Wheatstone

Technical Document

Interfacing with DAD and Wheatstone Control Surfaces

Overview

This technical document is intended to give you general information about integrating ENCO Systems DAD (Digital Audio Delivery) with the Wheatstone Generation and Evolution Series Radio Control Surfaces. This information also applies to the D Series TV Control Surfaces. This control is network based using TCP/IP. The Interface does require the purchase of the Console Control option on the DAD software key. Contact your ENCO Sales Representative for more information.

What do I need to get started?

- Purchase Console Control Application and Serial I\O from ENCO Systems
- Download Latest Software from ENCO Systems

- Document IP addresses for the Generation or Evolution control surface and DAD PC to reference during setup.

Setup

Wheatstone

There is no additional setup required for your Wheatstone Generation or Evolution Control Surface. The necessary interface is enabled at the factory and is ready for use. The Console Communication port of 55777 is hard coded and cannot be changed.

Configuring DAD and the ENCO Console Control Application

Make sure you have the latest version of the Console Control application from ENCO systems. You may download the latest version from ftp.enco.com.

Start by creating a Wheatstone directory in C:\DAD and place the Console Control application files in the Wheatstone directory.

There are several INI files used by the interface application that allow the user to customize the level of control for their needs.

Configuring the DAD CFI file

DAD will communicate with the interface via the Send Text function. In the DAD CFI file set a Send Text port to the port used in the Interface and the local IP address. The CFI is located in the C:\DAD\FILES directory. The file name will vary depending on the location environment variable set on the workstation.

NOTE: Check key for Serial I/O support. Serial I/O is required for Send Text.
[SEND TEXT]

A_IO=UDP 4444 192.168.1.XXX (replace IP address with network scheme)

NOTE: There are no spaces around the equal sign in the CFI file.

You now need to decide how you will send the commands to the console interface Application. You can create Command Cuts using the Send Text DCL or you can put the commands in the workstations GPO file.

No matter which method you choose, the DCL's will contain a comment that is used by the application's DADText.INI file.
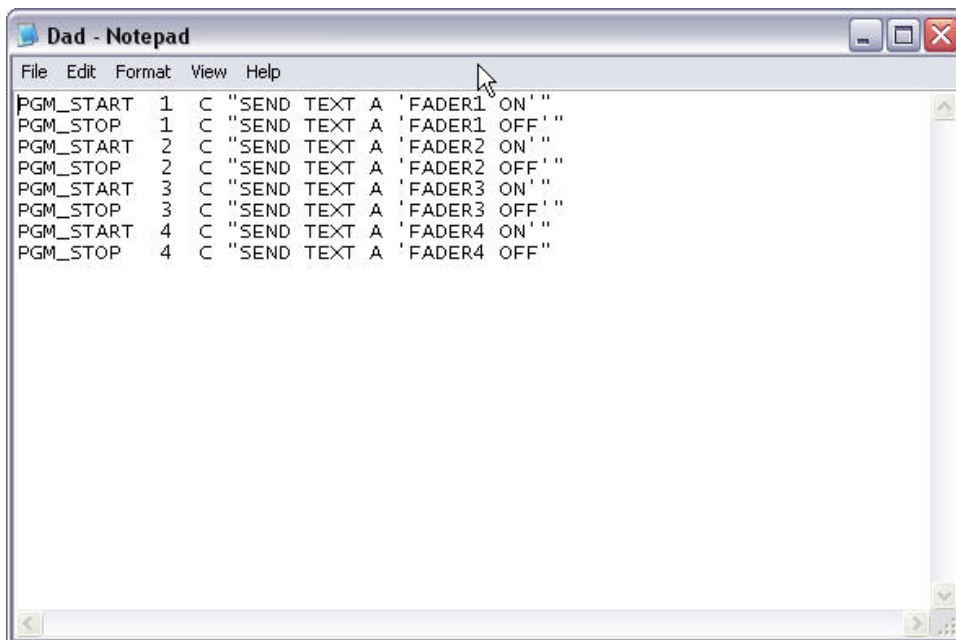
For example:
SEND TEXT A 'FADER1 ON'

The console interface contains a DADText file which contains:

"FADER1 ON" "<INPUT:1|ON:1>"

NOTE: More details on the interfaces DADText.INI file is below.

When the DCL containing FADER1 ON is sent from DAD to the interface, the interface will in turn send the string: <INPUT:1|ON:1> to the console, turning on fader 1.
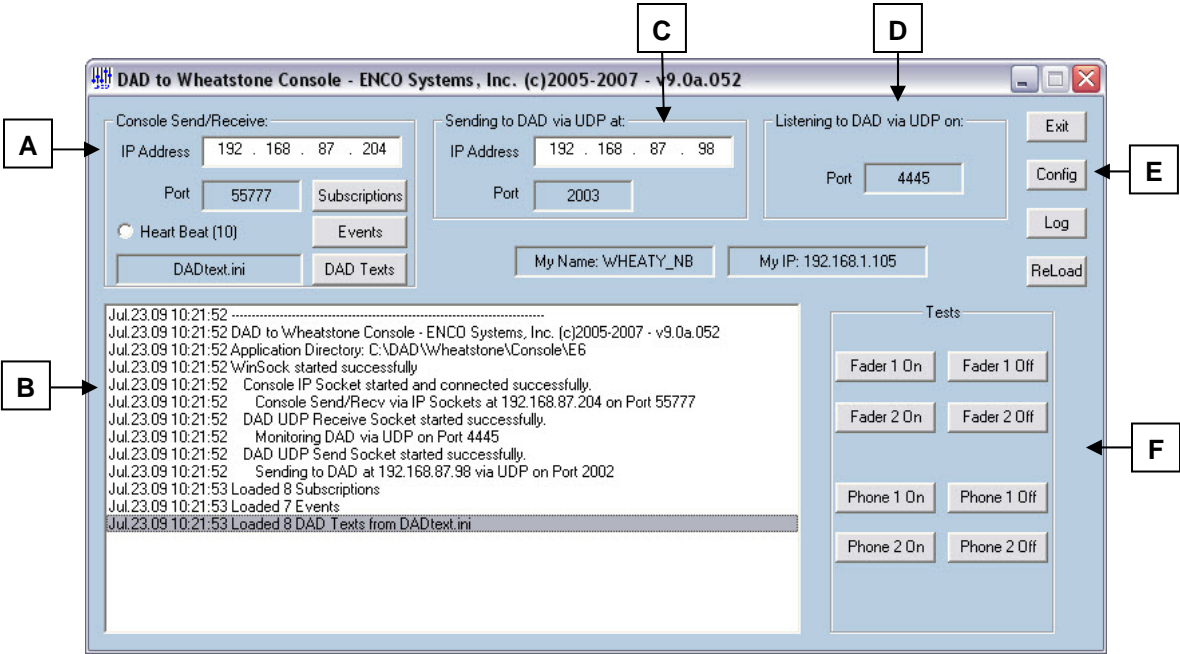

Below is a sample GPO file to show what a typical setup may be. Each Program start turning on its respective channel and the Program stop turning off the channel. This setup is assuming that your Playback is on static channels on the control surface.

```
Dad - Notepad
File  Edit  Format  View  Help
PGM_START  1  C "SEND TEXT A 'FADER1 ON'"
PGM_STOP   1  C "SEND TEXT A 'FADER1 OFF'"
PGM_START  2  C "SEND TEXT A 'FADER2 ON'"
PGM_STOP   2  C "SEND TEXT A 'FADER2 OFF'"
PGM_START  3  C "SEND TEXT A 'FADER3 ON'"
PGM_STOP   3  C "SEND TEXT A 'FADER3 OFF'"
PGM_START  4  C "SEND TEXT A 'FADER4 ON'"
PGM_STOP   4  C "SEND TEXT A 'FADER4 OFF'"
```

The following is an overview of the interface.

Buttons and Functions

ITEM	FUNCTION	DESCRIPTION
A	**Console Send/Receive**	
	Console IP / Port Address	**The IP Address and default port used by the Console. The port is defined in the Config.INI file and should match the port used by the console. This port cannot be changed.**
	Heart Beat (10)	**Displays the active Heartbeat connection between the interface and the console.**
	SUBSCRIPTIONS Button	**Opens the Subscriptions INI file. Subscriptions send a request to the server. The server will respond when an event happens to that source. More information about Subscriptions is below.**
	EVENTS Button	**Opens the Event INI file. Events are responses from the console subscription. Here one can relate that event to a DAD DCL. More information about Events is below.**
	DAD TEXTS Button	**Opens the DADText INI file. This file acts as a 'look up' table for DAD. DAD will send a declaration to this interface. This program will in turn send the declarations string to the console. More information about the DAD Text is below.**
B	**Process information screen**	**Here basic startup and connectivity messages are displayed. Any messages to / from the console can be displayed.**
C	**Sending to DAD via UDP at**	

	IP Address / Port Address	The IP Address and default port used by the DAD application. The port is defined in the Config.INI file. This could be 127.0.0.1for the local host adaptor.
D	Listening to DAD via UDP on	
	Port	The port used by DAD to send declarations.
E	EXIT Button	Exits and closes the program
	CONFIG Button	Opens the Config.INI. Here one can define the Console IP and Port, the DAD IP and Port plus the Heartbeat interval.
	LOG Button	This button opens the log files for the application. The application will create a log in the \Logs directory where the application is run from. The file will be in MMDDYY.txt.
F	Tests	
	Fader 1 On / Off	These buttons will turn on and off the respective button name.
	Fader 2 On / Off	
	Phone 1 On / Off	
	Phone 2 On / Off	

Overview of INI files

As mentioned previously in this document, there are several INI files used by the interface application that allow the user to customize the level of control for their needs. A brief description of each of these files is below.

Config.INI

The Config.INI file allows the user to define the IP Address and Port used by the control surface. The Console port of 55777 is set and cannot be changed. Here you can define the IP Address and Port used to communicate with DAD. The DAD configurations settings can be modified to fit your needs.

[General]

CONSOLE IP =192.168.1.14 (This address must match the Wheatstone Control Surface)

CONSOLE PORT =55777

TO DAD IP =10.66.66.35 (This IP address must match the DAD PC)

TO DAD PORT =2002

FROM DAD PORT =4444 (This port must match Send Text Port set in the DAD CFI File)

HEARTBEAT INTERVAL =10

HEARTBEAT COLOR =TRUE

HEARTBEAT TEXT =TRUE

The HEARTBEAT COLOR line can be set to FALSE to disable the changing of the text color within the display when the Heartbeat occurs.

The HEARTBEAT TEXT line should be set to FALSE for consoles that do not support the Display command. [For example the G3 and G4 series console]

Also, when set to FALSE, only the basic heartbeat will be sent. When set to TRUE, a line of text will be sent to Display 1 stating that the Heartbeat occurred at the time displayed.

NOTE: The Port number used in the line: FROM DAD PORT should be set the same as the SEND_TEXT_x_IO line in the DAD CFI.

The Heartbeat Interval should not be set to a time greater than 59 seconds. The console will timeout and close a TCP connection if it does not have any activity for more than 60 seconds. The heartbeat maintains the communications between the interface and the console by keeping an active TCP connection open.

It should also be noted that if the optional ENCO Provided Wheatstone Router Interface program is used, unique Ports should be used for each application.

Subscription.INI

The Wheatstone console requires the application to send a Subscription to an Input in order for a response to be given when that input changes state. This file allows the user to define the subscriptions as needed. The default INI file will contain an Input ON/OFF Subscription for faders 1 through 16, Subscriptions for Spare programmable buttons on the Console (if available), and optional Display messages (Not valid on Evolution Series Surfaces). It is recommended that subscriptions for only the channels you actually need be entered. Subscribing to channels that do not require control will generate unnecessary traffic on the network.

Users can add, modify, or remove subscription messages as needed. Further information about the subscription protocol is at the end of this document.

When this application starts, it will send ALL items within the *Subscription.INI* file to the console. If changes are made to the INI file, the application must be restarted for the changes to be sent to the Control Surface.

Examples of the subscription request lines within the default Subscription.INI are shown below.

<INPUTSUBSCRIBE:1|ON:1>

<INPUTSUBSCRIBE:2|ON:1>

<SPARESUBSCRIBE|BTN1:1>

<SPARESUBSCRIBE|BTN2:1>

<DISPLAY:1|COLOR:0><DISPLAY:1|TEXT:This is an LCD 1 message from 'the App'!>

<DISPLAY:2|COLOR:1><DISPLAY:2|TEXT:This is an LCD 2 message from 'the App'!>

If needed, subscribe to additional channels or buttons by adding the appropriate lines to this file.

Note that the Display entries are simply for notification that the application is talking to the console. If you wish to remove these lines, you are free to do so.

NOTE: *The spare button response will only be sent out if the Consoles options [G#_OPTS.TXT] file is set up for the spare button to be in mode 4 "Automation". Mode 4 is the only mode that ties the spare buttons to the TCP interface. All of the other modes are strictly for use with DIO logic signals.*

Events.INI

The Events.INI file contains the responses from the console subscription. When the application has subscribed to an event and that event takes place on the control surface, a response will be sent to the interface application. The interface application will then send a DCL Command to DAD.

Examples of the incoming requests lines within the default Events.INI are shown below.

"<INPUT_EVENT:1|ON:1>" "PLAY AIRPLAY1:disable GPI 1 for 2"

"<INPUT_EVENT:1|ON:0>" "STOP AIRPLAY1:disable GPI 2 for 2"

"<INPUT_EVENT:2|ON:1>" "PLAY AIRPLAY2:disable GPI 3 for 2"

"<INPUT_EVENT:2|ON:0>" "STOP AIRPLAY2:disable GPI 4 for 2"

"<SPARE_EVENT|BTN1:1>" "PLAY QUAD1"

"<SPARE_EVENT|BTN2:1>" "PLAY QUAD2"

The INI example above can be modified to fit your needs.

The syntax is as follows:

"<INPUT_EVENT:1|ON:1>" "PLAY AIRPLAY1:disable GPI 1 for 2"

"<INPUT_EVENT:1|ON:1>" is the response from the Console.

"PLAY AIRPLAY1:disable GPI 1 for 2" is the DCL Command that will be sent to DAD.

DADText.INI

The DAD Texts file can be thought of as a 'look-up' table. When a Send Text Command Cut is created, it will reference the phrase in the DADText.INI. The interface will then send the appropriate string to the console.

Examples of the DADText.INI entries are shown below.

"FADER1 ON" "<INPUT:1|ON:1>"

"FADER1 OFF" "<INPUT:1|ON:0>"

"FADER5 ON" "<INPUT:5|ON:1><DISPLAY:8|TEXT:DAD requested Fader 5 ON>"

"FADER5 OFF" "<INPUT:5|ON:0><DISPLAY:8|TEXT:DAD requested Fader 5 OFF>"

"PHONE1 ON" "<PHONE:1|ON:1><DISPLAY:5|TEXT:DAD requested Phone 1 ON>"

"PHONE1 OFF" "<PHONE:1|ON:0><DISPLAY:5|TEXT:DAD requested Phone 1 OFF>"

It should be noted that the Display entries are simply for notification that the application is talking to the console. If one wishes to remove these lines, they are free to do so.

NOTE: *The following commands are for Wheatstone consoles running software: 2.23 or later*

COMMAND	DESCRIPTION	EXAMPLE
HEARTBEAT	**Sent to the console every <:60 to keep connection alive**	**< >**
<SYS|TIME:HH:MM:SS>	**Sets the time of the console. Must be in exact hh:mm:ss.**	**<SYS|TIME:14.23.00>**
<SYS|TAKEPROG:eventname>	**Loads the Event session for the console.**	**<SYS	TAKEPROG:MATTENCO>**
<DISPLAY:n|TEXT:blah>	**This displays a single line of text at the bottom of the display.**	**<DISPLAY:1 |TEXT:DRINK TEA>**
<DISPLAY:n|COLOR:v>	**Changes the color of the above line.** *Valid color values are listed below.*	**SEND TEXT G '<DISPLAY:6 |COLOR:7>'**
<INPUT:n|ON:v>	**Set the Input fader number ON (1) or OFF (0).**	**<INPUT:1|ON:1>**

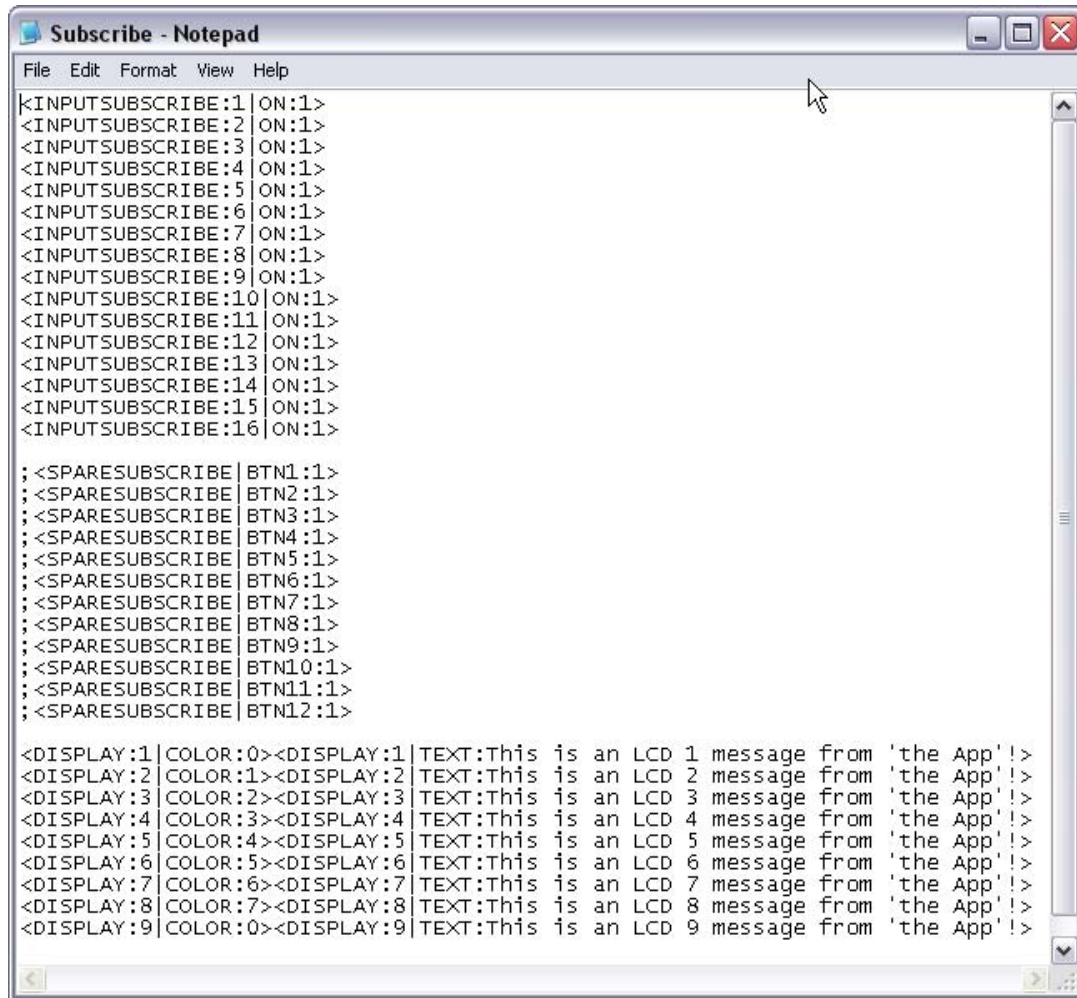|		
<INPUT:n|CUE:v>	Set the Input faders cue to ON (1) or OFF (0).	<INPUT:1|CUE:1>
<INPUT:n|PGM:v>	Set the Input fader to Program ON (1) or OFF (0).	<INPUT:1|PGM:1>
<INPUT:n|AUD:v>	Set the Input fader to Audition ON (1) or OFF (0).	<INPUT:1|AUD:1>
<INPUT:n|AUX:v>	Set the Input fader to Auxiliary ON (1) or OFF (0).	<INPUT:1|AUX:1>
<INPUT:n|UTL:v>	Set the Input fader to Utility ON (1) or OFF (0).	<INPUT:1|UTL:1>
<PHONE:n|same as above>	The PHONE faders can be set by using the same parameters and values listed above.	<PHONE:1|ON:0>
<INPUTSUBSCRIBE:n|event:1>	Sends a Subscription request to the Input Fader number for the event specified. Events could be ON, CUE, AUD etc. The value of 1 sets the Subscription ON.	<INPUTSUBSCRIBE:2|ON:1>
<SPARESUBSCRIBE|BTNn:1>	Sends a Subscription request to the programmable buttons on the console number for the event specified.	<SPARESUBSCRIBE|BTN1:1>

Color values for Console display

Color Value	Text Color	Background Color	Example Text
0	WHITE	GRAY BLUE	EXAMPLE TEXT
1	BLACK	RED	EXAMPLE TEXT
2	WHITE	DARK RED	EXAMPLE TEXT
3	BLACK	YELLOW	EXAMPLE TEXT
4	BLACK	GREEN	EXAMPLE TEXT
5	WHITE	DARK GREEN	EXAMPLE TEXT
6	WHITE	BLUE	EXAMPLE TEXT
7	BLACK	LIGHT GRAY	EXAMPLE TEXT

Sample Files

Below are the Samples of the default files you will receive from ENCO Systems.
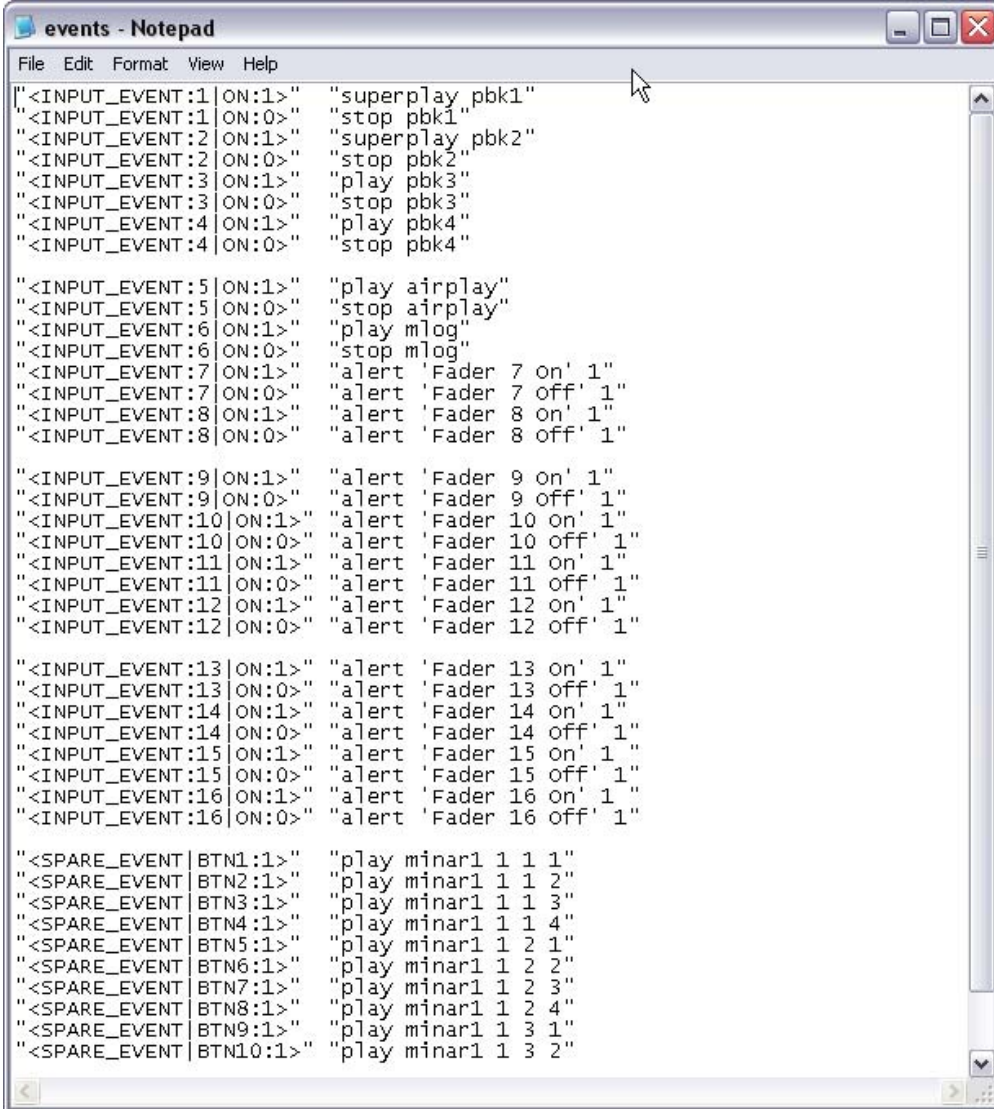
Subscription.INI

```
Subscribe - Notepad
File  Edit  Format  View  Help

<INPUTSUBSCRIBE:1|ON:1>
<INPUTSUBSCRIBE:2|ON:1>
<INPUTSUBSCRIBE:3|ON:1>
<INPUTSUBSCRIBE:4|ON:1>
<INPUTSUBSCRIBE:5|ON:1>
<INPUTSUBSCRIBE:6|ON:1>
<INPUTSUBSCRIBE:7|ON:1>
<INPUTSUBSCRIBE:8|ON:1>
<INPUTSUBSCRIBE:9|ON:1>
<INPUTSUBSCRIBE:10|ON:1>
<INPUTSUBSCRIBE:11|ON:1>
<INPUTSUBSCRIBE:12|ON:1>
<INPUTSUBSCRIBE:13|ON:1>
<INPUTSUBSCRIBE:14|ON:1>
<INPUTSUBSCRIBE:15|ON:1>
<INPUTSUBSCRIBE:16|ON:1>

;<SPARESUBSCRIBE|BTN1:1>
;<SPARESUBSCRIBE|BTN2:1>
;<SPARESUBSCRIBE|BTN3:1>
;<SPARESUBSCRIBE|BTN4:1>
;<SPARESUBSCRIBE|BTN5:1>
;<SPARESUBSCRIBE|BTN6:1>
;<SPARESUBSCRIBE|BTN7:1>
;<SPARESUBSCRIBE|BTN8:1>
;<SPARESUBSCRIBE|BTN9:1>
;<SPARESUBSCRIBE|BTN10:1>
;<SPARESUBSCRIBE|BTN11:1>
;<SPARESUBSCRIBE|BTN12:1>

<DISPLAY:1|COLOR:0><DISPLAY:1|TEXT:This is an LCD 1 message from 'the App'!>
<DISPLAY:2|COLOR:1><DISPLAY:2|TEXT:This is an LCD 2 message from 'the App'!>
<DISPLAY:3|COLOR:2><DISPLAY:3|TEXT:This is an LCD 3 message from 'the App'!>
<DISPLAY:4|COLOR:3><DISPLAY:4|TEXT:This is an LCD 4 message from 'the App'!>
<DISPLAY:5|COLOR:4><DISPLAY:5|TEXT:This is an LCD 5 message from 'the App'!>
<DISPLAY:6|COLOR:5><DISPLAY:6|TEXT:This is an LCD 6 message from 'the App'!>
<DISPLAY:7|COLOR:6><DISPLAY:7|TEXT:This is an LCD 7 message from 'the App'!>
<DISPLAY:8|COLOR:7><DISPLAY:8|TEXT:This is an LCD 8 message from 'the App'!>
<DISPLAY:9|COLOR:0><DISPLAY:9|TEXT:This is an LCD 9 message from 'the App'!>
```

Events.INI

```
events - Notepad

File  Edit  Format  View  Help

"<INPUT_EVENT:1|ON:1>"    "superplay pbk1"
"<INPUT_EVENT:1|ON:0>"    "stop pbk1"
"<INPUT_EVENT:2|ON:1>"    "superplay pbk2"
"<INPUT_EVENT:2|ON:0>"    "stop pbk2"
"<INPUT_EVENT:3|ON:1>"    "play pbk3"
"<INPUT_EVENT:3|ON:0>"    "stop pbk3"
"<INPUT_EVENT:4|ON:1>"    "play pbk4"
"<INPUT_EVENT:4|ON:0>"    "stop pbk4"

"<INPUT_EVENT:5|ON:1>"    "play airplay"
"<INPUT_EVENT:5|ON:0>"    "stop airplay"
"<INPUT_EVENT:6|ON:1>"    "play mlog"
"<INPUT_EVENT:6|ON:0>"    "stop mlog"
"<INPUT_EVENT:7|ON:1>"    "alert 'Fader 7 On' 1"
"<INPUT_EVENT:7|ON:0>"    "alert 'Fader 7 Off' 1"
"<INPUT_EVENT:8|ON:1>"    "alert 'Fader 8 On' 1"
"<INPUT_EVENT:8|ON:0>"    "alert 'Fader 8 Off' 1"

"<INPUT_EVENT:9|ON:1>"    "alert 'Fader 9 On' 1"
"<INPUT_EVENT:9|ON:0>"    "alert 'Fader 9 Off' 1"
"<INPUT_EVENT:10|ON:1>"   "alert 'Fader 10 On' 1"
"<INPUT_EVENT:10|ON:0>"   "alert 'Fader 10 Off' 1"
"<INPUT_EVENT:11|ON:1>"   "alert 'Fader 11 On' 1"
"<INPUT_EVENT:11|ON:0>"   "alert 'Fader 11 Off' 1"
"<INPUT_EVENT:12|ON:1>"   "alert 'Fader 12 On' 1"
"<INPUT_EVENT:12|ON:0>"   "alert 'Fader 12 Off' 1"

"<INPUT_EVENT:13|ON:1>"   "alert 'Fader 13 On' 1"
"<INPUT_EVENT:13|ON:0>"   "alert 'Fader 13 Off' 1"
"<INPUT_EVENT:14|ON:1>"   "alert 'Fader 14 On' 1"
"<INPUT_EVENT:14|ON:0>"   "alert 'Fader 14 Off' 1"
"<INPUT_EVENT:15|ON:1>"   "alert 'Fader 15 On' 1 "
"<INPUT_EVENT:15|ON:0>"   "alert 'Fader 15 Off' 1"
"<INPUT_EVENT:16|ON:1>"   "alert 'Fader 16 On' 1 "
"<INPUT_EVENT:16|ON:0>"   "alert 'Fader 16 Off' 1"

"<SPARE_EVENT|BTN1:1>"    "play minar1 1 1 1"
"<SPARE_EVENT|BTN2:1>"    "play minar1 1 1 2"
"<SPARE_EVENT|BTN3:1>"    "play minar1 1 1 3"
"<SPARE_EVENT|BTN4:1>"    "play minar1 1 1 4"
"<SPARE_EVENT|BTN5:1>"    "play minar1 1 2 1"
"<SPARE_EVENT|BTN6:1>"    "play minar1 1 2 2"
"<SPARE_EVENT|BTN7:1>"    "play minar1 1 2 3"
"<SPARE_EVENT|BTN8:1>"    "play minar1 1 2 4"
"<SPARE_EVENT|BTN9:1>"    "play minar1 1 3 1"
"<SPARE_EVENT|BTN10:1>"   "play minar1 1 3 2"
```
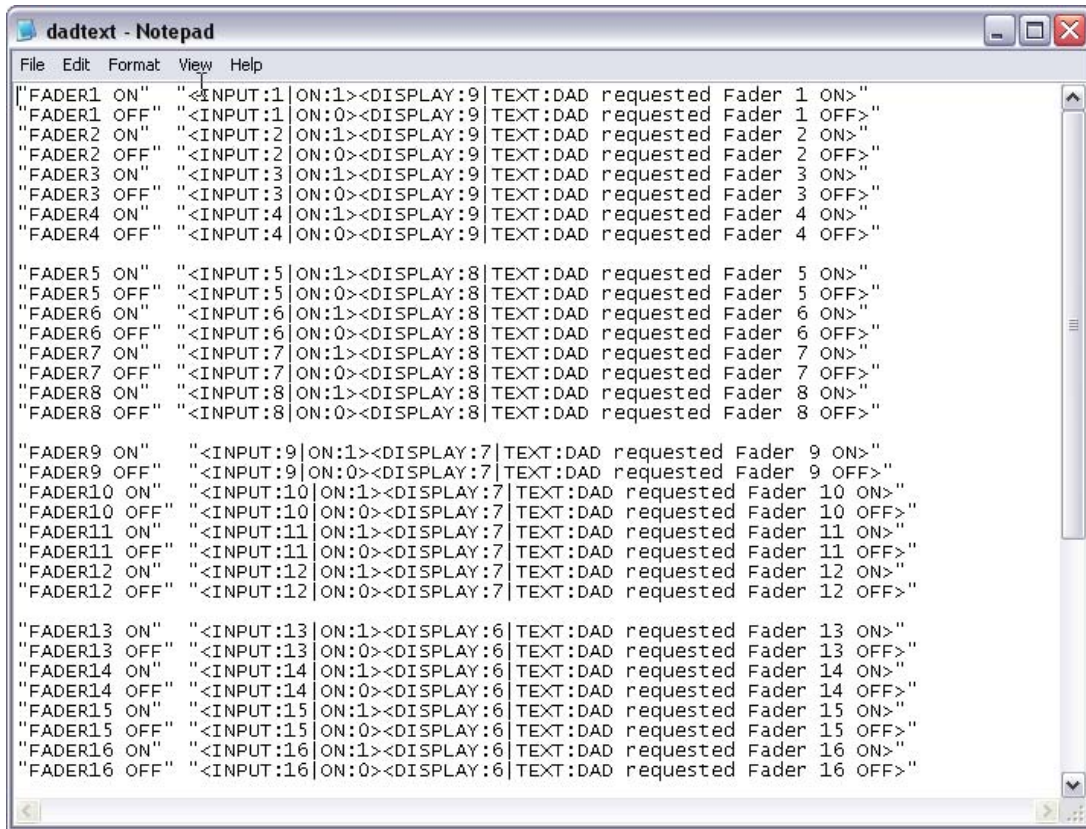
DADtext.INI

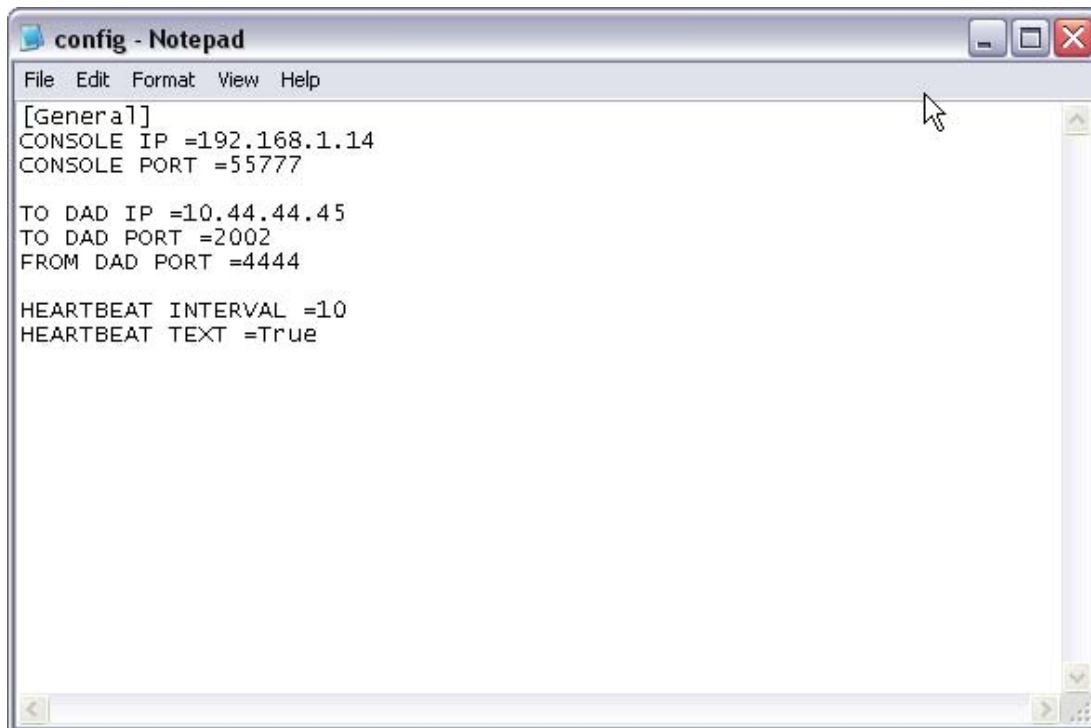```
dadtext - Notepad
File Edit Format View Help

"FADER1 ON"   "<INPUT:1|ON:1><DISPLAY:9|TEXT:DAD requested Fader 1 ON>"
"FADER1 OFF" "<INPUT:1|ON:0><DISPLAY:9|TEXT:DAD requested Fader 1 OFF>"
"FADER2 ON"   "<INPUT:2|ON:1><DISPLAY:9|TEXT:DAD requested Fader 2 ON>"
"FADER2 OFF" "<INPUT:2|ON:0><DISPLAY:9|TEXT:DAD requested Fader 2 OFF>"
"FADER3 ON"   "<INPUT:3|ON:1><DISPLAY:9|TEXT:DAD requested Fader 3 ON>"
"FADER3 OFF" "<INPUT:3|ON:0><DISPLAY:9|TEXT:DAD requested Fader 3 OFF>"
"FADER4 ON"   "<INPUT:4|ON:1><DISPLAY:9|TEXT:DAD requested Fader 4 ON>"
"FADER4 OFF" "<INPUT:4|ON:0><DISPLAY:9|TEXT:DAD requested Fader 4 OFF>"

"FADER5 ON"   "<INPUT:5|ON:1><DISPLAY:8|TEXT:DAD requested Fader 5 ON>"
"FADER5 OFF" "<INPUT:5|ON:0><DISPLAY:8|TEXT:DAD requested Fader 5 OFF>"
"FADER6 ON"   "<INPUT:6|ON:1><DISPLAY:8|TEXT:DAD requested Fader 6 ON>"
"FADER6 OFF" "<INPUT:6|ON:0><DISPLAY:8|TEXT:DAD requested Fader 6 OFF>"
"FADER7 ON"   "<INPUT:7|ON:1><DISPLAY:8|TEXT:DAD requested Fader 7 ON>"
"FADER7 OFF" "<INPUT:7|ON:0><DISPLAY:8|TEXT:DAD requested Fader 7 OFF>"
"FADER8 ON"   "<INPUT:8|ON:1><DISPLAY:8|TEXT:DAD requested Fader 8 ON>"
"FADER8 OFF" "<INPUT:8|ON:0><DISPLAY:8|TEXT:DAD requested Fader 8 OFF>"

"FADER9 ON"   "<INPUT:9|ON:1><DISPLAY:7|TEXT:DAD requested Fader 9 ON>"
"FADER9 OFF"   "<INPUT:9|ON:0><DISPLAY:7|TEXT:DAD requested Fader 9 OFF>"
"FADER10 ON"   "<INPUT:10|ON:1><DISPLAY:7|TEXT:DAD requested Fader 10 ON>"
"FADER10 OFF" "<INPUT:10|ON:0><DISPLAY:7|TEXT:DAD requested Fader 10 OFF>"
"FADER11 ON"   "<INPUT:11|ON:1><DISPLAY:7|TEXT:DAD requested Fader 11 ON>"
"FADER11 OFF" "<INPUT:11|ON:0><DISPLAY:7|TEXT:DAD requested Fader 11 OFF>"
"FADER12 ON"   "<INPUT:12|ON:1><DISPLAY:7|TEXT:DAD requested Fader 12 ON>"
"FADER12 OFF" "<INPUT:12|ON:0><DISPLAY:7|TEXT:DAD requested Fader 12 OFF>"

"FADER13 ON"   "<INPUT:13|ON:1><DISPLAY:6|TEXT:DAD requested Fader 13 ON>"
"FADER13 OFF" "<INPUT:13|ON:0><DISPLAY:6|TEXT:DAD requested Fader 13 OFF>"
"FADER14 ON"   "<INPUT:14|ON:1><DISPLAY:6|TEXT:DAD requested Fader 14 ON>"
"FADER14 OFF" "<INPUT:14|ON:0><DISPLAY:6|TEXT:DAD requested Fader 14 OFF>"
"FADER15 ON"   "<INPUT:15|ON:1><DISPLAY:6|TEXT:DAD requested Fader 15 ON>"
"FADER15 OFF" "<INPUT:15|ON:0><DISPLAY:6|TEXT:DAD requested Fader 15 OFF>"
"FADER16 ON"   "<INPUT:16|ON:1><DISPLAY:6|TEXT:DAD requested Fader 16 ON>"
"FADER16 OFF" "<INPUT:16|ON:0><DISPLAY:6|TEXT:DAD requested Fader 16 OFF>"
```

## Config.INI

```
config - Notepad
File  Edit  Format  View  Help

[General]
CONSOLE IP =192.168.1.14
CONSOLE PORT =55777

TO DAD IP =10.44.44.45
TO DAD PORT =2002
FROM DAD PORT =4444

HEARTBEAT INTERVAL =10
HEARTBEAT TEXT =True
```