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Introduction

This Synergy Controller application note describes the operation of the controller's FTP server. With the FTP server, chamber profiles or recipes (VPL files) can be copied to and from the controller, deleted from the controller or renamed, using a network. In addition the history log file can be retrieved from the controller.

Tidal Engineering's Synergy Controllers, both the Synergy Micro and the ¼ DIN Synergy Nano provide state-of-the-art usability and connectivity for environmental test control and data acquisition and combine the functions of a chamber controller and a data logger and are designed to improve test efficiency by supporting both factory automation and test and measurement protocols and standards.

Synergy Controller feature highlights includes:

- ➔ Color touch screen
- → Ethernet, RS-232 and GPIB communications
- → Built in Data logger with USB drive support
- → Data Acquisition, up to 64 T-type thermocouples (Optional)
- → Built-in Web Server for remote control; WebTouch Remote [™] (Optional)
- → Compatible with Synergy Manager for PC based control, monitoring and programming.
- → Built-in FTP Server for factory automation and test and measurement applications

For more information regarding the controller please see the full Synergy Controller Technical Manual on our website at http://www.tidaleng.comsynergy.htm

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File Transfer Protocol (FTP) is a protocol used to transfer files from one computer to another through a network, such as the Internet.

An FTP client can connect to the FTP server in the Synergy Controller to manipulate files on the it.

Note that the Synergy Controller FTP feature described here is not available on all controllers. Contact the factory to find out if your controller supports this feature. Controller upgrades may be available.

Accessing the Synergy Controllers' FTP Server

The FTP server can be accessed both with an FTP client such as Internet Explorer (IE) or programmatically. The examples below use the first method.

Accessing the controller's FTP server programmatically is beyond the scope of this application note however many application environments support this capability including .NET and LabVIEW. In Microsoft .NET 2.0 for example, you can programmatically access FTP servers using the FtpWebRequest and FtpWebResponse managed classes.

To access the Synergy Controllers FTP server using IE, first configure the controller network properties from the COMM Screen's Ethernet folder as shown below:

Comm Screen	10:52:	30 PM
Ethernet\		
IP Address Selection	DHCP	
Ethernet Address	172.16.10	0.118
Ethernet Subnet Mask	255.255.2	255.0
Ethernet Gateway	172.16.10).254
, D	escription	
Change The 'IP Address Sele the protocol for assig controller.	ction' parameter spe gning an IP address	ecifies to the
Chamber Off	10.8 F	26.9 %

Then type the Controller's IP address in the format <u>ftp://172.16.10.118</u> in the browser's address bar and press enter. The controller's public directory will be displayed as shown below.

🔹 ftp://172.16.10.118/ - Microsoft Internet Explorer 📃 🗖						
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites	<u>T</u> ools <u>H</u> elp					
😮 Back 🔹 🕥 🚽 🎓 Search 🌔 Folders 🔛 🗉						
Address 👰 ftp://172.16.10.118/			💌 🄁 Go			
	🔼 Name 🔺	Size Type	Modified			
Folder Tasks 🙁	APPNOTEMACRO.csv	112 bytes Microsoft Office Excel Co	1/1/2000 12:01 AM			
🗐 Rename this item	🖬 blink.vpl	212 bytes VPL File	5/23/2008 10:01 AM			

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The public directory contains the following file types:

1. Controller Profiles. These use the .VPL file extension for example: product1.vpl

The Controller Profiles are the programs or recipes that control the chamber's process variables such as temperature vs. time profile.

2. Configuration files. These use the .CFG filename extension. for example: sab.cfg

A Configuration file is a database of the chamber's setup and calibration that can be backed-up and restored using the folders in MAINTenance screen.

3. History Log file. This uses the .TXT filename extension. for example: History.txt

The History Log file is a CSV formatted ASCII file that contains the log data specified in the Log Setup folder as well as Alarm and Profile event history.

4. Macro file. This file uses the .CSV extension. for example: APPNOTEMACRO.CSV

The Macro file is a CSV formatted ASCII file that contains the controllers MACRO definitions which can be triggered using the controller's Bar Code Reader feature.

ftp://172.16.10.118/ - Micr	osoft Internet Explorer				
Eile Edit View Favorites Tools Help					
🔇 Back 🔹 🕥 🕤 🦻 🔎 Sea	arch 防 Folders 🛛 🛄 🗸 👘				
ddress 👰 ;tp://172.16.10.118/				💽 💽 🖉	
	Name	Size	Туре	Modified 🔺	
4-Macro File	APPNOTEMACRO.csv	112 bytes	Microsoft Office Excel Co	1/1/2000 12:01 AM	
	i product1.vpl	175 bytes	VPL Hie	1/1/2000 12:01 AM	
Toterpet Explorer	🖬 product2.vpl	194 bytes	VPL File	1/1/2000 12:01 AM	
	🖬 vtv 1.vpl	145 bytes	VPL File	1/1/2000 12:01 AM	
2-Config File	🖬 vtv 2.vpl	205 bytes	VPL File	1/1/2000 12:13 AM	
	🔄 🗟 blink vpl	212 bytes	VPL File	5/23/2008 10:01 AM	
	🔡 sab.cfg	12.0 KB	Microsoft Office Outlook C	5/29/2008 1:18 PM	
	🔤 blinka.vpl	464 bytes	VPL File	6/7/2008 9:17 AM	
1-Profile	🖬 blinkb.vpl	453 bytes	VPL File	6/9/2008 8:44 PM	
	🔄 🗟 product 1-rep. vpl	175 hytes	VPL File	6/20/2008 5:47 PM	
	🔟 bradbb.vpl	175 bytes	VPL File	6/20/2008 5:52 PM	
	🔤 intel.vpl	453 bytes	VPL File	6/26/2008 7:09 PM	
3-History Loa	🔰 🛅 intel2.vpl	537 bytes	VPL File	6/26/2008 7:11 PM	
	🗖 blinkc. vpl	453 bytes	VPL File	6/26/2008 8:46 PM	
	🗐 History.txt	361 KB	Text Document	6/27/2008 10:50 AM	

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Using the FTP server to transfer VPL files from the controller to the PC

As mentioned above, the FTP server can be used to copy VPL files from the controller to another computer on the network. To copy VPL files, click on the file of interest in the FTP client with the right mouse. The file menu will appear. Select Copy as shown below.

😰 ftp://172.16.10.118/ - Microsoft Internet Explorer 📃 🗖 🔀							
File Edit View Favorites Tools Help							
🔇 Back 🔻 🕥 🗹 🏂 Search 🏠 Folders 🔛 🗧							
Address 👰 ftp://172.16.10.118/					💌 🄁 Go		
	^	Name 🔺	Size	Туре	Modified		
Folder Tasks 🙁		APPNOTEMACRO.csv	112 bytes	Microsoft Office Excel Co	1/1/2000 12:01 AM		
Dename this item		🔤 blink. vpl	212 bytes	VPL File	5/23/2008 10:01 AM		
Maria Ibia ibaa		🔤 blinka.vpl	464 bytes	VPL File	6/7/2008 9:17 AM		
Move this item		🖬 blinkb.vpl	453 hutos	VPL File	6/9/2008 8:44 PM		
Copy this item		bradbb. Open	35	VPL File	6/20/2008 5:52 PM		
🗙 Delete this item		exphstC Copy To Fold	ler ^{IB}	Text Document	6/20/2008 5:48 PM		
		intel.vpl		VPL File	6/26/2008 7:09 PM		
	=	product Cut	es es	VPL File	1/1/2000 12:01 AM		
Other Places 📀		product Copy	es es	VPL File	6/20/2008 5:47 PM		
Internet Explorer		product Paste	35	VPL File	1/1/2000 12:01 AM		
		🔡 sab.cfg 🛛 Delete	:В	Microsoft Office Outlook C	5/29/2008 1:18 PM		
My Documents		vtv 1.vr Rename	? 5	VPL File	1/1/2000 12:01 AM		
Search My Network Places		🔟 vtv 2.vr		VPL File	1/1/2000 12:13 AM		
		intel2.v Properties	s	VPL File	6/26/2008 8:10 PM		
Details 😵	~						

Then browse to the destination folder on the PC, Right Click and select Paste as shown below.

😂 C: \Old Profiles					
File Edit View Favorites To	ools Help				**
🌀 Back 🝷 🕤 🕆 🏂 🔎 Sea	arch 🌔 Folders 🛛 🎛	-			
Address 🛅 C:\Old Profiles					💌 🄁 Go
	🔺 Name 🔺		Size Type	Date Modified	
File and Folder Tasks 🛛 🔕					
 Make a new folder Publish this folder to the Web Share this folder 	E	View Arrange Icons By Refresh	•		
Other Places 🔹 🛞		Customize This Folder			
 Local Disk (C:) My Documents My Computer My Network Places 	•	Paste Paste Shortcut Undo Rename New Properties	Ctrl+Z		

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The copied file will appear in the folder on the PC as shown below.

😂 C: \Old Profiles						
<u> </u>	[ools	<u>H</u> elp				27
🛛 🗿 Back 👻 🕥 🕤 🏂 🔎 Se	arch	i 🌔 Folders 🛛 🛄 🕇				
Address 🗁 C:\Old Profiles						💌 🄁 Go
	^	Name 🔺	Size	Туре	Date Modified	
File and Folder Tasks 🙁		🖻 blinkb.vpl	1 KB	VPL File	6/9/2008 8:44 PM	
💋 Make a new folder						
Publish this folder to						
the web						
-	-					
Other Places						
real Dick (C)						
A My Documents	-					
My Computer						
My Network Places						
	Y					

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Using the FTP server to transfer VPL files from the PC to the Controller

The FTP server can copy controller profiles (VPL files) from the PC to the Controller thru the network as follows: Browse to the source folder on the PC, right click on the source file and select Copy from the menu as shown below.



Then browse to the FTP client, Right Click in the file area and select Paste from the menu.

📮 ftp://172.16.10.118/ - Microsoft Internet Explorer							
File Edit View Favorites Too	ols Help			1			
😮 Back 🔻 🕥 🕐 Search 🌔 Folders 🛛 🖽 🗸							
Address 👰 ftp://172.16.10.118/				💌 ラ Go			
	Name 🔺	Size	Туре	Modified			
Other Places Internet Explorer Internet Explorer My Documents My Network Places My Network Places	APPNOTEM. blink.vpl blinka.vpl blinkb.vpl bradbb.vpl exphst00.tp intel.vpl intel2.vpl product1.vp product1.vp product2.vpl sab.cfg rvvv 1.vpl vvv 2.vpl	ACRO.csv 112 bytes 212 bytes View • Arrange Icons By • Refresh Paste Paste Shortcut Login As New • Properties 205 bytes	Microsoft Office Excel Co VPL File VPL File VPL File VPL File Text Document VPL File VPL File VPL File VPL File VPL File VPL File VPL File VPL File VPL File VPL File	1/1/2000 12:01 AM 5/23/2008 10:01 AM 6/7/2008 9:17 AM 6/9/2008 8:44 PM 6/20/2008 5:52 PM 6/20/2008 5:48 PM 6/26/2008 7:09 PM 6/26/2008 7:11 PM 1/1/2000 12:01 AM 6/20/2008 5:47 PM 1/1/2000 12:01 AM 5/29/2008 1:18 PM 1/1/2000 12:01 AM 1/1/2000 12:13 AM			

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Now the new file can be seen in the FTP client window, the IE browser in this case, as shown below. Note that you will have to press F5 or select the View/Refresh menu to refresh the directory list to see the newly copied file.

🛂 ftp://172.16.10.118/ - Microsoft Internet Explorer								
Eile Edit View Favorites Iools Help								
🕜 Back 🝷 🏐 🝷 🏂 🔎 Search	😮 Back 🔻 🐑 🔺 🏂 Search 🌮 Folders 🔛 🗧							
Address 👰 ftp://172.16.10.118/				💌 ラ Go				
	Name 🔺	Size	Туре	Modified				
	APPNOTEMACRO.csv	112 bytes	Microsoft Office Excel Co	1/1/2000 12:01 AM				
Other Places 🔊	🔤 blink.vpl	212 bytes	VPL File	5/23/2008 10:01 AM				
Internet Explorer	🔤 blinka.vpl	464 bytes	VPL File	6/7/2008 9:17 AM				
	🔤 blinkb.vpl	453 bytes	VPL File	6/9/2008 8:44 PM				
My bocamerics	🔤 bradbb.vpl	175 bytes	VPL File	6/20/2008 5:52 PM				
Sector My Network Places	🗐 exphst00.txt	1.74 MB	Text Document	6/20/2008 5:48 PM				
	國 intel. vpl	453 bytes	VPL File	6/26/2008 7:09 PM				
	🔤 intel2.vpl	537 bytes	VPL File	6/26/2008 7:11 PM				
	🔤 product1.vpl	175 bytes	VPL File	1/1/2000 12:01 AM				
	🔤 product1-ren.vpl	175 bytes	VPL File	6/20/2008 5:47 PM				
	🔤 product2.vpl	194 bytes	VPL File	1/1/2000 12:01 AM				
Copied	🔡 sab.cfg	12.0 KB	Microsoft Office Outlook C	5/29/2008 1:18 PM				
File	🔤 vtv 1.vpl	145 bytes	VPL File	1/1/2000 12:01 AM				
	🖬 vtv 2.vpl	205 bytes	VPL File	1/1/2000 12:13 AM				
	🔟 blinkc.vpl	453 bytes	VPL File	6/26/2008 9:46 PM				

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Retrieve the Controller's history log file using the FTP server

The FTP server can be used to retrieve the history log file from the controller. Retrieving the history log file from the controller uses the same procedure described previously for copying a controller profile from the controller. The only difference is that the log database is not stored on the public directory and is copied there using a controller command.

There are two communication commands that control the history log file and history database. These commands can be sent using Telnet as well as using GPIB and RS-232. The controller's Telnet interface is used in these examples. This interface is enabled from the COMM screen's TCP/IP Server folder as shown below.

Comm Screen	10:49:43 PM
	rver\
TCP/IP Server On/	Off Enabled
The 'TCP,	Description P Server' is used to enable Ethernet
Change Communic	10.6 F 26.9 %

History commands are available to clear the history database and to copy the history log file to the VPL folder.

The Clear History command deletes all of the data in the history database on the controller. The command syntax is:

= clearhist 1

The Copy History command copies the history database to a default file named History.txt in FTP server's public folder. Then the history.txt file can be downloaded via FTP. There are a some other ways to uses the copyhisttoftp command as described below.

The complete command syntax is = copyhisttoftp arg1 "File name"

Here are examples of the command usage.

- Arg1 = 1, Gives the exported history file the default filename, "history.txt",
- Arg1 = 3, Names the history file using the File Name parameter. For example: My_Test_Results.txt.
- Arg1 = 7, names the history file "File Name" and adds the date For example: My_Test_Results_07-09-2009
- Arg1 = 15, names the history file "File Name" + date + time. For example: My_Test_Results_07-09-2009_02.20.05

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The following examples demonstrate the use of these commands. Note that the free SimpleComm terminal program available from <u>www.TidalEng.com</u> is used in these examples to send the History commands using Telnet.

To create the history log file History.txt and copy it to the public directory, Type the command, "= copyhisttoftp 1" in the Command text box and press the Send button as shown below: Note that the Controller Responds with "OK".

🖶 Tidal Engineering SimpleComm	
<u>File View A</u> bout	
RS-485 RS-232 IEEE 488	TCP/IP-1 TCP/IP-2
Connect Disconnect Status: Socket Connected Address 172.16.10.118	
Command	
= copyhisttoftp	•
SystErr? *IDN?	□ Loop 1000 ▼ ms. Send
Response	
ок	

Now the file History.txt can be seen in the FTP client as shown below. Note that you will have to press F5 or select the View/Refresh menu in the FTP client to refresh the file list to see the new file.

📮 ftp://172.16.10.118/ - Microsoft Internet Explorer						
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> o	ols <u>H</u> elp		AT			
🔇 Back 🔻 🌖 🗹 🏂 Search 🏠 Folders 🔛 🗧						
Address 👰 ftp://172.16.10.118/			💌 ラ Go			
	🔨 Name	Size Type	Modified 🔺			
Folder Tasks 🔹	APPNOTEMACRO.csv	112 bytes Microsoft Office Excel Co	1/1/2000 12:01 AM			
- Departs this item	🖬 product1.vpl	175 bytes VPL File	1/1/2000 12:01 AM			
	🖬 product2.vpl	194 bytes VPL File	1/1/2000 12:01 AM			
Move this item	🖬 vtv 1.vpl	145 bytes VPL File	1/1/2000 12:01 AM			
Copy this item	🖬 vtv 2.vpl	205 bytes VPL File	1/1/2000 12:13 AM			
🗙 Delete this item	🖬 blink.vpl	212 bytes VPL File	5/23/2008 10:01 AM			
	🔡 sab.cfg	12.0 KB Microsoft Office Outlook C	5/29/2008 1:18 PM			
	📕 🖬 blinka, vpl	464 bytes VPL File	6/7/2008 9:17 AM			
Other Places 🙁	🖬 blinkb.vpl	453 bytes VPL File	6/9/2008 8:44 PM			
Tobarrah Eve	🖬 product1-ren.vpl	175 bytes VPL File	6/20/2008 5:47 PM			
	🖬 bradbb.vpl	175 bytes VPL File	6/20/2008 5:52 PM			
	🔤 intel.vpl	453 bytes VPL File	6/26/2008 7:09 PM			
🛛 😼 My Net 🛛 🛛 File	intel2.vpl	537 bytes VPL File	6/26/2008 7:11 PM			
	blinkc.vpl	453 bytec VPL File	6/26/2008 8:46 PM			
	📃 🗐 History.txt 🛛	598 bytes Text Document	6/26/2008 10:16 PM			
Details 🔮	~					

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To clear the history database, type the command, "= clearhist 1" in the Command text box and press the Send button as shown below:

(Note that this command doesn't effect the History txt file in the public directory)

📇 Tidal Engineering	g SimpleComm			
<u>File V</u> iew <u>A</u> bout				
RS-485	RS-232	IEEE 488	TCP/IP-1	TCP/IP-2
Connect Discor Address 172.16.10. Port 5000	nnect Status: Socket (.118	Connected		
Command				
= clearhist 1				
Syst:Err? *IDN	4?		🗆 Loop 1000 💌	ms. Send
Response				
ок				

To examine the history database contents, type the command, "= copyhisttoftp 1" in the Command text box and press the Send button. This will export the history database to the History.txt file. Note that this command can also executed using the touch screen.

📒 Tidal Engineering SimpleComm	
<u>File View A</u> bout	
RS-485 RS-232 IEEE 488	TCP/IP-1 TCP/IP-2
Connect Disconnect Status: Socket Connected Address 172.16.10.118	
Command	
= copyhisttoftp	-
Syst:Err? *IDN?	Loop 1000 - ms. Send
Response	
ок	

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Now you can examine the History.txt file as shown below. Note that it only contains new records.

省 ftp://172.16.10.118/History.txt - Microsoft Internet Explorer	
Eile Edit View Favorites Tools Help	1
🕜 Back 🔹 🕥 👻 🗷 😰 🏠 🔎 Search 👷 Favorites 🤣 😥 😓 📴 💭 🔯 🛍 端	
Address 👰 ftp://172.16.10.118/History.txt 💽 🕤 Go	🔁 •
Date and Time,Record Type,CH1 Actual,CH2 Actual,CH1 Setpoint,CH2 Setpoint,RTD1,RTD 06/26/2008 23:09:00,I,10.7,26.9,80.0,100.0,95.3700,95.3700,1.3466,5.0076,0.2454,4.0 06/26/2008 23:09:10,I,10.9,26.9,80.0,100.0,95.4000,95.4000,1.3466,5.0076,0.2466,4.0	2,High 000 000
	>
🕙 Done 🔮 Internet	

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Using the Firefox client to connect to the Synergy Controller's FTP server.

The Synergy Controller FTP server can be accessed using the Firefox FTP Client after the following setup.

1. Download FTP client for FireFox: <u>https://addons.mozilla.org/en-US/firefox/addon/684/</u>



See the Firefox FTP Support page for more information: http://fireftp.mozdev.org/help.html.

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For more Synergy Controller application notes, videos, technical manuals and free software and information concerning our other Synergy environmental test control and data acquisition products please visit our website at www.tidaleng.com

About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company further provides product development services together with engineering support, and is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems. Tidal's products are available exclusively through ADI American Distributors Inc., an ISO-9002 certified distributor of electronic and electromechanical components and assemblies.

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