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1 RSLinx Training Guide 2 Contacts Rockwell Software Notice of Technical Support Phone Technical Support Fax World Wide Web Rockwell Software Inc. All Rights Reserved Printed in the United States of America Portions are copyrighted by Allen-Bradley Company, Inc. and used with permission. This guide and any related Products of Rockwell Software are copyrighted by Rockwell Software Inc. Any reproduction and/or distribution without prior written consent of Rockwell Software Inc. is strictly prohibited. Please refer to the licensing agreement for details. The WINtelligent Series trademark notice is a registered trademark. Логотип Rockwell Software, RSAssistant, RSBatch, RSCompanion, RSData, RSEmulate 5, RSEmulate 500, RSGuardian, RSHarmony, RSKeys, RSLinx, RSLogix 5, RSLogix 500, RSPower, RSPowerCFG, RSPowerRUN, RSRules, RSServer32, RSServer, RSServer Toolkit, RSSql, RSToolbox, RSTrainer, RSTrend, RSTune, RSView32, RSView, RSWire, A.I. Серия, Расширенный интерфейс (A.I.) Серия, AdvanceDDE, ControlGuardian, ControlView, INTERCHANGE, Упакованные DDE, PLC-500, WINtelligent, WINtelligent EMULATE 5, WINtelligent EMULATE 500, WINtelligent LINX, WINtelligent LOGIC 5, WINtelligent VIEW, WINtelligent RECIPE, WINtelligent VISION, WINtelligent VISION2 являются товарными знаками Rockwell Software Inc., PLC-2, PLC-3 и PLC-5 зарегистрированы товарными знаками DTL, Сеть DTL, Пирамида Интегратор, PanelBuilder, PanelView, PLC-5/250, PLC- 5/20E, PLC-5/40E, PLC-5/80E, SLC, SLC 5/01, SLC 5/02, SLC 5/03, SLC 5/04 и SLC 500 являются товарными знаками компании Аллен-Брэдли, Inc. Microsoft, MS-DOS, Windows и Visual Basic являются зарегистрированными товарными знаками and Windows NT and Microsoft Access are trademarks of Microsoft. Ethernet is a registered trademark of Digital Equipment, Intel and Xerox Corporation. IBM is a registered trademark of the International Business Machines Corporation. AIX, PowerPC, Power Series, RISC System/6000 are trademarks of the International Business Machinery Corporation. UNIX is a registered trademark in the U.S. and other countries licensed exclusively through X/Open Company Limited. All other trademarks are the property of their respective owners and are now recognized. Guarantee This Rockwell Software product is guaranteed under the product license. Product performance will depend on the configuration of the system, the application, operator management, and other related factors. Product sales can vary depending on the users. This guide is as much today as possible at the time of printing; however, the accompanying software may have changed since then. Software reserves the right to modify any information contained in this manual or software at any time without notice. The instructions in this guide do not claim to cover all the details or in the equipment described, procedure or process, or to provide guidance to provide all possible contingencies during installation, operation or maintenance. Review Date: 2/27/2002 Covers: RSLinx 2.20 3 RSLinx Training

6 7 RSLinx Training Guide 1 Goals: Towards the end of the school period, using this tutorial, Learning in the classroom and experience with RSLinx, you need to understand and properly perform configuration steps for the following: Features of RSLinx installation requirements and how to install RSLinx How to Customize Communication Equipment in RSLinx Using the new RSWho How to use diagnostics in RSLinx DDE (Dynamic Data Exchange) and OPC (OLE for Process Management) and how they work How to customize DDE/OPC themes How to set up a DDE hot link to Microsoft Excel and make a live data chart How to write a macro in Microsoft Excel to record data through DDE Network DDE - data exchange between the RSLinx server and client applications 8 2 RSLinx Training Guide 9 RSLinx Training Guide 3 Training Section 1 A: Introduction Description of the RSLinx product is a complete 32-bit family product that provides a link to a wide range of applications. RSLinx supports Rockwell Software and Allen-Bradley, HMI and software components. It serves shop data for commercially available DDE client applications such as Microsoft Excel and Access. This allows real-time data from the factory floor to be given in applications for display, logging, or trends. With RSLinx, you can set customized settings or download recipes for supported devices from an observation computer. RSLinx also supports many popular industrial applications developed by OEMs (original Equipment Manufacturers), VAR (Resellers with added is part of rockwell Software's strategic program and independent software vendors using the INTERCHANGE Compatible RSLinx 'C' API. RSLinx is available in packages according to needs both functions and functionality. RSLinx OEM is available to work as a communication tool for many HMI rockwell Software (RSTrend, WINtelligent VIEW, WINtelligent QUALITY, WINtelligent RECIPE) products, as well as any third-party product that has been developed for the use of the RSLinx 'C API'. RSLinx Professional starts with the functionality of OEM RSLinx and adds DDE communication to all products that can act as DDE customers. The RSLinx SDK is a software development kit used to create custom applications that can leverage the communication capabilities of OEM RSLinx and RSLinx. Its 'C' (API) application programming interface includes more than 50 of the most powerful data access and conversion features for the INTERCHANGE API, as well as a few additional features specific to the RSLinx architecture. Developed from top to bottom as a true 32-bit app, RSLinx takes full advantage of the multi-dark, multi-set, and multidisciplinary capabilities of Windows operating systems. RSLinx can run any combination of the above applications at the same time, through the same or different communication interfaces. 10 4 RSLinx Training Guide RSLinx DDE/ OPC Server RSI Software Packages RSView32 RSLogix5 RSLogix500 RSTrend Etc. C-API (Direct Driver) OPC Server Network Device DDE Server Any compatible DDE program (customer) Microsoft Excel Microsoft Access Lotus 123 for Windows Etc. Network (with the right communication equipment) DH DH DH DH485 Ethernet RSLinx can transmit data to and from Allen-Bradley PLCs using common Allen-Bradley communications devices such as PCMK, 1784-KT. It supports the Allen-Bradley SLC-500, PLC-2, PLC-3, PLC-5, and PLC-5/250 processor families all in one package. This is a complete communications software package that does not require any external driver software to work with - it's not TSR (resident memory). It does all the communication work for commercially available DDE compatible Windows programs as well as Windows programs that the user can create. With RSLinx and a DDE-compatible Windows app such as Excel, the user can install, connect to the PLC and collect data online in about 5 minutes. In some ways, RSLinx is three drivers in one: It includes direct driver level access between PLC and other Rockwell Software products. It provides DDE (Dynamic Data Exchange) access to any DDE-compatible program. It also currently supports OLE for Process Management (OPC). For more information about OPC, or download the OPC specification, got in: 11 RSLinx Training Guide 5 New Features RSLinx Version 2.1 Features Network Shortcuts provides quick access to a specific network lurking complexity from client applications. The new driver configuration selectively turn on/off drivers have multiple COM port drivers configured but are disabled. Switching fast between drivers same port COM. Enter the driver's start-up status (i.e. automatic, manual, disabled, on-demand) the On Demand option is only available for serial and Ethernet drivers, and for PCMK drivers only in Windows 95/98. Applies only to specific drivers (i.e. PCMK on Win 9x, serial driver RS-232) RS-232 DF1 driver can now use up to 32 COM ports. PLC/SLC Data Monitor (reading only) The new RSLinx Data Monitor ActiveX provides the ability to monitor multiple data files for PLC or SLC devices. Unlike the data monitor found in RSLinx 2.0, they now support RSLogix Emulate 5/500 emulator software! OPC/DDE for DeviceNet Read / Write data values on any device in DeviceNet. Use the Electronic Data Sheet (EDS) information to access device attributes in a user-friendly format when using Copy to Clipboard. EDS options for DeviceNet themes and tags for those with a tag name file. To use this feature, check the Copy a DDE help topic. You can also use the OPC browsing feature to get EDS options from OPC customers who can view. Configuration Backup/Recovery Save RSLinx configuration information including drivers and DDE/OPC Topics. Backup files can be archived on a network server and retrieved during a recovery operation. This functionality includes a command line interface for Batch file operations. Network Properties - Users can now specify network survey settings and address ranges for customized drivers. This is necessary for offline viewing (for example, to overcome KE-KE). 12 6 RSLinx Guide to Learning New Features (cont.) Drivers 1784-PCC PCMCIA for ControlNet (NT Driver). The NT Core Driver comes with a 1784-PCC card (Series B or Reflade-A) and must be installed before adjusting driver 1784-PCC in RSLinx SD/SD2 S'S DH (Windows 95/98 driver) DF1 Slave Driver DeviceNet 1747-SDN Pass through DeviceNet Driver Support (1784-PCD, PCD, PCD 1784-PCID (S)). Install a driver provided with equipment. DDE/OPC Server Diagnostics Added the following Diagnostics: Processed Unsolicited Unsolicited Messages DDE Customer Customer Connections DDE Customer Disconnecting OPC Customer Connection New DDE /OPC item modifier noopt allows the customer, not RSLinx to optimize the items. For example, n7:0,l122,noopt ignores the 100-word limit on the DH network and reads the full 122 words. However, this item is sent in its own package. Support data files RSLogix 5 and RSLogix 500 (.rss and.rsp) directly to support the tag name service. To use the RSLogix 5 and 500 tag database for DDE or OPC, select DDE/OPC topic Include use symbols and select the appropriate file. DDE and OPC will now use tag names for PLC5 or SLC addresses. To view RSLinx tags from the data file, select Edit qgt; copy DDE Link to Clipboard, select theme, and and The address of the data table. MicroLogix 1500 processor support. 13 RSLinx Training Guide 7 New Features (cont.) RSLinx works headless when RSView32, OPC customers, RSLogix products, and custom C apps are automatically launched, and the main RSLinx window is not displayed. In this case, the RSLinx app is said to be running headless. RSLinx, however, appears as a system tray icon, just as if it were running as a service. To view the existing RSLinx, tap the icon, click on the icon on the right and select Recovery, or from the Start menu select the program zgt; Rockwell Software zgt; RSLinx zgt; RSLinx. Any of these actions will bring the running RSLinx to the forefront. To disable RSLinx, click on the icon and select Shutdown or click on the icon on the right, select Recovery and select Exit and Shutdown File. RSLinx Lite, RSLinx OEM and RSLinx Professional are available in the following languages: English German German Italian Portuguese 14 8 RSLinx Training Guide RSLinx Features RSLinx has the following existing features with version 2.0 and earlier: Support for all types of A-B PLC; The SLC-500 family, PLC-2, PLC-3, PLC-5, PLC-5/250 in one software package. All communication hardware for ALLEN Bradley PLCs is supported in a single software package. There is no need to buy a separate software package for each hardware device you want to use, and there are no TSR (resident

memory) programs to install. Multiple hardware communication devices can be used at the same time as the same person computer. These devices can communicate on one or more data Highway Pluses and/or Data Highway 485s. It is capable of displaying RSWhos for different motorways at the same time and can be set to upgrade automatically or manually. Full diagnosis and error reporting. It also includes diagnosing DDE links that can be active. Individual read and write (word/bits can be read and/or written). The block reads and writes (not supported by emulators). Unwanted messages with ALLEN-Bradley PLCs. (not supported when using emulators). Copy the link to Windows Clipboard is supported to make it easier to create DDE links. Automatic data optimization. Local and remote stations through the bridges of module 1785-KA-1785-KA5-5130-KA. Network support through NET DDE. Interrupt support for 1784-KT drivers to improve bandwidth. 15 RSLinx Training Guide 9 RSLinx Processor / Matrix Support Devices Allen-Bradley Equipment Ethernet DH DH DH DH485 DF1 1747-PIC X 1770-KFC 1770-KFD (Серийный интерфейс) 1770-KF2 X 1770-KF3/1747-KE X 1771-SDNPT No 1784-KT/KTX/PCMK X X 1784-KTC(X) или 9904-KTCX 1784-PCC (PCMCIA CARD) 1784-PCD (PCMCIA CARD) 1784-PCDIS (PCI CARD) 1784-PCMK X X 1784-PKTX X X X 1785-X 1785-X (TCP/IP) X Linx Gateway Customer Driver X Logix 5550 X MicroLogix X Panel View X PLC-5 Channel zero X SLC500 5/03 Channel zero X SoftLogix 5 Controller X Technology X 136-SD/SD2 DeviceNet X X X X (NT only) ControlNet X X X - driver 1771-SDNPT to support passage through capabilities from the 1771 network to DeviceNet. Please call Rockwell Software Inc. for details or other drivers. Another look at the same information: 16 10 RSLinx Guide Benefits RSLinx Ease upgrades to new processors and networks because all 32-bit Allen-Bradley drivers are included in one package. Product compatibility from Rockwell Software, Allen-Bradley and third-party products or custom solutions using open C API, OPC or AdvanceDDE RSLinx. Synchronized reading and recording access to CPU data in THE PLC-5 and SLC 500 processors through the DDE interface. Synchronous and asynchronous readable and write access to CPU data in processors PLC-5, PLC-2, PLC-3, PLC-5/250, MicroLogix 1000 and SLC 500 processors via C API. Parallel work of several communication devices. Intuitive user interface tested in our use lab. Easy Copy/Paste DDE creating a hot link. Sharing data with other computers through Network DDE. Efficient use of system resources and minimal network traffic through optimized DDE reads. Connection to legacy networks is supported by remote routing via KA, 1785-KA5, 5130-KA, 5820-EI, 1756-DHRIO and Remote ControlNet. Intuitive system research supported by RSWho's graphic function and comprehensive diagnostics. Help is just a single click, through the context of sensitive help, what is the right click help, and on the line of books. Seamless upgrades from RSLinx Lite or RSLinx OEM. The RSLinx Gateway can only be installed with a RSLinx Gateway CD. 17 RSLinx Training Guide 11 RSLinx Lite, RSLinx OEM, RSLinx Professional, RSLinx SDK, RSLinx Gateway What's the difference? RSLinx is available in versions to meet the costs and functionality requirements of many different applications. Depending on the running version, some features may or may not work. To find out which version you're working on, read the text of the main RSLinx title (the line of text at the top of the main window). If you're running a Lite or OEM version, some features documented in the help file may not be included. Below are the main differences between the different versions of RSLinx: We're a packed RSLinx to provide the best cost/functionality compromise to address different market segments: RSLinx Lite Only used complete with other Rockwell products that use RSLinx as a communication interface to install floor devices. External interfaces are not provided for DDE, OPC or user applications C. Note: RSLinx package, losing activation, activation, back to RSLinx Lite. Some applications, such as RSView32, cannot communicate with tags or other PLC data using RSLinx Lite alone. Make sure the activation files are protected to protect against loss or damage. RSLinx OEM is designed to be used with third-party HMI or custom applications. Provides full driver support for Allen-Bradley devices and networks. We expose our AdvanceDDE interface for DDE messaging, the OPC COM interface for local OPC connectivity, and support for the time of user applications developed with RSLinx SDK. RSLinx Professional full version. Includes all the functionality in the OEM RSLinx plus additional features such as: DDE formats (XL_Table, CF_Text) for Microsoft Office or standard DDE client applications, FastDDE for Wonderware customers and OPC automation interface for local OPC connectivity. 18 12 RSLinx Training Guide RSLinx Gateway includes all functionality in RSLinx Professional, as well as remote customer connection or TCP/IP. Allows you to create additional workstations running RSLinx or the OPC Client app to gateway to The Allen-Bradley networks connected to a PC server. It can connect from a remote location using the Remote Access Service (RAS). When you buy RSLinx Gateway, you have a license for up to five simultaneous remote connections. More remote connections can be obtained by purchasing additional license packages. A typical RSLinx Gateway RSLinx SDK software development kit (SDK) provides all the necessary files and documentation to develop C/C user applications to communicate with the RSLinx interface. A copy of OEM RSLinx is included in this purchase. The ultimate use of the user app will require additional purchases of OEM RSLinx, RSLinx Professional or RSLinx Gateway. 19 RSLinx Training Guide 13 RSLinx Software Requirements RSLinx requires one of the following software environments: Microsoft Windows NT Version 4.0 (Pack 3 service or later recommended). Because RSLinx uses features that aren't available in Windows NT until version 4.0, RSLinx is only supported on Windows NT Version 4.0 or later. Microsoft Windows 95 with DCOM for Windows 95 installed. DCOM for Windows 95 must be installed before trying to install RSLinx, or installing RSLinx will fail. DCOM for Windows 95 can be installed with a RSLinx CD or downloaded by Microsoft DCOM95 (Microsoft Windows 98). Note: RSLinx will not be installed on Windows NT 4.0 with a 4. Harmony version installed with RSLinx on Windows NT 4.0 with a 4 service package. HarmonyRT.zip from the Technote ID support library: P1040. This is not a problem with the 2.1 version of RSLinx. The RSLinx equipment requirements have the following minimum equipment requirements: equipment: 486/66 or Pentium processor with at least 16 megabytes of RAM. This version of RSLinx will not work on Alpha, MIPS or Power PC processors. Windows NT versions for different processors are not binary. At least 15 megabytes of available hard drive space. Certain features of the app may require 20 megabytes of available hard drive space. A 16-color SVGA display with a resolution of 800 by 600 or more. A Windows-compatible mouse. 20 14 RSLinx Training Guide to RSLinx Help System Rockwell Software Technical Support Most questions can be answered with RSLinx many internal help options without calling to Rockwell technical support software, but if you should call, expect superior customer service. Rockwell Software is the first automation company to receive SCP certification from service and support consultants for exemplary customer service in technical support and training programs. Rockwell Software plans to continuously improve in the field of software support and customer service to ensure that their customers receive world-class assistance. The Software Support Association (SSPA) coveted the Software Technical Assistance Recognition Award (STAR) for the most improved achievement! Just call Rockwell Software at (440) (Mayfield Village, Ohio), Monday through Friday from 8 a.m. to 5 p.m. ET. You can also fax your question to us by calling (440) 21 RSLinx Training Guide 15 RSLinx Internal Help Help with RSLinx can be easily obtained by clicking on the F1 key or using the help menu options shown below. It uses a standard help format that you may have seen in other products. Improvements in the aid system include: What is it? Help in most areas of RSLinx by right-clicking the option. Click What is it? There will be a button and a pop-up of the help theme. With What's This?, the Context Help icon has been added to the toolbar. Just click? The icon and cursor will change to this: Click on the theme and the same pop-up help theme will appear. Online books that include a hardware configuration guide and a guide to starting RSLinx in Adobe Acrobat.pdf format. The reading tool is on and you can can print the file if you want. RSI on the Internet takes you to the main website of Rockwell Software. Copy protection will help you quickly start walking you through the four steps of creating a DDE hot link. 22 16 RSLinx Training Guide Help online on the Rockwell Software website, support area: Library Support View our support library for tips and answers to your most common problems. Our support team introduces technical notes to the Support Library based on calls to our support group. Resetting the codes Have you lost Rockwell Product Activation Software due to any type of hard drive damage or corruption? Reset reset code Help you quickly come up and run. This requires you to have access to the MASTER drive. Request support send a support request via a web browser and we will either contact you by phone or as quickly as possible. To make your product serial number available to complete the process. 23 Training Guide to RSLinx 17 Software Updates If your software is currently under warranty or contract support, you can download the software update. Teaching Our training catalog is available online, including detailed descriptions of courses, schedules and enrollment information. You'll find a range of courses covering Rockwell software and Microsoft technology. You can even subscribe to the course online! The Guide to Supporting Our Support Guide is to describe our support services to you. Our most important goal is that you are completely satisfied and comfortable using Rockwell Software products. That's where our technical expertise and diversity of support services can really make a difference. Download Search for our database of downloadable files to demonstrate, shared downloads, presentations, promotional information, and customer reviews! (This does not include online software updates.) Transfer the registration of the registration of the product registration using a web browser! If we need more information to complete the transfer, we will contact you on . Software Connection Magazine - Your link to support software and product news If you haven't seen the latest issue in print, you can find it online as well as past issues ranging from Check URL: My support new support feature on our site allows you to personalize technotes and personalize software updates. You can choose products of interest to you and can specify your preferred delivery option (s). 24 18 RSLinx Training notes and offers with ControlLogix 5550, unsolicited messages only work on the Ethernet or DH network. To receive unwanted DDE messages from the processor through the DHRIO module and through the ENET module on the Ethernet network, select the DDE theme from the DDE/OPC Topic Configuration dialog window. Then select Extended Link, Click Remote, and manually enter the DHRIO remote communications ID through which the message is sent. Newly created DDE themes default to 20 for maximum limit packages. This makes the updates more symmetrical for the group of optimized packages for each theme. For the same functionality on old DDE themes, set maximum Limit packages on the DDE/OPC Topic Configuration dialog field, data collection tab up to 20 or best value for PLC and access method. When setting up DDE/OPC themes receive unwanted messages from controlNet from the DDE/OPC Topic Configuration dialog window, select the Advanced Communication tab and select a local route for local or remote remote To ensure that unsolicited messages coming to RSLinx work properly when setting up a DDE theme for a remote processor through ControlLogix Gateway, install a remote link ID into the appropriate remote module link ID (e.g. DHRIO). Block reads and writes do not work with custom certain types - (ControlLogix 5550). In Windows NT, PIC/AIC and DF1 Survey Master/Rab Drivers (with rtS control included only) drivers need their own serial driver (RSSERIAL. SYS, not SERIAL. SYS) and therefore cannot share the interruption with another production device. If you use an automatic configuration on the 1770-KF2/KF3 device, you must set the station number to the KF2/KF3 number before pressing the Auto-Configure button. Otherwise, Auto-Configure tries to detect the device on the station currently selected, and if the PLC device, Auto-Configure is configured to PLC, not KF2/KF3. If you're restoring a Windows NT configuration and you have a customized KTC (X) or PCMK driver, you have to restart your computer to start the driver. Once the PCC driver is first set up in Windows NT, you need to restart your computer before using the driver. When installing RSLinx, DTL32. DLL stays in the system directory if it is blocked by another application. You must have the administrative privileges of Windows NT to install RSLinx drivers and/or customize RSLinx drivers. 25 RSLinx Training Guide 19 App Notes and Suggestions (continued) When receiving unwanted messages from the SLC 500 processor across the KA5 Bridge, the remote configuration of the DDE theme should be installed on the Internet. In addition, the SLC 500 message instructions should be set at 0. In addition, unsolicited messages sent from a PLC or other site to RSLinx can cause errors if DDE or C-API customers do not work to receive them. When you download the program to the SLC 500, stop all data connections active to that station. In some cases, the processor may not be corrected if apps continue to survey SLC during downloads. If you're running Windows 95 with a 1747-PIC driver with WINelligent LINX we recommend that you change the next entry in the system.ini file (in the Windows catalog). In the download section of the system.ini file, change comm.drv and icomcomm.drv to comm.drv and comm.drv After changing that record, restart Windows 95. RSLinx does not automatically record NetDDE shares in the NT or Windows 95 registry for customized topics. For help with NetDDE shares, please contact the NetDDE help page. RSLinx won't reread the list of custom structures for SoftLogix until the theme is and restarted. RSLinx supports configurations without interruption when using Allen-Bradley network cards; however, we recommend that you assign an interruption to improve the driver's performance. If you have Auto Hide for Windows bar, every time you go to the task bar (if the animation is on), it reduces your packets/sec speed due to time calculations. Don't use the power scheme option on your computer when you run RSLinx. Use BIOS or control panel to disable this option. 26 20 RSLinx Training Guide To App Notes and Suggestions (continued) Downgrade to the previous version of RSLinx If you have RSLinx Version 2.1 installed, but want to downgrade to the previous version of RSLinx, complete the following: 1. Select DDE's theme configuration, and remove any DDE themes customized in the RSLinx Start menu, select the programs of the RSLinx Software (get), Uninstall RSLinx 2.1 (provided that you used the default when installing RSLinx 2.1). You are free to save or delete configurations. You can also remove RSLinx 2.1 using the Add/Remove Management Group selection. 3. Rebooting your computer. 4. Install the previous version of RSLinx. For use with the A.I. Series Ladder Logistics in Windows NT 4.0, this version of RSLinx is only compatible with versions: 7.21 or above PLC-5 A.I. Series Ladder Logistics 8.14 or above PLC-500 A.I. Series Ladder Logistics 6.19 or above PLC-3 A.I. Series Ladder Logistics 1.39 or above PLC-5/250 A.I. Series Ladder Logistics In Windows 95, this version of RSLinx is only compatible with versions: 8.00 or above PLC-5 A.I. Series Ladder Logistics Windows 95 support for other A.I. and RSLinx will be added in future software revisions. If you're using the old version and are in support, call customer service and request an update. 27 RSLinx Training Guide 21 App Notes and Suggestions (continued) 1784-PCMK and PCMCIA Information and Windows NT Restrictions When using 1784-PCMK (PCMCIA or PC card) communication card, Windows NT has the following limitations: When 1784-PCMK is reconfigured through RSLinx, your Windows NT system should be restarted for changes to make its effect. Only one PCMCIA of the same type can be used at a time. This means that you can only use one 1784-PCMK at a time or one PCMCIA Ethernet card at the same time as RSLinx. You can also use one 1784-PCMK card and one PCMCIA Ethernet card, while Windows NT and RSLinx do not support the dynamic removal or insertion of PCMCIA cards. If you delete or insert a PCMK card with RSLinx running, you must re-start the Windows NT system to recognize the card. It's easier to set up a PCMK card when you use board addresses at or above D000. Running RSLinx on NT with computers that are not networked When you run RSLinx on NT with 1784-KT/KTX (D)/KTC/PCMK, RSLinx requires NDIS services that will work. Windows NT doesn't install or run NDIS services unless it's configured to used Network. To make sure that NDIS services are installed and running, the network protocol must be selected in the Nt. If you try to set up an RSLinx driver, and network services aren't installed on your workstation, you'll see the next sequence of message conversations. Click OK to go through each. System Process - The name of the system object has not been found. You can't start a NDIS Mac driver. See the app's event log for a specific error (s). System Process - The name of the system object has not been found. RSLinx-StartServiceError: You can't start a NDIS Mac driver. See the app's event log for a specific error (s). RSLinx-StartServiceError: You can't start a NDIS Mac driver. See the app's event log for a specific error (s). RSLinx will work, but drivers will not be launched. If these messages occur when you try to set up an RSLinx driver, you need to install network services on the workstation. 28 22 RSLinx Training notes and suggestions (continued) Running RSLinx on machines not online Is important: This procedure requires you to log into Windows NT with the privileges of a system administrator. In order for RSLinx to work properly in Windows NT 4.0, you must install RSLinx release or later. If you have an earlier version of RSLinx, please upgrade to the latest version of RSLinx. 1. Start Windows NT 4.0 and go to the control panel. 2. Double-click the network icon. If the NT asks if you want to install the Windows NT network, click Yes. 3. NT will take you through the Master Setting network. When the NT asks how you are connected to the web, select a network. 4. Don't look for an NT adapter. Choose the MS Loopback adapter. 5. Select TCP/IP protocol. 6. Click Nearby to accept four other NT services will be downloaded. 7. Place the NT 4.0 CD in the drive and click Continue. 8. During installation you will be asked for a frame type. Choose if you want to use DHCP to set up TCP/IP, click No. 10. When asked to customize TCP/IP Properties, use an IP address and a slash mask and click OK. 11. Select a team and insert a name into the box. You have to restart the system so that these changes take effect. When Windows NT restarts, you can go to RSLinx and set up drivers. 29 RSLinx Training Guide 23 App Notes and Suggestions (Continued) Routing Over the Bridge RSLinx device cannot communicate through the outer bridge device while using a 1756-DHRIO bridge with a TCP or CNET driver. The problem arises when the first bridge is a 1756-DHRIO device, and the second bridge is not a 1756-DHRIO device (e.g., pyramid integrator). In this case, the source reference ID stays at zero, and the response packages fail. Currently, there are the following restrictions: Offlink routing works on one bridge. Offlink route route passes through two or more bridges, The first bridge is the DHRIO module. Offlink routing doesn't work in two or more if the first bridge is something other than a 1756-DHRIO device. You can't go from the DHRIO module through the 1785-KA Bridge device to the DH network. To move from the DH network, the DHRIO module has to be configured using the ControlLogix Gateway Configuration tool. For example, if bridge 1785-KA5 is in DH' network in Node 4 and DH485 LinkID is 13, follow: 1. Select the Browse Network file. 2. Choose the Browse Network module. 3. Choose the DHRIO module. 3. Go to the routing table configuration tab. 4. Tap the right button on the channel you're using and select Add. 5. Choose the DHS Bridge. 6. Enter the CA5 (4 in this example) and LinkID DH485 (13 in this example). 7. Click Apply. You can now view the KA5 module. 30 24 RSLinx Training Guide 31 RSLinx Training Guide 25 Training Section 2: Installation of RSLinx RSLinx is installed using the standard Windows settings program. Your RSLinx package can consist of either a CD or several discs (not both). If the drives, you can start with a disk labeled drive 1. Fill in the following to install RSLinx: Note: In Microsoft Windows NT, as with any other network software, you must have admin privileges to install RSLinx software. 1. Insert the RSLinx 1 floppy disk into the floppy disk (or install a CD, insert the CD into the CD). 2. Tap the Start button on the taskbar, then run and view a disk containing a floppy disk or RSLinx CD. 3. Find and double-click SETUP. Exe. 4. Click OK. 5. Follow the instructions that appear on the screen. One of the last stages of the installation process requires activation. This is the key to activating the software and without it, RSLinx is only RSLinx Lite. The Lite version does not have the capability of DDE or OPC. 32 26 RSLinx Training Guide 6. The new installation phase will require a 10-digit number. The customization program won't be all you have to continue until the serial number found on the RSLinx activation drive is entered. Enter the 10-digit serial number here 7. Click on and start installation. 8. Once RSLinx is installed, remove the RSLinx floppy disks and store them in a safe place, especially on the main activation drive. Even an activation drive without activation left on it can help you recover from lost or damaged activation. The Help/Copy Protection menu can be found in the instructions section on how to use the key panel found in the instructions section. 33 Training Guide RSLinx 27 Training Section 3: Communication Equipment Configuration, RSWho and Diagnostics 1. Open RSLinx. Next screen appears: Context Help Theme Configuration Copy DDE Link to Clipboard Driver Diagnostics Customized Drivers RSWho Open DDE/OPC Project Status Bar First Time you launch a newly installed package You have to set up communication equipment. In this section we'll go an example of how to set up communication equipment and how to use the new RSWho (Who Active) and highway diagnostics. 34 28 RSLinx Training tab / Discussion: 1. Running RSLinx 2. Tap the communication equipment configuration icon. The Customized Drivers field below will appear. To remove a driver that has been configured earlier, click here. 3. Select the hardware device from the list of available drivers that you are going to use to communicate with the world of PLC and click Add a new example in this exercise, we will choose 1784 KT/KTX (D)/PCMK/PKTX (D). Note: If you are using a hardware device other than the CT that is used in this example, you can choose this alternative device. 35 RSLinx Training Guide Click Add New. The next dialogue will be displayed to name a driver: Use the default AB_KT-1 5. Click OK Then the following dialogue seems to select the type of KT card and start the configuration: Click on the retractable arrow and select KT. Tip: Rockwell Software provides a tool to read your WINtelligent LINX configuration and display it for use in the RSLinx setup. This utility is available on the Rockwell Software website (or by calling technical support at (440) 36 30 RSLinx Training Guide Setting 1784 KT 1. To set up the CT, take the following steps (each item is selected and configured by clicking on the line of that item in the previous box). a) Select equipment (device type) through. Choose KT. (b) Choose a network type (DH or DH485) by clicking on the network type element and then clicking the arrow on the right side of that window to choose the right option. Choose DHS. (c) Create the name of the station up to eight characters. In this case, use the default: RSLinx. d) Enter the station number - a valid, non-duplicative station address for DH. (Range: 0-77 Octal) (e) Choose the correct sixty-year-old address of the CT board. This should be consistent with the settings made on the KT DIP switches. If you're unsure of your KT's dive switch settings, you'll need to check the board and installation documentation to match the dive switch settings to their address. (f) Choose the right break number. This should be consistent with that set of hardware jumpers on the KT board. An interruption (or IAR) is not required, but for better performance, select an unused interruption of either 3, 4, 5 or 7. (g) If this is the last station on the network, it is important to select YES to terminate DH. The inclusion of DH' stop will switch to stopping the resistor, as PLC would have if it was the last station on the network. h) Click OK. RSLinx will now find and set up the KT map. 37 RSLinx 31 Learning Guide Please note the new AB_KT-1 driver that is displayed in the Configure Settings section For the first KT map, it will be AB_KT-1. Full configuration to be read: AB_KT-1 DH'Sta:0 DH'Sta:0 RUNNING RSLinx supports several hardware communication devices, so the next tuned CT will be called AB_KT-2 (default, although you can change it) and so on. The only limitations for multiple communication drivers are the physical locations of devices on your computer, memory addresses, and Windows resources. 38 32 RSLinx Training Guide RSWho RSWho lets you view all active network connections from one screen. The left RSWho glass is a tree control that shows the network and the device. The correct glassbar is to control a list that shows all members of the collection. A collection is a network or device that is a bridge. Features: RSWho is limited to one network at a time. The RSWho list view has two views, a large icon and a detail. RSWho supports the upward and downward sorting of columns in the list view. RSWho supports window preservation, including column width and splitter position. RSWho is run automatically and maximised when RSLinx is launched. Important: The device that appears with a red X above it indicates that RSWho previously recognized this device, but now it can't. Red X indicates a communication state error, such as disabling a recognized device. Tip: To remove a few dead nodes remove the driver from the RSWho, then roll up and expand your parent branch. Viewing the RSWho icon indicates the network. If the icon is animated, the network is visible. Click on the network or device to start browsing. When selecting the checkbox, Autobrowse RSWho constantly reviews the chosen network. If Autobrowse is cleared, the Update button is active. By clicking Update instructs RSWho to perform one browsing cycle of the selected device. Since Refresh only performs one browsing cycle, clicking the update several times may be necessary to discover everything on the network. When a network or device collapses (indicated by the q sign), click or double-click the network icon or device next to the icon to expand the view and start browsing. When the network or device expands (indicated by the sign), click or double tap the network icon or device next to the icon to collapse. Click the button on the supported device to select station diagnostics or other supported services for that device. 39 RSLinx Training Guide 33 Lab/ Discussion 1. Check if the connection to DH is good by opening RSWho. Click the RSWho icon. Also, open RSWho by selecting Communications/RSWho from the top RSLinx menu. 2. Right tap on the RSWho screen will allow you to choose many options, depending on where you click the right mouse, RSWho below shows many of the RSWho's option. Note: can't do all the right click menus appear at the same time RSWho in the great detail View A station, which was once active, but no longer, indicated with the RED X Bridge Note: RSWho will not be via SoftLogix, Ethernet, or Linx Gateway at the remote RSLinx Gateway 40 34 RSLinx Training Guide RSWho's Big Icon View Note: It's not a good idea to let RSWho screens work all the time in Autobrowse mode. To keep the RSWho screen fresh, RSLinx must constantly flood all processors in the selected network. This creates a large amount of network traffic and increases the burden on RSLinx network drivers. Rockwell Software assumes that RSWho is only used when needed and then closed. Alternatively, if you want to keep RSWho open, don't stop the update button, and if you think the network could change or you run into a problem, just click the update guide. 3. Please note that each device on DH' is identified by its own icon. The name of the station or project and the station number are also displayed. 4. In the right or left RSWho bar, the right button on one of the PLC stations and select the diagnostic station. Appear the following: 41 RSLinx Training Guide Right click on KT in the RSWho window. Select Driver Diagnostics. When you're done looking at the diagnosis, close the RSWho window and diagnostic windows by clicking the Xs in the top right to the right of the window. 42 36 RSLinx Training Guide 43 RSLinx Training Guide 37 Training Section 4: Using Data Table Data Monitor Data Monitor Data can now view activity in data table files for PLC-5 data, as well as SLC data. This is known as data monitoring. The data monitor window is not effective; so they can stay on the desktop if you minimize RSLinx - OR - When you keep track of your data, the information is displayed either in the data file list window or in the data table window. Data Monitoring Allows: Select data files to view data file viewing in the network format View multiple data files at the same time as the RSLinx data table monitor is not available with RSLinx Lite or RSLinx OEM. Important: The data table monitor is only for reading. The values in the data files cannot be changed directly from the data monitor window. However, items can be copied to the clipboard and read or write with DDE. The input and output files are protected from DDE. 44 38 RSLinx Training Guide Following Fields are displayed on the Data Monitor dialog field: Double click here to see the data file. Data Grid displays the data values for addresses in the data table file (even if they are not currently in use). The width of the grid can be adjusted to meet the requirements of the display. When you click on the position in this grid, the address appears in the field right below. Offset displays the file type and number and file element. Columns - Click the arrow to the right of this drop list window to change items that can be shown in a row horizontally across the data grid. If you're looking at binary data, default 16 and be changed. 45 RSLinx Training Guide 39 Version of Data Table Properties allows you to change the rate of the survey and the radius of the data (binary, Octal, Decimal, Hexadecimal, or ASCII.) 46 40 RSLinx Training Guide 41 RSLinx Training Guide 43 RSLinx Training Section 5: DDE and How It Works Dynamic Data Exchange (DDE) is an interprocess communication specification that is built into the Microsoft Windows operating system. Note: The AdvanceDDE protocol is the only version supported by RSLinx-OEM. DDE is not available with RSLinx Lite. This allows Windows programs that support DDE to share data with each other. All communications occur in a Windows environment that is essentially transparent to users, using very simple instructions on how to communicate. Microsoft's RSLinx Excel Note: Not all apps that run microsoft-available Windows DDE. Contact the app manufacturer before you buy an app to use in RSLinx. The easiest way to visualize dynamic Data Exchange is to think about talking to people in a room. These people represent different Microsoft Windows apps (programs) running on your computer. Some of the people in the room ask questions (customers), others give answers (servers), and some ask questions and give answers (client/servers). In other words, the client initiates or requests the transfer of data, and the servers respond to the request by providing or accepting the data. Dynamic data sharing issues are fairly common. When Microsoft Excel asks RSLinx, it just looks for data. Excel doesn't know where the data comes from. Excel only knows that it has asked the RSLinx question, and if RSLinx is named the server, the data will be provided. 48 42 RSLinx Training Guide DDE Continuation - Application, Theme, Item Every Dynamic Data Exchange question consists of these parts: With whom do I speak (i.e., what is a common TOPIC)? What data do I need (i.e., what specific points are I talking about)? In other words, who's talking? What is the common theme? What specific data? Windows DDE uses words: App, Theme, DDE Conversation Item, which takes place between programs running windows (such as RSLinx and Excel). App, Theme, and Element Definitions: App: When you use the Microsoft Windows app to get data from another Windows app, you need to know the name of the app you want to respond to. The app refers to the program with which you work, for example, RSLinx will be an application that uses communication (such as Excel) will say (this usually applies to a running file program, such as RSLinx.exe). To use the previous example, when you asked a question to your group of people, you have to tell them from whom you want to get an answer. You ask for RSLinx data from PLC on the highway, the name of the app to uses RSLinx. (RSLinx.exe is the name of the RSLinx file being executed and thus the name to use for DDE communication no matter what you called the RSLinx icon). Subject: Once the app is known, we need to understand which topic to discuss. To use the previous example, when you ask a question to a person, you need to choose a common topic to discuss. With DDE, the topics available are defined by the app. The person asking the question must choose an accessible topic, otherwise the data exchange cannot take place. At RSLinx, the theme will consist of the information needed to get us to communicate with a particular PLC. The DDE project is a storage container for one or more DDE themes because the folder contains files in Windows. By grouping themes into the project, you can make several topics available at the same time. It's time.