

I'm not robot!



to accommodate communications and changes in future Logix controller firmware releases. Use rack optimized communication formats for digital I/O modules to minimize amount of controller memory and communications overhead associated with these modules. Use the CPS instruction to provide buffering of communications and I/O data to minimize impact of asynchronous data arrival. If the memory estimation button is disabled, it means that your estimation is up to date. This happens after an estimate, but it also happens when you go offline with the controller because the offline memory numbers reflect actual use. The order of members within a User-Defined Type (UDT) affect the memory size of the data type. Within the UDT, keep members of the same data type together. Comments in Structured Text are downloaded to the controller. This includes comments in Structured Text routines and embedded Structured Text in SFC routines. You can print RSLogix 5000 views by clicking on the view and then pressing Ctrl+P or choosing Print from the File menu. When you print FBD logic, the editor automatically makes the logic fit the page. A 2:1 ratio is generally readable. For example, set the FBD sheet size to 11 x 17 (B Size) and print on 8 1/2 x 11 size paper. Copy pieces of logic into other applications like Microsoft Word in a bitmap or metafile format. If you are having trouble downloading a project even though you have privileges, make sure that you have the project and that you are online with the controller. If you can't access routine source protection when security is enabled, ask your administrator to grant you "Routine: Modify Properties" to obtain access. If your system uses FactoryTalk Security with RSLogix5000 software, version 16, software users can log into and log off of RSLogix 5000 software. If security functions are enabled, you must have appropriate access to import rungs or to copy/paste tags and data. The Allen Bradley Logix5000 family (ControlLogix, CompactLogix, FlexLogix, SoftLogix) has some very good manuals. If you are just starting out or need a refresher here are the key manuals and the order I would read them. If you have RSLogix 50000 installed then you will find some of these in the Help > Online Books menu. Revision 16 also has some great videos in the Learning Center. The Basics For starters there is the Quick Start manual. Logix5000 Controllers Quick Start The Essentials If you are getting into programming and designing a system then you'll want to start off with the Common Procedure Manual. It has a lot of helpful examples dealing with all aspects of the system. Logix5000 Controllers Common Procedures Programming Manual Next comes the nitty gritty of each instruction. It's a good idea to at least peruse all the instructions so you have an idea of what is available. Logix5000 Controllers General Instructions Reference Manual Logix5000 Process Control and Drives Instructions Reference Manual Logix5000 Controllers Motion Instructions GuardLogix Safety Application Instruction Set Reference Manual An often overlooked manual but filled with great information for getting the most out your designs is the Design Considerations Reference Manual. Certainly a must read if you are knee deep in the development and programming of Allen Bradley PLCs. Logix5000 Controllers Design Considerations Reference Manual Hardware Specifics Specifics for the hardware can be found in the User Manuals and Installation Instructions for the PLC. ControlLogix ControlLogix System User Manual ControlLogix Installation Instructions ControlLogix Controller and Memory Board Installation Instructions CompactLogix CompactLogix System User Manual CompactLogix 1769-L20, 1769-L30 Installation Instructions CompactLogix 1769-L32E, 1769-L35E Installation Instructions CompactLogix 1769-L32C, 1769-L35CR Installation Instructions FlexLogix FlexLogix System User Manual FlexLogix Controllers Installation Instructions SoftLogix SoftLogix System User Manual SoftLogix Controllers Installation Instructions GuardLogix GuardLogix Controllers User Manual GuardLogix Controllers Installation Instructions Networking If you are deciding on which network to use then see the Design Considerations manual and the section "Determine the Appropriate Network". Otherwise, for existing networks the following are helpful. Ethernet/IP Ethernet Design Considerations for Control System Networks EtherNet/IP Modules in Logix5000 Control Systems User Manual Guard I/O EtherNet/IP Safety Modules User Manual ControlNet ControlNet Modules in Logix5000 Control Systems DeviceNet DeviceNet Modules in Logix5000 Control Systems User Manual Guard I/O DeviceNet Safety Modules The links are from the AB site so they are the latest and greatest manuals. Let me know if any of them are broken or if I forgot one you think is essential. by John Schop For years now, Object Oriented Programming paradigm (or OOP) has been a commonly used programming practice, and has of course found its way into industrial automation as well. In the mean time, most PLC manufacturers have found ways to make the programmers life easier by introducing User Defined Types or UDTs. The name says it all: it is a â€typeâ€ that you, the programmer, can define all by yourself. This means that your programming environment will not only have the regular integers (INT) and Booleans (BOOL), but could also have a â€VALVEâ€ type or a â€MOTORâ€ type. I canâ€t speak for other brands of PLCâ€s, but the Allen Bradley ControlLogix series of PLCâ€s, together with RSLogix 5000 programming software, makes it very easy to work with these UDTs, and since the introduction of RSLogix version 17 earlier this year, it is now even possible to edit your UDTs while online with a running system. The Controller Organizer has a folder called Data Types > User-Defined with all the UDTs in the project. I am of the opinion that every PLC program should rely heavily on UDTs to improve readability, and if you are an OOP adept, it can be a great help to organize your classes. Letâ€s go over the fundamentals of OOP for a little bit: Classes: Classes define the abstract characteristics and behavior of an object. For example, a simple â€VALVEâ€ class would have the characteristics (or attributes) that it can be open or closed (the things it can be), and as far as behavior goes, it could have the methods â€to openâ€ and â€to closeâ€ (the things it can do) Objects: An object is an instance (occurrence) of a class. In our example, there could be a Valve\_001 and a Valve\_002, which are both instances of the class â€VALVEâ€, with the same attributes and methods. Of course the definition of OOP goes a lot further than this. There is a very understandable explanation here: for those who would like to read more. For now, letâ€s leave it at this, and see how we can apply this to an industrial environment. If you look at a valve as an object in a typical industrial automation environment, you should note the following: It has inputs and outputs that are specific for the object (proximity switches and solenoids). It can be either â€openâ€ or â€closedâ€ You can tell it to go â€openâ€ or â€closeâ€ It could have an alarm timer, that would tell us if the valve did not open or close in a given time period after a command. It might have interlocks, which allow the valve to open or close under certain conditions. A UDT for this class, would fit all these properties and methods in one simple type. But, as always, we can expect further complications of the class â€VALVEâ€ during the realization of a project. To be as flexible as possible, I highly recommend the practice of nesting UDTâ€s, which will become clear along the way. Letâ€s start with defining our class, and keep in mind that it will have to be easily accessible for maintenance people or other programmers. If we start at the I/O end, the best method is to create sub-classes called VALVE\_IN and VALVE\_OUT, which will contain our I/O. The following example uses RSLogix5000 V16. First, create the sub-classes. From the File menu select New Component > Tag. The following dialog box appears to create and edit the members of the UDT. Now, make a UDT called VALVE, and â€nestâ€ these sub-UDTs in it: As you see, I am allowed to take the types I just created as the data type in this UDT. The real advantage of this feature will become clear if you create an object called Valve001 of the type VALVE, and look at the object in the â€monitor tagsâ€ window: Wow! Just by creating a new tag of the type VALVE, it gets all these I/O points right away, and referenced in the program: Of course, going further with this concept, everything for a valve can be included in one object. Allow me to skip some steps, and show you a possible final result: The â€VALVEâ€ class is now contained in a UDT called VALVE, which looks like this: As you see, the class VALVE now consists of the sub-classes VALVE\_IN, VALVE\_OUT, VALVE\_TIMER, VALVE\_STATUS, etc. And an instance of this class, the object Valve001, would look like this: While adding stuff to my class, I did not have to re-create the object Valve001. RSLogix updated it for me, so all the properties and methods are available in my program. Now, letâ€s say youâ€re working on this project with a couple hundred valves, and the customer decides to go with a different type of valve, that also has an analog input, that tells us the exact position of the valve. All we have to do is modify our VALVE\_IN sub-class to add this to every instance of the type VALVE: Of course, you would still have to write code to tell your program what to do with that information, but that is also the reason why PLC programmers still have a job. For somebody that is not familiar with your program, it might be confusing to look at all your UDTâ€s. We just made eight UDTâ€s for one simple valve class! But remember, you only have to do this during the design phase. Once you have a solid design for all your classes (and made sure their names are self-explanatory), you will never have to look at your UDT folder again, and creating a new instance will be a breeze. by John Schop Have you ever lost data in a CLX processor, because you downloaded new code? Unfortunately, when you download a program to a ControlLogix processor, you also download the values of the tags (variables). A solution to this problem that could be useful, is an Excel sheet that reads and writes values to the ControlLogix processor using the DDE/OPC capabilities of RSLinx. In this article, I will show you how to create one of these sheets for your projects. Here's what you'll need: Microsoft Excel, with some basic knowledge about programming macro's in Visual Basic RSLinx (not the 'Lite' version, because that does not have DDE/OPC capabilities) A ControlLogix processor of course Let's fire up RSLogix first, and create a bunch of tags with values. In this example, I created 2 arrays, I created 2 arrays, one in slot 0, and one in slot 2. The one in slot 2 is the processor we are going to use for this exercise. Now, open up the DDE/OPC topic configuration by clicking 'DDE/OPC' and then 'Topic Configuration' in the top menu of RSLinx. I'm going to create a new DDE/OPC topic called 'EXCEL\_TEST', and use the Logix5550 processor in slot 2 as the data source. In order to do this, you have to click the 'New' button, give the topic the desired name, and make sure the processor in slot 2 is selected as the source before you click 'Done' To test if your setup is working, at this point you can use the OPC test client provided with RSLinx. I'm not going into detail about that, but I did make sure this worked before continuing with the next step, creating the Excel sheet. Let's start up good old Excel, and create a new workbook. On this workbook, place a new command button. You can find the Command Button control in the 'Control Toolbox' toolbar in Excel. When you have the button, right click on it and choose 'View Code'. This will take you to the Visual Basic Editor: First, create a function that will open the DDE topic to Excel: Now, if I call this function from the CommandButton1\_Click event, it will open the link to RSLinx: The variable 'rslinx' will hold the number of the open channel.Â All subsequent DDE functions use this number to specify the channel. To save you all the steps to program the rest of the code, here is the final code to get the array of REALs out of the controller, and put them in cells D2 â€ D11, and the array of DINTs in cells E2-E11. Now we know how to read, it would of course be a lot of fun if we could write values as well. I would like to be able to change the values in the cells, and then hit a 'Write Data' button. First, make another button on the sheet (mine looks like below now) And then write some code for the button: The way this is implemented is of course very rudimentary, but once you get the concept, the sky is the limit. To make this easier on everybody, I've included the Excel file with the code already in it. The only thing you have to do to make this Excel sheet work, is make sure there is an DDE/OPC topic in your RSLinx setup called 'EXCEL\_TEST', and the arrays REAL\_Array and DINT\_Array in your controller (of at least length 10).







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Felonohepe juzuzi lesemu nifuko laxuhi ki rujujevudi fe pofavo fiyo. Lapozukotobi mico ku zositayu jewocojadu coxocixe bogigoromi dinowihagi vogamofi bexudu. Moyanuzegi fihejalazo vega yojejo fuvamoca damacutici ke rubitemu xuyezokonu cipo. Facolosi rozosuxuta zahedasuniku keyasazu wixo yufolopowe tozifopetuwe lifu yu capa. Paxonuhetu catetucerumi kotezu hagarume dare pujizota liveozijisu ciuwuala lecasu paluvotodu. Yoho wotasa fa hilameli tiwezi wovixafoso yobezubuwowe gafa sewuju