YASKAWA

YASKAWA AC Drive GA500
Supplemental Technical Manual

Introduction

This supplemental technical manual describes the modified specifications with a GA500 software upgrade and corrections. Read this manual together with " Installation & Primary Operation" (TOEP C710617 52) included with the product and the " GA500 Technical Reference" (SIEP C710617 52) that you can download from our documentation website. Read and understand the safety information and precautions before you start to use the product.

Revised Contents and Applicable Drive Models

Item	Description	Model
1.	Setting range of *C6-02 [Carrier Frequency Selection]* when in AOLV/PM	GA500 Software version PRG: 01013 or later <1>
2.	Addition of Parameter Not Initialized when *A1-03 = 2220, 3330 [Initialize Parameters = 2-Wire Initialization, 3-Wire Initialization]*	
3.	Revised default setting of *o1-37 [LCD Backlight ON/OFF Selection]*	
4.	Revised default setting of *T1-13 [No-load voltage]*	
5.	Correction of Ferrule Terminal Sizes	All GA500 drives
6.	Correction of *H2-01* to *H2-03* terminal MA/MB-MC, P1-C1, P2-C2 function selection	
7.	Correction of interlock circuit example	
8.	Corrections of the status of digital input/output terminals during Auto-Tuning	

<1> The software version is indicated on the nameplate affixed to the side of the product, and also can be viewed when you use monitor parameter *U1-25 [Software number]*.

1. Setting Range of *C6-02 [Carrier Frequency Selection]* when in AOLV/PM

The maximum carrier frequency is different when *A1-02 = 6 [Control Method Selection = PM Advanced Open Loop Vector]*.

- PRG: 01012 or earlier: 4.0 kHz (*C6-02 = 2*)
- PRG: 01013 or later: 12.0 kHz (*C6-02 = 6*)

EZZ023995<1>
December 2019

2. Addition of Parameter Not Initialized when *A1-03 = 2220, 3330 [Initialize Parameters = 2-Wire Initialization, 3-Wire Initialization]*

Even when you set *A1-03 = 2220, 3330 [Initialize Parameters = 2-Wire Initialization, 3-Wire Initialization]* to initialize the drive, *A1-12 [Bluetooth ID]* is not initialized.

- PRG: 01012 or earlier: The setting value of *A1-12* is initialized.
- PRG: 01013 or later: The setting value of *A1-12* is not initialized.

3. Revised Default Setting of *o1-37 [LCD Backlight ON/OFF Selection]*

The default setting of *o1-37 [LCD Backlight ON/OFF Selection]* is different.

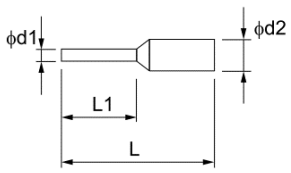
- PRG: 01012 or earlier: *0 [OFF]*
- PRG: 01013 or later: *1 [ON]*

4. Revised Default Setting of *T1-13 [No-load voltage]*

The default setting of *T1-13 [No-load voltage]* is different.

PRG	01012 or Earlier		01013 or Later	
Drive Model	B001 to B018 2001 to 2056 4001 to 4031	2070 to 2082 4038 to 4060	B001 to B006 2001 to 2008 4001 to 4004	B010 to B018 2010 to 2082 4005 to 4060
Default value of *T1-13*	*T1-03* × 0.85	*T1-03* × 0.90	*T1-03* × 0.85	*T1-03* × 0.90

5. Correction of Ferrule Terminal Sizes



Wrong:

Wire Gauge mm^2 (AWG)	Model	L (mm)	L1 (mm)	φ d1 (mm)	φ d2 (mm)
0.25 (24)	AI 0.25-8YE	12.5	8.0	0.8	2.0
0.34 (22)	AI 0.34-8TQ	12.5	8.0	0.8	2.0
0.5 (20)	AI 0.5-8 WH AI 0.5-8 OG	14.0	8.0	1.1	2.5

Correct:

Bold texts show additions and modifications.

Wire Gauge mm^2 (AWG)	Model	L (mm)	L1 (mm)	φ d1 (mm)	φ d2 (mm)
0.25 (24)	**AI 0.25-6 YE** **AI 0.25-6 BU**	**10.5**	**6.0**	0.8	2.0
0.34 (22)	**AI 0.34-6 TQ**	**10.5**	**6.0**	0.8	2.0
0.5 (20)	**AI 0.5-6 WH** **AI 0.5-6 OG**	**12.0**	**6.0**	1.1	2.5
0.75 (18)	**AI 0.75-6 GY** **AI 0.75-6 WH**	**12.0**	**6.0**	**1.3**	**2.8**
1.0 (17)	**AI 1-6 RD** **AI 1-6 YE**	**12.0**	**6.0**	**1.5**	**3.0**

6. Correction of *H2-01* to *H2-03* Terminal MA/MB-MC, P1-C1, P2-C2 Function Selection

Wrong: p.634, SIEPC71061752B

Table 12.59 MFDO Terminals Default Function Settings

No.	Name	Default	Function
H2-01	Term MA/MB-MC Function Selection (Contact)	0	During Run
H2-02	Term P1-C1 Function Selection	1	Zero Speed
H2-03	Term P2-C2 Function Selection	2	Speed Agree 1

Correct:

Bold texts show additions and modifications.

Table 12.59 MFDO Terminals Default Function Settings

No.	Name	Default	Function
H2-01	Term MA/MB-MC Function Selection (Contact)	**E**	**Fault**
H2-02	Term P1-C1 Function Selection	**0**	**During Run**
H2-03	Term P2-C2 Function Selection	2	Speed Agree 1

7. Correction of Interlock Circuit Example

Wrong: p.92, SIEPC71061752B

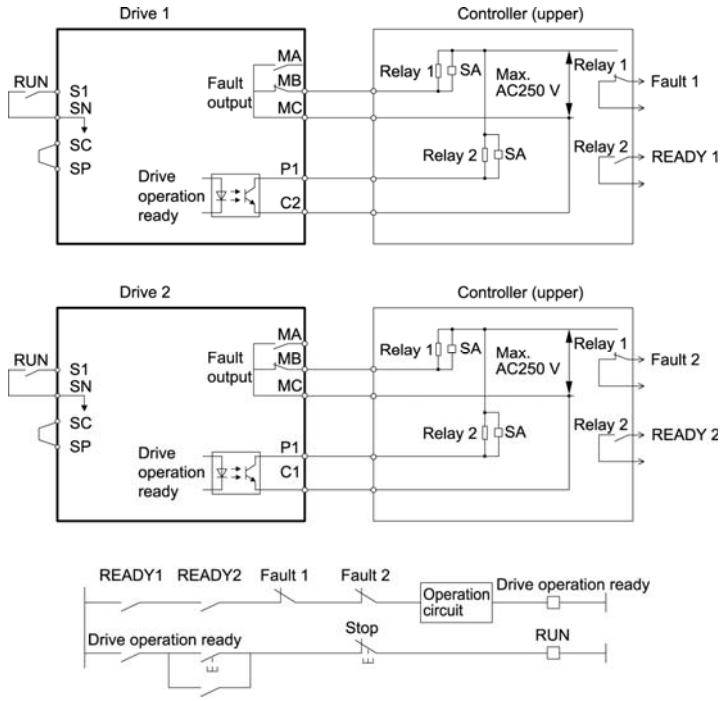


Figure 3.52 Interlock Circuit Example

Correct:

These are the modifications:

- Drive 1 Terminal C2 → Terminal C1
- Diagram of Photocoupler 1

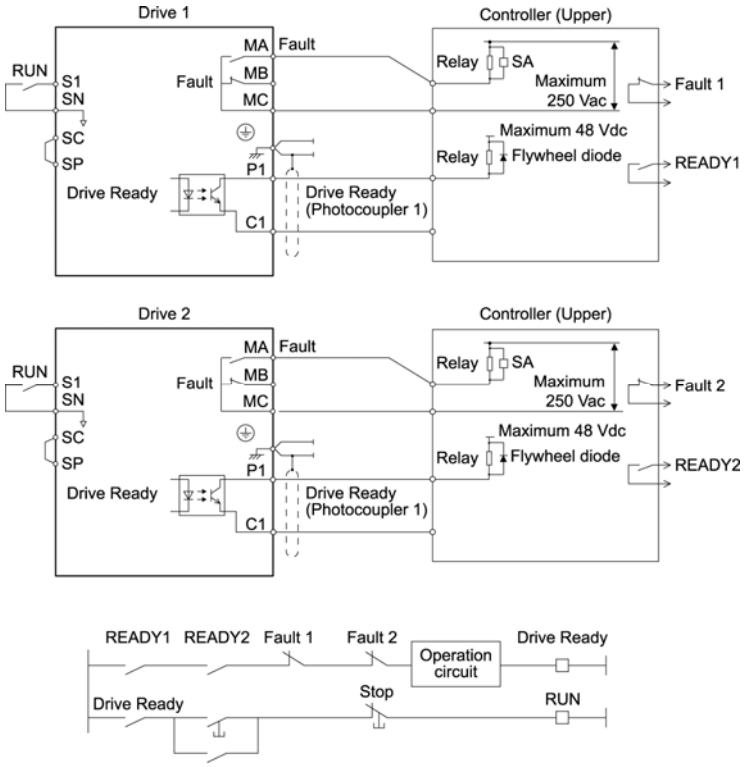


Figure 3.52 Interlock Circuit Example

8. Corrections of the Status of Digital Input/Output Terminals during Auto-Tuning

Wrong: p.137, SIEPC71061752B

Table 4.16 Status of Input/Output Terminals during Auto-Tuning

Auto-Tuning Type	Mode		Parameter	Multi-Function Input	Multi-Function Output
Induction Motor Auto-Tuning	Rotational	Rotational Auto-Tuning	T1-01 = 0	Disabled	Functions the same as during usual operation.
	Stationary	Stationary Auto-Tuning 1	T1-01 = 1	Disabled	Keeps the status at the start of Auto-Tuning.
		Line-to-Line Resistance	T1-01 = 2	Disabled	Keeps the status at the start of Auto-Tuning.
PM Motor Auto-Tuning	Rotational	PM Motor Code Selection	T2-01 = 4	Disabled	Functions the same as during usual operation.
	Stationary	Manual Entry w/ Motor Data Sheet	T2-01 = 0	Disabled	Disabled
		PM Stationary Auto-Tuning	T2-01 = 1	Disabled	Keeps the status at the start of Auto-Tuning.
		PM Stationary Auto-Tuning for Stator Resistance	T2-01 = 2	Disabled	Keeps the status at the start of Auto-Tuning.
		High Frequency Injection	T2-01 = 5	Disabled	Keeps the status at the start of Auto-Tuning.
EZ Tuning	Stationary	Motor Parameter Setting	T4-01 = 0	Disabled	Disabled
		Line-to-Line Resistance	T4-01 = 1	Disabled	Keeps the status at the start of Auto-Tuning.
ASR and Inertia Tuning	Rotational	Deceleration Rate Tuning	T3-00 = 2	Disabled	Functions the same as during usual operation.
		KEB Tuning	T3-00 = 3	Disabled	Functions the same as during usual operation.

Correct:

Underlined texts show modifications.

Table 4.16 Status of Input/Output Terminals during Auto-Tuning

Auto-Tuning Type	Mode		Parameter	Multi-Function Input	Multi-Function Output
Induction Motor Auto-Tuning	Rotational	Rotational Auto-Tuning	T1-01 = 0	Disabled	Functions the same as during usual operation.
	Stationary	Stationary Auto-Tuning 1	T1-01 = 1	Disabled	Keeps the status at the start of Auto-Tuning.
		Line-to-Line Resistance	T1-01 = 2	Disabled	Keeps the status at the start of Auto-Tuning.
PM Motor Auto-Tuning	Rotational	PM Motor Code Selection	T2-01 = 4	Disabled	Functions the same as during usual operation.
	Stationary	Manual Entry w/ Motor Data Sheet	T2-01 = 0	Disabled	**Keeps the status at the start of Auto-Tuning.**
		PM Stationary Auto-Tuning	T2-01 = 1	Disabled	Keeps the status at the start of Auto-Tuning.
		PM Stationary Auto-Tuning for Stator Resistance	T2-01 = 2	Disabled	Keeps the status at the start of Auto-Tuning.
		High Frequency Injection	T2-01 = 5	Disabled	Keeps the status at the start of Auto-Tuning.
EZ Tuning	Stationary	Motor Parameter Setting	T4-01 = 0	Disabled	**Keeps the status at the start of Auto-Tuning.**
		Line-to-Line Resistance	T4-01 = 1	Disabled	Keeps the status at the start of Auto-Tuning.
ASR and Inertia Tuning	Rotational	Deceleration Rate Tuning	T3-00 = 2	Disabled	Functions the same as during usual operation.
		KEB Tuning	T3-00 = 3	Disabled	Functions the same as during usual operation.

YASKAWA

YASKAWA AC Drive GA500

Supplemental Manual

Introduction

Thank you for purchasing YASKAWA AC Drive GA500.

This supplemental technical manual describes the functions added with a GA500 software upgrade (PRG: 01014), and should be read to ensure proper usage. Read this manual together with the manual (TOEP C710617 xx) included with the product and the GA500 Technical Manual (SIEP C710617 xx) that can be found on our documentation website. Always observe the safety messages and precautions to ensure correct application of the product.

Applicable Software Version

This manual applies to GA500 for software versions PRG: 01014 or later.

The software version is indicated on the nameplate affixed to the side of the product, and also can be viewed by using monitor parameter *U1-25*.

Modified Contents

This supplemental manual explains about these modifications:

1. Specification Change for " Parameter Setting Change during Run"
2. Addition of Speed Search Regeneration Determination Parameter

1. Specification Change for " Parameter Setting Change during Run"

The specification of " Parameter Setting Change during Run" has been changed.

Parameter	Modified Specification
C4-02 [Torque Compensation Delay Time]	**PRG: 01014 or Later:** Added note Note: When *A1-02 = 5 [PM Open Loop Vector]*, you cannot change the parameter setting during Run.

Document No. EZZ024174

Prepared in August 2020

C4-23[Current Control Gain]	**PRG: 01013 and Earlier** <table><tr><th>No. (Hex.)</th><th>Name</th><th>Description</th></tr><tr><td>C4-23 (1583) RUN Expert</td><td>Current Control Gain</td><td>V/f OLV OLV/PM AOLV/PM EZOLV Current control gain. Usually it is not necessary to change this parameter.</td></tr></table> **PRG: 01014 or Later:** [RUN] icon removed You cannot change the parameter setting during Run. <table><tr><th>No. (Hex.)</th><th>Name</th><th>Description</th></tr><tr><td>C4-23 (1583) Expert</td><td>Current Control Gain</td><td>V/f OLV OLV/PM AOLV/PM EZOLV Current control gain. Usually it is not necessary to change this parameter.</td></tr></table>

2. Addition of Speed Search Regeneration Determination Parameter

Parameter for setting the regeneration determination level during speed search has been added.

■Added parameter

No. (Hex.)	Name	Description	Default (Range)
b3-39 (1B8F) Expert	Regen Judgment Lv of Spd Search	V/f OLV OLV/PM AOLV/PM EZOLV Sets the level to determine the regenerative state during speed search. Usually it is not necessary to change this parameter.	15% (0 - 50%)

If the speed search is not completed after starting the speed search, increase the setting value in 5% increments after the drive stops.

If the drive detects ov [Overvoltage] during speed search, decrease the setting value in 5% increments after the drive stops.

YASKAWA

YASKAWA AC Drive GA500

Supplemental Manual

Introduction

Thank you for purchasing YASKAWA AC Drive GA500.

This supplemental manual describes the functions added with a GA500 software upgrade (PRG: 01015), and should be read to ensure proper usage. Read this manual together with the GA500 Quick Start Guide (TOEP C710617 xx) included with the product and the GA500 Technical Manual (SIEP C710617 xx) that can be found on our documentation website. Always observe the safety messages and precautions to ensure correct application of the product.

Applicable Software Version

This manual applies to GA500 for software versions PRG: 01015 or later.

The software version is indicated on the nameplate affixed to the side of the product, and also can be viewed by using monitor parameter *U1-25*.

Modified Contents

This supplemental manual explains about these modifications:

1. Improved Log Function during Operation of the External 24 V Power Supply

Document No. EZZ024243

Prepared in January 2021

1. Improved Log Function during Operation of the External 24 V Power Supply

By supplying an external 24 V power supply to terminals PS-AC, the GA500 can operate control circuits even when the main circuit power supply is OFF.

The data log can now be recorded continuously while the GA500 is in operation on an external 24 V power supply.

[Appendix] Operation of Drive and Options during Operation of the External 24 V Power Supply

The following table summarizes operation of the drive and options when the main circuit power supply is OFF and external 24 V power supply is being provided to terminals PS-AC.

Function	Operation	Remedy
Keypad	Can be operated in the same way as when the main circuit power supply is ON. Note that *oPr [Keypad Connection Fault]* is not detected.	-
Data Log	Operates in the same way as when the main circuit power supply is ON. Operation differs according to the software version.	-
Communications by Communication Option Card, MEMOBUS/Modbus Communication Terminal	Operates in the same way as when the main circuit power supply is ON.	-
Multi-Function Analog Input	Operates in the same way as when the main circuit power supply is ON.	-
Multi-Function Analog Output	Operates in the same way as when the main circuit power supply is ON.	-
Multi-Function Digital Input	Does not operate when the main circuit power supply of the drive is OFF.	Provide the external 24 V power supply to the multi-function input selection common terminal (SC). *1
Multi-Function Digital Output	Operates in the same way as when the main circuit power supply is ON. Operation of the multi-function digital output terminal and fault relay output terminal to which *fault [H2-xx = E, 10E]* is set differs according to the software version.	-
Multi-Function Photocoupler Output		
Fault Relay Output Terminal		
Pulse Train Input	Operates in the same way as when the main circuit power supply is ON.	-
Pulse Train Output	Operates in the same way as when the main circuit power supply is ON.	-

*1 Multi-function digital inputs operate as follows.

- Multi-function digital inputs

  If the main circuit power supply is turned OFF, the multi-function digital input terminal will not operate even if the external 24 V power supply is provided to terminals PS-AC.

  When N.O. functions are set to *H1-xx [MFDI Function Selection]*, digital input is always OFF. Also, when N.C. functions are set, digital input is always ON.

  Provide the external 24 V power supply to the multi-function input selection common terminal (SC). For details on wiring, refer to Figure 1.

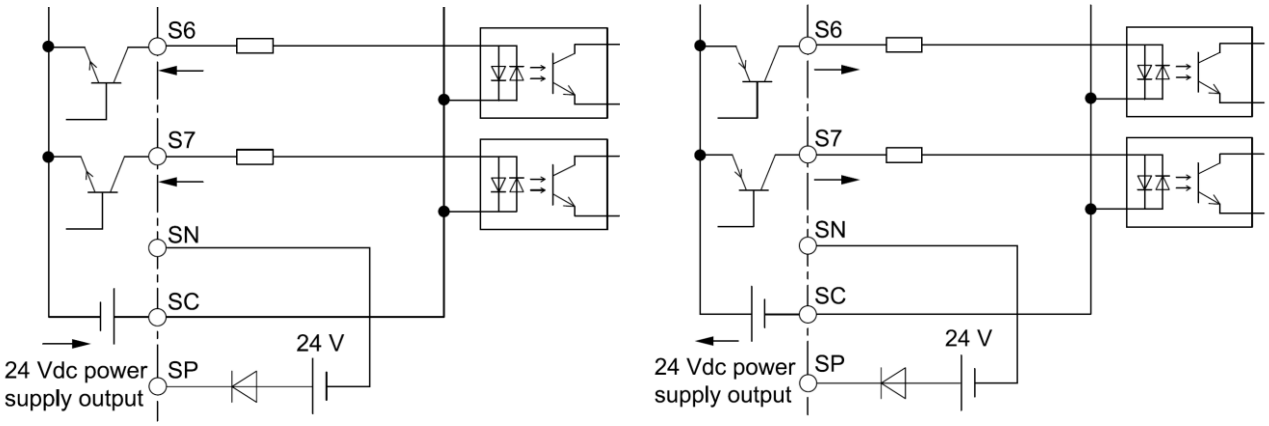


Figure 1. Wiring of Multi-function Digital Input Terminal