

FAMCO**LIGHTING**

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Recommended Installation and Commissioning of MLC (Multi-Line Carrier) MasterMinder Monitoring System (Patent No: 685314)

Introduction

Like any system the MLC (Multi Line Carrier) must be installed to an established standard to ensure that it will fulfill its function.

We invite all installers to discuss the system requirements with us, before undertaking an installation.

Theory of operation

The MLC system utilises a 132.5kHz FSK communications signal injected onto the mains cabling to communicate with the attached emergency luminaires.

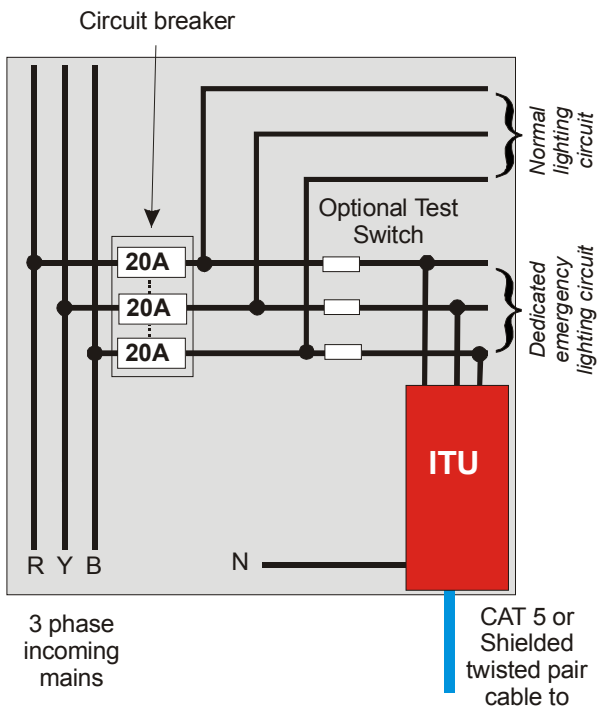
ITUs (Intelligent Transponder Units) are added to facilitate communication. The SCU communicates with each ITU via a dedicated cable. The ITUs inject a 132.5kHz communications signal onto the existing mains cabling to communicate with emergency luminaires. These fittings, each of which is uniquely numbered during commissioning, can be addressed individually, in groups, or as a total system from one or occasionally from several points. Each fitting, after being addressed, sends data back to the SCU via the mains cable and appropriate ITU.

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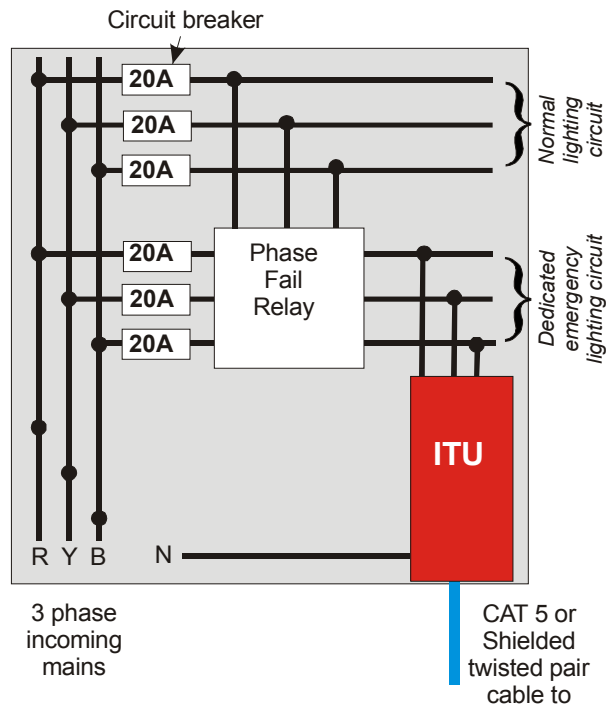
Typical ITU & System Layout

NOTE: Do not use any circuit breakers rated less than 16A

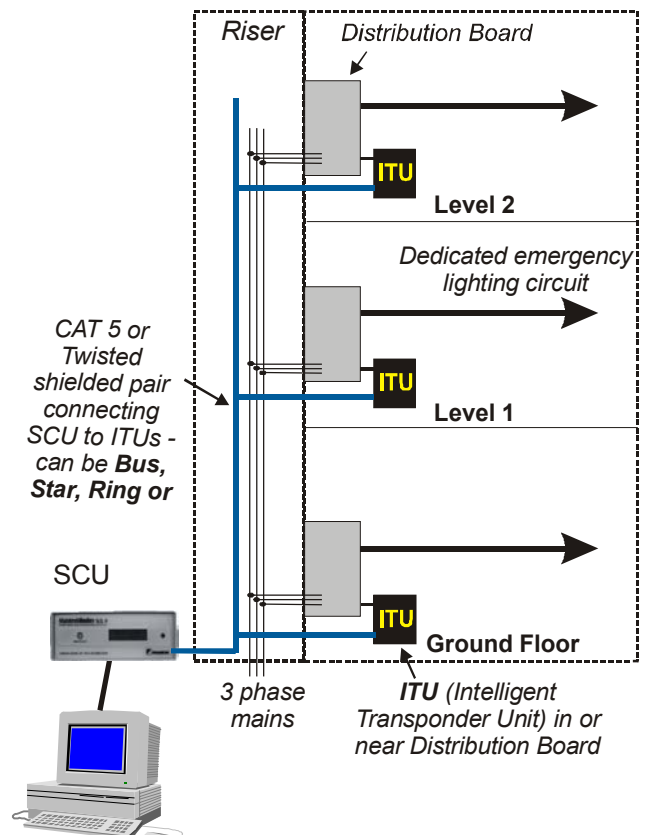
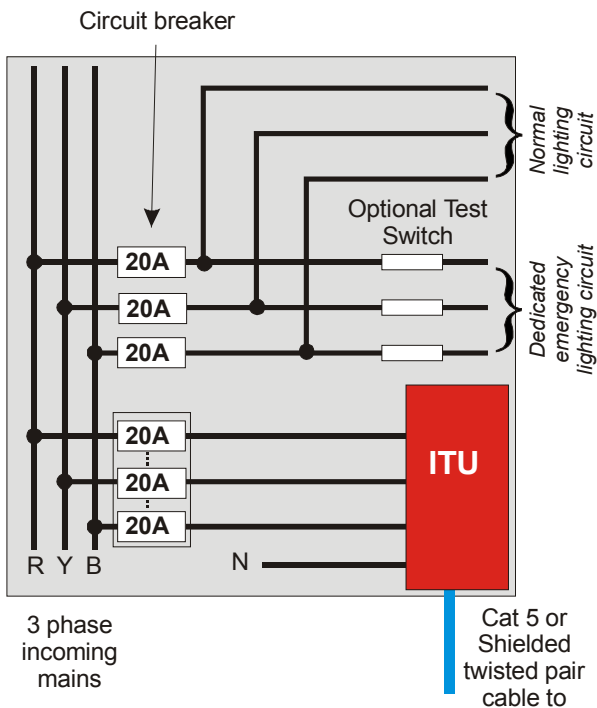
Distribution Board ITU - Example A

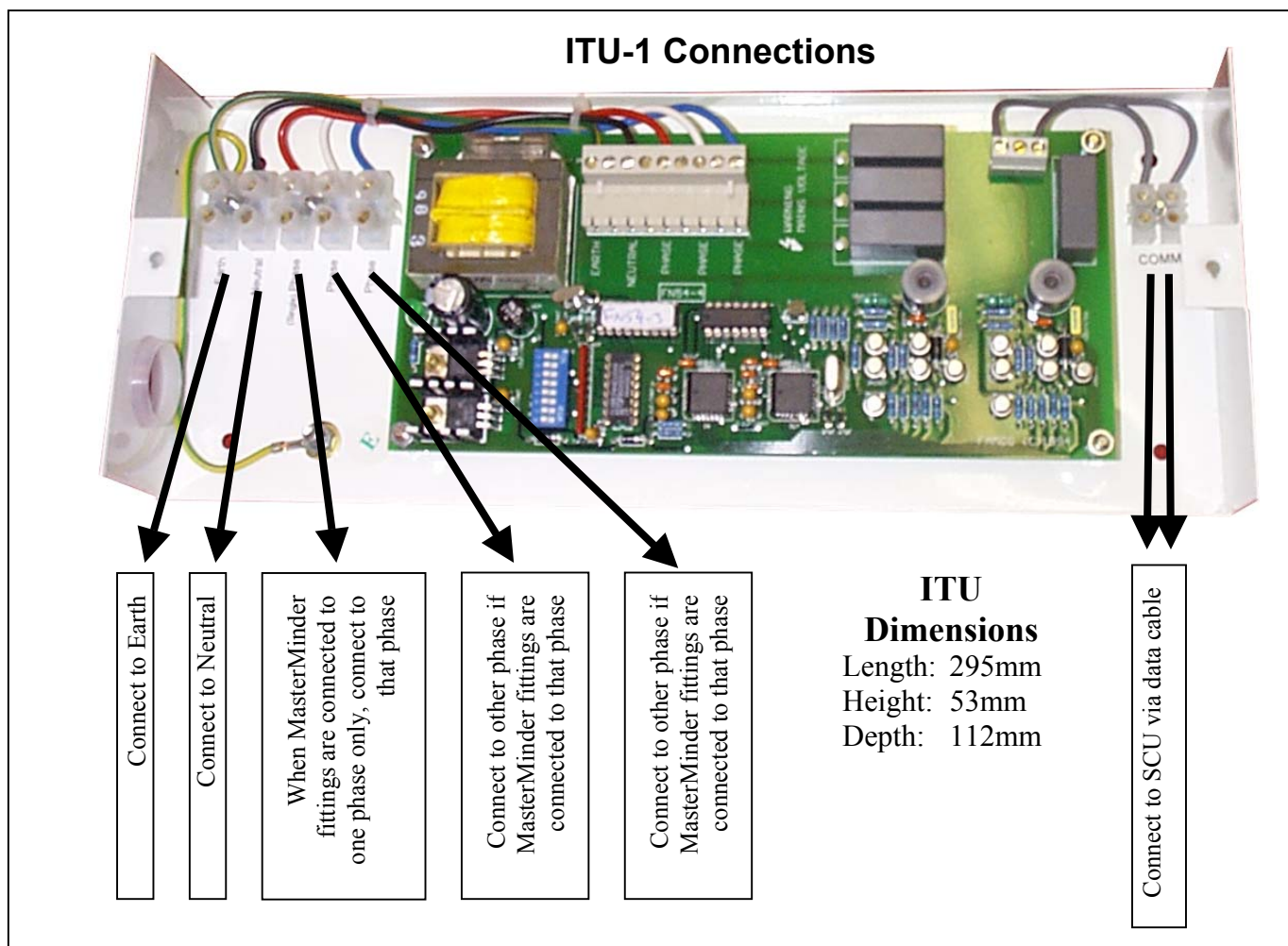


Distribution Board ITU - Example B



Distribution Board ITU - Example C





Cable Reticulation and Connections

The Installer should install data communications cable -CAT 5 (use 2 pairs twisted together to reduce the risk of a bad connection in the terminal block) or shielded twisted pair- to every **distribution board** on the site that will have emergency luminaires connected to it. The cable can be either Bus, Star, Ring or Mesh from the SCU point or from distribution board to distribution board. The cable run should be kept as short as possible. A maximum of about 40 ITUs can be connected to any one twisted pair connected directly to the SCU. CAT 5 provides supplementary twisted pairs when the first twisted pair has reached the maximum recommended number of ITUs.

All emergency luminaires at a given distribution board should be connected to a dedicated emergency circuit breaker as shown on the above diagram and extract from AS2293, enclosed. Each ITU must be connected as per the diagram above. The preferred configuration for connecting an ITU is shown in Example A in which the ITU is connected to the load side of the circuit breakers supplying the emergency lighting.

Example's A & C show the supply to both emergency and non-emergency luminaires coming off the same circuit breaker. In this situation it is important that the emergency/non-emergency supply cabling is separated at the distribution board.

On sites with very long distances between points eg. Separate buildings, or with more than 1000 emergency luminaires it may be necessary or practical to split the communication into more than one zone i.e. run it on more than one SCU, or have multiple testing points where a portable SCU and computer can be plugged in periodically for testing and diagnosis.

SCUs are normally connected directly to a PC via an RS232 communications port. Remotely located SCUs can be accessed via a data network using a serial device server or via a phone system using an integral modem (SCU5).

Scope of Works - Installation

The Installer is responsible for the following:

- Install the emergency luminaires as designed and agreed
- Wiring to conform with the requirements of AS2293.1 (ie: dedicated wiring to all exit & emergency luminaires).
Ensure switched & unswitched actives are not mixed at luminaires.
24 Hour security lighting not to be connected to emergency active unless advised.
- Install a 240V GPO at the SCU. Where a modem equipped SCU5 is required a dedicated telephone point must be provided.
- Install communication cable between the SCU and all switchboards supplying emergency luminaire circuits
- Where necessary install a number of GPOs and test points for multi point access
- Provide a drawing showing the location of all emergency luminaires (clearly identify the distribution board and circuit breaker number for each fitting and the unswitched active cable layout) and ITUs.
- Where necessary provide ladders or other means to gain safe access to emergency luminaires (also see below) to the commissioning person
- Provide ready access to all areas in which emergency luminaires are located. This includes access to relevant distribution boards ie. have key(s) or other means to have access to all areas where emergency luminaires, distribution boards, ITUs, SCU are installed, and accompany the commissioning person at all times
- Remove and reinstall emergency luminaires and ITUs if required
- Install additional ITUs if required
- Provide an assurance that the installation work is done correctly and is complete, to the commissioning person
- Conduct manual 2 hour test of all emergency and exit luminaires *unless commissioning takes place immediately after installation*
- Input data into the MasterMinder computer database if desired.

NOTE: EMERGENCY LUMINAIRES AND EXIT SIGNS SHOULD NOT BE USED AS TEMPORARY LIGHTING. TEMPORARY LIGHTING IS COMMONLY FREQUENTLY SWITCHED OFF/ON DURING THE CONSTRUCTION PHASE. FREQUENT SWITCHING OF EMERGENCY LUMINAIRES AND EXIT SIGNS MAY BE CONSIDERED MISUSE AND MAY VOID THE WARRANTY.

Commissioning

Famco will perform the commissioning tasks after receiving an assurance that the installation work is done correctly and an undertaking that if any additional work is required of Famco other than the commissioning outlined below it will be paid for by the organisation requiring the commissioning.

- The commissioning person, usually Famco or their trained representative numbers all the fittings, and, with the help of the installer ensures that all emergency luminaires are “found” on the installation (ie. the SCU communicates with them), Famco programs and performs a discharge test, collects data and gives copy of same to the Installer and/or owner and/or Consultant.
- Famco will carry out the work under normal conditions ie. mounting height of emergency luminaires reachable safely from a maximum 2.4m step ladder, during normal business hours

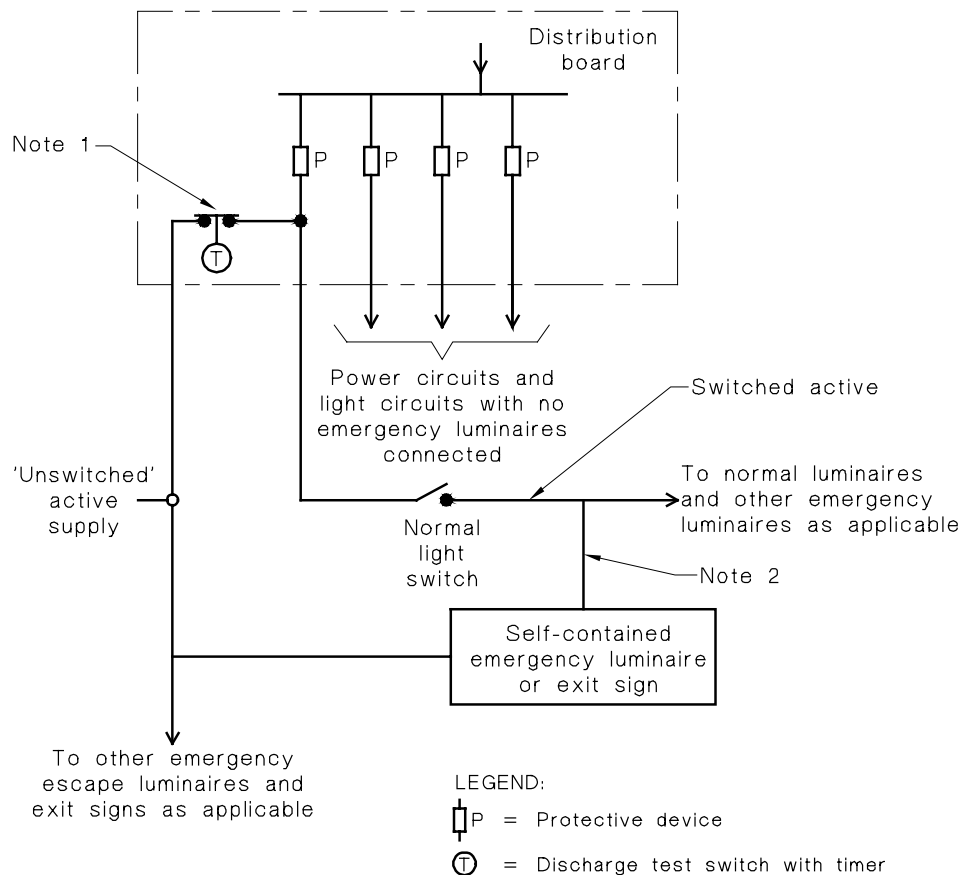
after receiving adequate documentation and notice to arrange a starting time convenient to the Installer and Famco.

- If required the contractor is responsible for providing the equipment necessary to access all luminaires over 2.4m height.
- Famco will supply all replacement parts or fittings at no cost during the course of commissioning and the period of guarantee, provided they are not damaged or rendered defective by improper installation, use or procedure by others.
- A training session will be given at the time of commissioning. An operating manual and software will be provided.

APPENDIX C

EXAMPLE DIAGRAMS OF EMERGENCY ESCAPE LUMINAIRE AND EXIT SIGN SYSTEMS

(Informative)



NOTES:

1. Where more than one circuit has emergency luminaires connected, additional test switches or a multipole relay controlled by one switch will be required.
2. This connection not applicable to non-maintained luminaires.

FIGURE C1 EXAMPLE SCHEMATIC FOR SELF-CONTAINED EMERGENCY ESCAPE LUMINAIRES AND EXIT SIGNS ARRANGED ON SAME CIRCUIT AS NORMAL LUMINAIRES

Australian Standard AS2293.1 Section 4.3 states:

A requirement has been included for all emergency lighting systems to incorporate facilities for discharge testing which do not necessitate interruption of the supply to the normal lighting.

Also Section 4 Paragraph 4.3.2.1 states:

Automatic testing facilities:

Provision shall also be made for the manual initiation of a discharge test by any appropriate means.