

GA500 vs. V1000

Product Comparison



Power Comparison

Attribute	GA500	V1000
240 V, Single-Phase	≤ 5 HP	≤ 5 HP
240 V, Three-Phase	≤ 30 HP	≤ 25 HP
480 V, Three-Phase	≤ 40 HP	≤ 25 HP
Integrated Brake Transistor	☑	☑
Maximum Output Frequency	590 Hz ^{*1}	400 Hz
Maximum Altitude, with Derate	4000 m	3000 m
60 Second Overload (ND/HD)	110% / 150%	120% / 150%
Scan Time	1 ms	2 ms
Communication Update Rate	1 ms	2 ms

*1: AOLV-PM maximum frequency 270 Hz

Ease of Use Comparison

Attribute	GA500	V1000
Bluetooth®	Option	N/A
DriveWizard Mobile	☑	N/A
Cloud Service/Storage	☑	N/A
Dedicated/Color Coded Keys	☑	N/A
Easy Slide Cover Lock	☑	N/A
Embedded Setup Wizard	☑	N/A
Optional LCD Keypad	Integrated or Panel	Panel Only
Remote Mount Keypad (Std)	☑	N/A
LED Status Ring	☑	N/A
No Power Programming	☑	N/A
No Power Firmware Upgrades	☑	N/A
QR Code	☑	N/A
Real-Time Clock	Option	N/A
Data Logging	Option	N/A
DriveWorksEZ Active Status LED	☑	N/A
DriveWorksEZ Connections	100	50
DriveWorksEZ Number of Blocks	400+	204

☑: Standard

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

Physical Comparison

Attribute	GA500	V1000
Size (Footprint)	Same	-
Type 1 Kit	Optional	☑
Maximum Temp w/Derate	60°C	50°C
Maximum Storage Temp	70°C	60°C
Finless	Future	☑
Type 4X	Future	☑
Keyhole Mounting	≥ 10 HP	N/A
Side-by-Side Mounting	0 mm	2 mm
DIN Rail Mountable	Kit	Kit
Euro-Style Power Terminals	☑	N/A
Detachable Terminal Board	N/A	☑
Conformal Coating	3C2, 3S2	☑
Temperature Controlled Fan	☑	N/A
Audible Noise	≤ 67 dBA	N/A

Flexibility Comparison

Attribute	GA500	V1000
OLV for Induction Motors	☑	☑
Enhanced PM Motor Control	☑	N/A
PM Motor Type	IPM/SPM	SPM
Synchronous Reluctance Motor Control	☑	N/A
Safe Torque Off	SIL3, PL _e	SIL2, PL _d
24 VDC Power Output	☑	N/A
24 VDC External Power Input	☑	Option
DC / Common Bus	☑	☑
Recycling and Harmful Materials	RoHS 2.0	RoHS

GA500 Hardware Enhancements

Power Enhancements

- Expanded motor horsepower range (240 V, 3-PH: 30HP, 480 V, 3-PH: 40 HP)
- Increased output current ratings on select models
- Dynamic braking transistor on all models
- Simple input power terminal connections for 1-phase drives (L & N)
- DC input power rated
- Extended maximum altitude (4000 m, with derate)

Physical Enhancements

- Improved keypad (dedicated direction buttons, color coded)
- Removable and panel mountable keypad
- Store parameters into standard removable keypad
- Conformal coated (IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles))
- Temperature controlled fans
- 50°C standard ambient rating (60°C with derate) - IP20
- Zero clearance side-by-side mounting (40°C ambient)
- Euro-style power terminals for bare wire or straight wiring
- Access main power terminals without removing covers
- Bi-Polar analog input with improved resolution (0-10 VDC & +/- 10 VDC: 1/4096, 4-20 mA: 1/2048)
- Removable control board
- Two isolated photocoupler outputs (P1/C1, P2/C2)
- Quick install DIN rail mounting kit

GA500 Programming Enhancements

Control Enhancements

- Extended speed range (590 Hz, 270 Hz for AOLV/PM)
- Control any motor type: Induction, Permanent Magnet, SynRel
- Interior permanent magnet (IPM) motor control (AOLV/PM)
- Rotational/stationary PM Auto Tuning
- Improved PM motor pole detection
- Motor pole Increase (48 --> 120)
- Automatic Energy Savings control for PM motors
- Gateway mode (master-slave 5 drive network)
- Digital input multi-tasking (one input performs two functions)
- Logic operation for digital outputs
- New Modbus function codes read/write from/to multiple consecutive or non-consecutive holding registers
- Virtual digital inputs & analog input through Modbus (also accessible via network option cards)
- Virtual I/O: trigger input functions based on output function w/o wiring
- Adjustable digital input deadband time
- PID feedback over the network with feedback loss detection
- PID feedback using drive monitor with feedback loss detection
- Digital input PID setpoints based on feedback units
- Induction motor test mode selection for non-rotational auto tuning

Optional Keypad Enhancements

- Menu driven programming
- Startup wizards
- Custom monitors
- Data logging
- 32 character parameter descriptions
- Bluetooth communications via DriveWizard Mobile app
- Cloud Service (Yaskawa Drive Cloud) for product registration and parameter storage

Ease of Use Enhancements

- LED Status Ring for clear drive operational status
- No power programming and firmware upgrade
- Easy sliding front cover lock
- QR code for fast and easy Yaskawa Drive Cloud registration
- Updated inbox media: mounting templates and simple startup instructions
- Short Circuit Current Rating (SCCR) stated on nameplate
- Identical footprint and mounting hole locations as V1000
- Common external heatsink option (V1000 option can be used on GA500, Frame V8 is new)
- Uses the same network communication option cards as V1000

Flexibility Enhancements

- USB PC interface port
- Integrated dual Functional Safety digital inputs
- Improved Functional Safety rating (SIL3, Ple)
- Functional Safety Monitor via programmable digital output
- 24VDC customer supplied input terminal for power loss ride-thru
- Integrated 24 VDC control power for customer use (150 mA, max)
- Simplified integrated Modbus RTU control (D+/D-)
- Optional integrated standard/Bluetooth keypad
- Blank keypad option

Ease of Use Enhancements

- Simplified Advanced Access Level menu for easier programming (over 70 parameters moved out of advanced access level)
- Expert Access Level for power users
- Language support increased 7 --> 9 (optional LCD keypad)
- 12 additional parameters changeable while running, including L7 torque limits, C1-19 fast stop time, slip comp time, torque comp time
- Improved speed search (lower current, quieter operation)
- Momentary Power Loss Ride Thru - KEB now included (full featured with adjustable DC on-level)
- Stall prevention during accel new mode: current limit mode
- Stall prevention during run new mode: intelligent mode
- Dedicated PID setpoint command monitor
- PID EZ sleep mode
- Customizable automatic fault reset feature (oLx, UV1, OV, OH, GF)

Flexibility Enhancements

- Accept communication parameter changes without power cycle
- Analog output power level (adjust 100% power level of analog output)
- Adjustable speed agree output status during baseblock
- Improved ASR tuning adjustments
- Input Timer function setting range expanded (300.0 --> 3000.0)
- PID Accel/Decel time changeable while running
- PID Accel/Decel time range expanded (255 --> 6000.0)
- PID Setpoint B5-19 can now be changed while running
- Number of run commands monitoring expanded to 8 digits

PC Tool Updates

- Expanded DriveWorksEZ connections and function blocks
- DriveWorks EZ monitors changeable while running
- DriveWizard Trace Recorder