EMEX Test system
Introduction

The complete emergency lighting central system testing solution. Emergency lighting regulations state that periodic, mandatory tests must be carried out to verify the correct operation of any emergency lighting system.

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01 EMEX test touch screen control panel

Increasingly, changes in safety legislation, risk assessment, and the requirements of public liability insurance are placing responsibility for the testing of emergency lighting systems firmly with the owner or occupier of the building. Additionally, legislation states that records of this testing must be kept.

Automated testing solution
Manual testing (and record keeping) of emergency lighting systems can prove to be expensive, time consuming and disruptive (even dangerous) exacerbated by access problems caused by physical and commercial reasons. The EMEX Test Central Testing System ensures peace of mind by automating the normal, periodic testing of emergency lighting lamps and control gear.

EMEX Test is simple to operate, being controlled by a dedicated touch screen control panel or a standards desktop PC and is featured packed.

- Multiple static inverter Central Power Supply Systems (CPS) can be networked to a single control PC
- Remote access via a Local Area Network (LAN) or internet connection is straight forward
- Utilising EMEX TS, Remote access via a Local Area Network (LAN) or internet connection is possible. This must be in collaboration with the building information technology management system and security policies.

Scheduled testing
System tests are scheduled for periods of minimum disruption using EMEX Test.
Live luminaire data is compared against pre-programmed threshold data to identify any discrepancies. These are then duly highlighted in the test report which is generated and stored automatically.

The user has full control to access test reports at any time. Service personnel can then arrange a convenient time to access any faulty luminaires – ready prepared with any necessary spares in order to further reduce the amount of time required to effect a repair.

In addition, EMEX Test can conduct discharge tests and monitor and record the status of the CPS and end battery voltage. Since discharge tests cannot be performed until visual condition checks have been undertaken by an engineer on site, these annual tests are initiated manually.

Fire alarm activation input
Fire alarm input on the CPS panel allows all lights to illuminate as a global activation on the initiation of a fire alarm evacuation, this is achieved by connecting a signal input (24V) to the connections in the FAR terminals in the CPS panel.

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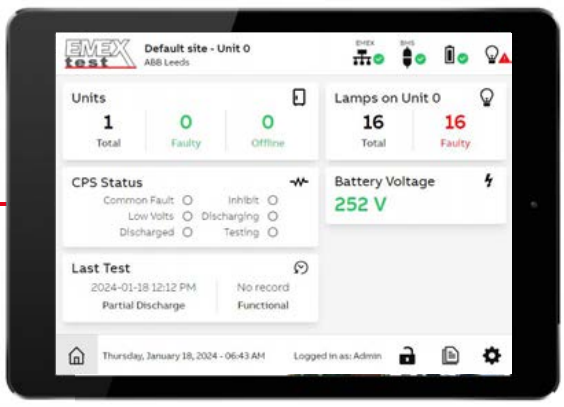


Touch screen
control panel

Technical reference
EMEX Test system technology

The system should use EMEX Test system Technology to provide full addressable monitoring ofthe complete emergency lighting system including the EMEX Central Power Supply System(s).

The system must be capable of monitoring fluorescent, cold cathode fluorescent, filament, LED, or halogen luminaires.

Software
System should use EMEX test software to schedule the automatic regular testing of emergency lighting system components. The system should automatically generate and collate test reports. These reports should be automatically date-stamped and should be available in a notepad format such that engineer's notes can be added.

CPS capacity
The system can support multiple Central Power Supply Systems (CPS). Each CPS must be able to communicate with up to 4,000 luminaires.

Communication
The system must use data cable to link the control computer to the CPS unit(s), and from each CPS to the associated luminaire interfaces only. Data cables will NOT be fitted direct to any luminaires. Up to 100 substations may be fed from the internal transmitter within the CPS.

MXD4 substation (EMEX Power AC/AC only)
The system must offer remote MXD4 substations having 4 separate outputs, each capable of monitoring up to 4 no. fluorescent, filament, LED, or halogen luminaires completely without modification to the luminaire. The systems should be capable of monitoring a lamp wattage of up to 230 watts. The substation should provide minimum 8 no. monitoring inputs, free programmable switched or unswitched with mixed mode of operation (maintained, non-maintained, switched maintained).

MXC substations and distribution panels
The system must offer remote MXC substations each having 2 outputs, which are capable of monitoring up to 40 No. luminaires / 10 amps in total or multi-way MXC substation distribution panels with 4 x 2A outputs which are capable of monitoring 80 No. luminaires. The substation should provide minimum 8 No. monitoring inputs, free programmable switched or unswitched control. Luminaires must share the same supply cable with mixed mode of operation (maintained, non-maintained, switched maintained, dim maintained).

LTC luminaire module
Luminaires for use with MXC each require a local LTC module. Each LTC must provide 1 no. switched and 1 no. unswitched local monitoring input to act directly on the luminaire in addition to any communication received from the substation.
A full range of exit signs, bulkhead luminaires, decorative luminaires, and twinspot units must be available ready fitted with LTC modules.
LTC modules must also be available loose and in remote enclosures for the adaptation of standard CPS 230V luminaires to the MXC system.

Flexibility
The AC/AC CPS system must permit both MXD4 and MXC solutions on the same system, controlled from a single PC.

The AC/DC CPS system must permit MXC multi-way distribution panel solutions on the same system, controlled from a single PC touch screen.

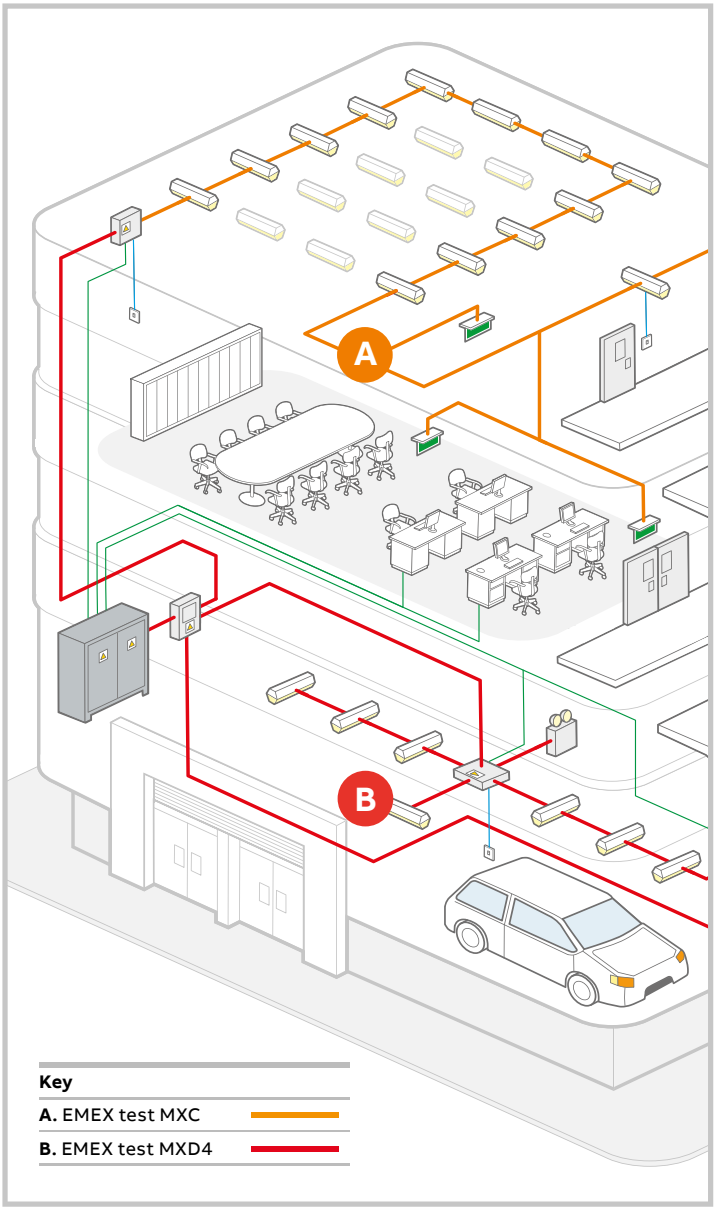
Cable specification
Cable must be 2 core with additional earth or drain wire and must be a composite screened cable. The conductor cross section must be a minimum of 1.5 mm sq cable and must be rated for 230V AC. General data cables do not meet this requirement.

These requirements can be met by using FP200 or similar fireproof cable or LSFOH type cable.

EMEX Test

Complete emergency lighting central system testing solution

EMEX Test is the most flexible emergency lighting testing system available today. With the ability to support virtually any type of CPS 230V luminaire, including LED, EMEX Test affords freedom of choice for consultants, designers and end-users alike.



Two approaches, one solution
EMEX Test can utilise two different solutions to interface your emergency luminaires, whatever the scenario. Both systems utilise the same software and are fully compatible with each other on the same system:

Substation and MXC multi way distribution panel
The MXC multi way distribution panel is ideal for use where a large number of emergency lighting circuits are situated in a relatively small area and where room for cable runs is restricted and the aesthetics are a primary concern.
The MXC substation panel solution employs compact LTC integral luminaire interfaces to supports up to 20 luminaires per circuit. It allows mixed operation modes of the emergency luminaires on the same circuit without data cable. Multiple local switched and un-switched circuit monitoring is marshalled by the substation, or direct into the luminaires. Substations are connected together and back to the control PC by data cable connection. Ideal for high-rise buildings.

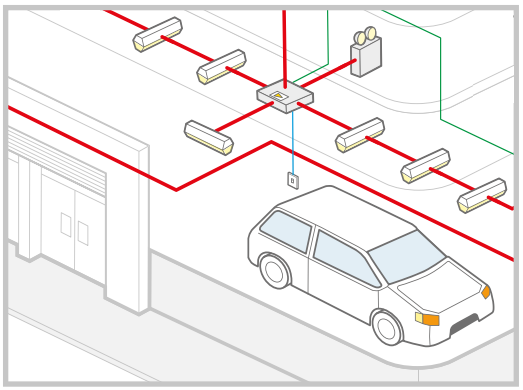
Features and benefits
- Maintained, non-maintained and switched luminaires on a single circuit
- Cable saving as a result of combined power and data lines
- High capacity substations
- Flexible local circuit monitoring options
- Fully compatible with MXD4

MXD4 AC/AC only
MXD4 substation modules control luminaires in groups of four with no modification to the mains luminaires whatsoever. Data cable provides communication to the CPS. A data cable connection exists between the CPS and the PC. MXD4 is ideal for use where a smaller number of luminaires are to be situated in an environment where aesthetic cabling is not an issue, for example warehousing or car parks.

Features and benefits
- Supports virtually any type of luminaire – no modification required
- High switching power capability
- Simple to install
- Compatible with digital and analogue dimming systems

EMEX Test

Case Study - A high rise building



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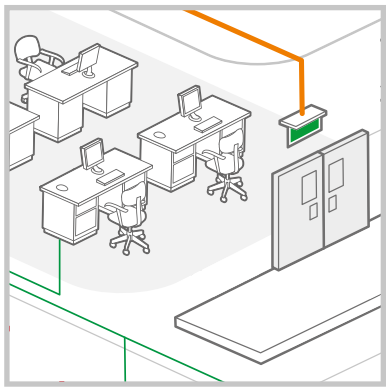

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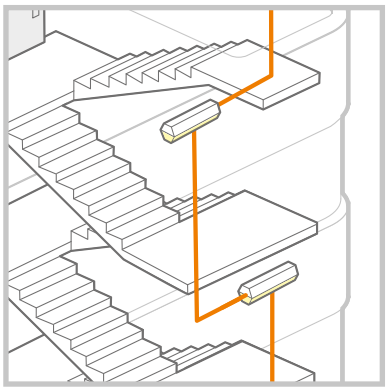

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03 Underground car parks
04 Upper floors
05 Stairwells

How to apply EMEX Test MXC and MXD4 emergency lighting testing systems
A typical high-rise installation will employ a variety of luminaire types in different areas. It will have varying switching arrangements and cabling restrictions according to the usage of each area and the fabric of the building.

When considering their mains lighting, the consultant and end user can retain complete freedom of design, assured in the knowledge that specifying EMEX Test will offer the most flexible and economic solution to provide addressable emergency lighting.

Underground car parks
In underground car parks and service areas the designer may prefer basic batten/linear fittings. In this instance, where surface cabling is acceptable, MXD4 substations are ideal. There is no modification to the CPS 230V 50/60Hz luminaires whatsoever. This makes the installation very straightforward no matter the wattage or operation of the luminaires (substations can even be “first fixed” before the luminaires arrive!), and has the great benefit that in the event of any damage or vandalism the CPS 230V 50/60Hz luminaires can be replaced without interfering with the addressable emergency system.

Open plan areas
Typically in open plan areas, special environments, or where the client would need to refurbish at a later date. MXD4 substations offer the benefits of utilising or changing any luminaires types at will, with only reprogramming of the EMEX Test software required.

Upper floors
Upper floors with a larger number of rooms per area (for example offices or hotel rooms), will also use MXC in order to take advantage of the large number of switched feeds that can be monitored by each substation. Coupled with the option to wire monitoring feeds directly into the luminaires, this will offer great savings in cable and simplify the installation, whilst retaining flexibility of programming should the mode of operation of the luminaire change.

EMEX Test can accommodate many scenarios whether the system is one large Central Power Supply System (CPS) feeding the whole building, one smaller CPS per floor, or any combination thereof.

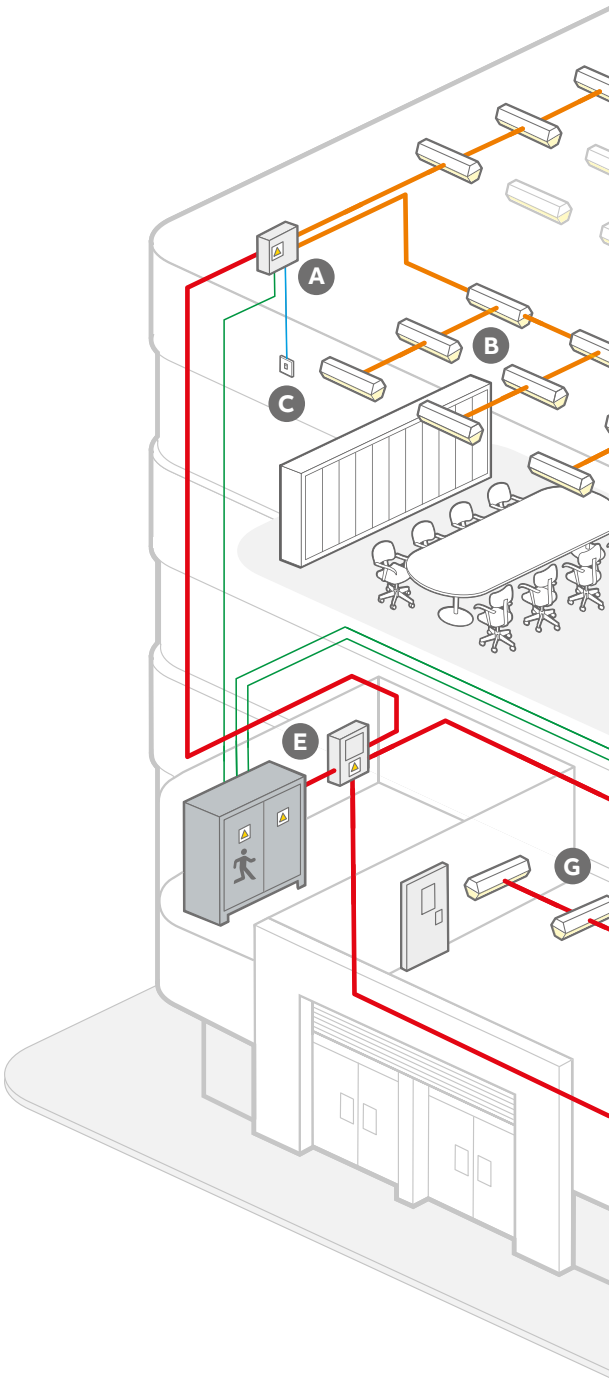
Stairwells
In stairwells, the MXC substation solution with LTC equipped luminaires offers great benefits in cable saving and installation costs. The MXC substation(s) can be mounted in risers at the foot of each stairwell, removing the need for data cable or remote boxes in the stairwell itself. The maintained exit signs, switched luminaires, and even any non-maintained external units can all share a single supply cable.

Monitoring feeds can all come to a single point at the substation, simplifying the cabling within the stairwell. Conversely, if it is inconvenient or impossible to wire a switched or monitoring feed back to the substation, it can be wired directly into the relevant luminaire.

Stairwells (Two circuit wiring)
Dual circuit wiring concept, to provide a higher integrity installation.

Applying EMEX test
AC/AC

01 A MXC substation
02 B MXC compatible luminaires
03 C Switching
04 D EMEX Test control station
05 E EMEX Power
06 F MXD4 substation
07 G MXD4 luminaires



MXC substation
Each MXC substation can control up to 40 luminaires. Power and datalines feed the substation which in turn monitors & controls the luminaires via a single combined power/data line. Each substation can monitor up to 8 local switched and/or unswitched circuits. Luminaires operate in maintained, switched maintained, or non-maintained modes on the same circuit, according to the system programming.

MXC compatible luminaires
The MXC testing system requires luminaires to be LTC compatible. In addition, virtually any standard mains luminaires can be converted for use with the MXC system using an integral or remote LTC interface module. Luminaires must contain a high frequency electronics (please check with Emergi-Lite). MXCs are not compatible with switch start control gear, please use MXD4 for these applications.

Switching
One switched and/or one unswitched local feed can be wired directly into the MXC System LTC module, in addition to the monitoring/switching provided via the MXC substation.

EMEX Test control station or touch screen panel
EMEX Test software is installed and run on the latest version of windows operating system the software monitors and initiates system function and duration tests, then collates test report data. EMEX Test can optionally export system status in BACnet format to a Building Management System.

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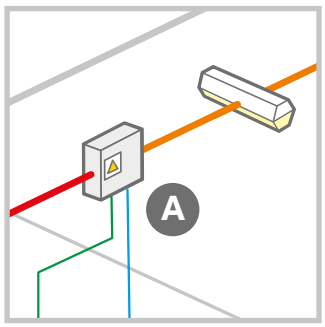

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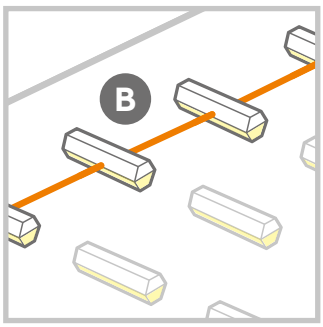

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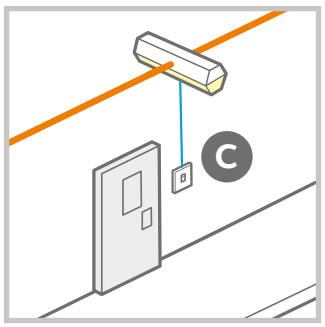

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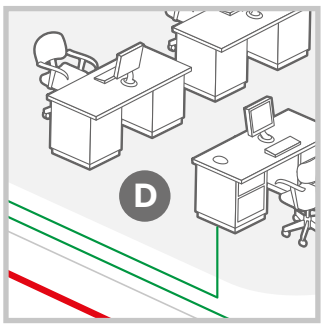

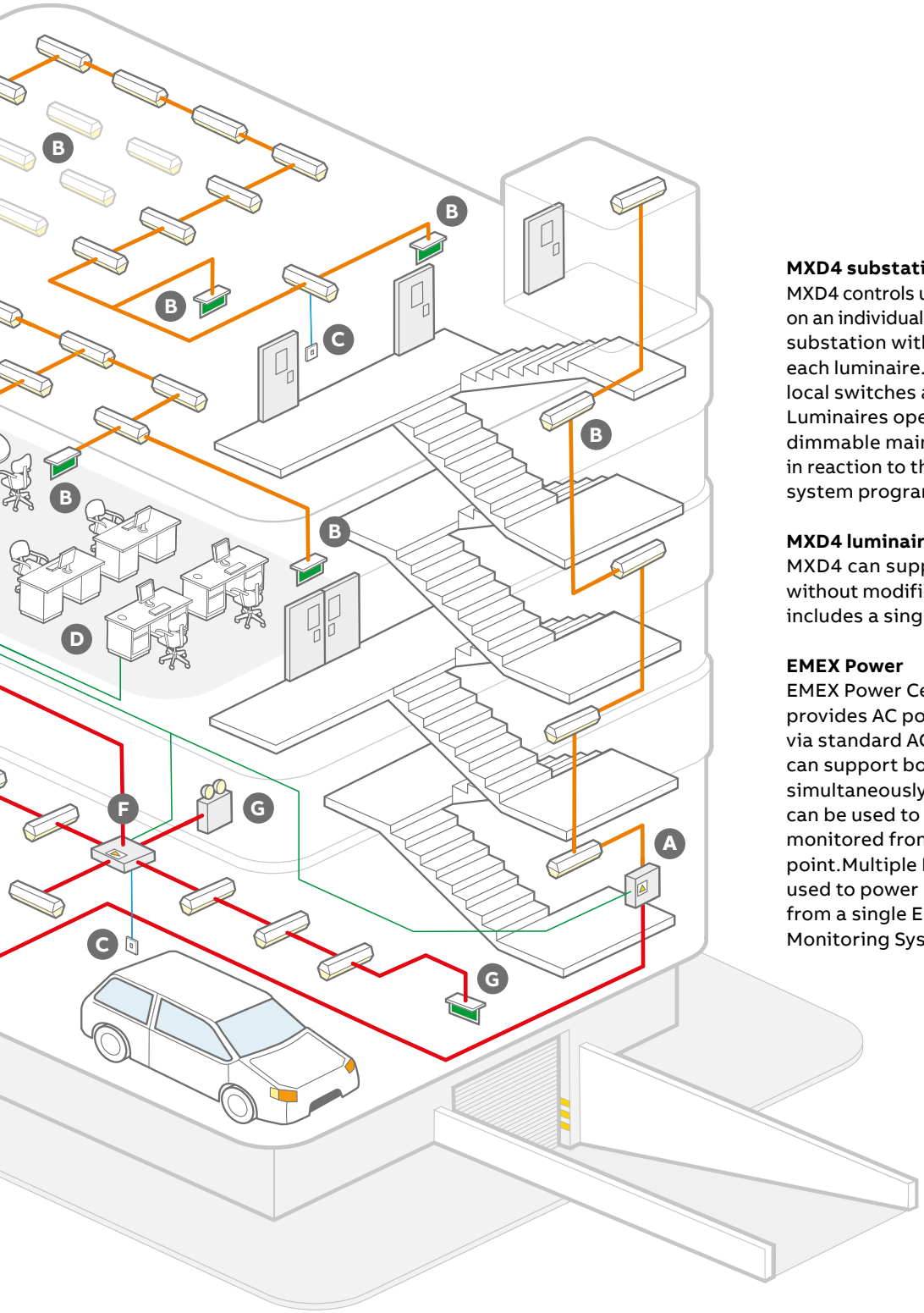

MXD4 substation
MXD4 controls up to 4 unmodified mains luminaires on an individual basis. Power and datalines feed the substation with individual power outputs to each luminaire. Each MXD4 can monitor up to 8 local switches and/or unswitched circuits. Luminaires operate in maintained, switched/dimmable maintained, or non-maintained modes in reaction to these inputs, according to the system programming.

MXD4 luminaires
MXD4 can support virtually any LED luminaire, without modification. Each MXD4 substation includes a single dimming control relay.

EMEX Power
EMEX Power Central Power Supply System provides AC power to emergency luminaires via standard AC distribution boards. EMEX Test can support both MXC and MXD4 systems simultaneously. Multiple EMEX Power CPS units can be used to power larger applications, monitored from a single EMEX Test control point.Multiple EMEX Power CPS units can be used to power larger applications, monitored from a single EMEX Test control point Central Monitoring System.

Key	
AC Power	
AC Power and data	
Data cable	
Local inputs	

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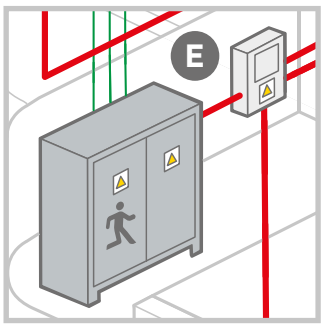

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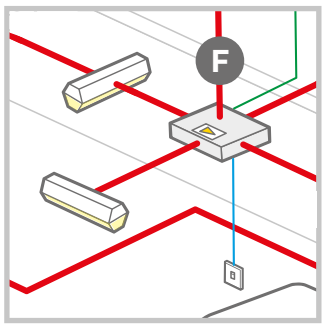

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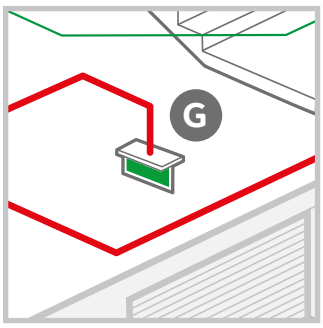


Applying EMEX test
AC/DC

01 A MXC distribution panel

02 B MXC compatible luminaires

03 C Switching

04 D EMEX Test control station

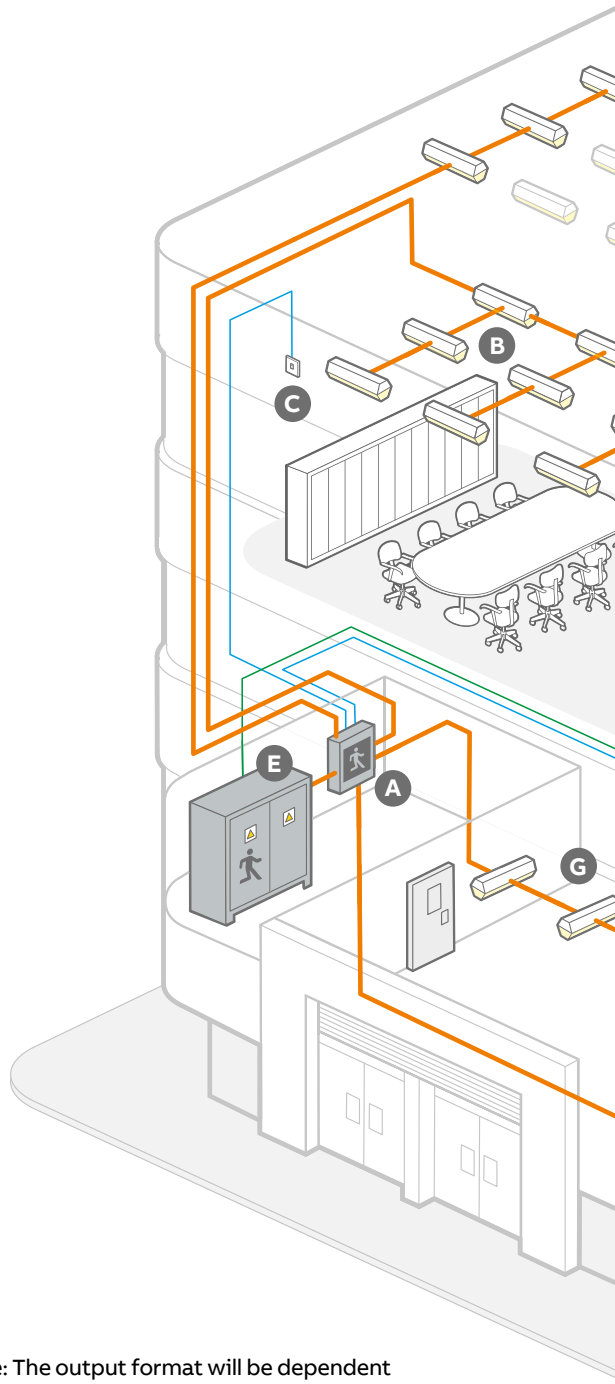
05 E EMEX Power

MXC distribution panel
Each MXC substation can control up to 80 (4x20) luminaires. Power and datalines feed the substation panel which in turn monitors & controls the luminaires via a single combined power/data line. Each substation can monitor up to 8 local switched and/or unswitched circuits. Luminaires operate in maintained, switched maintained, or non-maintained modes on the same circuit, according to the system programming.

MXC compatible luminaires
The MXC testing system requires luminaires to be LTC compatible. Virtually any standard mains luminaires can be converted for use with the MXC system using an integral or remote LTC interface module. Luminaires must contain AC/DC compatible high frequency electronics (please check with Emergi-Lite). MXCs are not compatible with switch start control gear.

Switching
One switched and/or one unswitched local feed can be wired directly into the MXC System LTC module, in addition to the monitoring/switching provided via the MXC substation.

EMEX Test control station or touch screen panel
EMEX Test software is installed and run on the latest version of windows operating system the software monitors and initiates system function and duration tests, then collates test report data. System status can be accessed remotely over a EMEX Test can optionally export system status in BACnet format to a Building Management System.



(Note: The output format will be dependent on the Building Management integrators system functionality and capabilities, see EMEX BMS profile document for further information).

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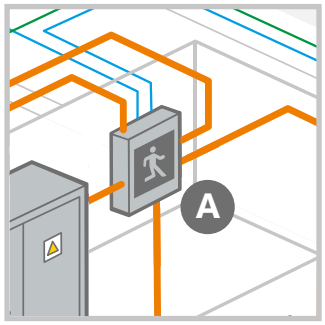

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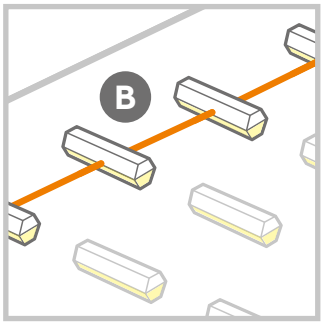

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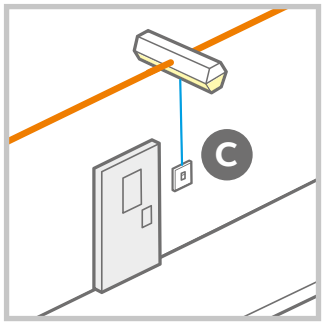

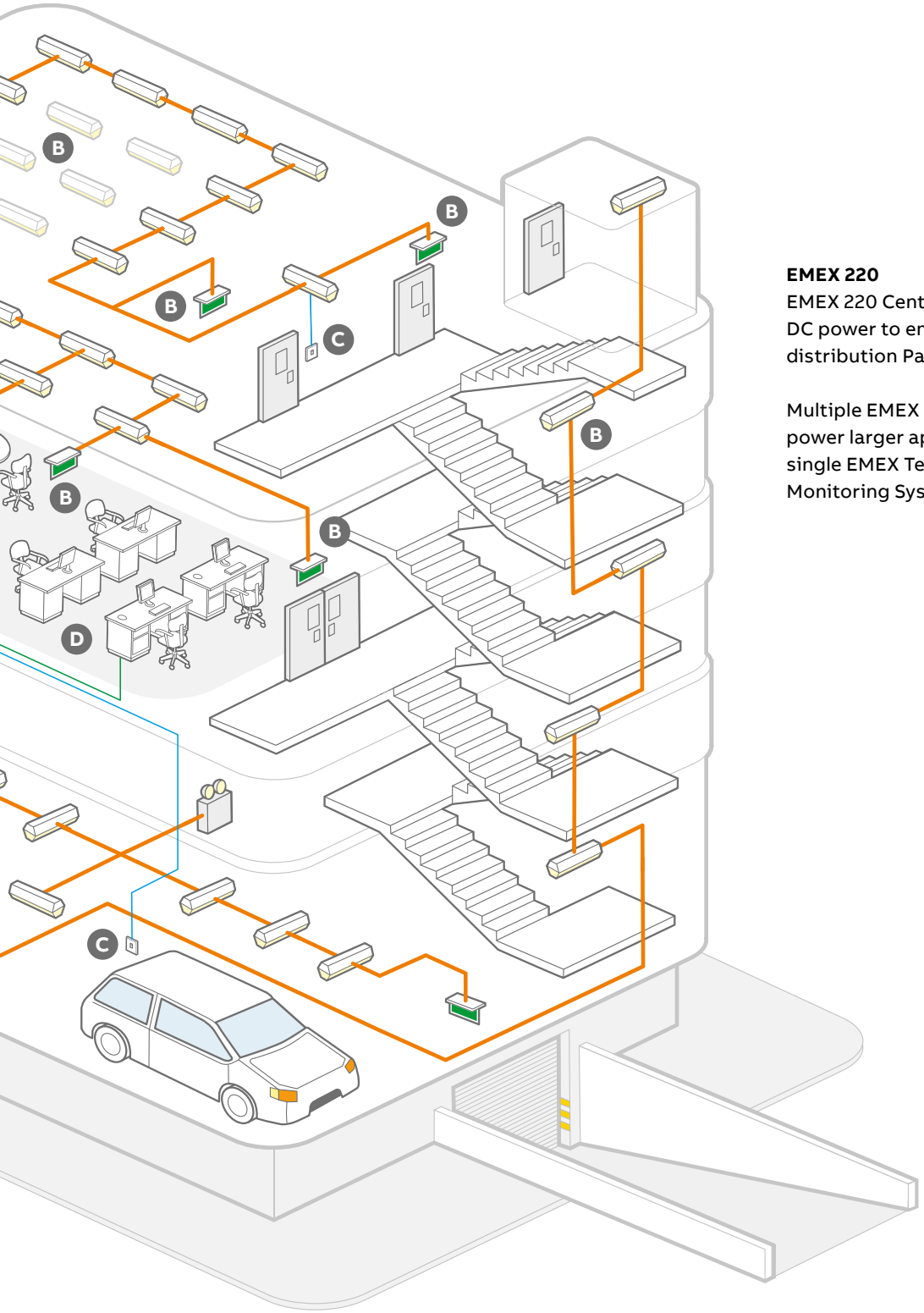

EMEX 220
EMEX 220 Central Power Supply System provides DC power to emergency luminaires via MXC distribution Panel boards.

Multiple EMEX Power CPS units can be used to power larger applications, monitored from a single EMEX Test control point Central Monitoring System.

Key	
AC/DC Power and data	
Data cable	
Local inputs	

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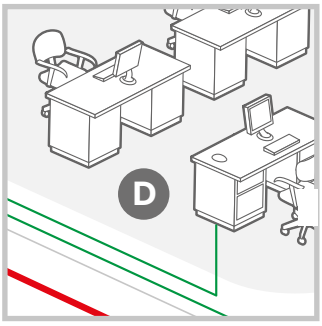

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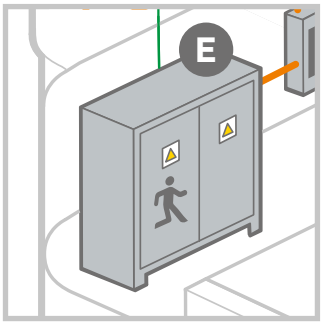

EMEX Test
System components

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01 EMEX Test software
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02 MXKP station adapter kit
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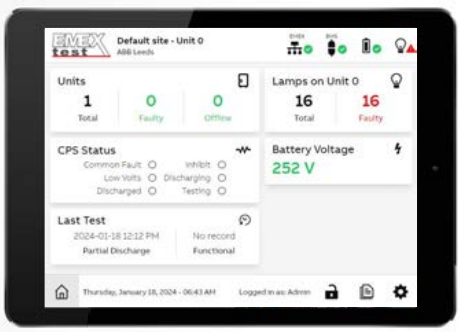
03 MXC substation

EMEX Test software
The focal point of an EMEX Test monitoring network is a Windows OS running the EMEX Test software package.
EMEX Test software is Windows™ based Operating system (OS). It provides detailed address information of all connected Central Power Supply Systems and luminaires. Scheduled testing is configured quickly and easily – once set up it can be left to operate, without further input, in the background. Reports are created and collated automatically. These are date stamped and can be printed or distributed electronically.

EMEX Test control panel
Description
- EMEX Test Control Panel utilising a touch screen for operation of the EMEX Test programme 8” High Brightness TFT LCD (400 cd/m), long life-time display, support 800 mm x 600 mm
- Fanless, with AMD LX-800 500MHz processor
- One 200-pin SO-DIMM DDR 266/333MHz
- Up to 1GB Sealed resistive touch screen
- Support Panel / VESA 75 mount
- DC 11~28V wide-range power input

MXKP station adapter kit, included with /TS Systems
The MXKP station adapter kit is required to integrate the EMEX Power static inverter with the EMEX testing system. Ordered separately, the MXKP station adapter kit is factory fitted in the inverter cabinet.
- 4,000 luminaire address capability
- Output capacity of 100 x MXD4 and/or MXC units per MXKP
- 2-core data bus to MXD4 and MXC units and to/from MXKP units
- 2-core screened 240V, (1.0 mm² minimum) data cable
- (Max. distance 2,500 metres – additional repeaters available)



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04 EMEX test reference - factory

MXC substation
The MXC substation controls LTC equipped HF luminaires. It can also monitor 8 switched or unswitched inputs.

- 20 LTC units per radial Circuit
- Maximum 270V AC
- 2000VA maximum output power
- 200 metres maximum distance (per output radial Circuit) to final luminaire
- 2-core screened 240V, (1.0 mm² minimum) cable (fireproof recommended)
- 210 mm x 253 mm x 60 mm
- Operating temperature 0 – 50°C
- Galvanised steel enclosure (colour options available as specials)
- Substation rated to IP20 as standard

EMEX Test
System components

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01 MXD4 4-way addressable substation
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02 MXT data repeaters
—
03 70W LTC addressable interface
—
04 230W DIM LTC addressable interface
—
05 LIOB-Connect I/O Module
—
06 EMEX 220 AC/DC MXC Distribution Panel

MXD4 4-way addressable substation
The MXD4 addressable substation controls up to 4 unmodified mains luminaires. It can also monitor 8 switched and/or 8 unswitched inputs.

- 4 luminaires on individual circuits
- Maximum 270V AC, 230W (1 ampere per circuit)
- Switching threshold of 230V -60% to -85%
- Address range of 4 to 3999 (blocks of 4)
- Analogue and digital compatible dimming capability using on-board dimming relay to break dimmer control line
- 2-core screened 240V, (1.0mm² minimum) cable (fireproof recommended)
- 2,500 metres maximum distance from MXKP to MXD4 transmitter
- 254 mm x 210 mm x 60 mm
- Operating temperature 0 – 50°C
- Galvanised steel enclosure (colour options available as specials)
- Option for high IP rating are available

MXT data repeaters
MXT100 and MXT200
The MXT data repeater is used to increase the number of interfaces on an individual data line.

- Maximum 270V AC
- 2-core data inputs
- 2-core screened 240V, (1.0 mm² minimum) cable (fireproof recommended)
- 300 mm x 400 mm x 120 mm

Up to 100 substations may be fed from the internal transmitter within the CPS. Additional MXT data repeaters are available for situations where more than 100 substations are required. For example the MXT200 data repeater is capable for handling up to 200 substations.

Lamp test controller addressable interfaces
The LTC is designed specifically to control luminaires with fluorescent or incandescent lamps when working from a static inverter system.

The LTC is part of the EMEX MXC automatic emergency lighting testing system, and can control the lamp and dimmer signal when testing. It measures the lamp power consumption and communicates this and the lamp status back to the EMEX central PC using power line communication via the MXC substation. It is fully addressable and programmable for any lamp type or configuration. This is done in situ from the central PC.

70W LTC addressable interface
The LTC addressable interface unit is required when connecting standard mains luminaires to the MXC substation system.

- Maximum 270V AC
- 70 watt maximum switching output power
- 2 control inputs configurable as local switched and unswitched monitoring
- Factory pre-addressed
- 116.5 mm x 24.5 mm x 22 mm
- Complies with Radiated & Conducted Emissions Standard EN 55015

230W DIM LTC addressable interface AC/AC only
- Maximum 270V AC
- 230 watt maximum switching output power
- 2 control inputs configurable as local switched and unswitched monitoring
- Dim relay to disconnect dimming signal
- Factory pre-addressed
- 155 x 42 x 30, 148 mm fixing centres
- Complies with Radiated & Conducted Emissions Standard EN 55015

BACnet interface
BACnet is a Data Communication Protocol for monitoring and communicating building management data to and from the BMS workstation. The module is fed with data points from the EMEX touch screen graphical user interface (GUI) software.

This data is connected to the BMS by Ethernet using TCP/IP internet protocol. Data point details can be obtained from the Emergi-Lite Technical support department with the interfacing documents.

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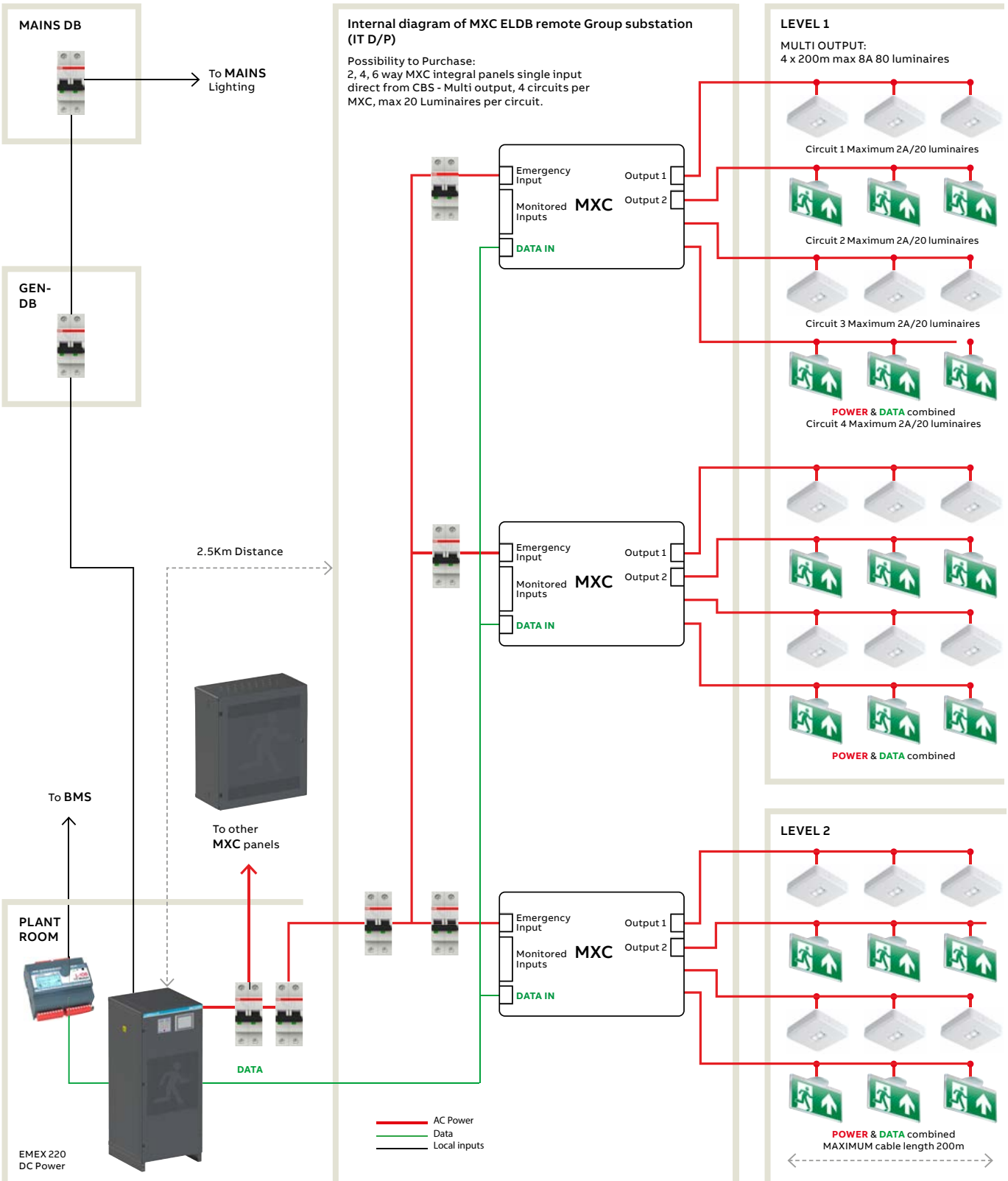
Order Codes

Part no.	Item name	Description
EMEX Test CBS and control Components		
ELD9500.910	MXKP	Static inverter addressable interface
ELD9500.039	MXIN Remote test node serial input (modem)	–
ELD9500.931	EMEX Pro Touch Screen Kit	Static inverter integral EMEX test Pro panel (touch screen)
ELD0077.009	RS232 to USB	RS232 to USB translator interface
ELD9500.120	MXT100 MXT100 data transmitter repeater	–
ELD9500.934	BACnet Static inverter integral	Static inverter integral BACnet interface I/O L-iob
ELD9500.935	SPN Energy Meter - BACnet	Single phase energy meter, AC volts/amperes
ELD9500.936	TPN Energy Meter - BACnet	Three phase energy meter, AC volts/amperes
EMEX230/400 AC/AC MXD range		
ELD9500.016	MXD4 Substation 50/60Hz	MXD4, 4 x 1A nominal O/P, 8 SU-CCT I/P data line interface
ELD9500.046	MXE2 Substation 50/60Hz	MXE2, 2 x 2A nominal O/P, 8 SU-CCT I/P data line interface
ELD9500.047	MXF1 Substation 50/60Hz	MXF1, 1x 4A nominal O/P, 8 SU-CCT I/P data line interface
EMEX230/400 AC/AC LTC range		
C-LTC230HF	LTC 230W AC Dim	LTC addressable interface 230W integral conversion with dimmer relay
C-LTC230HFRW	LTC 230W AC Dim REM	LTC addressable interface 230W remote conversion
ELD9500.048F	LTC 230W Dim parts Kit	LTC addressable interface 230W AC Dim new parts kit
ELD9500.048FRW	LTC 230W AC Dim ENC	LTC addressable interface 230W AC Dim new kit in enclosure
EMEX230/400 AC/AC MXC range		
ELD9500.032	MXC2.0 substation 50 Hz	MXC substation, 2 x 5A nominal O/P, 8 SU-CCTS I/P
ELD9500.032/60	MXC2.0 substation 60 Hz	MXC substation, 2 x 5A nominal O/P, 8 SU-CCTS I/P 60Hz
EMEX AC/DC & AC/AC LTC range Universal		
ELD9500.070	LTC 1-70W	LTC addressable interface 70W Single item/spare part
C-LTC70	LTC 1-70W	LTC addressable interface 70W integral conversion
C-LTC70RW	LTC 1-70W REM	LTC addressable interface 70W remote conversion
ELD9500.070K	LTC 1-70W parts Kit	LTC addressable interface 70W parts kit
ELD9500.070KRW	LTC 1-70W parts Kit ENC	LTC addressable interface 70W kit in enclosure
EMEX 220 AC/DC MXC Distribution Panel range		
ELD9500.033	2 way MXC2.0 Panel 8 O/P circuit	MXC substation, 8 x2.5A nominal O/P, 8 SU-CCTS I/P
ELD9500.034	4 way MXC2.0 Panel 16 O/P circuit	MXC substation, 16 x2.5A nominal O/P, 8 SU-CCTS I/P
ELD9500.035	6 way MXC2.0 Panel 24 O/P circuit	MXC substation, 24 x2.5A nominal O/P, 8 SU-CCTS I/P
ELD9500.033/60	2 way MXC2.0 Panel 4 O/P circuit 60Hz	MXC substation, 8 x2.5A nominal O/P, 8 SU-CCTS I/P 60Hz
ELD9500.034/60	4 way MXC2.0 Panel 8 O/P circuit 60Hz	MXC substation, 16 x2.5A nominal O/P, 8 SU-CCTS I/P 60Hz
ELD9500.035/60	6 way MXC2.0 Panel 24 O/P circuit 60Hz	MXC substation, 24 x2.5A nominal O/P, 8 SU-CCTS I/P 60Hz
CMS Central Monitoring System		
ELD9500.930	CMS SUPERVISOR EMEX BACNET	Central monitoring Supervisor EMEX BACnet
ELD9500.940	BACNET CPS MONITORING INTERF KIT	BACnet Central Power Supply Monitoring Interface Kit

EMEX 220 DC Power

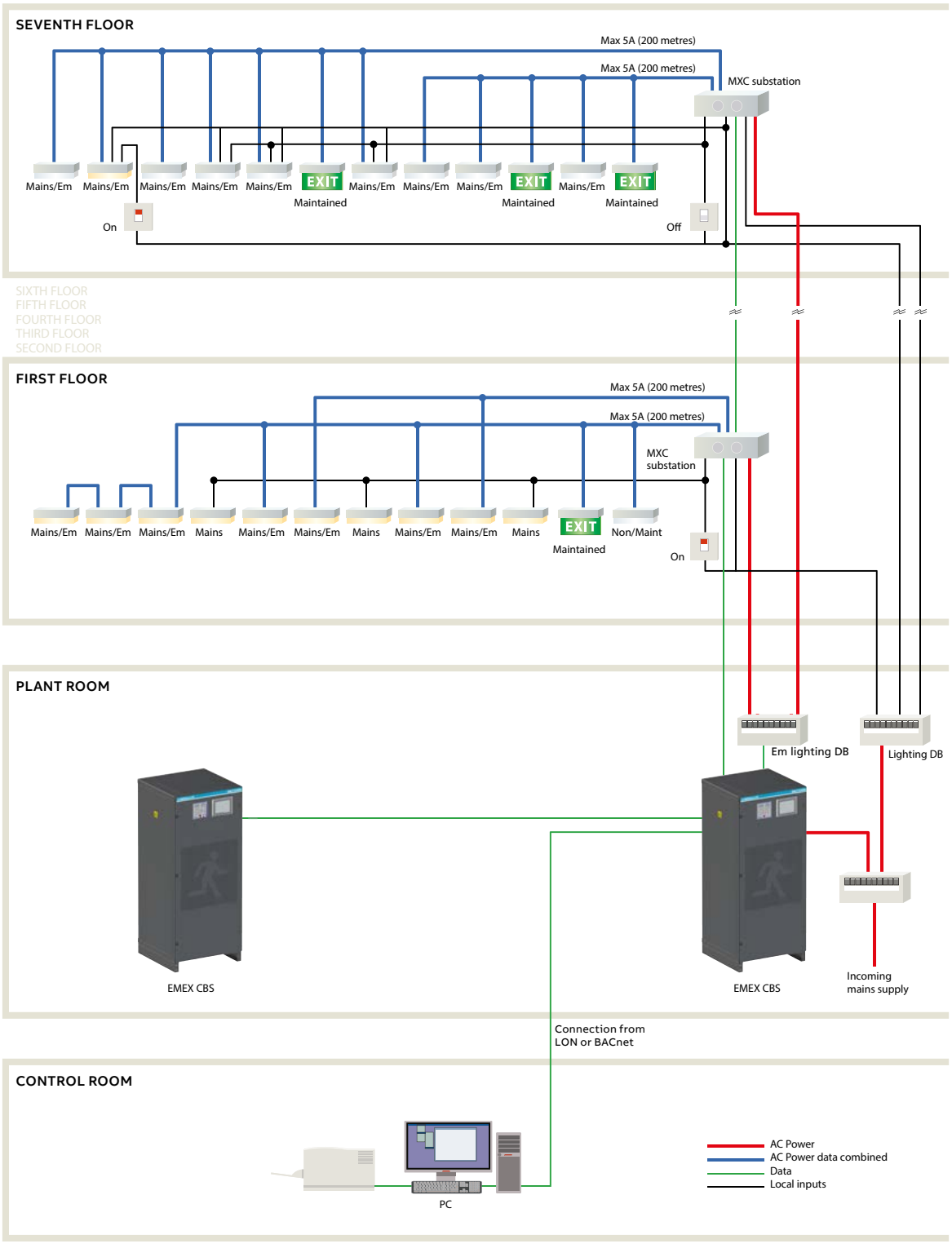
Layout schematic - Emergency lighting distribution board



Note: Indicative diagram only.

EMEX Test

Layout schematic - Distributed single MXC substations



EMEX Test

Layout schematic - Distributed MXD4 substations