

YASKAWA

GA500 Smart & Compact

The World's Smallest Class, Top Performance Drive
For HVAC, Refrigeration & Water Applications



Capable, Reliable & Sustainable

Drives controlling comfort throughout a facility presents unique challenges. Make your complicated day simple by using Yaskawa variable frequency drives for reliable, consistent performance. Whether you are looking at a new project or a retrofit, consider Yaskawa drives. Our drives are designed specifically for your HVAC applications and deliver simplicity, efficiency, at all loads to meet your specific needs.



Making Your Day Easier

The World's Smallest Class, Top Performance Drive

With the customer's interest always in mind, Yaskawa Electric Corporation leads the industry in developing drives that meet demand with uncompromising quality.

Based on the concepts of versatility, ease of use, and stability, the GA500 new drive series was created to be the smallest in its class, provide innovative permanent magnet motor control and ensure continual operation of customer machinery and equipment.

Backed by leading performance in the compact model class, the GA500 can help customer machinery and equipment achieve unprecedented evolution.

Innovative PM Motor Control for EC Fans

Continuous Operation of Machinery and Equipment enabled by Predict Potential Failures

Improve Efficiency of Production Management with the Introduction of IoT Using Sensing Technology



Program Without Power

GA500 can be programmed 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.



Optional LCD Keypad:

Additional Functionality

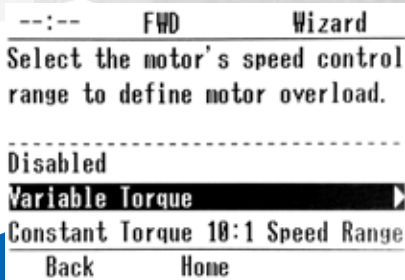
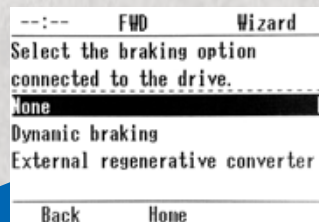
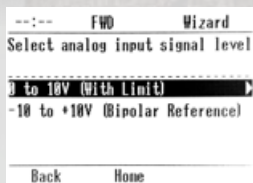
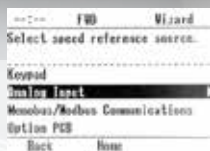
GA500 drives can be programmed and operated with an external high-resolution graphical keypad. Support for 13 languages, a Setup Wizard and the intuitive full text menu structure simplify the drive set up and save valuable time.

- Copy function for 4 sets of parameters
- Data logging on Micro-SD card
- Real-time clock
- Available with Bluetooth for connecting a mobile device
- Automatic backup function
- Standard RJ45 cable connection



Setup Wizard

The Setup Wizard reduces the setup time to a couple of minutes. It guides through the basic setup with simple questions not requiring any knowledge about drive parameters, thus saving valuable time.



Continuous Operation of HVAC Equipment

Yaskawa drives contribute to the stable operation and improvement of operating rates with a function to predict potential failures by detecting the deterioration of HVAC equipment, as well as a new function that extends service life.

Predict Potential Failures of Machinery Using Drives

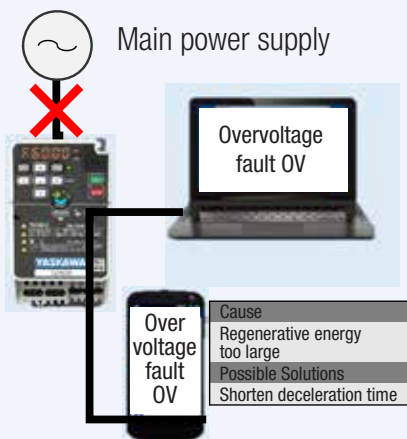
The GA500 helps users build machinery and production lines for continuous operation. The drive detects and informs users about unusual operations in machinery and equipment. This needs development with DWEZ and will take time.

In case the machine fails, it requires minimum time to recover the drive from failure and analyze the cause for recurrence prevention.

Step 1

Check the fault

Check the fault with the main power supply lost



Step 2

Recovery

Easily replace parts and parameters

Parameters are automatically backed up.



Step 3

Cause analysis

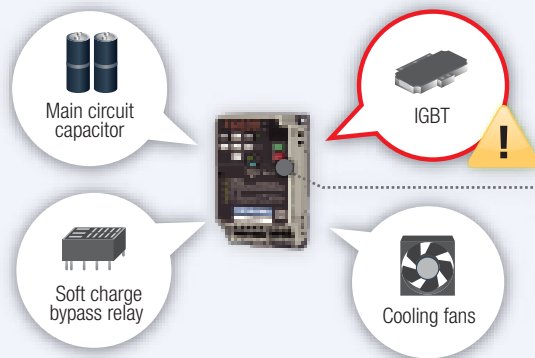
Obtain the data before and after the fault, using data logs! Waveforms are generated to allow immediate cause analysis

Data logging with Micro-SD card helps to analyze the fault



Predict Drive Service Life

The GA500 monitors deterioration of built-in, limited lifetime service parts in real time and notifies users about replacement timing.



Limited lifetime service parts	Replacement
Cooling fans	User
Main circuit capacitor	Parts replacement (Support by Yaskawa sales representatives)
Soft charge bypass relay	
IGBT	Drive replacement

Predicts deterioration of essential parts of drives!



Chiller Compressor*

- Liquid return detection, etc.



Fan*

- Filter clogging
- Wing damage
- Loose pulley belt



Pump*

- Motor bearings
- Dry run

* All protection features are developed using DWEZ special software

Longer Motor Service Life

The GA500 prevents the phenomenon of reduction in the magnetic force (irreversible demagnetization), which requires replacement with a new PM motor, and helps reduce downtime.



Prevent Demagnetization of PM Motor

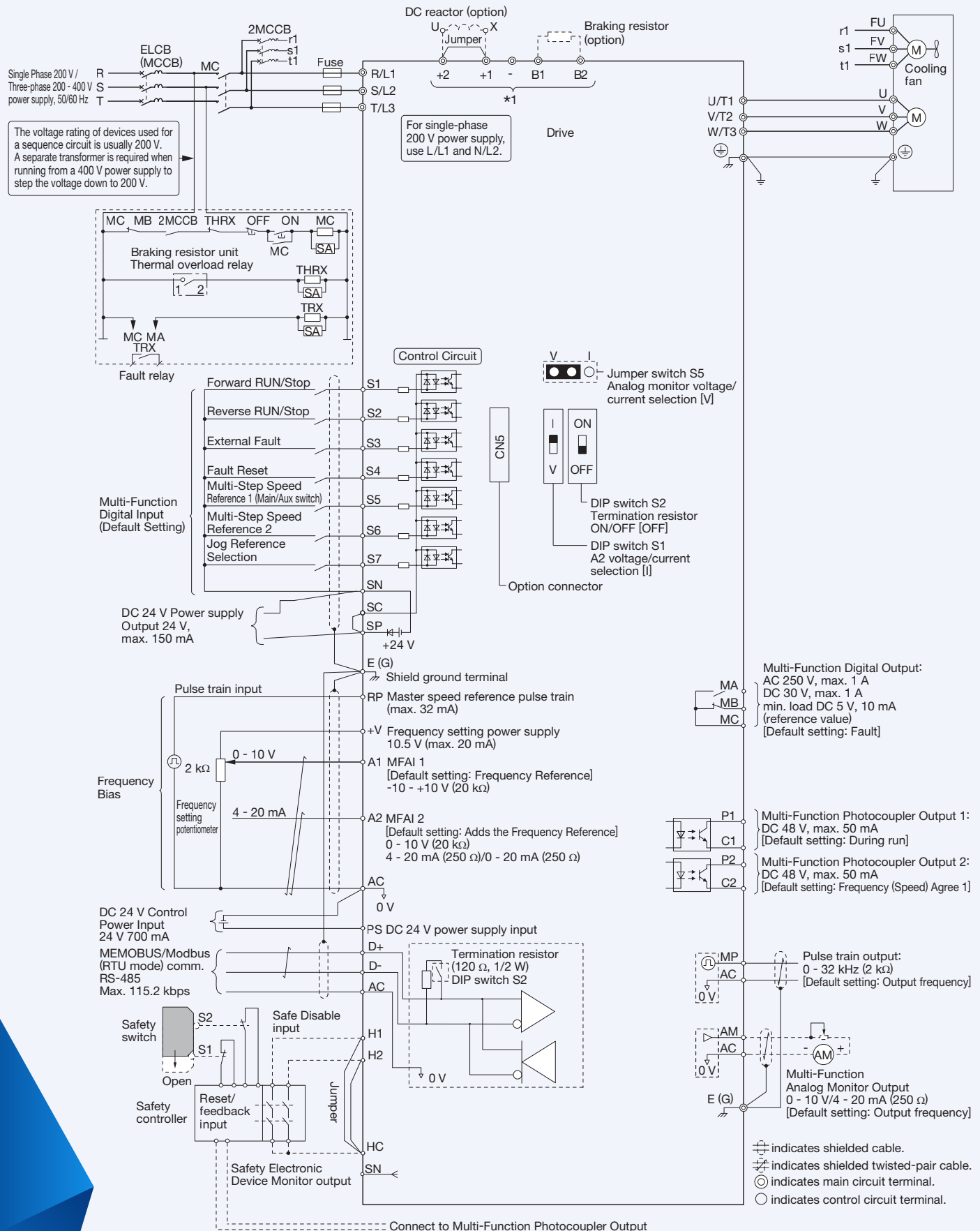
400 V Class

Catalog Code GA 50 A			4001	4002	4004	4005	4007	4009	4012	4018	4023	4031	4038	4044	4060	
Max. Applicable Motor Capacity kW		ND	0.4	0.75	1.5	2.2	3	3.7	5.5	7.5	11	15	18.5	22.0	30.0	
Input	Rated Input Current A	ND	1.2	2.1	4.3	5.9	8.1	9.4	14	20	24	38	44	59.7	80.7	
Output	Rated Output Current A	ND	1.2	2.1	4.1	5.4	7.1	8.9	11.9	17.5	23.4	31	38	44	60	
	Dimensions [mm]	H	128	128	128	128	128	128	128	260	260	300	300	350	350	
		W	108	108	108	108	108	108	108	140	140	140	180	180	190	190
		D	81	99	137.5	154	154	154	143	140	140	140	143	143	204	204
	Weight [kg]			0.8	0.9	1.5	1.5	1.5	1.5	2	3	3.2	4.6	4.8	6.5	6.5

Common Specifications

Input Supply	
Supply Voltage	380VAC - 480 VAC (-15% to 10%)
Supply Frequency	50Hz / 60Hz (±5%)
Displacement Power Factor cos (φ)	(>0.98)
Output Data	
Output Voltage	0-100% of Input Supply Voltage
Acc/Decc Time	0-6000 sec.
Max. Output Frequency	590Hz (Depend on Control method Selection)
Digital Input	
Programmable Digital Inputs	7
Logic	PNP / NPN / External VOE
Voltage Level	0-24 VDC
Analogue Input	
Analogue Inputs	2
Modes	Voltage or Current
Voltage Level	0-10 VDC (scalable)
Current Level	0/4 to 20 mA (scalable)
Analogue Output	
Programmable Analogue Output	1
Modes	Voltage (0-10VDC) or Current (4-20mA)
Relay Output	
Programmable Relay Outputs	3
Voltage Level	1 (250 VAC/30 VDC, 1A), 2 (48 VDC, 50mA)
Fieldbus Communication	
Built-In: MODBUS-RTU	Optional: Ethercat, Canopen, Profibus
Feature	Benefit
Modular Product Concept with a Wide Range of Options.	Low Initial Investment - Maximum Flexibility and Easy Upgrade Option
I/O Control via Serial Communication	Reduced Wiring Costs
Proven HVAC Protocols for BMS Connectivity	MODBUS-RTU and Other Standard Communication Protocols
Brake Chopper	Allows Dissipation of Regenerative Voltage Through Resistors.
Energy Meter	Built in KWH Meter
Predict Potential Machine Failure	Built in AHU Fan Belt Break Detection, Filter Clogging, Abnormal Vibration etc.
Energy Saving	
Automatic Energy Optimizer Function	Saves 5-15% energy
Advanced Energy Monitoring	Overview on Energy Consumption
Energy Saving Functions Priority Selection, Sleep Mode etc.	Saves energy
Solid Hardware	
Max ambient temp 50°C without derating (up to 60°C with deration)	No External Cooling or Over Size Necessary.
Conformal Coating and ROHS compliant	Problem-free Operation in Harsh Environments.
Robust Enclosure	Maintenance-Free
User Friendly	
Alpha numeric LCD Display with Setup Wizard and Auto Parameter Back Up	Reduces Setup Time and Ensures Fast and Easy Replacement of VFD
Mini USB-B Plug and Play Connection	Easy to Use PC Software Tools
Program without Main Power	Easy Programming Without Main Power Using Mobile or Laptop
Product Management with YASKAWA Drive Cloud	Access parameters from anywhere
Optional DC Reactor and EMC Filters	
DC Link Harmonic Filters	Meets EN61000-3-2
EMC Filters	Meets EN61800-3 for First Environment.

Standard Connection Diagram



For Today and Tomorrow

- Built-in EMC Filter for First Environment reduced RF emissions
- Conformal coating resists contamination
- RoHS-compliant for environmental friendliness



Versatile Building Automation

- Side-by-side mounting
- -10 to +60°C ambient operation
- Automatic energy efficiency optimizer
- Induction, permanent magnet, and synchronous reluctance motors



Network Flexibility

- Compatible with Building Automation Protocols



SUSTAINABLE

Globally Certified
Building-Specific
Design RoHS2-Compliant

FLEXIBLE

Space-Efficient Extended Ratings
Flexible Connectivity

Quick and Easy Setup
Easy Installation

EASY

Simple Operation

- Simple set up for efficient commissioning
- DriveWizard Mobile for drive management with mobile device
- Safe programming without main three-phase power
- LCD display and tactile buttons
- EZ Vector Control Method allows tuning less operation

