

Helen Project Service

Base UUID: **4F770000ED7D-11E4-840E-0002A5D5C51B**

Service UUID: **0x0301**

Abstract:

This service exposes measurement and control methods

Summary:

TODO

Service Dependencies:

This service is not dependent upon any other service.

GATT Requirements

| Sub-Procedure | Server Requirement |
|----------------------------------|--------------------|
| Write Characteristic Value | Mandatory |
| Notifications | C1 |
| Indications | Mandatory |
| Read Characteristic Descriptors | Mandatory |
| Write Characteristic Descriptors | Mandatory |

C1: Mandatory if the Helen Measurement characteristic is supported, otherwise excluded for this service.

Transport Dependencies

| Transport | Supported |
|------------|-----------|
| Classic | false |
| Low Energy | true |
| High Speed | false |

Error Codes

| Name | Code | Description |
|------|------|-------------|
| | | |

Service Characteristics

| Overview | Properties | | Security | Descriptors | | |
|--|----------------------|-------------|-----------------------------------|---|-------------|-----------|
| Name: Helen Measurement Requirement: Optional | Property | Requirement | None | Overview | Permissions | |
| | Read | Excluded | | Name: Client Characteristic Configuration Requirement: Mandatory | Perm. | Req. |
| | Write | Excluded | | | Read | Mandatory |
| | WriteWithoutResponse | Excluded | | | Write | Mandatory |
| | SignedWrite | Excluded | | | | |
| | Notify | Mandatory | | | | |
| | Indicate | Excluded | | | | |
| | WriteableAuxiliaries | Excluded | | | | |
| | Broadcast | Excluded | | | | |
| | ExtendedProperties | | | | | |
| Name: Helen Feature Requirement: Mandatory | Property | Requirement | None | None | | |
| | Read | Mandatory | | | | |
| | Write | Excluded | | | | |
| | WriteWithoutResponse | Excluded | | | | |
| | SignedWrite | Excluded | | | | |
| | Notify | Excluded | | | | |
| | Indicate | Excluded | | | | |
| | WriteableAuxiliaries | Excluded | | | | |
| | Broadcast | Excluded | | | | |
| | ExtendedProperties | | | | | |
| Name: Helen Modes Requirement: Mandatory | Property | Requirement | Optional for write property | None | | |
| | Read | Mandatory | | | | |
| | Write | Optional | | | | |
| | WriteWithoutResponse | Excluded | | | | |
| | SignedWrite | Excluded | | | | |
| | Notify | Excluded | | | | |
| | Indicate | Excluded | | | | |
| | WriteableAuxiliaries | Excluded | | | | |
| | Broadcast | Excluded | | | | |
| | ExtendedProperties | | | | | |

| Name: Helen Control Point Requirement: Mandatory | Property | Requirement | Optional | Overview | Permissions | |
|---|----------------------|-------------|----------|---|-------------|-----------|
| | Read | Excluded | | Name: Client Characteristic Configuration Requirement: Mandatory | Perm. | Req. |
| | Write | Mandatory | | | Read | Mandatory |
| | WriteWithoutResponse | Excluded | | | Write | Mandatory |
| | SignedWrite | Excluded | | | | |
| | Notify | Excluded | | | | |
| | Indicate | Mandatory | | | | |
| | WriteableAuxiliaries | Excluded | | | | |
| | Broadcast | Excluded | | | | |
| | ExtendedProperties | | | | | |

Helen Measurement

Characteristic UUID: **0x0302**

Summary:

The Helen Measurement characteristic is a variable length structure containing a Flags field and, based on the contents of the Flags field, may contain one or more additional fields as shown in the table below.

Value Fields

| Names | Field Req. | Format | Additional Information | | | | |
|---|------------|-------------------------|--------------------------------------|------|-----------------------|------------|-------|
| tbd. | Mandatory | 8bit | set to 0 until defined | | | | |
| Flags | Mandatory | 8bit | Bit Field | | | | |
| | | | Bit | Size | Name | Definition | |
| | | | 0 | 1 | output power present | 0 | False |
| | | | | | | 1 | True |
| | | | 1 | 1 | temperature present | 0 | False |
| | | | | | | 1 | True |
| | | | 2 | 1 | input voltage present | 0 | False |
| | | | | | | 1 | True |
| | | | 3 | 1 | SOC present | 0 | False |
| | | | | | | 1 | True |
| 4 | 4 | reserved for future use | | | | | |
| Mode | Mandatory | 8bit | OFF: 255; SOS: 254; ON: 0..n-1 | | | | |
| Output Power Information: Unit is in watts with a resolution of 1/1000. Unit: org.bluetooth.unit.power.watt Exponent: Decimal, -3 | Optional | uint16 | | | | | |
| Temperature Information: Unit is in degree Cesium with a resolution of 1.. Unit: org.bluetooth.unit.thermodynamic_t emperature.degree_celsius Exponent: Decimal, 0 | Optional | int8 | | | | | |

| | | | |
|--|----------|--------|--|
| Input Voltage Information: Unit is in volts with a resolution of 1/1000. Unit: org.bluetooth.unit.electric_potential_difference.volt Exponent: Decimal, -3 | Optional | uint16 | |
| State of charge Information: Unit is in percent with a resolution of 0.5 Unit: org.bluetooth.unit.percentage Exponent: Binary, -1 | Optional | uint8 | |

Helen Feature

Characteristic UUID: **0x0303**

Summary:

The Helen Feature characteristic is used to report a list of features supported by the device.

Value Fields

| Names | Field Req. | Format | Additional Information | | | | | | |
|---------------|--|-------------------------|--|------|--------------------------|---|---------|---------------------------|--|
| Mode Count | Mandatory | 8bit | the number of available modes | | | | | | |
| Channel Count | Mandatory | 8bit | the number of available channels | | | | | | |
| Channel Size | Mandatory if Channel Count > 0, otherwise excluded | 16bit | this field is present as array, one for each channel | | | | | | |
| | | | Bit Field | | | | | | |
| | | | Bit | Size | Name | Definition | | | |
| | | | 0 | 8 | channel bitsize | the total size in bits of the Channels Configuration Field for this channel | | | |
| | | | 8 | 4 | special feature bitsize | the number of bits used for special feature | | | |
| | | | 12 | 4 | channel description | Key | Name | Additional Information | |
| | | | | | | 0 | User | user specific channel | |
| | | | | | | 1 | Current | current regulated channel | |
| | | | | | | 2 | Voltage | voltage regulated channel | |
| | | | | | | 3 | PWM | PWM channel | |
| 4 | Switch | on/off channel | | | | | | | |
| 5-15 | reserved for future use | | | | | | | | |
| Features | Mandatory | 16bit | Bit Field | | | | | | |
| | | | Bit | Size | Name | | | Definition | |
| | | | 0 | 1 | mode set supported | 0 | False | | |
| | | | | | | 1 | True | | |
| | | | 1 | 1 | search request supported | 0 | False | | |
| | | | | | | 1 | True | | |
| | | | 2 | 1 | factory reset supported | 0 | False | | |
| | | | | | | 1 | True | | |
| | | | 3 | 1 | mode override supported | 0 | False | | |
| | | | | | | 1 | True | | |
| 4 | 12 | reserved for future use | | | | | | | |

Helen Modes

Characteristic UUID: **0x0304**

Summary:

The Helen Modes characteristic is used to modify the modes of the device.

Value Fields

| Names | Field Req. | Format | Additional Information | | | | |
|--------------------|------------|--------|---|------|-------------------------|------------|-------|
| Mode Configuration | Mandatory | 16bit | This field is present as array, one field for each mode | | | | |
| | | | Bit Field | | | | |
| | | | Bit | Size | Name | Definition | |
| | | | 0 | 1 | ignore | 0 | False |
| | | | | | | 1 | True |
| | | | 1 | 1 | First_In_Group | 0 | False |
| | | | | | | 1 | True |
| | | | 2 | 1 | Last_In_Group | 0 | False |
| | | | | | | 1 | True |
| | | | 3 | 1 | Is_Preferred_Mode | 0 | False |
| | | | | | | 1 | True |
| | | | 4 | 1 | Is_Temporary_Mode | 0 | False |
| | | | | | | 1 | True |
| | | | 5 | 1 | Is_Off_Mode | 0 | False |
| | | | | | | 1 | True |
| | | | 6 | 10 | reserved for future use | | |

| Channels Configuration | Optional | Variable | <div>This field is present as two-dimensional array, one for each channel and mode.</div> <div>[channel 0][mode 0] [channel 0][mode 1] [channel 0][mode 2] ... [channel 1][mode 0] [channel 1][mode 1] [channel 1][mode 2] ... [channel 2][mode 0] [channel 2][mode 1] [channel 2][mode 2]</div> <div>Bit Field</div> <table><tr><th>Bit</th><th>Size</th><th>Name</th></tr><tr><td>0</td><td>channel bitsize – special feature bitsize</td><td>intensity</td></tr><tr><td>channel bitsize – special feature bitsize</td><td>special feature bitsize</td><td>modus</td></tr></table> | Bit | Size | Name | 0 | channel bitsize – special feature bitsize | intensity | channel bitsize – special feature bitsize | special feature bitsize | modus |
|---|---|-----------|--|-----|------|------|---|---|-----------|---|-------------------------|-------|
| Bit | Size | Name | | | | | | | | | | |
| 0 | channel bitsize – special feature bitsize | intensity | | | | | | | | | | |
| channel bitsize – special feature bitsize | special feature bitsize | modus | | | | | | | | | | |

Helen Control Point

Characteristic UUID: **0x0305**

Summary:

The Helen Control Point characteristic is used to request a specific function to be executed on the receiving device.

Value Fields

| Names | Field Req. | Format | Additional Information | | |
|-----------------------|---|----------|---|-------------------------|--|
| Op codes | Mandatory | uint8 | Enumerations | | |
| | | | Key | Value | Description |
| | | | 1 | request mode | Request the current mode. The response to this control point is Op Code 0x20 followed by the current mode |
| | | | 2 | set mode | Set mode command. The response to this control point is Op Code 0x20 |
| | | | 3 | request search | Initiate the procedure to start the search for a remote or other compatible light. The response to this control point is Op Code 0x20. |
| | | | 5 | factory reset | Initiate the procedure to perform a factory reset The response to this control point is Op Code 0x20. If the current connection is bonded, the device will disconnect. |
| | | | 8 | override mode | Temporary override the channel configuration for the current mode with the given one. |
| | | | 32 | Response Code | The response code is followed by the requested Op Code, the response value and optionally the response parameter |
| mode | Mandatory for “set mode” Op code, otherwise excluded | uint8_t | 0, 4, 7, 9-31, 33-255 | Reserved for future use | |
| | | | | | |
| channel configuration | Mandatory for “override mode” Op code, otherwise excluded | Variable | A list of channel configurations for each channel | | |

| Request Op Code | Mandatory for "Response Code" Op Code, otherwise this field is Excluded. | uint8 | Refer to the Op Code table above for additional information on the possible values for this filed | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|--|---|--|--------------|--|--|-----|-------|-------------|---|---------|------------------------------------|---|-----------------------|--|---|-------------------|---|---|------------------|--|-----|-------------------------|--|-------|-------------------------|--|
| Response Value | Mandatory for "Response Code" Op Code, otherwise this field is Excluded. | uint8 | <table><tr><th colspan="3">Enumerations</th></tr><tr><th>Key</th><th>Value</th><th>Description</th></tr><tr><td>1</td><td>Success</td><td>Response for successful operation.</td></tr><tr><td>2</td><td>Op Code not supported</td><td>Response if unsupported Op Code is received.</td></tr><tr><td>3</td><td>Invalid Parameter</td><td>Response if Parameter received does not meet the requirements of the service or is outside of the supported range</td></tr><tr><td>4</td><td>Operation Failed</td><td>Response if the requested procedure failed</td></tr><tr><td>0-0</td><td>Reserved for future use</td><td></td></tr><tr><td>5-255</td><td>Reserved for future use</td><td></td></tr></table> | Enumerations | | | Key | Value | Description | 1 | Success | Response for successful operation. | 2 | Op Code not supported | Response if unsupported Op Code is received. | 3 | Invalid Parameter | Response if Parameter received does not meet the requirements of the service or is outside of the supported range | 4 | Operation Failed | Response if the requested procedure failed | 0-0 | Reserved for future use | | 5-255 | Reserved for future use | |
| Enumerations | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Key | Value | Description | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Success | Response for successful operation. | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Op Code not supported | Response if unsupported Op Code is received. | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Invalid Parameter | Response if Parameter received does not meet the requirements of the service or is outside of the supported range | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Operation Failed | Response if the requested procedure failed | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0-0 | Reserved for future use | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5-255 | Reserved for future use | | | | | | | | | | | | | | | | | | | | | | | | | | |
| mode | Mandatory for "Response Code" Op Code with “request mode” Request Op Code, otherwise this field is Excluded. | uint8_t | | | | | | | | | | | | | | | | | | | | | | | | | |