# DH485 Router/B

### PanelView800 to SLC or MicroLogix setup

**Technical Application Note** 

### A-DH485R

Document No. D120-023 Document Revision 1.1 05/2020

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## 1. PREFACE

### 1.1. PURPOSE OF THIS DOCUMENT

This document will assist the user to setup the DH485 Router/B (referred to as DH485 Router in this document) to allow a PanelView 800 application to communicate to an SLC device's DH485 port via EtherNet/IP.

### **1.2. ADDITIONAL INFORMATION**

The following resources contain additional information that can assist the user with the module installation and operation.

Resource	Link	
Slate Installation	http://www.aparian.com/software/slate	
DH485 Router/B User Manual		
DH485 Router/B Datasheet	https://www.aparian.com/products/dh48Eroutarh	
Application Notes	<u>Inteps.//www.aparian.com/products/dn485routerb</u>	
Example Code & UDTs		
Ethornot wiring standard	www.cisco.com/c/en/us/td/docs/video/cds/cde/cde205_220_420/installa	
Ethernet wiring standard	tion/guide/cde205_220_420_hig/Connectors.html	
CIP Routing	The CIP Networks Library, Volume 1, Appendix C:Data Management	

#### 1.3. SUPPORT

Technical support will be provided via the Web (in the form of user manuals, FAQ, datasheets etc.) to assist with installation, operation, and diagnostics.

For additional support the user can use either of the following:

Contact Us web link	www.aparian.com/contact-us
Support email	support@aparian.com

## 2. APPLICATION DESCRIPTION

The Aparian DH485 Router can be used to enable multiple modern Ethernet devices to communicate to legacy SLC5/03 via their DH485 serial ports. In the application example below, two PanelView800 terminals can read and write data to an SLC500.



FIGURE 2.1. - EXAMPLE OF A TYPICAL NETWORK SETUP

# 3. SETUP

The following sections will describe the installation and configuration of all the required devices to assist the user with the initial setup.

### 3.1. MODULE LAYOUT

The module has two ports at the bottom and two ethernet ports on the front of the enclosure as shown in the figure below. The ports are used for Ethernet, RS232 or RS485 serial, and power. The power port uses a three-way connector which is used for the DC power supply positive and negative (or ground) voltage as well as the earth connection.

The Ethernet cable must be wired according to industry standards which can be found in the additional information section of this document.



FIGURE 3.1. - DH485 ROUTER/B SIDE AND FRONT VIEW

### 3.2. SERIAL CABLE WIRING

The serial cable pinout is shown in the figure below:



SLC 5/03









FIGURE 3.4. – SERIAL CABLE PINOUT – MICROLOGIX 1100

All RS485 networks need to be terminated at the extremities (start and end point) of the communication conductor. The termination is done by placing a resistor between the positive and negative communication conductor. The value of the resistor will depend on the characteristic impedance of the cable chosen, but generally ranges from 100 Ohm to 150 Ohm.

The DH485 Ground Bridge should be enabled and the user can also enable the DH485 Router internal RS485 terminator in the module configuration in Slate (see below):

eneral Serial - DH485	ransparent PCCC Re	active Tag (Disabled)	Scheduled Tag (Disabled)	Advanced	
Node Address	0	~			
Max Scan Address	31	~			
BAUD Rate	19200	~			
Retry Limit	3	[0-10]			
Message Timeout	20	[1-100] (x 50ms)			
Response Timeout	5	[1-100] (ms)			
Reply Msg Wait	5	[1-100] (ms)			
	Terminate D	H485			
	UH485 Grou	ind Bridge			

FIGURE 3.5. – INTERNAL RS485 TERMINATION

#### 3.3. DH485 ROUTER SETUP

The DH485 Router must be configured in Transparent PCCC mode, as shown below.

General	Serial - DH485	Transparent PCC	CC   Reactive Tag (Disabled)   Scheduled Tag (Disabled)   Advanced
Instar	nce Name	DH485Router	
Descr	ription		
IP Ad	dress	192 _ 168	. 1 . 224 Major Revision 1 v
ENIP	Retry Limit	5 [0	D-5]
ENIP	TimeOut	1000	
ENIP	TimeOut	1000 m	15
ENIP Map	TimeOut	1000 m	15
ENIP Map	TimeOut oping Mode Transparer	1000 m nt - PCCC 1	ns Maps device initiated DH485 PCCC to Logix PLC 2,3,5 mapping. Supports remote programming.
	TimeOut	1000 m nt - PCCC 1 ag 1	ns Maps device initiated DH485 PCCC to Logix PLC 2,3,5 mapping. Supports remote programming. Maps device initiated DH485 PCCC to Logix Tag.
	TimeOut pping Mode Transparer Reactive T Scheduled	1000 m nt - PCCC   ag   Tag	ns Maps device initiated DH485 PCCC to Logix PLC 2,3,5 mapping. Supports remote programming. Maps device initiated DH485 PCCC to Logix Tag. DH485 Router initiated scheduled transfer between device and Logix.
ENIP	TimeOut oping Mode Transparer Reactive T Scheduled Unscheduled	1000 m at - PCCC   ag   Tag   ad	ns Maps device initiated DH485 PCCC to Logix PLC 2,3,5 mapping. Supports remote programming. Maps device initiated DH485 PCCC to Logix Tag. DH485 Router initiated scheduled transfer between device and Logix. Routes Logix Msg to DH485 Device.
ENIP Map	TimeOut oping Mode Transparer Reactive T Scheduled Unscheduled AIC	1000 m nt - PCCC    ag   Tag   ad	Maps device initiated DH485 PCCC to Logix PLC 2,3,5 mapping. Supports remote programming. Maps device initiated DH485 PCCC to Logix Tag. DH485 Router initiated scheduled transfer between device and Logix. Routes Logix Msg to DH485 Device. Translates DH485 to RS232
	TimeOut pping Mode Transparer Reactive T Scheduled Unschedule AIC	1000 m at - PCCC I ag I Tag I ad I	Maps device initiated DH485 PCCC to Logix PLC 2,3,5 mapping. Supports remote programming. Maps device initiated DH485 PCCC to Logix Tag. DH485 Router initiated scheduled transfer between device and Logix. Routes Logix Msg to DH485 Device. Translates DH485 to RS232

FIGURE 3.6. – DH485 GENERAL CONFIGURATION

In the Serial-DH485 settings, the BAUD Rate must match that of the SLC device (as configured using RSLogix 500).

General	Serial - DH48	Transparent PCCC	Reactive Tag (Disabled)	Scheduled Tag (Disabled)	Advanced	
N	ode Address	0	~			
N	lax Scan Addr	ess 31	~			
В	AUD Rate	19200	~			
R	letry Limit	3	[0-10]			
М	lessage Timeo	out 20	[1-100] (x 50ms)			
R	esponse Time	out 5	[1-100] (ms)			
R	eply Msg Wait	5	[1-100] (ms)			
		🗹 Termina	te DH485			
		✓ DH485 0	Ground Bridge			

FIGURE 3.7. – DH485 SERIAL CONFIGURATION



**NOTE:** At least one transparent mapped item must be added for the SLC500 programming to work on DH485. If the DH485 Router is used purely for communicating to the PanelView then the user can add a DH485 Node of zero with an IP address matching the PanelView connected. The reason for this is because the DH485 Router requires a node on the network.

5 DH48	5Router - Config	juratio	า						
Genera	al Serial - DH485	Trans	parent PCCC	Reactive Tag	g (Disabled) Scheo	duled Tag (Disabled)	Advanced		
PC	CC Address	1	~		Logix Connection	Class3	~		
	Enable PCCC Di	rect	PCC	C IP Address	0.0	0.0.0	6		
DH	485 / Ethernet Co	ntroller	Mapping (m	ax. of 20 item	s.)				
	DH485 Nod	e			Controller Pa	ath	4	Browse	
<u>}</u>	0	~	192.168.1.2	221					
				Ok	Apply	Cancel			

FIGURE 3.8. – TRANSPARENT PCCC CONFIGURATION

### 3.4. RSLOGIX 500 SETUP

Using RSLogix500, the DH485 port must be configured to match that of the DH485 Router's serial port settings with respect to BAUD rate.

### 3.5. PANELVIEW 800 SETUP

Open Connected Components Workbench and create a new project. The user will be prompted to add a device. Select a PanelView 800 model under the Graphical Terminals and press *Select* followed by *Add to Project*.

	<u>&gt;</u>
Selection	
2711R-T7T	Add to Protect
	Selection

FIGURE 3.9. – PANELVIEW 800 ADD

The PanelView 800 (PV800) will now be added to the project tree on the left.

#### 3.5.1. COMMUNICATION SETTING

Double click on the PV800 application in the tree to go to the settings page. The user will first need to setup the communication for the PV800.

Project Organizer 🛛 👻 🕂 🗙	Settings 🕫 🗙
Name: DF1RouterInterface*	2711R-T7T PV800_App1
Tags	Download Validate Generate Report
←          C2         Recipes         Screens         -	Graphic Terminal - General Validity: False Version: 3.011
	Communication User Accounts Languages Advanced Use Ethernet Encapsulation Controller Settings Add Controller Delete Selected Controller(s)
	Name Controller Type Address Ti
	PLC-1 Micro800 1

FIGURE 3.10. – PV800 APPLICATION COMMUNICATION SETTINGS

Next the user will need to select the MircoLogix/ENI Protocol from the drop-down menu:



FIGURE 3.11. – PROTOCOL SELECTION

The user will need to select the MicroLogix 1400 Controller Type for any SLC or MicroLogix device that the PV800 will interface to. Enter the **IP Address of the DH485 Router** in the address textbox.

Setup

Settings 🗢 🗙						
2711R-T7T PV800_App1						
Download Validate Genera	e Report					
Graphic Terminal - General Validity: False Version: 3.011 Communication User Accounts Languages Advanced	Communication Protocol: Ethernet   All Controller Settings Add Controller Dele	en-Bradley MicroLogix/ENI				
	Name	Controller Type	Address	Timing	Auto-Demotion D	escr
	J SLC	MicroLogix 1400	192,168,1,224			

FIGURE 3.12. - COMMUNICATION PARAMETERS

3.5.2. TAG SETUP

Next the user will need to setup a Tag which the PV800 can use to communicate with the SLC/MircoLogix controller. The Tag Editor can be found by double clicking on the Tags in the project tree.



FIGURE 3.13. – OPENING THE TAG EDITOR

The user must first select the controller to be used. This will be the same as the one selected in the communication settings (can be selected from a drop-down menu). The user must then select the request communication address as well as the data type.

ettings	Tag Editor 🖪	×				
External Memory System Global Connections						
Add	Delete	Undo Redo				
	Tag Name 🛛 🔺	Data Type	Address	Controller	Description	
•	TAG0001	16 bit integer	N11:0	SLC		

FIGURE 3.14. – TAG PARAMETERS

3.5.3. TESTING COMMUNICATION

To test the communication, the default screen can be selected by double-clicking on it in the project tree.



FIGURE 3.15. – DEFAULT SCREEN

The user will first need to add the Goto Terminal Config button to the display. The user can then add a Numeric Display as well which will be used to show the value of the tag.



FIGURE 3.16. – NUMERIC DISPLAY ADDED

Next the user will need to assign the Tag created (TAG0001) to the numeric display. This is done by right-clicking on the numeric display and selecting properties. The properties window will generally be opened on the right-hand side of the screen. Under the Connections tab the user will need to select the Read Tag that will be used.

Properties 🔹 👎 🗙						
Numeric Display NumericDisplay_1 +						
₽∎ <b>2</b> ↓   □						
Use Background Co	True 🔺					
Word Wrap	True					
🗆 Common						
Description						
Height	60					
Left	254					
Name	NumericDisplay_1					
Тор	80					
Width	100					
Connections						
Read Tag	×					
Vi						
E FolNew						
F TAG0001						
Gr \$SysAlarmClearA	AllStatus					
Ne <sup>\$SysAppBytesFr</sup>	ee					
NI \$595AppBytes58	ze					
NI \$5ysAppBytesus	sed 💌					
Rea dSvcBatteruStat	116					
\$SysBootCodeVe	ersion					
\$SysCIPIdentity						
\$SysClockDate						
Toolt	<b></b> ×					
Searchionoux	- لې					

FIGURE 3.17. – READ TAG SELECTED

Once this is done the user can download the application to the PV800. This is done by rightclicking the Application in the project tree and selecting download.

Project Organi	zer 🔹 म 🗙	Screens: 1 - Screen
Name: DF1Ro	uterInterface	1. AN
철 🍯 🛤		
	mi	
	Validate	
	Download	eot (
	Export	-
	Generate Report	
	Change Graphic Terminal.	
×	Delete	Del
1:	Rename	

FIGURE 3.18. – DOWNLOAD APPLICATION

The user will need to select the PV800 to which the application must be downloaded in the Connection Browser.

onnection Browser	×
AutobrowseRefresh.	
Workstation, WIN-Q377AC9FSP9	
由一品 Linx Gateways, Ethernet	
由 器 AB_ETH-1, Ethernet	
📩 🏪 AB_ETHIP-1, Ethernet	
😟 🖞 192.168.1.102, 1756-EN2TR, 1756-EN2TR/C 217021900	
🗄 🧱 192.168.1.126, Micro820, 2080-LC20-20AWB	
🗄 🏋 192.168.1.129, 1756-EN2TR, 1756-EN2TR/B	
2 192.168.1.171, Unrecognized Device, Data Logger Plus	
🗄 🗍 192.168.1.172, DF1 Router, DF1 Router	
192.168.1.188, ENI Series C/D, 1761-NET-ENI/D	
2 192.168.1.200, Unrecognized Device, PA Link	
🕂 192.168.1.201, Unrecognized Device, PA Link	
-? 192.168.1.210, Unrecognized Device, DNP3 Router	

FIGURE 3.19. – PANELVIEW SELECT

Once the application has been downloaded the user can verify the communication operation by viewing the actual PV800 to which the application was downloaded.



FIGURE 3.20. – ACTUAL PANELVIEW