

Panasonic KAIROS API Specifications

Kairos Core 100 (Main Frame)
AT-KC100

V1.0

Connected Solutions Company
Panasonic Corporation

Change History

[illegible]

Introduction

The KAIROS REST API defines some basic controls of a Vision Mixer that can be controlled from an automation system that needs to control a KAIROS device. The following document lists all the types and commands provided by the API.

The interface of the KAIROS REST API requires the following command syntax

http(s)://<ip>:<port>/<json-pointer>

IP address(default) : 192.168.10.10

```
port number(default)      : 1234
```

Note: trailing / (slash) is not allowed and will produce a 404 Invalid url response.

Authentication

In the current state of the REST API only Basic authentication (default) or no authentication (optional) is supported.

If the Basic authentication is used a fixed user name / password is set.

```
user name      : Kairos
```

password : System ID

Object Types

Base

Those parameters are inherited by all types of objects.

Name	R/W	comments
uuid	R	E.g. 93ddd7c7-752f-505f-8e62-444ffc86428c

AUX

Name	R/W	comments
name	R	
source	R/W	
sources	R	

Macro

Name	R/W	comments
name	R	
state	W	null if read

Input

Name	R/W	comments
index	R	
name	R	
tally	R	

Scene

Name	R/W	comments
name	R	
tally	R	
layers	R	

Layer

Name	R/W	comments
name	R	
sourceA	R/W	optional
sourceB	R/W	optional
sources	R	

Multiviewer

Name	R/W	comments
index	R	
name	R	
preset	W	null if read
presets	R	
sdp	R	

Multiviewer Preset

Name	R/W	comments
id	R	
name	R	
usr	R	

Object identification (uuid)

The initial way to identify objects was by using their name attribute or an index value where applicable. This is an easy way to identify or name objects if some user wants to execute commands directly from a browser or by using curl. The drawback of this is mostly when someone wants to address object types that are created dynamically like scenes. The name of the scene is defined by the user and it is allowed to have duplicate names. In such a case it is not possible to address a specific object because the name itself is not unique to the object. To solve this problem the unique identifiers were introduced. Even though it is harder to use from a browser or via curl, for an application developer this is the recommended way to address objects.

API Reference

Note: "< >" means string of parameters.

GET Request	Endpoint URL	Method
GET Input	http(s)://<ip>:<port>/inputs	GET
	http(s)://<ip>:<port>/inputs/<input> or /inputs/<0-31> or /inputs/<uuid>	GET
GET Macro	http(s)://<ip>:<port>/macros	GET
	http(s)://<ip>:<port>/macros/<macro> or /macros/<uuid>	GET
GET Aux	http(s)://<ip>:<port>/aux	GET
	http(s)://<ip>:<port>/aux/<0-15> or /aux/<aux> or /aux/<uuid>	GET
GET Multiviewer	http(s)://<ip>:<port>/multiviewers	GET
	http(s)://<ip>:<port>/multiviewers/<0-1> or /multiviewers/<multiviewer> or /multiviewers/<uuid>	GET
	http(s)://<ip>:<port>/multiviewers/<0-1>/sdp or /multiviewers/<uuid>/sdp	GET
GET Scene	http(s)://<ip>:<port>/scenes	GET
	http(s)://<ip>:<port>/scenes/<scene> or /scenes/<uuid>	GET

Example of curl (GET request)

```
$ curl http://Kairos:password@192.168.10.10:1234/inputs/IN1
```

PATCH Request	Endpoint URL	Method
PATCH Scene	http(s)://<ip>:<port>/scenes/<scene>/<layer> +<json-pointer>	PATCH
	or /scenes/<uuid>/<uuid> +<json-pointer>	
PATCH Macro	http(s)://<ip>:<port>/macros/<macro> +<json-pointer> or /macros/<uuid> +<json-pointer>	PATCH
PATCH Aux	http(s)://<ip>:<port>/aux/<aux> +<json-pointer> or /aux/<uuid> +<json-pointer>	PATCH
PATCH Multiviewer	http(s)://<ip>:<port>/multiviewers/<multiviewer> +<json-pointer> or /multiviewers/<uuid> +<json-pointer>	PATCH

Example of curl (PATCH request)

```
$ curl --request PATCH http://Kairos:password@192.168.10.10:1234/scenes/Main/Background -d '{"sourceA":"IN1"}'
```

Other requests

In the current state of the KAIROS REST API PUT/DELETE/POST requests are not supported.

If such a request is issued the system will send a 400 Bad Request status message.

Response

Code	Description
200	OK
400	Bad Request
404	Not Found

GET requests

The get requests supported by the KAIROS REST API are following the [RFC7231](#).

GET Inputs

/inputs

Example Response

```
[
  {
    "index": 0,
    "name": "IN1",
    "tally": 1,
    "uuid": "e53210f7-2235-5ae3-9c02-4f58d67bf8b8"
  },
  {
    "index": 0,
    "name": "IN2",
    "tally": 0,
    "uuid": "bc2932d5-bc00-52a3-be8b-753532420c14"
  },
  {
    "index": 0,
    "name": "IN3",
    "tally": 0,
    "uuid": "39ca682a-1adc-573e-a702-a53314dc81dd"
  },
  {
    "index": 0,
    "name": "IN4",
    "tally": 0,
    "uuid": "efab3a92-1fc5-55ef-bd0c-91b12b17b8e1"
  },
  {
    "index": 0,
    "name": "IN5",
    "tally": 0,
    "uuid": "3b4e76eb-e6a8-5290-828b-e1659cec1dd4"
  },
  {
    "index": 0,
    "name": "IN6",
    "tally": 0,
    "uuid": "dbd5ae62-5944-5de6-a44f-9afe764e28ff"
  },
  {
    "index": 0,
    "name": "IN7",
    "tally": 0,
    "uuid": "eb1564a8-c2f2-5c96-8e5e-34a98637c8b5"
  },
  {
    "index": 0,
    "name": "IN8",
    "tally": 0,
    "uuid": "6b977973-ea4a-578b-8324-4248f29f33ea"
  },
  {
    "index": 0,
    "name": "IN9",
    "tally": 0,
    "uuid": "e41935e9-8dea-5270-b58c-70d35dc5c949"
  },
]
```

```

},
{
  "index": 0,
  "name": "IN10",
  "tally": 0,
  "uuid": "07ea9b8b-ac21-52b9-8ba6-a859085890cc"
},
{
  "index": 0,
  "name": "IN11",
  "tally": 0,
  "uuid": "51b21378-42be-5703-9efe-cd2baf5719f7"
},
{
  "index": 0,
  "name": "IN12",
  "tally": 0,
  "uuid": "188bfc2f-83ed-5543-b8d9-bc5f6da82d24"
},
{
  "index": 0,
  "name": "IN13",
  "tally": 0,
  "uuid": "e0a05c4a-8bc9-5fe4-8db9-92167c4ff611"
},
{
  "index": 0,
  "name": "IN14",
  "tally": 0,
  "uuid": "59bfff32-9f79-5334-8bdd-87b7c3f5ff7b"
},
{
  "index": 0,
  "name": "IN15",
  "tally": 0,
  "uuid": "46b00464-4e04-5e84-be16-7a688f1f3f66"
},
{
  "index": 0,
  "name": "IN16",
  "tally": 0,
  "uuid": "7e5fc323-ceb7-5fef-a5ae-0ae85ed6cc97"
},
{
  "index": 0,
  "name": "IN17",
  "tally": 0,
  "uuid": "2c961af2-ed44-5dd3-91ef-72c5dcda076a"
},
{
  "index": 0,
  "name": "IN18",
  "tally": 0,
  "uuid": "dd7a9779-b511-551e-bbdd-7f52907261a3"
},
{
  "index": 0,
  "name": "IN19",
  "tally": 0,
  "uuid": "be7cf1dc-b5c6-5412-a87a-4d3e6d3b850e"
},
{

```

```

"index": 0,
"name": "IN20",
"tally": 0,
"uuid": "8eb2f82f-d45f-5d7b-831f-8e6ca06beda8"
"uuid": "8eb2f82f-d45f-5d7b-831f-8e6ca06beda8"
},
{
"index": 0,
"name": "IN21",
"tally": 0,
"uuid": "5ed6992c-7b1b-52d7-91c4-f2aeb76410e8"
},
{
"index": 0,
"name": "IN22",
"tally": 0,
"uuid": "d904e11f-2e72-5adb-bb1a-3563ee620b2d"
},
{
"index": 0,
"name": "IN23",
"tally": 0,
"uuid": "2ba9ef85-02b1-54aa-9156-51b58bd1e176"
},
{
"index": 0,
"name": "IN24",
"tally": 0,
"uuid": "cee82917-ed52-5431-adf1-64c9b5d977d8"
},
{
"index": 0,
"name": "IN25",
"tally": 0,
"uuid": "ed708724-084e-5e73-93fa-9be4b12293ee"
},
{
"index": 0,
"name": "IN26",
"tally": 0,
"uuid": "875b2a5f-a8e5-5ea3-9ec3-33432d6df1d1"
},
{
"index": 0,
"name": "IN27",
"tally": 0,
"uuid": "43cd1c09-863b-5fa4-aff7-1c47bce225be"
},
{
"index": 0,
"name": "IN28",
"tally": 0,
"uuid": "679e335b-94c4-5d87-b451-57e600c88c53"
},
{
"index": 0,
"name": "IN29",
"tally": 0,
"uuid": "0ebf463e-6eed-5a3a-88b1-2ed1ca9296c6"
},
{
"index": 0,

```

```

"name": "IN30",
"tally": 0,
"uuid": "f3f86a30-b573-509f-bdce-6e17e72a3b7d"
},
{
  "index": 0,
  "name": "IN31",
  "tally": 0,
  "uuid": "42487096-8934-500e-83c5-31efbce18499"
},
{
  "index": 0,
  "name": "IN32",
  "tally": 0,
  "uuid": "812135dc-7863-5ab3-b182-7db4affcea02"
}
]

```

/inputs/<input> or /inputs/<0-31> or /inputs/<uuid>

Example Response

```

{
  "index": 0,
  "name": "IN1",
  "tally": 1,
  "uuid": "e53210f7-2235-5ae3-9c02-4f58d67bf8b8"
}

```

GET Macros

/macros

Example Response

```

[
  {
    "name": "Macro1",
    "state": null,
    "uuid": "eb71d141-181c-5390-b709-7a9d50789bb1"
  },
  {
    "name": "Macro2",
    "state": null,
    "uuid": "3693f3ff-9b0b-5377-9090-a73e4fe58207"
  }
]

```

/macros/<macro> or /macros/<uuid>

Example Response

```

{
  "name": "Macro1",
  "state": null,
  "uuid": "eb71d141-181c-5390-b709-7a9d50789bb1"
}

```

GET AUX

Note: In the following responses, some element in the source options "sources" are omitted.

/aux

Example Response

```

[
  {
    "name": "AUX1",
    "source": "IN1",
    "sources": ["Black", "White", "CoIA", "CoIB", "CoIC", "FxIN1", "FxIN1", "IN1", ...],

```



```

"uuid": "5d152781-63c6-5dcc-ad35-e8b5be025867"
},
{
  "name": "AUX2",
  "source": "Main",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "952e8432-60aa-57c2-af7a-c7666c8fbf55"
},
{
  "name": "AUX3",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "32917296-436a-5edd-bf7c-7d9197bba74d"
},
{
  "name": "AUX4",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "313e020a-5f25-5a9b-83b7-3a3b0405ee76"
},
{
  "name": "AUX5",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "5ccee3f0-09ef-5f19-add8-16c1bc9ed5a3"
},
{
  "name": "AUX6",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "f1dfae31-9423-5596-a5ad-2e2c537f91cd"
},
{
  "name": "AUX7",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "26948dfc-06b4-5eca-b41e-a5dadce34856"
},
{
  "name": "AUX8",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "bc1ea12a-64f3-5ae6-9c74-38abc90de4f0"
},
{
  "name": "AUX9",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "afd163d7-b99b-528a-910e-9413304b3c94"
},
{
  "name": "AUX10",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "cf2a841a-8bc9-58b3-b43b-c017da6eb4e7"
},
{
  "name": "AUX11",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "d812a49f-1038-5bd9-a50f-658ecded4784"
},

```

```
{
  "name": "AUX12",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "d5127876-8b42-57e3-be03-2ef3803ceb09"
},
{
  "name": "AUX13",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "b87463d0-0eaa-5095-ab62-f91701abcf40"
},
{
  "name": "AUX14",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "48f02413-2211-5b6d-9523-19adf6388493"
},
{
  "name": "AUX15",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "ec838aca-b5d0-554e-ab35-43092c8f66f4"
},
{
  "name": "AUX16",
  "source": "Black",
  "sources": ["Black", "White", "ColA", "ColB", "ColC", "FxIN1", "FxIN1", "IN1", ...],
  "uuid": "13229cde-caae-5d0e-bb55-3f90d01aeaf8"
},
]
```

/aux/<0-15> or /aux/<aux> or /aux/<uuid>

Example Response

```
{
  "name": "AUX1",
  "source": "Main",
  "sources": [
    "Black",
    "White"
  ],
  "uuid": "04c03dbe-aa4e-5bdd-a98d-942f5c19ecbd"
}
```

GET Multiviewers

/multiviewers

Example Response

```
[
  {
    "index": 0,
    "name": "Multiviewer1",
    "preset": null,
    "presets": [
      {
        "id": 0,
        "name": "Full",
        "usr": false
      },
      {
        "id": 1,
        "name": "Quad Split",
        "usr": false
      }
    ]
  }
]
```

```

},
{
  "id": 2,
  "name": "10 Split A",
  "usr": false
},
{
  "id": 3,
  "name": "10 Split B",
  "usr": false
},
{
  "id": 4,
  "name": "10 Split C",
  "usr": false
},
{
  "id": 5,
  "name": "10 Split D",
  "usr": false
},
{
  "id": 6,
  "name": "9 Split",
  "usr": false
},
{
  "id": 7,
  "name": "16 Split",
  "usr": false
},
{
  "id": 8,
  "name": "25 Split",
  "usr": false
},
{
  "id": 9,
  "name": "36 Split",
  "usr": false
}
],
"sdp": "v=0¥nc=IN IP4 239.168.50.115¥ns=Multiviewer 0¥nt=0 0¥nm=video 20000 RTP/AVP 96¥na=rtpmap:96 H264/90000¥n",
"uuid": "fd839e94-a9e9-570b-a5aa-bf99575f364f"
},
{
  "index": 1,
  "name": "Multiviewer2",
  "preset": null,
  "presets": [ { "id": 0, "name": "Full", "usr": false }, { "id": 1, "name": "Quad Split", "usr": false }, { "id": 2, "name": "10 Split A", "usr": false }, { "id": 3, "name": "10 Split B", "usr": false }, { "id": 4, "name": "10 Split C", "usr": false }, { "id": 5, "name": "10 Split D", "usr": false }, { "id": 6, "name": "9 Split", "usr": false }, { "id": 7, "name": "16 Split", "usr": false }, { "id": 8, "name": "25 Split", "usr": false }, { "id": 9, "name": "36 Split", "usr": false } ],
  "sdp": "v=0¥nc=IN IP4 239.168.50.115¥ns=Multiviewer 1¥nt=0 0¥nm=video 20001 RTP/AVP 96¥na=rtpmap:96 H264/90000¥n",
  "uuid": "ef884504-d688-59c7-a2a0-2b7d69e70e5b"
}
]

```

/multiviewers/<0-1> or /multiviewers/\<multiviewer> or /multiviewers/\<uuid>

Example Response

```

{
  "index": 0,
  "name": "Multiviewer1",

```

```

"preset": null,
"presets": [
{
  "id": 0,
  "name": "Full",
  "usr": false
},
{
  "id": 1,
  "name": "Quad Split",
  "usr": false
},
{
  "id": 2,
  "name": "10 Split A",
  "usr": false
},
{
  "id": 3,
  "name": "10 Split B",
  "usr": false
},
{
  "id": 4,
  "name": "10 Split C",
  "usr": false
},
{
  "id": 5,
  "name": "10 Split D",
  "usr": false
},
{
  "id": 6,
  "name": "9 Split",
  "usr": false
},
{
  "id": 7,
  "name": "16 Split",
  "usr": false
},
{
  "id": 8,
  "name": "25 Split",
  "usr": false
},
{
  "id": 9,
  "name": "36 Split",
  "usr": false
}
],
"sdp": "v=0¥nc=IN IP4 239.168.10.209
s=Multiviewer 0
t=0 0
m=video 20000 RTP/AVP 96
a=rtpmap:96 H264/90000",
"uuid": "fd839e94-a9e9-570b-a5aa-bf99575f364f"
}

```

/multiviewers/<0-1>/sdp or /multiviewers/\<uuid>/sdp

Note: If sdp parameter is requested directly, a response will be sent with the Content-Type "application/sdp" as defined in [RFC4566](#).

Example Response

```
v=0
c=IN IP4 239.168.10.209
s=Multiviewer 0
t=0 0
m=video 20000 RTP/AVP 96
a=rtpmap:96 H264/90000
```

GET Scenes**/scenes**Example Response

```
[
{
"layers": [
{
"name": "Background",
"sourceA": "Black",
"sourceB": "Black",
"sources": [
"Black"
],
"uuid": "ce412da9-e248-567a-a8e0-2ec65739623c"
},
{
"name": "Layer-1",
"sourceA": "Black",
"sources": [
"Black",
"White"
],
"uuid": "61508e94-feb-5892-99e1-9c327e2149d6"
},
{
"name": "Layer-2",
"sourceA": "Black",
"sources": [
"Black",
"White"
],
"uuid": "93ddd7c7-752f-505f-8e62-444ffc86428c"
}
],
"name": "Main",
"tally": 1,
"uuid": "f1a5c030-e1a3-5b01-97e0-8a18b16ab1d3"
}
]
```

/scenes/\<scene> or /scenes/\<uuid>Example Response

```
{
"layers": [
{
"name": "Background",
"sourceA": "Black",
"sourceB": "Black",
"sources": [
"Black"
],
"uuid": "ce412da9-e248-567a-a8e0-2ec65739623c"
}
```

```

},
{
  "name": "Layer-1",
  "sourceA": "Black",
  "sources": [
    "Black",
    "White"
  ],
  "uuid": "61508e94-feb-5892-99e1-9c327e2149d6"
},
{
  "name": "Layer-2",
  "sourceA": "Black",
  "sources": [
    "Black",
    "White"
  ],
  "uuid": "93ddd7c7-752f-505f-8e62-444ffc86428c"
}
],
"name": "Main",
"tally": 1,
"uuid": "f1a5c030-e1a3-5b01-97e0-8a18b16ab1d3"
}

```

PATCH requests

The patch requests supported by the KAIROS REST API are application/merge-patch+json types as described in [RFC7396](#). Some of the definitions are not implemented directly as described in the rfc because of system restrictions that prevent some command execution. For example, it is not possible to add/remove parameters to an object, because the data structures are fixed and cannot be modified. This definition makes patch requests of the type application/json-patch+json as described in [RFC6902](#) not applicable.

If a patch request is issued which contains invalid parameters, it is not reported as an error and such parameters are ignored. For example a patch request with two parameters, if one parameter is not recognized by the system, that parameter will be ignored. The other PATCH request parameter will be executed if it is executable.

PATCH scene

/scenes/<scene>/<layer> or /scenes/<uuid>/<uuid> +json-pointer

The scene json object contains a name and a tally parameters as well as a list of layers. All of them are read only properties. A patch request can be send by specifying new Layer parameters "sourceA", "sourceB". The allowed values are listed in the sources parameter. The sources cannot be changed from the REST API. This list of sources is provided by the application and can be specified via other tools like KAIROS GUI software, Kairos Creator. An example PATCH request which changes the Background Layer (sourceA) of Main Scene can be written like in below.

`http://<ip>:<port>/scenes/Main/Background/ + json request Body`

Note: The source parameter is only accepted if a value is represented in the source options "sources" list. If the item is not listed in the source options, the response is "400 Bad Request" status code.

Example json request Body

```

{
  "sourceA": "Black"
}

```

PATCH Macro

/macros/<macro> or /macros/<uuid> +json-pointer

Example json request Body

```

{
  "state": "play"
}

```

PATCH Aux

/aux/⟨aux⟩ or /aux/⟨uuid⟩ +json-pointer

Note: The source parameter is only accepted if a value is represented in the source options "sources" list. If the item is not listed in the source options, the response is "400 Bad Request" status code.

Example json request Body

```
{
  "source": "Black"
}
```

PATCH Multiviewer

/multiviewers/⟨multiviewer⟩ or /multiviewers/⟨uuid⟩ +json-pointer

Note: The preset parameter is only accepted if a value is represented in the multiviewer presets list. If the item is not listed in the multiviewer presets list, the response is 400 Bad Request status code.

Example json request Body

```
{
  "preset": 11
}
```

Error Handling

Invalid Arguments in request body

The handling of patch request require a json document as request body containing parameters which need to be changed. In case of invalid arguments, a request is not accepted even if there are valid parameters listed. Invalid arguments are arguments that are not part of the object description received from the REST API. This allows a client to receive an object description, update the desired parameter and send the entire object with the changes applied back to the server. Some of the arguments provided are read only arguments. If a client changes these arguments, these changes are ignored by the server. Optional parameters exist for layer elements. In this case, it is required to specify at least one of the source parameters (sourceA, sourceB).

A patch request like /aux/04c03dbe-aa4e-5bdd-a98d-942f5c19ecbd with the invalid request body

```
{
  "source": "Black",
  "foo": "bar"
}
```

responds with status code 400 Bad Request and the change on the source parameter is not executed.

Malformed json in request body

If a patch request is send the request body json document is parsed. In case of an error in the json format, the system respond with http status code 400 Bad Request and an error message which describes the json document error. An example error response for incorrect json document,

```
{
  "A": "B
}
```

looks like this:

```
{
  "code": 400,
  "text": "Bad Request. Invalid json format: * Line 2, Column 11 Syntax error: Malformed object literal"
}
```

The error message shows that in Line 2 Column 11 the " " character is missing which causes a Malformed object literal that cannot properly processed by the json parser.

Note: The Column number can be different if tabs are used instead of space characters.