

YASKAWA AC Drive T1000A

AC Drive for Textile Applications

Finless Type Installation Guide

Type: CIMR-T□4A□□□□J□□

Models: 400 V Class, Three-Phase Input: 22 to 110 kW

To properly use the product, read this manual thoroughly and retain for easy reference, inspection, and maintenance. Ensure the end user receives this manual.

安川インバータ T1000A

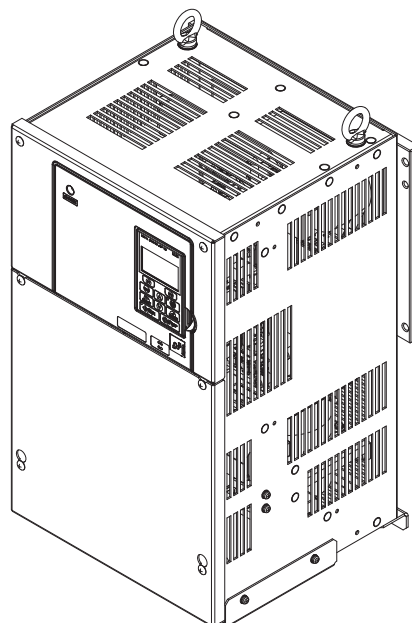
繊維専用インバータ

フィンレスタイプ 設置要領書

形 式 CIMR-TA4A□□□□J□□

容量範囲 400 V級（三相電源用）22～110 kW

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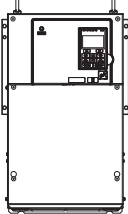
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1 Preface

◆ Applicable Documentation

This manual provides instructions on installing the T1000A Finless drive. For more specific information on the operation of this product, refer to the other manuals listed in the following table:

	T1000A Series AC Drive Safety Precautions
	This guide is packaged together with the product. Covers safety precautions, model numbers, and wiring for the drive. It is meant to get the drive ready for a trial run with the application and for basic operation.
	T1000A Series AC Drive Technical Manual
	This manual includes detailed explanation of the T1000A and usage instructions. Always refer to the Technical Manual whenever performing any installation, wiring, troubleshooting, and operation procedures. The Technical Manual is not packaged with T1000A. Contact a Yaskawa representative or the Yaskawa sales department directly to receive a copy of the Technical Manual.
	Yaskawa AC Drive - T1000A Finless Installation Guide (this book) Manual No.: TOBPC71061646
	This guide contains basic information required to install the T1000A Finless.

◆ Terms

Note: Indicates supplementary information that Yaskawa highly recommends be followed, even though equipment may not be at risk.

Drive: Yaskawa AC Drive-T1000A Finless Drive

◆ Registered Trademarks

- Company names and product names listed in this manual are registered trademarks of those companies.

General Precautions

- The diagrams in this manual may be indicated without covers or safety shields to show details. Restore covers or shields before operating the drive and run the drive according to the instructions described in this manual.
- The products and specifications described in this manual or the content and presentation of the manual may be modified without notice to improve the product and/or the manual. Such modifications are indicated by a revised manual number.
- When ordering a new copy of the manual due to damage or loss, contact your Yaskawa representative or the nearest Yaskawa sales office and provide the manual number shown on the front cover.
- If nameplate becomes worn or damaged, order a replacement from your Yaskawa representative or the nearest Yaskawa sales office.
- Yaskawa is not responsible for any modification of the product by the end user. Modification of the product voids the warranty.

NOTICE

For UL/CE compliance, refer to the Safety Precautions or Technical Manual packaged with the drive for the type of fuse required.

Failure to use the specified fuse can damage the drive.

2 Product Overview

◆ About This Product

This manual describes installation conditions and dimensions for the T1000A Finless drive. Use this product only after you have a full understanding of the manual and its contents.

This T1000A Finless drive is a component recognized by Underwriters Laboratories Inc.(UL). The installation procedure and instructions have been provided to fulfill the requirements as specified by the “Conditions of Acceptability”.

◆ Model Number and Nameplate Check

Please perform the following tasks after receiving the drive:

- Inspect the drive for damage.
- If the drive appears damaged upon receipt, contact the shipper immediately.
- Verify receipt of the correct model by checking the information on the nameplate.
- If you have received the wrong model or the drive does not function properly, contact your supplier.

■ Nameplate

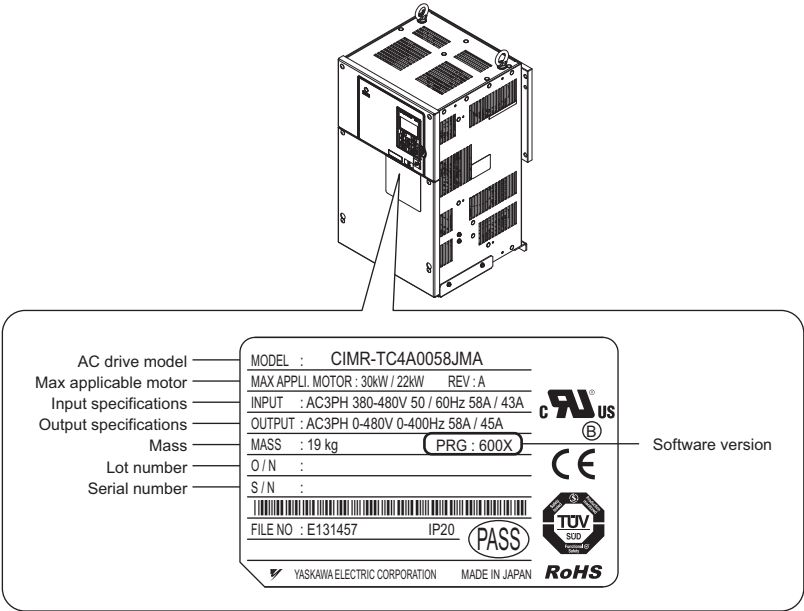


Figure 1 Nameplate Information

■ Drive Model Identification

The T1000A finless drive type is indicated by the letter “J” in the AC drive model designation code. Refer to the Safety Precautions or Technical Manual for complete model number information.

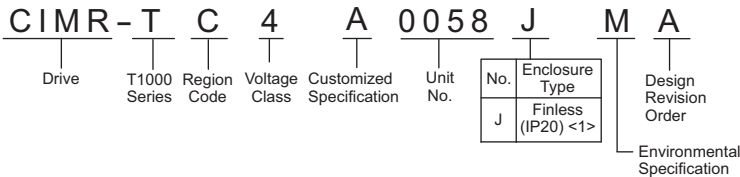


Figure 2 Understanding the Model Number

3 Conditions of Acceptability

Adhere to the installation conditions specified in this guide to take full advantage of the finless design of this drive.

◆ Installation Environment

The drive must be installed a control panel with a proper heat sink. The drive ambient temperature shall not exceed 45 °C for the drives installed location.

◆ Heatsink Plate Temperature

The aluminum panel on the back of the drive is referred to as the “heatsink plate.” The heatsink plate temperature should never exceed 60 °C.

Table 5 lists the thermal characteristics of the drive.

Use parameter U4-08 to check the temperature of the heatsink plate as described below.

NOTICE: The drive may be damaged if the temperature of the heatsink plate exceeds specified tolerance levels of 60 °C. Excessive heat can also shorten the performance life of various drive components.

■ Checking and Monitoring Heatsink Plate Temperature

Checking Heatsink Plate Temperature Using the LCD Operator

Scroll to parameter U4-08 (heatsink plate temperature).

When the temperature of the heatsink plate is 59 °C, U4-08 will display:

59°C

Checking Heatsink Plate Temperature Using an Analog Output

Example: When using Multi-Function Analog Output Terminal AM, set the parameters shown in **Table 1**.

Table 1 Using Analog Output 1

No.	Name	Description
H4-04	Multi-Function Analog Output Terminal AM Monitor Selection	00408 (heatsink plate temperature)
H4-05	Multi-Function Analog Output Terminal AM Gain	100.0%
H4-06	Multi-Function Analog Output Terminal AM Bias	0.0%

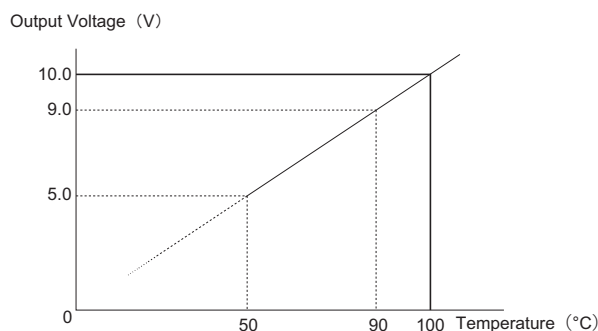


Figure 3 Output of Heatsink Plate Temperature by Analog Output

- Note:**
1. Accuracy of the temperature reading may vary ± 5 °C between 50 and 100 °C.
 2. The heatsink temperature is affected by the ambient temperature. Never exceed the allowable maximum heatsink plate temperature.

■ Drive Overheat Alarm (oH)

Use parameter L8-02 to cause the drive output an alarm when the heatsink plate exceeds the specified temperature.

L8-03 determines the action taken by the drive when an oH alarm is triggered. Refer to the T1000A Technical Manual for more details.

◆ Installation to Metallic Surface

The mating surface shall have the following properties:

- Surface flatness shall not exceed 0.2 mm across the entire mating surface.
- Surface roughness shall not exceed 8 S.

◆ Thermal Compound

Apply a thermal compound between the heatsink plate and the mating surface. The thermal compound assists in drive heat dissipation.

Yaskawa recommends the thermal compounds in [Table 2](#).

Table 2 Recommended Heatsink Plate Thermal Compounds

Manufacturer	Type	Model	Required Amount
Shin-Etsu Chemical Inc.	Oil-based compound	G746	200 to 300 μm
Dow Corning Toray Inc.	Silicone compound for heat dissipation	SC4471CV	(Varies in accordance with the flatness of the metal panel.)

Spread the required amount of thermal compound over the clean heatsink plate. Firmly press the T1000A finless drive against the metal panel and hold it in place against the heatsink plate for a few seconds. Wipe away any excess thermal compound from around the heatsink plate edges.

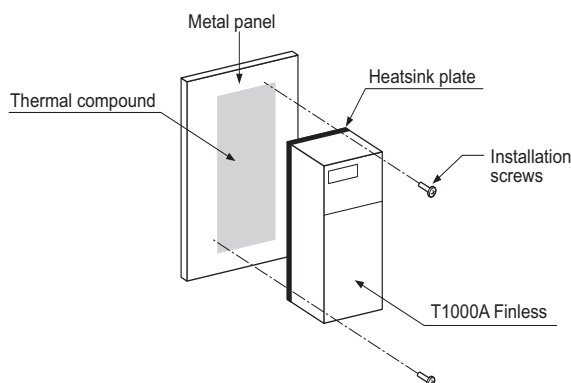


Figure 4 Application of Thermal Compound

Note: Surface milling of the metal panel to within 0.1 mm flatness is required if use of less thermal compound is desired.
Ensure the T1000A finless drive is firmly pressed against the metal panel for a few seconds to ensure proper thermal transfer.

◆ Drive Heatsink Plate Installation Screw Size and Tightening Torque

Screw size and torque specifications for heatsink plate installation screws that hold the drive to a metal back panel are listed in [Table 3](#).

Table 3 Screw Size and Tightening Torque

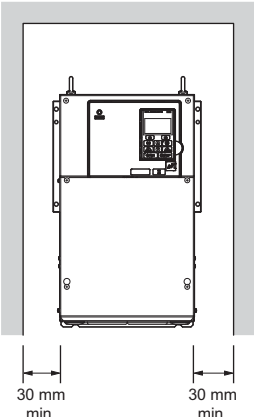
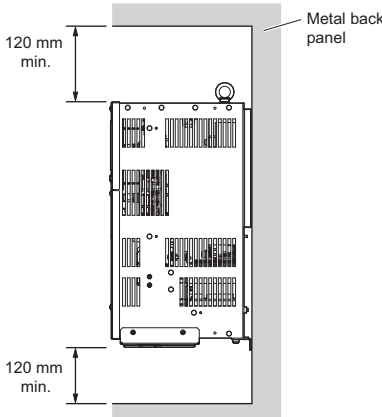
Model CIMR-T□	Screw Size	Tightening Torque N·m
4A0058 to 4A0165	M6	4.0 to 5.0
4A0208	M10	18.0 to 23.0

NOTICE: Tighten all screws according to specified torques. Failure to do so may inhibit drive cooling and possible damage the drive.

◆ Installation Spacing

Figure 4 illustrates correct installation spacing for proper airflow, and wiring. The drive should be installed so that the heatsink plate rests flat against the metal back panel to ensure proper cooling.

Table 4 Correct Installation Spacing

Side Clearance	Top/Bottom Clearance
 <p>30 mm min.</p> <p>30 mm min.</p>	 <p>120 mm min.</p> <p>120 mm min.</p> <p>Metal back panel</p>

NOTICE: Do not install T1000A Finless drives using the Side-by-Side method available in standard T1000A drive models. Improper drive cooling may result in damage to the drive. Install T1000A Finless drives with a minimum side-by-side clearance of 30 mm.

◆ Temperature Derating

To ensure the maximum performance life, the drives output current must be derated like shown in **Figure 5** when the drive is installed in areas with high ambient temperature. In order to ensure reliable drive overload protection, the parameters L8-12 and L8-35 must also be set according to the installation conditions.

■ Parameter Settings

No.	Name	Description	Range	Def.
L8-12	Ambient Temperature Setting	Adjust the drive overload (oL2) protection level when the drive is installed in an environment that exceeds its ambient temperature rating.	-10 to 50	40°C
L8-35	Installation Method Selection	0: IP20 enclosure 1: Side-by-Side mounting 2: NEMA Type 1 3: Finless model or external heatsink installation	0 to 3	3

Finless Drive (L8-35 = 3: Default Setting)

Drive operation between -10°C and 40°C allows 100% continuous current without derating. Operation between 40°C and 45°C requires output current derating.

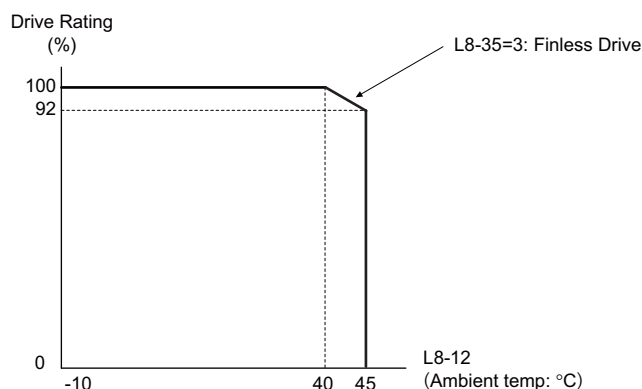


Figure 5 Ambient Temperature and Drive Derating

◆ Drive Watt Loss Thermal Characteristics

Table 5 Drive Watt Loss

Model CIMR-T□	Normal Duty				Heavy Duty			
	Rated Amps	Heatsink Loss	Interior Unit Loss	Total Loss	Rated Amps	Heatsink Loss	Interior Unit Loss	Total Loss
4A0058	58 <1>	471	215	686	45 <2>	349	170	518
4A0072	72 <1>	605	265	870	60 <2>	484	217	701
4A0088	88 <1>	684	308	993	75 <2>	563	254	817
4A0103	103 <1>	848	357	1205	91 <2>	723	299	1022
4A0139	139 <1>	1215	534	1749	112 <2>	908	416	1325
4A0165	165 <1>	1557	668	2224	150 <2>	1340	580	1920
4A0208	208 <1>	1800	607	2408	180 <2>	1771	541	2313

<1> These values assume the carrier frequency is set to 2 kHz.

<2> These values assume the carrier frequency is set to 8 kHz or less.

<3> These values assume the carrier frequency is set to 5 kHz or less.

4 Periodic Maintenance

◆ Replacement

Estimated drive performance life is based on specific usage conditions. These conditions are provided for the purpose of maximizing useful drive life and performance. Drive performance and/or useful life are affected by application in harsh environments or rigorous use.

■ Conditions for Estimating Performance Life

The estimated performance life of the drive is 10 years under the following conditions:

- Drive ambient temperature: Yearly average of 40°C in the enclosure panel
- Load factor: 80% max.
- Operation time: 24 hours a day

Drive performance life may be less than 10 years if drive use exceeds the conditions above.

5 Dimensions

Table 6 Dimensions

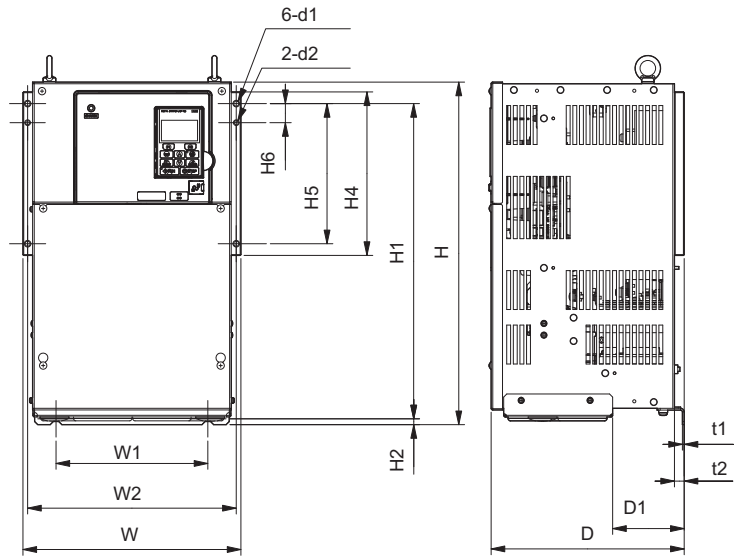


Figure 1

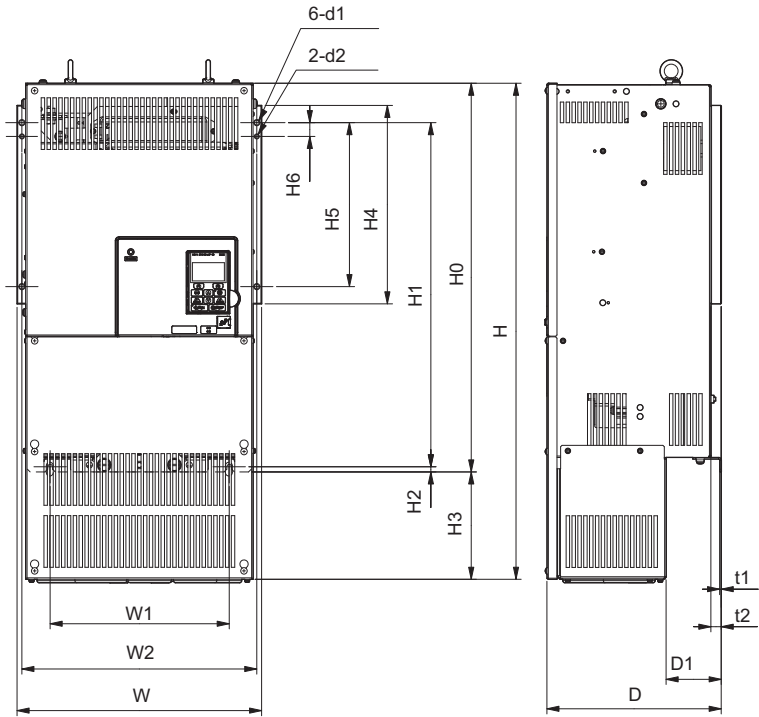


Figure 2

Model CIMR-T□	Dimensions (mm)																		
	Fig.	W	H	D	W1	W2	H0	H1	H2	H3	H4	H5	H6	D1	t1	t2	d1	d2	Weight (kg)
4A0058	1	280	440	248	195	268	—	405	8	—	210	180	25	92	2.3	13	M6	M6	19
4A0072		305	505	248	220	293	—	460	8	—	255	215	25	98	2.3	13	M6	M6	23
4A0088		355	538	243	260	341	—	483	8	—	300	238	25	92	2.3	15	M6	M6	31
4A0103	2	355	579	243	260	341	538	483	8	41	300	238	25	90	2.3	15	M6	M6	33
4A0139		355	720	253	260	341	564	500	8	156	288	238	20	80	2.3	15	M6	M6	39
4A0165		355	720	253	260	341	564	500	8	156	288	238	20	80	2.3	15	M6	M6	40
4A0208		495	325	477	831	666	585	13	147	380	320	40	295	95	3.2	15	M10	M10	66

6 Selecting an External Heatsink

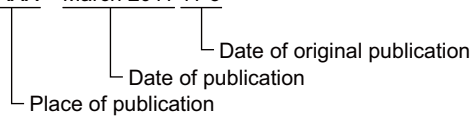
Select a suitable external heatsink that can prevent the heatsink temperature from exceeding 60°C as a result of a rise in the ambient temperature.

7 Revision History

The revision dates and the numbers appear on the bottom of the back cover.

MANUAL NO. TOBP C710616 46A

Published in XXXX March 2011 11-3



Date of Publication	Rev. No.	Section	Revised Content
March 2011	—	—	First edition

YASKAWA AC Drive T1000A

AC Drive for Textile Applications

Finless Type Installation Guide

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MANUAL NO. TOBP C710616 46A

Published in Japan March 2011 11-3
10-10-6