

# Constant Torque 600 Volt



## General Purpose Drive

### GPD 515/G5 AC Drive, 2 - 200 HP, 600 Volt

**The GPD 515/G5.** This AC drive incorporates a 32-bit RISC microcontroller to handle all logic functions as well as the complex, sine-coded PWM generating algorithms that control IGBT switching. Using flash ROM and Application Specific Integrated Circuits, the drive provides the benefits of all-digital control, serial communications, and adjustments that don't age, drift or vary with line voltage. The drive is such an excellent choice because it incorporates three control modes in one product; traditional V/Hz, open loop vector, and closed loop flux vector control performance.

The GPD 515/G5 is factory programmed and ready to run. When operated from a remote process control, no operator actions are required. For manual operation, set the frequency reference, set for local or remote control and press the RUN key

As a solutions provider, Yaskawa supports and encourages the industry's open architecture, open connectivity demands. GPD drive products can communicate via all the popular communication protocols such as DeviceNet, Modbus, Profibus, and others.

The GPD 515/G5 is equipped with a serial port utilizing standard Modbus protocol. All drive interfaces allow for all parameters, diagnostics, and operational commands. Optional interface boards provide a wide range of control, monitoring, and diagnostic communication capabilities for integration from plant floor to supervisory level systems.

One of the outstanding options for the G5 is DriveWizard, software that enables upload, download, and monitoring of parameters.

Another software, CASE, can add functionality to the drive by reconfiguring drive defaults, establishing presets for OEM equipment, and by eliminating peripheral controls and PLCs. CASE application-specific software can be easily flashed to the on-board ROM.

The GPD 515/G5 adaptability and flexibility provide a unique assortment of benefits for every application. It is ideal for thousands of applications, ranging from simple to complex, low to high precision, single drive or coordinated systems. In addition, virtually every application enjoys the benefits of high efficiency and power factor, high reliability, simple human interface, self-protection and no maintenance.



## G5/600 Volt

## Performance Features

- Ratings: 2 to 200 HP at 600 VAC
- Overload capacity:  
150% for 60 sec (200% peak)
- Starting torque: 150%
- Electronic reversing
- Adjustable accel/decel: 0.1 to 6000 sec
- Controlled speed range:  
(1) 40:1, (2) 100:1, (3) 1000:1
- Drive efficiency: 96 to 98%
- Displacement power factor: 0.98
- Output frequency: 0.1 to 400 Hz
- Jog forward and reverse
- Power loss ride-thru: 2 sec
- Inertia ride-thru
- Selectable auto restart after momentary power loss
- Programmable auto restart (0 to 10 attempts) on resettable fault
- Critical frequency rejection:  
3 selectable, adjustable bands

## Protective Features

- DC bus CHARGE indicator
- Optically-Isolated controls
- Phase-to-phase / phase-to-neutral short circuit protection
- Ground fault protection
- Electronic motor overload (UL)
- Current and torque limit
- Overtorque/undertorque detection
- Fault circuit: overcurrent, overvoltage, and overtemperature
- Input/output phase loss

## Standards & Reliability

- UL and cUL listed
- IEC: 146A
- MTBF: Exceeds 28 years
- Circuit burn-in: 96 hours at 85°C
- Tested on fully-loaded motors
- Surface mount devices

### Control Methods:

(1) Volts/Hertz; (2) Open Loop vector; (3) Flux Vector (closed loop)

## Other Products



V7 General purpose, V/Hz, or open loop vector, microsize, 1/8 - 10 HP. *Flyer FL.V7.01*



J7 General purpose, V/Hz, microsize, 1/8 - 5 HP. *Flyer FL.J7.01*



F7 Drive Industrial Workhorse, Normal and Heavy Duty, 1/2 - 500 HP. *Flyer FL.F7.01*

## Service Conditions

- Ambient service temperature:  
-10°C to 40°C (104°F) Nema 1, to 45°C (113°F) protected chassis
- Humidity: non-condensing 95%
- Altitude: to 3300 feet
- Service factor: 1.0
- Input voltage: +10%/-15%, 575 to 600 VAC
- Enclosure: NEMA 1 or protected chassis (other options)
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase insensitive
- Vibration: 1G (to 20 Hz), 0.2G (20 to 50 Hz)

## Design Features

- 32-bit microprocessor logic
- Alpha-numeric operator, removable, multi-lingual, 2 lines x 16 character
- 24 VDC control logic
- Programmable outputs:  
One form A and two open collector
- Timer function
- RS-232 communication port
- Multi-speed settings: 9 available
- Remote speed reference:  
-10 to +10 VDC (20K ohms) or  
4 to 20 mA (250 ohms)
- Setpoint (PID) control
- PID plus reference control
- Signal follower: bias and gain
- Analog monitor output:  
-10 to +10 VDC proportional to output parameters
- Dual motor parameter sets
- Auto-tune to motor characteristics
- Easy access, parameter groups
- Common bus capability
- Programmable flash ROM, via RS232C, for custom applications
- Run and fault contacts (1A)
- Up / down / hold reference
- NEMA 1 enclosed or protected chassis

## Additional V/Hz Features

- DC injection braking adjustable current level
- Ramp stop or coast to stop
- Frequency resolution:  
0.01 Hz w/ digital ref., 0.06 Hz w/ analog ref.
- Frequency regulation: (15° to 35°C)  
0.01% w/ digital ref., 0.1% w/ analog ref.
- Torque boost: full range, auto
- Current limited stall prevention during accel, decel and run
- Synchronized start into rotating motor via speed search
- Volts/hertz ratio: 15 preset and one infinitely-adjustable pattern
- Slip compensation

## Additional Vector Control Features

- Speed resolution:  
0.01% with digital reference  
0.1% with analog reference
- Speed regulation: (15° to 35°C)  
(2) 0.1% with digital reference  
(3) 0.01% with digital reference  
(3) 0.1% analog reference
- (3) Encoder response: 300kHz
- (3) Stall torque: to 150% at zero speed for 1 minute. 100% continuous

## Options

- Remote operator stations
- Pressure to electrical transducer
- Input breaker, disconnect, fuses
- NEMA 4 and 12 enclosures
- RS-485 communication port
- Isolation transformer
- Analog monitor, precision
- Digital or pulse monitor output
- Additional form C contacts (2)
- Synchronous motor operation
- Dynamic braking
- Dual PG card (digital follower)
- DriveWizard upload/download software  
(1) 1000 Hz output  
(3) Motor-mounted encoder  
(3) PG card, A/B/Z phase line driver, +5 or +12v supply
- Serial communication interface
- CASE application software



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