

PES
POWER
EFFICIENT
SYSTEMS

EnergyAce Light®

The **LEC A sp**
single phase
&
Three phase
voltage stabilizer



Power Electronics range of products

	16A	30A	50A	80A	210A
3 Phase		LEC Con			
		LEC A			
		LEC B Super			
		LEC B			
Single Phase	LEC A sp				
		LEC B single phase			
	Ecolite				



Power Electronics future range of products

	16A	30A	50A	80A	210A
3 Phase		LEC Con			
	LECA				
		LEC B Super			
		LEC B			
Single Phase	LEC A sp				
		LEC B single phase			
	Ecolite				



The **LEC A *sp*** Evolution

The development of the **LEC A *sp*** was driven by the wish to achieve the following goals:

Technical

- Improved **performance**
- **Maintenance free** product
- **Wider range** of products

Commercial

- Higher savings
- Shorter **payback** time
- Added **values & benefits** for the user/distributor /installer



LEC A *sp*

Mounting holes

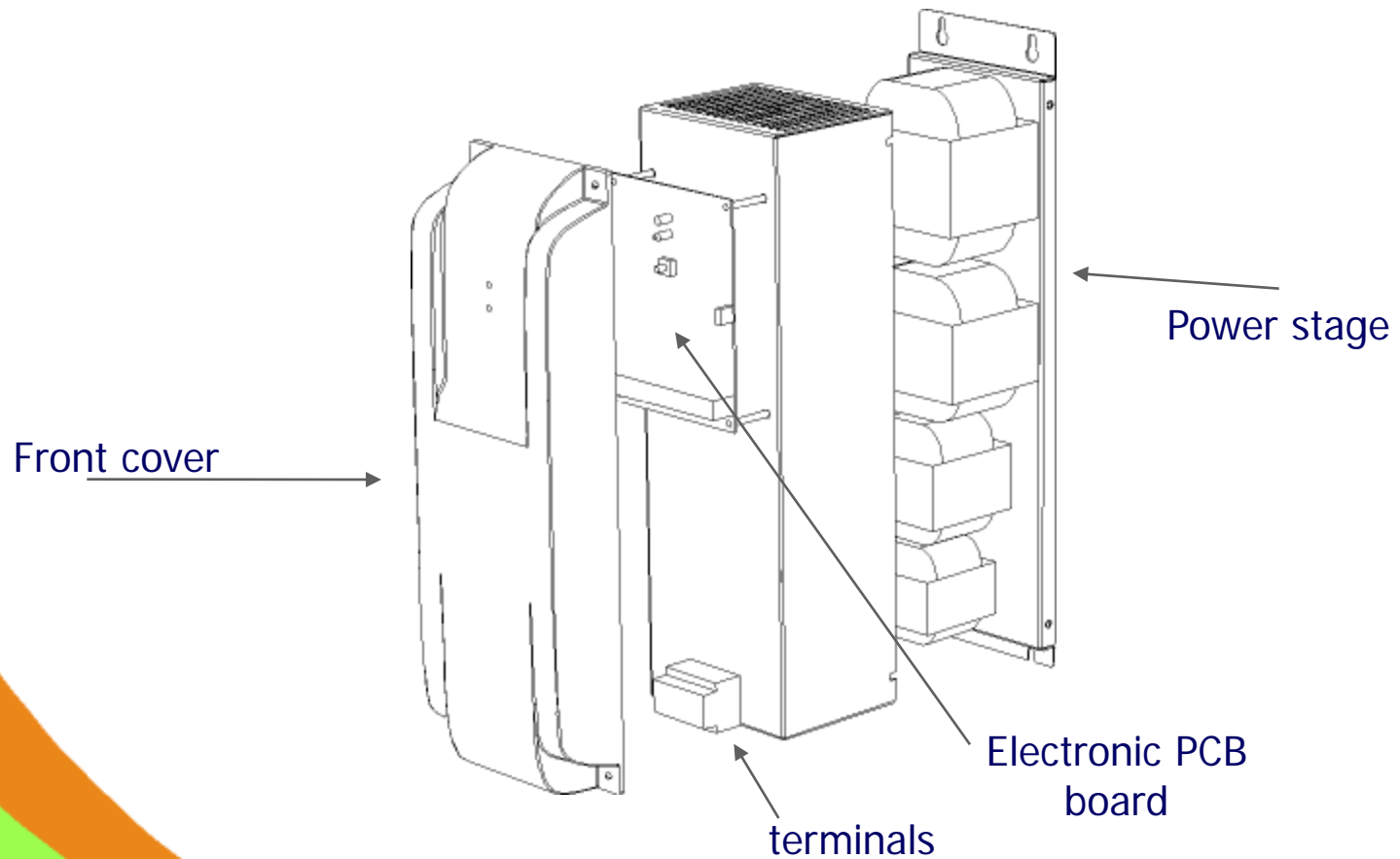
User interface



Power terminals

LEC A *sp*

Mechanical & Electrical structure



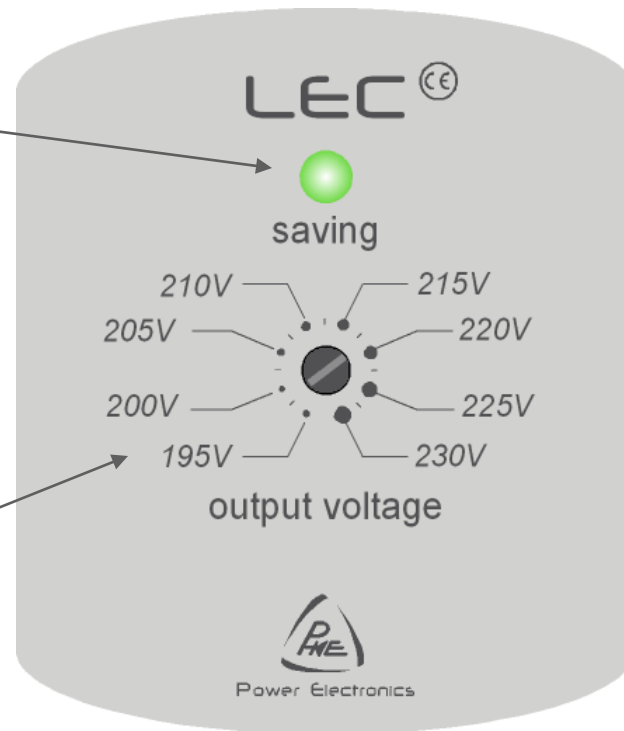
LEC A *sp* user interface

Saving indication LED

A blinking LED notes
Ignition mode.
A continuously lit
LED notes
Stabilization mode.

A digital rotary switch

For determining the
output voltage.



LEC A *sp*

Electrical structure

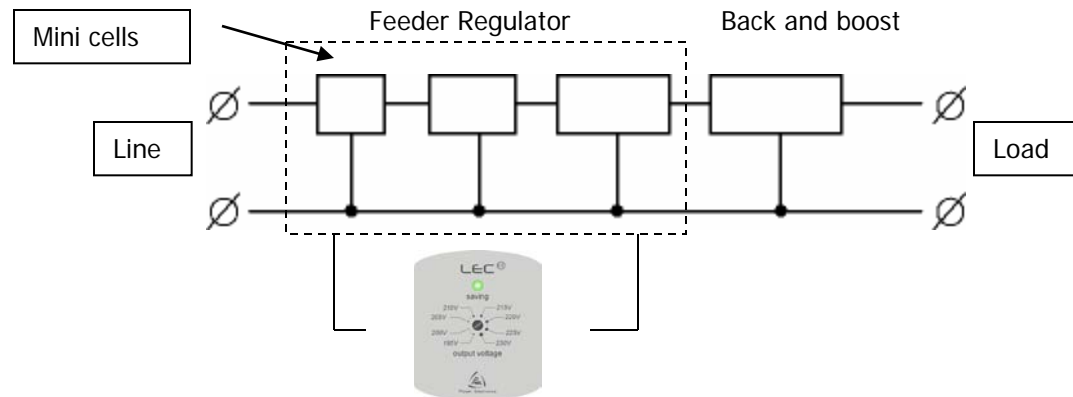
Two main principals characterize the **LEC A *sp*** and the **LEC A** technology.

- A. Transforming the unnecessary voltage
- B. The voltage control is carried out in a binary combination



LEC A *sp*

Electrical structure



The **LEC A *sp*** has a binary combined voltage regulator feeding a back & boost transformer. The feeder consists of 3 mini cells providing 8 levels of voltage in the range of 90-230 V. The superposition between the regulated feeder and the back and bust transformer results in an output voltage, regulated in increments of 2.5V.

Advantages of the **LEC A *sp*** Topology

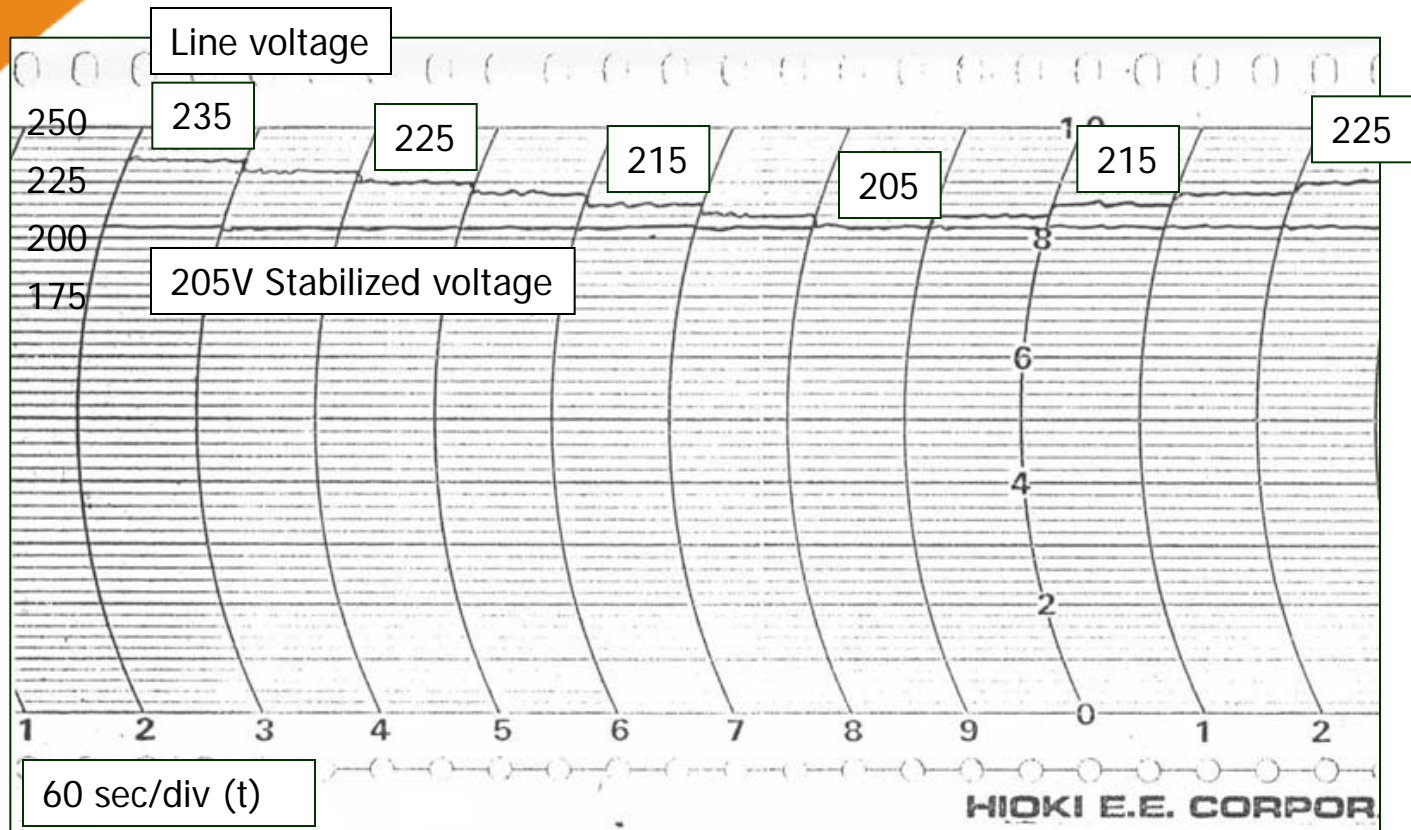
- a) Low number of magnetic stages relatively to the high number of voltage increments, (3 against 8)
- b) The control is handled at low voltage and low current
- c) The switching between the steps is smooth.
- d) The non-functioning stages do not draw any current
- e) The transformers used are of a UI core enabling high efficiency and low dimensions



Improved Performance

The **LEC A *sp*** maintains the output voltage at at the required level set by the user via tiny increments of **1% (+/- 2.5V)**.





Recorded output stabilized voltage Vs. Input Line voltage

Mechanical improvements

The **LEC A *sp*** unique highly efficient approach and **natural heat dissipation** result in a durable and inexpensive product (no internal fans required).

The **LEC A *sp*** is a standalone device, with **IP 21** protection degree, and may be installed outside a cabinet.



The pursuit of Higher Savings

- The **LEC A *sp*** enables voltage reduction **up to 35V** .
- The **LEC A *sp*** enables to achieve higher savings when **voltage is high** .
- The **LEC A *sp*** enables to achieve savings, even when the **voltage is low** .



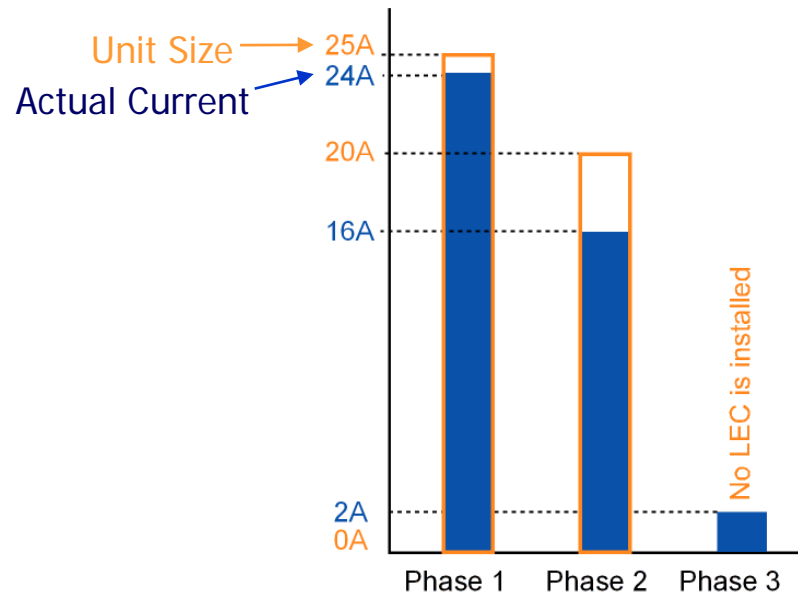
Short payback time

A high **loading factor** is achieved thanks to:

- **High resolution** in ratings (10A, 16A, 20A, 25A, 30A).
- The option to select the **best match** between unit size and load, per phase.



3 phase structure



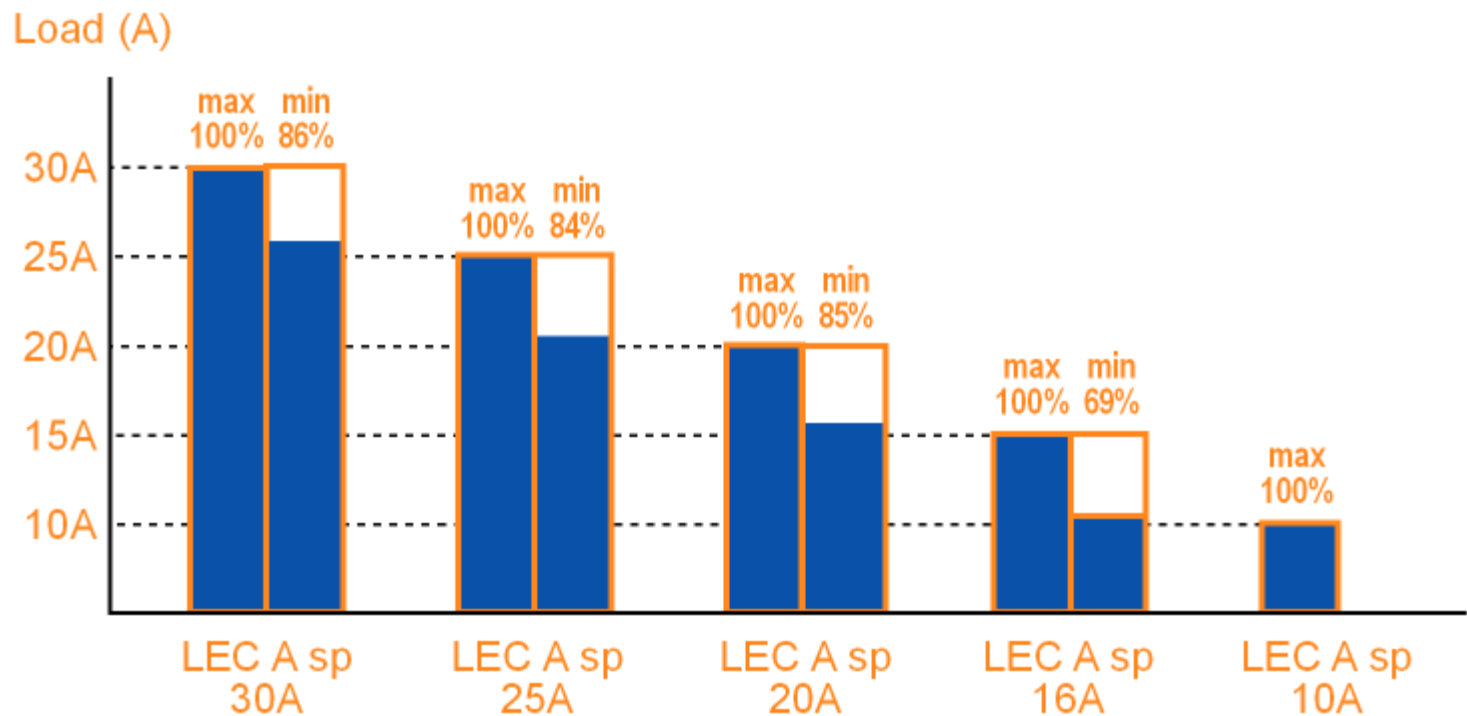
LEC A sp

Total load $24+16=40A$
Total capacity $25+20=45A$
Loading factor **89%**

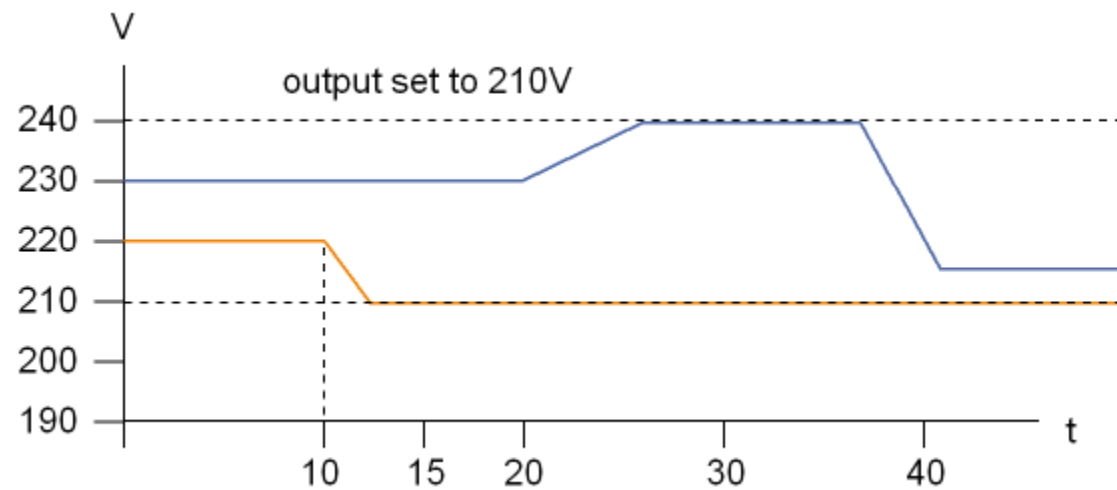
LEC A 3 phase

Total load $24+16+2=42A$
Total capacity $3 \times 30=90A$
Loading factor **47%**

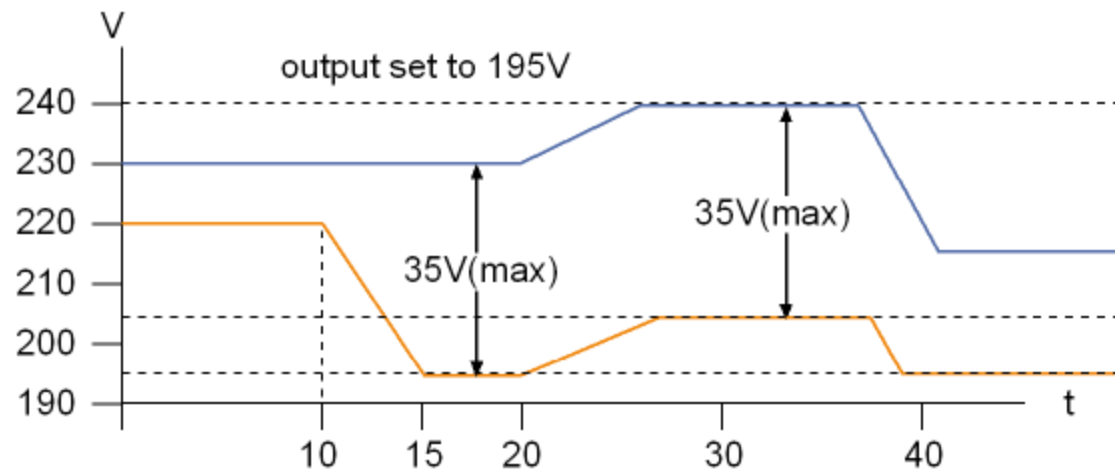
Average loading factor of 90%



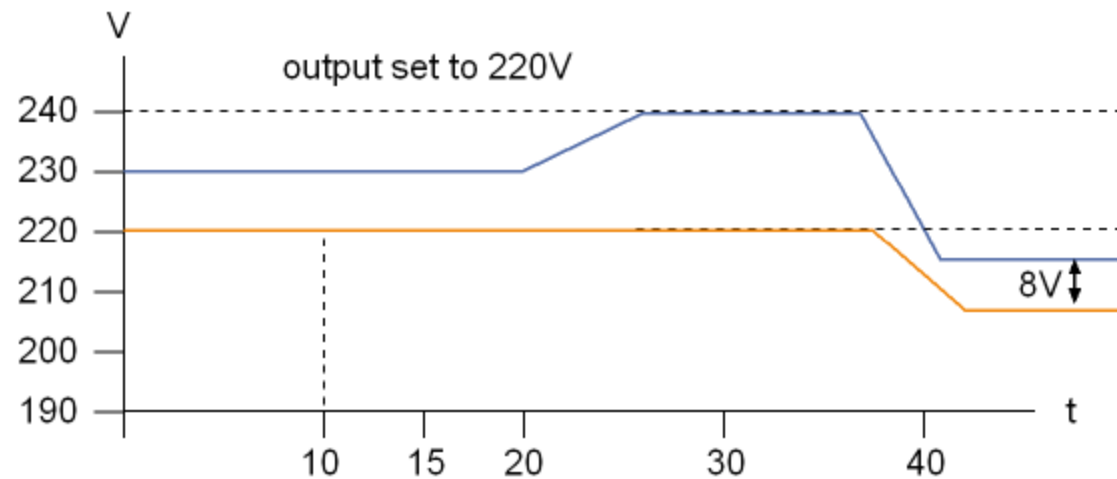
Output voltage vs Input voltage



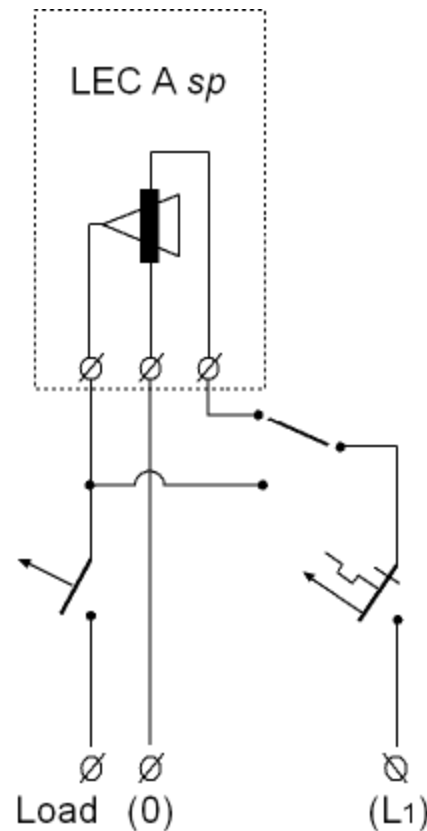
Output voltage vs Input voltage



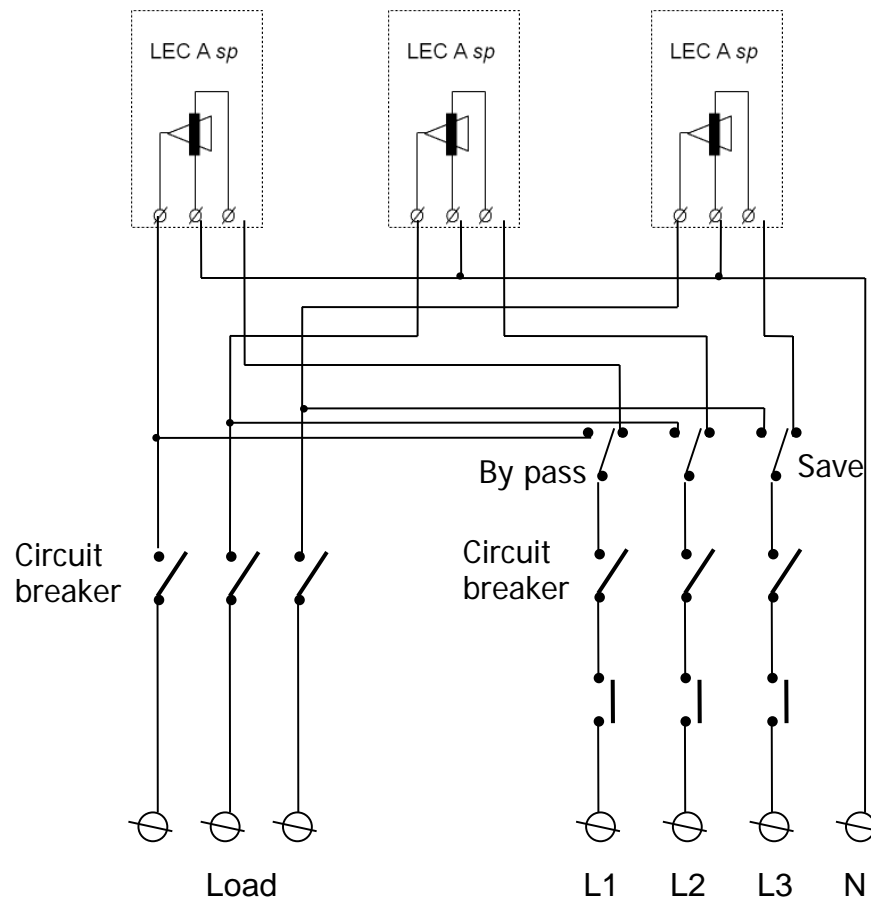
Output voltage vs Input voltage



Single phase installation line diagram



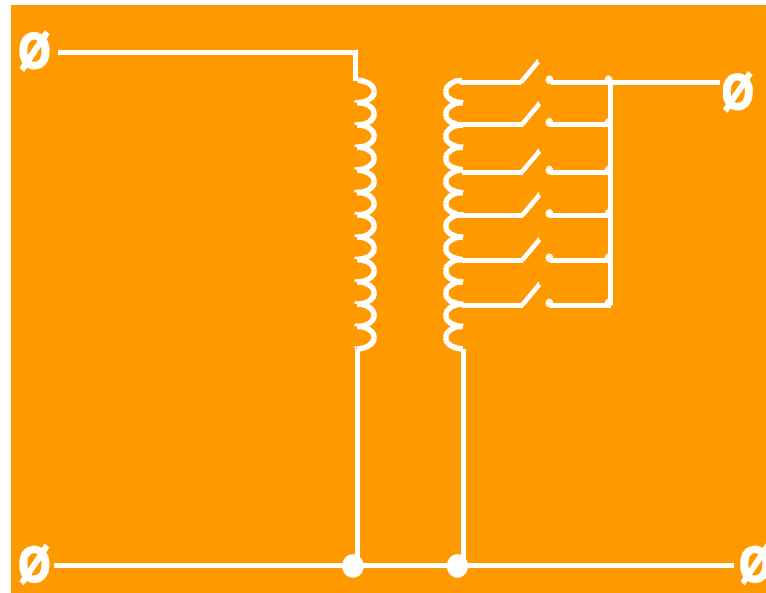
3 phase installation line diagram



Tape changer

The most obvious product to compare the LEC A sp to is the tape changer feeder.

However, the tape changer has several drawbacks.



Tape Changer drawbacks

1. High number of relays
2. Problematic transition effect when switching between the steps
3. A current limit system must be utilized when switching between the steps
4. The feeder transformer is always drawing power from the Mains, even when it is not functioning
5. One faulty step can cause total lack of control
6. Lack of voltage control leaves the main transformer undefined, and working as a choke.

