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Toshiba V Series Operation Manual

Integrated controller, control network fl-net opcn-2, module

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model 3000 FA Control Network [FL-net (OPCN-2)]
FL311/FL312 Module Operation Manual

Integrated Controller



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the meanings of the following marks and their descriptions before reading this manual. Hazard Classifications WARNING Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.

[Page 4](#) 1. Checking the Warning Labels on the Main Unit Make sure warning markings are attached on the main unit. If any of them are missing or the wording is illegible, contact Toshiba's Service Department. 2. Precaution on Installation WARNING Mandatory Be sure to ground the equipment.

[Page 5](#) Mandatory Forbidden Do not cover the hole of the equipment, and Be careful not to let wire fragments and other the ventilator/air inlet of the system. foreign matter into the module and units. They Otherwise, overheating, etc. can cause fire or could cause a fire, failure, and malfunction.

[Page 6](#) 4. Precautions for Use of The Equipment WARNING Mandatory Mandatory Be sure to keep the terminal covers on the The emergency stop circuit, interlock circuit, module and unit, and never touch the terminals etc. must be installed outside the model 2000 while power is on.

[Page 7](#) Toshiba service shop. will be simultaneously turned off. Do not attempt modifying or repairing model For system safety, be sure to switch off the load 2000 yourself because it is very dangerous.

[Page 8](#) CAUTION Forbidden Forbidden Do not apply benzene and thinner when cleaning Be careful not to hit or fall off the equipment by accident. the equipment. Excess shock can cause failure. Otherwise, it can cause deformity or discoloration the panel or case of the equipment. Mandatory Mandatory Touch a grounded metal part to discharge the...

[Page 9](#) User's manual. beyond normal range or if failure is occurred in Otherwise, it can cause malfunction, machine the equipment. damage or fire due to overheat. Contact Toshiba for repairing. Operation under such situation can cause fire or electrical shock. CAUTION Forbidden...

[Page 10](#) 8. Safety Precautions on Disposal WARNING CAUTION Forbidden Mandatory Do not throw lithium batteries into fire. Observe local regulations for disposal of the Otherwise, they can explode. lithium batteries or the product (Base unit and modules). viii model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 11](#) Toshiba is not liable for any incidental loss caused by the use or non-use of this product, such as loss of business profits, suspension of business, or loss or change of data on memory.

[Page 12](#) model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 13](#) Preface This manual describes how to use the FA control network FL-net(OPCN-2) modules (FL311 and FL312) of the Integrated Controller V series model 3000. The hardware and operation of these modules are described. For general information concerning the FL-net, refer to the "FL-net General Operation Manual."...

[Page 14](#) FL-net. Also read the manuals for the connected equipment and engineering tools. <FL-net Operation Manual> • Integrated Controller V Series FA Control Network [FL-net(OPCN-2)] General Operation Manual (6E8C4108) Provides general description of the FL-net network, such as parameters, cyclic transmission, message transmission, and how to implement the transmission path.

[Page 15](#) Toshiba service station. 4. Do not open the case of the equipment while it is in operation except when setting the switches.

[Page 16](#) Preface Caution FL-net(OPCN-2) protocol version 1.00 compliant equipment and version 2.00 compliant equipment cannot be run of the same network. 8. FL311 and FL312 operate exclusively on 10 Mbps Ethernet. Use 10 Mbps HUB if using the 10BASE-T side. If a 10M/100M switching HUB must be used, use a HUB that can fix the port transmission speed to 10 Mbps.

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L) 5 3.4 10BASE5 Connection Connector 5...

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Operation Manual...

[Page 21: Chapter 1 General](#)

Chapter 1 General The FL-net module (hereafter referred to as FL312) for integrated controller V series model 3000 is a transmission module to connect the integrated controller model 3000 to the FL-net. The integrated controller can communicate via cyclic transmission and message transmission with other equipment on the FL-net through FL312.

[Page 22](#) Chapter 1 General Figure 1-1 FL311/FL312 External model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 23: Chapter 2 Specification](#)

Chapter 2 Specification Table 2-1 shows the FL312 module specification. Table 2-1 FL312 module specification
Item Description Remark
Number of modules per system Up to 4
modules/station system The actual number of modules per system depends on the station system configuration (Note 1) Applicable physical layer 10BASE5...

[Page 24](#) Chapter 2 Specification model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 25: Chapter 3 Hardware](#)

Chapter 3 Hardware This chapter describes each part of the FL312 module. 3.1 Name of Each Part LED Display Node address switch Top side: NA-H Bottom side: NA-L 10BASE-T connector 10BASE5 connector Power supply terminal block for MAU Maintenance tool Connector Figure 3-2 Each part of FL312 6F8C1067...

[Page 26: Led Display](#)

Chapter 3 Hardware 3.2 LED Display Table 3-1 shows the displayed content of the LED display. (LED: Light Emitting Diode)
FL-net LNK ○ ○ RUN RX ○ ○ TX PER ○ ○ LNT COL ○ ○ ACC
Figure 3-2 LED display Table 3-1 Displayed content of the LED display LED name Displayed content...

[Page 27: Node Address Switch \(Na-H, Na-L\)](#)

3.3 Node Address Switch (NA-H, NA-L) 3.3 Node Address Switch (NA-H, NA-L) This is the hexadecimal rotary switch used to specify the FL-net node number. It is located at the front of the module. It is set with a thin flat head screwdriver. This node number becomes the host address of the IP address.

[Page 28](#) Chapter 3 Hardware model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 29: Chapter 4 Installation And Wiring](#)

Chapter 4 Installation and Wiring This chapter describes the installation and wiring of FL312. 4.1 FL312 Installation FL312 is installed in the I/O bus slot of the integrated controller model 3000 basic unit and expansion unit. Up to 4 modules can be installed in each integrated controller station system.

[Page 30: Removing The Module](#)

Chapter4 Registering Tag Variables 4.3 Removing the Module To remove the FL312 module, turn off the power and reverse the installation procedure. 4.4 Communication Cable Connection FL312 supports both 10BASE5 and 10BASE-T communication. Select the one appropriate for your system. Caution

[Page 31](#) 4.4 Communication Cable Connection Connecting to 10BASE-T The following procedure assumes that UTP cable (10BASE-T twisted-pair cable) is already setup. In the case of 10BASE-T, note the direction of the UTP cable connector and insert in the modular connector (10BASE-T). FL312 to HUB UTP cable...

[Page 32: Mau Power Supply Terminal Block Connection](#)

When using 10BASE-T, connect only the FG terminal to ground line. Use type D ground. FL312 does not have an external power supply. It must be provided by the customer. Select the external power according to the usage environment and number of FL312. Toshiba recommends the following product. Model SR

[Page 33: Chapter 5 Startup](#)

Chapter 5 Startup This chapter describes the FL312 module startup procedure. 5.1 Startup Procedure Flow START Set node number with mode address switch at bottom of module. Install FL312 in prescribed I/O bus slot. Connect MAU external power supply and shielded ground wire of AUI cable to terminal block.

[Page 34](#) Chapter 5 Startup model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 35: Chapter 6 Parameter Setup](#)

(5) Set variable name to transmission data for each transmission block. Also specify the data to be received for each FL-net module. Figure 6-1 FL312 registration and setup procedure The FL312 registration and setup example is shown below. The V Series Engineering Tool 2 is used. 6F8C1067...

[Page 36: Module Registration](#)

Chapter 6 Parameter Setup 6.2 Module Registration The registration and setup target system is shown below. System: FL-net BU648E BU648E Station: FL612TST_1 Station: FL612TST_2 Transmission block Transmission block • Area 1: word 0 to 15 • Area 1: word 16 to 31 •...

[Page 37](#) 6.2 Module Registration Figure 6-3 Module registration screen 6F8C1067...

[Page 38: Parameter Setup](#)

Chapter 6 Parameter Setup 6.3 Parameter Setup The FL312 parameters are set as follows: Select FL312TST_1 - FL312 from the product tree and select <File (F)><Module parameter>. The parameter setup screen titled "Module Parameters" appears. The FL312 parameters are set on this screen. Set the parameters for FL312 of FL312TST_2 in the same manner.

[Page 39](#) 6.3 Parameter Setup Figure 6-4 Parameter setup screen (FL312TST_1 side) Figure 6-5 Parameter setup screen (FL312TST_2 side) 6F8C1067...

[Page 40: Lan Registration](#)

Chapter 6 Parameter Setup 6.4 LAN Registration Register the LAN used by the system. Select [Network] from the product tree and select <File (F)><New (W)>. Register the FL-netLAN in the

Add Network screen. Figure 6-6 LAN registration Select the [Module] folder from FL-netLAN and select <File (F)><New (W)>. Register the FL312 module of FL312TST_1 and FL312TST_2 in FL-netLAN.

[Page 41](#) 6.4 LAN Registration Figure 6-7 Registering module in FL-netLAN 6F8C1067...

[Page 42: Network Variable Registration/Assignment](#)

Chapter 6 Parameter Setup 6.5 Network Variable Registration/Assignment Assign the FL-net common memory to system network variable. This enables the S controller user program to use the cyclic data in common area 1 and 2 communicated by FL-net cyclic transmission as network variables. The S controller OS batch transfers the data between the FL-net common memory area and network variable at the beginning of sequence.

[Page 43: Registering Network Variables](#)

6.5 Network Variable Registration/Assignment 6.5.2 Registering Network Variables Start the Edit Network Variable screen from the Edit Transmission Block screen and register the network variable name in common memory for each transmission block. In the Edit Transmission Block screen, press the [Open Network] button to open the Edit Network Variable screen.

[Page 44](#) Chapter 6 Parameter Setup model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 45: Chapter 7 Operation Mode](#)

Chapter 7 Operation Mode Table 7-1 and Figure 7-1 shows the FL312 operation modes and mode transition. Table 7-1 Operation modes Operation mode Description Initialize mode Mode to initialize the FL312 internal hardware/software when the power is turned on or when a reset request is issued. ...

[Page 46](#) Chapter 7 Operation Mode Power on Initialize normal end Initialize mode Standby mode Reset request Error detected Down mode Run mode Error detected (duplicate node address, watchdog detect, etc.) Figure 7-1 Mode transition diagram model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 47: Chapter 8 Cyclic Transmission](#)

Chapter 8 Cyclic Transmission This chapter describes the handling of data communicated with other nodes through cyclic transmission. Cyclic data is communicated through FL312 common memory. 8.1 Data Transfer by Batch I/O Data I/O by batch I/O is the most common data transfer method for the S controller. This is the method used to perform "Network Variable Registration/Assignment"...

[Page 48: Data Transfer By I/O Instruction](#)

Chapter 8 Cyclic Transmission Caution For data I/O by batch I/O, data synchronicity is guaranteed only up to one word. 8.2 Data Transfer by I/O Instruction Synchronicity of multiple word data is not guaranteed by batch I/O described in the previous section.

[Page 49](#) 8.2 Data Transfer by I/O Instruction FL312 S controller XMIT_T I/O process Exclusion Common memory process FL-net transmission Cyclic path transmission send/receive process Figure 8-2 Outline of I/O operation by I/O instruction Caution Data transfer completes asynchronously with the S controller scan cycle. ...

[Page 50: Significance Of Cyclic Transmission](#)

Chapter 8 Cyclic Transmission 8.3 Significance of Cyclic Transmission Cyclic transmission, which updates the common memory data, does not confirm the exchange between nodes as with message transmission. Therefore, in order to use the data acquired in S controller register in section 8.1 and 8.2, the status of the originating node must be confirmed.

[Page 51: Chapter 9 Message Transmission](#)

Chapter 9 Message Transmission This chapter describes the message transmission function supported by FL312. 9.1 Supported Message Transmission Service Types This section describes the message transmission services supported by FL312 (see Tables 9-1 and 9-2). Note that the supported transmission type differs between the client function and the server function.

[Page 52](#) 0x18000 to 0x18FFF Note3: Transparent type message service and vendor specific message service are planned to be used as Toshiba proprietary host procedures "Computer Link Service", "PC Link Service", and generic socket interface. "Computer Link Service" and "PC Link Service" are future functions.

[Page 53: Xmit_T Function Block](#) 33

9.2 XMIT_T Function Block 9.2 XMIT_T Function Block The XMIT_T function block used when the S controller issues various requests (message transmission client requests, dedicated requests) to FL312 is described. <Symbol> Instance name XMIT_T BOOL DONE BOOL ERROR BOOL STATUS DATA []...

[Page 54: Message Transmission Client Request](#)

Chapter 9 Message Transmission 9.3 Message Transmission Client Request Command/Transmission Data Byte block read DATA 65003 Data read from specified virtual address Virtual address (L) Virtual address (H) Read byte size Note1: The completion status information when executing this request is stored in the STATUS area of the XMIT_T function block.

[Page 55](#) 9. 3 Message Transmission Client Request Command/Transmission Data Word block read DATA 65005 Data read from specified virtual address Virtual address (L) Virtual address (H) Read word size Note1: The completion status information when executing this request is stored in the STATUS area of the XMIT_T function block.

[Page 56](#) Chapter 9 Message Transmission Network parameter write DATA 65008 Written network parameter data Note1: The completion status information when executing this request is stored in the STATUS area of the XMIT_T function block. See "Appendix Completion Status" for the details of the completion status information. Note2: When an error response (M_RLT=1) comes from a server side node, "-5106 (M_RLT= abnormal receive)"...

[Page 57](#) 9. 3 Message Transmission Client Request Command/Transmission Data Profile read DATA 65011 Read data length data area length Read profile information Note1: The completion status information when executing this request is stored in the STATUS area of the XMIT_T function block. See "Appendix Completion Status" for the details of the completion status information.

[Page 58](#) Chapter 9 Message Transmission (11) Log clear DATA 65014 None Note1: The completion status information when executing this request is stored in the STATUS area of the XMIT_T function block. See "Appendix Completion Status" for the details of the completion status information. Note2: When an error response (M_RLT=1) comes from a server side node, "-5106 (M_RLT= abnormal receive)"...

[Page 59](#) Chapter 10 FL312 Dedicated Requests This chapter describes the dedicated requests from the S controller to FL312. Dedicated requests are FL312 specific requests issued from the S controller to the connected FL312 and is used to control and set FL312 and transfer common memory data. These are outside the specification of FL-net.

[Page 60: Chapter 10 FL312 Dedicated Requests](#) 39

Chapter 10 FL312 Dedicated Requests 10.2 Dedicated Request (Command/Transmission Data) Cyclic data read DATA Data read from specified area/offset Area specification Offset (L) Offset (H) Read word size Note1: Offset is the word offset from the beginning of specified area Area specification (0: Area 1, 1: Area 2) Completion status (see appendix) of this request is stored in STATUS of XMIT_T.

[Page 61](#) 10.2 Batch Uploading from Controller RAS information read Request to read FL312 RAS information (internal error information and event log) from S controller. DATA Read data length type Read RAS information Start position Read count data area length Note1: Read data length: Byte length of read RAS information Data area length: Byte length of data section Type: 1 RAS counter 2 Specification prohibited...

[Page 62](#) Chapter 10 FL312 Dedicated Requests Own node parameter set request Request to set parameter in FL312 after initializing with reset request. Parameters are downloaded from Engineering Tool. This request is accepted only when FL312 is in standby mode. After parameter is set, FL312 mode must be changed to online mode with control request.

[Page 63: Chapter 11 Ras Function 43](#)

Chapter 11 RAS Function This chapter describes the FL312 RAS function. Refer to the "General Operation Manual" for information concerning the FL-net common RAS function. FL312 has the following RAS functions: Module status display with LEDs RAS information in S controller special registers RAS information that can be read with dedicated request 11.1 LED Display Refer to section "3.2 LED Display"...

[Page 64: Ras Information In S Controller Special Registers 44](#)

Chapter 11 RAS Function 11.2 RAS Information in S Controller Special Registers The following FL312 RAS information is automatically stored and updated in S controller special registers. Node status 1) Function Indicates the status of connected FL312. This status displays the current status of FL312.

[Page 65](#) 11.2 RAS Information in S Controller Special Registers The meaning of each bit is described in the following table. Table 11-1 Node status detail Bit name Description Remarks DOWN 1:Indicates that the FL312 is in down mode. Down mode is an The recover methods are as unrecoverable error status.

[Page 66](#) Chapter 11 RAS Function Cyclic node map 1) Function Indicates whether another node is performing cyclic transmission. The content of this area is correct only when the own node is linked to a network. 2) Register position SW346 FL312 (No.4) (16 words) SW361 SW362...

[Page 67: Other Ras Information 47](#)

11.3 Other RAS Information 11.3 Other RAS Information RAS information other than node status and cyclic node map is divided into information read by RAS information read request described in section "10. FL312 Dedicated Request" and information assigned to FL312 expansion memory space (read with MREAD function). 11.3.1 RAS Information Read Request Data See "Appendix RAS Information"...

[Page 68](#) Chapter 11 RAS Function In ring node map Indicates whether another node is linked to FL-net token ring. The content of this area correct only when the own node is linked to a network. Format (16 words) Each bit indicates the status of a node. 3015h 3006h The number in the above cell is the node number.

[Page 69: Chapter 12 Maintenance 49](#)

Chapter 12 Maintenance This chapter describes how to perform maintenance of the FL312. 12.1 Verification Items The major verification items for maintenance are as follows: RAS information The LED display, RAS information in S controller register, and other RAS information described in "Chapter 11.

[Page 70: Inspection](#)

Chapter 12 Maintenance 12.2 Inspection Daily Inspection Check the following items at the start of operation and during operation. Table 12-1 Daily inspection item Inspection item Method Judgment condition Action LED Display Sight See section "3.2 LED Display." Same as left Periodic Inspection Inspect the following items every 1 to several months.

[Page 71: Action When There Is Error 51](#)

12.3 Action when there is Error 12.3 Action when there is Error Abnormal conditions and countermeasures are shown below. Table 12-3 Main abnormal conditions Abnormal Condition Suspected cause Action Abnormal RUN is off Power out or error Check power supply primary side LED display voltage Abnormal switch setting...

[Page 72: Ras Information Backup 52](#)

7 years For saving data during power failure For network components (non Toshiba component such as repeater and HUB) used in FL-net system, check with the manufacturer selected during system configuration. model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 73: Appendix A Various Information](#)

Appendix A Various Information A.1 Log Information Memory Map Transmit/receive Word

address 308Ah Not implemented Reserved 3088h Total receive error count Reserved 3086h Total receive count 3084h Not implemented Reserved 3082h Total socket transmit error count Reserved 3080h Total socket transmit count Figure A-1 Log information (transmit/receive) Frame type Word address...

[Page 74](#) Appendix A Various Information Cyclic transmission Word address Reserved 30A4h Cyclic transmission BSIZE error count Reserved 30A2h Cyclic TBN error count Reserved 30A0h Cyclic CBN error count 309Eh Not implemented Reserved 309Ch Cyclic transmission receive error count Figure A-3 Log information (cyclic transmission) Message transmission Word address Reserved...

[Page 75](#) A.1 Log Information Memory Map Token related Word address Reserved 30C2h Token monitor timeout count Reserved 30C0h Token retention timeout count Reserved 30BEh Token reissue count Reserved 30BCh Token discard count Reserved 30BAh Token multiplexing recognition count Figure A-6 Log information (token related) Condition 1 Word address Reserved...

[Page 76: Control Information Map Memory](#)

Appendix A Various Information A.2 Control Information Map Memory Own node control table Word address 3119h Reserved Protocol version 3118h Reserved Minimum allowed frame interval 3117h Reserved Token monitor timeout interval 3116h Common memory area 2 size 3115h Common memory area 2 start address 3114h Common memory area 1 size 3113h...

[Page 77](#) A.2 Control Information Map Memory Linked node control table (#CTBL) Word address Not used 35FCh Node 254 35F8h Node 2 3208h Node 1 3204h Not used 3200h Figure A-10 Linked node control table #CTBL (All) Word address +3 h Common memory area 2 size +2 h Common memory area 2 start address +1 h...

[Page 78](#) Appendix A Various Information Linked node table (#MTBL) Word address Not used 3DF8 h Node 254 3DF0 h Node 2 3610 h Node 1 3608 h Not used 3600 h Figure A-12 Linked node control table #MTBL (All) Word address Reserved +6 h Reserved...

[Page 79: Message Transmission Communication Data](#)

A.3 Message Transmission Communication Data A.3 Message Transmission Communication Data Byte block read Item Data content Request None Normal response (M_RLT=0) Offset+0 Read data Size is any size up to 1024 octets. Abnormal response None (M_RLT=1) Not implemented response None (M_RLT=2) Figure A-14 Byte block read data Byte block write...

[Page 80](#) Appendix A Various Information Word block read Item Data content Request None Normal response (M_RLT=0) Offset+0 Read data Size is any size up to 1024 octets. Abnormal response None (M_RLT=1) Not implemented response None (M_RLT=2) Figure A-16 Byte block read data Word block write Item Data content...

[Page 81](#) A.3 Message Transmission Communication Data Network parameter read Item Data content Request None Normal response (M_RLT=0) Offset+0 Node name (facility name) Vendor name Manufacturer format Area 1 start address Area 1 size Area 2 start address Area 2 size Reserved Token monitor time up interval Reserved...

[Page 82](#) Appendix A Various Information Network parameter write Item Data content Request Offset+0 Set parameter flag Area 1 start address Area 1 size Area 2 start address Area 2 size Node name (facility name) Only address and size setting are written when set parameter flag is 16#01.

[Page 83](#) A.3 Message Transmission Communication Data Profile read Item Data content Request None Normal response (M_RLT=0) Offset+0 Read data Data is outside the range of this standard Abnormal response None (M_RLT=1) Not implemented response None (M_RLT=2) Figure A-22 Profile read data (10) Transparent type message Item...

[Page 84](#) Appendix A Various Information (12) Log data clear Item Data content Request None Normal response None (M_RLT=0) Abnormal response None (M_RLT=1) Figure A-25 Log data clear (13) Message loop back Item Data content Request Offset+0 Data Data is user defined. Size is up to 1024 octets.

[Page 85: Completion Status](#)

A.4 Completion Status A.4 Completion Status Table A-1 Completion status Completion name Code Description 1 Normal completion Request completed normally 2 Own node error Request cannot be processed because own node entered down mode Response when following request is issued in standby mode (1) Common memory read request 3 Own node standby (2) Common memory write request...

[Page 86](#) Appendix A Various Information Completion name Code Description Undefined command Undefined command was specified with XMIT_T FB -5118 specification error 24 Slot specification error -5119 Bus/unit/slot with no FL312 installed was specified 25 Other error -5103, -5120, -5121, -5122, -5123, -5124 ...contact manufacturer model 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual...

[Page 87: Ras Information](#)

A.5 RAS Information A.5 RAS Information The content of RAS information read with RAS information read is shown below. RAS counter (16 words) Word address Not used Not used Not used Not used Not used Not used Transmit request count Normal transmit count Not used Overflow count...

[Page 88](#) Appendix A Various Information Port information Word address Port 2 dual port overwrite count Port 2 transmission state prohibit Port 2 receive specification request count Port 2 receive data receive normal count Port 2 receive data receive error count Port 2 receive memory pool acquisition error count Not used Not used Port 2 transmission 2MBX receive normal count...

[Page 89](#) A.5 RAS Information Event trace 1) 1 record structure Word address Second Minute Hour Date Month Year Detail information 4 Detail information 3 Detail information 2 Detail information 1 Event code Note 1: Time information is expressed in BCD. Figure A-29 Event trace structure (1 record worth) 2) Event code Table A-2 Event codes Event code...

[Page 90](#) Appendix A Various Information Detail information Event code Content/Remark 0050h Own node parameter not set 0015h 0070h 0001h Request type Request type error 0017h 0002h Own node failure 0018h 0002h Own node failure 0073h Year Year setting error 0074h Month Month setting error 0075h Date...

[Page 91](#) A.5 RAS Information FA section information Word address Event (count) Word address Event (count) +27h Message SEQ error +26h +25h Message V-SEQ error +24h +23h Cyclic BSIZE error +6Bh Token save timeout +22h +6Ah +21h Cyclic TBN error Not used +20h +1Fh Cyclic CBN error...

[Page 92](#) Appendix A Various Information UDP stack information Word address Not used Not used Not used Not used Not used Not used Not used Not used Not used Not used Not used Transmit error count Transmit packet discard count Receive error count Receive packet discard count Figure A-31 UDP stack information...

[Page 93](#) 3000 FA Control Network [FL-net(OPCN-2)] FL311/FL312 Module Operation Manual 1st edition 14th May. 2004 1067.1.0405 INDUSTRIAL AND POWER SYSTEMS & SERVICES ELECTRICAL APPARATUS & MEASUREMENT DIVISION 1-1, Shibaura 1-chome, Minato-ku, Tokyo 105-8001, Japan Tel.:+81-3-3457-4737 Fax.:+81-3-5444-9409 □ TOSHIBA Corporation 2003-2004 All Right Reserved.

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