



Toshiba E3 Manual

Variable torque adjustable speed drive, high performance adjustable speed drive quiet asd series, metasys n2
communications interface

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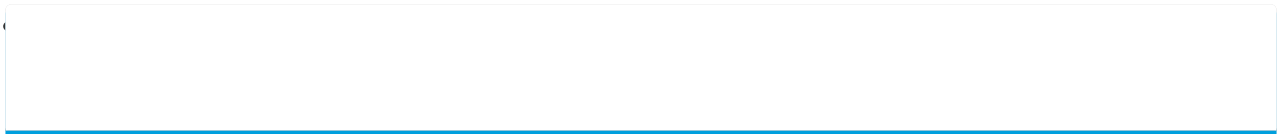
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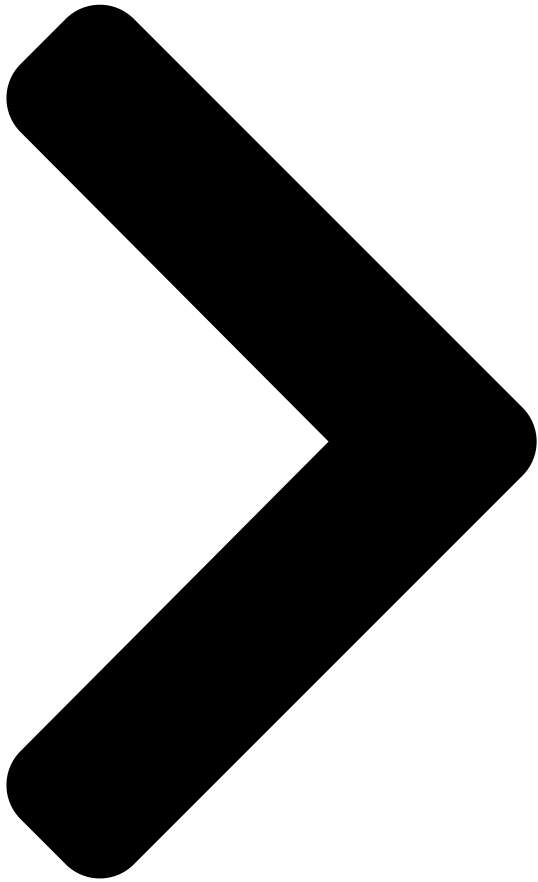
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HIGH PERFORMANCE ADJUSTABLE SPEED
DRIVE

QUIET ASD SERIES

METASYS N2 COMMUNICATIONS INTERFACE
MANUAL

August, 1998

ICC #10035-002

T O S E W I D

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Toshiba adjustable speed drive specification sheet (7 pages)

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Embedded ethernet function (84 pages)

Summary of Contents for Toshiba E3

[Page 1](#) HIGH PERFORMANCE ADJUSTABLE SPEED DRIVE QUIET ASD SERIES METASYS N2 COMMUNICATIONS INTERFACE MANUAL August, 1998 ICC #10035-002...

[Page 2](#) G3. Not all functions may be accessible, however, in other units. These exceptions will be noted where applicable. Also, use of this interface in other Toshiba 3-series drives may require the use of an additional plug-in communications option ROM. For more information regarding the required combinations of adjustable speed drives, interface boards and option

ROMs, please contact your local distributor or Toshiba International Corporation.

[Page 3: Operating Environment](#)

Usage Precautions Operating Environment • Please use the communications interface only when the ambient temperature of the inverter unit into which the interface is installed is within the following specified temperature limits: Operation: -10 ~ +40°C (+14 ~ +104°F) -25 ~ +65°C (-13 ~ +149°F) Storage: •...

[Page 4](#) TABLE OF CONTENTS 1. Interface Board Installation / Removal5 Installation Procedure5 Removal Procedure..... 8 2. Grounding.....10 3. Environmental Specifications10 4. Maintenance And Inspection11 5. Storage And Warranty12 Storage..... 12 Warranty12 6. N2 Interface Configuration13 N2 Network Connections

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[Page 6: Installation Procedure](#)

N2 network. This portion of the manual will detail the procedure used to install and remove the interface board. If at any time you experience problems during the installation / removal process, please call Toshiba International Corporation for assistance.

[Page 7](#) operation panel support bracket operation panel support bracket screws Figure 1: EIII with front cover removed standoff mounting holes Figure 2: EIII with front cover and operation panel support bracket removed...

[Page 8](#) If the inverter unit does not appear to power up, or does not function properly, immediately turn power OFF. Repeat steps 1 ~ 3 to remove all power from the inverter. Then, verify all connections. Contact Toshiba International Corporation for assistance if the problem persists.

[Page 9: Removal Procedure](#)

1.2 Removal Procedure Removal of the N2 interface board from a EIII inverter should only be performed by a qualified technician familiar with the maintenance and operation of the EIII. In order to protect the interface board connector's reliability, do not repeatedly connect and disconnect the interface board.

[Page 10](#) If the inverter unit does not appear to power up, or does not function properly, immediately turn power OFF. Repeat steps 1 ~ 3 to remove all power from the inverter. Then, verify all connections. Contact Toshiba International Corporation for assistance if the problem persists.

[Page 11: Environmental Specifications](#)

2. Grounding Grounding is of particular importance for reliable, stable operation. Communication system characteristics may vary from system to system, depending on the system environment and grounding method used. A ground connection with an impedance of less than 100Ω should be used. Please be sure to consider the following points for making proper ground connections: Grounding method checkpoints 1.

[Page 12: Maintenance And Inspection](#)

4. Maintenance And Inspection Preventive maintenance and inspection is required to maintain the Metasys N2 communications interface in its optimal condition, and to ensure a long operational lifetime. Depending on usage and operating conditions, perform a periodic inspection once every three to six months. Before starting inspections, always turn off all power supplies to the inverter unit, and wait at least five minutes after the inverter's "CHARGE"...

[Page 13: Storage And Warranty](#)

The EIII Metasys N2 communications interface kit is covered under warranty for a period of 12 months from the date of installation, but not to exceed 18 months from the date of shipment from the factory. For further warranty or service information, please contact Toshiba International Corporation.

[Page 14: N2 Interface Configuration](#)

6. N2 Interface Configuration 6.1 N2 Network Connections Each EIII Metasys N2 interface board can be directly connected to the N2 bus by using twisted-pair cable connected as shown in Figure 4. Connect the N2+ wire to terminal "A", the N2- wire to terminal "B", and the cable shield to terminal "SHIELD" on the interface board's TB1 terminal block.

[Page 15: Eiii Parameter Settings](#)

FM0d and CM0d, respectively, in Gr. U t to 3. For more information on methods for changing parameter settings, refer to the TOSHIBA EIII Operation Manual. The following is a list of the parameters settings that are required during setup to...

[Page 16: Network Programming Interface](#)

8. Network Programming Interface 8.1 Object Summaries The EIII Metasys N2 bus interface has a predefined set of analog and binary I/O points used for controlling the inverter and for monitoring status items. These points can be summarized as follows: •...

[Page 17: I/O Point Map](#)

8.2 I/O Point Map Units Point Description Range / Value 0.00 ~ 400.00 Output frequency 0 ~ 255 Output current 0.0 ~ 232.0 Output voltage 0.0 ~ 255.0 Input voltage 0.00 ~ 100.00 IV terminal analog input value 0.00 ~ 100.00 RR terminal analog input value -100.00 ~...

[Page 18](#) Units Point Description Range / Value "RES" input terminal status 0=terminal-CC open 1=terminal-CC shorted "ST" input terminal status 0=terminal-CC open 1=terminal-CC shorted "FL" output contacts status 0=FLB-FLC shorted 1=FLA-FLC shorted "RCH" output status 0=RCH OFF 1=RCH ON "LOW" output contacts status 0=LOWA-LOWC open 1=LOWA-LOWC shorted 0.00 Hz ~...

[Page 19: Individual Object Descriptions](#)

8.3 Individual Object Descriptions This section gives a brief overview of each object, including any notable behavior or settings. For those parameters outlined here that directly map to internal EIII configuration parameters, refer to the EIII Operation Manual for further information regarding their usage or behavior.

[Page 20: Binary Input Objects](#)

8.3.2 Binary Input Objects BI #1 ..Indicates whether the inverter is running or stopped. BI #2 ..Indicates whether the inverter is running in the forward or reverse direction. BI #3 ..Indicates whether the inverter is currently using acceleration time #1 and deceleration time #1 or acceleration time #2 and deceleration time #2 when accelerating and decelerating.

[Page 21: Analog Output Objects](#)

8.3.3 Analog Output Objects IMPORTANT: Most of the AO objects detailed in this section map directly to EIII configuration parameters (parameters accessible via the EIII's keypad). When these parameters are changed (from either the keypad or N2 network), they are stored in the EIII's non-volatile EEPROM.

[Page 22](#) AO #10 ..Accesses the EIII's process (PID) deviation upper limit parameter (PvUL in Gr. F b). AO #11 ..Accesses the EIII's process (PID) deviation lower limit parameter (PvLL in Gr. F b). AO #12 and AO #13..The N2 interface provides a configurable "loss of communications"...

[Page 23](#) Note that the actual internal frequency command will be limited by the upper limit frequency (parameter UL in Gr.F). If the EIII was running at the time of the communications loss, it will then accelerate to and continuously run at the upper limit frequency;...

[Page 24: Binary Output Objects](#)

8.3.4 Binary Output Objects IMPORTANT: BO #9 and BO #10 map directly to EIII configuration parameters (parameters accessible via the EIII's keypad). When these parameters are changed (from either the keypad or N2 network), they are stored in the EIII's non-volatile EEPROM.

[Page 25: Inverter Fault Codes](#)

9. Inverter Fault Codes LED Message Fault Code Explanation nErr No error has been recorded since the last inverter reset or trip clear Overcurrent during acceleration Overcurrent during

deceleration Overcurrent during constant-speed run Load-end overcurrent detected at start-up (output terminals, motor wiring etc.) OCA1 U-phase armature short circuit OCA2...

[Page 26](#) LED Message Fault Code Explanation Dynamic braking resistor overcurrent OC1P Overcurrent in DC section during acceleration OC2P Overcurrent in DC section during deceleration OC3P Overcurrent in DC section during constant-speed Auto-tuning error EtyP Inverter typeform error □ 42 ~ 80 Unused dAMP Closed damper detected...

[Page 27: Ncu Ddl File](#)

N2 Network Controller Unit (NCU). An electronic version of this file can be downloaded via the internet from <http://www.iccdesigns.com>.

```
***** Toshiba EIII Adjustable Speed Drive
***** CSMODEL "EIII","VND" AITITLE "Analog
Inputs" BITITLE "Binary Inputs"...
```

[Page 28](#) CSBI "BI16",N,N,"ST TERM","OPEN","CLOSED" CSBI "BI17",N,N,"FL OUTP","FLB-C","FLA-C" CSBI "BI18",N,N,"RCH OUTP","OFF","ON" CSBI "BI19",N,N,"LOW OUTP","OPEN","CLOSED" CSAO "AO1",Y,Y,"FREQ CMD","HZ" CSAO "AO2",Y,Y,"ACCEL #1","SEC" CSAO "AO3",Y,Y,"DECEL #1","SEC" CSAO "AO4",Y,Y,"STALL","%" CSAO "AO5",Y,Y,"CMD MODE","-" CSAO "AO6",Y,Y,"FRQ MODE","-" CSAO "AO7",Y,Y,"P GAIN","-" CSAO "AO8",Y,Y,"I GAIN","-" CSAO "AO9",Y,Y,"PID LL","Hz" CSAO "AO10",Y,Y,"FB DEV U","%" CSAO "AO11",Y,Y,"FB DEV L","%"...

[Page 29: Notes](#)

11. Notes...

[Page 30](#) TOSHIBA INTERNATIONAL CORPORATION INDUSTRIAL DIVISION 13131 West Little York Rd., Houston, TX 77041 Tel: [800] 231-1412 Fax: [713] 466-8773 Telex: 762078 World Wide Web <http://www.tic.toshiba.com> Printed in U.S.A...