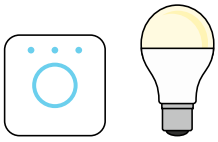
North

The Hue Driver



The Hue driver allows North to interface with a Philips Hue wireless lighting system. Available for Commander and ObSys.

This document relates to Hue driver version 1.1

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from *www.northbt.com*

Contents

Compatibility with the Philips Hue System

The Hue driver allows North to interface with a Philips Hue wireless lighting system.

The driver connects via an Ethernet network, to a Philips Hue bridge (Fig. 1). A Hue bridge can wirelessly connect with up to 50 lights and 12 accessories.

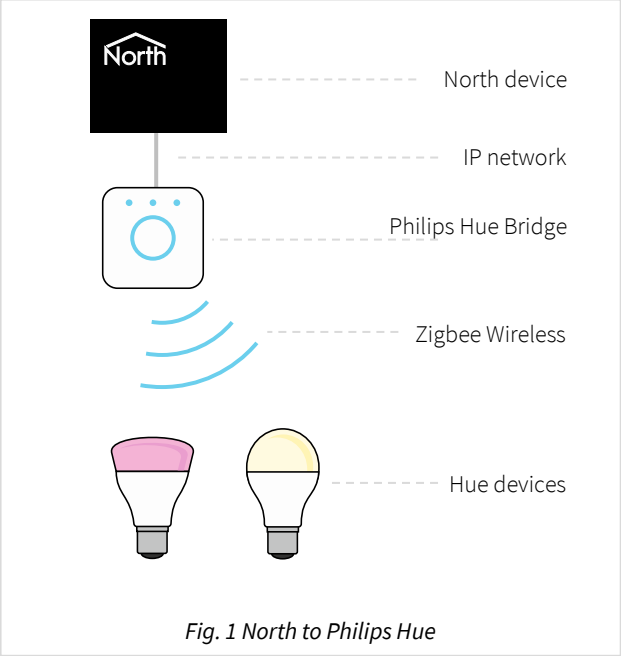


Fig. 1 North to Philips Hue

Equipment

The North device connects to a Philips Hue bridge version 2.0 or 2.1.

Hue devices compatible with the driver include:

- White bulbs and lamps
- White ambiance bulbs and lamps
- White & colour ambiance bulbs, lamps and light strips
- Accessories – dimmer switch controls and motion sensors

Values

Depending on the type of Philips Hue lamp or accessory connected, typically the following values are available:

- Lamp and Group on-off state
- Lamp and Group brightness
- Lamp and Group colour (RGB)
- Lamp and Group colour temperature
- Lamp and Group alert action
- Group scene setting
- Daylight
- Accessory room temperature
- Accessory presence sensor
- Accessory light level
- Accessory motion detection
- Accessory battery level
- Switches - Last button pressed

The Philips Hue system does not generate alarm event messages.

Prerequisites

Use the Philips Hue app on a mobile device to set-up the lighting system, including lamps and rooms.

The Hue bridge is usually assigned an IP address from the local network's DHCP server. If possible, we recommend creating a reservation for the bridge within the router/DHCP server. If you are unable to find the IP address of the bridge from the DHCP server, either visit *www.meethue.com/api/nupnp* using a browser on the same network or go to Hue bridges > Network settings using the Hue app.

When starting the interface for the first time, access to the Hue bridge is required - you will need to press the push-link button.

The driver requires a bridge with API version 1.13.0 or later. See *Driver Versions* for information on which bridge version the driver was last tested. Use the *Hue Bridge* object to determine the version of your bridge.

If you are connecting via a firewall, then the driver will require access to TCP port 80 on the bridge.

Using the Driver

On ObSys and Commander, the Hue driver is pre-installed. On all North devices, you can use the driver to create an interface to Hue. Once started, you will need to configure the driver before it can communicate with the Philips Hue system.

Starting the Interface

To start an interface using the Hue driver, follow these steps:

- → **Start Engineering** your North device using ObSys
- → Navigate to **Configuration, Interfaces,** and set an unused **Interface** to 'Hue' to start the interface
- → Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc), labelled **Hue Setup**, should now be available. If this object is not available, check an interface licence is available and the driver is installed.

Setting up the Driver

To set up the driver, follow these steps:

- → Navigate to the **Hue Setup** object (Mc)
- → Set the **Hue Bridge IP Address** object (IA) to the IP address of the bridge
- → Check the **Device Communicating** object (DS). If the value is 'Push-link', press and release the button on the bridge – this instructs it to accept requests from the driver.

Checking Communications

The interface polls the Philips Hue bridge for the current values from lamps, groups, and sensors.

You can check that the interface is communicating by reading the **Device Communicating** object (DS):

Value	Meaning
No	No response received from bridge. Check IP address
Yes	Driver connected to bridge and receiving values
Push-link	Driver waiting to link with bridge. Press and release the push-link button on the bridge to confirm

Object Specifications

Once an interface is started, one or more extra objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) – the whole object structure is a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Each object is specified below, along with its sub-objects.

Example Object Reference

An example of a reference to an object in the same device: the Philips Hue System object (S1) contains a Desk lamp (L1), which itself contains a State (SO). Therefore, the object reference will be 'S1.L1.SO'.

An example of a reference to an object in a different device: the IP network object (IP) contains Default Commander object (CDIP), which contains the object above (S1.L1.SO) – therefore the complete object reference is 'IP.CDIP.S1.L1.SO'.

Device Top-Level Objects

When an interface is started using the Hue driver, the objects below become available within the top-level object of the device. For example, if Interface 1 is started, then the object with references 'M1' and 'S1' become available.

Description	Reference	Type
Hue Setup Set up the Hue driver, started on interface *c* (*c* is the interface number)	M*c*	Fixed container: On the Commander platform this will be *[CDM v20\Hue v11]* On the ObSys platform this will be *[OSM v20\Hue v11]*
Hue System Access Philips Hue system connected to interface *c* (*c* is the interface number)	S*c*	Variable container: *[Hue v11]*

Hue Driver Setup

Object Type: [OSM v20\Hue v11]
Object Type: [CDM v20\Hue v11]

The Hue driver contains the following objects:

Description	Reference	Type
Device Label Label displayed when scanning the system	DL	Obj\Text; Max:20 chars; Adjustable
Hue Bridge IP Address The IP address of the Philips Hue bridge	IA	Obj\IP; Adjustable
Device Communicating Indicates the driver has connected to and is communicating with the bridge. The value 'push-link' indicates the button on the bridge needs pressing, see *Setting up the Driver* above	DS	Obj\ENum Values: 0=No, 1=Yes, 2=Push-link
Debug Enable This will store additional debug information in the record file. Use this option only when instructed by North Support	DE	Obj\NoYes; Adjustable
Want CLIP Sensors If set to 'Yes', CLIP sensors are returned in the scan results for the system	WC	Obj\NoYes; Adjustable

Hue System

Object Type: [Hue v11]

The Hue system is a network of Philips Hue compatible lamps, rooms, and sensors.

Description	Reference	Type
Lamp name Individual light or lamp, where *x*, is a number in the range 1…255	L*x*	Fixed container depending on lamp class. *[Hue v11\Light\Ambience]* *[Hue v11\Light\Colour]* *[Hue v11\Light\Dimmable]* *[Hue v11\Light\ExtColour]* *[Hue v11\Light\Plug-in light]*
Group name Room, Zone, or lighting group *x*, where *x* is a number in the range 1…255. A group allows several lamps to be controlled together as a group.	G*x*	Fixed container depending on group class: *[Hue v11\Group\Entertainment]* *[Hue v11\Group\Lightgroup]* *[Hue v11\Group\Lightsource]* *[Hue v11\Group\Luminaire]* *[Hue v11\Group\Room]* *[Hue v11\Group\Zone]*
Sensor name Sensor *x*, where *x* is a number in the range 1…255.	S*x*	Fixed container depending on device type. Daylight: *[Hue v11\Sensor\Daylight]* Light level sensor: *[Hue v11\Sensor\ZLLLightLevel]* Presence sensor: *[Hue v11\Sensor\ZLLPresence]* Temperature sensor: *[Hue v11\Sensor\ZLLTemperature]* Switch sensor: *[Hue v11\Sensor\ZLLSwitch]* CLIP generic status sensor: *[Hue v11\Sensor\CLIPGenericStatus]* CLIP generic flag sensor: *[Hue v11\Sensor\CLIPGenericFlag]*
Hue Bridge Information about the bridge	B	Fixed container: *[Hue v11\Bridge]*

Lamp: Colour Light and Extended Colour Light

Object Type: [Hue v11\Light\Colour]
Object Type: [Hue v11\Light\ExtColour]

A Colour Light and Extended Colour Light object represents a Hue compatible lamp that supports adjustment of its brightness, RGB (red-green-blue) colour, and colour temperature. These three properties work together, adjusting one may change the other values.

Description	Reference	Type
Label	L	Obj\Text; Max: 30chars
Model Id	M	Obj\Text; Max:30chars
Archetype General category of lamp/bulb	A	Obj\Text; Max: 30chars
State The current on-off state of the light	SO	Obj\OffOn; Adjustable
Brightness The brightness of the light, if appropriate. See Note 1	SB	Obj\Num; Range: 0…254; Adjustable
Colour The RGB colour of the light, if appropriate. See Note 2	SC	Obj\WinClr; Adjustable
Colour Temperature (K) The colour temperature of the light, if appropriate, in degrees Kelvin	ST	Obj\Num; Range 2000…6500; Adjustable
Alert Action Send alert action to the light. This causes either a 'single' light on-off cycle, or 'multiple' light on-off cycles for 15 seconds. Use this to alert the occupier to an event. This object reports the last value set, not the current state.	SA	Obj\ENum; Adjustable; Adjustable Values: 0=None, 1=Single, 2=Multiple
Comms OK Whether the bridge can communicate with the light	SR	Obj\NoYes

Note 1. If the Brightness is set to '0', the driver automatically sets the State to 'Off'. If the Brightness is set to any other value, the driver automatically sets the State to 'On'

Note 2. If the Colour is set to '0', the driver automatically sets the State to 'Off'. If the Colour is set to any other value, the driver automatically sets the State to 'On'

Lamp: Ambience Light

Object Type: [Hue v11\Light\Ambience]

An Ambience Light object represents a Hue compatible lamp that supports adjustment of its brightness, and colour temperature. These three properties work together, adjusting one may change the other values.

Description	Reference	Type
Label	L	Obj\Text; Max: 30chars
Model Id	M	Obj\Text; Max:30chars
Archetype General category of lamp/bulb	A	Obj\Text; Max: 30chars
State The current on-off state of the light	SO	Obj\OffOn; Adjustable
Brightness The brightness of the light, if appropriate. See Note 1	SB	Obj\Num; Range: 0…254; Adjustable
Colour Temperature (K) The colour temperature of the light, if appropriate, in degrees Kelvin	ST	Obj\Num; Range 2000…6500; Adjustable
Alert Action Send alert action to the light. This causes either a 'single' light on-off cycle, or 'multiple' light on-off cycles for 15 seconds. Use this to alert the occupier to an event. This object reports the last value set, not the current state.	SA	Obj\ENum; Adjustable; Adjustable Values: 0=None, 1=Single, 2=Multiple
Comms OK Whether the bridge can communicate with the light	SR	Obj\NoYes

Note 1. If the Brightness is set to '0', the driver automatically sets the State to 'Off'. If the Brightness is set to any other value, the driver automatically sets the State to 'On'

Lamp: Dimmable Light

Object Type: [Hue v11\Light\Dimmable]

A Dimmable Light object represents a Hue compatible lamp that supports adjustment of its brightness level.

Description	Reference	Type
Label	L	Obj\Text; Max: 30chars
Model Id	M	Obj\Text; Max:30chars
Archetype General category of lamp/bulb	A	Obj\Text; Max: 30chars
State The current on-off state of the light	SO	Obj\OffOn; Adjustable
Brightness The brightness of the light. See Note 1	SB	Obj\Num; Range: 0…254; Adjustable
Alert Action Send alert action to the light. This causes either a 'single' light on-off cycle, or 'multiple' light on-off cycles for 15 seconds. Use this to alert the occupier to an event. This object reports the last value set, not the current state.	SA	Obj\ENum; Adjustable; Adjustable Values: 0=None, 1=Single, 2=Multiple
Comms OK Whether the bridge can communicate with the light	SR	Obj\NoYes

Note 1. If the Brightness is set to '0', the driver automatically sets the State to 'Off'. If the Brightness is set to any other value, the driver automatically sets the State to 'On'

Lamp: Plug-in Light

Object Type: [Hue v11\Light\Plug-in light]

A plug-in light object represents a Hue compatible controllable plug socket, that is typically used to control power to a lamp, and may control it's brightness.

Description	Reference	Type
Label	L	Obj\Text; Max: 30chars
Model Id	M	Obj\Text; Max:30chars
Archetype General category of lamp/bulb	A	Obj\Text; Max: 30chars
State The current on-off state of the light	SO	Obj\OffOn; Adjustable
Brightness The brightness of the light. See Note 1	SB	Obj\Num; Range: 0…254; Adjustable
Alert Action Send alert action to the light. This causes either a 'single' light on-off cycle, or 'multiple' light on-off cycles for 15 seconds. Use this to alert the occupier to an event. This object reports the last value set, not the current state.	SA	Obj\ENum; Adjustable; Adjustable Values: 0=None, 1=Single, 2=Multiple
Comms OK Whether the bridge can communicate with the light	SR	Obj\NoYes

Note 1. If the Brightness is set to '0', the driver automatically sets the State to 'Off'. If the Brightness is set to any other value, the driver automatically sets the State to 'On'

Group

Object Type: [Hue v11\Group\Entertainment]
Object Type: [Hue v11\Group\Lightgroup]
Object Type: [Hue v11\Group\Lightsource]
Object Type: [Hue v11\Group\Luminaire]
Object Type: [Hue v11\Group\Room]
Object Type: [Hue v11\Group\Zone]

A Group object represents a Hue group containing one or more lights.

Attributes for all lights in the group can be set (brightness, colour, colour temperature, and alert action). The Any light on (ANY) and All lights on (LL) objects indicate is no, some, or all lights are on.

Description	Reference	Type
Label	L	Obj\Text; Max chars: 30
State Set the on-off state of the group's lights	AO	Obj\OffOn; Adjustable only
Brightness Set the brightness of the group's lights, if appropriate. See Note 1	AB	Obj\Num; Range: 0…255; Adjustable only
Colour Set the colour of the group's lights, if appropriate. See Note 2	AC	Obj\WinClr; Adjustable only
Colour Temperature (K) Set the colour temperature of the group's lights, if appropriate, in degrees Kelvin	AT	Obj\Num; Range 2000…6500; Adjustable only
Alert Action Send alert action to all lights in the group. This causes either a 'single' light on-off cycle, or 'multiple' light on-off cycles for 15 seconds. Use this to alert the occupier to an event	AA	Obj\ENum; Adjustable only Values: 0=None, 1=Single, 2=Multiple
Any Light On Whether one or more lights in the room are on	ANY	Obj\NoYes
All Lights On Whether all lights in the room are on	ALL	Obj\NoYes
Group Type The class or type of group	C	Obj\Text; Max chars: 20 Possible values include: Living room, Kitchen, Dining, Bedroom, Kids bedroom, Bathroom, Nursery…
Set Scene Name of scene to set group's lights. Must match exactly the scene name within the Hue system. See Scene Name x below for list of possible scenes. If there are scenes with names "1", "2", etc., then a number can be written to this object to control scenes also.	S	Obj\Text; Max chars: 20; Writable (always reads "") Always reads
Scene Name *x* Name of scene *x* within the Hue system, where **x** is in the range 1…20	SN*x*	Obj\Text; Mar chars:32

Note 1. If the Brightness is set to '0', the driver automatically sets the State to 'Off'. If the Brightness is set to any other value, the driver automatically sets the State to 'On'

Note 2. If the Colour is set to '0', the driver automatically sets the State to 'Off'. If the Colour is set to any other value, the driver automatically sets the State to 'On'

Daylight Sensor

Object Type: [Hue v11\Sensor\Daylight]

A Daylight object represents the daylight state from the Hue bridge. This is calculated using the location and sunset & sunrise settings within the bridge.

Description	Reference	Type
Label	L	Obj\Text; Max chars: 30
Daylight The current calculated daylight state, based on the bridge's location	SD	Obj\ENum Values: 0=No, 1=Yes, 2=Unknown

Light Level Sensor

Object Type: [Hue v11\Sensor\ZLLLightLevel]

A Light Level sensor object represents a Hue ambient light level sensor, which is part of a motion detector.

Description	Reference	Type
Label	L	Obj\Text; Max: 30 chars; Adjustable
Light Level The light level in 10000 $\log_{10}$(lux)+1 measured by the sensor. The sensor uses a logarithm scale because the human eye adjusts to light levels and notices small changes more at low lux levels than high lux levels. See notes below for typical values.	SL	Obj\Num; Range: 0…65535
Battery Level (%) The battery store energy level	CB	Obj\Num; Range: 0…100
Comms OK Whether the bridge can communicate with the sensor	CR	Obj\NoYes
Enabled Whether the sensor is operational	CO	Obj\NoYes; Adjustable

Notes

Typical light level values and conversion to lux:

Example	Light Level	Lux
Outdoor: Overcast moonless night sky	0	0.0001
Outdoor: Bright moonlight	1	1
Home: Night light	3000	2
Home: Dimmed light	10000	10
Home: Cosy living room	17000	50
Home: Non-task lighting	22000	150
Home: Working/reading	25500	350
Home: Specialised tasks, inside daylight	28500	700
Home: Maximum to avoid glare	33000	2000
Outdoor: Clear daylight	> 40000	> 10000
Outdoor: Brightest direct sunlight	51000	120000

Presence Sensor

Object Type: [Hue v11\Sensor\ZLLPresence]

A Presence Sensor object represents a Hue presence detector, which is part of a motion detector.

Description	Reference	Type
Label	L	Obj\Text; Max: 30chars; Adjustable
Presence detected Whether the detector has sensed a moving body within the last 5 seconds	SP	Obj\NoYes
Battery Level (%) The battery store energy level	CB	Obj\Num; Range: 0…100
Comms OK Whether the bridge can communicate with the sensor	CR	Obj\NoYes
Enabled Whether the sensor is operational	CO	Obj\NoYes; Adjustable

Temperature Sensor

Object Type: [Hue v11\Sensor\ZLLTemperature]

A Temperature Sensor object represents a Hue temperature sensor, which is part of a motion detector.

Description	Reference	Type
Label	L	Obj\Text; Max: 30 chars; Adjustable
Temperature (°C) The current temperature	ST	Obj\Float
Battery Level (%) The battery store energy level	CB	Obj\Num; Range: 0…100
Comms OK Whether the bridge can communicate with the sensor	CR	Obj\NoYes
Enabled Whether the sensor is operational	CO	Obj\NoYes; Adjustable

ZLLSwitch Sensor

Object Type: [Hue v11\Sensor\ZLLSwitch]

A ZLLSwitch Sensor object represents a generic switch, which typically reports the last button pressed, and how the button was pressed. The meaning depends on the switch type.

Description	Reference	Type
Label	L	Obj\Text; Max: 30 chars; Adjustable
Button Press The last button to be pressed	SB	Obj\Num; Range 0…9999
Battery Level (%) The battery store energy level, if available	CB	Obj\Num; Range: 0…100
Comms OK Whether the bridge can communicate with the sensor	CR	Obj\NoYes
Enabled Whether the sensor is operational	CO	Obj\NoYes; Adjustable

CLIP Generic Status Sensor

Object Type: [Hue v11\Sensor\CLIPGenericStatus]

A CLIP Generic Sensor object represents a generic sensor, which may be part of a motion detection sequence, or a value within a Hue Routine.

Description	Reference	Type
Label	L	Obj\Text; Max: 30 chars; Adjustable
Status The current state of the sensor	SS	Obj\Num; Adjustable
Battery Level (%) The battery store energy level, if available	CB	Obj\Num; Range: 0…100
Comms OK Whether the bridge can communicate with the sensor	CR	Obj\NoYes
Enabled Whether the sensor is operational	CO	Obj\NoYes; Adjustable

CLIP Generic Flag Sensor

Object Type: [Hue v11\Sensor\CLIPGenericFlag]

A CLIP Generic Sensor object represents a generic sensor, which may be part of a motion detection sequence, or a value within a Hue Routine.

Description	Reference	Type
Label	L	Obj\Text; Max: 30 chars; Adjustable
Flag The current state of the flag	SF	Obj\NoYes; Adjustable
Battery Level (%) The battery store energy level, if available	CB	Obj\Num; Range: 0…100
Comms OK Whether the bridge can communicate with the sensor	CR	Obj\NoYes
Enabled Whether the sensor is operational	CO	Obj\NoYes; Adjustable

Hue Bridge

Object Type: [Hue v11\Bridge]

A Hue Bridge object contains the label and version information for the connected bridge.

Description	Reference	Type
Label	L	Obj\Text; Max chars: 30
API Version API version available in the bridge	API	Obj\Text
Software Version Version of software installed in the bridge	SW	Obj\Text

Driver Versions

Version	Build Date	Details
1.0	21/6/2018	Driver released. Driver tested using a bridge with API version 1.26.0, software version 1806051111
1.1	14/6/20	Replaced Room with Group support Added Scene support Added Switch support Added CLIP sensor adjustment, and scan disablement Added auto on/off adjustment to Brightness and Colour adjustment Driver tested using a bridge with API version 1.38.0, software version 1939070020

Next Steps…

If you require help, contact support on 01273 694422 or visit *www.northbt.com/support*

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