

Commissioner dali

User Guide



Artistic Licence Engineering Ltd

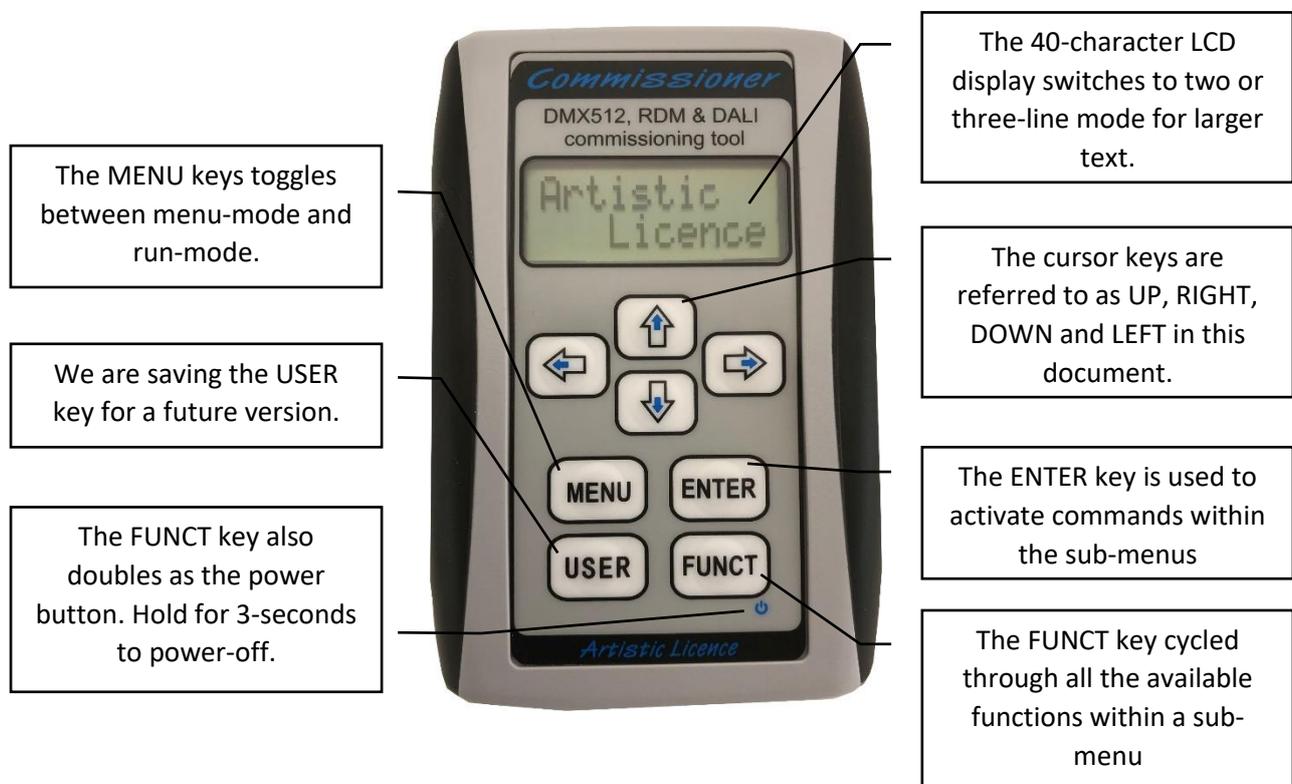
Firmware v0.2 User Guide v1.0

Introduction	5
DALI Connection.....	5
Power	5
Switching On and Off	5
Menu Navigation.....	6
Top Menu.....	7
DALI Menu.....	7
DALI - COMMISSION Menu	7
DALI – COMMISSION - DISCOVERY Menu	9
DALI - COMMISSION - CHANGE Menu	10
DALI - LEVEL Menu	11
DALI - LEVEL - SINGLE Menu	11
DALI - LEVEL - RANGE Menu.....	12
DALI - LEVEL – TYPE 8 Menu	12
Example.....	13
DALI - LEVEL - SCENE Menu.....	14
Example.....	14
DALI - MANAGE Menu	16
DALI – MANAGE - GROUPS Menu	16
Example.....	17
DALI – MANAGE - STATES Menu	17
Example.....	18
DALI – MANAGE - PARAM Menu	18
Example.....	19
DALI - LISTEN Menu.....	20
DALI – LISTEN - GRAPH Menu	20
Example.....	21
DALI – LISTEN - DECIMAL Menu	21
DALI – LISTEN - SINGLE Menu	21
DALI – LISTEN - FLICKER Menu	22
DALI – LISTEN - COMMS Menu	22
DALI - PHYSICAL Menu	23
DALI – PHYSICAL - CABLE Menu	23
DALI – PHYSICAL - NETWORK Menu	23
Glossary.....	24
DALI Channel.....	24

DALI Short-Address	24
DALI Device Type.....	24
DALI Control Gear	24
DALI Device	24
DALI Groups	24
DALI Scenes	24
DALI Circuit.....	24
DALI Bus Power	24
Warranty	26
Compliance	26
Waste Electrical & Electronic Equipment (WEEE).....	26

Introduction

Commissioner dali is a battery-powered, hand-held tool for commissioning, programming and analysing DALI devices (aka Control Gear).



DALI Connection

The DALI connection is made via the phono (RCA jack) at the top of the product. A lead which crocodile clips is supplied. Prior to connecting to a DALI circuit, users should use a DVM to ensure that the DALI circuit is at a nominal 16VDC (and has not been inadvertently connected to mains).

Power

Commissioner is powered by 2 x AA batteries. Approximately 100 hours of continuous operation is expected on one set of batteries. Rechargeable batteries can be used. Commissioner will power down after 10 minutes of inactivity (that is: no key presses). In power-down standby, the batteries will last for several months. However, if the product is used infrequently, we recommend storing without batteries fitted.

Switching On and Off

Commissioner is switched on by pressing FUNCT. Switch off is achieved by holding FUNCT for three seconds.

Once powered on, the product will display the splash screen which includes the firmware revision number and then display the top menu.

Menu Navigation

Menu navigation is intuitive and will be familiar to users of other Artistic Licence products. At a given time, the product is either in menu-mode or run-mode. The MENU key switches between these modes. The figure below shows the top menu. The UP and DOWN keys scroll the menu up and down. The < and > icons indicate that the LEFT and RIGHT keys can be used to navigate through the menu. The [icon indicates that there is no LEFT function: i.e. you are at the top menu.

```
TOP MENU
[ DALI    >
  CONFIG
```

As shown in the figure below, the ↵ icon indicates the option to run the selected function. In this example, the COMMISSION -> DISCOVERY function. To do so, press ENTER.

```
COMMISSION
< DISCOVER ↵
  CHANGE
```

Top Menu

The top menu provides access to the DALI and CONFIG menus. Press RIGHT to access the DALI menu.



DALI Menu

The DALI menu categorises all the available DALI functions as listed below. Use the RIGHT key to access the relevant sub-menus.

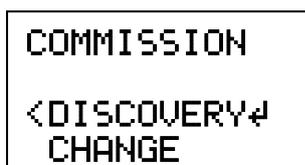


The DALI sub-menus are:

1. COMMISSION
Used to discover DALI devices and set, view or edit their short addresses.
2. LEVEL
Transmit ARC levels to single devices, a range of devices, set DT8 colours and control scenes.
3. MANAGE
Programme groups, maximum, minimum, failure and power states plus read and write all DALI parameters.
4. LISTEN
Listen to other controllers, display channel, group and broadcast ARC levels, flicker-finder, capture errors.
5. PHYSICAL
Check cable for power and shorts plus network integrity tests.

DALI - COMMISSION Menu

The DALI-Commission menu provides two options. Use UP and DOWN to navigate and then press ENTER.



The sub-menus are:

1. DISCOVERY

Used to discover DALI devices and set or remove their short addresses.

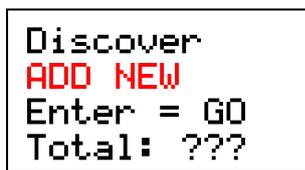
2. CHANGE

Edit the short address of an individual device.

DALI – COMMISSION - DISCOVERY Menu

The DALI-Commission-Discovery menu is used to control short addresses. Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or FUNCT keys to select the required option within an option field.



This menu has one option field with three options:

1. ADD NEW

Only devices without a short address will be added.

2. ADD ALL

All devices will be re-addressed.

3. DELETE ALL:

All devices will have their short address removed.

Press ENTER to start discovery with the selected option. The display will update as discovery proceeds. Be aware that discovery can take up to a minute.

The figure below shows a successful operation.



At the start of discovery, all devices will be set to their minimum intensity. As they are discovered, they are set to maximum intensity. This provides a visual cue to the order of short addressing and also highlights any devices that are not operational.

DALI - COMMISSION - CHANGE Menu

The DALI-Commission-Change menu is used to edit the short address of a specific device. Use the LEFT and RIGHT keys to navigate through the option fields. In this guide, option fields are highlighted in red.

Use the UP and DOWN keys to select the required option within an option field.

```
Commission  
Change 00  
to 000  
Enter = GO
```

The 'Change' field selects short address that you wish to change. Use the UP & DOWN keys to edit.

The 'to' field lists the available (that is - unused) short addresses.

Once the option fields are set, press ENTER to confirm the change.

The figure below shows a successful operation.

```
Commission  
Change 00  
to 006  
Complete
```

DALI - LEVEL Menu

The DALI-Level menu provides four options. Use UP and DOWN to navigate and then press ENTER.



The sub-menus are:

1. SINGLE
Transmit ARC values to single channel, group and broadcast addresses.
2. RANGE
Transmit ARC values to a range of channel or group addresses.
3. TYPE 8
Read and write colour parameters for all four of the device type 8 colour types.
4. SCENE
Record and playback scenes.

DALI - LEVEL - SINGLE Menu

This menu allows transmission of the DALI ARC command which is used to set the device's intensity level. Transmission can be directed to broadcast, channel or group address. Use the LEFT and RIGHT keys to navigate through the option fields. Use the UP and DOWN or FUNCT keys to select the required option within an option field.



The operating functions are:

- MAN – DALI transmitted when user varies the level or presses ENTER.
- SNAP – snaps between on and off every second.
- FADE – slowly fades to full and rolls over to zero.
- RAMP – slowly fades to full then back to zero.

To change the operating function either press the FUNCT key or select the Func field and use the UP and DOWN keys.

In manual mode, a new ARC value is sent when ENTER is pressed or when the 'at' field is edited.

The FADE and RAMP modes send every allowed ARC value on a 39mS time-base which gives a 10s fade time.

The SNAP mode sends an ARC every 1.5s.

DALI - LEVEL - RANGE Menu

This menu allows transmission of the DALI ARC command which is used to set the device's intensity level. Transmission can be directed to a range of channel or group addresses. Use the LEFT and RIGHT keys to navigate through the option fields. Use the UP and DOWN or FUNCT keys to select the required option within an option field.

```
Tx CHANNEL  
to 00 - 03  
at 254/254  
Func: WALK
```

The operating functions are:

- MAN – DALI transmitted when user varies the level or presses ENTER.
- SNAP – snaps between on and off every second.
- FADE – slowly fades to full and rolls over to zero.
- RAMP – slowly fades to full then back to zero.
- ALT – Odd channels fade up while even channels fade down.
- WALK – Odd channels fade up while even channels fade down.

To change the operating function either press the FUNCT key or select the Func field and use the UP and DOWN keys.

In manual mode, a new ARC value is sent when ENTER is pressed or when the 'at' field is edited.

The SNAP & WALK modes send an ARC every 1.5s. The other modes send an ARC value every 39mS. This achieves a fade time of approximately 10s. However, in order to conserve bandwidth, as the range of channels or groups is increased, the resolution is lowered.

DALI - LEVEL – TYPE 8 Menu

This menu allows control of Device Type 8 colour parameters. Commands can be directed to broadcast, channel or group address. Use the LEFT and RIGHT keys to navigate through the option fields. Use the UP and DOWN keys to select the required option within an option field.

```
Send DT8  
1 TEMPc to  
CHANNEL 04  
at 65534
```

Device Type 8 allows control of colour using up to four colour types, numbered 0 to 3. Not all devices will support all of the colour types.

The first option field is used to select the colour type parameter from the following list. The number represents the colour type:

- 0 CIE-X
- 0 CIE-Y
 - Colour Type 0. XY coordinate. Defines the 16-bit XY coordinates in CIE chromaticity colour space.
- 1 TEMPc

- Colour Type 1. Colour Temperature. Defines the 16-bit colour temperature based on the black body line. Units are Mireks (1,000,000/K). 4000k cool white is approximately 250 Mireks.
- 2 PRI-0
- 2 PRI-1
- 2 PRI-2
- 2 PRI-3
- 2 PRI-4
- 2 PRI-5
- Colour Type 2. Primary N allows 8-bit control over up to 6 primary channels number 0 to 5.
- 3 RED
- 3 GREEN
- 3 BLUE
- 3 WHITE
- 3 AMBER
- 3 FREE
- Colour Type 3. RGBWAF allows 8-bit control over red, green, blue, white, amber and free (that is manufacturer defined) colour.

To change the colour type parameter, either select the field and use the UP and DOWN keys or press FUNCT.

The next option field selects the address of the DALI device to be set. The UP and DOWN keys select:

- Broadcast – send the commands to all devices.
- GROUP – send the command to one of the 16 possible groups.
- CHANNEL – send the command to one of the 64 possible channels.

The final option field is the value to which the colour parameter will be set. The colour parameters vary between 8-bit and 16-bit. Data is entered in decimal so the field width varies between 3 digits (0-255) and 5 digits (0-65535).

When channel addressing is used, Commissioner will read the data from the device, allowing the user to edit the existing value. During this process, the value field changes to '???' while waiting for the device to respond. If the value field remains in this display, the addressed device did not respond.

To send the command, press ENTER.

Example

The following command will set all the DT8 devices in group 7 to a colour temperature of 250 Mireks.

```
Send DT8
1 TEMPc to
GROUP 07
at 00250
```

DALI - LEVEL - SCENE Menu

This menu allows scenes to be recorded, replayed or edited. Commands can be directed to broadcast, channel or group address. Use the LEFT and RIGHT keys to navigate through the option fields. Use the UP and DOWN keys to select the required option within an option field.

```
Dali Scene
CHANNEL 00
PLAYBACK
Scene: 03
```

The first option field selects the address of the DALI device to be set. The UP and DOWN keys select:

- Broadcast – send the commands to all devices.
- GROUP – send the command to one of the 16 possible groups.
- CHANNEL – send the command to one of the 64 possible channels.

The second option field allows the specific command to be selected:

- PLAYBACK – The selected scene will be played back on the selected channel(s).
- RECORD TO – The current levels will be recorded to the selected scene of the selected channel(s).
- REMOVE FRM – The selected channel(s) will be removed from the selected scene.

To change the command either press the FUNCT key or select the field and use the UP and DOWN keys.

The final option field is used to select the scene number.

To send the command, press ENTER.

Example

The following command will remove from scene 4, all channels included in group 9.

```
Dali Scene
GROUP 09
REMOVE FRM
Scene: 04
```

The following command will record to scene 1, the current level of all devices on the circuit.

```
Dali Scene
BROADCAST
RECORD TO
Scene: 01
```

The following command will replay scene 14 on the DALI device with short-address 60 (aka channel 60).

Dali Scene
CHANNEL 60
PLAYBACK
Scene: 14

DALI - MANAGE Menu

The DALI-Manage menu provides three options. Use UP and DOWN to navigate and then press ENTER.



The sub-menus are:

1. GROUPS

Add or remove channels from groups.

2. STATES

Playback or record the four key states of: fault level, power-on level, maximum and minimum levels.

3. PARAM

Read and write all the key parameters of DALI devices.

DALI – MANAGE - GROUPS Menu

The DALI-Manage-Groups menu is used to add or remove a channel from a group. Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or keys to select the required option within an option field.



The first option field selects the address of the DALI device to be set. The UP and DOWN keys select:

- Broadcast – send the commands to all devices.
- GROUP – send the command to one of the 16 possible groups.
- CHANNEL – send the command to one of the 64 possible channels.

The second option field allows the specific command to be selected:

- ADD TO – The selected channel(s) will be added to the selected group.
- REMOVE FRM – The selected channel(s) will be removed from the selected group.

To change the command either press the FUNCT key or select the field and use the UP and DOWN keys.

The final option field is used to select the group number.

To send the command, press ENTER.

Example

The following command will remove from channel 9 from group 11.

```
Dali Group  
CHANNEL 09  
REMOVE FRM  
Group: 11
```

The following command will remove from all channels from group 12.

```
Dali Group  
BROADCAST  
REMOVE FRM  
Group: 12
```

The following command will add all channels in group 5 to group 13.

```
Dali Group  
GROUP 05  
ADD TO  
Group: 13
```

DALI – MANAGE - STATES Menu

The DALI-Manage-States menu is used to playback or record the four key DALI states:

- Fault level
 - The level to which a device will go in the event that it loses the DALI signal.
- Power-on level
 - The level to which a device will go upon power-on in the absence of an immediate command.
- Maximum level
 - The maximum level to which a device can be commanded.
- Minimum level
 - The minimum level to which a device can be commanded.

Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or keys to select the required option within an option field.

```
Dali State  
CHANNEL 01  
RECORD TO  
FAULT LEV
```

The first option field selects the address of the DALI device to be set. The UP and DOWN keys select:

- Broadcast – send the commands to all devices.

- GROUP – send the command to one of the 16 possible groups.
- CHANNEL – send the command to one of the 64 possible channels.

The second option field allows the specific command to be selected:

- RECORD TO – The selected channel(s) in the selected state will be recorded to the current levels.
- PLAYBACK – The selected channel(s) will be played back to the levels contained in the selected state.
- DEFAULT – The selected channel(s) in the selected state will be returned to their default values.

To change the command either press the FUNCT key or select the field and use the UP and DOWN keys.

The final option field is used to select the state:

- FAULT LEV
- POWER ON
- MIN LEVEL
- MAX LEVEL

To send the command, press ENTER.

Example

The following command will replay the fault level state for group 6.

```
Dali State
GROUP 06
PLAYBACK
FAULT LEV
```

The following command will record the power-on level for all devices.

```
Dali State
BROADCAST
RECORD TO
POWER ON
```

DALI – MANAGE - PARAM Menu

The DALI-Manage-Param menu is used to access the individual DALI parameters. The DALI parameter list includes queries, commands, reads and writes. This menu attempts to offer all available parameters in a logical order such that many parameters can be treated as read-write fields.

Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or keys to select the required option within an option field.

```
Channel 02
Param:
MAX LEVEL
READ: ???
```

The first option field allows the DALI channel to be set.

The second option field allows the specific DALI parameter to be selected. In this example, the MAX LEVEL.

The third option field defines whether the ENTER key will read or write the selected parameter.

Finally, the fourth option field contains the data attached to the DALI parameter.

The ENTER key will action the read or write of the parameter. When a read is requested, the data field displays '???' . If the device responds, the value will be displayed. If the '???' remains, the device did not respond.

Example

The following command will write a maximum level of 250 to channel 2.

```
Channel 02
Param:
MAX LEVEL
WRITE: 250
```

The following command will read the maximum level of channel 2, confirming whether the previous example succeeded.

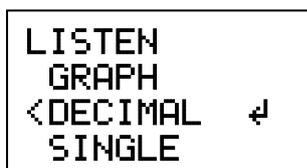
```
Channel 02
Param:
MAX LEVEL
READ: ???
```

The following command will read the fade time from channel 3.

```
Channel 03
Param:
FADE TIME
READ: 007
```

DALI - LISTEN Menu

The DALI-LISTEN menu provides numerous options for listening to data transmitted by other DALI controllers. Use UP and DOWN to navigate and then press ENTER to access the sub-menus.



The sub-menus are:

1. GRAPH

Display a bargraph of the ARC levels of up to 30 channels, 16 groups or the broadcast address.

2. DECIMAL

Display the decimal ARC levels of up to 6 channels, groups or the broadcast address.

3. SINGLE

Display the decimal and hexadecimal ARC level of a single channel, group or the broadcast address.

4. FLICKER

Display the decimal ARC level of a single channel, group or the broadcast address along with the maximum and minimum ARC levels detected.

5. COMMS

Display a live tally of forward frames, reverse frames and errors.

DALI – LISTEN - GRAPH Menu

The DALI-LISTEN-GRAPH menu is used to monitor the ARC levels sent by another controller. Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or keys to select the required option within an option field.



The first option field selects the address of the DALI device to which Commissioner will listen. The UP and DOWN keys select:

- Broadcast – only show broadcast ARC levels.
- GROUP – show group and broadcast ARC levels.
- CHANNEL – show channel and broadcast ARC levels.

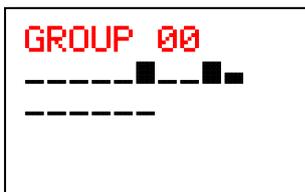
The remaining three display lines show a low-resolution bargraph of the ARC levels of up to 30 consecutive items.

Example

The following display will show ARC data for channels 7 to 37.



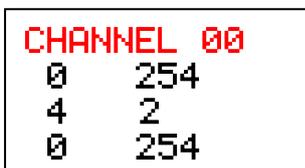
The following display will show ARC data for groups 0 to 15.



DALI – LISTEN - DECIMAL Menu

The DALI-LISTEN-DECIMAL menu is used to monitor the ARC levels sent by another controller. Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or keys to select the required option within an option field.



The first option field selects the address of the DALI device to which Commissioner will listen. The UP and DOWN keys select:

- Broadcast – only show broadcast ARC levels.
- GROUP – show group and broadcast ARC levels.
- CHANNEL – show channel and broadcast ARC levels.

The remaining three display lines show six consecutive ARC levels in decimal.

DALI – LISTEN - SINGLE Menu

The DALI-LISTEN-SINGLE menu is used to monitor the ARC levels sent by another controller. Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or keys to select the required option within an option field.

```
CHANNEL 00
0xfe 254
```

The first option field selects the address of the DALI device to which Commissioner will listen. The UP and DOWN keys select:

- Broadcast – only show broadcast ARC levels.
- GROUP – show group and broadcast ARC levels.
- CHANNEL – show channel and broadcast ARC levels.

The lower line shows the data received from the selected address in both hexadecimal and decimal.

DALI – LISTEN - FLICKER Menu

The DALI-LISTEN-FLICKER menu is used to monitor the ARC levels sent by another controller. Use the LEFT and RIGHT keys to navigate through the option fields. In the product, option fields are shown in UPPER CASE. In this guide, option fields are highlighted in red.

Use the UP and DOWN or keys to select the required option within an option field.

```
CHANNEL 00
Cur: 54
053- 057
```

The first option field selects the address of the DALI device to which Commissioner will listen. The UP and DOWN keys select:

- Broadcast – only show broadcast ARC levels.
- GROUP – show group and broadcast ARC levels.
- CHANNEL – show channel and broadcast ARC levels.

The middle, large text, line shows the current ARC level.

The lower line shows the range of levels that have been detected for the selected channel.

Press MENU twice to reset the monitoring.

DALI – LISTEN - COMMS Menu

The DALI-LISTEN-DECIMAL menu is used to monitor the DALI circuit for errors.

```
Dali Comms
Fwd: 00234
Rev: 00234
Err: 00000
```

Commissioner listens to the data flow and displays:

- Fwd – Forward DALI frames.
- Rev – Reverse DALI frames.
- Err – DALI frames with errors.

DALI - PHYSICAL Menu

The DALI-PHYSICAL menu provides two options for analysing the DALI physical layer (the cable). Use UP and DOWN to navigate and then press ENTER to access the sub-menus.

```
PHYSICAL
<CABLE  ↵
NETWORK
```

The sub-menus are:

1. CABLE

Checks for the existence of DALI Bus Power and also shorted cables.

2. NETWORK

Sends high frequency queries and monitors the response.

DALI – PHYSICAL - CABLE Menu

The DALI-PHYSICAL-CABLE menu is used to monitor the DALI Bus Power.

```
Dali Cable
GOOD POWER
```

The second line will display either good or bad.

DALI – PHYSICAL - NETWORK Menu

The DALI-PHYSICAL-NETWORK menu is used to send high frequency Query Control Gear messages to the selected address. This command is the basic 'are you there' command of the DALI protocol.

```
CHANNEL 00
Fwd: 00298
Rev: 00298
Err: 00000
```

The first option field selects the address of the DALI device to which Commissioner will listen. The UP and DOWN keys select:

- Broadcast – only show broadcast ARC levels.
- GROUP – show group and broadcast ARC levels.
- CHANNEL – show channel and broadcast ARC levels.

Commissioner listens to the data flow and displays:

- Fwd – Forward DALI frames.
- Rev – Reverse DALI frames.
- Err – DALI frames with errors.

Glossary

DALI Channel

See DALI Short-Address.

DALI Short-Address

The term is used interchangeably with short-address. Short-Addresses are assigned during commissioning and number from 0 to 63.

DALI Device Type

There are nine device types, DT0 – DT8. The first eight operate in a largely identical manner. DT8 is used to control colour.

DALI Control Gear

See DALI Device

DALI Device

This is the device that is being controlled. Also known as Lamp, Luminaire, Fixture and in DALI 1, Control Gear.

DALI Groups

There are 16 DALI Groups which can contain any combination of DALI Channels. The information is stored in the DALI Device.

DALI Scenes

There are 16 DALI Scenes which can contain the level of any combination of DALI Channels. The information is stored in the DALI Device.

DALI Circuit

The physical wires to which the DALI devices are connected. Each DALI Circuit can connect up to 64 DALI Devices.

DALI Bus Power

The (nominally) 16VDC current limited supply that must be connected to a DALI circuit in order for it to operate.

Warranty

All products are covered from date of purchase by a two-year return to base warranty.

By return to base, we mean that the customer is responsible for all costs of transport to and from Artistic Licence.

Returns will not be accepted without prior authorisation. In order to discuss a request to return goods, please email:

Sales@ArtisticLicence.com

No user serviceable parts inside.

Compliance

All Products manufactured or sold by Artistic Licence Engineering Ltd are fully compliant with the appropriate CE and RoHS regulations. Product specific information is available on request.

Waste Electrical & Electronic Equipment (WEEE)

Artistic Licence is a member of a WEEE compliance scheme and will happily recycle any of our products that you, at your expense, return to us.

Artistic Licence

© Artistic Licence Engineering Ltd. 2019

The Mould Making Workshop

Soby Mews

Bovey Tracey

TQ13 9JG

UK

Tel: +44 (0)20 88 63 45 15

Email: Sales@ArtisticLicence.com



The information contained in this document is subject to change without notice. Artistic Licence Engineering Ltd. makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of fitness for a particular purpose.

Artistic Licence Engineering Ltd. shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this material.

All trademarks are acknowledged.