Toshiba DEV002Z Installation And Operation Manual

Asd optional devicenet module

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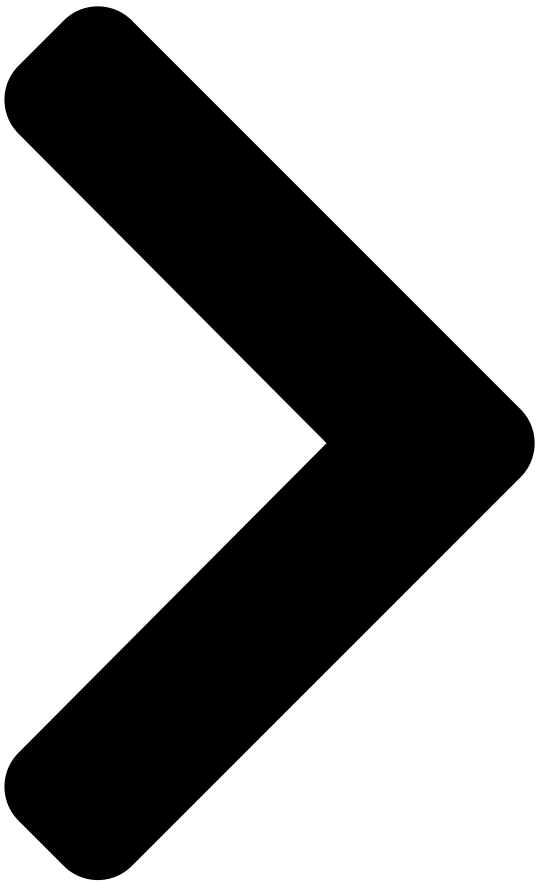

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Installation and Operation Manual

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Related Manuals for Toshiba DEV002Z

Inverter Toshiba DEV002Z Instruction Manual

Devicenet option (20 pages)

Network Card Toshiba DeviceNet DEV003Z-1 Function Manual

For tosvert vf-mb1/s15 converter (45 pages)

Network Card Toshiba RemotEye 4 User Manual

4 ups network card (262 pages)

Network Card Toshiba USB001Z Instruction Manual

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Network Card Toshiba ICC Multiprotocol Ethernet Interface ASD-G9ETH User Manual

Toshiba multiprotocol ethernet interface user's manual (106 pages)

Network Card Toshiba TOSVERT BCN001Z Function Manual

Vf-ps1 series bacnet option unit (19 pages)

Summary of Contents for Toshiba DEV002Z

Page 1: Installation And Operation

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ASD Optional DeviceNet Module DEV002Z Installation and Operation Manual Document Number: 58683-000 Date: January, 2008...

Page 4: Important Notice

The sales contract contains the entire obligation of Toshiba International Corporation. The warranty contained in the contract between the parties is the sole warranty of Toshiba International Corporation and any statements contained herein do not create new warranties or

modify the existing warranty.

Page 5

DEV002Z DeviceNet Module Please complete the Warranty Card supplied with the DeviceNet Module option card and return it to Toshiba by prepaid mail. This will activate the 12 month warranty from the date of installation; but, shall not exceed 18 months from the shipping date.

Page 6: About This Manual

DeviceNet module option card. Every effort has been made to provide accurate and concise information to you, our customer. At Toshiba we're continuously searching for better ways to meet the constantly changing needs of our customers. E-mail your comments, questions, or concerns about this publication to Technical-Publications-Dept@tic.toshiba.com.

Page 7: Table Of Contents

Table of Contents General Safety Information.....1 Safety Alert Symbol .....1 Signal Words .....1 Special Symbols ..... 2 Equipment Warning Labels .....2 Qualified Personnel .....2 Equipment Inspection ..... 3 Handling and Storage ..... 3 Disposal .....3 Installation and Operation Safety .....

Page 8

FA06 — Command Word 1 from Internal Option PCB ..... 30 FA23 — Command Word 2 from Internal Option PCB ..... 31 FA07 — Frequency Reference from Internal Option PCB .....31 FA33 — Torque Reference from Internal Option PCB.....32 FA50 —...

Page 9: General Safety Information

General Safety Information DO NOT attempt to install, operate, maintain or dispose of this equipment until you read and understand all of the product safety information and directions that are contained in this manual. Safety Alert Symbol The Safety Alert Symbol indicates that a potential personal injury hazard exists. The symbol is comprised of a triangle enclosing an exclamation mark.

Page 10: Special Symbols

Special Symbols To identify special hazards, other symbols may appear in conjunction with the DANGER, WARNING and CAUTION signal words. These symbols indicate areas that require special and/or strict adherence to the procedures to prevent serious injury to personnel or death. Electrical Hazard Symbol A symbol which indicates a hazard of injury from electrical shock or burn.

Page 11: Equipment Inspection

Modification of this equipment is dangerous and must not be performed except by factory trained representatives. When modifications are required contact your Toshiba sales representative. • Contact your Toshiba sales representative to report discrepancies or for assistance if required. Handling and Storage •...

Page 12: System Setup Requirements

Turn on the power only after attaching (or closing) the front panel. Do Not remove the front panel of the ASD when the power is on. • Do Not attempt to disassemble, modify, or repair the DeviceNet module. Call your Toshiba sales representative for repair information. DeviceNet Module Installation and Operation Manual...

Page 13: Overview

ASD DeviceNet module (DEV002Z) – 1 card DeviceNet open connector (connected) – 1 connector Installation and Operation Manual for DEV002Z DeviceNet option – 1 copy Document No. 58683-000 LED Name Label – 1 label...

Page 14: Features

Features The external view of the DeviceNet module is shown below. DeviceNet LED indicator Panel mounting tabs Dip switch DeviceNet connector • DeviceNet connector. • Dip switch for setting MAC address and baud rate (see Setting a MAC ID Number and a Network Baud Rate on pg.

Page 15: Installing The Devicenet Module

Installing the DeviceNet Module Install the DeviceNet module in ASD as follows: Turn off input power to the ASD and wait 15 minutes. Ensure that the red Charge LED is off. Install the DeviceNet module in the ASD as shown in Figure 1, below.

Page 16: Network Connection

Network Connection Installation Do not short-circuit adjacent terminals of DeviceNet module while connecting the wiring. Attach the DeviceNet cable to the DeviceNet connector, and plug in the connector to the DeviceNet module. Refer to DeviceNet Connector on pg. Recommended cable – Thin branch cables: DeviceNet-specific thin cable. Set the terminating resistance if needed.

Page 17: Setting A Mac Id Number And A Network Baud Rate

Setting a MAC ID Number and a Network Baud Rate Configure the MAC ID and network baud rate by setting the dip switch on the DeviceNet option card. Baud MAC ID Rate Example: Baud Rate = 250 kbps (BIN = 01) MAC ID = 37 (BIN = 100101) Default values: Baud Rate = 125 kbps...

Page 18: Devicenet Led Indicator

DeviceNet LED Indicator The DeviceNet option card has a bicolor (red and green) LED on the upper left edge, used to indicate the Module/Network Status (MNS). Status Item Displayed Not Powered DeviceNet module is not on–line because: • It may not be powered. Not On-line •...

Page 19: Communications Parameters

Communications Parameters The ASD (including the DEV002Z) acts as a follower device on the network. Use the parameters listed below to set the communication options. These settings can also be made by the use of configuration tools and the Electronic Data Sheet (EDS) file.

Page 20: Example: F830 = 2 (Instance 100/150)

Example: F830 = 2 (Instance 100/150) Table 4. Output Instance 100 Format. Byte Bit7 Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0 Acc/Dec Preset Speed Preset Speed Preset Speed Preset Speed DC Braking PI Control Motor #1/#2 #1/#2 Command Frequency Emergency Coast to Stop Forward/ Reset Trip...

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Byte Specifications Supplement Forced DC If “1” is specified, some units may dis- DC Braking Braking play “db” If “1” is specified operation is performed Jog Run 2 Jog Run at the frequency specified with F260 (Jog Run Frequency) Forward Run/ Forward Run Reverse Run Reverse Run...

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Byte Specifications Supplement Run/Stop Stop Coast to Stop (ST off) ST = On ST = Off No Emergency Emergency Off Emergency Off ST = On, Run = On, Ready for Operation Getting Ready for Ready for ST = On Operation Operation Ready for Operation Ready for...

Page 23: Devicenet Local/Remote Operation

DeviceNet Local/Remote Operation Figure 2 shows how to configure the ASD for local/remote operation. Terminal Function F terminal: Operating command R terminal: DeviceNet/Local switching RR terminal: Operation frequency command Figure 2. Wiring for Local/Remote Operation Variable resistor for adjusting output frequency 10 kΩ...

Page 24: Object Specifications

Object Specifications This section contains the object specifications for all DeviceNet objects currently supported by the DeviceNet module. The objects supported are listed in the table below: Table 8. Supported Objects. Class Code Object Class Page 0x01 Identity Object pg. 16 0x02 Message Router Object pg.

Page 25: Identity Object Specific Services

USINT Get/Set Interval messages in seconds 1 – Revision is the same level as the ASD CPU version. 2 – Minor revision is the revision of the DEV002Z software. Table 11. Identity Object Common Services. Service Supported Supported Service Name...

Page 26: Message Router Object

Message Router Object Class code 0x02 — The Message Router Object provides a messaging connection point through which a Client may address a service to any object class or instance residing in the DeviceNet interface unit. Table 12. Message Router Class Attributes. Data Access Default...

Page 27: Devicenet Object

DeviceNet Object Class Code 0x03 — The DeviceNet Object provides for the configuration and status of a DeviceNet port. Table 15. DeviceNet Object Class Attributes. Attribute Data Access Default Name Description Type Rules Value Revision UINT Revision number of this object Maximum instance number of an object Max Instance UINT...

Page 28: Assembly Object

Table 18. DeviceNet Object Specific Services Service Supported Supported Service Name Description of Service Code Class Instance Allocate_master/follower Requests the use of the Predefined 0x4B _connection_set Master/Follower Connection Set Indicates that the specified connections Release_group_2_identifier within the Predefined Master/Follower 0x4C _set Connection Set are no longer required and are to be released...

Page 29: Assembly Object - F830 Instance Details

Assembly Object – F830 Instance Details Instance 20/70 DeviceNet Standard data. (4 bytes, parameter F830 = 0.) Table 22. Output Instance 20 Layout. Byte Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 Fault Reset Forward Drive Reference Speed rpm (Low byte)

Page 30: Instance 21/71

Table 26. Instance 20/70 – Fault Reset. Instance Byte 14 13 5 4 3 1, 0 0x0004 Output Instance 20 3, 2 1 – Fault reset triggers on 0 to 1 transition only. Instance 21/71 DeviceNet Standard data. (4 bytes, parameter F830 = 1) Table 27.

Page 31: Examples Of Instance 21/71

Examples of Instance 21/71 Table 29. Instance 21/71 – Stop. Instance Byte 1, 0 0x0000 Output Instance 21 3, 2 1, 0 0x0310 Input Instance 71 3, 2 0x0000 Table 30. Instance 21/71 – Forward running 1800 rpm. Instance Byte 1, 0 0x0061 Output...

Page 32: Instance 100/150

Instance 100/150 Toshiba Specific data. (4 bytes, parameter F830 = 2) Table 33. Output Instance 100 Layout. Byte Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 Accel 1/ Preset Preset Preset Preset...

Page 33: Instance 101/151

Output Instance 100 3, 2 1 – Fault reset works on the transition from 0 to 1 only. Instance 101/151 Toshiba Specific data. (8 bytes, parameter F830 = 3) Table 40. Output Instance 101 Layout. Byte Bit 7 Bit 6...

Page 34: Examples Of Instance 101/151

Byte Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 Index (Low byte) Write Index (High byte) Data (Low byte) Data (High byte) Table 41. Input Instance 151 Layout. Byte Bit 7 Bit 6 Bit 5 Bit 4 Bit 3...

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Table 43. Instance 101/151 – Read Parameter F268 (Initial value of UP/DOWN frequency). Instance Byte 5, 4 0x0268 Output Instance 101 7, 6 Input 5, 4 0x0268 Instance 151 (F268 set to 7, 6 0x1770 60.0 Hz) Table 44. Instance 101/151 – Read Parameter FE04 (Voltage of DC bus). Instance Byte 11 10...

Page 36: Instance 102/152

Instance 102/152 Toshiba-specific data. (12 bytes, parameter F830 = 4) Table 46. Output Instance 102 Layout. Byte Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 F831 Command data (Low byte) F831 Command data (High byte)

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To write 0xC400 as the value of parameter FA06, set parameter F831 to 1 — FA06.

Bite 0 and 1 of the output instance 102 supports the parameter F831. If 0xC400 is entered here, 0xC400 will be written as the value of FA06. DeviceNet Master DEV002Z Output Instance 102 Parameter Value...

Page 38: Assembly Instance 102/152 - Parameters F831 - F836, F841 - F846 Setup Value

Direct Memory Access Settings. F831 - F836 setup value F841 - F846 setup value 0: No action 0: No action 1: FD01 (ASD status 1) 1: FA06 (ALCAN2 command 1) 2: FD00 (Output frequency, 0.01 Hz) 2: FA23 (ALCAN2 command 2) 3: FD03 (Output current, 0.01%) 3: FA07 (ALCAN2 frequency command, 0.01 Hz) 4: FD05 (Output voltage, 0.01%)

Page 39: Fa23 - Command Word 2 From Internal Option Pcb

Function Note Forward/Reverse Forward Reverse Run/Stop Stop Coast (ST) Coast Emergency Off Emergency Off Recommend this bit always be Enabled Reset Trip Reset When Enabled, this overrides the Frequency Link Priority parameter F004 When Enabled, this overrides the Command Link Priority parameter F003 FA23 —...

Page 40: Fa33 - Torque Reference From Internal Option Pcb

FA33 — Torque Reference from Internal Option PCB Torque reference is stored as a Hex value in increments of 0.01%/unit. For example, when torque reference is set up to 50%, it is converted as follows: 50 (%)/0.01 (%/unit) = 5000 (units) = 0x1388 (Hex). FA50 —...

Page 41: Fd01 - Asd Status (Real Time)

FD01 — ASD Status (real time) Function Note No Output Active Output The retry status and the trip reten- Emgergency No Fault Active Fault tion status are also regarded as tripped Alarm No Alarm Active Alarm (Reserved) THR2(VF2+tH2) Motor 1 (THR1) Motor 2 (THR2) THR1: F600, THR2: F173 PI Enable...

Page 42: Fe36 - Analog Input Value V/I

FE36 — Analog Input Value V/I Read the V/I terminal input. The value range is 0x0000 – 0x2710 (0 – 100.00%). FE37 — RX Input Read the RX terminal. The value range is 0xD8F0 – 0x2710 (-100.00 – +100.00%). FE60 to FE63 — My Function Monitor (1 – 4) Refer to the My Function Instruction Manual (Document No.

Page 43: Fd06 - Input Terminal Board Status

Function Note Stop after instantaneous power off Dec. Active stop Refer to F256 value Stop after F013 (LL) continuance time Dec. Active stop Refer to F302 value FD06 — Input Terminal Board Status TB Name Function (Parameter) Input TB Function select 1 (F111) Input TB Function select 2 (F112) Input TB Function select 3 (F113) Input TB Function select 4 (F114)

Page 44: Connection Object

Connection Object Class code 0x05 — The Connection Class allocates and manages the internal resources associated with both I/O and Explicit Messaging Connections. Table 48. Connection Object Attributes. Attribute Data Access Default Name Description Type Rules Value Revision UINT Revision of this object Maximum instance number of an Max Instance UINT...

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Attribute Data Access Default Name Description Type Rules Value Transmitted_connection Max number of bytes transmitted UINT _size across this connection Max number of bytes received across Received_connection_size UINT this connection Defines timing associated with this Expected_packet_rate UINT Get/Set 2500 (ms) connection 1(Auto Watchdog_timeout_action...

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Attribute Data Access Default Name Description Type Rules Value 0x3C0 (Conn. ID Placed in CAN ID field when Transmitted_connection_id UINT dependent transmitting on device MAC ID) 0x405 (Conn. ID CAN ID field value denoting Received_connection_id UINT dependent received messages on device MAC ID) Defines Sending/Responding (Send: Gr.

Page 47: Connection Class Specific Services

Connection Class Specific Services The Connection Class provides no object specific services. Motor Data Object Class code 0x28 — This object serves as a database for the motor parameters. Table 54. Motor Data Object Class Attributes. Attribute Data Access Default Name

Description Type...

Page 48: Motor Data Object Specific Services

Table 56. Motor Data Object Common Services. Service Supported Supported Service Name Description of Service Code Class Instance 0x0E Get_attribute_single Returns the contents of the specified attribute 0x10 Set_attribute_single Modifies the value of the specified attribute Motor Data Object Specific Services The Motor Data Object provides no object specific services.

Page 49: Control Supervisor Object Specific Services

Attribute Data Access Default Name Description Type Rules Value Requests Run/Stop control to be local or from network 0 = Local Control Net Control BOOL Get/Set 1 = Network Control Note that the status of Run/Stop control is reflected in attribute 15, CtrlFromNet 0 = Vendor Specific 1 = Startup 2 = Not_Ready...

Page 50: Run/Stop Event Matrix

Run/Stop Event Matrix Run1 Run2 Trigger Event Run Type Stop No Action 0 → 1 Run1 0 → 1 Run2 0 → 1 0 → 1 No Action No Action No Action No Action 1 → 0 Run2 1 → 0 Run1 Control Supervisor State Transition Diagram Non-Existent...

Page 51: Ac/Dc Drive Object

AC/DC Drive Object Class code 0x2A — This object models the functions specific to an AC or DC Drive. e.g., speed ramp, torque control, etc. Table 60. AC/DC Drive Object Class Attributes. Attribute Data Access Default Name Description Type Rules Value Revision UINT...

Page 52: Ac/Dc Drive Object Specific Services

Attribute Data Access Default Name Description Type Rules Value Motor phase current limit Current Limit Get/Set Units: 100 mA ASD torque Torque Actual Units: N•m Torque reference Power Actual Units: N•m Acceleration time: Acceleration Time UINT Get/Set Time from 0 to High Speed Limit Units: ms Acceleration time: Deceleration Time...

Page 53: Parameter Objects

For details on the function of a parameter, please refer to the instruction manual for the ASD. EDS files Each parameter of the ASD can be accessed and modified by using a configuration tool and an EDS file. EDS files can be downloaded from the Toshiba website at: www.toshiba.com/ind/downloads_main.jsp. DeviceNet Module Installation and Operation Manual...

Page 54: Specifications

20 – 93% (non-condensing) Vibration 0.6 G (5.9 m/s) or less (10 – 55 Hz) DEV002Z complies with the requirements of Conformance Test Software Version A-17 of the Open DeviceNet Vendor Association’s (ODVA). DeviceNet Module Installation and Operation Manual...

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INDUSTRIAL DIVISION 13131 West Little York Road, Houston, Texas 77041 Tel 713/466-0277 Fax 713/466-8773 US 800/231-1412 Canada 800/872-2192 Mexico 01/800/527-1204 www.toshiba.com/ind Printed in the U.S.A.