YASKAWA

GA501

INDUSTRIAL AC MICRODRIVE
WITH EMBEDDED ETHERNET

IT'S PERSONAL

GA501 AC MICRODRIVE

ETHERNET-READY, OUT OF THE BOX

240 VAC, Single-Phase: 1/6 – 5 HP
240 VAC, Three-Phase: 1/6 – 30 HP
480 VAC, Three-Phase: 1/2 – 40 HP

EtherNet/IP™
PROFINET
Modbus TCP/IP
EtherCAT®
ASHRAE BACnet IP
MECHATROLINK

The GA501 AC microdrive is engineered to help you easily handle any industrial application. With **embedded dual-port Ethernet** and support for all major industrial Ethernet protocols, the GA501 eliminates extra hardware, reduces installation time, and simplifies system design.

EtherNet/IP™ is a trademark of ODVA, Inc.
BACnet is a trademark of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
EtherCAT is a trademark of Beckhoff Automation GmbH.
MECHATROLINK is a trademark of MECHATROLINK Members Association.
PROFIBUS is a trademark of PROFIBUS Nutzerorganisation e.V.

Offering intuitive interaction, world-class quality, and proven GA500 reliability, the GA501 is the drive you can count on for consistent, high-quality performance across your entire network.

STANDARD MULTI-PROTOCOL ETHERNET SUPPORT

- EtherNet/IP™
- PROFINET®
- Modbus TCP/IP
- EtherCAT®
- BACnet/IP®
- MECHATROLINK-4

TIME & COST SAVINGS

- Eliminates communication option cards entirely
- Reduces spare parts and inventory complexity
- Faster commissioning with fewer components
- No need to stock different drive variants for different networks
- Operates any motor on any network
- DriveWorksEZ® improves customization by eliminating a PLC and simplifying wiring
- Integrated braking transistor

EASY MACHINE DESIGN

- Wide power and voltage range
- Coated PCBs for use in harsh environments
- Speed search sync-up with free-wheeling motors at start
- Stall prevention and torque limit
- Meets global standards (UL, cUL, CE, TUV, RCM)
- Supports all major networks
- Reduced panel wiring and cabinet space

DriveWizard® and DriveWorksEZ® are registered trademarks of Yaskawa America, Inc.

EASY INSTALLATION & SYSTEM INTEGRATION

- Choose from six embedded Ethernet protocols for your controller with a simple on board DIP switch
- Reduce installation time with spring tension-type I/O wiring, and dual-port Ethernet connection points
- Embedded functional safety (STO: SIL3, PLe)
- Side-by-side mounting
- Bottom cable entries, cage clamp terminals
- Included DIN rail attachment up to 7.5 HP
- DriveWizard® Mobile app and PC software for easy and convenient setup
- Optional multi-line LCD operator display

EASY TO USE & MAINTAIN

- Built-in service life prediction for cooling fans and key components
- Simple parameter structure
- USB programming, even without main power, using DriveWizard Mobile or PC
- Access to main circuit w/o removing cover
- Use DriveWizard to analyze detailed drive behavior with high-speed scanning

Make your day easier, from panel design to commissioning, by trusting the GA501 from Yaskawa!

NETWORK INTEGRATION

Connect to your network in less than 60 seconds.

With embedded dual-port Ethernet, the GA501 is designed for modern industrial automation, supporting leading Ethernet protocols and flexible network topologies, including linear and Device Level Ring.
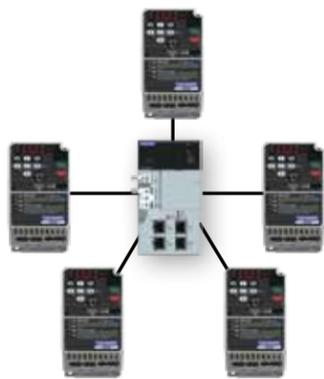
Simplify machine architectures, reduce wiring, and enable seamless PLC integration with a drive designed for today's connected factories.

CONFIGURATIONS

RING
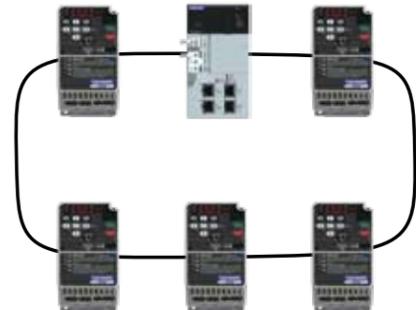
STAR

LINE

COST EFFECTIVE INTEGRATION

Ideal for PLC-centric systems and machines, the GA501 simplifies integration by enabling fast, deterministic control and real-time access to drive data.

PLC or Controller

PANEL PC

EtherNet/IP™   PROFINET®   Modbus TCP/IP   EtherCAT®   BACnet IP   MECHATROLINK

FLEXIBLE INSTALLATION SOLUTIONS

The flexible package design of the GA501 enables reliable operation across a variety of environmental conditions, whether the drive is in a control cabinet, on a wall, in a clean environment, or in a harsh one.

EMBEDDED DUAL-PORT ETHERNET

Embedded dual-port Ethernet simplifies wiring, minimizes configuration effort, and allows easy drive integration during initial installation and future system changes.

DIN RAIL MOUNTING

GA501 drives rated up to 7.5 HP are ready for DIN rail mounting and quick installation. The removable DIN rail attachment allows easy conversion to standard panel mounting when required.
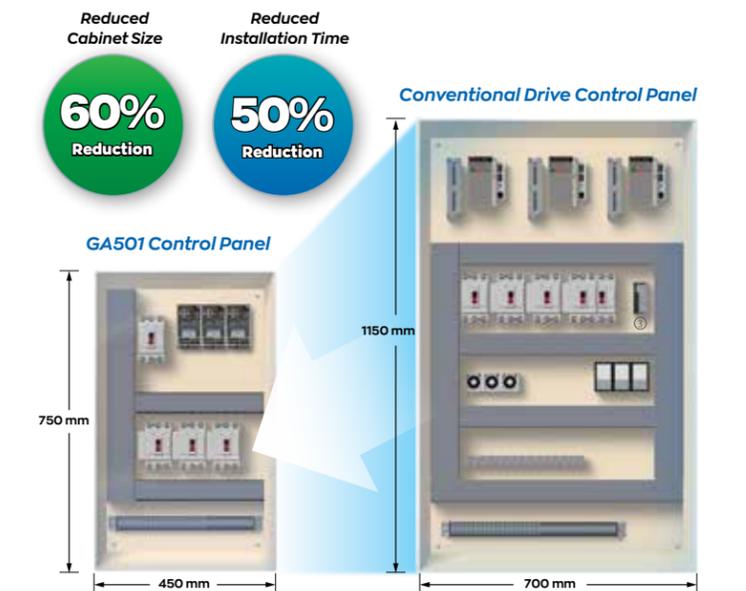
EASY EXTERNAL HEATSINK MOUNTING

With an optional ring kit, the GA501 makes it easy to mount the heatsink outside the cabinet, reducing cabinet size and cooling requirements.

REDUCED FOOTPRINT & INSTALL TIME

The GA501 can be mounted side-by-side with bottom entry wiring to reduce cabinet size and installation time

Reduced Cabinet Size
60% Reduction

Reduced Installation Time
50% Reduction

GA501 Control Panel
750 mm
450 mm

Conventional Drive Control Panel
1150 mm
700 mm

QUICK AND EASY

Whether you are installing, wiring, programming, or troubleshooting, GA501 simplifies the task.

NO POWER? NO PROBLEM!

Use DriveWizard Mobile to program the GA501 without any power supply connected, even while the drive is still in the box. Simply plug into one of your PC's USB ports or any USB On-The-Go device, start programming, and enjoy the ease of commissioning.

Display
Easy-to-read LED display.

Keypad
Multi-directional buttons to help you intuitively navigate through drive menus and parameters. Tactile feel of the buttons lets you know when you've pressed a button.

Parameter Backup / Copy
Removable keypad allows you to back up and copy parameters to other drives.

Embedded Dual-Port Ethernet
Ready for modern network topologies, such as linear and Device Level Ring (DLR), to reduce network wiring and complexity.

Power Range
• 240 VAC, Single-Phase: 1/6 – 5 HP
• 240 VAC, Three-Phase: 1/6 – 30 HP
• 480 VAC, Three-Phase: 1/2 – 40 HP

USB Port
Easily connect your PC or mobile device to program the drive with or without power.

LED Status Ring
You can determine the drive status with a quick glance at the LED status ring and know the GA501 is ready and operating.

Finger Safe Terminals
Easily access terminals to make the wiring process faster and easier. No need to remove the cover.

Simple Protocol Selection
Quickly select the required Ethernet protocol via an onboard DIP switch.
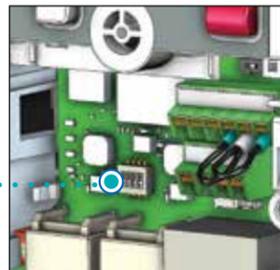
ONE FOR ALL

The GA501 precisely controls induction, permanent magnet, and synchronous reluctance motors providing versatility to run a variety of applications with just one drive.

Motor Control Benefits/Features:

INDUCTION MOTORS

INTERIOR PERMANENT MAGNET

SURFACE PERMANENT MAGNET

SYNCHRONOUS RELUCTANCE

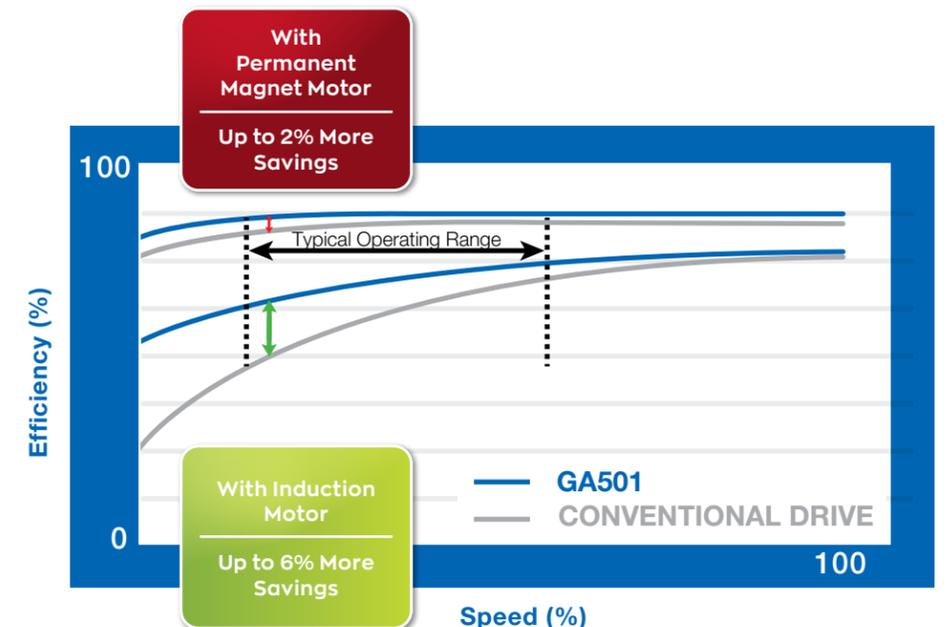### ONE DRIVE FOR VARIOUS APPLICATIONS

• 590 Hz output frequency (optional: up to 2000 Hz)
• Open loop, zero speed, and torque control of permanent magnet motors

ENERGY SAVINGS

• Automatic energy efficiency optimizer with GA501 energy saving functions

AUTOMATIC ENERGY EFFICIENCY OPTIMIZER

Energy usage is automatically optimized with the unique energy savings functions of the GA501. These functions minimize energy consumption through varying load and speed ranges, achieving power optimization for energy cost reduction. Maximize your energy usage by optimizing your motor torque-per-amp.
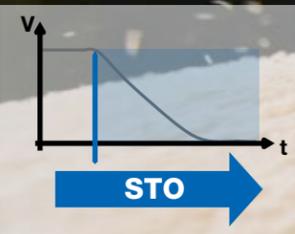
With Permanent Magnet Motor
Up to 2% More Savings

Typical Operating Range

With Induction Motor
Up to 6% More Savings

Efficiency (%)

100

0

GA501
CONVENTIONAL DRIVE

100

Speed (%)

PLAY IT SAFE

With the built-in dual channel STO (safe torque off, SIL3/PLe), the GA501 provides the right tools for easy machine integration of emergency stop functions, even when elevated levels of risk reduction are required.

TÜV Certified

SIMPLE SETUP AND MAINTENANCE

Reduce setup time to minutes with the setup wizard. Even without any knowledge of drive parameters, the step-by-step wizard will guide you and get you up and running.

Enhance your experience with the optional LCD keypad.

OPTIONAL REMOTE-MOUNTED LCD KEYPAD

Advanced keypad navigation:

- High-resolution display
- Automatic backup function
- Copy function (4 parameter sets)
- Real-time clock
- Micro SD storage for data logging (up to 32 GB)
- Optional Bluetooth® version

Bluetooth® is a registered trademark of Bluetooth SIG, Inc. USA.

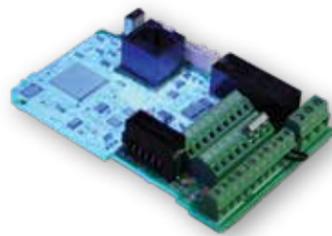*Simple Setup Wizards available with optional LCD keypad*

Designed for 10 years of maintenance-free operation, the GA501 is built tough to withstand harsh and demanding conditions.

WIDE AMBIENT TEMPERATURE RANGE

GA501 drives can be safely operated in ambient temperatures ranging from -10°C up to 60°C. In environments with conditions up to 50°C, no derating is necessary.

COATED CIRCUIT BOARD PROTECTION

Coated PCBs as standard protect the electronics from dust or humidity, while ensuring reliable operation even in harsh environments (IEC 60723-3-3, 3C2, 3S2).

TOOL-FREE FAN REPLACEMENT

- Improved location for convenient access from the top of the drive
- No tools required for removal and replacement
- Integrated 24 VDC fan power allows simple, plug-in fan replacement with no field wiring.

RUGGED
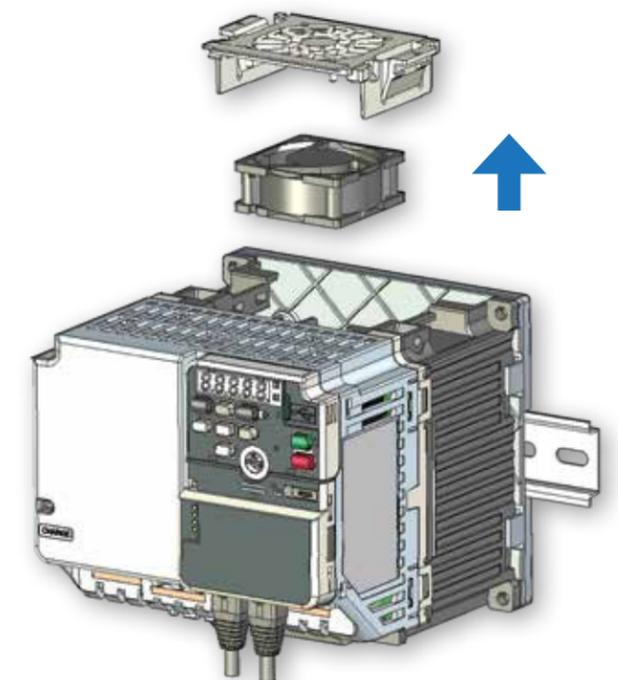
SOFTWARE TOOLS

If you are looking to keep a backup copy of your GA501's parameter set or need to customize the drive's functionality to match your application, the GA501 has the software tools to help.

DRIVEWIZARD® INDUSTRIAL

- Manage your parameters online or offline
- Create configurations offline, then later connect and download them to the GA501
- Connect via USB or optional Bluetooth and interface with the GA501, even without main power
- Monitor using a dashboard of dynamic variables
- Create reports for exporting and emailing

DRIVEWORKSEZ®

- Create simple, custom logic and eliminate an external controller
- Drag-n-drop graphical interface
- 400+ function blocks
- Up to 100 connections
- Offline simulation mode for testing without the risk of an application malfunction
- Protection of intellectual property with locked projects
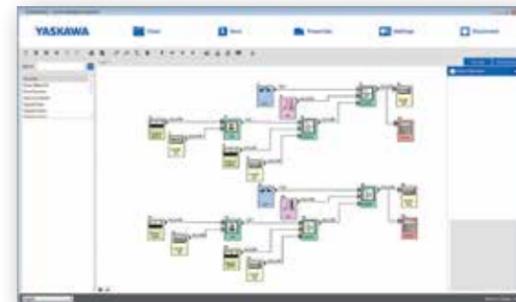
PARAMETER COMPATIBILITY

DriveWizard® makes it simple to transition from previous generation drives to the GA501.


Transition to GA501!

MOBILE COMMISSIONING MADE SIMPLE

DRIVEWIZARD® MOBILE APP

The DriveWizard® Mobile app turns your smartphone or tablet into an interface for your GA501 drive. All information for parameter setup and troubleshooting are in your pocket – anytime, anywhere. DriveWizard Mobile also provides:

- Intuitive parameter editing with help and search function
- Custom parameter and monitor lists
- Parameter backup/verify with or without main power applied to the drive
- Yaskawa Drive Cloud™ Service
- Export to DriveWizard® Industrial

Parameters → Parameters
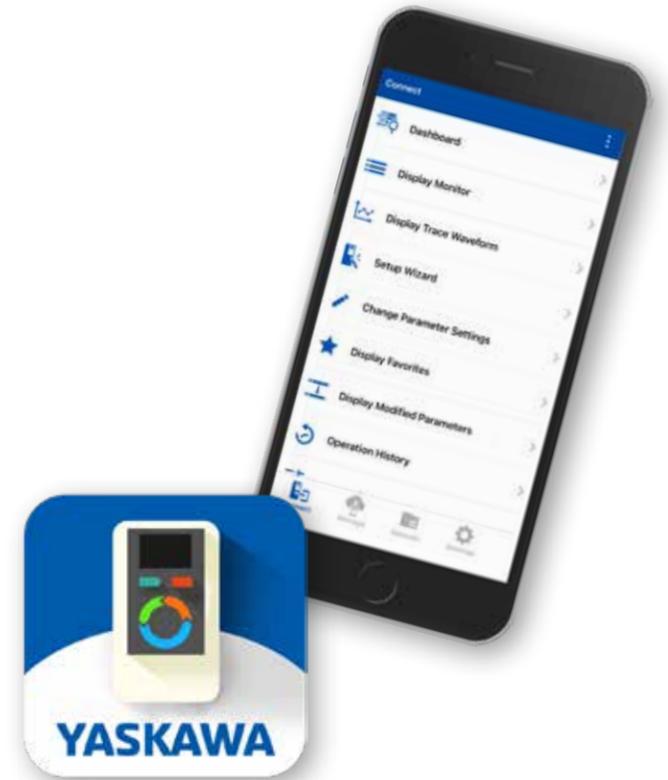
YASKAWA DRIVE CLOUD™ SERVICE

- Complimentary personal Drive Cloud account
- Technicians can easily capture or restore drive settings
- Accessible anywhere

REDUCE DIAGNOSTIC REPAIR & DOWNTIME

The Yaskawa Drive Cloud service provides an easy and safe way to keep track of all of your drive data.

THE DRIVE BUILT FOR THE
SMART FACTORY

Designed for today's connected factories, the GA501 integrates seamlessly into smart manufacturing environments.

Embedded Ethernet connectivity supports real-time monitoring, predictive maintenance strategies, and secure data exchange with PLCs, SCADA systems, and plant-level networks, helping transform raw data into actionable insight.

Ready for the SMART FACTORY

Edwards R. Deming Medal for Quality

PREDICTIVE MAINTENANCE

Real-time access to drive status, alarms, and performance data helps identify issues early and reduce unplanned downtime.

SCADA VISIBILITY

Seamlessly integrate into SCADA and higher level systems for centralized monitoring, diagnostics, and reporting.

SAFETY AND RELIABILITY

Proven Yaskawa reliability combined with embedded safety functions to support safe, dependable operation in connected systems.

LOWEST TOTAL COST OF OWNERSHIP

Designed for long-term value, the GA501 lowers total cost of ownership by reducing system complexity, minimizing downtime, and extending service life.
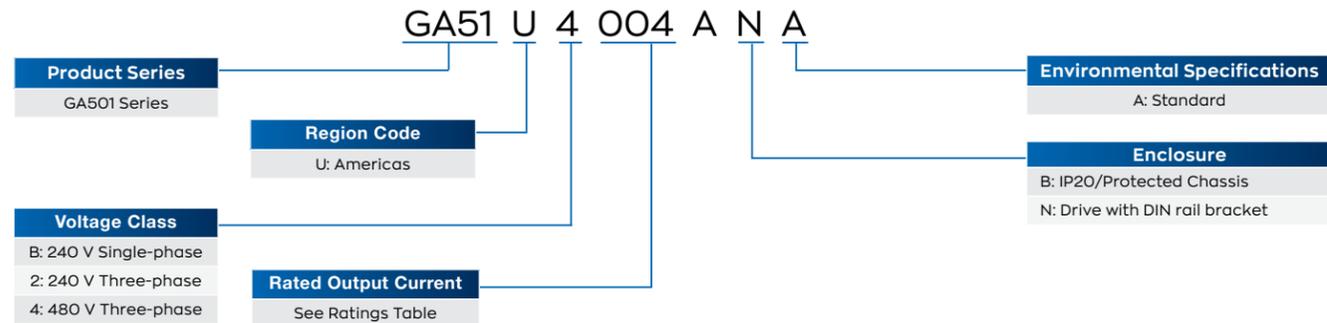
BEST-IN-CLASS QUALITY

Built on Yaskawa's proven GA500 platform, the GA501 delivers best-in-class quality, rigorous testing, and dependable performance you can trust in critical industrial environments.

RATINGS & SPECIFICATIONS

Catalog Code Designation

GA51 U 4 004 A N A

Product Series
GA501 Series

Region Code
U: Americas

Voltage Class
B: 240 V Single-phase
2: 240 V Three-phase
4: 480 V Three-phase

Rated Output Current
See Ratings Table

Environmental Specifications
A: Standard

Enclosure
B: IP20/Protected Chassis
N: Drive with DIN rail bracket

RATINGS

Power Output (HP)		240 V Models										480 V Models			
		Single-Phase				Three-Phase					Three-Phase				
Normal Duty (ND)	Heavy Duty (HD)	Catalog Code GA51U □□□□□□	Output Amps		Frame	Catalog Code GA51U □□□□□□	Output Amps		Frame		Catalog Code GA51U □□□□□□□	Output Amps		Frame
			ND	HD			ND	HD				ND	HD	
1/6	1/6	B001ANA	1.2	0.8	1.1	2001ANA	1.2	0.8	1.1					
1/4	1/4	B002ANA	1.9	1.6	1.1	2002ANA	1.9	1.6	1.1					
1/2	1/2										4001ANA	1.2	1.2	2.1
3/4	1/2	B004ANA	3.5	3	1.3	2004ANA	3.5	3	1.2					
1	3/4										4002ANA	2.1	1.8	2.2
1.5	1	B006ANA	6	5	2.4	2006ANA	6	5	1.4					
2	2										4004ANA	4.1	3.4	2.4
3	2	B010ANA	9.6	8	2.5	2010ANA	9.6	8	2.3					
3	3	B012ANA	12.2	11	3.2						4005ANA	5.4	4.8	2.5
4	3					2012ANA	12.2	11	2.4		4007ANA	7.1	5.6	2.5
5	4										4009ANA	8.9	7.3	2.5
N/A	5	B018ANA	N/A	17.6	4									
7.5	5					2021ANA	21	17.6	3.1		4012ANA	11.9	9.2	3.1
10	7.5					2030ABA	30	25	5					
10	10										4018ABA	17.5	14.8	5
15	10					2042ABA	42	33	5		4023ABA	23.4	18	5
20	15					2056ABA	56	47	6		4031ABA	31	24	6
25	20					2070ABA	70	60	7		4038ABA	38	31	6
30	25					2082ABA	82	75	7		4044ABA	44	39	8
40	30										4060ABA	60	45	8

SPECIFICATIONS

Operating Environment	
Ambient Temperature	-10 to +50°C (IP20/Protected Chassis), up to +60°C with derating
Storage Temperature	-20 to +70°C (short-term temperature during transportation)
Humidity	95% RH or less (non-condensing)
Altitude	Up to 1000 m without derating, up to 4000 m with derating
Vibration	Without DIN rail attachment: 10 to 20 Hz: 9.8 m/s² ; 20 to 55 Hz: 5.9 m/s²
	With DIN rail attachment: 10 to 20 Hz: 3.9 m/s² ; 20 to 55 Hz: 2 m/s²
Protection Design	IP20/Protected Chassis (Standard)
Mounting	Side-by-side, DIN rail up to 7.5 HP, external heatsink
Conformal Coating (PCBs)	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
Standards	CE, UL, cUL, RCM, EAC, RoHS
Functional Safety	IEC/EN 61800-5-2: STO, IEC/EN 61508: SIL3, EN ISO 13849-1: PLe

Power Ratings	
Overload Capacity	110%/1 min. (Normal Duty) or 150%/1 min. (Heavy Duty)
Rated Voltage	200 to 240 V, -15 to +10%
	380 to 480 V, -15 to +10%
Capacity Range	240 V, Single-phase: 1/6 to 5 HP (0.1 to 3.7 kW)
	240 V, Three-Phase: 1/6 to 30 HP (0.1 to 22 kW)
	480 V, Three-Phase: 1/2 to 40 HP (0.4 to 30 kW)
Input Frequency	50/60 Hz, +/-5%
Output Voltage Accuracy	+/-5%
Output Frequency	0 to 590 Hz (special software for up to 1000 Hz)
Control Method	V/f, Open Loop (IM/PM), Advanced Open Loop (PM), EZ Open Loop Vector
Motor Control	Induction Motor (IM), Interior or Surface Permanent Magnet Motor (IPM/SPM), Synchronous Reluctance Motor (SynRM)
Standard I/O	(2) Multi-function digital inputs (24 VDC)
	(1) Multi-function analog input (0 to -10 VDC)
	(2) Safe Torque Off (STO) inputs
	(1) Relay output (form C)
Terminal Type	I/O: Spring tension type; Main circuit: Cage clamp screw-type
Communications	Dual Port: EtherNet/IP™, PROFINET®, Modbus TCP/IP, EtherCAT® BACnet/IP®, MECHATROLINK-4
Additional Functions	Integrated PID controller with sleep function, automatic load distribution for multiple axes (droop control), automatic main power loss ride through, speed search function for smooth start of coasting motors, braking with over-magnetization for fast stop without braking resistors, energy-saving function, automatic restart after failure, overvoltage suppression, virtual input/output custom configuration, application presets, vibration suppression

Options	
Additional Options	Bluetooth keypad, LCD keypad, Remote keypad mounting attachments, Attachment for external heatsink, External EMC filters, AC reactors, DC chokes, braking resistors

APPROXIMATE DIMENSIONS

Frame Size	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	3.1	3.2	4	5	6	7	8
Height	5.04 (128)											10.24 (260)	11.81 (300)	13.78 (350)		
Width	2.68 (68)				4.27 (108)					5.53 (140)		6.69 (170)	5.51 (140)	7.09 (180)	8.66 (220)	7.48 (190)
Depth	3.56 (90.5)	4.82 (122.5)	5.22 (132.5)	5.61 (142.5)	3.76 (95.5)	4.47 (113.5)	5.65 (143.5)	5.98 (152)	6.63 (168.5)	6.20 (157.5)	6.99 (177.5)	7.56 (192)	5.75 (146)	5.87 (149)	7.60 (193)	8.27 (210)

Dimensions shown in inches (mm). Information on this page represents IP20 enclosures.

YASKAWA.COM

Yaskawa is the leading global manufacturer of low and medium voltage variable frequency drives, servo systems, machine controllers and industrial robots. Our standard products, as well as tailor-made solutions, are well known and have a high reputation for outstanding quality and reliability.

YASKAWA