

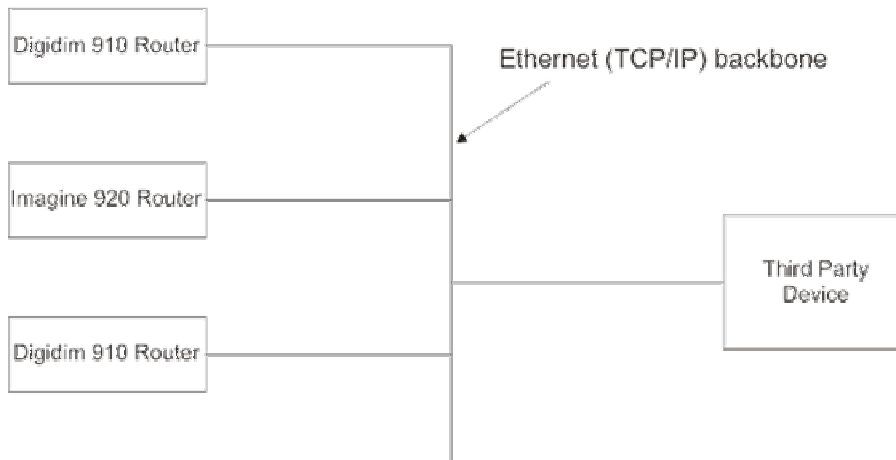
HelvarNet Overview

Notes:

- The **HelvarNet** option (product code ETH) must be purchased before you can use this feature. This can be purchased with the Designer software suite, or as an 'add-on' after having purchased the software. See [Obtaining Licenses for Designer Features](#) for details on upgrading the software.
- The HelvarNet feature is aimed at software developers and advanced system integrators who are capable of programming their third party devices to communicate with a Helvar **router** (and therefore the whole Helvar **lighting system**), using the HelvarNet protocol, explained in this section of the Online Help.

HelvarNet is an Ethernet I/O protocol which allows third party devices (e.g. AV equipment) to query and control a 910/920 router system and perform some basic system configuration, over an Ethernet (**TCP/IP**) connection. It is a published standard which provides a set of rules for communicating with a Helvar lighting system.

The third party **device** may communicate with one or more routers in the system, provided it knows the **IP address** of each router, in order to communicate with the lighting system.



Protocols

The following TCP/IP protocols are supported by HelvarNet:

TCP connection created and accepted by router.

UDP incoming and outgoing.

What are the requirements?

- The interface provides you with a means of interacting with the lighting system, it is up to you to develop and program your third party device in order to achieve this communication.
- If you wish to send commands to the router system from the third party device, then the third party device must be able to instigate a TCP connection with a Helvar router or send UDP messages to a Helvar router (this is not required for the router system to control the third party device).
- To establish a TCP connection and therefore communicate with the router, the third party device is required to connect to listener port number **50000**.
- To send TCP messages from the router to the third party device, the router connects to a listener port provided in the third party device. It is recommended that this listener port is in the range of 49152 to 65535. See [Routing Entries and Schedules](#) to learn more and [Scene Triggered Ethernet I/O](#) to find out how to do this.
- When using the UDP protocol, the third party device is required to send a message to destination port number **50001** in the router.
- To send UDP messages from the router to the third party device, it is recommended that the destination port in the third party device is in the range of 49152 to 65535. See [Routing Entries and Schedules](#) to learn more and [Scene Triggered Ethernet I/O](#) to find out how to do this.

Related Topics

- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [Command Format](#)
- [Control Command Descriptions](#)
- [Control Command Table](#)
- [Query Command and Reply Descriptions](#)
- [Query Reply Tables](#)

- [Query Command Table](#)
- [Messages](#)
- [Error / Diagnostic Messages](#)
- [Routing Entries](#)

Messages

System Access and Message Routing

Messages from the third party *device* can be targeted at any *router* in the system.

If access has not been granted or has been blocked to a particular router, then communications can still be achieved to that router via any other router in the system, provided that you have the *IP address* of another router and the third party device is allowed access to it.

If a query message needs to be sent to a router for which access has not been granted, then the query message can be sent to any of the alternative routers, following this the response to the query - the query reply message - will be returned by the router to which the query was originally sent.

Message Format

A message can contain a command, a reply or a generic string triggered by a routing entry from a router.

- Any message sent to, or received from, a router can be in either ASCII or raw binary form (see [Command Format](#) for more information), except for messages transmitted and triggered from routers via the programming of a routing entry or schedule, which can only be defined using ASCII strings (see [Routing Entries](#) for more information).
- Messages must not exceed the maximum length of 1500 bytes.
- The format of the data contained within messages is defined by the protocol.
- A query reply message from the router is in the same format as the query command message sent i.e. if a query message is sent in ASCII form then the reply will also be in ASCII.

Related Topics

- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [Command Format](#)
- [Control Command Descriptions](#)
- [Control Command Table](#)
- [Query Command and Reply Descriptions](#)
- [Query Reply Tables](#)
- [Query Commands Table](#)
- [HelvarNet Overview](#)
- [Error / Diagnostic Messages](#)
- [Routing Entries](#)

Command Format

Commands can be sent in either ASCII (text) or raw format.

In ASCII format, the commands are split into parameters and in raw format the commands are split into Words which contain the parameters.

Each command contains:

- a command number.
- parameters that address devices or lighting operations.
- parameters that are required to accompany the commands.

Note:

- When sending raw commands, certain command Words have been reserved for future use. These should always be given the value of 0 when creating commands.
- When you send a command, if you have entered an invalid parameter or it has been sent to a *device*, *router* or cluster that does not exist, then you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

ASCII Format

The ASCII format requires that certain rules concerning special characters, parameter identifiers, and delimiters be adhered to. These rules are as follows:

1. The ASCII string must begin with the command character '>' and end with the Terminator character '#'.

- Replies to queries begin with the character '?' and the data concerning a query's response is separated from the query string using the character '='. Again, the whole query response string is terminated with the character '#'.
- Error / Diagnostic messages begin with the character '!' and, again, end in '#'.
- Unless they are optional, all of the parameters required for the command must be included; otherwise the message is rejected and discarded.
- The parameters are not required to be ordered.
- The parameter identifiers are to be included as shown in the following table, i.e. all alphabetic identifiers should be in upper case.

Description	Character	Optional	Hex	Character Type
Command	>	No	0x3E	Message Type
Internal Command	<	No	0x3C	Message Type
Reply	?	No	0x3F	Message Type
Error / Diagnostic	!	No	0x21	Message Type
Terminator	#	No	0x23	Special
Answer	=	No	0x3D	Special
Delimiter	,	No	0x2C	Delimiter
Parameter ID Delimiter	:	No	0x3A	Delimiter
Address Delimiter	.	No	0x2E	Delimiter
Sequence Number	Q	For internal commands only	0x51	Parameter ID
<i>HelvarNet</i> Version	V	Version 1 only (assumes version 1)	0x56	Parameter ID
Command	C	No	0x43	Parameter ID
Acknowledgment	A	Yes (assumes a value of 0)	0x41	Parameter ID
Address	@	No	0x40	Parameter ID
Group	G	Yes (assumes a value of 1)	0x47	Parameter ID
<i>Scene</i>	S	Yes (assumes a value of 1)	0x53	Parameter ID
Block	B	Yes (assumes a value of 1)	0x42	Parameter ID
Fade Time	F	Yes (assumes 700ms)	0x46	Parameter ID
Level	L	No	0x4C	Parameter ID
Proportion	P	No	0x50	Parameter ID
Display Screen	D	No	0x44	Parameter ID
Time	T	No	0x54	Parameter ID
<i>Latitude</i>	N	No	0x4E	Parameter ID
<i>Longitude</i>	E	No	0x45	Parameter ID
Time Zone Difference	Z	No	0x5A	Parameter ID
Daylight Saving Time (DST)	Y	No	0x59	Parameter ID
Constant Light Scene	K	Yes (assumes false)	0x4B	Parameter ID
Force Store Scene	O	Yes (assumes false)	0x4F	Parameter ID

For example, in the command Recall Group 1234, Block 5, Scene 6, Fade Time 32 s, the string is sent as follows, including the delimiters and the start character '>' and stop character '#':

```
>V:1,C:11,G:1234,B:5,S:6,F:3200#
```

Notes:

- This ASCII representation for the above scene recall takes one byte per ASCII character, resulting in 26 bytes being transmitted.

Raw Format

- Command data is transmitted using the network byte order (big-endian).
- All commands must be ten Words in length (each Word being a 32 bit / 4 Byte value). Words five & six are reserved for future expansion to the addressing capabilities, and Words nine and ten are reserved to accommodate any changes or future requirements in the parameters.

Note:

- All ten Words must be sent, including all reserved Words.

For example, the command (Recall Group 1234, Block 5, Scene 6, Fade Time 32 s) is transmitted as follows (note that the trailing zeros are included and mandatory):

```
0x0001000B 0x000004D2 0x00000000 0x00050006 0x00000000 0x00000000 0x00000000 0x000000C80 0x00000000 0x00000000
```

Note:

- In the first 32 bit Word, the message type (see below), version number (1) and command number must be included.

Raw Message Types, Versions and Command Numbers

The raw message types are as follows:

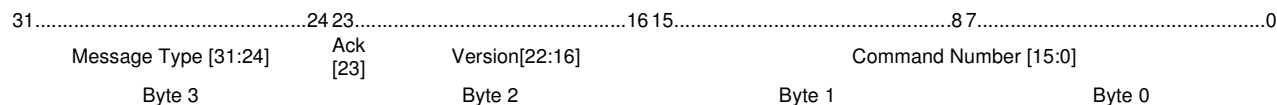
- 0 = Command
- 1 = Reply

2 = [Error / Diagnostic](#)

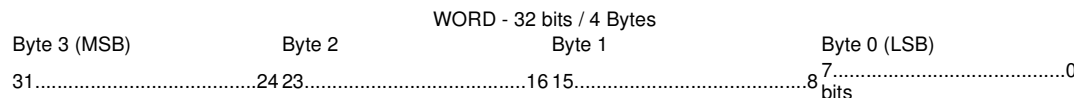
The message type number is included as the first byte of the 32 bit Word of the command. E.g. If you send a Query Clusters command, the first Word of the reply will be:

0x01010065

(1 denoting that the message is a reply)



Data Word Format (big-endian)



Related Topics

- [HelvarNet Overview](#)
- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [Control Command Descriptions](#)
- [Control Command Table](#)
- [Query Command and Reply Descriptions](#)
- [Query Reply Table](#)
- [Query Command Table](#)
- [Messages](#)
- [Error / Diagnostic Messages](#)
- [Routing Entries](#)

Control Command Descriptions

Notes:

- See [Control Command Table](#) for information on control command formats.
- Control commands can only be sent to *control gear* and *DMX* 'Out' devices.
- When you send a command, if you have entered an invalid parameter or it has been sent to a *device*, *router* or cluster that does not exist, then you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

Scene and Level Control Commands

See [Scenes](#) topic for information about scenes.

11 - Recall Scene (Group)

Send a *scene* recall across a group.

Note:

- To call a constant light scene, use the Constant Light flag (with a parameter value of 1).

Command

Command (11), Group (1..16383), Block (1..8), Scene (1..16), Constant Light (1=ON, 0=OFF), Fade Time (0..6553.5s)

ASCII Example

To recall constant light scene 5 in scene block 2, across group 17, with a fade time of 90 seconds:

```
>V:1,C:11,G:17,K:1,B:2,S:5,F:90#
```

Raw Example

To recall constant light scene 5 in scene block 2, across group 17, with a fade time of 90 seconds:

```
0x0001000B 0x00000011 0x00000000 0x10020005 0x00000000 0x00000000 0x00000000 0x00000000 0x0000005A 0x00000000 0x00000000
```

12 - Recall Scene (Device)

Send a scene recall to a device .

Note:

- This command should not be sent to any device other than a *load* (control gear), otherwise you will receive a diagnostic response if one was requested.

Command

Command (12), Cluster (1..253), Router (1..254), *Subnet* (1..4), Device (1..255), Block (1..8), Scene (1..16), Fade Time (0..6553.5s)

ASCII Example

To recall scene 4 in scene block 7, in a device at address 1.2.3.4, with a fade time of 1 second:

```
>V:1,C:12,B:7,S:4,F:1,@1.2.3.4#
```

Raw Example

To recall scene 4 in scene block 7, in a device at address 1.2.3.4, with a fade time of 1 second:

```
0x0001000C 0x00010002 0x00030004 0x00070004 0x00000000 0x00000000 0x00000000 0x00000001 0x00000000 0x00000000
```

13 - Direct Level (Group)

Change the output level of all channels in a group.

Command

Command (13), Group (1..16383), Level (0..100), Fade Time (0..6553.5s)

ASCII Example

To change the output level to 60% across group 17, with a fade time of 90 seconds:

```
>V:1,C:13,G:17,L:60,F:90#
```

Raw Example

To change the output level to 60% across group 17, with a fade time of 90 seconds:

```
0x0001000D 0x00000011 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x0000003C 0x0000005A 0x00000000 0x00000000
```

14 - Direct Level (Device)

Change the level of a load .

Command

Command (14), Cluster (1..253) / Router (1..254), Subnet (1..4) / Device (1..255), Level (0..100), Fade Time (0..6553.5s)

ASCII Example

To change the output level to 60% in a device at address 1.2.3.4, with a fade time of 90 seconds:

```
>V:1,C:14,L:60,F:90,@1.2.3.4#
```

Raw Example

To change the output level to 60% in a device at address 1.2.3.4, with a fade time of 90 seconds:

```
0x0001000E 0x00010002 0x00030004 0x00000000 0x00000000 0x00000000 0x00000000 0x0000003C 0x0000005A 0x00000000 0x00000000
```

Proportion Control Commands

When sending a 'Direct Proportion' value, this value relates to a proportion of the difference between the last recalled scene level or direct level and the output limits of the device.

When sending a positive value, this is a proportion of the difference of said level and 100% level. For example, if the last recalled scene level or direct level is 44% and you send a 'Direct Proportion at 50%' command, then the level rises from 44% to 72% ($100 - 44 = 56 \times 50\% = 28 + 44 = 72$).

When sending a negative proportion value, this is a proportion of the difference of the last recalled scene or direct level and 0%, which so happens to be a proportion of the level itself. For example, if the level is at 44% and you send a command to perform the 'Direct Proportion' function at -50%, then the level decreases to 22% (i.e. 50% of 44%).

Notes:

- The range for the 'Direct Proportion' and 'Modify Proportion' functions is -100% to 100%.
- Any succeeding 'Direct Proportion' commands will also use the last recalled scene or direct level as a base mark.

When sending a 'Modify Proportion' value, the same formula applies, only you are changing the currently applied 'Direct Proportion' value.

Take the example above resulting in a 'Direct Proportion' level of 72%. If you send a 'Modify Proportion at 5%' command, then the level rises from 72% to approx. 75% ($100 - 44 = 56 \times 55\% = 30.8 + 44 = 74.8$).

When sending a negative value, the formula subtracts that value from the 'Direct Proportion' level e.g. Still using the same example, if you send 'Modify Proportion at -5%' command, then the level decreases from 72% to approx. 69% ($100 - 44 = 56 \times 45\% = 25.2 + 44 = 69.2$).

15 - Direct Proportion (Group)

Send a 'Direct Proportion' message across a group (+/-100%).

Command

Command (15), Group (1..16383), Block (1..8), Scene (1..16), Proportion (-100..100), Fade Time (0..6553.5s)

ASCII Example

To send a direct proportion of 72% across group 17 (with a fade time of 90 seconds):

```
>V:1,C:15,P:72,G:17,B:8,S:16,F:90#
```

Raw Example

To send a direct proportion of 72% across group 17 (with a fade time of 90 seconds):

```
0x0001000F 0x00000011 0x00000000 0x00080010 0x00000000 0x00000000 0x00000048 0x0000005A 0x00000000 0x00000000
```

16 - Direct Proportion (Device)

Send a 'Direct Proportion' message to a load (+/-100%).

Command

Command (16), Cluster (1..253) / Router (1..254), Subnet (1..4), Device (1..255), Proportion (-100..100), Fade Time (0..6553.5s)

ASCII Example

To send a direct proportion of 72% in a device at address 1.2.3.4 (with a fade time of 90 seconds):

```
>V:1,C:16,P:72,F:90,@1.2.3.4#
```

Raw Example

To send a direct proportion of 72% in a device at address 1.2.3.4 (with a fade time of 90 seconds):

```
0x00010010 0x00010002 0x00030004 0x00000000 0x00000000 0x00000000 0x00000048 0x0000005A 0x00000000 0x00000000
```

17 - Modify Proportion (Group)

Modify a 'Direct Proportion' level sent to a group (+/-100%).

Command

Command (17), Group (1..16383), Block (1..8), Scene (1..16), Proportion Change (-100..100), Fade Time (0..6553.5s)

ASCII Example

To send a modify proportion of 5% across group 17, with a fade time of 90 seconds:

```
>V:1,C:17,P:5,G:17,B:8,S:16,F:90#
```

Raw Example

To send a modify proportion of 5% across group 17, with a fade time of 90 seconds:

```
0x00010011 0x00000011 0x00000000 0x00080010 0x00000000 0x00000000 0x00000005 0x0000005A 0x00000000 0x00000000
```

18 - Modify Proportion (Device)

Modify a 'Direct Proportion' level sent to a load (+/-100%).

Command

Command (18), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Proportion Change (-100..100), Fade Time (0..6553.5s)

ASCII Example

To send a modify proportion of 5% in a device at address 1.2.3.4, with a fade time of 90 seconds:

```
>V:1,C:18,P:5,F:90,@1.2.3.4#
```

Raw Example

To send a modify proportion of 5% in a device at address 1.2.3.4, with a fade time of 90 seconds:

```
0x00010012 0x00010002 0x00030004 0x00000000 0x00000000 0x00000000 0x00000005 0x0000005A 0x00000000 0x00000000
```

Emergency Test Control Commands

Emergency Test commands should only be sent to *DALI* emergency lighting ballasts, otherwise the emergency test will not be performed. See [DALI Emergency Lighting](#) for more information on emergency lighting and how to test it.

Note:

- Starting or stopping an Emergency Test will cause the corresponding 'Test Done' flag to be cleared.

19 - Emergency Function Test (Group)

Request an Emergency Function Test across a group.

Note:

- This command has no effect if sent to a group containing non-emergency devices.

Command

Command (19), Group (1..16383)

ASCII Example

To request an Emergency Function Test across group 56:

```
>V:1,C:19,G:56#
```

Raw Example

To request an Emergency Function Test across group 56:

```
0x00010013 0x00000038 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

20 - Emergency Function Test (Device)

Request an Emergency Function Test to an emergency lighting ballast.

Note:

- This command has no effect if sent to a non-emergency device.

Command

Command (20), Cluster (1..253) / Router (1..254), Subnet (1..4) / Device (1..255)

ASCII Example

To request an Emergency Function Test to an emergency lighting ballast at address 8.67.2.37:

```
>V:1,C:20,@8.67.2.37#
```

Raw Example

To request an Emergency Function Test to an emergency lighting ballast at address 8.67.2.37:

```
0x00010014 0x00080043 0x00020025 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

21 - Emergency Duration Test (Group)

Request an Emergency Duration Test across a group.

Note:

- This command has no effect if sent to a group containing non-emergency devices.

Command

Command (21), Group (1..16383)

ASCII Example

To request an Emergency Duration Test across group 56:

```
>V:1,C:21,G:56#
```

Raw Example

To request an Emergency Duration Test across group 56:

```
0x00010015 0x00000038 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

22 - Emergency Duration Test (Device)

Request an Emergency Duration Test to an emergency lighting ballast.

Note:

- This command has no effect if sent to a non-emergency device.

Command

Command (22), Cluster (1..253) / Router (1..254), Subnet (1..4) / Device (1..255)

ASCII Example

To request an Emergency Duration Test to an emergency lighting ballast at address 8.67.2.37:

```
>V:1,C:22,@8.67.2.37#
```

Raw Example

To request an Emergency Duration Test to an emergency lighting ballast at address 8.67.2.37:

```
0x00010016 0x00080043 0x00020025 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

23 - Stop Emergency Tests (Group)

Stop all Emergency Tests across a group.

Note:

- This command has no effect if sent to a group containing non-emergency devices.

Command

Command (23), Group (1..16383)

ASCII Example

To stop all Emergency Tests across group 56:

```
>V:1,C:23,G:56#
```

Raw Example

To stop all Emergency Tests across group 56:

```
0x00010017 0x00000038 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

24 - Stop Emergency Tests (Device)

Stop any Emergency Test running in an emergency ballast.

Note:

- This command has no effect if sent to a non-emergency device.

Command

Command (24), Cluster (1..253) / Router (1..254), Subnet (1..4) / Device (1..255)

ASCII Example

To stop any Emergency Test to an emergency lighting ballast at address 8.67.2.37:

```
>V:1,C:24,@8.67.2.37#
```

Raw Example

To stop any Emergency Test to an emergency lighting ballast at address 8.67.2.37:

```
0x00010018 0x00080043 0x00020025 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

Related Topics

- [Control Command Table](#)
- [Command Format](#)
- [HelvarNet Overview](#)
- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [Query Command and Reply Descriptions](#)
- [Query Reply Tables](#)
- [Query Command Table](#)
- [Routing Entries](#)
- [Error / Diagnostic Messages](#)
- [Messages](#)
- [DALI Emergency Lighting](#)
- [Scenes](#)

Control Command Table

Notes:

- See [Word / Parameter Formats](#) below the following tables for guidance on Words in raw format and parameters in ASCII format.
- With regards to Direct Level commands, if you enter a negative value, then the output level will be 0; if you enter a value greater than 100, then the level will be 100.
- When you send a command, if you have entered an invalid parameter or it has been sent to a *device*, *router* or cluster that does not exist, then you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

ASCII Format

Note:

- In an ASCII string, the parameters are not required to be in the order shown below.

Name	Parameters	
Recall <i>Scene</i> (Group)	Command Number 11	Group 1..16383 CL 1 or 0 Block 1..8 Scene 1..16 Fade time 0..6553.5s
Recall Scene (Device)	Command Number 12	Cluster 1..253 Subnet 1..4 Block 1..8 Router 1..254 Device 1..255 Scene 1..16 Fade time 0..6553.5s
Direct Level (Group)	Command Number 13	Group 1..16383 Level 0..100% Fade time 0..6553.5s
Direct Level (Device)	Command Number 14	Cluster 1..253 Subnet 1..4 Level 0..100% Router 1..254 Device 1..255 Fade time 0..6553.5s
Direct Proportion (Group)	Command Number 15	Group 1..16383 Block 1..8 Proportion -100..100% Fade time 0..6553.5s Scene 1..16
Direct Proportion (Device)	Command Number 16	Cluster 1..253 Subnet 1..4 Proportion -100..100% Fade time 0..6553.5s Router 1..254 Device 1..255
Modify Proportion (Group)	Command Number 17	Group 1..16383 Block 1..8 Proportion Change -100..100% Fade time 0..6553.5s Scene 1..16
Modify Proportion (Device)	Command Number 18	Cluster 1..253 Subnet 1..4 Proportion Change -100..100% Fade time 0..6553.5s Router 1..254 Device 1..255
Emergency Function Test (Group)	Command Number 19	Group 1..16383
Emergency Function Test (Device)	Command Number 20	Cluster 1..253 Subnet 1..4 Router 1..254 Device 1..255
Emergency Duration Test (Group)	Command Number 21	Group 1..16383
Emergency Duration Test (Device)	Command Number 22	Cluster 1..253 Subnet 1..4 Router 1..254 Device 1..255
Stop Emergency Tests (Group)	Command Number 23	Group 1..16383
Stop Emergency Tests (Device)	Command Number 24	Cluster 1..253 Subnet 1..4 Router 1..254 Device 1..255

Raw Format

Name	Command Number Word1 (32 bit)	Word 2 (32 bit)	Word 3 (32 bit)	Word 4 (32 bit)	Word 5 (32 bit)	Word 6 (32 bit)	Word 7 (32 bit)	Word 8 (32 bit)	Word 9 (32 bit)	Word 10 (32 bit)
Recall <i>Scene</i> (Group)	11	Group 1..16383	0	CL (MSBit) 1 or 0 Block 1..8 Scene 1..16	0	0	0	Fade time 0..6553.5s	0	0
Recall Scene (Device)	12	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	Block 1..8 Scene 1..16	0	0	0	Fade time 0..6553.5s	0	0
Direct Level (Group)	13	Group 1..16383	0	0	0	0	Level 0..100%	Fade time 0..6553.5s	0	0
Direct Level (Device)	14	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	Level 0..100%	Fade time 0..6553.5s	0	0
Direct Proportion (Group)	15	Group 1..16383	0	Block 1..8 Scene 1..16	0	0	Proportion -100..100%	Fade time 0..6553.5s	0	0
Direct Proportion (Device)	16	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	Proportion -100..100%	Fade time 0..6553.5s	0	0
Modify Proportion	17	Group 1..16383	0	Block 1..8 Scene 1..16	0	0	Proportion Change -100..100%	Fade time 0..6553.5s	0	0

(Group)

Modify Proportion (Device)	18	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	Proportion Change -100..100%	Fade time 0..6553.5s	0	0
Emergency Function Test (Group)	19	Group 1..16383	0	0	0	0	0	0	0	0	0
Emergency Function Test (Device)	20	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0	0
Emergency Duration Test (Group)	21	Group 1..16383	0	0	0	0	0	0	0	0	0
Emergency Duration Test (Device)	22	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0	0
Stop Emergency Tests (Group)	23	Group 1..16383	0	0	0	0	0	0	0	0	0
Stop Emergency Tests (Device)	24	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0	0

Word / Parameter Formats

Command Number

Raw Format

```

31.....24 23.....16 15.....8 7.....0
Message Type[24:31] Ack[23], HelvarNet Version [22:16] 0 0 0 0 0 0 0 0 Command Number [7:0]
Byte 3 Byte 2 Byte 1 Byte 0

```

ASCII Format

Command Number = 11..25 (in control commands' case)

Group

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Group [14:0]
Byte 3 Byte 2 Byte 1 Byte 0

```

ASCII Format

Group = 1..16383

Cluster / Router

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 Cluster [23:16] 0 0 0 0 0 0 0 0 Router [7:0]
Byte 3 Byte 2 Byte 1 Byte 0

```

ASCII Format

Cluster = 1..253, Router = 1..254

Subnet / Device

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 Subnet [18:16] 0 0 0 0 0 0 0 0 Device [7:0]
Byte 3 Byte 2 Byte 1 Byte 0

```

ASCII Format

Subnet = 1..4, Device = 1..255

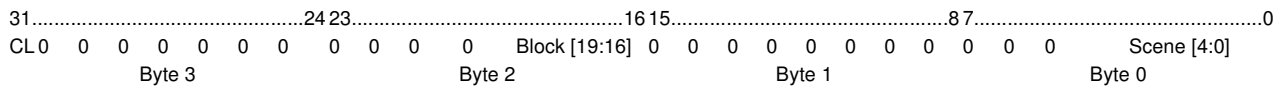
CL / Block / Scene

If you wish to call a constant light scene, then send the CL flag (a value of 1).

Note:

- The scene called will only be a constant light scene if configured so in Designer.

Raw Format



ASCII Format

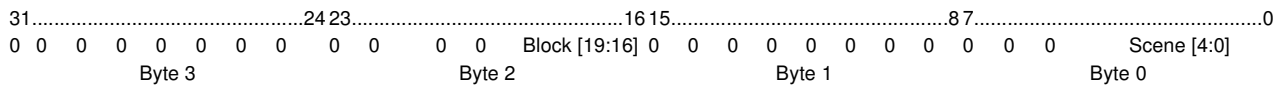
Constant Light = 1 (True) or 0 (False), Block = 1..8, Scene = 1..16

Note:

- If any other block / scene values are requested then you will receive an 'Invalid block parameter' or 'Invalid scene parameter' error.

Block / Scene

Raw Format



ASCII Format

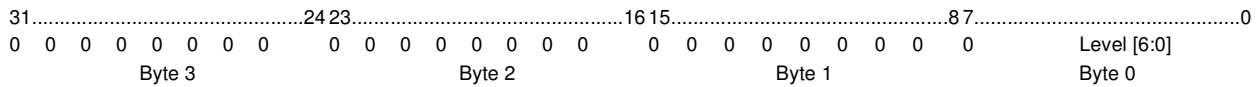
Block = 1..8, Scene = 1..16

Note:

- If any other block / scene values are requested then you will receive an 'Invalid block parameter' or 'Invalid scene parameter' error.

Level

Raw Format



ASCII Format

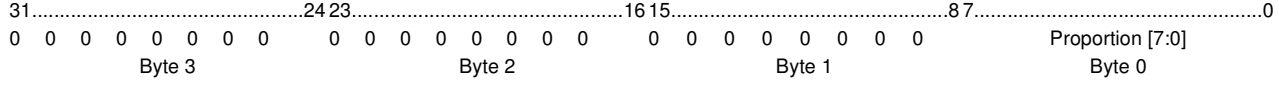
Level = 0..100

Note:

- If a value greater than 100 is requested then this is rounded down to 100.
- If a negative value is requested then this is rounded up to 0.

Proportion

Raw Format:

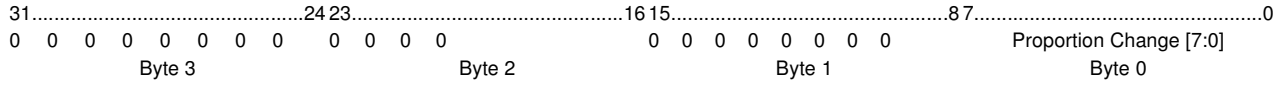


ASCII Format

Proportion = -100..100

Proportion Change

Raw Format



ASCII Format

Proportion Change = -100..100

Fade Time

The fade time is represented as hh:mm:ss.th; where hh represents hours, mm represents minutes, ss represents seconds and th represents tenths (t) and hundredths (h) of seconds.

Note:

- The maximum fade time for *DALI* / Digidim devices is 90 seconds; the maximum for Imagine / *SDIM*-connected devices is 46 hours.

Fade Time	ASCII	Hexadecimal
0.01 second	1	0x00000001
0.1 second	10	0x0000000A
1 second	100	0x00000064
60 seconds (1 minute)	6000	0x00001770
60 minutes (1 hour)	360000	0x00057E40

Raw Format

31.....24	23.....16	15.....8	7.....0
0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0	Fade Time [12:0]
Byte 3	Byte 2	Byte 1	Byte 0

Related Topics

- [Control Commands](#)
- [Command Format](#)
- [HelvarNet Overview](#)
- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [Query Command and Reply Descriptions](#)
- [Query Reply Tables](#)
- [Query Command Table](#)
- [Routing Entries](#)
- [Error / Diagnostic Messages](#)
- [Messages](#)

Query Command and Reply Descriptions

When you send a query command, the message returned contains the query command data which was sent, followed by the reply; this data makes up the query reply. If you send a query command in raw format, for example, the query reply will comprise all ten Words of the command plus the Word(s) that makes up the reply. It is necessary for the reply to contain the command data as the system will not guarantee the order of replies.

Notes:

- See [Query Command Table](#) and [Query Reply Table](#) for information on query command and reply formats.
- Query replies are sent in the same format as query commands. For example, if the query is sent to a *router* in ASCII form then the reply will also describe the reply data using the same ASCII format.
- When you send a command, if you have entered an invalid parameter or it has been sent to a *device*, router or cluster that does not exist, then you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

General Query Commands

101 - Query Clusters

When you send a Query Clusters command, the reply provides you with all the Cluster IDs that exist in the system.

Command

Send: Command (101)

Reply

Returns a bit field indicating the presence of all clusters:

Command (101), Cluster Count, 8x32 bit Words detailing the existence of the clusters 1-253 (bits 0, 254, 255 are always zero)

ASCII Example

If you send the following Query Clusters command:

```
>V:1,C:101#
```

If there are clusters 1, 2 and 253, then the reply will be:

```
?V:1,C:101=1,2,253#
```

Raw Example

If you send the following Query Clusters command:

```
0x00010065 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If there are 1, 2 and 253 clusters, then the reply will be:

```
0x01010065 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00030006
0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x20000000
```

102 - Query Routers

When you send a Query Routers command, the reply provides you with all the Cluster Member (Router) IDs that exist in the specified cluster.

Command

Send: Command (102), Cluster (1..253)

Reply

Returns a bit field indicating the presence of all routers within the specified cluster:

Command (102), Router Count / Cluster ID (1..253), 8x32 bit Words detailing the existence of the routers 1-254 (bits 0 and 255 are always zero)

ASCII Example

If you send the following Query Routers in cluster 253 command:

```
>V:1,C:102,@253#
```

If there are routers 252, 253 and 254 in cluster 253, then the reply will be:

```
?V:1,C:102,@253=252,253,254#
```

Raw Example

If you send the following Query Routers in cluster 253 command:

```
0x00010066 0x000000FD 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If there are routers 252, 253 and 254 in cluster 253, then the reply will be:

```
0x01010066 0x000000FD 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00030000
0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x70000000
```

103 - Query Last Scene In Block (LSIB)

When you send a Query Last *Scene* In Block command, the reply provides you with the last scene that was recalled in the specified scene block.

Command

Send: Command (103), Group (1..16383), Block (1..8)

Reply

Returns the number of the last recalled scene in the scene block:

Command (103), Group (1..16383), Block (1..8), Last Scene In Block (1..16)

ASCII Example

If you send the following Query LSIB command (including the group and scene block parameters):

```
>V:1,C:103,G:5,B:2#
```

If the last scene called in the block is 4, then the reply will be:

```
?V:1,C:103,G:5,B:2=4#
```

Raw Example

If you send the following Query LSIB command (including the group and scene block parameters):

```
0x00010067 0x00000005 0x00000000 0x00020000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the last scene called in the block is 4, then the reply will be:

```
0x01010067 0x00000005 0x00000000 0x00020000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000004
```

104 - Query Device Type

DALI, Digidim, Imagine (*SDIM*) and *DMX* devices are all capable of returning a device type. Devices can return more than one piece of type information.

For an ASCII query the response will be four comma separated values, the last of which is the protocol; the penultimate is the device type; and the remaining two are extra device information.

For a raw query the response will be returned in a 32 bit Word. The least significant byte contains the protocol; the next least significant byte contains the main device type; the two most significant bytes contain extra device information.

The devices protocols are as follows:

Protocol	Values
DALI	0x01
Digidim	0x02
Imagine / SDIM	0x04
DMX	0x08

Note:

- Only certain combinations of device types are valid or make sense.

Command

Send: Command (104), Cluster (1..253), Router (1..254), *Subnet* (1..4), Device (1..255)

Reply

Returns the device type:

Command (104), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Device Type (see tables below)

ASCII Example

If you send the following Query Device Type command (including the full address of the device):

```
>V:1,C:104,@2.2.1.1#
```

If the device is a 100 Rotary, then the reply will be:

```
?V:1,C:104,@2.2.1.1=1050626#
```

Raw Example

If you send the following Query Device Type command (including the full address of the device):

```
0x00010068 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the device is a 100 Rotary, then the reply will be:

```
0x01010068 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00100802
```

DALI Device Type Information

Device Type	Byte3-Byte1 (MSBytes)	
	[Any combination of the following]	Byte0 (LSByte)
Flourescent Lamps	0x00	0x01
Self-contained emergency lighting	0x01	0x01
Discharge lamps (excluding fluorescent lamps)	0x02	0x01
Low voltage halogen lamps	0x03	0x01
Incandescent lamps	0x04	0x01
Conversion into D.C. voltage (IEC 60929)	0x05	0x01
<i>LED</i> modules	0x06	0x01
Switching function (i.e. Relay)	0x07	0x01
Colour control	0x08	0x01
Sequencer	0x09	0x01
Undefined	0x0B-0xFE	0x01

Digidim Control Device Type Information

Device Type	Byte3 (MSByte)	Byte2	Byte1	Byte0 (LSByte)
100 – Rotary	0x00	0x10	0x08	0x02
110 – Single <i>Slider</i>	0x00	0x11	0x07	0x02
111 – Double Slider	0x00	0x11	0x14	0x02
121 – 2 <i>Button</i> on/off + <i>IR</i>	0x00	0x12	0x13	0x02
122 – 2 <i>Button</i> modifier + IR	0x00	0x12	0x20	0x02

124 – 5 Button + IR	0x00	0x12	0x44	0x02
125 – 5 Button + modifier + IR	0x00	0x12	0x51	0x02
126 – 8 Button + IR	0x00	0x12	0x68	0x02
170 – IR Receiver	0x00	0x17	0x01	0x02
312 – Multisensor	0x00	0x31	0x25	0x02
410 – Ballast Style 1-10V Converter	0x00	0x41	0x08	0x02
416 – 16A Solo Dimmer	0x00	0x41	0x60	0x02
425 – 25A Solo Dimmer	0x00	0x42	0x52	0x02
444 – Mini Input Unit	0x00	0x44	0x43	0x02
450 – 800W Dimmer	0x00	0x45	0x04	0x02
452 – 1000W Universal Dimmer	0x00	0x45	0x28	0x02
455 – 500 Watt <i>Thyristor</i> Dimmer	0x00	0x45	0x59	0x02
458/DIM8 – 8 <i>Channel</i> Dimmer	0x00	0x45	0x80	0x02
458/CTR8 – 8-Channel Ballast Controller	0x74	0x45	0x81	0x02
458/SW8 – 8-Channel Relay Module	0x04	0x45	0x83	0x02
460 – DALI to SDIM Converter	0x00	0x46	0x03	0x02
472 – Din Rail 1-10V / <i>DSI</i> Converter	0x00	0x47	0x26	0x02
490 – Blinds Unit	0x00	0x49	0x00	0x02
494 – Relay Unit	0x00	0x49	0x48	0x02
498 – Relay Unit	0x00	0x49	0x86	0x02
804 – Digidim 4	0x00	0x80	0x45	0x02
924 – LCD TouchPanel	0x00	0x92	0x40	0x02
935 – Scene Commander (6 buttons)	0x00	0x93	0x56	0x02
939 – Scene Commander (10 buttons)	0x00	0x93	0x94	0x02
942 – Analogue Input Unit	0x00	0x94	0x24	0x02
458/OPT4 – 4-Channel Options Module	0x00	0x45	0x86	0x02

Imagine (SDIM) Device Type Information

Device Type	Byte3 (MSByte)	Byte2	Byte1	Byte0 (LSByte)
No device present	0x00	0x00	0x00	0x04
458/SW8 – 8-Channel Relay Module	0x00	0x00	0xF3	0x04
458/CTR8 – 8-Channel Ballast Controller	0x00	0x00	0xF4	0x04
458/OPT4 – Options Module	0x00	0x00	0xF5	0x04
498 – 8-Channel Relay Unit	0x00	0x00	0xF6	0x04
458/DIM8 – 8-Channel	0x00	0x00	0xF7	0x04

Dimmer				
HES92060 Sine Wave Dimmer	0x00	0x00	0xF8	0x04
Ambience4 Dimmer	0x00	0x00	0xF9	0x04
HES92020 <i>SCR</i> Dimmer	0x00	0x00	0xFA	0x04
HES98020 Output Unit	0x00	0x00	0xFB	0x04
HES92220 Transistor Dimmer	0x00	0x00	0xFC	0x04
HES98180-98291 Relay Unit	0x00	0x00	0xFE	0x04
Dimmer (old style, type undefined)	0x00	0x00	0xFF	0x04

DMX Device Type Information

Device Type	Byte3 (MSB)	Byte2	Byte1	Byte0 (LSByte)
DMX No device present	0x00	0x00	0x00	0x08
DMX Channel In	0x00	0x00	0x01	0x08
DMX Channel Out	0x00	0x00	0x02	0x08

105 - Query Description Group

DALI, Digidim, Imagine (*SDIM*) and *DMX* devices are all capable of returning a description of the group.

The replies in the following examples are the default descriptions for those devices/objects. However, the reply will return group name according to the conventions you have applied to your *lighting system* via Designer. For example, if the group has been named 'Building' then this will be returned in the Query Description Group reply.

Note:

- The query description group replies are case sensitive as per the Microsoft Windows ® ASCII extended character set.

Command

Send: Command (105), Group (1...16383)

Reply

Returns: Command (105), Group (1...16383), Group description

ASCII Example

If you send the following Query Description Group command (including the group number):

```
>>V:1,C:105,G:5#
```

The reply will be the command sent and the reply containing the group description of the group requested i.e.

```
?V:1,C:105,G:5=Group 5#
```

Raw Example

If you send the following Query Description Group command (including the group number):

```
0x00010069 0x00000005 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the description is Group 5, then the reply will be:

```
0x01010069 0x00000005 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x47726F75
0x70203500
```

106 - Query Description Device

DALI, Digidim, Imagine (*SDIM*) and *DMX* devices are all capable of returning a description of a specific device.

The replies in the following examples are the default descriptions for those devices/objects. However, the reply will return group name according to the conventions you have applied to your lighting system via Designer. For example, if the device has been named 'Ballast 10' then this will be returned in the Query Description Group reply.

Note:

- The query description device replies are case sensitive as per the Microsoft Windows ® ASCII extended character set.

Command

Send: Command (106), Cluster (1..253), Router (1..254), *Subnet* (1..4), Device (1..255)

Reply

Returns a description of the device:

Command (106), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Device description

ASCII Example

If you send the following Query Description Device command (including the full address of the device):

```
>V:1,C:106,@2.2.1.1#
```

If the device is called 'Ballast', then the reply will be:

```
?V:1,C:106,@2.2.1.1=Ballast#
```

Raw Example

If you send the following Query Description Device command (including the full address of the device):

```
0x0001006A 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the device is called 'Ballast', then the reply will be:

```
0x0101006A 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x42616C6C
0x61737400
```

Device State Query Commands**110 - Query Device State**

E.g. disabled, lamp fault, missing, overtemperature, Function Test in progress, Function Test passed etc.

Command

Send: Command (110), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Returns the device state:

Command (110), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Device State (see table below)

ASCII Example

If you send the following Query Device State command (including the full address of the device):

```
>V:1,C:110,@2.2.1.1#
```

If the device has been disabled, then the reply will be:

```
?V:1,C:110,@2.2.1.1=1#
```

Raw Example

If you send the following Query Device State command (including the full address of the device):

```
0x0001006E 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the device has been disabled, then the reply will be:

```
0x0101006E 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

The state of a device is described by the following set of flags:

State	Description	Flag Value
NSDisabled	Device or subdevice has been disabled, usually an IR subdevice or a DMX channel	0x00000001
NSLampFailure	Unspecified lamp problem	0x00000002
NSMissing	The device previously existed but is not currently present	0x00000004
NSFaulty	Ran out of addresses (DALI subnet) / unknown Digidim control device / DALI <i>load</i> that keeps responding with multi-replies	0x00000008
NSRefreshing	DALI subnet, DALI load or Digidim control device is being discovered	0x00000010
NSReserved	Internal use only	0x00000020
NSReserved	Internal use only	0x00000040
NSReserved	Internal use only	0x00000080
NSEM_Resting	The load is intentionally off whilst the <i>control gear</i> is being powered by the emergency supply	0x00000100
NSEM_Reserved	Internal use only	0x00000200
NSEM_InEmergency	No mains power is being supplied	0x00000400

NSEM_InProlong	Mains has been restored but device is still using the emergency supply	0x00008000
NSEM_FTInProgress	The Functional Test is in progress (brief test where the control gear is being powered by the emergency supply)	0x00001000
NSEM_DTInProgress	The Duration Test is in progress. This test involves operating the control gear using the battery until the battery is completely discharged. The duration that the control gear was operational for is recorded, and then the battery recharges itself from the mains supply	0x00002000
NSEM_Reserved		0x00004000
NSEM_Reserved		0x00008000
NSEM_DTPending	The Duration Test has been requested but has not yet commenced. The test can be delayed if the battery is not fully charged	0x00010000
NSEM_FTPending	The Functional Test has been requested but has not yet commenced. The test can be delayed if there is not enough charge in the battery	0x00020000
NSEM_BatteryFail	Battery has failed	0x00040000
NSReserved	Internal use only	0x00080000
NSReserved	Internal use only	0x00100000
NSEM_Inhibit	Prevents an emergency fitting from going into emergency mode	0x00200000
NSEM_FTRequested	Emergency Function Test has been requested	0x00400000
NSEM_DTRequested	Emergency Duration Test has been requested	0x00800000
NSEM_Unknown	Initial state of an emergency fitting	0x01000000
NSOverTemperature	Load is over temperature/heating	0x02000000
NSOverCurrent	Too much current is being drawn by the load	0x04000000
NSCommsError	Communications error	0x08000000
NSSevereError	Indicates that a load is either over temperature or drawing too much current, or both	0x10000000
NSBadReply	Indicates that a reply to a query was malformed	0x20000000
NSReserved		0x40000000
NSDeviceMismatch	The actual load type does not <i>match</i> the expected type	0x80000000

Note:

- All other flags are reserved for future use and should be ignored.

111 - Query Device Is Disabled

Query whether the device has been disabled.

Command

Send: Command (111), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Returns the lamp state:

Command (111), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Device Disabled State (1=Disabled, 0=Enabled)

ASCII Example

If you send the following Query Device Is Disabled command (including the full address of the device):

```
>V:1,C:111,@1.1.2.58#
```

If the device has been disabled, then the reply will be:

```
?V:1,C:111,@1.1.2.58=1#
```

Raw Example

If you send the following Query Device Is Disabled command (including the full address of the device):

```
0x0001006F 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the device has been disabled, then the reply will be:

```
0x0101006F 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

112 - Query Lamp Failure

Query whether the lamp has failed.

Note:

- This command should not be sent to any device other than a ballast, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (112), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Returns the lamp state:

Command (112), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Lamp Failure State (1=Failed, 0=OK)

ASCII Example

If you send the following Query Lamp Failure command (including the full address of the device):

```
>V:1,C:112,@1.1.2.58#
```

If the lamp has failed, then the reply will be:

```
?V:1,C:112,@1.1.2.58=1#
```

Raw Example

If you send the following Query Lamp Failure command (including the full address of the device):

```
0x00010070 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the lamp has failed, then the reply will be:

```
0x01010070 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

113 - Query Device Is Missing

Query whether the device is missing.

Command

Send: Command (114), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Returns a message indicating whether the device is missing or not:

Command (113), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Device Missing State (1=Missing, 0=Present)

ASCII Example

If you send the following Query Device Is Missing command (including the full address of the device):

```
>V:1,C:114,@2.2.1.1#
```

If the device is missing, then the reply will be:

```
?V:1,C:114,@2.2.1.1=1#
```

Raw Example

If you send the following Query Device Is Missing command (including the full address of the device):

```
0x00010072 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the device is missing, then the reply will be:

```
0x01010072 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

114 - Query Device Is Faulty

Query whether the device is faulty.

Command

Send: Command (113), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Returns a message indicating whether the device is faulty or not:

Command (113), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Device Faulty State (1=Faulty, 0=OK)

ASCII Example

If you send the following Query Device Is Faulty command (including the full address of the device):

```
>V:1,C:113,@2.2.1.1#
```

If the device is faulty, then the reply will be:

```
?V:1,C:113,@2.2.1.1=1#
```

Raw Example

If you send the following Query Device Is Faulty command (including the full address of the device):

```
0x00010071 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the device is faulty, then the reply will be:

```
0x01010071 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

129 - Query Emergency Battery Failure

Query whether the emergency ballast's battery has failed.

Note:

- This command should not be sent to any device other than an emergency ballast, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (129), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Returns the emergency battery state:

Command (129), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Battery Failure State (1=Failed, 0=OK)

ASCII Example

If you send the following Query Emergency Battery Failure command (including the full address of the device):

```
>V:1,C:129,@1.1.2.58#
```

If the emergency ballast's battery has failed, then the reply will be:

```
?V:1,C:129,@1.1.2.58=1#
```

Raw Example

If you send the following Query Emergency Battery Failure command (including the full address of the device):

```
0x00010081 0x00010001 0x00020058 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the emergency ballast's battery has failed, then the reply will be:

```
0x01010081 0x00010001 0x00020058 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

Measurement / Input / Level Query Commands

Note:

- Devices / subdevices of this type must be configured in Designer before you can query their measurement, input(s) or level. Specifically, they must be grouped

150 - Query Measurement

For analogue types, e.g. light measurement (Multisensor), analogue input (Analogue Input Unit).

Note:

- If sent to a digital device / subdevice which does not perform any measurement, for example a Button Panel, then you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (150), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Subdevice (1..16)

Reply

Returns the measurement from the device / subdevice:

Command (150), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Subdevice (1..16), Measurement (1..100)

ASCII Example

If you send the following Query Measurement command (including the full address of the subdevice):

```
>V:1,C:150,@2.2.1.1.4#
```

If the measurement from the subdevice is 100, then the reply will be:

```
?V:1,C:150,@2.2.1.1.4=100#
```

Raw Example

If you send the following Query Measurement command (including the full address of the subdevice):

```
0x00010096 0x00020002 0x00010001 0x00040000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the measurement from the subdevice is 100, then the reply will be:

```
0x01010096 0x00020002 0x00010001 0x00040000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000064
```

151 - Query Inputs

Returns the state or digital input(s) of: a device (e.g. for the PIR detector of a Multisensor - 0xFF=occupied, 0x00=unoccupied); or the LEDs of a button panel; or the switch inputs of an input unit. If sent to the device level, summarises the digital input state. If sent to the subdevice level, gives the state of

that subdevice's input.

Note:

- Before running Query Inputs please ensure that the input source has been set via Designer for input devices such as the [444 Mini Input Unit](#) or [942 Analogue Input Unit](#). See [Analogue Mode Configuration](#) and [Edge Mode Configuration](#).

Command

Send: Command (151), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Subdevice (1..16)

Reply

Returns the input state of the device / subdevice:

Command (151), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Subdevice (1..16), Input State (see below)

The majority of subdevices have on and off states and are therefore represented by 0 (OFF) or 1 (ON). For example, buttons with LEDs will either be pressed (LED on) or not pressed (LED off). See below for the exceptions.

Mini Input Unit: As there are 8 inputs on this device there will be 8 states e.g. 01001100 would be represented in ASCII as 50.

Slider: 0..100 (level in %)

Analogue Input Unit: 0..100 (level in %)

ASCII Example

If you send the following Query Inputs command to a subdevice (including the full address of the subdevice):

```
>V:1,C:151,@2.2.1.1.4#
```

If the state of the subdevice is ON, then the reply will be:

```
?V:1,C:151,@2.2.1.1.4=1#
```

Raw Example

If you send the following Query Inputs command to a subdevice (including the full address of the subdevice):

```
0x00010097 0x00020002 0x00010001 0x00004000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the state of the subdevice is ON, then the reply will be:

```
0x01010097 0x00020002 0x00010001 0x00004000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

152 - Query Load Level

Note:

- This command should not be sent to any device other than a load (control gear), otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (152), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (152), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Load Level (1..100)

ASCII Example

If you send the following Query Load Level command (including the full address of the device):

```
>V:1,C:152,@1.1.2.15#
```

If the load level is 25%, then the reply will be:

```
?V:1,C:152,@1.1.2.15=25#
```

Raw Example

If you send the following Query Load Level command (including the full address of the device):

```
0x00010098 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the load level is 25%, then the reply will be:

```
0x01010098 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000019
```

Note:

- Query load level commands may also report a level even though the device may be set to 'Off'. This is because the load level is set below the switch on level.
- Levels above 50% may be subject to a 1% swing when returning levels due to the DALI standard *logarithmic dimming curve*. E.g. setting the level of a DALI ballast to 93% in Designer will cause the router to actually return a level of 92% when queried using Ethernet I/O. This is because 93% is not accounted for in the DALI logarithmic dimming curve. The router always assigns the closest dimming curve level to the level set in Designer. For further information see [DALI Logarithmic Dimming Levels](#)

ASCII Example

If you send the following Query Load Level command (including the full address of the device):

>V:1,C:152,@1.1.2.15#

If the load level is set at 1% and the switch on level is 2%, then the reply will be:

?V:1,C:152,@1.1.2.15=2147483649#

Raw Example

If you send the following Query Load Level command (including the full address of the device):

0x00010098 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000

If the load level is 1% and the switch on level is 2%, then the reply will be:

0x01010098 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x80000001

The ASCII and Raw reply responses, 2147483649 and 0x80000001 are synonymous. If these replies are returned following a query load level request then the device at the specified address is 'Off' even though it appears 'On'.

For further reference the Raw Word table denotes the response to query load level command when device is set to 'off':

31.....24	23.....16	15.....8	7.....0
Switch			Level [6:0]
[31:30]			
0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0
Byte 3	Byte 2	Byte 1	Byte 0

Power Consumption Query Commands

160 - Query Power Consumption

Query the power consumption of a device.

Note:

- If the power consumption of the device is unknown, then you will receive a value of 0 in the reply.

Command

Send: Command (160), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (160), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Current (in mA)

ASCII Example

If you send the following Query Power Consumption command (including the full address of the device):

>V:1,C:160,@1.1.2.15#

If the power consumption of the device is 15mA, then the reply will be:

?V:1,C:160,@1.1.2.15=15#

Raw Example

If you send the following Query Power Consumption command (including the full address of the device):

0x000100A0 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000

If the power consumption of the device is 15W, then the reply will be:

0x010100A0 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x0000000F

161 - Query Group Power Consumption

Query the power consumption of all devices in a group.

Note:

- If the total power consumption of the devices in the group are unknown, then you will receive a value of 0 in the reply.

Command

Send: Command (161), Group (1..16383)

Reply

Command (161), Group (1..16383), Power Consumption (in Watts)

ASCII Example

If you send the following Query Group Power Consumption command (including the group number):

>V:1,C:161,G:16#

If the group's power consumption is 105W, then the reply will be:

?V:1,C:161,G:16=105#

Raw Example

If you send the following Query Group Power Consumption command (including the group number):

```
0x000100A1 0x00000010 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the group's power consumption is 105mA, then the reply will be:

```
0x010100A1 0x00000010 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000069
```

Emergency Test Query Commands

170 - Query Emergency Function Test Time

Note:

- Emergency Test queries should only be sent to emergency ballasts, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (170), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (170), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Emergency Function Test Time (hh:mm:ss dd-mmm-yyyy)

ASCII Example

If you send the following Query Emergency Function Test Time command (including the full address of the device):

```
>V:1,C:170,@1.1.2.15#
```

If the Emergency Function Test Time is 08:00 on 1st July 2009, then the reply will be:

```
?V:1,C:170,@1.1.2.15=08:00:00 01-Jul-2009#
```

Raw Example

The raw time value is calculated in seconds from 00:00:00, 1 January 1970.

Time Value	Hexadecimal
1 second	0x00000001
60 seconds (1 minute)	0x0000003C
60 minutes (1 hour)	0x00000E10
24 hours (1 day)	0x00015180
1 year (365 days)	0x01E13380

If you send the following Query Emergency Function Test Time command (including the full address of the device):

```
0x000100AA 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the Emergency Function Test Time is 08:00 on 1st July 2009, then the reply will be:

```
0x010100AA 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x4A3DE880
```

171 - Query Emergency Function Test State

Note:

- Emergency Test queries should only be sent to emergency ballasts, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (171), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (171), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Emergency Function Test State (combinations of the following emergency state values).

Emergency State Values

States	Values
Pass	0
Lamp Failure	1
Battery Failure	2
Faulty	4
Failure	8
Test Pending	16
Unknown	32

ASCII Example

If you send the following Query Emergency Function Test Pending command (including the full address of the device):

```
>V:1,C:171,@1.1.2.15#
```

If the Emergency Function Test is pending, then the reply will be:

?V:1,C:171,@1.1.2.15=16#

Raw Example

If you send the following Query Emergency Function Test Pending command (including the full address of the device):

```
0x000100AB 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the Emergency Function Test is pending, then the reply will be:

```
0x010100AB 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000010
```

172 - Query Emergency Duration Test Time

Note:

- Emergency Test queries should only be sent to emergency ballasts, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (172), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (172), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Emergency Duration Test Time (hh:mm:ss dd-mmm-yyyy)

ASCII Example

If you send the following Query Emergency Duration Test Time command (including the full address of the device):

```
>V:1,C:172,@1.1.2.15#
```

If the Emergency Duration Test Time is 06:00 on 1st January 2010, then the reply will be:

```
?V:1,C:172,@1.1.2.15=06:00:00#
```

Raw Example

The raw time value is calculated in seconds from 00:00:00, 1 January 1970.

Time Value	Hexadecimal
1 second	0x00000001
60 seconds (1 minute)	0x0000003C
60 minutes (1 hour)	0x00000E10
24 hours (1 day)	0x00015180
1 year (365 days)	0x01E13380

If you send the following Query Emergency Duration Test Time command (including the full address of the device):

```
0x000100AC 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the Emergency Duration Test Time is 06:00 on 1st January 2010, then the reply will be:

```
0x010100AC 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x4B306060
```

173 - Query Emergency Duration Test State

Note:

- Emergency Test queries should only be sent to emergency ballasts, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (173), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (173), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Emergency Duration Test Pending (combinations of the emergency state values described in command 171)

ASCII Example

If you send the following Query Emergency Duration Test Pending command (including the full address of the device):

```
>V:1,C:173,@1.1.2.15#
```

If the Emergency Duration Test is pending, then the reply will be:

```
?V:1,C:173,@1.1.2.15=16#
```

Raw Example

If you send the following Query Emergency Duration Test Pending command (including the full address of the device):

```
0x000100AD 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the Emergency Duration Test is pending, then the reply will be:

```
0x010100AD 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000010
```

174 - Query Emergency Battery Charge

Query the remaining charge of the emergency ballast battery.

Note:

- Emergency queries should only be sent to emergency ballasts, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (174), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (174), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Emergency Battery Charge (0..100%)

ASCII Example

If you send the following Query Emergency Battery Charge command (including the full address of the emergency ballast):

```
>V:1,C:174,@1.1.2.15#
```

If the emergency ballast battery has 40% charge remaining, then the reply will be:

```
?V:1,C:174,@1.1.2.15=40#
```

Raw Example

If you send the following Query Emergency Battery Charge command (including the full address of the emergency ballast):

```
0x000100AE 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the emergency ballast battery has 40% charge remaining, then the reply will be:

```
0x010100AE 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000028
```

175 - Query Emergency Battery Time

Query the current total running time of the emergency ballast battery.

Note:

- Emergency queries should only be sent to emergency ballasts, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (175), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (175), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Emergency Battery Time (1 ... 255 hours)

ASCII Example

If you send the following Query Emergency Battery Time command (including the full address of the emergency ballast):

```
>V:1,C:175,@1.1.2.15#
```

If the emergency ballast battery running time has been 12 hours, then the reply will be:

```
?V:1,C:175,@1.1.2.15=12#
```

Raw Example

If you send the following Query Emergency Battery Time command (including the full address of the emergency ballast):

```
0x000100AF 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the emergency ballast battery running time has been 12 hours, then the reply will be:

```
0x010100AF 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x0000000C
```

176 - Query Emergency Total Lamp Time

Query the current total lamp running time from any power source.

Note:

- Emergency queries should only be sent to emergency ballasts, otherwise you will receive a 'Property does not exist' error message. See [Error / Diagnostic Messages](#).

Command

Send: Command (176), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255)

Reply

Command (176), Cluster (1..253), Router (1..254), Subnet (1..4), Device (1..255), Emergency Total Lamp Time (1 ... 1020 hours)

ASCII Example

If you send the following Query Emergency Total Lamp Time command (including the full address of the emergency ballast):

```
>V:1,C:176,@1.1.2.15#
```

If the emergency ballast total lamp running time has been 100 hours, then the reply will be:

?V:1,C:176,@1.1.2.15=100#

Raw Example

If you send the following Query Emergency Total Lamp Time command (including the full address of the emergency ballast):

0x000100B0 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000

If the emergency ballast total lamp running time has been 100 hours, then the reply will be:

0x010100B0 0x00010001 0x0002000F 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000064

System Query Commands

185 - Query Time

Command

Send: Command (185)

Reply

Returns the local system time:

Command (185), Local System Time (hh:mm:ss dd-mmm-yyyy)

ASCII Example

If you send the following Query Time command:

>V:1,C:185#

If the time is 14:36:39 on 1st July 2009, then the reply will be:

?V:1,C:185=1245591399#

Raw Example

The raw time value is calculated in seconds from 00:00:00, 1 January 1970.

Time Value	Hexadecimal
1 second	0x00000001
60 seconds (1 minute)	0x0000003C
60 minutes (1 hour)	0x00000E10
24 hours (1 day)	0x00015180
1 year (365 days)	0x01E13380

If you send the following Query Time command:

0x000100B9 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000

If the time is 14:36:39 on 1st July 2009, then the reply will be:

0x010100B9 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x4A3E3767

186 - Query Longitude

Command

Send: Command (186)

Reply

Returns the *longitude* :

Command (186), Longitude (H ddd0mm'ss" - where H = Hemisphere, d = degrees, m = minutes and s = seconds)

ASCII Example

If you send the following Query Longitude command:

>V:1,C:186#

If the longitude of your location is W 064° 38'21", then the reply will be:

?V:1,C:186=232701#

Raw Example

Longitude is calculated from the raw value received as follows:

Note:

- E = negative of W (for Hexadecimal, use two's compliment to represent negative values)

Hexadecimal	Decimal	Longitude
0x0002D30C	185100	W 051025'00"
0xFFFFD2CF4	-185100	E 051025'00"

The calculation is as follows:

ddd0 = 185100 / 3600 = 51.416666666666666666666666666667 - 0.416666666666666666666666666667 (remainder) = 51

$mm' = 0.41666666666666666666666666666667 \text{ (remainder)} \times 60 = 25.000000000000000000000000000002 - 0.0000000000000000000000000000002$
 (remainder) = 25

$ss'' = 0.00000000000000000000000000000002 \text{ (remainder)} \times 60 = 0.0000000000000000000000000000012 = 0$

If you send the following Query Longitude command:

```
0x000100BA 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the longitude of your location is W 064° 38'21", then the reply will be:

```
0x010100BA 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00038CFD
```

This is how you calculate the longitude values from this hexadecimal value:

$0x00038CFD = 232701$

$ddd0 = 232701 / 3600 = 64.639166666666666666666666666667 - 0.639166666666666666666666666667 \text{ (remainder)} = 64$

$mm' = 0.639166666666666666666666666667 \text{ (remainder)} \times 60 = 38.35 - 0.35 \text{ (remainder)} = 38$

$ss'' = 0.35 \text{ (remainder)} \times 60 = 21$

187 - Query Latitude

Command

Send: Command (187)

Reply

Returns the *latitude* :

Command (187), Latitude (H ddmm'ss" - where H = Hemisphere, d = degrees, m = minutes and s = seconds)

ASCII Example

If you send the following Query Latitude command:

```
>V:1,C:187#
```

If the latitude of your location is N 64° 38'21", then the reply will be:

```
?V:1,C:187=232701#
```

Raw Example

The raw latitude value is calculated as per the longitude value (see above),

Note:

- S = negative of N (for Hexadecimal, use two's complement to represent negative values)

If you send the following Query Latitude command:

```
0x000100BB 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the latitude of your location is N 64° 38'21", then the reply will be:

```
0x010100BB 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00038CFD
```

188 - Query Time Zone

Command

Send: Command (188)

Reply

Returns the timezone offset (*GMT*):

Command (188), Time Difference (-12..12 hours)

ASCII Example

If you send the following Query Time Zone command:

```
>V:1,C:188#
```

If you are located at 1 hour offset from Greenwich Mean time (GMT), then the reply will be:

```
?V:1,C:188=3600#
```

Raw Example

Note:

- The raw time zone value received is in seconds. For hexadecimal, use two's complement for negative values.

If you send the following Query Time Zone command:

```
0x000100BC 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If you are located at 1 hour offset from Greenwich Mean time (GMT), then the reply will be:

```
0x010100BC 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000E10
```

189 - Query Daylight Saving Time

Command

Send: Command (189)

Reply

Returns the DST:

Command (189), DST (1=ON, 0=OFF)

ASCII Example

If you send the following Query DST command:

```
>V:1,C:189#
```

If Daylight Saving Time is enabled, then the reply will be:

```
?V:1,C:189=1#
```

Raw Example

If you send the following Query DST command:

```
0x000100BD 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If Daylight Saving Time is enabled, then the reply will be:

```
0x010100BD 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

190 - Query Software Version

Query the router firmware version.

Command

Send: Command (190)

Reply

Returns the software version:

Command (190), Software Version (e.g. 4.2.2)

ASCII Example

If you send the following Query Software Version command:

```
>V:1,C:190#
```

If the router firmware version is 4.2.2, then the reply will be:

```
?V:1,C:190=67240448#
```

Raw Example

If you send the following Query Software Version command:

```
0x000100BE 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the router firmware version is 4.2.2, then the reply will be:

```
0x010100BE 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x04020200
```

191 - Query HelvarNet Version

Query the *HelvarNet* software version.

Command

Send: Command (191)

Reply

Returns the software version:

Command (191), HelvarNet Version (e.g. 1)

ASCII Example

If you send the following HelvarNet Software Version command:

```
>V:1,C:191#
```

If the HelvarNet version is 1, then the reply will be:

```
?V:1,C:191=1#
```

Raw Example

If you send the following Query Software Version command:

```
0x000100BF 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the Designer software version is 4.2.2, then the reply will be:

```
0x010100BF 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001
```

Related Topics

- [Query Command Table](#)
- [Query Reply Tables](#)
- [Control Command Table](#)
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Query Command Table

Note:

- See [Word / Parameter Formats](#) below table for guidance on Words in raw format and parameters in ASCII format.
- When you send a command, if you have entered an invalid parameter or it has been sent to a *device*, *router* or cluster that does not exist, then you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

ASCII Format

Note:

- In an ASCII string, the parameters are not required to be in the order shown below.

Name	Parameters			
Query Clusters	Command Number 101			
Query Routers	Command Number 102	Cluster 1..253		
Query LSIB	Command Number 103	Group 1..16383	Block 1..8	
Query Device Type	Command Number 104	Cluster 1..253 <i>Router</i> 1..254	Subnet 1..4 Device 1..255	
Query Description Group	Command Number 105	Group 1..16383		
Query Description Device	Command Number 106	Cluster 1..253 <i>Router</i> 1..254	Subnet 1..4 Device 1..255	
Query Device State	Command Number 110	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Device Is Disabled	Command Number 111	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Lamp Failure	Command Number 112	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Device Is Faulty	Command Number 113	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Device Is Missing	Command Number 114	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Emergency Battery Failure	Command Number 129	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Measurement	Command Number 150	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	Subdevice 1..16 / 0 (0x0 = no subdevice specified)
Query Inputs	Command Number 151	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	Subdevice 1..16 / 0 (0x0 = no subdevice specified)
Query <i>Load</i> Level	Command Number 152	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Power Consumption	Command Number 160	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	
Query Group Power Consumption	Command Number 161	Group 1..16383		
Query Emergency Function Test Time	Command Number 170			
Query Emergency Function Test State	Command Number 171			
Query Emergency Duration Test Time	Command Number 172			
Query Emergency Duration Test				

State	Command Number 173
Query Emergency Battery Charge	Command Number 174
Query Emergency Battery Time	Command Number 175
Query Emergency Total Lamp Time	Command Number 176
Query Time	Command Number 185
Query <i>Longitude</i>	Command Number 186
Query <i>Latitude</i>	Command Number 187
Query Time Zone	Command Number 188
Query Daylight Saving Time	Command Number 189
Query Software Version	Command Number 190
Query <i>HelvarNet</i> Version	Command Number 191

Raw Format

Name	Command Number Word1 (32 bit)	Word 2 (32 bit)	Word 3 (32 bit)	Word 4 (32 bit)	Word 5 (32 bit)	Word 6 (32 bit)	Word 7 (32 bit)	Word 8 (32 bit)	Word 9 (32 bit)	Word 10 (32 bit)
Query Clusters	101	0	0	0	0	0	0	0	0	0
Query Routers	102	Cluster 1..253	0	0	0	0	0	0	0	0
Query LSIB	103	Group 1..16383	0	Block 1..8 / 0	0	0	0	0	0	0
Query Device Type	104	Cluster 1..253 <i>Router</i> 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Description Group	105	Group 1..16383	0	0	0	0	0	0	0	0
Query Description Device	106	Cluster 1..253 <i>Router</i> 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Device State	110	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Device Is Disabled	111	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Lamp Failure	112	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Device Is Faulty	113	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Device Is Missing	114	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Emergency Battery Failure	129	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Measurement	150	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	Subdevice 1..16 / 0 (0x0 = no subdevice specified)	0	0	0	0	0	0
Query Inputs	151	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	Subdevice 1..16 / 0 (0x0 = no subdevice specified)	0	0	0	0	0	0
Query Load Level	152	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Power Consumption	160	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Group Power Consumption	161	Group 1..16383	0	0	0	0	0	0	0	0
Query Emergency Function Test Time	170	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Emergency Function Test State	171	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Emergency Duration Test Time	172	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Emergency	173	Cluster 1..253	Subnet 1..4	0	0	0	0	0	0	0

Duration Test State	Router 1..254	Device 1..255								
Query Emergency Battery Charge	174	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Emergency Battery Time	175	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Emergency Total Lamp Time	176	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	0	0	0	0	0	0	0
Query Time	185	0	0	0	0	0	0	0	0	0
Query Longitude	186	0	0	0	0	0	0	0	0	0
Query Latitude	187	0	0	0	0	0	0	0	0	0
Query Time Zone	188	0	0	0	0	0	0	0	0	0
Query Daylight Saving Time	189	0	0	0	0	0	0	0	0	0
Query Software Version	190	0	0	0	0	0	0	0	0	0
Query HelvarNet Version	191	0	0	0	0	0	0	0	0	0

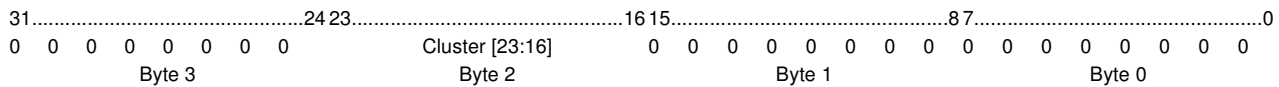
Word / Parameter Formats

Note:

- See [Control Command Word Formats](#) for Word formats not given here.

Cluster

Raw Format

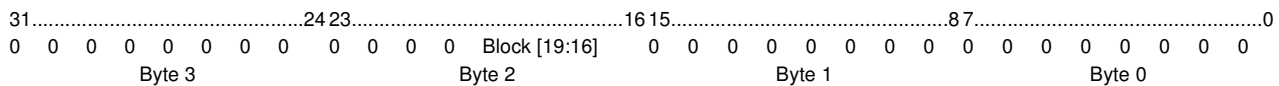


ASCII Format

Cluster = 1..253

Block

Raw Format

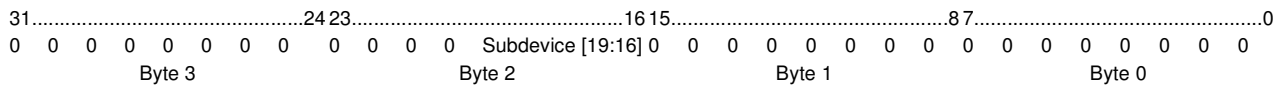


ASCII Format

Block = 1..8

Subdevice

Raw Format



ASCII Format

Subdevice = 1..16

Related Topics

- [Query Command and Reply Descriptions](#)
- [Query Reply Tables](#)
- [Control Command Table](#)
- [Control Command Descriptions](#)
- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [HelvarNet Overview](#)
- [Routing Entries](#)

- [Error / Diagnostic Messages](#)
- [Messages](#)
- [Command Format](#)

Query Reply Table

Notes:

- See [Word / Parameter Formats](#) below the following tables for guidance on Words in raw format and parameters in ASCII format.
- A query reply is prefixed with the query command which was sent.
- When you send a query command, if you have entered an invalid parameter or it has been sent to a *device*, *router* or cluster that does not exist, then, instead of a reply, you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

ASCII Format

Name	Reply Description
101 - Query Clusters	List of cluster IDs (separated by comma delimiter)
102 - Query Routers	List of router IDs (separated by comma delimiter)
103 - Query LSIB	LSIB , 1..16
104 - Query Device Type	Device Type
105- Query Description Group	Group Description, an ASCII extended character set response describing the group queried
106- Query Description Device	Device Description, an ASCII extended character set response describing the device queried
110 - Query Device State	Device State , a decimal value, that when broken down into its binary form, represents the states where each state is represented by 1 or 0
111 - Query Device Is Disabled	Device Disabled State , 1 = 'Disabled' or 0 = 'Enabled'
112 - Query Lamp Failure	Lamp Failure State , 1 = 'Failed' or 0 = 'OK'
113 - Query Device Is Faulty	Device Faulty State , 1 = 'Faulty' or 0 = 'OK'
114 - Query Device Is Missing	Device Missing State , 1 = 'Missing' or 0 = 'Present'
129 - Query Emergency Battery Failure	Battery Failure State , 1 = 'Failed' or 0 = 'OK'
150 - Query Measurement	Measurement , 1..100 (%) or 0..200 <i>light sensor</i> level
151 - Query Inputs	Input State , a decimal value, that when broken down into its binary form, represents the input states where each state is represented by 1 or 0
152 - Query <i>Load</i> Level	Load Level , 1..100 (%)
160 - Query Power Consumption	Power, Watts (W)
161 - Query Group Power Consumption	Power, Watts (W)
170 - Query Emergency Function Test Time	Time test was completed (Local System Time , a decimal value that represents the number of seconds since 1st January 1970)
171 - Query Emergency Function Test State	Test Status , a decimal value that accounts for combinations of the state values described in the Emergency State Values table
172 - Query Emergency Duration Test Time	Time test was completed (Local System Time, a decimal value that represents the number of seconds since 1st January 1970)
173 - Query Emergency Duration Test State	Test Status , a decimal value that accounts for combinations of the state values described in the Emergency State Values table
174 - Query Emergency Battery Charge	Battery Charge , 0-100 (%)
175 - Query Emergency Battery Time	Battery Time. A decimal value for the time the lamp has been running from the batteries. 0 ... 255 hours
176 - Query Emergency Total Lamp Time	Total Lamp Time. A decimal value for the amount of time the lamp has been running on all power supplies.
185 - Query Time	Local System Time, a decimal value that represents the number of seconds since 1st January 1970
186 - Query <i>Longitude</i>	Longitude , a signed decimal value that represents the hemisphere, hours, minutes and seconds of the longitudinal line from <i>GMT</i>
187 - Query <i>Latitude</i>	Latitude , a signed decimal value that represents the hemisphere, hours, minutes and seconds of the latitudinal line from GMT
188 - Query Time Zone	Time Difference, a decimal value that represents the number of seconds for the longitudinal location of the time line from GMT
189 - Query Daylight Saving Time	DST, 1 = 'On' or 0 = 'Off'
190 - Query Software Version	Designer Version (Major Version, Step Stone Version, Point Release Version), a decimal value, that when broken down into its hexadecimal form shows the version parts in their respective octets
191 - Query <i>HelvarNet</i> Version	HelvarNet Version

Raw Format

Name	Word 11 (32b)	Word 12 (32b)	W13 (32b)	W14 (32b)	W15 (32b)	W16 (32b)	W17 (32b)	W18 (32b)	W19 (32b)
		Cluster IDs							
101 - Query Clusters	Cluster Count (total no. of clusters), 0	32 bytes in total, arranged as 8x32 bit words; a bit field detailing the existence of the clusters 1-253 (bits 0, 254 and 255 are always zero)	C2	C3	C4	C5	C6	C7	C8
		Router IDs							
102 - Query Routers	Router Count (total no. of routers), 0	32 bytes in total, arranged as 8x32 bit words; a bit field detailing the existence of the routers 1-254 (bits 0, 255 are always zero)	R2	R3	R4	R5	R6	R7	R8
103 - Query LSIB	LSIB , 1..16								
104 - Query Device Type	Device Type								
105 - Query Description Group	Group Description	Group Description (visible in additional word 8x32 bit word if the group description is longer than 4 ASCII extended display characters)							
105 - Query Description Device	Device Description	Device Description (visible in additional word 8x32 bit words if the group description is longer than 4 ASCII extended display characters)							
110 - Query Device State	Device State								
111 - Query Device Is Disabled	Device Disabled State , 1=Disabled / 0=OK								
112 - Query Lamp Failure	Lamp Failure State , 1=Failed / 0=OK								
113 - Query Device Is Faulty	Device Faulty State , 1=Faulty / 0=OK								
114 - Query Device Is Missing	Device Missing State , 1=Missing / 0=OK								
129 - Query Emergency Battery Failure	Battery Failure State , 1=Failed / 0=OK								
150 - Query Measurement	Measurement , 1..100(%)								
151 - Query Inputs	Input State								
152 - Query Load Level	Load Level , 1..100(%)								
160 - Query Power Consumption	Power, Watts(W)								
161 - Query Group Power Consumption	Power, Watts(W)								
170 - Query Emergency Function Test Time	Local System Time , no. of seconds since 00:00:00, 1st Jan 1970								
171 - Query Emergency Function Test State	Test Status								
172 - Query Emergency Duration Test Time	Local System Time, no. of seconds since 00:00:00, 1st Jan 1970								
173 - Query Emergency Function Test State	Test Status, Pending=1 / Ready=0								
174 - Query Emergency Battery Charge	Battery Charge , 0-100(%)								
175 - Query Emergency Battery Lamp Time	Battery Time. The time the lamp has been running from the batteries. 0 ...255 hours								
176 - Query Emergency Battery Total Lamp Time	Battery Total Lamp Time. The amount of time the lamp has been running on all power supplies. 0 ...255 hours Local System Time, no. of								

185 - Query Time	seconds since 00:00:00, 1st Jan 1970
186 - Query Longitude	Longitude A signed 32 bit value, W=Positive, E=Negative
187 - Query Latitude	Latitude A signed 32 bit value, N=Positive, S=Negative
188 - Query Time Zone	Time Zone A signed 32 bit integer representing the seconds from GMT; each time zone is represented by an hour (3600 seconds). Western zones are negative and Eastern zones are positive
189 - Query Daylight Saving Time	DST (LSBit), 1=On / 0=Off
190 - Query Software Version	Version number: Byte 3 (MSB)=Major Version Byte 2=Step Stone Version Byte 1=Point Release Version
191 - Query HelvarNet Version	Version number

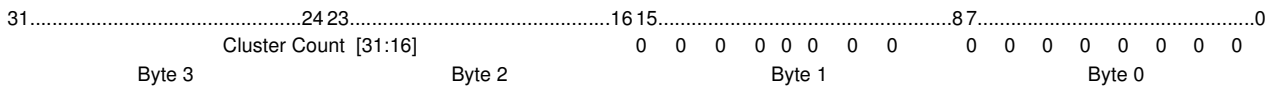
Word / Parameter Formats

Note:

- See [Control Command Word Formats](#) and [Configuration Command Word Formats](#) for Word formats not given here.

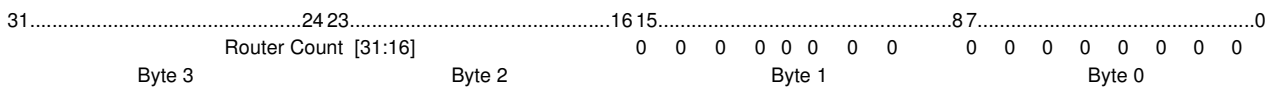
Cluster Count

Raw Format



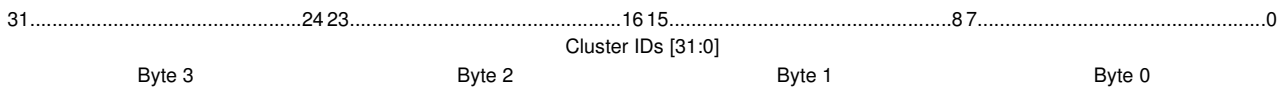
Router Count

Raw Format



Cluster IDs

Raw Format

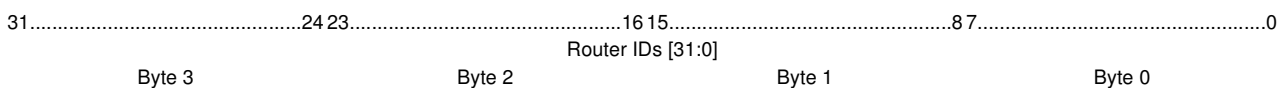


ASCII Format

Cluster IDs = 1..253

Cluster Member (Router) IDs

Raw Format



ASCII Format

Cluster Member IDs = 1..254

Last Scene In Block (LSIB)

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      Byte 3                     Byte 2                     Byte 1                     LSIB [7:0]
                                                                    Byte 0

```

ASCII Format

LSIB = 1..16

Device Type**Raw Format**

```

31.....24 23.....16 15.....8 7.....0
      Byte 3                     Byte 2                     Device Type [31:0]                     Byte 1                     Byte 0

```

ASCII FormatRefer to [Query Device Type](#) section**Device State****Raw Format**

```

31.....24 23.....16 15.....8 7.....0
      Byte 3                     Byte 2                     Device State [31:0]                     Byte 1                     Byte 0

```

ASCII FormatRefer to [Query Device State](#) section**Device Disabled State****Raw Format**

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
      Byte 3                     Byte 2                     Byte 1                     Byte 0

```

ASCII Format

Device Disabled State = 1 (Disabled) or 0 (OK)

Lamp Failure State**Raw Format**

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
      Byte 3                     Byte 2                     Byte 1                     Byte 0

```

ASCII Format

Lamp Failure State = 1 (Failed) / 0 (OK)

Device Faulty State**Raw Format**

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
      Byte 3                     Byte 2                     Byte 1                     Byte 0

```

ASCII Format

Device Faulty State = 1 (Faulty) / 0 (OK)

Device Missing State**Raw Format**

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
      Byte 3                     Byte 2                     Byte 1                     Byte 0

```

ASCII Format

Device Missing State = 1 (Missing) / 0 (OK)

Battery Failure State

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
      Byte 3                        Byte 2                        Byte 1                        Byte 0

```

ASCII Format

Battery Failure State = 1 (Failed) / 0 (OK)

Measurement

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      Byte 3                        Byte 2                        Byte 1                        Measurement [6:0]
                                                                         Byte 0

```

ASCII Format

Measurement = 1..100 or the reading from the Light Sensor subdevice of the Multisensor

Input State

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      Byte 3                        Byte 2                        Byte 1                        Inputs [7:0]
                                                                         Byte 0

```

ASCII Format

Refer to [Query Inputs](#) section

Load Level

Raw Format

```

31.....24 23.....16 15.....8 7.....0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      Byte 3                        Byte 2                        Byte 1                        Load Level [6:0]
                                                                         Byte 0

```

ASCII Format

Load Level = 0..100

Current

Raw Format

```

31.....24 23.....16 15.....8 7.....0
      Byte 3                        Byte 2                        Current [31:0]                        Byte 1                        Byte 0

```

ASCII Format

Current = mA

Local System Time

Raw Format

```

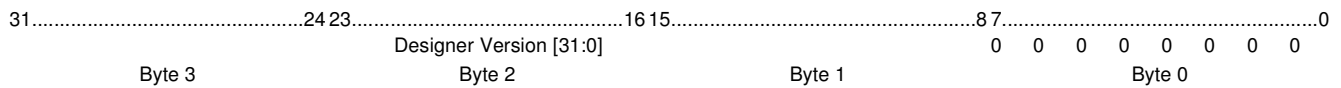
31.....24 23.....16 15.....8 7.....0
      Byte 3                        Byte 2                        Local System Time [31:0]                        Byte 1                        Byte 0

```

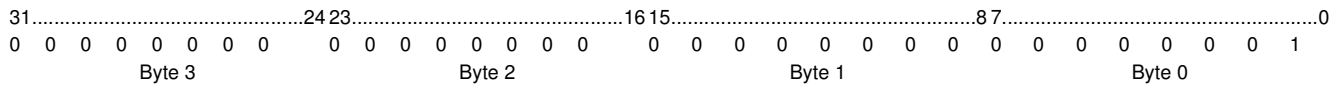
ASCII Format

The local system time value is calculated in seconds from 00:00:00, 1 January 1970.

ASCII	Hexadecimal	System Time Value
1	0x00000001	1 second

**ASCII Format**

Designer Version = a decimal value, that when broken down into its hexadecimal form shows the version parts in their respective octets, e.g. v 4.2.2 = 67371520

HelvarNet Version**Raw Format****ASCII Format**

HelvarNet Version = X (e.g. 1)

Related Topics

- [Query Command and Reply Descriptions](#)
- [Query Command Table](#)
- [Control Command Table](#)
- [Control Command Descriptions](#)
- [HelvarNet Overview](#)
- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [Routing Entries](#)
- [Error / Diagnostic Messages](#)
- [Messages](#)
- [Command Format](#)

Configuration Command Descriptions**Notes:**

- See [Configuration Command Table](#) for information on configuration command formats.
- Unless stated otherwise, configuration commands are not intended for daily use. This is to avoid continual re-writing of flash memory.
- With regard to Store *Scene* commands, if you enter a negative value, then the output level will be 0; if you enter a value greater than 100, then the level will be 100.
- When you send a command, if you have entered an invalid parameter or it has been sent to a *device*, *router* or cluster that does not exist, then you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

Scene Configuration Commands**Note:**

- Scene configuration commands should only be sent to *control gear (load)* channels, otherwise the commands will be ignored.
- With regard to group scene store commands, when channels in a group are not used in a scene, the Force flag can be used to override this, thus forcing the scene to use those channels. See [Scene Table](#) for more information on *channel* 'ignores' in scenes.
- With regard to channel scene store commands, when a channel is not used in a scene, the Force flag can be used to override this, thus forcing the scene to be stored. See [Scene Table](#) for more information on channel 'ignores' in scenes.

201 - Store Scene (Group)

Set the scene level for channels in the specified group. If the 'Force' flag is clear, channels with 'ignore' already stored in the Scene Table are not affected.

Command

Command (201), Group (1..16383), Force Store (1=ON, 0=OFF) / Block (1..8) / Scene (1..16), Level (0..100)

ASCII Example

To store an output level of 75% as scene 5 in scene block 2, across group 17:

```
>V:1,C:201,G:17,O:1,B:2,S:5,L:75#
```

Raw Example

To store an output level of 75% as scene 5 in scene block 2, across group 17:

```
0x000100C9 0x00000011 0x00000000 0x10020005 0x00000000 0x00000000 0x0000004B 0x00000000 0x00000000 0x00000000
```

202 - Store Scene (Channel)

Set the scene level for the channel. If the Force flag is clear and 'ignore' is already stored in the Scene Table for the channel, then the scene is not stored.

Command

Command (202), Cluster (1..253) / Router (1..254), *Subnet* (1..4) / Device (1..255), Force Store (1=ON, 0=OFF) / Block (1..8) / Scene (1..16), Level (0..100)

ASCII Example

To store an output level of 75% as scene 5 in scene block 2, at channel 2.2.1.1:

```
>V:1,C:202,@2.2.1.1,O:1,B:2,S:5,L:75#
```

Raw Example

To store an output level of 75% as scene 5 in scene block 2, at channel 2.2.1.1:

```
0x000100CA 0x00020002 0x00010001 0x10020005 0x00000000 0x00000000 0x0000004B 0x00000000 0x00000000 0x00000000
```

203 - Store As Scene (Group)

Stores the current levels of channels in the group into the specified block / scene. If the 'Force' flag is clear, channels with 'ignore' already stored in the Scene Table are not affected.

Command

Command (203), Group (1..16383), Force Store (1=ON, 0=OFF) / Block (1..8) / Scene (1..16)

ASCII Example

To store the current levels of all channels in group 17 as scene 5 in scene block 2:

```
>V:1,C:203,G:17,O:1,B:2,S:5#
```

Raw Example

To store the current levels of all channels in group 17 as scene 5 in scene block 2:

```
0x000100CB 0x00000011 0x00000000 0x10020005 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

204 - Store As Scene (Channel)

Stores the current level of the channel into the specified block / scene. If the Force flag is clear and 'ignore' is already stored in the Scene Table for the channel, then the scene is not stored.

Command

Command (204), Cluster (1..253) / Router (1..254), *Subnet* (1..4) / Device (1..255), Force Store (1=ON, 0=OFF) / Block (1..8) / Scene (1..16), Level (0..100)

ASCII Example

To store the current level of channel 2.2.1.1 as scene 5 in scene block 2:

```
>V:1,C:204,@2.2.1.1,O:1,B:2,S:5#
```

Raw Example

To store the current level of channel 2.2.1.1 as scene 5 in scene block 2:

```
0x000100CC 0x00020002 0x00010001 0x10020005 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

205 - Reset Emergency Battery and Total Lamp Time (Group)

Reset the Emergency Battery and Total Lamp Time across a group.

Note:

- This command has no effect if sent to a group containing non-emergency devices.

Command

Command (205), Group (1..16383)

ASCII Example

To reset the Emergency Battery Time and Total Lamp time across group 56:

```
>V:1,C:205,G:56#
```

Raw Example

To reset the Emergency Battery Time and Total Lamp time at group 56:

```
0x000100CD 0x00000038 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

206 - Reset Emergency Battery and Total Lamp Time (Device)

Reset the Emergency Battery and Total Lamp Time at a device.

Note:

- This command has no effect if sent to a non-emergency device.

Command

Command (206), Cluster (1..253) / Router (1..254), Subnet (1..4) / Device (1..255)

ASCII Example

To reset the Emergency Battery Time and Total Lamp time of an emergency lighting ballast at address 8.67.2.37:

```
>V:1,C:206,@8.67.2.37#
```

Raw Example

To reset the Emergency Battery Time and Total Lamp time of an emergency lighting ballast at address 8.67.2.37:

```
0x000100CE 0x00080043 0x00020025 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

Time and Location Configuration Commands

Notes:

- Only Daylight Saving Time (DST), *longitude* / *latitude* and time zone changes cause a write to flash memory. System time changes may be written as frequently as desired.
- The time zone value received is in seconds. For hexadecimal, use two's complement for negative values.
- For system time calculation, see Local [System Time Word Format](#); for longitude calculation, see [Latitude Word Format](#); and for latitude calculation, see [Longitude Word Format](#).

240 - Set Time and Location

Allows the system time, longitude, latitude, time zone and Daylight Saving Time (DST) to be set.

Command

Command (240), Local System Time (secs since 00:00:00, 1st Jan 1970), Longitude (H ddd0mm'ss"), Latitude (H ddd0mm'ss"), Time Difference (-12..12, calculated in secs), Daylight Saving Time (1=ON, 0=OFF)

ASCII Example

To set a time of 14:36:39 on 1st July 2009, at a location of longitude W 064038'21" and latitude N 51025'00", in time zone +01:00, with DST applied:

```
>V:1,C:240,T:1245591399,E:232701,N:185100,Z:3600,Y:1#
```

Raw Example

```
0x000100F0 0x4A3E3767 0x00038CFD 0x0002D30C 0x00000E10 0x00000001 0x00000000 0x00000000 0x00000000 0x00000000
```

241 - Set Time

Allows the system time to be set.

Command

Command (241), Local System Time (secs since 00:00:00, 1st Jan 1970)

ASCII Example

To set a time of 14:36:39 on 21st June 2009:

```
>V:1,C:241,T:1245591399#
```

Raw Example

```
0x000100F1 0x4A3E3767 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

242 - Set Longitude

Allows the longitude to be set.

Command

Command (242), Longitude (H ddd0mm'ss")

ASCII Example

To set a longitude W 064038'21":

```
>V:1,C:242,E:232701#
```


Raw Example

```
0x000100F2 0x00000000 0x00038CFD 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

243 - Set Latitude

Allows the latitude to be set.

Command

Command (243), Latitude (H dd0mm'ss")

ASCII Example

To set a latitude N 51025'00":

```
>V:1,C:243,N:185100#
```

Raw Example

```
0x000100F3 0x00000000 0x00000000 0x0002D30C 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

244 - Set Time Zone

Allows the time zone to be set.

Command

Command (244), Time Difference (-12..12, calculated in secs)

ASCII Example

To set a time zone of +01:00:

```
>V:1,C:244,Z:3600#
```

Raw Example

```
0x000100F4 0x00000000 0x00000000 0x00000000 0x0000E10 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

245 - Set Daylight Saving Time

Allows DST to be set.

Command

Command (245), DST (1=ON, 0=OFF)

ASCII Example

To apply DST:

```
>V:1,C:245,Y:1#
```

Raw Example

```
0x000100F5 0x00000000 0x00000000 0x00000000 0x00000000 0x00000001 0x00000000 0x00000000 0x00000000 0x00000000
```

Related Topics

- [Configuration Command Table](#)
- [Query Command and Reply Descriptions](#)
- [Query Commands Table](#)
- [Query Reply Tables](#)
- [Control Command Table](#)
- [Control Command Descriptions](#)
- [HelvarNet Overview](#)
- [Routing Entries](#)
- [Error / Diagnostic Messages](#)
- [Messages](#)
- [Command Format](#)

Configuration Command Table

Notes:

- See [Word / Parameter Formats](#) below the following tables for guidance on Words in raw format and parameters in ASCII format.
- When you send a command, if you have entered an invalid parameter or it has been sent to a *device* , *router* or cluster that does not exist, then

you will receive an error message describing what is wrong with the command. See [Error / Diagnostic Messages](#).

ASCII Format

Note:

- In an ASCII string, the parameters are not required to be in the order shown below.

Name	Parameters
Store <i>Scene</i> (Group)	Command Number 201 Group 1..16383 Force Store Block 1..8 Scene 1..16 Level 0..100%
Store Scene (Device)	Command Number 202 Cluster 1..253 <i>Router</i> 1..254 Subnet 1..4 Device 1..255 Force Store Block 1..8 Scene 1..16 Level 0..100%
Store As Scene (Group)	Command Number 203 Group 1..16383 Force Store Block 1..8 Scene 1..16
Store As Scene (Device)	Command Number 204 Cluster 1..253 Router 1..254 Subnet 1..4 Device 1..255 Force Store Block 1..8 Scene 1..16
Reset Emergency Battery and Total Lamp Time (Group)	Command Number 205 Group 1..16383
Reset Emergency Battery and Total Lamp Time (Device)	Command Number 206 Cluster 1..253 Router 1..254 Subnet 1..4 Device 1..255
Set Time and Location	Command Number 240 Local System Time no. of seconds since 1st January 1970 Longitude Hemisphere, hours, minutes and seconds in decimal form Latitude Hemisphere, hours, minutes and seconds in decimal form Time Zone -12..12 (<i>GMT</i>) DST 1=ON / 0=OFF
Set Time	Command Number 241 Local System Time no. of seconds since 1st January 1970
Set <i>Longitude</i>	Command Number 242 Longitude
Set <i>Latitude</i>	Command Number 243 Latitude
Set Time Zone	Command Number 244 Time Zone -12..12 (<i>GMT</i>)
Set DST	Command Number 245 DST 1=ON / 0=OFF

Raw Format

Name	Command Number Word1 (32 bit)	Word 2 (32 bit)	Word 3 (32 bit)	Word 4 (32 bit)	Word 5 (32 bit)	Word 6 (32 bit)	Word 7 (32 bit)	Word 8 (32 bit)	Word 9 (32 bit)	Word 10 (32 bit)
Store <i>Scene</i> (Group)	201	Group 1..16383	0	Force Store (MSBit) Block 1..8 Scene 1..16	0	0	Level 0..100%	0	0	0
Store Scene (Device)	202	Cluster 1..253 <i>Router</i> 1..254	Subnet 1..4 Device 1..255	Force Store (MSBit) Block 1..8 Scene 1..16	0	0	Level 0..100%	0	0	0
Store As Scene (Group)	203	Group 1..16383	0	Force Store (MSBit) Block 1..8 Scene 1..16	0	0	0	0	0	0
Store As Scene (Device)	204	Cluster 1..253 Router 1..254	Subnet 1..4 Device 1..255	Force Store (MSBit) Block 1..8 Scene 1..16	0	0	0	0	0	0
Reset Emergency Battery and Total Lamp	205	Group 1..16383	0	0	0	0	0	0	0	0

Latitude	ASCII	Hexadecimal
N 51025'00"	185100	0x0002D30C
S 51025'00"	-185100	0xffffD2CF4

Longitude

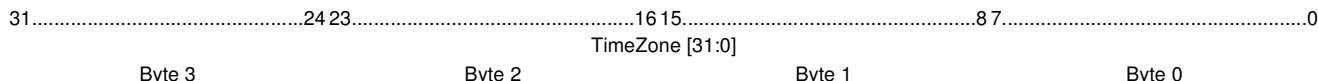
Longitude is as per latitude (see above).

Note:

- E = negative of W (for Hex, use two's complement to represent negative values)

Time Zone

Raw Format

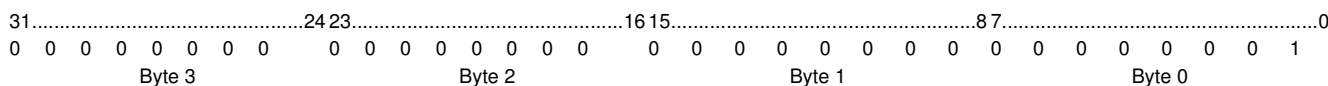


ASCII Format

Time difference = -12..12 (calculated in secs)

Daylight Saving Time (DST)

Raw Format



ASCII Format

Daylight Saving Time = 1 (ON) / 0 (OFF)

ASCII Format

The ASCII and raw time value is calculated in seconds from 00:00:00, 1 January 1970.

System Time Value	ASCII	Hexadecimal
1 second	1	0x00000001
60 seconds (1 minute)	60	0x0000003C
60 minutes (1 hour)	3600	0x00000E10
24 hours (1 day)	86400	0x00015180
1 year (365 days)	31536000	0x01E13380

Related Topics

- [Configuration Command Descriptions](#)
- [Command Format](#)
- [Control Command Descriptions](#)
- [Control Command Table](#)
- [Query Command and Reply Descriptions](#)
- [Query Reply Tables](#)
- [Query Command Table](#)
- [HelvarNet Overview](#)
- [Messages](#)
- [Routing Entries](#)
- [Error / Diagnostic Messages](#)
- [Longitude and Latitude](#)

Error / Diagnostic Messages

The routers are capable of providing useful diagnostic information for all possible Ethernet I/O messages received from a 3rd party *device*. The diagnostic response can provide information concerning whether a message was successful, was invalid or was not appropriate for a specified address. Obviously successful queries will simply be replied with the answer, however if the query is invalid or does not contain the correct parameters then an error diagnostic will be returned, instead of the expected answer, with the original query. For lighting or configuration commands diagnostic information is available on demand and is achieved by specifying that you want this information returned using the Ethernet I/O 'Acknowledgment' feature. In the ASCII format this will mean attaching the parameter ID 'A' with a parameter value of 1 or in the RAW format by switching the 'Acknowledgment' flag on

in the command word.

The following table shows you the raw value and ASCII description for each error message:

Raw Value	ASCII Description
0	Success
1	Error - Invalid group index parameter
2	Error - Invalid cluster parameter
3	Error - Invalid <i>router</i> parameter
4	Error - Invalid <i>subnet</i> parameter
5	Error - Invalid device parameter
6	Error - Invalid sub device parameter
7	Error - Invalid block parameter
8	Error - Invalid <i>scene</i> parameter
9	Error - Cluster does not exist
10	Error - Router does not exist
11	Error - Device does not exist
12	Error - Property does not exist
13	Error - Invalid RAW message size
14	Error - Invalid messages type
15	Error - Invalid message command
16	Error - Missing ASCII terminator
17	Error - Missing ASCII parameter
18	Error - Incompatible version

The error message contains the command data which was sent, followed by the data concerning the erroneous command. *See below for an example error message in ASCII and raw formats.*

Example

ASCII Format

If you send the following Query Device type command:

```
>V:1,C:104,@:2.2.1.1#
```

If the device does not exist, then the reply will be:

```
!V:1,C:104,@:2.2.1.1=11#
```

Raw Format

If you send the following Query Device type command:

```
0x00010068 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
```

If the device does not exist, then the reply will be:

```
0x02010068 0x00020002 0x00010001 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000 0x0000000B
```

Related Topics

- [Configuration Command Descriptions](#)
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Routing Entries

Routing entries of the following type allow generic data transmission over Ethernet:

- ETHERNET TRANSMIT triggered by a group / block / *scene* recall: This causes transmission of a generic string, from a single *router* .

When the entry is triggered, a connection to the third party *device* is instigated from the router. The *IP address* and port to which the connection to the third party device is made is determined from the routing entry's configuration:

- To send *TCP* messages from the router to the third party device, the router connects to a listener port provided in the third party device. It is recommended that this listener port is in the range of 49152 to 65535.
- To send *UDP* messages from the router to the third party device, it is recommended that the destination port in the third party device is in the range of 49152 to 65535.
- Additionally, the IP address of the router that is responsible for the transmission of the generic string also needs to be configured.

See [Scene Triggered Ethernet I/O](#) to learn how to configure this type of routing entry.

Related Topics

- [Configuration Command Descriptions](#)
- [Configuration Command Table](#)
- [Command Format](#)
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