

**Alcorn
McBride
Inc.**



WEBster

Internet Expansion Module

User's Guide



Every effort has been made to assure the accuracy of the information contained in this manual, and the reliability of the Alcorn McBride WEBster hardware and software. Errors can sometimes go undetected, however. If you find one, please bring it to our attention so that we can correct it for others. Alcorn McBride welcomes comments and suggestions on the content and layout of its documentation.

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Welcome!

Thanks for purchasing Alcorn McBride's WEBster™. WEBster adds Ethernet connectivity to all Alcorn McBride products, enabling remote control, monitoring, and programming of your system from any computer in the world using an ordinary Internet Browser such as Microsoft Explorer or Netscape.

WEBster comes preloaded with a complete set of WEB pages that form a remote graphical control and monitoring interface for Alcorn McBride audio/video players, show control and lighting products. Use these pages just as they are, or edit them using an HTML authoring package such as Microsoft FrontPage and create a custom interface tailored exactly for your show. WEB pages can even be password-protected for secure access.

Other Internet Protocol capabilities such as SMTP (email) and FTP (File Transfer Protocol) allow WEBster to automatically send email or data. For example, a fault condition detected during a show could cause WEBster to automatically send a service request email to a maintenance address.

Alcorn McBride's WEBster also contains a real-time clock, which adds real-time scheduling capabilities to all Alcorn McBride products. You can now trigger show control events based on the time-of-day, week, month, or year. Or you can playback audio, video, or lighting cues on a preset schedule.

New schedules or show control programs can be downloaded to WEBster via Ethernet, which means that you can update and monitor your system's operation from virtually anywhere in the world!

Features

WEBster offers a wide range of features including:

- Adds Ethernet Connectivity to all Alcorn McBride products
- Provides WEB-based control and monitoring
- Can automatically send email in response to input from show controller
- Accepts download of new show control programs via FTP
- Enables time and date based scheduling with real time clock
- Preloaded with complete and functional sample WEB pages
- WEB page and setup data stored in removable PC-compatible compact flash card (included)
- Ethernet and serial cables included

Front Panel Indicators

WEBster provides four LED indicators on the front panel.



Ethernet and Status LEDs

The following defines the function of each LED:

Blue – Power - This LED will be illuminated whenever the unit is plugged in.

White – Ethernet activity – Whenever any Ethernet packets are received or transmitted from WEBster, this LED will blink.

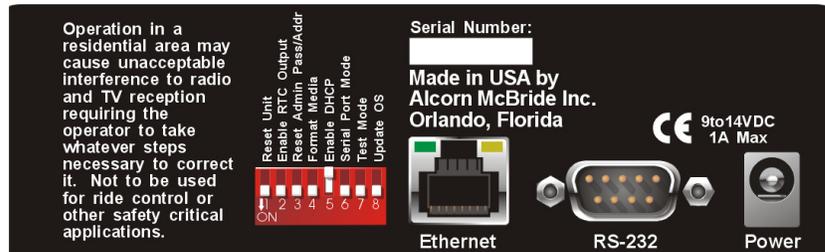
Yellow – Serial activity – Any incoming or outgoing serial activity will cause this LED to blink.

Red/Green – Status – If WEBster ever encounters an internal error condition this LED will flash. Specific errors are explained in a later section, “Error Conditions.” This LED will blink green whenever the Compact Flash socket is accessed.

When WEBster first powers up, the Green LED will blink steadily indicating that initialization is taking place.

Rear Panel Controls and Connectors

The rear panel includes an Ethernet jack, RS232 connector, a power jack, and an 8-position DIP switch.



Ethernet Jack

The Ethernet jack contains two LEDs, "Link" and "LAN". "Link" should be ON and "LAN" should blink occasionally when connected to a network.

This RJ-45 connector provides connection for a standard 10-Base T Ethernet cable. This cable would normally be connected to a hub, but may also be connected directly to a PC's Ethernet card using an Ethernet null, or "cross-connect" cable, which is included with WEBster.

Ethernet is the primary mechanism for transfer of data to WEBster. WEBster is shipped with a factory default IP address of 192.168.0.254, which is useful for configuring WEBster across an Ethernet LAN, but must be changed if WEBster is to be connected to a router on the Internet. Refer to the **Networking WEBster** section of this document for more information.

RS-232C Serial Connector

A serial cable is provided with each WEBster.

This interface is a standard DB-9 male RS-232C connector, intended to be connected to an Alcorn McBride show controller or audio/video player with a straight-through (not null modem) cable. The pinout appears below. Control and monitoring commands are transferred between this connector and the Ethernet interface.

Pin	Function
2	TXD (data from WEBster)
3	RXD (data to WEBster)
5	GND

Configuration DIP Switches

There are eight small switches near the power connector used to configure or reset the unit.

Switch 1 - Reset Unit

This switch resets the hardware portion of WEBster. No other operations of the unit will be possible while the switch is ON.

Switch 2 – Serial RTC output

When this switch is ON, WEBster will output Real-Time Clock information to the serial port. The update rate is once each second, and the format is either ASCII or 9th bit mode. (see Serial Port mode switch below)

Switch 3 - Reset Defaults

Default security password is "admin".

Powering up WEBster with this switch in the ON position will reset the security password to the default and will reset the IP Address of the unit to the default 192.168.0.254 . It also clears the Gateway and Subnet Mask addresses and returns the serial port configuration to 9600, N, 8,1.

Switch 4 - Format Media

Powering up WEBster with this switch in the ON position will format the compact flash. No other operations of the unit will be possible while the switch is ON.

Switch 5 - DHCP Enable

Set this switch to ON if you would like WEBster to obtain it's Ethernet configuration from your network DHCP server. Please refer to the section "DHCP Operation" for a complete description of this feature.

Switch 6 - Serial Port Mode

This switch should be set to ON if WEBster is to be connected to Alcorn Show Control equipment which requires 9th bit serial protocol. Leave it in the OFF position if not connected WEBster to Alcorn McBride show controllers.

Switch 7 - Test Mode

This switch forces WEBster into a test mode, where a PC running a simple ASCII terminal program can be used to configure IP and other parameters via the serial port. Please refer to the Test Mode section of this manual for further details.

Switch 8 - Software Update

With this switch ON, WEBster will update its operating system either from the serial port or from a file contained on the compact flash. Please refer to the Software Update section of this manual for further details.

Power

The power input is a 2.5x5.5x10mm barrel connector with center pin (+) and the outer rim (-). WEBster requires 6 to 9VDC at 1 Amp max. An external universal 110/220 VAC power supply is supplied with each unit.

Networking WEBster

WEBster is a conduit for transferring information between Ethernet and RS232. Ethernet is a physical medium for transferring data over a network. TCP/IP is used to transmit the data over the Ethernet. TCP/IP is a common “protocol” for transmitting data on local Ethernet connections (*Intranet*) and also global connections (*Internet*). WEBster allows both. We will refer to the use of either an Intranet or the Internet as the *Network*.

The serial interface is standard RS232C, and the protocol supports both 8-bit and 9-bit oriented protocols used by all Alcorn McBride products. The baud rate is 9600.

Connecting to WEBster to the Ethernet

192.168.0.254 represents the official test IP address.

WEBster is shipped with a factory default IP address of 192.168.0.254, which is useful for transferring data across an Ethernet LAN, but must be changed if WEBster is to be connected to a router on the Internet.

WEBster is configured with default TCP/IP settings. These settings are the IP address, the Administrator Username, and the Administrator Password. These settings need to be changed only if the unit is to be used on an Intranet or the Internet, where other computers or equipment with other (or the same) IP address may be present

If your network is set up for DHCP, set the “DHCP Enable” DIP switch on the rear of the unit. Please refer to the section “DHCP Operation” for complete details.

If you are connecting WEBster to an existing Ethernet LAN Intranet, then the Network System Administrator will need to provide you with a unique IP address for WEBster. If you are connecting WEBster to the Internet, then your Internet Service Provider (ISP) will either provide you with a unique IP address, or indicate that your network is set up for DHCP (Dynamic Host Configuration Protocol). If you are on a DHCP-enabled network WEBster’s IP address will be automatically configured.

The default Admin Username is *admin*, and the default Admin login password is *admin*. The password should be changed if WEBster is going to remain on the Network.

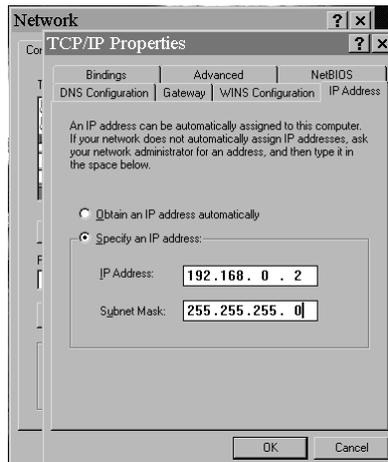
To change any of these three settings, you need to connect to WEBster using a web browser, such as Netscape or Internet Explorer, which is freely available on most computer platforms like Windows 95/98/NT/ME/XP, Unix, Macintosh, and so on.

WEBster comes with a red “Null-Ethernet” (also known as a “cross-connect” or “peer-to-peer”) cable. This cable allows two peers (such as a PC and WEBster) to communicate directly without going through a network hub. **DO NOT USE THIS CABLE TO CONNECT WEBster OR A PC TO A NETWORK HUB OR SWITCH.**

Connecting WEBster directly to a PC

If you are not connecting to WEBster from your Local Area Network (LAN), the Internet, or an Ethernet hub, you should follow these instructions:

1. Plug one end of the red “Null-Ethernet” cable that came with your WEBster into the Ethernet port on the rear of the unit.
2. Plug the other end of the red “Null-Ethernet” cable into the Ethernet port on your computer.
3. Using Windows 95/98/NT/ME/XP, right-click on the Network Neighborhood icon and select **Properties**. If you are not using Windows or you do not have TCP/IP Networking installed on your computer, please consult your computer’s documentation for further instructions on Network Configuration.
4. Double-click on the TCP/IP option. The “TCP/IP Properties” window should be displayed. Select the “IP Address” tab.



5. Write down your current IP address and Subnet Mask settings and keep them in a safe location.
6. Change your **IP Address** to the value shown above (192.168.0.2). Change your **Subnet Mask** to the value shown above (255.255.255.0).
7. Click the **OK** button twice to exit and save the changes to the Network setup.
8. Your computer will require you to reboot to change the settings. Click the **Yes** button to do so.
9. Once your computer has finished rebooting, launch a Web Browser (Netscape, Internet Explorer, etc.).
10. In the address box, type “http://” followed by the IP address of your WEBster. If this is your first time connecting to WEBster, or you have not changed the IP address, the correct entry should be:

<http://192.168.0.254>

11. Upon hitting the Enter key on your keyboard, you should be presented with the logon WebPage from WEBster. Please refer to the section

“Logon WEB Page” for details on how to logon to and configure WEBster.

12. When you are finished configuring your WEBster, follow steps 3-8 to restore your computer’s TCP/IP settings.

Note: If you are unable to connect to WEBster over Ethernet after following the above procedure, the problem may be a result of internal conflicts in Windows TCP/IP settings. To avoid this Windows problem, right-click on the Network Neighborhood icon and select **Properties**. Select each reference to TCP/IP and click Properties. Write down the old settings and then delete all references to TCP/IP by highlighting them individually and selecting **Remove**. Then click **Add**, select **Protocol** and click **Add**. Select **Microsoft** on the left side of the **Select Network Protocol** dialog. Now select TCP/IP from the right side of the **Select Network Protocol** dialog and press **OK**. Windows will ask you to insert the Windows installation disk(s) to complete the process. This procedure will eliminate any conflicts with other TCP/IP entries in Windows. You will need to perform the above procedure again to connect to WEBster.

Connecting WEBster to a Local Area Network (LAN) or the Internet

Note: This process can only be accomplished once you have already connected to WEBster directly and have changed the default IP address to an address approved by your Network Administrator.

To connect to WEBster over a LAN or the Internet:

1. Connect one end of an Ethernet cable to the Ethernet connector on WEBster. **DO NOT USE THE SUPPLIED RED “NULL-ETHERNET” CABLE.**
2. Connect the other end of the Ethernet cable to your network hub.
3. On your computer, launch a Web Browser (Netscape, Internet Explorer, etc.).
4. In the address box, type “http://” followed by the IP address of your WEBster.
5. Upon hitting the Enter key on your keyboard, you will be presented with the logon WebPage from your WEBster.

WEBster's Main WEB Pages

WEBster holds all of the WEB pages it uses in the Compact Flash card. This memory card is fully DOS compatible, and can be read or written to by any Windows laptop or desktop PC equipped with a Compact Flash socket.

The following sections explain each of the WEB pages that are contained on the Compact Flash card that is included with WEBster.

Welcome Web Page

The first web page that WEBster displays is the Welcome page (index.htm), which allows you to customize your WEBster. It also provides tutorials and example pages you can use to learn how to interface to WEBster. The Show Control Console is also a ready-to-use control panel for interfacing to our show controllers.

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Welcome! Configure WEBster or use the Example Pages to Get Started

What Would You Like To Do?

- [Change WEBster's Settings](#)

Tutorials and Examples:

HTML	Flash
Show Controllers	Show Controllers
<ul style="list-style-type: none">• Start Sequences• Set Variables	<ul style="list-style-type: none">• Show Control Console (ShwCntrl.htm)
General Serial Control	General Serial Control
<ul style="list-style-type: none">• Example using the MP3 Audio Machine• Using Text Boxes and Images	<ul style="list-style-type: none">• Example using the MP3 Audio Machine

Administrator Login Page

The default Admin
User Name is admin,
and the default Admin
Password is admin.

Upon selecting “Change WEBster’s Settings” The next web page that WEBster displays is the Administrator Login Page, which asks you for a User Name and Password.



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Administrator Login: Please Enter Your Username and Password

Administrator User Name:

Administrator Password:

Once you have entered a valid User Name and Password, WEBster will display the Setup WEB page.

Setup Web Page

Note: You can also set WEBster's IP address using the serial port. See the "Test Mode" section for details.

The Setup Page is divided into 5 different sections, each of which is explained individually in the following pages.

Alcorn McBride Inc. WEBster Internet Expansion Module [Home](#)

Settings Please edit your settings for time, TCP/IP, Email, etc...

Real Time Clock Setup

Current Time: **09:38:20**

Daylight Savings Time: None
 United States
 Universal Time

Enable Serial Port Clock Output:

TCP/IP Setup

IP Address:

Gateway Address:

Subnet Mask:

Email Setup

"From:" Email Address:

Email Host:

Email Server's IP Address:

Customization Setup

Initial Page To Load:

Require Users to Login: *

Customer User Name: *

Customer Password: *

*this field only used when requiring a customer to log in

Scheduler Setup

Initial Schedule To Load:

Seconds to Delay Schedule After Bootup:

Geographical Setup

Longitude:

Latitude:

Time Zone:

Admin Setup

Administrator User Name:

Administrator Password:

Real Time Clock Setup

Real Time Clock Setup

Current Time: **09:38:20**

Daylight Savings Time: None
 United States
 Universal Time

Enable Serial Port Clock Output:

When you first pull up the setup page from your WEBster, the time should be set to the current time on the Eastern coast of the United States (where Alcorn McBride is located). WEBster's Real Time Clock has a battery back-up so that if power is removed, it will still keep time. If your WEBster is to be located elsewhere, it will be necessary to change the hours (and possibly the date) of the Real Time Clock.

WEBster's Real Time Clock operates in 24-hour time mode, otherwise known as Military Time (i.e. 1:00 AM = 0100 hours, 1:00 PM = 1300 hours).

To change the Real Time Clock, click the Set Time button. WEBster will immediately set its time and date to the time and date on your computer. The setup screen will return the time and date that WEBster has been set to.

WEBster supports Daylight Savings Time for the United States and Universal Time. To correctly follow these standards, WEBster needs to know where it is located on the globe. Appendix A has the timezones for the countries of the world. Consult a map for Longitude and Latitude.

The backup battery will last 10 years under normal operating conditions.

Battery Part No. Panasonic CR2032 or equiv.

Note: It is normal for the clock to be off a few seconds each month. A future release of the WEBster software will allow the unit to automatically connect to the Internet to correct its time.

Enable Serial Port Clock Output

To cause WEBster to output the current time and date to its RS232 port, check the "Enable Serial Port Clock Output" checkbox. Please refer to the section "Real Time Clock Output" for details of the message formats.

TCP/IP Setup

TCP/IP Setup

~~Enable DHCP:~~

IP Address:

Gateway Address:

Subnet Mask:

The IP Addresses section allows you to change the current addresses that WEBster uses to access the Network.

Enable DHCP

Please refer to the section "DHCP Operation" for complete details.

If the "DHCP Enable" DIP switch is ON, this box will be checked and the remaining fields will be read-only and indicate the configuration parameters obtained from the DHCP server. **This Option has been removed from the web page and is now ONLY configurable from the DIP switch on the rear of the unit. This comment and subsection will be removed in later versions of this manual.**

IP Address

If WEBster is not going to be connected to a Local Area Network or to the Internet, you may leave the IP address set to [192.168.0.254](#).

However, if you intend to connect WEBster to a Local Area Network or to the Internet, it will be necessary to change the IP Address. To obtain a new IP address, contact your Network Administrator or your Internet Service Provider.

You can reset the unit back to the default IP address with a switch on the rear of the unit.

When you have obtained your new IP address, simply enter the new address in the New IP Address field and click the **Change Settings** button. Write the new IP address down. Upon clicking **Change Settings**, you will immediately be rerouted to the WEBster at its new IP Address.

If you get to this page and decide not to change your IP address, simply click the **Cancel Settings** button. This will return you to the Welcome page without changing your IP address. If you would like to reset WEBster to the default address of 192.168.0.254, simply click the Default button.

Gateway Address

You can clear the Gateway Address and Subnet Mask with a switch on the rear of the unit.

If WEBster is going to be connected to a Local Area Network that includes a router or Internet gateway to a Wide Area Network (WAN), you will need to type in the IP Address of the device. You should be able to obtain this from your Network Administrator. If no router or gateway is present, leave this blank.

Subnet Mask

WEBster needs to know the gateway address and subnet mask so that it can determine which addresses are part of your LAN (address allowed by subnet mask). IP addresses that are not part of your LAN are sent directly to the gateway to the WAN (Wide Area Network) to access to the outside world.

The Subnet Mask is used by the router or gateway to determine which IP Address are to be routed to the WAN or kept on the Local Area Network. Again, this address should be provided by your Network Administrator. It should be left blank if there is no router or gateway.

Email Setup

Email Setup

"From:" Email Address:	<input type="text"/>
Email Host:	<input type="text"/>
Email Server's IP Address:	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

WEBster has the ability send an email in response to a particular command sent into its RS232 port. This page contains the setup parameters for email.

"From:" Email Address

The other email parameters such as "To:" address, "Subject:" and message text are sent to WEBster as part of the RS232 input message.

Enter the address or the name you want to appear in the "From:" section of the email message sent by WEBster. For example, it could be WEBster@alcorn.com.

Email Server's IP Address

Enter the IP address of the email server you are going to use. You should be able to get the address from your Network Administrator.

Email Host

Enter the Host Name that your Email server is expecting. Again, you should be able to get this information from your Network Administrator.

Scheduler Setup

Scheduler Setup

Initial Schedule To Load:
Seconds to Delay Schedule After Bootup:

The initial schedule to load by default is schedule.txt, but you can change that by using the “Initial Schedule To Load” option. The “Seconds to Delay Schedule After Bootup” option make WEBster wait that many seconds to execute any schedule events. Some installations may require a delay before starting the schedule after bootup. For example a video server may take longer to reboot than WEBster, so you would want to wait a certain number of seconds before executing a bootup event in the schedule. Please read the Scheduler section for more details.

Geographical Setup

Geographical Setup

Longitude:
Latitude:
Time Zone:

Appendix A lists Timezones for the world.

As you may recall from the “Real Time Clock Setup” section, WEBster supports Daylight Savings Time for the United States and Universal Time. To correctly follow these standards, WEBster needs to know where it is located on the globe. Appendix A has the timezones for the countries of the world. Consult a map for Longitude and Latitude.

Customization Setup

Customization Setup

Initial Page To Load:
Require Users to Login: *
Customer User Name: *
Customer Password: *
*this field only used when requiring a customer to log in

WEBster has the ability to require your end user to log in before gaining access to its pages. This section contains the setup parameters for the following:

Initial Page to Load

Enter the name of your default page here. This allows you to set up the first page people will see upon browsing to WEBster’s IP address without having

to rename the INDEX.HTM file that comes on the unit by default. Some popular names are index.html, default.htm, and home.htm.

Require Users To Login

Check this option, if you need for users to log into the WEBster before continuing. The User Name and Password entries are required if this is checked.

Customer User Name

The default Customer User Name is customer, and the default Password is customer

This section allows you to change your customer's login password. The User Name and Password must each be 8 characters (letters or numbers only) or less.

Warning: Keep your customer's User Name and Password in a safe location.

Customer Password

You can reset the Customer User Name and Password to default by setting the DIP switch on the rear panel during power-up.

To return to the Welcome page without making any changes to the Username or Password, click the **Cancel** button.

Cancel Changes and Log Out

Administrator User Name and Password

Admin Setup

Administrator User Name:
Administrator Password:

The default Admin User Name is admin, and the default Admin Password is admin

This section allows you to change your Password. The Administrator User Name and Password must each be 8 characters (letters or numbers only) or less.

Warning: Keep your Administrator User Name and Password in a safe location. These parameters will allow the holder full access to WEBster.

You can reset the Admin User Name and Password to default by setting the DIP switch on the rear panel during power-up.

To change the settings in your WEBster press the **Update** button. To return to the Welcome page and cancel any changes you made on the current page, press the **Logout** button.

Update

You can reset the Admin User Name and Password to default by setting the DIP switch on the rear panel during power-up.

To change the settings in your WEBster press the **Update** button. To return to the Welcome page and cancel any changes you made on the current page, press the **Logout** button.



Other Network Functions

The following sections explain the other network protocols and functions supported by WEBster.

DHCP Operation

Dynamic Host Configuration Protocol (DHCP) allows WEBster to obtain numerous configuration parameters from a DHCP server.

WEBster can obtain its IP address, subnet mask, and gateway IP address from a DHCP server. If DHCP operation is enabled, WEBster establishes an Ethernet connection with the DHCP server immediately upon bootup. Your Network Administrator will be able to tell you whether your network is connected to a DHCP server.

During bootup, the red "Error" LED will blink, indicating that initialization is taking place and that WEBster is establishing a connection with the DHCP server. Once the LED turns OFF, WEBster has successfully obtained a valid configuration from the DHCP server.

The parameters that the DHCP server establishes in WEBster are:

These parameters will be unavailable in the Setup WEB Page whenever the "DHCP Enable" DIP switch is ON.

- 1) IP Address
- 2) SubNet Mask
- 3) Gateway Address

UDP Operation

Only 8-bit messages can be used for UDP communications.

WEBster can convert RS232 messages sent to its serial port into UDP messages, and convert UDP messages sent to its Ethernet port into RS232 messages. All that is needed is to set up the UDP Receive Port, UDP Send Port, and the UDP Address. These parameters are set up using WEBster in the “Test Mode” .

Here’s how to set up WEBster for UDP operation.

You can type “Help” to get a full list of commands in Test Mode.

If using two WEBsters to communicate to each other (i.e. converting RS232 to UDP in one WEBster, then back from UDP to RS232 in another WEBster) make sure you select a UDP Ipaddress that matches the IP address of the receiving WEBster.

- 1) Place WEBster into “Test Mode” by turning DIP switch 7 ON.
- 2) Connect up a PC running a terminal program to the serial port. The terminal should be set up for 9600, N, 8, 1, assuming that WEBster is set at its default serial port settings.
- 3) Type “setudp” followed by a carriage return. Enter the IP address where UDP messages will be sent. If this WEBster is supposed to send UDP messages to another WEBster, this will be the IP address of the receiving WEBster.
- 4) Type “setudpsendport” followed by a carriage return. Enter the UDP Port you want to use to send UDP messages.
- 5) Type “setudprecvport” followed by a carriage return. Enter the UDP Port you want to use to receive UDP messages.
- 6) Turn DIP switch 7 OFF to disable the “Test Mode”.

Your WEBster is now set up to send and receive UDP messages. This information is stored in non-volatile Flash memory in WEBster, and will be retained after power-cycling.

All data sent to the serial port will now be converted into UDP datagrams and sent to the selected UDP port and UDP address specified. All UDP messages received on the specified UDP port will be sent out the serial port.

FTP Operation

File Transfer Protocol (FTP) is an Ethernet protocol used to transfer files from one computer to another.

WEB pages and other data files are transferred to or from WEBster using File Transfer Protocol (FTP). These sections describe the basic FTP commands and operations required to transfer files to WEBster.

Important Note: WEBster currently only supports filenames in the 8.3 format and does not accept long filenames. Long filenames contained on a Compact Flash media inserted into WEBster will be *truncated* to 8.3 format.

FTP Logon

The previous IP setup procedures must have been performed before FTP operation is possible.

With WEBster connected to the Network Open a DOS command prompt window on your PC by clicking Start...Run and then typing "command" in the window. At the DOS prompt type:

[ftp 192.168.0.254](ftp://192.168.0.254)

If you have changed WEBster's IP address from the default or are using DHCP you need to use the new address instead of the one shown above.

You should get a response from WEBster that looks like this:

```
Connected to 192.168.0.254
220-Welcome to the Alcorn McBride Embedded WEB Server
220-Please log in.
User (192.168.0.254:(none)): [Type your UserName here]
331 Password required for Username.
Passsword: [Type your Password here – it will not show on
screen]
230 User Logged in.
ftp>
```

In the spaces indicated above, type in your current User Name and Password.

WEBster will respond to all FTP commands listed here, but not all commands available on some ftp client programs are supported

Follow the step-by-step list of commands as shown below to transfer a file to and from WEBster to your PC.

dir

WEBster will time out and you will need to log back on if you wait too long between ftp commands. This is a security feature.

Type

dir

At the ftp> prompt.

You will see a directory listing of what is on the Compact Flash card.

bin

Use the “bin” command to force all file transfers into binary mode. **You need to do this to successfully transfer WEB files and other data to WEBster.**

ha

You can use the “ha” command to have the ftp program print hash marks on the screen while files are being downloaded. This is helpful for getting feedback on file transfer progress.

put <filename>

Hint: It's best to start the command prompt in the directory on your PC containing the files you wish to transfer to WEBster. That way you don't have to type in any path before the file name.

Use the “put” command to transfer a file from your PC to WEBster. For example, type

put index.htm

at the ftp> prompt to transfer the index.htm file from your PC to WEBster.

Be certain that you have issued the *bin* command once before this command is sent.

get <filename>

Use the “get” command to copy a file from WEBster to your PC. For example, type

get index.htm

at the ftp> prompt to copy the index.htm file from WEBster to your PC.

del <filename>

You must always delete a file from WEBster before replacing it with another of the same name.

Use the “del” command to delete files. For example, type

del index.htm

to delete the index.htm file from the Compact Flash.

rename <filename>

Use the “rename” command to rename a file on WEBster. After you type the filename and hit Enter, the ftp program will ask what you want to rename the file to. For example, type

Rename index.htm

At the ftp> prompt. The FTP program will respond with

To file

At which you type the file name you want to rename to, such as

index2.htm

quit

Use the “quit” command to end your FTP session.

Downloading New Scripts to Alcorn McBride Show Controllers

Important Note: The 8/9 Bit Serial Mode DIP Switch must be in the ON position and WEBster’s serial port must be connected to the ‘Programmer’ port of an Alcorn McBride Show Controller.

Anytime that a .DAT file with the name “load.dat” is transferred to WEBster via FTP, the file is automatically downloaded to the attached show controller upon exiting the FTP session on the PC.

Important: The actual transfer of data to the show controller occurs after the ftp session has terminated (i.e. You type ‘quit’ at the ftp> prompt).

Serial Port Setup

Set the “Test Mode” DIP switch to access WEBster’s test commands from the serial port. You can reset the serial port configuration to the default 9600, N, 8, 1 with the “Reset Defaults” DIP switch turned on during power-up.

With WEBster in Test Mode, you can change the baud rate, bits/char, parity, and stop bits used for the serial port. The default serial configuration is 9600 baud, No parity, 8 bits/char, and 1 stop bit. With a terminal connected to WEBster’s serial port and set to the default configuration, type “setserial” to access the serial configuration menu. After the serial configuration is changed you will need to reconfigure your serial terminal program in order to communicate serially with it again.

Available Serial Port Parameters

Baud Rates: 2400, 4800, **9600**, 14.4k, 19.2k, 28.8k, 38.4k, 57.6k, 76.8k, 115.2k, 250k, 500k

Parity: **None**, Even, Odd (9th bit mode is special parity mode activated by configuration DIP switch)

Bits/Char: 5,6,7, or **8**

Stop Bits: **1** or 2

Default configuration parameters are indicated in **bold**.

Control and Monitoring with WEBster

WEB pages contained in WEBster's memory can be used to control the transmission of command and status information via the serial port. The following sections explain how this is accomplished.

Serial Port Connections

WEBster controls and monitors show control systems and other equipment using its serial RS232 port.

Be sure to select 9-bit mode in the Serial Port Setup WEB Page if using WEBster with Alcorn McBride show control equipment. Use the following guide to determine which serial interface to connect WEBster to on each of the various Alcorn McBride products and what options to select in the Serial Port Setup WEB Page.

Use the 9-pin cable supplied with WEBster.

For other equipment, please refer to the documentation supplied by the specific manufacturer for connection and serial port configuration information.

Product	Connect WEBster to:	Serial Port Setup
V16+, V4+, V2+ Interactivator	"Programmer" or any available port configured for 9-bit operation (see Note)	9-bit mode
DMX Machine SMPTE Machine Digital Binloop	"Programmer"	9-bit mode
IO64	"Host" or "Remote" (configured for 9-bit operation) (see Note)	9-bit mode
LightCue MP3AM 8TraXX PK8001	"RS232"	8-bit mode 9600 baud 8 bits/character

Note: FTP download of script files is not possible with WEBster connected to any port other than Programmer. All other functions are available, however.

Sample WEB Pages

Once you've read the previous sections to learn how to connect and establish a Network connection with WEBster, you will immediately be able to perform simple monitoring and control tasks using the sample WEB pages included with WEBster on any browser-enabled computer connected to your network.

The following sections describe the sample WEB pages that are included with WEBster and briefly explain the various HTML language elements that allow the associated Web page to accomplish monitor and control tasks.

IMPORTANT NOTE: This section is not meant to be a tutorial on HTML code or WEB page authoring. Fortunately, there are dozens of very good HTML tutorials available for free on the WEB. Two links appear below:

<http://www.davesite.com/webstation/html/>

<http://archive.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimerAll.html>

Alcorn McBride will be happy to custom design a WEB page interface for your installation.

Please call us for a quote.

Although this is only a very brief explanation of how certain HTML elements contained in the sample WEB pages enable WEBster to communicate with Alcorn McBride products, once you read and understand each section you should be able to use Microsoft FrontPage or other HTML authoring tools to make minor alterations to these sample pages and customize them to your application.

Some Important Notes before Beginning

This section covers a few details like representing hexadecimal strings and .syn files, that we will visit again in the sample webpages and sections discussing how to interact with WEBster via web pages. In order to keep those sections clear, here's an explanation of what they are beforehand.

ASCII and HEX string representation in HTML code

In the WEB page and associated HTML code examples that follow, the actual serial strings that are sent by WEBster, and received back as acknowledgements from the serial device are embedded in the HTML code that you create. These strings can be ASCII, HEX or a combination of both.

For example, an ASCII string is represented simply as:

“This is an ASCII string.”

HEX strings, on the other hand, need to be surrounded by special delimiting characters so that WEBster knows to separate them from the ASCII codes. These delimiting characters are “<*” at the beginning of the HEX string and “*>” at the end. For example, to send a carriage return, which is accomplished by sending a HEX “0D” you would use:

“<*0d*>”

To send a combination of ASCII and HEX you just concatenate the ASCII strings and the delimited HEX strings. For example, to send a play command to an Alcorn McBride audio/video player you would use:

“PL<*0d*>”

which would send an ASCII “PL” followed by a carriage return.

The same rules apply to the acknowledgement strings expected back from the serial device.

Please refer to the following examples to see how these strings are used in the HTML code.

.syn Files – WEBster’s Response Pages to Form Submissions

When you click on a button on one of the sample WEB pages included with WEBster, the browser expects to receive back another WEB page that is basically a duplicate of the original with some information filled in. WEBster holds these duplicate WEB pages as files in memory, and each has the same name as the original “.HTM” file, except that the extension is “.SYN” instead of “.HTM.” WEBster fills in the required information (monitor and status) in the HTML code which forms the .SYN file and sends it back up to the browser. For some commands, you can also program the text which is to be displayed on the returned WEB page in response to a successful acknowledgement string from the device you’re communicating with.

Making a .SYN file

HTML2SYN.EXE can be downloaded from our website at www.alcorn.com/support/software

The .SYN file is a slightly altered version of the original .HTM file that it represents. Alcorn McBride provides a free utility, HTML2SYN.EXE which automatically generates a .SYN file from the original .HTM file. To use it simply type:

```
html2syn <filename.htm> <filename.syn>
```

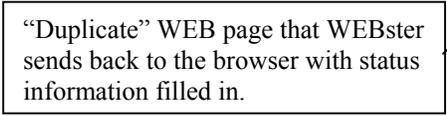
where filename is replaced with the actual filename that you are using (i.e. index, for index.htm and index.syn)

The information that WEBster fills in to the .SYN file can be monitoring or other information such as whether or not a response was received from the player after a command was issued.

In the section labeled “Monitoring Alcorn McBride Audio and Video Players”, we discuss syn files. Here’s what the HTML code looks like in the sample MP3 Audio Machine WEB page.

```
<INPUT TYPE="hidden" NAME="synfile" VALUE="mp3index.syn">
```

“Duplicate” WEB page that WEBster sends back to the browser with status information filled in.



Note that if you want to use a form and route through to another page that is not the one you are currently on you can simply substitute the .syn file for that page.

Tutorials And Examples

The introduction page (index.htm) has links at the bottom to several example pages in HTML and Flash available for you to quickly see how to interact with WEBster via a browser.

Tutorials and Examples:

HTML

Show Controllers

- [Start Sequences](#)
- [Set Variables](#)

Flash

Show Controllers

- [Show Control Console \(ShwCntrl.htm\)](#)

General Serial Control

- [Example using the MP3 Audio Machine](#)
- [Using Text Boxes and Images](#)

General Serial Control

- [Example using the MP3 Audio Machine](#)

This section deals with HTML and the next handles Flash. WEBster is tightly integrated with our show controllers and also designed to handle general serial messaging, which lets it access almost any serially controllable device. The Select the “Start Sequences” link for the “Controlling Alcorn McBride Show Controllers Section”.

Controlling Alcorn McBride Show Controllers

Below is the sample WEB page, “SHOWSEQ..HTM” included with WEBster for controlling Alcorn McBride Control equipment. You can enter this file name into the “Initial Page to Load” in the Setup WEB Page if you want it to appear whenever you access WEBster via Ethernet.

Remember to set the DIP switch setting on WEBster for 9th bit mode when connected to the show controller ‘Programmer’ port.

Also be sure that the Test Mode DIP switch is OFF.

Each button on the WEB page is associated with HTML code which, when activated, sends a 9th bit formatted ‘Start Sequence’ command to the Programmer port of the Show Controller.

Below is a description of the HTML code that performs the operation. This example assumes no feedback from the controller. Please see the next section for an example which includes acknowledgement feedback.

Alcorn McBride Show Control

Current Status:

Command
Sent

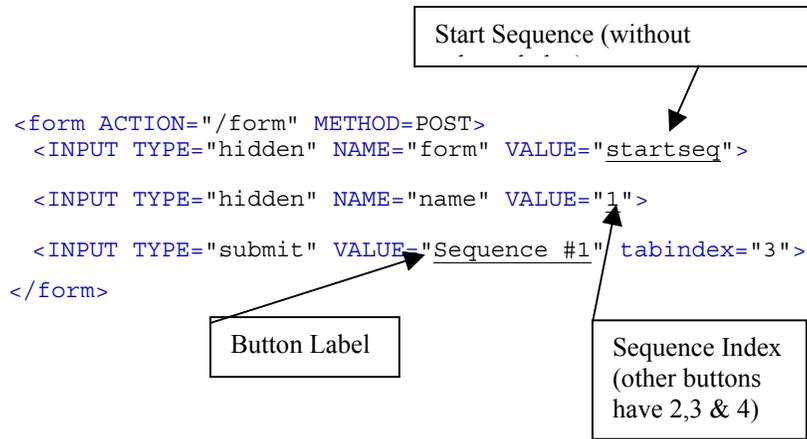
Start Show Sequence

Sequence #1

Sequence #2

Sequence #3

Sequence #4



Notice that no acknowledgement from the show controller is expected in this example. The unit does not automatically send an acknowledgement when the Programmer port is used. This can program this into your script however, and use the next example if you need feedback from the controller.

Monitoring Alcorn McBride Show Controllers

Below is the sample WEB page, "SHOWSEQ.HTM" included with WEBster for controlling Alcorn McBride Control equipment when acknowledgement from the controller is required.

Remember to set the DIP switch setting on WEBster for 9th bit mode when connected to the show controller 'Programmer' port.

Each button on the WEB page is associated with HTML code which, when activated, sends a 9th bit formatted 'Start Sequence' command to the Programmer port of the Show Controller.

Expected back is either an ACK character (0xAA) or a NAK (0x55). The result is displayed in the "Current Status" section of the WEB page.

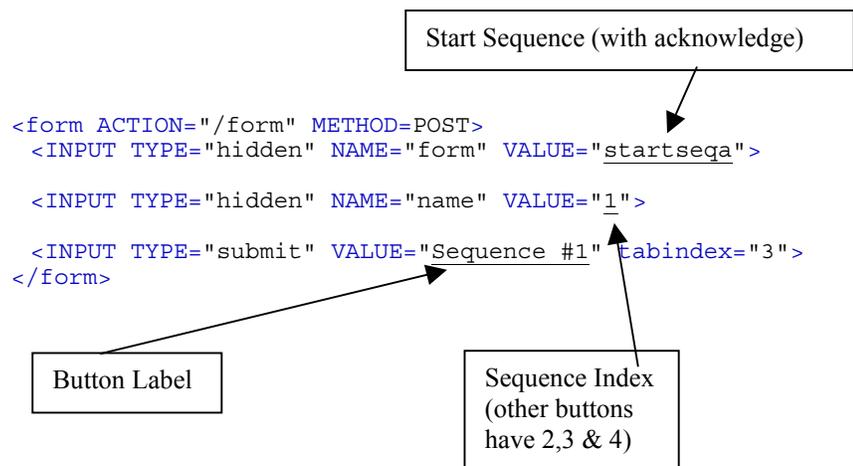
Below is a description of the HTML code that performs the operation. Note you can right-click on the white space of the page and select View Source to see the code or copy and paste it to your pages.



The screenshot shows the top of a web browser window. On the left is the Alcorn McBride Inc. logo. In the center is the 'WEBster' logo with a globe icon. To the right of the logo is the text 'Internet Expansion Module'. On the far right is a 'Home' link. Below the logo area is a header bar with the text 'Alcorn McBride Show Control'. Underneath the header bar, the text 'Current Status:' is followed by 'ACK' and 'Received!' on separate lines.

Start Show Sequence

Sequence #1 Sequence #2 Sequence #3 Sequence #4



StartSeq and Other AMI Show Controller Commands

The previous section describes how you use the **startseq** and **startseqack** commands in WEBster. WEBster also has **sendstring**, **on**, and **off**. The next available page can be accessed by selecting “Set Variables” on the Welcome Page. It’s source code shows you how to set variables in WEBster.



Set Variable

Set Var 1	Set Var 2	Set Var 3	Set Var 4
<input type="text" value="0"/> <input type="button" value="Set"/>			

Here is the source code for the “Set Var 1” option above. The values required by the setvar command are highlighted in black below.

```
<form ACTION="/form" METHOD=POST>  
  < INPUT TYPE ="submit" value="Set">  
  <INPUT TYPE="hidden" NAME="form" VALUE="setvar">  
  <INPUT TYPE="hidden" NAME="varindex" VALUE="0">  
  < INPUT TYPE ="text" name="varvalue" size="4" value="0">  
  <INPUT TYPE="hidden" NAME="synfile" VALUE="setvar.syn">  
</form>
```

Using **on** and **off**, you can control flags and outputs on our show controllers. Here is source code to turn **ON flag 1** in an AMI show Controller.

```
<form ACTION="/form" METHOD=POST>  
  < INPUT TYPE ="submit" value="On Flag 1">  
  <INPUT TYPE="hidden" NAME="form" VALUE="on">  
  <INPUT TYPE="hidden" NAME="index" VALUE="0">  
  <INPUT TYPE="hidden" NAME="synfile" VALUE="whatver.syn">  
</form>
```

Here is source code to turn **OFF flag 7** in an AMI show Controller. .

```
<form ACTION="/form" METHOD=POST>  
  < INPUT TYPE ="submit" value="Off Flag 7">  
  <INPUT TYPE="hidden" NAME="form" VALUE="off">  
  <INPUT TYPE="hidden" NAME="index" VALUE="6">  
  <INPUT TYPE="hidden" NAME="synfile" VALUE="whatver.syn">  
</form>
```

Outputs use the same command with a different index. Note that the indices for flags, variables, etc... in the controllers are in appendix B of the Show Control User’s Guide in the manuals section of www.alcorn.com.

Controlling Serial Products like AMI Audio/Video Players

Below is the sample WEB page, "MP3INDEX.HTM" included with WEBster for controlling the MP3 Audio Machine. You can enter this file name into the "Initial Page to Load" in the Setup WEB Page if you want it to appear whenever you access WEBster via Ethernet. You can access it by selecting "Example Using the MP3 Audio Machine" on the Welcome page (index.htm).

Remember to configure the serial port correctly to communicate with the MP3 Audio Machine (see Serial Port Setup WEB page)

Each button on the WEB page is associated with HTML code which, when activated, sends a command string to the player. For controlling products like the MP3AM, the **sendstring** command is used. For example, the Loop button HTML code looks like this:

```
<INPUT TYPE="hidden" NAME="form" VALUE="sendstring" >
<INPUT TYPE="hidden" NAME="name" VALUE="LP<*0d*>" >
```

Button Label

Actual serial string sent to device is an ASCII "LP" followed by a carriage return (hex "0d" indicated in HTML code by <*0d*>).

```
<INPUT TYPE="submit" VALUE="Loop" tabindex="2">
```

Single Commands

For more granular control, use these buttons, which break up the commands into pieces. You can right-click on this page and select View Source to see the specific code for each button, but here is the code for the Loop button below

```
<form ACTION="/form" METHOD=POST>
<INPUT TYPE="submit" VALUE="Loop" tabindex="2">
<INPUT TYPE="hidden" NAME="form" VALUE="sendstring">
<INPUT TYPE="hidden" NAME="string" VALUE="LP<*0d*>">
<INPUT TYPE="hidden" NAME="dispresult" VALUE="Looping">
<INPUT TYPE="hidden" NAME="responsestring" VALUE="R<*0d*>">
<INPUT TYPE="hidden" NAME="synfile" VALUE="mp3index.syn">
</form>
```

Notice how the **string** and **responsestring** values have changed between the buttons that handle search and play in one and these buttons that do single commands.

Search File 1

Search File 2

Play

Loop

Pause

Stop

Monitoring Serial Products like AMI Audio/Video Players

Handling feedback with WEBster is easy with .syn files. By simply inserting a tilde in a comment string like this <-- ~ --> into your HTML code, you have given WEBster the location to place the response from your form posting.

Displaying the response from controlled device

If you want to display a particular message on the returned WEB page based on the response received from the device you're controlling, include the following HTML code in your WEB page:

```
<INPUT TYPE="hidden" NAME="responsestring" VALUE="R<*0d*>">
```

String that WEBster expects back from serial device is an ASCII "R" followed by a carriage return (hex "0d" indicated in HTML code by <*0d*>).

Here is the parameter to setup your status string

```
<INPUT TYPE="hidden" NAME="dispresult" VALUE="Looping">
```

```
<form ACTION="/form" METHOD=POST>
<INPUT TYPE="submit" VALUE="Loop" tabindex="2">
<INPUT TYPE="hidden" NAME="form" VALUE="sendstring">
<INPUT TYPE="hidden" NAME="string" VALUE="LP<*0d*>">
<INPUT TYPE="hidden" NAME="dispresult" VALUE="Looping">
<INPUT TYPE="hidden" NAME="responsestring" VALUE="R<*0d*>">
<INPUT TYPE="hidden" NAME="synfile" VALUE="mp3index.syn">
</form>
```

Notice how the **string** and **responsestring** values have changed between the buttons that handle search and play in one and these buttons that do single commands.

Feedback

The **feedback** from the unit is displayed below. To do this you insert a tilde (~) character sequence in an HTML comment <!-- ~!--> where ever you want the response to go. So below, we have included it in the cell just after "Response". Note that you don't have to have any response from a product you are trying to control. Simply remove the tilde in this page, and it no longer gives a status. When you do this you can also remove the optional **dispresult** and **responsestring** values from your buttons above. The resulting code would look like this:

```
<form ACTION="/form" METHOD=POST>
<INPUT TYPE="submit" VALUE="Loop" tabindex="2">
<INPUT TYPE="hidden" NAME="form" VALUE="sendstring">
<INPUT TYPE="hidden" NAME="string" VALUE="LP<*0d*>">
<INPUT TYPE="hidden" NAME="synfile" VALUE="mp3index.syn">
</form>
```

Response: Looping

Text displayed on returned WEB page.

If the serial device sends back a response that is not declared in the HTML code (the value of “responsestring” above) then WEBster displays the string received on the return WEB page as:

Unexpected Response: <string received>

Where <string received> is the actual serial message returned from the device.

If the serial device does not respond, and the “responsestring” and “dispresult” lines are present in the HTML code, then WEBster displays “No Response” on the return WEB page.

HTML Commands Summary

Here is a convenient list of the commands available through the HTTP interface on WEBster. Look to the previous sections for detailed discussions and examples.

Form Name	Name	Value	Comments
sendstring	name (actually and index num)	(your string)	Sends a string to the serial device.
startseq	name (actually and index num)	0-255	Starts a sequence in AMI controllers Expects NO response from the controller
startseqack	name (actually and index num)	0-255	Starts a sequence in AMI controllers. Expects a response from the controller
setvar	varindex	0-31	Variable to be set
	Varvalue	0-255	Value to set it to
on	Index	Outputs 0-63, Flags 64-128	Most controllers have 8,16 or 32 outputs and 32 flags
off	Index	Outputs 0-63, Flags 64-128	Most controllers have 8,16 or 32 outputs and 32 flags

Using Images as Buttons, Text Boxes, etc...

You can take advantage of pretty much anything HTML, JavaScript, and Flash have to offer in making your presentation. Pretty much application that can submit forms via HTTP you can use to talk to WEBster. From the Welcome page select "Using Text Boxes and Images" to look at examples for using Images as buttons and textboxes as inputs. Here is a screen shot below.



Using Images

Want to use images instead of buttons? This example sends a search and play message to an MP3 Audio Machine when you click the car. Just like any form, you have fields that are necessary to communicate properly with WEBster, whether it's a button, image, or text box.

```
<form ACTION="/form" METHOD=POST>
<INPUT TYPE="image" border="0" src="car.gif" alt="car.gif">
<INPUT TYPE="hidden" NAME="form" VALUE="sendstring">
<INPUT TYPE="hidden" NAME="string" VALUE="1SE<*0d*>PL<*0d*>">
<INPUT TYPE="hidden" NAME="dispresult" VALUE="File 1 Played">
<INPUT TYPE="hidden" NAME="responsestring" VALUE="R<*0d*>R<*0d*>">
<INPUT TYPE="hidden" NAME="synfile" VALUE="genindex.syn">
</form>
```



(press image to send command)

Response:

Using Text Fields

This is an example of how to add a data field to your forms, so you can send customized strings to any serial device, without having to tie them to a button.

```
<form ACTION="/form" METHOD=POST>
<INPUT TYPE="submit" VALUE="Send Command">
<INPUT TYPE="hidden" NAME="form" VALUE="sendstring">
<INPUT TYPE="text" NAME="string" SIZE=11>
<INPUT TYPE="hidden" NAME="synfile" VALUE="genindex.syn">
</form>
```

Sample Flash Presentations

WEBster ships with some demo Flash movies that you can use to teach yourself how to control WEBster via Flash. One has also been designed as a general control panel for our show controllers. You can use this one as-is and take advantage of much of the functionality WEBster and our controllers have to offer.

General Flash Notes

For those of you unfamiliar with Flash, here are a few tips to bring you up to speed. Please understand that this is not a tutorial on Flash. There are plenty of tutorials available on the Internet. Just go to your favorite search engine, like www.google.com and search for “Flash how to“ or “Flash Tutorial”. Also, if you have purchased Macromedia Flash, they have a terrific tutorial to get you started, complete with a thorough example application. They have a support forum on www.macromedia.com too.

Flash is a movie-based application. When you use a Flash presentation on WEBster, you embed it inside an html page, just like a JPEG, GIF, video, or audio file. All of these example applications were created with Flash 5.0. When you “publish” your presentation, you get a .html and a .swf file. Place both of these on WEBster. When you access the presentation via a browser, load the .htm file, not the .swf. Remember to change Flashes publish properties to publish your HTML files with the .htm extension instead of .html. WEBster trims your file names to the 8.3 standard when it initially looks at the media.

Simple Example: MP3 Audio Machine Control Panel – “mp3flash.htm“

Here is a simple example of how to control a serial product, like the MP3AM with Flash. On the Welcome page (index.htm) select “Example Using the MP3 Audio Machine”. You see the following screen:

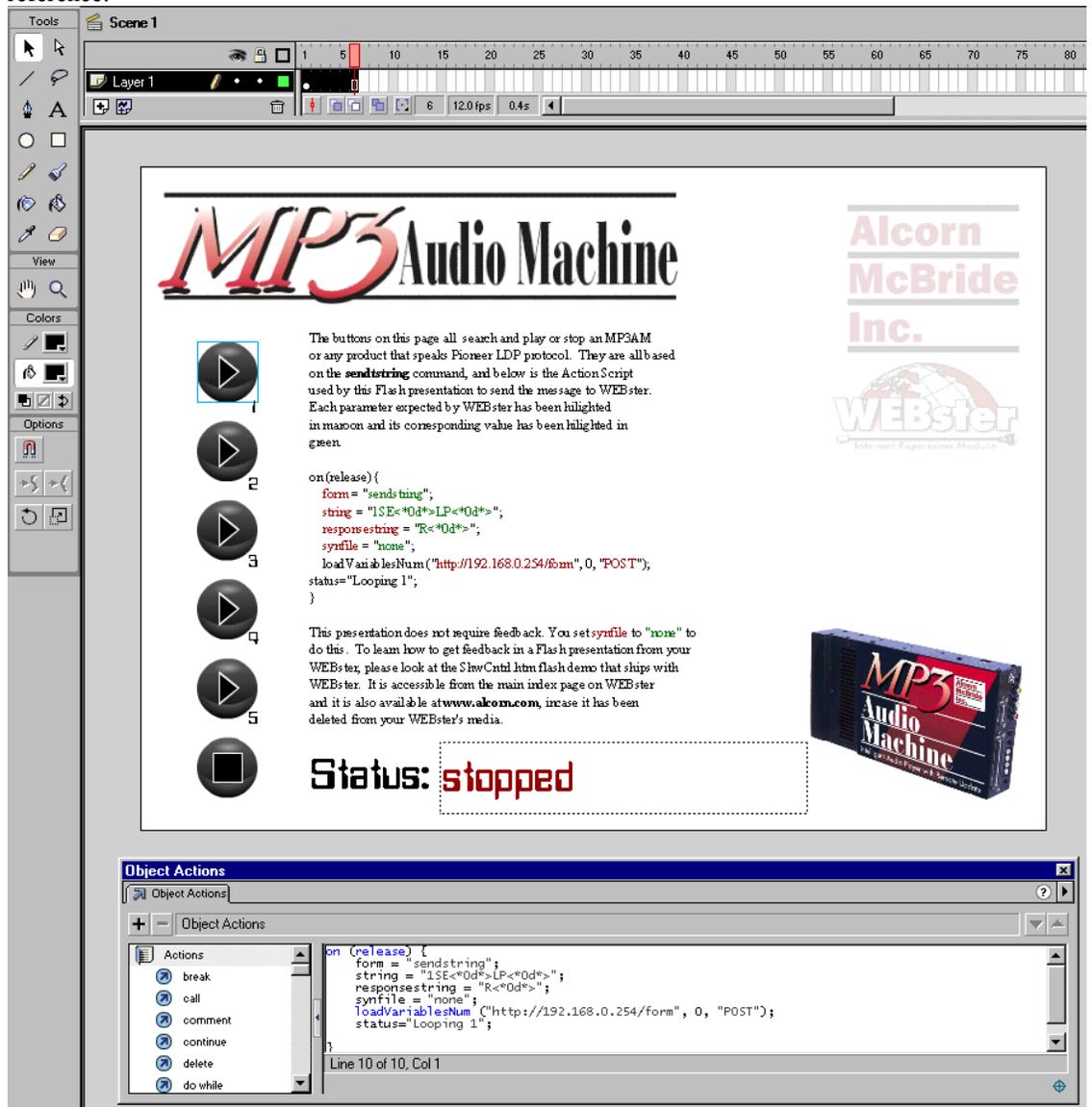
The buttons on this page all search and play or stop an MP3AM or any product that speaks Pioneer LDP protocol. They are all based on the `sendString` command, and below is the ActionScript used by this Flash presentation to send the message to WEBster. Each parameter expected by WEBster has been highlighted in maroon and its corresponding value has been highlighted in green.

```
on (release) {  
    form = "sendString";  
    string = "TSE:" + "MP3:" + "L:" + "01*";  
    responseString = "R:" + "01*";  
    style = "none";  
    loadVariablesNum ("http://192.168.0.254/ferm", 0, "POST");  
    status = "Looping 1";  
}
```

This presentation does not require feedback. You set `style` to "none" to do this. To learn how to get feedback in a Flash presentation from your WEBster, please look at the ShowCtrl.htm flash demo that ships with WEBster. It is accessible from the main index page on WEBster and it is also available at www.alcorn.com, in case it has been deleted.

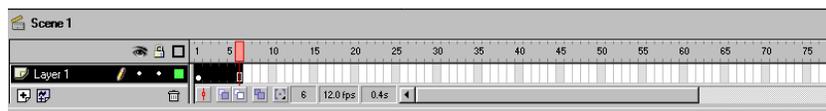
Status: stopped

The source file MP3flash.fla ships on WEBster's media. And is available at www.alcorn.com/products/WEBster. If you have Macromedia Flash, copy the file from the media to your PC and open it. Here's a screenshot for your reference:

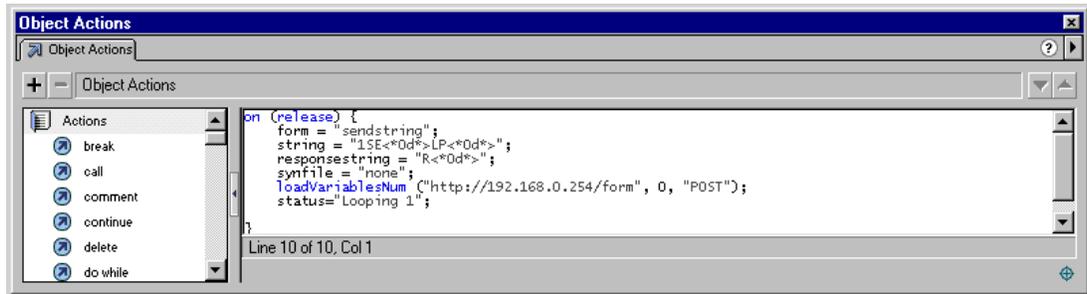


The Timeline

This presentation is only one scene with one layer (Layer 1). It does nothing fancy.



The Action Script



Each button has the action script associated with it that sends the commands to WEBster. Select a button while having the “Object Actions” panel open, and you get access to the button’s Action Script. You can copy and paste it into your application. The script for each button looks like this:

```
on (release) {
    form = "sendstring";
    string = "1SE<*0d*>LP<*0d*>";
    responsestring = "R<*0d*>";
    synfile = "none";
    loadVariablesNum ("http://192.168.0.254/form", 0, "POST");
    status="Looping 1";
}
```

In the Action Script source code for the “button released event” above, we see the same parameter we saw in the HTML examples. We are using the **sendstring** command with its required parameters **string** **response string**, and **synfile**. Notice synfile is set to “none”. When you use Flash, you do not use .syn files. You tell WEBster that no synfile must be returned for this command. After you have set up all the variables you submit your form by using **loadVariablesNum()**. Note the IP address in loadVariablesNum() is the default one. Set it to match your WEBster’s IP address, if you have changed it. “POST” is required in many of the HTTP form submissions to WEBster. Only when you are doing feedback (see the ShwCntrl.htm tutorial below) do you use a “GET”.

Tutorial: V16 Family Control Panel – “ShwCntrl.htm”

ShwCntrl.htm is a console we developed for two purposes. The first purpose is for those who don’t want to learn flash but still want to have a pre-made control panel for our V16 family of controllers, ShwCntrl.htm acts as your control panel/GUI. It is fully functional. If you have a WEBster and a controller, and you would like to see visual feedback on the show controller’s LCD, you can use ShwCntrl.amw, a script written specifically to write status to the LCD when a variable is changed, a sequence has been started, an output has been turned on, etc... It ships on your WEBster’s compact flash, but it is also available at <http://www.alcorn.com/products/WEBster>

Just download it to your show controller, and you are ready to display feedback on the LCD when WEBster sends it commands that you actuate with the ShwCntrl.htm interface. Once you are familiar with the console, download your own script to your show controller and you are now ready to control that show.

The second purpose of ShwCntrl.htm is to provide a tutorial for how to control a WEBster using a Flash presentation. Flash presentations use the same HTML commands to control the WEBster as HTML pages do; they just have a different syntax. So if you have unanswered questions during your ShwCntrl.htm tutorial, refer to the HTML Commands Summary table and the HTML sections for detailed explanations those commands.

Below is a screenshot of the opening page. If you have changed your IP address in the WEBster, enter the new one in the box provided.

MENU

Intro Start Sequences Set Variables Set Outputs Set Flags Feedback

Welcome to WEBster's demo flash control panel. It is useful for controlling many functions in our V16+ family of show controllers. It is also useful as a tutorial for learning how to make your Flash-based presentations communicate with WEBster. If you do not find the source for this presentation with your WEBster, it is available from Alcorn McBride by request or from www.alcorn.com. Before selecting one of the menu options from the top panel, please verify the IP address below matches that of the WEBster with which you are communicating.

WEBster's IP Address:

 **Alcorn McBride Inc.**

How it Works:

This section will show you the Flash Action script behind the buttons on each page:

This section will be an actual copy and paste of the Action script used for each button. For example there is a variable called ipaddress used in this demo that is associated with the input box to the left. To simplify programming, there is a variable called formurl that is used in this demo which is the ipaddress to the left with "/form" appended to the end. This is just the standard format used when submitting forms to WEBster.

The tutorial is broken into sections handling each of the commands available for interfacing to a WEBster attached to our show controllers. For example here is a screenshot of the page that starts sequences:



How it Works:

Each button on this page has Flash script associated with it that sends a **startseq** command to WEBster. Button 1's code looks like this :

```
on (press) {
  form = "startseq";
  name="0";
  synfile = "none";
  loadVariablesNum (formurl, 0,
  "POST");
}
```

It has an explanation and the source code for the first button in the text to the right of the screen. Here is a copy of the source code here for our discussion.

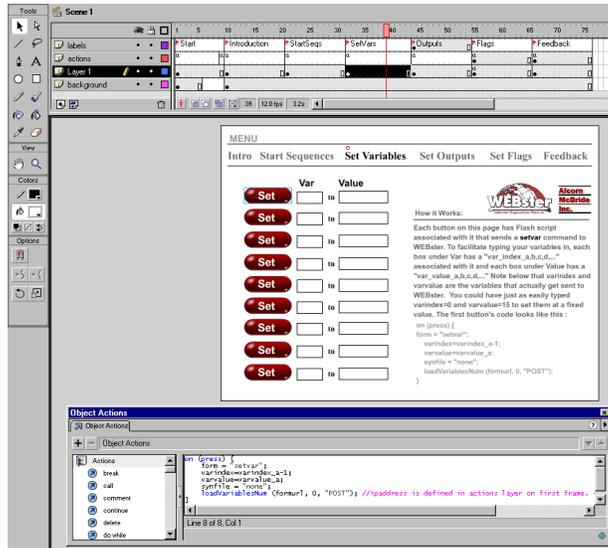
```
on (press) {
  form = "startseq";
  name="0";
  synfile = "none";
  loadVariablesNum (formurl, 0, "POST");
}
```

In the Action Script source code for the “button pressed event” above, we see the same parameter we saw in the HTML examples. We are using the **startseq** command with its required parameters **name** and **synfile**. Notice **synfile** is set to “none”. When you use Flash, you do not use .syn files. You tell WEBster that no **synfile** must be returned for this command. After you have set up all the variables you submit your form by using **loadVariablesNum()**. The value **formurl** is a variable that has the IP address entered in on the Welcome page of the tutorial and a “/form” appended to it. You can simply type in the IP address, but if you ever change it, you have to change it for all the buttons. So if your IP address is 192.168.0.254, the resulting phrase that would need to go into **loadVariablesNum** is:

http://192.168.0.254/form

All of the pages are like this, showing you the source Action Script that makes the buttons work. The buttons follow the same format, but they fill in the appropriate required variables for the command you are sending. You can set variables, turn on and off outputs and flags, and learn about getting feedback using Flash. To keep from duplicating much of that information here, we ask you to use the tutorial to learn more. Instead we will discuss some of the work behind the scenes.

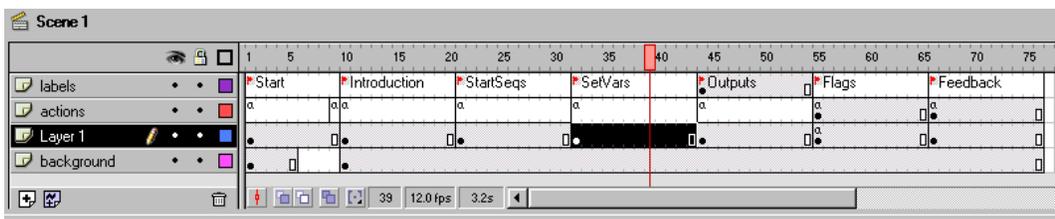
The Flash application file (ShwCntrl fla) used to create the console is also shipped on WEBster’s media from the factory. You can also download it at www.alcorn.com/products/WEBster. Below is a screenshot for our discussion of its design, with the Set Variables portion of the presentation showing.



The Timeline

The timeline is setup for each page as follows:

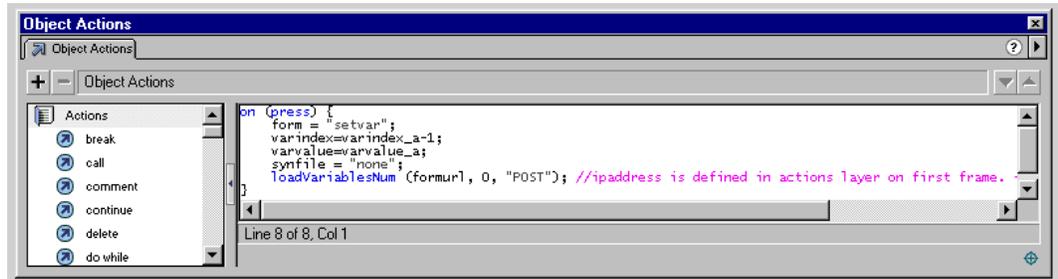
- Start** – loops until the whole presentation is loaded
- Introduction** – holds the intro and asks for the IP address
- StartSeq** – Starts sequences and details the **startseq** function
- SetVars** – Set variables and details the **setvar** function
- Outputs** – Toggles outputs and details the **on/off** function for outputs
- Flags** - Toggles flags and details the **on/off** function for flags
- Feedback** – Starts sequences and details how to retrieve feedback in Flash



The “actions” layer has lowercase A’s in certain sections. you have the “Object Actions” panel (shown below) open, select an ‘a’ frame to see more action script that manipulate the presentation’s operations.

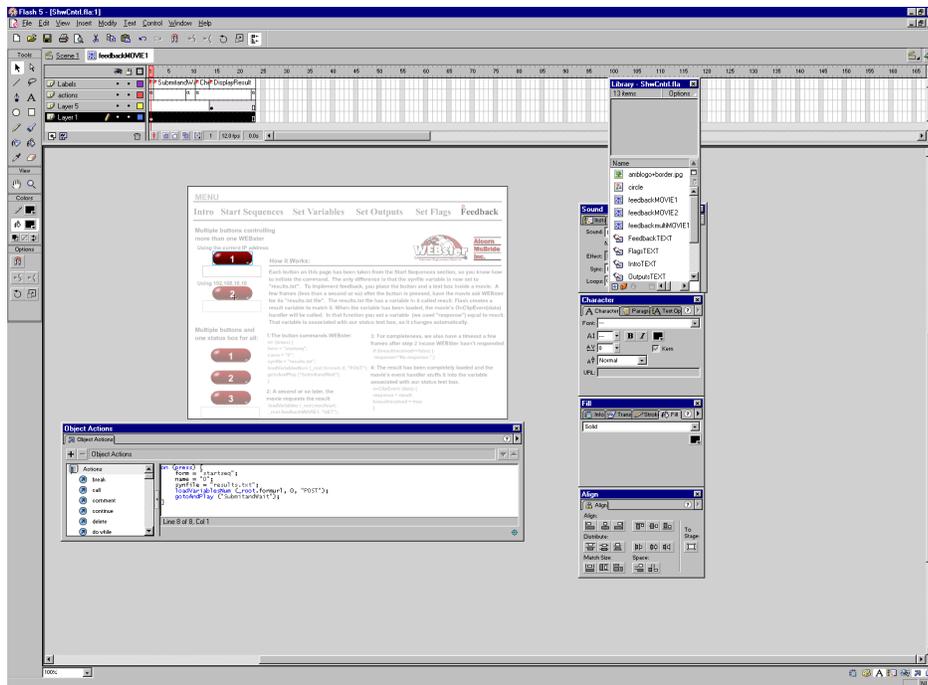
The ActionScript

Select a button while you have the “Object Actions” panel open and you can copy and paste the Action Script to your own buttons.

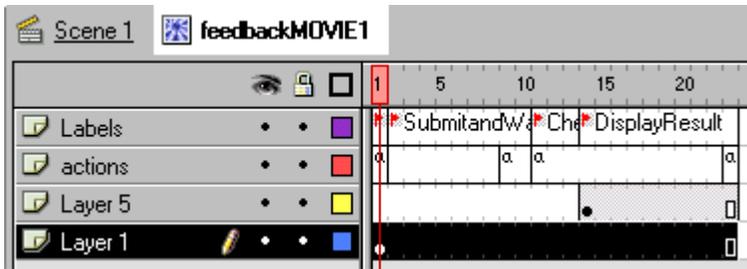


Feedback

The way you achieve feedback on Flash is by embedding your buttons and the result field in a movie. **Once you have issues the command, you go back a little later and ask for the result in a file form.** Go to the Feedback section of the presentation. Double click on the first button number 1. That takes you to the movie called feedbackMOVIE1. You should see this:



See how everything is grayed out except for button 1? Notice how the time line has now changed to the timeline for this little movie. Below is a close-up screenshot for your reference.



If you select button 1 while the “Object Actions” panel is open, you’ll see the following Action Script code.

```
on (press) {
    form = "startseq";
    name = "0";
    synfile = "results.txt";
    loadVariablesNum (_root.formurl, 0, "POST");
    gotoAndPlay ("SubmitandWait");
}
```

In **bold** is the synfile name. It is not a syn file and it is not “none”. You use “results.txt” to tell WEBster it should write the results of your command to a file called “results.txt”. If you pressed button one in the final .htm file, you could look at the media in your PC or via FTP and see results.txt on it. Notice at the end of the script, the command gotoandPlay () is used to make the little movie go to SubmitandWait and start playing. Until that happens the movie is stuck on frame one. A couple of frames close to the end of the “SubmitandWaitSection” (see the labels at the top level), the action (signified by the little ‘a’) places a request for the results.txt file. Here is the code:

```
loadVariables (_root.resultsurl, _root.feedbackMOVIE1, "GET");
```

loadVariables is used to kick off the loading process. The first value passed, **_root.resultsurl** is simply a variable in the big movie that has “/results.txt” appended to the ipaddress entered in the Introduction section of the tutorial. It looks like this “http://192.168.0.254/resutls.txt”, and you could manually type that into the parameter if you like. Next, the **_root.feedbackMOVIE1** parameter tells Flash where to send the results of this file request. **_root** refers to the master movie and **feedbackMOVIE1** is this mini movie’s name.

Next we wait a few frames to let the file request go through. Then we check to be sure in the “CheckResult” section. We did this by looking at a true/false value that gets set once the results.txt file has been completely loaded. Based on that result, we either use the response info that was in the results.txt file, or we stuff “No response” into the variable associated with the status text box just below button one. Lastly in the DisplayResult section, we simply display the text box in Layer 5.

The part that is a little unintuitive about this is where we handle the event that says the results.txt file was completely loaded. If you go back to the main

movie (select scene1 just above the timeline), and then select button 1, which is really the minimovie, the “Object Actions” panel displays this code:

```
onClipEvent (data) {  
    response = result;  
    bresultreceived = true;  
}
```

This is the reason we have to use a movie to get feedback. We put the onClipEvent(data) handler for the mini movie in this location. When the file we requested inside the movie (see the loadVariables() function above) and directed it to this specific movie, our mini movie’s data event gets thrown when the file has been loaded. Inside results.txt is “result=WhateverTheResultWas”. When Flash loads it, it fills in the result variable (in bold above). We copy result to response, which is the variable that is associated with the status box in the movie. We then set out true/false variable, bresultreceived to true, signaling the “CheckResult” section that it is completely loaded.

It’s a little hairy at first, but they all work this way. The way you make it possible for many buttons on one page to control different WEBsters or to have different responses is by making little movies of each set of buttons and responses. There are two examples on the tutorial for this. One is for single buttons talking to different IP addresses and one is for multiple buttons talking to the same ip address and reporting to the same status box. You can also have multiple buttons talking to different ip addresses and reporting to the same status box.

Flash vs. HTML – Pro's and Con's

- ❑ Why would you choose to use Flash instead of HTML and vice versa?
- ❑ So you don't need .syn files either
- ❑ Dynamic screens take advantage of Flash's potential.

Flashes drawbacks:

- ❑ There's a small learning curve

Flashes benefits:

- ❑ Super fast interface – there's no need to refresh! It's not free. The price varies depending on the version (0 to a few hundred dollars)
- ❑ Your customer has to have a Flash player installed (5.0 or later recommended)

HTML benefits:

- It's free
- It has a smaller learning curve than Flash
- It is supported by any browser
- You can use JavaScript to liven it up a bit and automate some things.

HTML drawbacks:

- It's slow
- You have to wait on the page to refresh
- It has static webpages

- ❑ Please visit www.alcorn.com to download a protocol file which implements all of WEBster's serial interface commands for Alcorn McBride show controllers.
- ❑ In addition to providing the command and status interface for the HTML based (WEB Page) operations described previously, WEBster also uses the serial port to accept email message requests, output Real-Time Clock information, and provide error status.
- ❑ The following sections describe each of these capabilities in detail. Message formats for both Alcorn McBride Show Control and simple 8-bit ASCII communications are documented.

Real-Time Clock (RTC)

- When enabled via the Real-Time Clock Setup in the Settings WEB page, WEBster outputs the date and time to its RS232 port once each second. Depending on how the serial port is configured in the Serial Port Setup WEB Page, this can be formatted in simple ASCII or in Alcorn McBride Show Control message format.

Alcorn McBride Show Control RTC Message Format

- ❑ *In the following table, and throughout this manual,, the prefix "0x" refers to the hexadecimal representation of the number.*
- ❑ *Please refer to the Alcorn McBride Show Control Manual for details on the SetVarEQ command.*
- ❑ When enabled via the Real-Time Clock Setup in the Settings WEB page or the DIP switch, WEBster outputs the date and time to its RS232 port in the form of SetVarEQ messages. When connected to an Alcorn McBride show controller, sequences can be designed to use these variables to perform various tasks based on time.
- ❑ The output occurs once each second, and variables are set to the hexadecimal value of the corresponding date/time parameter. The table below shows which variables relate to which date/time parameter. The example shown is for the date 1/15/59 and time 9:26:05 AM.

❑ Date/Time ❑ Parameter	❑ Variable ❑ Set	❑ Example	
		❑ Hex	❑ Actual
❑ Month	❑ Var26	❑ 0x01	❑ ❑ 1/15/59
❑ Day	❑ Var27	❑ 0x0F	
❑ Year	❑ Var28	❑ 0x3B	
❑ Hours	❑ Var29	❑ 0x11	❑ ❑ 9:26:05 PM
❑ Minutes	❑ Var30	❑ 0x1A	
❑ Seconds	❑ Var31	❑ 0x05	

ASCII Formatted RTC Message Format

The baud rate will be whatever is listed on the Serial Port Setup WEB Page

When the serial port is not configured for Alcorn McBride Show Control, the date/time message is in the form of an ASCII string, and has the format shown in the following table. The example shown is for the date 1/15/59 and time 9:26:05 PM.

Byte	Meaning	Example
1	Tens place month	0
2	Ones place month	1
3	Hyphen	0x2d
4	Tens place day	1
5	Tens place day	5
6	Hyphen	0x2d
7	Tens place year	5
8	Ones place year	9
9	Space bar	0x20
10	Space bar	0x20
11	Hundreds place day	0
12	Tens place day	1
13	Ones place day	5
14	Colon	0x3a
15	Tens place hours	1
16	Ones place hours	7
17	Colon	0x3a
18	Tens place minutes	2
19	Ones place minutes	6
20	Colon	0x3a
21	Tens place seconds	0
Byte	Meaning	Example
22	Ones place seconds	0
23	Carriage return	0x0d

Sending Emails from WEBster

The Sender's Address, Email Host, and Email Server IP Address are configured in the Email Setup WEB Page.

WEBster can send an email in response to a specific incoming serial message. The incoming serial message contains the recipient address, the subject, and the message body. All of this information is in the form of ASCII strings.

Depending on how the serial port is configured in the Serial Port Setup WEB Page, the message format containing the email information for WEBster to send can either be Alcorn McBride Show Control Protocol or an ASCII/Hex-based protocol.

Alcorn McBride Show Control Email Message Format

Below is a screenshot of a WinScript sequence showing how to send an Email request to WEBster using an Alcorn McBride show controller. In this example, port1 of the show controller has been configured for WEBster, and the WEBster protocol file is used to assemble a valid message from information entered into the data columns.

The example shows the email going to support@alcorn.com, with the subject as "Subject Here," and the message body saying, "This is the Message."



The screenshot shows a window titled "[Default] of Script1" with a toolbar and a table. The table has columns for R, Label, Time, Event, Data1, Data2, Data3, and Data4. The first row contains the following data:

R	Label	Time	Event	Data1	Data2	Data3	Data4
000001		00:00:00	SendMail	port1	"support@alcorn.com"	"Subject Here"	"This is the Message"

ASCII/Hex Formatted Email Message Format

The ASCII/Hex form of the email message consists of ASCII strings separated by HEX zero bytes (nulls). The format of the message is as follows:

<0xFC><recipient address>0x00<subject>0x00<message>0x00<checksum>

where:

Byte	Meaning
0xFC	command byte that WEBster recognizes as the start of an email request message
recipient address	ASCII string containing the address where you want to send the email (i.e. support@alcorn.com). The Sender's address is entered into the Email Setup WEB page
subject	ASCII string containing the subject of the email (i.e. system status message)
message	ASCII string containing the body of the message. The total number of characters is limited to 1024
checksum	sum of all previous bytes, shifted right by one bit

Please refer to the Error Conditions section for details.

WEBster will set an error condition if the checksum sent does not match what it calculates.

Alcorn McBride Email Service

TBD

Scheduler

WEBster has a down-to-the-minute scheduler based upon its internal real time clock. According to the time of day and date of year, WEBster can start a show, make a video player play the next video, or tell any device it is connected to, to do whatever it is supposed to at 3pm on January 1st 2002, for example. This functionality is built into a feature called the **Scheduler**.

File Format / Tutorial

The Scheduler uses a text file loaded onto the compact flash of the WEBster. The text file can be edited in a text editor, like notepad, or via the scheduler page built into WEBster. The default filename is **schedule.txt**, but you can learn how to change this in the Scheduler Setup Webpage section.

A **schedule** is composed of a list of events. An **event** is some sort of action that must happen at a given time, whether it is sending a serial command out of the serial port, or changing the default web page to a new one for the week. All of the events you can use are listed in a table in the "Events" section below.

An event has a variety of parameters that can be applied to it, in order to customize the WEBster's control to your show. In order to understand how you define an event in WEBster, let's take this simplest example and build it to the most feature-rich example.

Example 1: T:13:46 D:01/1/2000 E:SendString 1:"Hello, world!"

An event exists on one line. It is made up of several fields. Example 1 shows the minimum number of fields you need to define an event, which are an Event, a Start Time, possibly a required data field, and a Start Date. Each field begins with a delimiter.

Here is a table of delimiters for your reference:

Delimiter	Field
T:	Starting time (hh:mm) (military time)
D:	Starting date (mm/dd/yy or mm/dd/yyyy . You can use periods, slashes, or dashes to separate dates)
I:	Ending time (hh:mm) (military time)
A:	Ending date (mm/dd/yy or mm/dd/yyyy . You can use periods, slashes, or dashes to separate dates)
E:	Event
1:	Parameter 1 for the event
2:	Parameter 2 for the event
3:	Parameter 3 for the event
4:	Parameter 4 for the event
R:	Repeat Number: repeat after this number of periods has expired
P:	Repeat Period: Time to wait between executions, used with Repeat Number and Set when necessary
S:	Repeat Set: special case usage described below

;	Although not a field, this marks a comment
---	--

Now that we have seen a table of the event fields, let's look at the event in Example 1. Here are its fields:

Start Time: 1:46pm in the afternoon (**13:46** military)

Start Date: **January 1st 2000**.

Event: **SendString** event, which is a generalized event allowing you to send a custom string to a product connected to the WEBster's serial port.

Field 1, the string, defined as **Hello, world!**

The SendString event actually has more fields associated it with it, that are not required. So let's look at it with those fields filled in:

Example 2: (New fields are in bold.)

T:14:46 D:01/1/2000 E:SendString 1:"Hello, world, again!" 2:"R" h0d 3:20 4:3 ;Repeats a while

Here we have added:

Field 2: an acknowledgement string, **R <carriage return which is hex 0d>**

Field 3: a timeout in seconds (**20** for this example)

Field 4: a number of retries (**3** for this example)

Comment: We also stuck a comment "**Repeats a while**" at the end of the line, by prefixing it with a semicolon (;). **Anything found after a semicolon is ignored by the scheduler.** You can place a comment on its own line, if you like.

Now let's finish up with the remaining fields

Example3: (New fields are in bold. kept on one line for clarity.)

T:14:46 D:01/1/2000 R:30 P:minute A:1.3.00 I:3:00 E:SendString 1:"Hello, world, again!" 2:"R" h0d 3:20 4:3 ;Repeats a while

We've now added:

Repeat Number: **30**

Repeat Period: **minute**

Ending Time: 3am in the morning (**3:00** military)

Ending Date: January 3rd 2000

The Repeat Number acts as a multiplier of the Repeat Period. They should be read in conjunction like this: "**Repeat this event every 30 minutes**".

You may have noticed a slight change in the times and strings used in the examples above. The events used in Example1 and the final one in Example3 are used in an example file on WEBster that you can run with ScheduleTester (discussed below) to see how these actually operate.

The only field not discussed yet is a **set**.

Example 4:

T:1:00 D:11-28-02 R:4 P:Thursday S:November E:defaultwebpage 1:"thanksgi.htm"

A **set** defines a certain range of valid repeat periods. In Example 4, only the Thursdays in November are eligible for this event. When a **set** is used in an event, the Repeat Number takes on a different meaning. Instead of being a multiplier of the Repeat Period, **it and the Repeat Period become an index**

of the set. These three fields should be read in conjunction like this:
“Repeat this event every 4th Thursday in November.”

Events in Detail

There are predefined events you can schedule. They are discussed in detail below and summarized in a table at the end of this discussion.

SendString:

Description: This event sends a customized string out of the serial port.

Field1: The message. You use quotes around the characters that are ASCII. There are also several escapes that you can use inside the quotes, to allow you to insert carriage returns, bells, etc... These follow the syntax of a C program. values.

Supported escape characters:

\”	Insert a doublequote
\n	Insert a line feed (hex 0A)
\r	Insert a carriage return (hex 0D)
\t	Insert a tab (hex 09)
\b	Insert a bell (hex 07)
\\	Insert a Backslash

You can enter hexadecimal characters in the strings as well by prefixing them with the letter ‘h’. You use white space or commas as separators if your string is a combination of hex and ASCII

Field2: Acknowledgment string to look for. You can format it in the same manner as Field1

Field3: Timeout in seconds before retry or failure

Field4: Number of retries before quitting.

Comments: Field one is required. Fields 2,3 & 4 are optional.

Examples: These examples talk to a player, like the DVMHD, DVM2, DVD player, etc...

```
E:SendString 1:“215SE” h0d ;Select file 215
E:SendString 1:“215SE” h0d “PL” h0d ;Select & play file 215 using hex
E:SendString 1:“215SE\nPL\n” ;Select & play 215 using escapes
E:SendString 1:“\“alcorn.mpg\””SE h0d ;Select file alcorn.mpg

;Select with R<carriage return> ack message, 10second timeout, and 2 retries
E:SendString 1:“215SE\n” 2:”R\n” 3:10 4:2
```

StartSequence:

Description: Start sequence by number to any connected Alcorn McBride Show Controller.

Field1: The sequence index. See the table below for the index values.

Field2: N/A

Field3: N/A

Field4: N/A

Comments: “1” will refer to Sequence #1

Examples: E:StartSequence 1:1 ;Start sequence 1
E:StartSequence 1:12 ;Start sequence 12

SetvarEQ:

Description: Set a variable on any connected Alcorn McBride Show Controller.
Field1: The variable index. See the table below for the index values.
Field2: The value
Field3: N/A
Field4: N/A
Comments: WinScript refers to variable0 as variable1, variable12 as variable13,...
Examples: E:SetVarEQ 1:4 2:100 ;Set variable 4 to 100
E:SetVarEQ 1:13 2:6 ;Set variable 13 to 6

On:

Description: Turn on any flag or output on any connected Alcorn McBride Show Controller.
Field1: The flag or output index. See the table below for the index values.
Field2: N/A
Field3: N/A
Field4: N/A
Comments: WinScript refers to flag0 as flag1, output13 as output14,...
Examples: E:on 1:h40 ;Turn on flag 0
E:On 1:h13 ;Turn on output 13

Off:

Description: Turn off any flag or output on any connected Alcorn McBride Show Controller.
Field1: The flag or output index. See the table below for the index values.
Field2: N/A
Field3: N/A
Field4: N/A
Comments: WinScript refers to flag0 as flag1, output13 as output14,...
Examples: E:OFF 1:h50 ;Turn off flag 16
E:off 1:h00 ;Turn off output 0

DefaultWebPage:

Description: Change the default webpage. Useful for certain modes or special events, like holidays, when you want the interface to default to a different initial page.
Field1: file name
Field2: N/A
Field3: N/A
Field4: N/A
Examples: E:defaultwebpage 1:"newyear.htm"
E:defaultwebpage 1:"Monday.htm"
E:defaultwebpage 1:"Tuesday.htm"
E:defaultwebpage 1:"Wednesday.htm"

Table of Events:

Here you will find the events in the WEBster you can schedule. For a detailed discussion see the previous **Events in Detail** section.

Delimiter	Field 1	Field 2	Field 3	Field 4
SendString	String	Acknowledgment string to look for*	Timeout in seconds before retry or failure*	Number of retries*
StartSequence	<sequence index>	N/A	N/A	N/A
SetVarEQ	<variable index>	<value>	N/A	N/A
On	<output or flag index>	N/A	N/A	N/A
Off	<output or flag index>	N/A	N/A	N/A
DefaultWebPage	<pagename>	N/A	N/A	N/A

* optional parameter

Indices for sequences, variables, flags, and outputs:

WinScript refers to resource as resource+1 , like variable0 as variable1, variable12 as variable13,etc..., so don't let this confuse you.

Resource	Field 1
Sequence	0x00 – 0xFF
State Variable	0x00 – 0x1F
Output	0x00 – 0x3F
Flag	0x40 – 0x7F

Fields in Detail

There is a summarized table in the **File Format/Tutorial** section that lists all the fields for your reference. Since the Event, and event Parameter fields (E:, 1:, 2:, 3:, and 4:) have been discussed in detail in the **Events in Detail** section, we'll discuss the rest of the fields here.

T: Start Time

The Start Time is the hour and minute your event becomes active. For most cases being active simple means gets executed. You specify it in military time 00:00 is midnight, 23:59, 11:59pm, is last minute of the day something can be scheduled. You can specify the word **BOOT** as the field's value. This used to make an event get executed upon every reboot after the start time and start day have been reached.

Example:

T:13:30
T:Boot

D: Start Date

The Start Date is the month, day, and year your event becomes active. For most cases being active simple means gets executed. You specify it in a variety of ways. You can use periods, slashes, or dashes to separate the fields of the dates. Dates from the year 2000 to the year 2099 are supported. Leap years are handled.

Examples:

D:1.1.00
D:1/1/00
D:1-1-00
D:01.01.2001
D:01/01/2001
D:01-1-2001

I: End Time

The End Time is the hour and minute your event stops being active. See the T: Start Time section for syntax.

Examples:

I:1:30

A: End Date

The End Date is the month, day, and year your event stops being active. See the D: Start Date section for syntax.

Examples:

D:1.1.00
D:1/1/00
D:1-1-00
D:01.01.2001
D:01/01/2001
D:01-1-2001

R: Repeat Number

The Repeat Number acts in one of two ways:

- With no Repeat Set field present.
- With a Repeat Set field present:

With no Repeat Set field present:

This is the most common usage of the Repeat Number. It acts as a multiplier of the Repeat Period. They should be read in conjunction like this: “**Repeat this event every <repeat number> <repeat period>**”. Ex. “Repeat this event every 30 minutes”.

The repeat number can be anywhere from 1 to over 4billion. You can specify repeating a number of minutes, which is why this is so huge. Realistically though, you would specify repeating in years, if it got that large. Whatever combination you choose between Repeat Number and Repeat Period should not multiply out to be greater than a century.

Example:

R:1 ;do it every period
R:117 ;do it every 117 periods

With a Repeat Set field present: The Repeat Number and the Repeat Period become an index of the set. These three fields should be read in conjunction like this: “Repeat this event every <repeat number> <repeat period> in <set>.” Ex. “Repeat this event every 4th Thursday in November.”

Although many customers may come up with other uses, we can use an example of holidays to explain what using a set can do for you. Over the period of a year, you may want to schedule events for some holidays. Unfortunately, not all holidays land on the same date every year. By defining a set, along with the repeat number and repeat period, you can choose the first Monday of the month, or whatever you like. Sets can be specific months or general and periods can be specific or general too.

Example:

R:2 P:Sunday S:May E:defaultwebpage 1:"mothers.htm" ;Mother's Day
R:1 P:Day S:Month E:SetVarEQ 1:1 2:1 ;Tell controller to do show for day #1
R:1 P:Day S:Month E:SetVarEQ 1:1 2:2 ;Tell controller to do show for day #1
R:2 P:Day S:Month E:SetVarEQ 1:1 2:3 ;Tell controller to do show for day #2
R:3 P:Day S:Month E:SetVarEQ 1:1 2:4 ;Tell controller to do show for day #3
....

P: Repeat Period

The Repeat Period defines how long to wait. It is multiplied or indexed according to the presence of a Repeat Set field. (See the Repeat Set and Repeat Number sections for details)

Periods can be one of the following:

Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday
Minute
Hour
Day
Year
Boot

Notes: Month is not a valid period. If you want to make a monthly schedule, use a combination of repeat number, period and set to do so. See the example in the Repeat Number section for details.

Examples:

R:sunday
R:year

I: Repeat Set

Using the Repeat Set field changes the way Repeat Number and Repeat Period operate. Together they act as an index into the Repeat Set. Please read the Repeat Number section above, for a detailed explanation of the different behaviors they take on when the Repeat Set field is present.

In order to create a monthly schedule, you can specify the Repeat Set as **month**. In order to execute an event on

Sets can be one of the following:

Month

January, February, March, April, May, June, July, August, September, October, November, and December

Examples:

R:5 P:day S:month	;repeat 5 th day of every month
R:2 P:monday S:month	;repeat 2 nd Monday of every month
R:4 P:Thursday S:November	;repeat 4 th Thursday in november

Restrictions

Since the Scheduler is very flexible, it is easier to explain what you cannot do, than to explain what you can.

1. When using BOOT as the Repeat Period, the Repeat Number can only be one. The unit does not keep track of the number of times hit has rebooted. You can put in other numbers, but it will ignore them.
2. Whatever combination you choose between Repeat Number and Repeat Period should not multiply out to be greater than a century. For example, don't repeat an event every 102 years.
3. One event executes per minute. If you want more and you haven't already purchased a small show controller, like the InterActivator, then get on of these. It can increase the amount of events you can generate from 1per minute to 30 per second * 60 seconds per minute = 1800 events per minute!
4. If there will be retries associated with an event, like SendString, then the summed total amount of it timeout*retries can be no longer than 59seconds, so that it doesn't conflict with other commands waiting in the queue one minute later. Total timeout = (59sec/number of retries).

Comments & Whitespace

Comments are prefixed with a semicolon (;). **Anything found after a semicolon is ignored by the scheduler.** You can place a comment on its own line, if you like. You can use spaces or tabs to organize your schedule. They both are ignored.

Examples:

```
;This is a comment on its own line  
T:1:00 D:1-1-01 E:SetVarEQ 1:2 2: 33 ;this is a comment too
```

Order of Operations

Here is a listing of times when WEBster checks the schedule and the operations afterwards.

1. WEBster loads the schedule from schedule.txt (default) at:
 - a. Boot up
 - b. After an FTP transfer
 - c. Scheduler Web page update
 - d. Every night at midnight.
2. WEBster gets today's date (or already knows it) from built in RTC.
3. WEBster parses the schedule and loads all of today's active events.
4. If it is a bootup that caused the schedule load, the Bootup event gets loaded.
5. If there has been a bootup delay set via the setup webpage, then the unit will wait until that time has expired before starting. This allows WEBster to wait on products that boot slower than it does before sending a command. An example is a hard-disk based system that has a 20second boot time. WEBster has to wait until it has booted before sending a search and play command.

Double Occupancy: When Two Events Occupy the Same Slot

If you plan on having a fairly complicated show, you may want to be sure you don't have events competing with each other for execution when their time and date come around. This discussion looks at what happens when two events end up on the same time and date. It explains the rules used to determine which event wins.

Definitions

The following are previously undefined terms used in the **Scheduler Rules** discussion below

- **Timestamp** - time portion of the event's starting point (T: and D:)
- **Datestamp** - date portion of the event's start point (T: and D:)
- **Slot** - the event's timestamp + datestamp.
- **Startslot** - slot when the event begins (required)
- **Endslot** - slot when the event ends (not required)
- **Profile** - an event's startslot, endslot, type (defined below)
- **Double Occupancy** - two events in the same slot.

The following **types** of events exist in WEBster:

- **One-shots** - One time events with no repeat
- **Loops** - Repeating events
- **Finites** - loops that have an end time and end date

- **Infinities** - loops with no end time or end date
- **Active Event** - events with today's datestamp that have been or will be loaded into the queue
- **Executable Event** - events with the current timeslot.
- **Start Time Bootups** - events with start time listed as BOOT.
- **Repeat Period Bootups**- events with repeat period listed as BOOT.

Scheduler Rules

Precedence: If two events occupy the same slot, this is the precedence:

1. StartTime Bootups take ultimate precedence during the bootup minute, and are treated as normal events afterwards (if they repeat).
2. Repeating Bootups take second precedence during the bootup minute.
3. One-shots take precedence over Loops.
4. Finites take precedence over infinities during their period of execution.
5. Finites started on a later slot will take precedence over earlier finites.
6. Infinities started on a later slot will take precedence over earlier infinities.
7. If two or more events with the same **profile** are scheduled for the same start slot, the first one found in the file will be executed. **This should only occur as a mistake. Ex.** Two one-shots, finite loops, or infinite loops are programmed with the same startslot.

When Double Occupancy is Legal: There are times that two events can legally occupy the same slot. These are expected to occur as:

- **Overlaps** - When two or more loops (finites or infinities) unintentionally line up. Ex. A 3hour infinite and a weekly infinite will eventually overlap, if programmed on same timestamp of the day, but not necessarily the same datestamp.
- **One-shot Overrides** - one-shots that are intended to supercede a standard finite or infinite show. Ex. A special holiday show at the regular show's slot.
- **Finite Overrides** - Finites that are intended to supercede another finite or infinite show. Ex. 1week finite that is placed in the middle of a 6month finite to override the standard show for 1week, then go back to normal.
- **Infinite Overrides (Replacements)** - Infinite loops scheduled for the same datestamp at a later date. Ex. Daily infinite for three months, another daily infinite for the rest of the year. Although this probably should be programmed as finites, a customer may program it as replacements.

Using the Scheduler WEBpage

Now that you understand the structure of the schedule file, the WEBster has a web page you can use to conveniently build your schedule instead of having to type it all in manually. As you add events the page does a minor amount of error detection for you, where as the ScheduleTester.exe program discussed below will do a more thorough analysis for you.

(add page screenshots and discuss in detail here...)

ScheduleTester.exe

ScheduleTester.exe (ST) is a free console program you can use to simulate your schedule over a predefined time span. This program accepts the same file that you load into WEBster, analyses it for errors and then simulates the actions WEBster will take over the time period you specify. It writes a log file, listing the days and times of days the events will be executed.

It has the following parameters:

Switch	Meaning	Default
-s	<sourcefile>	schedule.txt
-o	<logfile>	out.txt
-p	append output to logfile instead of overwriting it.	off
-a	analyze schedule only. no simulation.	off
-l	show daily schedule loads only during simulation. no minute by minute executions.	off
-e	the simulation will stop on any errors or warnings found in the file.	off
-n	nice mode: sleep() every "minute" - slower, but tasks processor less.	off
-d	<6 digit start date mmddyy> this is a required format	010100 (January 1st, 2000)
-t	<4 digit start hour hhmm> this is a required format	0000 (midnight.)
+y	<number of years (365 days each) to simulate>	0
+m	<number of months (31 days each) to simulate>	0
+w	<number of weeks to simulate>	1
+d	<number of days to simulate>	0
+h	<number of hours to simulate>	0
+i	<number of minutes to simulate>	0

Example1:

C:\schemuletester

This calls the default operation of schemuletester. This means open schedule.txt, simulate from January 1,2000 for 1week, and write the results to out.txt.

Example2:

C:\schemuletester -sweekschedule.txt -oresults.txt -d010302 -t1230 +d700 +h4 +m916

This means open weekschedule.txt, simulate from January 3,2002, for 700days 4hours and 916minutes and write the results to results.txt.

Simulation

When you analyze and simulate your schedule, you'll see the following on your screen:

```
AMI Schedule Tester: (press Ctrl+C to cancel)
-----
Reading schedule.txt and writing results to out.txt.
100% complete
```

When your reach 100%, it's done and you can open the log file.

Results

When you use ST to test a schedule you have created, it first does a syntax analysis of the whole schedule, and then does a simulation. Error codes are generated mainly at the analysis, but can be generated during simulation as well. Just like the WEBster, the Schedule Tester skips over the errored events and attempts to execute the schedule anyway, unless you use the **-e** option to make it stop on any error. Open the output file in the same directory with notepad or your favorite text editor to see the results.

Inside the log file you'll see a few lines like this:

```
Starting Syntax Analysis.
-----
Errors have a corresponding line number in front of them.
Valid Event: D:01.01.00 T:13:46 E:SENDSTRING 1:Hello World!
Valid Event: D:01.01.00 T:14:46 A:01.03.00 I:03:00 R:30 P:Minute E:SENDSTRING 1:Hello
World Again!

Starting Simulation (time is military)
-----
Will simulate for 10080 total minutes
Bootup at: 00:00
on: 01.01.00
```

Saturday 01.01.00

Loading Events:

Event Added: D:01.01.00 T:13:46 E:SENDSTRING 1:Hello World!

Event Added: D:01.01.00 T:14:46 A:01.03.00 I:03:00 R:30 P:Minute E:SENDSTRING 1:Hello World Again!

Executing Events:

13:46 (13:46 starttime) AlcornSendString: Hello World!

Ack: (null)

Retries: 0

Timeout: 0

14:46 (14:46 starttime) AlcornSendString: Hello World Again!

Ack: (null)

Retries: 0

Timeout: 0

...

...

...

Done.

Errors

During analysis and simulation, if ScheduleTester finds errors, it gives you an explanation of what is wrong, along with a line number.

Example1: This event has a space in its date

```
T:13:46 D:01 /1/2000          E:SendString 1:"Hello World!",h0d
```

Result: The line number has been printed in front of the error.

```
9 Error: BAD_STARTDATE
```

Example2: This event has a typo in the event field

```
T:14:46 D:01/1/2000 R:30 P:minute A:1.3.00 I:3:00 E:SrndString 1:"Hello World Again!",h0d
```

Result: The line number has been printed in front of the error.

```
10 Error: BAD_EVENT
```

Batch Processing

You can run many instances of ScheduleTester in a row. This is handy for simulating a variety of scenarios with the press of a button. Simply create a text file with the extension as **.bat**. Put into it the full command line, like those in the examples above. Then run the batch file in the same directory, in which ScheduleTest is located.

Example: A batch file used to test 4 different schedules

```
schedul tester -sfulldayschedule.txt -ofulldayschedule_out.txt -d020702 +w1 +d3
```

```
schedul tester -ssrss_schedule.txt -ossrs_out.txt -d122802 +m7
```

```
schedul tester -sweeklyschedule.txt -owweeklyschedule_out.txt -d020402 +w2
```

```
schedul tester -sboot_schedule.txt -oboot_schedule_out.txt -d010303 -t0133 +w2
```

Uploading New Schedules to WEBster

FTP schedule.new to immediately update your schedule. FTP schedule.txt to update your schedule at midnight like normal.

You can FTP shedule.txt to the WEBster, replacing your current version. (Delete the schedule.txt on the unit before FTP'ing this one.) WEBster has the current schedule in memory. At midnight, or after a fresh reboot, the new schedule.txt will get loaded into memory. If you want to cause an immediate update of your schedule without rebooting, then name your schedule "schedule.new" before uploading it. WEBster will rename your current schedule to schedule.old, rename schedule.new to your current schedule's name, and load it into memory. **Important:** The actual update of the schedule.new occurs after the ftp session has terminated (i.e. You type 'quit' at the ftp> prompt).

Test Mode

The Test Mode serial protocol is 9600, N,8,1. No other serial operation except software update is functional in this mode.

With the Test Mode DIP switch activated, WEBster can be completely configured using a simple ASCII terminal program running on a PC. Commands are listed below.

List of Test Mode Serial Commands

If you type “Help” WEBster outputs the following list of available commands:

Command	Explanation
Help	Prints out a list of available commands
autoexec	Executes the “autoexec.bat” file contained on the compact flash.
format	Formats the compact flash media Warning: all data will be lost!
setserial	Allows you to configure the baud rate, bits/char, parity, and stop bits of the serial port
?ip	Lists the currently assigned IP address
setip	Sets the IP address
?gw	Lists the currently assigned Gateway address
setgw	Sets the Gateway address
?sub	Lists the currently assigned Subnet Mask
setsub	Sets the Subnet Mask
?mailip	Lists the currently assigned Mail IP address
setmailip	Sets the Mail IP address
?mailhost	Lists the currently programmed Mail Host Name
setmailhost	Sets the Mail Host Name
?page	Lists the currently programmed Startup WEB Page
setpage	Sets the Startup WEB Page
?mailsender	Lists the currently programmed Mail Sender Name
setmailsender	Sets the Mail Sender Name
?errors	Lists the last 8 errors logged
?V	Displays the current software version

Autoexec.bat File

Parameters set in the Autoexec.bat file take precedence over those programmed previously.

You can use an Autoexec.bat file on the Compact Flash to configure WEBster or perform certain tasks each power-up.

Format of Autoexec.bat File

The following is an example of a typical Autoexec.bat file. It is a simple text file that can be edited using Notepad or any other simple text editor.

This particular Autoexec.bat file configures the IP addresses and other parameters of WEBster. Note the number fields are hexadecimal. For example, below the IP0=C0A8 means IP0=192.168 and IP1=00FE means IP1=0.254 for a combined IP address of 192.168.0.254 in decimal. You can use Windows' calculator in Scientific mode to convert decimal numbers to hex by pressing the Hex radio button. Note: C0(hex) equals 192(decimal) etc...

```
[System]
DHCP=0
IP0=C0A8
IP1=00FE
[SMTP]
sender=nobody@alcorn.com
receiver=nobody@alcorn.com
host=alcorn.com
maillp0=D87A
maillp1=2809
[FTP]
FTP=1
[Gateway]
GWIP0=C0A8
GWIP1=0001
SUBMSK0=FFFF
SUBMSK1=FF00
[StartPage]
index.htm
```


Updating WEBster's Software

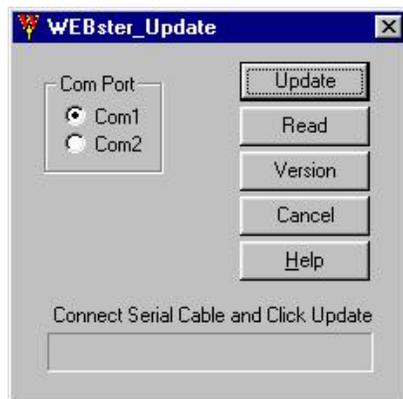
WEBster software updates are available from <http://www.alcorn.com/support/software.html>.

To update the operating system in WEBster, turn on the "Software Update" DIP switch and then cycle power or reset (DIP switch 1) WEBster. WEBster then waits for a software update via its serial port.

Updating Software Using the WEBster_Update.exe Utility

WEBster_Update.exe is available from <http://www.alcorn.com/support/software.html>.

Connect a null-modem serial cable between the PC and WEBster. On a Windows 98 or higher PC, use the program, "WEBster_Update.exe" to reprogram WEBster's operating system serially. The program is described below.



The file "WEBster.hex" must be in the same directory where WEBster_update.exe is installed.

Click on the "Update" button to download new a new operating system software image to WEBster.

The file "webread.hex" is saved in the same directory where WEBster_update.exe is installed.

Click on the "Read" button to upload WEBster's operating system software to your computer. This can be used to copy to other WEBsters that might need updating.

Click on "Version" to display the version of the operating system currently running.

Error Conditions

When WEBster first powers up, the Red LED will blink steadily for several seconds during initialization.

If the Red LED on the front of WEBster is flashing, an internal error condition has occurred. The type of error can be determined either serially or via a WEB page.

The Error LED is turned off whenever the error condition is queried either serially or via the WEB.

Determining Error Status Serially

Depending on how the serial port is configured in the Serial Port Setup WEB Page, the error messaging can be formatted in Alcorn McBride Show Control format or in plain ASCII/Hex.

Alcorn McBride Show Control Error Status Request

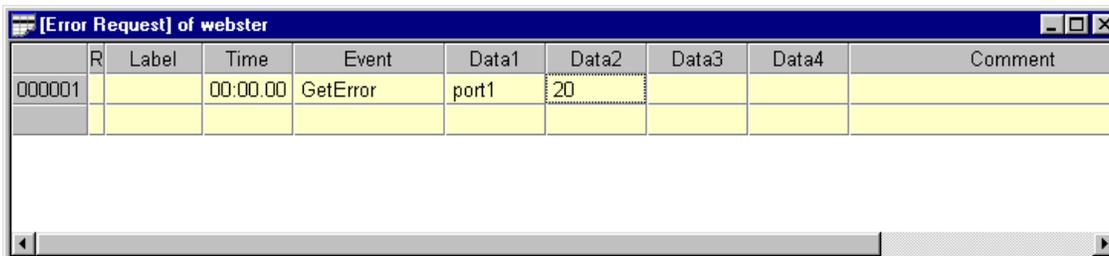
If selected in the Serial Port Setup WEB page, WEBster can send the SetVarEQ command containing the error code automatically, without requiring a GetError command.

To obtain the error status using an Alcorn McBride Show Controller, issue the GetError command, to which WEBster will respond with a Set Variable command (SetVarEQ) with the variable containing the error code. The show controller can then initiate an error sequence based on the value of the variable.

Below is a screenshot of a WinScript sequence showing how to send a GetError command to WEBster. In this example, port1 of the show controller has been configured for WEBster, and the WEBster protocol file assembles a valid message.

Please refer to the Alcorn McBride Show control Manual for more details on the SetVarEQ command.

This example shows that var20 has been chosen to contain the error code returned from WEBster.



R	Label	Time	Event	Data1	Data2	Data3	Data4	Comment
000001		00:00.00	GetError	port1	20			

Important Note: If enabled, the Real-Time Clock message also alters the values of variables in the show controller. Be sure to choose a unique variable that is not affected by the Real-Time Clock operation.

ASCII/Hex Formatted Error Status Request Message

If selected in the Serial Port Setup WEB page, WEBster can send the error code automatically, without requiring a GetError command.

The ASCII/Hex form of the GetError command consists of a single command byte followed by a null character. The format of the message is as follows:

<0xFB><0x00>

where:

Byte	Meaning
0xFB	command byte that WEBster recognizes as the start of an GetError message
0x00	ASCII null

WEBster responds to this error request command with the following:

<error_code><CR>

where:

Byte	Meaning
error_code	Byte containing the error code (see below)
<CR>	ASCII carriage return (equal to hex 0x0d)

Error Codes

Error Code	Error Description
0	No error exists.
1	Unrecognized serial message received.
2	Ethernet timeout – an IP address WEBster is trying to connect to is unreachable.
3	File access error (file not found, media full, media error)
4	Email error (unable to send email)
5	Unable to read compact flash.
6	
7	
8	
9	
100	Unknown error.

Accessing Error Status via the WEB

Below is an example of WEBster's Error Status WEB page. It is accessible from the logon page, and lists the last 10 errors that have occurred.

TBD

[screen shot of Error Status page]

Troubleshooting Guide

Follow the guide below to solve the most common problems encountered.

No.	Checkpoint	Y/N	Solution
1	Does the Red LED flash after bootup?	NO	No errors were encountered.
		YES	WEBster could be trying to find a Gateway connection that is not responding. Reset the address/password using the DIP switch and re-boot. If the flashing Red LED stops, you may have had the wrong Gateway address assigned or the Gateway is not responding.
2	Is the LAN LED on and is the LINK LED flashing with short pulses?	NO	No network connection is detected. The Ethernet cable is either not plugged in or wrong type of cable is used. For connection to a network with a hub or switch, a normal network cable can be used. For direct connection to a PC network card, a null-cable must be used.
		YES	A network connection is detected. WEBster is connected to the network.
3	Does WEBster respond to PING requests? Type: ping 192.168.0.254 at a DOS command prompt. Replace the IP address shown above with the one you previously configured WEBster with.	NO	Reset WEBster's IP address using the DIP switch on the back of the unit and try again. Make sure that your PC does not have a subnet mask set up which would mask WEBster's IP address. Contact your Network Administrator to determine if this is the case. Make sure that your PC does not have a software firewall program installed which is blocking WEBster's IP address.
		YES	The PC and WEBster are set up with a correct IP address and they are able to communicate with each other.
4	Can WEBster communicate with a DOS FTP program?	NO	The Username and Password being used are incorrect. Reset the Username and Password to default by using the DIP switch on the back of the unit and try again.
		YES	The user has access to the Compact Flash file system.
5	Can the sample WEB pages be accessed in a WEB browser?	NO	This is normally caused by the setup of the WEB browser. In the "options" or "preferences" menu, check that the WEB browser is configured for direct network connection of local area network and NOT using a proxy server. Also, make sure (using FTP above) that there is a valid "index.htm" file on the Compact Flash. This is the first WEB page that is displayed.
		YES	No problems.

For the answers to other questions, check out the Alcorn McBride Knowledge Base at <http://www.alcorn.com/kb>

If you don't find it there, please email our technical support staff at support@alcorn.com

Specifications

Ethernet: 10BaseT
TCP/IP
FTP
SMTP (Email)
HTTP 1.1
ARP, UDP, ICMP

Serial RS232C
9600,N,8,1
9600,N,9,1 (for Alcorn McBride Show Control)

Power: 6 VDC to 9 VDC at 1 Amp max
Adapter for 115 or 230 volts provided
115/230 volts, 50/60 Hz, 30 W max

Physical: TBD

Indicators: LAN LED
Link LED
4 user-programmable LEDs

Controls: 8 position DIP switch
Reset
RTC clock output mode
Address/Password Reset
Format media
DHCP Enable
Serial Port Mode
Test Mode
Update Firmware Enable

Connectors: RJ-45 10-Base T Ethernet connector.
DB-9M serial RS-232 connector
Barrel connector (2.5 mm x 5.5 mm x 10 mm) for power

Part Numbers

WEBster with 110/220 VAC Power Supply	230-100658.00
Spare 110/220 VAC Power Supply	798-001377.00
Compact Flash Docking Station for USB port	CFUSB-1
Compact Flash to PC-Card Adapter	CFPC-1
Compact Flash Media	Contact factory for sizes and part numbers
Micro Drive Media	Contact factory for sizes and part numbers
RS232 Cable	699-001138.00
Ethernet Cable (null)	699-000634.00

Appendix A: World Map of Time Zones

