

Open Drives

Technical Data and Specifications

Output Ratings

- Horsepower;
 - 200 – 240V: 0.75 – 37 kW
 - 380 – 480V: 0.75 – 75 kW
 - 500 – 600V: 0.75 – 75 kW
- Frequency Range: 0.1 – 400 Hz
- Overload Rating: 150% for 60 seconds
- Frequency Resolution:
 - Digital: 0.1 Hz
 - Analog: Max. (Set Frequency/1000) Hz
- Frequency Accuracy
 - Digital: $\pm 0.01\%$ of max. frequency
 - Analog: $\pm 0.2\%$ of max. frequency
- Undervoltage Carryover Limit: 0.3 to 25 seconds

Motor Performance

- Motor Control: Sensorless Vector
- Constant and Variable Torque: Standard
- Speed Regulation: 0.5% of base speed

Input Power

- Voltage at 50/60 Hz ± 3 Hz
 - 200V – 240V, -10% +5% / 3-phase
 - 380V – 480V, -10% +10% / 3-phase
 - 500V – 600V, -15% +10% / 3-phase
- Displacement Power Factor: Better than 0.95
- Efficiency: Typically greater than 95%

Design Type

- Microprocessor: 32-Bit
- Converter Type: Diode
- Inverter Type: Insulated Gate Bipolar Transistor
- Waveform: Sensorless Vector

Environment

- Operating Temperature:
 - -10°C to +50°C
- Humidity: 0 to 90% non-condensing
- Maximum Elevation: 1000 meters

Codes and Standards

- NEMA, IEEE, NEC: Design Standards
- UL Listed
- cUL Listed
- CE Marked (Requires EMI filter)

Enclosure

- Standard: Protected Chassis (IP20)

Protective Features

- Ground Fault: Standard
- Overload Protection: Standard
- Overcurrent: Standard
- Overvoltage: Standard
- Undervoltage: Standard
- Overtemperature: Standard
- Overload Limit: Standard

Set Up Adjustments, Performance Features, Operator Control and External Interface

Keypad

- Alphanumeric Display: Standard, 1 x 4 character
- Digital Indications: Frequency (Hz), Motor Current (amps), User-Defined RUN/STOP, FORWARD/REVERSE and Parameters
- Diagnostics: Last 3 trips with cause
- LED Status Indicators: 5 (RUN/STOP, FORWARD/REVERSE and LOCAL/REMOTE)
- Operator Functions: START/STOP, Speed control (digital) RESET, SETUP Keys, ENTER, FORWARD/REVERSE and LOCAL/REMOTE

I/O Terminal Block

- Analog Inputs:
 - 3 Inputs: 0 – 10V DC, 4 – 20 mA
 - Analog Voltage: Nominal 10V DC (10K ohm input impedance)
 - Analog Current: Nominal 4 – 20 mA (250 ohm)
- Digital Inputs: 10 Programmable Inputs
- Digital Outputs: 2 Programmable
- Relay Outputs: 2 Programmable

- Analog Monitor Output:
 - Analog meter – frequency or output current

- Dynamic Brake Chopper

Programmable Parameters

- Out of the Box: Factory settings loaded for quick start-up.
- Accel. and Decel.: 2 separately adjustable Linear or S Curve times: 0.1 – 3000 seconds
- Auto Restart: Overcurrent, overvoltage and undervoltage with 4 selectable retry restart modes
- DC Injection Braking
- External Fault: Terminal input
- Jog: Terminal input
- Fault Reset: STOP/RESET or terminal input
- I/O: NO/NC Selectable
- Jump Frequencies: 3 (with adjustable width)
- Parameter Security: Programmable software lock
- Preset Speeds: 7 preset speeds
- PID Controller: PID process control
- Reversing: Keypad or terminal
- Speed Setting: Keypad, terminal or pot
- START/STOP Control: Keypad or terminal
- Stop Modes: Decel, coast or DC injection

Reliability

- Pretested Components: Standard
- Surface Mount Technology: Standard (PCBs)
- Computerized Testing: Standard
- Final Test with Full Load: Standard
- Eaton's Cutler-Hammer Engineering Systems and Service: National network of AF drive specialists

Table 1. Fuse Specifications — 575V

Model	I (A) Input	I (A) Output	Line Fuse		MMP	Recommend
			I (A)	Bussmann P/N		
GVX001A1-5	2.0	1.7	6	JJS-6	Consult factory	Consult factory
GVX002A1-5	3.6	3.5	6	JJS-6		
GVX003A1-5	4.9	4.5	10	JJS-10		
GVX005A1-5	9.9	7.5	20	JJS-20	Consult factory	Consult factory
GVX007A1-5	10.8	10	20	JJS-20		
GVX010A1-5	14.3	13.5	30	JJS-30		
GVX015A1-5	19.8	19	40	JJS-40	Consult factory	Consult factory
GVX020A1-5	22	22	40	JJS-40		
GVX025A1-5	27.7	27	50	JJS-50		
GVX030A1-5	37	34	70	JJS-70	Consult factory	Consult factory
GVX040A1-5	41	41	70	JJS-70		
GVX050A1-5	52	52	100	JJS-100		
GVX060A1-5	62	62	125	JJS-125	Consult factory	Consult factory
GVX075A1-5	95	80	175	JJS-175		
GVX100A1-5	117	100	200	JJS-200		

Note: Smaller fuses than those shown in the table are permitted.

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Wiring

Table 2. Wiring Items

Items	Explanations
Input Power	Please follow the specific power supply requirement shown in user manual.
Fuse	Please check the Fuse Specification tables in user manual for proper fuse selection.
Magnetic Contactor (Optional)	Please do not use a Magnetic Contactor as the ON/OFF switch of the AC drive, this will reduce the operating life of the AC drive. The contactor should only be used as a safety device for disconnecting power to the drive.
Line/Load Reactor (Optional)	To improve the power factor. An AC Reactor may be necessary when capacity is above 1000 kVA, and the wiring distance is within 10m.
EMI Filter (Optional)	Used to reduce the electromagnetic interference.
Braking Resistor (Optional)	Used to reduce stopping time of the motor. Please refer to the Braking Resistor tables below for specific Braking Resistors.

Braking

All Braking Resistors and Braking Units Used in AC Motor Drives

Note: Please only use Eaton resistors and recommended values. Other resistors and values will void Eaton's warranty. Please contact your nearest

Eaton representative for use of special resistors. For instance, in 460V Series, 75 kW, the AC motor drive needs 2 braking units with total of 16 braking resistors, so each braking unit uses 8 braking resistors. The braking unit

should be at least 10 cm away from AC motor drive to avoid possible interference. Refer to the *Braking Unit Module User Manual* for further details.

Table 3. Braking Specifications — 230V and 460V

Applicable Motor (kW)	Full Load Torque of System Nm	Total Resistance and Wattage Applied to Drive	Braking Unit/No. of Units Used	Braking Resistor Kit P/N and No. of Units in Kit	Braking Torque @ 10% ED with Kit
230 Voltage					
0.75	0.427	80W 200 Ω	①	① K13-000034-0821	1 125%
1.5	0.849	300W 100 Ω	①	① K13-000034-0861	1 125%
2.2	1.262	300W 100 Ω	①	① K13-000034-0861	1 125%
3.7	2.080	400W 40 Ω	①	① K13-000034-0825	1 125%
5.5	3.111	500W 30 Ω	①	① K13-000034-0826	2 125%
7.5	4.148	1000W 20 Ω	①	① K13-000034-0862	① 125%
11	6.186	2400W 13.6 Ω	①	① K13-000034-0863	① 125%
15	8.248	3000W 10 Ω	GBM2022	1 K13-000034-0864	1 125%
18.5	10.281	4800W 8 Ω	GBM2022	1 K13-000034-0865	1 125%
22	12.338	4800W 6.8 Ω	GBM2022	1 K13-000034-0866	1 125%
30	16.497	6000W 5 Ω	GBM2022	2 K13-000034-0867	2 125%
37	20.6	9600W 4 Ω	GBM2022	2 K13-000034-0868	2 125%
460 Voltage					
0.75	0.427	80W 750 Ω	①	① K13-000034-0841	1 125%
1.5	0.849	300W 400 Ω	①	① K13-000034-0843	1 125%
2.2	1.262	300W 250 Ω	①	① K13-000034-0843	1 125%
3.7	2.080	400W 150 Ω	①	① K13-000034-0844	1 125%
5.5	3.111	500W 100 Ω	①	① K13-000034-0845	2 125%
7.5	4.148	1000W 75 Ω	①	① K13-000034-0846	3 125%
11	6.186	1000W 50 Ω	①	① K13-000034-0869	① 125%
15	8.248	1500W 40 Ω	GBM4045	1 K13-000034-0870	1 125%
18.5	10.281	4800W 32 Ω	GBM4045	1 K13-000034-0871	1 125%
22	12.338	4800W 27.2 Ω	GBM4045	1 K13-000034-0872	1 125%
30	16.497	6000W 20 Ω	GBM4045	1 K13-000034-0873	1 125%
37	20.6	9600W 16 Ω	GBM4045	1 K13-000034-0874	1 125%
45	24.745	9600W 13.6 Ω	GBM4045	1 K13-000034-0875	1 125%
55	31.11	12000W 10 Ω	GBM4045	2 K13-000034-0876	2 125%
75	42.7	19200W 6.8 Ω	GBM4045	2 K13-000034-0877	2 125%

① Contact Eaton.

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Table 4. Braking Specifications — 575V

Applicable Motor (kW)	Full Load Torque of System Nm	Total Resistance and Wattage Applied to Drive	Braking Unit/No. of Units Used	Braking Resistor Kit P/N and No. of Units in Kit		Braking Torque @ 10% ED with Kit
575 Voltage						
0.75	0.427	300W 400 Ω	①	①	①	1 125%
1.5	0.849	300W 250 Ω	①	①	①	1 125%
2.2	1.262	400W 150 Ω	①	①	①	2 125%
3.7	2.08	400W 150 Ω	①	①	①	2 125%
5.5	3.111	500W 100 Ω	①	①	①	2 125%
7.5	4.148	500W 100 Ω	①	①	①	1 125%
11	6.186	500W 100 Ω	①	①	①	① 125%
15	8.248	4000W 75 Ω	GBM5055	1	①	1 125%
18.5	10.281	4000W 50 Ω	GBM5055	1	①	1 125%
22	12.338	6000W 40 Ω	GBM5055	1	①	1 125%
30	16.497	6000W 40 Ω	GBM5055	1	①	1 125%
37	20.6	8000W 25 Ω	GBM5055	1	①	1 125%
45	24.75	8000W 25 Ω	GBM5055	1	①	1 125%
55	31.11	12000W 20 Ω	GBM5055	1	①	1 125%
75	42.7	16000W 12.5 Ω	GBM5055	2	①	2 125%

① Contact Eaton.

Notes:

- Please select the factory setting resistance value (Watt) and the duty-cycle value (ED%).
- If damage to the drive or other equipment are due to the fact that the braking resistors and the braking modules in use are not provided by Eaton, the warranty will be void.
- Take into consideration the safety of the environment when installing the braking resistors.
- If the minimum resistance value is to be utilized, consult local dealers for the calculation of the Watt figures.
- Please select thermal relay trip contact to prevent resistor over load. **Use the contact to switch power off to the AC motor drive!**
- When using more than 2 braking units, equivalent resistor value of parallel braking unit can't be less than the value in the column **"Minimum Equivalent Resistor Value for Each AC Drive" (the right-most column in the table).**
- Please read the wiring information in the user manual of braking unit thoroughly prior to taking into operation.