EMCDevice:1 Device Template Version 1.01

For UPnP™ Version *1.0*
Status: *Preliminary Design (TPD)*
Date: *July 17, 2007*

Authors	Company
Grzegorz Lehmann	DAI-Labor

Contents

List of Tables

1. Overview and Scope

This device template is compliant with the Universal Plug and Play Architecture, Version *1.0*.

The EMCDevice:1 template provides UPnP access to power sockets in the home environment and provides means for home automation.

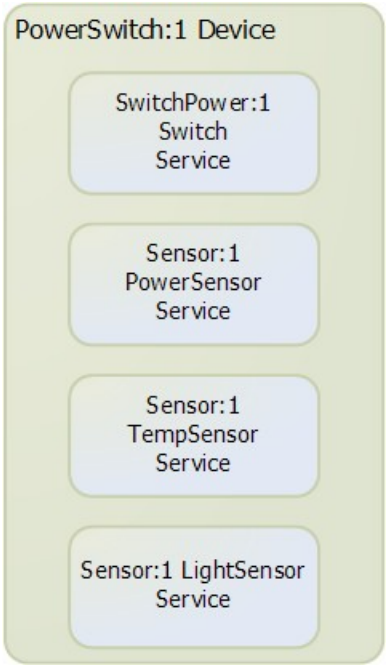
EMC stands for *Energy Measurement and Control* and the EMCDevice:1 defines a general-purpose template, which can be used to access context-aware power sockets. Up to now it was impossible to implement energy management through UPnP. The EMCDevice:1 specification aims at birdging this gap. The template allows to integrate different home automation systems and buses (e.g. EIB, ZigBee) and make them accessible thorugh UPnP.

Each EMCDevice device provides a SwitchPower:1 service which allows to turn the device connected to the socket on or off. Furthermore a socket is equipped with sensors – power consumption sensor, temperature sensor and a light sensor. The power consumption sensor allows to read the power consumption of the device connected to the socket. The temperature and light sensors of the EMCDevice, although optional, allow the it to deliver additional context data.

As depicted in Figure 1, the EMCDevice:1 provides following functionality:

- Switching of the power switch with a SwitchPower:1 service
- Access to the value of the power consumption sensor through a Sensor:1 service
- Access to the value of the temperature sensor through a Sensor:1 service
- Access to the value of the light sensor through a Sensor:1 service

Figure 1 EMCDevice:1 Functional Diagram



Change Log
[17 Jul 2007] Created v1.0

2. Device Definitions

2.1. Device Type

The following device type identifies a device that is compliant with this template:

urn:**schemas-upnp-org:device**:*EMCDevice:1*

2.2. Device Model

Products that expose devices of the type **urn:schemas-upnp-org:device:***EMCDevice:1* must implement minimum version numbers of all required embedded devices and services specified in the table below.

Table 1: Device Requirements

DeviceType	Root	Req. or Opt.[1]	ServiceType	Req. or Opt.[1]	Service ID[2]
EMCDevice:1	yes	R	SwitchPower:1	R	Switch
			Sensor:1	R	PowerSensor
			Sensor:1	O	TempSensor
			Sensor:1	O	LightSensor
			Non-standard services embedded by an UPnP vendor go here.	*X*	*TBD*
Non-standard devices embedded by a UPnP vendor go here.	*TBD*	*X*	*TBD*	*TBD*	*TBD*

[1] R = Required, O = Optional, X = Non-standard.
[2] Prefixed by urn:**upnp-org**:**serviceId**: .

2.2.1. Description of Device Requirements

The SwitchPower:1 service is required exactly once. All sensor services are optional.

2.2.2. Relationships Between Services

The Sensor service PowerSensor shows the current power usage of the power plug. Therefore it should return 0 values if the status of the Switch service is false.

2.3. Theory of Operation

A EMCDevice device describes a power plug and consists of a SwitchPower service and optional Sensor service. With the SwitchPower service it is possible to turn the power plug on and off.

Usually a device connected to a power plug has its own power switch. If the switch is off, then turning a PowerPlug on will have no effect on the device. In such case a control point can read the value of the PowerSensor and find out whether the device uses some power. If not, than the power switch of the device is off and the control point may advise the user to switch the device on manually.

If the EMCDevice is equipped with additional sensors, those can advertised in form of the optional Sensor services defined in this template.

3. XML Device Description

```
<?xml version="1.0"?>
<root xmlns="urn:schemas-upnp-org:device-1-0">
  <specVersion>
    <major>1</major>
    <minor>0</minor>
  </specVersion>
  <URLBase>base URL for all relative URLs</URLBase>
  <device>
    <deviceType>urn:schemas-upnp-org:device:EMCDevice:1</deviceType>
    <friendlyName>short user-friendly title</friendlyName>
    <manufacturer>manufacturer name</manufacturer>
    <manufacturerURL>URL to manufacturer site</manufacturerURL>
    <modelDescription>long user-friendly title</modelDescription>
    <modelName>model name</modelName>
    <modelNumber>model number</modelNumber>
    <modelURL>URL to model site</modelURL>
    <serialNumber>manufacturer's serial number</serialNumber>
    <UDN>uuid:UUID</UDN>
    <UPC>Universal Product Code</UPC>
    <iconList>
      <icon>
        <mimetype>image/format</mimetype>
        <width>horizontal pixels</width>
        <height>vertical pixels</height>
        <depth>color depth</depth>
        <url>URL to icon</url>
      </icon>
      XML to declare other icons, if any, go here
    </iconList>
    <serviceList>
      <service>
        <serviceType>urn:schemas-upnp-org:service:SwitchPower:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:Switch</serviceId>
        <SCPDURL>URL to service description</SCPDURL>
        <controlURL>URL for control</controlURL>
        <eventSubURL>URL for eventing</eventSubURL>
      </service>
      <service>
        <serviceType>urn:schemas-upnp-org:service:Sensor:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:PowerSensor</serviceId>
        <SCPDURL>URL to service description</SCPDURL>
        <controlURL>URL for control</controlURL>
        <eventSubURL>URL for eventing</eventSubURL>
      </service>
      <service>
        <serviceType>urn:schemas-upnp-org:service:Sensor:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:TempSensor</serviceId>
        <SCPDURL>URL to service description</SCPDURL>
        <controlURL>URL for control</controlURL>
        <eventSubURL>URL for eventing</eventSubURL>
      </service>
      <service>
        <serviceType>urn:schemas-upnp-org:service:Sensor:1</serviceType>
        <serviceId>urn:upnp-org:serviceId:LightSensor</serviceId>
```

```
        <SCPDURL>URL to service description</SCPDURL>
        <controlURL>URL for control</controlURL>
        <eventSubURL>URL for eventing</eventSubURL>
      </service>
      Declarations for standard non-AV services defined by UpnP
      (if any) go here
      Declarations for other services added by UPnP vendor
      (if any) go here
     </serviceList>
    <deviceList>
    Description of embedded devices added by UpnP vendor
    (if any) go here
    </deviceList>
    <presentationURL>URL for presentation</presentationURL>
  </device>
</root>
```

4. Test

There are no semantic tests defined for this device.