



AUTOMATED-LIGHTING DATA SERVICE – OVERVIEW

9 December 2008

Introduction

Modern automated lighting controllers require information about the fixtures they are controlling. This lets them present the user with a sensible set of controls. At its most basic it is a mapping between features of the fixture and the DMX512 control protocol (eg. Pan is on channel 3, range 0 to 255, default value 127). It may also contain information about how control values relate to the real world (eg. Pan range is -270° to $+270^{\circ}$). A recent development is to calibrate certain features, particularly colour, so that programming can be stored and manipulated in generic terms that can be mapped to the same result on any fixture.

Currently each control manufacturer gathers this data in its own proprietary format. This is a significant amount of work and a major resource drain on support staff due to the number of fixtures on the market, the rate at which new fixtures are introduced, and the fact that fixture manufacturers release this data in many different formats. Each control manufacturer requires essentially the same data however, so this effort in gathering it is being duplicated many times over. There are clear quality and efficiency arguments for a single organisation to liaise with fixture manufacturers to collate all this data and make it available to manufacturers as a service.

Carallon operates a service to provide this fixture data on a subscription basis. The data is stored in an XML format to make it easy for users of the service to extract the data they require, and is divided into a number of distinct sections allowing users to subscribe only to the sections they require. Carallon test and calibrate fixtures to ensure, as far as possible, that the data is accurate and provide a library support service. The data is available to subscribers on fair and reasonable terms intended to make the service convenient and cost effective while protecting this valuable data resource.

Available Services

The data available as part of the subscription service breaks down into four sections:

Section A – Fixture Personalities

This section includes the core data required to control each fixture. It presents the DMX512 behaviour of the fixture in a standard format. It is separated into DMX channels and ranges, and gives the corresponding behaviours (features) of the fixture for each of those ranges. Each channel the fixture uses is defined, as is each DMX value within that channel. This allows the personality to be used for visualiser applications, as well as for controllers. The syntax gives additional information, such as whether a DMX range represents a discrete setting or a continuous range. Interactions between channels are also recorded, and where one channel controls the mode of another then each mode is separately defined.

There is a naming convention for features that is common across all fixtures in the database. This also records the relationship between features, eg that Gobo Index and Gobo Rotate actually control the same mechanism.

Real world information about the fixture is included in the personality where specified in the fixture documentation. This might be the pan and tilt range (in degrees), strobe rates (in Hertz) or gobo index angles (in degrees). We also include the names of the colours, gobos, and effects fitted to the various wheels of the fixture, where specified in the documentation. This allows the controller to use a generic fixture model. Note that as this information is based solely on manufacturer supplied documentation, we cannot make any assurances concerning its accuracy. We aim to test each fixture after writing, and so can verify the information in the personality, but testing is dependent on the availability of the fixtures so we cannot provide any assurances as to when a particular fixture will be tested.

Additional data within the personality categorises the fixture in various ways, for example the type of fixture (luminaire, accessory, controller), the light source (incandescent, discharge, LED, etc), the movement capabilities (static, moving mirror, moving yoke, etc). These can be used by the controller, for example to select an appropriate icon for the fixture. User notes and known issues are also embedded in the personality which specify switch or menu settings required for that personality, plus other useful information. These could also allow a controller to provide help information for the fixtures.

If a fixture has multiple DMX modes then the mode is specified within the personality, and, at our discretion, we will include separate personalities for the different modes. We also specify whether a particular personality is solely based on manufacturer data or has been tested.

Further attributes can be added to the database at the request of subscribers provided: (i) there is a clear rule set for determining the value of an attribute; (ii) we can make that rule set openly available to all subscribers; and (iii) it is understood that we cannot immediately evaluate that attribute for fixtures already calibrated.

Section B – Graphical Data

This section includes data that may be required by control systems offering a graphical user interface. For each fixture it includes thumbnails of the gobos present as standard in each fixture and colour swatches for the colours present as standard in each fixture.

Section B1 – Gobo libraries

This section is an additional option for subscribers to Section B. It consists of libraries of gobos, effects, and animation wheels from gobo manufacturers, which could be used in the graphical interface of any console or visualiser. The database also includes the Rosco and Apollo gobo libraries, and we are also talking to other manufacturers about licensing their libraries.

This subsection is available at no cost to clients who subscribe to section B. Additional licensing terms are required however to protect the manufacturer's IP.

Section C – Colour Data

This section includes data for matching the colour response of different types of fixtures to each other and to gels. To obtain this data each fixture and gel is calibrated in a carefully controlled environment, however this calibration can be used in a number of different ways, so there are different formats available. This information is not available in manufacturers literature so fixtures must actually be tested.

C1 – Gel to CMY lookup

This consists of a lookup table of gel against fixture type containing CMY or RGB values. This will allow a user to select a gel and instantly set their colour-mixing lights to a matching colour regardless of fixture type. This data can be used without any knowledge of colour spaces or specialised implementation in the control system – it is just a lookup table of values.

C2 – Custom colour data

Alternatively we can provide individual tables defining the colour response of each fixture type in terms of a specific colour space, as well as corresponding data for each gel. Using this data within the control system requires an understanding of colour spaces and a suitable algorithm for the conversion and interpolation. There are many colour spaces and formats in which this data can be presented and which one is appropriate depends on the algorithm used in the console. Therefore this option will usually involve some setup costs to cover preparation of a custom data format and if necessary a reference implementation for the colour algorithm.

Section D – Visualisation Models

This section is intended to include the specific modelling data required by visualisation tools to define their virtual fixtures. The data requirements in this area are still being developed. Please contact us for details or to give input on your data collection needs.

Fixture Schedule

The collection of fixture data is an ongoing process so there will never be a date on which our data library is 'complete'. We have already compiled over 1500 personalities for over 900 fixtures and are testing and calibrating them while simultaneously compiling personalities for new or less common fixtures.

All common fixtures by Martin, High End, Varilite, Clay Paky, Robe, Coemar, Color Kinetics, ETC, James Thomas and Pulsar are included in the existing database, (many of which have been tested). Additionally there are many other fixtures by other manufacturers.

Pricing

The billing cycle for the subscription service is quarterly (every 3 months). There is a minimum sign-up period of one year. When subscribing to multiple data sections packages may be available. Please contact us at fixture_support@carallon.com for a quote.

Product Development Kit

For products that are currently in development we have a scheme to allow you access to fixture data, documentation and support for development purposes only, without incurring a fee every quarter. You pay a one-off fee equivalent to a single quarter's subscription for the sections you require and we will provide fixture data for a representative sample of approximately 30 fixtures covering all the typical test cases.

This data can be used throughout the development phase (however long that may take). It can also be included in beta releases of the software, for testing purposes only, provided it is not made available for sale. Once the product is released then you must upgrade to the full subscription to continue using the data, and at that time we will make the rest of the database available.

Terms and Conditions

This is not designed as a consumer service, but as a customized service to a relatively small fraternity of product manufacturers. Consequently all aspects of the service are open to discussion and it is our aim to work with subscribers to tailor the service to their needs. This document provides an overview of the planned service and all details are subject to change. The following is intended only to give a general outline of our terms and conditions. The full licence agreement is available for review on request.

- All data is provided under licence and remains the property of Carallon Limited.
- The licence grants use of the data for a specified list of products agreed with Carallon Limited. As a guide, an acceptable list of products covered by a single list might include: (i) a family of products that use a common library format; or (ii) a primary product (or family of products) that is under active development and one or more products (or families of products) that are being maintained but not actively developed. It is our intent that a single manufacturer will normally require a single licence, but in certain cases where multiple distinct product lines exist then separate licences may be required.
- The data is made available to subscribers for use in the specified products only. The subscriber shall not make the data available to any third-party (other than an end-user of their product in the appropriate format for use in the product, see below) or use it for any other purpose than creating libraries for the specified products.
- The list of products covered by a licence may be changed at any time by agreement with Carallon Limited. This agreement will not normally be withheld providing the guidelines given above continue to be met. (For example a new product within the same product family is being developed, or a new product family is being developed and existing products will now be maintained only.)
- A single licence may cover control products or visualiser products but not both. Separate licences are required when a product range includes both types of product. Exceptions may be made on a case by case basis where the visualization is not a distinct product but only exists as a part of a control product.
- The minimum subscription period is one year. On signup to the service payment for the first two quarters shall be made in advance. After the first two quarters all subscription payments shall be invoiced at the start of the respective quarter and paid within 30 days.
- All subscribers will have access to updates covering new fixtures or retested fixtures as they become available.
- All subscribers are entitled to support from Carallon Limited regarding fixture data issues specifically. This support will be provided to employees and representatives of the subscriber only. Carallon cannot provide support or assistance to end users of our subscribers' products at any time.
- All products that have been named on the licence for a full year acquire indefinite rights to use of the data even if the subscription later lapses (although will clearly lose entitlements to the updates and support under the subscription service). We recognise that it is not realistic to ask for a subscription commitment for the lifetime of a product and so asking for at least one year of subscription from the last addition of a product to the licence seems like a reasonable compromise. Obviously we hope that subscribers will choose to continue the service in order to receive ongoing support and updates, but should they choose not to then they will be fully entitled to continue using the data in their existing products (though not in any new products).
- All data will be accurate to the best of our knowledge. However we can make no absolute guarantee about the accuracy of our data and our liability for any defects is strictly limited to correction of the errors in a timely fashion once brought to our attention.
- We may be unable, in rare circumstances, to provide colour mixing data for certain subtractive colour mixing systems used in fixtures. The main fixtures this applies to are the Varilite VL5 and derivatives. Further details are available on request.
- As part of our support service we will endeavour to respond to subscriber requests for particular fixtures to be added to our library or to be tested. However our ability to test fixtures depends upon the availability of the fixture, which is not under our control.
- Subscribers must make best efforts to ensure that they do not distribute libraries for their products in a format that releases Carallon's proprietary data into the public domain. Many existing control products use a text-based or otherwise easily interpreted format for their fixture data. It is therefore accepted that the data in Section A may be distributed in a readable form – the value in that section is regarded as being through our maintenance and updates rather than the data itself. However it is imperative that all other data be distributed in a format that is not human-readable and cannot be trivially reverse-engineered to gain access to Carallon's data. For each product a sample of a compiled product library should be made available to Carallon for approval prior to general distribution, such approval not to be unreasonably withheld or delayed.