

Plug and Play DTD description language - example



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Example with MXCHIP

<https://catalog.azureiotsolutions.com/details?title=MXChip-IoT-DevKit&source=all-devices-page>

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MXCHIP®
上海庆科信息技术有限公司

MXChip IoT DevKit

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To review device capabilities, download the JSON file. To get firmware for

Example : Capability model

urn:mxchip:mxchip_iot_devkit:1

https://preview.catalog.azureiotolutions.com/globalRepository/capabilityModels/urn:mxchip:mxchip_iot_devkit:1

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Code View ☐ Off

DCM Publisher

Created

Last modified

Long description

Interfaces

▼ urn:azureiot:DeviceManagement:DeviceInformation:1

> Properties

▼ urn:mxchip:built_in_sensors:1

> Telemetry

▼ urn:mxchip:built_in_leds:1

> Commands

▼ urn:mxchip:screen:1

> Commands

▼ urn:mxchip:settings:1

> Properties

```
{
  "@context": "http://azureiot.com/v1/contexts/IoTModel.json",
  "@id": "urn:mxchip:mxchip_iot_devkit:1",
  "@type": "CapabilityModel",
  "displayName": "MXChip IoT DevKit",
  "implements": [
    {
      "name": "deviceinfo",
      "schema": "urn:azureiot:DeviceManagement:DeviceInformation:1"
    },
    {
      "name": "sensors",
      "schema": "urn:mxchip:built_in_sensors:1"
    },
    {
      "name": "leds",
      "schema": "urn:mxchip:built_in_leds:1"
    },
    {
      "name": "screen",
      "schema": "urn:mxchip:screen:1"
    },
    {
      "name": "settings",
      "schema": "urn:mxchip:settings:1"
    }
  ]
}
```

Interface 1

Interface 2

Interface 3

Interface 4

Interface 5

Well known : Interface

urn:mxchip:built_in_sensors:1

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urn:azureiot:DeviceManagement:DeviceInformation:1

Device Interface

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urn:azureiot:DeviceManagement:DeviceInformation:1

Properties

Property Name	Long description	Writable	Schema Type
Manufacturer	Company name of the device manufacturer. This could be the same as the name of the original equipment manufacturer (OEM). Ex. Contoso.	Read-Only	string
Device model	Device model name or ID. Ex. Surface Book 2.	Read-Only	string
Software version	Version of the software on your device. This could be the version of your firmware. Ex. 1.3.45	Read-Only	string
Operating system name	Name of the operating system on the device. Ex. Windows 10 IoT Core.	Read-Only	string
Processor architecture	Architecture of the processor on the device. Ex. x64 or ARM.	Read-Only	string
Processor manufacturer	Name of the manufacturer of the processor on the device. Ex. Intel.	Read-Only	string
Total storage	Total available storage on the device in kilobytes. Ex. 2048000 kilobytes.	Read-Only	long
Total memory	Total available memory on the device in kilobytes. Ex. 256000 kilobytes.	Read-Only	long

```
{
  "@id": "urn:azureiot:DeviceManagement:DeviceInformation:1",
  "@type": "Interface",
  "displayName": "Device Information",
  "contents": [
```

Interface 1

```
    {
      1 "@type": "Property",
        "name": "manufacturer",
        "displayName": "Manufacturer",
        "schema": "string",
        "description": "Company name of the device manufacturer. This could be the same as the name of the original equipment manufacturer (OEM). Ex. Contoso."
    },
```

```
    {
      2 "@type": "Property",
        "name": "model",
        "displayName": "Device model",
        "schema": "string",
        "description": "Device model name or ID. Ex. Surface Book 2."
    },
```

```
    {
      3 "@type": "Property",
        "name": "swVersion",
        "displayName": "Software version",
        "schema": "string",
        "description": "Version of the software on your device. This could be the version of your firmware. Ex. 1.3.45"
    },
```

```
    {
      4 "@type": "Property",
        "name": "osName",
        "displayName": "Operating system name",
        "schema": "string",
        "description": "Name of the operating system on the device. Ex. Windows 10 IoT Core."
    },
  ],
}
```

```
    {
      5 "@type": "Property",
        "name": "processorArchitecture",
        "displayName": "Processor architecture",
        "schema": "string",
        "description": "Architecture of the processor on the device. Ex. x64 or ARM."
    },
```

```
    {
      6 "@type": "Property",
        "name": "processorManufacturer",
        "displayName": "Processor manufacturer",
        "schema": "string",
        "description": "Name of the manufacturer of the processor on the device. Ex. Intel."
    },
```

```
    {
      7 "@type": "Property",
        "name": "totalStorage",
        "displayName": "Total storage",
        "schema": "long",
        "displayUnit": "kilobytes",
        "description": "Total available storage on the device in kilobytes. Ex. 2048000 kilobytes."
    },
```

```
    {
      8 "@type": "Property",
        "name": "totalMemory",
        "displayName": "Total memory",
        "schema": "long",
        "displayUnit": "kilobytes",
        "description": "Total available memory on the device in kilobytes. Ex. 256000 kilobytes."
    },
  ],
}
```

```
"@context": "http://azureiot.com/v1/contexts/IoTModel.json"
}
```

Example : Interface Telemetry

urn:mxchip:built_in_sensors:1

https://preview.catalog.azureiotsolutions.com/globalRepository/interfaces/urn:mxchip:built_in_sensors:1

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urn:mxchip:built_in_sensors:1

Device Interface

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urn:mxchip:built_in_sensors:1

Telemetry

Telemetry Name	Long description	Schema Type
Humidity	The humidity measurement data from the built-in HTS221 sensor.	double
Temperature	The temperature measurement data from the built-in HTS221 sensor.	double
Pressure	The pressure measurement data from the built-in LPS22HB sensor.	double

Interface 2

```
{
  "@id": "urn:mxchip:built_in_sensors:1",
  "@type": "Interface",
  "displayName": "mxchip_sensor",
  "contents": [
    {
      "@type": "Telemetry",
      "name": "humidity",
      "displayName": "Humidity",
      "comment": "The humidity measurement data from the built-in HTS221 sensor.",
      "schema": "double"
    },
    {
      "@type": "Telemetry",
      "name": "temperature",
      "displayName": "Temperature",
      "comment": "The temperature measurement data from the built-in HTS221 sensor.",
      "schema": "double"
    },
    {
      "@type": "Telemetry",
      "name": "pressure",
      "displayName": "Pressure",
      "comment": "The pressure measurement data from the built-in LPS22HB sensor.",
      "schema": "double"
    }
  ],
  "@context": "http://azureiot.com/v1/contexts/IoTModel.json"
}
```


Example : Interface Command

urn:mxchip:screen:1

<https://preview.catalog.azureiotsolutions.com/globalRepository/interfaces/urn:mxchip:screen:1>

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urn:mxchip:screen:1

Device Interface

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urn:mxchip:screen:1

Commands

Command Name	Long description	Command Type
Echo	This command will echo the text string from cloud and show it on the onboard OLED screen.	synchronous
Countdown	This command will show countdown number in the onboard OLED screen, and reboot the device once it's 0.	synchronous

Interface 4

```
{
  "@id": "urn:mxchip:screen:1",
  "@type": "Interface",
  "displayName": "mxchip_screen",
  "contents": [
    {
      "@type": "Command",
      "description": "This command will echo the text string from cloud and show it on the onboard OLED screen.",
      "name": "echo",
      "displayName": "Echo",
      "commandType": "synchronous",
      "request": {
        "name": "text",
        "schema": "string"
      },
      "response": {
        "name": "echoResponse",
        "schema": {
          "@type": "Object",
          "fields": [
            {
              "name": "echo",
              "schema": "string"
            }
          ]
        }
      }
    },
    {
      "@type": "Command",
      "description": "This command will show countdown number in the onboard OLED screen, and reboot the device once it's 0.",
      "name": "countdown",
      "displayName": "Countdown",
      "commandType": "synchronous",
      "request": {
        "name": "number",
        "schema": "integer"
      }
    }
  ],
  "@context": "http://azureiot.com/v1/contexts/IoTModel.json"
}
```

Example : Interface Property

urn:mxchip:settings:1

<https://preview.catalog.azureiotsolutions.com/globalRepository/interfaces/urn:mxchip:settings:1>

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urn:mxchip:settings:1

Device Interface

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urn:mxchip:settings:1

Properties

Property Name	Long description	Writable	Schema Type
Fan Speed		Read-Write	double
Voltage		Read-Write	double
Current		Read-Write	double
IR		Read-Write	boolean

Interface 5

```
{
  "@id": "urn:mxchip:settings:1",
  "@type": "Interface",
  "displayName": "mxchip_settings",
  "contents": [
    {
      "@type": "Property",
      "name": "fanSpeed",
      "displayName": "Fan Speed",
      "writable": true,
      "schema": "double"
    },
    {
      "@type": "Property",
      "name": "voltage",
      "displayName": "Voltage",
      "writable": true,
      "schema": "double"
    },
    {
      "@type": "Property",
      "name": "current",
      "displayName": "Current",
      "writable": true,
      "schema": "double"
    },
    {
      "@type": "Property",
      "name": "irSwitch",
      "displayName": "IR",
      "writable": true,
      "schema": "boolean"
    }
  ],
  "@context": "http://azureiot.com/v1/contexts/IoTModel.json"
}
```