

# Save It Easy<sup>®</sup>

## ENERGY SAVING RETROFIT ADAPTERS High Frequency Electronic Ballast Technology



## INSTALLATION GUIDE

Version 2.2

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This document is intended as a general guide to be used by suitably qualified persons who conduct the installation work in compliance with all appropriate industry requirements and guidelines. Product warranties are only valid where the installation has been carried out in compliance with this installation guide.

Where individual sites have specific requirements with regard to installation or health and safety procedures, these should be taken into consideration.

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# 1 Introduction to this Guide

This Installation Guide provides an overview of the installation requirements for the Save It Easy® range of retrofit high frequency lighting adapters.

It is applicable to the installation of the products ***in standard switch start fittings*** and applies to all Inline T5 and Inline T8 Save It Easy® products.

***Where the products are to be installed in non-switchstart luminaires***, i.e. rapid start, quick start and T8 high frequency systems, the installer should refer for the specific wiring instructions to the appropriate Application Guidance Note which should be read in conjunction with this Guide.

In particular, we would draw the reader's attention to the General Installation Guidance in Section 6 of this manual.

The 'Save-It-Easy®' range of high frequency lighting adaptors is designed specifically as a solution for achieving significant energy savings. It is important that installers are aware that these adaptors cannot and do not seek to improve the lighting performance of existing installations, and in particular cannot guarantee that the installation of Save It Easy® will ensure that a lighting installation meets the latest guidelines.

It is therefore important that, prior to the installation of a retrofit product, the customer and/or installer have satisfied themselves that the light levels and light quality from the existing installation are appropriate for the use to which the building is put and that the lighting scheme complies with the appropriate health and safety legislation.

If there is any doubt concerning the existing or proposed installation then ECSL is happy to work with you and your clients to check lighting levels, to conduct trial installations in order to establish the efficacy of the retrofit solution or, in more complex situations, to work with a lighting engineer to define an appropriate solution.

## 2 Save It Easy® Product Range

### 2.1 Conversion Strategy

The table below sets out the Save It Easy® products with relation to the existing luminaires for which they are designed.

Existing Luminaire				Save It Easy® Configuration		
Length	Fitting	Wattage	Lamp type	Save It Easy® Product Code	Lamp Type	Lamp Wattage
2ft	Single or Twin lamp	18W	T8	INL-240-014-T5A	T5	14W
		20W	T12			
2ft	Triple lamp	18W	T8	INL-230-014-TRI	T5	14W
		20W	T12			
2ft	Quad lamp	18W	T8	INL-230-014-QUAD	T5	14W
		20W	T12			
3ft	All	30W	T8	INL-240-014-T5A	T5	21W
4ft	All	36W	T8	INL-UHL-45F-T5A	T5	28W
		40W	T12			
5ft	All	58W	T8		T5	35W
		65W	T12			
6ft	All	70W	T8	INL-UHL-049-T5B	T5	49W
		75W	T12			
8ft	All	85/100/125W	T12	INL-240-070-T8A	T8	70W

## 2.2 Product Content

In each case the Save It Easy® product consists of the HF Ballast (one for each lamp) together with several other items as required. These are listed below:

Save It Easy® Product Code	HF Ballast No of Units	T5 End Cap	T8 Extension Piece (see note <sup>1</sup> )	Starter - Fuse (see note <sup>3</sup> )	RTK-070 Power Unit	Lamp Securing Clip
INL-240-014-T5A	1	1	NA	1	NA	NA
INL-230-014-TRI <sup>2</sup>	3	3	NA	3	1	NA
INL-230-014-QUAD <sup>2</sup>	4	4	NA	4	1	NA
INL-UHL-45F-T5A	1	1	NA	1	NA	NA
INL-UHL-049-T5B	1	1	NA	1	NA	See section 5.1.3
INL-230-070-T8A	1	NA	1	1	NA	2

Notes:

<sup>1</sup> The T8 Extension Piece carries the part number INL-EXT-070-T8A.

<sup>2</sup> The part number for the HF Ballast supplied with this product is EVG-230-014-T5A.

<sup>3</sup> The starter fuses have different values according to the product. The correct fuse for each product is shown in the table below.

## 2.3 Starter/Fuses

Different SIE starter/fuses should be used according to the SIE product being installed. The starter/fuse applicable to each product is shown below:

Save It Easy® Product Code	Applicable Starter/Fuse Number
INL-240-014-T5A	601
INL-230-014-TRI	601
INL-230-014-QUAD	601
INL-UHL-45F-T5A	401
INL-UHL-049-T5B	501
INL-230-070-T8A	501

## 2.4 SIE Components

The main components of Save It Easy® are illustrated below:



Left -14 watt T5 HF ballast unit

Below - 70 watt T8 HF ballast unit



Left –SIE End Cap

Below – Starter Fuse



### 3 Electrical Safety



**Prior to installation each luminaire must be isolated from the mains supply in one of the following two ways before commencing work:**

- A) In the event that any wiring work is required, isolate via mains distribution board.**  
This can be achieved by switching the circuit breakers off or removing the fuses as appropriate.
- B) In the event that no wiring work is required, switch the lights off and, if possible, remove the fuse in the luminaire**  
Isolation of the light switch is normally sufficient when retrofitting the Save It Easy® product into standard switchstart battens and luminaires (apart from the 3 and 4 lamp 600mm x 600mm modular fittings), provided that steps are taken to prevent inadvertent switching on during the installation. If circuit wiring modification is required, the fuse in the luminaire must be removed.

In the event of doubt, please consult your technician before proceeding. All work should be carried out by a competent trained person.

### 4 Electrical Compliance

It is the responsibility of the installer to comply with current legislation regarding electrical works.

Where modifications are made to the luminaire, and more specifically where wiring modifications are made, the luminaire should be clearly labelled as having been modified and should indicate which organisation should be contacted in the event of malfunction or operational queries.

## 5 Installation Guidelines

### 5.1 Fitting the lamp to the SIE Ballast Unit

#### 5.1.1 All Units

- a. When attaching the SIE Ballast and end cap or extension piece to the lamp, always ensure that the end of the lamp with the manufacturers name and lamp part number is inserted into the ballast unit as shown below.
- b. Please note that there is normally an audible 'click' when the lamp pins fully engage in the female connector within the SIE ballast, end cap and extension piece. Make sure the lamp is properly engaged before continuing.
- c. When push connecting the lamp to the end cap, it is advisable to hold the end cap so that one finger is between the pins on the end cap. This will ensure that the force is exerted in the right way to effect a good connection and help avoid damage to the end cap.



#### 5.1.2 8 foot Luminaires

The INL-240-070-T8A is supplied with two circular, plastic, securing rings (shown below) which must be used to secure the T8 lamp into the SIE ballast and extension units. Each ring has three tongues which are inserted inside the neck of the lamp recess so that, when the lamp is inserted, the tongues are compressed between the lamp sides and the inside of the neck, creating a firm fit.



The best way to fit the securing ring is as follows:

1. Insert the lamp end through the ring.



2. Partially insert the lamp end into the SIE unit so that the tongues on the securing ring are inside the neck of the SIE unit and the two connecting pins on the lamp just engage with the female connector in the SIE unit.



3. Push in the lamp and ring together to seat the ring completely and fully engage the lamp with the SIE unit.

The best technique for doing this is to hold the adapter and ring with one hand and the lamp with the other. A firm push is sufficient. Do not use a greater force and make sure that the lamp is not inserted at an angle.

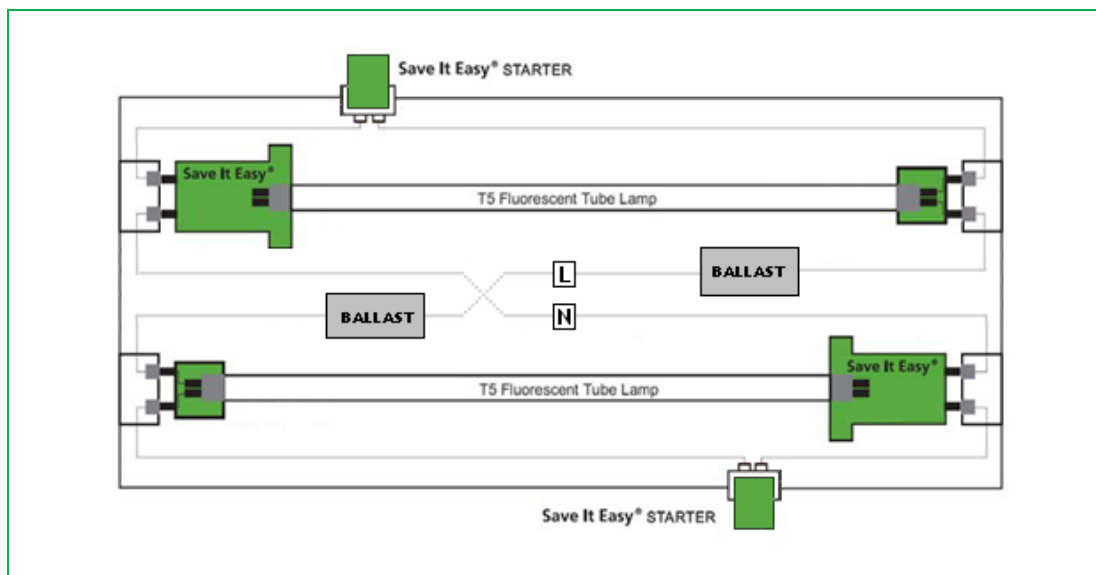
If the fit seems too tight, withdraw the lamp, remove one of the tongues on the ring and repeat the process.



### 5.1.3 6 foot Luminaires

In all normal circumstances, the assembly of the T5 lamp into the INL-UHL-049-T5B adapter will be completely secure. However, in the event that an even more secure fit is required, a securing ring similar to that for the INL-240-070-T8A can be made available. The fitting of this ring should follow exactly the same process as set out in section 5.1.2 above.

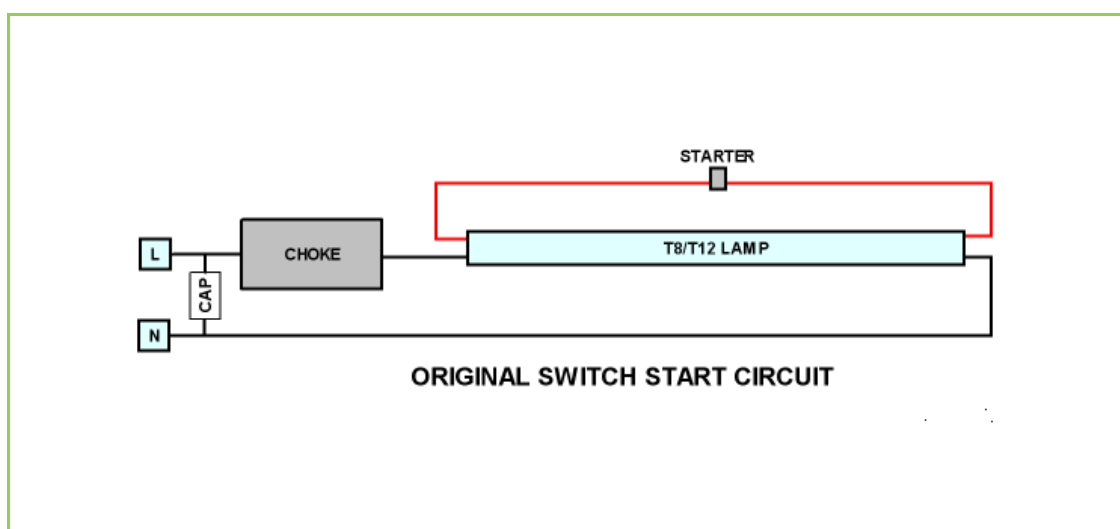
### 5.1.4 Twin Lamp Luminaires



When installing Save It Easy® in twin lamp fittings, ensure that where possible the adapter units are positioned in opposition to each other (as opposed to adjacent), as shown in the above diagram. Preferably the adapter should be at the neutral end (normally the end nearest the starter in switch start fittings).

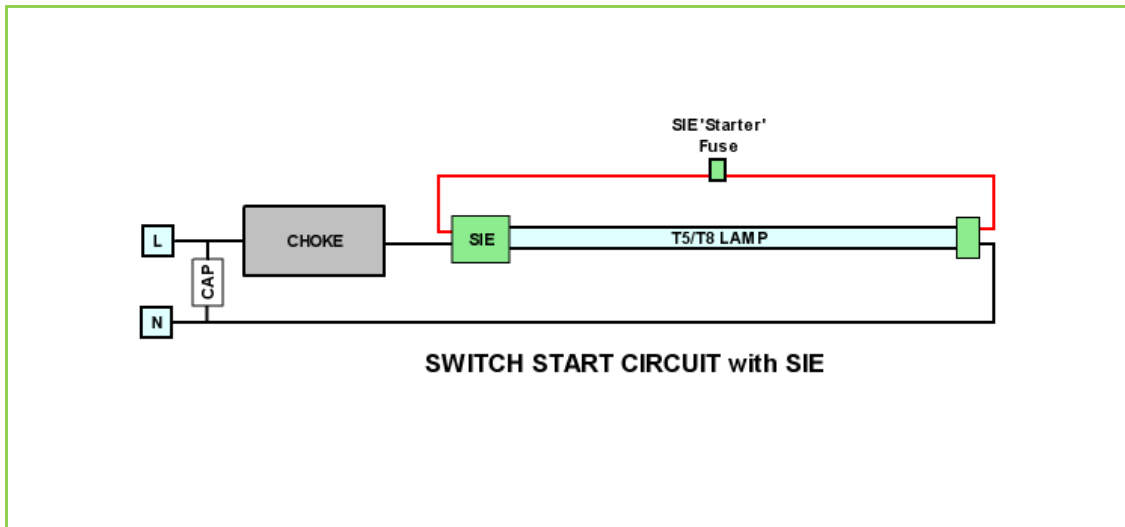
### 5.2 Installing in Switch start circuits (excluding 600mm x 600mm, 3 and 4 lamp modular fittings)

The existing switch start circuit prior to the installation of Save It Easy® is illustrated below.



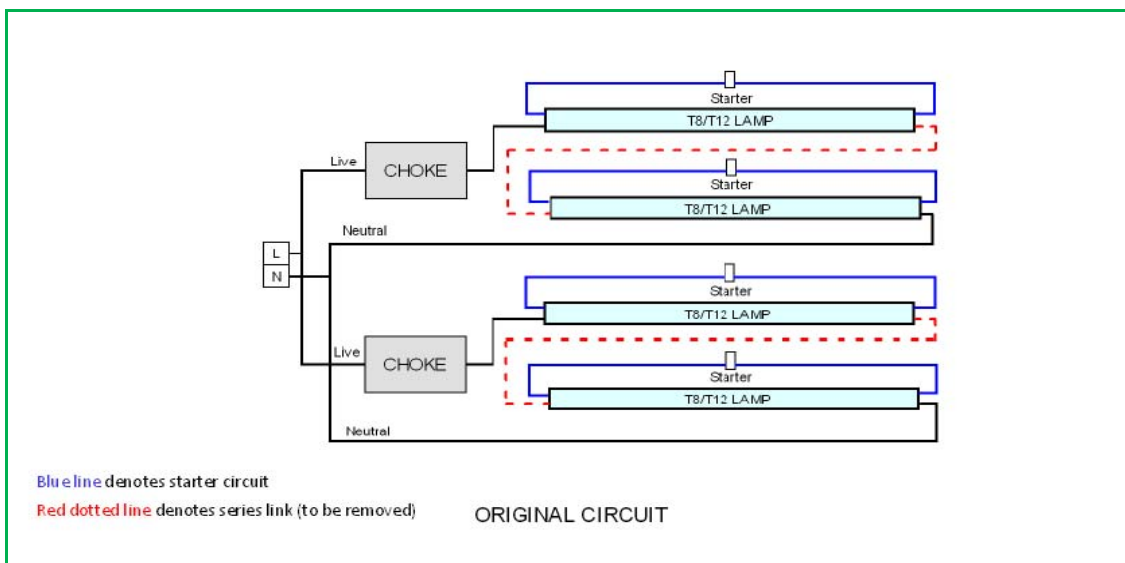
To install Save It Easy®, the starter is replaced by the SIE 'starter' fuse and the existing T8 or T12 lamp is replaced by the new lamp with the Save It Easy® HF ballast attached to one end and the T5

end cap or (in the case in the INL-240-070-T8A) the T8 extension piece attached to the other. The resulting circuit is shown below.



### 5.3 Wiring Circuit Modifications required to fit Save It Easy® to 4 x 18 Watt Modular fittings

The normal configuration of these modular fittings is that one ballast (choke) will supply two lamps wired in series as shown in the diagram below.

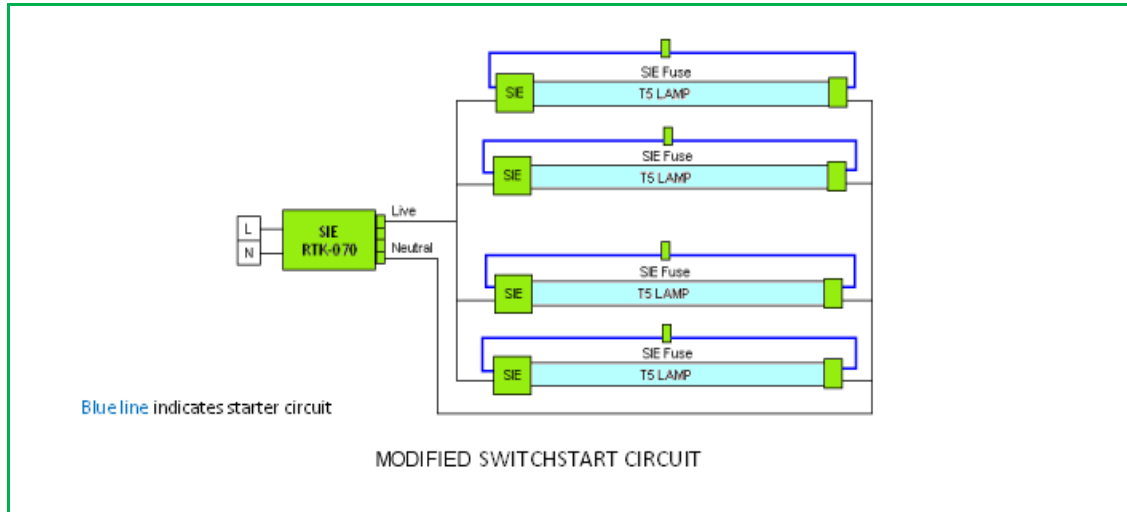


The installation of Save It Easy® requires that the wire link that connects the two lamps wired in series (shown in dotted red in the diagram above) is removed together with the existing ballasts (chokes).

The incoming live and neutral must then be connected to the SIE Power Management Unit (RTK-070), which can be secured in position by means of the magnets fitted to its base.

The lamps must then be wired in parallel to the live and neutral output terminals of the SIE Power Management Unit as shown in the diagram below.

Finally, the starters are replaced with the SIE starter fuses and the T5 lamps fitted as normal using EVG-230-014-T5A adapters.



## **6 General Installation Considerations**

We provide below some general guidance concerning the planning and execution of a Save It Easy® installation and the operation of the equipment.

### **6.1 Power Factor**

Save It Easy® adapters are designed to operate with a Power Factor (PF) close to unity (the most desirable situation) when used in series with an electromagnetic (EM) ballast, the actual PF values varying slightly with the different versions and with the characteristics of the existing EM ballast.

Because EM ballasts have a very poor, lagging, Power Factor, most luminaires are fitted with a capacitor to improve the PF, which means that, when Save It Easy® is installed, an Over Compensation Effect (OCE) can occur. This would result in a low, leading, PF and consequently an increased current through the system (although the power consumption is not affected by this increased current since the increased current is offset by the lower power factor).

In sites where there is an extremely heavy lighting load compared to other electricity consumption, this may not be desirable because it could mean that the whole site would end up with a leading PF. In such an event, the capacitors should be removed from the luminaire's circuit (a very simple process) during the Save It Easy® installation. However, in any other situation, the OCE is likely to be beneficial in that it will improve the overall PF for the site, in some case bringing with it additional savings with respect to reduced capacity charges.

It should be noted, however, that this relates only to fittings with Switch Start ballasts. The installation process for non-Switch Start ballasts will include removal of the PF correction capacitor as a matter of course.

For further information, please refer to SIE Application Guidance Note 18.

### **6.2 Electromagnetic Compatibility**

Save It Easy® has been tested and certified as performing in conformance with the International Standard EN55015, Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.

However, as a retrofit product, this certification cannot guarantee compliance of the complete luminaire since the wiring within the luminaire can have an influence which is outside the scope of the Save It Easy® to control.

In the event of concern regarding the EMC performance of the luminaire, the installer should consider adding a filter to the existing incoming supply of the fitting to ensure compliance. These filters are readily available at low cost from ECSL – please contact either your electrical distributor or ECSL for details.

Further information on this is available in SIE Application Guidance Note 14.

### **6.3 Thermal Cut-out**

Save It Easy® has a self-resetting, thermal cut-out, safety device that prevents overheating when a lamp fails.

If the lights are toggled, i.e. switched on, off and on again in quick succession, this mechanism can be triggered, preventing the lamps from turning on.

If the lamps do fail to light after switching the circuit quickly from on to off and then on again, the correct procedure is to wait for a few seconds to allow the reset and then turn the lights on – they will illuminate normally.

This is not a failure of the Save It Easy® adapter and users should be advised accordingly.

#### ***6.4 Lamp Compatibility***

Save It Easy® is compatible with linear fluorescent lamps that meet the industry standards. However, we strongly recommend that only lamps from the leading manufacturers, i.e. Philips, Osram, GE and Sylvania, are used to help ensure that the expected lumen output and lamp life are achieved.

## 7 Warranty

Energy Conservation Solutions Limited (ECSL) warrants that each Save It Easy® adapter is free from defects in materials and workmanship and conforms to Energy Conservation Solutions' official published specifications. The warranty period is for two years commencing on the date of shipment. Within this two year period, ECSL will replace free of charge any defective product upon its return to ECSL as directed below, provided always that the product has been installed and operated in accordance with ECSL specifications.

The warranty does not cover the replacement of an adapter which has failed as a result of misuse, accident, modification, unsuitable physical or operating environment, or incorrect installation. The warranty is voided by removal or alteration of any identification labels.

All communications with ECSL regarding Save It Easy® warranty, including the return of any products for warranty replacement, should be directed to

SIE Warranty  
Energy Conservation Solutions Ltd  
8 Jayes Courtyard  
Jayes Park  
Ockley  
Surrey RH5 5RR

Telephone 01306 621546  
[www.ecsl.uk.com](http://www.ecsl.uk.com)

## 8 Application Guidance Notes

Information on both general and specific topics, including wiring instructions for non-switchstart luminaires, is provided through SIE Application Guidance Notes.

These are continually being updated and added to, and can be obtained by contacting your Save It Easy® supplier or directly from Energy Conservation Solutions Limited.

The list of current and planned Application Guidance Notes (AGN) at the date of the release of this guide is as follows:

AGN Number	Topic	Release Date
012	Installation in 600 mm x 600 mm Modular Luminaire with two Quick Start or Rapid Start Ballasts	4/3/08
014	EMC Considerations	TBA
015	Installation in Fittings with Quick Start or Rapid Start Ballasts	13/5/08
016	Installation in 600 mm x 600 mm Modular Luminaire with Switch Start Ballasts	5/4/08
017	Installation in 600 mm x 600 mm Modular Luminaire with HF Ballasts	14/4/08
018	Power Factor Considerations	18/4/08