

V1000 to GA500

Industrial AC Microdrive Product Transition Guide

Model: CIMR-VU

240 V Single-Phase Input : 1/8 to 5 HP
240 V Three-Phase Input : 1/8 to 25 HP
480 V Three-Phase Input : 1/2 to 25 HP

Catalog Code: GA50U

240 V Single-Phase Input : 1/6 to 5 HP
240 V Three-Phase Input : 1/6 to 30 HP
480 V Three-Phase Input : 1/2 to 40 HP

This guide lists only comparable models. Refer to the GA500 Selection Guide No. SL.GA500.01 for a list of all available models.



AC Drive Transition Guide

V1000 to GA500

This document is intended to help OEM's, Integrators, and End Users select and replace Yaskawa V1000 series AC drives with Yaskawa GA500 AC drives. Replacement should be conducted by qualified personnel familiar with AC drive installation. Follow local electrical codes during replacement and installation.

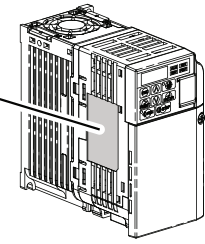
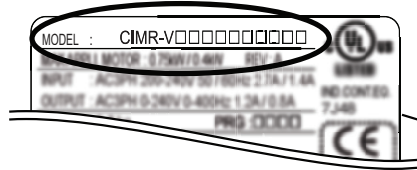
- 1 MODEL IDENTIFICATION4**
- 2 REPLACEMENT GA500 DRIVE SELECTION5**
- 3 DIMENSIONS AND ADAPTERS7**
- 4 BRANCH CIRCUIT PROTECTION.9**
- 5 MAIN CIRCUIT AND MOTOR WIRING12**
- 6 CONTROL CIRCUIT WIRING.19**
- 7 TRANSFER OF PARAMETER SETTINGS28**
- 8 CARRIER FREQUENCY - C6-02 [CARRIER FREQUENCY SELECTION]. . . .40**
- 9 WATT LOSS COMPARISON41**
- 10 NETWORK COMMUNICATION AND CONTROL I/O OPTIONS.44**
- 11 OTHER OPTION COMPATIBILITY45**

1 Model Identification

◆ Identify Your Model

The catalog numbers differ slightly between the drive series. Use this number comparison to understand nameplate location and catalog code differences between series when selecting a replacement drive.

V1000 Drive

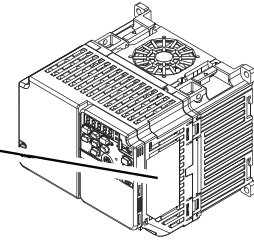
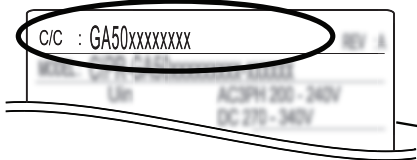


CIMR-V U 2 A 001 F A A

| | |
|---|----------------------|
| V1000 Drive | |
| Region Code | |
| U | Americas |
| Input Power Supply Voltage | |
| B | 1-phase, 200-240 Vac |
| 2 | 3-phase, 200-240 Vac |
| 4 | 3-phase, 380-480 Vac |
| Customized Specifications | |
| A | Standard Model |
| Rated Output Current | |
| Note: Refer to rated output current specification | |

| | |
|------------------------------------|-----------------------------|
| Design Revision Order | |
| Environmental Specification | |
| A | Standard |
| M | Humidity and dust-resistant |
| S | Vibration resistant |
| Enclosure Type | |
| A | IP00/Open-Chassis |
| B | IP20/Open-Chassis |
| F | IP20/NEMA Type 1 |
| G | NEMA 4X/IP66 |
| J | IP20/Finless |
| L | IP00/Finless |

GA500 Drive



GA50 U 4 004 A B A

| | |
|---|---------------------|
| GA500 Drive | |
| Region Code | |
| U | Americas |
| Input Power Supply Voltage | |
| B | 240 V, Single-phase |
| 2 | 480 V, Three-phase |
| 4 | 480 V, Three-phase |
| Rated Output Current | |
| Note: Refer to rated output current specification | |

| | |
|------------------------------------|------------------------|
| Environmental Specification | |
| A | Standard |
| Enclosure Design | |
| B | IP20/Protected Chassis |
| EMC Noise Filter | |
| A | No built-in filter |
| E | Built-in EMC Filter |

2 Replacement GA500 Drive Selection

Table 1 through **Table 3** provide a model to model cross reference. Select the GA500 model that corresponds to your V1000 model.

Increasing the Carrier Frequency parameter C6-02 from the factory default setting may require derating of the drive capacity. *Refer to Carrier Frequency - C6-02 [Carrier Frequency Selection] on page 40* to understand the effect of changing parameter C6-02 on your new replacement drive.

Note: Normal Duty overload tolerance.

- V1000 120% of rated normal duty current for 60 seconds.
- GA500 110% of rated normal duty current for 60 seconds.

Table 1 Single-Phase 240 V Models

| V1000 Model CIMR-VU | Rated Output Heavy Duty (HD) Amps | Rated Output Normal Duty (ND) Amps | | GA500 Catalog Code GA50U | Rated Output Heavy Duty (HD) Amps | Rated Output Normal Duty (ND) Amps |
|------------------------|---|--|---|--------------------------------|---|--|
| BA0001 | 0.8 | 1.2 | ↔ | B001 | 0.8 | 1.2 |
| BA0002 | 1.6 | 1.9 | ↔ | B002 | 1.6 | 1.9 |
| BA0004 | 3.0 | 3.3 | ↔ | B004 | 3.0 | 3.5 |
| BA0006 | 5.0 | 6.0 | ↔ | B006 | 5.0 | 6.0 |
| BA0010 | 8.0 | 9.6 | ↔ | B010 | 8.0 | 9.6 |
| BA0012 | 11.0 | 12.0 | ↔ | B012 | 11.0 | 12.2 |
| BA0018 | 17.5 | - | ↔ | B018 | 17.6 | - |

Table 2 Three-Phase 240 V Models

| V1000 Model CIMR-VU | Rated Output Heavy Duty (HD) Amps | Rated Output Normal Duty (ND) Amps | | GA500 Catalog Code GA50U | Rated Output Heavy Duty (HD) Amps | Rated Output Normal Duty (ND) Amps |
|------------------------|---|--|---|--------------------------------|---|--|
| 2A0001 | 0.8 | 1.2 | ↔ | 2001 | 0.8 | 1.2 |
| 2A0002 | 1.6 | 1.9 | ↔ | 2002 | 1.6 | 1.9 |
| 2A0004 | 3.0 | 3.5 | ↔ | 2004 | 3.0 | 3.5 |
| 2A0006 | 5.0 | 6.0 | ↔ | 2006 | 5.0 | 6.0 |
| 2A0010 | 8.0 | 9.6 | ↔ | 2010 | 8.0 | 9.6 |
| 2A0012 | 11.0 | 12.0 | ↔ | 2012 | 11.0 | 12.2 |
| 2A0020 | 17.5 | 19.6 | ↔ | 2021 | 17.6 | 21.0 |
| 2A0030 | 25.0 | 30.0 | ↔ | 2030 | 25.0 | 30.0 |
| 2A0040 | 33.0 | 40.0 | ↔ | 2042 | 33.0 | 42.0 |
| 2A0056 | 47.0 | 56.0 | ↔ | 2056 | 47.0 | 56.0 |
| 2A0069 | 60.0 | 69.0 | ↔ | 2070 | 60.0 | 70.0 |
| - | - | - | | 2082 | 75.0 | 82.0 |

2 Replacement GA500 Drive Selection

Table 3 Three-Phase 480 V Models

| V1000 Model CIMR-VU | Rated Output Heavy Duty (HD) Amps | Rated Output Normal Duty (ND) Amps | | GA500 Catalog Code GA50U | Rated Output Heavy Duty (HD) Amps | Rated Output Normal Duty (ND) Amps |
|------------------------|---|--|---|--------------------------------|---|--|
| 4A0001 | 1.2 | 1.2 | ↔ | 4001 | 1.2 | 1.2 |
| 4A0002 | 1.8 | 2.1 | ↔ | 4002 | 1.8 | 2.1 |
| 4A0004 | 3.4 | 4.1 | ↔ | 4004 | 3.4 | 4.1 |
| 4A0005 | 4.8 | 5.4 | ↔ | 4005 | 4.8 | 5.4 |
| 4A0007 | 5.5 | 6.9 | ↔ | 4007 | 5.6 | 7.1 |
| 4A0009 | 7.2 | 8.8 | ↔ | 4009 | 7.3 | 8.9 |
| 4A0011 | 9.2 | 11.1 | ↔ | 4012 | 9.2 | 11.9 |
| 4A0018 | 14.8 | 17.5 | ↔ | 4018 | 14.8 | 17.5 |
| 4A0023 | 18.0 | 23.0 | ↔ | 4023 | 18.0 | 23.4 |
| 4A0031 | 24.0 | 31.0 | ↔ | 4031 | 24.0 | 31.0 |
| 4A0038 | 31.0 | 38.0 | ↔ | 4038 | 31.0 | 38.0 |
| - | - | - | | 4044 | 39.0 | 44.0 |
| - | - | - | | 4060 | 45.0 | 60.0 |

3 Dimensions and Adapters

◆ Dimension Comparison and Mounting Kits

The standard model V1000 enclosure is wall-mount UL Type 1. GA500 dimensions for the optional UL Type 1 kit assembled to the GA500 are also shown. Use these tables to understand physical dimensions when required for replacing the V1000 with a new GA500 drive.

Note:

- V1000 and GA500 have the same mounting dimensions. No mounting kit conversion is required.
- Dimensions in this document are approximate. Refer to the Technical Manual or Dimension Diagrams for exact dimensions.

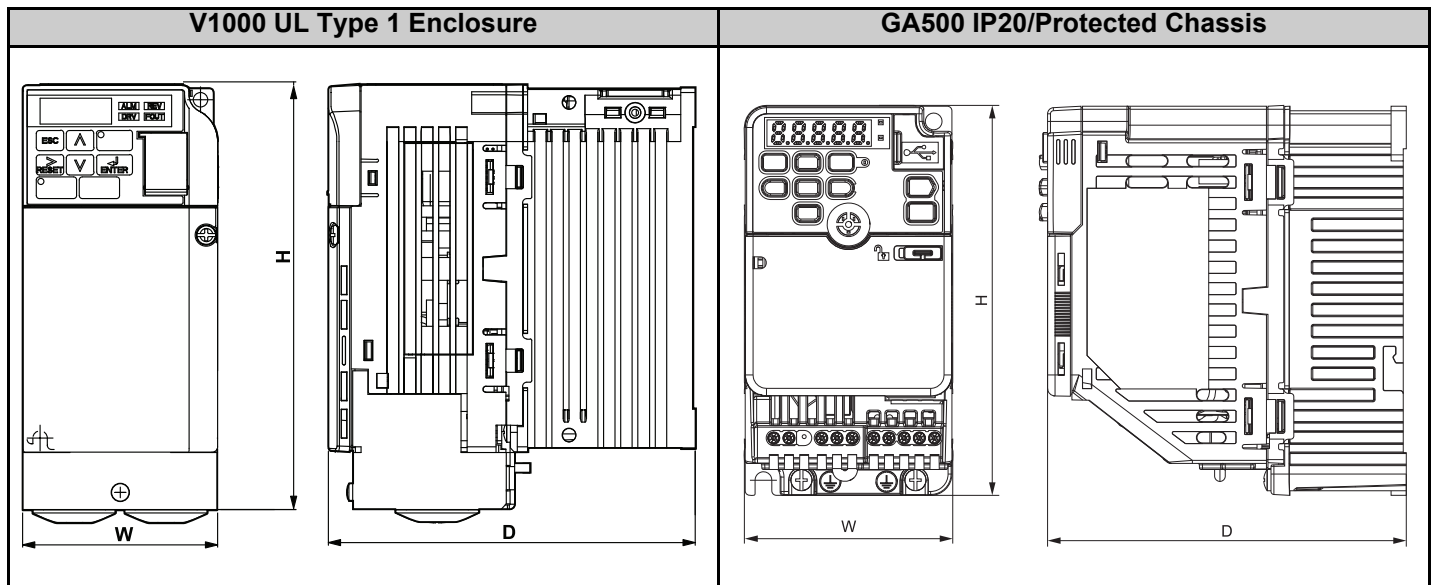


Table 4 Single-Phase, 240 V Models - Exterior Dimensions and Enclosure Kits

| V1000 Frame | V1000 Model | GA500 Frame | GA500 Catalog Code GA50U_ | GA500 UL Type 1 Enclosure Kit | V1000 UL Type 1 Enclosures | GA500 Protected Chassis Enclosures | GA500 IP20/UL Type 1 Enclosures |
|-------------|-------------|-------------|---------------------------|-------------------------------|----------------------------|------------------------------------|---------------------------------|
| | CIMR-VU | | GA50U | Catalog Code | H x W x D in | H x W x D in | H x W x D in |
| 1 | BA0001 | 1.1 | B001 | ZBAA-GA50V1-1 | 5.89 x 2.68 x 2.99 | 5.04 x 2.68 x 2.99 | 5.83 x 2.68 x 2.99 |
| 1 | BA0002 | 1.1 | B002 | | | | |
| 3 | BA0003 | 1.3 | B004 | ZBAA-GA50V1-2 | 5.89 x 2.68 x 4.65 | 5.04 x 2.68 x 4.65 | 5.83 x 2.68 x 4.65 |
| 8 | BA0006 | 2.4 | B006 | ZBAA-GA50V2-1 | 5.89 x 4.25 x 5.41 | 5.04 x 4.25 x 5.41 | 7.01 x 4.25 x 5.41 |
| 10 | BA0010 | 2.5 | B010 | ZBAA-GA50V2-2 | 5.89 x 4.25 x 6.06 | 5.04 x 4.25 x 6.06 | 7.01 x 4.25 x 6.06 |
| 12 | BA0012 | 3.2 | B012 | ZBAA-GA50V3-1 | 6.02 x 5.51 x 6.42 | 5.04 x 5.51 x 6.42 | 7.01 x 5.51 x 6.42 |
| 13 | BA0018 | 4 | B018 | ZBAA-GA50V4-1 | 6.02 x 6.69 x 7.09 | 5.04 x 6.69 x 7.09 | 7.17 x 6.69 x 7.09 |

3 Dimensions and Adapters

Table 5 Three-Phase, 240 V Models - Exterior Dimensions and Enclosure Kits

| V1000 Frame | V1000 Model | GA500 Frame | GA500 Catalog Code GA50U_ | GA500 UL Type 1 Enclosure Kit | V1000 UL Type 1 Enclosures | GA500 Protected Chassis Enclosures | GA500 IP20/UL Type 1 Enclosures |
|-------------|-------------|-------------|---------------------------|-------------------------------|----------------------------|------------------------------------|---------------------------------|
| | CIMR-VU | | GA50U | Catalog Code | H x W x D in | H x W x D in | H x W x D in |
| 1 | 2A0001 | 1.1 | 2001 | ZBAA-GA50V1-1 | 5.89 x 2.68 x 2.99 | 5.04 x 2.68 x 2.99 | 5.83 x 2.68 x 2.99 |
| 1 | 2A0002 | 1.1 | 2002 | | 5.89 x 2.68 x 4.25 | 5.04 x 2.68 x 4.25 | 5.83 x 2.68 x 4.25 |
| 2 | 2A0004 | 1.2 | 2004 | | 5.89 x 2.68 x 5.04 | 5.04 x 2.68 x 5.04 | 5.83 x 2.68 x 5.04 |
| 4 | 2A0006 | 1.4 | 2006 | | | | |
| 7 | 2A0010 | 2.3 | 2010 | ZBAA-GA50V2-3 | 5.89 x 4.25 x 5.08 | 5.04 x 4.25 x 5.08 | 7.01 x 4.25 x 5.08 |
| 8 | 2A0012 | 2.4 | 2012 | ZBAA-GA50V2-1 | 5.89 x 4.25 x 5.41 | 5.04 x 4.25 x 5.41 | 7.01 x 4.25 x 5.41 |
| 11 | 2A0020 | 3.1 | 2021 | ZBAA-GA50V3-2 | 6.02 x 5.51 x 5.63 | 5.04 x 5.51 x 5.63 | 7.01 x 5.51 x 5.63 |
| 14 | 2A0030 | 5 | 2030 | ZBAA-GA50V5-1 | 10 x 5.51 x 5.51 | 10.24 x 5.51 x 5.51 | 11.73 x 5.51 x 5.51 |
| 14 | 2A0040 | 5 | 2042 | | | | |
| 16 | 2A0056 | 6 | 2056 | ZBAA-GA50V6-1 | 11.42 x 7.09 x 6.42 | 11.81 x 7.09 x 5.63 | 13.39 x 7.09 x 5.63 |
| 17 | 2A0069 | 7 | 2070 | ZBAA-GA50V7-1 | 14.09 x 8.66 x 7.36 | 13.78 x 8.66 x 7.36 | 15.87 x 8.66 x 7.36 |
| - | - | 7 | 2082 | | - | 13.78 x 8.66 x 7.36 | 15.87 x 8.66 x 7.36 |

Table 6 Three-Phase, 480 V Models - Exterior Dimensions and Enclosure Kits

| V1000 Frame | V1000 Model | GA500 Frame | GA500 Catalog Code GA50U_ | GA500 UL Type 1 Enclosure Kit | V1000 UL Type 1 Enclosures | GA500 Protected Chassis Enclosures | GA500 IP20/UL Type 1 Enclosures |
|-------------|-------------|-------------|---------------------------|-------------------------------|----------------------------|------------------------------------|---------------------------------|
| | CIMR-VU | | GA50U | Catalog Code | H x W x D in | H x W x D in | H x W x D in |
| 5 | 4A0001 | 2.1 | 4001 | ZBAA-GA50V2-4 | 5.89 x 4.25 x 3.19 | 5.04 x 4.25 x 3.19 | 5.87 x 4.25 x 3.19 |
| 6 | 4A0002 | 2.2 | 4002 | ZBAA-GA50V2-5 | 5.89 x 4.25 x 3.9 | 5.04 x 4.25 x 3.9 | 5.87 x 4.25 x 3.9 |
| 8 | 4A0004 | 2.4 | 4004 | ZBAA-GA50V2-2 | 5.89 x 4.25 x 5.41 | 5.04 x 4.25 x 5.41 | 5.87 x 4.25 x 5.41 |
| 9 | 4A0005 | 2.5 | 4005 | | 5.89 x 4.25 x 6.06 | 5.04 x 4.25 x 6.06 | 7.01 x 4.25 x 6.06 |
| 9 | 4A0007 | 2.5 | 4007 | | | | |
| 9 | 4A0009 | 2.5 | 4009 | ZBAA-GA50V3-2 | 5.89 x 4.25 x 6.06 | 5.04 x 4.25 x 6.06 | 7.01 x 4.25 x 6.06 |
| 11 | 4A0011 | 3.1 | 4012 | | 6.02 x 5.51 x 5.63 | 5.04 x 5.51 x 5.63 | 7.01 x 5.51 x 5.63 |
| 14 | 4A0018 | 5 | 4018 | ZBAA-GA50V5-1 | 10 x 5.51 x 5.51 | 10.24 x 5.51 x 5.51 | 11.73 x 5.51 x 5.51 |
| 14 | 4A0023 | 5 | 4023 | | | | |
| 15 | 4A0031 | 6 | 4031 | ZBAA-GA50V6-1 | 11.42 x 7.09 x 5.63 | 11.81 x 7.09 x 5.63 | 13.39 x 7.09 x 5.63 |
| 16 | 4A0038 | 6 | 4038 | | 11.42 x 7.09 x 6.42 | 11.81 x 7.09 x 5.63 | 13.39 x 7.09 x 5.63 |
| - | - | 8 | 4044 | ZBAA-GA50V8-1 | - | 13.78 x 7.48 x 8.03 | 15.87 x 7.48 x 8.03 |
| - | - | 8 | 4060 | | - | | |

4 Branch Circuit Protection

Use this section to understand if the existing V1000 branch circuit protection is suitable for the replacement GA500 drive.

◆ V1000 Branch Circuit Protection

Table 7 V1000 Branch Circuit Protection

| Drive Model CIMR-VU | Fuse Type: Class T, Non-Time Delay (Manufacturer: Ferraz) Rating: 600 Vac, 200 kAIR | | Fuse Type: Semiconductor Fuse, Fast Acting (Manufacturer: Busmann) Rating: 500 Vac, 200 kAIR | |
|---------------------------|---|-----|--|-----|
| | Fuse | Amp | Fuse | Amp |
| Single-Phase 240 V | | | | |
| BA0001 | A6T6 | 6 | FWH-25A14F | 25 |
| BA0002 | A6T10 | 10 | FWH-25A14F | 25 |
| BA0004 | A6T20 | 20 | FWH-60B | 60 |
| BA0006 | A6T40 | 40 | FWH-80B | 80 |
| BA0010 | A6T40 | 40 | FWH-100B | 100 |
| BA0012 | A6T50 | 50 | FWH-125B | 125 |
| BA0018 | A6T80 | 80 | FWH-175B | 175 |
| Three-Phase 240 V | | | | |
| 2A0001 | A6T3 | 3 | FWH-25A14F | 25 |
| 2A0002 | A6T6 | 6 | FWH-25A14F | 25 |
| 2A0004 | A6T15 | 15 | FWH-25A14F | 25 |
| 2A0006 | A6T20 | 20 | FWH-25A14F | 25 |
| 2A0010 | A6T25 | 25 | FWH-70B | 70 |
| 2A0012 | A6T25 | 25 | FWH-70B | 70 |
| 2A0020 | A6T40 | 40 | FWH-90B | 90 |
| 2A0030 | – | – | FWH-100B | 100 |
| 2A0040 | – | – | FWH-200B | 200 |
| 2A0056 | – | – | FWH-200B | 200 |
| 2A0069 | – | – | FWH-200B | 200 |
| Three-Phase 480 V | | | | |
| 4A0001 | A6T3 | 3 | FWH-40B | 40 |
| 4A0002 | A6T6 | 6 | FWH-40B | 40 |
| 4A0004 | A6T15 | 15 | FWH-50B | 50 |
| 4A0005 | A6T20 | 20 | FWH-70B | 70 |
| 4A0007 | A6T25 | 25 | FWH-70B | 70 |
| 4A0009 | A6T25 | 25 | FWH-90B | 90 |
| 4A0011 | A6T30 | 30 | FWH-90B | 90 |
| 4A0018 | – | – | FWH-80B | 80 |
| 4A0023 | – | – | FWH-100B | 100 |
| 4A0031 | – | – | FWH-125B | 125 |
| 4A0038 | – | – | FWH-200B | 200 |

4 Branch Circuit Protection

◆ GA500 Branch Circuit Protection

Use branch circuit protection to protect against short circuits and to maintain compliance with UL61800-5-1. Yaskawa recommends connecting semiconductor protection fuses on the input side for branch circuit protection.

- 240 V model fuse selection:

Use the fuses specified in this document or in the drive product instructions to prepare the drive for use on a circuit that supplies not more than 31,000 Amps RMS and not more than 240 Vac when there is a short circuit in the power supply.

- 480 V model fuse selection:

Use the fuses specified in this document or in the drive product instructions to prepare the drive for use on a circuit that supplies not more than 31,000 Amps RMS and not more than 480 Vac when there is a short circuit in the power supply.

The built-in short circuit protection of the drive does not provide branch circuit protection. The user must provide branch circuit protection as specified by the National Electric Code (NEC), the Canadian Electric Code, Part I (CEC), and local codes.

Table 8 GA500 Branch Circuit Protection

| GA500 Catalog Code GA50U_ | Fuse Type: Class J, T, and CC Time-delay Rated Current (A) | Fuse Type: Semiconductor Fuse, Fast Acting (Manufacturer: EATON/Bussmann) | |
|------------------------------|---|--|-----|
| | | Model | Amp |
| Single-Phase 240 V | | | |
| B001 | 2 | FWH-25A14F | 25 |
| B002 | 3.5 | FWH-25A14F | 25 |
| B004 | 9 | FWH-60B | 60 |
| B006 | 15 | FWH-80B | 80 |
| B010 | 20 | FWH-100B | 100 |
| B012 | 30 | FWH-125B | 125 |
| B018 | 40 | FWH-150B | 150 |
| Three-Phase 240 V | | | |
| 2001 | 3 | FWH-25A14F | 25 |
| 2002 | 3.5 | FWH-25A14F | 25 |
| 2004 | 6 | FWH-25A14F | 25 |
| 2006 | 10 | FWH-25A14F | 25 |
| 2010 | 15 | FWH-70B | 70 |
| 2012 | 20 | FWH-70B | 70 |
| 2021 | 35 | FWH-90B | 90 |
| 2030 | 50 | FWH-100B | 100 |
| 2042 | 70 | FWH-150B | 150 |
| 2056 | 90 | FWH-200B | 200 |
| 2070 | 110 | FWH-200B | 200 |
| 2082 | 125 | FWH-225A | 225 |
| Three-Phase 480 V | | | |
| 4001 | 3 | FWH-40B | 40 |
| 4002 | 3.5 | FWH-40B | 40 |
| 4004 | 7 | FWH-50B | 50 |
| 4005 | 9 | FWH-70B | 70 |
| 4007 | 12 | FWH-70B | 70 |
| 4009 | 15 | FWH-90B | 90 |
| 4012 | 20 | FWH-90B | 90 |
| 4018 | 30 | FWH-80B | 80 |
| 4023 | 40 | FWH-100B | 100 |

4 Branch Circuit Protection

| GA500 Catalog Code GA50U_ | Fuse Type: Class J, T, and CC Time-delay Rated Current (A) | Fuse Type: Semiconductor Fuse, Fast Acting (Manufacturer: EATON/Bussmann) | |
|------------------------------|---|--|-----|
| | | Model | Amp |
| 4031 | 50 | FWH-125B | 125 |
| 4038 | 60 | FWH-175B | 175 |
| 4044 | 70 | FWH-200B | 200 |
| 4060 | 100 | FWH-200B | 200 |

5 Main Circuit and Motor Wiring

Use this section to convert the V1000 main circuit wiring for installation to the GA500.

Key wiring differences between the V1000 and GA500 are:

- V1000 uses crimp terminals/ring lugs and GA500 accepts bare wire (except for ground terminal).
- Terminal sizes, shapes or physical location may differ slightly between V1000 and GA500.

Information in this section:

- **Main Circuit Connection Diagram on page 12**
- **Main Circuit Wiring Procedure on page 12**
- **Wire Termination Differences V1000 to GA500 on page 13**
- **Main Circuit and Motor Terminal Layout Comparison on page 13**
- **Main Circuit and Motor Wire Gauge and Tightening Torque on page 15**

◆ Main Circuit Connection Diagram

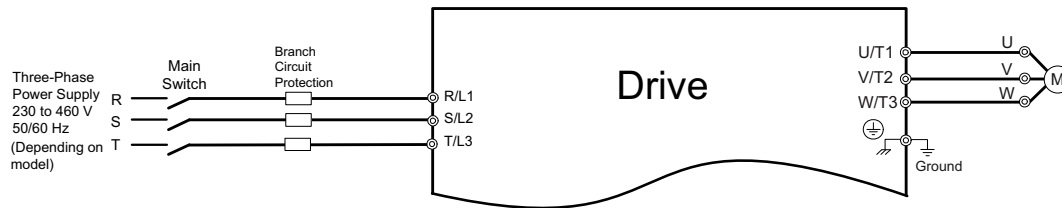


Figure 1 Main Circuit Connection Diagram (Typical)

◆ Main Circuit Wiring Procedure

Follow the GA500 Installation & Primary Operation Manual (No. TOEPC71061752) for all wiring procedures.

NOTICE:

- A screwdriver or hexagonal tool must be used when wiring the terminal.
- When stranded wire is used, wire it so that no loose wire strands protrude out of the connection. Do not excessively twist stranded wire.
- Do not solder wire ends.
- Do not use bent or crushed wire. Cut off any rough ends of the wire before installation.

1. Label the V1000 terminal wires before removing.
2. Remove crimp terminals if needed, and prepare wire ends.
3. Expose the required length of bare wire by stripping the insulation to the strip length in **Table 9**.
4. Wire the terminals. The wire will correctly fit the terminal block when the insulation is stripped to expose the correct wire length.
5. Tighten screws according to the tightening torque listed in the GA500 Installation and Primary Operation Manual No. TOEPC71061752.
6. Dress and arrange wires so that excessive wire tension is not applied to the terminal block.
7. After connecting the wires, gently pull on the wires to check that they do not pull out.
8. Regularly tighten any loose terminal block screws to their specified tightening torque.

◆ Wire Termination Differences V1000 to GA500

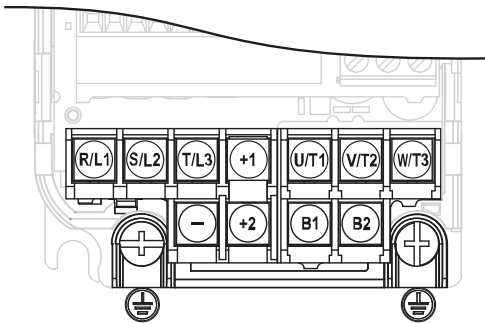
If crimp terminal ends/ring lugs are present on the V1000, they must be removed and the wire stripped to bare wire for installation to the GA500. Refer to the GA500 Installation & Primary Operation Manual No. TOEPC71061752, for more information on wire termination.

■ Main Circuit and Motor Terminal Layout Comparison

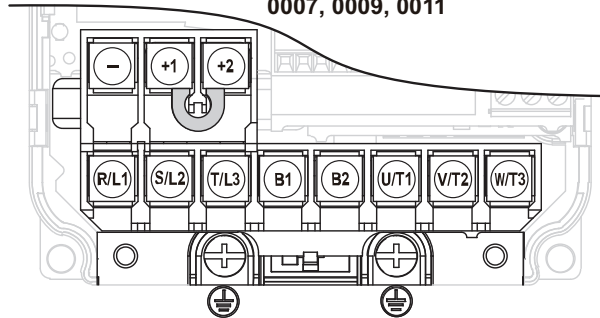
Terminal location and appearance differs slightly between V1000 and GA500. Use this section to understand differences to prepare for wiring the GA500.

- Refer to **Figure 2** for V1000 Main Circuit and Motor Circuit Terminal Layout by Model
- Refer to **Figure 3** for GA500 Main Circuit and Motor Circuit Terminal Layout by Model

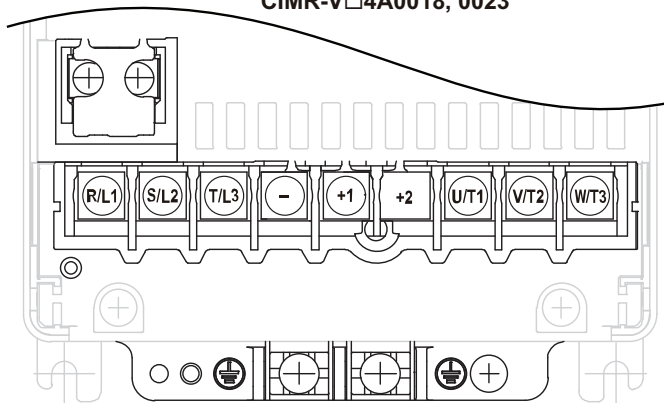
Models: CIMR-V□BA0001, 0002, 0003
CIMR-V□2A0001, 0002, 0004, 0006



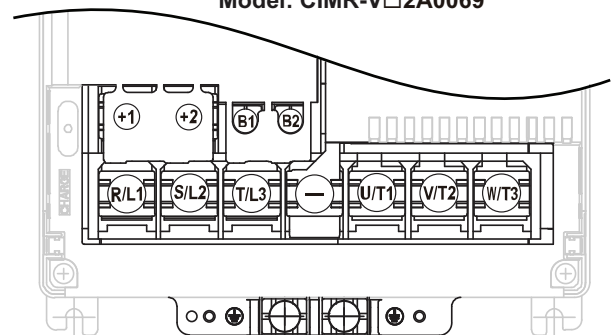
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CIMR-V□4A0001, 0002, 0004, 0005
0007, 0009, 0011



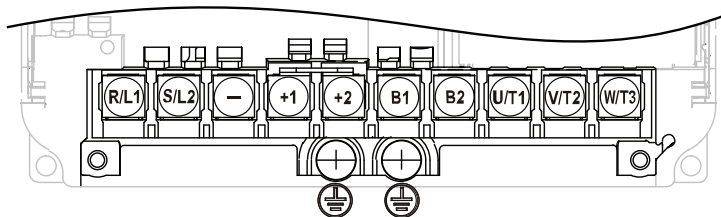
Models: CIMR-V□2A0030, 0040
CIMR-V□4A0018, 0023



Model: CIMR-V□2A0069



Model: CIMR-V□BA0018



Models: CIMR-V□2A0056
CIMR-V□4A0031, 0038

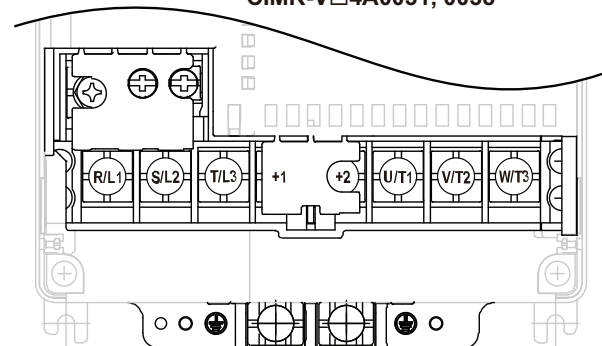
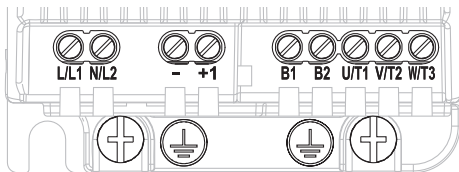


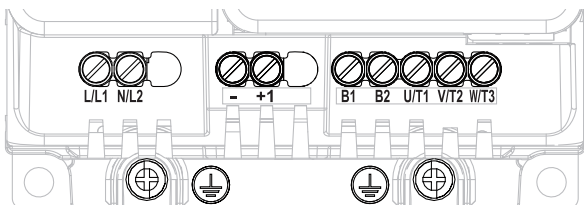
Figure 2 V1000 Main Circuit and Motor Circuit Terminal Layout by Model

5 Main Circuit and Motor Wiring

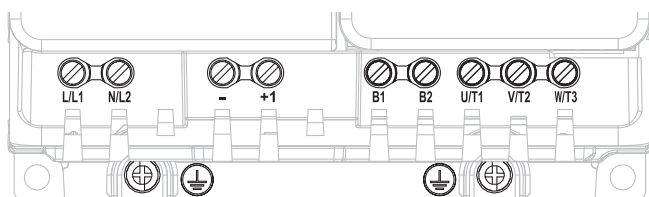
Models: GA50UB001□, B002, B004



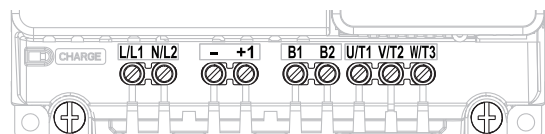
Models: GA50UB006□, B010



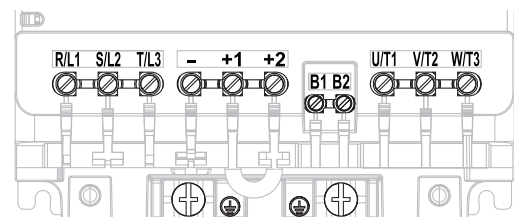
Model: GA50UB012□



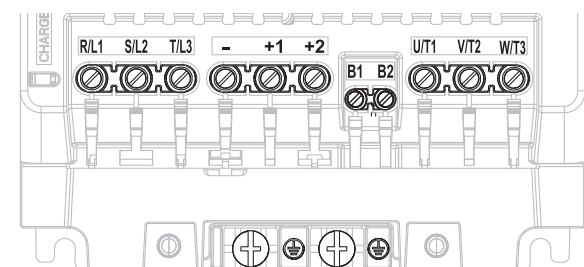
Model: GA50UB018□



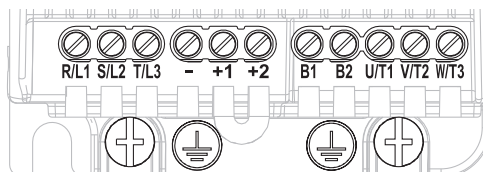
Models: GA50U2056□, 4031, 4038



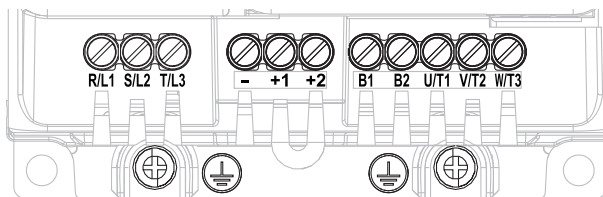
Models: GA50U4044□, 4060



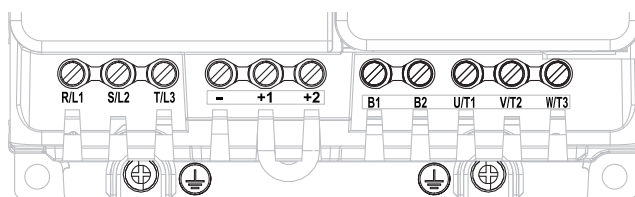
Models: GA50U2001□, 2002, 2004, 2006



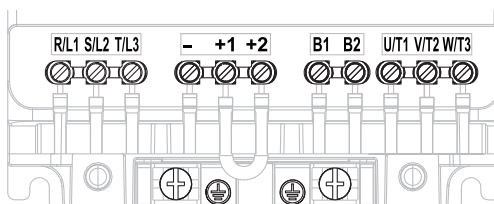
Models: GA50U2012□, 4001, 4002, 4004, 4005, 4007, 4009



Model: GA50U4012□



Models: GA50U2030□, 2042, 4018, 4023



Models: GA50U2070□, 2082

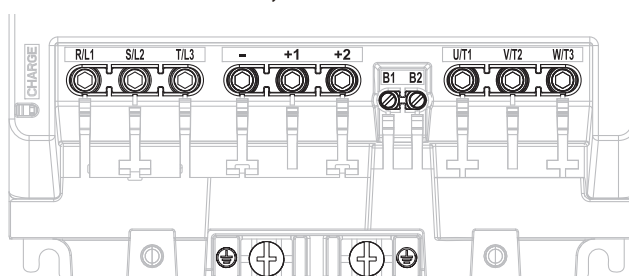


Figure 3 GA500 Main Circuit and Motor Circuit Terminal Layout by Model

■ Main Circuit and Motor Wire Gauge and Tightening Torque

Table 9 lists wire gauge for the drive main circuit terminals. Verify the existing V1000 wire size is within the Wire Range and Recommended Gauge for the GA500.

■ GA500 Main Circuit Wiring Precautions

Wire the main circuit terminal block correctly as specified by the GA500 Installation and Primary Operation Manual No. TOEPC71061752. Comply with local standards for correct wire gauge in the region where you will use the drive.

GA500 Wire Selection and Termination

Use UL Listed vinyl-coated insulated copper wire rated 600 V minimum. Wire gauge must be calculated using 75 °C ratings, higher temperature rated wire may be utilized without a wire gauge reduction.

The recommended wire gauge are based on drive continuous current ratings with 75 °C (167 °F) 600 V class 2 heat-resistant indoor PVC wire. Assume these conditions:

- Ambient temperature: 40 °C (104 °F) maximum
- Wiring distance: 100 m (3281 ft) maximum
- Normal Duty rated current value

GA500 Peripheral Device Wiring

Refer to the instruction manual for each device for recommended wire gauge to connect peripheral devices or options to terminals +1, +2, -, B1, and B2. Contact Yaskawa or your nearest sales representative if the recommended wire gauge for the peripheral devices or options are out of the range of the applicable gauge for the drive.

GA500 Grounding

WARNING! *Electrical Shock Hazard*

Make sure that the protective ground wire complies with technical standards and local safety regulations. The EN 61800-5-1:2007 standard specifies that you must wire the power supply to automatically de-energize when the protective ground wire disconnects. If you turn on the internal EMC filter, the leakage current of the drive will be more than 3.5 mA. Use these closed-loop crimp terminals or equivalent to connect a protective ground wire that has a minimum cross-sectional area of 10 mm² (copper wire).

- 8-4NS from JST Mfg. Co., Ltd.
- R8-4S from NICHIFU Co., Ltd.
- P10-8R from PANDUIT Corp.

Table 9 Main Circuit and Motor Wire Gauge by Drive Model

| V1000 | | | | GA500 | | | | |
|----------------------------------|------------------|----------------------------------|-------------------|---------------------------|------------------|----------------------------------|-------------------|-----------------------------------|
| Drive Model CIMR-VU_ | Terminal | Recom- mended Gauge AWG | Wire Range AWG | Catalog Code GA50U_ | Terminal | Recom- mended Gauge AWG | Wire Range AWG | Wire Stripping Length mm |
| Single-Phase 240 V Models | | | | | | | | |
| BA0001 BA0002 BA0003 | R/L1, S/L2, T/L3 | 14 | 18 to 14 | B001 B002 B004 | L/L1, N/L2 | 14 | 14 | 6.5 |
| | U/T1, V/T2, W/T3 | 14 | 18 to 14 | | U/T1, V/T2, W/T3 | 14 | 14 | 6.5 |
| | -, +1, +2 | - | 18 to 14 | | -, +1 | 14 | 14 | 6.5 |
| | B1, B2 | - | 18 to 14 | | B1, B2 | 14 | 14 | 6.5 |
| | Ground | 14 | 18 to 14 | | Ground | 14 | 14 | - |
| BA0006 | R/L1, S/L2, T/L3 | 12 | 14 to 10 | B006 | L/L1, N/L2 | 12 | 14 to 10 | 8 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 14 | 14 to 12 | 8 |
| | -, +1, +2 | - | 14 to 10 | | -, +1 | 12 | 14 to 10 | 8 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 8 |
| | Ground | 10 | 14 to 10 | | Ground | 10 | 14 to 10 | - |

5 Main Circuit and Motor Wiring

| V1000 | | | | GA500 | | | | |
|--------------------------------------|------------------|-----------------------------|-------------------|------------------------------|------------------|-----------------------------|-------------------|-----------------------------------|
| Drive Model CIMR-VU_ | Terminal | Recommended Gauge AWG | Wire Range AWG | Catalog Code GA50U_ | Terminal | Recommended Gauge AWG | Wire Range AWG | Wire Stripping Length mm |
| BA0010 | R/L1, S/L2, T/L3 | 10 | 14 to 10 | B010 | L/L1, N/L2 | 10 | 12 to 10 | 8 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 14 | 14 to 12 | 8 |
| | -, +1, +2 | - | 14 to 10 | | -, +1 | 10 | 12 to 10 | 8 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 8 |
| | Ground | 10 | 14 to 10 | | Ground | 10 | 14 to 10 | - |
| BA0012 | R/L1, S/L2, T/L3 | 10 | 14 to 10 | B012 | L/L1, N/L2 | 8 | 14 to 8 | 10 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 12 | 14 to 10 | 10 |
| | -, +1, +2 | - | 14 to 10 | | -, +1 | 8 | 14 to 8 | 10 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 10 |
| | Ground | 10 | 14 to 10 | | Ground | 10 | 14 to 10 | - |
| BA0018 | R/L1, S/L2, T/L3 | 8 | 12 to 8 | B018 | L/L1, N/L2 | 8 | 12 to 6 | 10 |
| | U/T1, V/T2, W/T3 | 10 | 12 to 8 | | U/T1, V/T2, W/T3 | 10 | 14 to 8 | 10 |
| | -, +1, +2 | - | 12 to 8 | | -, +1 | 8 | 12 to 6 | 10 |
| | B1, B2 | - | 12 to 8 | | B1, B2 | 14 | 14 to 12 | 10 |
| | Ground | 8 | 12 to 8 | | Ground | 8 | 12 to 8 | - |
| Three-Phase 240 V Models | | | | | | | | |
| 2A0001 2A0002 2A0004 2A0006 | R/L1, S/L2, T/L3 | 14 | 18 to 14 | 2001 2002 2004 2006 | R/L1, S/L2, T/L3 | 14 | 14 | 6.5 |
| | U/T1, V/T2, W/T3 | 14 | 18 to 14 | | U/T1, V/T2, W/T3 | 14 | 14 | 6.5 |
| | -, +1, +2 | - | 18 to 14 | | -, +1, +2 | 14 | 14 | 6.5 |
| | B1, B2 | - | 18 to 14 | | B1, B2 | 14 | 14 | 6.5 |
| | Ground | 14 | 18 to 14 | | Ground | 14 | 14 | - |
| 2A0010 | R/L1, S/L2, T/L3 | 12 | 14 to 10 | 2010 | R/L1, S/L2, T/L3 | 14 | 14 to 12 | 8 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 14 | 14 to 12 | 8 |
| | -, +1, +2 | - | 14 to 10 | | -, +1, +2 | 12 | 14 to 10 | 8 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 8 |
| | Ground | 10 | 14 to 10 | | Ground | 10 | 14 to 10 | - |
| 2A0012 | R/L1, S/L2, T/L3 | 12 | 14 to 10 | 2012 | R/L1, S/L2, T/L3 | 12 | 14 to 10 | 8 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 12 | 14 to 10 | 8 |
| | -, +1, +2 | - | 14 to 10 | | -, +1, +2 | 10 | 12 to 10 | 8 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 8 |
| | Ground | 10 | 14 to 10 | | Ground | 10 | 14 to 10 | - |
| 2A0020 | R/L1, S/L2, T/L3 | 10 | 14 to 10 | 2021 | R/L1, S/L2, T/L3 | 8 | 14 to 8 | 10 |
| | U/T1, V/T2, W/T3 | 10 | 14 to 10 | | U/T1, V/T2, W/T3 | 10 | 14 to 8 | 10 |
| | -, +1, +2 | - | 14 to 10 | | -, +1, +2 | 8 | 14 to 8 | 10 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 10 | 10 |
| | Ground | 10 | 14 to 10 | | Ground | 8 | 14 to 8 | - |
| 2A0030 | R/L1, S/L2, T/L3 | 8 | 10 to 6 | 2030 | R/L1, S/L2, T/L3 | 8 | 12 to 6 | 10 |
| | U/T1, V/T2, W/T3 | 8 | 10 to 6 | | U/T1, V/T2, W/T3 | 8 | 12 to 6 | 10 |
| | -, +1, +2 | - | 10 to 6 | | -, +1, +2 | 6 | 12 to 6 | 10 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 12 | 12 to 8 | 10 |
| | Ground | 8 | 10 to 6 | | Ground | 8 | 10 to 6 | - |
| 2A0040 | R/L1, S/L2, T/L3 | 6 | 10 to 6 | 2042 | R/L1, S/L2, T/L3 | 6 | 12 to 6 | 10 |
| | U/T1, V/T2, W/T3 | 8 | 10 to 6 | | U/T1, V/T2, W/T3 | 6 | 12 to 6 | 10 |
| | -, +1, +2 | - | 10 to 6 | | -, +1, +2 | 4 | 10 to 2 | 18 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 10 | 14 to 6 | 10 |
| | Ground | 6 | 10 to 6 | | Ground | 6 | 10 to 6 | - |

5 Main Circuit and Motor Wiring

| V1000 | | | | GA500 | | | | |
|---------------------------------|------------------|----------------------------------|-------------------|---------------------------|------------------|----------------------------------|-------------------|-----------------------------------|
| Drive Model CIMR-VU_ | Terminal | Recom- mended Gauge AWG | Wire Range AWG | Catalog Code GA50U_ | Terminal | Recom- mended Gauge AWG | Wire Range AWG | Wire Stripping Length mm |
| 2A0056 | R/L1, S/L2, T/L3 | 4 | 6 to 4 | 2056 | R/L1, S/L2, T/L3 | 4 | 10 to 2 | 18 |
| | U/T1, V/T2, W/T3 | 4 | 6 to 4 | | U/T1, V/T2, W/T3 | 4 | 10 to 2 | 18 |
| | -, +1, +2 | - | 6 to 4 | | -, +1, +2 | 2 | 8 to 2 | 18 |
| | B1, B2 | - | 10 to 6 | | B1, B2 | 8 | 12 to 6 | 10 |
| | Ground | 6 | 8 to 4 | | Ground | 6 | 8 to 4 | - |
| 2A0069 | R/L1, S/L2, T/L3 | 3 | 8 to 2 | 2070 | R/L1, S/L2, T/L3 | 2 | 6 to 1 | 20 |
| | U/T1, V/T2, W/T3 | 3 | 8 to 2 | | U/T1, V/T2, W/T3 | 2 | 8 to 1 | 20 |
| | -, +1, +2 | - | 8 to 2 | | -, +1, +2 | 1 | 6 to 1/0 | 20 |
| | B1, B2 | - | 8 to 6 | | B1, B2 | 8 | 12 to 6 | 10 |
| | Ground | 6 | 6 to 4 | | Ground | 4 | 6 to 4 | - |
| - | | | | 2082 | R/L1, S/L2, T/L3 | 1 | 6 to 1/0 | 20 |
| | | | | | U/T1, V/T2, W/T3 | 2 | 6 to 1 | 20 |
| | | | | | -, +1, +2 | 2/0 | 2 to 2/0 | 20 |
| | | | | | B1, B2 | 6 | 10 to 6 | 10 |
| | | | | | Ground | 4 | 6 to 4 | - |
| Three-Phase 480 V Models | | | | | | | | |
| 4A0001 4A0002 4A0004 | R/L1, S/L2, T/L3 | 14 | 14 to 10 | 4001 4002 | R/L1, S/L2, T/L3 | 14 | 14 to 12 | 8 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 14 | 14 to 12 | 8 |
| | -, +1, +2 | - | 14 to 10 | | -, +1, +2 | 14 | 14 to 12 | 8 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 8 |
| | Ground | 14 | 14 to 10 | | Ground | 14 | 14 to 10 | - |
| | | | | 4004 | R/L1, S/L2, T/L3 | 14 | 14 to 12 | 8 |
| | | | | | U/T1, V/T2, W/T3 | 14 | 14 to 12 | 8 |
| | | | | | -, +1, +2 | 14 | 14 to 12 | 8 |
| | | | | | B1, B2 | 14 | 14 to 12 | 8 |
| | | | | | Ground | 10 | 14 to 10 | - |
| 4A0005 4A0007 4A0009 | R/L1, S/L2, T/L3 | 14 | 14 to 10 | 4005 4007 4009 | R/L1, S/L2, T/L3 | 14 | 14 to 12 | 8 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 14 | 14 to 12 | 8 |
| | -, +1, +2 | - | 14 to 10 | | -, +1, +2 | 14 | 14 to 12 | 8 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 8 |
| | Ground | 10 | 14 to 10 | | Ground | 10 | 14 to 10 | - |
| 4A0011 | R/L1, S/L2, T/L3 | 12 | 14 to 10 | 4012 | R/L1, S/L2, T/L3 | 12 | 14 to 10 | 10 |
| | U/T1, V/T2, W/T3 | 14 | 14 to 10 | | U/T1, V/T2, W/T3 | 14 | 14 to 12 | 10 |
| | -, +1, +2 | - | 14 to 10 | | -, +1, +2 | 10 | 12 to 8 | 10 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 10 |
| | Ground | 10 | 14 to 10 | | Ground | 10 | 14 to 10 | - |
| 4A0018 | R/L1, S/L2, T/L3 | 10 | 14 to 6 | 4018 | R/L1, S/L2, T/L3 | 10 | 12 to 8 | 10 |
| | U/T1, V/T2, W/T3 | 10 | 14 to 6 | | U/T1, V/T2, W/T3 | 10 | 12 to 8 | 10 |
| | -, +1, +2 | - | 14 to 6 | | -, +1, +2 | 10 | 14 to 8 | 10 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 14 | 14 to 12 | 10 |
| | Ground | 8 | 14 to 6 | | Ground | 10 | 14 to 6 | - |
| 4A0023 | R/L1, S/L2, T/L3 | 10 | 10 to 6 | 4023 | R/L1, S/L2, T/L3 | 8 | 14 to 6 | 10 |
| | U/T1, V/T2, W/T3 | 10 | 10 to 6 | | U/T1, V/T2, W/T3 | 10 | 14 to 8 | 10 |
| | -, +1, +2 | - | 10 to 6 | | -, +1, +2 | 8 | 12 to 6 | 10 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 12 | 14 to 10 | 10 |
| | Ground | 8 | 10 to 6 | | Ground | 10 | 10 to 6 | - |

5 Main Circuit and Motor Wiring

| V1000 | | | | GA500 | | | | |
|-------------------------|------------------|----------------------------------|-------------------|---------------------------|------------------|----------------------------------|-------------------|-----------------------------------|
| Drive Model CIMR-VU_ | Terminal | Recom- mended Gauge AWG | Wire Range AWG | Catalog Code GA50U_ | Terminal | Recom- mended Gauge AWG | Wire Range AWG | Wire Stripping Length mm |
| 4A0031 | R/L1, S/L2, T/L3 | 8 | 10 to 6 | 4031 | R/L1, S/L2, T/L3 | 8 | 12 to 6 | 10 |
| | U/T1, V/T2, W/T3 | 8 | 10 to 6 | | U/T1, V/T2, W/T3 | 8 | 12 to 6 | 10 |
| | -, +1, +2 | - | 10 to 6 | | -, +1, +2 | 6 | 12 to 4 | 18 |
| | B1, B2 | - | 14 to 10 | | B1, B2 | 10 | 12 to 8 | 10 |
| | Ground | 6 | 10 to 6 | | Ground | 8 | 10 to 6 | - |
| 4A0038 | R/L1, S/L2, T/L3 | 6 | 10 to 6 | 4038 | R/L1, S/L2, T/L3 | 6 | 12 to 6 | 10 |
| | U/T1, V/T2, W/T3 | 8 | 10 to 6 | | U/T1, V/T2, W/T3 | 8 | 12 to 6 | 10 |
| | -, +1, +2 | - | 10 to 6 | | -, +1, +2 | 4 | 10 to 2 | 18 |
| | B1, B2 | - | 10 to 8 | | B1, B2 | 10 | 14 to 6 | 10 |
| | Ground | 6 | 10 to 6 | | Ground | 6 | 10 to 6 | - |
| - | - | - | - | 4044 | R/L1, S/L2, T/L3 | 4 | 10 to 2 | 18 |
| | | | | | U/T1, V/T2, W/T3 | 6 | 12 to 4 | 18 |
| | | | | | -, +1, +2 | 2 | 8 to 2 | 18 |
| | | | | | B1, B2 | 8 | 12 to 6 | 10 |
| | | | | | Ground | 6 | 10 to 6 | - |
| - | - | - | - | 4060 | R/L1, S/L2, T/L3 | 2 | 8 to 2 | 18 |
| | | | | | U/T1, V/T2, W/T3 | 4 | 10 to 2 | 18 |
| | | | | | -, +1, +2 | 2 | 6 to 2 | 18 |
| | | | | | B1, B2 | 8 | 12 to 6 | 10 |
| | | | | | Ground | 6 | 10 to 6 | - |

6 Control Circuit Wiring

Use this section to understand differences between the V1000 and GA500 control circuit wiring to transfer control circuit wiring to the GA500. Refer to the GA500 Installation & Primary Operation Manual or Technical Reference for more details and precautions when wiring the GA500 control circuit terminals.

◆ Control Circuit Terminal Layout

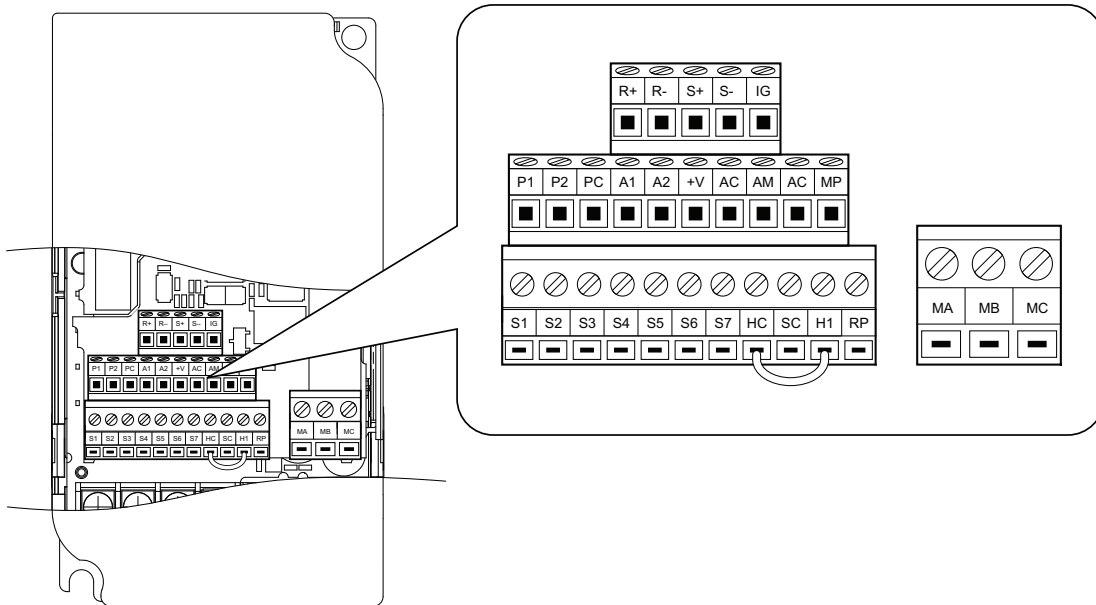


Figure 4 V1000 Control Circuit Terminals

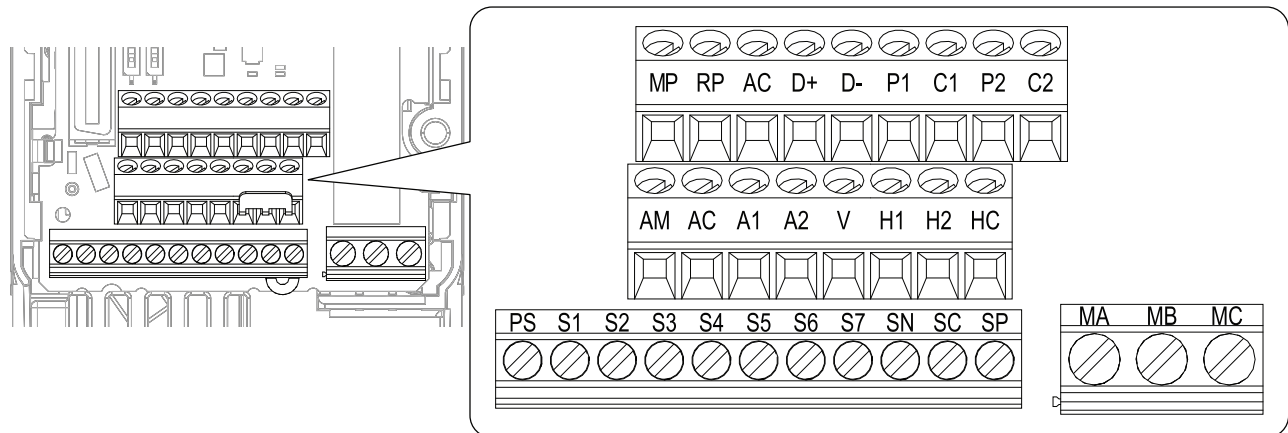


Figure 5 GA500 Control Circuit Terminals

6 Control Circuit Wiring

◆ Control Circuit Connection Diagrams

Refer to the GA500 Installation & Primary Operation Manual or Technical Reference for complete details on the GA500 control circuit.

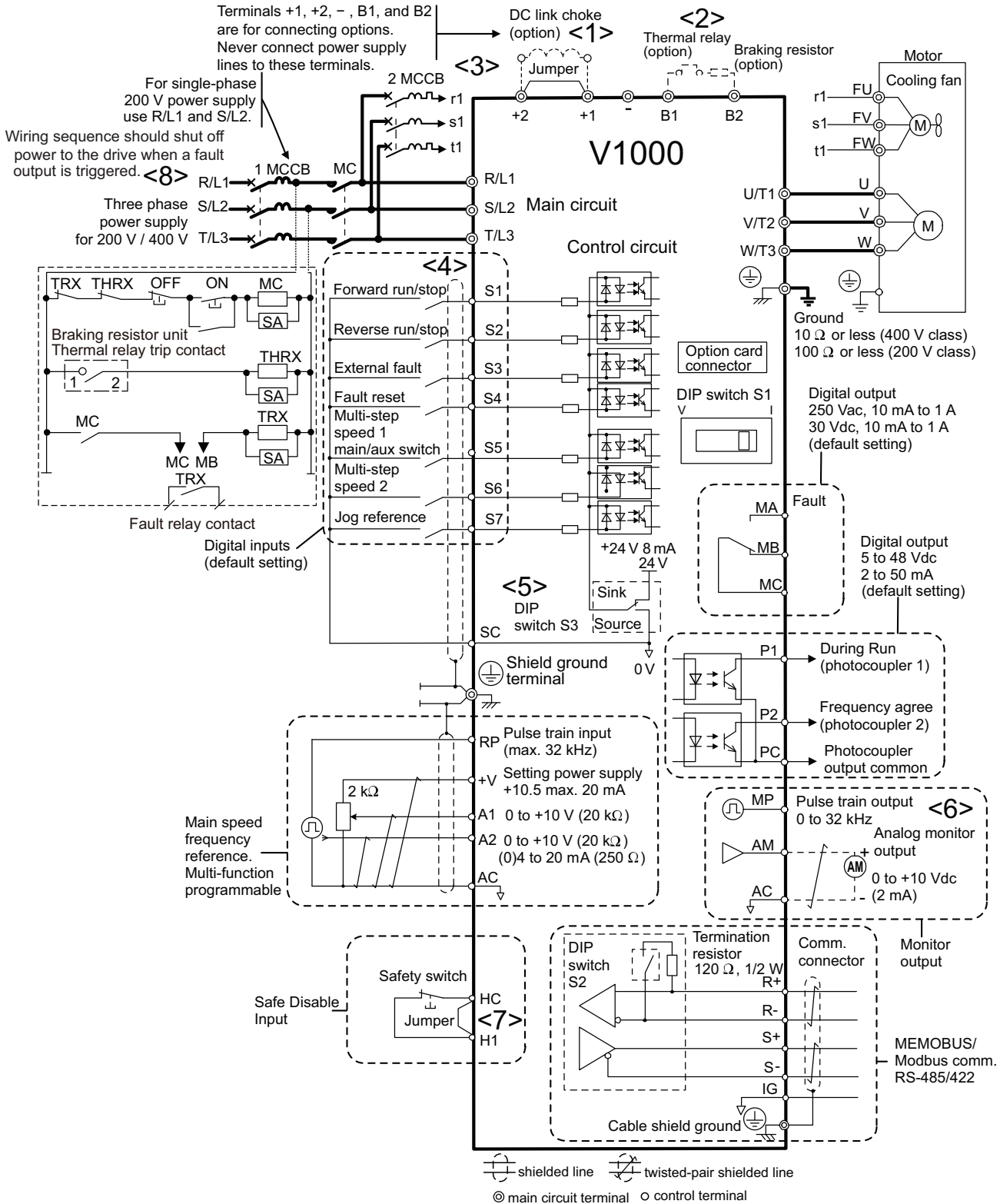


Figure 6 V1000 Connection Diagram

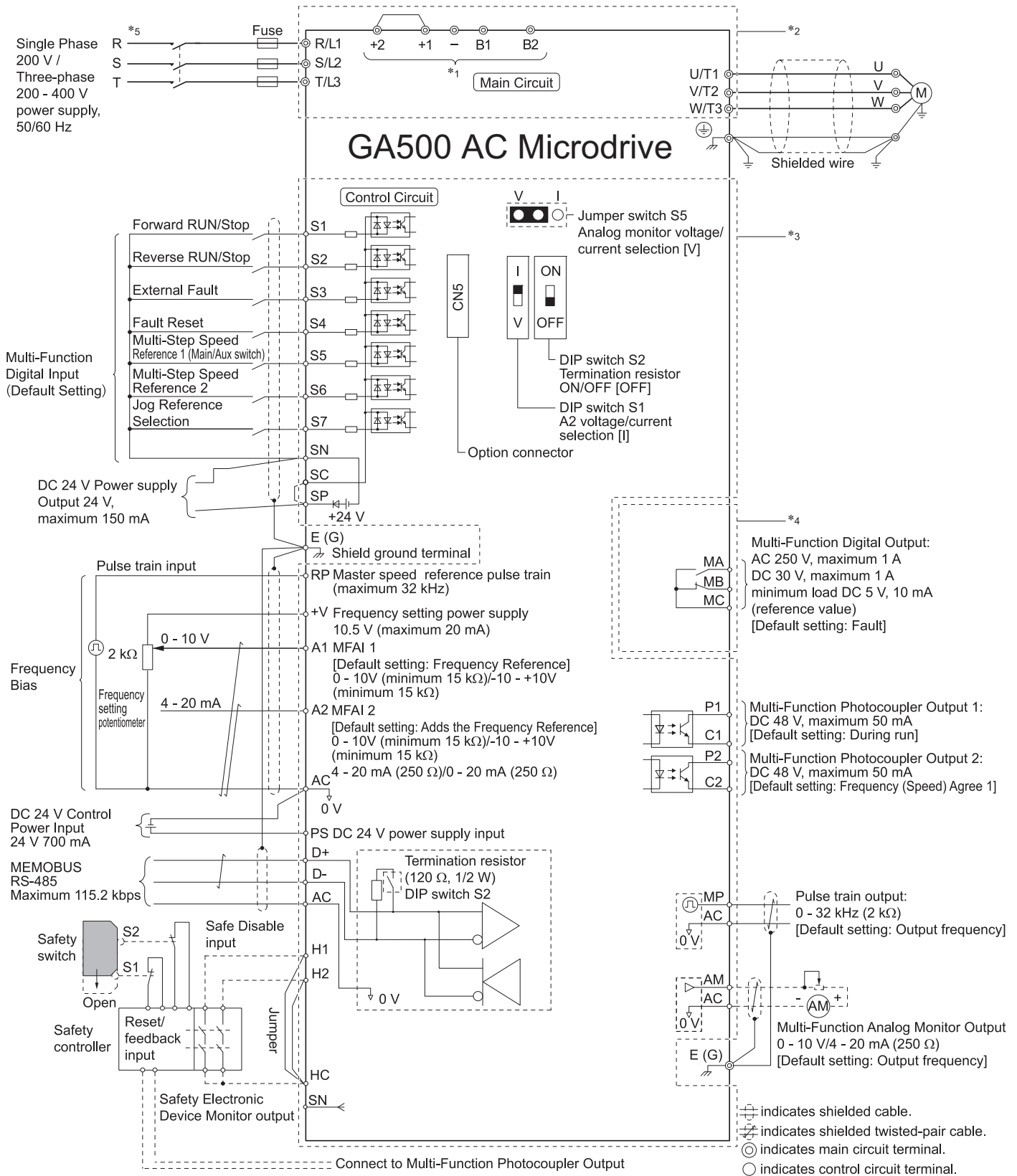


Figure 7 GA500 Connection Diagram

6 Control Circuit Wiring

◆ Control Circuit I/O Cross Reference

Refer to the GA500 Installation & Primary Operation Manual or Technical Reference for more details and precautions when wiring the GA500 control circuit terminals.

Table 10 Control Circuit I/O Cross Reference

| Control Circuit Terminals | | Name | Signal Level | |
|---------------------------|-------|--|--|--|
| V1000 | GA500 | | V1000 | GA500 |
| S1 | S1 | Multi-function digital input selection 1 (ON: Forward run, OFF: Stop) | Photocoupler 24 Vdc, 8 mA | Photocoupler 24 Vdc, 6 mA |
| S2 | S2 | Multi-function digital input selection 2 (ON: Reverse run OFF: Stop) | | |
| S3 | S3 | Multi-function digital input selection 3 (External fault (N.O.)) | | |
| S4 | S4 | Multi-function digital input selection 4 (Fault reset) | | |
| S5 | S5 | Multi-function digital input selection 5 (Multi-step speed reference 1) | | |
| S6 | S6 | Multi-function digital input selection 6 (Multi-step speed reference 2) | | |
| S7 | S7 | Multi-function digital input selection 7 (Jog command) | | |
| - | SN | Multi-function digital input power supply 0 V | - | Multi-function digital input power supply, 24 V (Maximum 150 mA) Notice: Do not jumper or short terminals SP and SN. Failure to comply will damage the drive. |
| SC | SC | Multi-function digital input selection common | Sequence Common | |
| - | SP | Multi-function digital input power supply +24 Vdc | - | |
| H1 | H1 | Safe Disable input 1 | Open: Output disabled Closed: Normal operation Note: Disconnect wire jumper between HC and H1 when using the safe disable input. The wire length should not exceed 30 m. | Remove the jumper between terminals H1-HC and H2-HC to use the Safe Disable input. • 24 V, 6 mA • ON: Normal operation • OFF: Coasting motor • Internal impedance 4.7 kΩ • OFF Minimum OFF time of 3 ms |
| - | H2 | Safe Disable input 2 | - | |
| HC | HC | Safe Disable function common | +24 Vdc (Maximum 10 mA) | Safe Disable function common NOTICE: Do not close the circuit between terminals HC and SN. A closed circuit between these terminals will cause damage to the drive. |

| Control Circuit Terminals | | Name | Signal Level | |
|---------------------------|-------|--|--|---|
| V1000 | GA500 | | V1000 | GA500 |
| RP | RP | Master frequency reference pulse train input | Response frequency: 0.5 to 32 kHz (Duty Cycle: 30 to 70%) (High level voltage: 3.5 to 13.2 Vdc) (Low level voltage: 0.0 to 0.8 Vdc) (Input impedance: 3 kΩ) | Response frequency: 0.5 to 32 kHz (Duty Cycle: 30 to 70%) (High level voltage: 3.5 to 13.2 Vdc) (Low level voltage: 0.0 to 0.8 Vdc) (Input impedance: 3 kΩ) |
| | | (Master frequency reference) | | |
| +V | +V | Power supply for frequency setting | +10.5 Vdc (Allowable current 20 mA maximum) | +10.5 Vdc (Allowable current 20 mA maximum) |
| A1 | A1 | Multi-function analog input 1 | Input voltage 0 to +10 Vdc (20 kΩ) resolution 1/1000 | Voltage input Use H3-01 [Terminal A1 Signal Level Select] to select the signal level. • 0 V to 10 V/100% (input impedance: minimum 15 kΩ) • -10 V to +10 V/-100% to +100% (Input impedance: minimum 15 kΩ) |
| | | Master frequency reference | | |
| A2 | A2 | Multi-function analog input 2 | Input voltage or input current (Selected by DIP switch S1 and H3-09) 0 to +10 Vdc (20 kΩ), Resolution: 1/1000 4 to 20 mA (250 Ω) or 0 to 20 mA (250 Ω) Resolution: 1/500 | Voltage input or current input Use DIP switch S1 and H3-09 [Terminal A2 Signal Level Select] to select the input. 0 V to 10 V/100% (Input impedance: minimum 15 kΩ) -10 V to +10 V/-100% to +100% (Input impedance: Minimum 15 kΩ) 4 mA to 20 mA/100%, 0 mA to 20 mA/100% (Input impedance: 250 Ω) |
| | | (Combined to terminal A1) | | |
| AC | AC | Frequency reference common | 0 V | 0 V |
| E (G) | E (G) | Connecting shielded cable | - | - |
| MA | MA | N.O. output | Relay output 30 Vdc, 10 mA to 1 A | Relay output 30 Vdc, 10 mA to 1 A |
| | | (Fault) | | |
| MB | MB | N.C. output | 250 Vac, 10 mA to 1 A Minimum load: 5 Vdc, 10 mA (Reference value) | 250 Vac, 10 mA to 1 A Minimum load: 5 Vdc, 10 mA (Reference value) |
| | | (Fault) | | |
| MC | MC | Digital output common | | |
| P1 | P1 | Multi-function photocoupler output 1 | Photocoupler output 48 Vdc, 2 to 50 mA | Photocoupler output 48 V, 2 to 50 mA |
| - | C1 | (During RUN) | | |
| P2 | P2 | Multi-function photocoupler output 2 | | |
| - | C2 | (Speed agree 1) | | |
| PC | - | Photocoupler common | | |
| MP | MP | Pulse train output | 32 kHz (Maximum) | 32 kHz (Maximum) |
| | | (Output frequency) | | |

6 Control Circuit Wiring

| Control Circuit Terminals | | Name | Signal Level | |
|-------------------------------|-------|-----------------------------------|--|--|
| V1000 | GA500 | | V1000 | GA500 |
| AM | AM | Analog monitor output | 0 to 10 Vdc (2 mA or less) Resolution: 1/1000 | Select voltage or current output. 0 V to 10 V/0% to 100% 4 mA to 20 mA (Receiver recommended impedance: 250 Ω) Note: Use jumper S5 and H4-07 [Terminal AM Signal Level Select] to set the signal type. |
| | | (Output frequency) | | |
| AC | AC | Monitor common | 0 V | 0 V |
| - | PS | External 24 V power supply input | - | Supplies backup power to the drive control circuit, keypad, and option board. 21.6 Vdc to 26.4 Vdc, 700 mA |
| - | AC | External 24 V power supply ground | - | 0 V |
| Serial Communication Terminal | | Name | Signal Level | |
| V1000 | GA500 | | V1000 | GA500 |
| R+ | D+ | Communications input (+) | RS-485/422 MEMOBUS/ Modbus communication protocol 115.2 kbps (Maximum) | RS-485 MEMOBUS/ Modbus communication protocol 115.2 kbps (Maximum) |
| R- | | Communications input (-) | | |
| S+ | D- | Communications output (+) | | |
| S- | | Communications output (-) | | |
| IG | AC | Shield ground | 0 V | 0 V |

Table 11 Control Circuit Terminal Sizes and Wire Gauge

| Model | Capacity | Terminal Symbol | Screw | Tightening Torque N•m (lb-in) | Bare Wire | | Crimp Ferrule | |
|-------|----------------|---|-------|-------------------------------------|---|---|---|--|
| | | | | | Recommended Gauge mm ² (AWG) | Wire Range mm ² (AWG) | Recommended Gauge mm ² (AWG) | Wire Range mm ² (AWG) |
| V1000 | All capacities | S1-S7, SC, RP, +V, A1, A2, AC, HC, H1, P1, P2, PC, MP, AM, AC, S+, S-, R+, R-, IG | M2 | 0.22 to 0.25 (1.9 to 2.2) | 0.75 (18) | Stranded wire: 0.25 to 1.0 (24 to 18) Solid wire: 0.25 to 1.5 (24 to 16) | 0.25 to 0.5 (24 to 20) | 0.5 (20) |
| | | MA, MB, MC | M3 | 0.5 to 0.6 (4.4 to 5.3) | 0.75 (18) | Stranded wire: 0.25 to 1.5 (24 to 16) Solid wire: 0.25 to 1.5 (24 to 16) | 0.25 to 1.0 (24 to 17) | 0.5 (20) |
| GA500 | All capacities | PS, S1 - S7, SN, SC, SP, AM, AC, A1, A2, +V, H1, H2, HC, MP, RP, AC, D+, D-, P1, C1, P2, C2 | M2 | 0.22 - 0.25 (1.95 - 2.21) | 0.75 (18) | Stranded wire: 0.25 - 1.0 (24 - 17) Solid wire: 0.25 - 1.5 (24 - 16) | 0.5 (20) | 0.25 - 0.5 (24 - 20) |
| | | MA, MB, MC | M3 | 0.5 - 0.6 (4.4 - 5.3) | 0.75 (18) | Stranded wire: 0.25 - 1.5 (24 - 16) Solid wire: 0.25 - 1.5 (24 - 16) | 0.5 (20) | 0.25 - 1.0 (24 - 17) |

◆ Control Circuit Switches and Jumpers

Use this section to make any needed changes to the GA500 control circuit switches or jumpers.

■ V1000 Switches and Jumpers

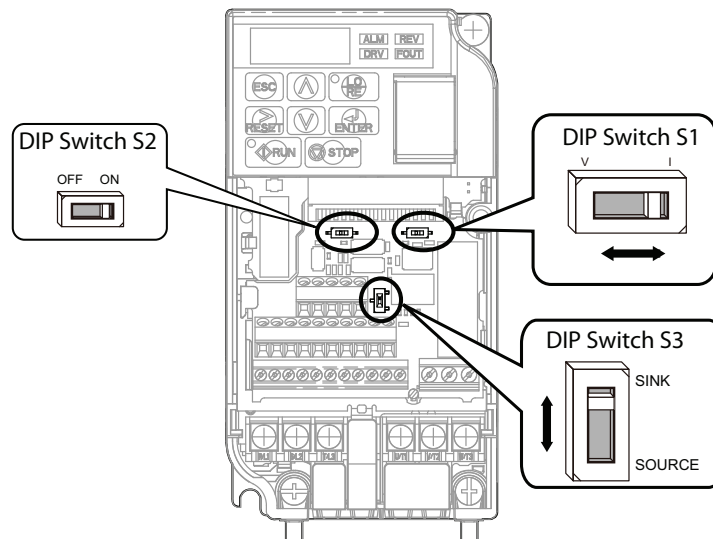


Figure 8 V1000 DIP Switches

Table 12 V1000 DIP Switch Settings

| DIP Switch | Switch Function | Setting Value | DIP Switch Setting Description |
|------------|--|--------------------|--|
| S1 | Analog input signal selection for voltage or current for terminal A2 | V (left position) | Voltage input (0 to 10 V) |
| | | I (right position) | Current input (4 to 20 mA or 0 to 20 mA): default setting |
| S2 | MEMOBUS/Modbus termination resistor switch setting for the RS-485, RS-422 communication terminals R-, R+, S-S+ | ON | Internal termination resistor ON |
| | | OFF | Internal termination resistor OFF (no termination resistor): default setting |
| S3 | Sinking/sourcing mode switch for digital input terminals S1~S7 | SINK | Sinking Mode (0 V common): default setting |
| | | SOURCE | Sourcing Mode (+24 V common) |

GA500 Switches and Jumpers

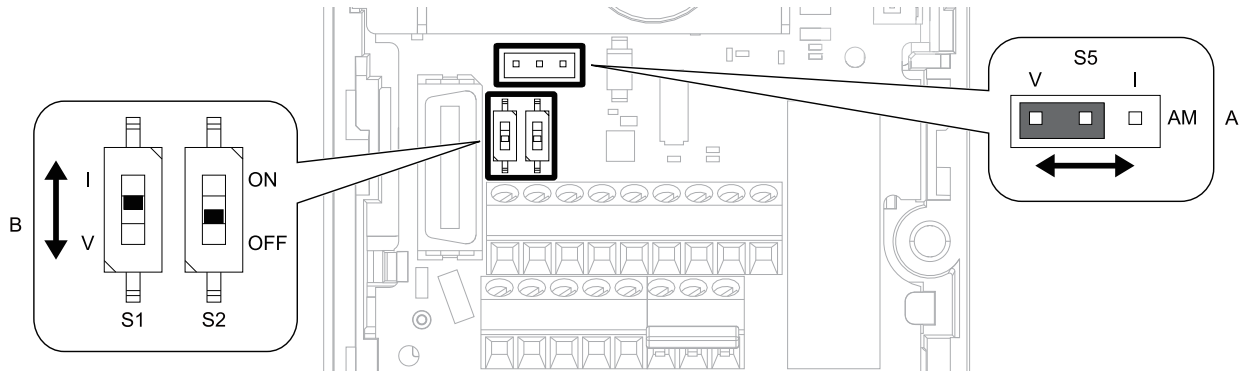


Figure 9 GA500 Switches and Jumpers

Table 13 GA500 Switch and Jumper Settings

| Switch or Jumper | GA500 Terminal | Default Setting Value | DIP Switch Setting Description |
|------------------|----------------|-----------------------|--|
| DIP SW S1 | A2 | I (current input) | Sets the input method for terminal A2 (voltage or current). |
| DIP SW S2 | - | OFF | Enables and disables the MEMOBUS/Modbus communications termination resistor. |
| Jumper S5 | AM | V (voltage output) | Sets the output method for terminal AM (voltage or current). |

7 Transfer of Parameter Settings

Use this section to transfer V1000 parameter settings to the GA500. There are several methods to transfer parameters.

- **Transfer Parameters via DriveWizard Industrial PC Software on page 28** (recommended)
Yaskawa recommends the use of DriveWizard Industrial to transfer parameters.
- **Procedure - Manual Transfer of V1000 Parameters to the GA500 using the Keypad on page 31**

◆ Transfer Parameters via DriveWizard Industrial PC Software

The DriveWizard® Industrial support tool is a Windows-based PC program designed to make commissioning and troubleshooting of Yaskawa drives as simple as possible. DriveWizard® Industrial provides user-friendly tools for viewing, manipulating, and exchanging data with the drive. Data can be retrieved, changed, stored, and graphed. DriveWizard® Industrial is also used to transfer parameters from previous generation drives to new ones.

DriveWizard Industrial is compatible with the GA500, GA800, A1000, P1000, U1000, V1000, V1000-4X, J1000, D1000, R1000, F7, P7, G7 and G5 Low HP.

Request a free copy of DriveWizard Industrial PC software here:

<https://www.yaskawa.com/ad-campaign~promoCode=drivewizard-industrial>

DriveWizard Industrial product page on yaskawa.com:

<https://www.yaskawa.com/products/drives/industrial-ac-drives/industrial-software-tools/drivewizard-industrial>



The screenshot shows the "Drive Converter" software window. The window title is "Drive Converter" and it has standard Windows window controls. Below the title bar, there is a description: "This function allows users to convert from one drive series to another drive series." and a "Getting Started" link. Below that, it says "Create or open an existing project, next go to the Tool menu and click on Project Converter." The main area contains a "Drive Conversion" dialog box with two tabs: "Conversion Selection" and "Conversion Log". The "Conversion Selection" tab is active and shows "Drive Information" with fields for "Drive Series: A1000", "Software Version: 1026", "Model: CIMR-A*2*0004***", and "Control Method: Open Loop Vector". To the right, there is a "Drive Duty Cycle" section with radio buttons for "Normal Duty" (selected), "Normal Duty 2", and "Heavy Duty". Below this, there is a section "Select drive series, software version and model to convert to:" with dropdown menus for "Drive Series: GA800", "Software Version: 09010", and "Model: CIPR-GA80*2004****". A "Go!" button is located to the right of these dropdowns. At the bottom of the dialog, there are two checkboxes: "Convert non-KVA related parameters only" and "Convert modified parameters only". A red "Important please read:" warning box is present at the bottom of the dialog, containing text about automatic model suggestions and parameter verification. At the very bottom of the software window, there are buttons for "Help", "Transfer converted data to the active project", and "Cancel".

The screenshot shows the YASKAWA software interface. At the top, there is a navigation bar with tabs for FILE, HOME, EDIT, STARTUP AND DIAGNOSTICS, TOOLS, and HELP. Under the TOOLS tab, there are three icons: Application Wizard, Network Configurator, and Convert Project. The Convert Project icon is highlighted with a mouse cursor. Below the navigation bar is a blue header with the YASKAWA logo. The main interface is divided into two panes. The left pane shows a tree view of parameter groups for A1000, including A:Initialization, B:Application, C:Tuning, D:Instructions, E:Motor Parameter, F:Option, H:Terminal Function Selection, L:Protection Function Selection, N:Special Adjustment, O:Operator Relation, Q:DWEZ Parameter, R:Connection Data, Modified Parameters, and Monitors A1000. The right pane has tabs for Overview, Export, and E-Mail. Below these tabs are buttons for Preview, Print, and Edit Parameter. A message below the buttons says "Click Preview to review parameter or monitor print-out." Below the message is a table titled "Parameter Groups A1000" with two columns: No. and Parameter.

| No. | Parameter |
|-------|--------------------|
| A1-01 | Access level |
| A1-02 | Control method |
| A1-04 | Enter password |
| A1-06 | Select application |

7 Transfer of Parameter Settings

■ About DriveWizard Mobile for Android and iOS

DriveWizard Mobile is DriveWizard for mobile devices. It does not have a feature to transfer parameters between V1000 and GA500, but it is very useful for commissioning GA500 drives with your smartphone or tablet.

Start-up, adjust, and monitor Yaskawa GA500 AC drives with your smartphone or tablet. Use DriveWizard® Mobile to backup, store, and retrieve your drive settings locally or to your personal Yaskawa Drive Cloud™ account. DriveWizard Mobile is the mobile app version of DriveWizard® Industrial.

Get DriveWizard Mobile here: <https://www.yaskawa.com/dwm>

Get the App



DriveWizard Mobile for Android



► Requires 4.4 or later



DriveWizard Mobile for iOS



► Requires iOS 10.0 or later
► Compatible with iPhone, iPad, and iPod Touch



◆ Procedure - Manual Transfer of V1000 Parameters to the GA500 using the Keypad

An easy way to view which V1000 parameters differ from factory settings is to use the V1000 **urFy** or **verify** menu. If no parameters differ from factory settings then the V1000 will display “None”. Record the parameters and their settings in a log so they can be manually entered into the replacement GA500 drive.

This procedure is also available in video format on YouTube.



- **YouTube Video title:** Checking modified parameter settings in V1000 and J1000
- **YouTube Video URL:** <https://youtu.be/5vbZW10X7Wc>

Table 14 Viewing Modified Parameters on the V1000 Drive

| Step | Key Press | V1000 Display | Description/Action |
|--|--|----------------|--|
| 1 | [ESC] | F xx.xx | Press until left-most digit is "F" (Freq Ref) followed by numbers. Consider this "Home Base". |
| 2 | [DOWN] | "urFy" | Points to Drive's VERIFY menu. Note: Press [Down] x 4 on the V1000. |
| 3 | [ENTER] | "xx-xx" | Display will show the most recently viewed "modified" Parameter. Note: all digits are flashing. |
| 4 | [UP]/[DOWN] | "xx-xx" | Using arrows, scroll through the "modified" parameter(s). |
| 5 | [ENTER] | Modified value | Displays selected Parameter's current "modified" value. |
| 6 | Write down the modified parameters and settings in a log for reference when transferring settings to the replacement GA500 drive. | | |
| 7 | [ESC] | "xx-xx" | Displays selected "modified" Parameter. |
| 8 | Repeat previous three keystrokes to view other "modified" parameters and their values. | | |
| 9 | [ESC] x 2 | F xx.xx | Press until left-most digit is "F" (Freq Ref) followed by Frequency Reference. Consider this "Home Base". |
| The V1000 drive is now back at the ready state and can be replaced with the new GA500 drive. Follow all safety precautions in the V1000 and GA500 manuals when replacing your drive. | | | |
| 10 | Use the log you made in Step 6 as your reference to program the same parameters into the replacement GA500. Follow the GA500 instruction manual for parameter setting procedures. | | |
| Procedure complete. | | | |

7 Transfer of Parameter Settings

◆ Parameters with Default Value or Setting Range Differences

Some of the setting ranges and default settings for certain parameters differ between V1000 and GA500.

Table 15 only lists **setting range or default setting differences** between similar V1000 and GA500 parameters. **Table 15** is not a comprehensive comparison of all parameter differences between V1000 and GA500. For example, GA500 parameters that have no equal in the V1000 are omitted.

Table 15 Parameters with Setting Range or Default Value Differences

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|--------------------------------------|--|------------------|---------------------------|-----------------|--------------|------|------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x0100 | A1-00 | Language Selection | Language selection for the digital operator. This parameter is not reset when the drive is initialized by parameter A1-03. 0: English 1: Japanese 2: German 3: French 4: Italian 5: Spanish 6: Portuguese 7: Chinese 8: Czech 9: Russian 10: Turkish 11: Polish 12: Greek | 0~12 | 0~7 | 02-09 Depend | 02-09 Depend | DEC | |
| 0x0101 | A1-01 | Access Level Selection | Restricts user access to parameter settings. The set access level restricts what parameters the keypad will display, and what parameters the user can set. 0: Operation Only 1: User Parameters 2: Advanced Level 3: Expert Level | 0~3 | 0~2 | 2 | 2 | DEC | |
| 0x0102 | A1-02 | Control Method Selection | Selects the Control Method of the drive. 0: V/f Control without PG 2: Open Loop Vector 5: PM Open Loop Vector 8: EZ Vector Note: Does not return to the default setting when the drive is initialized. | 0,2,5,6,8 | 0, 2, 5 | 02-09 Depend | 0 | DEC | |
| 0x0103 | A1-03 | Initialize Parameters | Resets parameters to default values. 0: Keypad or Multi-Speed Selection 1110: User Initialization 2220: 2-Wire initialization 3330: 3-Wire initialization | 0,1110,2220,3330 | 0, 1110, 2220, 3330, 5550 | 0 | 0 | DEC | |
| 0x0189 | B2-01 | DC Injection Braking Start Frequency | Sets the frequency at which DC Injection braking starts when Ramp to Stop (b1-03 = 0) is selected. If b2-01 < E1-09, DC Injection braking starts at E1-09. Note: Zero Speed restrictions are active in Flux Loop Vector Mode. | 0.0~10.0 | 0.0~10.0 | A1-02 Depend | 0.5 | DEC | Hz |
| 0x01BB | B2-13 | Short Circuit Brake Time at Stop | Sets the time for Short-Circuit Brake operation at stop in units of 0.01 s. Used to stop a motor rotating due to inertia. Disabled when set to 0.00. | 0.00~25.50 | 0.00~25.50 | A1-02 Depend | 0.50 | DEC | sec |

7 Transfer of Parameter Settings

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|---------------------------------------|---|---------------|-----------|------------------------|-------|------|------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x019E | B3-14 | Bi-Directional Speed Search Selection | This parameter enables the drive to detect the motor direction during speed search. 0: Disabled. Drive uses frequency reference direction. 1: Enabled. Drive uses detected direction | 0~1 | 0~1 | A1-02 Depend | 0 | DEC | |
| 0x01C0 | B3-24 | Speed Search Method Selection | This parameter is select of Speed search for start or recovery of power failure. 1: Speed estimation type 2: Current detection type | 1~2 | 0~1 | A1-02 Depend | 0 | DEC | |
| 0x01A3 | B4-01 | Timer Function On-Delay Time | Used in conjunction with a multi-function digital input and a multi-function digital output programmed for the timer function. This sets the amount of time between when the digital input is closed, and the digital output is enabled. | 0.0~3000.0 | 0.0~300.0 | 0.0 | 0.0 | DEC | sec |
| 0x01A4 | B4-02 | Timer Function Off-Delay Time | Used in conjunction with a multi-function digital input and a multi-function digital output programmed for the timer function. This sets the amount of time the output remains enabled after the digital input is opened. | 0.0~3000.0 | 0.0~300.0 | 0.0 | 0.0 | DEC | sec |
| 0x01A5 | B5-01 | PID Function Setting | This parameter determines the function of the PID control. 0: Disabled 1: D = Feedback 2: D = Feed-Forward 3: Freq. Ref. + PID output (D = Feedback) 4: Freq. Ref. + PID output (D = Feed-Forward) 5: Same as Setting 1 w/ G7 Mode 6: Same as Setting 2 w/ G7 Mode 7: Same as Setting 3 w/ G7 Mode 8: Same as Setting 4 w/ G7 Mode | 0~8 | 0~4 | 0 | 0 | DEC | |
| 0x01B3 | B5-15 | PID Sleep Function Start Level | Sets the sleep function start frequency. Note: Enabled even when PID control mode has not been selected. | 0.0~590.0 | 0.0~400.0 | A1-02 Depend (all 0.0) | 0.0 | DEC | Hz |
| 0x01B5 | B5-17 | PID Accel/Decel Time | Applies an accel/decel time to the PID setpoint reference. The drive's standard softstarter (C1-xx and S-curve) still affects the output of the PID algorithm. | 0.0~6000.0 | 0~255 | 0.0 | 0.0 | DEC | sec |
| 0x01B6 | B6-01 | Dwell Reference at Start | The Dwell function is used to temporarily hold the frequency when driving a motor with heavy load. Parameters b6-01 and b6-02 set the frequency to hold and the time to maintain that frequency at start. Parameters b6-03 and b6-04 do the same at top. | 0.0~590.0 | 0.0~400.0 | A1-02 Depend (all 0.0) | 0.0 | DEC | Hz |
| 0x01B8 | B6-03 | Dwell Frequency at Stop | The Dwell function is used to temporarily hold the frequency when driving a motor with heavy load. Parameters b6-01 and b6-02 set the frequency to hold and the time to maintain that frequency at start. Parameters b6-03 and b6-04 do the same at top. | 0.0~590.0 | 0.0~400.0 | A1-02 Depend (all 0.0) | 0.0 | DEC | Hz |

7 Transfer of Parameter Settings

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|---|--|---------------|--------------|--------------------------------|--------------------------------|------|-------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x01CC | B8-01 | Energy Saving Control Selection | Energy Savings function enable/disable selection. 0: Disabled 1: Enabled (set b8-04) 2: PM Energy-saving control | 0~2 | 0~1 | A1-02 Depend (all 0) | 0 | DEC | |
| 0x020A | C1-11 | Accel/Decel Switch Frequency | Sets the frequency at which acceleration and deceleration times are automatically changed. | 0.0~590.0 | 0.0~400.0 | A1-02 Depend (all 0) | 0.0 | DEC | Hz |
| 0x0264 | C1-14 | Picking up speed and slowing down rate setting standard frequency | Sets the base frequency used to calculate acceleration and deceleration rates. | 0.0~590.0 | 0.0~400.0 | 0.0 | 0.0 | DEC | Hz |
| 0x0212 | C3-04 | Slip Compensation Selection during Regeneration | Enables or disables slip compensation during regenerative operation. 0: Disabled 1: Enabled (6 Hz and above) 2: Enabled (compensation provided wherever possible) | 0~2 | 0~1 | 0 | 0 | DEC | |
| 0x021C | C5-02 | ASR Integral Time 1 | Sets the integral time of the speed control loop. (ASR) | 0.000~60.000 | 0.000~10.000 | A1-02 Depend | A1-02 Depend | DEC | sec |
| 0x021E | C5-04 | ASR Integral Time 2 | Sets the speed control gain 2 and integral time 2 of the speed control loop (ASR). Note: Adjustment is not normally required. | 0.000~60.000 | 0.000~10.000 | A1-02 Depend | A1-02 Depend | DEC | sec |
| 0x0221 | C5-07 | ASR Gain Switching Frequency | Sets the frequency for switching between Proportional Gain 1, 2 and Integral Time 1, 2. When ASR switch is set to one of the multi-function input terminals, that switching value take priority. | 0.0~400.0 | 0.0~400.0 | A1-02 Depend (all 0) | 0.0 | DEC | Hz |
| 0x0280 | D1-01~17 | Frequency Reference 1~17 | Setting units are determined by o1-03. | 0.00~590.00 | 0.00~400.00 | 0.00 | 0.00 | DEC | O1-03 |
| 0x0294 | D3-01~3 | Jump Frequency 1~3 | Sets the median value of the specific frequency band that needs to be jumped. | 0.0~590.0 | 0.0~400.0 | A1-02 Depend (all 0) | 0.0 | DEC | Hz |
| 0x0297 | D3-04 | Jump Frequency Width | This parameter determines the width of the deadband around each selected prohibited frequency reference point. A setting of "1.0" will result in a deadband of +/- 1.0 Hz. | 0.0~20.0 | 0.0~20.0 | A1-02 Depend (all 1.0) | 1.0 | DEC | Hz |
| 0x0303 | E1-04 | Max Output Frequency (FMAX) | Sets the maximum output frequency for the V/f pattern. | 40.0~590.0 | 40.0~400.0 | A1-02,E1-03,O2-09,E5-01 Depend | A1-02,E1-03,O2-09,E5-01 Depend | DEC | O1-04 |
| 0x0305 | E1-06 | Bass Frequency (FA) | Sets the base frequency for the V/f pattern. | 0.0~590.0 | 0.0~400.0 | A1-02,E1-03,O2-09,E5-01 Depend | A1-02,E1-03,O2-09,E5-01 Depend | DEC | O1-04 |
| 0x0306 | E1-07 | Mid Output Frequency (FB) | Sets the middle output frequency. | 0.0~590.0 | 0.0~400.0 | A1-02,E1-03,O2-09 Depend | A1-02,E1-03,O2-09 Depend | DEC | O1-04 |
| 0x0308 | E1-09 | Minimum Output Frequency (FMIN) | Sets the minimum output frequency for the V/f pattern. | 0.0~590.0 | 0.0~400.0 | A1-02,E1-03,O2-09,E5-01 Depend | A1-02,E1-03,O2-09,E5-01 Depend | DEC | O1-04 |
| 0x030A | E1-11 | Mid Output Frequency 2 | Set only when fine tuning the V/f pattern within the constant power (HP) range above base speed. This value seldom needs to be changed. | 0.0~590.0 | 0.0~400.0 | A1-02,E1-03,O2-09 Depend | A1-02,E1-03,O2-09 Depend | DEC | O1-04 |
| 0x0311 | E2-04 | Number of Motor Poles | Sets the number of motor poles. This value is automatically set during Auto-Tuning. | 2~120 | 2~48 | 4 | 4 | DEC | |

7 Transfer of Parameter Settings

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|--|--|---------------|------------|-------------------------|-------------------------|------|-------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x0313 | E2-06 | Motor Leakage Inductance | Sets the voltage drop due to motor leakage inductance as a percentage of motor rated voltage. This value is automatically set during Auto-Tuning. | 0.0~60.0 | 0.0~40.0 | kVA Depend | kVA Depend | DEC | % |
| 0x031A | E3-04 | (FMAX) | Sets the maximum output frequency used for motor 2. | 40.0~590.0 | 40.0~400.0 | A1-02, O2-09,kVA Depend | A1-02, O2-09,kVA Depend | DEC | O1-04 |
| 0x031C | E3-06 | Motor 2 Base Frequency (FA) | Sets the base frequency used for motor 2. | 0.0~590.0 | 0.0~400.0 | A1-02, O2-09,kVA Depend | A1-02, O2-09,kVA Depend | DEC | O1-04 |
| 0x031D | E3-07 | Motor 2 Minimum Output Frequency (FB) | Sets the middle output frequency used for motor 2. | 0.0~590.0 | 0.0~400.0 | A1-02, O2-09,kVA Depend | A1-02, O2-09,kVA Depend | DEC | O1-04 |
| 0x031F | E3-09 | Motor 2 Minimum Output Frequency (FMIN) | Sets the minimum output frequency used for motor 2. | 0.0~590.0 | 0.0~400.0 | A1-02, O2-09,kVA Depend | A1-02, O2-09,kVA Depend | DEC | O1-04 |
| 0x0345 | E3-11 | Motor 2 Mid Output Frequency 2 | Used only for fine-tuning the V/f ratio within the rated output range. This setting rarely needs to be changed. | 0.0~590.0 | 0.0~400.0 | A1-02, O2-09,kVA Depend | A1-02, O2-09,kVA Depend | DEC | O1-04 |
| 0x0324 | E4-04 | Motor 2 Motor Poles | Sets the number of poles of motor 2. This value is automatically set during Auto-Tuning. | 2~120 | 2~48 | 4 | 4 | DEC | |
| 0x0326 | E4-06 | Motor 2 Leakage Inductance | Sets the voltage drop due to motor leakage inductance as a percentage of rated voltage of motor 2. This value is automatically set during Auto-Tuning. | 0.0~60.0 | 0.0~40.0 | kVA Depend | kVA Depend | DEC | % |
| 0x032C | E5-04 | Motor Poles (for PM motor) | Sets the number of motor poles. | 2~120 | 2~48 | E5-01 Depend | E5-01 Depend | DEC | |
| 0x0381 | F1-02 | Operation Selection at PG Open Circuit (PGO) | Selects the motor operation when PGo [PG Disconnect] is detected. 0: Ramp to stop 1: Coast to stop 2: Fast Stop (use C1-09) 3: Alarm only 4: No alarm display | 0~4 | 0~3 | 1 | 1 | DEC | |
| 0x03A5 | F6-04 | Trace Sampling from Communications Option Board | Sets the delay time until bUS [Option Communication Error] issues are detected. | 0.0~12.0 | 0.0~5.0 | 2.0 | 2.0 | DEC | sec |
| 0x040B | H2-01 | Terminals MA, MB, and MC Function Selection (relays) | Terminals MA, MB, and MC Function Selection (relays) | 0x0~0x1A7 | 0x0~0x192 | 0x00E | 0x00E | HEX | |
| 0x040C | H2-02 | Terminals P1 Function Selection (open-collector) | Terminals P1 Function Selection (open-collector) | 0x0~0x1A7 | 0x0~0x192 | 0x000 | 0x000 | HEX | |
| 0x040D | H2-03 | Terminals P2 Function Selection (open-collector) | Terminals P2 Function Selection (open-collector) | 0x0~0x1A7 | 0x0~0x192 | 0x002 | 0x002 | HEX | |
| 0x042A | H5-06 | Drive Transmit Wait Time | Set the delay time from when the drive receives data to when the drive sends data. | 0~65 | 5~65 | 5 | 5 | DEC | ms |
| 0x0435 | H5-09 | CE Detection Time | Sets the time required to detect a communications error. Adjustment may be need when networking several drives. | 0.0~25.0 | 0.0~10.0 | 2.0 | 2.0 | DEC | sec |

7 Transfer of Parameter Settings

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|---|---|--|--------------------------------------|---------------------|---------------------|------|------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x0431 | H6-06 | Terminal MP Pulse Train Monitor Selection | Selects a function for the pulse train monitor output terminal MP. Inputs the "x-xx" portion of the Ux-xx parameter to be monitored. | 0,31,101,102,105,116,501,502,702,801~809,821~825,831~839,851~855 | 0,31,101,102,105,116,501,502,801~809 | 102 | 102 | DEC | |
| 0x0480 | L1-01 | Motor Overload Protection Selection | Enables or disables the motor overload protection using electronic thermal protectors. 0: Disabled 1: Variable Torque 2: Constant Torque 10:1 Speed Range 3: Constant Torque 100:1 Speed Range 4: PM Variable Torque 5: PM Constant Torque 6: Variable Torque (50Hz) | 0~6 | 0~4,6 | A1-02 Depend | A1-02 Depend | DEC | |
| 0x0485 | L2-01 | Momentary Power Loss Operation Selection | Selects the drive operation performed when a momentary power loss occurs. 0: Disabled 1: Enbl with Timer 2: Enbl whl CPU act 3: KEB Mode 4: KEB Stop Mode 5: KEB Decel to Stp | 0~5 | 0~2 | 0 | 0 | DEC | |
| 0x048A | L2-06 | KEB Deceleration Time | Sets the time required to decelerate to zero speed when a KEB command is input from a multi-function input terminal. | 0.0~6000.0 | 0.0~200.0 | 0.0 | 0.0 | DEC | sec |
| 0x048B | L2-07 | Momentary Power Loss Ridethru Time | Set the time (in seconds) to accelerate to the set speed after recovery from a momentary power loss. If setting = 0.0, then active acceleration time is used instead. | 0.0~6000.0 | 0.0~25.5 | 0.0 | 0.0 | DEC | sec |
| 0x048E | L2-10 | KEB Detection Time | Sets the minimum duration to operate the KEB after a momentary power loss is detected. | 0~25500 | 0~2000 | 50 | 50 | DEC | ms |
| 0x048F | L3-01 | Stall Prevention Selection during Acceleration | Selects the method of the Stall Prevention During Acceleration function. 0: Disabled 1: General Purpose 2: Automatic Decel Reduction 3: ILim Mode | 0~3 | 0~2 | 1 | 1 | DEC | |
| 0x0493 | L3-05 | Stall Prevention Selection during Run | Enables or disables the Stall Prevention During Run function. 0: Disabled 1: Decel Time 1 2: Decel Time 2 3: Intelligent | 0~3 | 0~2 | A1-02 Depend | 1 | DEC | |
| 0x0494 | L3-06 | Stall Prevention Level during Run | This parameter is enabled when L3-05 is set to "1" or "2". Drive rated current is set as 100%. Decrease the set value if stalling or excessive current occurs with the default settings. | 5~150 | 30~150 | C6-01, L8-38 Depend | C6-01, L8-38 Depend | DEC | % |
| 0x0466 | L3-21 | Acceleration Deceleration Rate Calculation Gain | Sets the proportional gain used to calculate acceleration and deceleration rates. | 0.10~10.00 | 0.00~200.00 | A1-02 Depend | A1-02 Depend | DEC | |
| 0x046F | L3-25 | Load Inertia Ratio | Sets the ratio between the connected machinery and the motor. | 0.1~1000.0 | 0.0~1000.0 | 1.0 | 1.0 | DEC | |
| 0x0456 | L3-27 | Pre-Stall Acceleration Time | Pre-Stall Acceleration Time | 0~5000 | 20~150 | 60 | 60 | DEC | ms |

7 Transfer of Parameter Settings

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|---|---|---------------|--------------|------------------------|-------------------|------|------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x0499 | L4-01 | Speed Agreement Detection Level | Sets the speed agree detection level or the motor speed detection level. | 0.0~590.0 | 0.0~400.0 | A1-02 Depend (all 0.0) | 0.0 | DEC | Hz |
| 0x049A | L4-02 | Speed Agreement Detection Width | Sets the speed agree detection width or motor speed detection width. | 0.0~20.0 | 0.0~20.0 | A1-02 Depend | 2.0 | DEC | Hz |
| 0x049B | L4-03 | Speed Agreement Detection Level(+/-) | Sets the speed agree detection leveler the motor speed detection level. | -590.0~590.0 | -400.0~400.0 | A1-02 Depend (all 0.0) | 0.0 | DEC | Hz |
| 0x049C | L4-04 | Speed Agreement Detection Width (+/-) | Sets the speed agree detection width or motor speed detection width. | 0.0~20.0 | 0.0~20.0 | A1-02 Depend | 2.0 | DEC | Hz |
| 0x04AE | L8-02 | Overheat Alarm Level | When the heatsink temperature exceeds the value set in this parameter, an Overheat Alarm (OH) will occur. Requires that one of the multi-function digital output terminals (H2-xx) be set to 20. | 50~150 | 50~130 | kVA Depend | kVA Depend | DEC | °C |
| 0x04B6 | L8-10 | Heatsink Cooling Fan Operation Selection | Controls the heatsink cooling fan operation. 0: Fan On-Run Mode - Fan will operate only when the drive is running and for L8-11 seconds after RUN is removed. 1: Fan always on - Cooling fan operates whenever the drive is powered up 2: Fan ON in heating of Drive - Fan runs when drive main circuit overheat is detected | 0~2 | 0~1 | 0 | 0 | DEC | |
| 0x04E1 | L8-31 | Current Unbalance Detection Current Level | Sets the current level to activate Current Unbalance Protection Detection function with the drive rated current at 100%. | 1~100 | 0.0~100.0 | 3 | 30.0 | DEC | |
| 0x04EC | L8-35 | Side-by-Side Selection | 0: Disabled (standard installation). 1: Side-by-Side installation. 2:NEMA 1 Type 1 enclosure 3: Finless / Fin outside | 0~3 | 0~3 | 0 | kVA, O2-09 Depend | DEC | |
| 0x04F1 | L8-40 | Low Carrier Frequency Time | Sets the amount of time the drive will operate with a reduced carrier frequency. The carrier frequency derating function during run is disabled when this parameter is set to 0.00 s. | 0.00~2.00 | 0.00~2.00 | A1-02 Depend | 0.50 | DEC | sec |
| 0x0471 | L8-51 | STPo I Detection Level | Sets the STPo [De-synchronization Error] on the basis of the output current. | 0.0~300.0 | 0.0~150.0 | 0.0 | 0.0 | DEC | % |
| 0x0589 | N3-02 | High Slip Braking Current Limit | Sets the maximum current to be drawn during an HSB stop. Higher n3-02 settings will shorten motor stopping times but cause increased motor current, and therefore increased motor heating. | 0~200 | 100~200 | C6-01, L8-38 Depend | 150 | DEC | % |
| 0x0570 | N6-01 | Line-to-Line Motor Resistance Online Tuning | Tunes the line-to-line motor resistance online. 0: Disabled 1: Enabled (Line-to-line resistance tuning) 2: Enabled (Voltage Adjustm) In with PG vector control (A1-02 = 3), it is not possible to enable the resistance online adjustment only. There is a need to set C3-28=2. | 0~2 | 0~1 | 0 | 1 | DEC | |
| 0x0563 | N8-36 | Superimposed Harmonic Frequency | Sets the frequency in Hz for the superimposed signal used for superimposed harmonics. | 200~5000 | 200~1000 | 500 | 500 | DEC | Hz |

7 Transfer of Parameter Settings

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|---|---|---------------|--------------|-----------------|-------|------|------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x0568 | N8-41 | Superimposed Harmonic Polarity Estimation Proportional Gain | Sets the P gain for PI control used to estimate polarity. There is usually no need to change. You set the response of the speed estimation for high frequency injection. N8-57 (high frequency superimposed selection) is valid at the time of the 1. Unit [Hz] | 1.0~100.0 | -10.00~10.00 | 3.0 | 1.00 | DEC | Hz |
| 0x0569 | N8-42 | Integral Time for Superimposed Harmonic Polarity Estimation | Sets the integral time in 0.01 sec units for PI control used to estimate polarity. There is usually no need to change. You set the damping factor of the speed estimation for high frequency injection. N8-57 (high frequency superimposed selection) is valid at the time of the 1. Unit is [-] | 0.1~5.0 | 0.00~9.99 | 1.0 | 0.01 | DEC | |
| 0x053E | N8-51 | Acceleration Time Pull-In Current* | Sets the pull-in current during acceleration as a percentage of the motor rated current (E5-03). Set to a high value when more starting torque is needed. | 0~200 | 0~200 | A1-02 Depend | 50 | DEC | % |
| 0x05C3 | N8-74 | Light Load Iq Level | Set n8-48 [Pull-in/Light Load Id Current] to the level of the load current (q-axis current) to be applied. | 0~255 | 0.0~250.0 | 30.0 | 30.0 | DEC | % |
| 0x05C4 | N8-75 | Medium Load Iq Level (low) | Set n8-78 [Medium Load Id Current] to the level of the load current (q-axis current) to be applied. | 0~255 | 0.0~250.0 | 50.0 | 50.0 | DEC | % |
| 0x05CE | N8-77 | Heavy Load Iq Level | Set n8-49 [Heavy Load Id Current] to the level of the load current (q-axis current) to be applied. | 0~255 | 0.0~250.0 | 90.0 | 90.0 | DEC | % |
| 0x05F4 | N8-78 | Medium Load Id Current | Sets the level of the pull-in current for midrange loads. | 0~255 | -200.0~200.0 | 0.0 | 0.0 | DEC | % |
| 0x0500 | O1-01 | Drive Mode Unit Monitor Selection | Sets the U monitor that shows in Drive Mode. This parameter is only enabled for LED keypads. | 104~855 | 104~813 | 106 | 106 | DEC | |
| 0x0502 | O1-03 | Digital Operator Display Selection | Selects the display units for the frequency reference and output frequency. 0: 0.01 Hz 1: 0.01% (100% = E1-04) 2: r/min 3: User-selected units | 0~3 | 0~3 | A1-02 Depend | 0 | DEC | |
| 0x0504 | O1-05 | LCD Contrast | Sets the contrast of the digital operator LCD. A setting of "0" is the lightest contrast and a setting of "10" is the darkest contrast. 5: Normal contrast | 0~10 | 0~5 | 5 | 3 | DEC | |
| 0x164A | Q2-11 | Drive U1 Monitor Select 1 | Drive U1 Monitor Select 1 | 0~21 | 0~3, 6~13 | 0 | 0 | DEC | |
| 0x164B | Q2-12 | Drive U1 Monitor Select 2 | Drive U1 Monitor Select 2 | 0~21 | 0~3, 6~13 | 0 | 0 | DEC | |
| 0x0701 | T1-01 | Auto-Tuning Mode Selection | Selects the type of Auto-Tuning to be used. 0: Rotational Auto-Tuning 1: Stationary Auto-Tuning 1 2: StaTun for LinetoLine Resistance | 0~2 | 0, 2~3 | 0 | 0 | DEC | |
| 0x0702 | T1-02 | Motor Rated Power | Sets the motor rated power in kilowatts (kW). Note: If motor power is given in horsepower, power in kW can be calculated using the following formula: kW = HP x 0.746 | 0.00~650.00 | 0.03~650.00 | 0.40 | 0.40 | DEC | kW |

7 Transfer of Parameter Settings

| Reg. No. | Param. No. | Name | Description | Setting Range | | Initial Setting | | Base | Unit |
|----------|------------|-----------------------|--|---------------|-----------|-----------------|-------|------|------|
| | | | | GA500 | V1000 | GA500 | V1000 | | |
| 0x0705 | T1-05 | Motor Base Frequency | Sets the base frequency of the motor in Hertz (Hz). | 0.0~590.0 | 0.0~400.0 | 60.0 | 60.0 | DEC | Hz |
| 0x0706 | T1-06 | Number of Motor Poles | Sets the number of motor poles. | 2~120 | 2~48 | 4 | 4 | DEC | |
| 0x0707 | T1-07 | Motor Base Speed | Sets the base speed of the motor in revolutions per minute (RPM). | 0~35400 | 0~24000 | 1750 | 1750 | DEC | RPM |
| 0xBdB | T1-12 | Test Mode Selection | <p>Enables the Test Mode after performing Stationary Auto-Tuning. Enable this setting if it is possible to operate the motor with a light load attached after Stationary Auto-Tuning is complete.</p> <p>Note: This selection is possible when T1-10 [Motor Rated Slip Frequency] = 0 Hz. 0: No 1: Yes</p> | 0~1 | 0~0 | 0 | 0 | DEC | |

8 Carrier Frequency - C6-02 [Carrier Frequency Selection]

To understand the effect of changing the Carrier Frequency on your new replacement drive, refer to the GA500 Technical Reference SIEPC71061752, Section 10.7 Drive Derating, Carrier Frequency Settings and Rated Current Values.

Download here: <http://www.yaskawa.com/SIEPC71061752>



9 Watt Loss Comparison

Use this section to understand the watt loss difference between the V1000 and GA500. This is useful to ensure proper cooling for GA500 drives that replace V1000 drives inside of enclosures.

Understanding the “Difference” columns in *Table 16* through *Table 21*.

- A positive number = GA500 has **more** watt loss compared to V1000.
- A negative number = GA500 has **less** watt loss compared to V1000.

◆ Normal Duty (Parameter C6-01=1, factory default)

Table 16 Single-Phase 240 V Models, Watt Loss Comparison

| V1000 | | | | | GA500 | | | | | Difference | | |
|---------|-------------|-----------|----------|-------|--------------|-------------|-----------|----------|-------|------------|----------|-------|
| Model | Carrier kHz | Watt Loss | | | Catalog Code | Carrier kHz | Watt Loss | | | Watt Loss | | |
| CIMR-VU | | Interior | External | Total | GA50U | | Interior | External | Total | Interior | External | Total |
| BA0001 | Swing 2 kHz | 5.0 | 8.5 | 13.5 | B001 | 2.0 | 8.0 | 6.0 | 14.0 | 3.0 | -2.5 | 0.5 |
| BA0002 | Swing 2 kHz | 7.6 | 9.7 | 17.3 | B002 | 2.0 | 14.0 | 11.0 | 25.0 | 6.4 | 1.3 | 7.7 |
| BA0004 | Swing 2 kHz | 14.6 | 14.4 | 29.1 | B004 | 2.0 | 14.0 | 17.0 | 31.0 | -0.6 | 2.6 | 1.9 |
| BA0006 | Swing 2 kHz | 30.1 | 19.4 | 49.5 | B006 | 2.0 | 17.0 | 26.0 | 43.0 | -13.1 | 6.6 | -6.5 |
| BA0010 | Swing 2 kHz | 51.7 | 29.8 | 81.4 | B010 | 2.0 | 36.0 | 50.0 | 86.0 | -15.7 | 20.2 | 4.6 |
| BA0012 | Swing 2 kHz | 61.3 | 37.1 | 98.4 | B012 | 2.0 | 48.0 | 60.0 | 108.0 | -13.3 | 22.9 | 9.6 |
| BA0018 | Swing 2 kHz | — | — | — | B018 | 2.0 | 49.0 | 92.0 | 141.0 | N/A | N/A | N/A |

Table 17 Three-Phase 240 V Models, Watt Loss Comparison

| V1000 | | | | | GA500 | | | | | Difference | | |
|---------|-------------|-----------|----------|-------|--------------|-------------|-----------|----------|-------|------------|----------|-------|
| Model | Carrier kHz | Watt Loss | | | Catalog Code | Carrier kHz | Watt Loss | | | Watt Loss | | |
| CIMR-VU | | Interior | External | Total | GA50U | | Interior | External | Total | Interior | External | Total |
| 2A0001 | Swing 2 kHz | 5.0 | 8.0 | 13.0 | 2001 | 2.0 | 7.0 | 5.0 | 12.0 | 2.0 | -3.0 | -1.0 |
| 2A0002 | Swing 2 kHz | 7.6 | 9.5 | 17.1 | 2002 | 2.0 | 9.0 | 9.0 | 18.0 | 1.4 | -0.5 | 0.9 |
| 2A0004 | Swing 2 kHz | 15.8 | 13.6 | 29.4 | 2004 | 2.0 | 11.0 | 16.0 | 27.0 | -4.8 | 2.4 | -2.4 |
| 2A0006 | Swing 2 kHz | 27.5 | 17.2 | 44.7 | 2006 | 2.0 | 14.0 | 25.0 | 39.0 | -13.5 | 7.8 | -5.7 |
| 2A0010 | Swing 2 kHz | 51.7 | 25.8 | 77.5 | 2010 | 2.0 | 25.0 | 51.0 | 76.0 | -26.7 | 25.2 | -1.5 |
| 2A0012 | Swing 2 kHz | 61.3 | 30.4 | 91.7 | 2012 | 2.0 | 30.0 | 61.0 | 91.0 | -31.3 | 30.6 | -0.7 |
| 2A0020 | Swing 2 kHz | 98.7 | 46.3 | 145.0 | 2021 | 2.0 | 52.0 | 111.0 | 163.0 | -46.7 | 64.7 | 18.0 |
| 2A0030 | Swing 2 kHz | 246.4 | 88.9 | 335.3 | 2030 | 2.0 | 63.0 | 240.0 | 303.0 | -183.4 | 151.1 | -32.3 |
| 2A0040 | Swing 2 kHz | 266.7 | 112.8 | 379.6 | 2042 | 2.0 | 84.0 | 307.0 | 391.0 | -182.7 | 194.2 | 11.4 |
| 2A0056 | Swing 2 kHz | 357.9 | 151.8 | 509.7 | 2056 | 2.0 | 109.0 | 367.0 | 476.0 | -248.9 | 215.2 | -33.7 |
| 2A0069 | Swing 2 kHz | 461.7 | 184.5 | 646.2 | 2070 | 2.0 | 142.0 | 534.0 | 676.0 | -319.7 | 349.5 | 29.8 |
| - | - | - | - | - | 2082 | 2.0 | 160.0 | 531.0 | 691.0 | N/A | N/A | N/A |

Table 18 Three-Phase 480 V Models, Watt Loss Comparison

| V1000 | | | | | GA500 | | | | | Difference | | |
|---------|-------------|-----------|----------|-------|--------------|-------------|-----------|----------|-------|------------|----------|-------|
| Model | Carrier kHz | Watt Loss | | | Catalog Code | Carrier kHz | Watt Loss | | | Watt Loss | | |
| CIMR-VU | | Interior | External | Total | GA50U | | Interior | External | Total | Interior | External | Total |
| 4A0001 | Swing 2 kHz | 10.0 | 9.6 | 19.6 | 4001 | 2.0 | 8.0 | 7.0 | 15.0 | -2.0 | -2.6 | -4.6 |
| 4A0002 | Swing 2 kHz | 18.5 | 13.9 | 32.4 | 4002 | 2.0 | 13.0 | 12.0 | 25.0 | -5.5 | -1.9 | -7.4 |
| 4A0004 | Swing 2 kHz | 30.5 | 16.8 | 47.3 | 4004 | 2.0 | 14.0 | 24.0 | 38.0 | -16.5 | 7.2 | -9.3 |

9 Watt Loss Comparison

| V1000 | | | | | GA500 | | | | | Difference | | |
|---------|-------------|-----------|----------|-------|--------------|-------------|-----------|----------|----------|------------|----------|----------|
| Model | Carrier kHz | Watt Loss | | | Catalog Code | Carrier kHz | Watt Loss | | | Watt Loss | | |
| CIMR-VU | | Interior | External | Total | | | GA50U | Interior | External | Total | Interior | External |
| 4A0005 | Swing 2 kHz | 44.5 | 21.8 | 66.3 | 4005 | 2.0 | 16.0 | 32.0 | 48.0 | -28.5 | 10.2 | -18.3 |
| 4A0007 | Swing 2 kHz | 58.5 | 28.4 | 86.9 | 4007 | 2.0 | 20.0 | 44.0 | 64.0 | -38.5 | 15.6 | -22.9 |
| 4A0009 | Swing 2 kHz | 63.7 | 31.4 | 95.1 | 4009 | 2.0 | 28.0 | 58.0 | 86.0 | -35.7 | 26.6 | -9.1 |
| 4A0011 | Swing 2 kHz | 81.7 | 46.0 | 127.7 | 4012 | 2.0 | 39.0 | 83.0 | 122.0 | -42.7 | 37.0 | -5.7 |
| 4A0018 | Swing 2 kHz | 181.2 | 80.1 | 261.3 | 4018 | 2.0 | 52.0 | 155.0 | 207.0 | -129.2 | 74.9 | -54.3 |
| 4A0023 | Swing 2 kHz | 213.4 | 107.7 | 321.1 | 4023 | 2.0 | 86.0 | 236.0 | 322.0 | -127.4 | 128.3 | 0.9 |
| 4A0031 | Swing 2 kHz | 287.5 | 146.1 | 433.6 | 4031 | 2.0 | 101.0 | 284.0 | 385.0 | -186.5 | 137.9 | -48.6 |
| 4A0038 | Swing 2 kHz | 319.2 | 155.8 | 475.0 | 4038 | 2.0 | 108.0 | 341.0 | 449.0 | -211.2 | 185.2 | -26.0 |
| - | - | - | - | - | 4044 | 2.0 | 137.0 | 417.0 | 554.0 | N/A | N/A | N/A |
| - | - | - | - | - | 4060 | 2.0 | 176.0 | 490.0 | 666.0 | N/A | N/A | N/A |

◆ Heavy Duty (Parameter C6-01=0)

Table 19 Single-Phase 240 V Models, Watt Loss Comparison

| V1000 | | | | | GA500 | | | | | Difference | | |
|---------|-------------|-----------|----------|-------|--------------|-------------|-----------|----------|----------|------------|----------|----------|
| Model | Carrier kHz | Watt Loss | | | Catalog Code | Carrier kHz | Watt Loss | | | Watt Loss | | |
| CIMR-VU | | Interior | External | Total | | | GA50U | Interior | External | Total | Interior | External |
| BA0001 | 8.0 | 4.3 | 7.4 | 11.7 | B001 | 10.0 | 8.0 | 5.0 | 13.0 | 3.7 | -2.4 | 1.3 |
| BA0002 | 8.0 | 7.9 | 8.9 | 16.7 | B002 | 10.0 | 10.0 | 9.0 | 19.0 | 2.1 | 0.1 | 2.3 |
| BA0004 | 8.0 | 16.1 | 11.5 | 27.7 | B004 | 10.0 | 14.0 | 16.0 | 30.0 | -2.1 | 4.5 | 2.3 |
| BA0006 | 8.0 | 33.7 | 16.8 | 50.5 | B006 | 10.0 | 18.0 | 28.0 | 46.0 | -15.7 | 11.2 | -4.5 |
| BA0010 | 8.0 | 54.8 | 25.9 | 80.7 | B010 | 8.0 | 31.0 | 42.0 | 73.0 | -23.8 | 16.1 | -7.7 |
| BA0012 | 8.0 | 70.7 | 34.1 | 104.8 | B012 | 8.0 | 41.0 | 55.0 | 96.0 | -29.7 | 20.9 | -8.8 |
| BA0018 | 8.0 | 110.5 | 51.4 | 161.9 | B018 | 8.0 | 53.0 | 98.0 | 151.0 | -57.5 | 46.6 | -10.9 |

Table 20 Three-Phase 240 V Models, Watt Loss Comparison

| V1000 | | | | | GA500 | | | | | Difference | | |
|---------|-------------|-----------|----------|-------|--------------|-------------|-----------|----------|----------|------------|----------|----------|
| Model | Carrier kHz | Watt Loss | | | Catalog Code | Carrier kHz | Watt Loss | | | Watt Loss | | |
| CIMR-VU | | Interior | External | Total | | | GA50U | Interior | External | Total | Interior | External |
| 2A0001 | 8.0 | 4.3 | 7.3 | 11.6 | 2001 | 10.0 | 6.0 | 5.0 | 11.0 | 1.7 | -2.3 | -0.6 |
| 2A0002 | 8.0 | 7.9 | 8.8 | 16.7 | 2002 | 10.0 | 7.0 | 8.0 | 15.0 | -0.9 | -0.8 | -1.7 |
| 2A0004 | 8.0 | 16.2 | 11.5 | 27.7 | 2004 | 10.0 | 10.0 | 16.0 | 26.0 | -6.2 | 4.5 | -1.7 |
| 2A0006 | 8.0 | 27.4 | 15.9 | 43.3 | 2006 | 10.0 | 14.0 | 27.0 | 41.0 | -13.4 | 11.1 | -2.3 |
| 2A0010 | 8.0 | 54.8 | 23.8 | 78.6 | 2010 | 8.0 | 18.0 | 43.0 | 61.0 | -36.8 | 19.2 | -17.6 |
| 2A0012 | 8.0 | 70.7 | 29.9 | 100.6 | 2012 | 8.0 | 24.0 | 56.0 | 80.0 | -46.7 | 26.1 | -20.6 |
| 2A0020 | 8.0 | 110.5 | 43.3 | 153.8 | 2021 | 8.0 | 40.0 | 108.0 | 148.0 | -70.5 | 64.7 | -5.8 |
| 2A0030 | 8.0 | 231.5 | 72.2 | 303.7 | 2030 | 8.0 | 49.0 | 187.0 | 236.0 | -182.5 | 114.8 | -67.7 |
| 2A0040 | 8.0 | 339.5 | 82.8 | 321.3 | 2042 | 8.0 | 60.0 | 232.0 | 292.0 | -279.5 | 149.2 | -29.3 |
| 2A0056 | 8.0 | 347.6 | 117.6 | 465.2 | 2056 | 8.0 | 85.0 | 318.0 | 403.0 | -262.6 | 200.4 | -62.2 |
| 2A0069 | 8.0 | 437.7 | 151.4 | 589.1 | 2070 | 8.0 | 119.0 | 473.0 | 592.0 | -318.7 | 321.6 | 2.9 |
| - | - | - | - | - | 2082 | 8.0 | 148.0 | 525.0 | 673.0 | N/A | N/A | N/A |

Table 21 Three-Phase 480 V Models, Watt Loss Comparison

| V1000 | | | | | GA500 | | | | | Difference | | |
|---------|-------------|-----------|----------|-------|--------------|-------------|-----------|----------|-------|------------|----------|-------|
| Model | Carrier kHz | Watt Loss | | | Catalog Code | Carrier kHz | Watt Loss | | | Watt Loss | | |
| CIMR-VU | | Interior | External | Total | GA50U | | Interior | External | Total | Interior | External | Total |
| 4A0001 | 8.0 | 19.2 | 11.5 | 30.7 | 4001 | 8.0 | 9.0 | 11.0 | 20.0 | -10.2 | -0.5 | -10.7 |
| 4A0002 | 8.0 | 28.9 | 14.8 | 43.7 | 4002 | 8.0 | 11.0 | 16.0 | 27.0 | -17.9 | 1.2 | -16.7 |
| 4A0004 | 8.0 | 42.3 | 17.9 | 60.2 | 4004 | 8.0 | 15.0 | 31.0 | 46.0 | -27.3 | 13.1 | -14.2 |
| 4A0005 | 8.0 | 70.7 | 26.2 | 96.9 | 4005 | 8.0 | 18.0 | 42.0 | 60.0 | -52.7 | 15.8 | -36.9 |
| 4A0007 | 8.0 | 81.0 | 30.7 | 111.7 | 4007 | 8.0 | 18.0 | 49.0 | 67.0 | -63.0 | 18.3 | -44.7 |
| 4A0009 | 8.0 | 84.6 | 32.9 | 117.5 | 4009 | 8.0 | 25.0 | 65.0 | 90.0 | -59.6 | 32.1 | -27.5 |
| 4A0011 | 8.0 | 107.2 | 41.5 | 148.7 | 4012 | 8.0 | 32.0 | 85.0 | 117.0 | -75.2 | 43.5 | -31.7 |
| 4A0018 | 8.0 | 166.0 | 62.7 | 228.7 | 4018 | 8.0 | 55.0 | 166.0 | 221.0 | -111.0 | 103.3 | -7.7 |
| 4A0023 | 8.0 | 207.1 | 78.1 | 285.2 | 4023 | 8.0 | 61.0 | 200.0 | 261.0 | -146.1 | 121.9 | -24.2 |
| 4A0031 | 8.0 | 266.9 | 105.9 | 372.8 | 4031 | 8.0 | 79.0 | 255.0 | 334.0 | -187.9 | 149.1 | -38.8 |
| 4A0038 | 8.0 | 319.1 | 126.6 | 445.7 | 4038 | 8.0 | 95.0 | 338.0 | 433.0 | -224.1 | 211.4 | -12.7 |
| - | - | - | - | - | 4044 | 8.0 | 127.0 | 442.0 | 569.0 | N/A | N/A | N/A |
| - | - | - | - | - | 4060 | 8.0 | 135.0 | 446.0 | 581.0 | N/A | N/A | N/A |

10 Network Communication and Control I/O Options


V1000 network communication and I/O options are generally compatible with GA500. Firmware inside these options may require an update to support GA500. Refer to the “Applicable Products” section of the specific Option Installation Manual on www.yaskawa.com to get the compatible firmware version required in the option card.

Navigate to the “Options” section of the GA500 product page for more information on GA500 compatible options.

URL: <https://www.yaskawa.com/products/drives/industrial-ac-drives/microdrives/ga500-drive>

Home / Products / Drives / Industrial AC Drives / Microdrives / GA500 Drive

GA500 Drive Print



1/8 – 40 HP
The GA500 industrial AC micro drive combines simplicity and flexibility with Yaskawa's tradition of highly reliable products. Out of the box, the GA500 is a breeze to install with minimal wire preparation needed. Programming is simple enough to get the motor spinning in minutes but powerful enough to solve many of the toughest applications with tried and true open loop vector and V/f control.

Video | Flyer | Brochure | Tech Manual | Quick Start Guide | Core Manuals

Overview | **Options** | Software | Support & Training | Documents | Drawings

Features

Highlights

- ▶ No power pro Power
- ▶ Responsive I Enclosures
- ▶ Conformal coated (IEC 60721-3-3, 3C2, 3S2)

Products

- Drives
- Industrial AC Drives
- General Purpose Drives
- Microdrives
- GA500 Drive
- V1000 Drive
- V1000-4X Drive
- J1000 Drive
- Fan & Pump Drives
- System Components
- Industrial Network

Refer to the GA500 Selection Guide No. SL.GA500.01 for a complete list of GA500 options.

Download here: <https://www.yaskawa.com/sl.ga500.01>



11 Other Option Compatibility

Use this section to understand the compatibility of other V1000 options for the GA500.

Navigate to the “Options” section of the GA500 product page for more information on GA500 compatible options.

URL: <https://www.yaskawa.com/products/drives/industrial-ac-drives/microdrives/ga500-drive>

- **Braking resistor option (LKEB):** The braking unit can be transferred to GA500 without making any changes.
- **Braking units (CDBR Type):**
The braking unit can be transferred to GA500 without making any changes. If using a CDBR braking unit, set L8-55 = 0 [Internal DB Transistor Protection = Disabled].
- **AC or DC reactor:**
The AC or DC reactor can be transferred to GA500 without making any changes.

Refer to the GA500 Selection Guide No. SL.GA500.01 for a complete list of GA500 options.

Download here: <https://www.yaskawa.com/sl.ga500.01>



V1000 to GA500

Product Transition Guide

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Specifications are subject to change without notice for ongoing product modifications and improvements.
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