

**Fire Alarm System Device Types & Fire Detection Resources – CR 3541**

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\*\*\*\*\* **Change #1 (new text)** \*\*\*\*\*

## **Annex F**

**(normative)**

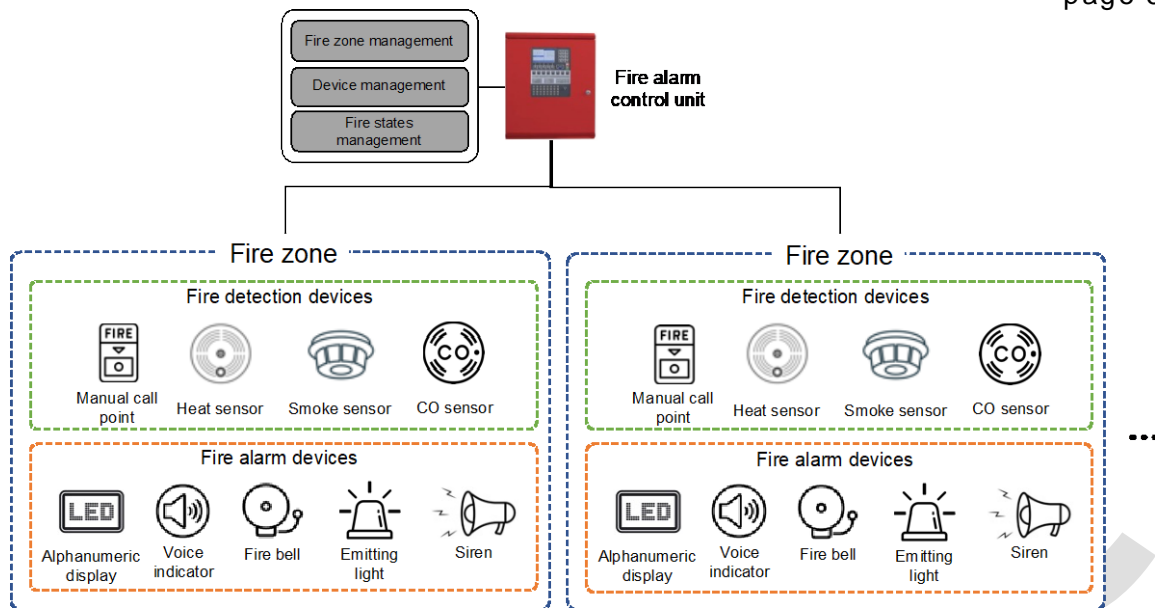
### **Fire Alarm system Device Types**

#### **F.1 Scope**

This Annex defines Device Types for use in fire alarm systems and describes use cases to which fire alarm system devices apply to the smart home and building. The fire alarm system considered in this Annex is composed of a fire alarm control unit, fire detection devices, and fire alarm devices.

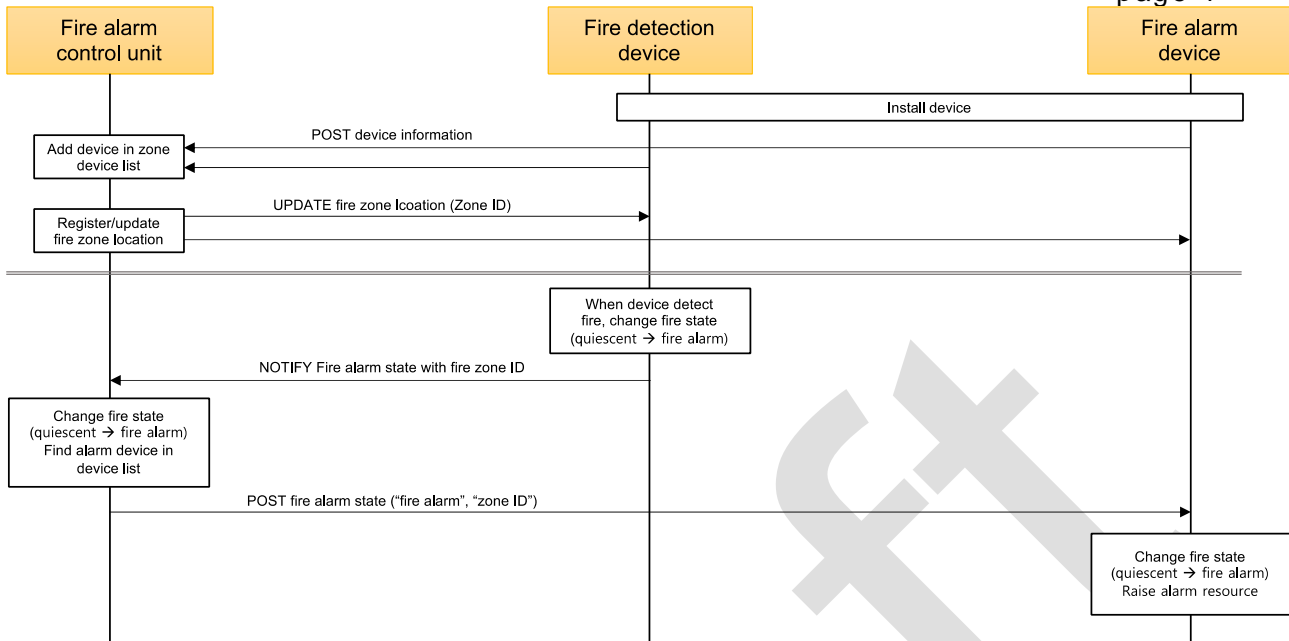
#### **F.2 Operational scenarios**

Generally, the residential house is classified into two types; single-family house and apartment house. In the case of a single-family house, there is a single owner who is fully responsible for managing and controlling the fire alarm systems and devices. Otherwise, the apartment house is shared by different owners who are responsible for their own rooms so the manager is required to manage and control the fire alarm system of the entire building including sharing facilities such as the elevator, lobby, etc. The fire alarm system is deployed in a centralized manner, in which all devices are connected to a control unit called the fire alarm control unit. Fire alarm systems for apartment houses also can adapt to the commercial building scenario. The entire fire alarm system includes fire detectors, indicators, and protection devices. In this Annex, our initial scope is limited to the centralized control unit, detectors, and indicators. Figure F. 1 shows the deployment scenario of a fire alarm system in smart home/building. Design, operation, and management of fire alarm systems and devices should be following ISO 7240(Fire detection and alarm systems) series standards. To design a system, ISO 7240-1 defines fire zones which are sub-division of premises distinguishable areas separately from other subdivisions. Each fire zone has fire detection devices and alarm devices. For monitoring and control of these devices with separating zone, ISO 7240-2 defines fire indication and alarm control functions for a centralized fire management system called a fire alarm control unit. The fire alarm control unit also manages fire alarm states by six conditions and routing fire detection signals from fire detection devices to fire alarm devices and external (i.e., manager, fire station).



**Figure F. 1 – Deployment scenario of the fire alarm system in smart home/building**

Figure F. 2 shows example message flows for setting the fire alarm system and operating when fire is detected. When fire detection device and fire alarm device (OCF Server role) install in the system, they use OCF to POST their device information to the fire alarm control unit (OCF Client role) for adding device information in the system. In the fire alarm control unit, resource is required to identify fire zone ID and allocate it to each device. After mapping device to corresponding fire zone ID, the fire alarm control unit send OCF message to devices including allocated fire zone ID. This ID is using by fire detection devices to send detection message to notice the location of fire, by the fire alarm control unit to determine appropriate alarm device for indicating residence in the building, and by the fire alarm devices to indicate information using sound or display.



**Figure F. 2 – Message call flow example for the fire alarm system**

### F.3 Standardized Device Types

OCF device types for the fire alarm system categorized into three Device Types; Fire alarm control unit, Fire detection and Fire alarm. The Device Type exposed by the “rt” value of /oic/d of all Fire alarm system Devices shall have a Resource Type value (“rt”) prefixed with “oic.d.”. Table F. 1 lists Device Type for the fire alarm control unit.

**Table F. 1 – Fire alarm control unit device types**

Device Name	Device Type (rt)	Required Resource Name	Required Resource Type
Fire Alarm Control Unit	oic.d.firealarmcontrolunit	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state

Table F. 2 lists Fire detection Device Types. For fire detection, four types of devices are defined. Manual Call Point is used to initiate a fire signal by pressing simple switch or button with human intervention. Other devices use existing sensor resources to detect fire by monitoring heat, smoke and carbon monoxide.

**Table F. 2 – List of Fire detection Device Types**

Device Name	Device Type (rt)	Required Resource Name	Required Resource Type
Heat Detector	oic.d.heatdetector	Fire Zone location	oic.r.location.firezone

		Fire state	oic.r.fire.state
		Temperature	oic.r.temperature
		Value Conditional	oic.r.value.conditional
Smoke Detector	oic.d.smokedetector	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state
		Smoke sensor	oic.r.sensor.smoke
		Value Conditional	oic.r.value.conditional
Carbon Monoxide Detector	oic.d.carbonmonoxidedetector	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state
		Carbon monoxide sensor	oic.r.sensor.carbonmonoxide
		Value Conditional	oic.r.value.conditional
Manual Call Point	oic.d.manualcallpoint	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state
		Binary switch	oic.r.switch.binary

Table F. 3 lists Fire alarm Device Types. For fire alarm, five devices are defined. For fire alarm, devices use resource to play sound or light.

**Table F. 3 – List of Fire alarm Device Types**

Device Name	Device Type (rt)	Required Resource Name	Required Resource Type
Fire Bell	oic.d.firebell	Fire Zone location	oic.r.location.firezone
		Zone Device List	oic.r.zonedevicelist
		Fire state	oic.r.fire.state
		Binary switch	oic.r.swtich.binary
Siren	oic.d.siren	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state

		Audio controls	oic.r.audio
Voice Indicator	oic.d.voiceindicator	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state
		Audio controls	oic.r.audio
		Media source list	oic.r.mediasourcelist
Emitting Light	oic.d.emittinglight	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state
		Emitting	oic.r.light.emitting
Alphanumeric Indicator	oic.r.alphanumericindicator	Fire Zone location	oic.r.location.firezone
		Fire state	oic.r.fire.state
		Media source list	oic.r.mediasourcelist

\*\*\*\*\* **Change #2 (new text)** \*\*\*\*\*

## 1.182 Fire Zone Location

### 1.182.1 Introduction

This Resource describes a fire zone location configuration. Fire zone is pre-defined in design of building as defined in ISO 7240-13, and all information is managed by fire alarm control unit as described in ISO 7240-2.

### 1.182.2 Example URI

/FireZoneLocationResURI

### 1.182.3 Resource type

The Resource Type is defined as: "oic.r.location.firezone".

### 1.182.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Fire Zone Location",
    "version": "2022-11-15",
    "license": {
      "name": "OCF Data Model License",
      "url":
"https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LICEN
NSE.md",
      "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/FireZoneLocationResURI" : {
      "get": {
        "description": "This Resource describes the properties associated with the fire zone location
inside building.\n",
        "parameters": [
          {"$ref": "#/parameters/interface"}
        ],
        "responses": {
          "200": {
            "description": "RETRIEVES the current fire zone location. ",
            "x-example": {
              "rt": ["oic.r.location.firezone"],
              "if": ["oic.if.r", "oic.if.baseline"],
              "zoneID": 31,
              "floor": 3,
              "room": "room number 301",
              "facility": "range hood",
            },
            "schema": {"$ref": "#/definitions/Firezonelocation"}
          }
        }
      },
      "post": {
        "description": "Update or set Fire zone Location information.",
        "parameters": [
          {"$ref": "#/parameters/interface"},
          {
            "name": "body",
            "in": "body",
            "required": true,

```





```

    },
    "id": {
      "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/id"
    },
    "if": {
      "description": "The OCF Interface set supported by this Resource.",
      "items": {
        "enum": [
          "oic.if.baseline",
          "oic.if.rw"
        ],
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true,
      "readOnly": true,
      "type": "array"
    },
    "type": "object"
  }
}
}
}

```

### 1.182.5 Property definition

Table 1 defines the Properties that are part of the “oic.r.location.firezone” Resource Type.

**Table 1 – The Property definitions of Resource with type “rt”=“oic.r.location.firezone”.**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	No	Read Only	The Resource Type.
zoneID	Number	Yes	Read Write	The Device's current fire zone location.
floor	Number	No	Read Write	The Device's current floor in the building.
room	String	No	Read Write	The Device's current room in the building.
facility	String	No	Read Write	The Device's attaching facility in the building.
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
if	array: see schema	No	Read Only	

### 1.182.6 CRUDN behavior

Table 2 defines the CRUDN operations that are supported on the “oic.r.location.firezone” Resource Type.

**Table 2 – The CRUDN operations of the Resource with the type “rt”=”oic.r.location.firezone”.**

Create	Read	Update	Delete	Notify
	get	post		Observe

## 1.183 Zone Device List

### 1.183.1 Introduction

This Resource describes list of fire zone ID and OCF devices for each fire zone. Fire alarm control unit can be read or set, remove device in the list. This resource can be requested by OCF client of fire alarm control unit (e.g., fire station, building manager) to monitor devices in each fire zone location.

### 1.183.2 Example URI

/ZoneDeviceListResURI

### 1.183.3 Resource type

The Resource Type is defined as: “oic.r.zonedevicelist”.

### 1.183.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Zone Device List",
    "version": "2022-11-25",
    "license": {
      "name": "OCF Data Model License",
      "url":
        "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LICEN
        SE.md",
      "x-copyright": "copyright 2021 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/ZoneDeviceListResURI": {
      "get": {
        "description": "This Resource describes list of OCF devices for fire alarm system.\n\nThe fire
        alarm control unit can read or write, and send it to OCF client(e.g., fire station, building manager,
        etc.) by separating its fire zone location.",
        "parameters": [
          {
            "$ref": "#/parameters/interface",
            "currentZoneID": 20
          }
        ],
        "responses": {
          "200": {
            "description": "RETRIEVES the information for ZoneDeviceList Resource.",
            "x-example": {
              "rt": ["oic.r.vendorlist"],
              "if": ["oic.if.rw", "oic.if.baseline"],
              "currentZoneID": 20,
              "zoneDeviceList": ["heat-01", "co-23", "siren-045"],
              "status": "quiescent"
            },
            "schema": { "$ref": "#/definitions/ZoneDeviceList" }
          }
        }
      }
    }
  }
}
```

```

    }
  }
},
"parameters": {
  "interface": {
    "in": "query",
    "name": "if",
    "type": "string",
    "enum": ["oic.if.r", "oic.if.baseline"]
  }
},
"definitions": {
  "ZoneDeviceList" : {
    "properties": {
      "rt": {
        "description": "The Resource Type.",
        "items": {
          "enum": ["oic.r.ZoneDeviceList"],
          "maxLength": 64,
          "type": "string"
        },
        "minItems": 1,
        "uniqueItems": true,
        "readOnly": true,
        "type": "array"
      },
      "currentZoneID": {
        "description": "The current fire zone ID selected from \"zoneList\".",
        "type": "number"
      },
      "zoneDeviceList": {
        "description": "The array of all devices in selected zone.",
        "items": {
          "type": "string"
        },
        "readOnly": true,
        "type": "array"
      },
      "zoneList": {
        "description": "The array of the existing fire zone IDs.",
        "items": {
          "type": "number"
        },
        "readOnly": true,
        "type": "array"
      },
      "status": {
        "description": "Current operation status based on the selected zone ID.\n Status information
is generated from /fireAlarmStates/ propoerty in /FireAlarmStateResURI/ resource.",
        "type": "string"
      },
      "n": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/n"
      },
      "id": {
        "$ref":
"https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
schema.json#/definitions/id"
      },
      "if": {
        "description": "The OCF Interface set supported by this Resource.",
        "items": {
          "enum": [
            "oic.if.r",
            "oic.if.baseline"
          ],
          "type": "string"
        }
      }
    }
  }
}

```

```

    "minItems": 2,
    "uniqueItems": true,
    "readOnly": true,
    "type": "array"
  },
},
"type": "object",
"required": ["currentZoneID"]
}
}
}

```

### 1.183.5 Property definition

Table 3 defines the Properties that are part of the “oic.r.fire.state” Resource Type.

**Table 3 - The Property definitions of Resource with type “rt”=“oic.r.zonedevicelist”.**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	No	Read Only	The Resource Type.
currentZoneID	number	Yes	Read Only	The current zone ID requested by OCF client.
zoneDeviceList	array: see schema	Yes	Read Only	The array of the devices in current Zone ID.
zoneList	array: see schema	Yes	Read Only	The array of existing fire zone IDs.
status	string	Yes	Read Only	Current fire state of selected zone ID.
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
if	array: see schema	No	Read Only	

### 1.183.6 CRUDN behavior

Table 4 defines the CRUDN operations that are supported on the “oic.r.zonedevicelist” Resource Type.

**Table 4 – The CRUDN operations of the Resource with type “rt”=“oic.r.zonedevicelist”.**

Create	Read	Update	Delete	Notify
	get			

## 1.184 Fire State

### 1.184.1 Introduction

This Resource describes fire alarm states.

The Property “fireAlarmStates” is an array of possible states defined in ISO 7240-2.

The Property “currentFireAlarmState” is the current fire alarm state value of the OCF device.

### 1.184.2 Example URI

/FireAlarmStateResURI

### 1.184.3 Resource type

The Resource Type is defined as: “oic.r.fire.state”.

### 1.184.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Fire Alarm State",
    "version": "2022-11-15",
    "license": {
      "name": "OCF Data Model License",
      "url":
"https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LICEN
NSE.md",
      "x-copyright": "copyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/FireAlarmStateResURI": {
      "get": {
        "description": "This Resource describes the fire alarm states on a device.\n\nThe states can be
read or set, setting indicates a desired state.\n\nThe Property \"fireAlarmStates\" is an array of the
possible operational states defined in the ISO7240.\n\nThe Property \"currentFireAlarmState\" is the
current fire alarm state of the device.\n\nThe Property \"runningTime\" is the ISO8601 encoded elapsed
time in the current operational state.",
        "parameters": [
          { "$ref": "#/parameters/interface" }
        ],
        "responses": {
          "200": {
            "description": "RETRIEVES the current fire alarm state.",
            "x-example": {
              "rt": ["oic.r.fire.state"],
              "if": ["oic.if.s", "oic.if.a", "oic.if.baseline"],
              "fireAlarmStates": ["quiescent", "fire alarm", "fault warning", "disablement", "test",
"supervisory control"],
              "currentFireAlarmState": "quiescent",
              "runningTime": "PT15M20S",
            },
            "schema": { "$ref": "#/definitions/FireAlarmState" }
          }
        }
      }
    }
  },
  "post": {
    "description": "Sets the desired fire alarm state.",
    "parameters": [
      { "$ref": "#/parameters/interface" },
      {
        "name": "body",
        "in": "body",
        "required": true,
      }
    ]
  }
}
```





Create	Read	Update	Delete	Notify
	get	post		Observe

## 1.185 Emitting

### 1.185.1 Introduction

This Resource describes the emitting resource, which consists colors and patterns of the light.

### 1.185.2 Example URI

/EmittingResURI

### 1.185.3 Resource type

The Resource Type is defined as: "oic.r.light.emitting".

### 1.185.4 OpenAPI 2.0 definition

```
{
  "swagger": "2.0",
  "info": {
    "title": "Emitting",
    "version": "2022-11-15",
    "license": {
      "name": "OCF Data Model License",
      "url":
        "https://github.com/openconnectivityfoundation/core/blob/e28a9e0a92e17042ba3e83661e4c0fbce8bdc4ba/LICEN
        SE.md",
      "x-copyright": "opyright 2020 Open Connectivity Foundation, Inc. All rights reserved."
    },
    "termsOfService": "https://openconnectivityfoundation.github.io/core/DISCLAIMER.md"
  },
  "schemes": ["http"],
  "consumes": ["application/json"],
  "produces": ["application/json"],
  "paths": {
    "/EmittingResURI" : {
      "get": {
        "description": "This Resource describes a emitting function.\n\nThe Property \"emittingSet\" is
          a boolean showing the current emitting status.\n\nThe Property \"color\" is a integer showing the
          current color of emitting.\n\nThe Property \"colorLists\" is an array of the possible colors available
          in this device.\n\nThe Property \"emittingPeriod\" is an integer showing seconds of emitting period.",
        "parameters": [
          { "$ref": "#/parameters/interface" }
        ],
        "responses": {
          "200": {
            "description": "RETRIEVES the current emitting state.",
            "x-example":
              {
                "rt": ["oic.r.light.emitting"],
                "if": ["oic.if.a", "oic.if.baseline"],
                "emittingSet": true,
                "color": "red",
                "colorLists": ["red", "blue", "yellow"],
                "emittingPeriod": 1
              },
            "schema": { "$ref": "#/definitions/Dimming" }
          }
        }
      },
      "post": {
        "description": "Sets the desired emitting status.\n\n",
        "parameters": [
          { "$ref": "#/parameters/interface" },

```





```

    "type": "array"
  },
  "emittingPeriod": {
    "description": "The period of emitting (seconds).",
    "type": "integer"
  },
  "n": {
    "$ref":
    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
    schema.json#/definitions/n"
  },
  "id": {
    "$ref":
    "https://openconnectivityfoundation.github.io/core/schemas/oic.common.properties.core-
    schema.json#/definitions/id"
  },
  "range": {
    "$ref":
    "https://openconnectivityfoundation.github.io/IoTDataModels/schemas/oic.baseresource.properties-
    schema.json#/definitions/range_integer"
  },
  "step": {
    "$ref":
    "https://openconnectivityfoundation.github.io/IoTDataModels/schemas/oic.baseresource.properties-
    schema.json#/definitions/step_integer"
  },
  "if": {
    "description": "The OCF Interface set supported by this Resource.",
    "items": {
      "enum": [
        "oic.if.a",
        "oic.if.baseline"
      ],
      "type": "string"
    },
    "minItems": 2,
    "uniqueItems": true,
    "readOnly": true,
    "type": "array"
  }
},
"type": "object",
"required": ["emittingSetting"]
}
}
}

```

### 1.185.5 Property definition

Table 7 defines the Properties that are part of the “oic.r.light.emitting” Resource Type.

**Table 7 - The Property definitions of Resource with type “rt”=“oic.r.light.emitting”.**

Property name	Value type	Mandatory	Access mode	Description
rt	array: see schema	No	Read Only	The Resource Type.
emittingSet	boolean	Yes	Read Write	The current status of the resource.
color	string	No	Read Write	The current color of emitting light.
colorLists	array: see schema	No	Read Only	The array of the possible colors

				available in this device.
emittingPeriod	integer	No	Read Write	The period of emitting.
n	multiple types: see schema	No	Read Write	
id	multiple types: see schema	No	Read Write	
if	array: see schema	No	Read Only	

### 1.185.6 CRUDN behavior

Table 8 defines the CRUDN operations that are supported on the “oic.r.light.emitting” Resource Type.

**Table 8 – The CRUDN operations of the Resource with type “rt”=“oic.r.light.emitting”.**

Create	Read	Update	Delete	Notify
	get	post		Observe