

DYNAMIC POWER FACTOR CORRECTION



POWER FACTOR CONTROLLER
THYRISTOR MODULES
SOFTWARE

 **Lovato**
electric

ENERGY AND AUTOMATION

DYNAMIC POWER FACTOR CORRECTION (FAST)

Power factor controllers

DCRG8F



Suitable for power factor correction with thyristor modules

8 static steps, expandable up to 24 steps thanks to the EXP series expansion modules ...

Three-phase voltage and current inputs

Thyristor modules

DCTL...



Versions for steps from 7.5kvar to 120kvar

Rated voltage from 400 to 690VAC

cULus-certified for all DCTL... series

APPLICATION FIELDS



Welding machines



Presses



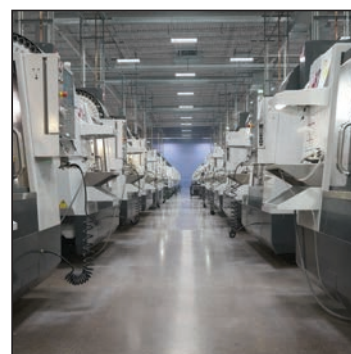
Lifts



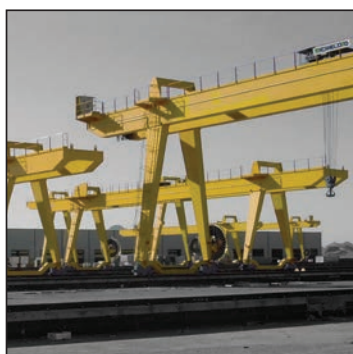
Automotive industry



Wind farms for the production of energy



Injection moulding machines



Cranes



Mixing machines



Robots

SOFTWARE

Monitoring, configuration and remote control for energy management



Xpress
Synergy

DCRG8F



The DCRG8F automatic power factor correction controller is designed to meet the requirements of a dynamic power factor correction for applications where the **reactive load varies rapidly over time** and a quick correction must be **applied**.

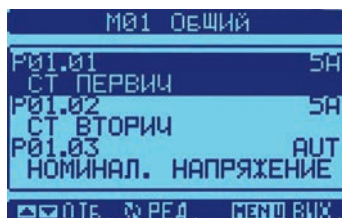
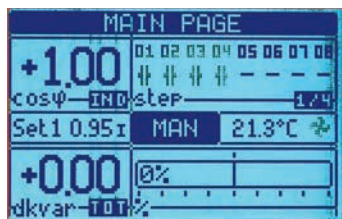
Examples: welding machines, presses, moulding machines, etc...

- Graphic backlit LCD with texts in 10 languages.
- Programming from front keyboard, PC or smartphone or tablet with App.
- 8 static steps.
- Expandable up to 24 steps with expansion modules connected at the back of the controller.



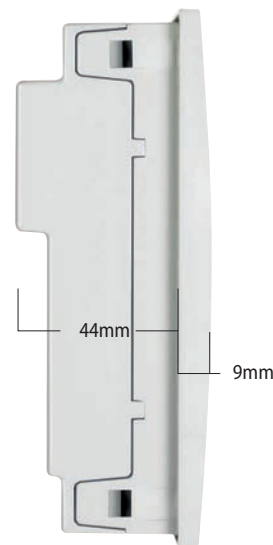
LCD GRAPHIC DISPLAY WITH BACKLIGHTING, 10 LANGUAGES

Easy to read 128x80 pixels, with adjustable brightness. Texts and graphs in 10 languages: Italian, English, Spanish, French, German, Czech, Polish, Russian, Portuguese and one customisable.



FLUSH MOUNTING 144x144mm

LIMITED DIMENSIONS



FIXING SYSTEM



Reduced profile and depth simplify installation of the power factor controller even in very compact electrical panels.

The fixing system with **metal screws** guarantees excellent, lasting hold over time.



8 STATIC INTEGRATED OUTPUTS, EXPANDABLE UP TO 24

DCRG8F integrates 8 static outputs for step control with a maximum capacity of **120mA** (increased capacity to allow the connection of several thyristor modules in parallel).

It is also possible to expand the number of static outputs up to 24 via the EXP1001 expansion module (4 opto-isolated static outputs, 55mA max).



EXPANDABLE WITH EXP... MODULES

4 slots for expansion modules, choose between:

- static outputs for increasing steps
- relay outputs (for controlling electromechanical contactors)
- digital inputs
- PT100, 0/4...20mA, 0...10V, 0...±5V analogue inputs
- analogue outputs type 0/4...20mA, 0...10V, 0...±5V
- communication ports: USB, RS232, RS485, Ethernet, Profibus-DP, Modem GPRS-GSM
- data memory, calendar-clock with backup reserve energy for data logging.



IR FRONT OPTICAL PORT

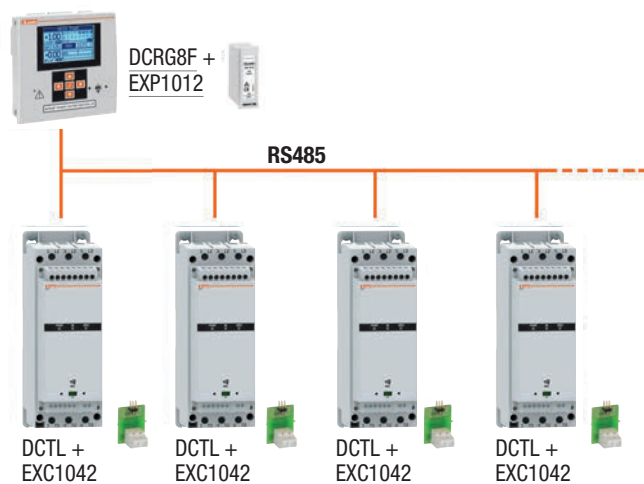
The optical port on the front allows you to communicate with your PC, smartphone or tablet via USB device (CX01) or Wi-Fi (CX02) to perform programming, monitoring and diagnostic functions.

- no need to switch off the power supply;
- electrical safety (no risk of accessing dangerous live parts);
- convenience of operating directly from the front.



DEDICATED TO THE DYNAMIC POWER FACTOR CORRECTION THROUGH THE CONTROL OF THYRISTOR MODULES

Perfect coupling with the DCTL series thyristor modules, which can be controlled via the static outputs on board the DCRG8F or via the optional RS485 port with EXP1012 module.



Through the **RS485 serial command** it is also possible to monitor the status of each single DCTL thyristor module from the DCRG8F controller display and read measurements such as

residual power, voltages, currents, THDI, temperature and working hours.

ALARM DIAGNOSIS



Through the RS485 serial command and the connection to the DCTL thyristor modules, the display can show the description of the possible alarms of each single step.

WIDE RANGE OF RATED VOLTAGE MEASUREMENTS

Auxiliary power supply (100...415VAC / 110...250VDC) separate from the three-phase voltage measuring circuit (50...720VAC).

3 CURRENT INPUTS FOR CURRENT TRANSFORMERS WITH SECONDARY 5A OR 1A

- A parameter can enable the controller for use with a 5A or 1A secondary current transformer;
- Automatic recognition of current flow direction.

DCRG8F - DYNAMIC POWER FACTOR CONTROLLER

MEASUREMENTS IN TRMS (True Root Mean Square)

VOLTAGE AND CURRENT HARMONIC CONTENT ANALYSIS UP TO 31st ORDER

BALANCED USE OF STEPS WITH SAME POWER RATING

Measurement of reactive power installed for each step.

PANEL OVER-TEMPERATURE PROTECTION VIA INTERNAL SENSOR



GSM/GPRS MODEM



With the EXP1015 expansion module, the controller is equipped with a GSM/GPRS modem, automatically configured by the control unit. This simplifies installation and wiring.

Once a data traffic enabled SIM card is inserted, the controller can send alarm or event SMSs and e-mails and data files can be transmitted to FTP servers.

SOFTWARE COMPATIBILITY

- **Sam1** application for Android and iOS smart devices;
- **Xpress** for remote control and configuration from PC;
- **Synergy** and **Synergy cloud** for supervision and energy management.

Operational characteristics

VOLTAGE MEASUREMENT CIRCUIT:

- auxiliary supply voltage: 100...415VAC / 110...250VDC
- separate, single-phase or three-phase measurement input: 50...720VAC
- rated frequency: 50/60Hz ($\pm 10\%$)

CURRENT CIRCUIT:

- single- and three-phase input
- rated current: 5A or 1A (programmable)

STATIC OUTPUTS:

- 8 integrated, capacity 120mA max.
- 16 optional, capacity 55mA max.

MEASUREMENTS AND CONTROL:

- power factor adjustment: 0.5 ind...0.5 cap.
- voltage measurement range: 50...720VAC
- current measurement range: 0.025...6A
- type of voltage and current measurement: true root mean square (TRMS)

OPERATING TEMPERATURE: -20...+70°C

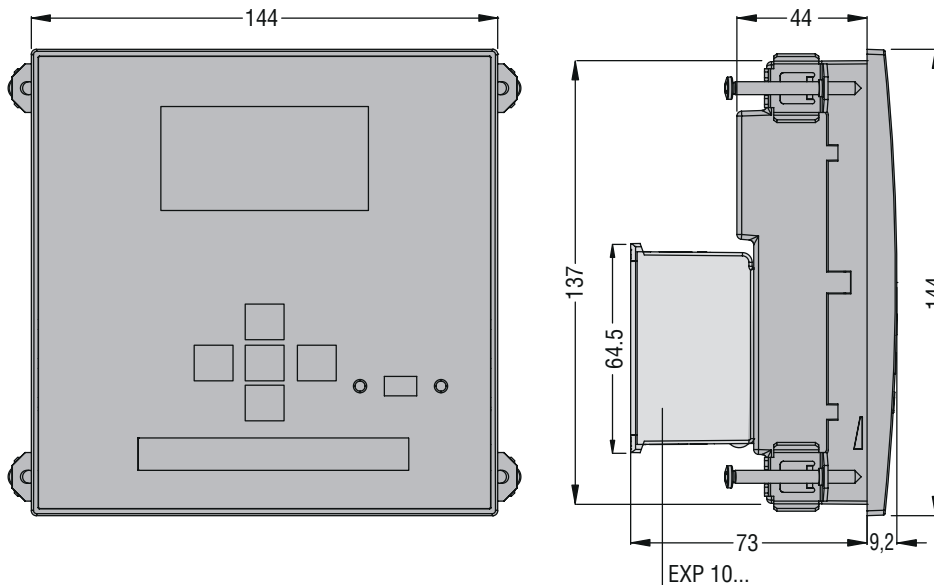
HOUSING: flush mounting 144x144mm

DEGREE OF PROTECTION: IP65 front; IP20 on terminals.

CERTIFICATIONS: cULus, EAC, RCM.



Dimensions



NFC

APP

Programming the parameters via tablet and smartphone is now possible also through **NFC wireless technology**. Bringing a smartphone or tablet with **NFC** connection enabled near the DCTL thyristor module activates the APP and the connected thyristor module is automatically recognized. It will then be possible to modify the parameters and program the DCTL thyristor module.



Sām1

APP

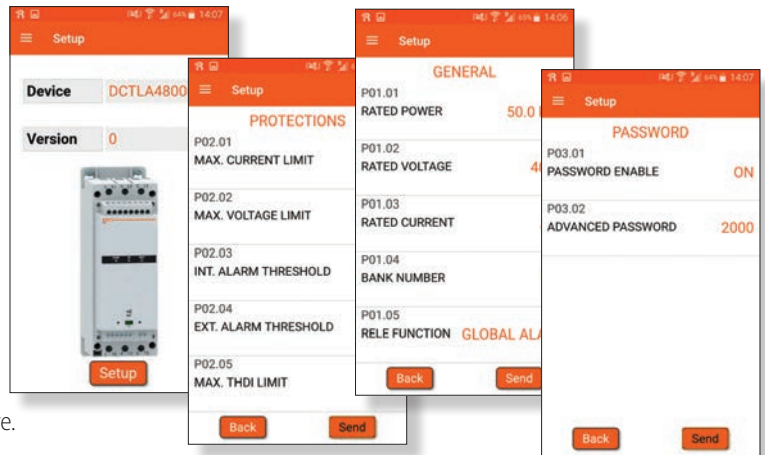


The CX02 communication device is the access point to the DCRG8F controller and the DCTL thyristor modules via the SAM1 App.

Thanks to SAM1, you can:

- view the measurements on your smartphone or tablet
- set the parameters, save a copy in a file and recover them if necessary; the file can also be sent via email
- send commands
- display active alarms
- read the list of events.

APP SAM1 can be downloaded from Google Play Store or Apple Store.

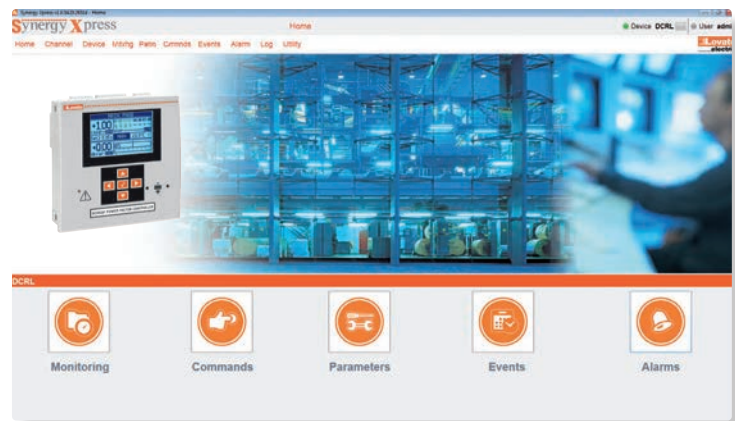


Xpress

CONFIGURATION AND REMOTE CONTROL SOFTWARE

It is a software that allows you to:

- set the parameters from PC to DCRG8F/DCTL or vice versa
- read the measures
- view events and alarms
- send commands.



Synergy

SUPERVISION AND ENERGY MANAGEMENT SOFTWARE

The DCRG8F controller is compatible with Synergy and Synergy Cloud software.

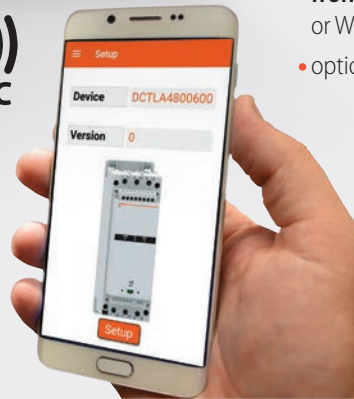
Thanks to the communication expansion modules DCRG8F can be immediately connected to a network without the need for additional external accessories.

Serial and Ethernet communication is supported.

The Ethernet port is suitable for both static IP and dynamic IP address operation and the network configuration of the DCRG8F controller is similar to that normally performed on a PC.



DCTL...



The DCTL series thyristor modules are the ideal solution for the **dynamic correction** of the power factor.

Switching to **zero crossing** guarantees **very short switching times** and allows to reduce to a minimum the current peaks generated on the capacitors during the insertion phase and allows a switching off of the capacitors without voltage peaks, with consequent **extension of the life of the capacitors themselves**.

Integrated current transformers with **specific function for current monitoring and protection** power and harmonics of the capacitor bank.

Ready to use without programming if used with standard features.

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**.



DEDICATED TO THE DYNAMIC POWER FACTOR CORRECTION (FAST)

The DCTL series thyristor modules are characterized by a high switching speed that ensures the switching on and off of the capacitors in the order of tens of milliseconds.

This makes them particularly suitable for applications requiring dynamic power factor correction, where the power factor varies very rapidly as a result of sudden and frequent changes in the load, such as welding machines, presses, cranes, mixers, automation robots, etc. ... which could not be compensated by a traditional power factor correction system with switching on by electromechanical contactors.

VERSIONS WITH RATED VOLTAGE 400VAC, 480VAC AND 600...690VAC

They are available in **3 variants** that differ in the rated operating voltage:

- 400VAC version (IEC and cULus)
- 400...480VAC version (IEC and cULus)
- 600...690VAC version (IEC), 600VAC version (cULus)

POWER FOR STEPS FROM 7.5KVAR TO 120KVAR

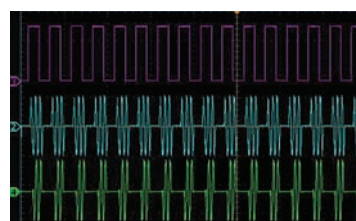
Versions are available with powers for steps from 7.5, 15, 30, 50 and 100kvar at 400VAC, from 9, 18, 36, 60 and 120kvar at 480VAC or 30, 50 and 100kvar at 600...690VAC.

NOISE REDUCTION

Switching on and off of capacitors are electronically managed and due to the absence of moving mechanical components the thyristor modules can work silently. This makes them particularly suitable for installation in environments that require minimum noise, such as shops, offices, hotels, hospitals, cinemas, etc.



SWITCHING ON AT ZERO-CROSSING



Capacitors are switched exactly when the potential difference between the mains voltage and the residual voltage on the capacitors is zero, allowing the current peaks on the

capacitors to be reduced to a minimum during switch-on and switch-off transients. This feature makes the DCTL thyristor modules suitable for systems that require a very high number of manoeuvres or in which devices particularly sensitive to transient overcurrents or overvoltages are installed.

■ MONITORING AND PROTECTION OF CURRENT, POWER AND CURRENT HARMONIC IN THE CAPACITOR BANK

Thanks to the presence of integrated current transformers, it is possible to **monitor and protect the bank of capacitors against overcurrent phenomena** generated, for example, by the distortion of the voltage waveform. It is also possible to continuously **monitor electrical measurements** such as the residual power of the capacitor bank, three-phase voltages and currents, heatsink and capacitor temperatures, THDI, working hours and maximum voltage, current and temperature values, to signal faults on fuses, on the capacitor bank or on the thyristor module itself.

■ PROGRAMMABLE RELAY OUTPUT

The DCTL thyristor modules incorporate an 8A 250VAC relay output with changeover contact, which can be programmed for one of the following functions:

- **alarm signalling:** the output switches in case of global alarm; the type of active alarm can be identified from the number of flashes of the FAULT LED on the front of the device.



This feature is very useful for remote diagnostics and reporting of a fault condition, e.g. problems with the system (e.g. excessively high voltages or currents), or if the thyristor module is not working properly (e.g. short-circuited module), or for checking whether the integrated fan is not working or is blocked.

- **fan control:** possibility of programming the output to control an external fan in case of overtemperature.

■ PROGRAMMABLE PROTECTION THRESHOLDS

If required, the DCTL thyristor modules allow complete monitoring and protection of the capacitor bank. The following protection thresholds can be programmed using the LOVATO NFC App, the LOVATO SAM1 App or the Xpress software:

- maximum current threshold
- maximum voltage threshold
- heatsink maximum temperature threshold
- capacitor maximum temperature threshold (measured with optional external probe NTC01)
- THDI threshold
- current asymmetry threshold
- capacitor residual power minimum threshold.

■ OVERTEMPERATURE PROTECTION



Via **integrated probe** or **probe input external** NTC01 for temperature measurement directly in the area of installation of the capacitors (useful for example when the capacitors are installed away from the thyristor modules) protection against overtemperatures is guaranteed.

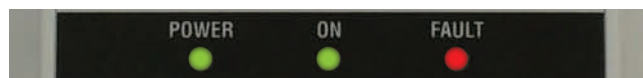
■ MONITORING AND DIAGNOSIS OF THE INTEGRATED FAN OPERATION



The DCTLs incorporate one or two cooling fans as standard to ensure proper ventilation. The operation of the fans is **monitored by means of an analogue measurement** of the supply current of the fans and the temperature by means of an integrated probe, which allows the status of the fans to be checked and any faults (e.g. fans not connected or blocked) to be detected automatically.

■ 3 FRONT INDICATION LEDs

- **POWER:** signals the presence of the auxiliary power supply
- **ON:** indicates that the module is activated
- **FAULT:** global alarm (with identification of the active alarm by number of flashes).

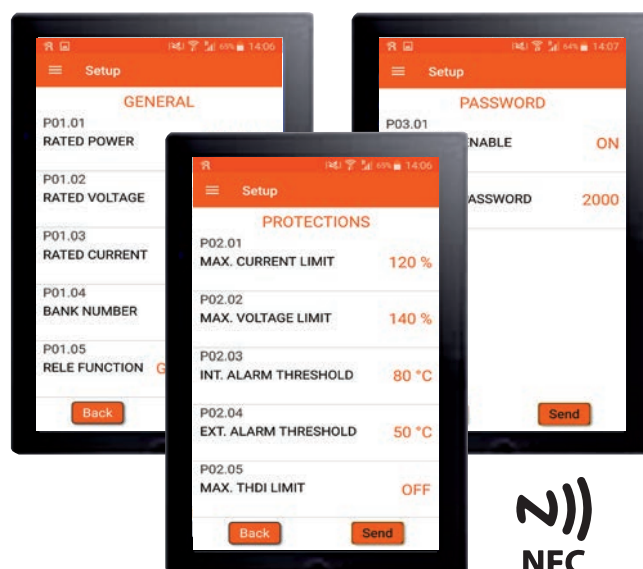


■ NFC CONNECTIVITY AND APP

NFC connectivity for setting parameters and programming protection thresholds (overtemperature, overcurrents, overvoltages, ...) from Android smartphones or tablets with LOVATO NFC App.

Through App LOVATO NFC you can:

- read and modify the parameters of the DCTL thyristor modules
- save the parameters on the smart device to be copied to other DCTL modules or as a back-up copy
- send the parameter file by e-mail.



FRONT OPTICAL PORT

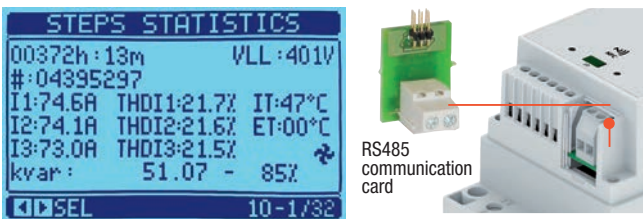
The front optical port, in combination with the USB (CX01) and Wi-Fi (CX02) connection devices, allows a secure connection from the front with a PC, smartphone or tablet.

- no need to remove power from the panel to connect to the thyristor module
- electrical safety (no risk of accessing dangerous live parts)
- convenience of operating on the front.



OPTIONAL COMMUNICATION PORT RS485 (code EXC1042)

As an alternative to traditional control via static outputs, the DCTL thyristor modules equipped with optional RS485 card code EXC1042, in combination with the DCRG8F power factor controller equipped with optional module EXP1012, can be controlled via serial port. This solution allows a **simple and linear wiring on BUS** and allows to visualize directly from the display of the DCRG8F controller the status and the electrical measurements (temperature, power, etc...) of the single DCTL thyristor modules.



AUXILIARY POWER SUPPLY AND CONTROL CIRCUIT

The DCTL modules are powered by an auxiliary voltage of 100...240VAC.

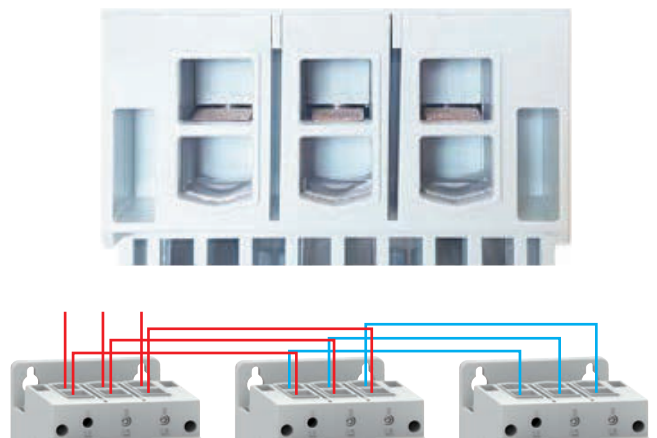
The control circuit can be made by 8...30VDC voltage, as typically found in most thyristor modules on the market, or by clean contact by directly connecting the static output of the power factor controller to the digital input integrated in the DCTL. The first solution makes the DCTL compatible with any type of dynamic power factor controller on the market, while the second solution **saves the use of a power supply** with 8...30VDC output inside the cabinet, reducing costs and space. When combined with the DCRG8F controller + EXP1012 module, the DCTL thyristor modules (equipped with RS485 serial port, code EXC1042) can also be controlled by serial bus.

READY TO WORK

DCTL modules are created with a basic programming that allows to use them without the need of any programming in most cases. When necessary, however, you can adapt them to each application via apps or software.

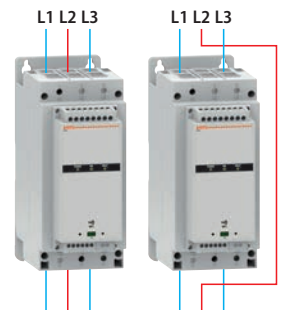
POWER CONNECTIONS WITH DOUBLE, SCREW-TYPE TERMINAL

The power terminals of the DCTLs (excluding sizes 100 and 120kvar) are made with **double screw-type terminals**, which greatly simplify the wiring for connecting thyristor modules in parallel without the need for external parallel bridges.



POSSIBILITY OF CONNECTING THE CENTRAL PHASE OR NOT

Many of the 2 phase thyristor modules on the market have only the connection terminals of the two controlled phases, while the uncontrolled phase is not connected to the module; consequently, it is necessary to wire this phase inside the panel following a path outside the module, which is often complicated, especially when the space inside the panel is already very limited. The DCTL thyristor modules instead integrate the uncontrolled phase terminal (L2, central phase), which can be freely wired or not depending on the layout of the power factor correction panel, allowing for simpler, more compact and tidy wiring.



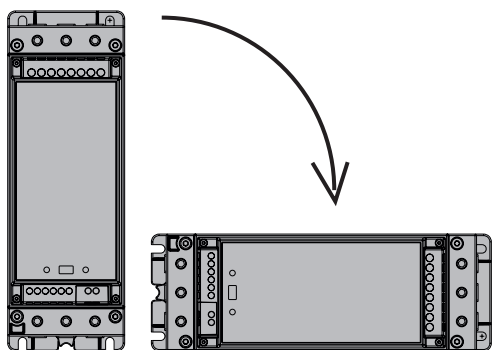
HIGH PIV

The 690VAC (IEC), 600VAC (cULus) version DCTLs have a very high peak inverse voltage (PIV) of **3600VAC**; this makes them particularly resistant to mains transients.

POSSIBILITY OF INSTALLING IN VERTICAL OR HORIZONTAL POSITION

They can be installed either vertically or horizontally without any performance derating.

This makes them extremely flexible and adaptable for various layouts of power factor correction panels, where often there is not enough space for traditional vertical mounting and it is necessary to mount the thyristor module on the horizontal plane (e.g. rack installation).



SOFTWARE COMPATIBILITY

- **NFC** application for Android smart devices;
- **Sam1** application for Android and iOS smart devices;
- **Xpress** for remote control and configuration from PC.

HIGH STURDINESS AND LITTLE MAINTENANCE

The absence of moving mechanical parts allows a considerable reduction in maintenance times compared to a traditional power factor correction system controlled by electromechanical contactors.

SCREW FIXING OR ON DIN RAIL



The DCTL modules are screw mounted. The first two mechanical sizes (up to 50kvar for 400VAC version, 60kvar for 480VAC version, 50kvar for 600...690VAC version) can be installed alternatively on DIN rail with optional accessory code EXP8003.

TYPE-APPROVALS

cULus for all versions.

Note: the DCTLA 690 versions... for cULus up to 600VAC can be used for IEC up to 690VAC.

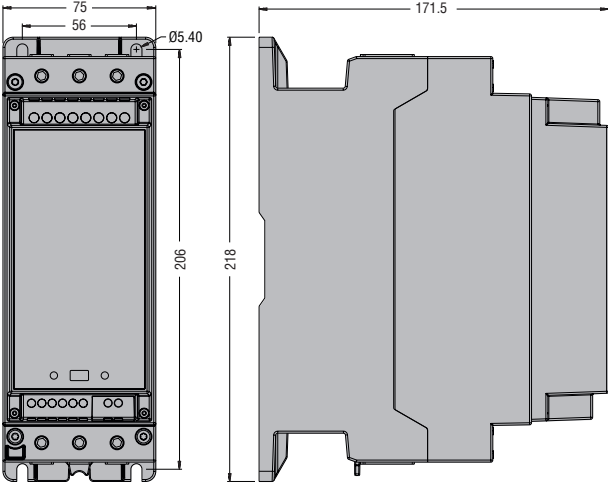


Operational characteristics

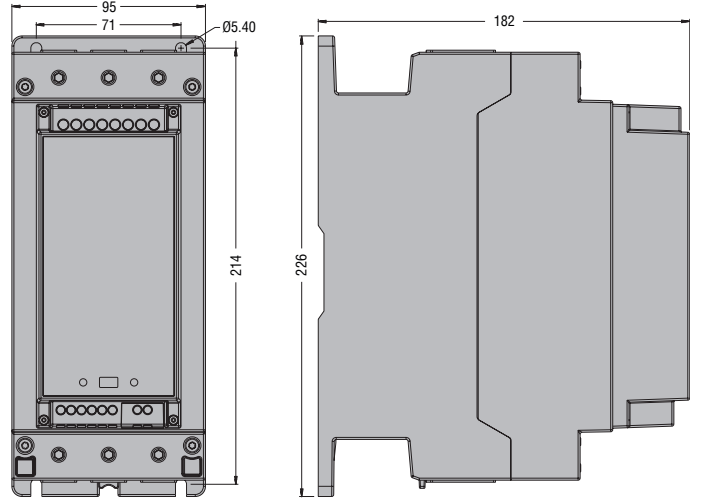
Code	DCTLA 400 0075	DCTLA 400 0150	DCTLA 400 0300	DCTLA 400 0500	DCTLA 400 1000	DCTLA 480 0090	DCTLA 480 0180	DCTLA 480 0360	DCTLA 480 0600	DCTLA 480 1200	DCTLA 690 0300	DCTLA 690 0500	DCTLA 690 1000	
Rated operating voltage Us	400VAC					400...480VAC					600VAC... 690VAC			
Frequency	50/60Hz													
Rated current Ie	11A	22A	43A	72A	144A	11A	22A	43A	72A	144A	29A	48A	96A	
Step power	400VAC	7.5kvar	15kvar	30kvar	50kvar	100kvar	7.5kvar	15kvar	30kvar	50kvar	100kvar	20kvar	33kvar	67kvar
	440VAC	-	-	-	-	-	8kvar	16.5kvar	33kvar	55kvar	110kvar	22kvar	37kvar	73kvar
	480VAC	-	-	-	-	-	9kvar	18kvar	36kvar	60kvar	120kvar	24kvar	40kvar	80kvar
	525VAC	-	-	-	-	-	-	-	-	-	-	26kvar	44kvar	87kvar
	600VAC	-	-	-	-	-	-	-	-	-	-	30kvar	50kvar	100kvar
	690VAC	-	-	-	-	-	-	-	-	-	-	30kvar	50kvar	100kvar
Maximum Reverse Voltage (PIV)	1800VAC	1800VAC	1800VAC	1800VAC	1800VAC	2200VAC	2200VAC	2200VAC	2200VAC	2200VAC	3600VAC	3600VAC	3600VAC	
Number of controlled phases	2													
Auxiliary supply	100...240VAC													
Control circuit	8...30VDC or clean contact or via RS485 serial port (with optional card EXC1042 in combination with corrector DCRG8F+EXP1012)													
Over-temperature protection	Yes, via integrated probe or optional external probe NTC 01													
Cooling	Forced ventilation													
Operating temperature	-20...+45°C without derating (up to 55°C with derating)													

Dimensions

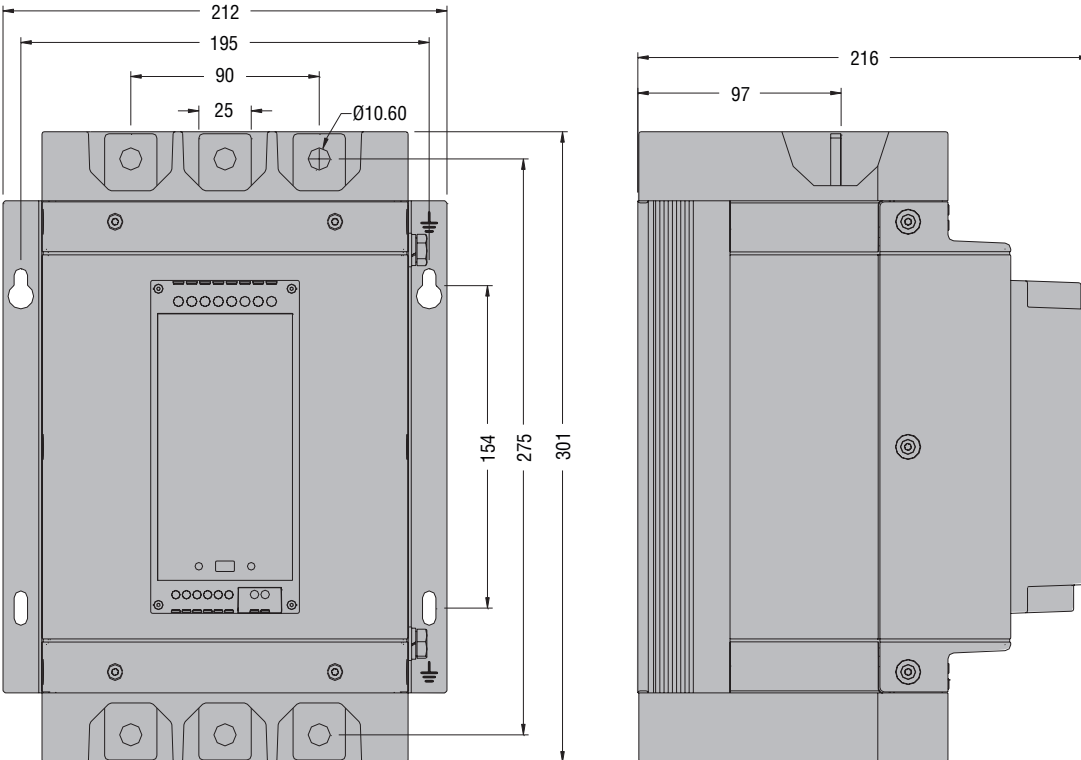
DCTLA4000075 - DCTLA4000150 - DCTLA4000300
DCTLA4800090 - DCTLA4800180 - DCTLA4800360



DCTLA4000500
DCTLA4800600
DCTLA6900300 - DCTLA6900500

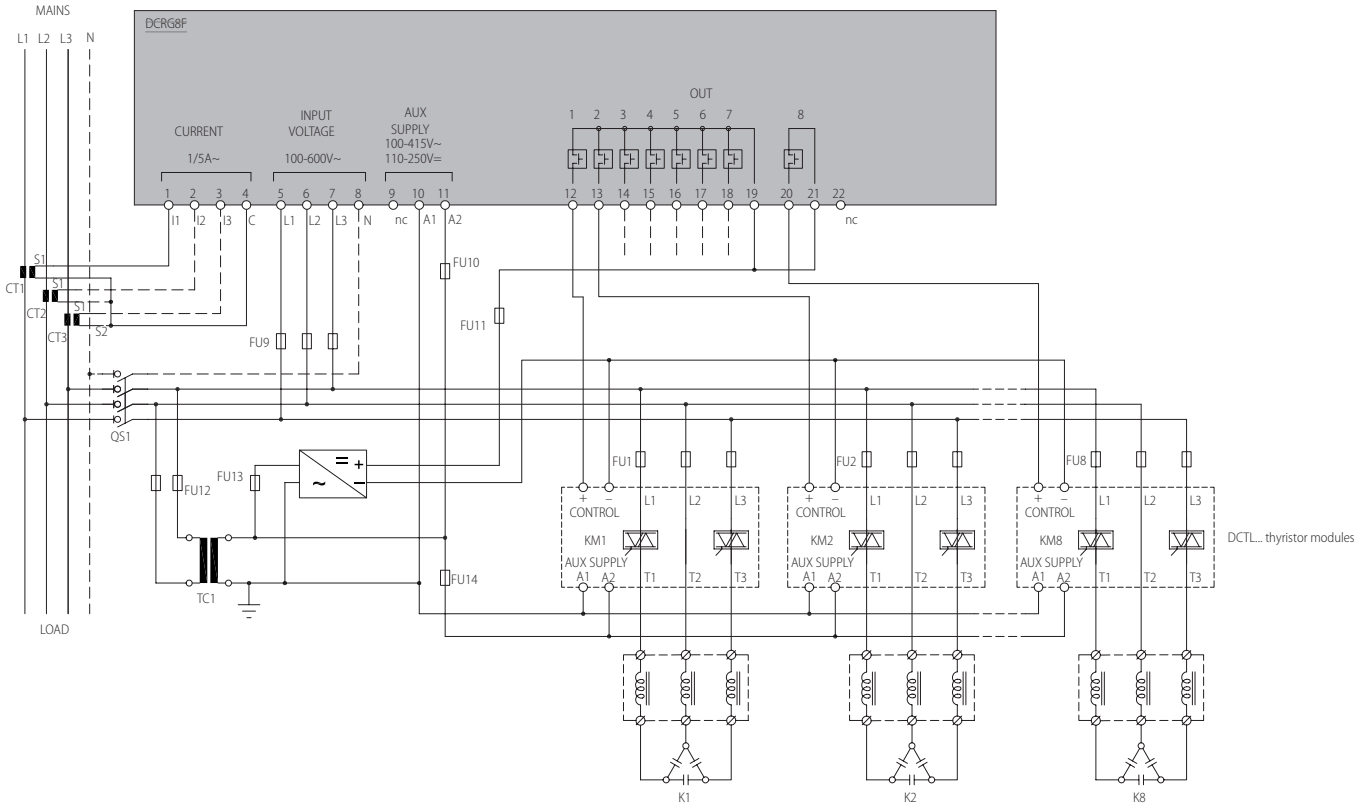


DCTLA4001000
DCTLA4801200
DCTLA6901000

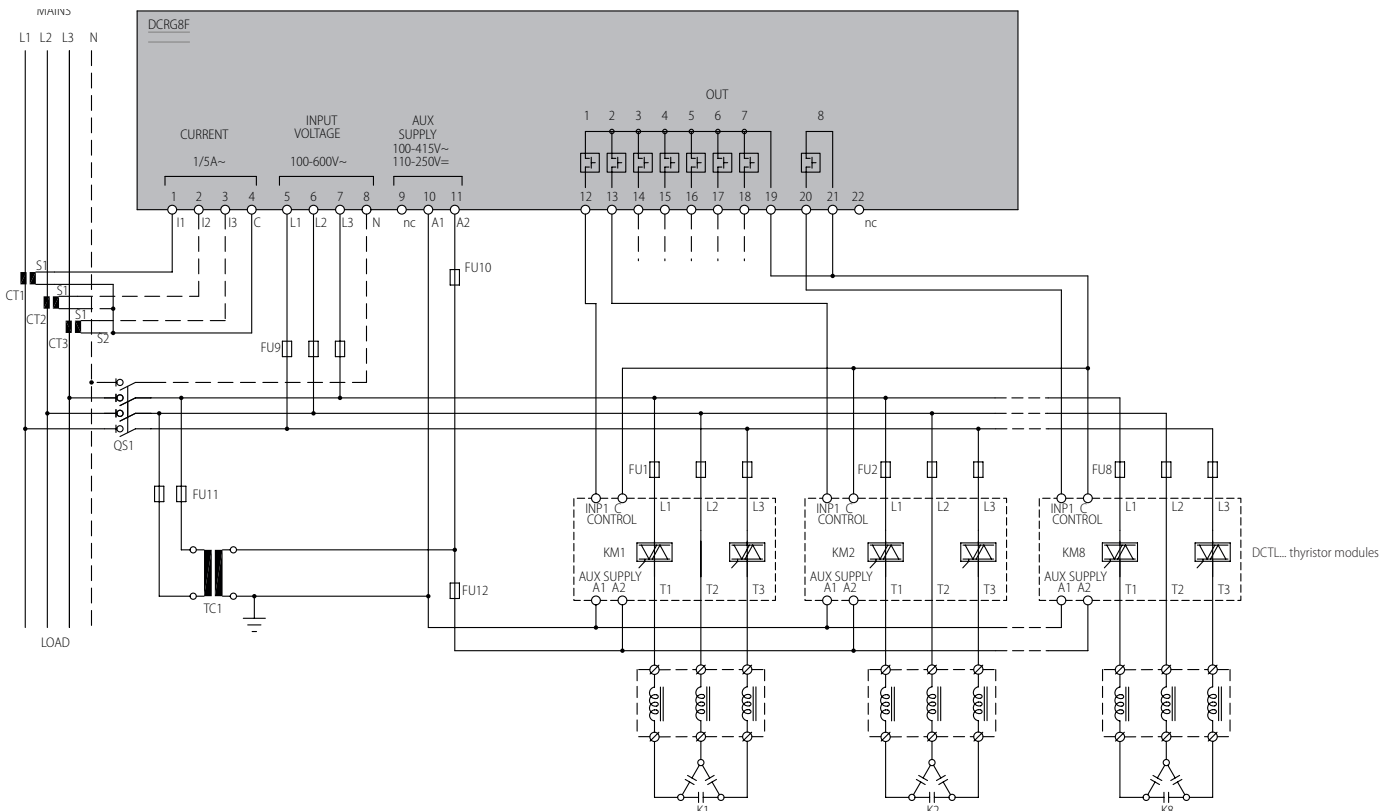


■ Connection to thyristor modules, command via static outputs

Option 1: control with 8...30VDC voltage signal



Option 2: clean contact control (only available in conjunction with DCTL series thyristor modules)



ORDER CODES

DYNAMIC POWER FACTOR CONTROLLER



CODE	DESCRIPTION
DCRG8F	Automatic dynamic power factor controller, 8 static steps (120mA), expandable up to 24 steps, auxiliary power supply 100...415VAC

ACCESSORIES FOR DCRG8F POWER FACTOR CONTROLLER



CODE	DESCRIPTION
EXPANSION MODULES - Additional steps	
EXP1001	4 opto-isolated static outputs (55mA) for incrementing static steps
EXP1006	2 relay outputs 5A 250VAC to increase power factor correction steps
EXP1007	3 relay outputs 4A 250VAC to increase power factor correction steps
EXPANSION MODULES - Inputs and outputs	
EXP1000	4 opto-isolated digital inputs
EXP1002	2 digital inputs and 2 opto-isolated static outputs
EXP1003	2 relay outputs 5A 250VAC
EXP1004	2 opto-isolated analogue inputs PT100, 0/4...20mA or 0...10 V or 0...±5 V
EXP1005	2 opto-isolated analogue outputs 0/4...20mA or 0...10 V or 0...±5 V
EXP1008	2 opto-isolated digital inputs and 2 relay outputs 5A 250VAC
EXPANSION MODULES - Communication ports	
EXP1010	Opto-isolated USB interface
EXP1011	Opto-isolated RS232 interface
EXP1012	Opto-isolated RS485 interface
EXP1013	Opto-isolated Ethernet interface
EXP1014	Opto-isolated Profibus-DP interface
EXP1015	GPRS/GSM modem, without aerial
EXPANSION MODULES - Additional functions	
EXP1030	Data memory, calendar-clock with backup reserve energy for data logging
TEMPERATURE PROBE	
NTC 01	Remote temperature probe, length 3 m
COMMUNICATION DEVICES	
CX01	PC-DCRG8F connection device, with optical USB connector for programming, data download, diagnostics and firmware update
CX02	A device for Wi-Fi PC-DCRG8F connection, for programming, data downloads, diagnostics and cloning
CX03	GSM penta-band (850/900/1800/1900/2100MHz) for EXP1015 expansion
EXC CON 01	RS485/Ethernet converter, 12...48VDC, DIN rail mounting kit included
EXC M3G 01	3G RS485/modem gateway, 9.5...27VAC/9.5...35VDC, aerial and connection cable included



MAXIMUM EXPANDABILITY OF DCRG8F POWER FACTOR CONTROLLER

Power factor controller	Integrated static steps (120mA)	EXP1001	EXP1006	EXP1007	TOTAL STEPS	
		Module with 4 static outputs (55mA) number of modules	Module with 2 relay outputs (5A 250VAC) number of modules	Module with 3 relay outputs (4A 250VAC) number of modules	Static	Relay-type
DCRG8F	8	max. 4 (4 steps)	-	-	24	-
	8	-	2 (2 steps)	max. 2 (3 steps)	8	10
	8	-	4 (2 steps)	-	8	8

■ THYRISTOR MODULES



CODE	DESCRIPTION
VERSIONS WITH RATED VOLTAGE 400VAC TYPE-APPROVED FOR cULus	
DCTLA4000075	Step module from 7.5kvar to 400VAC, rated operating voltage 400VAC, with current control
DCTLA4000150	Step module from 15kvar to 400VAC, rated operating voltage 400VAC, with current control
DCTLA4000300	Step module from 30kvar to 400VAC, rated operating voltage 400VAC, with current control
DCTLA4000500	Step module from 50kvar to 400VAC, rated operating voltage 400VAC, with current control
DCTLA4001000	Step module from 100kvar to 400VAC, rated operating voltage 400VAC, with current control
VERSIONS WITH RATED VOLTAGE 400...480VAC TYPE-APPROVED FOR cULus	
DCTLA4800090	Step module from 9kvar to 480VAC, rated operating voltage 400...480VAC, with current control
DCTLA4800180	Step module from 18kvar to 480VAC, rated operating voltage 400...480VAC, with current control
DCTLA4800360	Step module from 36kvar to 480VAC, rated operating voltage 400...480VAC, with current control
DCTLA4800600	Step module from 60kvar to 480VAC, rated operating voltage 400...480VAC, with current control
DCTLA4801200	Step module from 120kvar to 480VAC, rated operating voltage 400...480VAC, with current control
VERSIONS WITH RATED VOLTAGE 690VAC IEC, 600VAC TYPE-APPROVED FOR cULus	
DCTLA6900300	Step module from 30kvar to 690VAC, rated operating voltage 600...690VAC, with current control
DCTLA6900500	Step module from 50kvar to 690VAC, rated operating voltage 600...690VAC, with current control
DCTLA6901000	Step module from 100kvar to 690VAC, rated operating voltage 600...690VAC, with current control

■ ACCESSORIES FOR THYRISTOR MODULES



CODE	DESCRIPTION
TEMPERATURE PROBE	
NTC 01	Remote temperature probe, length 3 m
RS485 COMMUNICATION CARD	
EXC1042	RS485 communication card
COMMUNICATION DEVICES	
CX01	PC-DCTL connection device, with optical USB connector for programming, data download, diagnostics and firmware update
CX02	A device for Wi-Fi PC-DCTL connections, for programming, data downloads, diagnostics and cloning
ASSEMBLY KIT ON 35MM DIN RAIL	
EXP8003	DIN rail mounting kit for DCTLA4000075 ... DCTLA4000500 , DCTLA4800090 ... DCTLA4800600 , DCTLA6900300 ... DCTLA6900500 .

■ DYNAMIC POWER FACTOR CORRECTION



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