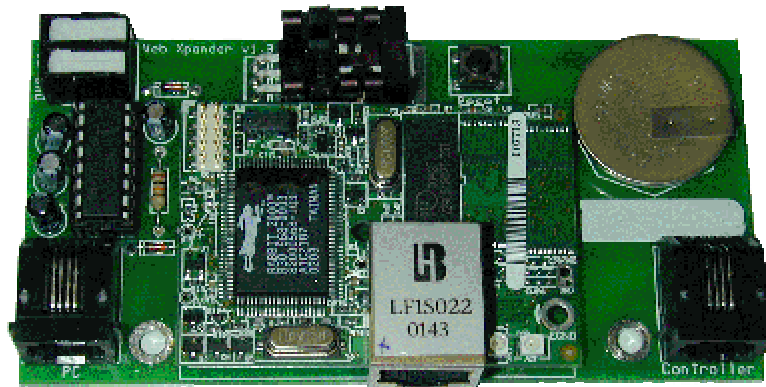


Web Xpander



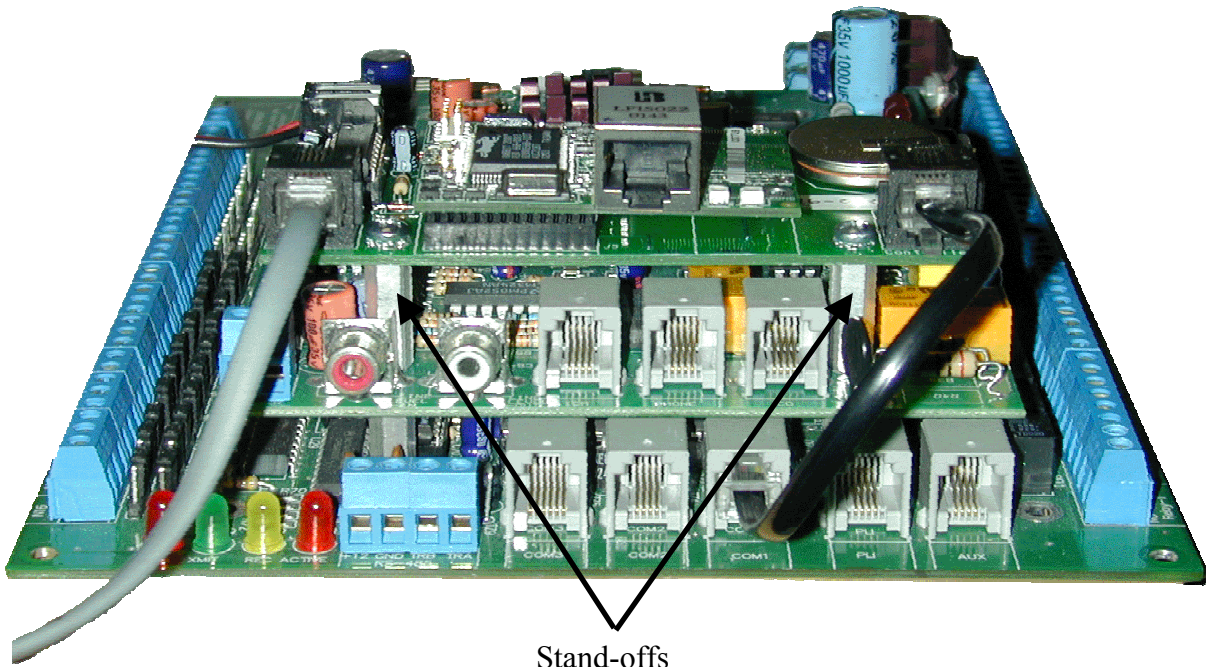
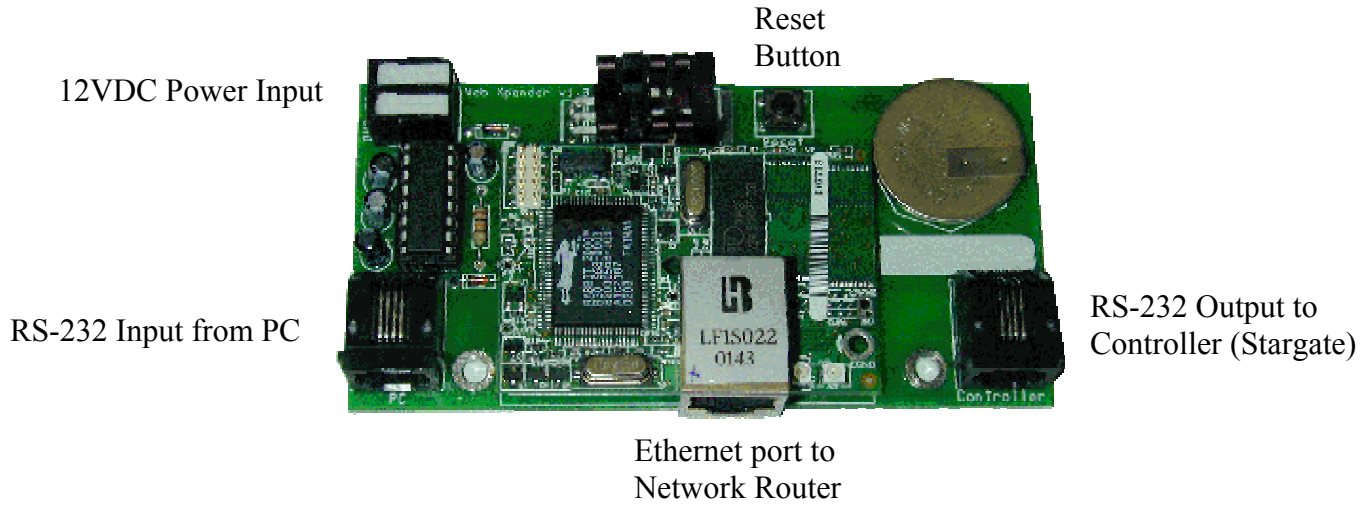
Installation and Operation Manual



12200 Thatcher Court, Poway, CA 92064
TEL 858-486-8787 FAX 858-486-8789
ONLINEJDS@AOL.COM
www.jdstechologies.com

Document Rev 1.0
December 2002

Web Xpander



Welcome to Web Xpander

Web Xpander is a serial (RS-232) to ethernet module with embedded web pages that allow monitoring and control of STARGATE via the internet and/or local area network (for downloading schedules see Appendix E). Web Xpander can also be used with STARGATE-Lite, TimeCommander-Plus, TimeCommander, CommStar and HomeBase controllers.

What's Included

- One Web Xpander circuit board
- One short modular data cable
- One each Red/Black power wires
- Two M/F standoffs (circuit board support posts)
- Two F/F standoffs (circuit board support posts)
- Four screws
- One CDROM with support documentation and software

What You Need

- STARGATE, WinEVM and modular data cable
- Home network – see “Network Connection” below
- Windows 95 or newer operating system (95/98/ME/NT/2000/XP)
- Web Browser – Microsoft Internet Explorer 5.0 or greater

Installing the Web Xpander

The Web Xpander is designed to attach directly to STARGATE's Telephone/Voice Board or to the main motherboard (STARGATE-Lite).

1. Unplug the STARGATE power transformer from the AC outlet
2. If you are using a 12V backup battery, disconnect the battery from the STARGATE “BATTERY +12V” and “BATTERY GND” terminals.

Mounting to STARGATE's Telephone/Voice Board

- 3a. Remove the two screws from the Telephone/Voice board at the end nearest the phone jacks. Using the supplied two standoffs that have screw holes on the top and exposed threads on the bottom, attach the standoffs to the Telephone/Voice board as shown in the photo. (Continue with step 4)

Mounting to STARGATE-Lite (no Telephone/Voice Board)

- 3b. Using the supplied two standoffs that have screw holes on both sides, and two of the supplied screws, attach the standoffs to the STARGATE main circuit board in the two holes just behind the row of serial ports as shown in the photo.
4. Place the Web Xpander on top of the standoffs with the network and serial jacks facing the same direction as the STARGATE jacks and attach with two screws as shown in the photo.
5. Connect the supplied red and black pair of wires from the “**Aux 12V**” terminals to the corresponding terminals on the Web Xpander board. Use the red wire for +12 and the black wire for ground.
6. Remove the data cable from the STARGATE jack labeled COM1 (the other end is connected to your PC/WinEVM) and plug this end into the jack on the Web Xpander labeled “PC”.
7. Plug one end of the short black data cable into the STARGATE jack labeled COM1
8. Plug the other end of the short black data cable into the black telephone type jack on the Web Xpander labeled “Controller”.
8. If you are using a 12V backup battery, re-connect the battery to the STARGATE
9. Plug the STARGATE power transformer into an AC outlet

Network Connection

The Web Xpander can be connected to a network in many ways. The most common methods are:

- Direct connection to a single PC using a cross-over cable
- Connection to a network hub which is connected to one or more PCs
- Connection to a Cable/DSL Router which provides internet access to both the Web Xpander and PCs on the local network (Ideal Configuration).

1. Direct Connection to a Single PC

This method is applicable in situations where you simply want to communicate with the Web Xpander from a web browser on a local PC. To connect to the Web Xpander in this manner you will need a **crossover** network cable. This cable is very similar in function to a null-modem cable used when connecting two PCs together using their serial ports. A standard ethernet network cable is wired differently and will not work in this configuration.

2. Connection to a Network Hub

This method is common in both large and small networked environments. Connect the Web Xpander to the hub using a standard RJ-45 network cable. Connect any other computers to the hub, also using standard network cables. The Web Xpander will be accessible (once configured) by other computers connected via the hub.

3. Connection to a Cable/DSL Router

This is the most ideal situation in that it allows you to access your STARGATE via the Web Xpander from your home network as well as anywhere on the internet once you've configured both the Web Xpander and your router. In most cases, the router will also act as a DHCP server and provide the initial network settings for the Web Xpander.

Network Configuration

Every device on a TCP/IP network must have a unique IP address. IP addresses are always numeric and in the format xxx.xxx.xxx.xxx. The default Web Xpander IP address is “**192.168.0.5**” (if no DHCP server was found). Most home cable/dsl routers default to “192.168.0.1” for the router and dynamically assign addresses (using DHCP) to PCs starting from “192.168.0.100”.

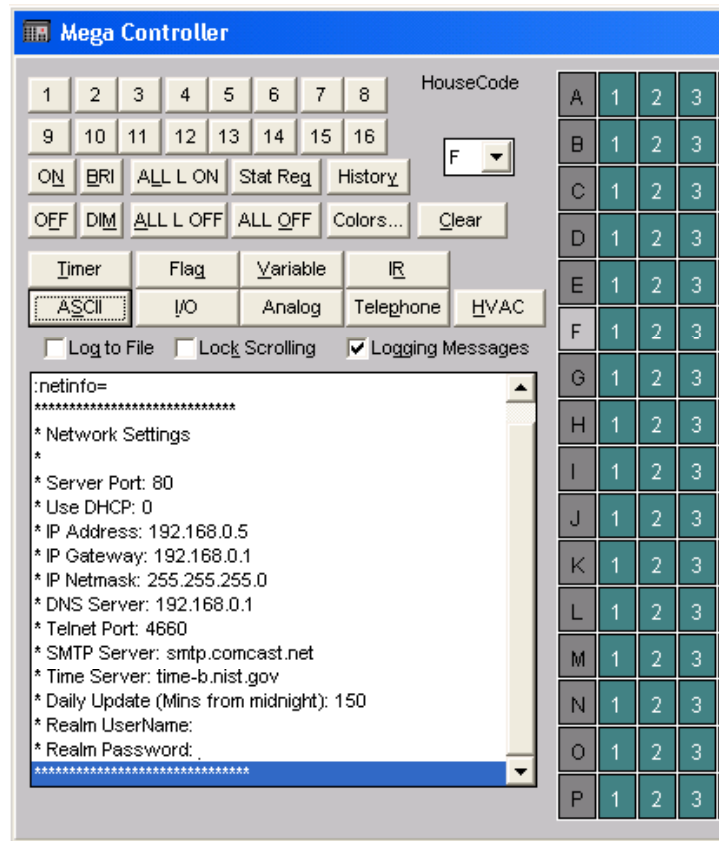
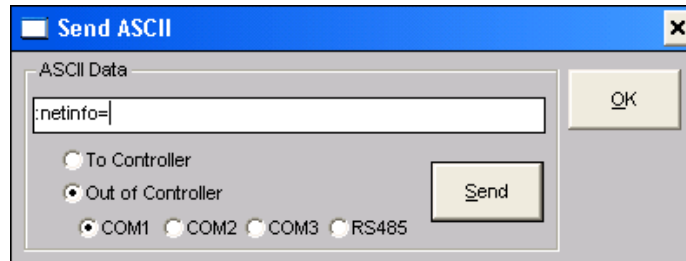
When you first power up the Web Xpander (and after either a power loss or by pressing the small reset button) it will attempt to retrieve its network settings using DHCP unless you have disabled this feature.

DHCP stands for Dynamic Host Configuration Protocol. The principle is that a device that knows nothing about its own network settings sends out a broadcast saying, in effect, tell me what to do. The DHCP server is listening for these broadcasts, and responds with information containing the settings that device should have. Typically the information returned contains IP address, netmask, gateway and DNS settings. Most home Cable/DSL routers support DHCP “out of the box.”

After you've connected the Web Xpander and applied power to the STARGATE, run WinEVM on your PC. After WinEVM starts, click the MegaController button. A properly functioning MegaController dialog indicates that the data cables are correctly installed between the PC and the Web Xpander, and between the Web Xpander and the controller.

Viewing Current Network Settings

You can use the “:netinfo=” command to view the current network settings of the Web Xpander using WinEVM. From the MegaController screen, click ASCII and send the command “:netinfo=” (no quotes) out of the controller to COM1. The network settings should appear in the MegaController log window.



If your PC and Web Xpander are connected through a Cable/DSL router and your PC and router are already configured to use addresses in the range displayed, open a web browser and type “http://” followed by the IP Address displayed. (ex: <http://192.168.0.5>) in the address bar and press Enter. If everything is configured properly, you should be prompted for a username and password to access the Web Xpander. Both the default username and password are “webx”.

If your Web Xpander is connected using network configurations 1 or 2 (above) you may need to manually set the IP address of the PC or the Web Xpander.

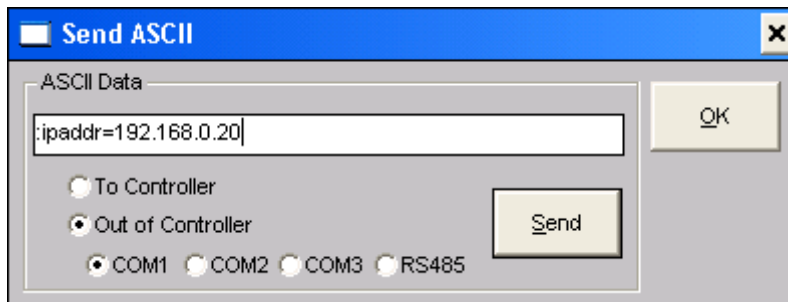
Manually Configuring Web Xpander Network Settings

You can send commands to the Web Xpander via the STARGATE by using the “ASCII” button on the MegaController in WinEVM.

1. Start WinEVM
2. Click the MegaController icon
3. Click the ASCII button
4. Select “Out of Controller” and “Com1”
5. Type one or more of the following network configuration commands to configure your Web Xpander to function on your network

Note: Once you can access the Web Xpander via the web (Internet Explorer) all of these settings are accessible from the “Settings” button.

A full listing of Web Xpander commands is available in Appendix A



Click “Send” to issue ASCII data.
Click “OK” to close.

“Send ASCII” dialog accessed by clicking ASCII from the WinEVM MegaController

Command	Description	Example
:ipaddr=	Sets the IP Address	:ipaddr=192.168.0.20
:ipmask=	Sets the Netmask	:ipmask=255.255.255.0
:ipgate=	Sets the Gateway Address	:ipgate=192.168.0.1
:dns=	Sets the DNS Address	:dns=192.168.0.1
:dhcp=	Enabled/Disables DHCP	:dhcp=1 or :dhcp=0
:smtp=	Sets the outgoing (SMTP) mail server name	:smtp=smtp.comcast.net
:user=	Sets the user name required for access	:user=myname
:pass=	Sets the password required for access	:pass=mypass
:webport=	Sets the port (default = 80) for the web server	:webport=80

:telnet=	Sets the port (default = 23) for telnet (Ethernet to Serial)	:telnet=23
:reset=	Resets the Web Xpander	:reset=
:netinfo=	Displays network settings	:netinfo=

The Web Xpander must be reset (either with the **:reset=** command or by pressing the reset button on the Web Xpander circuit board) for these changes to take effect.

Web Pages



When you access the Web Xpander with a web browser (Internet Explorer 5.0 or greater recommended) you'll see the main menu. The main menu consists of 16 buttons grouped in to four functional areas. Clicking on each button will display a web page particular to the button selected.

LIGHTING

Lighting		
Device Name	Set Level	Pre-Set Level
[A-1] Mara's Lamp		
Addr	Name	Status
A-1	Mara's Lamp	On Off Idle
A-5	Test 2-Way Lamp	On Off Idle
B-1	B1 Name	On Off Idle
I-1	Outside Lights	On Off Idle
I-2	Family Room Lamp	On Off Idle
I-3	Garage Light	On Off Idle
I-4	Garage Sensor	On Off Idle

Single click "On", "Off" or "Idle" to change status. Click device Name then select Set Level or Preset Level to adjust brightness.

A/V

A/V	
Outputs: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/>	
IR	Name
1	VCR Power
2	TV Power
255	Device 255
256	Device 256
500	Device 500

Select Output then single click on the Name to send IR command.

SECURITY

Security		
Commands ARM partition in Home Mode ARM partition Disarm partition Bypass zone Un-Bypass zone <input type="button" value="Send Command"/>	Partitions <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8	Zones Security Zone #1 Security Zone #2

Select security Command and Partition or Zone then click “Send Command.”

HVAC

HVAC								
Zone	Name	Temp	Set Temperature			Mode	Fan	
1	Main Zone	79°	72	<input type="button" value="Set"/>	<input type="button" value="Inc"/>	<input type="button" value="Dec"/>	Off	Auto

Type in or click Inc/Dec to adjust Set Temperature then click “Set” to apply.

X10

HouseCode															
1	2	3	4	5	6	7	8	HouseCode							
9	10	11	12	13	14	15	16	I							
<input type="button" value="ON"/>		<input type="button" value="BRI"/>		<input type="button" value="ALL L ON"/>		<input type="button" value="Stat Req."/>		<input type="button" value="History"/>							
<input type="button" value="OFF"/>		<input type="button" value="DIM"/>		<input type="button" value="ALL L OFF"/>		<input type="button" value="ALL OFF"/>		<input type="button" value="Clear"/>							
11/12 22:00:06 Xmit-I 2 (Family Room La 11/12 22:00:06 Xmit-I ON 11/12 22:00:11 Xmit-I 3 (Garage Light) 11/12 22:00:12 Xmit-I OFF 11/12 22:13:51 Recv-I 2 (Family Room La 11/12 22:13:51 Recv-I ON 11/12 22:25:40 Recv-I 2 (Family Room La 11/12 22:25:41 Recv-I OFF 11/13 04:29:12 Recv-I 1 (Outside Lights 11/13 04:29:13 Recv-I OFF 11/13 06:42:00 Xmit-I 1 (Outside Lights 11/13 06:42:00 Xmit-I OFF 11/13 08:15:04 Recv-I 3 (Garage Light) 11/13 08:15:05 Recv-I ON 11/13 08:15:08 Recv-I 4 (Garage Sensor)															

Device Label	House	Unit	Command	Level												
[I-3] Garage Light	I	3	On													
A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
G	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
H	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
K	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
O	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

DIGITAL

Digital Inputs (Controller)		
Input	Name	Status
1	Digital In 1	OFF
2	Digital In 2	OFF

ANALOG

Analog Inputs (Controller)		
Input	Name	Value
1	Analog In 1	19
2	Analog In 2	19

RELAY

Relays (Controller)			
Relay	Name	Status	
1	Relay 1	ON	OFF
2	Relay 2	ON	OFF
8	Relay 8	ON	OFF

Single click “On” or “Off” to change the status of a relay.

FLAG

Flags 1-128		
#	Name	Status
1	Flag 1	Set Clear Idle
2	2	Set Clear Idle
3	3	Set Clear Idle
4	4	Set Clear Idle
5	5	Set Clear Idle
6	6	Set Clear Idle
7	7	Set Clear Idle
8	8	Set Clear Idle
9	9	Set Clear Idle
10	10	Set Clear Idle
30	30	Set Clear Idle

Flags 129-256		
#	Name	Status
256	Flag 256	Set Clear Idle

Single click “Set”, “Clear” or “Idle” to change status of a flag.

VARIABLE

Variables			
#	Name	Value	
1	Test Variable 1	34	Load Clear Inc Dec
2	Variable 2	0	Load Clear Inc Dec
10	Variable 10	200	Load Clear Inc Dec
256	Variable 256	0	Load Clear Inc Dec

Type in or click Inc/Dec to adjust variable value then click “Load” to apply.

Green “Clear” button indicates a value of zero. Red “Load” button indicates a value greater than zero.

TIMER

Timers		
Timer	Name	Value
1	Jeff Timer 1	00:00:00
2	2nd Timer	00:00:00
3	3	00:00:00
4	4	00:00:00
5	5	00:00:00
6	6	00:00:00
7	7	00:00:00

ASCII

Send ASCII Data

To Controller Out of Controller

COM1 COM2 COM3 RS485

Click "Send" to issue ASCII data.

HISTORY

History

11/13 20:20:40 Recv-I 3 (Garage Light)
11/13 20:20:41 Recv-I ON
11/13 20:21:19 Recv-I 3 (Garage Light)
11/13 20:21:19 Recv-I ON
11/13 20:21:39 Recv-I 3 (Garage Light)
11/13 20:21:40 Recv-I ON
11/13 20:21:55 Recv-I 3 (Garage Light)
11/13 20:21:56 Recv-I ON
11/13 20:22:08 Recv-I 3 (Garage Light)
11/13 20:22:08 Recv-O ON
11/13 20:22:20 Recv-I 4 (Garage Sensor)
11/13 20:22:21 Recv-I ON
11/13 20:27:26 Recv-I 3 (Garage Light)
11/13 20:27:26 Recv-I OFF
11/13 21:02:19 Recv-A 1 (Mara's Lamp)
11/13 21:02:19 Recv-A ON
11/13 21:19:19 Recv-A 1 (Mara's Lamp)
11/13 21:19:19 Recv-A OFF
11/13 22:09:18 Recv-I 2 (Family Room Lamp)
11/13 22:09:18 Recv-I OFF

Activity Log Filtering

X-10
 X-10 (RCS Polling)
 Flags
 Timers
 Variables
 Digital Inputs
 Relay Outputs
 AV
 Telephone
 HVAC
 Security

MSG LOG

Message Log	
11/09 20:25:27	BIST
11/09 20:35:53	Last Download
11/10 13:08:04	Last Download
11/12 21:59:37	Last Download

TEL LOG

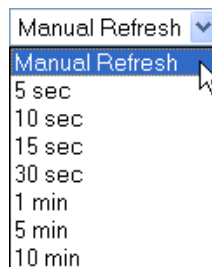
Telephone Log	
11/25 07:31	Long Dist Call (0 min 14 sec) 18005551
11/25 07:33	Long Dist Call (0 min 14 sec) 18584868
11/25 07:33	Long Dist Call (0 min 21 sec) 18009835
11/25 11:09	Local Call (1 min 22 sec)
11/25 12:17	CID XXXXXXXX
11/25 12:18	CID XXXXXXXX
11/25 12:20	CID XXXXXXXX
11/25 12:24	Private Number

SETTINGS

Web Xpander Settings	
User Name	<input type="text" value="webx"/>
Password	<input type="password" value="••••"/>
5 min Direct Access	<input type="button" value="Start"/>
Auto Network Config (DHCP)	<input type="checkbox"/> Enabled
WebX IP Address	<input type="text" value="192.168.0.5"/>
Gateway	<input type="text" value="192.168.0.1"/>
Netmask	<input type="text" value="255.255.255.0"/>
Name (DNS) Server	<input type="text" value="192.168.0.1"/>
Web Server Port	<input type="text" value="80"/>
Pass-Thru (Telnet) Port	<input type="text" value="23"/> <input type="checkbox"/> Toshiba SG-20 Support
Outgoing (SMTP) Mail Server	<input type="text" value="smtp.comcast.net"/>
Internet Time Server	<input type="text" value="time-b.nist.gov"/>
Daily Time Update	<input type="text" value="3:30am"/> ▼
Last Successful Time Update	None since last Web Xpander restart.
<input type="button" value="Save"/>	

Auto Page Refresh

The Lighting, HVAC, X10, Digital, Analog, Relay, Flag, Variable, Timer, History, Msg Log and Tel Log pages have a drop-down box at the bottom of each page. Selecting a refresh interval from this box will cause the selected page to automatically reload its contents from the Web Xpander. To disable auto-refresh for a given page, select “Manual Refresh” from the list. Each page can have its own refresh interval.



Web Xpander Labeler

The Web Xpander Labeler is a Windows utility that reads your device names from WinEVM and imports them into the Web Xpander. To install, run **WebXLabel1.exe** located on the CD-ROM (also available on the JDS Technologies web site). After you've used this tool to import your custom labels, your defined device names will appear on the web pages. The Web Xpander only shows data for devices that you have named/labeled in WinEVM or have manually defined in the Labeler tool.

Quick Start Instructions

- Click the "Import from WinEVM" button to begin the process. When prompted, select the "DEVICE.DBF" file from your WinEVM directory. The defined labels will then be imported into the Web Xpander Labeler application.
- Click "Send to Web Xpander" to send these labels to the Web Xpander. This process uses the same serial cable and communications port as WinEVM to communicate with the controller so WinEVM must not be running when you send labels to the Web Xpander.

Advanced Features

- Click "Options", "Configuration" to view or change the PC COM port.
- Click "Options", "Advanced" to view or edit the imported labels.
- Click "File", "Load Default Labels" to load a pre-defined set of default labels. These labels are generic labels and have no relation to your WinEVM settings.

Appendix A – Web Xpander Commands

Command	Description	Example
:reset=	Resets the Web Xpander	:reset=
:ipaddr=	Sets the IP Address	:ipaddr=192.168.0.20
:ipmask=	Sets the Netmask	:ipmask=255.255.255.0
:ipgate=	Sets the Gateway Address	:ipgate=192.168.0.1
:dns=	Sets the DNS Address	:dns=192.168.0.1
:dhcp=	Enabled/Disables DHCP	:dhcp=1
:smtp=	Sets the outgoing (SMTP) mail server name	:smtp=smtp.comcast.net
:user=	Sets the user name required for access	:user=myname
:pass=	Sets the password required for access	:pass=mypass
:webport=	Sets the port (default = 80) for the web server	:webport=80
:telnet=	Sets the port (default = 23) for telnet (Ethernet to Serial)	:telnet=23
:time=	Sets the internet Time server for time synchronization	:time=time-b.nist.gov
:daily=	Sets the daily time sync in number of minutes from midnight	:daily=210 (i.e. 3:30am)
:netinfo=	Displays network settings	:netinfo=
:mailto=	Sets the email recipient	:mailto=myemail@yahoo.com
:mailfrom=	Sets the email sender	:mailfrom=myhouse@home.com
:mailsubject=	Sets the email subject	:mailsubject=Test Email
:mailbody=	Sets one or more lines of email text. This command can be sent multiple times up to 500 characters total.	:mailbody=Motion Sensor 1 Activated
:mailsend=	Sends the email	:mailsend=

Appendix B – Sending Email with the Web Xpander

Sending email with the Web Xpander is accomplished by sending ASCII commands from the controller (i.e. STARGATE) to the Web Xpander's serial port. The example below demonstrates sending an email when the alarm is disarmed.

EVENT: Send Email When Alarm Disarmed

If

Partition Not ARMED [Partition 1] TRANSITION

Then

ASCII-Out: ':mailto=mycellphone@yahoo.com' [COM1]

ASCII-Out: ':mailfrom=myhouse@home.com' [COM1]

ASCII-Out: ':mailsubject=Security' [COM1]

ASCII-Out: ':mailbody=Alarm System Disarmed' [COM1]

ASCII-Out: ':mailsend=' [COM1]

End

Appendix C – Managing a Dynamic Home Internet Address

Accessing the Web Xpander from the internet (i.e. outside your home network) requires router specific settings and configuration. Once you've properly routed incoming connections on port 80, for example, to the Web Xpander you need to know the IP address of your cable modem or DSL modem to connect to your location from the internet.

One easy way to determine your IP address is to start a web browser on an internet enabled PC within your home network and visit: <http://www.WhatIsMyIP.com/>

If your IP address is static, i.e. it never changes, you'll just use that address to access resources on your home network. If your IP address is dynamic, i.e. it changes periodically, there are a few options available for tracking it.

One free service available is <http://www.no-ip.com>. No-IP will allow you to create a domain name (i.e. <http://TheSmiths.no-ip.com>) which will automatically redirect to your home IP address. If you have a static IP address, you just register that address with No-IP and choose a domain name. If your home IP address changes, No-IP offers a free software utility that runs on an internet connected PC in your home and periodically updates No-IP with your dynamic IP address. Once this is established, you can use your created domain name to access your home from any internet connected PC.

Visit <http://www.No-IP.com> for more information.

Appendix D – Ethernet to Serial Bridge Functionality

The Web Xpander provides a method of sending/receiving serial data to/from the STARGATE via the Ethernet port using Telnet. Telnet is a terminal emulation program for TCP/IP networks. A telnet application comes with Microsoft Windows but you can also download other versions from the internet such as MochaSoft Telnet (<http://www.mochasoft.dk>).

The Web Xpander listens for incoming connections on a configurable port. The default telnet port is 23 but this can be changed on the Settings page.

To begin a telnet session, click “Start”, “Run” and type “telnet 192.168.0.5” (replacing 192.168.0.5 with the IP address of your Web Xpander. You should then be prompted for username and password which are the same as for the web pages. After entering a correct username/password you can type STARGATE commands (i.e. ##%07). Commands you type will be sent to the serial port of the STARGATE, and data received from the STARGATE will be sent via the network back to you.

Appendix E – Downloading WinEVM Schedules over a Network Connection

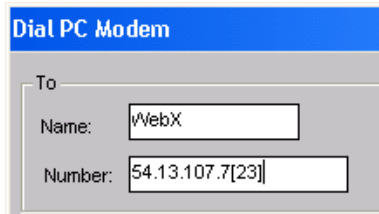
WinEVM has been successfully run over a network connection to the STARGATE using a product called COM/IP, distributed by PC Micro Systems.

<http://www.pcmicro.com/comip/>. This allows downloading of schedules via the internet and/or local area network.

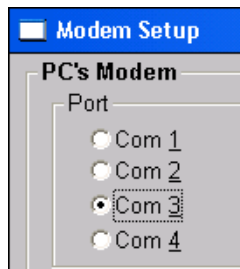
COM/IP creates a virtual serial port / modem on your PC that when “dialed” is actually making a connection over the network. Once configured, you can use the WinEVM “Dial PC Modem” function to connect to the STARGATE via the Web Xpander. WinEVM communicates through the virtual modem port created by COM/IP and functions as if you are connected to a STARGATE over a modem connection. All features, including schedule downloads, are possible in this configuration.

Configuring COM/IP and WinEVM

1. Download and install a 30-day trial version of COM/IP from <http://www.pcmicro.com/comip/>
2. Follow the installation instructions provided with the product to create a single com port (COM1, COM2, COM3 or COM4)
3. Start WinEVM and open the Dial PC Modem dialog box
4. Type anything you wish for the “Name:” and type the IP address of your Web Xpander in the “Number:” box. This is the IP address COM/IP will connect to.
5. If you’ve selected a Telnet port other than the default 23, you must place that value in brackets [] after the IP address. For example: 192.168.0.5[300]



6. Click the Modem Setup button and specify the COM port you selected in the COM/IP configuration.



7. Click OK to return to the “Dial PC Modem” window.

8. **** You must temporarily disable the username/password checking** for remote access before connecting. Open the Settings page in your web browser and click the “Start” button next to “5 min Direct Access”. This will disable the username/password prompt for 5 minutes so you can connect with COM/IP and WinEVM.
9. Return to WinEVM and click “Start” in the Dial PC Modem window to connect to the STARGATE via the Web Xpander.
10. Double-Click the COM/IP icon in the system tray (next to the clock) if necessary to display the COM/IP Port Monitor and select the Trace Window to diagnose connection problems.

