TimeZone Delay Service

Customer Service

Support.

By Phone in Europe.

- Service is available from CloudCast Systems in the United Kingdom at +44 808 196 0362.

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- Service is available from CloudCast Systems in the United Kingdom at +61 7 5606 8211.

By E-Mail.

- The address is **support@cloudcastsystems.com.au.**

Online.

- The CloudCast Systems Web site has a variety of information which may be useful for product selection and support. The URL is **http://www.cloudcastsystems.com.au**.

Feedback

We welcome feedback on any aspect of CloudCast Systems products or this manual. Please contact us with your comments.

Updates

All of our products are undergoing constant improvement. Periodic updates may become available - to determine if this is the case, visit our web site periodically, or contact us for advice concerning whether a newer release is more suitable to your needs

Warranty

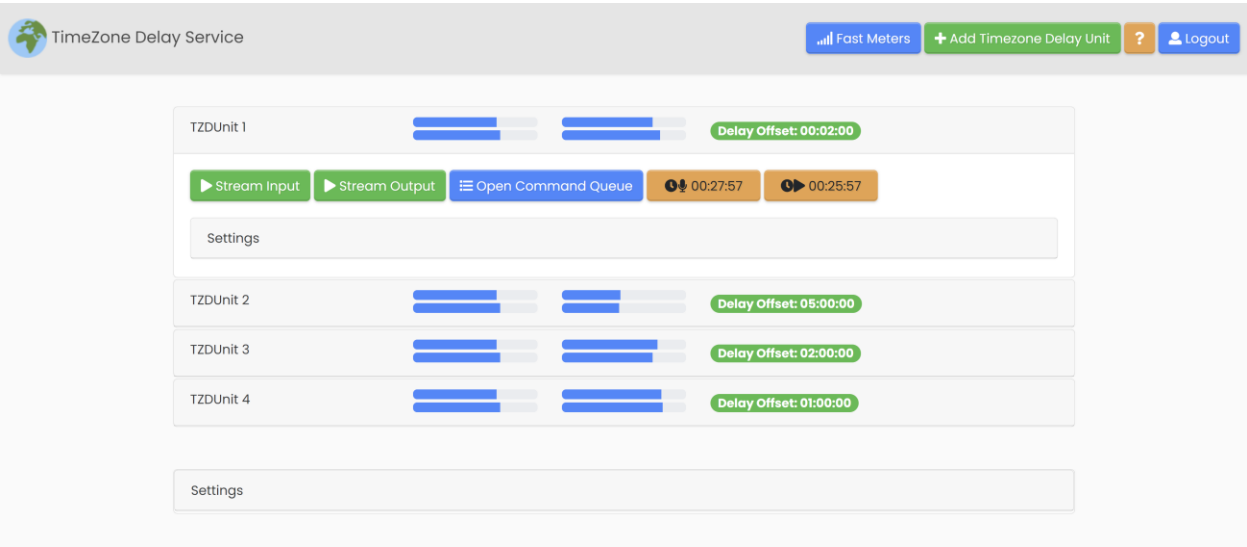
Please see Appendix C.

Contents

Date	Revision	Description	Initial
01/10/2020	1.0	Initial	
08/10/2020	1.1	Added Ember+ Update, Default server timezone	
11/11/2020	1.2	Added external syslog	
23/02/2021	1.3	Added extra information around DST offset changes	

Under the Hood

- 0 Seconds to 24 hours audio and data delay with 1 second granularity
- Runs as a service and managed through a html5 web interface
- SSL & TSL encryption for web server
- SOAP Api & TCP control protocol for external status and control.
- Run up to 4 units on a single windows machine.
- Shout cast stream pre and post delay audio via the Browser.
- Delayed TCP/UDP data ports for use with now playing and playout systems.
- Axia GPIO, Wheatstone ACI and Ember+ Protocols.
- Daylight saving scheduling.
- CommandQueue which allows users to edit/add and delete queued data.
- Verbose logging and external syslog capabilities



Getting Started – System Requirements

- Intel Core i7, Xeon, or Core i9 multicore processors specified for desktop or server applications.
- Physical Machines 2 CPU's, Virtual Platforms 4 CPU's
- System must have 8GB minimum RAM
- Operating system should be Windows 7, 8, 8.1,10 Server2012 R2 or Server2016
- TZDS Only support 64 bit operating systems
- Gigabit Ethernet LAN
- Microsoft .NET Framework 4.5
- PC Time must be locked to NTP Source

Hard drive Requirements

Hard drive selection is important when using physical hardware due to the amount of data being written to the drive. For best performance when selecting your hard drive, the following points should be taken into consideration:

1. Each Unit stores around 30 Gigabytes of audio, however data channels are an unknown quantity so it's important you understand how much TCP/UDP will be stored in a 24 hour period.
2. Use SSD over HDD
3. DWPD (Daily Writes Per Day) equal or greater than 1
4. TBW (Total Bytes Written) Factor of > 200

Virtual Machine Tips

Timezone Delay Service has been verified on the following virtual platforms

- VMware 6.5

To familiarize yourself with the VMWare environment, please read the following Technical White Papers (from VMWare):

- Deploying Extremely Latency-Sensitive Applications in VMware vSphere 5.5
- Best Practices for Performance Tuning of Telco and NFV Workloads in vSphere

When configuring VMWare for use with Timezone Delay Service, it is essential to use the latency sensitivity settings (mentioned in the white papers), and to follow the "100% reservation rule" for CPU and memory.

Keeping Time

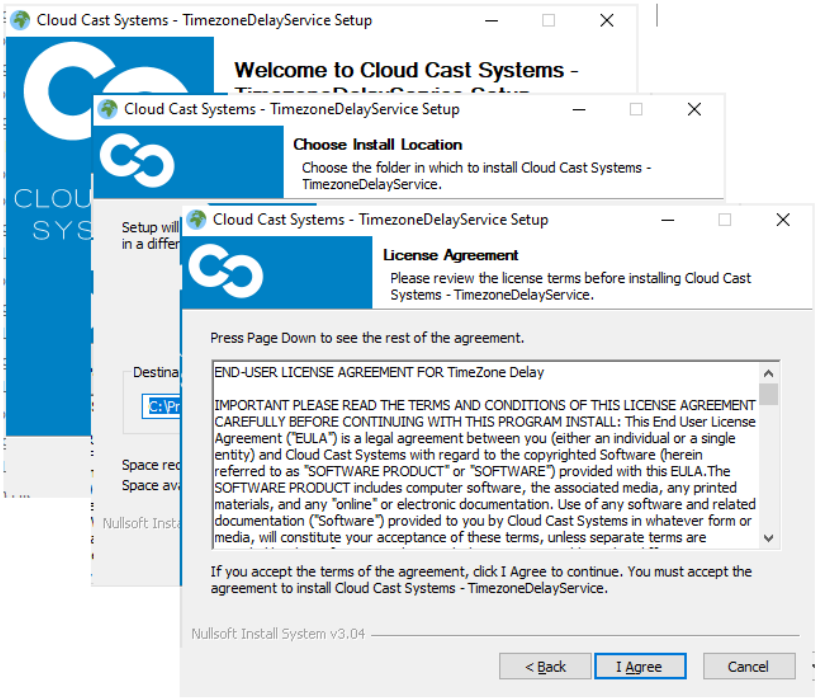
Its important that the operating system clock is locked to an NTP source, this can be either directly to a GPS or a domain controller. TZDS uses this clock to determine the average sample rate of the audio driver and makes ongoing corrections when the sample rate is not a perfect 48000 per second.

To ensure the windows time service doesn't apply large time changes we recommend using Tardis Time Sync to keep the offset changes small to ensure the sample rate averaging isn't impacted. For an installation guide on Installing Tardis Time Sync please download the guide from the here.

TZDS used the Surina Soundtouch library to apply a sample rate correction.

Getting Started - Installation

Getting started with TZDS is as simple as downloading TZDS from the cloud cast systems website and navigating through the standard installation procedure.

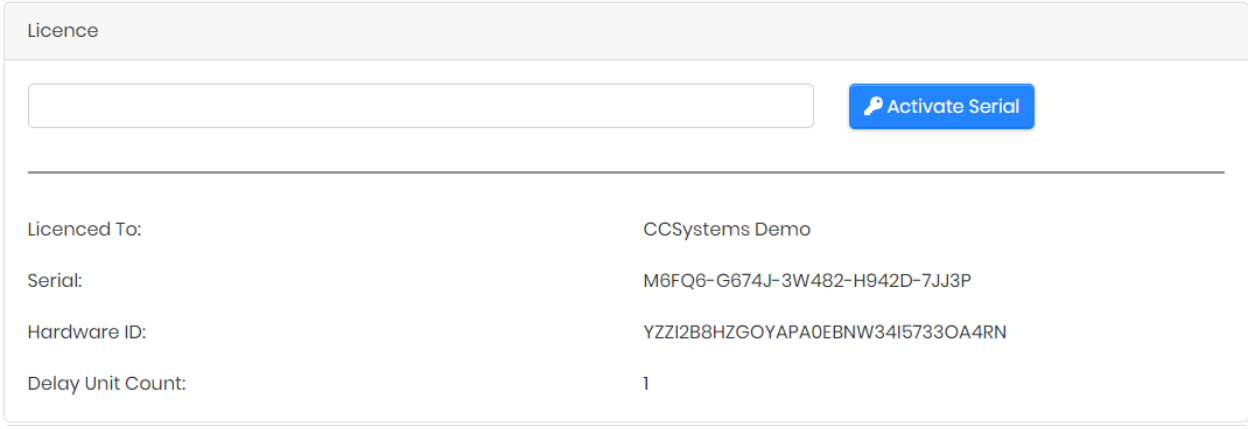


Getting Started – Registering License

Licensing for TZDS is done via online activation, this means that the machine TZDS is installed on requires access to the cloudcastsystems.com.au website. If your machine is unable to access the internet please contact support@cloudcastsystems.com.au for offline activation.

To Activate your copy of TZDS please following the procedure below:

1. Ensure TZDS service is running, the service is called "TimezoneDelayService".
2. In Google Chrome navigate to http://127.0.0.1:81 which will load the TZDS webserver.
3. If prompted enter the default login – username: **admin** password: **password.**
4. Navigate to Settings -> License and enter the serial number provided by CloudCast Systems.
5. Select Activate and wait until license server responds.



License To	Shows the name the software is activated for
Serial	Shows the serial used to activate the software
Hardware ID	Shows the Unique Hardware which locks the Serial to this machine
Delay Unit Count	Shows the amount of Delay Units that are able to be configured

Getting Started – Trial Activation

TZDS Allows for a trial license which is valid for 30 days from activation, trial activation is only valid if a license is unable to be found on the machine.

To Activate your trial license please follow the procedure below:

1. Ensure TZDS Service is running, the service is called "TimezoneDelayService".
2. In Google Chrome navigate to http://127.0.0.1:81 which will load the TZDS webserver.
3. Navigate to Settings -> License -> Register for Trial -> Enter your Email address Select Activate.
4. If Registration is successful, an email will be sent to your inbox asking you activate the trial. Select the Activate Link inside the body of the email to activate.
5. Re-Enter your email into the Register for Trial Dialog to Activate 30 Day Trial license.

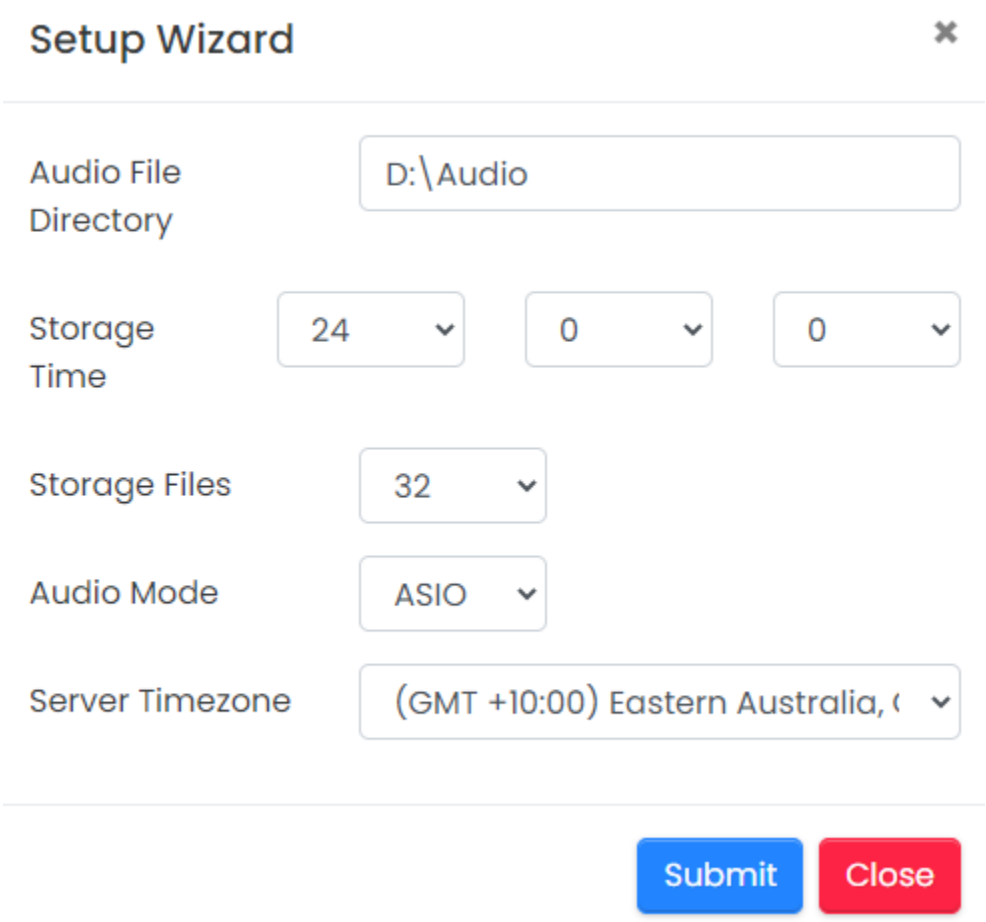
Getting Started – Setting up Delay Unit

Before you can use TZDS you must first setup the location of where the audio buffer will be stored.

Setup Wizard

When you first launch the TZDS web interface you'll be prompted with a simple setup wizard, its recommended that you setup a directory with the appropriate amount of space (30GB per unit) and select ASIO as the audio mode, both the storage time and storage files are defaults and should only be changed on the advice of our support team.

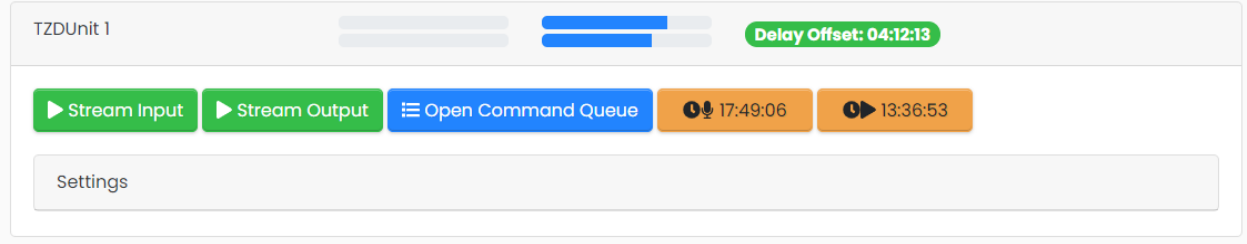
Server Timezone should be set to the servers normal non daylight saving Timezone.



Basic Operation

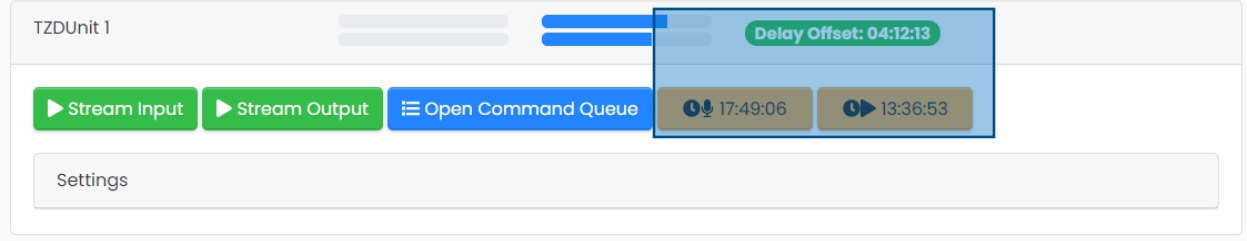
By default, TZDS has no delay units configured, to Add your first delay unit, navigate to the webserver and select “Add Delay Unit” button which is in the top right corner of the webpage.

Web Interface Buttons



Web Interface Buttons	
Opens CommandQueue for Delay Unit	Open Command Queue
Stream audio input	Stream Input
Stream audio output	Stream Output
Speed up meter updates from 1 second to 100ms	Slow Meters
Add Extra delay unit	Add Timezone Delay Unit
Launch help	?
User Log out	Logout

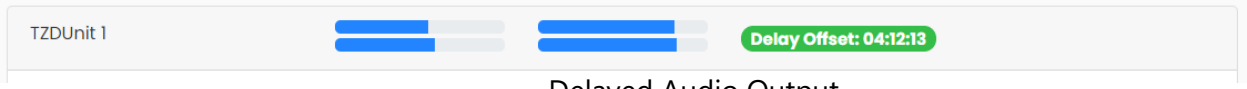
Web Interface Status



Current Delay Offset	Delay Offset: 00:45:00
Current Time Recording (Local Server Time)	17:56:59
Current Time Playing (Local Server Time)	17:11:59
Current Time (Delay unit Time offset time)	20:35:06

Audio Meters

Live Audio Input

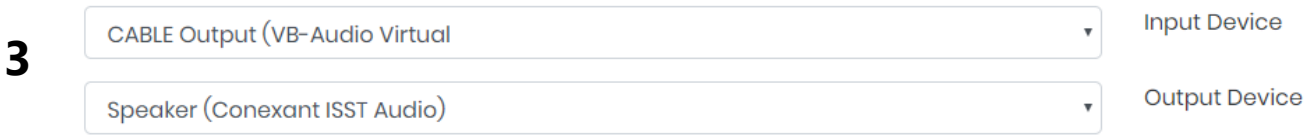


Delayed Audio Output

Assigning Input and Output Devices

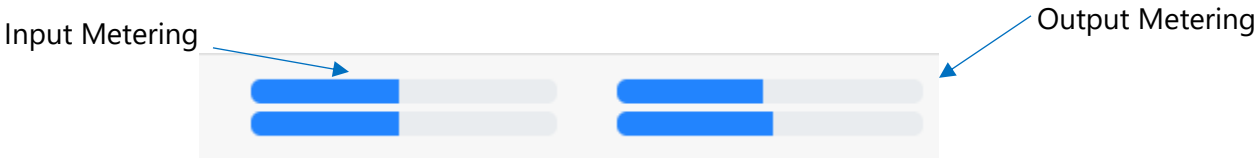
1. Navigate to the TZDS webserver at http://127.0.0.1:81 and select the delay unit you wish to configure.
2. Select Settings - > Delay Settings.
3. Select your input and output device.

NOTE: Asio Devices show both left and right channels, for stereo please choose the left hand channel.



4. Select Update Delay Settings

5. Once updated successfully you should see metering on the input meters.



Setting Delay Offset

1. Navigate to the TZDS webserver at http://127.0.0.1:81 and select the delay unit you wish to configure.
2. Select Settings - > Delay Settings.
3. Set the desired delay offset using the H(Hours), M(Minutes) and S(Seconds) Inputs.
4. Select update delay settings.

Setting Delay Unit Name

5. Navigate to the TZDS webserver at http://127.0.0.1:81 and select the delay unit you wish to configure.
6. Select Settings - > Delay Settings.
7. Enter new name in delay box and update settings.

8. Select update delay settings.

External Control

TZDS has the ability to be controlled from an external control system either via a TCP Port using a propriety protocol or via the soap web api.

The soap web api documentation can be found here.

https://documenter.getpostman.com/view/10723981/TVKJwEWG

the TCP control protocol can be found in Appendix B.

Data Channels

All Data channels are time aligned with the audio, this means that if the delay offset changes, the data as well as the audio is shifted in time.

TZDS Currently supports

- TCP
- UDP
- Wheatstone SLIO
- Axia GPIO
- Ember+

All queued Data channels can be viewed from the CommandQueue table (fig 2.0) which is launched from within the delay unit menu. The Command Queue is explained further on in this manual.

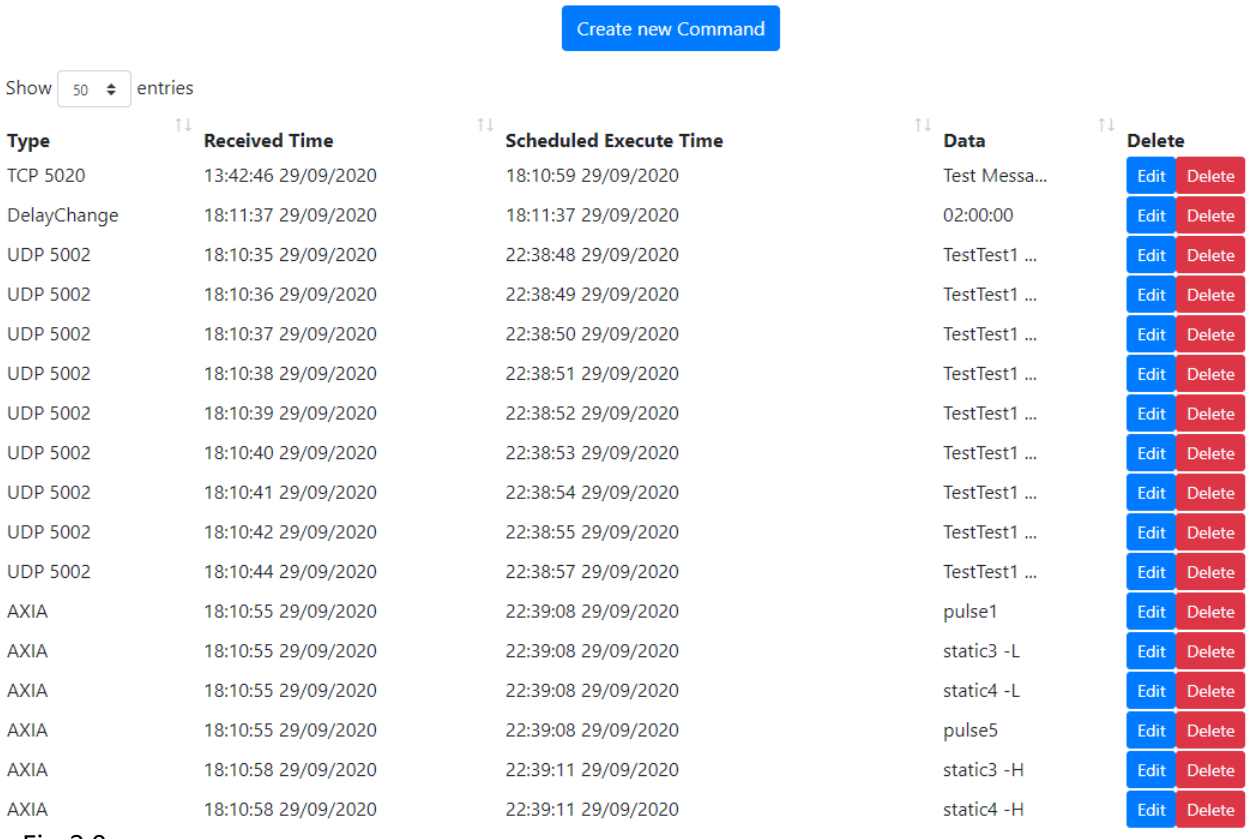
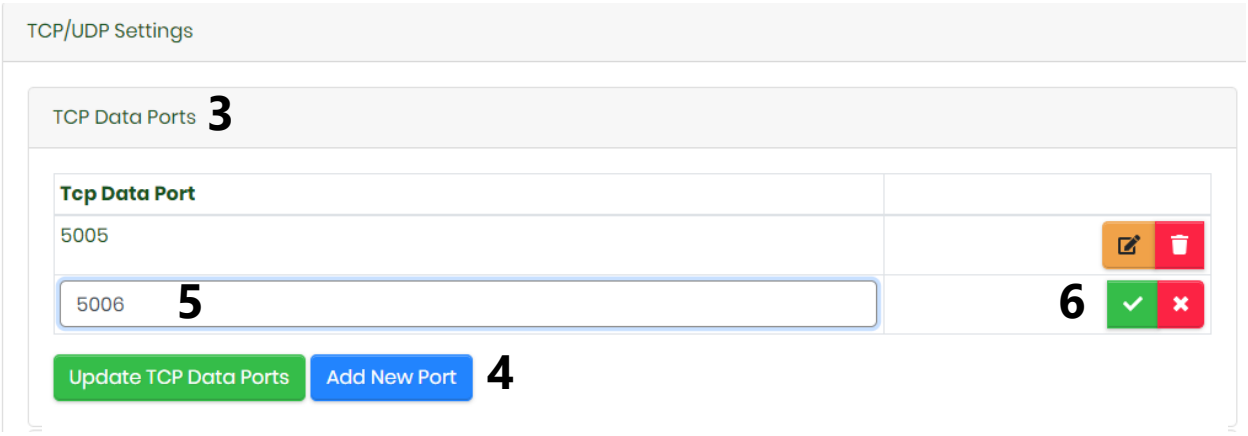


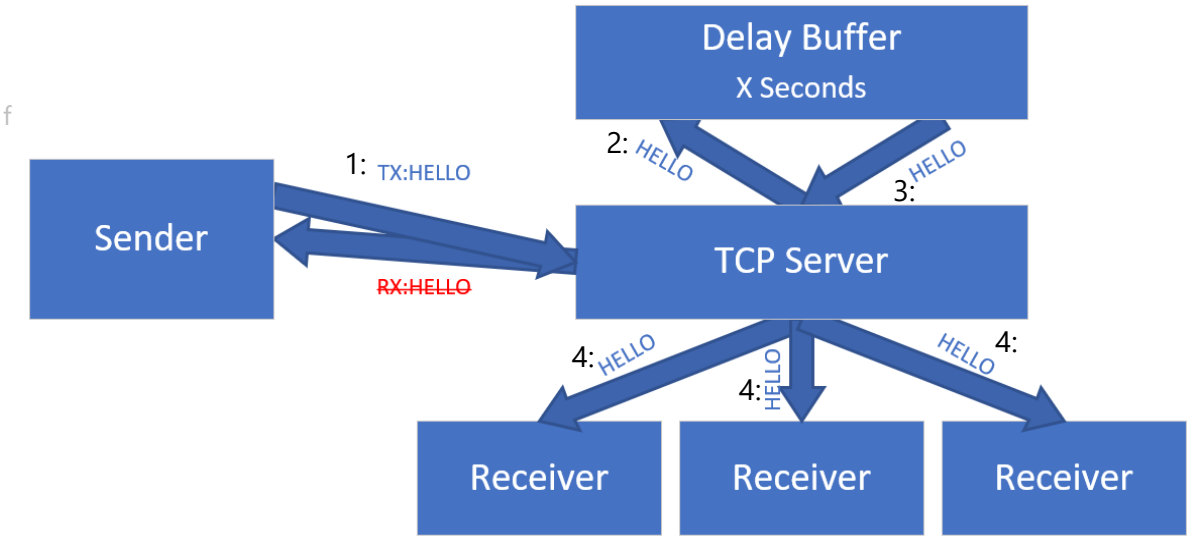
Fig 2.0

Adding TCP Data Port

TZDS allows for TCP Data ports which delays incoming data by the current delay offset. This feature could be used to delay now playing data from the playout system. Currently the TCP Data ports act as a server which broadcasts any data from the sender to all connected receivers. For signal flow diagram refer to fig 1.1.

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings - > Delay Settings -> TCP/UDP Settings -> TCP Data Ports.
4. Select add new port.
5. Enter the TCP port into the input box.
6. Select the green tick to confirm.

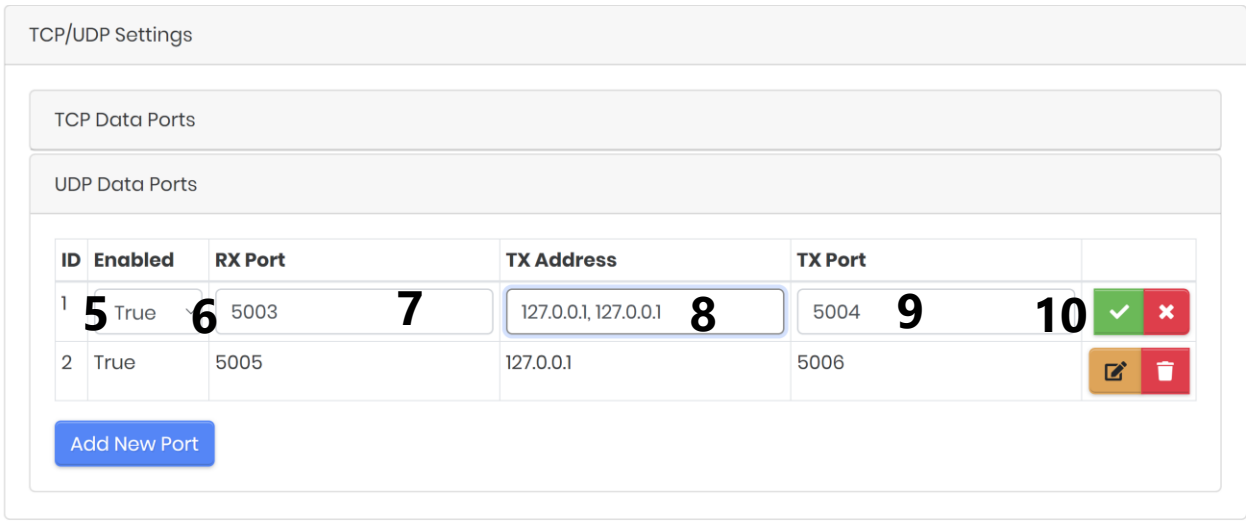




Adding UDP Data Port

TZDS allows for UDP Data ports which delays incoming data by the current delay offset. This feature could be used to delay now playing data from the playout system.

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings - > Delay Settings -> TCP/UDP Settings -> UDP Data Ports.
4. Select add new port.
5. Enter control ID.
6. Select port enabled.
7. Enter the RX UDP port into the input box.
8. Enter the TX Ip address (for multiple address use comma delimited).
9. Enter the TX UDP port.
10. Select the green tick to confirm.

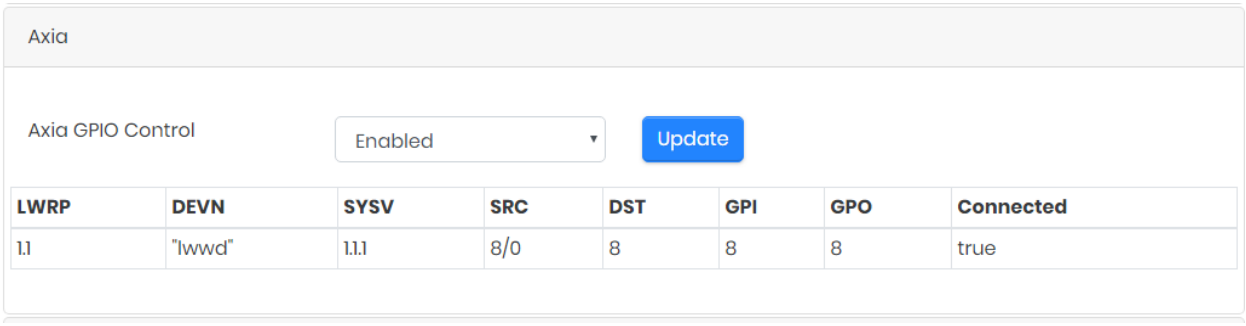


Adding and Configuring Axia GPIO

TZDS allows for control via the Axia gpio protocol.

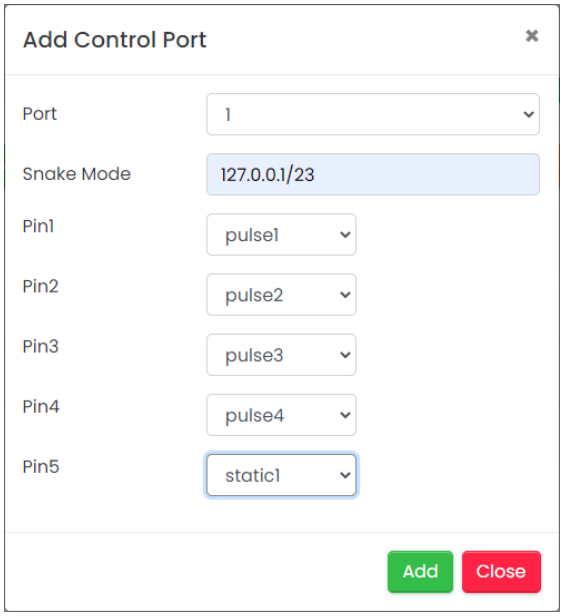
Enabling Axia GPIO Service

To Enable the AXIA GPIO service you must enable the option in the Settings -> Controls Options -> Axia menu.



Adding Control Port (GPI)

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings -> Delay Settings -> External Control -> Axia GPIO -> Axia GPIO Control.
4. Select add control port (Appendix A).
5. Enter port details.
6. Select add.

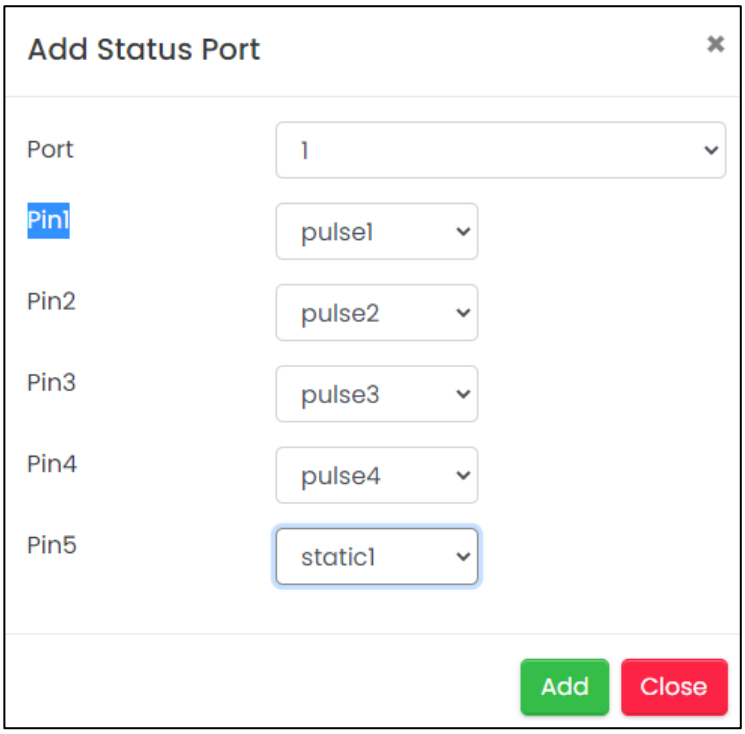


Port	Set Port Number
SnakeMode	Set Snake Mode Route
Pin 1	Set Pin 1 Control
Pin 2	Set Pin 2 Control
Pin 3	Set Pin 3 Control
Pin 4	Set Pin 4 Control
Pin 5	Set Pin 5 Control

Adding Status Port (GPO)

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings - > Delay Settings ->External Control -> Axia GPIO -> Axia GPIO Control.
4. Select add status port (Appendix A).
5. Enter port details.
6. Select add.

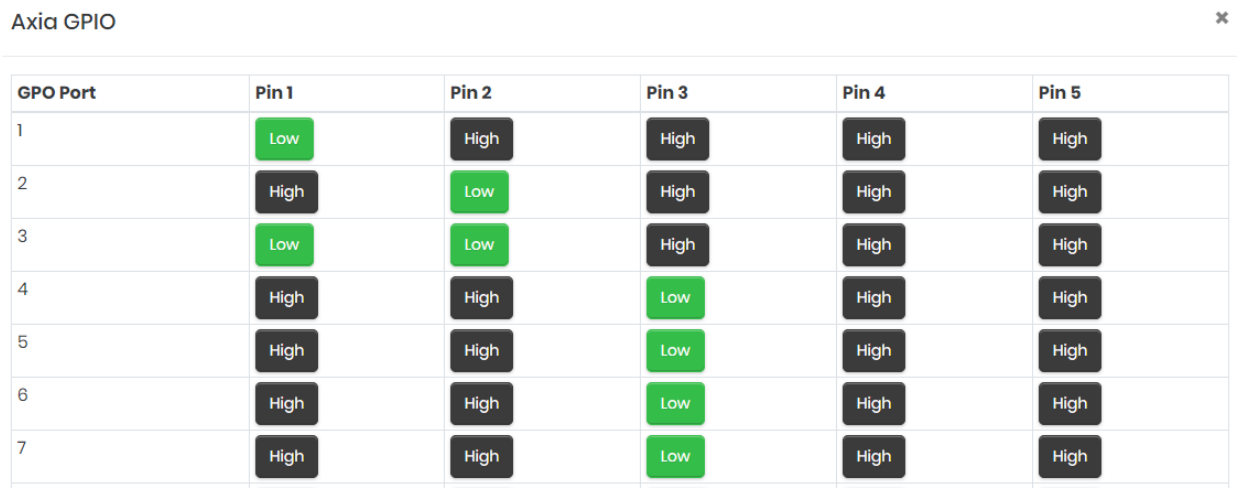
Port	Set Port Number
Pin 1	Set Pin 1 Control
Pin 2	Set Pin 2 Control
Pin 3	Set Pin 3 Control
Pin 4	Set Pin 4 Control
Pin 5	Set Pin 5 Control



Debugging Axia GPIO

To test and monitor Axia GPIO you can access the GPIO Pins from the TZDS Webserver.

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings - > Delay Settings -> Axia GPIO -> View Axia GPIO.



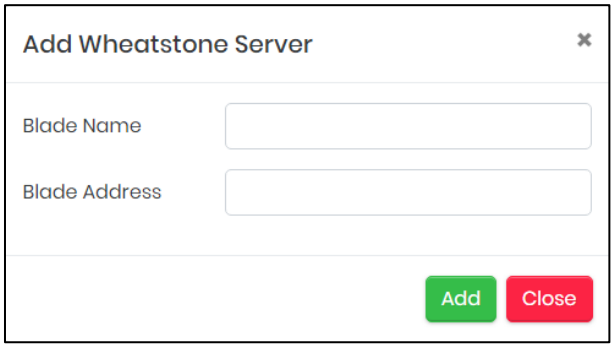
Adding Wheatstone SLIO

TZDS allows for control via the Wheatstone aci protocol. To enable the use of status and control SLIO you must first add a blade server. This blade server could be on the local machine (127.0.0.1) or an external server.

Adding Blade Server

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings - > Control Options -> Wheatstone Blade Server.
4. Select add new server.
5. Enter server details.
6. Select add.

Name	Set Name for Server
Server Address	Set IP Address

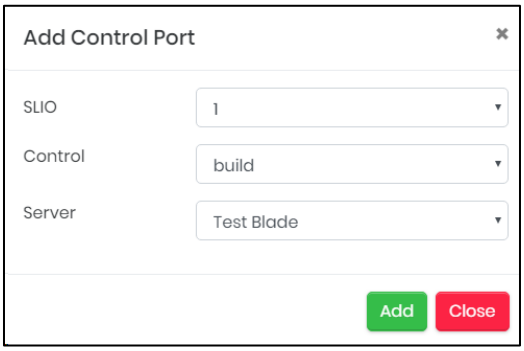


Adding and Configuring Wheatstone SLIO

TZDS Allows for individual SLIO's to be configured for both Status and Control on each delay unit.

Adding Control Port

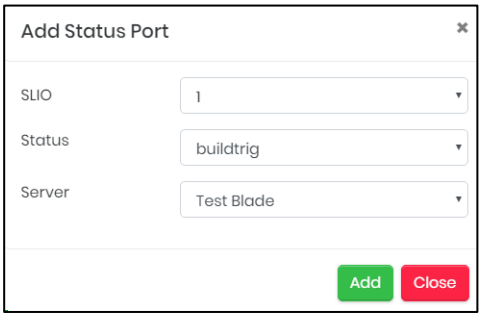
1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings -> Delay Settings -> External Control ->Wheatstone ACI -> Wheatstone ACI Control.
4. Select add control port (Appendix A)
5. Enter port details.
6. Select add.



SLIO	Set SLIO Number
Control	Set Control
Server	Set Blade Server

Adding Status Port

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings - > Delay Settings -> External Control - >Wheatstone ACI -> Wheatstone ACI Control.
4. Select status (Appendix A).
5. Select add.



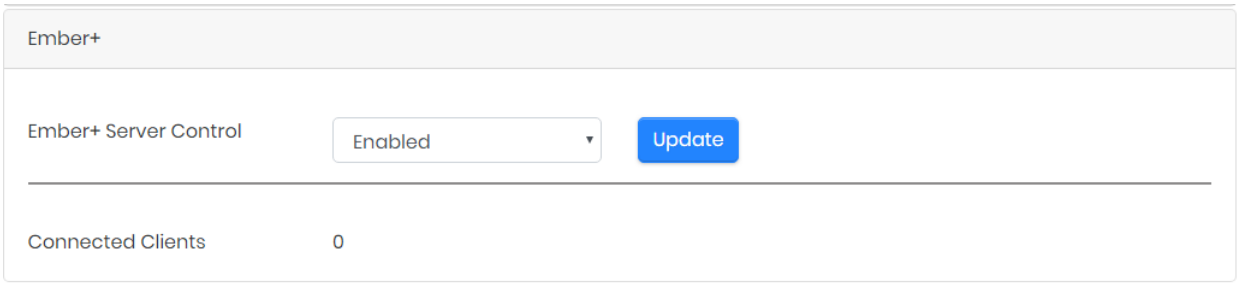
SLIO	Set SLIO Number
Status	Set Status
Server	Set Blade Server

Using Ember+

TZDS allows for control and monitoring via the Ember+ Protocol.

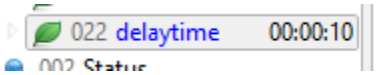
Enabling Ember+ Service

To enable the Ember+ service you must enable it via the Settings -> Control Options -> Ember+ Menu.



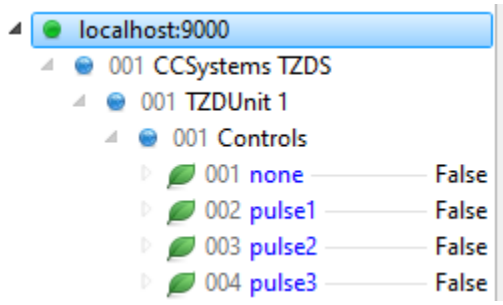
Each Delay Unit Spawns a tree which contains Controls and Status from each unit. The Controls and Status can be found in Appendix A.

EmberPlus also allows you to set the delaytime offset.



Connecting to Ember+ Server

The Ember+ service runs on TCP port 9000.



CommandQueue

Each Timezone delay unit has the ability to delay a number of data sources including TCP, UDP, Axia GPIO, Wheatstone SLIO, Ember+ and scheduled delay offset changes. The CommandQueue is a central location where all queued data for the current 24 hour period is stored and is able to be viewed/edited/deleted or new commands can be created.

Overview

Each entry in the CommandQueue table contains the following fields:

Data Type	Command Received (Local Server Time)	Scheduled Execution Time (Local Server Time)	Data

Data type

TZDS contains the following data type options.

Data Type	**Extra Params**	**Example**
Axia	N/A	Axia
UDP	RX Port Number	UDP 5002
TCP	RX Port Number	TCP 5003
Wheatstone	Blade Server	WS 10.10.10.1
Ember+	N/A	Ember+
DelayChange	N/A	DelayChange

Command Received

This time specifies the Local Server Time of which this command was received and stored; this time does **not** shift with any changes to delay offset. This time is also used to remove the command from the queue when it is older than 24 hours.

Scheduled Execution Time

This time specifies the Local Server Time of which this command will be executed, this time can change depending on the delay offset. If the delay offset is shifted the time will be updated.

NOTE: DelayChange objects will not be altered. Meaning when this command is used it will only run once at the desired execution time.

Data

This represents a preview of the type of data that is being stored, for TCP and UDP it shows the first 10 chars of the message, For AXIA, Wheatstone and Ember+ it shows the Control Status command which will run and for Delay Change, this column shows the offset which will be activated.

Examples of Delay Offset Change Impacting Data

Normal Operation

Data Type	Time Received	Delay Offset	Execution Time
TCP	15:33:14	02:00:00	17:33:14
AXIA	21:34:30	10:00:00	07:34:30 +1
DelayChange	N/A	N/A	14:00:00

Delay Offset Changes

Data Type	Time Received	Delay Offset	Scheduled Execution Time	Delay Offset Change	Scheduled Execution Time
TCP	15:33:14	02:00:00	17:33:14	01:00:00	16:44:14
AXIA	21:34:30	10:00:00	07:34:30 +1	00:10:00	21:44:30
DelayChange	N/A	N/A	14:00:00	N/A	14:00:00

Adding TCP/UDP Command to CommandQueue

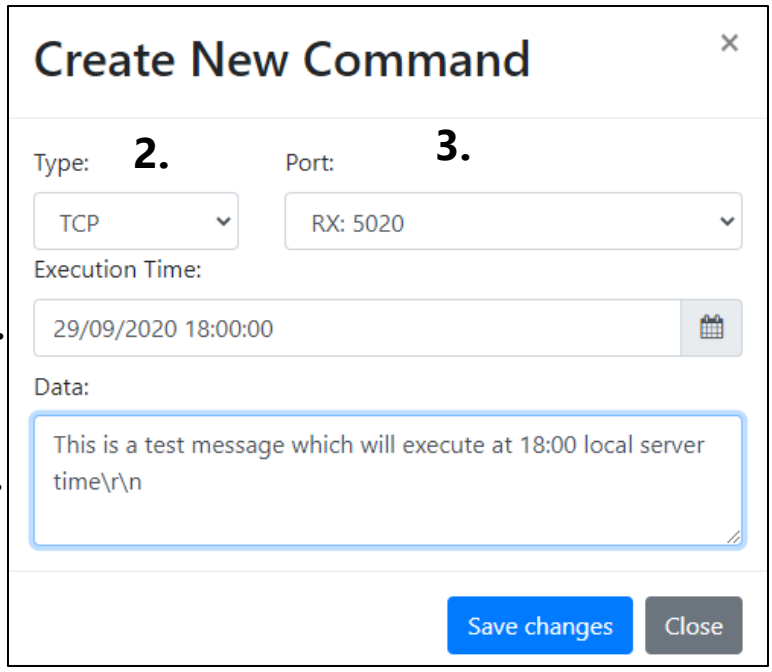
In the event a manual command is required to be added to the queue, careful consideration is needed to understand when exactly you want to execute this command if you have delay offset changes. The commands execution time are subject to change based on the delay offset.

1. To add a new command to the queue, select the create new command button.
2. Select the CommandQueue data type.
3. Select the appropriate Port (Adding Ports).
4. Select the Execution Time. Note: this is the **local server** time.
5. Enter the ASCII Data into the Data field.
    a. TCP and UDP accepts the following control characters.

    \r = carriage return

    \l = line feed

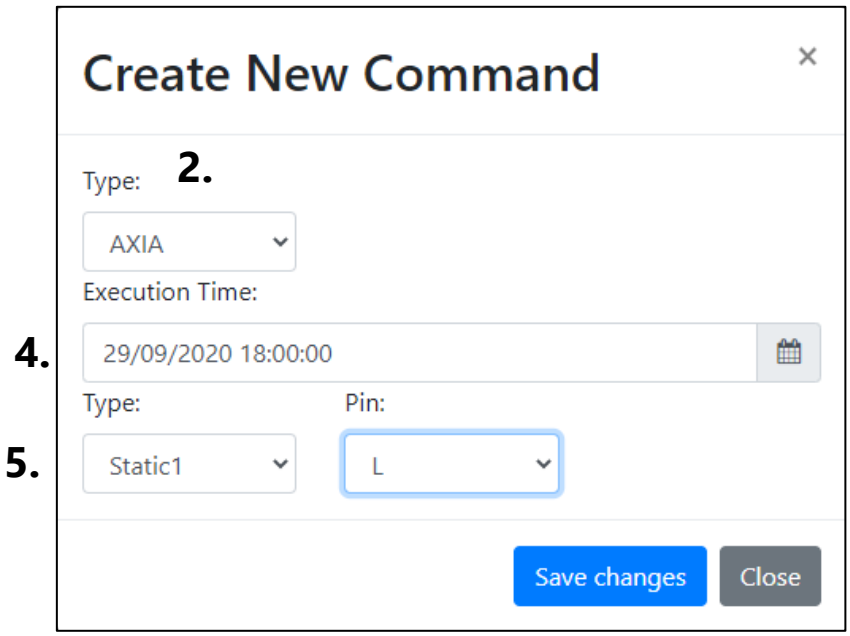
    \t = tab
6. Select save changes.



Adding AXIA/WS/Ember+ to CommandQueue

When using Axia, Wheatstone or Ember+, these control protocols need to be mapped to a control/status element which can be found in (Appendix A). These commands execution time are subject to change based on the delay offset.

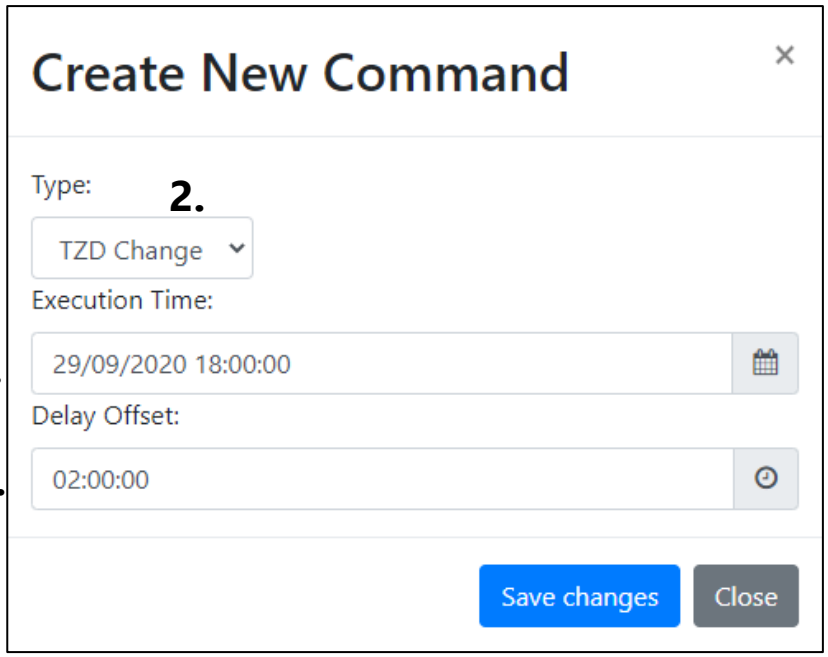
1. To add a new command to the queue, select the create new command button.
2. Select the CommandQueue data type.
3. If you have chosen Wheatstone, you will need to select the appropriate port.
4. Select the Execution Time. Note: this is the **local server** time.
5. Enter the Data Control
6. Select save changes.



Adding Delay Change to the CommandQueue

In the event you need to schedule a one-off delay offset change, you can create a command that will change the delay offset. this command is a special object which does not adhere to the changes in delay offset, meaning when you set the execution time it will not be altered and will execute at that time.

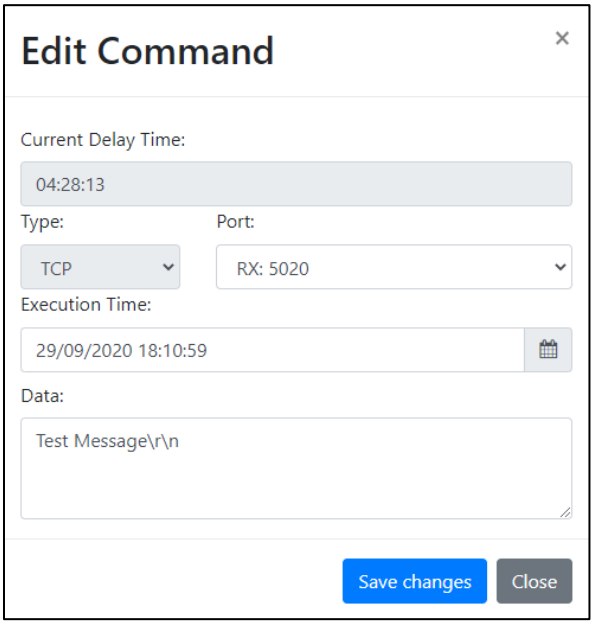
1. To add a new command to the queue, select the create new command button.
2. Select TZD Change.
3. Select the Execution Time. Note: this is the **local server** time.
4. Enter the Delay Offset
5. Select save changes.



Editing / Deleting Commands from the CommandQueue

CommandQueue also allows the users to edit and delete existing commands in the queue, this can be handy particularly in the event of a Rouge AD Start Pulse or incorrect data.

Simply select Edit the button to open the command object, note that some fields are unable to edited. Should you require access to edit these fields its recommended that you recreate the command using the create new command option.



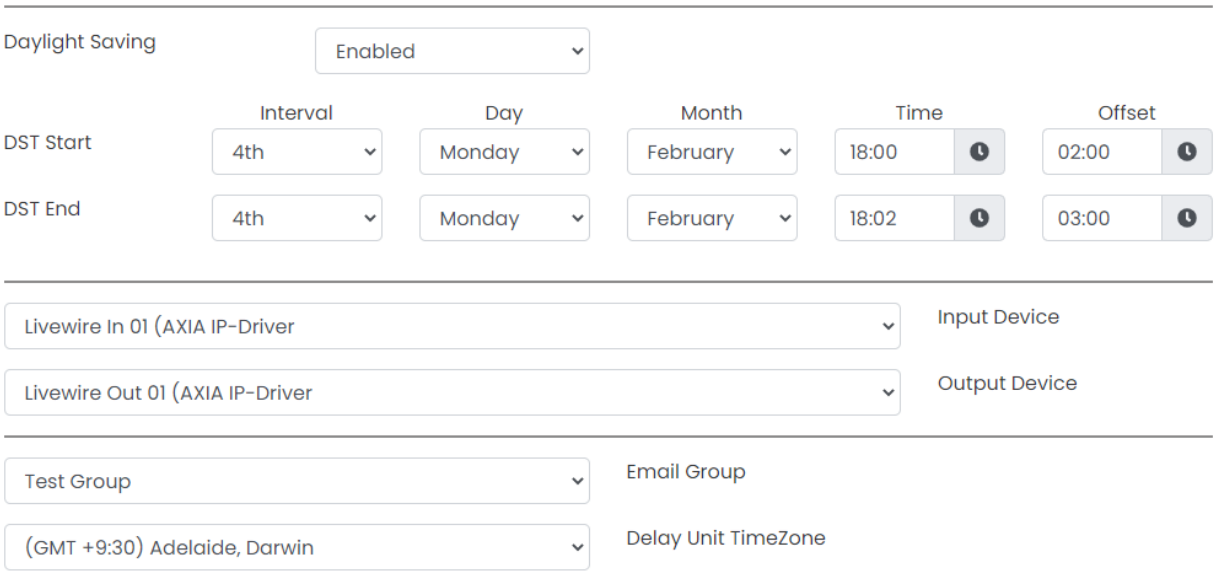
The Execution time shown, represents the time the command will be executed under the delay offset shown above.

To Delete a command, simply select the Delete button, the user will be prompted to confirm before the CommandQueue removes the command from the table.

Daylight Savings Changes

TZDS allows users to set daylight saving offsets which are separate from one off delay offset changes. As the date is different every year, the user must input the start and end date and times using the below fields. Its important to note that the DST Start and DST End Times are in reference the to Delay Unit Timezone and not the local Server Time.

For Example if the server is in Sydney (+10/+11) and the delayed audio is for Perth (+8) and the DST Start time is 1800, this refers to 1800 in a +8 Timezone.



1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings -> Delay Settings -> Daylight Saving -> Enabled.
4. Select the normal Timezone offset of the local server. **(This Is an important step)**
5. Set the start date using the interval, day, month, time and offset inputs.
6. Set the send date using the interval, day, month, time and offset inputs.

Configuring Email

TZDS allows for the sending of emails when a delay offset is changed. Each Delay unit can have a specific email group which allows for sending to multiple recipients.

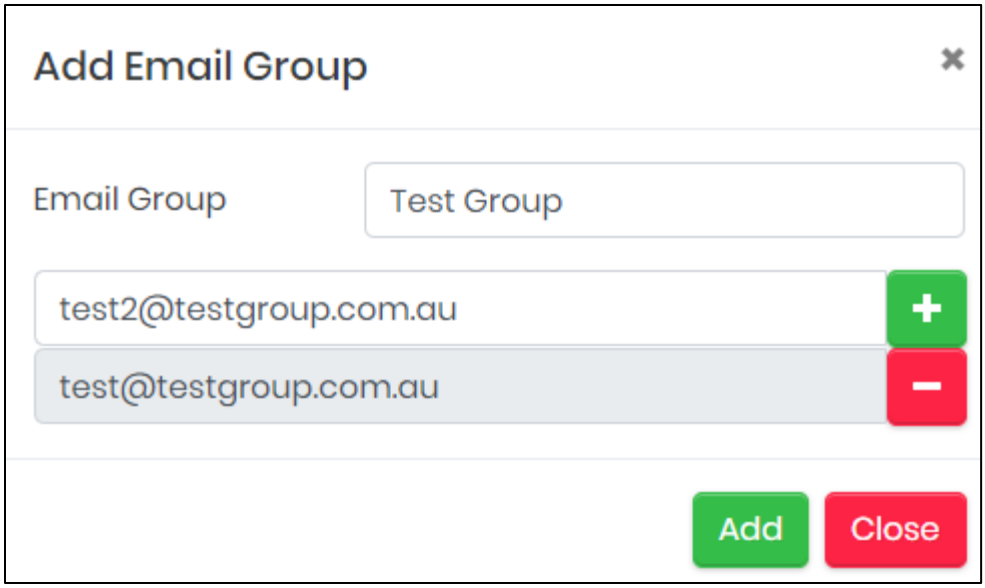
Configuring Email Server

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select Settings - > Email.

Email Server	Set email server ip or dns address.
Email Server Port	Set specific email port ie. 25 for SMTP.
From Address	The address which the emails will be sent from.
Authenticate Server	Set for server authentication.
Username	Server username.
Password	Server password.

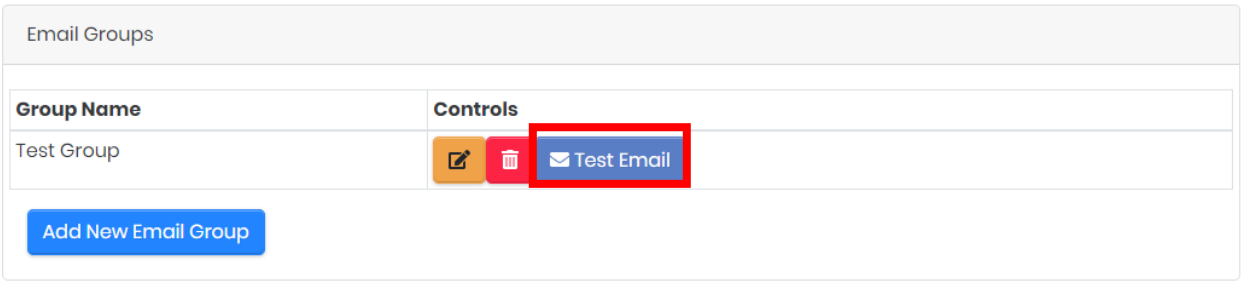
Creating Email Group

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select Settings - > Email -> Email Groups
3. Select add new group.
4. Enter group name.
5. Enter address and select + symbol.
6. Enter more addresses as needed.
7. Select add.



Testing Email Group

Once the email group has been created you can test the group by select the test email button.



Assign Email Group to Delay Unit

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select the Delay Unit you wish to configure.
3. Select Settings - > Delay Settings.
4. Set desired email group.
5. Select Update Delay Settings.

Logging

TZDS creates a 24 hour log of all activity, there is individual logs for each UDP/TCP data port, Axia, Wheatstone, external control protocol, http access and general delay activity. TZDS also captures a global log which contains all messages.

Logs

Log	Filename	Location
General Delay Activity	TimezoneDelayService-{date }.txt	logs
Axia Messages	Axiamsg-{DATE}.txt	logs\axia
Wheatstone Messages	Wheatstone-{DATE}.txt	logs\wheatstone
Ember+	Emberplus-{DATE}.txt	Logs\emberplus
UDP Data	UDPserver-{rxport}-{txaddress}-{txport}-{date}.txt	logs\UDP
TCP Data	TCPserver-{rxport}-{date}.txt	logs\TCP
TCP Control Protocol	TCPcontrol.{date}.txt	Logs\control
Global	TZDS-ALL-{date}.txt	Logs

External Syslog Server

BDS allows you to send the general delay activity log to an external syslog server, BDS currently only supports UDP based connections.

To enable external syslog communication:

1. Navigate to the BDS webserver at http://127.0.0.1:81.
2. Select Settings - > Other Settings.
3. Select external syslog to enabled.
4. Enter the remote server address.
5. Enter the remote server port.
6. Select Update Other Settings.

Log Maintenance

By Default TZDS will purge the delay logs every 30 days. To change this setting:

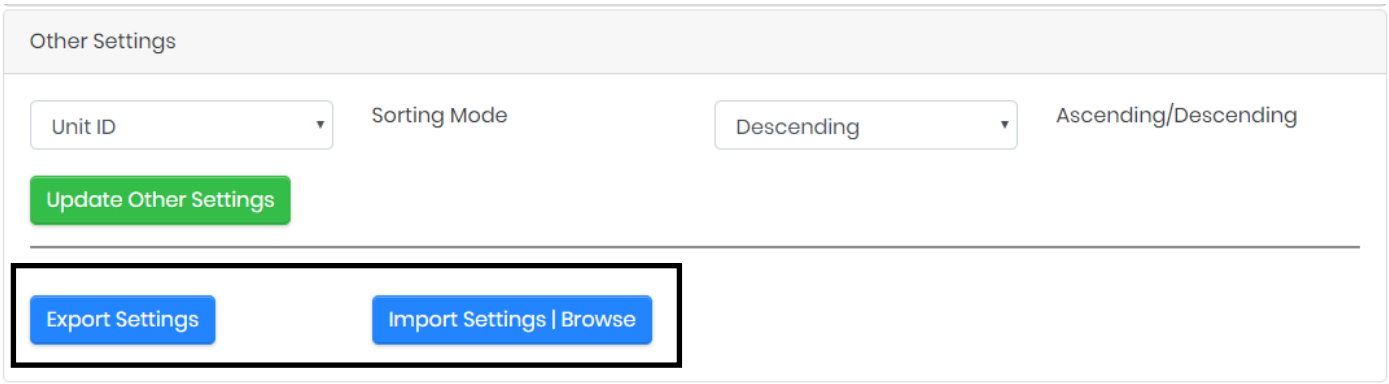
7. Navigate to the TZDS webserver at http://127.0.0.1:81.
8. Select Settings - > Other Settings.
9. Change keeps logs for option
10. Select update other settings.

Other Settings

Export and Import Settings

For easy configuration and configuration backup use the Import/Export Settings buttons from within the TZDS webserver.

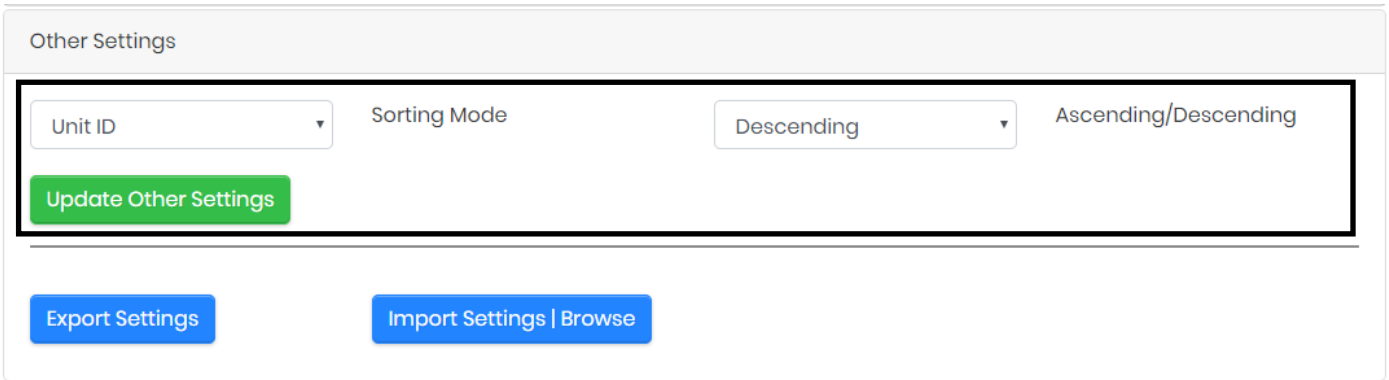
1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select Settings -> Other Settings



Arranging Delay Units in Webserver

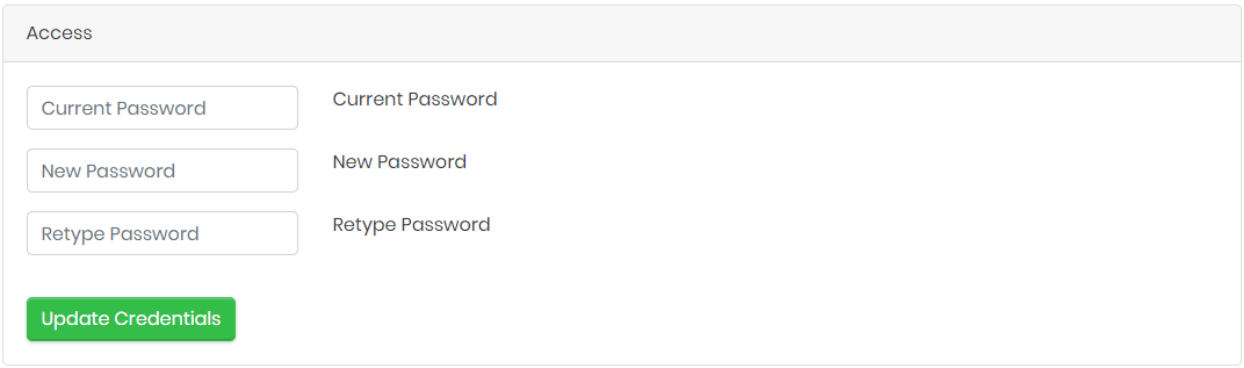
TZDS allows you to sort each delay unit either by the unique ID or by the Delay Unit Name.

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select Settings -> Other Settings.



Webserver Authentication

TZDS requires web authentication in order to use the controls, by default the username is admin and the password is password.



Restarting One or All Timezone Delay Units

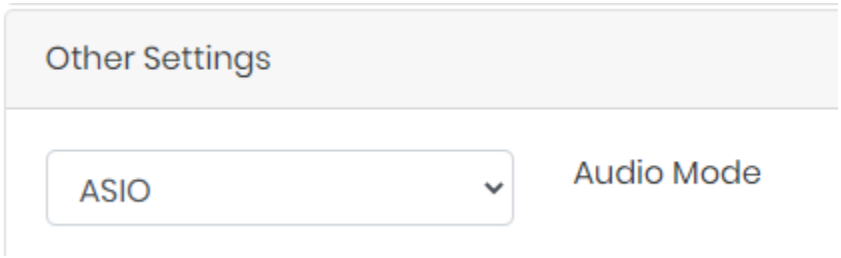
To restart a single Delay unit, navigate to the Delay Settings Menu and Select Reload Player, select OK at the popup window to restart delay unit instance.

To restart all delay units navigate to Settings->Other Settings -> Reload All Players, Select OK at the popup window to restart delay unit instance.

Choosing Audio Mode

TZDS supports 3 audio modes, Wave, WASAPI and ASIO. Wave IN and WASAPI provide an easy solution as they support most Inputs and Outputs using the windows mixer, but it comes with a higher latency value then ASIO.

To Set Audio Mode navigate to Setting -> Other Settings -> Audio Mode.



***NOTE:** Changing audio modes should only be done when TZDS has been bypassed, the audio will stop as the input and output channels are different between audio modes.

FAQ

How do I add extra Delay Units to my License?

If you have requested an upgrade to your license to add more delay units contact support at support@cloudcastsystems.com.au. Once confirmed simply re-enter your serial and the Delay Unit count will increase

What is the bitrate of the Shout cast Streams?

the bitrate of the shout cast streams is 128 kbps by default but can be changed in the options menu.

1. Navigate to the TZDS webserver at http://127.0.0.1:81.
2. Select Settings - > Other Settings.
3. Streaming Encoder Bitrate.
4. Select Update Other Settings.

What is the default login for the webserver?

Username: admin

Password: password

What if I forgot the webserver password?

Please contact support@cloudcastsystems.com.au for instructions on how to reset the webserver password.

What format is the TCP and UDP Buffers?

The TCP and UDP Data buffers accept binary data which means all characters are expected. However the CommandQueue only supports ASCII.

How much space do I need?

Each delay unit can store up to 24 hours of 32 bit linear audio which is approximate 30 gigabytes, its recommended that you allow for 4/5 times this as you also need space to store any TCP/UDP Data that will be stored from the data channels.

How do I upgrade my version of TZDS?

To upgrade your version of TZDS simply install the new version over the top of the old. Its good practice to make a copy of the settings.xml file in the application directory however the settings file is not updated.

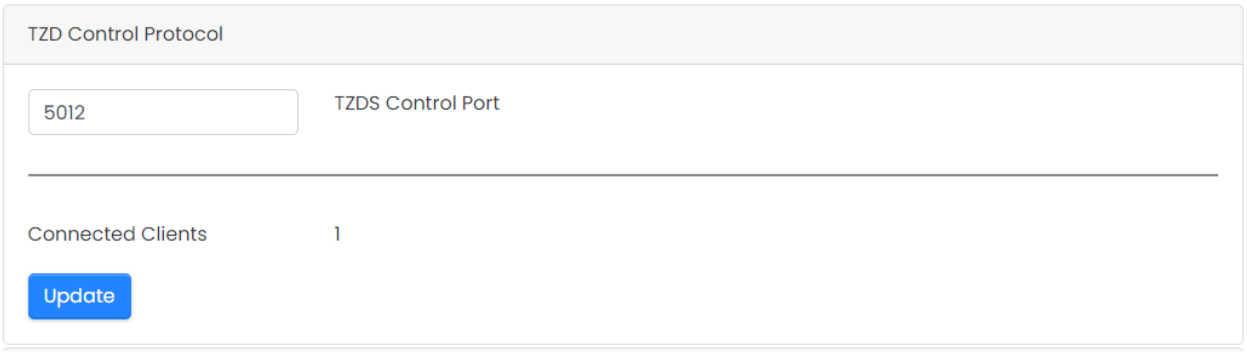
How do I change the default webserver port?

The webserver port can be changed in the settings.xml file. Ensure you stop the service first before editing the settings.xml file.

To Change the port, edit the following xml tag <webPort>81</webPort>.

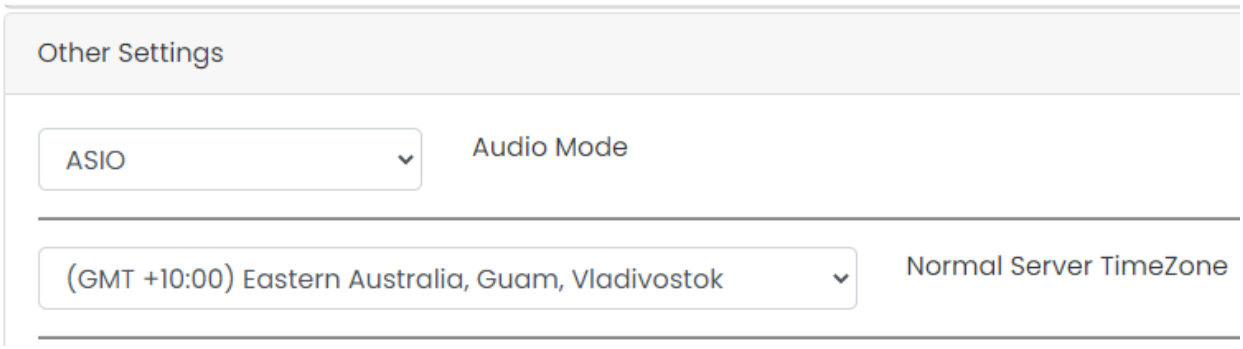
How do I change the default TCP Control Protocol Port?

The TCP control port can be changed in Settings -> Control Options -> TZDS Control Protocol.



How do I change the server Timezone offset?

The server Timezone offset can be changed in Settings -> Other Settings -> Server Timezone



How do I enable SSL/TSL on web interface?

TZDS allows for an SSL Certificate to enable encrypted https and WebSocket data. To enable the ssl certificate you must have a pfx file and the password associated to the pfx file. For more information about certificates please use the following link.

To enable ssl please stop the service and edit the settings.xml file in the program files directory.

Once complete restart the service.

Settings	Value
<useSSL>	True or false
<sslCert>	Enter path to pfx certificate or Thumbprint ID
<sslPass>	Enter password for pfx certificate when using pfx path, (Not required when using thumbprint id)

Appendix A

Status

None	No Status
pulse1	Pulsed 200ms
pulse2	Pulsed 200ms
pulse3	Pulsed 200ms
pulse4	Pulsed 200ms
pulse5	Pulsed 200ms
pulse6	Pulsed 200ms
pulse7	Pulsed 200ms
pulse8	Pulsed 200ms
pulse9	Pulsed 200ms
pulse10	Pulsed 200ms
static1	Continuous Logic
static2	Continuous Logic
static3	Continuous Logic
static4	Continuous Logic
static5	Continuous Logic
static6	Continuous Logic
static7	Continuous Logic
static8	Continuous Logic
static9	Continuous Logic
static10	Continuous Logic

Controls

none	No control
pulse1	200ms Pulse
pulse2	200ms Pulse
pulse3	200ms Pulse
pulse4	200ms Pulse
pulse5	200ms Pulse
pulse6	200ms Pulse
pulse7	200ms Pulse
pulse8	200ms Pulse
pulse9	200ms Pulse
pulse10	200ms Pulse
static1	Continuous Logic
static2	Continuous Logic
static3	Continuous Logic
static4	Continuous Logic
static5	Continuous Logic
static6	Continuous Logic
static7	Continuous Logic
static8	Continuous Logic
static9	Continuous Logic
static10	Continuous Logic

Appendix B

Timezone Delay Service Control Protocol

Delay Unit Control Protocol V1.0

Global Commands

LOGIN - Unit must be logged in to use SET

GET TZDUNITS - Get All Available Units

Specific Unit Commands

GET/SET *x = Unit ID*

DELAY_x.OFFSET = Delay in HH:MM:SS Format

EXAMPLES

TX: GET DELAY_1.OFFSET

RX: STATUS DELAY_1.OFFSET=03:00:00

TX:SET DELAY_1.OFFSET=10:10:10

RX: STATUS DELAY_1.OFFSET=10:10:10

Appendix C

END-USER LICENSE AGREEMENT FOR TimeZone Delay Service

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