



# Products and solutions for power factor correction

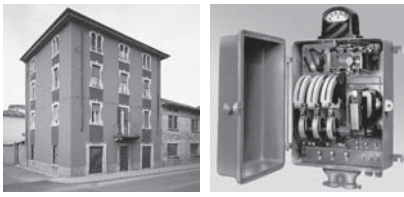
  
ENERGY AND AUTOMATION



# Tradition and Innovation



LOVATO Electric S.p.A. - Bergamo - Italy



### Since 1922

The first LOVATO Electric headquarters founded in Bergamo (Italy) in 1922: the starting point of the grand industrial adventure.



### Italian design

Highly-qualified design, technical and research staff fully develop and design innovative and reliable products in the Bergamo offices, using state-of-the-art software.



### Most advanced manufacturing facilities

LOVATO Electric manufactures its products with cutting-edge technology.



### Quality and certifications

LOVATO Electric products comply with the major international quality standard requirements.



### Customer care service

The Customer Service team offers prompt and professional assistance for products and applications.



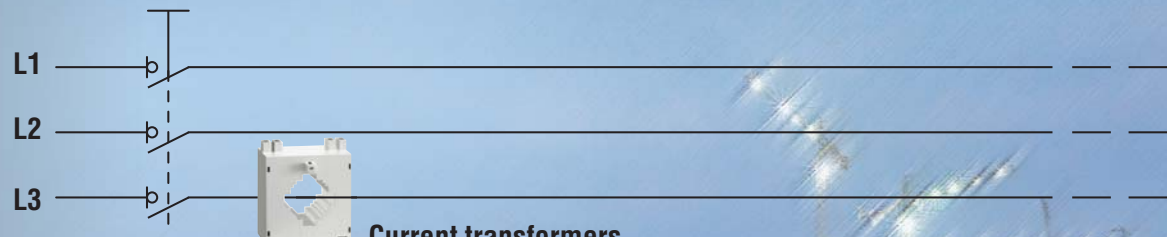
### International presence in over 100 countries

Foreign branches and widespread official sales affiliates assure product assistance and availability in over 100 countries worldwide.



- |  |   |  |   |
|--|---|--|---|
| <b>Italy</b><br>LOVATO ELECTRIC S.P.A. | <b>Canada</b><br>LOVATO ELECTRIC CORP.                | <b>China</b><br>LOVATO ELECTRIC (SHANGAI) CO LTD | <b>Czech Republic</b><br>LOVATO ELECTRIC S.R.O. |
| <b>Germany</b><br>LOVATO ELECTRIC GmbH | <b>Poland</b><br>LOVATO ELECTRIC SP. Z O.O.           | <b>Romania</b><br>LOVATO ELECTRIC SRL            | <b>Spain</b><br>LOVATO ELECTRIC S.L.U.          |
| <b>Turkey</b><br>LOVATO ELEKTRİK LTD   | <b>United Arab Emirates</b><br>LOVATO ELECTRIC ME FZE | <b>United Kingdom</b><br>LOVATO ELECTRIC LTD     | <b>USA</b><br>LOVATO ELECTRIC INC.              |

# PRODUCTS AND SOL



Current transformers

Automatic power factor controllers

Fuse holders

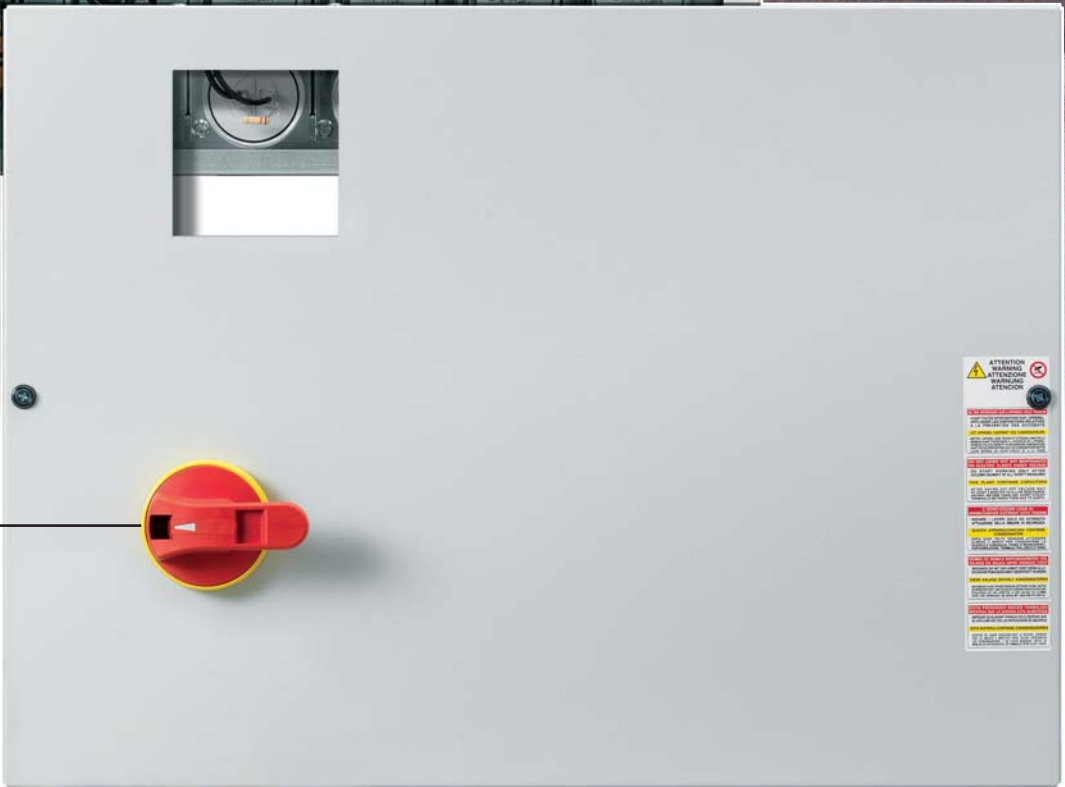


Fuse holders and MCBs

Contactors



Switch disconnectors



# UTIONS FOR POWER F

## SWITCH DISCONNECTORS

- ▶ 16A to 1600A ratings
- ▶ Three and four pole types and with fuseholder
- ▶ Versions: direct operating, door coupling and in housing
- ▶ Wide range of accessories.



## CONTACTORS

- ▶ 7.5 - 12.5 - 15 - 20 - 25 - 30 - 38 - 45 - 50 - 60kVAR ratings at 400V
- ▶ Versions with incorporated limiting resistors
- ▶ Three-pole types up to 630A in AC3 duty
- ▶ Four-pole types up to 1600A in AC1 duty
- ▶ Wide range of accessories.



## THYRISTOR MODULES

- ▶ 30, 50, 100kvar step units
- ▶ Suitable for dynamic power factor correction
- ▶ Current flow zero-crossing controlled connection-disconnection
- ▶ Over-temperature protection
- ▶ Over-current protection at capacitor switching.



## FUSE HOLDERS

- ▶ Modular concept for 10x38, 14x51 and 22x58 fuse sizes
- ▶ IP20 protection degree, finger safe and sealable cover to increase user's safety
- ▶ Version with status indicator to quickly identify the fuse to replace
- ▶ UL and CSA certified versions.



## CURRENT TRANSFORMERS

- ▶ Primary current: 50-4000A
- ▶ Solid and split core versions
- ▶ Secondary current: 5A.



## MINIATURE CIRCUIT BREAKERS

- ▶ High breaking capacity
- ▶ Different tripping curves: B, C or D type
- ▶ Wide range of current 1 to 125A
- ▶ UL approved versions.



## AUTOMATIC POWER FACTOR CONTROLLERS

### DCRL SERIES

- 3 or 5 steps in 96x96mm housing, expandable up to 7 steps max.
- Expandable with EXP modules such as inputs and outputs, step increment and communication ports
- Backlight icon display
- Optic interface port for programming, data download and diagnostics
- Independent voltage measurement input
- Capacitor overload protection
- Internal panel temperature sensor
- Configurable alarms
- Suitable for medium-voltage systems
- Wide range of auxiliary supply: 100...440VAC
- Control voltage: 100...600VAC
- Operating range: 50...720VAC
- Rated current input Ie: 5A or 1A programmable
- Voltage and current harmonic-content measurement.



### DCRG SERIES

- 8, 10, 12, 14 or 16 steps in 144x144mm housing
- Expandable with EXP modules such as inputs and outputs, step increment, capacitor protection, communication ports, etc.
- Backlight graphic display, 128x80 pixels
- Optic interface port for programming, data download and diagnostics
- Independent voltage measurement input
- Capacitor overload protection
- Internal and external panel temperature sensor
- Voltage and current harmonic-content measurement
- Event logging
- Configurable alarms
- Suitable for medium-voltage systems
- Suitable for dynamic power factor correction
- Wide range of auxiliary supply: 100...415VAC
- Control voltage: 100...600VAC
- Operating range: 50...720VAC
- Rated current input Ie: 5A or 1A programmable
- Master-Slave function
- 10 languages: Italian, English, Spanish, French, German, Czech, Polish, Russian, Portuguese and customisable.



## SOFTWARE AND APPLICATIONS

- ▶ **Synergy** is a web-based, multiclient software for energy management
- 3 level multiclient web access
- Simultaneous control of multiple communication channels.
- ▶ **Sam1** is an APP to view alarms, send commands, read measurements, set parameters, download events and send data via e-mail
- iOS and Android compatible.



# ACTOR CORRECTION

## ● GSM/GPRS MODEM

By fitting the EXP10 15 expansion module, the DCRG controller is automatically equipped and configures a **GSM/GPRS modem**. Once a data-enabled SIM card is inserted, alarm or event SMS, email messages and latest logged data can be transmitted by the controller to FTP servers.



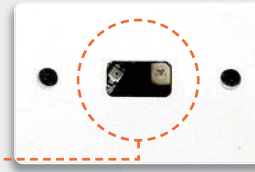
## ● WEB SERVER FUNCTION

By installing the **Ethernet** expansion module EXP10 13, the main measured values of the DCRG controller can be viewed by most common Web-client using Java platform and with no need to install any additional PC software.



## ● OPTICAL COMMUNICATION PORT

By using CX 01 USB or CX 02 Wi-Fi point dongle, the optical port on the front allows to communicate with a PC, smartphone and tablet, to carry out programming, diagnostics and data download without removing power to the electric panel.



## ● CAPACITOR PROTECTION

By adding the EXP10 16 expansion module, the DCRG controller can be equipped with additional capacitor protection functions. The module can measure the harmonic current values and the capacitor temperature on-site.

## ● THREE CURRENT INPUTS FOR DCRG

- **Independent power factor correction** of each step can be done.
- Identification of capacitor failure on any of the phases being controlled.
- Analysis of all electrical parameters of the system by a multimeter.

# Synergy

## SUPERVISION AND ENERGY MANAGEMENT SOFTWARE

### ● FUNCTIONALITY

- Serial communication via Ethernet or modem with LOVATO Electric devices in the field
- Database of instantaneous values
- Graphic pages
- Datalog files
- Energy consumption reports
- Charts
- Gestione Alarms
- Energy quality analysis
- Field equipment parameterising
- Access level management.

### ● SIMPLE, GUIDED, INTUITIVE CONFIGURATION

**Synergy** programming does not require any particular computer knowledge since specific configuring instruments have been developed to guide through the configuration of product networks, graphic pages, datalog reports and charts, in a simple and intuitive way.

### ● SERVER-MULTICLIENT SYSTEM

**Synergy** structure and applications are based on MS (Microsoft) SQL Relational Database management system (RDBMS).

**Synergy** consulting (Client) is made through popular programs for Internet browsing that are available across different platforms and operating systems.

These features allow **Synergy** to be a highly versatile system, simultaneously accessible to a large number of users/workstations, via intranets, VPN or Internet.

### ● APP **Sam1**

Configuration and maintenance operations, often done in intolerable ambience due to weather or noisy conditions, are now easier to do for all LOVATO Electric products with communication interface on front compatible with CX02 dongle. Indeed, tablets and smartphones with Android or iOS operating system can connect to them using the new application called **Sam1** directly downloadable from Google Play or iTunes. Therefore, it is no longer necessary to connect and switch on a PC using cables to change configurations, set up parameters or even clone device programming. With this APP, a file previously saved can be uploaded; commands can be sent; measured quantities can be read from LOVATO Electric devices. The events can be viewed and saved in a text file and later copied and sent by email.



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**LOVATO Electric products are available in over 100 countries through its distributors**

The products described in this publication are subject to be revised or improved at any moment. Catalogue descriptions and details, such as technical and operational data, drawings and instructions, etc., do not have any contractual value. In addition, products should be installed and used by qualified personnel and in compliance with the regulations in force for electrical systems in order to avoid damages and safety hazards.