

GE Consumer & Industrial
Electrical Distribution

Built-in features
Built-in simplicity
Built for constant torque

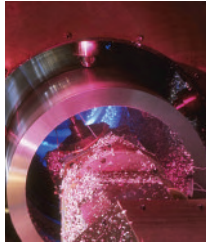
AF-650 GP™ General Purpose Drives



imagination at work

AF-650 GP™ General Purpose Drives

Built for constant torque

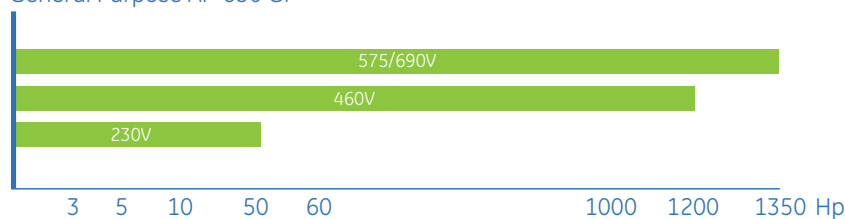


The AF-650 GP drive is designed for light and heavy duty control of mixers and material handling applications. It also provides vector modes (advanced, sensorless and closed loop) for those demanding torque applications.

It's just right for:

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

General Purpose AF-650 GP™



A rock-solid aluminum base is integrated with the back panel to provide high mechanical stability and the fan is quickly accessible to make cleaning easy.

- Available up to 50HP @ 208/230, up to 1200HP @ 460V, and up to 1350HP @ 575V and 690V
- Designed for ambient temperatures up to 50°C
- Built-in DC link reactor ensures very low harmonic disturbance of the power supply
- Compliance with major international standards CE, UL, cUL, C-Tick

Fully functional, fully ready

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

Stand-alone drive types

For drives rated up to and including 100HP

- IP20/chassis
- IP21/NEMA 1 Field Installed Kit
- IP66/NEMA 4

For drives rated 125HP or more

- IP00/chassis
- IP21/NEMA 1
- For all drives*
- IP54 /55/NEMA 12

AF-650 GP™ General Purpose Drives

Standard features

Control card

Terminal blocks
 Serial ports
 Control inputs
 Control outputs
 Safe stop input

Pluggable, spring-loaded
 RS485 and USB ports
 4/6 digital, 2 analog, 2 pulse, 1 encoder, 24Vdc
 2 relay, 1 analog, 2 pulse
 "Safe channel" meets the following global standards:
 EN954-1 according to category 0 of EN60204-1



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, A1 and B1 optional
 Facilitates meeting CE EMC directives

DC Link Reactor

Low harmonic emission: THID < 48%
 No voltage drop, full output voltage
 Fulfills 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.

Fieldbus

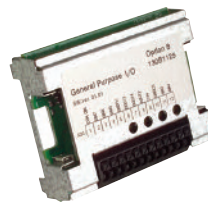
Top or bottom cable entry
 Profibus, DeviceNet and Ethernet IP

General purpose I/O

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

Encoder

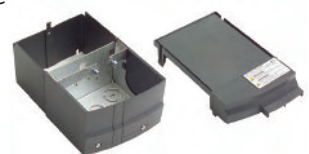
Connects encoder feedback
 Encoder module supports
 Incremental encoders
 Power supply for encoders – 5 VDC
 RS 422 interface



Resolver	Supports brushless servo and flux vector controlled asynchronous motors Primary voltage 4 - 8 Vrms Primary frequency 2.5 kHz – 15 kHz Primary current max 50 mA rms Secondary input voltage 4 Vrms Resolution 10 bit @ 4 Vrms input amplitude
Relay	Adds 3 relay outputs AC-1 Resistive load 240VAC, 2A AC-15 Inductive load @ $\cos \phi$ 0.4, 0.2 A DC-1 Resistive load 240V AC 1A DC-13 Inductive load @ $\cos \phi$ 0.4, 0.1 A
Safe PLC interface	Maintains integrity of dual wire Safe PLC safety link Isolates safety link circuit from other standard logic inputs Eliminates interference with the Safe PLC safety link sense signal
24 Vdc supply	Powers control card and options Allows serial communication, control, programming and diagnostics during power outages Input voltage range: 24 V DC \pm 15% (max. 37 V in 10 sec.) Max. input current: 2.2 A Input capacitance load: < 10 μ F Power-up delay: < 0.6 s
Brake resistors	AF-650 GP only when purchased with optional built-in Brake Chopper Provides dynamic braking torque up to 160% 10% duty cycle / 120 sec period 40% duty cycle / 120 sec period Screened metal enclosure
Line / load reactors	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
Harmonics filter	Reduces AC line current distortion Superior to 12 and 18 pulse solutions Supplements built-in DC Link Reactor Supported by GE harmonics calculation software
Backplate	Completes heatsink cooling air channel NEMA 1 (IP21) , NEMA 12 (IP55) IP65/66 (~NEMA 4)
Conformal coating	Protects electronics from aggressive atmospheres Tested to ANSI/ISA S71.04-1985, Classes G3 and GX

Accessories

Remote display kit	NEMA 4 (IP65) rating for remote mounting of keypad Preassembled cable
NEMA 1 kits	Converts IP20 chassis drive to IP21/NEMA 1 Includes field-installable top dust cover, bottom wiring box and bonding plate Fits all drives \leq 125HP



AF-650 GP™ General Purpose Drives

Built-in simplicity speeds set-up

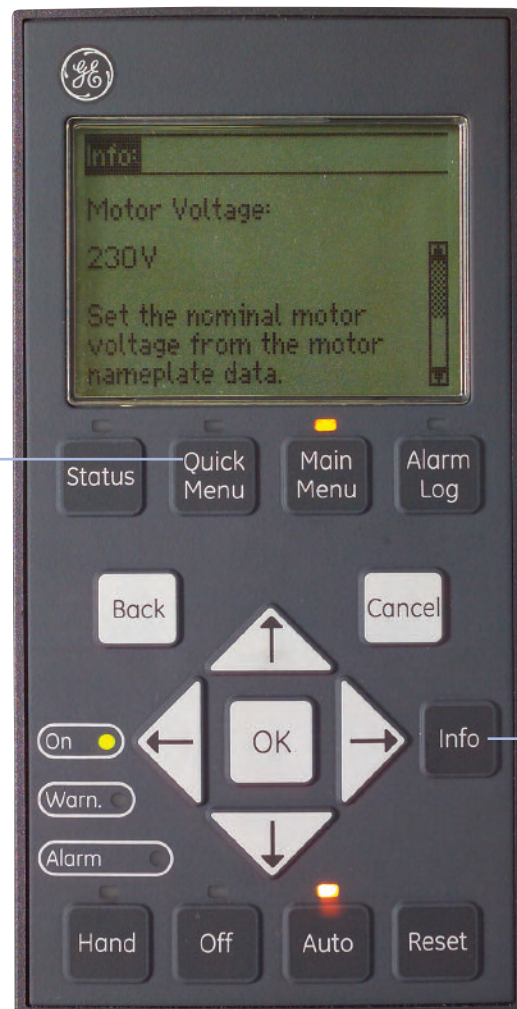
The removable keypad, common to all AF-6 Series drives, is your window into all programming and information elements.

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



Actual size

AF-650 GP™ General Purpose Drives

Ratings, dimensions and specifications

Voltage	HP Rating	Output Current (A)	Efficiency		Watt Loss (W)	GE Unit Size	Type	Dimensions (in)			Weight (lbs)
			kHz	%				Height	Width	Dept	
230Vac	0.33	1.8	5	94	21	12	IP20	14.7	3.5	8.7	10.8
	0.5	2.4	5	94	29	12	IP20	14.7	3.5	8.7	10.8
	1	4.6	5	95	54	12	IP20	14.7	3.5	8.7	10.8
	2	7.5	5	96	82	12	IP20	14.7	3.5	8.7	10.8
	3	10.6	5	96	115	12	IP20	14.7	3.5	8.7	10.8
	5	16.7	5	96	185	13	IP20	14.7	5.1	8.7	14.55
	7.5	24.2	4	96.4	239	23	IP20	15.71	6.5	9.13	26.5
	10	30.8	4	95.9	371	23	IP20	15.71	6.5	9.13	26.5
	15	46.2	4	96.4	463	24	IP20	20.47	9.06	9.41	51.8
	20	59.4	3	96	621	33	IP20	24.8	12.13	13.15	77.2
	25	74.8	3	97	740	33	IP20	24.8	12.13	13.15	77.2
	30	88	3	97	874	34	IP20	31.5	14.57	13.15	110.2
	40	115	3	97	1143	34	IP20	31.5	14.57	13.15	110.2
50	143	3	97	1400	34	IP20	31.5	14.57	13.15	110.2	
460Vac	0.5	1.3	5	93	35	12	IP20	14.7	3.5	8.7	10.8
	1	2.4	5	96	46	12	IP20	14.7	3.5	8.7	10.8
	2	4.1	5	97	62	12	IP20	14.7	3.5	8.7	10.8
	3	5.6	5	97	88	12	IP20	14.7	3.5	8.7	10.8
	5	10	5	97	124	12	IP20	14.7	3.5	8.7	10.8
	7.5	13	5	97	187	13	IP20	14.7	5.1	8.7	14.55
	10	16	5	97	255	13	IP20	14.7	5.1	8.7	14.55
	15	24	4	98	291	23	IP20	15.71	6.5	9.13	26.5
	20	32	4	98	379	23	IP20	15.71	6.5	9.13	26.5
	25	37.5	4	98	444	24	IP20	20.47	9.06	9.41	51.8
	30	44	4	98	547	24	IP20	20.47	9.06	9.41	51.8
	40	61	3	98	570	24	IP20	20.47	9.06	9.41	51.8
	50	73	3	98	697	33	IP20	24.8	12.13	13.15	77.2
	60	90	3	98	891	33	IP20	24.8	12.13	13.15	77.2
	75	106	3	98	1022	34	IP20	31.5	14.57	13.15	110.2
	100	147	3	99	1232	34	IP20	31.5	14.57	13.15	110.2
	125	160	3	97	2641	43	IP00	39.3	16.1	14.7	200.6
	150	190	3	97	2995	43	IP00	39.3	16.1	14.7	200.6
	200	240	3	97	3425	44	IP00	50.3	16.1	14.7	304.2
	250	302	3	98	3910	44	IP00	50.3	16.1	14.7	304.2
	300	361	3	98	4625	44	IP00	50.3	16.1	14.7	304.2
	350	443	3	98	6005	52	IP00	59	23	19.5	611
	450	540	2	98	6960	52	IP00	59	23	19.5	611
500	590	2	98	7691	52	IP00	59	23	19.5	611	
550	678	2	98	7964	52	IP00	59	23	19.5	611	
600	730	Consult GE				61	IP21/NEMA 1	86.8	55.1	23.9	2214
650	780					61	IP21/NEMA 1	86.8	55.1	23.9	2214
750	890					61	IP21/NEMA 1	86.8	55.1	23.9	2214
900	1050					62	IP21/NEMA 1	86.8	71	23.9	2748
1000	1160					62	IP21/NEMA 1	86.8	71	23.9	2748
1200	1380					62	IP21/NEMA 1	86.8	71	23.9	2748

For 575/690Vac data, consult www.geelectrical.com/drives

Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, express or implied, that such performance will be obtained under end-use conditions.

GE Consumer & Industrial
41 Woodford Avenue
Plainville, CT 06062

www.geelectrical.com/drives

