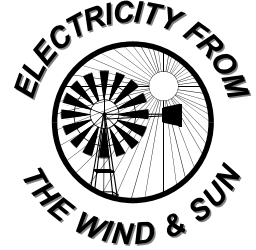


# DISTRIBUTED LOAD CONTROLLERS



## Distributed Intelligent Load Controllers for Load Shedding / Load Adding

### Introduction

These Distributed Intelligent Load Controllers ("DILC"s) are designed to improve the reliability and efficiency of isolated power systems by controlling some of the loads on the system. When a number of load controllers are fitted to suitable loads, each one continuously monitors the condition of the supply and makes its own decisions on whether it should switch its load off or on. The combined result is smoother loading on the generators, and maximum use of available energy. Ideal for use in *Sunny Island* inverter systems.

### Benefits

- Reduced fuel consumption and costs
- 24 hour power
- No blackouts
- No wasteful dumping of excess generation
- Prioritised loads
- Essential loads protected
- Integration of renewable energy
- Efficient use of generation
- Improved use of diesel generation

### Features

- When used as 'Load Adders' they are perfect for use in combination with *Sunny Island* inverter systems - especially those incorporating wind turbines. In periods of high wind as the battery becomes full the *Sunny Island* causes grid frequency to rise. The load controllers can detect this and switch on loads such as heaters so excess energy is usefully deployed.
- When used as 'Load Shedders' non-essential loads can be switched off temporarily when a generator system nears overload
- Sensitive loads are protected from "brown out" conditions
- Loads are gradually re-introduced in a random order as power system stabilises.



DILC as plug-and-socket adaptor for UK and Europe



DILC in wall mounting enclosure as installed on Island of Foula, Scotland (also available as DIN-rail type)

# DISTRIBUTED LOAD CONTROLLERS

## Product Description

Wherever power is provided by a small local power system with generators such as diesel generator sets, wind or hydro turbines or a combination, there is the possibility of blackouts caused by overloads or unbalanced loads on the system. It is possible that sensitive equipment like computers or DVD players may be affected by voltage dips.

In many local power systems fuel, wind or water can be wasted when the generators have to run at times of low power demand.

Load controllers such as DILCs will help to solve these problems if they are used appropriately on the power system. DILCs should be deployed throughout the system on loads that it is acceptable to switch off, or defer, at times when demand exceeds supply. It may also be required to switch some loads on when there is a surplus of energy, and DILCs can perform this task also.

DILCs are available in a number of casing options:

- as a plug-and-socket adaptor for UK and Europe,
- as a DIN-rail type, and
- in a wall-mounting enclosure with a miniature circuit breaker ("MCB") in series.

These different casings allow flexibility in the way in which DILCs are deployed – on heating circuits, on whole rings and on individual loads. Whichever option is employed the settings and manner of application is the same.

A DILC will disconnect its load immediately if the system frequency or voltage fall below their threshold values. When the system frequency and voltage achieve the required conditions for the load to be switched on, it begins a time-out and then switches on the load. The timeout period will be a random value within a pre-set range.

DILCs can operate in one of two modes: frequency sensing only, or frequency and voltage sensing. In both cases, a time-out delay setting must be chosen, between 8 seconds and 16 minutes, and this incorporates a random factor to avoid simultaneous connection of multiple loads.

## Technical Information

### Product Compliance

EU Directives (CE marked)	Low voltage directive (72/23/EEC)
	EMC directive (89/336/EEC)

### Mechanical and Environmental

#### Dimensions

LDC-2P	120 x 65 x 85 mm (h x w x d excl. pins)
LDC-2R	75 x 50 x 110 mm (h x w x d)
LDC-2W	178 x 129 x 128 mm (h x w x d)

Weight	Mounted	Packed (std. packaging)
LDC-2P	0.35 kg	TBA
LDC-2R	0.3 kg	TBA
LDC-2W	1.0 kg	TBA

Ambient temperature - operation -10 °C to +40 °C

Ambient humidity Indoor use only

## Ratings

Frequency	44 to 66 Hz
Nominal voltage (Vn)	110/230 VAC
Operating range	Vn = 110 VAC 100 to 120 VAC Vn = 230 VAC 180 to 260 VAC
Burden	Approx. 75 mA
Maximum load	16 A or 3 kW single phase AC resistive
Supply protection (wall-mounting only)	16 A type B MCB

## User Configuration

Nominal frequency	50, 60 Hz
Frequency threshold	fn = 50 Hz 47.35 - 52.08 Hz fn = 60 Hz 53.15 - 59.19 Hz
Voltage threshold	fn = 50 Hz disabled, 195, 190, 185 V fn = 60 Hz disabled, 105, 100, 95 V
Voltage step change	disabled, 10, 15, 20 % Vn
Time delay range	8 s to 2 min, 2 to 4 min, 4 to 8 min, 8 to 16 min

## Indication

Output on	Green LED
Output off - voltage/frequency low	Yellow LED (steady)
- voltage/frequency OK, timing to switch-on	Yellow LED (flashing)

## Accuracy

Frequency	±0.5 Hz
Voltage	±5 V
Delay to switch-on	±1 s

## Ordering Information

DILC product code	LDC-			-
<b>DILC type</b>				
Load adding/shedding DILC		2		
<b>Enclosure</b>				
Plug-in			P	
DIN-rail			R	
Wall-mounted			W	
<b>Region</b> (nominal voltage and plug type)				
UK (230 V & BS 1363 plug/socket)				uk
Europe (230 V & CEE 7/7 plug/socket)				eu

E.g. DIN-rail case for UK use is **LDC-2R-uk**.