

Where Automation Connects.





MVI56E-LDM

ControlLogix Platform "C" Programmable Linux Application Development Module

January 15, 2014

QUICK START GUIDE

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MVI56E-LDM Quick Start Guide January 15, 2014

ProSoft Technology® Product Documentation

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1 Start Here

This Quick Start Guide will help you....

- set up your LDM Development Environment
- set up a sample Serial Application Program
- run the Serial Application Program

1.1 Development Environment

The MVI56E-LDM development tools run under Linux. In order to run these tools on a Windows-based machine, you must run a Virtual Machine that hosts the Linux Operating System.

VMware provides a virtual machine player used to host the Linux Operating System. You can get it at:

https://my.vmware.com/web/vmware/downloads.

1.2 Setup

The file Debian6VM.zip is located on the ProSoft Product DVD shipped with the module.

- 1 Copy this file to the VM Player image ico directory (VMware > VMware Player > ico).
- **2** Uncompress Debian6VM.zip into this directory.
- **3** Start the VM Player by double-clicking on its icon.
- 4 Select "Open a Virtual Machine".



5 Navigate to the Debian6VM file and click on Debian6VM.vmx. The image icon appears in the left window.



6 Double-click on the image icon. The following screen appears:

🖥 VMware Player (Non-commercial use only)					
Player 👻 🕨 🗸 🔚 🗐					
Home Home					
Debian6\/M					
	Debian6VM				
	State: Powered Off				
	OS: Debian 6				
	Version: Workstation 8.0 virtual machine RAM: 512 MB				
	Play virtual machine				
	Edit virtual machine settings				

7 Click "Play virtual machine". A dialog appears asking if the virtual machine has been moved or copied. Select "I copied it".



8 After the image loads, the VMware Player prompts you for a username and password.

Username: **user** Password: **password**

The home screen appears.



9 Double-click on either the Home icon or the File System icon to navigate to the following directory:

user/workspace/mvi56E-ldm/src/LDM/serial_application

😼 Debian6VM - VMware Player (Non-commercial use only)					
Player 🗸 🔛 🖛 🔚 🧱 💼 🐘 🚬 👘					
	serial_application - File M	anager	+ _ d ×		
<u>File Edit View Go</u> Hel	р				
🛅 user	◀	-Idm src LDM serial_app	lication		
📷 Trash	Name	▼ Size Date Modified	Permissions		
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File System	📄 src	4.0 kB 09/26/2013	drwxr-xr-x		
Floppy Drive	makefile	9.8 kB 09/23/2013	-rwxr-xr-x		
Documents	objects.mk	493 B 09/11/2013	-rwxr-xr-x		
Download	Serial_Application	16.2 kB 10/14/2013	-rwxr-xr-x		
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10 Right-click on the Serial Application folder and click "Open Terminal Here'.

Player Serial_application - File Manager File Edit General Serial_application File Size Desktop Size Desktop Create File System File System File System Download Download Sitems Size Download Size Download Size Sitems Size Open Terminal Here Sitems Size Size	🔁 Debian6VM - VMware Player	(Non-commercial use only)		
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<pre>File Edit View Terminal Go Help user@debian6vm:~/workspace/mvi56e-ldm/src/LDM/serial_application\$ make clean Removing intermediate and target files rm -rf Release/*.o Release/*.d Release/Serial_Application rm -rf Debug/*.o Debug/*.d Debug/Serial_Application user@debian6vm:~/workspace/mvi56e-ldm/src/LDM/serial_application\$</pre>	Terminal - us	er@debian6vm: ~/workspace/mvi56e-le	dm/src/LDM/serial_application	• • - •
<pre>user@debian6vm:~/workspace/mvi56e-ldm/src/LDM/serial_application\$ make clean Removing intermediate and target files rm -rf Release/*.o Release/*.d Release/Serial_Application rm -rf Debug/*.o Debug/*.d Debug/Serial_Application user@debian6vm:~/workspace/mvi56e-ldm/src/LDM/serial_application\$</pre>	<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> erminal	<u>G</u> o <u>H</u> elp		
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<pre>rm -rf Debug/*.o Debug/*.d Debug/Serial_Application user@debian6vm:~/workspace/mvi56e-ldm/src/LDM/serial_application\$</pre>	rm -rf Release/*.o	Release/*.d Release/Seria	_Application	
user@debian6vm:~/workspace/mvi56e-ldm/src/LDM/serial_application\$	rm -rf Debug/*.o D€	bug/*.d Debug/Serial_Appli	Lcation	
				_

12 Type 'make'.



This creates a 'Serial_Application' binary file in the user/workspace/mvi56eldm/src/LDM/serial_application/Release folder and also in the user/workspace/mvi56eldm/src/LDM/serial_application folder.

13 Copy the 'Serial Application' binary file.

🔨 Debian6VM - VMware Player (Non-commercial use only)							
Player 🗸 📔 👻 🔡 📜	■.				» 🚐 💿 🗖	ta 🖶 🛛	
	Release	- File Manag	er			• - •	×
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>G</u> o <u>H</u> elp							
🛅 user 💽	iser workspace	mvi56e-ldm	src L[OM serial_appli	cation Release		
📷 Trash 🛛 🛛 Na	lame	•	Size	Date Modified	Permissions		
Desktop			16.2 kB	Today	-rwxr-xr-x		
File System	serial_ Open With	•	244 B	Today	-rw-rr		
Floppy Drive	serial_Send To	•	7.7 kB	Today	-rw-rr		
Documents	Cut						
Download	<u>Б</u> ору						
Music	🚍 <u>D</u> elete						
	<u>R</u> ename						
videos	😑 Cr <u>e</u> ate Arch	ive					
	Properties						
"Serial_Application" (16.2 kB)	executable						

- **14** Paste the file where you can access it using an ftp client. In this example, FileZilla is used for the ftp client.
- **15** Open an ftp client and upload the file to the MVI56E-LDM module in the /psft/sample directory.

Fz root@192.168.0.250 - FileZilla		_						
File Edit View Transfer Server Book	marks Help	New version avai	lable!					
📃 - 📝 i (* i 🛊 💭 🔽 💺	🛷 🗉 👧	9 M						
Host: 192.168.0.250 Username: root		Password: ••••	Port:	Quickconnect				
Response: 257 "/psft/sample" is the curr Command: PASV Response: 227 Entering Passive Mode (Command: MLSD Response: 150 Opening ASCII mode dal	ent directory 192, 168,0,250, 19 a connection for N	3,151). MLSD						^
Response: 226 Transfer complete Status: Directory listing successful								-
Local site: C:\Users\kseki\Desktop\MVI56ELDM\			•	Remote site: /psft/sample				•
additional and the second sec			<u>م</u>	mnt opt				*
				proc psft				
			-	sample				-
Filename	Filesize	Filetype	Last modified	Filename	Filesize	Filetype	Last modified	Permissic *
RS232_Sample_doc.docx	253,302	Microsoft Wor	8/5/2013 12:58:4	퉬				
RS485_Sample	17,245	File	8/7/2013 3:37:56	Backplane_Sample	20,319	File	9/23/2013 5:42:	adfrw (07
RS485_Sample1	21,161	File	9/10/2013 3:27:3	Client_Sample	16,365	File	9/23/2013 5:43:	adfrw (07
RS485_Sample2	21,483	File	9/11/2013 10:54:	Enet_Application	22,104	File	9/23/2013 5:42:	adfrw (07 =
RS485_Test_Sample	21,261	File	9/6/2013 3:33:38	Led_Sample	13,994	File	9/23/2013 5:44:	adfrw (07
RS485_Test_Sample.c	20,752	C Source	8/14/2013 9:27:5	Serial_Application	16,617	File	9/23/2013 5:43:	adfrw (07
Serial_Application	16,617	File	10/23/2013 9:51:	Serial_Sample	16,759	File	9/23/2013 5:44:	adfrw (07
Setup & build with Extra Notes - FL.docx	1,823,562	Micros 🛧 Uploa	d	Server_Sample	16,432	File	9/23/2013 5:43:	adfrw (07
•	11	🕈 Add f	iles to queue		10 00	F0.	0/22/2012 5.44.	4
Selected 1 file. Total size: 16,617 bytes		Open		8 files. Total size: 151,389 byte	s			
Server/Local file Direction	Remote file	Edit		rity Status				
			e directory sh					
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Queued files Failed transfers Success	ul transfers	Kenar	ne]				
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📀 🔚 🙋 🖸		¥ 🛃			E	• 12	🏴 🛱 🌒 🍀 🕺	1:02 AM 0/23/2013

1.3 Configuring Serial Communication

- 1 Establish a connection to the module. In the following example, PUTTY is being used. **Note:** You can download PUTTY for free at http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html.
- **2** Open PUTTY.

Reputition Putty Configuration	New Yorks	8 X
Category:		
Category: Session Category: Ca	Basic options for your PuTTY see Specify the destination you want to conner Serial line COM3 Connection type: Raw Telnet Rlogin SSH Load, save or delete a stored session Saved Sessions Default Settings Close window on exit: Always Never Only on cl	ssion ct to Speed 115200 d Serial Load Save Delete ean exit
About Help	Open	Cancel

- Set the Speed to 115200
- Set the appropriate COM port
- Ensure that the Connection Type is set to Serial.
- 3 Click Open. The Putty session opens.
- 4 Enter your login and password. RA56-daTM login: root, Password: password.

Putty	- 0	×	
		-	7
Distribution built using LinuxLink by Timesys			
Kernel 2.6.33.7 for armv5tejl			1
RA56-dATM login: root			
Password:			
			Ш
			Ш
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			Ш
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			Ш,

5 Keep PUTTY open while you set up the ControlLogix5000 as described in the next section.

1.4 Setting Up the ControlLogix 5000

1 Open the MVI56E-LDM.ACD program and change the appropriate chassis type to match your hardware and firmware.

Controller Properties - ProSoft_LDM_Example	
Date/Time Advanced SFC Execution File Redundancy Nonvolatile Memory M General Serial Port System Protocol User Protocol Major Faults Minor F	emory aults
Vendor: Allen-Bradley	
Type: 1756-L63 ControlLogix5563 Controller Change Controller.	
Revision: 16.20	
Name: ProSoft_LDM_Example	
Description: Example Logic for MVI56E-LDM	
Chassis Type: 1756-A7 7-Slot ControlLogix Chassis	
Slot:	
UK Lancel Apply He	:IP
anee Controller 🛛 🕅	
Controller properties and other project data that is not valid for the new controller tone	
- From	
Type: 1756-L63 ControlLogix5563 Controller	
Revision: 16.20	
- To	
Type: 1756-L63 ControlLogix5563 Controller	
Bevision: 16	
,	
UK Cancel Help	

2 Download MVI56_LDM.ACD file in the ControlLogix processor by choosing Communications > Who Active > Download.



1.5 Serial Application Sample

Serial_Application shows an example of how the LDM module can be used to communicate to an end device to transmit/receive ASCII strings from the ControlLogix5000 processor through the backplane to the LDM module on the bottom serial port (default application port). This same sample program will stream ASCII data into the module from the end device on the same serial port and send the data to the backplane to the controller tags of the ControlLogix.

Send out number of bytes entered in Write_Byte_Cnt Controller tag continuously after the Serial_App_Sample_WriteTrigger tag has been triggered from the default application port. Streams in ASCII data from the end device into the Controller tag Local:1:I.Data. *Note:* Use HyperTerminal or a similar program to perform the following steps.

- **1** Open HyperTerminal.
- 2 Enter a name and choose an icon for the connection.

Connection Description	?×				
New Connection					
Enter a name and choose an icon for the connection:					
Name:					
LDM_RS232_Sample					
lcon:					
🏽 🍪 🕾 🍪 🐻	8				
	>				
OK Car	ncel				

3 Choose the appropriate COM port.

Connect To	? 🔀			
LDM_RS232_Sample				
Enter details for t	he phone number that you want to dial:			
<u>C</u> ountry/region:	United States (1)			
Ar <u>e</u> a code:	93313			
<u>P</u> hone number:				
Co <u>n</u> nect using:	СОМ1 💌			
	OK Cancel			

4 Use the following settings for the Serial_Application program.

Bits per second: 115200 Data bits: 8 Parity: None Stop bits: 1 Flow Control: None

COM1 Properties	? 🛛
Port Settings	
Bits per second:	115200
Data bita	
Data bits.	8
Parity:	None
Stop bits:	1
Elow control:	None
	Restore Defaults
	Testore Deradits
0	K Cancel Apply

- **5** Under the ASCII Setup, check the 'Echo typed character locally'. This will allow you to see the stream data being sent to the LDM module on the HyperTerminal screen.
- 6 Click OK, but keep HyperTerminal open since it will be used again after you complete the following sections.



7 Use PUTTY or Telnet to log into the module.

RA56-dATM login: root

Password: password



8 Change the directory to /psft/sample.

Client_Sample Serial_Application Tag_Sample	<pre># # pwd /psft/sample # ls Backplane Sample</pre>	Ied Sample	Server Sample	
	Client_Sample	Serial_Application	Tag_Sample	

9 Type './' and the name of the sample program that you want to run. In this example, ./Serial_Application&.



- **10** Keep PUTTY or Telnet open and set up the ControlLogix5000 program as described in the section entitled Setting Up the Control Logix 5000.
- **11** Open the MVI56E-LDM.ACD program and change the appropriate chassis type to match your hardware and firmware.

👪 Controller Pro	perties - ProSoft_LDM_Example	
Date/Time Adva General Seria	nced SFC Execution File Redundancy Nonvolatile Major Faults al Port System Protocol User Protocol Major Faults	1emory Memory Minor Faults
Vendor:	Allen-Bradley	
Туре:	1756-L63 ControlLogix5563 Controller Chang	e Controller
Revision:	16.20	
Name:	ProSoft_LDM_Example	
Description:	Example Logic for MVI56E-LDM	
Chassis Type:	1756-A7 7-Slot ControlLogix Chassis	
Slot:		
	OK Cancel Apply	Help
Change Controlle	r	
Changing the controller pro	e controller type will change, delete, and/or invalidate the operties and other project data that is not valid for the new	
controller typ	ie.	
From Type: 1756-L	.63 ControlLogix5563 Controller	
Revision: 16.20		
Type: 1756-1	63 Controll agiy5563 Controller	
Bevision 16		
		- 1
	UK Lancel He	

12 Download the MVI56E-LDM.ACD file in the ControlLogix processor by choosing Communications > Who Active > Download.



13 Trigger 'Serial_ENET_App_Sample_On_Trigger' by right-clicking on the Controller tag and choosing 'Toggle Bit'.

8 RSLogie 5000 - ProSoft_LDM_Example in ARTS6[_LDM.ACD[1756143]	(Malidhogram - Malidiautine)	
If the Edit New Search Logic Communications Tools Window Help		- 0.1
Res Res Res Mode		
Consultant Restrict (Consultant Restrict (Cons	Image: State in the state of the s	00045000 0025 00
Ready		Rang Tol 6 APP 111 A

🧠 p - HyperTerminal								
Ele Edit Yew ⊊all Iransfer He	Þ							
D 📽 📨 🏅 🗈 🎦 📾								
world! wo								
Connected 00:11:26 Auto deter	t 115200 8-N-1	SCROLL	CAPS	NUM	Capture	Print echo		

This allows the MVI56E-LDM module to send out the text 'world!' to the console.

You can view how the stream of data is accepted by the LDM module by untoggling the Serial_App_Sample_WriteTrigger and typing a string of characters on the console.



You can see the letter 'h' in the location 'Local:1:I.Data'. Make sure that the Style column in the ControlLogix is set to ASCII.

You can also observe this on the console port as well.

Putty		and a state of the	00	×	J
read byte buff[0]	=	119		~	
read byte buff[0]	=	W			Ш
read_byte_buff[1]	=	111			Н
read byte buff[1]	=	o			Ш
read byte buff[2]	=	114			Ш
read_byte_buff[2]	=	r			Ш
read_byte_buff[3]	=	108			
read_byte_buff[3]	=	1			
read_byte_buff[4]	-	100			Ш
read_byte_buff[4]	-	d			Ш
<pre>read_byte_buff[5]</pre>	=	33			Ш
<pre>read_byte_buff[5]</pre>	-				Ш
read_byte_buff[6]	-	13			N
<pre>read_byte_buff[6]</pre>	=				П
<pre>read_byte_buff[7]</pre>	-	0			
<pre>read_byte_buff[7]</pre>					Ш
<pre>read_byte_buff[8]</pre>	=	10			Ш
read_byte_buff[8]	-				Ш
<pre>read_byte_buff[9]</pre>		0			H
read_byte_buff[9]	-				
write_buff[0] is:	1	04		=	
write_buff[0] is:	h			-	
					- 1

2 Support, Service & Warranty

Contacting Technical Support

ProSoft Technology, Inc. (ProSoft) is committed to providing the most efficient and effective support possible. Before calling, please gather the following information to assist in expediting this process:

- Product Version Number
- System architecture
- Network details

If the issue is hardware related, we will also need information regarding:

- Module configuration and associated ladder files, if any
- Module operation and any unusual behavior
- Configuration/Debug status information
- LED patterns
- Details about the serial, Ethernet or fieldbus devices interfaced to the module, if any.

Note: For technical support calls within the United States, an after-hours answering system allows 24-hour/7-days-a-week pager access to one of our qualified Technical and/or Application Support Engineers. Detailed contact information for all our worldwide locations is available on the following page.

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	E-mail address: support@prosoft-technology.com			
Asia Pacific	Tel: +603.7724.2080, E-mail: asiapc@prosoft-technology.com			
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Asia Pacific	Tel: +86.21.5187.7337 x888, E-mail: asiapc@prosoft-technology.com			
(location in China)	Languages spoken include: Chinese, English			
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(location in Sao Paulo)	E-mail: brasil@prosoft-technology.com			
	Languages spoken include: Portuguese, English			

2.1 Warranty Information

For complete details regarding ProSoft Technology's TERMS & CONDITIONS OF SALE, WARRANTY, SUPPORT, SERVICE AND RETURN MATERIAL AUTHORIZATION INSTRUCTIONS please see the documents on the Product CD/DVD or go to www.prosoft-technology/warranty

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