Central power supply solutions

EMEX Test

- Automated, scheduled testing of your emergency lighting systems power supply
- Full control to access test reports locally or remotely at any time
- Efficient emergency lighting testing procedure
EMEX Test

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.

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
- Utilising EMEX TS, Remote access via a Local Area Network (LAN) or internet connection is straightforward
- Building Management System communication can be easily incorporated

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 locally or remotely 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.
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 slave 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:

**MXC**

MXC is ideal for use where a large number of high frequency, luminaires 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 solution employs compact LTC integral luminaire interfaces to support up to 40 luminaires from a single substation. It allows mixed operation modes of the emergency luminaires on the same circuit without data cable. Multiple local switched and unswitched 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, MXC provides savings in cable, containment and installation costs.

**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**

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
- Fully compatible with MXC
EMEX Test
Case study - A high rise building

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 will prefer basic batten fittings or filament lamps. In this instance, where surface cabling is acceptable, MXD4 substations are ideal. There is no modification to the slave 230V 50/60Hz luminaires whatsoever. This makes the installation very straightforward as the substations are identical 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 slave 230V 50/60Hz luminaires can be replaced without interfering with the addressable emergency system.

Open plan areas
For lower floors with typically open plan areas where suspended ceilings are employed and switching arrangements are uncomplicated, MXD4 substations also offer benefits. In addition, the client would be free to refurbish at a later date, changing luminaires types at will, with only reprogramming of the EMEX Test software required to suit.

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 this scenario – and more – 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
MXC and MXD4 emergency lighting testing systems

**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 (bulkheads, exit signs) to be MXC 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 ballast (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**
EMEX Test software is installed on a standard desktop PC to initiate scheduled tests and collate test report data. System status can be accessed remotely over a Local Area Network (LAN), or via the internet utilising the EMEX TS option. EMEX Test can optionally export system status in BACNET or LONWORKS format to a Building Management System. (Note: The output format will be dependent on the Building Management integrators system functionality and capabilities, see EMEX LONWORKS profile document for further information). A network node enables the engineer to access test reports and control the system using a laptop PC from any point on the data cable.

**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.

**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 maintained, or non-maintained modes in reaction to these inputs, according to the system programming.

**MXD4 luminaires**
MXD4 can support virtually any fluorescent, LED, filament, or halogen luminaire, without modification. Each MXD4 substation includes a single dimming control relay.
APPLYING EMEX TEST – MXC AND MXD4 EMERGENCY LIGHTING TESTING SYSTEMS

Key
AC Power
AC Power and data
Data cable
Local Inputs
EMEX Test
System components

EMEX Test software
The focal point of an EMEX Test monitoring network is a PC running the EMEX Test software package. EMEX Test software is Windows™ based. 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.

Wall mounted EMEX Test control panel
Description
• Wall mounted 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

Specification details
• Maximum AC voltage 240V AC 50/60Hz
• Windows CE net 4.2 / 5.0, XP, XP embedded
• I/O ports: COM1: RS-232, COM2: RS 232/422/485, COM3: RS-232, External USB 2.0 x2, 2x5 2.0 mm pin header for internal USB 2.0 x2, 1 x VGA, 1 x PS/2 keyboard & mouse, 1 x Reset switch, 1 x power on/off switch 1 x LAN (10/100Mb),

Construction
• Plastic front panel & metal housing IP 20
• Enclosure dimensions 318 mm (L) x 270 mm (W) x 104 mm (H)
• Cable termination 2.5 mm² maximum
• Cable entry 20 mm gland hole

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)
**MXIN test input node**

**Included with /TS Systems**

Provides an input point to allow roving access to the system using a laptop PC.

**MXC substation**

The MXC substation controls up to 40 LTC equipped HF luminaires. It can also monitor 8 switched or unswitched inputs.

- 40 x LTC units over 2 radials (20 per radial)
- Maximum 270V AC
- 2 x 1,150VA (5 ampere) maximum output power
- 200 metres maximum distance (per output radial) 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. Option of higher IP rating available to order
- For further details on the MXC & MXD please refer to the
EMEX Test
System components

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 55015:2000

230W DIM LTC addressable interface
- 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 55015:2000

Lon Adapter
The LON adapter interface allows integrators of open system networks to provide network connectivity to Emergi-Lite emergency lighting systems.

The unit is housed in an industry-standard M36 DIN rail enclosure and supports both RS232 and 11S4-65 communication options. Simple ASCII string generated by the Emergi-Lite system over RS232 is made available through the open LonTalk protocol using Standard Network Variable Type SNVT_str_ascii.

Note: The output format will be dependent on the Building Management integrators system functionality and capabilities, see EMEX LONWORKS profile document for further information.
**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 from an InfraLINK Lonworks module.

The InfraLINK module is specifically pre-configured to work with the L-GATE module. The data is converted from LONWORKS protocol into BACNET protocol in the L-GATE module. This data is connected to the BMS by Ethernet using TCP/IP internet protocol.

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**Order Codes**

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EMEX Test
Layout schematic - MXC substations

SEVENTH FLOOR

FIRST FLOOR

PLANT ROOM

CONTROL ROOM

AC Power
AC Power data combined
Data
Local inputs
EMEX Test
Layout schematic - MXD4 substations
Sub-circuit monitoring
Hold-off / changeover relays

It is a mandatory requirement that emergency lighting is energised in the event of a local sub-distribution failure, not just on total building supply failure.

Hold-off & sub-circuit monitoring relays are used to energise luminaires in the case of local supply failure. They may be used to feed more than one luminaire on the same switched circuit and are available in 1 amp, 8 amp & 12 amp versions.

Hold-off relays
Hold-off relays are required to monitor the relevant lighting supply circuits such that a failure brings on the emergency luminaires automatically in the event of local supply failure. Non maintained luminaires are connected to a localised sub-circuit hold-off relay fed from a maintained battery system. These luminaires are only energised when the supply to the hold off relay fails. 5, 10, 15 and 20 way sub-circuit monitors (with 12 amp hold-off relay) are available.

Changeover relays
The basic use of a switched maintained system is to energise the emergency lighting when required by operation of the local switched supply but automatically illuminate in the event of local sub-circuit supply failure (irrespective of the position of the local switch).

SI230 changeover relays are compact and easy to install. When using these changeover relays switched maintained emergency luminaires are energised whenever a local switched supply is present and automatically, when a local sub-circuit failure occurs.

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<td>230 volt 8 amp mains changeover relay with 2 x 2.5mm² terminal capacity</td>
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Maintained
Do not require sub-circuit monitoring or hold-off relays

Non-maintained
Require a hold-off relay (1 per circuit)

Switched maintained
Require a changeover relay (1 per switched circuit)