Alfa Electrical Ltd
TAM House
Ballymount Trading Estate
Ballymount Road Lower
Dublin 12
Telephone: 01-4600732
Fax: 01-4600732

ST MICHAELS HOUSE
UNIT 94A LAGAN ROAD

ELECTRICAL OPERATIONS AND MAINTENANCE MANUAL

CONTENTS

PROJECT TEAM

Client:

St Michaels House,
Technical Services Dept,
89D Lagan Road,
Dublin Industrial Estate,
Glasnevin,
Dublin 11.
Contact: Paul Kenny
Tel: 01-8303161

Architects:

James Smyth Architects,
Booterstown Ave 10-12,
Blackrock,
Co Dublin
Contact: Vincent Traynor
Tel: 01-2882661

M&E Consultants:

Clarke and Associates,
Academy Street,
Kildare Town,
Co Kildare.
Contact: Barry Nolan
Tel: 045-522356

Main Contractor:

Flynn Management & Contractors
Ward Cross,
The Ward,
Co. Dublin
Contact: Keith Sutton
Tel: 01-8503000

Electrical Contractor:

Alfa Electrical Ltd,
Unit 4 Willow Business Park,
New Nangor Road,
Dublin 12.
Contact:Paul Mangan
Tel: 01-4089123

SECTION 1 - GENERAL DESCRIPTION

The project involves the refurbishment of the existing building at Unit 94A, Lagan Road, Glasnevin, Dublin 11 into a new training centre for St Michaels House.

Upon completion the newly refurbished building shall be occupied by St Michaels House and shall have the following facilities:

- 2 No Meeting Rooms
- Training Room
- Independent Living Skills
- Library
- Quiet Room
- Training Managers Office
- Computer Room
- Managers Office
- Training & Drama Room
- Uni-sex Shower Room
- Open plan reception
- Dining & Relaxation Room
- Kitchen & Coffee dock
- 2 No Store Rooms
- Male & Female Toilets

The Electrical Services Installation was completed by Alfa Electrical Ltd from December 2008 to February 2009. The Installation consists of the following elements:

- LV Switchgear
- General Services Installation
- Lighitng Installation
- Emergency Lighting Installation
- Communication Services Installation
- Fire Alarm Services Installation
- Security Services Installation
- Electrical Services Installation associated with Platform Lift
- Male & Female Toilets

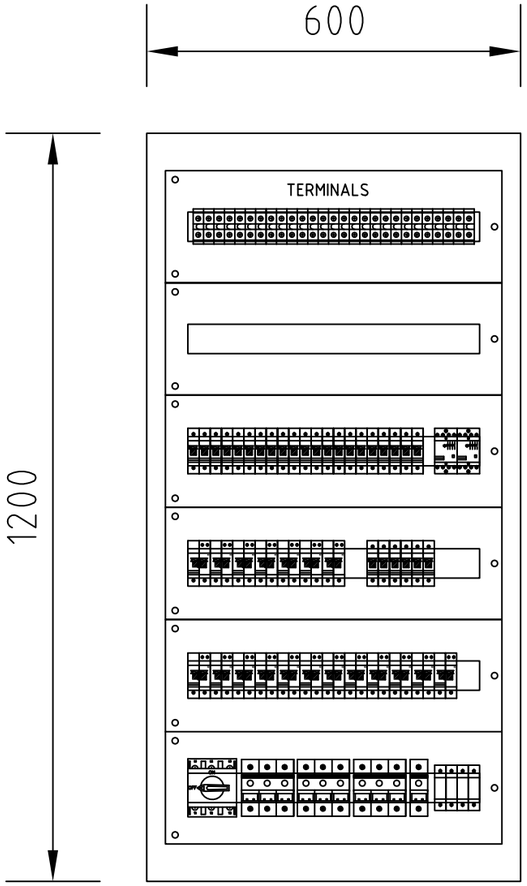
SECTION 2 – ELECTRICAL CENTRES & MAINS DISTRIBUTION

Supplier Details:

Reg Farrell Engineering
Unit 19 Oak Road Business Park,
Western Industrial Estate,
Dublin 12.
Tel: (01) 4659010
Fax: (01) 4659011
Contact: Ciara

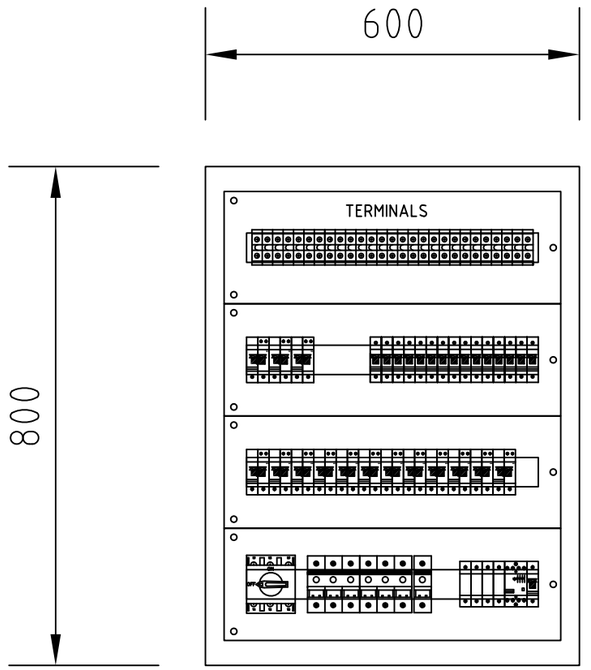
John Keogh Electrical
Unit 7,
E.P.Mooney Buisness Centre,
Longmile Road,
Dublin 12.
Tel: (01) 4509999
Fax: (01) 4509544
Contact: Garrett Dwyer

Contents:



SUB DISTRIBUTION BOARD SDB-1

COSTEL ENCLOSURE 1200 x 600 x 300
COSTEL CHASSIS
80 AMP 3P & N MAIN ISOLATOR
LIGHTING 63 AMP 3 POLE NEOZED SWITCHFUSE
SOCKETS & G.S 63 AMP 3 POLE NEOZED SWITCHFUSE
EXTERNAL LIGHTING 63 AMP 3 POLE NEOZED SWITCHFUSE
63 AMP 1 POLE NEOZED SWITCHFUSE
15 x 20 AMP RCBO
18 x 10 AMP MCB
3 x 32 AMP MCB
3 x 32 AMP TP MCB
1 x 6 AMP MCB
EMERGENCY LIGHTING CTU
LIGHTING CONTACTORS



SUB DISTRIBUTION BOARD SDB-2

COSTEL ENCLOSURE 800 x 600 x 250
COSTEL CHASSIS
80 AMP 3P & N MAIN ISOLATOR
LIGHTING 63 AMP 3 POLE NEOZED SWITCHFUSE
SOCKETS & G.S 63 AMP 3 POLE NEOZED SWITCHFUSE
63 AMP 1 POLE NEOZED SWITCHFUSE
15 x 20 AMP RCBO
9 x 10 AMP MCB
1 x 6 AMP MCB
EMERGENCY LIGHTING CTU
LIGHTING CONTACTORS

AS INSTALLED

REVISIONS

REV.No.	DATE	DETAILS

TITLE	WORKSHOP DRAWINGS SBD-1 & SBD-2		
DRG.No.	-	FLOOR	N/A
DRAWN	F.H	SCALE	1:10 @ A3
CHECKED		DATE	18/02/09
PROJECT	ST MICHAELS HOUSE - LAGAN ROAD	CLIENT:	ST MICHAELS HOUSE

ALFA ELECTRICAL LTD
Alfa Electrical Ltd,
TAM House,
Ballymount Trading Estate,
Ballymount Road Lower,
Dublin 12
Tel: (01) 4600732
Email: info@alfaelectrical.ie

Sub Distribution Board SDB - 2

Terminal	Cct Ref	Type	Location	Device	R	S	T
1	P01	Sockets	Reception	20amp RCBO	R		
2	P02	Sockets	Reception	20amp RCBO		S	
3	P03	Sockets	Dining and Relaxation	20amp RCBO			T
4	P04	Sockets	Kitchen and Coffee Dock	20amp RCBO	R		
5	P05	Sockets	Kitchen and Coffee Dock	20amp RCBO		S	
6	P06	Sockets	Landing Upstairs	20amp RCBO			T
7	P07	Sockets	Lift	20amp RCBO	R		
8		Sockets	Staff Canteen	20amp RCBO		S	
9	P09	Sockets	IP Rated Socket Reception	20amp RCBO			T
10		Sockets	Spare	20amp RCBO	R		
11		Sockets	Spare	20amp RCBO		S	
12		Sockets	Spare	20amp RCBO			T
13	P08	Sockets	Water Boiler Position for Water Boiler	20amp RCBO	R		
14				20amp RCBO		S	
15				20amp RCBO			T
16	P16		IP Rated 16a Socket Reception	20amp MCB	R		
17	P16		IP Rated 16a Socket Reception	20amp MCB		S	
18	P16		IP Rated 16a Socket Reception	20amp MCB			T
19	P19		Cooker	32amp MCB	R		
20	P20		Marco Water Boiler	32amp MCB		S	
21			Lift Supply	20amp MCB			T
22	P22		Dishwasher	20amp MCB	R		
23	P22		Dishwasher	20amp MCB		S	
24	P22		Dishwasher	20amp MCB			T
25							
26							
27							
28							
29							
Terminal	**Cct Ref**	**Type**	**Location**	**Device**	**R**	**S**	**T**
30	L01	Lighting	Stairs Leading to Reception	10amp MCB	R		
31			Spare	10amp MCB		S	
32	L03	Lighting	Store to Classroom	10amp MCB			T
33	L04	Lighting	Dining and Relaxation	10amp MCB	R		
34	L08	Lighting	WCs Upstairs	10amp MCB		S	
35			Access/ Intruder	10amp MCB			T
36	L06	Lighting	Dining and Relaxation	10amp MCB	R		
37	L07	Lighting	Kitchen and Coffee Dock	10amp MCB		S	
38			Roller Shutter	10amp MCB			T
39	L05	Lighting	Dining and Relaxation	10amp MCB	R		
40	L08	Lighting	WCs at Entrance/ Lift	10amp MCB		S	
41		Lighting	Fire Alarm	10amp MCB			T
42							
43							
44			Control	6amp MCB	R		
45			Time Clock Controlling Water Boiler				
46			Contactor Controlling Water Boiler				
47			Central Test Unit				
48			Contactors Emergency Lighting				
49		Sockets	Supply IP Rated 16a Socket External	20amp MCB	R		
50		Sockets	Supply IP Rated 16a Socket External	20amp MCB		S	
51		Sockets	Supply IP Rated 16a Socket External	20amp MCB			T

Box depth 300

STRUCTURE
1,5 mm steel sheet painted with RAL 7032 / 7035 textured finish.

FLAT MOUNTING PLATE
2 mm galvanized steel sheet.

DOOR
reversible, with two square handles up to 1200 mm height, and one handle closing for 1400 mm height, painted RAL 7032 / 7035 textured finish with sealing gasket in continuous pour.

GLAND PLATE
Duly dimensioned, is fixed at the bottom of the box.

THE SUPPLY INCLUDES
structure, mounting plate, door, gland plate, all screws necessary for the assembly.

code	Degree of protection	Dimensions		
		Height H	Width L	Depth P
CE.0863 [1]	IP 65 EN 60529 UL NEMA type 4	800	600	300
CE.0883 [1]			800	
CE.1063 [1]		1000	600	
CE.1083 [1]			800	
CE.1263 [1]		1200	600	
CE.1283 [1]			800	
CE.1463 [2]		1400	600	
CE.1483 [2]			800	

1 - Square handle
2 - Handle

UNI EN ISO 9001:2000

In accordance with European Standards CEI EN 50298

Underwriters Laboratories Canada and USA - UL 508

TÜV SÜD Group

Impact resistance NF C 20-12-1986 IK7

Certification for degree of protection CEI EN 50529

Certification for shockproofing OPCM 3274 20/03/2003

Miniature Circuit Breakers

G60

IEC 60898 6000 / 3

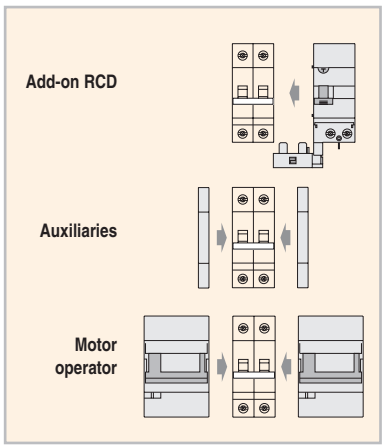
IEC 60947-2 10kA

Applications

Approval / Marking

KEMA KEUR CE CEBEC

Add-on devices



Add-on RCD pg B.14
Auxiliary contacts pg C.4
Shunt trip pg C.6
Undervoltage release pg C.6
Panel board switch pg C.6
Motor operator pg C.8

Accessories pg A.35
Busbars pg E.1
More technical data chap. T1
Dimensions pg A.36

Performances

Thermal setting In	(A)	2-63
Rated voltage AC Un	(V)	240/415
Minimum operating voltage $U_{B\ min}$	(V)	12
Tripping characteristics		B-C-D
Selectivity class		3
Mechanical/electrical endurance		20000/10000
Tropicalisation acc.to IEC 60068-2		95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm^2)	25-35
Poles		1, 1+N, 2, 3, 4
Weight	(g/pole)	120

Short-circuit capacity

AC acc. to IEC 60898

Poles	*V*	*Icn/Ics (kA)*
1-4	230/400	6

AC acc. to IEC 60947-2

Poles	*V*	*Icu (kA)**
1	240	10
1+N, 2	127	30
	240	20
2	415	10
3, 4	240	20
	415	10
		*Ics = 75% Icu

DC acc. to IEC 60947-2

Poles	*V*	*Icu/Ics (kA)*
1	60	20
2	125	25

SECTION 3 – GENERAL SERVICES

Supplier Details: John Keogh Electrical
Unit 7,
E.P.Mooney Buisness Centre,
Longmile Road,
Dublin 12.
Tel: (01) 4509999
Fax: (01) 4509544
Contact: Garrett Dwyer

Contents:

- Schedule of Equipment
- MK Albany Plus Range
- MK Logic Plus Range
- Emergency Call System

General Services Schedule of Equipment

Item	Manufacture	Part No	Supplier
Switched Socket Outlets	MK	MK2948MCO	John Keogh Electrical
Fan Isolator Switch	MK	MK4860MCO	John Keogh Electrical
20A Double Pole Switch c/w neon indicator	MK	MK5233MCO	John Keogh Electrical
Unswitched Spur c/w neon indicator	MK	MK377	John Keogh Electrical
Cooker Outlet	MK	MK5105	John Keogh Electrical
20A Double Pole Switch c/w neon indicator	MK	MK5423	John Keogh Electrical
Phone Plate	MK	MK0182	John Keogh Electrical
1 Mod Grid Frontplate	MK	MK3431MCO	John Keogh Electrical
1G Grid Frame	MK	MK3701	John Keogh Electrical
Inter/Grid Switch	MK	MK4893W	John Keogh Electrical
3 Gang Switch	MK	MK4673MCO	John Keogh Electrical
1 Gang 2W Switch	MK	MK4671MC	John Keogh Electrical
4 Mod Grid Frontplate	MK	MK3434MCO	John Keogh Electrical
4G Grid Frame	MK	MK3704	John Keogh Electrical
2W Grid	MK	MK4882	John Keogh Electrical
32 amp MCO Switch Dishwasher	MK	MK5114MC	John Keogh Electrical
32 amp MCO Switch	MK	MK5106 MCO	John Keogh Electrical
16 amp 4 pole IP Rated Socket and Isolator	Gewiss	DE66209	John Keogh Electrical
16 amp 2 pole IP Rated Socket and Isolator	Gewiss	DE66204	John Keogh Electrical

DOUBLE POLE SWITCHING

13 AMP SOCKET AVAILABLE WITH NEON INDICATORS

MATCHING SCREWS

STYLISH CURVED DESIGN WITH WHITE INSERTS
Blends unobtrusively into the environment

UNIQUE 3-PIN "CHILD RESISTANT SHUTTER SYSTEM"
Designed to inhibit access to the electricity supply, unless all 3 pins of a standard British 13 Amp plug are in position

PRE-TREATED HEAT-CURED POWDER LACQUER FINISH
Ensures that the range is durable and tarnish resistant and eliminates the requirement for a gasket

Terminal screws are backed out and captive. Terminals are upwards facing to make installation easier.

Funnel entrance to terminals.

Clear terminal markings for easy identification.

Satin Brass finish has subtle good looks to suit classic interiors.

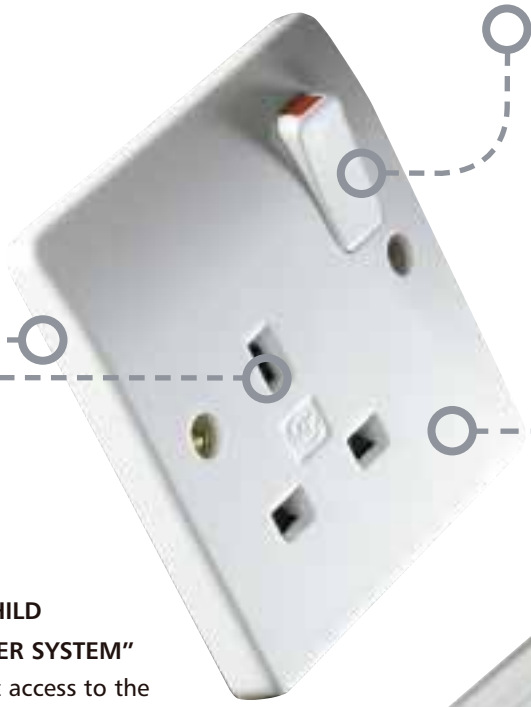
Stylish Satin Chrome finish compliments modern interior design.

CONTOURED TO BLEND INTO THE WALL

DOUBLE POLE SWITCHING
Switches both live and neutral (neutral makes first, breaks last) means added safety for the user

OPTIONAL NEON INDICATOR SHOWS WHEN SWITCH IS ON

3mm SWITCH CONTACT GAP



TASTEFUL WHITE, HIGH GLOSS, HIGH QUALITY THERMOSET MATERIAL
Maintains appearance and resists scratching

UNIQUE 3-PIN "CHILD RESISTANT SHUTTER SYSTEM"
Designed to inhibit access to the electricity supply, unless all 3 pins of a standard British 13 Amp plug are in position (see note on opposite page for related products)

TERMINAL MARKINGS
Clearly marked on all rear mouldings

TERMINAL SCREWS
Backed out and held captive within the terminal housing

IN-LINE TERMINALS
Allow wire to be cut stripped to the same length

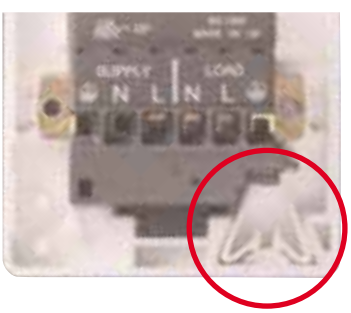
FUNNEL ENTRANCE TO TERMINALS
Terminals are upwards facing to make installation easier

DUAL EARTH TERMINALS
Available for installations that require high integrity earthing

Outboard rockers on switchsockets reduce the likelihood of accidentally switching appliances on or off

Combined TV, FM, satellite and telephone sockets save on installation time and space

Simple but effective screwless cord grip on connection units – securely holds the cable



SECTION 4 – LIGHTING AND EMERGENCY LIGHTING

Supplier Details:

Thorlux Lighting,
1st Floor, Unit H3,
Centrepoint Business Park,
Oak Road,
Dublin 12.
Tel: (01) 4604608
Fax: (01) 4604609
Contact: Paul Ford

Total Lighting,
Unit 7,
E.P.Mooney Buisness Centre,
Longmile Road,
Dublin 12.
Tel: (01) 4509999
Fax: (01) 4509544
Contact: Garrett Dwyer

Emerald Electrical Wholesale,
198a Whitehall Road,
Terenure,
Dublin 12.
Tel: (01) 4099786
Fax: (0)1 4099941
Contact: David Lyons

Contents:

- Schedule of Fittings
- Catalogue Cuttings
- Installation Instructions

Lighting Schedule

Ref	Item	Manufacture	Part No	Supplier
A	Recessed Radiance 4*18w Body	Thorolux	ALT 10276JF	Thorolux
	Recessed Radiance 4*18w Louvre	Thorolux	LVR10240	Thorolux
	Lamp: 18w Triphosphor, 400k	Philips	LMP9182	Philips
B	DOT Opal 38w, HF	Thorolux	2DOT9903JF	Thorolux
	Lamp: 38w 2D Colour 84	Philips	38w22DCol84o	Total Lighting
B1	DOT Opal 38w, HF with Emergency Inverter Pack	Thorolux	2DOT9903JFS21460	Thorolux
	Lamp: 38w 2D Colour 84	Philips	38w22DCol84o	Total Lighting
C1	Kanby – T5 Controller 2*35w, HF	Thorolux	KB10931	Thorolux
	Lamp: 35w, TL5, 400K	Philips	LMP10352	Thorolux
C2	CL-5 2*35w, HF	Thorolux	CL11285JF	Thorolux
	Lamp: 35w, TL5, 400K	Philips	LMP10352	Thorolux
D	Thoroproof T5 1*49w, HF	Thorolux	TP11797JF	Thorolux
	Lamp: 49, TL5, 400K	Philips	LMP10353	Thorolux
E1	City Carre c/w cover III	Thorolux	1218500	Thorolux
	Lamp: 60 watt pl Lamp	Philips	60wPL	Thorolux
E2	LED Downlighter	Thorolux	SLA13587	Thorolux
	LED Downlighter Control Module	Thorolux	SLA12974	Thorolux
	Interlink Plug (Live End)	Thorolux	SLA12982	Thorolux
	5 ft Twin Flourescent Corrosion Proof	Phillips	2*58wCPF	Emerald
	Lamp: 58w	Sylvania	58w/Col35	Emerald
	Safe Edge Maintained Blade Emergency Exit Sign	Menvier	SED	Greenhills
	Lamp: 8-Watt Tube	Menvier	F8W/35	Emerald
	28w 2D Golf 282D+L	Robus	RS218	Total Lighting
	Lamp: 4 PIN 28W 2D LAMP	Sylvania	L2D284P	Total Lighting
	2X26W PL DROP-GLASS	Robus	LDR2261-01	Total Lighting
	Lamp: 26W PLC LAMP 4PIN 840	Sylvania	LPL264/84	Total Lighting

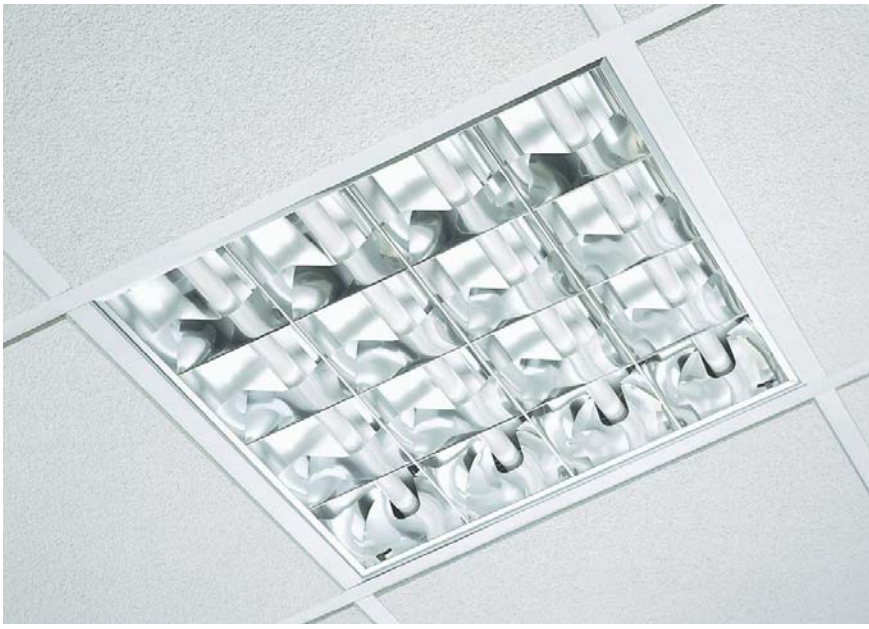
TYPE A

Recessed Radiance

Recessed T8 luminaires for general use and VDT areas

- Steel body finished white
- Satin anodised aluminium louvres
- LG7:2005 (<1500 cd/m^2 @ 65°) and faceted crossblade louvre versions available
- High uniformity lighting with radial light distribution
- Fits most ceiling types, may be lay-in or pulled-up
- Supplied with side arm support kit
- Daylite version, see page 27

IP20



LG7:2005

Range

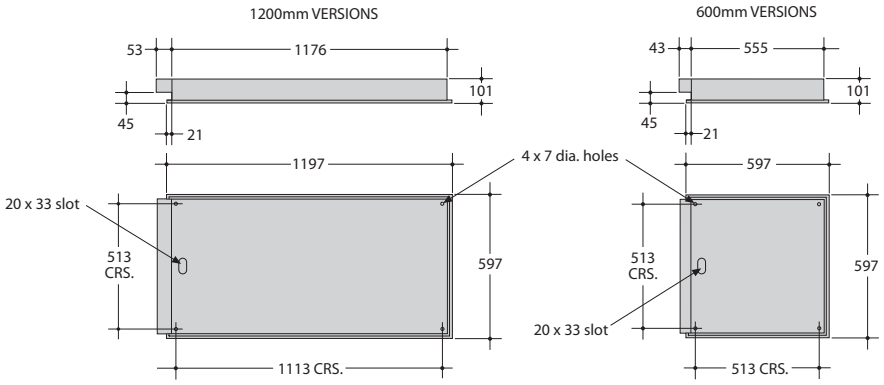
NOMINAL SIZE (mm)	LAMP	LG7:2005 VERSION.	FACETED VERSION	APPROX. kg	CIRCUIT
600 x 1200	3 x 36W T8	RRD 10260	-	16.5	D-J
600 x 1200	4 x 36W T8	RRD 10261	RRD 10267	17.0	D-J
600 x 600	3 x 18W T8	RRD 10263	RRD 10269	8.0	D-J
600 x 600	4 x 18W T8	RRD 10262	RRD 10268	8.0	D-J

CIRCUIT - add suffix required:
D - high frequency regulating **J** - high frequency e.g. **RRD 10260D** etc.

EMERGENCY VERSION - prefix catalogue number with '**ERR**'.
AUTOTEST VERSION - prefix catalogue number with '**TRR**'.
Emergency and AutoTest versions add 0.7kg to weights listed.

AIR HANDLING VERSION - suffix catalogue number with '**H**' e.g. **RRD 10260DH** etc.

LAMPS MUST BE ORDERED SEPARATELY



TYPE D

Thoroproof

Anti-corrosive polycarbonate luminaires for T8 and T5 lamps

- High-impact and corrosion-resistant light grey, injection moulded polycarbonate body
- Clear prismatic polycarbonate cover
- Body and cover flame-retardant
- Smooth easy-clean lines
- Snug-fit polycarbonate cover clips (stainless steel option see page 42)
- Fast installation via external stainless-steel brackets preserves IP rating
- Optional narrow distribution reflector for rack lighting applications
- Complies with M.O.D. JSP482 Chapter 8 Document for 'Category C' areas

IP65

Range

NOMINAL SIZE (mm)	LAMP	CAT. No.	LENGTH (mm)	FIXINGS	APPROX. kg	STANDARD CIRCUIT	EMERGENCY CIRCUIT	AUTOTEST CIRCUIT
				T8 LAMP VERSIONS				
1200	1 x 36W T8 2 x 36W T8	TP 10411 TP 10412	1270	920mm centres	3.0 4.0	E-J-S E-J-S	E-J J	- -
1500	1 x 58W T8 2 x 58W T8	TP 10413 TP 10414	1570	1150mm centres	4.2 5.5	E-J-S E-J-S	E-J J	- -
				T5 LAMP VERSIONS				
1200	1 x 28W T5 2 x 28W T5	TP 12075 TP 13400	1270	920mm centres	3.0 4.0	J J	J J	J J
1500	1 x 35W T5 2 x 35W T5	TP 11795 TP 11796	1570	1150mm centres	4.2 5.5	J J	J J	J J
1500	1 x 49W T5 2 x 49W T5	TP 11797 TP 11798	1570	1150mm centres	4.2 5.5	J J	J -	J -

FACTORY FITTED THROUGH WIRING - add '**TW**' after catalogue number eg. **TP 10411JTW**

CIRCUIT - add suffix required:
E - electronic start **J** - high frequency **S** - switch start e.g. **TP 10411E** etc.

EMERGENCY VERSION - prefix catalogue number with '**ETP**'.
AUTOTEST VERSION - prefix catalogue number with '**TTP**'.
Emergency and AutoTest versions add 0.7kg to weights listed.

LAMPS MUST BE ORDERED SEPARATELY, SEE PAGE 284 FOR DETAILS

DIRECT
Pair of stainless steel brackets supplied. Provides clearance for thermal expansion and fixing.

PENDANT
Pair of steel spring loops supplied.

SECTION 5 – COMMUNICATIONS SERVICES

Supplier Details:

Beacon Communications,
Unit A1,
Nangor Road Business Park,
Nangor Road,
Dublin 12.
Tel: (01) 4198485 / 4198488
Fax: (01) 4198606
Contact: Adrian Dunbar

Total Lighting,
Unit 7,
E.P.Mooney Buisness Centre,
Longmile Road,
Dublin 12.
Tel: (01) 4509999
Fax: (01) 4509544
Contact: Garrett Dwyer

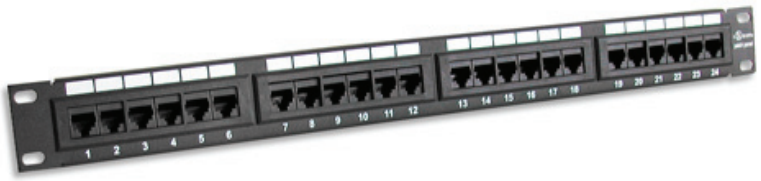
Contents:

- Schedule of Equipment
- Product Information

MATRIX
DELIVERING QUALITY LAN NETWORKS

C5E-SPEC-01 Rev 1.0

CAT 5e 24 PORT PATCH PANEL

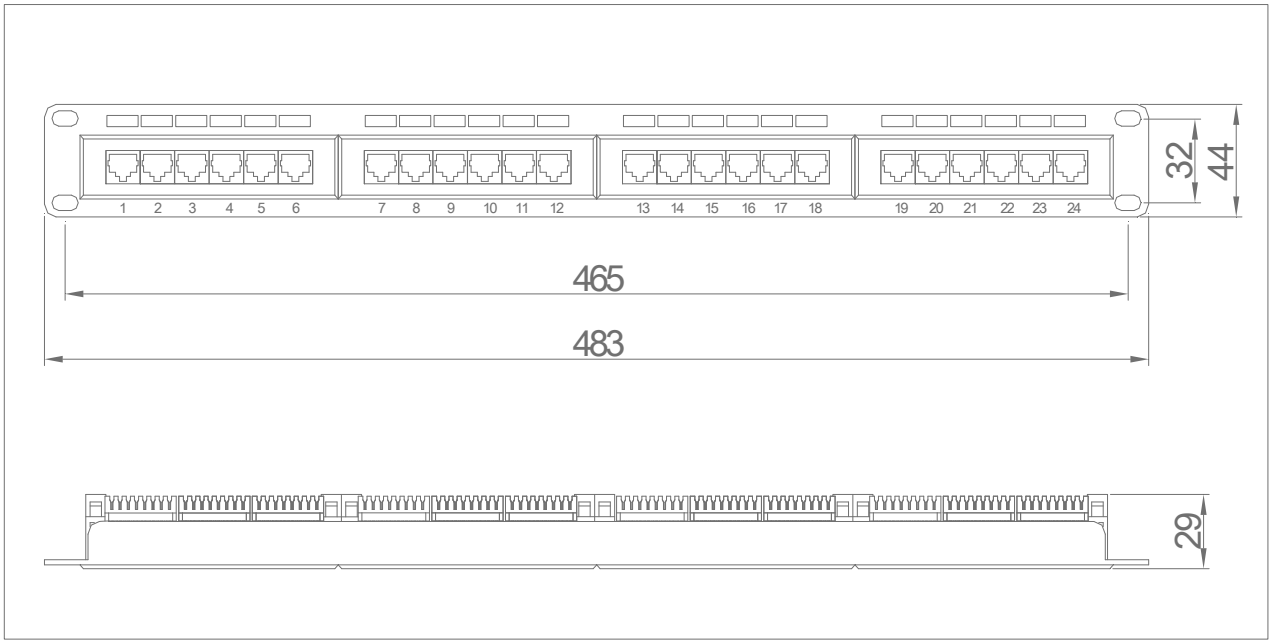


Specifications
Qualified Cat.5e Permanent Link/Channel of
EIA T568A and T568B (ISO/IEC11801)
24port 19" 1U Height
Gold plating: gold over nickel
Silver plating: 1.25um, 5um
Modularity

Mechanical Performance
Insertion Life: 750 cycles minimum
IDC Life: 200 times (22-26 AWG Solid wire) minimum
Plug/Jack Contact Force: 100g minimum using FCC-approved plug.

Environment Characteristic
Storage Temperature: -40° to 70° C
Operating Temperature: -10° to 60° C
Relative Humidity: 95% non-condensing

Electrical Performance
Insulation resistance: 1000 Mohms minimum
Contact resistance: 7 mohms maximum
Dielectric intensity: AC 1000 Vrms 50Hz or 60Hz in 60s



CAT 5e UTP

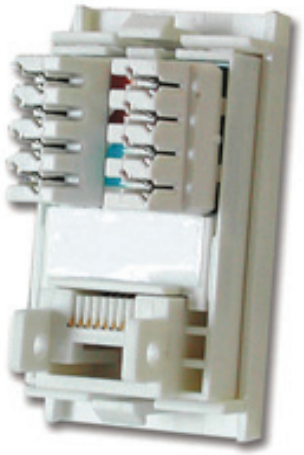
Bcon Communications Limited t/as Beacon Communications
Unit A1, Nangor Road Business Park, Nangor Road, Dublin 12
Tel : +00 353 1 4198485 Fax : +00 353 1 4198606

BEACON Communications

MATRIX
DELIVERING QUALITY LAN NETWORKS

C5E-SPEC-03 Rev 1.0

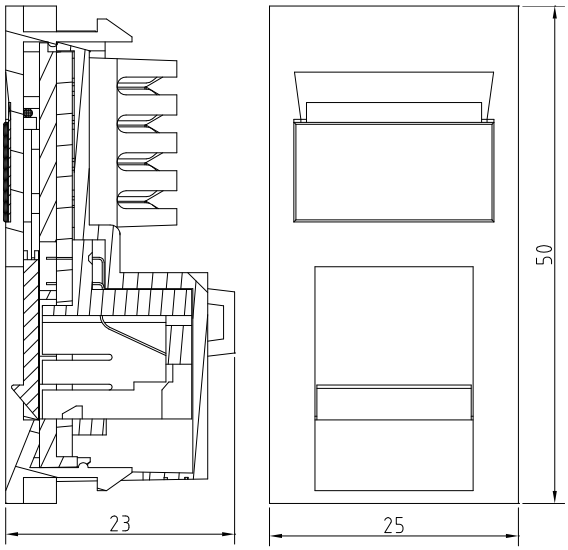
CAT 5e EURO MODULE



Specifications
Size: 25×50×23mm
Color: White
Criteria: TIA/EIA T568-A
Krone IDC
CAT5e

Mechanical Performance
Material: Shell: ABS(UL94V-0)
Jack: PBT
Gold pin: Sn6.5-0.1(Y)

Thickness of gold coated: 15um, 30um, 50um
Contactor: Sn6.5-0.1(Y)
Thickness of silver coated: 0.5um
IDC: Copper conductor 0.4~0.64mm max.



Environment Characteristic
Temperature: -20°C ~ 65°C
Relative humidity: max 95% at 20°C

Electrical Performance
Contact Resistance (excluding body resistance)
≤10mΩ (under normal air condition)

Insulation Resistance:≥1000MΩ
(under normal air condition)

Dielectric intensity: DC 2000V, no spark over and fly arc in 1 min.

CAT 5e UTP
Bcon Communications Limited t/as Beacon Communications
Unit A1, Nangor Road Business Park, Nangor Road, Dublin 12
Tel : +00 353 1 4198485 Fax : +00 353 1 4198606
BEACON Communications

SECTION 6 – FIRE ALARM SERVICES

Supplier Details:

Siemens Limited
Fitzwilliam Court
Leeson Close
Dublin 2
Tel: (01) 2162000
Contact: Derek Regan

Greenhills Rainbow Ltd,
23A Greenhills Industrial Estate,
Walkinstown,
Dublin 12.
Tel: (01) 4602014
Fax: (01) 4503155
Contact: Paul Tracey

Contents:

- Schedule of Equipment
- Product Information
- Fire Alarm Panel Installation Manual
- Fire Alarm Panel Commissioning Manual
- Fire Alarm Panel User Manual

Fire Alarm Schedule

Ref	Item	Manufacture	Part No	Supplier
	2-Loop Analogue Addressable Panel Mx-4200	Advanced Electronics		Siemens
	12-Volt 7.2 Ah Battery		MX-12070	Greenhills
	Apollo XP95 Optical Smoke Detector	Apollo	IE2: 55000-600	Siemens
	Apollo XP95 ROR Heat Detector	Apollo	IE2: 55000-401	Siemens
	Apollo XP95 Manual Call Point	Apollo	IE2: 55000-901	Siemens
	Roshni LP Sounder		ROSHNI	Greenhills
	24-VDC External Sounder/Strobe		FLASHNI	Greenhills
	Apollo Integrated Base Sounder	Apollo	IE2: 45681 – 278po	Siemens

XP95 Optical Smoke Detector ▲ **Part Number 55000-600/620/660**

OPERATING PRINCIPLES

The XP95 optical detector uses the same outer case as the ionisation smoke detector and is distinguished by the indicator LED which is clear in standby and red in alarm. Within the case is a printed circuit board which on one side has the light proof labyrinth chamber with integral gauze surrounding the optical measuring system and on the other the address capture, signal processing and communications electronics.

An infrared light emitting diode within its collimator is arranged at an obtuse angle to the photo-diode. The photo-diode has an integral daylight-blocking filter.

The IR LED emits a burst of collimated light every second. In clear air the photo-diode receives no light directly from the IR LED because of the angular arrangement and the dual mask. When smoke enters the chamber it scatters photons from the emitter IR LED onto the photo-diode in an amount related to the smoke characteristics and density. The photo-diode signal is processed by the optical ASIC and passed to the A/D converter on the communications ASIC ready for transmission when the device is interrogated.

ELECTRICAL DESCRIPTION

The detector is designed to be connected to a two wire loop circuit carrying both data and a 17V to 28V dc supply. The detector is connected to the incoming and outgoing supply via terminals L1 and L2 in the mounting base. A remote LED indicator requiring not more than 4mA at 5V may be connected between the +R and -R terminals. An earth connection terminal is also provided.

When the device is energised the ASICs regulate the flow of power and control the data processing. The optical ASIC is controlled by the communications ASIC and pulses the IR LED. The signal from the photo-diode is processed by the optical ASIC and transferred to the communications ASIC where it is then stored. When smoke enters the chamber the photo-diode signal increases. The information to the A/D converter is updated once per second or when either the monitor or the preceding address is interrogated. Whenever the device is interrogated this data is sent to the control equipment. EN54 threshold alarm levels are calibrated within the processing ASIC. If the device is not addressed within one second of its last polling and the analogue value is greater than the EN54 alarm level the alarm flag is initiated and the device address is added to the data stream every 32 polling cycles from its last polling for the duration of the alarm level condition, except when the alarming device is being interrogated. This can provide a location identified alarm from any device on the loop in approximately two seconds.

The detector is calibrated to give an analogue value of 25±7 counts in clean air. This value increases with smoke density. A count of 55 corresponds to the EN54 alarm sensitivity level. See Fig. 9.

ENVIRONMENTAL CHARACTERISTICS

The XP95 optical smoke detector is unaffected by wind or atmospheric pressure and operates over the temperature range -20°C to +60°C. See Fig. 10.

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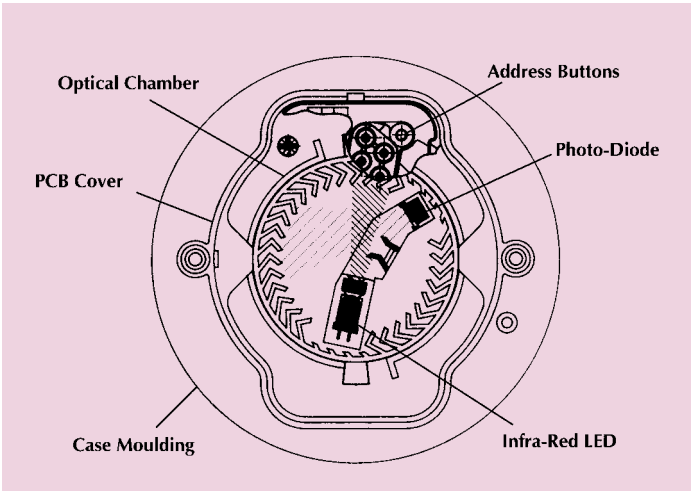

Fig.7 Top section - XP95 Optical Smoke Detector

XP95 Manual Call Point (MCP)

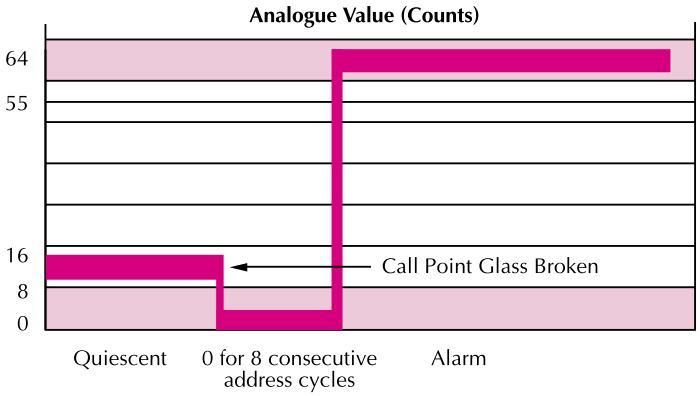

Fig.16 Typical response characteristic - XP95 Manual Call Point

OPERATING PRINCIPLES

The new Apollo XP95 EN54-11:2001 compliant Manual Call Point (MCP) is based on the KAC conventional MCP range. It is electronically and mechanically backward compatible with previous Apollo call points based on KAC's World Series product.

The address of each call point is set at the commissioning stage by means of a seven-segment DIL switch.

A single bi-coloured alarm LED is provided on the call point. This LED is controlled, independently of the call point, by the control panel. The red LED is lit when the call point has been activated. An amber/yellow LED indicates a fault.

Call points can be remotely tested from the panel by transmission of a single bit in the communications protocol. Call points respond by providing a value of 64 which corresponds to the alarm value.

XP95 Manual Call Points are available with or without an isolator. Each version is available with a resettable element and a backbox for surface mounting as standard. If a glass is required, it is available on request. For all part numbers please refer to Table 2.

To provide additional protection against accidental operation, a transparent hinged cover with a locking tag, part number 26729-152 is available, which can be fitted to the manual call point. *Please note that the call point does not conform to EN54-11:2001 when this lid is fitted and secured with the locking tag. For weatherproof call points see Discovery guide PP2052.*

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Important Note – the use of lubricants, cleaning solvents or petroleum based products should be avoided.

	Colour	Deformable Element	Backbox for surface Wiring	Pattress Box	Isolated	Non-isolated
55100-905	Red	•	•			•
55100-908	Red	•	•		•	

Table 2

apollo WORLD CLASS FIRE SOLUTIONS

Mx-4200 Fire Panel

Analogue Addressable Fire Control Panel

Features at a glance

- Fully Expandable from 1 to 2 Loops
- EN54 Parts 2 & 4 'Approved'
- Apollo/Hochiki/Nittan Protocol
- 3 Year Warranty as standard
- Global Compliance
- Multiple Languages
- Fully Networkable

Advanced Fire Panel Technology

The Mx-4200 series is fully expandable from 1 to 2 loops complete with 2 on-board sounder circuits. The control panel consists of a simple to use LCD menu driven graphical interface, dual, flashbased microprocessor technology driven by a 4 Amp power supply and charger approved to EN54 parts 2 & 4. Dedicated system navigation keys makes learning this control panel user friendly as well as installer friendly due to the uncomplicated, trouble free, commissioning and fault finding.

Powerful Cause and Effect programming coupled with 'DynamiX' zoning makes the panel suitable for a wide range of site applications, from small to large complex multi area systems. Fully on site programmable via on board alphanumeric keypad or PC -Net Configuration tools.

PC Software
An extensive suite of PC based, software programs have been developed to supplement the Mx-4000 series Fire panels. User-friendly Windows based 'PC-NeT' configuration software includes a virtual panel allowing for remote diagnostics via a low cost modem connection, saving time and expense for any travelling or maintenance.

Key Features:

- Fully expandable from 1 to 2 loops via common plug in loop driver boards.
- Full support of Apollo (Discovery, Xplorer S90 & XP95).Hochiki ESP & Nittan Evolution protocols.
- Advanced graphical LCD user interface with up to 1000 fire zones as standard, allowing full EN54 compliance without additional hardware or LED indication.

- 4 Amp power supply and charger to EN54 part 4.
- Dedicated RS232 serial port for direct PC or modem connection.
- Dual, flash based, microprocessor technology with on-board Real Time Clock.Optional on-board or remote printer.
- Installer friendly 'Auto-learn' and 'Loop Detection' facility for trouble-free, commissioning.Fully on-site programmable via on-board alphanumeric keypad or PC configuration tools.
- Flash memory and the advanced graphical display enables the panels to be configured to operate in virtually any language with any character set and allows the installer's logo and company details to be applied to the LCD display.
- Robust, removable equipment chassis with plug-in connectors for simple fixing and cable termination
- When connected to the fault tolerant Ad-NeT network, the panel operates as a true peer-to-peer interface (with up to 1000 shared zones) with full cross panel reporting, control and cause and effect functionality.

Product Data Sheet

User Manual

Product Data Sheet

User Manual
MX-4100, MX-4200, MX-4400, Mx-4400/LE & Mx-4800
Fire Alarm Control Panels

The operation and functions described in the manual are available from Software Versions Mx4100-019, Mx4200-019 and Mx4400-019 onwards.

Document Number: 680-015
Revision: 07

Advanced
ELECTRONICS LIMITED

SECTION 7 – SECURITY SERVICES

Supplier Details:

Greenhills Rainbow Ltd,
23A Greenhills Industrial Estate,
Walkinstown,
Dublin 12.
Tel: (01) 4602014
Fax: (01) 4503155
Contact: Paul Tracey

Scott and O`Shea,
Units G4 & G5 Calmount
Calmount Park,
Ballymount,
Dublin 12.
Tel: (01) 4568901
Fax: (01) 4568903
Contact:

Reliable Security Products Ltd
Units 2 & 3
Cian Park Industrial Estate
Dublin 9
Tel: (01) 8372445
Fax: (01) 8571685
Contact: Eddie Meyer

Contents:

- Video Intercom Kit
- Video Intercom Handsfree Monitor
- Egress Button Momentary Switch
- Key Resetable Green BGU
- Electromagnetic Lock
- 12-Volt 1-Amp Power Supply Unit
- 24-Volt 1-Amp Power Supply Unit
- 12-Volt 7.2 Ah Battery
- 24v Door Retainer

SmartAccess

Video Intercom Kit

C10SAVK1

Features

- Colour video intercom
- Hands free video monitor
- Expandable up to 2 hands free video monitors and 2 audio handsets
- Call transfer option (on systems with multiple monitors/handsets)
- Attractive compact design
- 40m range
- IP44

SECTION 8 – MECHANICAL SERVICES

Mechanical Contractor: JRE Group,
Western Road,
Clonmel,
Co Tipperary
Tel: 052 87400
Fax: 052 87435
Contact: John Kinsella

MCC Supplier Details: McCool Controls & Engineering Ltd
U12 Docklands Innovation Centre
East Wall Road
Dublin 3
Tel: (01) 8550532
Fax: (01) 8550546
Contact: John Kinsella

Contents:

Boiler House Wiring Schedule

Equipment	Ref	Switch	Indication / Location
Boiler	BO/1	Test-Off-Auto	Power on/fault
Burner	BU/1	Test-Off-Auto	Boiler house
Primary Pump Calorifier Constant temperature circuit	P1	Test-Off-Auto	Running/Tripped Boilerhouse
Heating Pump Zone A	P2	Test-Off-Auto	Running/Tripped Boiler house
Heating Pump Zone B	P3	Test-Off-Auto	Running/Tripped Boiler house
Shunt Pump	P7	Test-Off-Auto	Running/Tripped Boiler house
Hot Water Secondary Return Pump	P9	Test-Off-Auto	Running/Tripped Boiler house
Heat dissipation stat (flow header)	T1	N/A	Return Header
Boiler house Frost immersion stat (return header)	T2	N/A	Flow Header
Boiler house External Stat (weather compensation)	T3	N/A	North External Wall
External Stat (frost)	T4	N/A	North External Wall Boiler House
In Line Flow Temperature Detector Zone A	T5	N/A	Flow Pipe Downstream of Mixing Valve
In Line Flow Temperature Detector Zone B	T6	N/A	Flow Pipe Downstream of Mixing Valve
Room Air Temperature Sensor Zone A	T10	N/A	Heating Zone A Wall Mounted
Room Air Temperature Sensor Zone B	T11	N/A	Heating Zone B Wall Mounted
Calorifier Water Temperature HI/Lo control Stats	T15 & T16	N/A	Boiler House
Motorised mixing valve Zone A	MMV1	N/A	Boiler House
Motorised mixing valve Zone B	MMV2	N/A	Boiler House
Motorised mixing valve Calorifier	MMV6	N/A	Boiler House
Manual On/Off switch For Zone A		N/A	Admin Office
Manual On/Off switch For Zone B		N/A	Admin Office
LPHW Pressurisation Unit	PU-1	On-Off	Power On/Fault/Pressure Alarm
PU 1 High Pressure Switch	PU 1.1	N/A	Integral to PU 1
PU 1 Low Pressure Switch	PU 1.2	N/A	Integral to PU 1
PU 1 Control Pressure Switch	PU 1.3	N/A	Integral to PU 1
Water Booster set	WB 1	On-Off	Boiler Room
Gas Detection Panel	GP 1	On-Off	Boiler Room

SECTION 9 – TEST RESULTS & COMPLETION CERTIFICATES

Contents:

LINKWARE
CABLE TEST MANAGEMENT SOFTWARE

Cable ID: SMH LAGAN RD-DROP 01

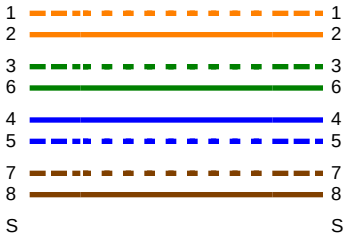
Test Summary: PASS

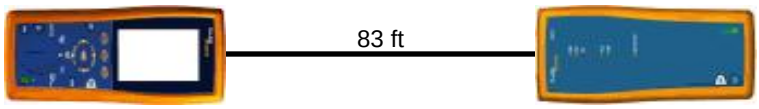
Date / Time: 02/20/2009 08:25:55am
Headroom: 8.4 dB (NEXT 36-45)
Test Limit: TIA Cat 5e Perm. Link
Cable Type: Cat 5e UTP

Operator: Your Name
Software Version: 2.1200
Limits Version: 1.2800
NVP: 69.0%

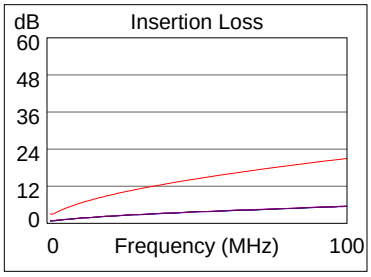
Model: DTX-1800
Main S/N: 9748109
Remote S/N: 9748110
Main Adapter: DTX-PLA002
Remote Adapter: DTX-PLA002

Wire Map (T568B)
PASS

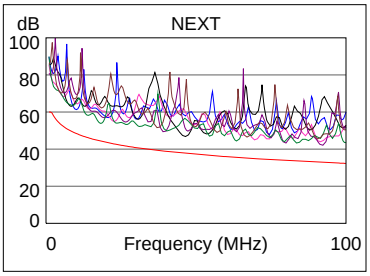


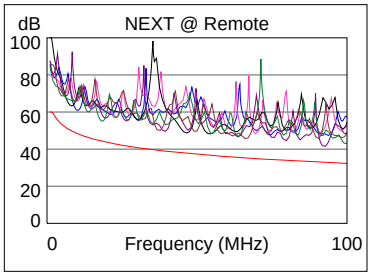


Length (ft), Limit 295	[Pair 45]	83
Prop. Delay (ns), Limit 498		126
Delay Skew (ns), Limit 44		3
Resistance (ohms)	[Pair 45]	4.8
Insertion Loss Margin (dB)	[Pair 12]	15.5
Frequency (MHz)	[Pair 12]	100.0
Limit (dB)	[Pair 12]	21.0

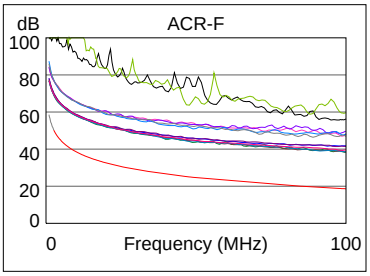


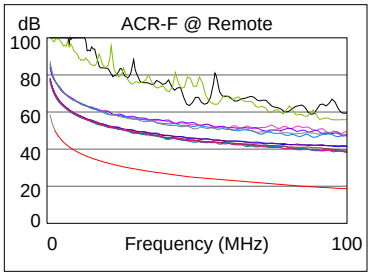
	Worst Case Margin		Worst Case Value	
PASS	MAIN	SR	MAIN	SR
Worst Pair	36-78	36-45	36-45	36-45
NEXT (dB)	8.9	8.4	9.1	8.4
Freq. (MHz)	63.5	92.5	91.8	92.5
Limit (dB)	35.5	32.9	32.9	32.9
Worst Pair	45	36	45	36
PS NEXT (dB)	9.2	9.9	9.2	9.9
Freq. (MHz)	91.3	92.3	91.5	92.3
Limit (dB)	30.0	29.9	29.9	29.9



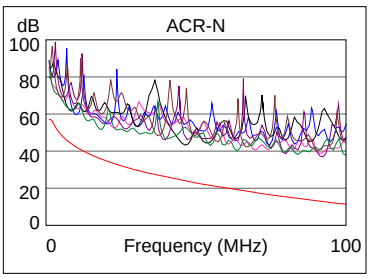


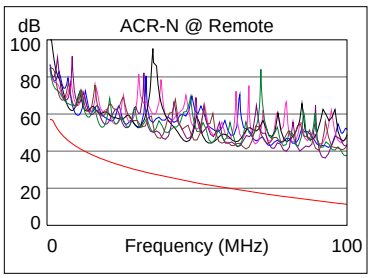
PASS	MAIN	SR	MAIN	SR
Worst Pair	36-45	45-36	36-45	45-36
ACR-F (dB)	18.6	18.6	19.6	19.6
Freq. (MHz)	3.3	2.8	99.5	99.5
Limit (dB)	48.4	49.8	18.7	18.7
Worst Pair	36	36	36	36
PS ACR-F (dB)	17.4	17.4	19.2	18.7
Freq. (MHz)	2.3	2.3	98.0	100.0
Limit (dB)	48.6	48.6	15.8	15.6



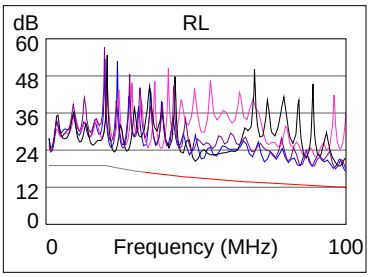


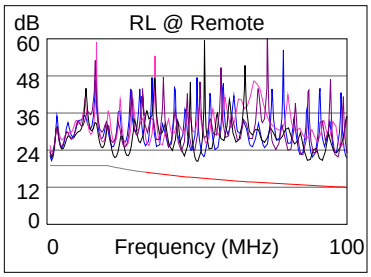
N/A	MAIN	SR	MAIN	SR
Worst Pair	36-78	36-78	36-45	36-45
ACR-N (dB)	15.8	17.0	23.9	23.3
Freq. (MHz)	17.9	18.4	91.8	92.5
Limit (dB)	36.1	35.8	12.9	12.8
Worst Pair	36	36	45	36
PS ACR-N (dB)	16.5	17.8	23.9	24.7
Freq. (MHz)	18.4	18.4	91.5	92.3
Limit (dB)	32.8	32.8	10.0	9.8





PASS	MAIN	SR	MAIN	SR
Worst Pair	12	45	12	45
RL (dB)	5.2	5.3	5.2	5.3
Freq. (MHz)	100.0	50.0	100.0	50.0
Limit (dB)	12.0	15.0	12.0	15.0





Compliant Network Standards:

10BASE-T	100BASE-TX	100BASE-T4
1000BASE-T	ATM-25	ATM-51
ATM-155	100VG-AnyLan	TR-4
TR-16 Active	TR-16 Passive	

LinkWare Version 5.0

Project: DEFAULT
Site: Client Name

FLUKE networks

SECTION 10 – OPERATING & MAINTENANCE PROCEDURES

Contents:

- Operating & Maintenance Procedures
- Safety

OPERATING & MAINTENANCE PROCEDURES

General Recommendations

1.1 Introduction

Preventative Maintenance can be described as the routine inspection, testing and cleaning, adjustments and early detection of incipient trouble likely to cause breakdown. The efficient manner in which this is done can be assessed by freedom from breakdown and behavior of plant under abnormal and fault conditions. Since most of the equipment is normally static, attention is not always drawn to the dangers which can result from general neglect and it follows that a properly organised system of maintenance is essential.

Maintenance problems are influenced by site and atmospheric conditions, system design and type of plant in use. The installation, testing and commissioning of equipment is all-important and must be properly supervised. This section is confined to the routine maintenance of existing plant and equipment and does not deal with the more frequent inspections and test necessary during the commissioning period and the immediate post-commissioning period.

Workshop plant, machinery testing equipment, vehicles and portable compressors etc. have also been excluded

Statutory regulations must be observed by those engaged on maintenance.

1.2 Object

To ensure a satisfactory routine maintenance of distribution plant and equipment and also to ensure a satisfactory method of reporting and recording maintenance.

1.3 Periodic Maintenance

The frequency of inspection and maintenance is given in the following sections but intervals between inspections shown in these tables may be reduced at the discretion of the Engineer, when plant is subject to severe or abnormal operating conditions to where the record shows that more frequent maintenance is essential.

SAFETY

1.1 General

Statutory Regulations

All parties involved in the operation and maintenance of the electrical installation must be aware and act under the requirements of the Health and Safety at Work Act 2005, the Construction Safety, Health & Welfare Regulations 2006 and the General Application Regulations 2007, and any other relevant statutory regulations and current amendments.

Basic Safety Points

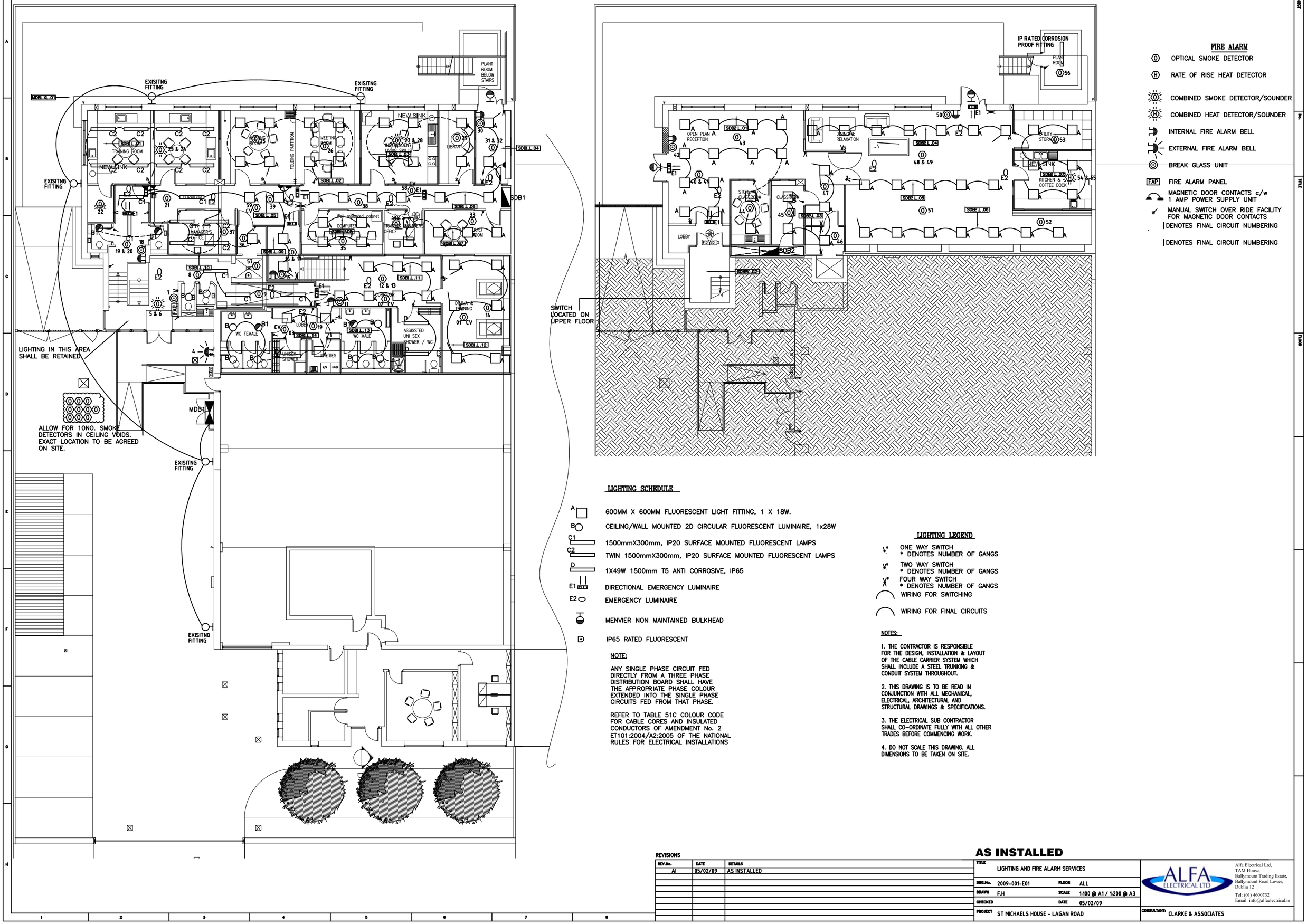
The following list, which contains a number of basic rules that should be observed, it is not necessarily comprehensive.

1. Always assume every circuit is live until it has been checked with a voltmeter or similar approved means.
2. Always check your instruments with a known live source before using them for testing.
3. Before removing fuses, switch off or, if possible, isolate the circuit which it is serving. Never remove a fuse from a circuit carrying its working current.
4. Never touch two sides of a circuit simultaneously whether it is live or dead.
5. Do not use metal rules or measuring tapes when working on or near live equipment.
6. Always use an approved fuse puller, suitably rated and insulated for the line voltage, to remove fuses on circuits which cannot be isolated.
7. When removing fuses, always break contact on the hot side of the circuit first and when replacing, insert fuses in the cold side first.
8. Always use tools with handgrips adequately insulated against the voltage of the circuit to be worked on.
9. If, through necessity, work has to be carried out on a live circuit, make sure that someone else is present who is familiar with First Aid procedures associated with electrocution, and that a permit authorising the work to be done is obtained from the building management personnel.
10. Use carbon dioxide or similar gas type extinguishers, NOT liquid or foam type, to fight electrical fires.
11. Careful attention must be given to securing the safety of personnel and equipment while maintenance or repair work is in progress.
12. Where maintenance work is in progress, a “DANGER” notice must always be attached to any live apparatus, calling attention to the danger of approach. A “CAUTION” notice must always be attached to plant or its associated control equipment, warning of possible damage to equipment which may be occasioned by interference.
13. Before any work is commenced on any item of equipment, supply and ancillary circuits must be made dead and locked off.
14. When working on medium and low voltage switchgear, it is recommended that caution notices and adequate screens are used, to prove that the apparatus is dead before any work is commenced. Where it is necessary to work on live low voltage or medium voltage switchgear, steps should be taken to guard against shock and short circuit by the use of insulating stands, screens, boots, gloves and tools as may be necessary; these should be maintained in sound condition and checked immediately before use.

SECTION 11 – AS INSTALLED DRAWINGS

Contents:

- Lighting and Fire Alarm Services
- Power and General Services
- Intruder Alarm Services
- Electrical Schematics



FIRE ALARM

- OPTICAL SMOKE DETECTOR
- RATE OF RISE HEAT DETECTOR
- COMBINED SMOKE DETECTOR/SOUNDER
- COMBINED HEAT DETECTOR/SOUNDER
- INTERNAL FIRE ALARM BELL
- EXTERNAL FIRE ALARM BELL
- BREAK GLASS UNIT
- FAP — FIRE ALARM PANEL
- MAGNETIC DOOR CONTACTS c/w 1 AMP POWER SUPPLY UNIT
- MANUAL SWITCH OVER RIDE FACILITY FOR MAGNETIC DOOR CONTACTS
- | DENOTES FINAL CIRCUIT NUMBERING
- | DENOTES FINAL CIRCUIT NUMBERING

LIGHTING SCHEDULE

- A — 600MM X 600MM FLUORESCENT LIGHT FITTING, 1 X 18W.
- B — CEILING/WALL MOUNTED 2D CIRCULAR FLUORESCENT LUMINAIRE, 1x28W
- C1 — 1500mmX300mm, IP20 SURFACE MOUNTED FLUORESCENT LAMPS
- C2 — TWIN 1500mmX300mm, IP20 SURFACE MOUNTED FLUORESCENT LAMPS
- D — 1X49W 1500mm T5 ANTI CORROSIVE, IP65
- E1 — DIRECTIONAL EMERGENCY LUMINAIRE
- E2 — EMERGENCY LUMINAIRE
- MENVIER NON MAINTAINED BULKHEAD
- IP65 RATED FLUORESCENT

NOTE:

ANY SINGLE PHASE CIRCUIT FED DIRECTLY FROM A THREE PHASE DISTRIBUTION BOARD SHALL HAVE THE APPROPRIATE PHASE COLOUR EXTENDED INTO THE SINGLE PHASE CIRCUITS FED FROM THAT PHASE.

REFER TO TABLE 51C COLOUR CODE FOR CABLE CORES AND INSULATED CONDUCTORS OF AMENDMENT No. 2 ET101:2004/A2:2005 OF THE NATIONAL RULES FOR ELECTRICAL INSTALLATIONS

LIGHTING LEGEND

- ONE WAY SWITCH * DENOTES NUMBER OF GANGS
- TWO WAY SWITCH * DENOTES NUMBER OF GANGS
- FOUR WAY SWITCH * DENOTES NUMBER OF GANGS
- WIRING FOR SWITCHING
- WIRING FOR FINAL CIRCUITS

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION & LAYOUT OF THE CABLE CARRIER SYSTEM WHICH SHALL INCLUDE A STEEL TRUNKING & CONDUIT SYSTEM THROUGHOUT.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL MECHANICAL, ELECTRICAL, ARCHITECTURAL AND STRUCTURAL DRAWINGS & SPECIFICATIONS.
3. THE ELECTRICAL SUB CONTRACTOR SHALL CO-ORDINATE FULLY WITH ALL OTHER TRADES BEFORE COMMENCING WORK.
4. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS TO BE TAKEN ON SITE.

REVISIONS

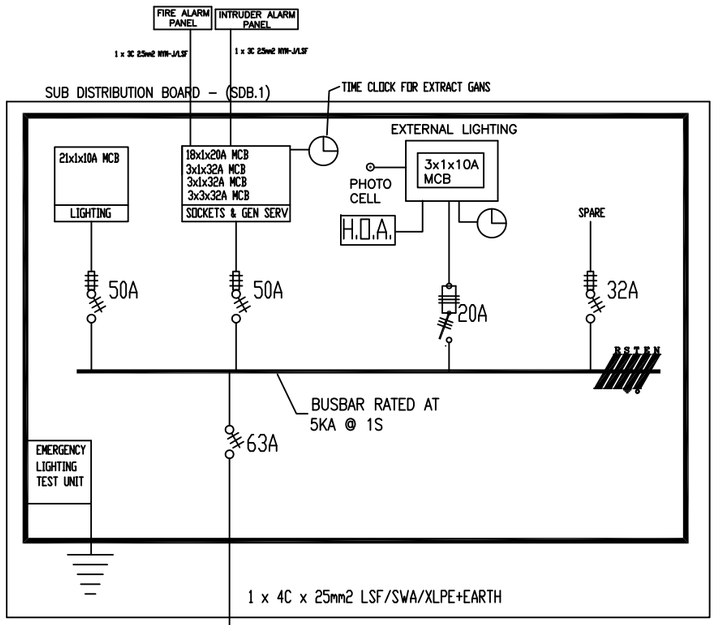
REV.No.	DATE	DETAILS
A1	05/02/09	AS INSTALLED

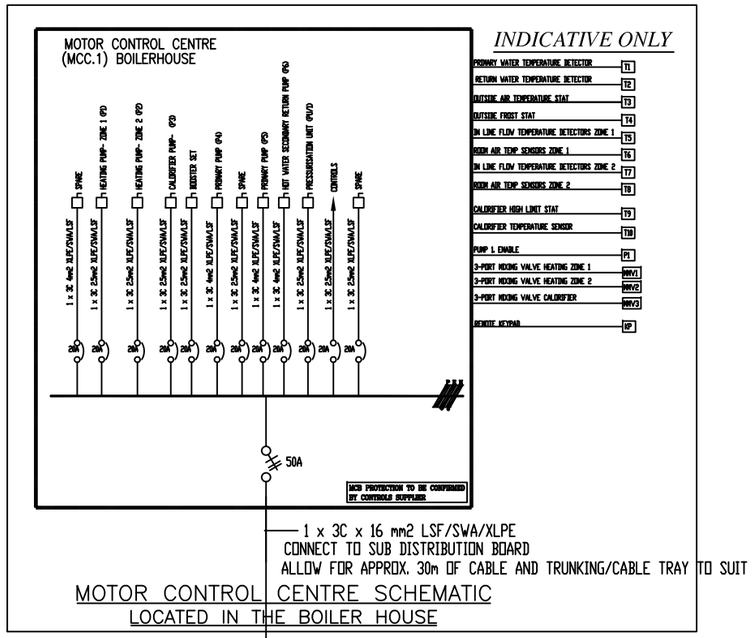
AS INSTALLED

TITLE	LIGHTING AND FIRE ALARM SERVICES		
DRG.No.	2009-001-E01	FLOOR	ALL
DRAWN	F.H	SCALE	1:100 @ A1 / 1:200 @ A3
CHECKED		DATE	05/02/09
PROJECT	ST MICHAELS HOUSE - LAGAN ROAD		

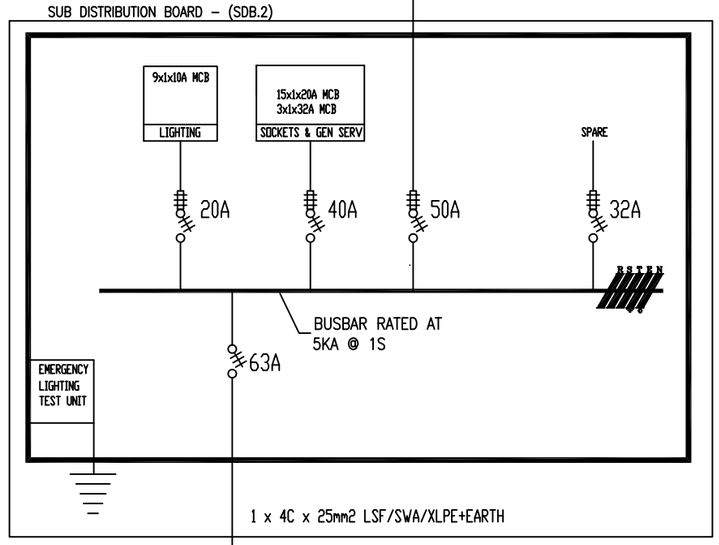
ALFA ELECTRICAL LTD
Alfa Electrical Ltd,
TAM House,
Ballymount Trading Estate,
Ballymount Road Lower,
Dublin 12
Tel: (01) 4600732
Email: info@alfaelectrical.ie

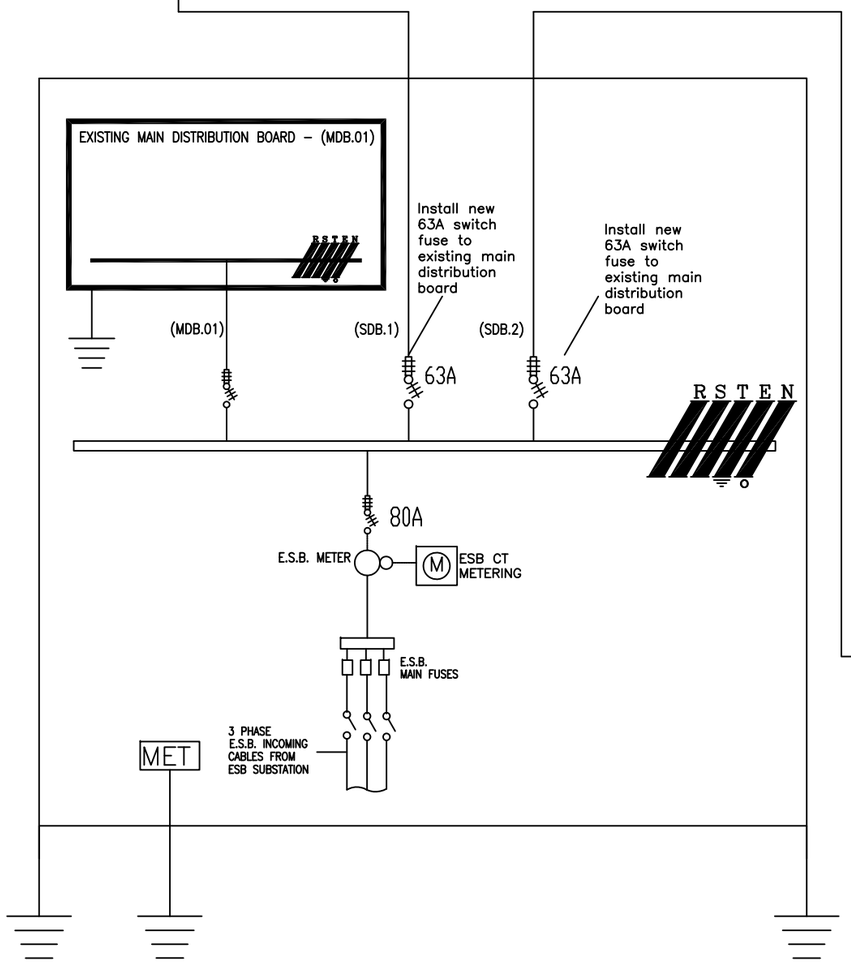
CONSULTANT: CLARKE & ASSOCIATES





MOTOR CONTROL CENTRE SCHEMATIC
LOCATED IN THE BOILER HOUSE





AS INSTALLED

REVISIONS

REV.No.	DATE	DETAILS
A1	05/02/09	AS INSTALLED

TITLE	ELECTRICAL SCHEMATIC		
DRG.No.	2009-001-E04	FLOOR	ALL
DRAWN	F.H	SCALE	N/A
CHECKED		DATE	05/02/09
PROJECT	ST MICHAELS HOUSE - LAGAN ROAD		

ALFA ELECTRICAL LTD
Alfa Electrical Ltd,
TAM House,
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CONSULTANT: CLARKE & ASSOCIATES