

# YASKAWA

# GA501

INDUSTRIAL AC MICRODRIVE  
WITH EMBEDDED ETHERNET

IT'S PERSONAL



# 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



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.

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

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.

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

## 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

EFFORTLESS

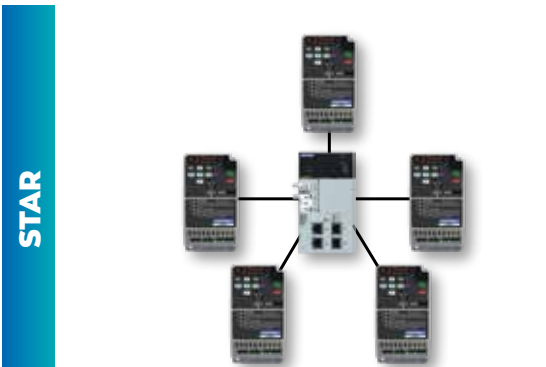
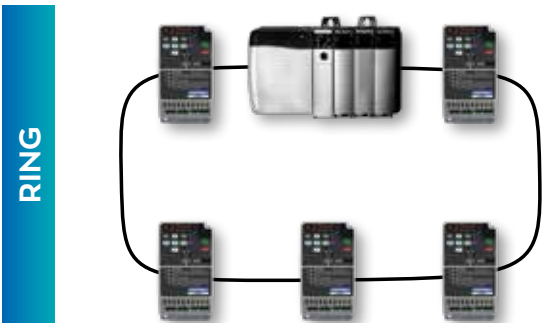
# NETWORK INTEGRATION

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



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



# 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.



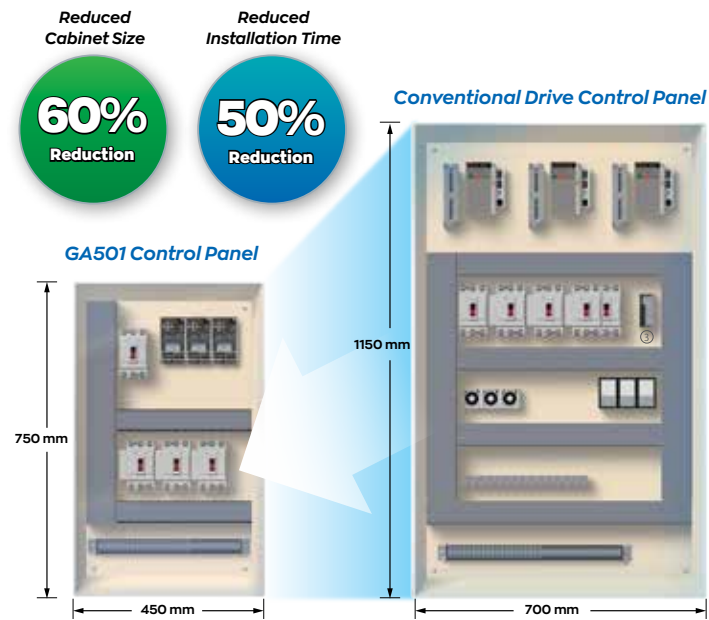
EASY EXTERNAL HEATSINK MOUNTING

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



# 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.

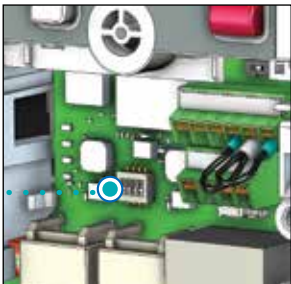
**Power Range**  
• 240 VAC, Single-Phase: 1/6 – 5 HP  
• 240 VAC, Three-Phase: 1/6 – 30 HP  
• 480 VAC, Three-Phase: 1/2 – 40 HP



**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

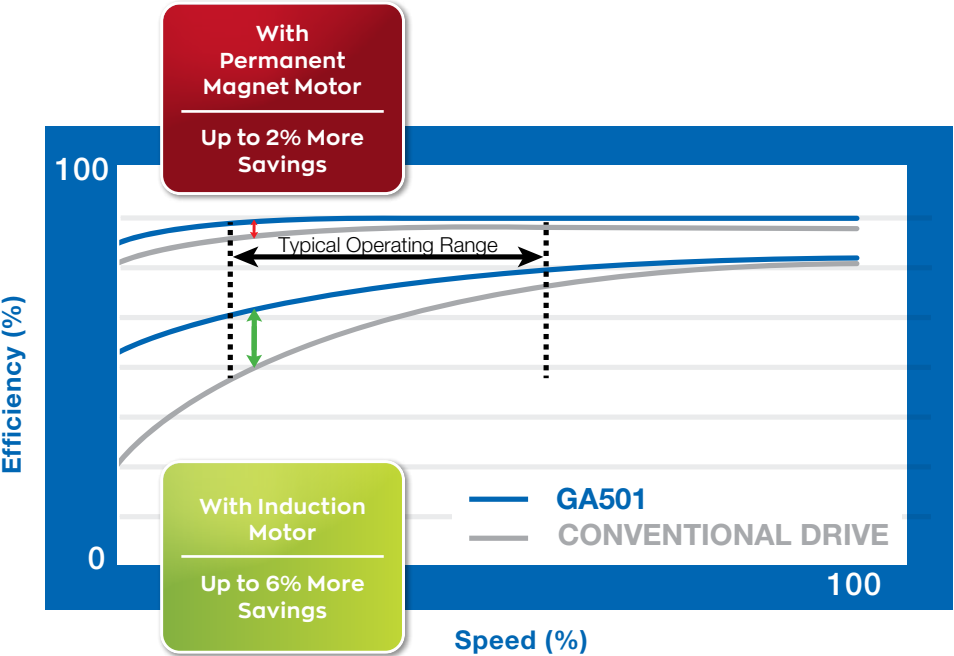
- 590 Hz output frequency (optional: up to 2000 Hz)
- Open loop, zero speed, and torque control of permanent magnet motors

## 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.



INTEGRATED FUNCTIONAL SAFETY

# PLAY IT SAFE



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).



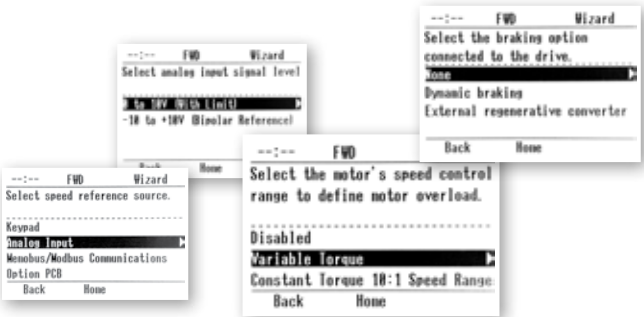
# RUGGED

## 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.



Simple Setup Wizards available with optional LCD keypad

**OPTIONAL REMOTE-MOUNTED LCD KEYPAD**

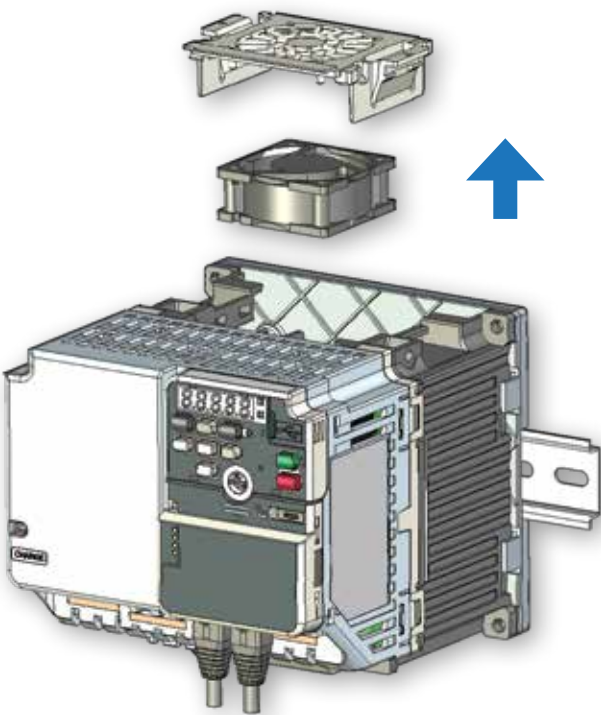
Advanced keypad navigation:

- 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.

**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.



POWERFUL

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.

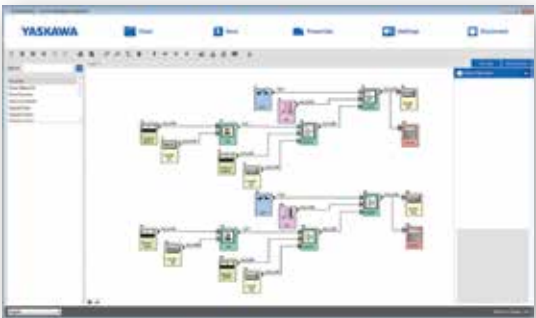
DRIVEWIZARD® INDUSTRIAL

- 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



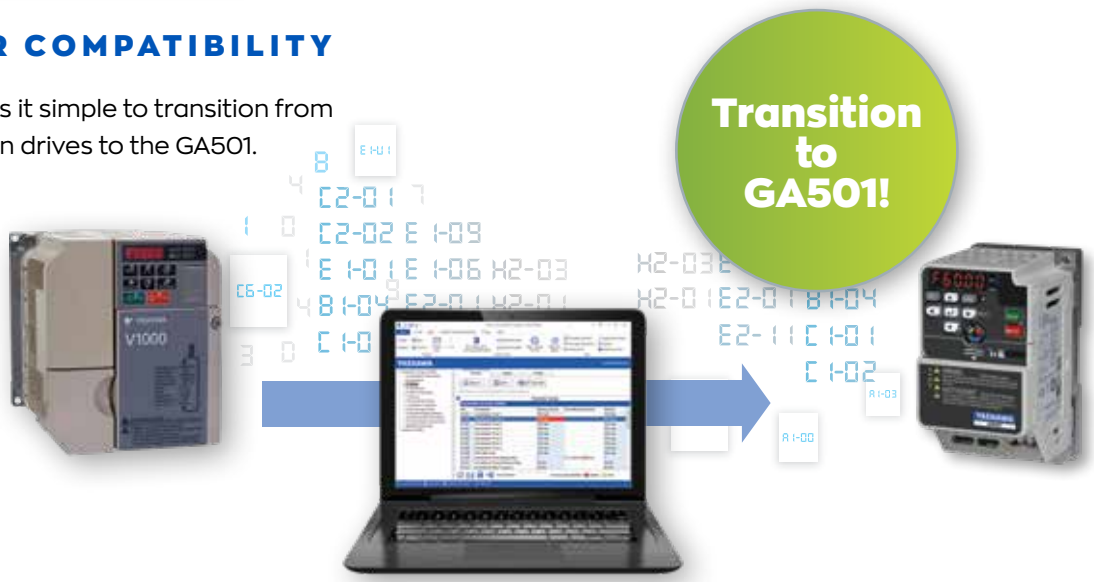
DRIVEWORKSEZ®

- 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.



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



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.

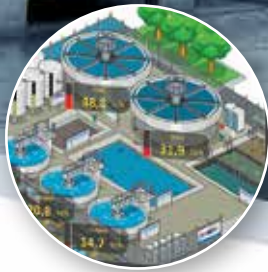
Embedded Ethernet connectivity supports real-time monitoring, predictive maintenance strategies, and secure data exchange with PLCs, SCADA systems, and plant-level networks, helping transform raw data into actionable insight.

Ready for the SMART FACTORY



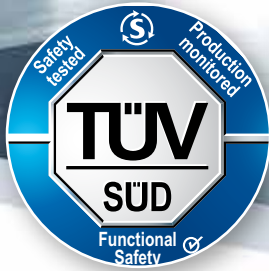
## PREDICTIVE MAINTENANCE

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



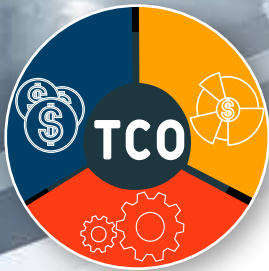
## SCADA VISIBILITY

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.



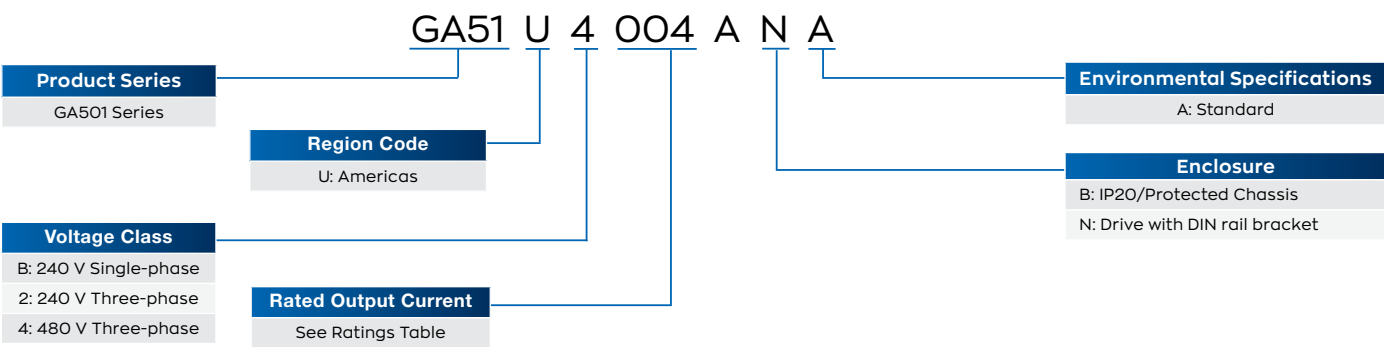
Edwards R. Deming Medal for Quality

## 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



## 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     |

## 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.

## 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<br>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: PL <sub>e</sub>                                                                                                                                                                                                                                                                                                                                                                                        |
| 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                                                                                                                                                                                                                                                                                               |

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

**Yaskawa America, Inc.** | Drives & Motion Division

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