Toshiba TOSDIC-CIE DS Manual

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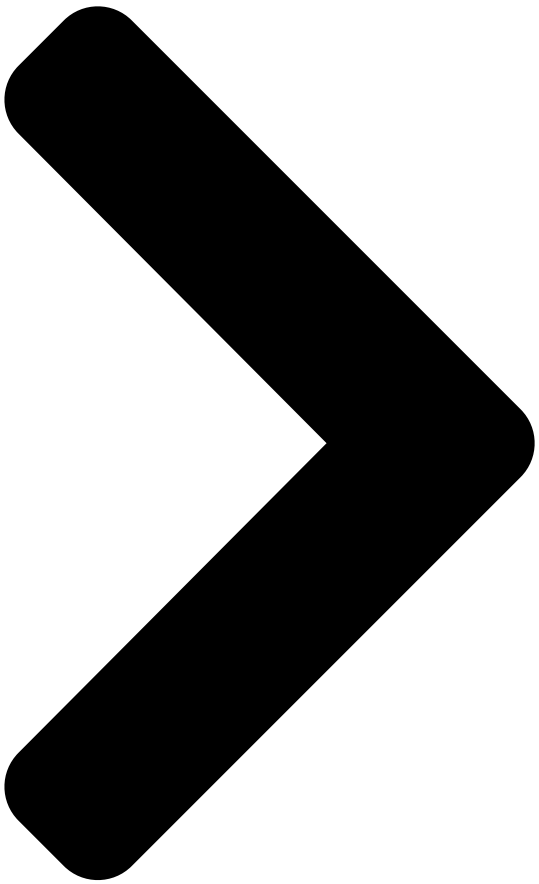

MENU

Toshiba Integrated Control System

SVR-DS System Function Manual

6F8C0791

TOSHIBA

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Control Systems Toshiba TOSDIC-CIE DS Instruction Manual

(158 pages)

Control Systems Toshiba TOSDIC-CIE DS Installation And Wiring Manual

(148 pages)

Control Systems Toshiba TOSDIC-CIE DS Manual

(74 pages)

Control Systems Toshiba TOSDIC-CIE DS Operation Manual

Dpcs emulator hardware (i/o system component) (72 pages)

Control Systems Toshiba TOSDIC-CIE DS Function Manual

(60 pages)

Control Systems Toshiba TOSDIC-CIE DS Instruction Manual

(55 pages)

Control Systems Toshiba TOSDIC-CIE DS Instruction Manual

(49 pages)

Control Systems Toshiba TOSDIC-CIE DS Instruction Manual

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Control Systems Toshiba TOSVERT VF-PS1 Instruction Manual

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Summary of Contents for Toshiba TOSDIC-CIE DS

Page 1 MENU Toshiba Integrated Control System SVR-DS System Function Manual 6F8C0791...

Page 2 First Edition July, 1999 The contents of this manual may be revised without notice. © Copyright 1998 by Toshiba Corporation. All rights reserved. No part of this manual may be reproduced in any form without permission.

Page 3 Safety Precautions Safety Precautions The instruction manual and the labels affixed to the products or equipment give important information for using products safely. It helps prevent

damage to properties and hazard to people who use them or work with them. Make yourself familiar with the signal words and signs in this page, then read the safety precautions that follow and always follow the instructions to avoid hazards.

Page 4 Safety Precautions Confirmation of product safety label Confirm that product safety labes are put on the front panel of the power supply module. If the lavel is lost or soiled, inform TOSHIBA Corporation. 1. Safety Precautions for Installation WARNING Grounding required: To avoid the risk of electric shock or fire, be sure to ground the equipment.

Page 5 Safety Precautions 2. Safety Precautions for Inspection and Maintenance WARNING Turn off power: Turn off power before attaching or detaching modules or before connecting devices. Failure to do so may result in electric shock or equipment fault. Make sure that power is off: Always check and make sure that the external power is turned off before installing or removing modules.

Page 6 Turn off power in the event of a problem: If the temperature in or around the equipment becomes abnormally high or an unusual fault occurs in the equipment, stop using it and turn off power, then contact your Toshiba representative. If left alone, overheat may result in fire.

Page 7 Safety Precautions CAUTION Do not touch components: Do not touch pins, connectors or soldered surfaces in modules with any part of your body. Static electricity may damage IC's or LSI's and cause equipment to fail. Also the pointed end of component lead may hurt your body.

Page 8 (see NOTE 3) will be needed for system operation, maintenance and management. Consult the Toshiba sales representative in your area. (Note 1) Equipment which directly involves human life is as follows: Medical equipment such as life sustaining equipment and equipment in surgical operation rooms.

Page 9 Safety Precautions Non-Liability Clauses l Toshiba will not be responsible for damage caused by a fire, earthquake or a third party, or by use under abnormal conditions such as an accident, intention, error or abuse by the user. l Toshiba will not be responsible for incidental damage due to the use of or inability to use this product, including losses of business profits, suspension of business and mutilation or erasure of stored data.

Page 10 Safety Precautions viii...

Page 11: Introduction

This manual describes mainly the system functions of the server station SVR-DS for TOSDIC-CIE DS. Read this manual thoroughly to understand the functions of the SVR-DS functions before you use the system. First, read “Safety Precautions” carefully to use this device safely and correctly.

Page 12 Introduction Chapter 6 Time Monitoring This chapter describes time monitoring of SVR-DS. Chapter 7 User Application Environment This chapter describes user application environment of SVR-DS. n Targeted Readers of This Manual This manual is targeted at new users of the OIS-DS/SVR-DS system. You need some knowledge about computer operations to understand this manual, but you don’t have to be an expert at computer.

Page 13: Table Of Contents

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Page 15: Overview Of Svr-Ds

TOSDIC-CIE DS system. The TOSDIC-CIE DS System and SVR-DS For TOSDIC-CIE DS, the maximum of two SVR-DS stations, eight OIS-DS stations, and 22 PCS-DS stations can be connected to one system of Ethernet Control LAN. OIS Engineering Tools, general purpose workstations, and PC’s can be connected to the Information System Ethernet.

Page 16: Hardware Composition

1. Overview of SVR-DS Hardware Configuration OIS/SVR consists of SVR-DS, which manages databases, and OIS-DS, which is used by operators for screen operations. They are connected via the Ethernet Control LAN. You can connect a printer for messages to SVR-DS, and a printer for reports and hard copies to OIS-DS. SVR-DS Centronics Voice Output Device...

Page 17

1. Overview of SVR-DS In OIS/SVR, peripheral devices such as printers can be shared by connecting them by using network connections via the Information System Ethernet. Information System LAN Print Server Print Server Print Server Centronics Centronics Centronics SVR-DS Voice Output Device For History For Hard...

Page 18

1. Overview of SVR-DS SVR-DS can be made redundant. The on-line SVR-DS outputs to the peripheral devices such as printers. Voice Output Device Redundant SVR-DS Print Server Redun- Print Server dant SVR-DS Print Server For History Messages Centro Centronics (Note) nics Hard Copies For Reports...

Page 19: Standard Functions

1. Overview of SVR-DS Standard Functions OIS-DS and SVR-DS have the following standard functions. These standard functions are shared between SVR-DS and OIS-DS. Figure 1.5 shows the standard functions of OIS/SVR. Figure 1.6 shows the standard functions of SVR-DS. OIS-DS/SVR-DS Screen Management Screen Startup Menu/History...

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1. Overview of SVR-DS SVR-DS Database Management Historical Database History Database Report Database Database Mirroring (Redundant System) User Application Environment Library (Functions) Management Scheduler Maintenance Table Mirroring (Redundant System) Background Processing System Clock Redundancy Control Internal Tags (Process Tags, Parameter Tags) System Tags Report Data Filing Event Bit (Event Management)

Page 21: Tag Management

2. Tag Management 2. TAG MANAGEMENT SVR-DS manages own system tags and internal tags. l l l l System Tags These tags monitor own SVR-DS system. SVR-DS provides OIS-DS with system access support and notifies it of state changes for alarm management. l l l l Internal Tags SVR-DS manages parameters of OIS-DS/SVR-DS and PCS-DS, data regarding OIS-DS/SVR- DS guidance, and process data for applications as “internal tags”.

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2. Tag Management...

Page 23: Database Management

3. Database Management 3. DATABASE MANAGEMENT SVR-DS manages some of the databases managed by OIS-DS/SVR-DS, as described below. OIS-DS Operator Window Current Database Network Database SVR-DS Historical Database Report Database Network Database Figure 3.1 Databases of OIS-DS/SVR-DS (1) Historical Database Saves process data, history information, and report data.

Page 24: Historical Database

3. Database Management Historical Database The historical database resides in the hard disk of the SVR-DS. The historical trend data, history messages, report data, and user application data operated by the SVR-DS are collected and saved for each historical tag. The data is read by the OIS-DS. Screen display Historical tag setup Reports...

Page 25: Historical Tag

3. Database Management Table 3.1 Specification of Historical Database Item Specification Collectable Data PCS process tags Internal OIS process tags Application set values Collecting Period Fixed Period Trend data :15 period types between 5s and 1 day Collection Report data :1 minute Common trend/report data: 20s to 1 minute Events Event conditions...

Page 26: History Message

3. Database Management l l l l History Message The SVR-DS monitors the process and system and saves record message histories including process and system alarms generated, guidance messages, digital tag operations and operator operations. A maximum of 8,000 histories can be saved per system in the hard disk (historical database) of the SVR-DS.

Page 27: Report Database

3. Database Management Report Database The “Report” function performs report-calculations of historical tag data saved in the historical database of the SVR-DS and saves calculation results as report tag data in hourly, daily, monthly and yearly units. The saved report tag data can be output by the OIS-DS report printer in the style of daily, monthly or yearly report.

Page 28 3. Database Management The specification of report data is as follows: Table 3.2 Specification of Report Data Item Specification Data that can be collected PCS process tags Internal OIS process tags Operator set values Collection Period One minute Collection Points 5,000 tags/system, total with historical tags Save Period Hourly data...

Page 29: Report Data Processing

3. Database Management l l l l Report Data Processing One system can be selected and performed from the three systems, namely, the minutely system, hourly maximum system and hourly average system, for hourly, daily, monthly and yearly data of process tags of the PCS-DS and internal process tags of the OIS/SVR. This report calculation processing system is set up in the report database in each system.

Page 30 3. Database Management 1) Minutely system The month maximum value, month maximum value time, month minimum value, month minimum value time and month average value for one month (31 samples) of day maximum value, day minimum value and day average value of daily data are calculated and the calculation results are saved with report tags as monthly data.

Page 31 3. Database Management Minutely System Daily Data Monthly Data Yearly Data January First Day 12-Month Year 31-Day Maximum Value Maximum Value Maximum Value Minimum Value Minimum Value Minimum Value Average Value Average Value Average Value Hourly Maximum System Daily Data Monthly Data Yearly Data Hourly Data...

Page 32 3. Database Management Report Data Processing of Power Factor Indicator Tags Maximum, minimum and average values of power factor indicator tags of the PCS-DS process tags are calculated in accordance with the following report calculation methods. When calculating maximum and minimum values, select the set-phase calculation system or absolute-value calculation system.

Page 33 3. Database Management (1) Hourly data Counter or analog integration is integrated for one hour (60 samples) of historical tag data collected in one-minute periods in accordance with the tag type set up in the report database. Save the integration results with report tags as hourly data. 1) Counter Calculate and total differences between nth data and n-1th data of historical tag data collected in one-minute periods.

Page 34 3. Database Management Daily Data Monthly Data Yearly Data Hourly Data Minutely Data 00:01 January First Day 12-Month Year 31-Day 23:01 Maximum Value Maximum Value Maximum Value Collected Value 23:02 Minimum Value Minimum Value Minimum Value Collected Value 01 o’clock Average Value Average Value 24-Month...

Page 35 3. Database Management Closing Time Set up combinations of closing time, closing day and closing month as the closing date and time used in report calculations. Select one of the closing dates and times set up and set them with report tags.

Page 36: Network Database

3. Database Management Network Database The network database resides in the hard disks of the SVR-DS and OIS-DS saved with different setup information. In the network database, data can be written and read for each item in the table. The SVR-DS can be accessed from the SVR-DS and OIS-DS. The network database of the SVR-DS is saved with system setup information common to the OIS-DS and SVR-DS, such as historical tag setup information and internal tag

information.

Page 37: Background Processing

4. Background Processing 4. BACKGROUND PROCESSING SVR-DS processes data and signals for OIS-DS/SVR-DS in background processing. Alarm Monitoring OIS-DS/SVR-DS monitor process alarms and system alarms. SVR-DS performs signal processing of these alarms. OIS-DS displays these alarms and allows operators to operate them. l l l l Process Alarms Process alarms are managed according to the alarm confirmation methods and alarm grades.

Page 38 4. Background Processing Occurrence Recovery Signal Not Confirmed Confirmed OIS Status ´ : Confirmation Operation ON Color/OFF Color Display Return Operation B link ing CRT Display Ignored : Occurred Message Output (Note) Alarm Confirmation Operation : Alarm Buzzer Output AWON/AD : Auto Window Displayed AWON : Auto Window Deleted...

Page 39 4. Background Processing Occurrence Recovery : Confirmation Operation Signal Not Confirmed Confirmed Display Return Operation OIS Status ´ : Occurred Message Output ON Color/OFF Color ON Blinking : Recovery Message Output CRT Display Alarm Confirmation Operation : Alarm Buzzer Output AWON/AD : Auto Window Displayed AWON...

Page 40 4. Background Processing Occurrence Recovery : Confirmation Operation Signal Not Confirmed Not Confirmed Display Return Operation Normal OIS Status ´ ´ : Occurred Message Output ON Blinking OFFBlinking ON Color/OFF Color OFF : Recovery Message Output CRT Display Alarm Confirmation Operation : Alarm Buzzer Output : Auto Window Displayed...

Page 41: System Alarms

4. Background Processing l l l l System Alarms System alarms are managed according to the Type B alarm confirmation method and the following alarm grades. Table 4.2 Display Priorities for System Alarms Confirmed/ Alarm Grade Display Color Display Not Confirmed Priority Not Confirmed Major Alarm...

Page 42: Event Condition Management

4. Background Processing Event Condition Management SVR-DS manages event conditions used as triggers for guidance, voice output, and history message printing, as well as bit data that indicate occurrence/recovery of events. For event conditions, you need to register status signals and conditions of process tags and bit signals output when the event conditions are met beforehand by using the OIS-SVR Engineering Tools.

Page 43: Message Printing

4. Background Processing Ÿ Tag Number Ÿ Atom Name : Bits in Alarm Occurrence State, Tag Representative Alarm Monitor ON/OFF, bits for Alarm Monitor ON/OFF, DI Status of digital tags, and Scan ON/OFF Ÿ NOT Specification Ÿ AND/OR Specification Message Printing When SVR-DS receives record messages of an event occurred, you can specify messages in terms of the message type and print them out from the printer.

Page 44: Guidance Management

4. Background Processing Guidance Management SVR-DS manages occurrence and recovery of guidance. You need to register event conditions that serve as occurrence/recovery conditions for guidance beforehand by using the OIS-SVR Engineering Tools. When SVR-DS receives an event change message, it sends a guidance occurrence/recovery message to OIS-DS.

Page 45: Internal Process Processing Signals

4. Background Processing Internal Process Processing Signals SVR-DS performs signal processing such as linerization process, industrial unit conversion, and alarm detection for process input signals of internal process tags. Application Processing Monitor Function Standard Screen Data Historical Retrieval Graphic Internal Process Signal Report Processing Internal Tag...

Page 46 4. Background Processing Table 4.4 Functions and Operations of Redundant Systems Function SVR Operation for Online/Standby Collected by Online SVR ’ s and some Standby Historical Database Collection SVR ’ s Performed by both Online and Standby SVR ’ s Save Performed at down recovery of Online SVR ’...

Page 47 4. Background Processing In the SVR Station State Display, check that the process execution state during historical mirroring and report data mirroring goes “Suspended”.

Page 48 4. Background Processing...

Page 49: Alarm Output

5. Alarm Output 5. ALARM OUTPUT When a process alarm or system alarm occurs, SVR-DS outputs voice messages and external alarms. Voice Messages When a voice alarm is output, the registered voice alarm is output from the voice message device. Voice alarms are output from the voice message device when the events registered for the voice alarms occur or are recovered.

Page 50 5. Alarm Output Ÿ Event Conditions : The event conditions for the external alarm output to be generated. Ÿ Output Type : Selected from the type which outputs from the event occurrence to recovery and the type which outputs only for one second when the event occurs.

Page 51: Time Monitoring

SVR-DS monitors the clocks of OIS-DS’s, SVR-DS’s, and PCS-DS’s connected to the Ethernet Control LAN of the TOSDIC-CIE DS system in a certain period (more than one munute). If the allowable time difference (within five seconds) is exceeded, clocks are synchronized to the system clock of own SVR-DS.

Page 52 6. Time Monitoring...

Page 53: User Application Environment

7. User Appication Environment 7. USER APPLICATION ENVIRONMENT In SVR-DS, user application programs written in the C language can be executed. The SVR-DS’s user application programs are used for background process. The SVR-DS standard functions allow you to use the SVR-DS system-specific functions. Also, you can utilize the OS/FW’s (Solaris compliant) rich library of functions.

Page 54: Data Sharing

7. User Application Environment (2) Event Condition Programs Detect changes in event conditions and perform processing when they are met. (3) Fixed Cycle/Event Condition Programs Perform processing in a fixed cycle, as well as when event conditions are met. l l l l Data Sharing When data is shared among multiple applications, you can use the Network Database to mirror written data to all SVR-DS’s.

Page 55: Svr Engineering

8. SVR Engineering 8. SVR ENGINEERING The system configuration, internal tags, event conditions, and history message printing information of SVR-DS are registered by using the OIS/SVR Engineering Tools. SVR- DS/OIS-DS and the OIS/SVR Engineering Tools are connected via a Control System LAN or Information System LAN.

Page 56 8. SVR Engineering...

Page 57: Ras Functions

9. RAS Functions 9. RAS Functions SVR-DS has the following RAS functions. Table 9.1 RAS Functions of OIS/SVR Item Meaning Watchdog timer diagnosis (System reset when an error is detected) Temperature Rise Temperature monitoring in the SVR-DS cabinet Fan Stop Monitoring of fan stop inside the SVR-DS cabinet Voltage Drop Monitoring of voltage drop (The system goes down at error...

Page 58: Remote Diagnosis

9. RAS Functions l l l l Remote Diagnosis File transfer by commands such as FTP can be performed for the RAS information of OIS- DS/SVR-DS by connecting a remote computer to the OIS-DS/SVR-DS network via a telephone line. Telephone Line OIS-DS OIS-DS Information...

Page 59: Appendix1. System Specification Of Ois-Ds/Svr-Ds

Appendix1. System Specification Of OIS-DS/SVR-DS Appendix1. System Specification of OIS-

DS/SVR-DS Appendix Table1.1 System Specification of OIS-DS/SVR-DS(1) Item Specifications Remarks No. of Tags 20000 items (process tags)/system Process data as well as system data and parameter are tagged. No. of Stations For 10M Ethernet Max.

Page 60 Appendix1. System Specification Of OIS-DS/SVR-DS Appendix Table1.1 System Specification of OIS-DS/SVR-DS(2) Item Specifications Remarks Remote Operation Analog : 3 step increment/decrement for SV and MV Dedicated keys (optional) Digital : 2 action operation from tag display patterns Operable with the mouse (touch panel) on the window if there is no dedicated key...

Page 61 Appendix1. System Specification Of OIS-DS/SVR-DS Appendix Table1.1 System Specification of OIS-DS/SVR-DS(3) Item Specifications Remarks Graphic Screen 1024 screens/system Online registration with a graphic editor is possible. External Recorder None OIS Internal Signal Analog 1024 tags/SVR Processed by SVR-DS Processing Digital 2048 tags/SVR No.

Page 62 Appendix1. System Specification Of OIS-DS/SVR-DS...

Page 64 TOSHIBA TOSHIBA CORPRATION 1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO, 105-8001, JAPAN PHONE:3457-4900...

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