DRAWING_NO.

Introduction to Command Professional

The Command Professional lighting control system comprises of single or multiple Dali universes and a comprehensive range of detectors and lighting control equipment designed to provide optimum lighting conditions, controllability and flexibility for projects of any size.

A two-wire communications Dali network (universe) connects all field devices, luminaires, detectors and switch input units etc. in order that they share occupancy and control information; this gives greatly enhanced detection performance and facilitates a host of user friendly control features such as corridor linking (i.e. corridor lighting can be sustained by occupancy in other areas).

Larger systems can be constructed easily by linking Dali universe's together through a bus communication cable (TCP/IP or Lonworks). The system can be scaled by adding additional universe controllers, detectors and switch input units depending on project requirements.

What sets a Command Professional apart from other bus based systems is the ability to control individual luminaires and detectors, configure and re-configure groups and create interacting groups of luminaires. This allows complete lighting management and the facility to report, along with integration into building management system protocols such as BACNET, OPC, TCP/IP, Web Services etc.

Another great advantage of Command Professional is that the Dali universe may be wired with a free topology. This means that any wiring configuration may be used so long as everything is connected and it does not exceed the below constraints:

- A maximum universe length of 300m.
- Maximum load capacity for the Dali universe of 250mA and 64 addresses (address example = 52 drivers and 12 input devices). 12 input devices is the maximum per universe, input devices are switch input modules and sensors all luminaires are output devices.
- Typically Whitecroft recommended design level tolerance of 20% spare capacity.

Devices	Address	mA
Dali Ballast	1	2
DALI emergency module (additional)	1	2
LED colour change driver	4	2
PIR/Photocell (multisensor)	1	4
Directional PIR/photocell (multisensor)	1	4
Scene setting plate	1	4
Dali switch input unit	1	4

Command Professional Field Cable

Dali bus cable:

For optimal wiring of Dali bus cabling use Belden 8471 Paired High Conductivity Cable or alternately any grade of 1.5mm solid or stranded mains rated cable (radial wiring). Please note that the maximum length of any subnet is 300m. All subnet wiring is to be supplied and installed by the customer.

Voltage Rating:

Wiring regulations state that cable should be rated to the same voltage as that appearing on any other cable sharing the same containment. The Command Professional cables may be run with mains cable on different phases, provided suitably rated cable is used.

Larger networked systems

When networking larger systems there two methods of bus communication available TCP/IP and Lonworks.

TCP/IP Method:

The TCP/IP backbone protocol method utilises a CAT5e/6 backbone network (dedicated VLAN or customer's infrastructure). This links the head end PC and Area Controllers together. The Area Controllers are then linked to the field Dali Controllers and LCM's via the Lonworks bus. All field devices sit on the Dali bus (cable spec detailed above) Information can be passed freely through the network from each device.

Ethernet Network:

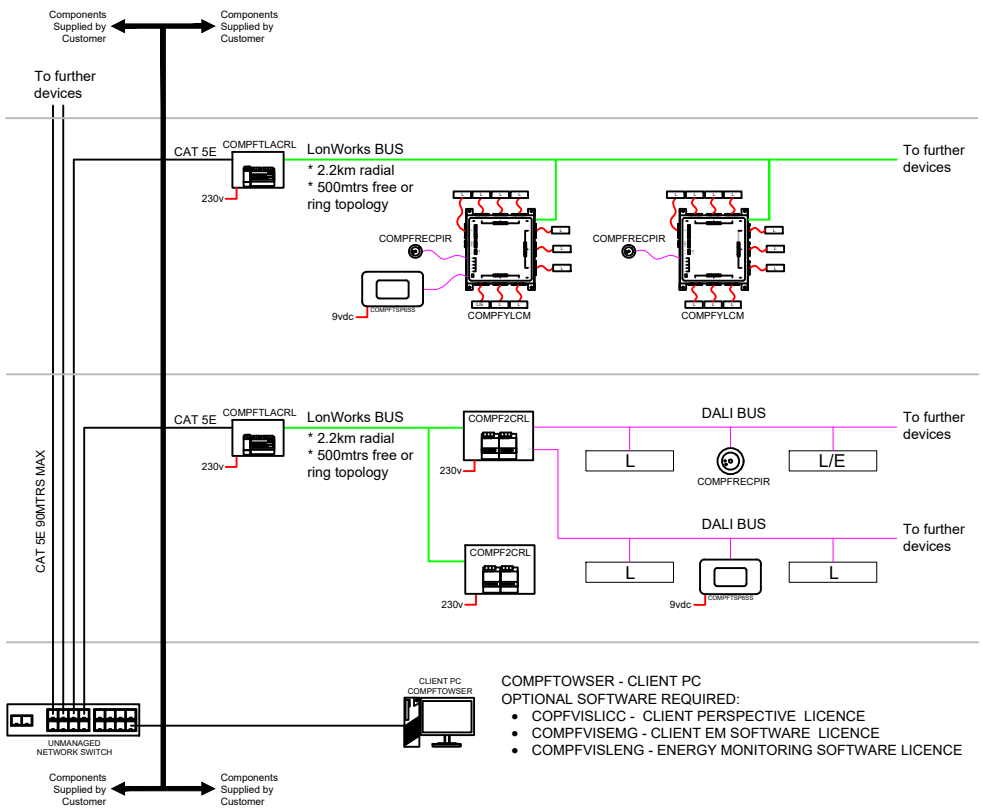
All equipment requirements, wiring and connections associated with the Ethernet network is to be designed, supplied and installed by others. If the Ethernet network is not dedicated and is the Dali controls are piggybacking on the customers' existing network then static IP addresses will need to be issued to Whitecroft prior to the commissioning of the controls installation. Static IP addresses will be required for each Dali controller and each PC Graphical User Interface installed. Please liaise with Whitecroft Commissioning Department for confirmation of the number of Static IP addresses required.

Ethernet can be ran on either CAT5e or CAT6 cable, see specification opposite.

Ethernet Cable Spec:

Frequency	Up to 100Mhz	0 - 250Mhz (min) 500Mhz (max).
Max cable length	90 metres	90 metres (up to 1,000 Mbps) and higher network speeds over short distances. Gb Ethernet, 55m max, with 33m with high crosstalk.
Performance	Potentially more interference than CAT6	SNR higher
Top Speed	1000Mbps	10 Gbps over 33-55 Metres
AWG	24-26	22-24
Connectors	RJ45 (aka8P8C)	RJ45 (aka8P8C)

TCP/IP Network Diagram



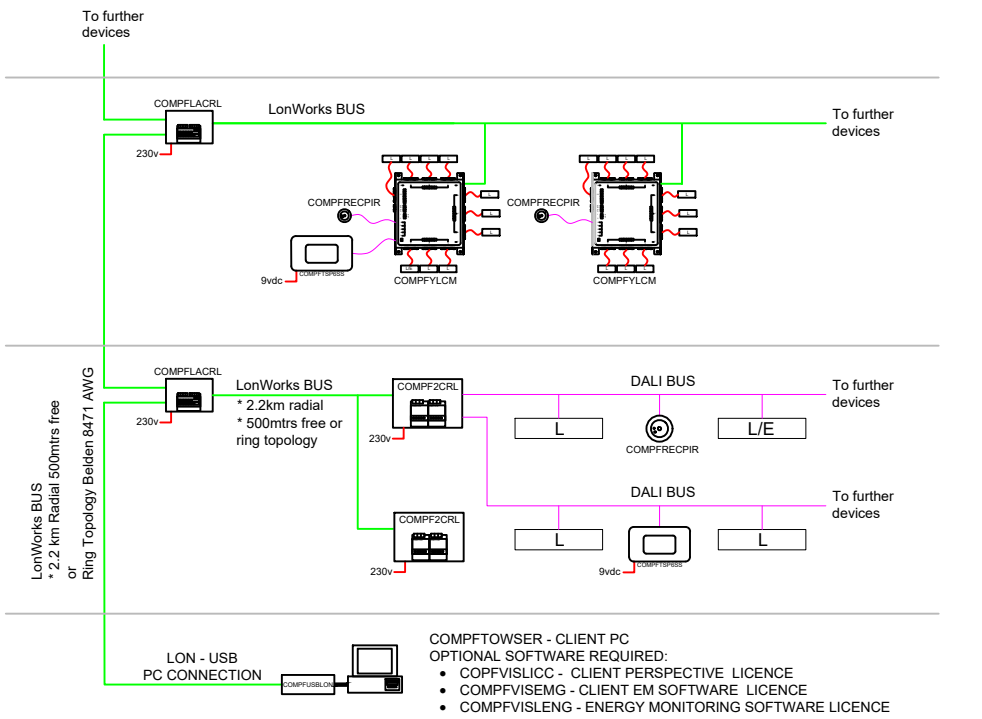
Lonworks Method:

The Lonworks backbone protocol method links the head end via a LON to PC interface COMPFUSBLON to the Lonworks area controllers. The area controllers are linked to the field Dali controllers and LCM's via the Lonworks bus. All field devices sit on the Dali bus (cable spec detailed above) Information can be passed freely through the network from each device.

Lonworks Network Diagram

Specification: Belden 8471 recommended

Number of Pairs	1
Total Number of Conductors	2
AWG	16
Stranding	19 x 29
Conductor material	TC - Tinned Copper
Insulation Material	PVC - Polyvinyl
Chloride Nom. Insulation Wall Thickness	023 in.
Lay Length	2 in.
Twists/ft.	6



Command Professional Typical Wiring Application Notes
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Note :- All information detailed in this document is **not** project specific, and is provided as a typical example only. Whitecroft Lighting reserve the right to make changes to Equipment and Specification as required. It is the customers responsibility to verify the required specification on a project by project basis.

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