Auri™

Auri Third Party Control API

AMPETRONIC | LISTEN TECHNOLOGIES

Contents

Introduction

This documentation describes the API for Ampetronic and Listen Technologies Auri products, including an overview of the interface and syntax, list of commands and examples of usage. Where available for the required control system, we recommend the use of provided plugins. The document assumes that you are familiar with using APIs and have the knowledge to integrate sending and receiving commands into your control system of choice.
Simple set and forget commands can generally be implemented very simply, parsing responses may require more experience in scripting or development for the intended platform.

Overview

Support for the API was introduced in firmware version 1.5, alongside Auri Manager version 1.4 being required to enable the API. If you are running older versions, please update before attempting to use the API.
The API is disabled by default and must be enabled via the Settings page of each device in Auri Manager. See the system manual for more details on how to configure your device.
The API uses UDP commands with no authentication to read and write data. By default, the API is in plaintext. Encryption is supported from firmware version 1.X alongside Auri Manager version 1.X onwards.
If enabling the API without encryption, ensure that the security of the network is considered suitable to avoid misuse.
A limited subset of commands are supported, primarily focused on monitoring device status and managing broadcast security.
Each command sent will receive a response over the same UDP interface.

Key Information

You will need to know the IP address of the device before connecting, this can be found through the Devices page on Auri Manager.
It is recommended to use a fixed IP to avoid the API connection being interrupted, either by assigning a static IP address or reserving the address in the DHCP server.
You must ensure that UDP traffic over port 54666 is allowed between the Auri product and the device intended to control it.

Usage	Type	Address	Port
API	UDP (Unicast)	Device IP (DHCP, Static or Link Local)	54666

Encryption

Beginning with firmware v1.6 and Auri Manager v1.7, the Auri API now supports optional encrypted communication for systems where enhanced transport security is required. Encryption is configured in Auri Manager and affects all API interactions once enabled.

Devices support the following encryption modes:

Encryption	Description	Notes
OFF	All API traffic is sent and received as plaintext UDP	Least secure but most compatible and easy to implement. Ensure network is secured.
AES-256-CBC	Symmetric encryption using AES-256 in Cipher Block Chaining mode	Medium security. Compatible with Q-Sys and Crestron. Recommended when using official plugins.
	Symmetric encryption using AES-256 in Galois/Counter Mode (authenticated encryption)	Most secure but least compatible. Not supported natively in common AV control systems.

When encryption is enabled on the device, it affects all API commands and responses including GET, SET and errors. If an unencrypted or incorrectly encrypted message is received, the device will simply echo back the message that was sent.

Using AES-256-CBC, the first 16 characters of the message are the IV. The remainder of the message is the encrypted text, using PKCS#7 padding. The IV must be unique per message, and cryptographically random.

The encryption key is accessed from Auri Manager and will be 64 characters of hexadecimal. Encryption keys are unique to each device and can be refreshed at any point. This hex string will need converting into byte values to create a 32 byte key before being used with a crypto function.2

Command Syntax

Commands must be terminated by the "\r" carriage return (ASCII 13).
All commands intended to read data start with GET.
All commands intended to write data start with SET.
Commands have hierarchical identifiers depending on the property in question, for example a system command will simply be –

```
GET SYSTEM STATUS\r
```

However, a radio command must specify the radio number, eg.

```
GET RADIO 1 ENCRYPTION\r
```

And going further an input command must specify the stream and input numbers, eg.

```
GET AUDIO STREAM 1 INPUT 1 MUTE\r
```

SET commands use the same syntax, with a value specified after an " = " sign, the spacing is important and must be followed exactly to avoid errors.
For Boolean fields the values are specified as ON or OFF, eg.

```
SET RADIO 1 ENCRYPTION = ON\r
```

For string fields the values must be encapsulated in quote marks, eg.

```
SET RADIO 1 ENCRYPTION BROADCAST_NAME = "Meeting Room"\r
```

Command Responses

All commands will receive a response over the same UDP interface.
Both GET and SET commands will respond in the same way, confirming the current value of the parameter, eg.

```
Command   >> GET RADIO 1 ENCRYPTION PRIVACY_KEY\r
Response  >> RADIO 1 ENCRYPTION PRIVACY_KEY = "Password"\r
Command   >> SET RADIO 1 ENCRYPTION PRIVACY_KEY = "New Password"\r
Response  >> RADIO 1 ENCRYPTION PRIVACY_KEY = "New Password"\
```

Errors

If the API encounters an error then it will return this in place of the usual response.
The below table shows a list of potential error responses, the description and an example.

For each example the following approach is used –

```
> INVALID COMMAND
> ERROR RESPONSE
> CORRECT COMMAND
> NORMAL RESPONSE
```

Error Code	Description	Example
201	No GET or SET specified	> SYSTEM STATUS\r > ERROR 201 <SYSTEM STATUS> > GET SYSTEM STATUS\r > SYSTEM STATUS = 0
202	No module identifier specified	> GET STATUS\r > ERROR 202 <STATUS> > GET SYSTEM STATUS\r > SYSTEM STATUS = 0
203	No parameter identifier specified	> GET SYSTEM\r > ERROR 203 <SYSTEM> > GET SYSTEM STATUS\r > SYSTEM STATUS = 0
204	Parameter setting not specified	> SET SYSTEM IDENTIFY\r > ERROR 204 <SYSTEM IDENTIFY> > SET SYSTEM IDENTIFY = ON\r > SYSTEM IDENTIFY = ON
205	Unable to process message	> GET SYSTEM STATUS > ERROR 205 <SYSTEM STATUS> > GET SYSTEM STATUS\r > SYSTEM STATUS = 0
8	Unknown identifier specified	> GET RADIO 3 ENCRYPTION\r > ERROR 8 <RADIO 3 ENCRYPTION> > GET RADIO 2 ENCRYPTION\r > RADIO 2 ENCRYPTION = ON
17	Parameter setting too long	> SET RADIO 1 ENCRYPTION PRIVACY_KEY = “12345678901234567” > ERROR 17 <RADIO 1 ENCRYPTION PRIVACY_KEY> > SET RADIO 1 ENCRYPTION PRIVACY_KEY = “1234567890123456” > RADIO 1 ENCRYPTION PRIVACY_KEY = “1234567890123456”
37	Parameter setting too short	> SET RADIO 1 ENCRYPTION PRIVACY_KEY = “123” > ERROR 37 <RADIO 1 ENCRYPTION PRIVACY_KEY> > SET RADIO 1 ENCRYPTION PRIVACY_KEY = “1234” > RADIO 1 ENCRYPTION PRIVACY_KEY = “1234”

List of Supported Commands – TX2N Transmitter

The following commands are supported by the Auri TX2N and Auri TX2N-D Transmitters.

GET Commands

Command	Responses
GET SYSTEM STATUS	0 (OK) / Non-Zero (Fault)
GET RADIO [1/2] ENCRYPTION	ON/OFF
GET RADIO [1/2] ENCRYPTION BROADCAST_NAME	String
GET RADIO [1/2] ENCRYPTION PRIVACY_KEY	String
GET RADIO [1/2] TRANSMITTER OUTPUT	ON/OFF
GET AUDIO STREAM [1/2] PROGRAM INFO	String
GET AUDIO STREAM [1/2] INPUT [1/2] MUTE	ON/OFF
GET AUDIO STREAM [1/2] OUTPUT LEVEL LEFT	Integer -96 to 0
GET AUDIO STREAM [1/2] OUTPUT LEVEL RIGHT	Integer -96 to 0

SET Commands

Command	Supported Values
SET SYSTEM IDENTIFY	ON
SET RADIO [1/2] ENCRYPTION	ON/OFF
SET RADIO [1/2] ENCRYPTION BROADCAST_NAME	String, 4-32 characters, extended ASCII
SET RADIO [1/2] ENCRYPTION PRIVACY_KEY	String, blank, or 4-16 characters, extended ASCII
SET RADIO [1/2] TRANSMITTER OUTPUT	ON/OFF
SET AUDIO STREAM [1/2] PROGRAM INFO	String, 4-32 characters, extended ASCII
SET AUDIO STREAM [1/2] INPUT [1/2] MUTE	ON/OFF

List of Supported Commands – D4 and D16 Docking Stations

The following commands are supported by the Auri D4 and Auri D16 Docking Stations.

GET Commands

Command	Responses
GET SYSTEM STATUS	0 (OK) / Non-Zero (Fault)
GET DOCK ENCRYPTION BROADCAST_NAME [1-32]	String
GET DOCK ENCRYPTION PRIVACY_KEY [1-32]	String

SET Commands

Command	Supported Values
SET SYSTEM IDENTIFY	ON
SET DOCK ENCRYPTION BROADCAST_NAME [1-32]	String, 4-32 characters, extended ASCII
SET DOCK ENCRYPTION PRIVACY_KEY [1-32]	String, blank, or 4-16 characters, extended ASCII

Testing a Connection

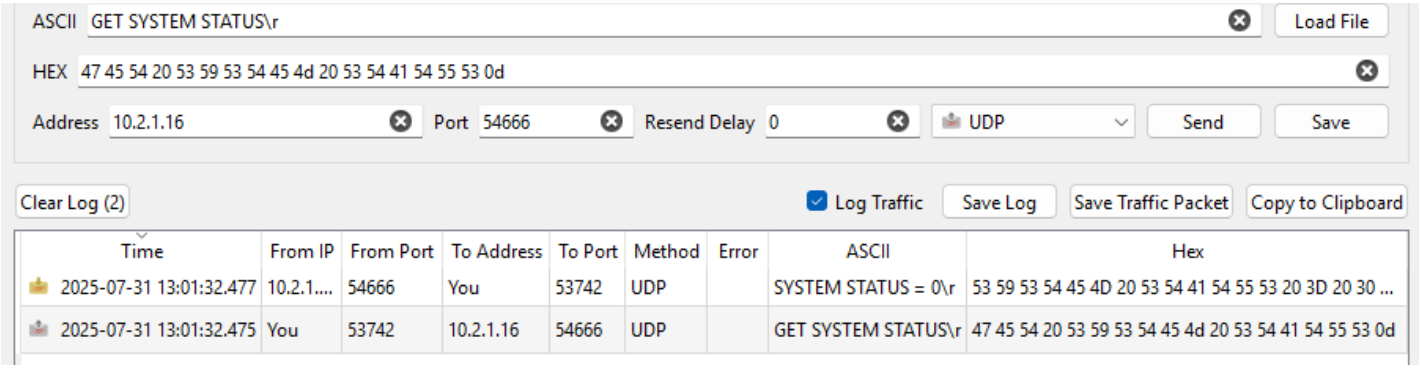
One of the simplest ways to get started is by sending the Identify command (SET SYSTEM IDENTIFY = ON) and confirming that the LED on the device starts flashing for 30 seconds.
You can test this in PowerShell using the following command, replacing 10.2.1.16 with your device IP address –

```
$cmd = "SET SYSTEM IDENTIFY = ON"; $msg = $cmd + "`r"; $u = New-Object System.Net.Sockets.
UdpClient; $u.Send([Text.Encoding]::ASCII.GetBytes($msg), $msg.Length, "10.2.1.16", 54666);
$u.Close()
```

The same test can be carried out in Q-Sys using the basic Command Buttons component –

Checking Responses

In order to check a response, you will need a script or application which can maintain a UDP socket and listen for packets being sent back from the Auri device.
Packet Sender is a simple, free tool that allows sending and receiving of UDP messages, for example –



Node.js Example

An example is also provided below for a node.js implementation, which simply returns the device status to the command line.

```
const dgram = require('dgram');

// Configuration
const deviceIP = '10.2.1.16';
const devicePort = 54666;
const command = 'GET SYSTEM STATUS';
const timeout = 5000; // 5 seconds

// Create UDP client
const udpClient = dgram.createSocket('udp4');
let isComplete = false;

function cleanup() {
    if (!isComplete) {
        isComplete = true;
        udpClient.close();
    }
}

// Handle incoming responses
udpClient.on('message', (response, sender) => {
    console.log(`Response: ${response.toString()}`);
    console.log(`From: ${sender.address}:${sender.port}`);
    cleanup();
});

// Handle connection errors
udpClient.on('error', (error) => {
    console.error(`UDP Error: ${error.message}`);
    cleanup();
});

// Send command to device
const message = command + '\r';
udpClient.send(message, devicePort, deviceIP, (error) => {
    if (error) {
        console.error(`Send failed: ${error.message}`);
        cleanup();
        return;
    }
    console.log(`Sent: "${command}" to ${deviceIP}:${devicePort}`);
});

// Set timeout
setTimeout(() => {
    if (!isComplete) {
        console.log('No response received within timeout period');
        cleanup();
    }

}, timeout);
```

```
Windows PowerShell
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Test> node auri-udp-test.js
Sent: "GET SYSTEM STATUS" to 10.2.1.16:54666
Response: SYSTEM STATUS = 0
From: 10.2.1.16:54666
```

Q-Sys Lua Example

As an alternative example, the following lua script can be used in Q-Sys with the Text Controller component to execute the same function, returning the device status to the debug output.

```
local udp = UdpSocket.New()
local timeoutTimer = Timer.New()
local done = false

-- Configuration
local deviceIP = “10.2.1.16”
local devicePort = 54666
local command = “GET SYSTEM STATUS”
local timeout = 5

-- Handle incoming responses
udp.Data = function(socket, packet)
    print(“Response: “ .. packet.Data)
    print(“From: “ .. packet.Address .. “:” .. packet.Port)
    udp:Close()
    timeoutTimer:Stop()
    done = true
end

-- Set timeout
timeoutTimer.EventHandler = function()
    if not done then
        print(“Timeout - no response”)
        udp:Close()
    end
end

-- Send command to device
udp:Open()
udp:Send(deviceIP, devicePort, command .. “\r”)
print(“Sent: “ .. command)
timeoutTimer:Start(timeout)
```

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```lua
local udp = UdpSocket.New()
local timeoutTimer = Timer.New()
local done = false

-- Configuration
local deviceIP = "10.2.1.16"
local devicePort = 54666
local command = "GET SYSTEM STATUS"
local timeout = 5

-- UDP response handler
udp.Data = function(socket, packet)
    print("Response: " .. packet.Data)
    print("From: " .. packet.Address .. ":" .. packet.Port)
    udp:Close()
    timeoutTimer:Stop()
    done = true
end

-- Timeout handler
timeoutTimer.EventHandler = function()
    if not done then
        print("Timeout - no response")
        udp:Close()
    end
end

-- Send command
udp:Open()
udp:Send(deviceIP, devicePort, command .. "\r")
print("Sent: " .. command)
timeoutTimer:Start(timeout)
```

Debug Output | Normal | AutoSave

```
2025-07-31T13:00:19.367    Starting Script
2025-07-31T13:00:19.367    Sent: GET SYSTEM STATUS
2025-07-31T13:00:19.368    Response: SYSTEM STATUS = 0

2025-07-31T13:00:19.368    From: 10.2.1.16:54666
```

Q-Sys Lua Example with Encryption

The following code demonstrates a basic implementation of AES-256-CBC encryption on top of the previous Q-Sys example to provide security on the API transport.

Replace the key_hex value with the encryption key set in Auri Manager for the device.

```
local udp = UdpSocket.New()
local timeoutTimer = Timer.New()
local done = false

-- Configuration
local deviceIP = “10.2.1.16”
local devicePort = 54666
local command = “GET SYSTEM STATUS”
local timeout = 5

-- Encryption key set in Auri Manager
local key_hex =
“0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef”

-- Convert hex key to bytes
local function hex_to_bytes(hex)
  local t = {}
  for i = 1, #hex, 2 do
    t[#t+1] = string.char(tonumber(hex:sub(i, i+1), 16))
  end
  return table.concat(t)
end

local key_bytes = hex_to_bytes(key_hex)

-- Decrypt response: format is [16-byte IV][ciphertext]
local function decrypt_response(packet_bytes)
  if #packet_bytes < 16 then
    return nil, “Response too short”
  end

  local iv = packet_bytes:sub(1, 16)
  local ciphertext = packet_bytes:sub(17)

  local success, plaintext = pcall(Crypto.Decrypt, Crypto.Cipher.AES_256_CBC,
key_bytes, iv, ciphertext)
  if not success then
    return nil, “Decryption failed”
  end
```

```
  return plaintext
end

-- Handle incoming responses
udp.Data = function(socket, packet)
  local plaintext, err = decrypt_response(packet.Data)

  if plaintext then
    print("Response: " .. plaintext)
    print("From: " .. packet.Address .. ":" .. packet.Port)
  else
    print("Decryption error: " .. err)
  end

  udp:Close()
  timeoutTimer:Stop()
  done = true
end

-- Set timeout
timeoutTimer.EventHandler = function()
  if not done then
    print("Timeout - no response")
    udp:Close()
  end
end

-- Send encrypted command
udp:Open()
local iv = Crypto.GetRandomBytes(16)
local ciphertext = Crypto.Encrypt(Crypto.Cipher.AES_256_CBC, key_bytes, iv,
command .. "\r")
udp:Send(deviceIP, devicePort, iv .. ciphertext)
print("Sent: " .. command)
timeoutTimer:Start(timeout)
```

AMPETRONIC Unit 2, Trentside Business Village, Farndon Road, Newark NG24 4XB, United Kingdom
Phone: +44.1636.610062 www.ampetronic.com

LISTEN TECHNOLOGIES 14912 Heritage Crest Way, Bluffdale, Utah 84065-4818 USA
Phone: +1.801.233.8992 Toll-Free: 1.800.330.0891 www.listentech.com

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