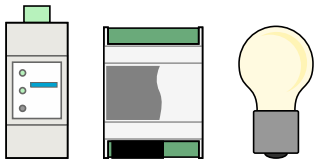
The DALI Driver



The DALI driver allows North to interface with a network of lighting devices that support the DALI (Digital Addressable Lighting Interface) standard. Available for Commander and ObSys.

This document relates to DALI driver version 1.0

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

Contents

Compatibility with the DALI System

The DALI driver allows North to interface with a network of lighting devices that support the DALI (Digital Addressable Lighting Interface) standard.

The driver connects, via a DALI RS232 SCI2 Interface, to a network of lighting devices (Fig. 1). A wide range of equipment from many manufacturers supports DALI.

There are two main types of DALI devices:

- Control gear – contains the power control circuitry to drive lamps, such as ballasts, emergency lamps, and other outputs
- Control devices – provides information to or instructs control gear, using a button press, light-level sensor, time-clock, etc.

The DALI driver is a control device. It sends commands to control gear, and can receive replies to these messages. The driver is also a pseudo control gear, capable of receiving commands from other control devices.

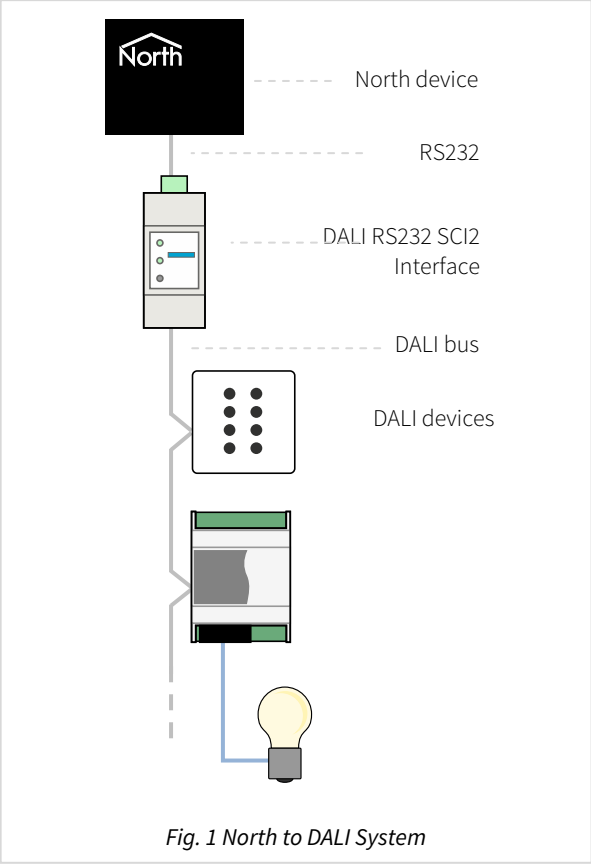


Fig. 1 North to DALI System

Equipment

The North device connects to a DALI RS232 SCI2 Interface. This converts the RS232 electrical signal to the DALI two-wire standard (IEC 62386). Some DALI RS232 Interfaces can also provide power to the DALI bus.

DALI RS232 interfaces that are compatible with the driver include:

- Tridonic DALI interface RS232 PS/S
- Lunatone DALI RS232 SCI

DALI-compatible control gear is available from many manufacturers, including:

- Delmatic
- Helvar
- JCC Lighting
- Lunatone
- OSRAM
- Philips Lighting
- Tridonic

Values

The DALI driver is capable of both requesting values from control gear, and listening for values from other control devices.

Values available from Control Gear

- Brightness level (direct arc power)
- Lighting scene
- Maximum/minimum levels
- Group membership
- Lighting scene levels
- Fade settings
- Lamp fault

Brightness level and lighting scene can be set using broadcast, group, and individual addressing.

Values available from Control Devices

The driver stores a brightness level for each of the 16 DALI groups. Other control devices can set this level using broadcast or group addressing, and the resulting level written elsewhere on the North system.

Prerequisites

Before the driver can use group or individual addressing, the DALI control gear may need to be configured. Speak to the lighting installer regarding configured group addresses and individual addresses, and the integration features required. Configuration options are also available from the driver. See *DALI Overview* section below for more details.

DALI Overview

The DALI protocol defines a set of commands to send to light fittings. The device that sends a command is called a control device, and the devices that receive a command are called control gear.

DALI uses a polarity independent two-wire network, arranged in a bus or star topology. The network carries data and power on the same two-wires. Each DALI control gear powers its DALI interface using the bus power. Control gear usually require another power supply for the actual light source, although very low-powered control devices can work from bus power alone.

Addressing

The DALI driver supports three different addressing methods when sending commands to control gear: broadcast, group, and individual (sometimes called short addressing).

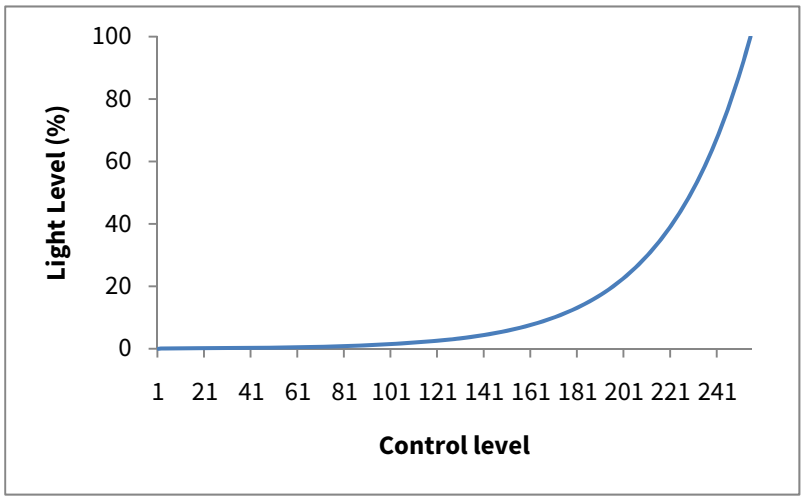
Broadcast addressing allows a control device (such as the North device) to affect all control gear (the lights) on the network at once. The control gear does not need to have a unique address, and so this addressing works 'out-of-the-box'.

Group addressing allows a control device to affect all members of a DALI group. Each DALI network supports up to 16 groups. Control gear may be a member of zero, one, or more groups. The control gear needs to be set up to belong to a particular group. Group set-up may be done in a variety of ways, depending on the equipment manufacturer. The driver provides objects to set group membership, if supported by the control gear.

Individual addressing allows a control device to affect an individual control gear. Each DALI network supports up to 64 short addresses. Each control gear has only a single short address, although manufacturers typically supply control gear without a short addresses. Short address set-up may be done in a variety of ways, depending on equipment manufacturer; one common method uses randomised address searching. See *Address Configuration* below.

Brightness Level

Each DALI control gear has a direct arc power level, in the range 0...254, which represents the power driving the actual light source. Level 255 can also be used as a mask, which typically means to do nothing.



Each control gear implements a logarithmic curve that maps this control level (0..254) to a light level percentage (0..100%). Some people believe that this curve better replicates the sensitivity of the human eye's ability to gauge changes in light.

Control devices (such as a North device) may send a command to instruct control gear to change this brightness level, using broadcast, group, or individual addressing. The current level can be determined using individual addressing only.

See *Appendix A* for a list of typical levels and their corresponding brightness.

Level Limits

Each control gear has an adjustable minimum and maximum brightness level. This allows control devices to set the levels based on safety or current outside light levels. If the light level is adjusted outside this range, the value will be limited to the minimum or maximum value.

Each control gear has a power-on level and system fail level, which define default light levels.

Each control gear also has a physical minimum level, dependent on the type of lamp. This is usually predefined by the light fitting manufacturer to protect the light source.

If the control gear allows, these values can be set from the driver.

Scenes

Each control gear supports up to 16 lighting scenes. When commanded to go to a scene, the control gear sets its brightness to the programmed direct arc power level for that scene. Control devices, including this driver, can send scene commands using broadcast, group and individual addressing.

The driver also records the last scene command that it receives from the DALI network for each group (or broadcast). These values are available as objects, and the driver can send the group scene number onwards to a destination object within the North system.

Fading

When changing from one light level to another, the control gear generally fades to the new light level rather than changing suddenly.

DALI supports two different fade speeds: time and rate. Fade time is used when fading between different levels, such as scene levels, direct arc power levels, etc. Fade rate is used when fading relatively, for example when an ‘up’ or ‘down’ button is pressed.

Address Configuration

There are various ways of assigning short addresses to control gear. Some gear has an addressing method built-in, perhaps with a simple display. Other control gear may support a randomised addressing method, where a device searches the network for a randomised address.

The DALI driver supports randomised addressing. Use the Special Command driver object (SC) to instruct the driver to configure unaddressed control gear. This command should be used with caution, as it is a specialised process and might render a working DALI system unusable.

Using the Driver

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

If updating the driver on Commander, the CDM file is available to install in to bank 21.

Making the Cable

Connect the North device's COM port to the DALI RS232 SCI2 interface.

Both Tridonic and Lunatone DALI interfaces provide an RJ45 RS232 connection. Use the RJ45 to DB9 cable provided with the interface to connect to the North device's COM port.

The RS232 cable specification (Fig. 2) shows an extension cable, if required.

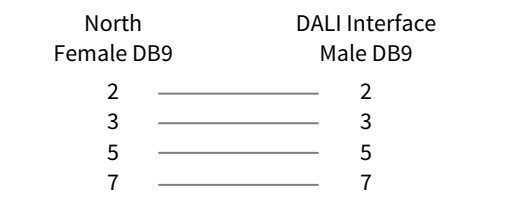


Fig. 2 North to DALI RS232 cable

Power is supplied to the DALI interface on pin 7, so the maximum RS232 cable length is 5m.

Other DALI RS232 Interfaces may require a different cable.

Extension cables are available from North, order code CABLE/DALI.

Starting the Interface

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

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

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

Setting up the Driver

To set up the driver, follow these steps:

- → Navigate to the **DALI Setup** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'
- → Set **COM Port** (RS.COM) to select the serial port number on the North device the DALI interface is connected to.

Checking Communications

You can check that the interface is communicating by reading the **Device Communicating** object (DS). A value of 'Yes' indicates the driver has connected to, and is communicating with the DALI interface.

Object Specifications

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

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

Example Object Reference

An example of a reference to an object in the same device: the DALI network object (S1) contains an Individual address (I4), which itself contains a Level (L) – therefore the object reference will be 'S1.I4.L'.

An example of a reference to an object in a different device: the IP network object (IP) contains Default Commander object (CDIP), which contains the object above (S1.I4.L) – therefore the complete object reference is 'IP.CDIP.S1.I4.L'.

Device Top-Level Objects

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

Description	Reference	Type
DALI Setup Set up the DALI driver, started on interface *c* (*c* is the interface number)	M*c*	Fixed Container: On the Commander platform this will be *[CDM v20\DALI v10]* On the ObSys platform this will be *[OSM v20\DALI v10]*
DALI Network Access the DALI network connected to interface *c* (*c* is the interface number)	S*c*	Variable Container: *[DALI v10\Network]*

DALI Driver Setup

Object Type: *[OSM v20\DALI v10]*
Object Type: *[CDM v20\DALI v10]*

The DALI driver contains the following objects:

Description	Reference	Type
RS232 COM Port	RS.COM	Obj\Num; 1…8; Adjustable
System Label Label displayed when scanning the system	DL	Obj\Text: 20 chars; Adjustable
Device Communicating Indicates whether communications have been established with the DALI RS232 interface	DS	Obj\NoYes
Special Command Instructs the driver to perform a task on the DALI network. See notes below.	SC	Obj\Text; Adjustable
Debug Enable This will store additional debug information in the record file. Use this option only when instructed by North Support. Reset to 'No' when interface is started.	DE	Obj\NoYes; Adjustable

Notes

The Special Command object (SC) instructs the driver to carry out a particular action on the DALI network. Set the value to the command required, then read for the current progress.

This command should be used with caution, as it is a specialised process and might render a working DALI system unusable.

Special Command	Task performed by driver
'RandNew'	Check for unaddressed control gear; Search for unused short addresses; Random addresses generated in all unaddressed control gear; Search for the lowest random address, and assign unused short address to gear
'Stop'	Stops the special process immediately

DALI Network

Object Type: *[DALI v10\Network]*

The DALI network contains a list of different addresses and addressing methods to access control gear on the network. These include broadcast, group, and individual addresses. Scan this object to discover the addresses available.

Refer to *DALI Overview* section for more information on addressing.

Description	Reference	Type
Broadcast Control all devices on the network	B	Fixed container: *[DALI v10\Bcast]*
Group *x* Access all devices assigned to group *x*, where *x* is in the range 0…15	G*x*	Fixed container: *[DALI v10\Group]*
Individual x Access a single device at its individual address *x*, where *x* is in the range 0…63. *Individual* is replaced with the device type label: Ballast, Emergency, HID, Halogen, Incandescent, Converter, LED, or OLED	I*x*	Fixed container: *[DALI v10\Gear]*

Broadcast

Object Type: *[DALI v10\Bcast]*

The Broadcast object provides control of all DALI control gear simultaneously using the broadcast address. Use this object to set all devices to the same lighting scene or brightness level.

This method of control does not require an individual device to have an address.

Description	Reference	Type
Level Set the brightness level (direct arc power) of all control gear	L	Obj\Num; 0 (Off)…254 (100%); Adjustable only
Scene Select the lighting scene of all control gear	S	Obj\Num; 0…15; Adjustable only (always reads 0)

Group

Object Type: *[DALI v10\Group]*

A Group object provides control of a group of DALI control gear. Each DALI device can be configured to be in any combination of the 16 available groups.

In addition to controlling a group of devices, the driver listens to group and broadcast commands from other control devices on the network. The current Level (L) and Scene (S) values are available for the group. The driver provides a list of Scene Levels (SL) to translate a received scene command onto a level in the range 0…254.

Use the level to provide control of objects within the North system from the DALI network. For faster distribution of the value, a Destination Object (LO) specifies where to write the level when its value is set by a control device.

Description	Reference	Type
Level Brightness level (direct arc power) for this group of control gear	L	Obj\Num; 0…254; Adjustable
Scene Lighting scene for this group of control gear	S	Obj\Num; 0…15; Adjustable
Scene Levels Used by the driver to map a received scene command onto a level	SL	Fixed Container: *[DALI v10\SceneLevel]*
Destination Object The driver will write any new Level value to this object reference when a control device sets the level for this group (or using broadcast) directly or indirectly using Scenes (or broadcast to all devices)	LO	Obj\Obj; Adjustable

Individual

Object Type: *[DALI v10\Gear]*

An Individual object provides monitoring and control of a single DALI device using its short address.

Description	Reference	Type
Level Brightness level (direct arc power) of the control gear	L	Obj\Num; 0…254; Adjustable
Scene Select the lighting scene of the control gear	S	Obj\Num; 0…15; Adjustable only (always reads 0)
Version Software version of device	V	Obj\Text: 10 chars In the format <major>.<minor>. E.g. '0.1'
Lamp Failed Indicates whether the lamp has failed	LF	Obj\NoYes
Operating Mode Mode of operation of the device. '0' indicates operation to the DALI standard	OM	Obj\Num:0, 128…255; Adjustable 0=Standard, 128…255=Manufacturer Specific
Address Information Settings for the control gear's address	AI	Fixed container: *[DALI v10\AddrInfo]*
Group Membership Assign the device's group membership	GM	Fixed container: *[DALI v10\GroupMember]*
Level Limits Settings for maximum, minimum, and fallback brightness levels	LL	Fixed container: *[DALI v10\LimitLevel]*
Scene Levels Used by the device to map a received scene command onto a level	SL	Fixed Container: *[DALI v10\SceneLevel]*
Fade Settings	FS	Fixed Container: *[DALI v10\Fade]*

Address Information

Object Type: *[DALI v10\AddrInfo]*

An Address Information object provides access to the DALI control gear's address.

Description	Reference	Type
Random Address Used by the set up tool to address devices	MA	Obj\Text: 6 hexadecimal characters E.g. 'F123B5'
Short/Individual Address Set to change the control gear's short address. Warning: If set to the same address as other control gear, can stop the DALI network functioning	SA	Obj\Num; 0…63, 255; Adjustable 0…63: Address 255: Erase address

Group Membership

Object Type: *[DALI v10\GroupMember]*

A Group Membership object allows access to a control gear's group membership. Each DALI device can be assigned to any combination of the 16 available groups.

Description	Reference	Type
Member of Group *x* Device is a member of group *x*, where *x* is in the range 0…15. Note: some devices cannot have their group membership changed using objects.	M*x*	Obj\NoYes; Adjustable

Level Limits

Object Type: *[DALI v10\LimitLevel]*

The Level Limits object provides access to the brightness level limits (direct arc power) held within the control gear.

Description	Reference	Type
Physical Minimum Level The minimum brightness level supported by the device. Set by the manufacturer.	HN	Obj\Num; 0…254
Maximum Level The maximum brightness level currently supported by the gear. This may be written by light-level sensors, etc., to save energy	X	Obj\Num; 0…254; Adjustable
Minimum Level The minimum brightness level currently supported by the gear. This may be written by other control devices	N	Obj\Num; 0…254; Adjustable
System Fail Level The brightness level used when the system fails – a network fault perhaps.	F	Obj\Num; 0…254; Adjustable
Power-on Level The brightness level used when the device is powered on (before any other instruction is received)	P	Obj\Num; 0…254; Adjustable

Scene Levels

Object Type: *[DALI v10\SceneLevel]*

A Scene Levels object allows access to the brightness level (direct arc power) setting for each lighting scene.

Description	Reference	Type
Scene *x*: Level Brightness level (direct arc power) for scene *x*, where *x* is in the range 0…15	L*x*	Obj\Num; 0…254, 255; Adjustable 255 indicates no change to current brightness level

Fade Settings

Object Type: *[DALI v10\Fade]*

A Fade Settings object allows access to the fade setting values within the control gear.

Description	Reference	Type
Fade Time (secs) Time in seconds for fading from the current brightness to the requested new scene or level	T	Obj\ENum; Adjustable; where: 0=0, 1=0.7 secs, 2=1, 3=1.4, 4=2, 5=2.8, 6=4, 7=5, 8=8, 9=11, 10=16, 11=22, 12=32, 13=45, 14=64, 15=90
Fade Rate (steps/sec) Fade steps per second that are performed when control devices send ‘up’ and ‘down’ brightness commands	R	Obj\ENum; Adjustable; where: 0=Not permitted, 1=357 steps/s, 2=253, 3=178, 4=126, 5=89, 6=63, 7=44, 8=31, 9=22, 10=15, 11=11, 12=7, 13=5, 14=3, 15=2

Appendix A: Brightness Level

The diming curve of DALI control gear is calculated according to the following formula, where n is the arc power level.

$$Light\ output\ (n) = 10^{\frac{n-1}{253/3}-1}\%$$

The table below shows the level (0…254) versus the light output (0…100%).

Level	Output %	Level	Output %	Level	Output %	Level	Output %	Level	Output %	Level	Output %	Level	Output %	Level	Output %
0	Off	32	0.233	64	0.559	96	1.338	128	3.206	160	7.680	192	18.40	224	44.08
1	0.100	33	0.240	65	0.574	97	1.375	129	3.294	161	7.893	193	18.91	225	45.30
2	0.103	34	0.246	66	0.590	98	1.413	130	3.386	162	8.111	194	19.43	226	46.56
3	0.106	35	0.253	67	0.606	99	1.452	131	3.479	163	8.336	195	19.97	227	47.85
4	0.109	36	0.260	68	0.623	100	1.492	132	3.576	164	8.567	196	20.52	228	49.17
5	0.112	37	0.267	69	0.640	101	1.534	133	3.675	165	8.804	197	21.09	229	50.53
6	0.115	38	0.275	70	0.658	102	1.576	134	3.776	166	9.047	198	21.68	230	51.93
7	0.118	39	0.282	71	0.676	103	1.620	135	3.881	167	9.298	199	22.28	231	53.37
8	0.121	40	0.290	72	0.695	104	1.665	136	3.988	168	9.555	200	22.89	232	54.84
9	0.124	41	0.298	73	0.714	105	1.711	137	4.099	169	9.820	201	23.53	233	56.36
10	0.128	42	0.306	74	0.734	106	1.758	138	4.212	170	10.09	202	24.18	234	57.92
11	0.131	43	0.315	75	0.754	107	1.807	139	4.329	171	10.37	203	24.85	235	59.53
12	0.135	44	0.324	76	0.775	108	1.857	140	4.449	172	10.66	204	25.53	236	61.17
13	0.139	45	0.332	77	0.796	109	1.908	141	4.572	173	10.95	205	26.24	237	62.87
14	0.143	46	0.342	78	0.819	110	1.961	142	4.698	174	11.26	206	26.97	238	64.61
15	0.147	47	0.351	79	0.841	111	2.015	143	4.828	175	11.57	207	27.71	239	66.39
16	0.151	48	0.361	80	0.864	112	2.071	144	4.962	176	11.89	208	28.48	240	68.23
17	0.155	49	0.371	81	0.888	113	2.128	145	5.099	177	12.22	209	29.27	241	70.12
18	0.159	50	0.381	82	0.913	114	2.187	146	5.240	178	12.55	210	30.08	242	72.06
19	0.163	51	0.392	83	0.938	115	2.248	147	5.385	179	12.90	211	30.91	243	74.06
20	0.168	52	0.402	84	0.964	116	2.310	148	5.535	180	13.26	212	31.77	244	76.11
21	0.173	53	0.414	85	0.991	117	2.374	149	5.688	181	13.63	213	32.65	245	78.21
22	0.177	54	0.425	86	1.018	118	2.440	150	5.845	182	14.00	214	33.55	246	80.38
23	0.182	55	0.437	87	1.047	119	2.507	151	6.007	183	14.39	215	34.48	247	82.60
24	0.187	56	0.449	88	1.076	120	2.577	152	6.173	184	14.79	216	35.43	248	84.89
25	0.193	57	0.461	89	1.105	121	2.648	153	6.344	185	15.20	217	36.41	249	87.24
26	0.198	58	0.474	90	1.136	122	2.721	154	6.520	186	15.62	218	37.42	250	89.65
27	0.203	59	0.487	91	1.167	123	2.797	155	6.700	187	16.05	219	38.46	251	92.14
28	0.209	60	0.501	92	1.200	124	2.874	156	6.886	188	16.50	220	39.52	252	94.69
29	0.215	61	0.515	93	1.233	125	2.954	157	7.076	189	16.95	221	40.62	253	97.31
30	0.221	62	0.529	94	1.267	126	3.035	158	7.272	190	17.42	222	41.74	254	100.0
31	0.227	63	0.543	95	1.302	127	3.119	159	7.473	191	17.90	223	42.90		

Appendix B: DALI Commands Supported

Commands sent as control device using short addressing

Address Byte	Command Binary	Function	Object
0*aaaaaa*0	*llllllll*	Set Arc Power Level, *l*	Write I*a*.L
0*aaaaaa*1	0001*xxxx*	Go to Scene *x*	Write I*a*.S
0*aaaaaa*1	00100011	Op Mode = DTR [1]	Write I*a*.OM
0*aaaaaa*1	00101010	Max Level = DTR [1]	Write I*a*.LL.X
0*aaaaaa*1	00101011	Min Level = DTR [1]	Write I*a*.LL.N
0*aaaaaa*1	00101100	Fail Level = DTR [1]	Write I*a*.LL.F
0*aaaaaa*1	00101101	Power-on = DTR [1]	Write I*a*.LL.P
0*aaaaaa*1	00101110	Fade Time = DTR [1]	Write I*a*.FS.T
0*aaaaaa*1	00101111	Fade Rate = DTR [1]	Write I*a*.FS.R
0*aaaaaa*1	0100*xxxx*	Scene *x* = DTR [1]	Write I*a*.SL.L*x*
0*aaaaaa*1	0101*xxxx*	Add Group *x*	Write I*a*.GM.Mx
0*aaaaaa*1	0110*xxxx*	Remove Group *x*	Write I*a*.GM.M*x*
0*aaaaaa*1	10000000	Short Address = DTR [1]	Write I*a*.AI.SA
0*aaaaaa*1	10010010	Query Lamp Failure	Read I*a*.LF
0*aaaaaa*1	10010111	Query Version No	Read I*a*.V
0*aaaaaa*1	10011001	Query Device Type	Scan I*a*
0*aaaaaa*1	10011010	Query Phys Level	Read I*a*.LL.HN
0*aaaaaa*1	10011110	Query Op Mode	Read I*a*.OM
0*aaaaaa*1	10100000	Query Actual Level	Read I*a*.L
0*aaaaaa*1	10100001	Query Max Level	Read I*a*.LL.X
0*aaaaaa*1	10100010	Query Min Level	Read I*a*.LL.N
0*aaaaaa*1	10100011	Query Power-on Level	Read I*a*.LL.P
0*aaaaaa*1	10100100	Query Fail Level	Read I*a*.LL.F
0*aaaaaa*1	10100101	Query Fade Time/Rate	Read I*a*.FS.R or Read I*x*.FS.T
0*aaaaaa*1	1011*xxxx*	Query Scene *x* Level	Read I*a*.SL.L*x*
0*aaaaaa*1	11000000	Query Group 1-8	Read I*a*.GM.M*x*
0*aaaaaa*1	11000001	Query Group 9-16	Read I*a*.GM.M*x*
0*aaaaaa*1	11000010	Query Random H	Read I*a*.AI.MA
0*aaaaaa*1	11000011	Query Random M	Read I*a*.AI.MA
0*aaaaaa*1	11000100	Query Random L	Read I*a*.AI.MA

Notes

1. These commands also require special command ‘DTR’ - see below.

Commands sent as control device using broadcast and group addressing

Address Byte	Command Binary	Function	Object
100*gggg*0 11111110	*llllllll*	Set Arc Power Level, *l*	Write G*g*.L Write B.L
100*gggg*1 11111111	0001*xxxx*	Go to Scene *x*	Write G*g*.S Write B.S

Commands received as control gear using broadcast and group addressing

Address Byte	Command Binary	Function	Object
100*gggg*0 11111110	*llllllll*	Set Arc Power Level, *l*	Read G*g*.L
100*gggg*1 11111111	0001*xxxx*	Go to Scene *x*	Read G*g*.S or Read G*g*.L

Special commands sent as control device

Address Byte	Command Binary	Function	Object
10100001	00000000	TERMINATE	Write SC = ‘RandNew’
10100011	(DTR)	DTR	See DTR functions above
10100101		INITIALISE	Write SC = ‘RandNew’
10100111	00000000	RANDOMISE	Write SC = ‘RandNew’
10101001	00000000	COMPARE	Write SC = ‘RandNew’
10101011	00000000	WITHDRAW	Write SC = ‘RandNew’
10110001	(H)	SEARCHADDRH	Write SC = ‘RandNew’
10110011	(M)	SEARCHADDRM	Write SC = ‘RandNew’
10110101	(L)	SEARCHADDRL	Write SC = ‘RandNew’
10110111	(Short)	PROGRAMSHORTADDR	Write SC = ‘RandNew’

Special commands received as control device

Address Byte	Command Binary	Function	Effect
10100001	00000000	TERMINATE	Enables the sending of commands by the driver
10110101		INITIALISE	Disables the sending of commands by the driver until TERMINATE received or 30minute timer expires

Driver Versions

Version	Build Date	Details
1.0	11/4/2016	Driver released

Next Steps…

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

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