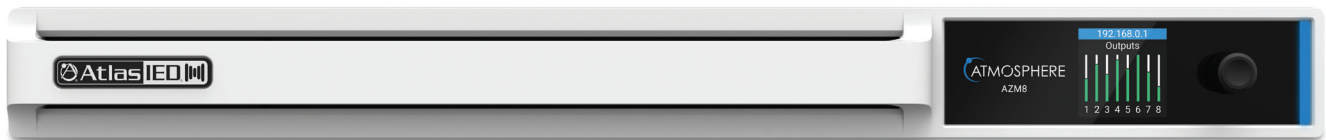




# Atmosphere™ AZM4 / AZM8

*Instruction Manual for Third Party Control*



# AZM4 / AZM8

## *Instruction Manual*

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### Introduction

The Atmosphere AZM4/AZM8 can be controlled by a third party using TCP communication along with UDP for metering. Third party parameter names are dynamically assigned during configuration of the AZM4/AZM8. Please refer to the Third Party Control Message Table in the User Interface under Settings>Third Party Control>Message Table for a message formatting diagram and a listing of all active third-party parameter names. Messages can also be constructed in the Message Builder Tab on the Third Party Control page.

The screenshot shows the 'Third Party Control' interface with the 'Message Table' tab selected. It displays two message format examples and a table of parameters.

**Message format for set, bump and update**

```
{ "jsonrpc": "2.0", "method": "set", "params": { "param": "ZoneGain_3", "val": "38.4" } }
```

**Message format for subscribe and unsubscribe**

```
{ "jsonrpc": "2.0", "method": "sub", "params": { "param": "ZoneGain_3", "fmt": "val" } }
```

**Methods**

- set = set
- bump = bump
- update = update (from subscribed parameters)
- getResp = get response

**Formats**

- pcnt = percent
- val = value
- str = string (used for "Name" parameters with "update" method)

**Methods**

- sub = subscribe
- unsub = unsubscribe
- get = get

**Formats**

- pcnt = percent
- val = value
- str = string (used for "Name" parameters with "update" method)

| Names          | Gain         | Meter         | Mute         | Name         | Source       | Combine | Misc |
|----------------|--------------|---------------|--------------|--------------|--------------|---------|------|
| <b>Sources</b> |              |               |              |              |              |         |      |
| PC Main        | SourceGain_0 | SourceMeter_0 | SourceMute_0 | SourceName_0 | --           | --      | --   |
| Bluetooth      | SourceGain_1 | SourceMeter_1 | SourceMute_1 | SourceName_1 | --           | --      | --   |
| Big Mic        | SourceGain_2 | SourceMeter_2 | SourceMute_2 | SourceName_2 | --           | --      | --   |
| <b>Mixes</b>   |              |               |              |              |              |         |      |
| Mix All        | MixGain_15   | MixMeter_15   | MixMute_15   | MixName_15   | --           | --      | --   |
| Mix 2          | MixGain_14   | MixMeter_14   | MixMute_14   | MixName_14   | --           | --      | --   |
| Mix 3          | MixGain_15   | MixMeter_16   | MixMute_16   | MixName_16   | --           | --      | --   |
| Mix 4          | MixGain_17   | MixMeter_17   | MixMute_17   | MixName_17   | --           | --      | --   |
| <b>Zones</b>   |              |               |              |              |              |         |      |
| Room A         | ZoneGain_3   | ZoneMeter_3   | ZoneMute_3   | ZoneName_3   | ZoneSource_3 | --      | --   |
| Room B         | ZoneGain_0   | ZoneMeter_0   | ZoneMute_0   | ZoneName_0   | ZoneSource_0 | --      | --   |
| Room C         | ZoneGain_4   | ZoneMeter_4   | ZoneMute_4   | ZoneName_4   | ZoneSource_4 | --      | --   |

**Note:** It is recommended that programming of third-party controllers is completed after configuration of the AZM4/AZM8 system is finalized. Removing (and possibly adding) Zones, Sources, Mixes, Groups, Messages, etc...from the setup has the potential to reassign third party parameter names.

## 2.0 TCP/UDP Overview

TCP port 5321 is used on AZM4/AZM8 for modifying parameter values, subscribing, and unsubscribing. Subscription updates for all parameters aside from meters are sent back using the TCP port.

UDP port 3131 is used by the AZM4/AZM8 to send subscription updates for meters.

When the TCP connection is terminated by the client or AZM4/AZM8, all subscriptions for the disconnected client will be lost and resubscribing in the next session will be required to receive updates for any parameters of interest.

Inactivity on an open TCP or UDP port may eventually cause the connection to be terminated by the AZM4/AZM8. To avoid this, it is advised to send a keep-alive message at least once every 5 minutes. Responses to the keep-alive message are delivered via both TCP and UDP.

Keep-alive message example:

```
{ "jsonrpc": "2.0", "method": "get", "params": { "param": "KeepAlive", "fmt": "str" } }
{ "jsonrpc": "2.0", "method": "getResp", "params": { "param": "KeepAlive", "str": "OK" } } <- TCP Response
{ "jsonrpc": "2.0", "method": "getResp", "params": { "param": "KeepAlive", "str": "OK" } } <- UDP Response
```

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### 3.0 Message Types and Syntax

All messages sent to the AZM4/AZM8 must be newline delimited, i.e., “\n” as the last 2 characters of the message. Messages sent to the AZM4/AZM8 include those with methods “set”, “bmp” (bump), “sub” (subscribe), “unsub” (unsubscribe), and “get” (get). Messages sent back to the third-party client use methods “update”, “getResp” (get response), and “error”.

#### 3.1 Set, Bump, Update, and Get-Response

Messages that use the “set”, “bmp”, “update”, and “getResp” methods share the same format and have interchangeable parts as shown in the image below.

### Message format for set, bump and update

```
{"jsonrpc":"2.0","method":"set","params":{"param":"ZoneGain_3","val":-38.4}}\n
```

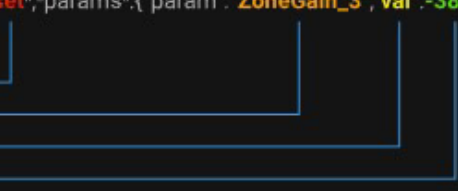
Message container

**Method**

**Parameter**

**Format**

**Amount**



#### Methods

- set** = set
- bmp** = bump
- update** = update (from subscribed parameters)
- getResp** = get response

#### Formats

- pct** = percent
- val** = value
- str** = string (used for “Name” parameters with “update” method)

#### 3.2 Subscribe and Unsubscribe

Messages that use the “sub”, “unsub”, and “get” methods share the same format and have interchangeable parts as shown in the image below. The “get” method can be used to find the current value of a parameter at the instance in time when the message is sent; however, it is recommended that parameters are subscribed in order to maintain synchronization.

### Message format for subscribe and unsubscribe

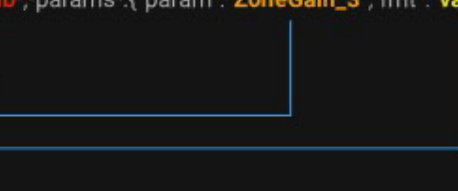
```
{"jsonrpc":"2.0","method":"sub","params":{"param":"ZoneGain_3","fmt":"val"}}\n
```

Message container

**Method**

**Parameter**

**Format**



#### Methods

- sub** = subscribe
- unsub** = unsubscribe
- get** = get

#### Formats

- pct** = percent
- val** = value
- str** = string (used for “Name” parameters with “update” method)

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### 3.3 Multiple Parameters in a Single Message (Arrays)

Multiple parameters can be included in any message by building an array for "params" using square brackets.

Examples:

```
{"jsonrpc": "2.0", "method": "set", "params": [{"param": "ZoneGain_0", "pct": 50}, {"param": "ZoneGain_1", "val": -20}]\n{"jsonrpc": "2.0", "method": "bmp", "params": [{"param": "SourceGain_0", "val": -1}, {"param": "SourceGain_1", "val": 2}]\n{"jsonrpc": "2.0", "method": "sub", "params": [{"param": "SourceMeter_0", "fmt": "val"}, {"param": "SourceMeter_1", "fmt": "val"}, {"param": "SourceMeter_2", "fmt": "val"}, {"param": "SourceMeter_3", "fmt": "val"}, {"param": "SourceMeter_4", "fmt": "val"}]\n{"jsonrpc": "2.0", "method": "unsub", "params": [{"param": "SourceMeter_3", "fmt": "val"}, {"param": "SourceMeter_4", "fmt": "val"}]\n
```

### 3.4 Response when using "id"

Some messages do not generate a response from the third-party server. For example, a message using the "unsub" method or messages that use the "set" and "bmp" when the parameter being modified is not subscribed. However, a response can be generated if desired by appending an "id" to the end of the message. An example of a message using the "unsub" method with and without an "id" is shown below.

With "id":

```
Sent-> {"jsonrpc": "2.0", "method": "unsub", "params": [{"param": "GpoPresetName_0", "val": "str"}], "id": 10}\n
```

```
Received-> {"jsonrpc": "2.0", "result": "OK", "id": 10}
```

Without "id":

```
Sent-> {"jsonrpc": "2.0", "method": "unsub", "params": [{"param": "GpoPresetName_0", "val": "str"}]}\n
```

Nothing Received

## 4.0 Parameters with Special Handling

Some third-party parameters have restrictions or require special handling; those parameters are described here.

- Parameters that contain the names (SourceName, ZoneName, MixName, etc.) cannot be set by a third-party client. The only valid actions for these parameters is "sub" (subscribe), "unsub" (unsubscribe) and "get".
- The GroupActive parameter can be set in order to Activate (Combine) or Deactivate (Uncombine) Zones just like the Combine buttons seen in the Groups section of the Zones tab in the GUI. It can also be subscribed in order to know the current Combine state. The ZoneActive parameter can be subscribed and indicates when a Zone is included in a Group; however, it cannot be set by a third-party client.
- Action parameters (PlayMessage, RecallScene, etc...) will trigger the associated action when included in a properly formatted message using the "set" or "bmp" method; however, the value of these parameters does not represent the action state. These parameters are not really meant for subscription, but if the parameter is subscribed in a session, an update will be received when the parameter is acted upon. Receiving an update after the initial subscription indicates the action has been triggered.

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### 5.0 Third Party Control Message Table

The Third Party Control Message Table shows how third-party parameter names correspond to parameters in the AZM4/AZM8's configuration. The table can be found in the User Interface under [Settings > Third Party Controller > Message Table].

To find the name of a third-party parameter:

1. Look in the "Names" column to find the Source, Zone, Group, etc... of interest. (This column shows names that were assigned during the setup of the AZM4/AZM8)
2. Follow the row over to the parameter attribute of interest (Gain, Mute, etc...)
3. Note the third party param name in the row/column intersection

For example, to send a message to mute the source called "Big Mic" in the AZM4/AZM8, follow the "Big Mic" row (in the Sources section) to the "Mute" column to find the third party param name "SourceMute\_2". Then construct the desired message:  

```
{ "jsonrpc": "2.0", "method": "set", "params": { "param": "SourceMute_2", "val": 1 } }
```

| Names           | Gain         | Meter         | Mute         | Name          | Source        | Combine        | Misc          |
|-----------------|--------------|---------------|--------------|---------------|---------------|----------------|---------------|
| <b>Sources</b>  |              |               |              |               |               |                |               |
| PC Main         | SourceGain_0 | SourceMeter_0 | SourceMute_0 | SourceName_0  | -             | -              | -             |
| Bluetooth       | SourceGain_1 | SourceMeter_1 | SourceMute_1 | SourceName_1  | -             | -              | -             |
| Big Mic         | SourceGain_2 | SourceMeter_2 | SourceMute_2 | SourceName_2  | -             | -              | -             |
| <b>Mixes</b>    |              |               |              |               |               |                |               |
| Mix All         | MixGain_15   | MixMeter_15   | MixMute_15   | MixName_15    | -             | -              | -             |
| Mix 2           | MixGain_14   | MixMeter_14   | MixMute_14   | MixName_14    | -             | -              | -             |
| Mix 3           | MixGain_16   | MixMeter_16   | MixMute_16   | MixName_16    | -             | -              | -             |
| Mix 4           | MixGain_17   | MixMeter_17   | MixMute_17   | MixName_17    | -             | -              | -             |
| <b>Zones</b>    |              |               |              |               |               |                |               |
| Room A          | ZoneGain_3   | ZoneMeter_3   | ZoneMute_3   | ZoneName_3    | ZoneSource_3  | -              | -             |
| Room B          | ZoneGain_0   | ZoneMeter_0   | ZoneMute_0   | ZoneName_0    | ZoneSource_0  | -              | -             |
| Room C          | ZoneGain_4   | ZoneMeter_4   | ZoneMute_4   | ZoneName_4    | ZoneSource_4  | -              | -             |
| Studio          | ZoneGain_1   | ZoneMeter_1   | ZoneMute_1   | ZoneName_1    | ZoneSource_1  | -              | -             |
| Apollo Room     | ZoneGain_2   | ZoneMeter_2   | ZoneMute_2   | ZoneName_2    | ZoneSource_2  | -              | -             |
| <b>Groups</b>   |              |               |              |               |               |                |               |
| All Meeting     | GroupGain_5  | GroupMeter_5  | GroupMute_5  | GroupName_5   | GroupSource_5 | GroupCombine_5 | -             |
| All Zones       | GroupGain_6  | GroupMeter_6  | GroupMute_6  | GroupName_6   | GroupSource_6 | GroupCombine_6 | -             |
| <b>Messages</b> |              |               |              |               |               |                |               |
| Did U Know?!    | -            | -             | -            | MessageName_0 | -             | -              | PlayMessage_0 |
| 2-minute        | -            | -             | -            | MessageName_1 | -             | -              | PlayMessage_1 |

**Note:** The Third Party Message Table is dynamic and will update according to the current AZM4/AZM8 settings.

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### 6.0 Parameter List

General parameter names (without the underscore and index) are shown with their ranges in the table below.

| Parameter           | Min Val | Max Val  | Min Pct | Max Pct | Subscription Update via TCP | Subscription Update via UDP | Read Only (parameter cannot be set by third party) |
|---------------------|---------|--|---------|---------|-----------------------------|-----------------------------|--|
| SourceGain          | -80     | 0  | 0       | 100     | X                           |                             |  |
| SourceMeter         | -80     | 0  | 0       | 100     |                             | X                           | X  |
| SourceMute          | 0       | 1  | 0       | 100     | X                           |                             |  |
| SourceName          | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| MixGain             | -80     | 0  | 0       | 100     | X                           |                             |  |
| MixMeter            | -80     | 0  | 0       | 100     |                             | X                           | X  |
| MixMute             | 0       | 1  | 0       | 10      | X                           |                             |  |
| MixName             | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| ZoneGain            | -80     | 0  | 0       | 100     | X                           |                             |  |
| ZoneMeter           | -80     | 0  | 0       | 100     |                             | X                           | X  |
| ZoneMute            | 0       | 1  | 0       | 100     | X                           |                             |  |
| ZoneName            | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| ZoneSource          | -1      | Num Sources (use number after underscore in SourceName)              | N/A     | N/A     | X                           |                             |  |
| ZoneGrouped         | 0       | 1  | 0       | 100     | X                           |                             | X  |
| GroupGain           | -80     | 0  | 0       | 100     | X                           |                             |  |
| GroupMeter          | -80     | 0  | 0       | 100     |                             | X                           | X  |
| GroupMute           | 0       | 1  | 0       | 100     | X                           |                             |  |
| GroupName           | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| GroupSource         | -1      | Num Sources (use number after underscore in SourceName)              | N/A     | N/A     | X                           |                             |  |
| GroupActive         | 0       | 1  | 0       | 100     | X                           |                             |  |
| MessageName         | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| PlayMessage         | N/A     | N/A  | N/A     | N/A     | X                           |                             |  |
| RoutineName         | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| RecallRoutine       | N/A     | N/A  | N/A     | N/A     | X                           |                             |  |
| SceneName           | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| RecallScene         | N/A     | N/A  | N/A     | N/A     | X                           |                             |  |
| GpoPresetName       | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| RecallGpoPreset     | N/A     | N/A  | N/A     | N/A     | X                           |                             |  |
| BellScheduleName    | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |
| Today'sBellSchedule | 0       | Num Bell Schedules (use number after underscore in BellScheduleName) | N/A     | N/A     | X                           |                             |  |
| LoudNoise           | 0       | 1  | 0       | 100     | X                           |                             | X  |
| GpoState            | 0       | 1  | 0       | 100     | X                           |                             | X  |
| FirmwareVersion     | N/A     | N/A  | N/A     | N/A     | X                           |                             | X  |