives that use optional plug-in communication interface cards.

The V7N provides low motor noise and high starting torque. Two control methods are provided – V/Hz and Open Loop Vector control for precise speed regulation. Open Loop Vector control also provides higher torque at low speed. The V7N is designed for constant torque applications, with current overload rating of 150% for 60 seconds and is ideally suited for applications such as conveyors, grinders, centrifuges, pumps, fans, machine tools, packaging, food processing, automotive assembly, and textiles.

The V7N digital operator provides a 4-digit LED status display with a built-in analog speed potentiometer, as well as digital programming of almost 200 parameters. The V7N includes 3 multi-function DeviceNet inputs, four multi- analog input, a multi-function DeviceNet output and two multi-function open collector outputs. The embedded DeviceNet allows 64 network nodes. It includes programmable MAC ID and baud rate. The V7N supports drive type profiles with flash capability for easy software upgrades. Network status LEDs are visible through the cover and a plug style connector simplifies wiring..

Performance Features

- Ratings: 1/8 to 10 HP at 230 VAC, 1/2 to 10 HP at 460 VAC
- Constant torque overload rating: 150% for 1 min., 200% for 30 Sec. (250% peak)
- DC injection braking, ramp to stop
- Electronic reversing
- Adjustable accel/decel: 0.01 to 6000 seconds
- Controlled speed range: 40:1(1) 100:1(2)
- Speed regulation ± 0.5 to 1% with slip compensation (1) ± 0.2% (2)
- Drive efficiency: 95%
- Displacement power factor: 0.98
- Output frequency: 0.1 to 400 Hz
- Frequency resolution: 0.01 Hz with digital reference 0.06 / 60 Hz with analog reference
- Frequency accuracy: 0.01% with digital command 0.5% with analog command
- Volts / hertz ratio: infinitely adjustable pattern
- Open loop vector control
- DC Injection braking: adjustable amplitude, duration, current limited
- Torque boost: full range, auto
- Power loss ride-thru: 0.5 sec.
- Speed search
- Auto restart
- 3 Critical frequency rejection settings
- Slip Compensation
- Energy Savings Function
- PID with loss of feedback function

Design Features

- 16-bit microprocessor logic
- Digital keypad operator with analog speed pot
- LED status display
- Copy Keypad Function
- Remote Mount Keypad Capability
- RJ-45 Style Digital Operator Connector
- 4 multi-function digital inputs
- 3 multi-function DeviceNet inputs
- Programmable DeviceNet output
- 24 VDC control logic compatible with sourcing or sinking outputs (PNP or NP))
- Carrier frequency: 10 kHz maximum
- 16 multi-speed settings plus jog speed
- Remote speed reference: 0-10 VDC (20 kohms) or 4-20 mA (250 ohms)
- Signal follower: bias and gain
- 2 programmable open collector outputs
- Approximately 200 parameters
- Digital pulse train input (30 kHz max.)
- Cooling fan controlled by drive run/stop
- UL and cUL listed; CE approved
- UL recognized electronic overload
- MTBF: exceeds 28 years
- Dynamic Braking Transistor
- NEMA 1 enclosure

Protective Features

- Current limit, stall prevention during accel, decel, and run
- Motor and drive overload
- Over voltage
- Instantaneous over current
- Short circuit
- Under voltage
- Heatsink overheat
- Ground fault protection
- Over/under torque

DeviceNet Features

- Embedded DeviceNet
- Quick disconnect style plug
- Baud rate: 125/250/500 KBps
- Baud rate setting: Programmable or DIP switches
- Device Profile: AC Drive device type 02
- Message types:
- Explicit Message I/O polled message
- Group 2 only server
- MAC ID setting: programmable or DIP switches

Service Conditions

- Ambient service temperature: -10° to 40°C (14° to 105°F)
- Ambient storage temperature: -20° to 60°C (-4° to 140°F)
- Humidity: to 95% non-condensing
- Altitude: to 3280 ft; higher by derating
- Service factor: 1.0
- Input voltage: -15% to +10% 200 to 230 VAC, 380 to 460 VAC
- Input frequency: +/-5%; 50/60 Hz
- Phase sequence insensitive

Options

- Dynamic Braking resistor (external)
- External DC link reactor
- DriveWizard
- CASE software

(1) V/Hz Mode
(2) Open Loop Vector Mode

Rated Input	Drive Model Number CIMR-V7NU	RMS Amps Cont. Rating	Nominal HP (2)	Basic Drive Price
230 V(1)	**20P21**	1.6	0.25	
	20P41	3.0	0.5	
	20P71	5.0	0.75 & 1	
	21P51	8.0	2	
	22P21	11.0	3	
	23P71	17.5	5	
	25P51	25.0	7.5	
	27P51	33.0	10	
460 V	**40P21**	1.2	0.5	
	40P41	1.8	0.75	
	40P71	3.4	1 & 2	
	41P51	4.8	3	
	42P21	5.5	3	
	43P71	8.6	5	
	45P51	14.8	7.5 & 10	
	47P51	18.0	10	

(1) For single-phase input, select drive by ensuring that 50% of the drive's continuous output current rating is equal to or greater than the motor's full load ampere rating

(2) Horsepower rating is based on standard NEMA B 4-pole motor

(3) Current rating of 21A and nominal horsepower rating of 15HP has an overload rating of 120% for 60 sec.

Option Description Enclosure & Mounting Options	Basic Drive Model Number	Option Part Number	Option Price
Adapter Plate GPD 333 to GPD 315/V7	MVA001	72606-EZZ08114A	
	MVA002	72606-EZZ08114A	
	MVA003	72606-EZZ08114A	
	MVA005	72606-EZZ08114B	
	MVA008	72606-EZZ08114B	
	MVA011	72606-EZZ08114C	
	MVA017	72606-EZZ08114D	
	MVB001	72606-EZZ08114C	
	MVB002	72606-EZZ08114C	
	MVB003	72606-EZZ08114C	
	MVB005	72606-EZZ08114C	
	MVB009	72606-EZZ08114C	
DIN Rail Mounting Kits	MVA001	72606-EZZ08122A	
	MVA002	72606-EZZ08122A	
	MVA003	72606-EZZ08122A	
	MVA005	72606-EZZ08122A	
	MVA008	72606-EZZ08122B	
	MVA011	72606-EZZ08122B	
	MVA017	72606-EZZ08122C	
	MVB001	72606-EZZ08122B	
	MVB002	72606-EZZ08122B	
	MVB003	72606-EZZ08122B	
	MVB005	72606-EZZ08122B	
	MVB009	72606-EZZ08122C	
Heat Sink External Provision, Bracket	MVA001, MVA002	72606-EZZ08136A	
	MVA003	72606-EZZ08136B	
	MVA005	72606-EZZ08136C	
	MVA008, MVA011	72606-EZZ08136D	
	MVA025, MVA033	72606-EZZ08136H	
	MVA017	72606-EZZ08136F	
	MVB001	72606-EZZ08136E	
	MVB002-MVB006	72606-EZZ08136D	
	MVB009	72606-EZZ08136F	
	MVB015, MVB018	72606-EZZ08136H	
Control Options			
Ring Kit Option	CIMR-V7CU20P24	UUX000060	
	CIMR-V7CU20P44	UUX000060	
	CIMR-V7CU20P74	UUX000060	
	CIMR-V7CU40P44	UUX000060	
	CIMR-V7CU21P54	UUX000061	
	CIMR-V7CU22P24	UUX000061	
	CIMR-V7CU23P74	UUX000061	
	CIMR-V7CU40P74	UUX000061	
	CIMR-V7CU41P54	UUX000061	
	CIMR-V7CU42P24	UUX000061	
	CIMR-V7CU43P74	UUX000061	
Analog Input Connector/Cable	All	WRMT41202-C	
115 Vac Logic Interface	MVA001-MVA005,MVA025, MVA033,MVB015, MVB018	DS085	
	MVA008-MVA017,MVB001-MVB009	DS088	
Analog Input, Bipolar	MVA001-MVA005,MVA025,MVA033, MVB015,MVB018	DS080	

Option Description	Basic Drive Model Number	Option Part Number	Option Price
RFI Filter	MVA001	FIL001083	
	MVA002	FIL001083	
	MVA003	FIL001083	
	MVA005	FIL001083	
	MVA008	FIL001084	
	MVA011	FIL001084	
	MVA017	FIL001085	
	MVA025	FIL001100	
	MVA033	FIL001100	
	MVB001	FIL001086	
	MVB002	FIL001086	
	MVB003	FIL001086	
	MVB005	FIL001087	
	MVB009	FIL001088	
	MVB015	FIL001101	
	MVB018	FIL001101	
Network Communications			
DeviceNet	All	CM052	
Profibus & Profibus II	All	CM067	
Operator Interface			
Blank Cover	All	72606-CVS31059	
Operator Cable, Remote, 1 Meter	All	UWR00051	
Operator Cable, Remote, 3 Meter	All	UWR00052	
Operator Carrier, Remote	All	72606-EZZ08386A	
Operator, Digital Remote	All	JVOP-146	
Operator Cover, Remote	All	72606-CVS31060	
Operator, Digital, With Potentiometer	All	JVOP-140	
Operator, Digital, Without Potentiometer	All	JVOP-147	
Operator Kit, With Potentiometer, Remote, 1 Meter, NEMA 1	All	DS084	
Operator Kit, Without Potentiometer, Remote, 1 Meter, NEMA 4/12	All	DS081	
Operator Kit, With Potentiometer, Remote, 3 Meter, NEMA 1	All	DS086	
Operator Kit, Without Potentiometer, Remote, 3 Meter, NEMA 4/12	All	DS083	
Computer Interface Software & Cables			
Software CD	All	CDJ7V7.01	
Interface Cable	All	UWR00468-2	

Option Description	Basic Drive Model Number	Quantity Required	Approximate Braking Torque In % Of Motor Torque	Option Part Number	Option Price
Dynamic Braking Resistors					
3% Duty Cycle Resistor, For Heat Sink Mounting	MVA001	1	220%	50185531	
	MVA002	1	220%	50185531	
	MVA003	1	220%	50185430	
	MVA005	1	125%	50185430	
	MVA008	1	125%	50185431	
	MVA011	1	120%	50185432	
	MVA017	1	100%	50185433	
	MVB001	1	230%	50185530	
	MVB002	1	230%	50185530	
	MVB003	1	130%	50185530	
	MVB005	1	125%	50185531	
	MVB009	1	105%	50185531	
10% Duty Cycle "Resistor Unit", For Separate Customer Mounting	MVA003	1	220%	URS000022	
	MVA005	1	220%	URS000022	
	MVA008	1	175%	URS000024	
	MVA011	1	120%	URS000024	
	MVA017	1	115%	URS000025	
	MVA025	1	115%	URS000026	
	MVA033	1	125%	URS000027	
	MVB001	1	460%	URS000032	
	MVB002	1	230%	URS000032	
	MVB003	1	130%	URS000032	
	MVB005	1	200%	URS000034	
	MVB009	1	135%	URS000035	
	MVB015	1	170%	URS000037	
	MVB018	1	195%	URS000038	

DIMENSIONS: GPD315/V7 BASIC DRIVE NEMA 1

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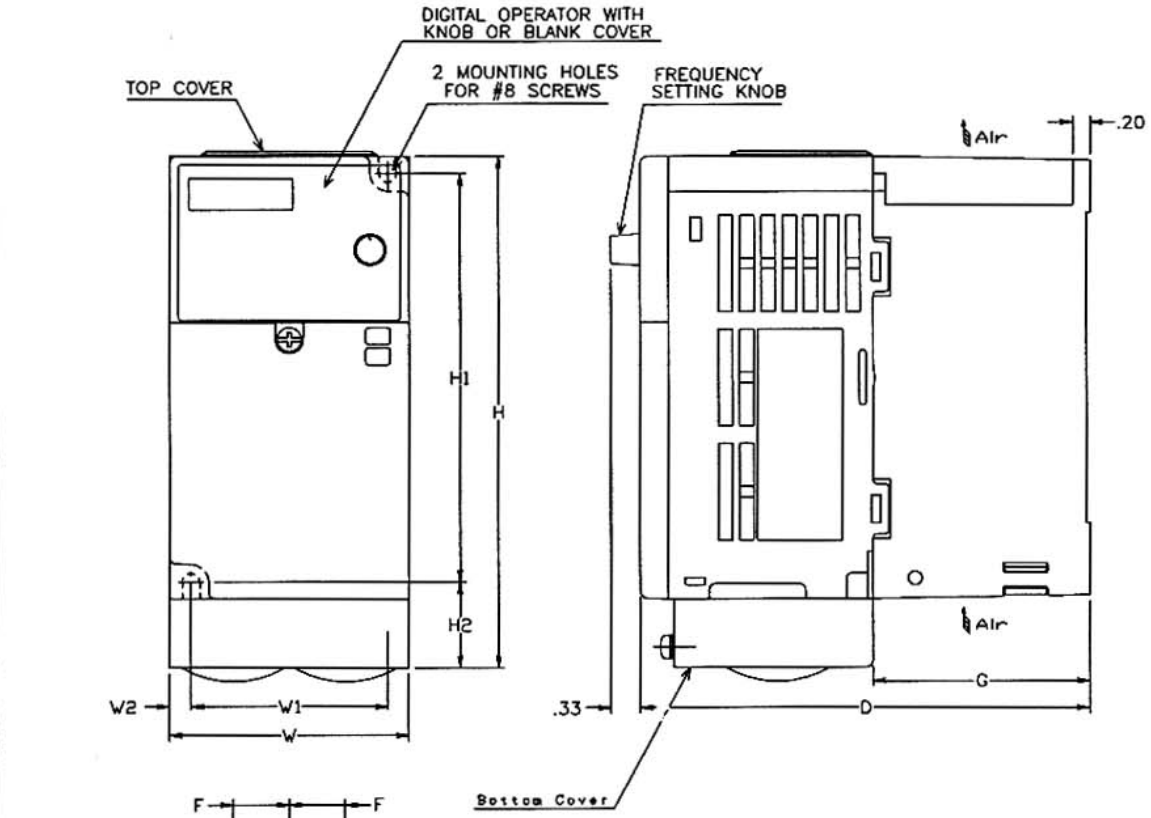
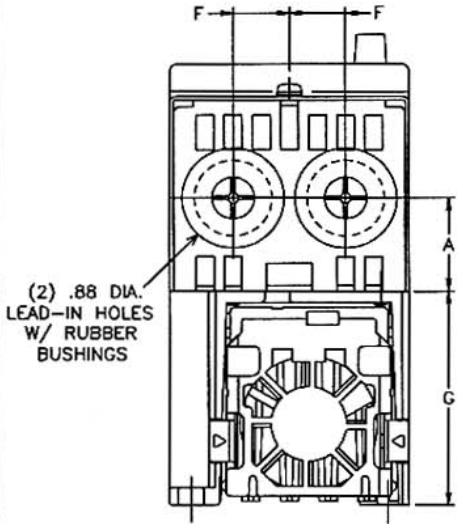


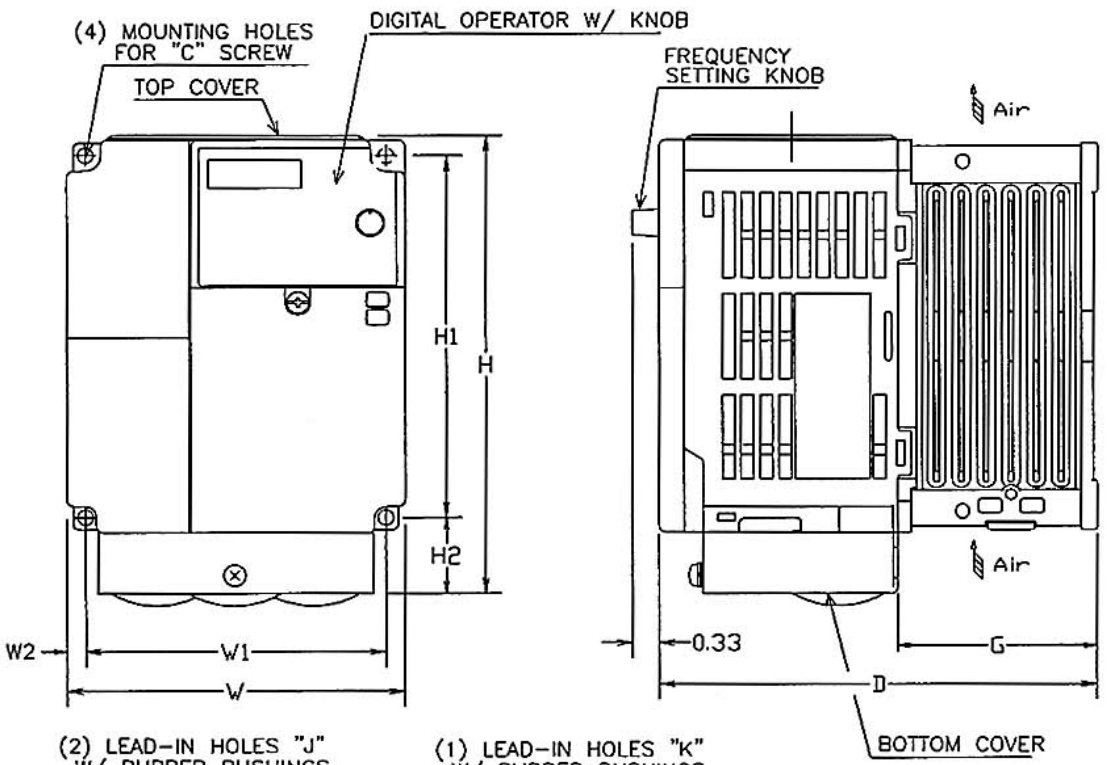


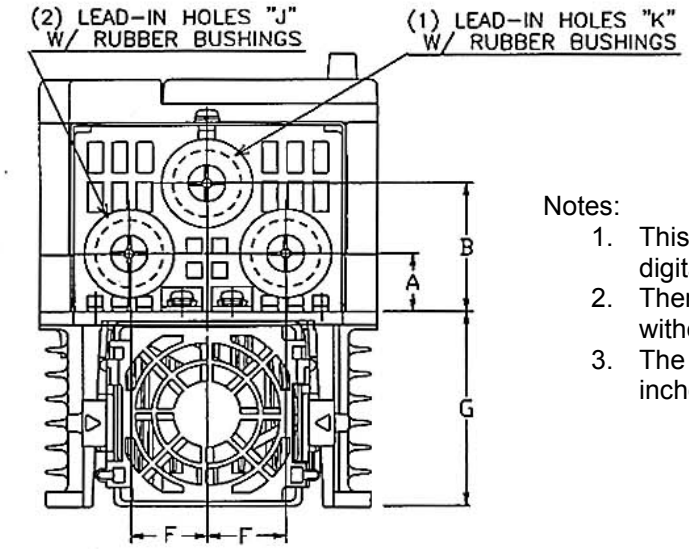
Notes:

1. This drawing shows the inverter unit having digital operator with frequency setting knob.
2. There are two other types: digital operator without knob and blank cover without knob.
3. The network communication option adds 1.5 inches to depth of enclosure.

Voltage	Model GPD 315	Output Current Rating (AMPS)	HP	Dimensions										Approx Weight (LBS)
				Mounting		H	W	H2	W2	A	D	F	G	
				H1	W1									
230	MVA001	0.8	1/8	4.65	2.2	5.83	2.68	0.2	0.24	1.06	3.0	0.63	0.39	1.5
	MVA002	1.6	1/4	4.65	2.2	5.83	2.68	0.2	0.24	1.06	3.0	0.63	0.39	1.5
	MVA003	3	1/2	4.65	2.2	5.83	2.68	0.2	0.24	1.06	3.0	0.63	0.39	2.2
	MVA005	5	3/4-1	4.65	2.2	5.83	2.68	0.2	0.24	1.06	3.0	0.63	0.39	2.6

DIMENSIONS: GPD315/V7 BASIC DRIVE NEMA 1

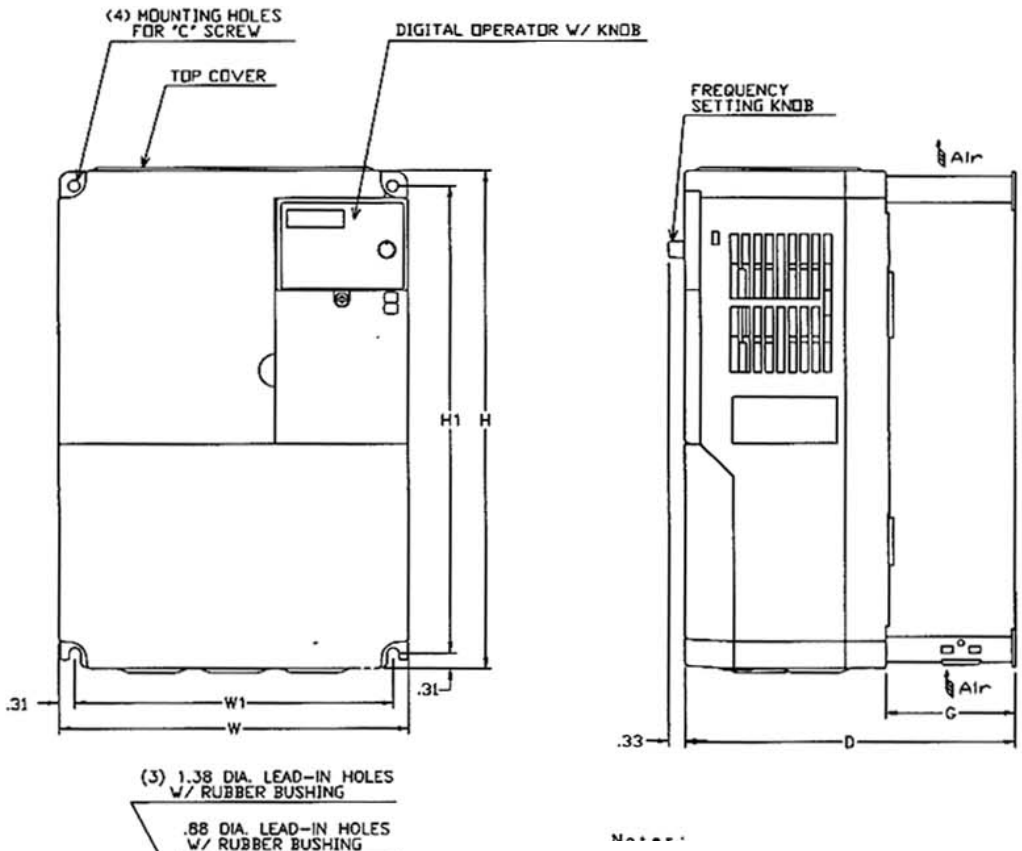


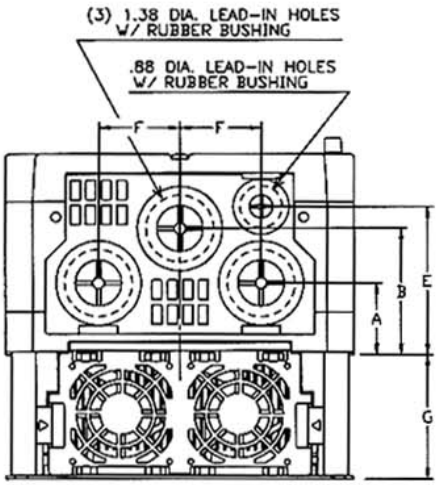


Notes:

1. This drawing shows the inverter unit having digital operator with frequency setting knob.
2. There are two other types: digital operator without knob and blank cover without knob.
3. The network communication option adds 1.5 inches to depth of enclosure.

MODEL# GPD315-	OUTPUT CURRENT RATING (AMPS)	HP	DIMENSIONS IN INCHES									F	G	J	K	APPROX. WEIGHT (LBS)
			MOUNTING		H	W	H2	W2	A	B	C	D					
			H1	W1													
MVA008	8.0	2	4.65	3.78	5.83	4.25	.98	.24	.98	-	#8	5.16	.87	2.52	.88	.88	3.5
MVA011	11.0	3	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	5.51	.98	2.52	.88	.88	3.7
MVA017	17.5	5	4.65	5.04	5.83	5.51	.98	.24	.98	1.18	#8	5.63	1.48	2.80	1.10	.88	5.3
MVB001	1.2	1/2	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	3.62	.98	.63	.88	.88	2.6
MVB002	1.8	3/4	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	4.33	.98	1.34	.88	.88	2.6
MVB003	3.4	1&2	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	5.51	.98	2.52	.88	.88	3.7
MVB005	4.8	3	4.65	3.78	5.83	4.25	.98	.24	.98	2.17	#8	6.14	.87	2.52	1.10	.88	3.7
MVB009	8.6	5	4.65	5.04	5.83	5.51	.98	.24	.98	1.18	#8	5.63	1.48	2.80	1.10	.88	5.3

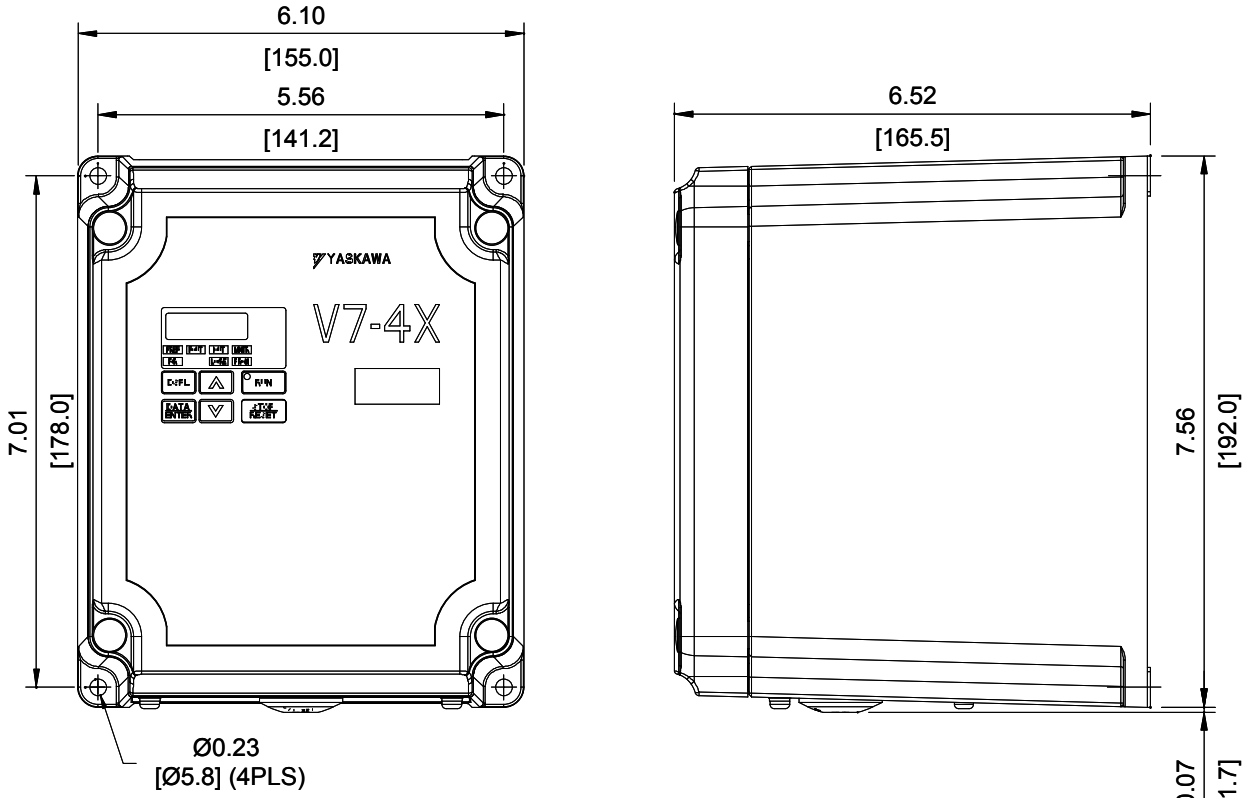


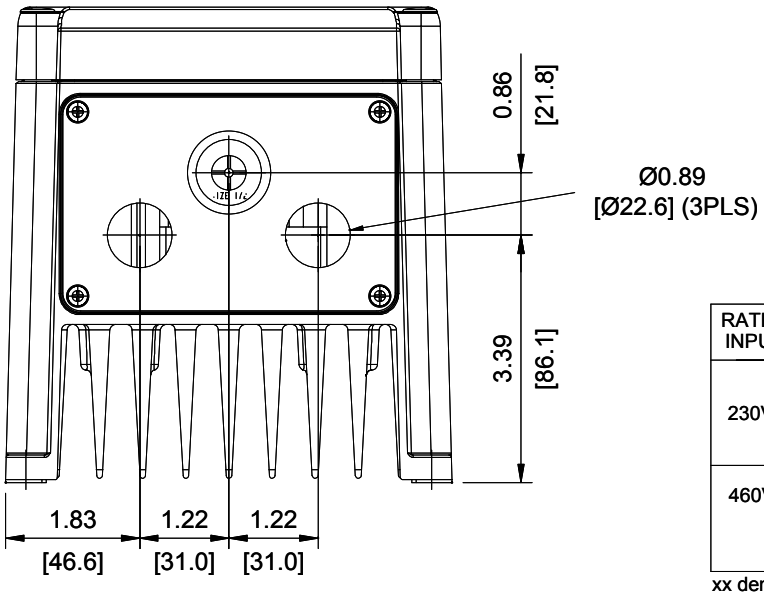


Notes:

1. This drawing shows the inverter unit having digital operator with frequency setting knob.
2. There are two other types: digital operator without knob and blank cover without knob.
3. The network communication option adds 1.5 inches to depth of enclosure.

VOLTAGE	MODEL GPD315-	OUTPUT CURRENT RATING (AMPS)	HP	DIMENSIONS IN INCHES										G	APROX WEIGHT (LBS)
				MOUNTING		H	W	A	B	C	D	E	F		
				H1	W1										
230	MVA025	11.5	3	9.61	6.46	10.24	7.09	1.48	2.60	#10	6.70	3.05	1.65	2.56	10.5
	MVA033	16.5	5	9.61	6.46	10.24	7.09	1.48	2.60	#10	6.70	3.05	1.65	2.56	10.5
460	MVB015	14.8	7.5/10	9.61	6.46	10.24	7.09	1.48	2.60	#10	6.70	3.05	1.65	2.56	10.5
	MVB018	18.0	-	9.61	6.46	10.24	7.09	1.48	2.60	#10	6.70	3.05	1.65	2.56	10.5





V74X NEMA 4X

RATED INPUT	MODEL # CIMR-V7xx	AMPS	HP	WT LBS
230V	20P24	1.6	1/4	7.8
	20P44	3.0	1/2	8.0
	20P74	5.0	3/4 & 1	8.2
460V	40P24	1.2	1/2	8.4
	40P44	1.8	3/4	8.4
	40P74	3.4	1 & 2	8.7

xx denotes AA-ZZ

UNITS: inch [mm]

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REV. JCM 2.3.03

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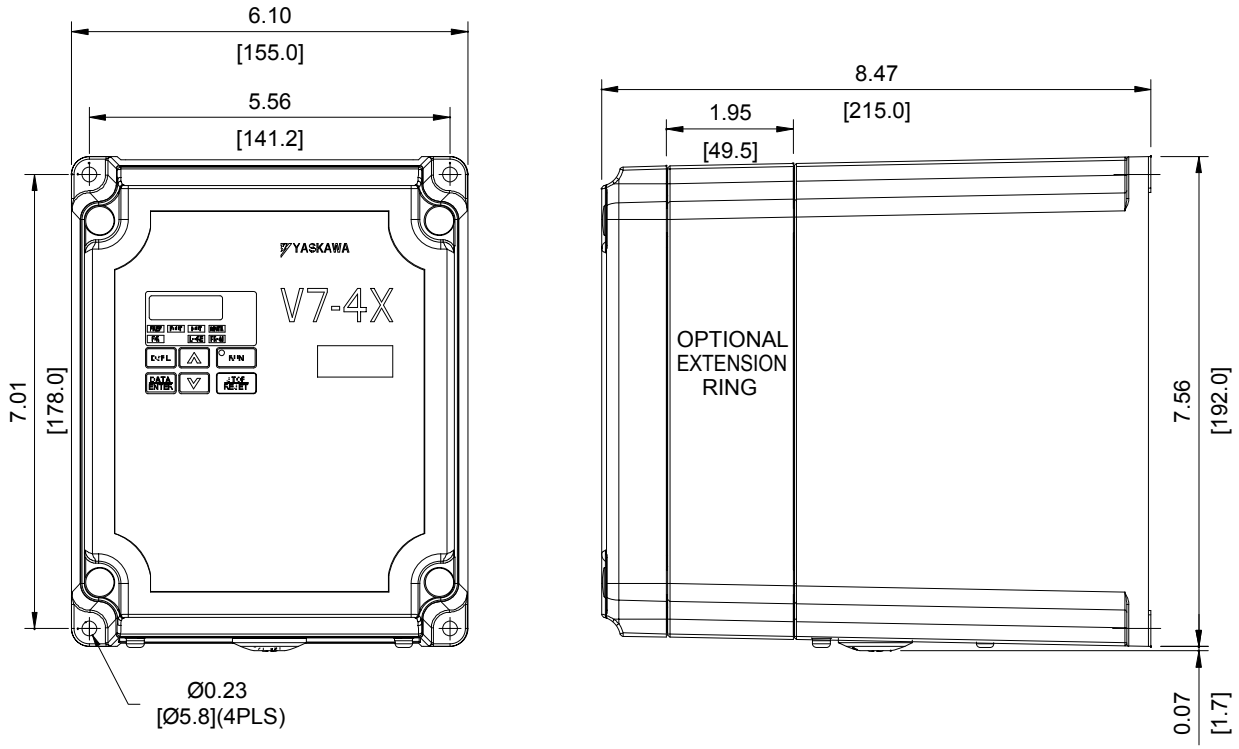

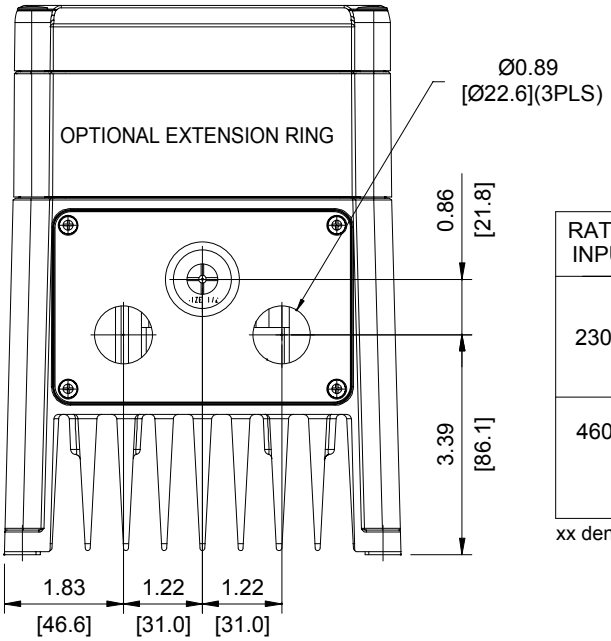

V74X NEMA 4X

RATED INPUT	MODEL # CIMR-V7xx	AMPS	HP	WT LBS	RING KIT PART No.
230V	20P24	1.6	1/4	7.8	UUX000060
	20P44	3.0	1/2	8.0	UUX000060
	20P74	5.0	3/4 & 1	8.2	UUX000060
460V	40P24	1.2	1/2	8.4	UUX000060
	40P44	1.8	3/4	8.4	UUX000060
	40P74	3.4	1 & 2	8.7	UUX000060

xx denotes AA-ZZ

UNITS: inch [mm]

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REV. JCM 2.3.03

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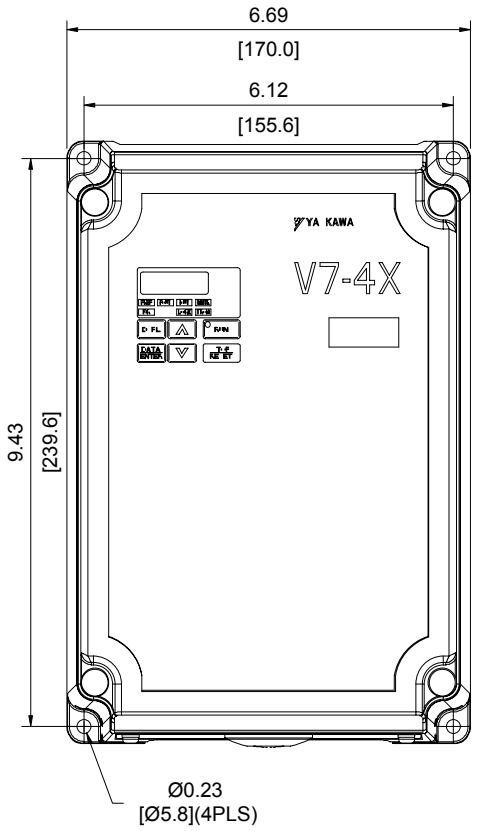

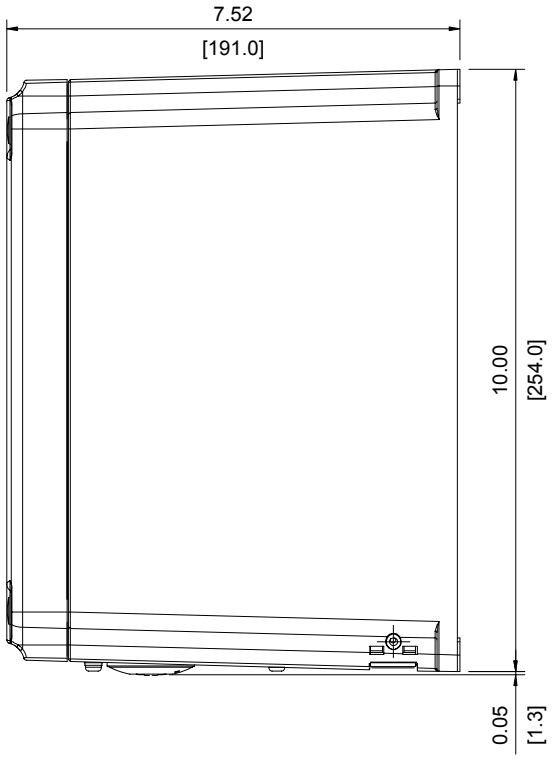

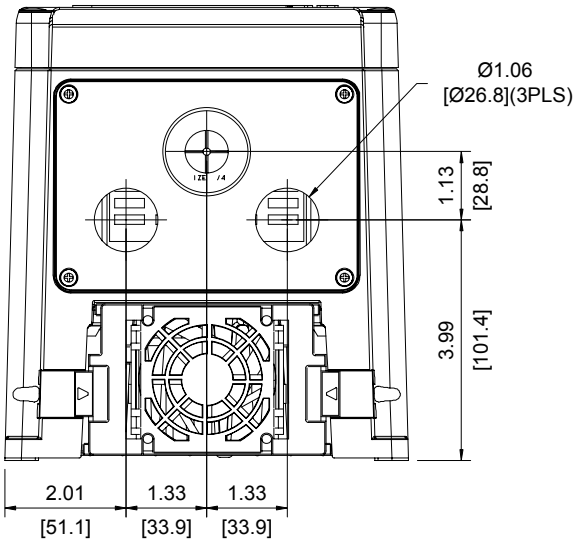

V74X NEMA 4X

RATED INPUT	MODEL # CIMR-V7xx	AMPS	HP	WT LBS
230V	21P54	8.0	2	13.0
	22P24	11.0	3	13.3
	23P74	17.5	5	13.7
460V	41P54	4.8	3	13.3
	43P74	8.6	5	13.7

xx denotes AA-ZZ

UNITS: inch [mm]

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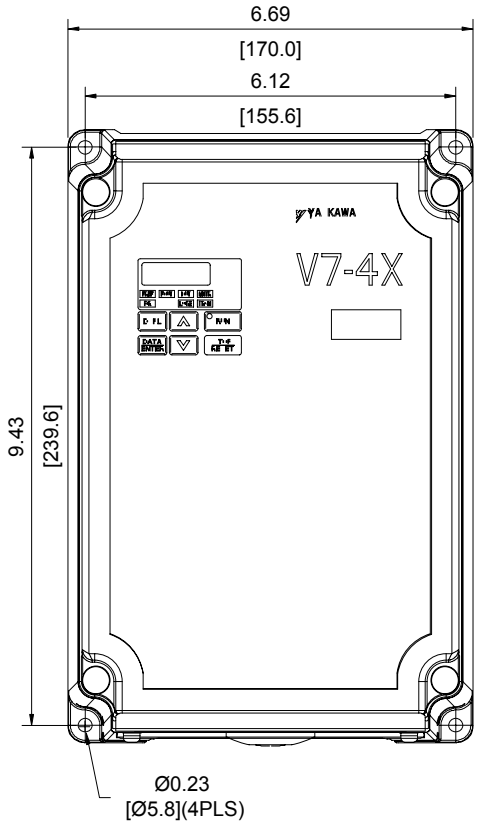
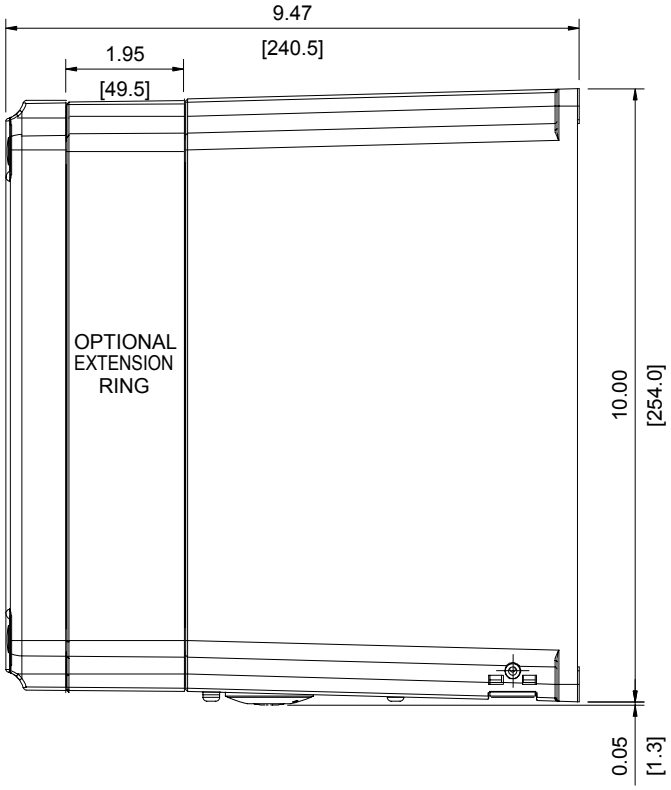
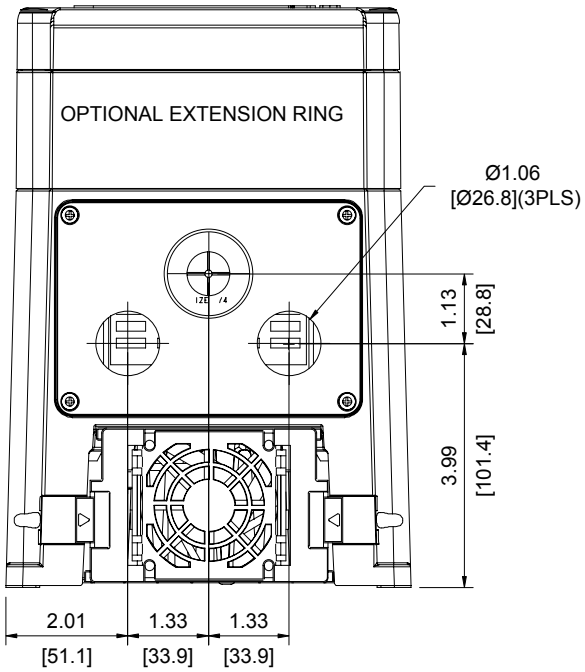
DR BY RIP 7.9.02
APPVL. SR
REV. JCM 9.16.02

S -5505







V74X NEMA 4X

RATED INPUT	MODEL # CIMR-V7xx	AMPS	HP	WT LBS	RING KIT PART No.
230V	21P54	8.0	2	13.0	UUX000061
	22P24	11.0	3	13.3	UUX000061
	23P74	17.5	5	13.7	UUX000061
460V	41P54	4.8	3	13.3	UUX000061
	43P74	8.6	5	13.7	UUX000061

xx denotes AA-ZZ

UNITS: inch [mm]

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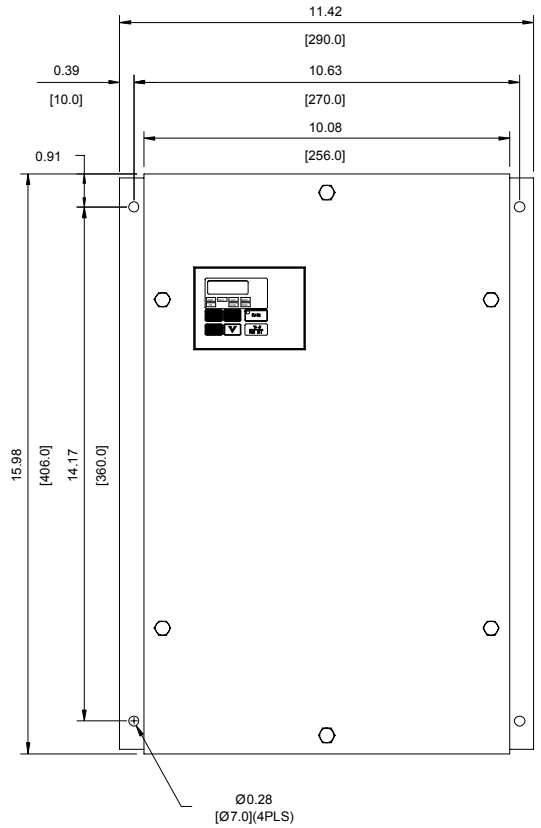
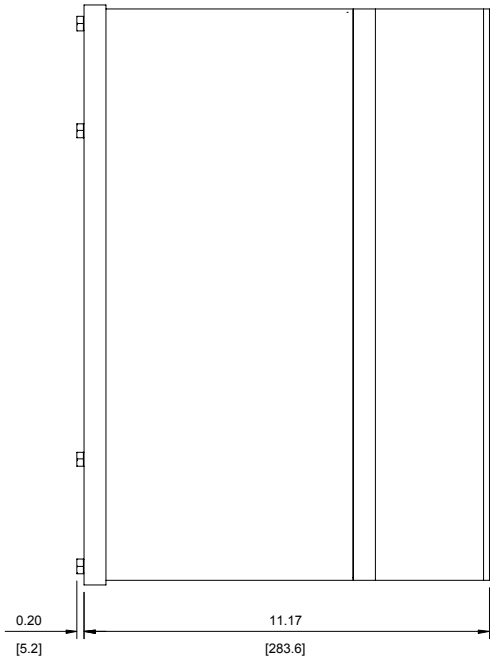
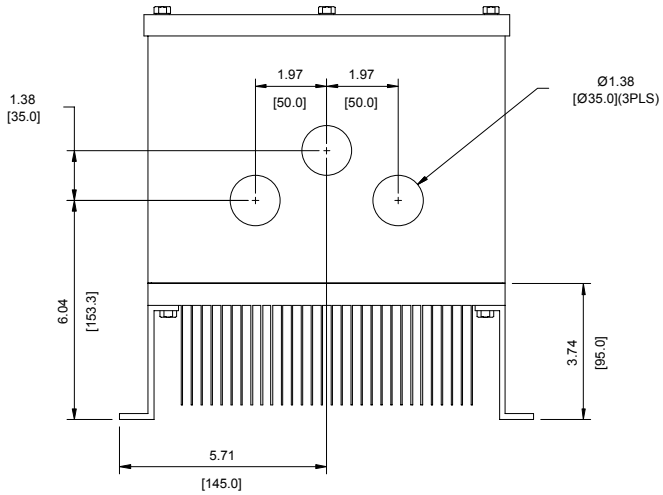
S - 5507







V74X NEMA 4X

RATED INPUT	MODEL # CIMR-V7xx	AMPS	HP	WT LBS
230V	25P54	25	7.5	41.5
	27P54	33	10	41.5
460V	45P54	14.8	7.5 & 10	41.5
	47P54	21	15	41.5

xx denotes AA-ZZ

UNITS: inch [mm]

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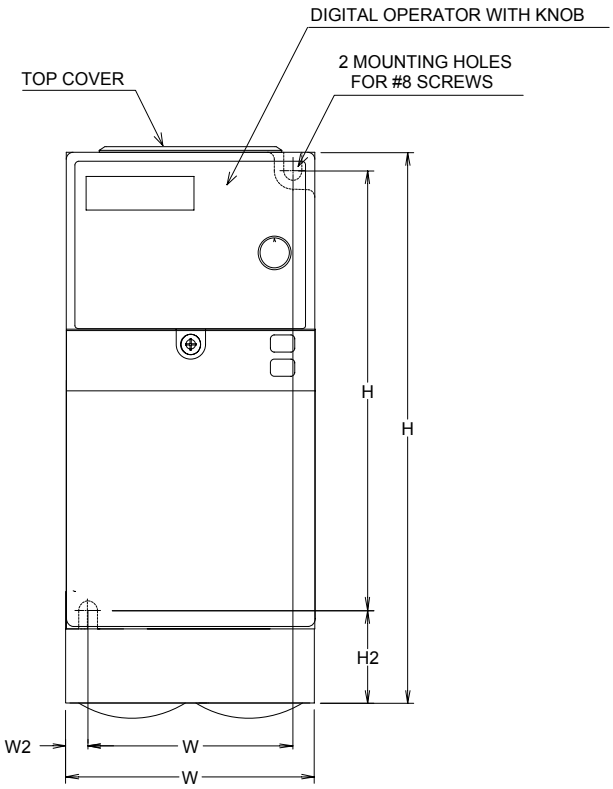
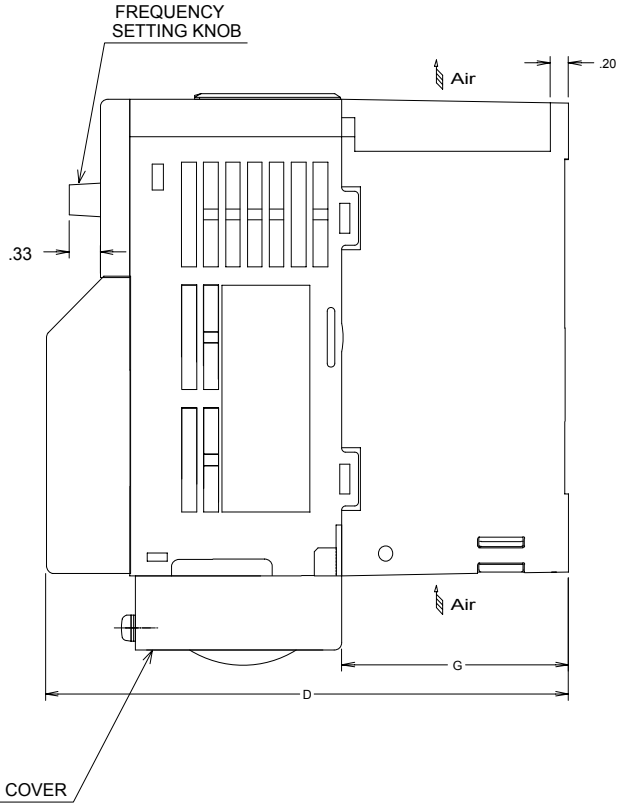
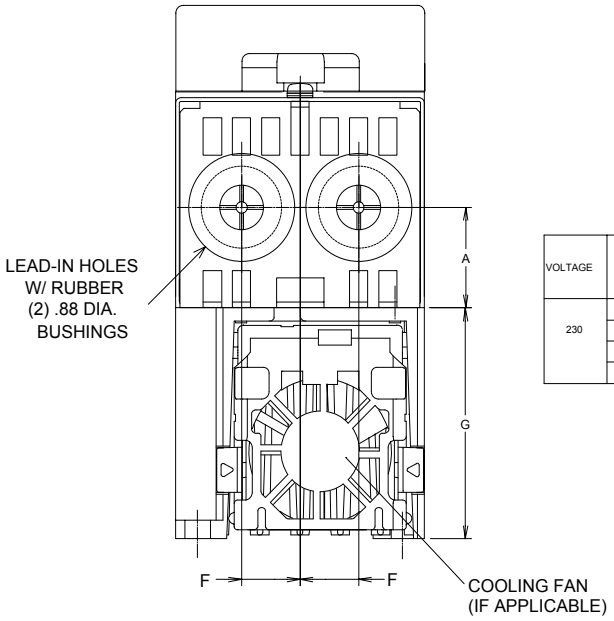
S - 5524







V7N DEVICENET

VOLTAGE	MODEL # CIMR-V7NU	OUTPUT CURRENT RATING (AMPS)	HP	DIMENSIONS IN INCHES										APPROX. WEIGHT (LBS.)	COOLING METHOD
				MOUNTING		H	W	H2	W2	A	D	F	G		
				H1	W1										
230	20P1	0.8	1/8	4.65	2.20	5.83	2.68	.20	.24	1.06	3.59	.63	.39	1.5	SELF
	20P2	1.6	1/4	4.65	2.20	5.83	2.68	.20	.24	1.06	3.59	.63	.39	1.5	SELF
	20P4	3.0	1/2	4.65	2.20	5.83	2.68	.20	.24	1.06	4.84	.63	1.65	2.2	SELF
	20P7	5.0	3/4-1	4.65	2.20	5.83	2.68	.20	.24	1.06	5.63	.63	2.44	2.6	FAN

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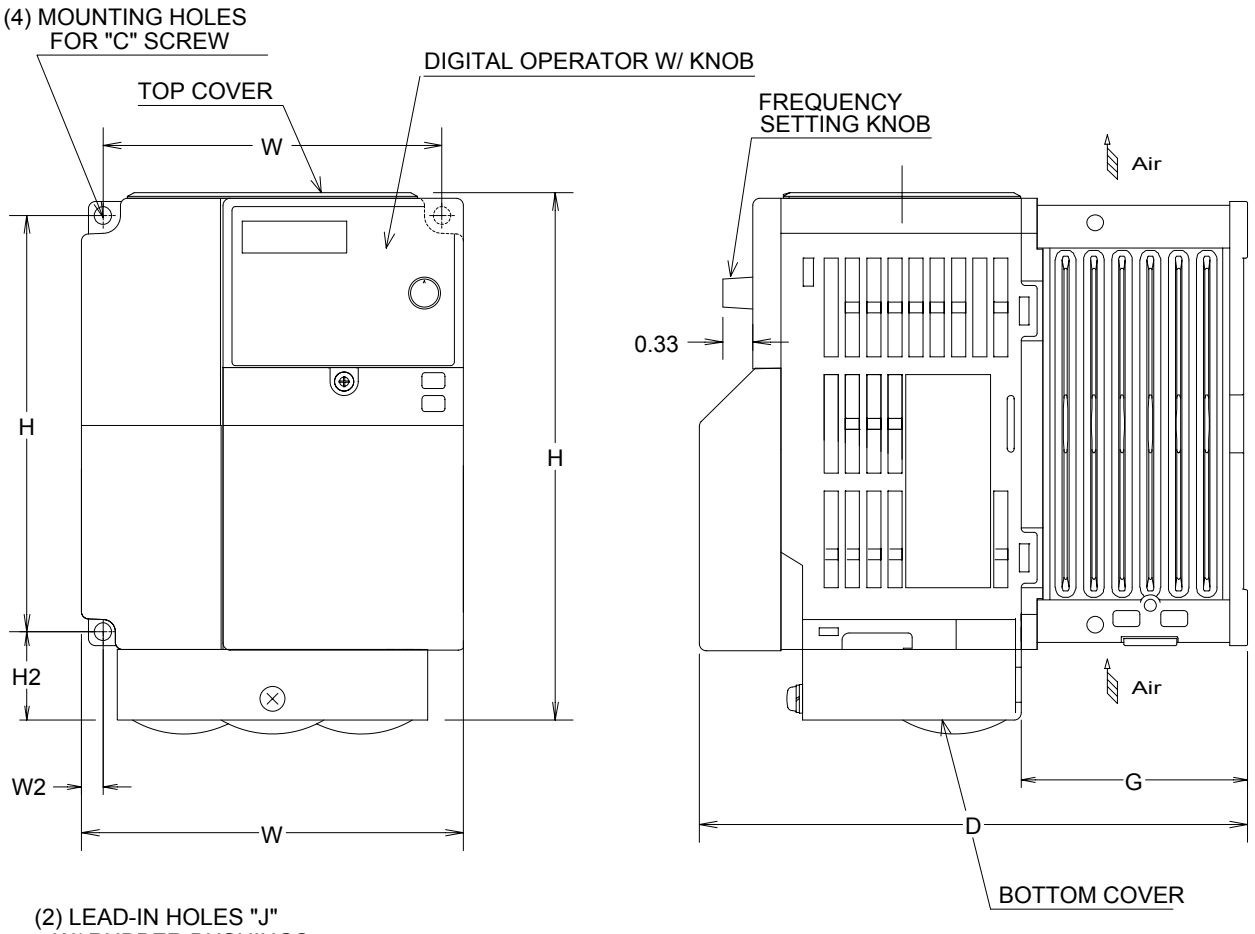

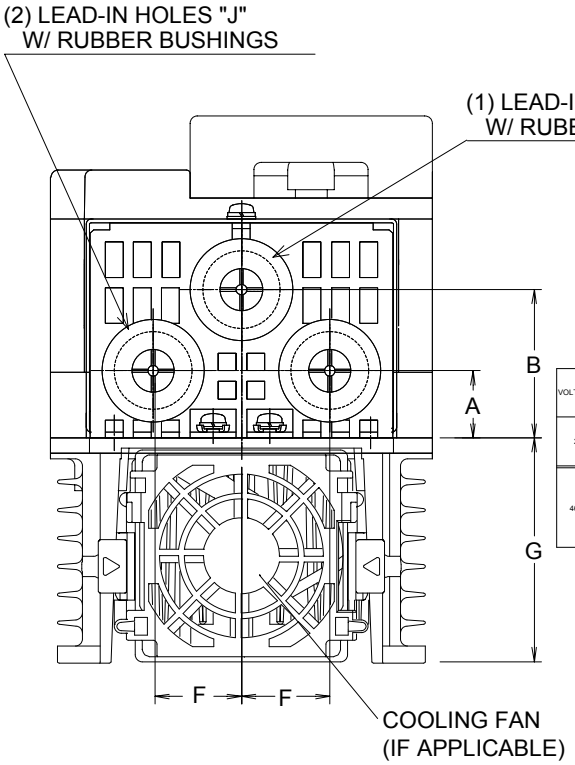

V7N DEVICENET

VOLTAGE	MODEL # CIMR-V7NU	OUTPUT CURRENT RATING (AMPS)	HP	DIMENSIONS IN INCHES														APPROX. WEIGHT (LBS.)	COOLING METHOD
				MOUNTING H1	MOUNTING W1	H	W	H2	W2	A	B	C	D	F	G	J	K		
230	21P5	8.0	2	4.65	3.78	5.83	4.25	.98	.24	.98	—	#8	5.75	.87	2.52	1.10	—	3.5	FAN
	22P2	11.0	3	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	6.10	.98	2.52	.87	.87	3.7	FAN
	23P7	17.5	5	4.65	5.04	5.83	5.51	.98	.24	.98	1.18	#8	6.22	1.48	2.80	1.10	.87	5.3	FAN
460	40P2	1.2	1/2	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	4.21	.98	.63	.87	.87	2.6	SELF
	40P4	1.8	3/4	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	4.92	.98	1.34	.87	.87	2.6	SELF
	40P7	3.4	1&2	4.65	3.78	5.83	4.25	.98	.24	.75	1.65	#8	6.10	.98	2.52	.87	.87	3.7	SELF
	41P5	4.8	3	4.65	3.78	5.83	4.25	.98	.24	.98	2.17	#8	6.73	.87	2.52	1.10	.87	3.7	FAN
	43P7	8.6	5	4.65	5.04	5.83	5.51	.98	.24	.98	1.18	#8	6.22	1.48	2.80	1.10	.87	5.3	FAN

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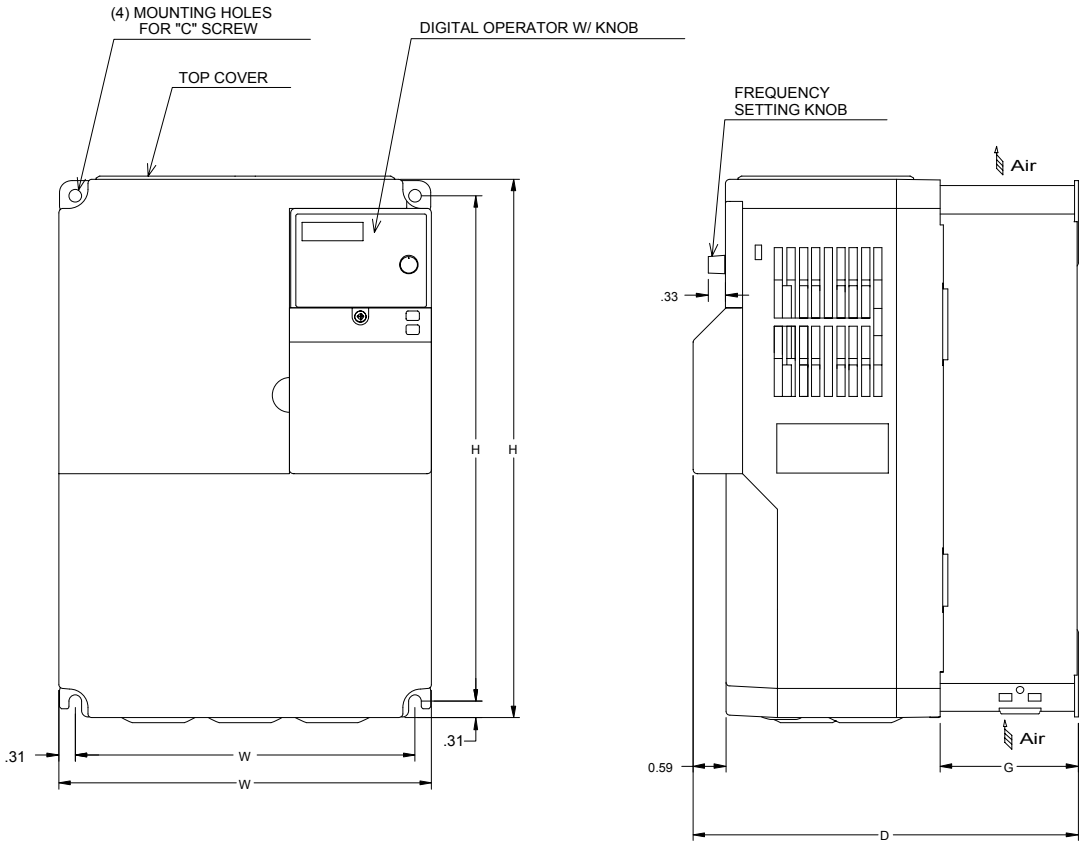

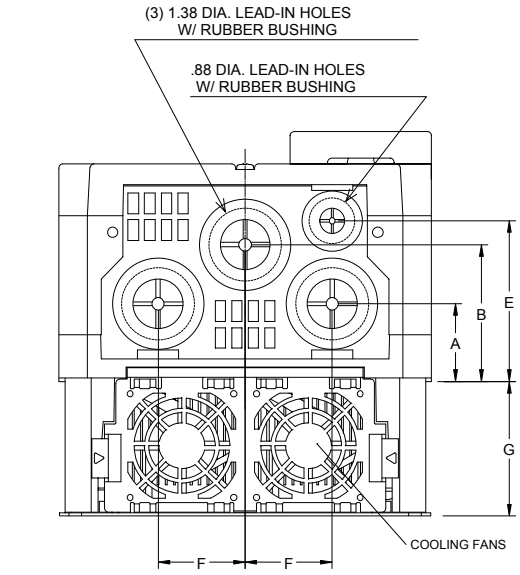

V7N DEVICENET

VOLTAGE	MODEL # CIMR-V7NU	OUTPUT CURRENT RATING (AMPS)	HP	DIMENSIONS IN INCHES											APPROX. WEIGHT (LBS.)	COOLING METHOD
				MOUNTING		H	W	A	B	C	D	E	F	G		
				H1	W1											
230	25P5	25.0	7.5	9.61	6.46	10.24	7.09	1.48	2.60	#10	7.29	3.05	1.65	2.56	11.45	FAN(2)
	27P5	33.0	10	9.61	6.46	10.24	7.09	1.48	2.60	#10	7.29	3.05	1.65	2.56	11.89	FAN(2)
460	45P5	14.8	7.5	9.61	6.46	10.24	7.09	1.48	2.60	#10	7.29	3.05	1.65	2.56	10.14	FAN(2)
	47P5	18.0	10	9.61	6.46	10.24	7.09	1.48	2.60	#10	7.29	3.05	1.65	2.56	10.58	FAN(2)

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YASKAWA ELECTRIC AMERICA, INC. - STANDARD TERMS AND CONDITIONS OF SALE

1. GENERAL:

(a) Any sale of products or services by Yaskawa Electric America, Inc. ("YEA") is governed exclusively by these Standard Terms and Conditions of Sale ("Standard Terms") and shall supersede any inconsistent or additional terms on Buyer's purchase order or any other document. These Standard Terms constitute the final, complete and exclusive agreement between YEA and the Buyer as to the subject matter hereof. YEA hereby objects to any inconsistent or additional terms. This Agreement may be amended only in writing signed by an authorized representative of YEA.

(b) Any order placed with YEA must be in the form of a written purchase order or letter from Buyer ("Order") and shall set forth all information necessary for YEA to fill the Order, if accepted. All proposals, quotations or similar communications from YEA will be considered invitations to Buyer to submit an Order. A binding sales contract will result only when YEA accepts Buyer's Order, at YEA's office in Waukegan, Illinois or such other place as designated by YEA. YEA reserves the right to bill any Order at a minimum of $100, plus any additional charges provided for herein.

(c) All products shall be packaged for domestic shipment in accordance with YEA'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.

2. WARRANTY:

(a) YEA warrants that each new and unused product sold by YEA shall be free of defects in material workmanship 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. YEA warrants that its services shall be free of defects in workmanship for a period of ninety (90) days from the date they are first provided. Within the applicable warranty period, YEA will, at its sole discretion, either repair, replace or return the purchase price paid to YEA for any product, part or service found by YEA to be defective; provided that the subject product is used under normal conditions for which it was designed and installed, operated and maintained in accordance with YEA's instructions and (subject always to such instructions) in accordance with generally accepted industrial practices.

(b) YEA's warranty obligation shall be conditioned upon receipt by YEA of written notice of any alleged defects within sixty (60) days after discovery. YEA will not be responsible or accept invoices for unauthorized repairs to any products, even if defective. YEA 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.

(c) Where Buyer requests that YEA supply non-stock products or component parts manufactured by a third-party, YEA 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. YEA shall have no liability, whether in contract, tort or otherwise, for such products.

(d) YEA does not guarantee production rates or the quality of goods made using YEA's products or services, nor shall any longer warranty periods apply, except as agreed in writing signed by an authorized YEA representative.

(e) YEA's WARRANTY HEREIN IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES OF YEA AND ALL PARENT OR AFFILIATED COMPANIES OF YEA. 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, ARE HEREBY EXCLUDED.

(f) UNDER NO CIRCUMSTANCES SHALL YEA, OR ANY PARENT OR AFFILIATED COMPANY OF YEA, 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 GOODS OR SERVICES SUPPLIED BY YEA OR ANY TRANSACTION TO WHICH THESE STANDARD TERMS APPLY. THE MAXIMUM LIABILITY OF YEA, 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 YEA FOR THE DEFECTIVE PRODUCT OR SERVICE.

3. DRAWINGS/MEASUREMENTS:

All drawings, tables, graphs and the like submitted by YEA or contained in YEA's publications shall be regarded as approximations only. Weights, measurements, capacities and all other particulars of products or services offered by YEA are approximations only. YEA is not responsible for such approximations, including, in particular, based on data supplied by Buyer.

4. INFRINGEMENT:

YEA's liability for infringement (and the liability of any parent or affiliated company of YEA) is limited to YEA's defense of any suit or proceeding brought against Buyer based on a claim that products sold hereunder, when employed in the manner intended by YEA, constitutes an infringement of any patent of the United States. If Buyer's use of the products in the manner intended by YEA is finally enjoined in such action, YEA 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). YEA 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 products or in the practice of any process, and if a claim, suit or action is brought against YEA or any parent or affiliate of YEA, Buyer shall defend, indemnify and save YEA (and its parent/affiliates) harmless from and against any and all claims, losses or damages arising therefrom.

5. SHIPMENT, FORCE MAJEURE, PRICES AND ERROR:

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

(b) In no event shall YEA 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 YEA'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, YEA's obligation shall be limited to the refund of any advance payment received from Buyer.

(c) All claims for loss of or damage to products, whether concealed or obvious, must be made, in writing, to the carrier and to YEA 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. YEA will render reasonable assistance in providing information necessary for Buyer to process such damage claims with the carrier or any insurance company.

(d) YEA's quoted prices are firm for thirty (30) days from the date of YEA's written proposal. Thereafter, the applicable prices are those in effect at the time Buyer's Order is placed with YEA. YEA will notify Buyer of any price changes for incorporation into a revised Order prior to acceptance by YEA. Pricing based on volume discounts is subject to adjustment by YEA 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 YEA.
(e) (1) 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, YEA reserves the right to charge Buyer for storage charges plus interest.
(f) (2) All shipments are F.O.B. YEA's (or its suppliers') manufacturing plant or warehouse. YEA will, at Buyer's expense, arrange for the transportation of the products from the manufacturing plant or warehouse designated by YEA. Buyer is responsible to timely procure all necessary export and import licenses and all permits required for the consummation of the transaction.

6. TERMS OF PAYMENT:
(a) All payments are due within thirty (30) days of YEA's invoice. YEA reserves the right to require payment in advance, or satisfactory security, for any shipment or sale. YEA may cancel any shipment or Order for any Buyer which has failed to make payment or comply with any other provision of these Standard Terms. YEA reserves the right to seek any other remedy available at law or equity. Payment shall be made at the agreed time, to the place specified, and in the currency indicated on YEA's invoice. Buyer's failure to pay at the agreed time and place constitutes a waiver of Buyer's right to demand YEA's performance under the contract.
(b) When an account 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 are accepted by YEA, Buyer's failure to pay any installment when due shall give YEA 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, YEA may then cancel the contract by written notice to Buyer. Upon cancellation of an installment contract, all items already delivered to and paid for in full by Buyer will be transferred to Buyer "AS IS, WHERE IS," without any warranty.
(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 YEA, such expenses may be recovered by YEA from Buyer, and Buyer shall indemnify YEA against claims for the same. Buyer is responsible for all taxes applicable or related to this transaction, including all sales, use and excise taxes.

7. RISK OF LOSS:
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 manufacturing plant or warehouse of YEA or its supplier. Buyer is responsible to obtain insurance coverage on all shipments of products supplied by YEA.

8. RETURNS/CANCELLATION CHARGES:
Buyer shall not return any product to YEA without the written consent of, and upon terms agreed to, by YEA. If Buyer refuses to accept delivery, or improperly revokes acceptance of product, Buyer shall be responsible for YEA's cancellation charges and expenses. Before returning products, a Return Merchandise Authorization ("R.M.A.") number must be obtained from YEA. 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, YEA will only accept for return and credit new, unused, current stock items, in the original packaging and undamaged. Buyer shall be responsible for all freight charges, import/export charges, duties, tariffs, taxes, insurance and risk of loss/damage regarding return shipment to YEA.

9. SECURITY INTEREST:
To secure any indebtedness due and owing from Buyer from time to time, Buyer hereby grants to YEA, and YEA hereby reserves, a continuing purchase money security interest in all Yaskawa-brand and other products heretofore or hereafter sold and delivered to Buyer by YEA, 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 YEA herein. Buyer shall cooperate with YEA, and hereby appoints YEA as its attorney-in-fact, to execute and file, on Buyer's behalf, any documents necessary to evidence and perfect YEA's security interest.

10. GOVERNING LAW, FORUM AND JURY WAIVER:
These Standard Terms and the relationship of the parties hereto shall be 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 YEA and/or the relationship of Buyer and YEA, 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 YEA and/or the relationship of Buyer and YEA. 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 YEA.

11. MISCELLANEOUS:
(a) Failure on the part of YEA to enforce any of its rights derived from this contract shall never be construed as a waiver of any of YEA'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 YEA trademark must be approved by YEA in writing.
(d) Buyer may not delegate its performance or assign its rights under this Agreement except upon the express written consent of YEA. In any case, these Standard Terms shall be binding upon the successors and legal representatives of Buyer.
(e) Buyer shall comply with all applicable laws and regulations regarding the use, import and export of the products sold hereunder. The products and services to be sold hereunder are not intended for use in any nuclear, chemical or weapons production or environmental damage. If Buyer uses the products or services for such or other impermissible purposes, it shall indemnify, hold harmless and defend YEA, all parent and affiliated companies of YEA, from and against all related claims and damages.
(f) All rights and remedies available to YEA under the Uniform Commercial Code and other applicable law are reserved to YEA as remedies in the event of Buyer's default.

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YASKAWA

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