YASKAWA

Smart & Compact

The World's Smallest Class, Top Performance Drive

GA500

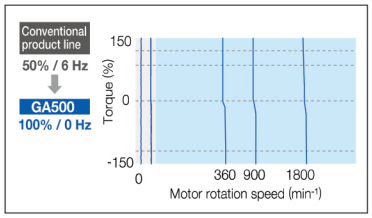
High Torque Quick Response

Innovative

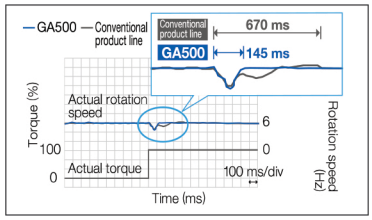
Stable Drive for High-impact Loads

- Innovative PM Motor Control
- Continuous Operation of Machinery and Equipment for Diagnosis of Predictive Failures
- Improve Efficiency of Production Managemenet with the Introduction of IoT Using Sensing Technology
- 24VDC supply (upto150mA) built in to power external sensors without the need of an SMPS source

■ Speed - Torque Characteristics



■ Speed Change with a High-impact Load



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!

Transport Conveyor

- Belt break
- Drive chain break
- Roller bearing deterioration

Fan

- Filter clogging
- Wing damage
- Loose pulley belt

Chiller Compressor

- Liquid return detection, etc.

Pump

- Motor bearings
- Deterioration of bearings

Specification Overview

Motor Control	
Motor types	Induction Motor (IM), Permanent Magnet Motor (IPM/SPM), Synchronous Reluctance Motor (SynRM)
Control methods	Sensorless V/f and Vector control, EZVector
Torque control	For IPM motors without encoder
Motor parameter tuning	Automatic, rotating/static

Further Functions
Integrated PID controller with sleep function
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

Protective Functions
Stall prevention, overload prevention, overheat prevention and further protective functions for the motor, the application and the inverter drive

Self-monitoring
Monitoring of main components (fans, IGBTs, capacitors, charging circuit) with maintenance alarm notification

Communication Options	Model Code
CANopen	SI-S3
CC-Link	SI-C3
DeviceNet	SI-N3
EtherCAT	SI-ES3
Ethernet/ IP	SI-EN3
MECHATROLINK-III	SI-ET3
Modbus/TCP	SI-EM3
POWERLINK	SI-EL3
PROFIBUS-DP	SI-P3
PROFINET	SI-EP3
Communication Option Case (required when using a communication option)	JOHB-GA50

Other Options
Bluetooth® keypad, Attachment for external heatsink, External EMC filter, Shield clamp kit, AC chokes, Harmonics filter, Output chokes, Braking resistors, Braking modules.

Operating Environment	
Ambient temperature	-10 to +50 °C (IP20), up to +60 °C with derating
Storage temperature	-20 to +70 °C
Humidity	95 % RH or less (non-condensing)
Altitude	Up to 1000 m without derating, up to 4000 m with derating
Vibration/Shock	10 to 20 Hz: 9.8 m/s² 20 to 55 Hz: 5.9 m/s²
Protection design	IP20 standard
Mounting	Side-by-side, DIN rail, external heatsink
Environmental conditions	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)

Conformity / Standards	
Standards	CE, UL, cUL, EAC, REACH, RoHS
Functional safety	IEC/EN61508 SIL3 (STO), PLe

Power Ratings	
Overload capacity	150 %/1 min. (heavy duty) or 110 %/1 min. (normal duty)
Rated voltage	200 to 240 VAC, -15 to +10 %
	380 to 480 VAC, -15 to +10 %
Capacity range (ND)	200V Class, 1-phase: 0.1 to 3.7 kW
	200V Class: 0.1 to 22 kW
	400V Class: 0.2 to 30 kW
Output frequency	0 to 590 Hz
Carrier frequency	8 kHz (HD) or 2 kHz (ND); max. 15 kHz
Braking transistors	Integrated

Control / Programming	
Control inputs	7 digital, 2 analog (1×V/I, 1×V), 1 pulse
Control outputs	1 relay, 2 photo coupler, 1 pulse, 1 analog
Virtual input/output	For connection of I/O functions without physical wiring
	Multiple assignment of I/O functions for easier wiring
Programming interface	Mini-USB on the front cover; digital operator with Bluetooth® (optional)
Keypad	7-segment LED with 5 digits, tactile soft buttons
Serial communication	Memobus/Modbus, RS-485, up to 115 kBps

Ordering Code

CIPR – GA50 T 4 004 A B A A

Product Series	Region Code	Voltage Class	Rated Output Current	EMC Filter Option	Enclosure Type	Environmental Spec	Design Revision
GA500 Series	T: Asia	B: 200V 1-Phase 2: 200V 3-Phase 4: 400V 3-Phase	See Rating Table	A: Standard E: Built-in	B: IP20	A: Standard	

400V Class

CIPR GA50T □□□□	Duty	4001	4002	4004	4005	4007	4009	4012	4018	4023	4031	4038	4044	4060
Max Applicable Motor kW	HD	0.2	0.4	0.75	1.5	2.2	3	3.7	5.5	7.5	11	15	18.5	22
	ND	0.4	0.75	1.5	2.2	3	3.7	5.5	7.5	11	15	18.5	22	30
Rated Input Current	HD	1.2	1.8	3.2	4.4	6	8.2	10.4	15	20	29	39	50.5	59.7
	ND	1.2	2.1	4.3	5.9	8.1	9.4	14	20	24	38	44	59.7	80.7
Rated Output Current	HD	1.2	1.8	3.4	4.8	5.6	7.3	9.2	14.8	18	24	31	39	45
	ND	1.2	2.1	4.1	5.4	7.1	8.9	11.9	17.5	23.4	31	39	44	60