

WHERE TECHNOLOGY MEETS TRADITION



WHO WE ARE



PRODUCTS

- Electromechanical products
- Electronic products
- Software
- **5** groups
- **30** product families
- **12.000** codes



							
MOTOR PROTECTION AND CONTROL	01	02	03	04	05	06	
	Motor protection circuit breakers	Contactors	Motor protection relays	Electromechanical starters and enclosures	Soft starters	Variable speed drives	
							
CONTROL AND SIGNALLING	07	08	09	10			
	Pushbuttons and selector switches	Signal towers and beacons	Limit, micro and foot switches	Rotary cam switches			
							
CIRCUIT PROTECTION AND ISOLATION	11	12	13	14	15	16	
	Switch disconnectors	Fuse holders and fuses	Miniature and residual circuit breakers	Surge protection devices	Modular contactors	Earth leakage relays	
							
AUTOMATION AND CONTROL	17	18	19	20 <small>new</small>	21	22	23
	Time relays	Monitoring relays	Level controls	General purpose relays	Micro PLCs and HMI	Switching power supplies	Automatic battery chargers
							
ENERGY MANAGEMENT	24	25	26	27	28 <small>new</small>	29	30
	Metering instruments and current transformers	Power factor controllers and thyristor modules	Automatic transfer switch controllers	Engine and generator controllers	Fire pump controllers	Software and applications	Expansion modules and accessories

OEMs

- Compressors
- Ovens
- Dishwashers
- Pumps
- Welding machines
- Packaging
- Etc.



ENERGY MANAGEMENT

- Measure and control
- Energy quality and analysis
- Capacitor banks
- Gen sets
- Power distribution boards
- Motor starting, fan
- Photovoltaic systems
- Etc.



MACHINE BUILDERS (OEMs)



SOLUTIONS

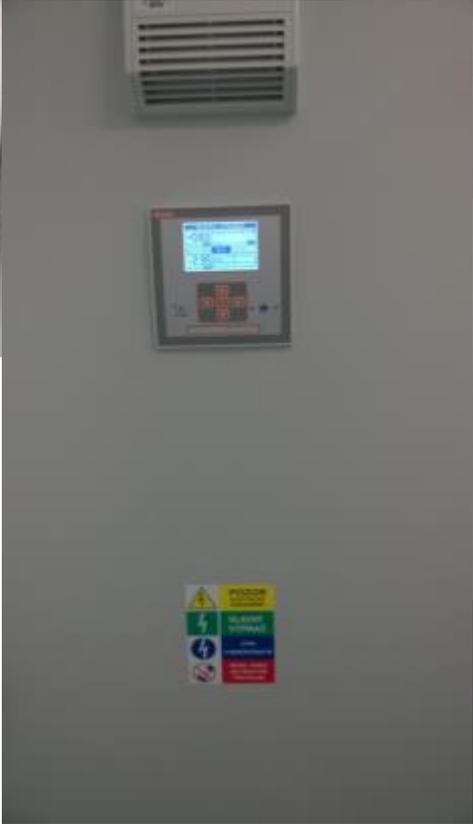
PUMPING, IRRIGATION AND PIPING



ENERGY MANAGEMENT



POWER FACTOR CORRECTION

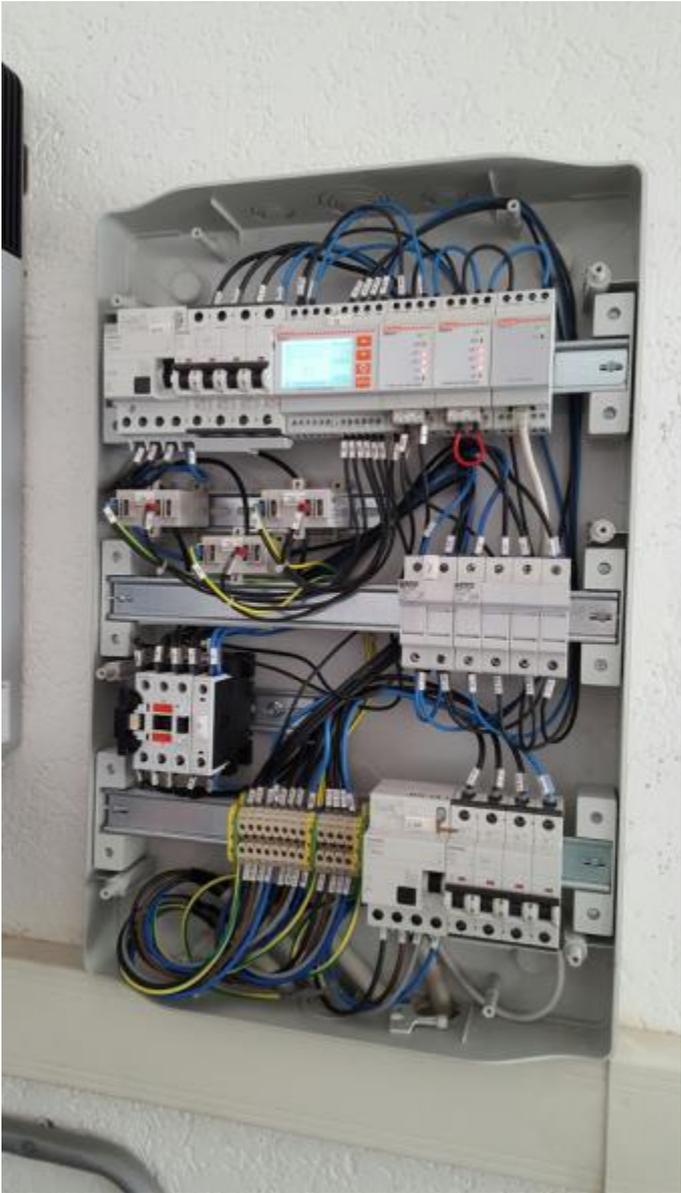


GEN SETS



SOLUTIONS

PHOTOVOLTAIC SYSTEMS



MILESTONES

1922

LOVATO ELECTRIC was established with the aim of manufacturing oil and air-break switches



MILESTONES

13

1922

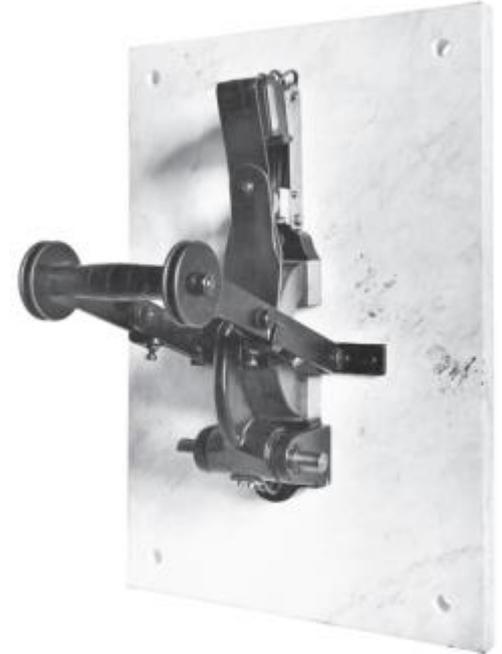
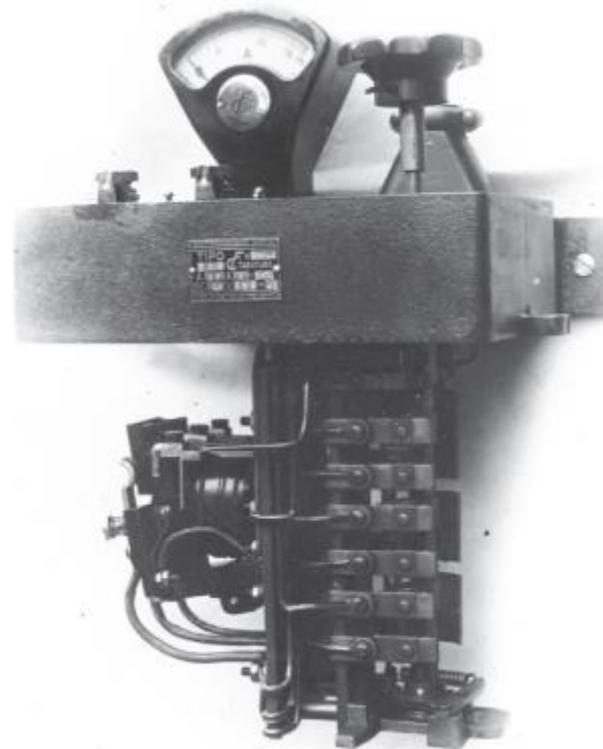
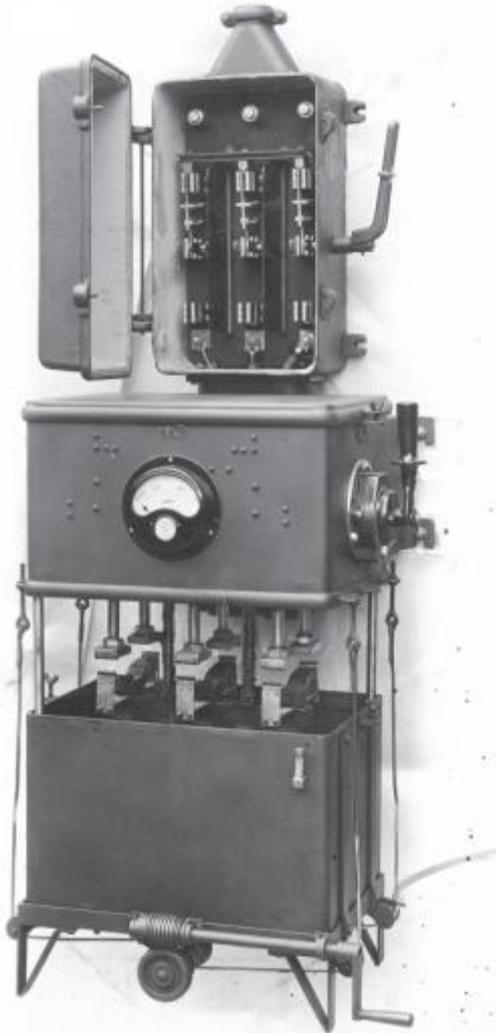
The first workshop



MILESTONES

1922

The first products



MILESTONES

1960

Manufacturing of monoblock contactors begins



MILESTONES

16

1963

New premises in Gorle (Bergamo) Italy, 14,000m² area



MILESTONES

1975

Integration of electromechanical production with a line of electronic equipment



MILESTONES

2001

Opening of the new Research and Development center in Gorle (Italy)



MILESTONES

2010

Presentation of LCD multimeters and power analyzers, **DMG** series



2012

Presentation of **PLatinum** series of Ø22mm pushbuttons and selector switches



MILESTONES

2012

Opening of new logistics center (dispatch of finished products) in Gorle (Italy)



2013

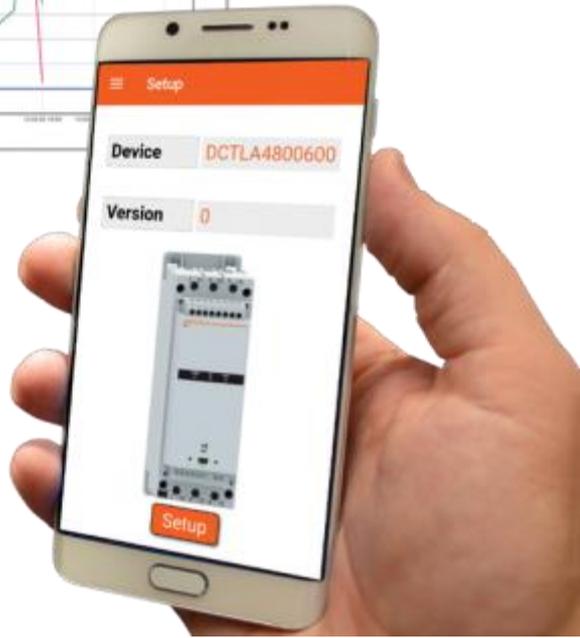
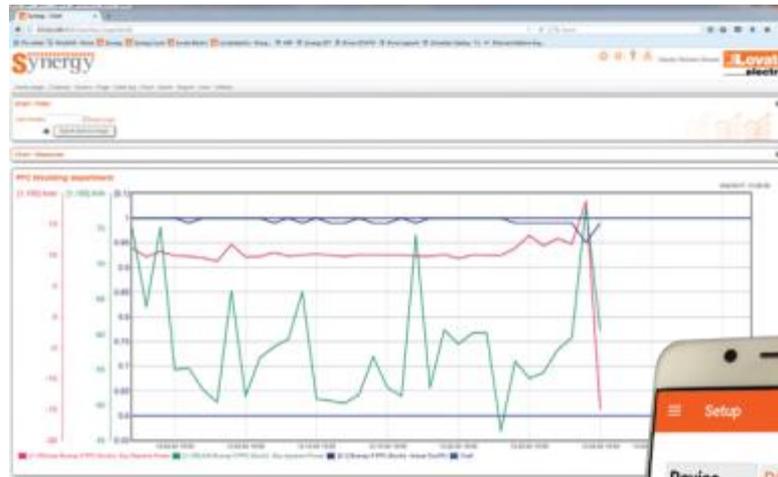
Opening of new LOVATO Electric SRO factory in Czech Republic



MILESTONES

2014

Software and APPs for remote programming and monitoring



NFC
Sam1
Xpress
Synergy

2017

Motor starting solutions



MILESTONES

2017

Canteen and relax facilities



Relax area



Canteen



Gym

MILESTONES

2018

Start of construction of the new office building for industrialization



MILESTONES

2019

LOVATO Lab opening



MILESTONES

2019

Acquisition of KONČAR NSP business unit in Croatia.



LOCATION

Site in Gorle (Bergamo), 45km east of Milan



HEAD OFFICE

Based in the heart of the most important electromechanical production area of Italy



WORLDWIDE AVAILABILITY

100 | COUNTRIES
90 | IMPORTERS
14 | FOREIGN SUBSIDIARIES

Canada
LOVATO Electric Corp.
www.Lovato.ca

USA
LOVATO Electric INC.
www.LovatoUsa.com

Italy
LOVATO Electric S.p.A.
www.LovatoElectric.com

Spain
LOVATO Electric S.L.U.
www.LovatoElectric.es

Croatia
LOVATO Electric d.o.o
www.LovatoElectric.hr

France
LOVATO Electric SAS
www.LovatoElectric.fr

Poland
LOVATO Electric SP.Z O.O.
www.LovatoElectric.pl

Germany
LOVATO Electric GmbH
www.LovatoElectric.de

Czech Republic
LOVATO Electric S.R.O.
www.LovatoElectric.cz

Russia
OOO LOVATO Electric
www.LovatoElectric.ru

UK
LOVATO Electric LTD
www.Lovato.co.uk

Romania
LOVATO Electric SRL
www.LovatoElectric.ro

China
LOVATO Electric (SHANGHAI) CO LTD
www.LovatoElectric.cn

Turkey
LOVATO Elektrik LTD
www.LovatoElectric.com.tr

United Arab Emirates
LOVATO Electric ME FZE
www.LovatoElectric.ae

To become specialized in 30 product lines present in our catalogue

“Specialised single product” or limited range of products
Companies
.....
.....
.....
.....
.....
.....
.....
.....
.....

- complete range
- flexibility
- rapidity
- competitive pricing

LOVATO Electric

Multinational corporations with complete range of products
Schneider Electric
Siemens
ABB
Eaton
Rockwell Automation

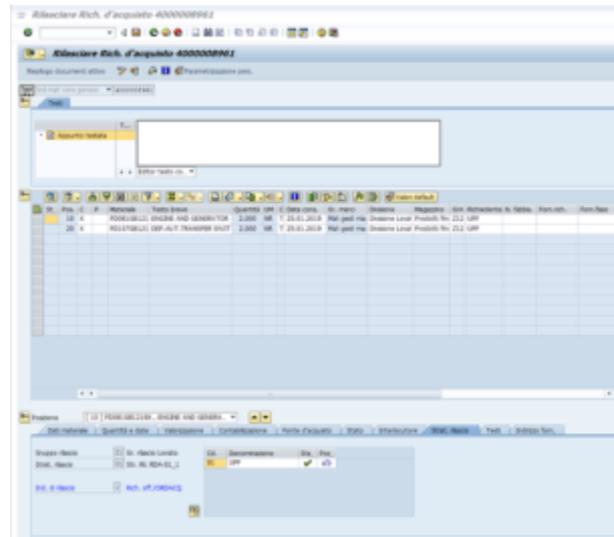
SHAREHOLDERS

100% Cacciavillani family



SAP

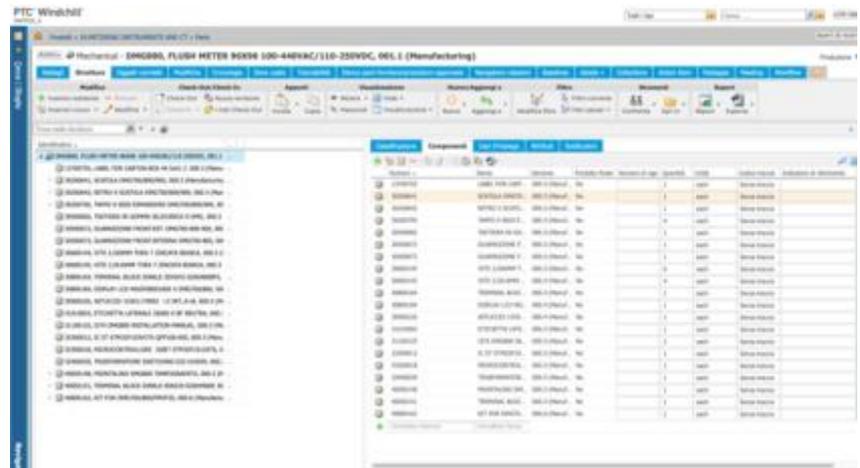
Integrated operations system (ERP)



PLM

Product Life cycle Management

Software per il processo di innovation



People: “The main resource of the Company”

30% of human resources involved in research and development



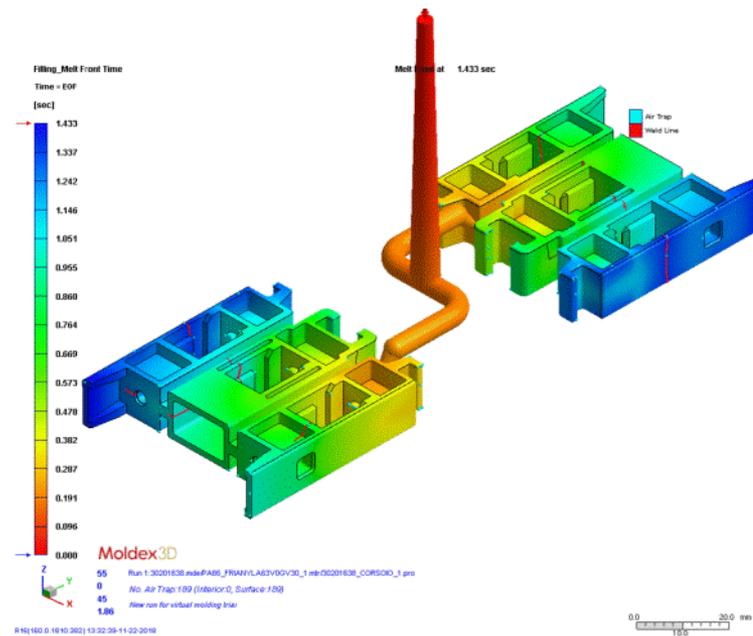
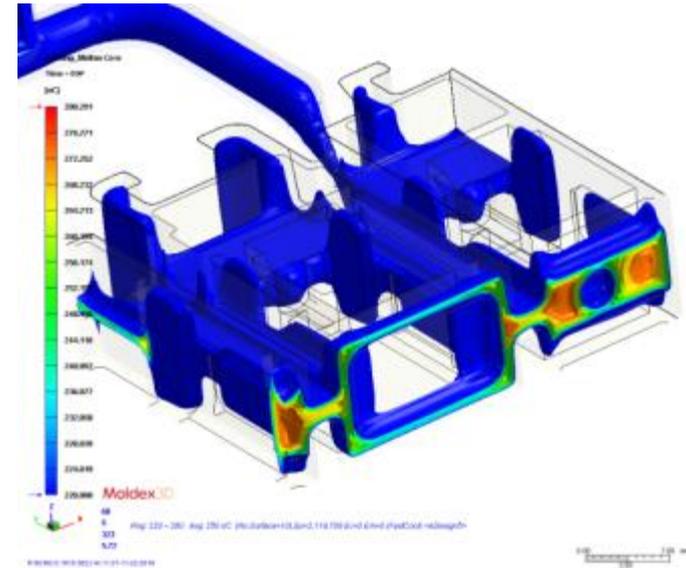
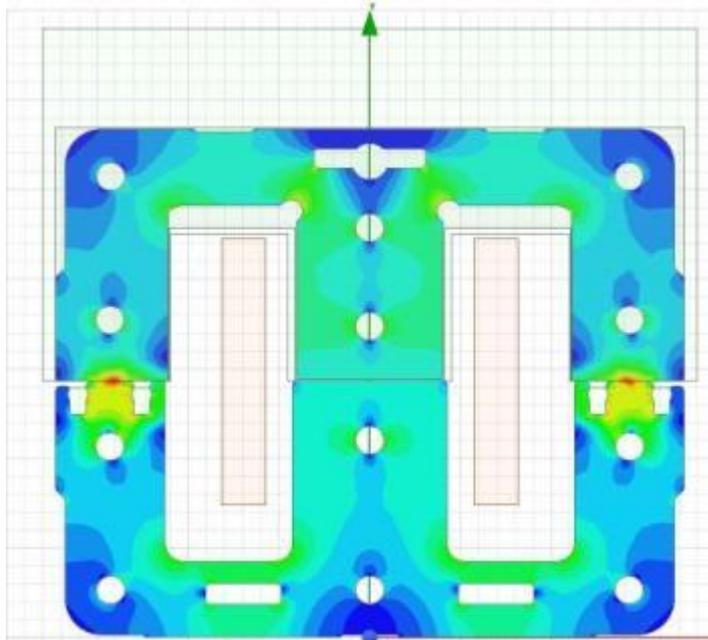
R&D electronic products
R&D software



R&D electromechanical products

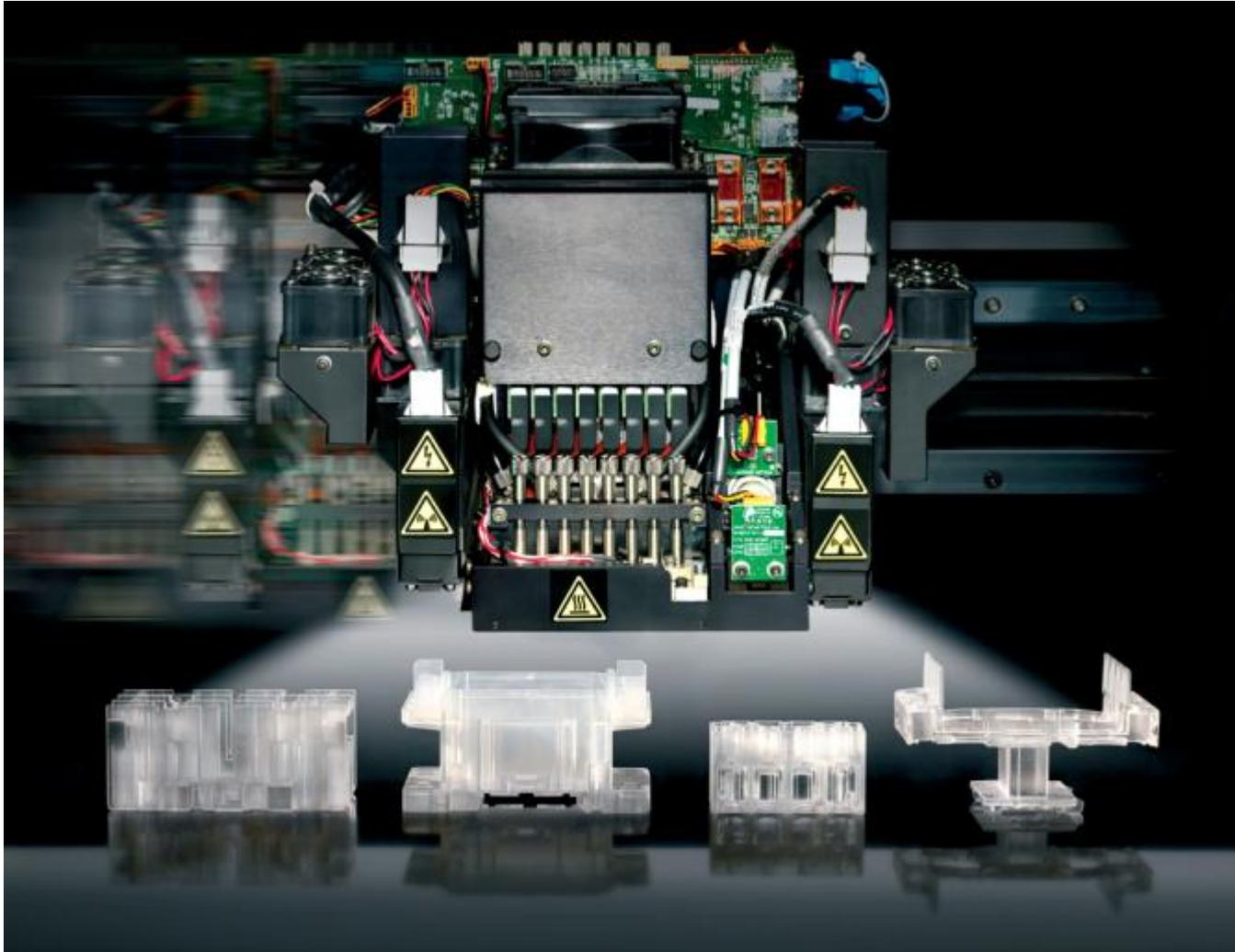
R&D

CAE simulation



R&D

Prototype creation using 3D printers



R&D

Internal prototype creation, development and pre-series using the SMD assembly line



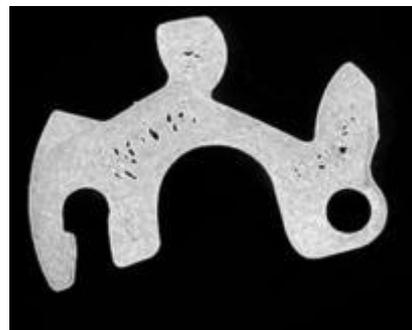
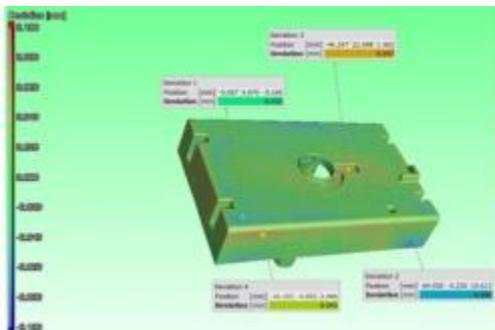
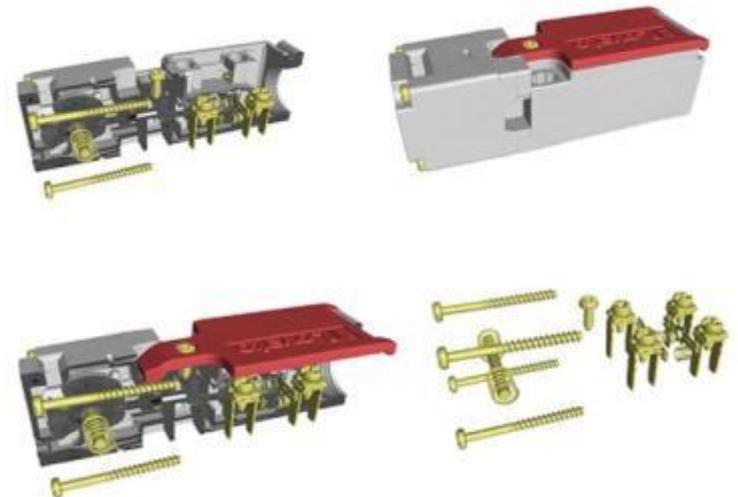


Test laboratory – 1.700m² area





Computerized 3D tomography for structural analysis of the products





Our laboratory is qualified and certified to conduct type testing, under ACAE control, for the emission of ACAE / LOVAG certifications which are recognized by European Union and valid worldwide

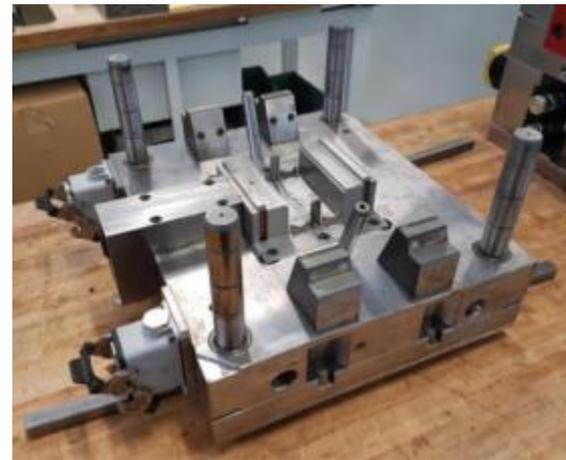
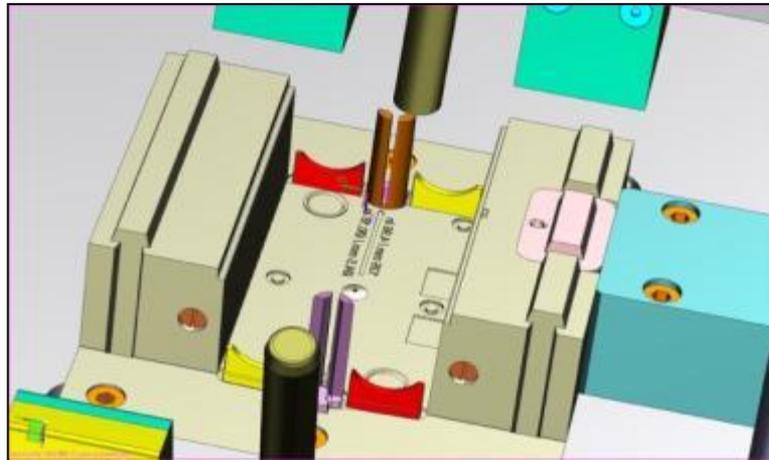
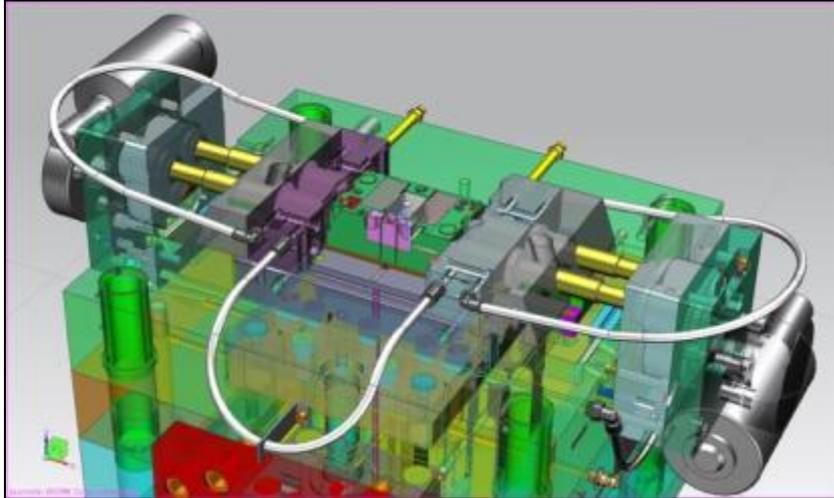


ASSOCIAZIONE PER LA CERTIFICAZIONE
DELLE APPARECCHIATURE ELETTRICHE

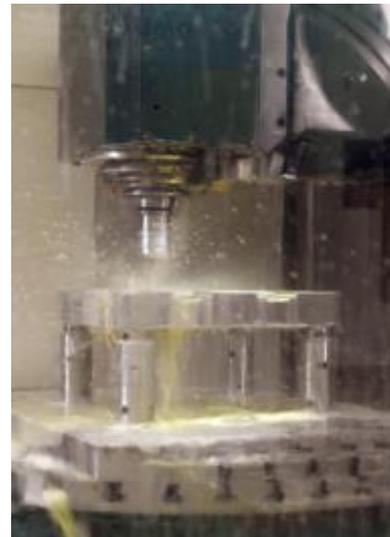


LOW VOLTAGE
AGREEMENT GROUP

Tooling room



Tooling room



Moulding department



Automatic assembly lines



Other production sites



ISO 9001

IQNet/CISQ Quality certification (1992)



ISO 14001

IQNet/CISQ Quality certification (2002)



BS OHSAS 18001

Occupational Health and Safety Assessment System (2014)



OUR WINNING CARDS

Technical support



Phone



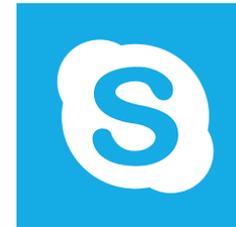
Mail



Teamviewer



Whatsapp



Skype



Social

Answers within 24h !!

OUR WINNING CARDS

Innovative products



OUR WINNING CARDS

Fast deliveries





Data sheets



BF0910A230
THREE-POLE CONTACTOR, IEC OPERATING CURRENT IE (AC3) = 9A, AC COIL 50/60HZ, 230VAC, 1NO AUXILIARY CONTACT

BF0910A230
THREE-POLE CONTACTOR, IEC OPERATING CURRENT IE (AC3) = 9A, AC COIL 50/60HZ, 230VAC, 1NO AUXILIARY CONTACT



Power contactor
BF09

Product designation				Power contactor			
Product type designation				BF09			
Contact characteristics							
Number of poles				nr. 3			
Rated insulation voltage UI				V 690			
Rated impulse withstand voltage Uimp				kV 6			
Operating frequency				Operational frequency min		Hz 25	
				Operational frequency max		Hz 400	
Conventional free air thermal current Ith				A 25			
Operating current				Operational current AC3 (5440V $\leq 55^{\circ}\text{C}$)		A 9	
				Operational current AC4 (400V)		A 4,9	
Short-time allowable current for 10s (IEC/EN60947-1)				A 150			
Protection fuse				gG (IEC)		A 25	
				aM (IEC)		A 10	
Making capacity (RMS value)				A 90			
Breaking capacity at voltage				Breaking capacity 440V		A 72	
				Breaking capacity 500V		A 72	
				Breaking capacity 690V		A 71	
Resistance per pole (average value)				m Ω 2,5			
Power dissipation per pole (average value)				Power dissipation pole (average value) Ith		W 1,6	
				AC3		W 0,2	
Tightening torque for terminals				min		Nm 1,5	
				max		Nm 1,8	
				min		lbf 1,1	
				max		lbf 1,5	
Tightening torque for coil terminal				min		Nm 0,8	
				max		Nm 1	
				min		lbf 0,59	
				max		lbf 0,74	
max number of wires simultaneously connectable				nr. 2			
Conductor section							
AWG				min		16	
				max		10	
Flexible w/o lug conductor section				min		mm ² 1	
				max		mm ² 6	
Flexible c/w lug conductor section				min		mm ² 1	
				max		mm ² 6	

BF0910A230 The characteristics described in this document are subject to updates or modifications at any time. The descriptions, technical and functional information, illustrations and instructions in this brochure are purely illustrative and are consequently not contractually binding. 1/5



BF0910A230
THREE-POLE CONTACTOR, IEC OPERATING CURRENT IE (AC3) = 9A, AC COIL 50/60HZ, 230VAC, 1NO AUXILIARY CONTACT

BF0910A230
THREE-POLE CONTACTOR, IEC OPERATING CURRENT IE (AC3) = 9A, AC COIL 50/60HZ, 230VAC, 1NO AUXILIARY CONTACT

Flexible with insulated space lug conductor section

		min	mm ² 1
		max	mm ² 6
Power terminal protection according to IECEN 60947-1		IP20	
Type of contact		1 N/A	
Thermal current Ith		A 25	
IEC/EN 60947-5-1 designation		A600	
Temperature			
Operating temperature		min	°C -50
		max	°C 70
Storage temperature		min	°C -60
		max	°C 80
Size altitude		m 3,000	
Operating position		normal	Vertical plane
		allowable	±30°
Mounting		Screw / DIN rail	
Weight		g 0,387	
Mechanical life		Cycles 30,000,000	
Electrical life		Cycles 200,000	
Performance level (P1) according to IEC/EN 12469-1		Performance level (P1) according to EN/ISO 24819-1 16600kVsd	
Performance level (P1) according to EN/ISO 24819-1		Performance level (P1) according to EN/ISO 24819-1 16600kVsd	
Wiring contains according to IECEN 60947-4-1		Yes	
EMC compatibility		Yes	
Rated AC voltage at 50/60Hz, 60Hz		min	V 12
		max	V 600
AC operating voltage			
of 50/60Hz coil powered at 50Hz			
pick-up		min	N/A 30
		max	N/A 110
drop-out		min	N/A 20
		max	N/A 55
of 50/60Hz coil powered at 60Hz			
pick-up		min	N/A 35
		max	N/A 110
drop-out		min	N/A 20
		max	N/A 55

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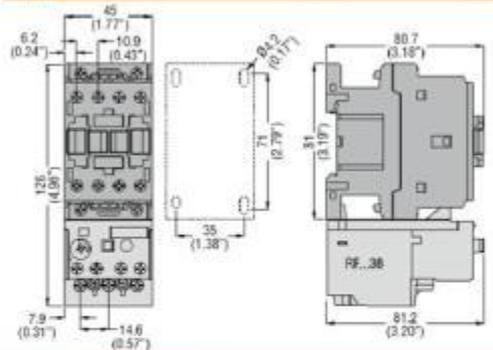


BF0910A230
THREE-POLE CONTACTOR, IEC OPERATING CURRENT IE (AC3) = 9A, AC COIL 50/60HZ, 230VAC, 1NO AUXILIARY CONTACT

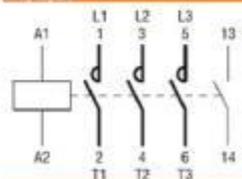
BF0910A230
THREE-POLE CONTACTOR, IEC OPERATING CURRENT IE (AC3) = 9A, AC COIL 50/60HZ, 230VAC, 1NO AUXILIARY CONTACT

		AC current	A 10
		EC voltage	V 250
		EC current	A 1

Dimensions



Wiring Diagram



Performance and Compliance

Certification

- CSA C22.2 n° 809-07-1
- CSA C22.2 n° 809-07-4-1
- IECEN 60947-1
- IECEN 60947-4-1

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Application stories

The screenshot shows the Lovato electric website home page. The header includes the company logo, navigation links (Global, Home, Reserved area), a search bar, and social media icons. The main content area features a 'New products' section with an image of a control module and a 'Application cases' section with a list of categories: ENERGY MANAGEMENT, POWER CONTINUITY, and POWER FACTOR CORRECTION.

This screenshot displays the 'Application cases' section of the Lovato electric website. It is filtered by 'POWER CONTINUITY' and shows a list of projects under the 'OTHERS' category. The first project is 'OTKRITIE ARENA SPARTAK FOOTBALL STADIUM Moscow - Russian Federation', which includes a small image of the stadium and a brief description of the backup power supply project. Other categories like 'FINANCE AND GOVERNMENT' and 'INDUSTRY' are also visible.

This screenshot provides a detailed view of the 'OTKRITIE ARENA SPARTAK FOOTBALL STADIUM' application case. It features a large image of the stadium, the product name '9 pcs RQK900SA paralleling control module', and a detailed description of the project. The description states that PowerTech Engineering, the service partner of Lovato Electric in Russia, provided backup power for the stadium during the 'Confederation Cup 2017' and 'World Cup 2018'. A 'New products' section on the right shows an image of a surge protection device, and a 'Spot News' section below it mentions a new building project.

System design software

Most of our products are available in electrical CAD softwares such as EPLAN, SPAC and IGE-XAO

The screenshot displays the ePLAN data portal interface. On the left, there is a sidebar with navigation options: 'Produttore' (set to Lovato Electric), 'Catalogo EPLAN' (set to Elettrotecnica with 960 items), 'Caratteristiche' (with checkboxes for 'Dati di acquisto', 'Maschera funzioni', 'Macro logica', and 'Dati grafici 2D'), and 'Lingue'. The main content area shows a list of products, with three items visible:

- [1] LOV.11B11500220**: Lovato Electric, 11B11500220, 11B11500220, CONTATTORE 3P 115A AC3, 59 downloads.
- [2] LOV.11B1150024**: Lovato Electric, 11B1150024, 11B1150024, CONTATTORE 3P 115A AC3, 44 downloads.
- [3] LOV.11B11500380**: Lovato Electric, 11B11500380, 11B11500380, CONTATTORE 3P 115A AC3, 41 downloads.



Participation in major trade fairs



- SPS Nuremberg
- INDUSTRY Hannover
- SPS Parma
- MEE Dubai
- etc.





Catalogues in 8 different languages



Demo cases



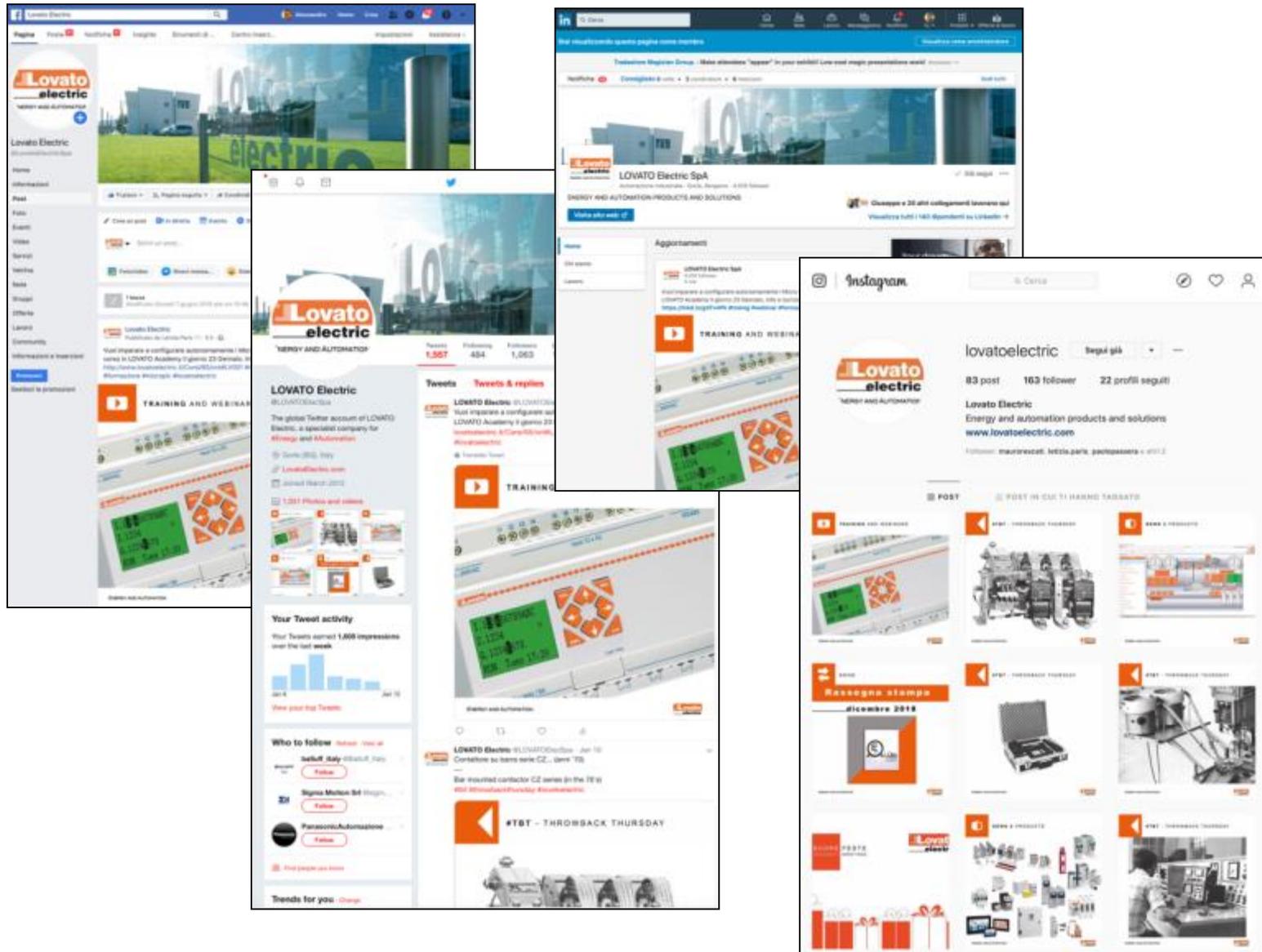
Brochure

	Lovato	Lovato	Gavazzi	Martin-Gerth	Ima	Electrac	Duca9	Socomec
Interfaccia utente	DMC200-210	DMC300	EM24	PM3	NEMO D4-L	Perito D4	SmartPro	Dine JM
Tipo display	LCD grafico 128x60	LCD grafico 128x60	LCD a icone	LCD a icone	LCD a icone	LCD grafico 100x64	LCD a icone	LCD a icone
Tastiera	4 tasti	4 tasti	Joystick + selezione	4 tasti	3 tasti	3 tasti	2 tasti	0 tasti *
Alimentazione ausiliaria								
Tensione	100-240Vac 100-230Vac	100-240Vac 100-230Vac	115-230Vac 18-60Vac/Vdc (opzione)	185-230Vac 24-48Vdc	115-230Vac 48Vdc	230-240Vac 115-120Vac 18-30Vac 18-40Vdc	230-240Vac 115-120Vac	110-400Vac 120-300Vdc
Ingressi di tensione	10-430Vac	10-430Vac	70-250 o 277-430Vac	50-430Vac	50-430Vac	10-415Vac	10-730Vac	50-730Vac
Accuratezza	0.5%	0.2%	0.5%	0.5%	0.5%	0.5%	0.25% 1s	0.5%
Ingressi di corrente	5mA-6A	5mA-6A	5A nominale, 10A max	10mA-6A	10mA-6A	10mA-6A	10mA-6A	10mA-6A
Accuratezza	0.5%	0.2%	0.5%	0.5%	0.5%	0.5%	0.25% 1s	0.5%
Misura energia								
Attiva	classe 0.5S	classe 0.5S	classe 1	classe 2	classe 1	classe 1	classe 1	classe 1
Passiva	classe 2	classe 2	classe 2	classe 2	classe 2	classe 2	classe 2	classe 2
Altre funzioni								
Valori massimi	si	si	no	no	no	si	no	no
Valori minimi	si	si	no	si	si	si	no	si
Maximum demand	si	si	si	si	si	si	si	si
Contatore	si	si	si	si	si	si	no	si
Isolamento								
Dimensioni	4 moduli	4 moduli	4 moduli	4 moduli	4 moduli	4 moduli	0 moduli *	7 moduli *
Fattore di protezione	IP40 (monte) IP20 (connessioni)	IP40 (monte) IP20 (connessioni)	IP30 (monte) IP20 (connessioni)	IP53 (monte) IP20 (connessioni)	IP42 (monte) IP20(connessioni)	IP40 (monte) IP20(connessioni)	IP40 (monte) IP20(connessioni)	IP40 (monte) IP20(connessioni)
Temperatura								
Temperatura di funzionamento	-30 / +40 °C	-20 / +45 °C	-25 / +45 °C	-5 / +45 °C	-5 / +45 °C	-10 / +45 °C	-	-10 / +45 °C
Equipaggiamenti								
Ingressi/uscite digitali	-	888 moduli EXM	2 OUT stazione 2 OUT relè (opzione R2) 3 I/O digitali (opzione SI)	1 OUT impulsi (solo PMS)	1 OUT impulsi	2 OUT / 1 IN progr (versione 101 200)	2 OUT programmabili	2 OUT programmabili
Ingressi/uscite analogici	-	-	-	-	-	OUT 4 500mA (versione 404 500A)	-	-
RS232	-	si	-	-	-	-	-	-
RS485	solo DMC210	si	Opzione IS	solo PMS	si	si	si	si
USB	-	si	-	-	-	-	-	-
Ethernet	-	si	-	-	-	-	-	-
Memoria eventi con orologio	-	si	-	-	-	-	-	-

Cross reference table with competitors

SALES PROMOTION

Social Network: Facebook, Twitter, LinkedIn, Instagram



Social Network: Youtube channel



Company presentation

Company RIPRODUCI TUTTI

LOVATO Electric SpA 443 visualizzazioni • 5 mesi fa	LOVATO Electric SpA 949 visualizzazioni • 10 mesi fa	LOVATO Electric SpA 7149 visualizzazioni • 1 anno fa	LOVATO Electric SpA 754 visualizzazioni • 1 anno fa	LOVATO Electric SpA 1329 visualizzazioni • 1 anno fa

Products playlist

Products RIPRODUCI TUTTI

LOVATO Electric SpA 159 visualizzazioni • 1 mese fa	LOVATO Electric SpA 294 visualizzazioni • 1 mese fa	LOVATO Electric SpA 885 visualizzazioni • 1 anno fa	LOVATO Electric SpA 287 visualizzazioni • 1 anno fa	LOVATO Electric SpA 1322 visualizzazioni • 1 anno fa

Tutorials playlist

Tutorials RIPRODUCI TUTTI

LOVATO Electric SpA 881 visualizzazioni • 3 mesi fa	LOVATO Electric SpA 271 visualizzazioni • 3 mesi fa	LOVATO Electric SpA 281 visualizzazioni • 3 mesi fa	LOVATO Electric SpA 164 visualizzazioni • 3 mesi fa	LOVATO Electric SpA 421 visualizzazioni • 3 mesi fa



MOTOR PROTECTION CIRCUIT BREAKERS



- Wide adjustment range 0.1 to 100A
- IEC breaking capacity I_{cu} 50kA (400V) up to 100A
- Suitable for isolation
- Comprehensive line of accessories
- Magnetic-only version
- Automatic trip indicators
- High reliability and accuracy of tripping.



CONTACTORS



- Three-pole versions up to 630A in IEC AC3 duty
- Four-pole versions up to 1600A in IEC AC1 duty
- Versions for power factor correction up to 100kvar at 400VAC
- Four-pole versions with 2NO+2NC or 4NC main poles
- Versions for photovoltaic application
- Versions with AC, AC/DC or DC control
- Low-consumption versions with DC control circuit for control relays and 9-38A contactors in IEC AC3 duty
- Extensive choice of add-on blocks and accessories
- Certified by primary international authorities.

MOTOR PROTECTION RELAYS



- Thermal overload relays for currents between 0.09 and 420A
- Electronic thermal overload relays for currents between 0.4 and 110A
- Electronic thermal overload relays with selectable tripping class: 5-10-20-30
- Phase failure sensitive and non phase failure sensitive versions
- Automatic and/or manual resetting
- Independent or direct mounting on contactor
- Thermistor protection relay.

ELECTROMECHANICAL STARTERS AND ENCLOSURES



- Direct-on-line starters in non-metallic enclosure complete with or without thermal relay
- Versions with RESET or START/STOP pushbuttons
- Non-metallic enclosures for customer-assembled starters
- Reversing and changeover contactor assemblies
- Star-delta starters, open frame and in non-metallic enclosure versions.

SOFT STARTERS



- 12A to 1200A soft starter ratings
- Standard and severe duty types
- Internal bypass contactor up to 320A rating
- Startup with torque control, voltage ramp or current limit
- Integrated total motor protection
- Clock calendar
- Digital control and adjustment
- RS232 and RS485 for monitoring and remote control
- Modbus-RTU and proprietary ASCII communication protocols.



VARIABLE SPEED DRIVES



- Versions for single-phase up to 2.2kW / 3HP and three-phase up to 110kW / 150HP
- Special function for pump and fan control using PID algorithm
- Active earth leakage protection
- EMC suppressor built-in all versions
- Selectable motor control mode: V/f, vector, energy saving
- Selectable digital and analog input and output functions.

PUSHBUTTONS AND SELECTOR SWITCHES



- Simple and snap on installation
- Highly conductive contacts
- Robust for severe ambient conditions
- Contact operation: double breaking action, direct opening operation and self cleaning
- Plastic and metal enclosure
- High degree of protection: IP66, IP67, IP69K and UL Type 4X.



SIGNAL TOWERS AND BEACONS



Signal towers Ø45mm

- Supplied already assembled
- Steady light and pulsed or continuous sound modules.

Multicoloured signal towers Ø70mm

- Modular and combinations up to 5 modules
- Steady light and pulsed or continuous sound modules.

Signal towers Ø70mm

- Modular and combinations up to 7 modules
- Steady or blinking light, pulsed or continuous sound modules.

Signal beacons Ø62mm

- Steady or blinking light, pulsed or continuous sound modules.

LIMIT, MICRO AND FOOT SWITCHES



- Dimensions to EN 50047 standards
- Dimensions compatible to EN 50047
- Dimensions to EN 50041 standards
- Direct opening action of NC contacts
- Extensive range of operating heads
- Versions complete with interchangeable and rotatable heads
- Versions with removable and interchangeable auxiliary contact blocks
- Versions with solenoid and separate actuator.

ROTARY CAM SWITCHES



- Suitable for circuit connection, changeover, switching on and off as well as motor starting
- Possible special circuit schemes
- IEC IP40 or IP65 front degree of protection
- 2-screw fixing
- Wide range of features
- IEC conventional free air thermal current I_{th} 16A...125A ratings.

SWITCH DISCONNECTORS



- 16A to 1600A ratings
- Versions: direct operating handle, door coupling, door mount and in enclosure
- Wide range of accessories
- Type for photovoltaic applications up to 850A, 1000VDC (DC21B)
- Switch disconnectors and changeover switches in plastic, metal and stainless steel AISI 304 enclosure
- Versions UL98 certified.



FUSE HOLDERS AND FUSES



- Modular size for 10x38, 14x51 and 22x58mm fuses
- Finger safe - IEC IP20 degree of protection against accidental contact with live parts and with sealable cover for operators' safety
- Version with status indicator to quickly determine if the fuse is still operative or needs to be replaced
- UL and CSA certified versions.

MINIATURE AND RESIDUAL CIRCUIT BREAKERS



- UL1077- and UL489-certified versions
- High breaking capacity
- Various trip characteristic curves: type B, C or D
- Wide 1...125A current range
- Residuals with trip characteristic curves type A, AC and B
- Accessories available.

SURGE PROTECTION DEVICES



- Protection against overvoltage and high surge conditions caused by direct or indirect lightning strikes
- Types with plug-in cartridge provide fast servicing capability
- Mechanical indicator for visual failure status signalling of single modules
- Versions with or without output for remote SPD status indication
- Versions for data and signal lines
- Versions for photovoltaic applications.

MODULAR CONTACTORS



- Two, three and four-pole versions, 20A to 63A
- Very silent during operation or control stage
- Manual control version
- Operating flag indicator
- Add-on auxiliary contacts.

EARTH LEAKAGE RELAYS



- Modular, flush and internal panel mount version, with or without flag indicator, configurable prealarm indication and fail safe operation
- Versions with automatic toroid connection control
- Choice of supply voltage ranges
- Adjustable fault current $I\Delta n$
- Adjustment and choice of tripping range for both fault current and delay time.

TIME RELAYS



- Modular version for modular-slot switchboards, also suitable for rear mounting plate fixing
- Plug-in or flush-mount version
- Version programmable with NFC
- Vast range of functions and time scales
- Reliable time and repeat accuracy.

MONITORING RELAYS



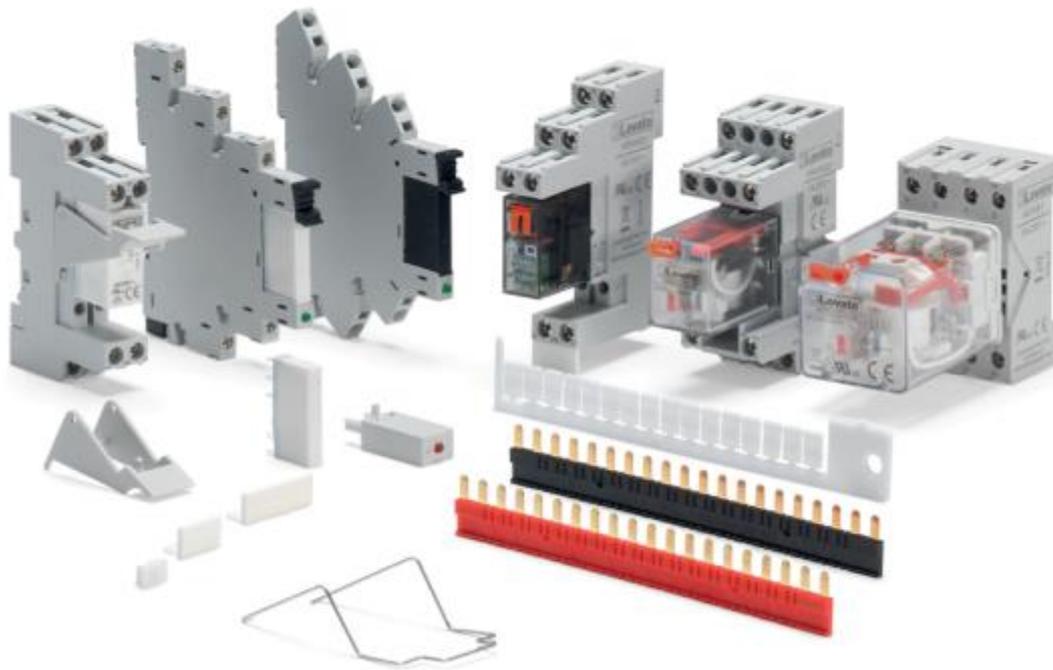
- Modular version for modular-slot switchboards, also suitable for rear mounting plate fixing
- Minimum and maximum voltage monitoring relays for single and three-phase systems, with or without neutral
- Voltage asymmetry, phase sequence and phase loss control relays
- Multifunction voltage and frequency monitoring relays with NFC technology and APP
- Frequency monitoring relays
- Minimum and maximum current monitoring relays
- Interface protection system units compliant with Italian standards CEI 0-21, CEI 0-16, DEWA DRRG and G59.

LEVEL CONTROLS



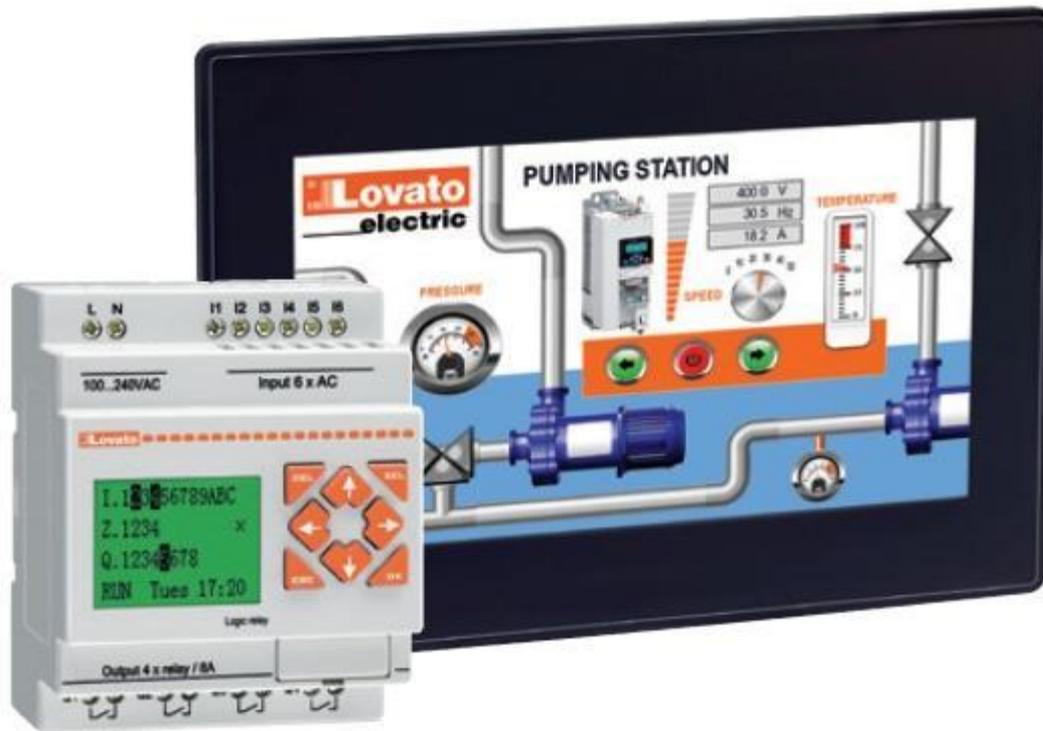
- Level monitoring relays for electrically conductive liquids
- Modular and plug-in versions
- Adjustable 2.5...200k Ω sensitivity
- Single and three-pole probes
- Float switches
- Start-up priority change relays.

GENERAL PURPOSE RELAYS



- Electromechanical and SSR (solid state relay) versions
- AC or DC coils
- Sockets with screw or spring terminals
- Relays with LED state indicator and mechanical actuator
- Parallel busbars and noise filters.

MICRO PLCs AND HMI



- 10, 12 and 20 Input-Output base modules
- Expansion modules with 4 digital Inputs and 4 digital Outputs
- Expansion modules for analog Inputs-Outputs
- Modbus-RTU slave communication module
- RS232/USB serial interface port for PC, HMI operator panel or program backup memory connection
- On-board programming languages: Italian, English, Spanish, French, German, Portuguese and Chinese
- PC programming languages: Italian, English and Spanish
- HMI with graphic touchscreen display, 64k colors, format 4.3", 7" and 10.1".

SWITCHING POWER SUPPLIES



- Versions: modular and 35mm DIN rail mount
- Output voltage adjustment by front potentiometer
- Short-circuit protection
- Built-in input voltage surge suppressor
- Used as power supply for DC electromechanical and electronic equipment
- Redundancy modules.

AUTOMATIC BATTERY CHARGERS



- Switching and linear technology
- 1 charging level
- Versions for non-sealed and sealed lead-acid batteries, 1.25 to 12A ratings
- Charging current limitation selectable.

ENERGY METERS



ENERGY METERS

- Single-phase, three-phase with neutral, three-phase with or without neutral
- Direct connection or by current transformers
- MID certified versions
- Versions expandable with EXM... Expansion modules
- Versions with built-in RS485 or M-Bus communication ports.

DATA CONCENTRATORS

- Energy consumption data storage for network usage
- Connection up to 14 energy meters equipped with static output
- Expandable with EXM... expansion modules
- Built-in RS485 communication port.



DIGITAL METERING INSTRUMENTS



- Digital voltmeters, ammeters, wattmeters, frequency meters and cosphi meters
- Digital multimeters and power analyzers, expandable, with graphic LCD
- Ideal for distribution systems, co-generation energy systems, stand-by generating sets and on-board machinery installation
- High measurement accuracy
- Totally programmable digital outputs
- RS485, RS232, USB, Ethernet, GPRS, Profibus DP serial interface for remote control and data-logger
- Dedicated expansion modules for extended functionality.

CURRENT TRANSFORMERS



- 50A to 4000A primary current ratings
- 5A secondary current
- 50 to 60Hz operating frequency
- Solid core version for 22mm to 86mm diameter cables
- Split core version for 24x24mm to 80x160mm busbars
- Accuracy Class 1, 0.5 and 0.5S
- Compact prewired split-core version with 1m cable long.

POWER FACTOR CONTROLLERS AND THYRISTORS



- Automatic intelligent adjustment
- Versions from 2 to 24 steps and up to 32 with Master-Slave function
- Versions with static outputs
- Versions for capacitive reactive power factor correction
- Use in cogeneration and medium voltage systems
- USB, serial, Ethernet communication interfaces
- Modbus-RTU and ASCII communication protocols
- Dedicated expansion modules for extended functionality
- Thyristor modules for dynamic power factor correction.



AUTOMATIC TRANSFER SWITCH CONTROLLERS



- Management of two or three-phase supply lines
- Emergency demand supervision for standby generating set
- Tie-breaker management
- Control of contactors, motorised circuit breakers and motorised changeover switches
- Closed transition
- Automatic non-priority load management
- Event logging
- Remote control and supervision
- Built-in NFC technology
- Expandable with EXP modules
- Communication protocols
- Modbus-ASCII, RTU and TCP.



ENGINE AND GENERATOR CONTROLLERS



- Engine protection controllers
- Stand alone gen-set controllers
- Auto mains failure (AMF) gen set controllers
- Paralleling controller for mains - generator and generator-generator
- Totally programmable inputs, outputs and alarms
- RS232, RS485, USB, Ethernet communication interface
- Engine control by CANbus
- Setup and supervision software
- Modem control for sending alarm messages and emails
- Dedicated expansion modules for extended functionality.

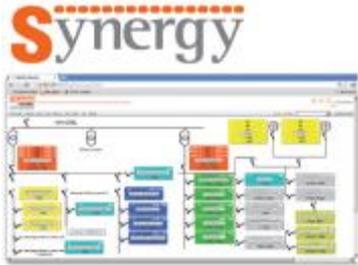


FIRE PUMP CONTROLLERS



- Fire pump controllers according to EN 12845
- Remote alarm panels according to EN 12845
- Advanced programmable I/O functions to control the fire fighting system
- Expandable with EXP modules
- Controllers and expansion modules with tropicalized PCB
- Controllers with built-in NFC technology
- RS485 and Ethernet communication interfaces
- Setup and supervision software
- Modem control for sending alarm messages and emails.

SOFTWARE AND APPLICATIONS



SUPERVISION AND ENERGY MANAGEMENT SOFTWARE

- Structure and applications based on MS SQL relational database management system
- Data consultation through popular Internet browsers
- Versatile system, accessible to a large number of users/workstations via intranets, VPN or Internet
- **Cloud version** for using Synergy functions on LOVATO Electric portal.



CONFIGURATION AND REMOTE CONTROL SOFTWARE

- Parameter setting
- Point-by-point monitoring
- Memory module management.



APP FOR SMARTPHONE AND TABLET

- Can be used to view alarms, send controls, read measurements, set parameters, download events and send collected data via e-mail
- iOS and Android compatible.



APP FOR PROGRAMMING VIA NFC TECHNOLOGY

- Parameter setting with NFC technology
- Access without the need to supply the LOVATO Electric product
- Android compatible.



EXPANSION MODULES AND ACCESSORIES



- Relay outputs
- Digital inputs and outputs
- Analog inputs and outputs
- Communication interface
- Data storage with clock-calendar
- Communication devices to connect LOVATO Electric products to personal computers, smartphones and tablets
- Connecting cables to link LOVATO Electric products to personal computers, modems and converter drives
- Gateway RS485/modem 3G
- RS485/Ethernet and RS232/RS485 converters.

BF series contactors from 95 to 150A in AC3



They have a small footprint: 75mm for the three-pole versions and 100mm for the four-pole versions. Motor currents at 400V from 95 to 150A and thermal currents I_{th} from 140 to 165A.

They have power terminals with double lug clamp and 4-terminal coil. They are available with two types of coil: AC or AC/DC with electronic control and wide supply voltage range.

The contactor with AC/DC coil has low power consumption, only closes at correct supply voltage, with built-in noise filter.

Also available in specific versions for controlling capacitors and DC load breaking.

GL series switch disconnectors



For currents from 160 to 315A.

The product structure is compact and also enables mounting directly on DIN rail. Disconnector switches and transfer switches are available in three-pole and four-pole version; the fourth pole can be mounted as an accessory by the customer. Contacts are visible thanks to the transparent window on the poles.

UL98 certified versions suitable for mounting in electric boards intended for the North American market are available. The range is completed by a wide selection of accessories and handles.

Switch disconnectors in metal or stainless steel enclosure



Disconnector switches and transfer switches are available in three-pole and four-pole version from 16 to 315A.

They offer a high mechanical robustness combined with resistance even to the most chemically aggressive environments. There is a ground terminal and accessories can be added such as auxiliary contacts and neutral terminal. The protection rating is IP65. Switch disconnectors up to 100A are also available in stainless steel enclosure.

Multifunction timer with NFC technology



The range of timers is completed with a new multi-voltage timer (12...240VAC/DC), multifunction with output contact, programmable through NFC and App (LOVATO Nfc). The NFC connectivity enables a simple and fast configuration using a smartphone; settings are thus accurate and repeatable and programming can be carried out even on a powered-off device. The programming can also be password protected. More than 30 functions are available, including those of the TMM1 model multifunction timer and of the TMPL model recycle time relay independent timing.

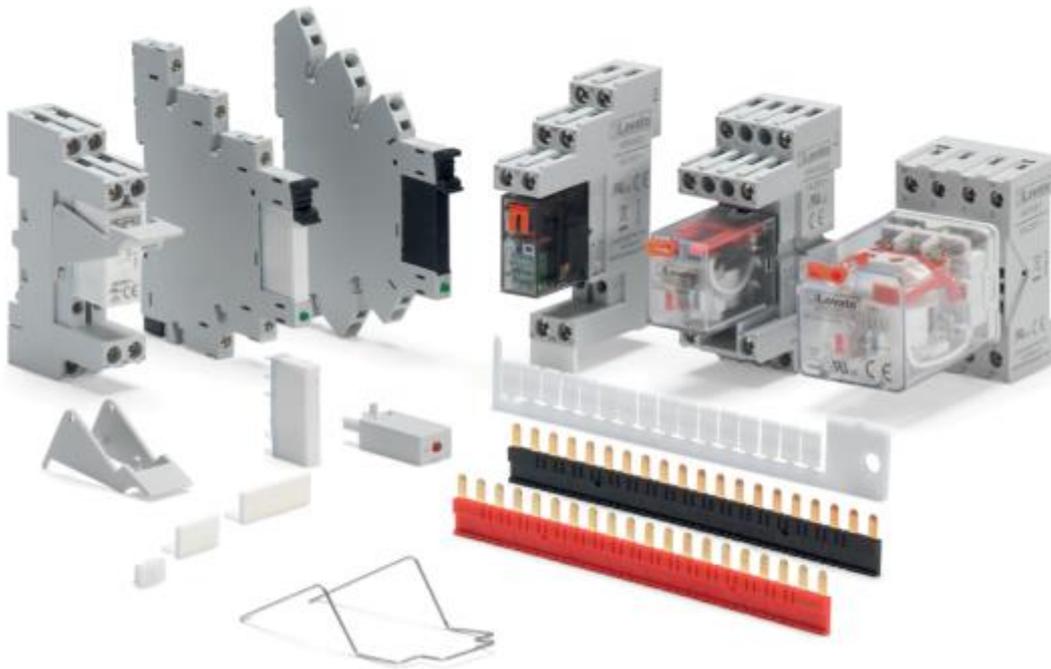
Monitoring relay with NFC technology



The PM series is completed with a new voltmeter and frequency meter relay for three phase systems with or without neutral programmable through the NFC and App (LOVATO Nfc) technology.

The NFC connectivity makes the relay programming easier by using a smartphone and an intuitive App. Programming will be fast and accurate and is even possible on a powered-off device. The new PMV95 includes the following functions: phase sequence, phase loss, no neutral, min. and max. voltage, asymmetry, min. and max. frequency. The single functions can also be enabled or disabled independently and the programming can be password protected.

HR series general purpose relays



It is composed of electro-mechanical relays and solid state relays; from 1 to 4 switching contacts with rated currents up to 16A.

“Slim” versions (only 6 mm wide), compact versions, versions with indication LED and test mechanical actuators are available. The range is completed by a wide selection of sockets with screw and spring terminals, filters, marking elements and connection jumpers.

Multimeter with current measurement through Rogowski coils



The DMG611 multimeter is a measuring device with four voltage inputs (three phase and neutral) and three inputs for reading the phase currents through Rogowski coils. The main advantage of these coils is their flexibility and deformability, so that they are highly suitable for system retrofitting.

The built-in RS485 communication port enables the inclusion of DMG611 in a supervision network. The multimeter is compatible with the Synergy and Xpress software and with the App SAM1.

DCRG8F automatic power factor controller



It has been designed to control power factor correction panels with steps added through thyristor modules, particularly suitable for systems with inductive loads that change very quickly over time.

The controller includes 8 steps that can be increased using the EXP series expansion modules.

DCTL series thyristor modules for controlling capacitors



They are available for the most common values of reactive power: 7,5, 15, 30 and 100kvar.

They are equipped with a front optical port for parameter programming, diagnostics and statistical data collection.

Thanks to the NFC technology and to the App LOVATO Nfc, it is possible to connect with the modules even if they are powered off using a smartphone.

It is possible to add an RS485 (EXC1042) communication port for supervising remotely and controlling activation through serial bus, thus saving on the panel wiring.

ATP series of ATS panels



This is a range of automatic transfer switching (ATS) panels in IP65 metal enclosure.

They are used for the automatic or manual switching of the load from the main line to a stand-by or emergency line.

The panels are available in 6 electrical sizes from 40 to 160A and include the following components:

- 2 interlocked four-pole contactors
- ATL600 model automatic transfer switch controller
- ATLDPS1 dual power supply module for control and measurement of the voltages at the supply inputs
- MCBs for the protection of the auxiliary supply
- Connection terminal blocks.

Automatic mains failure (AMF) GEN-SET controller



RGK750 is the new LOVATO Electric generating set controller with black front cover, graphic display, AMF (Automatic Mains Failure) management and advanced features as the buzzer for alarm notification, the remote alarm output for RGKRR support and built-in PLC. Two slots can host EXP expansion modules which let the controller to be equipped with communication options or additional digital inputs and outputs. Canbus J1939 is available on board.

FFL series controllers for electric pumps and fire fighting motor pumps



LOVATO Electric introduces its controller for sprinkler type fire-fighting systems thanks to its expertise in applications for pumping and controlling electric motors and diesel engines.

The FFL control units are designed according to the EN 12845 European standards; besides complying with these standard requirements, these devices also feature additional functions for the supervision, monitoring and maintenance of the fire-fighting systems.

On completion, two unit versions of remote alarm panels are available and enable reporting of the condition of the fire-fighting unit to a supervised room.

Synergy software



Synergy is upgraded with important functions which increase flexibility in use. The possibility of integrating third party devices - provided that they are able to communicate through Modbus protocol - has been added.

Furthermore, the collected data can be accessed not only through the traditional web interface but also using the web APIs specifically designed to interface Synergy with third party software. Finally, the indicators used in live pages have been upgraded, the functions that can be associated with the alarm events have been increased and the data collection algorithms have been optimized to face the steady increase in information necessary in the applications for monitoring and energy analysis. All functions are now also available in the Cloud version: energy data always update and available everywhere.

Gateway data logger



Data collection in production machinery and systems often requires frequent sampling procedures to process detailed analyses. This leads to the need for a local data warehouse, thus avoiding complete reliance on the performance of the internet, which is not always fast and reliable.

The Gateway data logger EXC GLA01 collects the data from the instruments on the field through RS485-Modbus communication and transfers it without time constraints through the internet to the Synergy supervision software data log, on remote server or cloud. The connection with the internet can be through the Ethernet interface or through the optional EXC GLAX1 modem module which allows phone lines to be used, thus solving the problems of authorisations for accessing customers' company networks.



THANK YOU FOR THE ATTENTION!