

Technical

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Technical information

For the very latest technical information including full Clipsal details visit www.getplc.com and click on the product support tab.

To speak to Technical Support call 0121 565 7770

Product guarantees

All products are subject to rigorous internal evaluation in GET's in-house laboratory before further testing by UKAS approved test houses.

We offer the following guarantees covering GET's product range:

Smart home

1 year guarantee is offered on all Smart Wireless lighting products

2 year guarantee is offered on all ULTI Wireless lighting products

2 year guarantee is offered on all Delta 8 home networking products

Wiring accessories

25 year guarantee is offered on all Ultimate electromechanical components with the exception of:

- All dimmers carry a 3 year guarantee

15 year guarantee is offered on electromechanical components of all other wiring accessory ranges with the exception of:

- All dimmers carry a 3 year guarantee
- Clipsal Infrascan carries a 3 year guarantee

Lighting

1 year guarantee is offered on all Lighting products with the exception of:

- Performer Transformers carry a 5 year guarantee
- Performer Plus Transformers carry a 10 year guarantee

Ventilation & heating

1 year guarantee is offered on all Ventilation & heating products with the exception of:

- Hand dryers carry a 3 year guarantee

Any component part or parts which become defective in normal use due to faulty material or workmanship, will be repaired or replaced at our discretion, free of charge. All costs of removal, installation, despatch, transport and insurance will be at the owners expense. Any guarantee will be considered null and void if the item has been interfered with in any way by unauthorised person, misuse in any way. This guarantee is in addition to and does not affect the statutory rights of the consumer.

Lighting | Technical information

GET lighting control products are compatible with many lamp types. Please check the table below for suitability.

Lamp type		Dimmer					Switch						
		Rotary	Electronic	1000w	Smart	ULTI	Plate/ Toggle	Time delay	Key card	Card switches	PIR	Photocell	ULTI
Incandescent													
GLS, Candle, Decorative, Golfball, strlight etc	MV	●	●	●	●	●	●	●	●	●	●	●	●
Halogen - GU10, G9, R7s, Halogen replacements	MVH	●	●	●	●	●	●	●	●	●	●	●	●
Halogen - MR16, G4, MR11, GU4, GU5.3.	LVH	●	●	●	●	●	●	●	●	●	●	●	●
Fluorescent CFL													
Tubular, compact double D 2 pin/4 pin		-	-	-	-	-	●	●	●	●	●	●	●
CFLi													
Stick, Candle, Spiral, Golfball, GX53, GU10, Energy saving pendant	MV	-	-	-	-	-	●	●	●	●	●	●	●
Dimmable CFLi	MV	●	-*	-*	-*	●*	●	●	●	●	-	●	●
Linear													
Mini batten, T4, T5	MV	-	-	-	-	-	●	●	●	●	●	●	●
T8 magnetic ballast HPF, LPPF	MV	-	-	-	-	-	●	●	●	●	●	●	●
T8 / High output T5 HF	MV	-	-	-	-	-	●	●	●	●	●	●	●
HID													
Mercury Vapor	MV	-	-	-	-	-	●	●	●	●	●	●	●
Self-Ballasted Mercury Vapor	MV	-	-	-	-	-	●	●	●	●	●	●	●
Metal Halide	MV	-	-	-	-	-	●	●	●	●	●	●	●
High Pressure Sodium	MV	-	-	-	-	-	●	●	●	●	●	●	●
Low Pressure Sodium	MV	-	-	-	-	-	●	●	●	●	●	●	●
Light Emitting Diode													
LED with Driver	MV	-	-	-	-	-	●	●	●	●	●	●	●
LED Replacement													
GU10, MR16	MV	-*	-*	-*	-*	-*	●	●	●	●	●	●	●

Notes*

The availability, types and styles of dimmable CFLi's and LED's will increase significantly with the progressive withdrawal of Incandescent lamps from the marketplace. Check with the Technical Support helpline (Tel 0121 565 7770) or website to determine if your lamp is compatible with GET controls.

N.B.

MV = Mains voltage

MVH = Mains voltage halogen

LVH = Low voltage halogen

● = compatible

-* = not compatible

Smart Wireless Lighting system

Receivers

Description	Receiver	
	Ceiling	Floor
Memory	Controlled by limited controls	
Load Type	1. Incandescent 2. Low Volt. Halogen with magnetic transformer Electronic Dimmable 3. Low Volt. Halogen with Ballast dimmable electronic transformer	
LED Backlight	Blue during operation	
Minimum Load	20W per channel	
Maximum Load	350W	
Operating Temperature	0°C to + 40°C	
Operating Humidity	0% to 95%	
Operating Voltage & Frequency	220-240V AC, 50Hz	
Radio Frequency	434MHz	
Dimensions	130mm x 50mm	180mm x 50mm excluding cable

Controllers

Product	Controller	
	Hand	Wall
Battery Type	2 x CR2032 button cell battery	
Operating Temperature	0°C to + 40°C	
Operating Humidity	0% to 95%	
Radio Frequency	434MHz	
Operating Range	30m (Open environment*)	
Dimensions	88mm x 88mm x 12mm	80mm x 80mm
Safety Compliance	BS EN 60669-2-1-2000	
Operation	On/Off/Adjust lighting intensity	
Memory	4 scenes or dimming Control of unlimited receiver	

* The performance of the operating range is subject to the actual conditions of the environment, such as weather and installation conditions. Under normal circumstances a longer range can be achieved outdoors, since indoors obstacles like concrete walls and metal shelves may shorten the operating range.

Functional Comparison Table

	Wall controller	Hand Controller
Scene Programming	●	●
Device Programming	●	●
Disabling Programmed Scene Setting*	●	●
Enabling Programmed Scene/Device*	●	●
Disabling All-Off Command	-	-
Enabling All-Off Command*	●	●
Scene/Device Mode Selection	●	●
Changing All-Off Function to Scene Function*	-	-
Resume All-Off Function*	-	-
Dimmer Partial Memory Clear	-	-

Environment and installation considerations

As the system uses radio frequencies, performance is dependant on the installation. Reliable operation in the following environments can be achieved although the effective range will be reduced by:

- installation in metal frame buildings or extensions
- operation through solid or cavity stone, brick or block walls
- operation through more than one floor, ceiling or partition wall
- locations near radio or television transmitters
- damp atmospheres e.g. swimming pools or saunas

If erratic operation is experienced moving closer to the receivers can usually be expected to restore correct operation.

Smart Wireless Lighting system

Frequently asked questions

QUESTIONS	ANSWERS
1. How many Receiver units can I use with my Remote Controller?	There is no limit to the amount of Receivers you can control from your remote.
2. Is there any wattage limitation on the Floor and Ceiling Receivers?	350 watts per Receiver (mains & low voltage no de-rating).
3. What is the range of the Controllers?	The typical range of the Controller is 30 metres in open space. Radio waves are affected by conditions such as walls and the weather.
4. Can the Wall Controller be recessed into my existing wall box?	Yes. The Wall Controller is designed to fit into a 16mm wall box.
5. Can I use 2 Controllers to control the same lights?	Yes, in fact there is no limit to the amount of Controllers you can use to control the same lights. You just need to set their coding switches to the same setting.
6. Can I expand the Lighting System at a later date?	Yes. The GET Smart Wireless Lighting System can be expanded at any time.
7. How long will the batteries in the Controller last?	This depends on the frequency of use. However based on an average amount of use the batteries should last approximately 2 years.
8. How will I know when my batteries need changing?	The right hand LED on the Controller will flash every time one of the buttons is pressed.
9. Can I use Fluorescent tube lighting with the system?	No, fluorescent lamps are not compatible with the system
10. What type of lamps can I use with the system?	The GET Smart Wireless Lighting System can be used with a wide range of lamp types. See page 147 for details.
11. If my neighbours also has a GET Smart Wireless Lighting System will there be any interference problems?	No. The system has 256 different house codes, therefore you can set your own unique code to prevent interference problems.
12. What standards does the system meet?	BS EN 60669-2-1
13. Will I need to reprogramme my system in the event of a power cut, or if the batteries in my Controller go flat?	No, your settings are stored in a memory that does not require constant power, therefore a loss of power will not affect your system.
14. Can I use the Wireless Lighting System with other electrical products?	No, the system is designed only to be used with lighting products.

ULTI wireless lighting system

Specification

Description	Switches		Dimmer	
	1-Gang	2-Gang	1-Gang	2-Gang
Safety Compliance	IEC60669-2-1			
Operation	Toggle on/off		Toggle On/ Off/ Adjust lighting intensity	
Memory	Up to 8 Remote Control Units		8 Remote Control Units	
LED Backlight	Changeable Amber / Blue colour		Changeable Amber / Blue colour	
Load Type	Please Refer to Load Table		1. Incandescent 2. Low Volt. Halogen with magnetic transformer Electronic Dimmable 3. Low Volt. Halogen with Ballast dimmable electronic transformer	
Minimum Load	25W		40W per channel	
Maximum Load	Please Refer to Load Table		600W	400w per gang, total 600W for both gangs combined
Operating Temperature	0°C to + 40°C			
Operating Humidity	0% to 95%			
Operating Voltage & Frequency	220-240V AC, 50/60Hz			
Radio Frequency	434MHz			
Mounting Centres 60.3mm	60.3mm			
Dimensions	87mm x 87mm x 39mm			

*Do NOT mix use type 1 & 2 loading in connection to same gang.

Load Type Table

The table below shows the maximum rating for 1-gang and 2-gang switch operating at 220-240V AC.

Switch Lamp type	1-gang total switch load	2-gang total switch load	
		Max power for one gang	Max total power for both gangs added
Incandescent lamp	2000W	Max power for one gang	2000W
		Max total power for both gangs added	2000W
Low voltage halogen (12V) with magnetic transformer	1900W	Max power for one gang	1900W
		Max total power for both gangs added	1900W
Low voltage halogen (12V) with electronic transformer	1900W	Max power for one gang	1900W
		Max total power for both gangs added	1900W
Fluorescent lamp with electronic ballast*	1800W	Max power for one gang	1800W
		Max total power for both gangs added	1800W
Fluorescent lamp with magnetic ballast power factor correction capacitor*	1800W	Max power for one gang	1800W
		Max total power for both gangs added	1800W
Fluorescent lamp with magnetic ballast but without power factor correction capacitor*	1000W	Max power for one gang	1000W
		Max total power for both gangs added	1000W
Energy saving lamp*	1400W	Max power for one gang	1400W
		Max total power for both gangs added	1400W

Dimmer Lamp type	1-gang total switch load	2-gang total switch load	
		Max power for one gang	Max total power for both gangs added
Incandescent lamp	600W	Max power for one gang	400W
		Max total power for both gangs added	600W
Low voltage halogen (12V) with magnetic transformer	600VA	Max power for one gang	400VA
		Max total power for both gangs added	600VA
Low voltage halogen (12V) with electronic transformer	600VA	Max power for one gang	400VA
		Max total power for both gangs added	600VA

* Each 0.47uF/275VAC, "X2" bypass capacitor is required to connect parallel to the load in the gang(s) with energy saving lamp or compact fluorescent lamp.

Smart home | Technical information

ULTI wireless lighting system

Freelocate

Product	FreeLocate 2-Setting Switch	FreeLocate 6-Setting Switch
Memory	2 scenes/ 2 devices settings	5 scenes/ 5 devices settings, All Off.
Battery Type	CR2032 button cell battery	
Operating Temperature	0 °C to 40 °C	
Operating Humidity	0% to 95%	
Radio Frequency	434MHz	
Operating Range	100m (Open environment)*	
Dimensions (H) x (W) x (D)	85mm x 85mm x 13mm	

* The performance of the operating range is subject to the actual conditions of the environment, such as weather and installation conditions. Under normal circumstances a longer range can be achieved outdoors, since indoors obstacles like concrete walls and metal shelves may shorten the operating range.

Hand held remote

Spec / Product	Remote Controller
Memory	5 scenes/5 devices settings, Master Dim Up/Down and All-Off
Battery Type	2 x AAA batteries
Operating Temperature	0 °C to + 40 °C
Operating Humidity	0% to 95%
Radio Frequency	434MHz
Operating Range	100m (Open environment)*
Dimensions	125mm (H) x 51mm (W) x 25mm (D)

* The performance of the operating range is subject to the actual conditions of the environment, such as weather and installation conditions. Under normal circumstances a longer range can be achieved outdoors, since indoors obstacles like concrete walls and metal shelves may shorten the operating range.

Function comparison table

	FreeLocate 2-	FreeLocate 6-	Remote control
Scene Programming	•	•	•
Device Programming	•	•	•
Disabling Programmed Scene Setting*	•	•	-
Enabling Programmed Scene/Device*	•	•	-
Disabling All-Off Command	-	•	•
Enabling All-Off Command*	•	•	•
Scene/Device Mode Selection (Single Function)	•	•	•
Scene/Device Mode Selection (Multiple Function)*	•	•	•
Changing All-Off Function to Scene Function*	-	•	-
Resume All-Off Function*	-	•	-
Switch/Dimmer Partial Memory Clear	•	•	•

* Only applicable to the Switches and Dimmers of Product No. Starting with U20.

Environment and installation considerations

As the system uses radio frequencies, performance is dependant on the installation. Reliable operation in the following environments can be achieved although the effective range will be reduced by:

- installation in metal frame buildings or extensions
- operation through solid or cavity stone, brick or block walls
- operation through more than one floor, ceiling or partition wall
- locations near radio or television transmitters
- damp atmospheres e.g. swimming pools or saunas

If erratic operation is experienced moving closer to the receivers can usually be expected to restore correct operation.

ULTI wireless lighting system

Trouble shooting guide

Symptom	Possible cause	Solution
Switch / Dimmer is not responding to the Remote Control Unit	1. Not previously programmed or improper programming.	Repeat the Programming Procedures explained in the Manual.
	2. Switch/Dimmer is set to Programme mode.	The LED indicator is turned on red now, indicating the unit is in Programming mode. If programming is not required, press the Programme button to exit Programming mode.
	3. Voltage is too low.	Make sure the operating voltage range is within the requirement.
	4. Power rating is too low	Replace a load that meets the minimum loading requirement.
	5. RF wireless control is disabled. (Programme LED flashes continuously in the pattern of 2)	Press the Programme Button of the Switch/Dimmer 6 times within 1 minute. Programme LED should stop flashing.
Unable to programme.	1. Red Programme LED flashes after the Programme Button is pressed.	This indicates the memory is full. Perform Memory Clearing Procedures to release space.
	2. The Switch does not receive programming commands.	Check the position of the function selector at the back of the FreeLocate Switch. Make sure it is in the Programme position.
	3. RF wireless control is disabled. (Programme LED flashes continuously in the pattern of 2)	Press the Programme Button of Switch 6 times within 1 minute. Programme LED should stop flashing.
Main light or LED backlight does not turn on.	1. Wires are not properly secured or connected in the terminals.	Make sure the wires are secured, screws are fastened and the Live or Load wires have been connected to the correct terminals.
	2. MCB is OFF or has been tripped.	Switch on the MCB. If a breaker continually trips, contact a registered electrician to find out the cause of the problem
	3. Temporary disorder.	Switch off the MCB and then on again to reset the switch.
Main load is turned off automatically.	1. Power rating is too low.	Replace the load that meets the minimum loading requirement.
	2. Wires are not properly secured in the terminals.	Make sure the wires are secured and screws are fastened properly.
	3. Controlled by other remote control unit within the area.	Determine which remote control unit(s) is (are) controlling the particular main light. (Refer to Memory Clearing Procedures).
Programme LED flashes continuously in a pattern of 2 for 1 minute then stops. Pattern continues when Control Button is pressed again.	1. Low Volt Halogen (12V) is blown	Replace the lamp load if it is blown, then perform a unit reset
	2. Magnetic transformer is faulty.	Check the status of magnetic transformer.

Frequently asked questions

QUESTIONS

1. Is two way / intermediate control achievable using ULTI?
2. What is the purpose of 047uF load capacitor UAX004?
3. What size of mounting box should be used with ULTI switches and dimmers?

ANSWERS

1. Yes. By using a FreeLocate switch
2. This capacitor should be used for specific lamp types where minimum load requirements are not met
3. A 35mm or deeper back box should be used.

Delta 8 | Technical information

Ease of installation

- Insulation displacement contacts (IDCs) with easy, fast connection using the universal connector tool.
- The system is easy to adjust with the test kit; simply check the amplification level and the overall signal level.

Scalability

The Delta 8 VDI system has open interfaces to existing and future applications (wireless, voice over IP, digital video, etc.), thus giving the user complete freedom of choice (some restrictions may apply).

The standard Delta 8 solution offers one unit for 8 telecommunication outlets. When greater resources or distribution capacity are needed, simply add a second unit daisy-chained to the first.

Aesthetic and functional integration

The Delta 8 core unit, attractive and discreet, can be easily integrated into the house, due to:

- limited space requirements.
- installation on DIN rail very appropriate for modular enclosures.
- attachment to 10" mounting for incorporation in 10" VDI cabinet (supplied by others).
- side clips for wall mounting or any other horizontal mounting method.

Ease of use

- No cross-connection required: once the core unit has been connected to the phone cable end, the TV cable or aerial and the data selector switch, the user can access all supported services from the telecommunication outlets.
- Simply connect radios, TV sets, telephones and data applications with the correct cord to one of the 8 predefined links to obtain the desired application.
- One of the two phone lines can be selected on each of the links at any time.

Satellite TV

Delta 8 will not transmit feeds from the LNB of a satellite receiver. To achieve the same satellite channel in multiple rooms you must use the RF output on the receiver and connect to RF in on the Delta 8 unit.

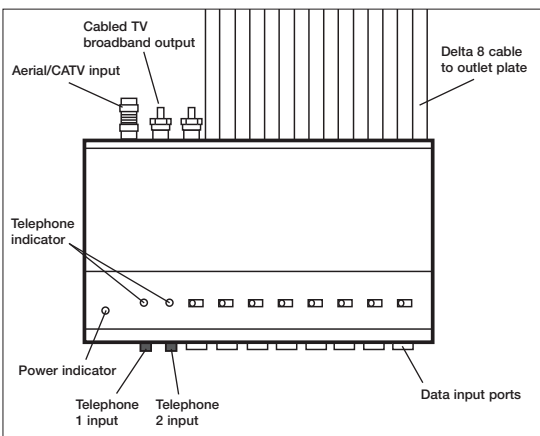
Cable TV

The Delta 8 system will allow the use of multiple cable receivers within the home. Restrictions to interactive services will apply as the Delta 8 does not accommodate for return path.

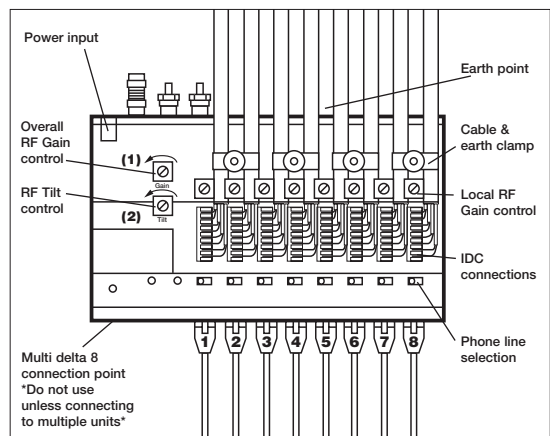
Broadband

With the Delta 8 system you can have access to a high speed broadband networks that can provide you video, entertainment, online gaming, plus the ability to download music and video. Other opportunities include VoIP (Voice over IP), SOHO (small office, home office), home schooling, and many more.

Delta 8 core unit



Delta 8 external view



Delta 8 internal view

Delta 8 | Technical information

Set up and configuration

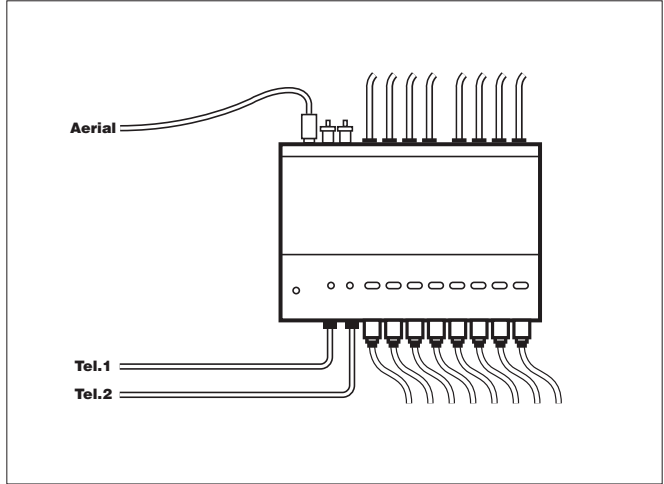
TV/RF input & data

Output will provide:

- a connection to the TV aerial and other RF signals
- choice between the two phone lines
- access to the local computer network

Consists of:

- 1 TV aerial connection
- 2 phone lines
- Data switch



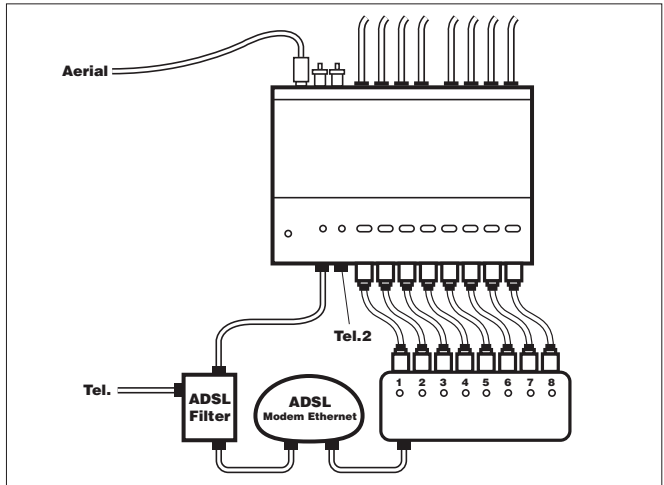
TV/RF input ADSL broadband plus

Output will provide:

- a connection to the TV aerial and other RF signals
- choice between the two phone lines
- access to internet

Consists of :

- 1 TV aerial connection
- 2 phone lines
- 1 ADSL filter
- 1 ADSL router/modem
- Data switch if insufficient output ports on router



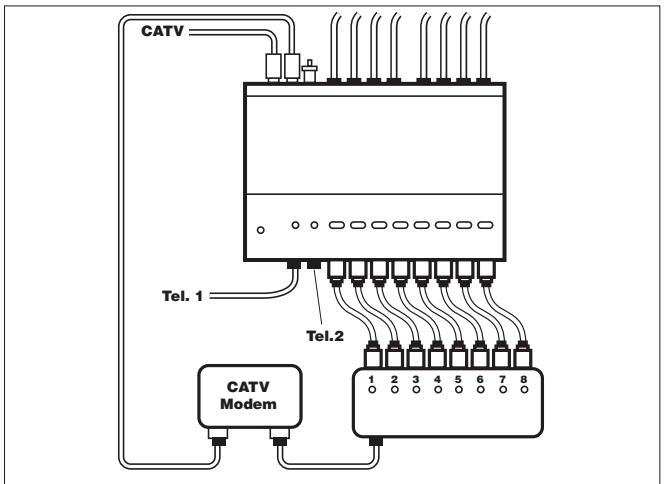
Cable TV and broadband internet configuration

Output will provide:

- a connection to the cable TV
- the choice between the two phone lines
- access to internet

Consists of :

- 1 CATV connection
- 1 or 2 phone lines
- 1 CATV modem
- Data switch



Delta 8 | Technical information

Delta 8 core unit

The active all-in-one module provides the interface for the Delta 8 system. The incoming services are distributed into the cable links on individual pairs by the dedicated features of the core unit, such as;

- broadband amplifier for TV/Radio with separate output stages
- data panel with true cat.6 link performance
- telephone line splitter with support of 2 different lines (maximum of 4 ren per line)

The system requires Delta 8 cable in its use to accommodate a link length from 2 to 50 metres.

Below the cover, the links are terminated to the unit, and turning-adjustment of each output stage is done per link to adapt for the lengths. Also global adjustments for Gain and Tilt of the incoming CATV line is possible.

If more than 8 outlets are needed in an installation, 2 or more core units can be daisy chained to achieve 16, 24,..outlets capacity

The core unit includes power supply and connection cords for the telephone line inputs.

Electrical and technical data

Power consumption	14W max
Bandwidth	47-862 MHz (CATV on all links)
Gain forward	Global = -5 / +15 dB
Tilt (equalizer)	Global = + / - 6 dB
Input level	60-77 dB μ V (CATV RF input)
Return loss	-10 dB min. (CATV RF input)
Insertion loss	RF input to DATA = 4 dB RF input to TEST = 10 dB DATA to RF input = 4 dB
Screening attenuation	> 90 dB (class A)
Impedance input	75 Ohm (CATV RF input)
Input voltage	12 Vdc

Construction and material data

Input interface	Tele lines: 2 x RJ11 Data ports: 8 x RJ45 STP CATV RF: F-conn. (fe-male) Security line: RJ3 1X Power supply: 5.5mm jack (+ on centre)
Output interface	Cable links: LSA punch down (TIA568B) CATV test: F-conn. (fe-male) CATV data: F-conn. (fe-male)

Standards and approvals

Application standard	EN50083-2: emission and immunity
Cabling standards	EN50173:2002 Cat.6 PL

Delta 8 Installation cable

A 4-pair high bandwidth and double shielded installation cable for Delta 8 applications. It offers Superior shielding with each pair individually shielded in metal foil and the overall tinned copper wire braid (S/STP).

The cable is specifically matching the applications in the Delta 8 system, using the well known colour coding from LAN installations.

The Delta 8 installation cable can be used in both surface and flush mounted installations and shows excellent resistance to damage and reduction of performance due to stress from the installation work.

The cable is offered in both 120 m box and 300 m drums, where the box is matching the average cable need for an apartment installation.

Electrical and technical data

Attenuation	47 dB @ 600 MHz / 100 meter
Bandwidth	0 - 900 MHz
Impedance	100 Ohm nom.
NEXT	93 dB @ 100MHz 80 dB @ 300 MHz 75 dB @ 600 MHz
Signal Velocity	0.8 c
Bending radius under installation	Min. 65 mm.
Bending radius Installed	Min. 30 mm.
Temperature, Installation	0 °C to +50 °C
Temperature, Operation	-20 °C to +60 °C

Construction and material data

Material	LSFROH
Weight	55 kg/km
Printing	Home installation cable 2x4xAWG23 SSTP
Caloriefic Value	0.55 MJ/m
Cable Ø	7.1 mm
Colour: conductor	White/Blue, white/orange, white/green, white/brown
Colour: sheath	White RAL 9010

Standards and approvals

Absence of halogens	ISO 60754-2
Flame Retardance	ISO 60332-1 / -3
Application standard	EN 50173-1
Cable standards	EN 50288-5-1
Application Standard	ISO 11801

Delta 8 | Technical information

Trouble shooting	Recommendations and installation
Telephone Connections	For all telephone connections, you have to use a two wire line adaptor in order to avoid any short circuit or non-functioning of other services (TV & data).
Security Input	Do not use the Security Input unless used with the stacking cord. Failure to do so will cause permanent damage of line one.
Non-functioning telephone	If the telephone line 1 does not work, but that the telephone line 2 still works, the line 1 could have been damaged by the RJ11 plug connected in the security socket. If it is the case, please contact Schneider Electric Ltd.
PABX	Where a PABX is in use, you must use 1Pair telephone cord between the PABX and line 1 or line 2. If the PABX requires more than 1Pair, it will not be compliant with the Delta 8 system with the potential risk of damaging the PABX.
Noise on the telephone line 1 or line 2	If noise on the telephone line 1 or 2, check the system : * without the ADSL filter, * by plugging directly the telephone on the telephone line from the operator (disconnection of the Delta 8). If no noise occurs when doing these operations separately, the problem should come from the mismatch impedance between the used telephone and the Delta 8.
Poor TV picture	Adjust Gain and Tilt to improve signal
Poor/No TV signal using triple play	Ensure the correct input cable is used from wall outlet plate to triple play
Data/broadband cable	The dedicated Delta 8 cables must be used for all data and broadband services
Data input to Delta 8	Cat 5, Cat 5E, Cat 6 or dedicated Delta 8 cables can be used as inputs

Frequently asked questions	Answers
Can I distribute HDMI over Delta 8?	Delta 8 will distribute RF television, data and telephone
What is the minimum and maximum single length I can run Delta 8 cable?	min. 2m, max. 50m
Can I use Cat. 5 or Cat. 6 cable?	No, bandwidth is insufficient on Cat. 5 and Cat. 6 cable
Is it possible to receive more than one signal from one outlet?	Yes. Incorporating a Tripleplay splitter enables you to connect to TV, Data and telephone at one Delta 8 outlet.
Do I need to run 3 cables to each wall outlet?	One of the many advantages of Delta 8 is that you only need to run one cable to each Delta 8 outlet
Can I have infra-red control over my equipment?	Yes, by using a separate RF to IR Converter (available separately from retail outlets)
Can I distribute cable or satellite broadcast?	Delta 8 will not transmit feeds from the LNB of a satellite receiver. To achieve the same satellite channel in multiple rooms you must use the RF output on the receiver and connect to RF in on the Delta 8 unit. The Delta 8 system will allow the use of multiple cable receivers within the home. Restrictions to interactive services will apply as the Delta 8 does not accommodate for return path. With the Delta 8 system you can have access to a high speed broadband networks that can provide you video, entertainment, online gaming, plus the ability to download music and video. Other opportunities include VoIP (Voice over IP), SOHO (small office, home office), home schooling, and many more.

Wiring accessories | Technical information

Recommended quantity of socket outlets for domestic installation

Inadequate installations can occur when not enough socket outlets have been installed or where the existing sockets are located in the wrong areas. This could lead to potentially dangerous improvisations.

The table below summarises the recommendations of the Electrical Installation Industry Liaison Committee (EILLC) regarding the minimum number of twin switched socket outlets per room, suitable for domestic installations. This takes into account likely uses and likely trends.

Room	Number of sockets	Room	Number of sockets
Kitchen	4	Landing/stairs	1
Lounge	6	Hall	1
Dining room	3	Garage	2
Double bedroom	3	Store/workroom	1
Single bed-sitting room	3	Central heating boiler point	1

Wiring circuits for 6AX and 10AX switches

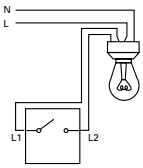


Diagram A – One way circuits

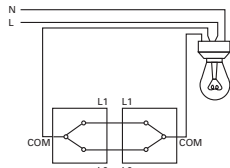
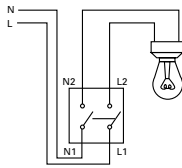


Diagram B – Two way circuits

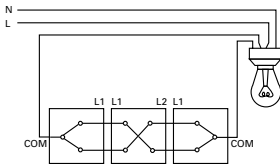
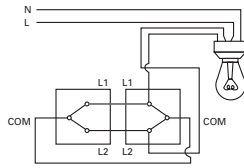
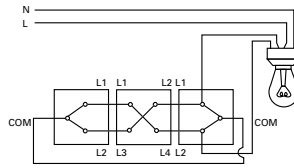


Diagram C – Intermediate circuits



Note: 1 way or 2 way switches can be replaced by dimmer switches. Rotary dimmers are 1 way only whilst Push dimmers are 2 way.
LV dimmers are suitable for use on the LV input side only.

Accessories mounting box

Product	Description	Ultimate white moulded	Exclusive white moulded	Ultimate flat plate	Rocca decorative	Exclusive brass and metal plate
6AX/10AX plate switches	1-2 gang	16mm	16mm	16mm	25mm	25mm
	3 gang	25mm	25mm	25mm	25mm	25mm
	4-6 gang	25mm	25mm	25mm	25mm	25mm
	TP isolator	25mm	25mm	25mm	25mm	25mm
Dimmer switches	1 & 2 gang	**16mm/25mm	**16mm/25mm	25mm	35mm	25mm
	3 & 4 gang	25mm	25mm	25mm	25mm	25mm
Socket outlets	1 gang	25mm*/35mm	25mm	25mm*/35mm	25mm	25mm
	2 gang	25mm*/35mm	25mm	25mm*/35mm	25mm	25mm
	3 gang		25mm			
Round pin sockets		25mm	25mm	25mm		25mm
RCD socket outlets	1 & 2 gang		25mm			25mm
Fused connection units		25mm	25mm	35mm	35mm	25mm
Flex outlet plates		25mm	25mm			
20AX key switches		25mm	25mm	25mm	35mm	25mm
20AX DP switches		25mm	25mm	25mm	35mm	25mm
32A DP plate switches	1 gang	47mm	47mm			47mm
	2 gang	47mm	47mm	47mm	47mm	
45A DP switches	1 gang	47mm	47mm			47mm
	2 gang	47mm	47mm	47mm	47mm	
45A DP ceiling switch			47mm			
Cooker connection units		47mm	47mm	47mm		47mm
Cooker terminal box		47mm	47mm			
Shaver sockets		47mm	47mm			47mm
Telephone socket outlets	Master & secondary	25mm	25mm	25mm	25mm	25mm
Co-axial socket outlets	Single & twin	25mm	25mm	25mm	25mm	25mm
Diplex and triplex		25mm	25mm	35mm	25mm	25mm
Satellite socket		25mm	25mm	25mm		25mm
RJ45 & RJ11		35mm	35mm	35mm	35mm	35mm

Note

Metal clad accessories are supplied complete with a 42mm surface mounted box in the same matching finish.

Metal plate accessories are not suitable for mounting on surface moulded pattresses.

*Dependent upon wiring configuration

**For 16mm flush fitted steel boxes use adaptor plate supplied when mounting 2 Way Ultimate slim line moulded dimmer switches

Wiring accessories | Technical information

Terminal capacities

Product	No. of cores to each terminal hole						
	1.0mm ²	1.5mm ²	2.5mm ²	4.0mm ²	6.0mm ²	10.0mm ²	16.0mm ²
6AX/10AX plate switches	5	3	1	–	–	–	–
13A socket outlets	–	–	5	3	2	–	–
13A DP socket outlets	–	–	5	3	2	1	1
20A DP switches	–	–	5	3	2	1	1
20AX DP switches/ (earth terminal only)	–	5	3	2	1	–	–
13A connection units	–	–	5	3	2	1	1
13A connection units/ (earth terminal only)	8	5	3	2	1	–	–
20A front entry flex outlet plate	–	–	5	3	2	1	1
20A front entry flex outlet plate (earth terminal only)	–	9	3	2	1	–	–
20A key switches	–	–	5	3	2	1	1
25A side entry flex outlet plate	–	–	5	3	2	1	1
25A side entry flex outlet plate (earth terminal only)	–	–	5	3	2	1	1
32A DP switches	–	–	–	3	2	1	–
32A Keypad switch	–	–	–	3	2	1	–
45A DP switches	–	–	–	4	3	2	1
45A DP switches (earth terminal only)	–	–	5	3	2	1	1
45A cooker control units	–	–	–	4	3	2	1
Cooker flex outlet	–	–	–	5	3	1	1
Dimmer switches	5	3	1	–	–	–	–
Batten lampholders	5	4	2	1	–	–	–
Batten lampholders (earth terminal only)	–	9	5	3	2	1	–
6AX ceiling switches	5	3	1	1	–	–	–
45A ceiling switches	–	–	–	4	3	2	1
Ceiling roses	5	4	2	1	–	–	–
Ceiling rose (earth terminal only)	–	9	5	3	2	1	–
20A junction boxes	11	8	4	2	1	1	–
30A junction boxes	–	–	7	4	3	2	1

Dimmer switches

General Information:

When specifying dimmers it is advisable to obtain as much information as possible to ensure suitability and compatibility of products. Consider the following:

- Type of lamps/lighting.
- Type of control gear used in the light fittings, (if applicable). e.g. type. Make and model number of transformer or ballast, etc.
- Number of light fittings/load of each dimmer.
- Number of circuits/dimmers.
- Number of dimmers on each plate.
- Number of switching positions for each circuit.
- Any requirement for dimming lights from more than one position.

1 gang plate size

Dimmer modules	Max.each Dimmer	Min.each Dimmer	Total per Plate
1	250W	60W	250W
1	400W	60W	400W
1 (Electronic)	350VA	60VA	350VA
2	250W	60W	500W
2 (Electronic)	300VA	60VA	400VA

Maximum load of 400W for the plate should not be exceeded.

2 gang plate size

Dimmer modules	Max.each Dimmer	Min.each Dimmer	Total per Plate
1	1000W	100W	1000W
3	250W	60W	750W
4	400W	60W	1000W

Maximum load of 1000W for the plate should not be exceeded.

GET mains dimmers are NOT designed for dimming with any form of Low Voltage transformer. For this application a suitably rated Low Voltage Dimmer Switch should be used.

Wiring accessories | Technical information

GET dimmer guidelines

Moulded plate mounted dimmers can generally be used with the supplied pattress to replace standard wall switches (where a 16mm box depth is typically used). For flat plate mounted dimmers, 25mm boxes are required, except for the 1000W Electronic dimmer that requires a 47mm box. All rotary dimmer terminations and wiring are the same as for standard switches, i.e. COM, L2 (and also L1 for two-way dimmers). Rotary one-way dimmers can only be used for switching and dimming from one position. Rotary two-way (push) dimmers can be used to replace any one, (but not both), of the two-way switch circuit, (note that only one dimmer can be used per switch circuit or lamp(s); thus the lights can be switched from more than one position but can only be dimmed from one. With any rotary dimmer, if replacing an

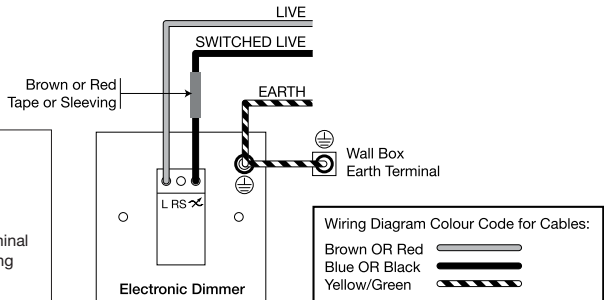
existing switch or dimmer, make a careful note of which wires are installed in which terminals on the old unit, and then connect them into the terminals with corresponding markings on the new dimmer. To ensure that plate temperatures are within maximum limits, maximum total connected load for a single size plate is 630W, and for a double size plate is 1000W. For Low Voltage lighting, remember to allow for transformer losses when calculating the total circuit load, typically 15% - 20%.

To use electronic dimmers in 1, 2 or more way circuits the circuit diagrams below and the Important Notes MUST be followed exactly.

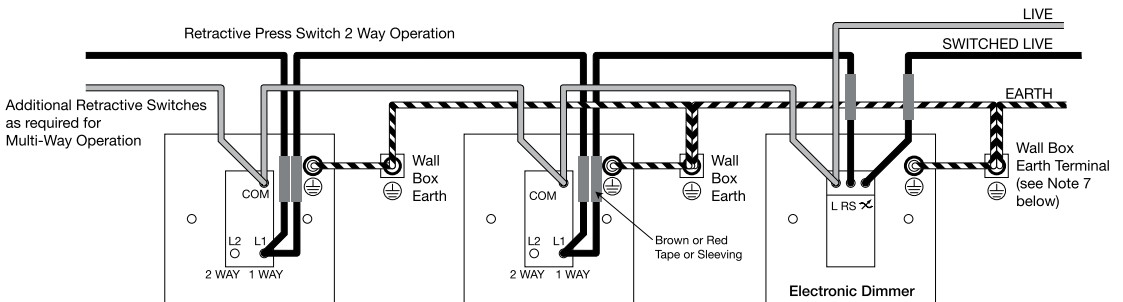
1 Way Installation Wiring Diagram

IMPORTANT NOTES - for 1 Way Installation

1. Read General Installation Safety Instructions before starting work
2. Do not connect any conductor to dimmer terminal marked RS. This is for use with 2 way switching



2 Way and Multi-Way Installation Wiring Diagram



IMPORTANT NOTES - for two Way and Multi - Way Installation

1. Read General Installation Safety Instructions before starting work.
2. Any existing 2 Way or Intermediate switches MUST be replaced with Retractive Press Switches.
3. Any number of Retractive Press Switches may be installed provided total cable length does not exceed 50m.
4. Either 1 Way normally open or 2 Way Retractive Push Switches may be used.
5. If 2 Way retractive switches are used, connect to Common (COM) and normally open L1 (1 WAY) terminals as shown. Do NOT use the L2 (2 WAY) terminal.
6. If replacing an existing 2 Way switch, cut back and insulate the unused 2 way wire previously connected to the L2 (2 way) terminal.
7. All Metal Wall Boxes and Metal Plate Switches must be earthed.
8. Do NOT connect more than 1 Dimmer in the same circuit,
9. Remove label covering centre terminal on rear of dimmer. This terminal is to be connected to Retractive Switch as shown in wiring diagram. Do NOT connect any other conductor to this terminal.

Wiring accessories | Technical information

Circuit, lamp and other equipment compatibility

To ensure optimum performance and reliability is obtained from dimmer switches the following recommendations and precautions should be followed as appropriate to the type of dimmer:

General recommendations

Circuits

It is recommended that all lighting circuits incorporating dimmers be protected by a 6A or up to a 10A maximum Type B miniature circuit breaker.

Tungsten halogen lamps

When using mains voltage Tungsten Halogen lamps, it is essential that these types of lamp incorporate internal fuses or are constructed such that arcing at the end of life cannot occur and are from quality lamp manufacturers. The use of inferior low quality lamps is not recommended and will invalidate any guarantee or warranty supplied with the dimmer switch.

Dimmable low voltage transformers

- Always check transformer compatibility BEFORE installation and if in doubt always check with the dimmer Helpline or the transformer manufacturer. It is recommended that electronic dimmable transformers be loaded to at least 70% of their rated maximum wattage.
- When running multiple lamps on dimmable electronic transformers ensure that all lamps are working correctly. Replace failed lamps as soon as possible as a single failed lamp may cause flickering of all other lamps connected to the same dimmer.
- Do NOT mix electronic and magnetic transformers on the same dimmer switch.
- It is recommended that a maximum number of 5 Low Voltage transformers only should be connected to an individual dimmer switch.

Electronic dimmers

Circuits

- For two-way or more switching ONLY use retractive switches. Do NOT use two-way switches.
- The live supply for retractive switches must come from the live (L) connection of the dimmer.
- The dimmer must be connected at the live supply end of multiway installations.

Lamps

- Do NOT use with Compact Fluorescent Lamps (CFL) even if marked "dimmable", Fluorescent lamps and Light Emitting Diode (LED) lamps of any description or motor loads.

Dimmable low voltage transformers

- These Electronic dimmer switches, except the 1kW, use leading edge (phase delay) dimming technology and must therefore be used with compatible good quality dimmable electronic or wire-wound (magnetic) transformers. Trailing edge (phase cut) dimmable transformers must not be used.
- The 1kW dimmer switch uses trailing edge (phase cut) dimming technology and must therefore be used with compatible good quality dimmable electronic transformers. Do not use the 1kW dimmer with magnetic transformers.

Rotary and 2 way (push) dimmers

Circuits

- Only use two-way (push) dimmers in two-way switching circuits. Only use one two-way dimmer in a two-way switching circuit.

Lamps

- These dimmer switches are suitable for dimming incandescent lamps and dimmable CFL lamps only and are NOT to be used with Fluorescent lamps, Light Emitting Diode (LED) lamps of any description or motor loads. Use of non-dimmable CFL lamps may permanently damage the dimmer or the lamp and will invalidate any guarantee or warranty supplied with the dimmer switch.
- It is recommended that a maximum number of 5 dimming CFL lamps only should be connected to an individual dimmer switch.

Dimmable low voltage transformers

- Only use Low Voltage dimmers with transformers. Do not use mains voltage dimmers.
- The Low Voltage dimmer switches use leading edge (phase delay) dimming technology and must therefore be used with compatible good quality dimmable electronic or wire-wound transformers. Trailing edge (phase cut) dimmable transformers must not be used.

Wiring accessories | Technical information

Co-Axial and Satellite sockets

Non isolated

Non-isolated products are intended for direct connection to a single or two separate TV/FM aerial downleads. These units are not designed for use in multi outlet systems.

Single TV/FM outlet for connection to a single TV or FM coaxial aerial lead.

Twin outlet for connection to each of two separate TV/FM, coaxial aerial leads.

Diplex and Triplex

Performance

Diplex

TV/FM diplex units for connection to a single coaxial aerial lead with combined TV and FM signals.

The connector standard IEC 169-2 plug for TV and IEC 169-2 socket for Radio.

Triplex

TV/FM/SAT triplex unit for connection to a single coaxial aerial lead with combined TV, FM and satellite signals.

TV: 470-860MHZ

Radio: (FM) 87.5 – 108 MHz and (DAB) 217.5 – 230 MHz.

Satellite: DC – 200kHz and 950-2300MHz.

The connector standard is 'f' for satellite, IEC 169-2 plug for TV and IEC 169-2 socket for Radio.

Telephone socket outlets

It is legal for a contractor to install a secondary telephone socket with associated wiring into house-holds with single exchange lines. The contractor may install a secondary socket and wire up to the master socket and wiring to the exchange. This does not include wiring the actual master socket or to the exchange itself. This final connection must be made by an approved installer.

For commercial and industrial installations a PBX (or PABX) internal exchange or 'intelligent' telephones are often fitted. In this case, the contractor may install all of the equipment except for the PBX unit installation. Again this must be carried out by a BSI approved installer and the interface between the PBX/PABX internal system and the incoming external lines must be connected by British Telecom.

GET telephone sockets are suitable for use in accordance with BS 7671, formerly the 16th Edition of the IEE Wiring regulations and should be wired in accordance with the diagrams shown.

Example of typical connection

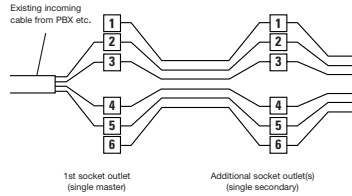
1 Connection to 2 & 5

2 Earth recall (when used) connect to terminal 4

3 Connection to terminal 3 is not usually required

NB (a) Standard 4 wire cable is shown below as incoming cable. If terminals 1 and 6 (normally unused) are required, 6 wire cable may be used.

(b) All socket outlet connections are parallel – any number of socket outlets can be connected, but it is recommended that only a maximum of 5 telephones be used at any one time on one line.



Lighting | Technical information

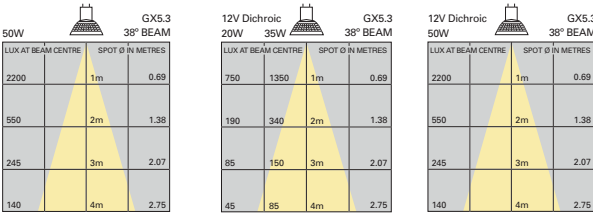
Lighting range standards

	Mains Halogen Downlighters	Low Voltage Dichroic Downlighters	Low Voltage Cabinet Lights
Operating Voltage	230/240V AC 50Hz	12V AC 50Hz	12V AC 50Hz
Max Lamp Rating	50W	50W	20W
Standard Compliance	EN 60598-1:1997	EN 60598-1:1997	EN 60598-1:1997
Lamp Type	GU10 Closed Halogen ES50	MR16 Dichroic Closed Type	G4 Capsule Lamp
	CE □	CE	CE

Beam Diagrams

Halogen lamps (mains)

MR16 dichroic lamps (low voltage)



Electronic Transformer data

MODEL	65VA		105VA		150VA		200VA	
	GTR65P	GTR65	GTR105P	GTR105	GTR150P	GTR150	GTR200P	GTR200
Primary (V)	230-240V		230-240V		230-240V		230-240V	
Secondary (V)	11.4 - 11.6V		11.4 - 11.6V		11.4 - 11.6V		11.4 - 11.6V	
Power	65VA		105VA		150VA		200VA	
Output (Hz)	40KHz - 43KHz		40KHz - 43KHz		40KHz - 43KHz		40KHz - 43KHz	
Current (A)	5.4A		8.8A		13A		17.4A	
LED Indicator	Yes	No	Yes	No	Yes	No	Yes	No
Output wires	2 x 300mm silicon insulated		2 Pairs		4 Pairs		4 Pairs	
Short Circuit Protection	Manual Reset	Auto Reset	Manual Reset	Auto Reset	Manual Reset	Auto Reset	Manual Reset	Auto Reset
Overload Protection	Manual Reset	Auto Reset	Manual Reset	Auto Reset	Manual Reset	Auto Reset	Manual Reset	Auto Reset
Thermal Protection	Resettable	Yes	Resettable	Yes	Resettable	Yes	Resettable	Yes
Max Case Temp	85°C		85°C		85°C		85°C	
Power Factor	0.98		0.98		0.98		0.98	
Cable Size max.	1.5mm ²		1.5mm ²		1.5mm ²		1.5mm ²	
Max Dimensions	124mm x 30mm x 40mm		147mm x 30mm x 40mm		206mm x 44mm x 56mm		206mm x 44mm x 56mm	
Case material	Polycarbonate UL94 V0		Polycarbonate UL94 V0		Polycarbonate UL94 V0		Polycarbonate UL94 V0	
Weight	107g	97g	121g	112g	280g	270g	300g	290g
Guarantee	10 Years	5 Years	10 Years	5 Years	10 Years	5 Years	10 Years	5 Years



Lighting | Technical information

Ingress protection system

EN 60529

The resistive performance of fittings to solids and liquids is indicated by the IP (Ingress Protection) prefix followed by two numbers. The first number indicates the measure of protection against the ingress of solids. The second number indicates the measure of protection against the ingress of liquids.

First identification number

Protection against the ingress of solids

Number	Measure of protection	Test
IP2X	Against foreign bodies > 12mm Ø	Ball 12mm Ø and finger test
IP3X	Against foreign bodies > 2.5mm Ø	Steel wire 2.5mm Ø
IP4X	Against foreign bodies > 1.0mm Ø	Steel wire 1.0mm Ø
IP5X	Against harmful dust deposits (dust proof)	Talcum powder – particles 1 µm Ø
IP6X	Against any entry of dust (dust light)	Talcum powder – particles 1 µm Ø

Second identification number

Protection against the ingress of liquids

Number	Measure of protection	Test
IPX1	Against falling drops of water	Water falling vertically
IPX2	Against falling drops of water	Water falling up to 15° from vertical
IPX3	Against falling drops of water (rain proof)	Water falling up to 60° from vertical
IPX4	Against splashed water (splash proof)	Water from all directions
IPX5	Against jets of water (jet proof)	Water from all directions projected by a nozzle
IPX6	Against heavy seas or powerful water jets	Water from all directions projected by a nozzle
IPX7	Against prolonged immersion effects, but not for continuous underwater application	Immersion in water > 1m for 30 minutes
IPX8	Against prolonged submersion (pressure water-tight)	Immersion in water > 1m max for 30 minutes – max. depth tested indicated after symbol

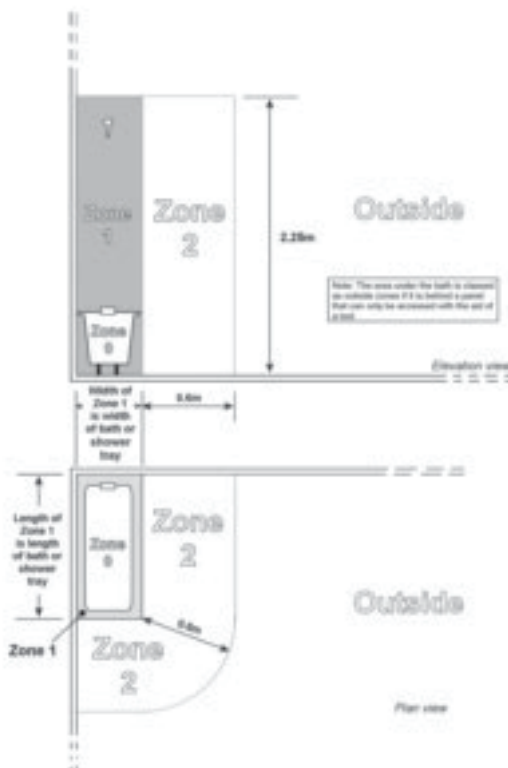
Current-using equipment and accessories in locations containing a bath or shower

These illustrations and the advice opposite are based on BS 7671:2008 the IEE Wiring Regulations 17th Edition, Section 701. For full details please look in this document.

For lighting installed in Zone 1 and 2 all luminaires must be at least IPX4, or IPX5 if water jets are used for cleaning.

All circuits for current-using equipment and accessories must be protected by RCD's of 30mA rating.

SELV (12V ac) luminaires must have the SELV source (transformer) outside the zones e.g. in the ceiling void.



Lighting | Technical information

Light and Colour rendering

The colour appearance will depend on the spectral emission of the light source and the ability of a light source to render colours naturally, without distorting the hues. An even balance of light and colour define the atmosphere of a room and by the warmth or coldness influences a persons mood.

The colour characteristics of a lamp are governed by two separate criteria: colour appearance and colour rendering.

Colour temperature

The colour appearance of a light source characterised by the colour temperature Kelvin (K), the higher the temperature of the lamp the whiter its light.

Colour rendering

The effect that Fluorescent and other types of lamp have on the appearance of coloured objects is indicated by the general colour rendering index (Ra) scale of eight standard test colours.

Measured on a scale of 0 to 100, where 100 is the equivalent of daylight, higher values indicate better colour rendering. Values of 100-90 are very good, 90-80 good and those below 80 should not be used where colour rendering is a key factor.

LUX (lux)

The amount of light falling on a surface. Offices are typically lit to between 600 and 800 lux at desktop height.

1 Lux = One lumen per square metre, unit of illuminance.

Lamp types

Tungsten Halogen

This light source is more efficient and compact and can therefore be directed to specific areas, producing a bright, white light brighter than incandescent lamps of the same wattage.

They are dimmable with all forms of modern dimmer control.

Linear Fluorescent

Up to 5 times more efficient and lasting up to 8 and even 15 times longer than incandescent. However, unlike halogen and tungsten these lamps require ballasts that control the current. Dimming can be achieved with many forms of electronic ballast. High output T5 diameter lamps are becoming the standard for commercial installations.

Compact Fluorescent Lamps

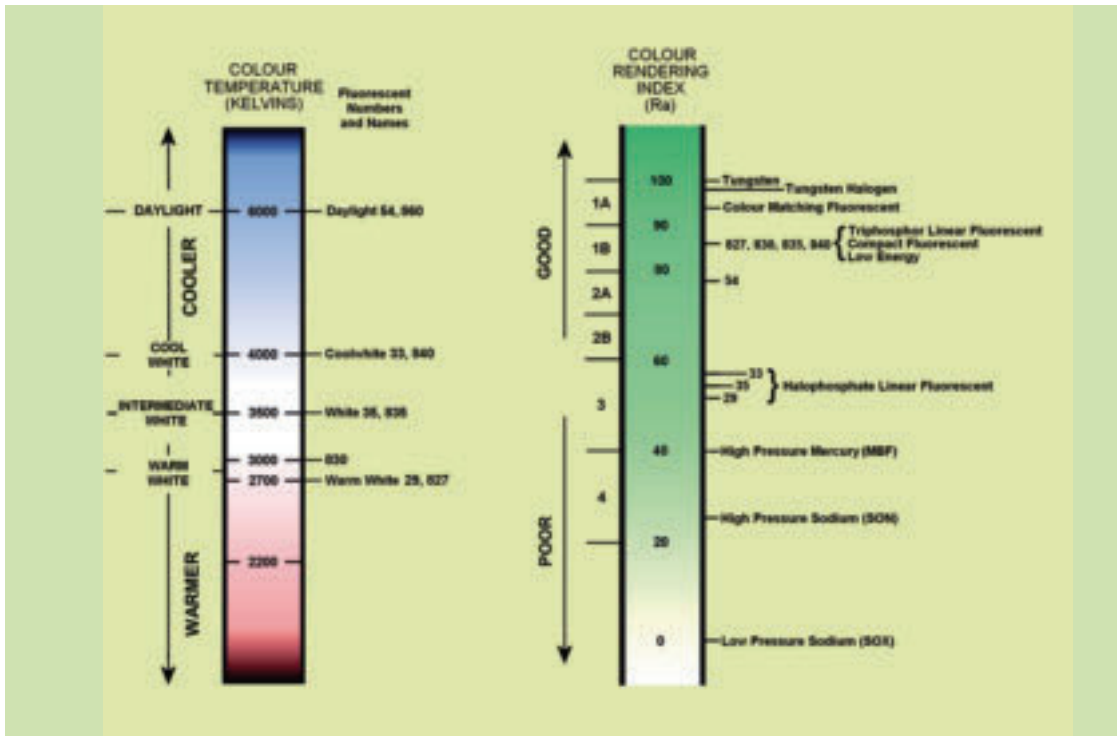
CFL's have the same characteristics and advantages of linear fluorescents, but are folded into compact shapes. Many wattages are available, from 5W to 80W.

External Ballast high frequency (Non retrofit) – Compact in size the 2 pin and 4 pin CFL's require a separate ballast.

Integral Ballast high frequency CFLi or low energy lamps – These lamps have internal electronic ballasts and can be used as direct replacements for GLS, candles and other lamps. They are central to achieving domestic lighting Carbon Emission Reduction Targets. The availability, types and styles of CFLi's and of dimmable versions will increase significantly with the progressive withdrawal of Incandescent lamps from the marketplace.

LED

Light Emitting Diode lamps can last for up to 50,000 hours. All LED light sources require some form of current control; either built into the lamp, such as in retrofit GU10's, or an external driver. For actual illumination the minimum wattage of retrofit lamps should be at least 3 Watts. LED lighting is currently in its infancy but is likely to eventually become a dominant light source. The availability of controllable LED's is currently poor but will become more prevalent.



Lighting | Technical information

Luminaire classification

Quality

All fittings produced by GET are manufactured and tested under a quality assurance system in accordance with EN ISO 9002: 1994, and are designed to comply with EN 60598

Compliance

The European Norm Electromechanical Certification (ENEC) has been adopted as a common mark of conformity with European Standards. A mark issued by any single national approbation bodies implies compliance with all seventeen international bodies. The ENEC mark now replaces the national test house symbol, and is appended by a number indicating from which test house the approbation originated.

CE marking

CE marking indicates compliance with the requirements of:

1. Low voltage directive for electrical safety (73/23/EEC as amended by 93/96/EEC)
2. EMC directive for electro magnetic compatibility (89/336/EEC as amended by 92/31/EEC)

Radio supression

EN 55015, EN 61000 & EN 61547

Fittings comply with radio interference supression and electromagnetic compatibility (EMC) regulations.

Feature symbols

Voltage

Fittings and transformers are supplied primarily for operation on 230/240V 50Hz. For alternative electrical specifications contact our Technical Support Department.

Electrical protection

Class 1 – fittings comply with class 1 (I) earthed electrical requirements i.e. functional insulation in all parts and earth termination.

Class 2 – fittings comply with class 2 (II) double insulated electrical requirements i.e. complete insulation in all parts without earth termination. In the event of an electrical fault, no dangerous voltage can reach touchable metal parts.

Class 3 – fittings comply with class 3 (III) triple insulated electrical requirements i.e. designed to connect to an external low voltage supply which is the same as the internal operating voltage requirement. In the event of an electrical fault, no dangerous voltage can develop.

Inflammability of surface protection

EN 60598



Suitable for mounting in or on furniture made or semi-incombustible or normally combustible materials such as wood.



Fittings made for mounting in or on furniture made of materials of unknown properties.

Equivalent wattages for energy saving lamps

Energy saving lamps last up to 8 times longer than standard lamps.

Standard	Energy Saving
15 Watts	4 Watts
30 Watts	7 Watts
40 Watts	9 Watts
60 Watts	11 Watts
70 Watts	13/15 Watts
100 Watts	20 Watts

Ventilation | Technical information

Minimum air changes required per hour

Recommended minimum number of air changes in certain environments.

Environment	Changes per hour	Environment	Changes per hour	Environment	Changes per hour
Bathrooms and shower rooms	3	Halls and landings	3	Shops	8
Bedrooms	2	Hospital rooms	4	Sports facilities	6
Cafés	10	Kitchens (domestic)	10	Store rooms	3
Canteens	8	Laundries and laundrettes	10	Toilets (domestic)	3
Cellars	3	Living and other domestic rooms	3	Toilets (public)	10
Changing rooms with showers	15	Meeting rooms	4	Utility rooms	15
Conference rooms	8	Offices	6	Workshops	6
Garages	6	Restaurants & bars	6		
Hairdressing salons	10	School rooms	2		

Example 1

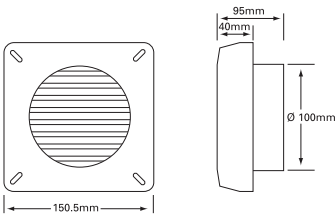
Room	Bathroom
Volume	$2.0 \times 2.0 \times 2.0 = 8\text{m}^3$
Number of air changes required	3
Performance	$8 \times 3 = 24\text{m}^3/\text{h}$
Fan required	GFAN4 = $93\text{m}^3/\text{h}$

Example 2

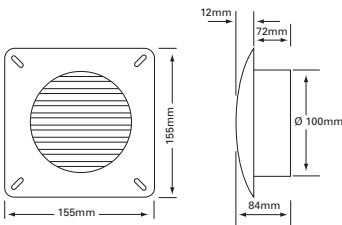
Room	Kitchen
Volume	$2.8 \times 2.8 \times 2.8 = 22\text{m}^3$
Number of air changes required	10
Performance	$22 \times 10 = 220\text{m}^3/\text{h}$
Fan required	GFAN6 = $250\text{m}^3/\text{h}$

Stale air is also removed by installing the appropriate GET fan. In certain circumstances, such as in toilets, a timer is incorporated to provide an automatic turn-on period of up to 25 minutes as stipulated in The Building Regulations.

Specifications for Standard 100mm/4" Fans



Voltage Supply	230V 50Hz
Power	20W Max
Timer Control (where applicable)	3 – 25 minutes
Humidistat Timer Control (where applicable)	3 – 50 minutes
Extract Capacity	$93\text{m}^3/\text{hr}$ max
Humidity Adjustment	50%-60%
Noise Level	45dB
IP Rating	IPX4
Max Room Temperature	40°C
Double Insulated	<input type="checkbox"/>
Fitted with Fused Thermal Protection	



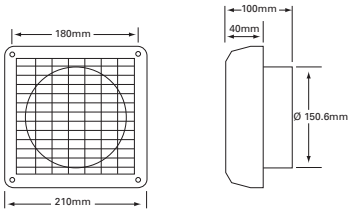
Voltage Supply	230V 50Hz
Power	20W Max
Timer Control (where applicable)	3 – 25 minutes
Extract Capacity	approximately $93\text{m}^3/\text{hr}$ max
IP Rating	IPX4
Max Room Temperature	40°C
Double Insulated	<input type="checkbox"/>
Fitted with Fused Thermal Protection	

Ventilation | Technical information

Specifications for 12V SELV unit

Controller		Fan	
Voltage Supply	230V 50Hz	Extract Capacity	93m ³ /hr max
Voltage Output	12V 50Hz 20VA	Noise Level	45dB (A)
Timer Control (where applicable)	3 – 25 minutes	IP Rating	IPX4
		Max Room Temperature	40°C
		Double Insulated	Class III SELV
		Fitted with Fused Thermal Protection	

Specifications for 150mm/6" Fans



150mm/6" Wall Fans

Voltage Supply	230V 50Hz
Power	28W Max
Timer Control (where applicable)	3 – 25 minutes
Humidistat Timer Control (where applicable)	3 – 50 minutes
Extract Capacity	250m ³ /hr max
Noise Level	35dB
IP Rating	IPX4
Max Room Temperature	40°C
Double Insulated	<input type="checkbox"/>
Fitted with Fused Thermal Protection	
Humidity Adjustment	50% – 90%

Humidistat Variants

Humidity override is primary to any other means of control, i.e. timer or pull cord. This ensures optimum operation at all time.

Installation Methods

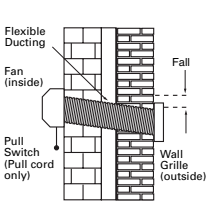


Diagram 1a

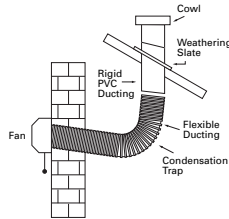


Diagram 1b

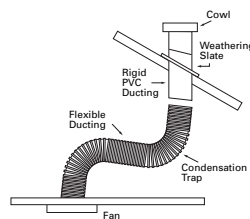


Diagram 1c

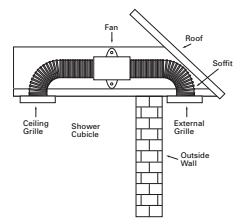


Diagram 1d

4" Fans are not designed for installation in showers. For this specification inline fan should be used. See diagram 1d

Wiring Diagrams

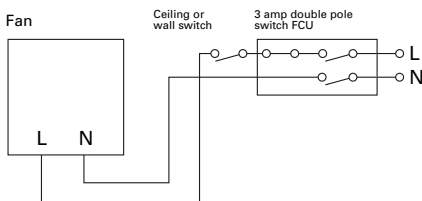


Diagram 2a Fan without Timer and Fan with humidistat/pull cord override

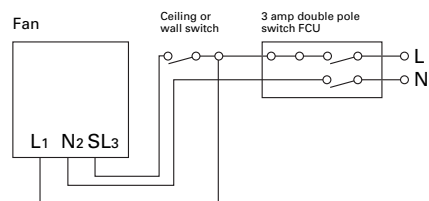


Diagram 2b Fan with Timer

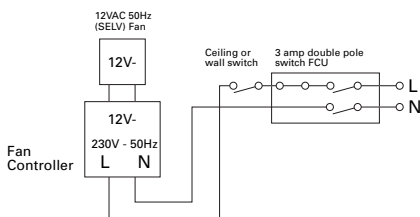


Diagram 2c 12V Fan without Timer

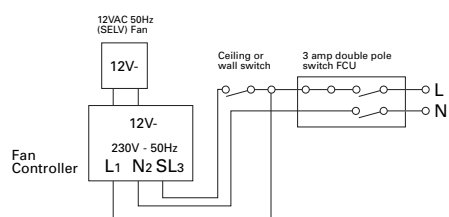


Diagram 2d 12V Fan with Timer