d-series HTTP API Specification

v1.0

January 2017

Requirements

Only very little is necessary to access the the HTTP API on d-series devices

- Firmware version >= 2.3.0
- a working IPv4 connection (DHCP or manual static configuration possible)
- a HTTP client or something that can produce standardized requests to a TCP socket (e.g. a browser, cURL, telnet, etc)

Please note that long cable runs can affect the performance of the Ethernet connectivity. We suggest to use CAT5e cables or better for all connections with lengths above 5-10m.

Introduction

Remote controlling a d-series product can be done by various means. One of which is the possibility to use a standard HTTP request on port 80.

The webserver running on the device will be responding to HTTP GET requests at the variadic URI

`http://<host-address>/api/<scope>/<set>/<of>/<arguments>/<value>`

Valid **`<host-addresses>`** can be either the literal IPv4 address or any resolvable DNS entry that directs to the same destination.

There is a set of two possible scopes, namely

- **`get`**
- **`set`**

The number of arguments is variadic, so grouping and different levels of abstraction can easily be achieved as described in the subsequent pages.

The primary difference between “set” and “get” requests is the trailing value string that has to be passed to set instructions. This value will be ignored when the same request is done in the “get” scope or can also be omitted.

Hence, an exemplary get request would look like

`http://192.168.0.25/api/get/channel/3/routing/attenuationDb`

and the respective set instruction

`http://192.168.0.25/api/set/channel/3/routing/attenuationDb/10`

For the sake of readability, we will omit the **`http://<host-address>/api/<scope>/`** part of the request in the following sections. To indicate to valid scopes we will use shortcuts:

- `[RW]` – Read/Write: both set and get request can be used
- `[RO]` – Read Only: get requests only

Trying to set a value to a RO will simply be ignored by the server.

Arguments and Variables

Some request URIs may contain variables, such as all channel related parameters. These are denoted using angle brackets as in `<index>`. The legal values of these variables can vary and will be described in the respective sections.

Values

All RW parameters will require you to pass a value as the last argument of a request. The legal datatype will be denoted using brackets as in `[bool]`. Passing a value in the “get” scope will be ignored and will not trigger any reaction.

Datatypes

When passing a value to a “set” request it is crucial to conform to some rules in order for the server to correctly interpret the desired value.

1. numerical values will be handled as integers `[int]` unless explicitly denoted as float.
2. when using floating point values `[float]` you MUST us a dot (.) as a decimal delimiter. Using any other character will result in undefined behavior.
3. `[bool]` values can be used as either 1 and 0 or literal “true” and “false”
4. `[text]` values MUST NOT contain commas (,) or any non-ASCII characters

Security Concerns

Since, at the moment, there is no user authentication incorporated in the API implementation (nor the browser remote) it is the obligation of the system designer to restrict network access to the device. Please contact us if you need advice on this topic.

General Information

/general/model [RO]

Description: returns number of output channels e.g. 16 when queried from a d:16

Notes:

/general/serialnumber [RO]

Description: returns serial number of the device

Notes:

/general/version [RO]

Description: returns version of the controller software

Notes:

System Data

/system/mute/[bool] [RW]

Description: (de)activate software mute

Returns: mute bus state (software_mute_enabled || panic_mute_enabled)

Arguments: should be enabled

Notes:

/system/followmute/[bool] [RW]

Description: (de)activate follow mute behavior. If the digital option has no source lock the software mute state will be enabled

Returns: current follow mute state

Arguments: should be enabled

Notes:

/system/fanmode/[int] [RW]

Description: read/write fan mode.

Returns: current fan mode

Arguments: desired fan mode

Notes: 0 = AUTO

1 = SILENT

2 = LOW

3 = NORMAL

4 = HIGH

5 = LINEAR

6 = TEST (factory use only)

/system/fanspeed/amplifiers [RO]

Description: rotation speed of central amplifier fan (cooling tunnel)

Returns: current fan speed in percent normalized to 1

Notes:

/system/fanspeed/smps [RO]

Description: rotation speed of lateral housing fans (smps)

Returns: current fan speed in percent normalized to 1

Notes:

/system/temperature/smpsleft [RO]

Description: temperature in left part (viewed from front) of the enclosure (power section)

Returns: current temperature in °C

Notes:

/system/temperature/smpsright [RO]

Description: temperature in right part (viewed from front) of the enclosure (power section)

Returns: current temperature in °C

Notes:

/system/temperature/amplifiers [RO]

Description: temperature at the rear of the cooling tunnel (amplifiers)

Returns: current temperature in °C

Notes:

/system/silent/[bool] [RW]

Description: (de)activate silent mode. The device will STOP all fans until temperature limit is reached. Then it will switch back to NORMAL fan mode.

WARNING: use this only in rare situations. This will affect the life expectancy of all

components!

Returns: current silent mode state

Arguments: should be enabled

Notes:

/system/stealth/[bool] [RW]

Description: (de)activate stealth mode. The device disables LCD touch screen and LED indicators

Returns: current stealth mode state

Arguments: should be enabled

Notes:

/system/smps/<index>/enabled/[bool] [RW]

Description: (de)activate a switching mode power supply (SMPS)

Returns: SMPS at <index> is currently enabled

Arguments: SMPS at <index> should be enabled

Notes: the SMPS can be indexed in two ways:

channels 1-6:	a	2
channels 7-12:	b	1
channels 13-18:	c	4
channels 19-24	d	3

WARNING: make absolutely sure that, if disabled, no signal is routed to the affected channels since this can destroy the analog input buffer prior to the amplifier stage!

/system/shutdown [RW]

Description: shut down the device immediately.

Returns: nothing

Arguments: none

Notes:

Digital Module

The following parameters refer to the properties of the digital option if available in the device.

/digital/enabled/<index>/[bool] [RW]

Description: (de)activate analog/digital selection of octet described by <index>

Returns: current state of selected octet

Arguments: should be enabled

Notes: <index> refers to index of a channel octet:

0 = channels 1-8

1 = channels 9-16

2 = channels 17-24 (where applicable)

/digital/moduletype [RO]

Description: returns type of equipped digital option

Notes: 1 = MADI

2 = DANTE

3 = AES3

/digital/clocksource/<index> [RW]

Description: selected clock source.

MADI modules can choose between optical and coaxial interface for clock recovery

Returns: currently selected clock source

Arguments: new clock interface

Notes: 0 = MADI optical

1 = MADI coaxial

2 = reserved

3 = reserved

4 = DANTE

5 = AES3

6 = reserved

/digital/samplerate [RO]

Description: current sample rate

Returns: sample rate in Hz

Notes: will return 0 if no lock

/digital/smuxfactor/[int] [RW]

Description: read/write SMUX factor

Returns: current value

Arguments: new value

Notes: In case of frequencies higher than 48 kHz SMUX is used for transmission. Two (or four) channels will be combined into one channel. In case of 192kHz, for example, a 48kHz MADI data stream (frame) will be generated. However, four channels will be combined in order to achieve the higher data volume. Since this 48kHz data stream can't be differentiated from a “real” 48kHz signal, you can adjust it manually by this value.

/digital/madi/coax/valid [RO]

Description: a valid MADI source has been detected at the coaxial interface

Returns: current state

Notes:

/digital/madi/coax/frame [RO]

Description: detected MADI frame on coaxial interface

Returns: current value

Notes: legal values: 48 or 96

/digital/madi/coax/channelcount [RO]

Description: detected number of channels in MADI signal on coaxial interface

Returns: current value

Notes: typically 56 or 64

/digital/madi/optical/valid [RO]

Description: a valid MADI source has been detected at the optical interface

Returns: current state

Notes:

/digital/madi/optical/frame [RO]

Description: detected MADI frame on optical interface

Returns: current value

Notes: legal values: 48 or 96

/digital/madi/optical/channelcount [RO]

Description: detected number of channels in MADI signal on optical interface

Returns: current value

Notes: typically 56 or 64

/digital/dante/valid [RO]

Description: a valid connection has been established

Returns: current state

Notes:

/digital/aes3/valid [RO]

Description: lock status of all 12 AES3 pairs.

Returns: current state as bitmap

Notes: the single lock states will be combined in a 16bit bit map interpreted as unsiged int where the first AES3 pair is located at the LSB

Channel Configuration

The subsequent properties can be read/written for each available output channel in the device. Hence, the <index> variable should be defined with the desired channel index.

Channel indexing generally starts at 0 = ch1 for both inputs and outputs.

Values above the maximum number of available channels will be ignored without notice.

Routing

/channel/<index>/routing/input/[int] [RW]

Description: input -> output routing of the channel
Select a digital channel as source for a power output channel

Returns: currently selected input channel

Arguments: new input channel

Notes: AES3 option channels are configured as subsequently aligned channels i.e. pair 1/2 maps to 0 and 1, pair 3/4 to 2 and 3 and so forth

/channel/<index>/routing/attenuationDb/[float] [RW]

Description: digital attenuation of the channel

Returns: current value in dB

Arguments: new attenuation in dB

Notes: legal values: [0;127] in 0.5dB steps

/channel/<index>/routing/interface/[int] [RW]

Description: input interface of the channel

Returns: current interface

Arguments: new interface

Notes: use this to pick a MADI interface. This way you can choose from 128 channels.
All other digital options do not support this feature!.
0 = MADI optical
1 = MADI coaxial
2 = reserved
3 = reserved
4 = DANTE (fixed)
5 = AES3 (fixed)
6 = reserved

/channel/<index>/routing/label/[text] [RW]

Description:

Returns:

Arguments:

Notes: reserved. not implemented

/channel/<index>/routing/mute/[bool] [RW]

Description: digitally mute channel

Returns: is currently muted

Arguments: should be muted

Notes:

/channel/<index>/routing/phaseinverted/[bool] [RW]

Description: digitally phase invert channel

Returns: is currently inverted

Arguments: should be inverted

Notes:

DSP Configuration

The subsequent parameters relate to the optional DSP option. If not equipped all requests will be ignored without notice.

Compressor

/channel/<index>/compressor/attackDbs/[float] [RW]

Description: attack time constant

Returns: current value in dB/s

Arguments: new value in dB/s

Notes: legal values: [1.0; 1000.0]

/channel/<index>/compressor/enabled/[bool] [RW]

Description: (de)activate compressor

Returns: is currently enabled

Arguments: should be enabled

Notes:

/channel/<index>/compressor/holdMs/[float] [RW]

Description: hold time constant

Returns: current value in ms

Arguments: new value in ms

Notes: legal values: [0.0; 2000.0]

/channel/<index>/compressor/ratioDenominator/[float] [RW]

Description: compression ratio denominator i.e. ratio = 1/value

Returns: current value

Arguments: new value
Notes: legal values: [1.0; 10.0]

/channel/<index>/compressor/releaseDbs/[float] [RW]
Description: release time constant
Returns: current value in dB/s
Arguments: new value in dB/s
Notes: legal values: [1.0; 1000.0]

/channel/<index>/compressor/softknee/[bool] [RW]
Description: (de)activate soft knee
Returns: is currently enabled
Arguments: should be enabled
Notes:

/channel/<index>/compressor/thresholdDbFs/[float] [RW]
Description: compression threshold (RMS)
Returns: current value in dBFS
Arguments: new value in dBFS
Notes: legal values: [-90.0; 0.0]

Cross Over

/channel/<index>/crossover/highcut/character/[int] [RW]
Description: filter topology of high cut/low pass filter (character)
Returns: current value
Arguments: new value
Notes: 0 = BUTTERWORTH
1 = BESSEL
2 = LINKWITZ RILEY

/channel/<index>/crossover/highcut/enabled/[bool] [RW]
Description: (de)activate high cut/low pass filter
Returns: is currently enabled

Arguments: should be enabled

Notes:

/channel/<index>/crossover/highcut/frequencyHz/[float] [RW]

Description: cut-off frequency of hight cut/low pass filter

Returns: current value in Hz

Arguments: new value in Hz

Notes: legal values: [20.0; 20000.0]

/channel/<index>/crossover/highcut/order/[int] [RW]

Description: filter order of high cut/low pass filter

Returns: current value

Arguments: new value

Notes: legal values:

[1;4] if character is BESSEL or BUTTERWORTH

2 or 4 if character is LINKWITZ RILEY

/channel/<index>/crossover/lowcut/character/[int] [RW]

Description: filter topology of low cut/high pass filter (character)

Returns: current value

Arguments: new value

Notes: 0 = BUTTERWORTH

1 = BESSEL

2 = LINKWITZ RILEY

/channel/<index>/crossover/lowcut/enabled/[bool] [RW]

Description: (de)activate low cut/high pass filter

Returns: is currently enabled

Arguments: should be enabled

Notes:

/channel/<index>/crossover/lowcut/frequencyHz/[float] [RW]

Description: cut-off frequency of low cut/high pass filter

Returns: current value in Hz

Arguments: new value in Hz

Notes: legal values: [20.0; 20000.0]

/channel/<index>/crossover/lowcut/order/[int] [RW]

Description: filter order of low cut/high pass filter

Returns: current value

Arguments: new value

Notes: legal values:

[1;4] if character is BESSEL or BUTTERWORTH

2 or 4 if character is LINKWITZ RILEY

Delay

/channel/<index>/delay/enabled/[bool] [RW]

Description: (de)activate digital delay

Returns: is currently enabled

Arguments: should be enabled

Notes:

/channel/<index>/delay/timeMs/[float] [RW]

Description: delay time

Returns: current value in ms

Arguments: new value in ms

Notes: legal values: [0; 11.5] ms.

Values outside bounds will be rounded.

Parametric Equalizer

The available parametric equalizer operates in five independent and freely configurable bands. To simplify the API we introduced addressing these bands via an index from 0 to 4.

/channel/<index>/equalizer/<band-index>/enabled/[bool] [RW]

Description: (de)activate equalizer band

Returns: is currently enabled

Arguments: should be enabled

Notes:

/channel/<index>/equalizer/<band-index>/frequencyHz/[float] [RW]

Description: center frequency/cut-off frequency of equalizer band

Returns: current value in Hz

Arguments: new value in Hz

Notes: legal values: [20.0; 20000.0]

/channel/<index>/equalizer/<band-index>/gainDb/[float] [RW]

Description: gain of equalizer band

Returns: current value in dB

Arguments: new value in dB

Notes: legal values: [-24.0; 24.0]

only available for filter types BELL, LOWSHELF and HIGHSHELF

/channel/<index>/equalizer/<band-index>/quality/[float] [RW]

Description: quality of equalizer band

Returns: current value

Arguments: new value

Notes: legal values: [0.1; 10.0]

/channel/<index>/equalizer/<band-index>/type/[int] [RW]

Description: type of equalizer band

Returns: current type

Arguments: new type

Notes: legal values:

0 = LOWCUT

1 = HIGHCUT

2 = LOWSHELF

3 = HIGHSHELF

4 = BELL

General

/channel/<index>/general/gainDb/[float] [RW]

Description: digital gain of channel

Returns: current value in dB

Arguments: new value in dB

Notes: legal values: [-24.0; 20.0]

/channel/<index>/general/mute/[bool] [RW]

Description:

Returns:

Arguments:

Notes: reserved. not implemented

Parameter Groups

Multiple parameters of the DSP are grouped into meaningful blocks. These can be switched on/off (i.e. bypassed) at once to facilitate work for the operator.

/channel/<index>/group/crossover/bypassed/[bool] [RW]

Description: (de)activate cross over block: high cut and low cut filters

Returns: is current bypassed

Arguments: should be bypassed

Notes:

/channel/<index>/group/dynamics/bypassed/[bool] [RW]

Description: (de)activate dynamics block: compressor and limiter

Returns: is current bypassed

Arguments: should be bypassed

Notes:

/channel/<index>/group/equalizer/bypassed/[bool] [RW]

Description: (de)activate equalizer block: all five equalizer bands

Returns: is current bypassed

Arguments: should be bypassed

Notes:

Limiter

/channel/<index>/limiter/decayDbs/[float] [RW]

Description: decay time constant

Returns: current value in dB/s

Arguments: new value in dB/s

Notes: legal values: [1.0; 100.0]

/channel/<index>/limiter/enabled/[bool] [RW]

Description: (de)activate limiter

Returns: is current enabled

Arguments: should be enabled

Notes:

/channel/<index>/limiter/holdMs/[float] [RW]

Description: hold time constant

Returns: current value in ms

Arguments: new value in ms

Notes: legal values: [0.0; 2000.0]

/channel/<index>/limiter/softknee/[bool] [RW]

Description: (de)activate soft knee

Returns: is current enabled

Arguments: should be enabled

Notes:

/channel/<index>/limiter/thresholdDbFs/[float] [RW]

Description: activity threshold (peak)

Returns: current value in dBFS

Arguments: new value in dBFS

Notes: legal values: [-90.0; 0.0]

Disclaimer

All described information is subject to change without further notice. To stay up to date, regularly check for updates of this document.