

Built-in features
Built-in simplicity
Built-in ruggedness

AF-650 GP™ Panel for Constant Torque Applications



imagination at work

AF-650 GP™ Constant Torque Drives Built for constant torque



The AF-650 GP drive is designed for light and heavy duty control of mixers and material handling applications. It also provides vector modes (advanced, sensorless and closed loop) for those demanding torque and speed applications. It's just right for:

- Conveyors
- Mixers
- Agitators
- Lathes
- Spinning machines
- Machine tool
- Grinders
- Extruders
- Plastic injection molding machines
- Woodworking machines
- Constant displacement pumps

A full range of enclosed drives are available in NEMA Type 1 (Slimline up to 60HP & 460VAC) or traditional style NEMA 12 enclosures.

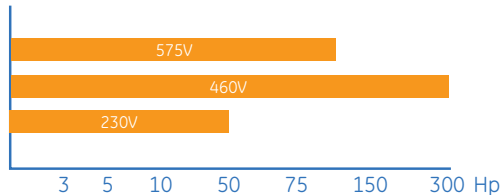
- 1–50HP @ 208VAC
- 1–300HP @ 460VAC
- 1–100HP @ 575VAC

NEMA 3R enclosures are also available.

- 1–50HP @ 208VAC
- 1–150HP @ 460VAC
- 1–100HP @ 575VAC

These power ratings, combined with our product features, allow us to meet your standard drive needs.

AF-650 GP™ Panel



Fully functional, fully ready

- Self protecting features
- Electronic thermal overload
- 150% current overload up to 1 minute
- Flying start (catch a spinning motor)
- Speed and process PID controls
- 24V encoder feedback built-in
- Precise stop function
- Advanced brake control
- Energy monitoring feature
- Easy to use PC software
- Modbus RTU built-in

AF-650 GP™ Constant Torque Drives

Panel Data

		Non-Bypass	Non-Bypass Output Contactor	2 Contactor Bypass	3 Contactor Bypass
Hp Ratings	208VAC, 3PH, 60Hz	1-50Hp	1-50Hp	1-50Hp	1-50Hp
	460VAC, 3PH, 60Hz	1-300Hp	1-300Hp	1-300Hp	1-300Hp
	575VAC, 3PH, 60Hz	1-100Hp	1-100Hp	1-100Hp	1-100Hp
Environment	Ambient Temperature	-10°C to 40°C	-10°C to 40°C	-10°C to 40°C	-10°C to 40°C
	Humidity (RH, non-condensing)	5% to 95%	5% to 95%	5% to 95%	5% to 95%
	Elevation	0 to 3,300 ft	0 to 3,300 ft	0 to 3,300 ft	0 to 3,300 ft
Enclosure Type, Style	NEMA Type 1, Slimline	Std (1-30Hp @ 208V) (1-60Hp @ 460V) (1-60Hp @ 575V)	Std (1-30Hp @ 208V) (1-60Hp @ 460V) (1-60Hp @ 575V)	Std (1-30Hp @ 208V) (1-60Hp @ 460V) (1-60Hp @ 575V)	Std (1-30Hp @ 208V) (1-60Hp @ 460V) (1-60Hp @ 575V)
	NEMA Type 1, Traditional	Std (40-50Hp @ 208V) (75-300Hp @ 460V) (75-100Hp @ 575V)	Std (40-50Hp @ 208V) (75-300Hp @ 460V) (75-100Hp @ 575V)	Std (40-50Hp @ 208V) (75-300Hp @ 460V) (75-100Hp @ 575V)	Std (40-50Hp @ 208V) (75-300Hp @ 460V) (75-100Hp @ 575V)
	NEMA Type 12	Opt (1-50Hp @ 208V) (1-300Hp @ 460V) (1-100Hp @ 575V)	Opt (1-50Hp @ 208V) (1-300Hp @ 460V) (1-100Hp @ 575V)	Opt (1-50Hp @ 208V) (1-300Hp @ 460V) (1-100Hp @ 575V)	Opt (1-50Hp @ 208V) (1-300Hp @ 460V) (1-100Hp @ 575V)
	NEMA Type 3R	Opt (1-50Hp @ 208V) (1-150Hp @ 460V) (1-100Hp @ 575V)	Opt (1-50Hp @ 208V) (1-150Hp @ 460V) (1-100Hp @ 575V)	Opt (1-50Hp @ 208V) (1-150Hp @ 460V) (1-100Hp @ 575V)	Opt (1-50Hp @ 208V) (1-150Hp @ 460V) (1-100Hp @ 575V)
Codes & Standards	UL & cUL	Std	Std	Std	Std
Power Circuit Features	Non-Fused Disconnect w/ Separate Mounted Fuses (panel short circuit current rating = 100kA)	Std	Std	Std	Std
	Mag-Break Circuit Breaker (MCP) (panel short circuit current rating = 65kA)	Opt	Opt	Opt	Opt
	DC Link Reactor (Equiv. 3% line reactor)	Std	Std	Std	Std
	5% AC Line Reactor	Opt	Opt	Opt	Opt
	Load Reactor	Opt	Opt	Opt	Opt
	Drive Output Contactor	-	-	Std	Std
	Bypass Contactor	-	-	Std	Std
	Isolation Contactor	-	-	-	Std
	Class 20/30 Overload Relay	-	-	Std	Std
Dynamic Brake Chopper	Opt	Opt	Opt	Opt	
Control Circuit Features	Power On Light	Std	Std	Std	Std
	Enable Light	Std	Std	Std	Std
	Bypass Light	-	-	Std	Std
	Motor Overload Light	-	-	Std	Std
	Normal Light	-	-	-	Std
	Drive Run & Fault Lights	Opt	Opt	Opt	Opt
	Hand-Off-Auto Switch	Std	Std	Std	Std
	Forward / Reverse Switch	Opt	Opt	-	-
	Start / Stop Pushbuttons	Opt	Opt	Opt	Opt
	Drive-Off-Bypass Switch	-	-	Std	Std
	Test-Isolate-Normal Switch	-	-	-	Std
	Speed Potentiometer	Opt	Opt	Opt	Opt
	Control Power Transformer	Std	Std	Std	Std
	Extra VA CPT & Motor Space Heater	Opt	Opt	Opt	Opt
	Elapsed Time Meter	Opt	Opt	Opt	Opt
	Customer I/O Terminal Board	Std	Std	Std	Std
	Quantity 2 Enable Inputs	Std	Std	Std	Std
	Remote Bypass Input	-	-	Std	Std
	Loss of 4-20mA Speed Ref to Fix Speed	Opt	Opt	Opt	Opt
	Bypass Output (N.O.)	-	-	Std	Std
	Drive Run Output (N.O.)	Std	Std	Std	Std
Drive Fault Output (1N.O.-1N.C.)	Std	Std	Std	Std	
4-20mA Output & Relay Output (1N.O.-1N.C.)	Opt	Opt	Opt	Opt	
Encoder Module	Opt	Opt	Opt	Opt	
Resolver Module	Opt	Opt	Opt	Opt	
Communication Options	Modbus RTU	Std	Std	Std	Std
	Ethernet IP	Opt	Opt	Opt	Opt
	DeviceNet	Opt	Opt	Opt	Opt
	Modbus TCP	Opt	Opt	Opt	Opt
	Profibus DP	Opt	Opt	Opt	Opt

AF-650 GP™ Constant Torque Drives

Built-in simplicity speeds set-up

The removable keypad, common to all AF-6 Series drives, is your window into all programming and information elements.

The keypad INFO key provides full-text, context-sensitive information to make programming easier and can eliminate the need for printed manuals. In most cases, start-up can be completed in less than 5 minutes – saving you valuable time.

You can set up one drive and then copy settings to other drives using the hot pluggable feature, eliminating the need for duplicate programming.

The Quick Menu provides easy access to all the basic settings and the controller.

- Hot pluggable
- Illuminated LCD display
- Parameters & their values
- Unit indications
- Rotation direction indication
- Set-up indication
- Custom user displays
- Trended charts display speed, torque, current
- Full alarm messages & descriptions



AF-650 GP™ Constant Torque Drives

Standard features

Control card

Terminal blocks	Pluggable, spring-loaded
Serial ports	RS485 and USB ports
Control inputs	4/6 digital, 2 analog, 2 pulse, 1 encoder, 24 vdc
Control outputs	2 relay, 1 analog, 2 pulse



Fieldbus

Built-in Modbus RTU

Logic controller

Built-in sequencer that can eliminate the need for PLCs or timers
Easy to learn, program and debug

DCT-10 software

Familiar, intuitive interface
Option programming
On- and off-line utility
Real-time data collection
Process management interaction
USB, RS485 or Fieldbus communication
On-board help for each parameter
Logging of alarms and warnings
Easy fault history documentation



RFI filter

Reduces interference
A2 standard

DC link reactor

Equivalent to 3 phase 3% line reactor

- Smaller in size and integral to drive

Low harmonic emission: THID < 48%
No voltage drop, full output voltage
Fulfils EN 61000-3-2/3-12
Displacement power factor (cos ϕ ~ 1)
True power factor 0.9

Optional features

Plug-and-play option modules deliver application versatility so you can maximize performance and energy savings



Drive communication options

Ethernet IP, DeviceNet, Modbus TCP, Profibus DP

General purpose I/O

3 digital and 3 analog inputs
2 digital and 1 analog outputs

Line / load reactors

Line reactor

- up to 5% impedance as an option

Load reactor

- Filters switching frequency from drive output
- Reduces motor's audible noise
- Eliminates dV/dt and Vpeak motor insulation stresses
- Allows use of non-VFD rated motors

Matrix Series D harmonic filter

- Integrated in drive enclosure
- Achieves 5% THID at rated load

AF-650 GP™ Constant Torque Drives

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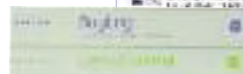
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