Strand Lighting

PRODUCT DATA

7.1.2

ARCHITECTURAL

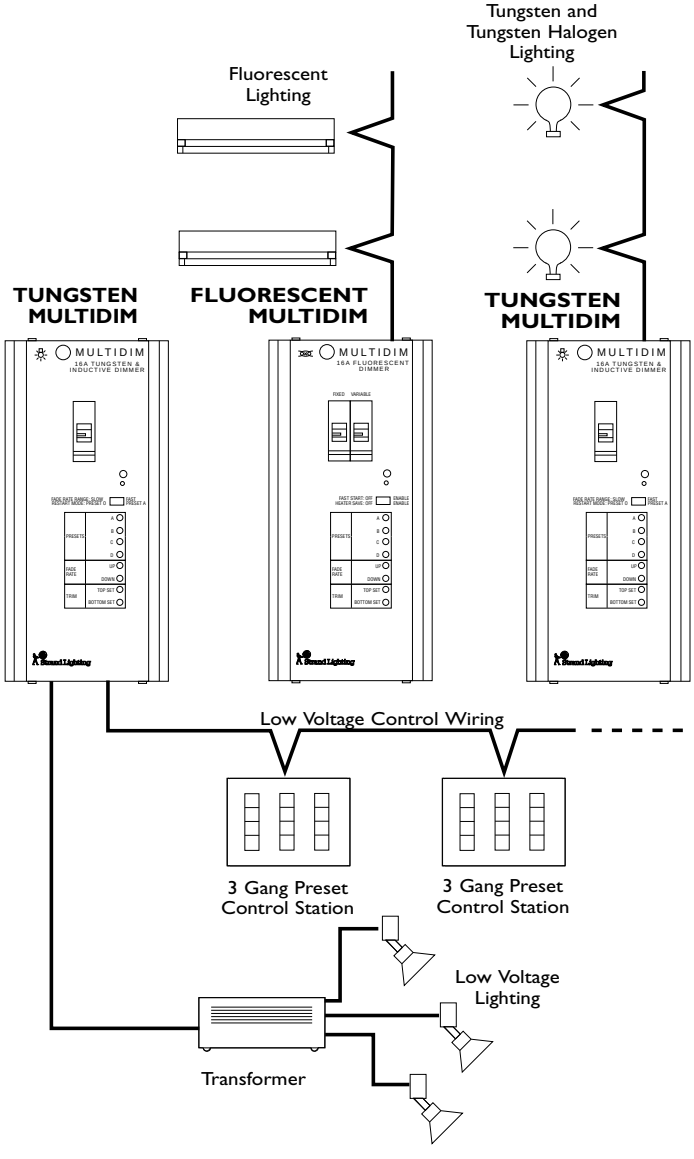
A Guide to Multidim

The Multidim range of modular, plug-in dimmers can build into an integrated system to control a mixture of lighting loads.

Multidim is designed for use with remote pushbutton (preset) or manual (slider) control stations. Manual control allows continual adjustment of the lighting to suit the ambience, while the dimmer's preset capabilities provide the opportunity to set up four predetermined light levels. Operation of remote pushbutton control stations will then cause the dimmer output to fade automatically to these levels at a pre-determined fade rate.

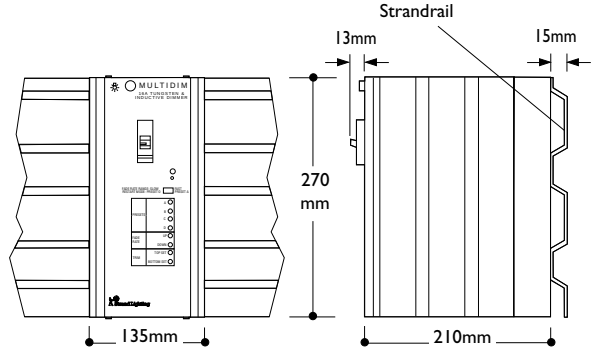
Each plug-in module is supplied complete with its own base socket, which fixes directly onto a wall or Strandrail, to which all load, supply and control wiring terminates. Modules can be installed individually or in groups. When installed in groups, adjacent base sockets form two trunking sections for separately routing the control and mains cables to and from the dimmers.

Multidim Typical Schematic



MULTIDIM™

Plug-In Modular Dimmers



Weights

6A	3.5kg
16A	4.0kg
32A	5.5kg

Standrail

Width	945mm
Height	270mm
Depth	15mm
Weight	3kg

Busbar Connect Set

(Each connector)

Width	35mm
Height	20mm
Depth	8mm
Weight	0.2kg

Typical applications include:-
Hotels, Restaurants, Churches, Meeting Rooms, Museums, Galleries & Auditoria.

- Versions suitable for tungsten and transformer-fed or fluorescent loads.
- Module ratings of 6, 16, and 32 Amps: each dimmer fitted with load-protecting MCB(s).
- 'Fast-start' feature for dimming h.f. electronic dimmable ballasts.
- Accessories to simplify installation.
- Genuine 'load independent' hard-firing of thyristors ensures stable output for all types of dimmable load.
- Four adjustable preset levels and separate Up and Down fade rates for use with remote pushbutton control stations.
- Suitable for use with manual (fader) control stations or any analogue (0 to ± 10 volt) control system.
- "Panic" facility for turning dimmers to full in an emergency.

Specifications

GENERAL

1 The dimmer shall be a plug-in modular unit that can be used individually, or built into an integrated system to control a mixture of lighting loads.

2 Each dimmer shall be suitable for a 220/240 Volt ac 50/60 Hz single phase, neutral and earth supply.

3 The dimmer module shall be convection cooled, with ventilation slots provided top and bottom.

4 The dimmer shall be of steel construction with finned (according to rating) extruded aluminium side panels for additional heat dissipation.

The finish shall be powder coat "Dusty Grey" (Staubgrau - RAL 7037 9090/43231)

5 The dimmer shall dissipate a maximum 2% of the connected load as heat.

6 Each dimmer shall be supplied with a base unit to which all load, supply and control wiring terminates and into which the dimmer module is plugged.

7 Each module shall be fully enclosed. It shall not be necessary to gain access to the module for installation or commissioning.

8 Modules shall be available for tungsten/inductive or fluorescent loads with ratings of 6, 16 and 32 amps.

9 Each base unit shall be keyed to prevent a module of the incorrect rating being inserted.

10 The dimmer shall be secured to its base unit with a knurled locking screw accessible from the front of the dimmer module.

11 It shall be possible to remove side access panels on adjacent base units to form a segregated load/supply and control wire trunking.

12 The base unit shall contain compression terminals accepting up to 10 mm2 cable for load and supply wiring.

13 The base unit shall contain a 16 way terminal strip accepting up to 1.5 mm2 signal cable for control termination.

14 The base shall include internal phase, neutral and earth busbars which can be used to distribute power to adjacent dimmers using optional Busbar Connect Sets rated at 32 Amps. Two additional access panels shall be provided to gain access to the internal busbars.

15 Each dimmer module shall have back-to-back thyristors which shall be genuinely hard fired from a firing circuit which operates independent of load current.

16 The rise time of the dimmer output current shall be limited by substantial varnish impregnated torroidal filters.

17 Tungsten dimmers shall have a single MCB for load and dimmer protection, fluorescent dimmers shall have an additional MCB for the heater circuit used on 4 wire dimming ballasts.

FLUORESCENT DIMMERS:

18 An internal mechanical relay shall be provided to switch on the LF (cathode heater) output when required for 4-wire systems.

For dimmable high frequency electronic ballasts (where the LF output is not required), a switch selectable "Fast Start" facility shall be provided to ensure the correct starting of the lamp(s).

"Fast-start" shall act each time the control is raised from 'off' to strike the lamps at around 45% for 1 or 2 seconds before settling smoothly to the control setting.

CONTROL

19 Each dimmer shall provide a -15V dc supply at a maximum of 100mA suitable for powering remote pushbutton or manual control stations.

20 A range of pushbutton and manual fader control stations shall be available in various configurations for direct connection to the appropriate control terminal in the dimmers base unit.

21 An optional Photocell Head and Amplifier Setting Panel shall be available for providing continuous control of the dimmer output in one of 3 modes:-

- **a** Constant Light: This shall provide closed loop control of the dimmer output to maintain the ambient light level.
- **b** Positive Light Correction: The output of the dimmer shall decrease as light on the sensor increases.
- **c** Negative Light Correction: The output of the dimmer shall decrease as light on the sensor decreases.

22 It shall be possible to interface external control equipment to the dimmers as follows:

ANALOGUE CONTROL

Control terminal number 3 in the base shall accept a 0 to ± 10 volts control signal with respect to the dimmer's technical earth (terminal 16).

PUSHBUTTON CONTROL

Presets are selected by momentary connection from technical earth (16) to the following terminals : -

Preset O:	Terminal 9	Preset C:	Terminal 8
Preset B:	Terminal 7	Preset A:	Terminal 6

Stop function : Terminal 10

The Stop function shall stop any pushbutton activated fade and hold the lighting at the current level until another preset is selected.

Note: Pushbutton and analogue control work internally on a "highest level takes precedence" basis and so the two forms of control are not usually combined on a single dimmer.

'Panic' Facility

A maintained connection between terminals 1 and 16 will hold the dimmer at full.

23 Each dimmer module shall support the following front panel facilities:

A red LED indicator showing that power is applied to the dimmer.

SWITCH SETTINGS:

Restart mode: Dimmers shall have a user selectable power-up condition. Select either Preset A or Preset O as preferred. Preset O shall be selected for all non-pushbutton control applications.

Fade Rate Range: Shall select either Fast (0.3 to 30 seconds) or Slow (3 to 300 seconds) range for manually adjusted up and down fade rate.
Note: Fade rate only applies for pushbutton control.

Fluorescent modules shall have the following additional switch settings:
Heater Save: Shall automatically disconnect the fluorescent heater supply LF when dimmer is at full.

Fast Start: Special feature for dimmable high frequency electronic ballasts to ensure correct starting of lamp(s)

MANUAL ADJUSTMENTS:

Each dimmer shall be supplied with a tool for making manual adjustment:s:

Presets: Level adjustments for the four presets A, B, C and O. Applicable only when pushbutton control stations are used, or when setting an appropriate level for the "Restart" function.

Fade Rate: Separate settings for up and down fade speed.

Trim: Top and bottom set adjustments determine the maximum and minimum dimmer output

MASTER/SLAVING:

24 It shall be possible via control wiring to connect any number of dimmers as 'slaves' to a designated 'master' dimmer so that they respond in unison to a single control signal.

This is useful in cases where a large load is to be dimmed, or where the overall load is to be split across more than one phase.

When a manual control station is used, a 'master' and its 'slaves' shall all respond to a single manual fader level. When pushbutton control is used, 'slaves' shall fade to the preset levels set on the 'master' dimmer.

ELECTRICAL SUPPLY

Multidim modules shall be suitable for 220/240 Volts AC, 50/60Hz single phase, neutral & earth.

CABLE SPECIFICATION

Control stations specifically designed for use with Multidim shall operate via low voltage (15V) dc signals. The cable between dimmer and control station(s) shall be colour-coded multicore signal cable typically 7/0.2mm, though other types may be used.

The routing for this cable shall avoid proximity with mains cables, in particular those feeding equipment likely to induce interference (eg. Cinema projectors, HMI lighting etc.).
Maximum length of cable run: 1000 metres.

Refer to the Control Station Data Sheets or the Multidim Installation Instructions for the number of conductors required for each station type.

DOCUMENTATION

Each Multidim shall be supplied complete with an Installation Instruction Booklet.

STANDARDS

Electrical safety in accordance with IEC 65/BS415

RFI suppression complies with BS800 and VDE 0875 level N, supply level G (load and control). Rise time of output limited by substantial varnish impregnated torroidal filters.

ENVIRONMENTAL SPECIFICATION

For dimmers, control stations and other associated equipment, the following recommendations shall apply:

Ambient Temperature extremes	0 - 35° Celsius

To be installed in a position with adequate ventilation allowing for heat dissipated by each dimmer (up to 2% of the connected load).

Relative Humidity	10 - 90% non condensing
General conditions	Office level cleanliness.
	Interior use only.

Care shall be taken to avoid sitting the dimmer module in a noise sensitive area, as dimmers emit low level humming sound.

The dimmers are designed for permanent installation, fixed to a wall or other similar non-inflammable surface.

Choice of Module

The selection of the appropriate dimmer module is dependant on two factors:

(i) Type of load - Tungsten, Fluorescent, Low Voltage, Neon and Cold Cathode.

Tungsten Multidim is suitable for low voltage transformer-fed loads, high voltage transformer fed loads such as Neon and Cold Cathode, as well as mains voltage tungsten or tungsten-halogen lamps.

Fluorescent Multidim is suitable for dimming luminaires with either 38mm diameter (T12), 26mm diameter (T8), or certain 4-pin Compact Fluorescent lamps, when fitted with compatible dimmable control-gear (See 'Fluorescent Dimming' Section for details).

(ii) Size of load - The guidelines below should be used to select the appropriate 6, 16 or 32 Amp dimmer capacity required. These guidelines take into account the derating factors for low voltage loads, and ballast type for fluorescent loads.

Tungsten Loads

For mains voltage loads, the module's stated MCB rating indicates the maximum loading under normal conditions of supply and ambient temperature. It is normally advisable to derate by a small margin to allow for supply fluctuations.

Transformer-Fed Loads

Transformer-fed loads such as low voltage lighting, cold cathode, or neon can be dimmed within safety guidelines. The transformers should be of a type suitable for phase control dimming, which normally include thermal protection. For further details see Strand Lighting Fact Sheet No. 5, "A Guide to Installation and Dimming of Low Voltage Lighting".

Tungsten Multidim's are suitable for these loads, but they must be de-rated to allow for surge currents.

De-rating guidelines are as shown below:-

Dimmer Rating	Maximum Transformer-Fed Load
6 Amp Tungsten	Up to 900 VA
16 Amp Tungsten	Up to 2400 VA
32 Amp Tungsten	Up to 4500 VA

Fluorescent Dimming

Fluorescent luminaires must be equipped with an approved dimmable ballast. The U.D.T. or Helvar High Frequency EL-FD range are recommended for T8 and Compact Fluorescent tubes. Strand's own dimming ballasts are recommended for T12 tubes.

Consult Strand Lighting if in any doubt about compatibility or ask for a copy of Fact Sheet No. 9, "A Guide to Fluorescent Dimming" for more details.

Maximum loadings should be calculated from the table below, not from the tube wattages as these do not provide an accurate indication of true load current.

Table showing the maximum number of tubes that can be connected to a Multidim

	FLUORESCENT TUBES												COMPACT FLUORESCENTS (4 PIN)					
	T12 (38mm)				T8 (26mm)								2D GR 10Q BASE		PL (TCS/E) 2G11 BASE			PLC (TCD/E) G24Q BASE
BALLAST TYPE	STRAND T12 (ENVIRON)				U.D.T..				HELVAR*				U.D.T.		U.D.T.			U.D.T.
	2ft	4ft	5ft	6ft	2ft	4ft	5ft	6ft	2ft	4ft	5ft	6ft						
LAMP WATTAGE	(600mm)	(1200mm)	(15000mm)	(1800mm)	(600mm)	(1200mm)	(1500mm)	(1800mm)	(600mm)	(1200mm)	(1500mm)	(1800mm)						
	20W	40W	65W	75/85W	18W	36W	58W	70W	18W	36W	58W	70W	28W	38W	18W	24W	36W	26W
Dimmer Rating																		
MULTIDIM 6A	28~	14	9	7	15	14	9	7	50	27	18	18	17	12	15	16	13	18
MULTIDIM 16A	76~	38	24	20	42	38	24	20	130	76	48	48	49	36	42	46	36	49
MULTIDIM 32A	142~	71	44	37	85	71	44	37	260	152	96	96	90	67	77	84	66	91

* It is recommended that when whenever possible a minimum of 2 tubes are connected to a dimmer.
Assumes 2ft 20W tubes are wired as pairs to a 40W Strand T12 Dimming Ballast.

Accessories

The following optional accessories are designed to simplify the installation of a group of Multidim modules.

Strandrail

Base sockets can be screwed either directly to a wall or Strandrail. Strandrail is a pre-formed steel backplate for mounting several Multidim modules quickly and neatly ensuring correct alignment and spacing.

Each length of rail is suitable for mounting up to seven Multidim modules of any rating or type. Supplied complete with all the screws, bolts and wall plugs required for fixing.

Busbar Connect Set

A row of Multidim modules can be fed from a common supply cable terminated in one base unit by using a Busbar Connecting Set. The three push-on connectors supplied in a set link phase, neutral and earth busbars within each dimmer base. Maximum rating of connectors: 32 Amps.

Connectors are fitted by removing access panels on the appropriate side(s) of the base.

Ordering Information

Cat. Number	Tungsten/Transformer-fed versions Description
71006	6 Amp Tungsten Multidim
71016	16 Amp Tungsten Multidim
71032	2 Amp Tungsten Multidim
Cat. Number	**Fluorescent Versions** **Description**
71106	6 Amp Fluorescent Multidim
71116	16 Amp Fluorescent Multidim
71132	32 Amp Fluorescent Multidim
Cat. Number	**Accessories** **Description**
76820	Strandrail
76821	Busbar Connect Set

Strand Lighting

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