unIFY 3rd Party Control
For Remote Control of unIFY Devices

Software API

Date 11/08/2016

Revision 06

Contents

1 – Overview of 3rd Party Control

All Attero Tech unIFY devices have the ability to be controlled remotely by a 3rd party system. They utilize a simple ASCII based protocol to allow control of unIFY devices on the fly using RS-232 serial or UDP network control.

For Ethernet networked products, there are two different protocol options. The Dante proprietary interface (-C) is reserved for products where support for this interface such as Symetrix Radius, Prism and Edge products and Attero Tech's unIFY CommandHub. For other control systems, the direct UDP (-U) command interface should be used. This document describes the protocol that the direct UDP command interface uses.

The command interface a device supports is determined by the firmware the device has loaded in it. Whether a device does or does not support the direct UDP command interface can be found by using either of the two methods:

1) Using unIFY Control Panel V2.1 or newer, the control interface type is shown by right clicking on a device in the device list and selecting Device Info. The "Control Type" field will indicate either –U or –C for a supported Attero Tech device.
2) Using Dante Controller, look at the devices "Product Version" and "Firmware Version". If the Product Version is V2.x.x or V3.x.x, or the Product Version is V4.x.x and the Firmware Version is V2.0.0, the software supports the -U UDP interface. This applies to all products except the unDNEMO, and unDNEMO-BT.

Devices can be ordered with the correct firmware to support direct UDP control interface by adding a "-U" suffix to the 900-xxxx-yy part number. For devices in the field that have firmware that support the Dante Proprietary interface (-C), in the firmware may be changed to support the direct UDP interface and this change can be applied in the field.

Note: Older units may have firmware that pre-dates in-field updates. If you have one of these, and need to update the device, contact Attero Tech support.

2 – Message Format

The control messages used by the direct UDP command interface have a very simple format. No matter what the device, the format of the message is always the same. The overall format of the message contains only printable ASCII characters so that they can be debugged easily. Each message contains a number of data fields each separated by a space. The message is then terminated with a carriage return. The general format of a message is shown below:

`<Command> <Parameter1> <Parameter2><CR>`

Field Name	Description
`<Command>`	The command that will be given to the device.
`<Parameter1>`	First optional parameter. See device command tables below for specific details
`<Parameter2>`	Second optional parameter. See device command tables below for specific details
`<CR>`	Carriage return character (ASCII character 13)

A typical message would look something like the following:

`IG 1 25.0<CR>`

2.1 – Command Responses

Each command sent to a device should return a response. Like the original command, the response only contains printable ACSII characters, each field is separated by a space and the message is terminated carriage return. The general format of a response message is shown below.

`<ACK> <Command> <Parameter1> <Parameter2><CR>`

Field Name	Description
`<ACK>`	Success or failure indication: "ACK" if successful; "NACK if unsuccessful
`<Command>`	The original command that was given to the device
`<Parameter1>`	First optional parameter from the original command message
`<Parameter2>`	Second optional parameter from the original command message
`<CR>`	Carriage return character (ASCII character 13)

If the command is successful, the device will return an ACK response. The ACK message for our example message above would be

`ACK IG 1 25.0<CR>`

If the command is processed but for some reason unsuccessful, the device will return a NACK response instead of an ACK. Just like the ACK, the original command will also be include in the NACK message.

`NACK IG 1 25.0<CR>`

There are cases where the device will not respond to a command at all. This is caused when the device unable to process the message it was sent for some reason. The most typical situation where this could happen is that the terminating <CR> character missing. Alternatively it could also be that the device is currently supporting the wrong command interface.

2.2 – Delivery Method

Commands are sent by placing them in a UDP packet which is sent directly to the IP address of the device being controlled. All direct UDP messages should be sent to port 49494 of the recipient device. Responses to commands will be directed back to the specific IP address and port that the request originated from.

Note: the uND32 uses a slightly different delivery method. Please refer to the uND32 section for more details.

3 – unDIO2x2 Commands

Note: unDIO2x2 devices must be product version V3.x.x or be V4.x.x with firmware V2.0.0 to support direct UDP commands.

The following commands are available for the unDIO2x2.

Description	Command	Parameter 1	Parameter 2
Input Gain	IG	Channel # (1 or 2)	Gain (0.0, 25.0 or 40.0)
Phantom Power	PP	Channel # (1 or 2)	State (0 = off or 1 = on)
Output Boost	OG	Channel # (1 or 2)	Gain (0.0 or 10.0)
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..9])	-
Save preset values	SAVE	x (x = [0..9])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-

3.1 – Input Gain

Select microphone or line input mode by setting the amount of microphone pre-amplifier input gain. The command sets a specific gain on a specific input. Input gains available are 0.0, 25.0, or 40.0. The gain values must contain the decimal value so sending a value of 0, 25 or 40 will not be accepted.

Example command:
```
IG 1 25.0<CR>
```
Sets the input gain of channel 1 to +25dB

Example response:
```
ACK IG 1 25.0<CR>
```
OK response

3.2 – Phantom Power

Activates or deactivates the phantom power on a particular input.

Example command:
```
PP 2 0<CR>
```
Sets the phantom power on input 2 to be off

Example response:
```
ACK PP 2 0<CR>
```
OK response

3.3 – Output Boost

Select the amount of gain to be used by the hardware output boost amplifier on a particular output. The output gains available are 0.0 or 10.0. The gain values must contain the decimal value so sending a value of just 0 or 10 will not be accepted.

Example command:
```
OG 1 10.0<CR>
```
Sets the output gain of channel 1 to be +10dB

Example response:
```
ACK OG 1 10.0<CR>
```
OK response

3.4 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command turns on the identify function and it will remain active until the appropriate Identify command is sent to turn it off, or the device is reset or power cycled. The Find Unit command activates the identify function but unlike the identify command the identify function will automatically turn itself off after 5 seconds.

Example commands:

ID 1<CR>	Turn on identify function
ID 0<CR>	Turn off identify function
FU<CR>	Turn on find unit function

Example commands:

ACK ID 1<CR>	OK response
ACK ID 0<CR>	OK response
ACK FU<CR>	OK response

3.5 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. There are ten presets available 0 through 9. A preset stores the devices configuration and includes the input gain setting, the output gain setting, and the phantom power setting. The response to this command from the device is the same format as for a basic command response.

Example command:

LOAD 5<CR>	Load Preset 5
SAVE 3<CR>	Save current settings as preset 3

Example response:

ACK LOAD 5<CR>	OK Response
ACK SAVE 3<CR>	OK Response

3.6 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters. The command takes no parameters.

Example command:

    QUERY<CR>

Example response:

    ACK QUERY IG1=0.0 IG2=25.0 OG1=10.0 OG2=0.0 PP1=0 PP2=1 MUTE=0 ID=0<CR>

The example response shows the device is configured as follows:

    Input 1 Gain 0dB (line level)
    Input 2 Gain +25dB
    Output 1 Gain +10dB
    Output 2 Gain 0dB
    Phantom power Input 1 - off
    Phantom power input 2 – on
    ID function – Disabled

__Note:__ The Query command response contains a MUTE parameter which is no longer supported and should be ignored.

3.7 – Defaults

The DEFAULTS command forces the system to return to factory settings. It sets input gains to 0.0, the output gains to 0.0, phantom power is turned off on both inputs and these same settings are also stored to preset 0. The settings in the remaining presets are left as is. The response from the device to this command is the same format as for a basic command response.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: *Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.*

3.8 – Version

Returns the software version of the host processor in the unDIO2X2. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.3.0<CR>
```

4 – unDX2IO Commands

***Note:** unDX2IO devices must be product version V3.x.x or be V4.x.x with firmware V2.0.0 to support direct UDP commands.*

The following commands are available for the unDX2IO.

Description	Command	Parameter 1	Parameter 2
Input Gain	IG	Channel # (1 or 2)	Gain (0.0, 25.0 or 40.0)
Phantom Power	PP	Channel # (1 or 2)	State (0 = off or 1 = on)
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..9])	-
Save preset values	SAVE	x (x = [0..9])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-

4.1 – Input Gain

Select microphone or line input mode by setting the amount of microphone pre-amplifier input gain. The command sets a specific gain on a specific input. Input gains available are 0.0, 25.0, or 40.0. The gain values must contain the decimal value so sending a value of 0, 25 or 40 will not be accepted.

Example command:
```
IG 1 25.0<CR>
```
Sets the input gain of channel 1 to +25dB

Example response:
```
ACK IG 1 25.0<CR>
```
OK response

4.2 – Phantom Power

Activates or deactivates the phantom power on a particular input.

Example command:
```
PP 2 0<CR>
```
Sets the phantom power on input 2 to be off

Example response:
```
ACK PP 2 0<CR>
```
OK response

4.3 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command turns on the identify function and it will remain active until the appropriate Identify command is sent to turn it off, or the device is reset or power cycled. The Find Unit command activates the identify function but unlike the identify command the identify function will automatically turn itself off after 5 seconds

Example commands:
```
ID 1<CR>
ID 0<CR>
FU<CR>
```
Turn on identify function
Turn off identify function
Turn on find unit function

Example commands:
```
ACK ID 1<CR>
ACK ID 0<CR>
ACK FU<CR>
```
OK response
OK response
OK response

4.4 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. There are ten presets available 0 through 9. A preset stores the devices configuration and includes the input gain settings, and the phantom powers settings. The response to this command from the device is the same format as for a basic command response.

Example command:
```
        LOAD 5<CR>              Load Preset 5
        SAVE 3<CR>              Save current settings as preset 3
```

Example response:
```
        ACK LOAD 5<CR>          OK Response
        ACK SAVE 3<CR>          OK Response
```

4.5 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters.

Example command:
```
        QUERY<CR>
```

Example response:
```
        ACK QUERY IG1=0.0 IG2=25.0 PP1=0 PP2=1 MUTE=0 ID=0<CR>
```

The example response shows the device is configured as follows:
```
        Input 1 Gain – 0
        Input 2 Gain +25dB
        Phantom power Input 1 - off
        Phantom power input 2 – on
        ID function - Disabled
```

Note: The Query command response contains a MUTE parameter which is no longer supported and can therefore be ignored.

4.6 – Defaults

The DEFAULTS command forces the system to return to factory settings. It sets input gains to 0.0, the output gains to 0.0, phantom power is turned off on both inputs and these same settings are also stored to preset 0. The settings in the remaining presets are left as is. The response from the device to this command is the same format as for a basic command response.

Example command:
```
        DEFAULTS<CR>
```

Example response:
```
        ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

4.7 – Version

Returns the software version of the host processor in the unDX2IO. The command takes no parameters.

Example command:
```
        VERSION<CR>
```

Example response:
```
        ACK VERSION 1.3.0<CR>
```

5 – unD3IO Commands

Note: unD3IO devices must be product version V2.x.x, V3.x.x, or be V4.x.x with firmware V2.0.0 to support direct UDP commands.

The following commands are available for the unD3IO.

Description	Command	Parameter 1	Parameter 2
Input Gain	IG	Channel # (1)	Gain (0.0, 25.0 or 40.0)
Phantom Power	PP	Channel # (1)	State (0 = off or 1 = on)
Input Select	IS	Channel # (2)	Input ("A", "B" "A+B")
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..9])	-
Save preset values	SAVE	x (x = [0..9])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-

5.1 – Input Gain

Select microphone or line input mode for the unD3IO's XLR input by setting the amount of microphone pre-amplifier input gain. The first parameter is the channel number and as the XLR input is the first channel, this should always be the value 1. Any other value will result in a NACK response. Input gains available are 0.0, 25.0, or 40.0. The gain values must contain the decimal value so sending a value of 0, 25 or 40 will not be accepted.

Example command:
```
IG 1 25.0<CR>
```
Sets the input gain of channel 1 to +25dB

Example response:
```
ACK IG 1 25.0<CR>
```
OK response

5.2 – Phantom Power

Activates or deactivates the phantom power on the unD3IO XLR input. The XLR is channel 1 so this parameter should always be the value 1. Any other value will result in a NACK response. The second parameter sets the phantom power either on (0) or off (1).

Example command:
```
PP 1 0<CR>
```
Sets the phantom power on input 1 to be off

Example response:
```
ACK PP 1 0<CR>
```
OK response

5.3 – Input Select

Select which of the line level inputs is used as input 2. Input 2 of the unD3IO is used exclusively for the line level only inputs so the first parameter in this command should always be a 2. Any other value will result in a NACK response. The second parameter is which inputs provide audio for the second audio input. The three options are
- o   A – Audio from only the RCA inputs mono-mixed into a single channel
- o   B – Audio from only the stereo-jack input mono-mixed into a single channel
- o   A+B – A mono mix of all the audio from both the RCA and stereo jack inputs

Example commands:
```
IS 2 A<CR>          Sets input select to RCA inputs only
IS 2 B<CR>          Sets input select to stereo jack inputs only
IS 2 A+B<CR>        Sets input select to RCA and stereo jack Mix
```

Example responses:
```
ACK IS 2 A<CR>      OK response
NACK IS 1 B<CR>     Fail response (channel incorrectly set)
```

5.4 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command turns on the identify function and it will remain active until the appropriate Identify command is sent to turn it off, or the device is reset or power cycled. The Find Unit command activates the identify function but unlike the identify command the find unit function will automatically turn itself off after 5 seconds

Example commands:
```
ID 1<CR>            Turn on identify function
ID 0<CR>            Turn off identify function
FU<CR>              Turn on find unit function
```

Example commands:
```
ACK ID 1<CR>        OK response
ACK ID 0<CR>        OK response
ACK FU<CR>          OK response
```

5.5 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. A preset stores the devices configuration and includes the input gain setting, the output gain setting, and the phantom power setting. There are ten presets available 0 through 9. Preset 0 contains the default settings used at power-up. The response to this command from the device is the same format as for a basic command response.

Example command:
```
LOAD 5<CR>          Load Preset 5
SAVE 3<CR>          Save current settings as preset 3
```

Example response:
```
ACK LOAD 5<CR>      OK Response
ACK SAVE 3<CR>      OK Response
```

5.6 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters.

Example command:
```
QUERY<CR>
```

Example response:
```
ACK QUERY IG1=0.0 IS=A PP1=0 ID=0<CR>
```

The example response shows the device is configured as follows:
>   Input 1 Gain – 0
>   Input select – RCA inputs only
>   Phantom power Input 1 – off
>   ID function – Disabled

Note: The Query command response contains a MUTE parameter which is no longer supported and can therefore be ignored.

5.7 – Defaults

The DEFAULTS command forces the system to return to factory settings. It sets input gains to 0.0, the output gains to 0.0, phantom power is turned off on both inputs and these same settings are also stored to preset 0. The settings in the remaining presets are left as is. The response from the device to this command is the same format as for a basic command response.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

5.8 – Version

Returns the software version of the host processor in the unD3IO. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.3.0<CR>
```

6 – unD4I Commands

*Note:** unD4I devices must be product version V3.x.x or be product version V4.x.x with firmware V2.0.0 to support direct UDP commands.

The following commands are available for the unD4I.

Description	Command	Parameter 1	Parameter 2
Input Gain	IG	Channel # (1-4)	Gain (-12.0, 0.0, 3.0, 15.0, 18.0, 30.0, 33.0, or 45.0)
Phantom Power	PP	Channel # (1-4)	State (0 = off or 1 = on)
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..8])	-
Save preset values	SAVE	x (x = [0..8])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-

6.1 – Input Gain

Select microphone or line input mode for a particular unD4I input by setting the amount of microphone pre-amplifier input gain it uses. The first parameter is the channel number and should be between 1 and 4. Any other value will result in a NACK response. Input gains available are -12.0, 0.0, 3.0, 15.0, 18.0, 30.0, 33.0, or 45.0. The gain values must contain the decimal value so sending a value of -12, 0, 3, 15, 18, 30, 33, or 45 will not be accepted.

Example command:
```
        IG 1 15.0<CR>                Sets the input gain of channel 1 to +15dB
```

Example response:
```
        ACK IG 1 15.0<CR>            OK response
```

6.2 – Phantom Power

Activates or deactivates the phantom power on a particular unD4I inputs. The first parameter is the channel number between 1 and 4. Any other value will result in a NACK response. The second parameter sets the phantom power either on (0) or off (1).

Example command:
```
        PP 1 0<CR>                   Sets the phantom power on input 1 to be off
```

Example response:
```
        ACK PP 1 0<CR>               OK response
```

6.3 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command turns on the identify function and it will remain active until the appropriate Identify command is sent to turn it off, or the device is reset or power cycled. The Find Unit command activates the identify function but unlike the identify command the find unit function will automatically turn itself off after 5 seconds

Example commands:

`ID 1<CR>`	Turn on identify function
`ID 0<CR>`	Turn off identify function
`FU<CR>`	Turn on find unit function

Example commands:

`ACK ID 1<CR>`	OK response
`ACK ID 0<CR>`	OK response
`ACK FU<CR>`	OK response

6.4 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. A preset stores the devices configuration and includes the input gain setting, the output gain setting, and the phantom power setting. There are ten presets available 0 through 9. Preset 0 contains the default settings used at power-up. The response to this command from the device is the same format as for a basic command response.

Example command:

`LOAD 5<CR>`	Load Preset 5
`SAVE 3<CR>`	Save current settings as preset 3

Example response:

`ACK LOAD 5<CR>`	OK Response
`ACK SAVE 3<CR>`	OK Response

6.5 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters.

Example command:

`QUERY<CR>`

Example response:

`ACK QUERY IG1=0.0 IG2=0.0 IG3=0.0 IG4=0.0 PP1=OFF PP2=OFF PP3=OFF PP4=OFF ID=OFF DBG=OFF<CR>`

The example response shows the device is configured as follows:

Input 1 through 4 Gain = 0 dB
Phantom power Input 1 through 4 = Off
ID function – Disabled
Dante Debug Mode LEDs Off

6.6 – Defaults

The DEFAULTS command forces the system to return to factory settings. It sets input gains to 0.0, the output gains to 0.0, phantom power is turned off on both outputs and these same settings are also stored to preset 0. The settings in the remaining presets are left as is. The response from the device to this command is the same format as for a basic command response.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

6.7 – Version

Returns the software version of the host processor on the unD4I. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.3.0<CR>
```

7 – unD4I-L Commands

Note: unD4I-L devices must be product version V3.x.x or be product version V4.x.x with firmware V2.0.0 to support direct UDP commands.

The following commands are available for the unD4I-L. It is important to note that the unD4I-L also supports customizable, asynchronous event messages in addition to the standard command set provided in this section. Please refer to the user manual for the unD4I-L on how to configure the logic input event messaging.

Description	Command	Parameter 1	Parameter 2
Input Gain	IG	Channel # (1-4)	Gain (-12.0, 0.0, 3.0, 15.0, 18.0, 30.0, 33.0, or 45.0)
Phantom Power	PP	Channel # (1-4)	State (0 = off or 1 = on)
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..8])	-
Save preset values	SAVE	x (x = [0..8])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-
Read logic input state	RLI	Input # (0-4)	
Read logic output state	RLO	Output # (0-4)	
Write logic output state	WLO	Output # (0-4)	State (0 = Off or 1 = On)
Read logic input voltage	RAC	Input # (1-4)	

7.1 – Input Gain

Select microphone or line input mode for a particular unD4I-L input by setting the amount of microphone pre-amplifier input gain it uses. The first parameter is the channel number and should be between 1 and 4. Any other value will result in a NACK response. Input gains available are -12.0, 0.0, 3.0, 15.0, 18.0, 30.0, 33.0, or 45.0. The gain values must contain the decimal value so sending a value of -12, 0, 3, 15, 18, 30, 33, or 45 will not be accepted.

Example command:
    IG 1 15.0<CR>   Sets the input gain of channel 1 to +15dB

Example response:
    ACK IG 1 15.0<CR>   OK response

7.2 – Phantom Power

Activates or deactivates the phantom power on a particular unD4I-L inputs. The first parameter is the channel number between 1 and 4. Any other value will result in a NACK response. The second parameter sets the phantom power either on (0) or off (1).

Example command:
    PP 1 0<CR>   Sets the phantom power on input 1 to be off

Example response:
    ACK PP 1 0<CR>   OK response

7.3 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command turns on the identify function and it will remain active until the appropriate Identify command is sent to turn it off, or the device is reset or power cycled. The Find Unit command activates the identify function but unlike the identify command the find unit function will automatically turn itself off after 5 seconds

Example commands:

`ID 1<CR>`	Turn on identify function
`ID 0<CR>`	Turn off identify function
`FU<CR>`	Turn on find unit function

Example commands:

`ACK ID 1<CR>`	OK response
`ACK ID 0<CR>`	OK response
`ACK FU<CR>`	OK response

7.4 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. A preset stores the devices configuration and includes the input gain setting, the output gain setting, and the phantom power setting. There are ten presets available 0 through 9. Preset 0 contains the default settings used at power-up. The response to this command from the device is the same format as for a basic command response.

Example command:

`LOAD 5<CR>`	Load Preset 5
`SAVE 3<CR>`	Save current settings as preset 3

Example response:

`ACK LOAD 5<CR>`	OK Response
`ACK SAVE 3<CR>`	OK Response

7.5 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters.

Example command:

```
QUERY<CR>
```

Example response:

```
ACK QUERY IG1=0.0 IG2=0.0 IG3=0.0 IG4=0.0 PP1=OFF PP2=OFF PP3=OFF PP4=OFF ID=OFF RLI=15
RLO=0 RAS=0 DBG=OFF<CR>
```

The example response shows the device is configured as follows:

Input 1 through 4 Gain = 0 dB
Phantom power Input 1 through 4 = Off
ID function – Disabled
Logic Inputs = 0xf (MSB Input 4 = High, Input 3 = High, Input 2 = High, LSB Input 1 = High)
Logic Outputs = 0x0 (MSB Output 4 = Low, Input 3 = Low, Input 2 = Low, LSB Input 1 = Low)
Dante Debug Mode LEDs Off

Note: The Query command response contains a RAS parameter which is no longer supported and can therefore be ignored.

7.6 – Defaults

The DEFAULTS command forces the system to return to factory settings. It sets input gains to 0.0, the output gains to 0.0, phantom power is turned off on both inputs and these same settings are also stored to preset 0. The settings in the remaining presets are left as is. The response from the device to this command is the same format as for a basic command response.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

7.7 – Version

Returns the software version of the host processor on the unD4I-L. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.3.0<CR>
```

7.8 – Read Logic Input State

Reads the logic state of one or all the logic inputs of the unD4I-L.

The command must be accompanied by a parameter which determines if the response will contain the state of an individual input (1-4) or the states of all inputs (0). When requesting a single input state, the response will be either a '0' for off or a '1' for on. When requesting all input states, the response will contain a decimal number representing a 4-bit bitmask of the input states where input 1 is the LSB and input 4 the MSB. The table below shows the possible values that can be returned and the state of each input that the value represents.

Value	State			
	Input 4	Input 3	Input 2	Input 1
0	Off	Off	Off	Off
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
10	On	Off	On	Off
11	On	Off	On	On
12	On	On	Off	Off
13	On	On	Off	On
14	On	On	On	Off
15	On	On	On	On

Example commands:

```
RLI 0<CR>          Retrieve the state of all logic inputs
RLI 1<CR>          Retrieve the state of just input one
```

Example responses:

```
ACK RLI 0 10<CR>   All input states where inputs 4 and 2 are on and inputs 1 and 3 are off.
ACK RLI 1 0<CR>    State for input 1 is off
```

7.9 – Read Logic Output State

Reads the logic state of one or all the logic outputs of the unD4I-L. The command must be accompanied by a parameter which determines if the response will contain the state of an individual output (1-4) or the states of all outputs (0). When requesting a single output state, the response will be either a '0' for off or a '1' for on. When requesting all output states, the response will contain a decimal number representing a 4-bit bitmask of the output states where input 1 is the LSB and input 4 the MSB. The table below shows the possible values that can be returned and the state of each output that the value represents.

Value	State			
	Output 4	Output 3	Output 2	Output 1
0	Off	Off	Off	Off
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
10	On	Off	On	Off
11	On	Off	On	On
12	On	On	Off	Off
13	On	On	Off	On
14	On	On	On	Off
15	On	On	On	On

Example commands:

    RLO 0<CR>   Retrieve the state of all logic outputs
    RLO 1<CR>   Retrieve the state of just output one

Example responses:

    ACK RLO 0 10<CR>   All output states where outputs 4 and 2 are on and outputs 1 and 3 are off.
    ACK RLO 1 0<CR>   State for output 1 is off

...

7.10 – Write Logic Output State

Writes a new logic state for one or all the logic outputs of the unD4I-L. This command can take one of two forms.

7.10.1 – Set Single Channel

The command must be accompanied by two parameters. The first parameter determines which output state (1-4) is to be changed. The second parameter must be either a '0' for off or a '1' for on.

Example commands:

`WLO 1 1<CR>`	Write the logic output 1 to be on
`WLO 2 1<CR>`	Write the logic output 2 to be on
`WLO 2 0<CR>`	Write the logic output 2 to be off

Example responses:

`ACK WLO 1 1<CR>`	Confirmation output 1 is now set to on
`ACK WLO 2 1<CR>`	Confirmation output 2 is now set to on
`ACK WLO 2 0<CR>`	Confirmation output 2 is now set to off

7.10.2 – Set All Channels

The command must be accompanied by two parameters. The first parameter must be a 0 indicating all channels are to be written at once. The second parameter contains a decimal number representing a 4-bit bitmask of the output states where input 1 is the LSB and input 4 the MSB. The table below shows the possible values that can be used and the state of each output that the value would represent.

Example commands:

`WLO 0 5<CR>`	Write the state of all logic outputs – Outputs 1 and 3 on, 2 and 4 off

Example responses:

`ACK WLO 0 5<CR>`	Confirmation outputs 1 and 4 are off, 1 and 3 are on

Value	State			
	Output 4	Output 3	Output 2	Output 1
0	Off	Off	Off	Off
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
10	On	Off	On	Off
11	On	Off	On	On
12	On	On	Off	Off
13	On	On	Off	On
14	On	On	On	Off
15	On	On	On	On

7.11 – Read Logic Input Voltage

Reads the actual voltage level on a logic input. The value returned is the ASCII representation of the 12-bit ADC reading (0-4095). The actual voltage value can be calculated using the following formula:

$$Voltage = \frac{x}{4096} \times 3.3$$ where x is the value returned by the command.

Example commands:

    RAC 2<CR>   Read analog level on logic input 2

Example responses:

    ACK RAC 2 2048<CR>   Voltage level on logic input 2 is $\frac{2048}{4096} \times 3.3 = 1.65V$

8 – unD32 Commands

Unlike other devices, the UDP packet can either be addressed to the specific IP address of the device to be controlled or it can be a broadcast message instead. However, the message *MUST* include the device name which needs to be prefixed to the commands and separated from the command by a space. The advantage of using a broadcast IP address is the control system does not need to know the specific IP address of any unD32 as any unD32 receiving the broadcast message will use the device name as a filter and only the unD32 that is specifically referenced in the message will execute the command. The broadcast method does not allow for a single command to affect multiple unD32 units.

Regardless of whether the UDP message is sent to a specific IP or a broadcast IP, packets must be directed to port 57007 and any response is returned back to the default response port 57008. These ports may be changed from the unD32 control application.

The following commands are available for the unD32.

Description	Command	Parameter 1	Parameter 2
Output Mute	OM	Channel # (1 – 32 or M)	Mute (0= off, 1 = on)
Output Attenuation	OA	Channel # (1 – 32 or M)	Level (-70.0 – 0.0)
Retrieve current settings	QUERY	Type (<Empty>, M or 1 – 32)	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-

8.1 – Output Mute

Sets the mute status of a particular output or the master mute. Individual channel mutes can be used to mute a particular output channel. The master mute can be used to mute all channels simultaneously. The first parameter selects which output or outputs are affected. Use a value between 1 and 32 to change an individual channel mute or use 'M' to change the master mute. The second parameter contains the new mute status. A '0' turns the mute off while a '1' turns the mute on.

Example commands:
```
unD32-000000 OM 1 0<CR>          Turns channel 1 mute off
unD32-000000 OM M 1<CR>          Turns master mute on
```

Example responses:
```
unD32-000000 ACK OM 1 0<CR>      Channel 1 mute off response
unD32-000000 ACK OM M 1<CR>      Master mute on response
```

Notes:
The master mute status always overrides any individual channel mute settings. The table below shows how the master mute and individual channel mute settings affect the audio of any given output channel.

Master mute Status	Channel Mute Status	Resultant Output
Off	Off	Audio Output
Off	On	Muted
On	Off	Muted
On	On	Muted

8.2 – Output Attenuation

Sets the attenuation level of a particular output or the master attenuation. Individual channel attenuation can be used to reduce the output level on a particular output channel. The master attenuation attenuates the levels across all channels.

The first parameter of this command selects which outputs are affected. Use a value between 1 and 32 to change an individual channel attenuation level or 'M' to change the master attenuation level. The second parameter contains the new attenuation level in dB. A value of 0.0 represents full volume. A value of -70.0 represents minimum volume. The attenuation value internally is limited to steps of 0.375dB. Any value will be accepted and rounded to the nearest available step.

Example commands:

```
unD32-000000 OA 1 0.0<CR>           Set channel 1 attenuation to 0
unD32-000000 OA M 35.0<CR>          Set master attenuation to -35dB
```

Example responses:

```
unD32-000000 ACK OM 1 0.0<CR>       Channel 1 mute off response
unD32-000000 ACK OM M 1<CR>         Master mute on response
```

Notes:
The effects of master attenuation and individual channel attenuation are cumulative.

8.3 – Query

A QUERY command allows the control system to get a snapshot of the current state of the devices attenuation levels and mute settings. Using the channel number as the parameter will result in only that channels information being returned. Using 'M' as the parameter will only return the master attenuation and master mute settings. In both cases the response will include the attenuation level and the mute status.

The attenuation level is returned as a number expressed in dB. It will always begin with a '-', and will always be shown to 3 decimal places. The mute status is either a 0 or a 1 where 0 means the mute is not active and a 1 meaning the mute is active.

Example command:

```
unD32-000000 QUERY 1<CR>            Request ch 1 attenuation level and mute status
unD32-000000 QUERY M<CR>            Request master attenuation level and mute status
```

Example response:

```
unD32-000000 ACK QUERY 1 -50.250 0<CR>      Response to channel 1 only Query
unD32-000000 ACK QUERY M -0.000 1<CR>       Response to Master only Query
```

The QUERY command can also be sent with no parameters. The response includes the master attenuation and master mute status as well as all channel attenuation levels and channel mute statuses. The format of this response is somewhat different from other command responses with each set of parameters separated by a <LF><CR>.

Example command:

```
unD32-000000 QUERY<CR>
```

Example response:

```
unD32-000000 ACK QUERY<CR><LF>
Master:  -0.000 0<CR><LF>
 [1]:  -0.000 0<LF><CR>
 [2]:  -0.000 0<LF><CR>
 [3]:  -0.000 0<LF><CR>
  .
  .
  .
  .
 [30]:  -0.000 0<LF><CR>
 [31]:  -0.000 0<LF><CR>
 [32]:  -0.000 0<LF><CR>
```

8.4 – Defaults

The DEFAULTS command forces the system to return to its original factory settings. The response from the device to this command is the same format as for a basic command response.

Example command:
```
unD32-000000 DEFAULTS<CR>
```

Example response:
```
unD32-000000 ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

8.5 – Version

Returns the software version of the unD32. The command takes no parameters.

Example command:
```
unD32-000000 VERSION<CR>
```

Example response:
```
unD32-000000 ACK VERSION 1.3.0<CR>
```

9 – unDX4I Commands

Note: unDX4I devices must be product version V4.x.x with firmware V2.0.0 to support direct UDP commands.

The following commands are available for the unDX4I.

Description	Command	Parameter 1	Parameter 2
Input Gain	IG	Channel # (0-4)	Gain (-18.0, - 3.0, 25.0, 40.0)
Phantom Power	PP	Channel # (0-4)	State (0 = off or 1 = on)
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..9])	-
Save preset values	SAVE	x (x = [0..9])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-
Output Volume	OV	Channel # (0-2)	Level (-60 to 0, 1 dB increments)
Output Mute	OM	Channel # (0-2)	State (0 = unmuted, 1 = muted)

9.1 – Input Gain

Select microphone or line input mode for a particular unDX4I input by setting the amount of microphone pre-amplifier input gain it uses. The first parameter is the channel number and should be between 0 and 4. A channel number of 0 will apply the gain setting to all available input channels. A channel value of 1, 2 3, or 4 will set the input gain on the specified channel only. Any other channel value will result in a NACK response. Input gains available are -18.0, -3.0, 25.0 and 40.0. The gain values must contain the decimal value so sending a value of -18, for example, will not be accepted.

Example command:
        IG 1 25.0<CR>   Sets the input gain of channel 1 to +25dB

Example response:
        ACK IG 1 25.0<CR>   OK response

9.2 – Phantom Power

Activates or deactivates the phantom power on a particular unDX4I inputs. The first parameter is the channel number and should be between 0 and 4. A channel number of 0 will apply the phantom power state to all available input channels. A channel value of 1, 2, 3, or 4 will set the phantom power state on the specified channel only. Any other value will result in a NACK response. The second parameter defines the new state the phantom power will be set to and is either on (0) or off (1).

Example command:
        PP 1 0<CR>   Sets the phantom power on input 1 to be off

Example response:
        ACK PP 1 0<CR>   OK response

9.3 – Output Volume (Attenuation)

Sets the output volume for a selected output channel. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the output volume to all output channels. A channel value of 1 or 2 will set the output volume on the specified channel only. Any other channel value will result in a NACK being returned. The volume must be an integer number between -60 and 0 where -60 is -60dB attenuation of the signal (low volume) and 0 is no attenuation (full volume).

*Note: This is attenuation only and applies no amplification to the audio signals.

Example command:

    OV 0 -20<CR>   Sets both output channels to -20 dB attenuation.

Example response:

    ACK OV 0 -20<CR>   OK response

9.4 – Output Mute

Sets the output mute state for a selected output channel. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the output mute setting to all output channels. A channel value of 1 or 2 will set the output mute on the specified channel only. Any other channel value will result in a NACK being returned. The second parameter is the mute state. Use a zero ("0") for unmuted and a one ("1") for muted. Any other value will result in a NACK being returned.

*Note: The output mute setting is independent of the volume control.

Example command:

    OM 2 1<CR>   Mute output channel 2.

Example response:

    ACK OM 2 1<CR>   OK response

9.5 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command (ID) turns on the identify function and it will remain active until the appropriate identify command is sent to turn it off, or the device is reset or power cycled. The find unit command (FU) activates the identify function but unlike the identify command the find unit function will automatically turn itself off after 5 seconds

Example commands:

    ID 1<CR>   Turn on identify function
    ID 0<CR>   Turn off identify function
    FU<CR>   Turn on find unit function

Example commands:

    ACK ID 1<CR>   OK response
    ACK ID 0<CR>   OK response
    ACK FU<CR>   OK response

9.6 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. A preset stores the devices configuration and includes the input gain setting, the output gain setting, and the phantom power setting. There are ten presets available 0 through 9. Preset 0 contains the default settings used at power-up. The response to this command from the device is the same format as for a basic command response.

Example command:

    LOAD 5<CR>   Load Preset 5
    SAVE 3<CR>   Save current settings as preset 3

Example response:

    ACK LOAD 5<CR>   OK Response
    ACK SAVE 3<CR>   OK Response

9.7 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters.

Example command:
```
QUERY<CR>
```

Example response:
```
ACK QUERY IG1=-3.0 IG2=-3.0 IG3=-3.0 IG4=-3.0 PP1=OFF PP2=OFF PP3=OFF PP4=OFF ID=OFF OV1=0
OV2=0 OM1=OFF OM2=OFF<CR>
```

The example response shows the device is configured as follows:
    Input 1 Gain -3.0 dB
    Input 2 Gain -3.0 dB
    Input 3 Gain -3.0 dB
    Input 4 Gain -3.0 dB
    Phantom Power Input 1 Off
    Phantom Power Input 2 Off
    Phantom Power Input 3 Off
    Phantom Power Input 4 Off
    ID function – Disabled
    Output 1 Volume 0 dB
    Output 2 Volume 0 dB
    Output 1 Mute = Unmuted
    Output 2 Mute = Unmuted

9.8 – Defaults

The DEFAULTS command forces the system to return to factory settings. It sets input gains to -3.0dB, the output gains to 0dB, phantom power is turned off on both XLR inputs and these same settings are also stored to preset 0. The settings in the remaining presets are left as is. The response from the device to this command is the same format as for a basic command response.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

9.9 – Version

Returns the software version of the host processor on the unDX4I. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.3.0<CR>
```

10 – unD6IO Commands

Note: *unD6IO devices must be product version V4.x.x with firmware V2.0.0 to support direct UDP commands.*

The following commands are available for the unD6IO.

Description	Command	Parameter 1	Parameter 2
Input Gain	IG	Channel # (0-2)	Gain (-18.0, - 3.0, 25.0, 40.0)
Phantom Power	PP	Channel # (0-2)	State (0 = off or 1 = on)
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..9])	-
Save preset values	SAVE	x (x = [0..9])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-
Output Volume	OV	Channel # (0-2)	Level (-60 to 0, 1 dB increments)
Output Mute	OM	Channel # (0-2)	State (0 = unmuted, 1 = muted)
Line Input Select	IS	Channel # (0, 3,4)	Input (A, B, A+B)

10.1 – Input Gain (XLR inputs only)

Select microphone or line input mode for a particular unD6IO input by setting the amount of microphone pre-amplifier input gain it uses. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the gain setting to all available input channels. A channel value of 1 or 2 will set the input gain on the specified channel only. Any other channel value will result in a NACK response. Input gains available are -18.0, -3.0, 25.0 and 40.0. The gain values must contain the decimal value so sending a value of -18, for example, will not be accepted.

Example command:
        IG 1 25.0<CR>   Sets the input gain of channel 1 to +25dB

Example response:
        ACK IG 1 25.0<CR>   OK response

10.2 – Phantom Power (XLR inputs only)

Activates or deactivates the phantom power on a particular unD6IO inputs. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the phantom power state to all available input channels. A channel value of 1 or 2 will set the phantom power state on the specified channel only. Any other value will result in a NACK response. The second parameter defines the new state the phantom power will be set to and is either on (0) or off (1).

Example command:
        PP 1 0<CR>   Sets the phantom power on input 1 to be off

Example response:
        ACK PP 1 0<CR>   OK response

10.3 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command (ID) turns on the identify function and it will remain active until the appropriate identify command is sent to turn it off, or the device is reset or power cycled. The find unit command (FU) activates the identify function but unlike the identify command the find unit function will automatically turn itself off after 5 seconds

Example commands:

```
ID 1<CR>          Turn on identify function
ID 0<CR>          Turn off identify function
FU<CR>            Turn on find unit function
```

Example commands:

```
ACK ID 1<CR>      OK response
ACK ID 0<CR>      OK response
ACK FU<CR>        OK response
```

10.4 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. A preset stores the devices configuration and includes the input gain setting, the output gain setting, and the phantom power setting. There are ten presets available 0 through 9. Preset 0 contains the default settings used at power-up. The response to this command from the device is the same format as for a basic command response.

Example command:

```
LOAD 5<CR>        Load Preset 5
SAVE 3<CR>        Save current settings as preset 3
```

Example response:

```
ACK LOAD 5<CR>    OK Response
ACK SAVE 3<CR>    OK Response
```

10.5 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters.

Example command:

```
QUERY<CR>
```

Example response:

```
ACK QUERY IG1=-3.0 IG2=-3.0 IG3=-3.0 IG4=-3.0 PP1=OFF PP2=OFF PP3=OFF PP4=OFF ID=OFF OV1=0
OV2=0 OM1=OFF OM2=OFF IS3=A IS4=A<CR>
```

The example response shows the device is configured as follows:

```
Input 1 Gain -3.0 dB
Input 2 Gain -3.0 dB
Input 3 Gain -3.0 dB
Input 4 Gain -3.0 dB
Phantom Power Input 1 Off
Phantom Power Input 2 Off
Phantom Power Input 3 Off
Phantom Power Input 4 Off
ID function – Disabled
Output 1 Volume 0 dB
Output 2 Volume 0 dB
Output 1 Mute = Unmuted
Output 2 Mute = Unmuted
Input Select Ch3 = RCA
Input Select CH4 = RCA
```

10.6 – Defaults

The DEFAULTS command forces the system to return to factory settings. It sets input gains to -3.0dB, the output gains to 0dB, phantom power is turned off on both XLR inputs and these same settings are also stored to preset 0. The settings in the remaining presets are left as is. The response from the device to this command is the same format as for a basic command response.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

10.7 – Version

Returns the software version of the host processor on the unD6IO. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.3.0<CR>
```

10.8 – Output Volume (Attenuation)

Sets the output volume for a selected output channel. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the output volume to all output channels. A channel value of 1 or 2 will set the output volume on the specified channel only. Any other channel value will result in a NACK being returned. The volume must be an integer number between -60 and 0 where -60 is -60dB attenuation of the signal (low volume) and 0 is no attenuation (full volume).

Note: This is attenuation only and applies no amplification to the audio signals.

Example command:
```
OV 0 –20<CR>            Sets both output channels to -20 dB attenuation.
```

Example response:
```
ACK OV 0 –20<CR>        OK response
```

10.9 – Output Mute

Sets the output mute state for a selected output channel. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the output mute setting to all output channels. A channel value of 1 or 2 will set the output mute on the specified channel only. Any other channel value will result in a NACK being returned. The second parameter is the mute state. Use a zero ("0") for unmuted and a one ("1") for muted. Any other value will result in a NACK being returned.

Note: The output mute setting is independent of the volume control.

Example command:
```
OM 2 1<CR>              Mute output channel 2.
```

Example response:
```
ACK OM 2 1<CR>          OK response
```

10.10 – Line Level Select

Select which of the specific inputs are used for the line level inputs, input 3 and input 4. Input 3 and 4 of the unD6IO are used exclusively for the line level audio and the user can select which of the line level connectors, the RCA or the 3,5mm jack, the audio comes from. Input 3 and 4 form a stereo pair with input 3 the left channel and input 4 the right channel.

When using this commands two parameters are required. The first parameter is the channel number. To set the value for a specific channel use the channel number, 3 or 4. To set both, channels to the same value, use 0. Any other value for the first parameter will result in a NACK response. The second parameter indicates which specific input or inputs provide the audio. The three options are:
- o A – Audio from only the RCA input
- o B – Audio from only the stereo-jack input
- o A+B – A mix of the audio from both the RCA and stereo jack input

Example commands:

`IS 3 A<CR>`	Sets input 3 to RCA left only
`IS 4 B<CR>`	Sets input 4 to 3.5mm jack right input only
`IS 3 A+B<CR>`	Sets input 3 to be a mix of RCA Left input and 3,5mm jack left input

Example responses:

`ACK IS 3 A<CR>`	OK response
`NACK IS 1 B<CR>`	Fail response (channel incorrectly set)

11 – unD6IO-BT Commands

Note: *unD6IO-BT devices must be product version V4.x.x with firmware V2.0.0 to support direct UDP commands.*

The following commands are available for the unD6IO-BT.

Description	Command	Parameter 1	Parameter 2
Identify Device	ID	mode (0 = off, 1 = on)	-
Find Unit	FU	-	-
Load preset values	LOAD	x (x = [0..9])	-
Save preset values	SAVE	x (x = [0..9])	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-
Output Volume	OV	Channel # (0-2)	Level (-60 to 0, 1 dB increments)
Output Mute	OM	Channel # (0-2)	State (0 = unmuted, 1 = muted)
Line Input Select	IS	Channel # (0, 3,4)	Input (A, B, A+B)
Get Bluetooth® friendly name	BTN	-	-
Set Bluetooth® friendly name	BTN	"Name" (up to 32 character string)	-
Lock Front Panel Button	BTL	state (0 = Lock off, 1 = Lock on)	
Get Bluetooth® Status	BTS	-	-
Activate pairing	BTB	-	-
Close Active Bluetooth® Connection	BCC	-	-
Clear Bluetooth® Pairings	CBC	-	-

11.1 – Identify/Find Unit

Used to find a device by flashing the devices LED's. When the identify function is activated, the power LED will flash on and off. The Identify command (ID) turns on the identify function and it will remain active until the appropriate identify command is sent to turn it off, or the device is reset or power cycled. The find unit command (FU) activates the identify function but unlike the identify command the find unit function will automatically turn itself off after 5 seconds

Example commands:

```
ID 1<CR>          Turn on identify function
ID 0<CR>          Turn off identify function
FU<CR>            Turn on find unit function
```

Example commands:

```
ACK ID 1<CR>      OK response
ACK ID 0<CR>      OK response
ACK FU<CR>        OK response
```

11.2 – Load/Save

The LOAD and SAVE commands allow the different configurations to be saved as presets. A preset stores the devices configuration and includes the input gain setting, the output gain setting, and the phantom power setting. There are ten presets available 0 through 9. Preset 0 contains the default settings used at power-up. The response to this command from the device is the same format as for a basic command response.

Example command:

```
LOAD 5<CR>              Load Preset 5
SAVE 3<CR>              Save current settings as preset 3
```

Example response:

```
ACK LOAD 5<CR>          OK Response
ACK SAVE 3<CR>          OK Response
```

11.3 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes all of the devices parameters.

Example command:

```
QUERY<CR>
```

Example response:

```
ACK QUERY IS3=A IS4=B ID=0 OV1=0 OV2=0 OM1=0 OM2=1 BTN=myName BTS=2 BTL=1<CR>
```

The example response shows the device is configured as follows:

Input Select Ch3 = RCA L
Input Select CH4 = 3.5mm R
ID function – Disabled
Output 1 Volume 0 dB
Output 2 Volume 0 dB
Output 1 Mute = Unmuted
Output 2 Mute = Unmuted
Bluetooth® Friendly Name = myName
Bluetooth® Interface Status = Connected
Button Lock = Locked

11.4 – Defaults

The DEFAULTS command forces the system to return to factory settings.

Input Select CH3 = RCA L
Input Select CH4 = RCA R
ID function – Disabled
Output 1 Volume 0 dB
Output 2 Volume 0 dB
Output 1 Mute = Unmuted
Output 2 Mute = Unmuted
Bluetooth® Friendly Name = D6IO-BT-010203 (Dante Device Name)
Bluetooth® Interface Status = Idle
Button Lock = Locked

Example command:

```
DEFAULTS<CR>
```

Example response:

```
ACK DEFAULTS<CR>
```

Note: *Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.*

11.5 – Version

Returns the software version of the host processor on the unD6IO-BT. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.0<CR>
```

11.6 – Output Volume (Attenuation)

Sets the output volume for a selected output channel. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the output volume to all output channels. A channel value of 1 or 2 will set the output volume on the specified channel only. Any other channel value will result in a NACK being returned. The volume must be an integer number between -60 and 0 where -60 is -60dB attenuation of the signal (low volume) and 0 is no attenuation (full volume).

Note: This is attenuation only and applies no amplification to the audio signals.

Example command:
```
OV 0 -20<CR>         Sets both output channels to -20 dB attenuation.
```

Example response:
```
ACK OV 0 -20<CR>     OK response
```

11.7 – Output Mute

Sets the output mute state for a selected output channel. The first parameter is the channel number and should be between 0 and 2. A channel number of 0 will apply the output mute setting to all output channels. A channel value of 1 or 2 will set the output mute on the specified channel only. Any other channel value will result in a NACK being returned. The second parameter is the mute state. Use a zero ("0") for unmuted and a one ("1") for muted. Any other value will result in a NACK being returned.

Note: The output mute setting is independent of the volume control.

Example command:
```
OM 2 1<CR>           Mute output channel 2.
```

Example response:
```
ACK OM 2 1<CR>       OK response
```

11.8 – Line Level Select

Select which of the specific inputs are used for the line level inputs, input 3 and input 4. Input 3 and 4 of the unD6IO-BT are used exclusively for the line level audio and the user can select which of the line level connectors, the RCA or the 3,5mm jack, the audio comes from. Input 3 and 4 form a stereo pair with input 3 the left channel and input 4 the right channel.

When using this commands two parameters are required. The first parameter is the channel number. To set the value for a specific channel use the channel number, 3 or 4. To set both, channels to the same value, use 0. Any other value for the first parameter will result in a NACK response. The second parameter indicates which specific input or inputs provide the audio. The three options are:
- o   A – Audio from only the RCA input
- o   B – Audio from only the stereo-jack input
- o   A+B – A mix of the audio from both the RCA and stereo jack input

Example commands:
```
IS 3 A<CR>           Sets input 3 to RCA left only
IS 4 B<CR>           Sets input 4 to 3.5mm jack right input only
IS 0 A+B<CR>         Sets input 3 to be a mix of RCA Left input and 3,5mm jack left input and input 4 to
                     be a mix of RCA right input and 3,5mm jack right input
```

Example responses:
```
ACK IS 3 A<CR>       OK response
NACK IS 1 B<CR>      Fail response (channel incorrectly set)
```

11.9 – Get/Set Bluetooth® Friendly Name

This function allows the control system to set a new friendly name, visible to other Bluetooth® devices when in pairing mode. (Maximum length is 16 characters)

Example "Get" command:
```
BTN<CR>
```

Example "Get" response:
```
ACK BTN unD6IO-BT-010203<CR
```

Example "Set" command:
```
BTN myBT<CR>
```

Example "Set" response:
```
ACK BTN mBT<CR>
```

11.10 – Get/Set Button Lock

This function allows the control system to lock out the front panel button from local user operation. Any button presses while the button is locked are ignored by the device (0 = Unlocked, 1 = Locked).

Example "Get" command:
```
BTL<CR>
```

Example "Get" response:
```
ACK BTL 1<CR>
```

Example "Set" command:
```
BTL 1<CR>                    Lock front panel button
```

Example "Set" response:
```
ACK BTN 1<CR>
```

11.11 – Bluetooth® Status

This function allows the control system retrieve the state of the unBT2A Bluetooth® interface.
(0 = IDLE, 1 = DISCOVERABLE, 2 = CONNECTED)

Example "Get" command:
```
BTS<CR>
```

Example "Get" response:
```
ACK BTS 2<CR>                Bluetooth® Interface has an active connection
```

11.12 – Activate Pairing

This function allows the control system to remotely activate the pairing/connect mode by simulating the front panel user button press.

Example command:
```
BTB<CR>
```

Example response:
```
ACK BTB<CR>                  Bluetooth® Interface is now in pairing/connect mode
```

11.13 – Close Bluetooth® Connection

This function allows the control system to remotely close the active Bluetooth® connection.

Example command:
```
BCC<CR>
```

Example response:
```
ACK BCC<CR>                  Active Bluetooth® connection closed.
```

11.14 – Clear Bluetooth® Pairings

This function clears the pairing list of the device. Note, if the pairing list is cleared, the user may need to manually unpair their device before attempting to pair again.

Example command:
```
CBC<CR>
```

Example response:
```
ACK CBC<CR>
```
Pairing list cleared

12 – unDNEMO-BT Commands

The following commands are available for the unDNEMO-BT.

Description	Command	Parameter 1	Parameter 2
Reset to factory defaults	DEFAULTS	-	-
Version Info	VERSION	-	-
Channel Info	CH_INFO	Range 1-64	-
Get Active CH Index	ACT_CH_IDX	-	-
Set Active CH Index	SET_ACT_CH_IDX	Range 1-64	-
Get Speaker Mute	SPKR_MUTE	-	-
Set Speaker Mute	SET_SPKR_MUTE	(0 = off, 1 = on)	-
Get Volume	VOLUME	-	-
Set Volume	SET_VOLUME	Range (1 -10)	-
Get Button Brightness	GBB	-	-
Set Button Brightness	SBB	Range (0-10)	-
Get Display Brightness	GDB	-	-
Set Display Brightness	SDB	Range (0-10)	-

12.1 – Defaults

The DEFAULTS command forces the system to return to factory settings.
    Sets all channels disabled
    Sets all channels (device name, and channel name) to null
    Sets all channels (display name - "No Channels Assigned")

    Sets AUX source to LINE input.
    Sets Display and Keypad brightness to MAX
    Clears all MODE setup bits
    Sets the active source to NET
    Sets volume to 50%.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

12.2 – Version

Returns the software version of the host processor on the unD6IO-BT. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.0<CR>
```

12.3 – Channel Info

This function allows the control system to retrieve the channel information for use in an extended user interface. The command takes a single parameter (1 to 64) to indicate the desired channel.

Example command:
```
CH_INFO 10<CR>
```

Response Format: ACK CH_INFO {Channel} {Enable State} "Device Name" "Channel Name" "Display Name" <CR>

Example response:
```
ACK CH_INFO 10 1 "unDX2IO-010203" "Mic 1" "Lectern Mic"<CR>
```

12.4 – Get Active Channel Index

This command allows the control system to retrieve the active channel index that is being monitored.

Example command:
```
ACT_CH_IDX<CR>
```

Example response:
```
ACK ACT_CH_IDX 5<CR>
```

12.5 – Set Active Channel Index

This command allows the control system to set the active channel index desired for monitoring.

Note: If a channel is disabled, this command will still attempt to select that channel and result in no available monitor audio.

Command Format: SET_ACT_CH_IDX {1 to 64}

Example command:
```
SET_ACT_CH_IDX 2<CR>
```

Example response:
```
ACK ACT_CH_IDX 5<CR>
```

12.6 – Get Speaker Mute

This command returns the state of the speaker mute.

Command Format: SPKR_MUTE<CR>

Example command:
```
SPKR_MUTE<CR>
```

Example response:
```
ACK SPKR_MUTE 1<CR>
```

12.7 – Set Speaker Mute

This command sets the state of the speaker mute.

Command Format: SPKR_MUTE {0 = Unmuted / 1 = Muted}<CR>

Example command:
```
SET_SPKR_MUTE 1<CR>
```

Example response:
```
ACK SPKR_MUTE 1<CR>
```

12.8 – Get Volume

This command returns the state of the speaker/headphone volume. The volume range is from 0 to 10 with a step size of 1.

Example command:
```
VOLUME<CR>
```

Example response:
```
ACK VOLUME 7<CR>
```

12.9 – Set Volume

This command returns the state of the speaker/headphone volume. The volume range is from 0 to 10 with a step size of 1.

Example command:
```
SET_VOLUME 7<CR>
```

Example response:
```
ACK SET_VOLUME 7<CR>
```

12.10 – Get Button Brightness

This command returns the brightness of the keypad. The brightness range is from 0 to 10 with a step size of 1.

Example command:
```
GBB<CR>
```

Example response:
```
ACK GBB 7<CR>
```

12.11– Set Button Brightness

This command sets the brightness of the keypad. The brightness range is from 0 to 10 with a step size of 1.

Example command:
```
SBB 7<CR>
```

Example response:
```
ACK SBB 7<CR>
```

12.12 – Get Display Brightness

This command returns the brightness of the display. The brightness range is from 0 to 10 with a step size of 1.

Example command:
```
GDB<CR>
```

Example response:
```
ACK GDB 7<CR>
```

12.13– Set Display Brightness

This command sets the brightness of the display. The brightness range is from 0 to 10 with a step size of 1.

Example command:
```
SDB 7<CR>
```

Example response:
```
ACK SDB 7<CR>
```

13 – unBT2A

Unlike all other devices in the document, the unBT2A is not Dante and is configured via a serial port over an RS-232 connection for 3ʳᵈ party control.

Parameter	Value
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bit	1
Flow Control	None

Figure 1 – unBT2A Serial Port Settings

13.1 – Commands

The following commands are available for the unBT2A.

Description	Command	Parameter 1	Parameter 2
Version Info	VERSION	-	-
Retrieve current settings	QUERY	-	-
Reset to factory defaults	DEFAULTS	-	-
Get Bluetooth® friendly name	BTN	-	-
Set Bluetooth® friendly name	BTN	"Name" (up to 32 character string)	-
Lock Front Panel Button	BTL	state (0 = Lock off, 1 = Lock on)	
Get Bluetooth® Status	BTS	-	-
Activate pairing	BTB	-	-
Close Active Bluetooth® Connection	BCC	-	-
Clear Bluetooth® Pairings	CBC	-	
Get Mute State	MUTE	-	-
Set Mute State	MUTE	state (0 = unmuted, 1 = muted)	

13.1.1 – Version

Returns the software version of the host processor on the unBT2A. The command takes no parameters.

Example command:
```
VERSION<CR>
```

Example response:
```
ACK VERSION 1.3.0<CR>
```

13.2 – Query

A QUERY command allows the control system to get a snapshot of the current state of the device. When a Query command is sent, the response includes a list of device parameters..

Example command:
```
QUERY<CR>
```

Example response:
```
ACK QUERY MUTE=0 BTN=unBT2A BTS=0 BTL=0<CR>
```

The example response shows the device is configured as follows:
Mute = Unmuted
Bluetooth® Friendly Name = unBT2A
Bluetooth® Status = IDLE
Button Lock = Unlocked

13.3 – Defaults

The DEFAULTS command forces the system to return to factory settings. It resets the Bluetooth® interface which also resets the friendly name to "unBT2A". The output muting state is also cleared.

Example command:
```
DEFAULTS<CR>
```

Example response:
```
ACK DEFAULTS<CR>
```

Note: Using this command restores the device settings to the original factory values removing any user changes. It should be used with caution.

13.3.1 – Get/Set Bluetooth® Friendly Name

This function allows the control system to set a new friendly name, visible to other Bluetooth® devices when in pairing/connection mode (Maximum length is 16 characters).

Example "Get" command:
```
BTN<CR>
```

Example "Get" response:
```
ACK BTN unBT2A<CR>
```

Example "Set" command:
```
BTN myBT2A<CR>
```

Example "Set" response:
```
ACK BTN myBT2A<CR>
```

13.3.2 – Get/Set Button Lock

This function allows the control system to lock out the front panel button from local user operation. Any button presses while the button is locked are ignored by the device (0 = Unlocked, 1 = Locked).

Example "Get" command:
```
BTL<CR>
```

Example "Get" response:
```
ACK BTL 1<CR>
```

Example "Set" command:
```
BTL 1<CR>                    Lock front panel button
```

Example "Set" response:
```
ACK BTN 1<CR>
```

13.3.3 – Blue tooth® Status

This function allows the control system retrieve the state of the unBT2A Bluetooth® interface (0 = IDLE, 1 = DISCOVERABLE, 2 = CONNECTED).

Example "Get" command:
```
BTS<CR>
```

Example "Get" response:
```
ACK BTS 2<CR>
```
      Bluetooth® Interface has an active connection

13.3.4 – Activate Pairing

This function allows the control system to remotely activate the pairing/connect mode by simulating the front panel user button press.

Example command:
```
BTB<CR>
```

Example response:
```
ACK BTB<CR>
```
      Bluetooth® Interface is now in pairing/connect mode

13.3.5 – Close Bluetooth® Connection

This function allows the control system to remotely close the active Bluetooth® connection.

Example command:
```
BCC<CR>
```

Example response:
```
ACK BCC<CR>
```
      Active Bluetooth® connection closed.

13.3.6– Clear Bluetooth® Pairings

This function clears the pairing list of the device. Note, if the pairing list is cleared, the user may need to manually unpair their device before attempting to pair again.

Example command:
```
CBC<CR>
```

Example response:
```
ACK CBC<CR>
```
      Pairing list cleared

13.3.7 – Get/Set Mute State

Gets or sets the mute state of the audio outputs.

Example Get Mute command:
```
MUTE<CR>
```

Example response:
```
ACK MUTE 1<CR>
```
      Mute active

Example set Mute command:
```
MUTE 0<CR>
```

Example response:
```
ACK MUTE 0<CR>
```
      Unmuted

APPENDIX A – Reference Documents

The following table lists the relevant reference documents.

Document Title	Revision
Dante Firmware Update Quick Start guide	01