

Monitor Pro System Overview

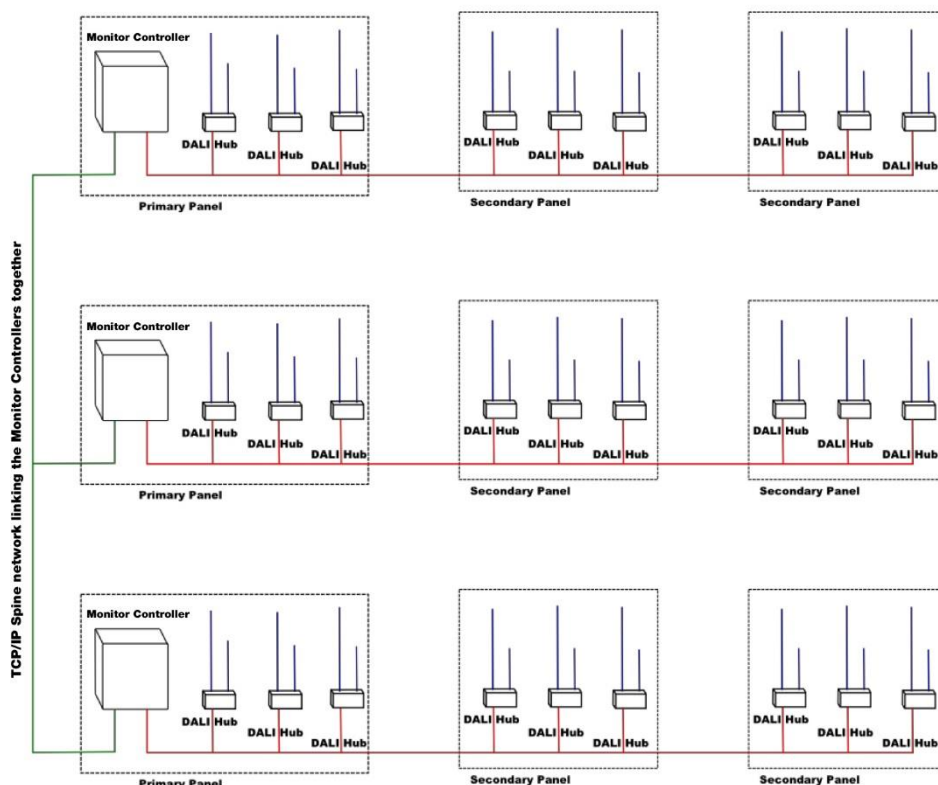
Introduction

The Liteplan Monitor-Pro system is a sophisticated lighting control and management system. Designed to provide a flexible and powerful lighting control system, the system is primarily focused on commercial applications such as Offices, Schools, Universities, Hospitals and Airports etc. Featuring an intuitive graphic user interface and commissioning tool, coupled with a very powerful database engine, the system provides an intuitive and simple way to initially set-up the system, as well as presentation of live real time status. A wide range of sensors, switch input interfaces and scene button panel options ensure market leading functionality and flexibility.

System Architecture

A Monitor-Pro lighting control system comprises of one or more Monitor Controllers, each supporting up to 10 Dali Hubs. DALI Hubs have two separate DALI field networks supporting up to 64 DALI devices each. Therefore each Monitor Controller has the capacity to manage up to 1280 DALI devices.

The Monitor-Pro software can be used to configure any connected DALI device to form local control groups. DALI devices do not need to be physically in the same DALI field network to function as part of a control group. Thus a control group can be as simple as a single switch controlling one local light, right up to say, a switch controlling the whole building.



Monitor Controller



The Monitor Controller is in effect an area controller, providing a powerful processing platform to monitor, control and report on the lighting control system. To ensure survivability and performance the Monitor Controller has been developed as an entirely solid state device. In simple terms this means there are no moving parts such as fans or Hard Disk Drives that are prone to failure over time.

The core of the Monitor Controller utilises a well proven global standard database engine. This means that Monitor Controllers provide a very stable operating environment and improved “mission-critical” performance and stability. Monitor Pro has been designed to not only allow you to control your lighting but also to monitor and report on your system to ensure optimum utilisation and energy saving throughout its entire life cycle.

At Liteplan we have seen numerous examples of projects in which the operation of the lighting control system is mission-critical. This is particularly true in areas such as Hospital Operating Theatres, Special/Intensive Care Units, critical Control Centres (air traffic/military operations) and secure environments such as prisons or police cells. Whilst the Monitor Controller is a very resilient device in its standard form, we have developed a unique capability in Monitor Pro that allows one or more additional Monitor Controllers to be added to the system that function as a “Hot Backup” for the primary Monitor Controller.

This approach allows systems that really must not fail; to continue to function seamlessly in the unlikely event of a Monitor Controller failure. Should the primary Monitor Controller cease to operate for any reason, the “Hot Backup” would immediately take over command and control of the Dali Hubs (whilst alerting the administrator of the failure).

The “Hot Backup” Monitor Controller can reside adjacent to the Primary Monitor Controller, but could also be installed in a separate location. They could even be fed from a different power source such as an Uninterruptible Power Supply (UPS) or an essential supply. In this case data connections would be made using managed network switches to also provide multi path network connections.

Further, Liteplan can supply enhanced Monitor Controllers in the form of Blade Servers or other rack mounted platforms that can be equipped with more processing cores and memory to create a central building controller. These Blade Servers are capable of running multiple versions of the 10 Dali Hubs of a standard Monitor Controller. This allows the Monitor Pro system to co-exist in a standard

I.T. rack alongside other building infrastructure should this be advantageous.

DALI Hub



The DALI Hub is the first of a series of Hub units to be developed by Liteplan. The Monitor Controller/Hub topology has been designed to allow the flexibility to develop new Hubs to cater for the next generation of lighting network protocols as they emerge, without having to redesign the entire system.

The DALI Hub supports two DALI networks, each capable of supporting the full 64 devices as specified by the DALI

Standard, for a total of 128 devices. The DALI Hub is capable of controlling and monitoring the full range of standard DALI devices which includes fluorescent ballasts, LED drivers, relays and emergency devices.

The system will work correctly with any lighting load controller (Ballast, Driver, Relay Module or Emergency Pack) that fully complies with the DALI standard. By localising the system processing in the Monitor Controller, we have been able to make the DALI Hub very cost effective units, and therefore minimise the cost impact should additional DALI networks be required on a project when compared to traditional DALI solutions. The DALI Hub also features an Auto-Heal facility enabling the replacement of a single failed DALI device automatically, without the need for any reprogramming.



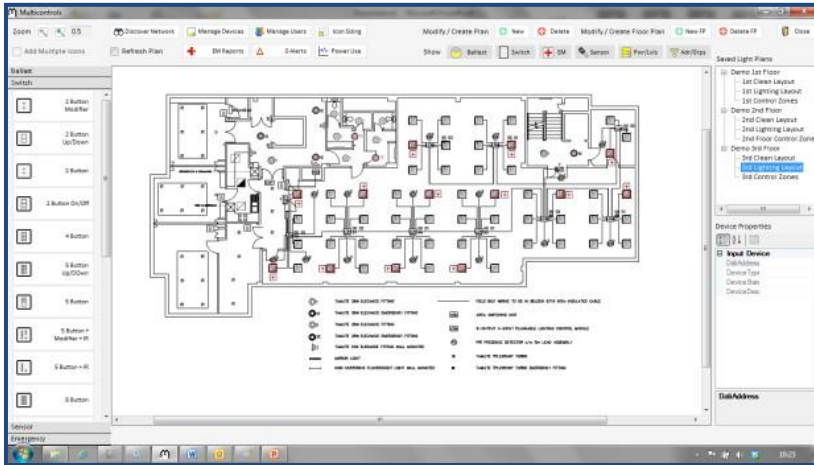
System Topology

The Liteplan Monitor-Pro system is connected together using global standard Ethernet TCP/IP network connections. This can either be a fully private network or the system can be incorporated in to an existing building I.T. infrastructure with an appropriate range of I.P. addresses being provided by the I.T. department.

In the development of Monitor-Pro we have focused our protocols on the use of TCP/IP messaging as this is considerably more robust than its counterpart UDP/IP. TCP/IP ensures that Monitor Pro is able to take full advantage of industry standard network technologies such as WIFI wireless networking etc. We have also ensured that all of our devices use fully compliant network addressing, and do not cause restrictions on the network (this is a significant limiting factor with some other systems).

The flexibility and worldwide standard of Ethernet means that the full range of networking tools and equipment may be used to create a network that is as simple or complex as required for the particular specifications of a project. A simple installation might consist of a private network using unmanaged network switches allowing all of the devices to communicate. A more demanding project might utilise fully managed network switches, enabling the creation of Virtual Local Area Networks (VLANs) which manages the traffic around the network and allows the creation of redundant links which are only brought in to life if the primary connection fails for any reason. This enables the creation of a bespoke solution that balances the demands of cost versus functionality.

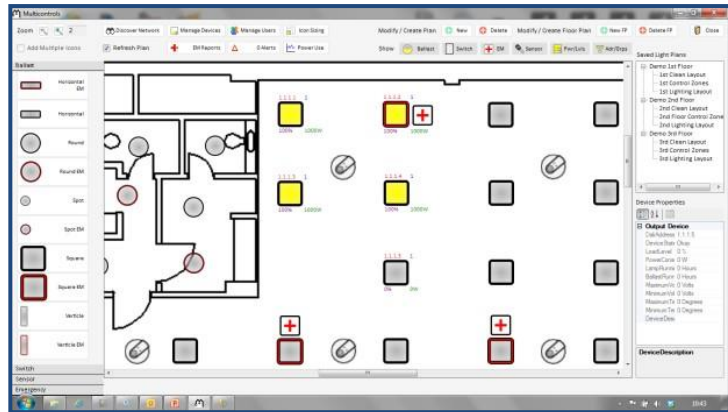
Monitor Pro Graphic User Interface (GUI)



Traditionally, Users of lighting control systems have struggled with a lack of an intuitive graphic user interface resulting in systems being difficult to visualise, harder to access and often requiring additional paper drawings and grouping tables to be maintained to keep the system up to date and allow changes to be made.

Liteplan have developed the Monitor Pro GUI – a graphical user interface designed to provide clear and simple visualisation and management of lighting control systems. Icons representing system elements can be overlaid on building schematics and incorporated into a site plan. These icons are dynamic and allow the state of the system and current output levels to be viewed at a glance giving a real-time system wide view.

Thanks to the power of the Monitor Controller the full set of site graphics is stored locally on the lighting control system so any authorised user or commissioning engineer, can connect to the system and utilize the full range of graphic functionality. This means there is no need to supply copies of paper drawings or site files to a user before they can access the system.



Also, this approach ensures accuracy as it derived directly from the system, unlike separate drawings or “Bolt on” graphics packages which require updating separately with any changes made to the control system.

The graphic capability is a standard and integral part of the Monitor Pro software. Unlike most other lighting control systems, no external graphics packages are required in addition to provide the graphic User Interface (GUI).

Monitor-Pro supports the ability to import various iterations of a floor plan so that the user can seamlessly toggle between an electrical layouts, ceiling plan or furniture arrangement for example, to provide the best information for the task at hand. Again, unlike most other lighting control systems, each layout supports seamless pan and zoom functionality for navigation around the floor areas.



Monitor-Pro also provides the following functionality giving greater management of a system:

- System diagnostic information
- Alert messages
- Power consumption data
- Emergency test reporting

Our aim is to give our customers a better solution for their lighting control and management by providing:

- Intuitive user interfaces
- User friendly tools for energy management helping to reduce the energy consumed by a building's lighting
- Out of the box tools and reporting for functions such as routine emergency lighting tests
- Live remote reporting of faults and failures using email and automated worksheets
- High levels of customer focused technical support and site commissioning
- Ongoing routine maintenance and support packages for the life of the system