

MECHTRIC



Power Quality



Power Quality: Powered by Mechtrix's Expertise and Global Partnerships

With over 60 years of industry experience, Mechtrix proudly partners with world-class manufacturers to deliver innovative solutions.

Mechtrix's **Power Quality** solutions include engine and generator controllers, automatic transfer switch controllers, battery chargers, and power factor controllers. Supporting components such as controller accessories and special configuration contactors ensure reliable operation and seamless integration.

These solutions provide effective management of power supply and distribution, helping maintain stability and performance across critical applications.

Power Quality

Generator Controllers

Engine & generator controllers



Lovato

F-1...2

Automatic transfer switch controllers



Lovato

F-3

Battery Chargers

Automatic battery chargers



Lovato

F-4

Power Factor Correction

Power factor controllers



Lovato

F-5...6

Capacitor switching contactors



Lovato

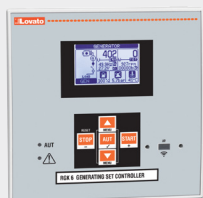
F-7

Thyristor switching modules

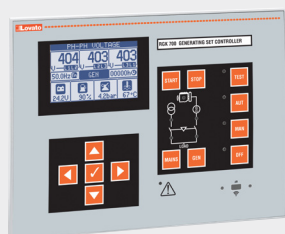


Lovato

F-7



RGK600



RGK700


 RGK750 (2 modules)
 RGK800 (3 modules)
 RGK900 (4 modules)


RGK900

Automatic mains failure (AMF) gen-set controllers

- Engine protection
- Programmable inputs and outputs / alarm properties
- Automatic starting of generator and load switching to stand-by emergency source in case of mains failure
- Supervision in "open transition" for contactors, motorised circuit breakers and changeover switches

type	digital inputs	digital outputs	description
RGK600 series			144 x 144 mm panel mounting
- Universal supply:		7...33 VDC	
- Display:		Graphic LCD 128 x 80 pixels with backlight	
- Measurement voltage:		50...576 VAC / Rated voltage: 480 VAC L-L	
- Current input:		3PH, /5A or /1A	
- Single, two and three phase voltage control - L1-L2-L3-N			
- IR programming port on front panel for communication with PC			
- 3 analog resistance input for oil pressure, engine temperature or fuel level control			
- Modbus-RTU and Modbus-ASCII protocols with expansion modules (RGK610)			

Automatic mains failure (AMF)

RGK600	4	6	basic AMF gen-set controller with "W" or magnetic "pickup" for engine speed reading (no CANbus)
RGK601	4	6	basic AMF gen-set controller with CANbus-J1939 (no "W" or magnetic "pickup")
RGK610*	4	6	basic AMF gen-set controller with "W" or magnetic "pickup" for engine speed reading (no CANbus)

* 1 slot to accept plug-in expansion modules **EXP1010/1011/1012**, see controller accessories

RGK700 series 180 x 240 mm panel mounting

As above **RGK600** but with the following additional features:

- Measurement voltage: 30...600 VAC / Rated voltage: 480 VAC L-L
- Rated voltage: RGK700 - 600 VAC L-L / RGK750 - 480 VAC L-L
- 1 USB/optical and Wi-Fi on front panel for programming and PC communication
- PLC logic for inputs, outputs and internal status
- Expansion bus with 2 slots for **EXP...** series expansion modules (**RGK750 only**)
- Calendar-clock (RTC) with backup reserve energy

Automatic mains failure (AMF)

RGK700	6	7	grey AMF gen-set controller
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RGK800 series 180 x 240 mm panel mounting

As above **RGK700** but with the following additional features:

- RS-485 communication (+ CANBUS)
- Neutral current measurement range: 0.050...6A or 1.2A
- 400Hz frequency support
- 1 programmable analog input
- Expandable with rear plug-in expansion (up to 3) modules (see controller accessories)

Automatic mains failure (AMF)

RGK800	8	9	fully featured AMF gen-set controller
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RGK900 series 180 x 240 mm panel mounting

- Mains-generator "closed transition" synchronising
- Mains-generator load sharing with source peak demand control
- Generator paralleling supervision (*island mode with load sharing*)
- Paralleling controllers for (*mains - mains*) and (*generator - generator*)

As above **RGK800** but with the following additional features:

- Voltage measurement range: 50-720 VAC / Rated voltage: 600 VAC L-L
- Frequency measurement range: 45...65Hz or 360...440Hz
- Display: Graphic LCD 128 x 112 pixels with backlight
- Customisable alarm text (16 alarms)
- Modbus-RTU, Modbus-ASCII and Modbus-TCP communication protocols
- 2 analog outputs for engine speed control (*governor*) / voltage regulator (AVR)

Paralleling controllers

RGK900SA	12	10	full featured stand alone gen-set controller
RGK900	12	10	mains-generator paralleling control

Control of mains, automatic transfer switching and paralleling on multiple generators controlled by **RGK900SA**

RGK900MC	13	10	Mains-ATS (<i>Automatic Transfer Switching</i>) controller
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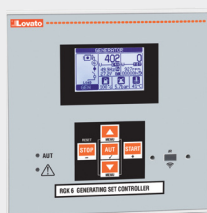
Sam1 **NFC** **Xpress**



RGK400SA



RGK420SA



RGK600SA

Stand alone gen-set controllers

- Engine protection
- Programmable alarm properties
- Programmable inputs and outputs
- Generator voltage and current control

type	digital inputs	digital outputs	description
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RGK400SA series

96 x 96 mm panel mounting

RGK400SA and **RGK420SA** with NFC technology are suitable for simple applications where only control, motor starting and monitoring of the electrical power alternator (*stand-alone applications, i.e. without the presence of the network*) are required.

- Universal supply: 12 / 24 VDC
- Display: LCD icon display
- Measurement voltage: 5...576 VAC
- Rated voltage: 480 VAC L-L
- Current Input: 1PH, /5A or /1A
- Engine protection: With "W" or magnetic "pickup" for engine speed reading
- 1 analog resistance input for oil pressure / engine temperature or fuel level control
- Single, two and three phase voltage control - L1-L2-L3-N
- IR programming port on front panel for communication with PC (**CX01**, see controller accessories)
- NFC technology for parameter setup via smartphone or tablet

Stand alone controller

RGK400SA	5+1 (E/stop)	5	stand alone gen-set controller
RGK420SA*	5+1 (E/stop)	5	stand alone gen-set controller

* Incorporates 3 position key switch (OFF, local start, remote start)

Expansion modules for above RGK400SA series (rear plug-in)

EXP1040	additional - 2 digital / resistance inputs, 2 static outputs
EXP1041	additional - 2 thermocouple inputs, 2 static outputs
EXP8005	housing gasket to increase protection to IP65

RGK600SA series

144 x 144 mm panel mounting

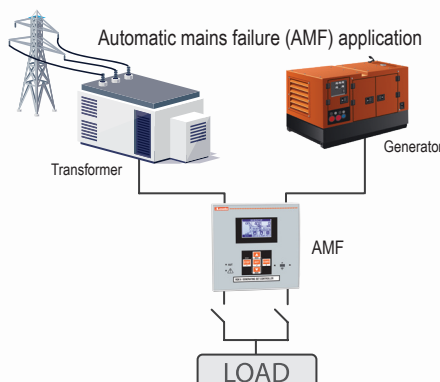
As above **RGK400SA** but with following additional features:

- Universal supply: 12 / 24 VDC
- Display: Graphic LCD 128 x 80 pixels with backlight
- Measurement voltage: 50...576 VAC
- Rated voltage: 480 VAC L-L
- Current Input: 3PH, /5A or /1A
- Operating temperature: -30...+70°C
- 3 analog resistance input for oil pressure, engine temperature or fuel level control
- No NFC technology
- Modbus-RTU and Modbus-ASCII protocols

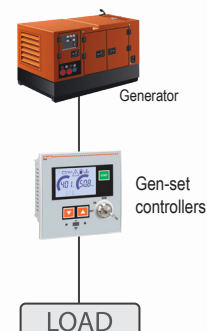
Stand alone controller

RGK600SA	4	6	stand alone gen-set controller with "W" or magnetic "pickup" for engine speed reading (no CANbus)
RGK601SA	4	6	stand alone gen-set controller with CANbus-J1939 (no "W" or magnetic "pickup")

Engine / Generator controllers



Stand alone gen-set controllers





ATL100



ATL500



ATL601



ATL900

**Automatic Transfer Switch (ATS) controllers**

- Tie-breaker management
- Remote control and supervision / Event logging
- Supervision of two or three three-phase power sources
- Automatic non-priority load management (ATL800, ATL900)
- Modbus-RTU, Modbus-ASCII and Modbus-TCP communication protocols
- IR programming port on front panel for communication with PC (*NFC on some models*)

type	digital inputs	relay outputs	description
ATL100 series (econo)		(no display)	54 mm DIN mounting

ATL100 with its modular housing is suitable for monitoring two independent power sources and to manage switching between the two sources with single phase control.

- Supply voltage: 110...230 VAC • Rated voltage: 110...230 VAC L-L
- 2 single phase inputs and outputs L+N
- Response thresholds of min and max voltage: 80% and 120% of nominal setting
- LED indication: 2 x (green) presence of both input voltages, 1 x presence of output voltage
1 x (red) indicates presence voltage out of limits on inputs

Automatic Transfer Switch (ATS)

ATL100	1	3	single phase automatic transfer switch controller
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ATL500 series (econo)		(no display)	144 x 144 mm panel mounting
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The ATL500 is an automatic transfer switch that enables load commutation between two different source lines: a main line (LINE 1) and a standby or emergency secondary line (LINE 2).

- Supply voltage: Self seeking power supply - 110...240 VAC LN
- Measurement inputs: 3-ph+N (*suitable for 1 and 2 phase lines*)
- Supported switching devices: Contactors and motorised changeovers
- Output relay: 2 NO for contactors / 1 NC to start genset

Automatic Transfer Switch (ATS)

ATL500	2	3	3-ph+N automatic transfer switch controller
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ATL600 series		(with LCD)	144 x 144 mm panel mounting
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- AC power supply 110...240 VAC • Rated voltage: 100...480 VAC L-L
- Management of two power sources
- Measurement inputs for 3-ph+N voltage values (*suitable for 1 and 2-phase lines*)
- 128 x 80 pixel backlit graphic LCD to view measurements, events and alarms

Automatic Transfer Switch (ATS)

ATL600	6	7	automatic transfer switch controller for 2 sources
ATL601*	6	7	automatic transfer switch controller for 2 sources

* With 12/24 VDC supply

ATL610 series as above **ATL600** but with following additional features:

- Real time clock RTC
- Dual power supply (110...240 VAC line and 12...24 VDC battery supply)
- Expandable with I/O and communication modules

Automatic Transfer Switch (ATS)

ATL610*	6	7	automatic transfer switch controller for 2 sources
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* 2 slots to accept plug-in expansion modules **EXP1010/1011/1012/1013/1014**, see page F-6

ATL800 series		(with backlit LCD)	180 x 240 mm panel mounting
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As above **ATL610** but with following additional features:

- Rated voltage: 100...600 VAC L-L
- Management of 2 energy sources and 1 tie breaker
- Built-in RS-485 communication / Built-in programmable PLC logic
- Expandable with up to 3 rear plug-in expansion modules **EXP...** (see controller accessories)

Automatic Transfer Switch (ATS)

ATL800	8	7	automatic transfer switch controller for 2 sources
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ATL900 series		(with backlit LCD)	180 x 240 mm panel mounting
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As above **ATL800** but with following additional features:

- Management of 3 energy power sources and 2 tie breakers
- 4 current inputs for the three phases and neutral
- 128 x 112 backlit graphic LCD to view measurements, events and alarms

Automatic Transfer Switch (ATS)

ATL900	12	10	automatic transfer switch controller for 3 sources
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Battery chargers

- For lead acid battery
- Automatic reset at end of alarm conditions
- Charging cycle in accordance with DIN 41773 standards

type	output voltage	output current	max. power consumption		description	dimensions (mm)		
			VA	W		(H)	(W)	(D)

BCF series - Modular automatic switching battery chargers

- Alarm output relay (3A 250 VAC) AC1 duty
- Modular DIN-rail mounting (*aligns with standard MCB's*) or chassis mount
- Wide auxiliary supply range 100...240 VAC ($\pm 10\%$) 50/60Hz
- Protection:
 - Mains input fuse (*non replaceable*)
 - Battery output fuse
 - Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload
- LED indication of:
 - Correct output voltage
 - Reverse battery polarity

Switching battery chargers

BCF025012	12V	2.5A	80	40	auto battery charger	96	90	56
BCF045012	12V	4.5A	150	70	auto battery charger	96	90	56
BCF012524	24V	1.25A	80	39	auto battery charger	96	90	56
BCF025024	24V	2.5A	150	77	auto battery charger	96	90	56

BCG series - DIN-rail mount switching battery chargers

- Alarm output relay (5A 30 VDC duty)
- Wide auxiliary supply range 110...240 VAC ($\pm 10\%$) 50/60Hz
- DIN-rail or chassis mounting (*can be mounted vertically with adaptor*)
- Boost signal controlled by external contact
- Hiccup function for battery recharging when its voltage is lower than 50% rated value
- Maximum charging current limiting trimmer 20...100% (*adjustable from front*)
- Protection:
 - Mains input fuse
 - Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload
- LED indication of:
 - Power ON
 - Charging operation $I > 30\% I_c$
 - Overload or short circuit condition
 - Reverse battery polarity

Switching battery chargers

BCG0612	12V	6A	230	97	auto battery charger	150	162	63
BCG1212	12V	12A	284	190	auto battery charger	150	213	63
BCG0524	24V	5A	364	158	auto battery charger	150	162	63
BCG1024	24V	10A	630	311	auto battery charger	150	213	63

Accessories for above BCG battery chargers

BCGX00	vertical side mount adaptor (<i>for space saving</i>) for BCG0612 and BCG0524
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BCE series - Linear battery chargers

- Auxiliary supply voltage: 220...240 VAC ($\pm 10\%$) 50/60Hz
- Charging current: 30 - 100% I_c (*adjustable*)
- Protection:
 - Mains input fuse (*except BCE2V524 and BCE0312*)
 - Battery output fuse
 - Electronic lock in case of short circuit on battery terminals, reverse Battery polarity output overload ($< 0.5 U_e$) and disconnected battery
- LED indication of:
 - Power ON
 - Charge ($I > 0.2 I_c$)
 - Alarm for protection tripping
- Alarm output: Static NPN transistor **BCE2V524** and **BCE0312** - others relay (5A 250 VAC)

Linear battery chargers

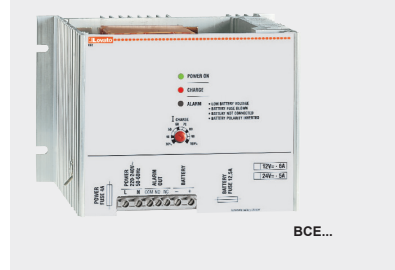
BCE0312	12V	3	117	—	auto battery charger	93	134	100
BCE0612	12V	6	222	—	auto battery charger	130	192	140
BCE1212	12V	12	400	—	auto battery charger	230	192	140
BCE2V524	24V	2.5	166	—	auto battery charger	93	134	100
BCE0524	24V	5	317	—	auto battery charger	130	192	140
BCE1024	24V	10	610	—	auto battery charger	230	192	140



BCF...



BCG ...



BCE...



DCRL...



DCRG8



DCRG8F

DCRL / DCRG Power Factor Controllers

DCRL/DCRG controllers incorporate latest technological advanced monitoring to provide accurate measurement and control of network parameters in power factor correction applications, providing total protection of capacitors and systems.

General features:

- Suitable for medium voltage systems (with VT's)
- High accuracy (TRMS) measurements with configurable alarms
- Wide voltage measurement range: 50...720 VAC L-L, 50...415 VAC L-N
- Expandable through clip-in expansion modules (I/Os, Comm ports etc.)
- Front mounted optic interface port for programming, data download, diagnostics

type	number of steps	expand to:	description	dimensions (mm)		
				(H)	(W)	(D)

DCRL controllers 3, 5 and 8 step (one CT connection)

DCRL series power factor controllers with advanced functionality in a dedicated ultra compact housing, combine modern front design with ease of mounting and expandability.

- Reactive power measurement per step installed
- 3, 5 or 8 steps (*expandable with expansion module*)
- Voltage and current THD with single harmonic analysis up to 15° order
- Backlit icon LCD display (*alarm codes with scrolling text*) 128 x 80 pixels

3 and 5 step controllers**1 expansion slot**

DCRL3	3 step	6 step	panel mount power factor controller	96	96	65
DCRL5	5 step	8 step	panel mount power factor controller	96	96	65

8 step controllers**2 expansion slots**

DCRL8	8 step	14 step	panel mount power factor controller	144	144	44
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DCRG controllers 8 step**single and three-phase CT connection**

DCRG series power factor controllers are designed to satisfy technical characteristics of modern electrical installation requirements in all industries and working conditions, to detect critical operating conditions and offer total protection of power factor systems.

- Recording of number of connections per step
- Capacitor over-current protection on all three phases
- Voltage and current THD with single harmonic analysis up to 31° order
- 8 steps (*expandable by up to another 10 steps with plug-in expansion modules*)
- Backlit graphic LCD display (*permits reading in bar-graph and wave form format*)
- Configurable for fast dynamic (*thyristor*) switching or a combination of static and relay
- Quick CT programming function / Automatic identification of direction of CT current flow
- Calendar-clock (RTC) with backup reserve for event logging: Alarms, setup changes, etc.
- Connection to 1/3 ph lines, 3 ph + N and co-generation systems with 4 quadrant operation
- Three current inputs permit per phase analysis of all electrical parameters in the installation

8 relay step controller**4 expansion slots**

DCRG8	8 step	18 step	panel mount power factor controller	144	144	44
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8 thyristor static step controller (expandable up to 24 steps with expansion modules)

DCRG8F	8 step	24 step	static step power factor controller	144	144	44
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For expansion modules options, see F-6

DCRG - Power factor controllers

DCRG 8F + EXP1012

RS485



DCTL + EXC1042



DCTL + EXC1042



DCTL + EXC1042



DCTL + EXC1042

The thyristor modules type DCTL can be connected to the automatic power factor controller type DCRG 8F with the RS485 optional port (code EXC1042), obtaining a simple and linear wiring.



Slave 1

MASTER-SLAVE FUNCTION

The DCRG can control the outputs of other compatible controllers up to 8 slaves can be controlled to create a system with a maximum of 32 steps.



Slave 2



Slave 3



Slave 8

Sam1 **NFC** **Xpress**


EXP...



CX02



CX01

Expansion modules for PFC controllers

EXP... series expansion modules add extra functionality to the following panel mount products:

DMG 600/7000/8000/9000	- Digital multimeters and power analysers
DCRL and DCRG	- Automatic power factor controllers
ATL 610/800/900	- Automatic transfer controllers
RGK 400/600/750/800/900	- Generator controllers

type	inputs	outputs	description
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EXP expansion modules (plug into rear of controller to add more functionality)

Inputs/Outputs

EXP1006	—	2 relay	to increase number of capacitor steps
EXP1007	—	3 relay	to increase number of capacitor steps
EXP1000	4 digital	—	opto-isolated digital inputs
EXP1001	—	4 static	opto isolated to increase static steps
EXP1002	2 digital	2 static	opto-isolated digital inputs and static outputs
EXP1003	—	2 relay	outputs rated 5A 250 VAC
EXP1004	2 analog	—	opto-isolated PT100, 0/4-20mA, 0-10V, 0...±5V
EXP1005	—	2 analog	opto-isolated 0/4-20mA or 0-10V or 0...±5V
EXP1016	3ph (A)	—	+ 2 x NTC for capacitor bank protection

Communication

EXP1010	USB	—	opto-isolated USB interface
EXP1011	RS-232	—	opto-isolated RS-232 interface
EXP1012	RS-485	—	opto-isolated RS-485 interface
EXP1013	Ethernet	—	opto-isolated Ethernet with web server function
EXP1014	Profibus	—	opto-isolated Profibus-DP interface

Accessories

51C2	PC - DCRL/DCRG connecting cable + EXP1011 module
CX01	PC - controller USB dongle with connecting cable
CX02	PC - Controller Wi-Fi dongle for programming, data download, diagnostics

Remote Generator Monitoring

Polar Monitoring brings an all-in-one generator monitoring and management system. Our Polar Gateway is compatible with a variety of different generator controllers. Viewing, monitoring, and managing the controllers from our user-friendly Polar Portal is possible no matter the make or model.



Remote Stop & Start

Fuel Level

Maintenance

Battery Voltage

Run Hours

Reports & Analytics

Real Time Alerts



Live & Historical Views


Demo Portal

Test the Polar Platform today!

Access the Polar Demo Portal via the QR code for a hands-on experience of everything Polar has to offer.





BFK11500A...

Capacitor switching contactors AC control circuit - 230/400V

Contactors for PFC with AC control circuits equipped with early-make limiting resistors limiting in-rush currents initially before making contact. Resistors are disconnected from the circuit when contactor closing operation is complete.

type	kvar 400V	kvar 440V	rated current	control	description	auxiliary contacts
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PFC contactors

BFK1210A...	12.5	14	18A	AC	capacitor switching contactor	1NO
BFK1810A...	15	17	23A	AC	capacitor switching contactor	1NO
BFK2600A...	20	22	30A	AC	capacitor switching contactor	—
BFK3200A...	25	27.5	36A	AC	capacitor switching contactor	—
BFK3800A...	30	33	43A	AC	capacitor switching contactor	—
BFK5000A...	40	41	58A	AC	capacitor switching contactor	—
BFK8000A...	50	56	75A	AC	capacitor switching contactor	—
BFK11500A...	75	85	115A	AC	capacitor switching contactor	—
BFK15000A...	100	115	144A	AC	capacitor switching contactor	—

Kit to assemble BFK contactors from standard BF contactors

for contactor

G460	kit to assemble standard contactors for capacitor switching	BF09...38A
BFX10K3	kit to assemble standard contactors for capacitor switching	BF50...94A
BFX10K4	kit to assemble standard contactors for capacitor switching	BF95...150A

Thyristor switching modules

Suitable for dynamic (fast) PFC

DCTL series thyristor modules are ideal for dynamic power factor correction. Zero cross switching guarantees very short switching times, reducing current peaks generated by capacitor insertion without voltage peaks on disconnection. Integrated current transformers permit complete monitoring and protection of capacitor banks.

- Prevents high in-rush currents at capacitor switching
- Operational voltage: 400 VAC (*690V available on request*)

Advanced communication functions:

- NFC connectivity for programming via smart devices
- Optical port for frontal connection to a PC via USB or WiFi via **CX01** or **CX02**
- Optional RS-485 card (**EXC1042**) for connection to **DCRG8F** controller

type	kvar 400V	kvar 480V	rated current	description	dimensions (mm)		
					(H)	(W)	(D)

Thyristor switching modules

DCTLA4000150	15	18	22A	thyristor switching module	218	75	172
DCTLA4000300	30	36	43A	thyristor switching module	218	75	172
DCTLA4000500	50	60	72A	thyristor switching module	226	95	182
DCTLA4001000	100	120	144A	thyristor switching module	301	212	216



DCTLA...

**DCTLA** - Thyristor switching modules

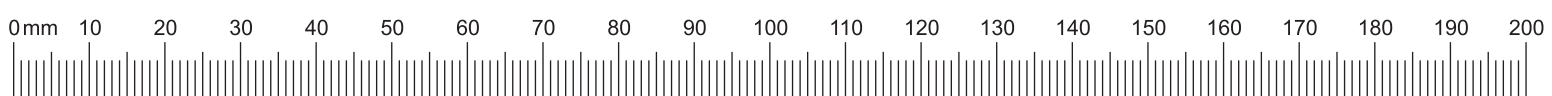
- DEDICATED TO THE DYNAMIC POWER FACTOR CORRECTION (FAST)
- VERSIONS WITH RATED VOLTAGE 400VAC, 480VAC AND 600...690VAC
- POWER FOR STEPS FROM 7.5KVAR TO 120KVAR
- NOISE REDUCTION 
- SWITCHING ON AT ZERO-CROSSING

Advanced communication functions:

- **NFC connectivity** for programming via **smart devices** and App
- **Frontal optical port** for connection to a PC via USB or Wi-Fi
- Optional **RS485 card**



Notes



World Class Innovation, Local Commitment

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