





- Automatic Power Factor Controllers p17-1
- Thyristor Modules p17-7
- Power Factor Correction Capacitors p17-9
- Harmonic Filter Reactors p17-10
- EMI Filters for AC Drives p17-11
- Reactors and Filters for AC Drives p17-13
- Harmonic Filters p17-16
- Motor Start and Run Capacitors p17-18



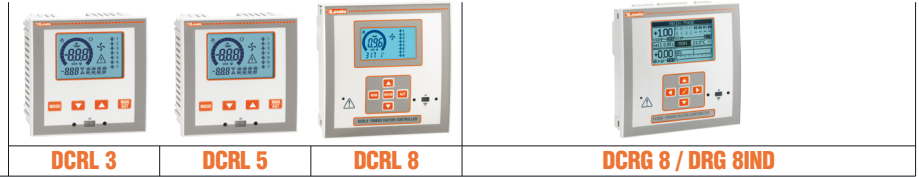
				
	DCRL 3	DCRL 5	DCRL 8	DCRG 8 / DRG 8IND
Steps	3 (up to 6 with EXP10 07)	5 (up to 8 with EXP10 07)	8 (up to 14 with EXP10 07)	8 (up to 18 relay outputs with EXP 1006 and EXP10 07) (up to 24 mixed relay and static outputs with EXP10 01)

FRONT/HOUSING

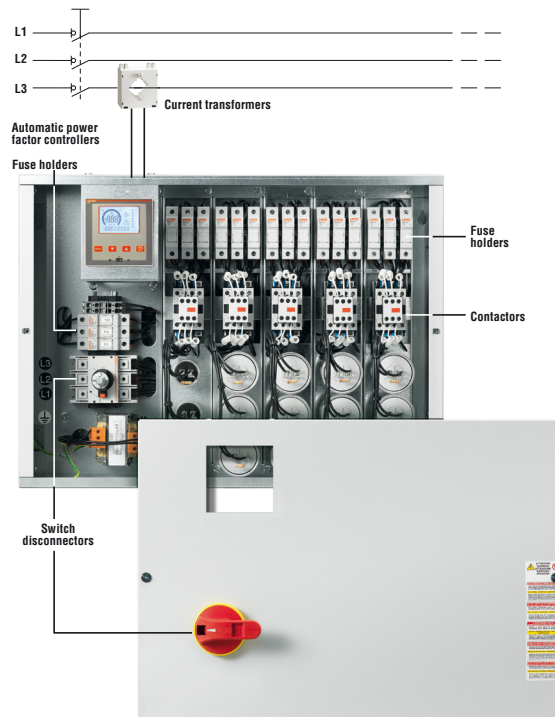
Display	Backlit icon LCD			128x80-pixel backlit graphic LCD
Languages	6 (scrolling text of alarm codes only) Italian, English, Spanish, French, German, Portuguese			10 Italian, English, Spanish, French, German, Czech, Polish, Russian, Portuguese and 1 customisable
Dimensions	96x96mm/ 3.78x3.78"	96x96mm/ 3.78x3.78"	144x144mm/ 5.67x5.67"	144x144mm/ 5.67x5.67"
Protection rating	IP54	IP54	IP65	IP65
Expandable with EXP... modules		●		●

CONTROL/FUNCTIONS

Automatic recognition of current flow direction		●		●
4-quadrant operation		●		●
Master-Slave function				●
Independent auxiliary supply input		●		●
Three-phase voltage control				●
Current inputs		1 (by 5A or 1A CTs)		3 (by 5A or 1A CTs)
Dynamic (FAST) power factor correction				● with EXP10 01 (maximum 16 static outputs)
Power factor correction by single phase				●
Possibility of connecting inductive steps				● (DCRG 8IND only)
Medium-voltage usage		●		●
Phase-neutral connection in three-phase systems		●		●
Analogue inputs				● with EXP10 04
Analogue outputs				● with EXP10 05
Input program. as function or external temperature sensor				● with EXP10 04
USB communication interface		● with EXP10 10		● with EXP10 10
RS232 communication interface		● with EXP10 11		● with EXP10 11
Opto-isolated RS485 communication interface		● with EXP10 12		● with EXP10 12
ETHERNET communication interface		● with EXP10 13 (only for DCRL 8)		● with EXP10 13 and web server function
Opto-isolated Profibus-DP interface				● with EXP10 14
GPRS/GSM modem				● with EXC M3G 01 and EXP1012
Optical USB communication port on front		● with CX 01		● with CX 01
Optical Wi-Fi communication port on front		● with CX 02		● with CX 02
Fast setting of current transformer		●		●
Compatible with Xpress remote control and setup software		●		●
Compatible with Synergy supervision software		●		●
Compatible with Sam1 App		●		●
Calendar-clock with backup reserve energy				●
Data logging memory				● with EXP10 30
Event logging: alarms, setup changes, etc.				●
Customisable internal counters				●



	DCRL 3	DCRL 5	DCRL 8	DCRG 8 / DRG 8IND
MEASUREMENTS				
Rated measurement voltage		600VAC max.		600VAC max.
Measurement voltage range		50...720VAC		50...720VAC
Instantaneous $\cos\phi$		●		●
Instantaneous and average weekly power factor values		●		●
Voltage and current		●		●
Reactive power to reach set-point and total values		●		●
Capacitor overload		●		●
Electrical panel temperature		●		●
Maximum voltage and current value		●		●
Maximum capacitor overload value		●		●
Maximum panel temperature value		●		●
Maximum capacitor temperature value				● with EXP10 04
Active and apparent power value				●
Active, reactive, apparent energy				●
Current and voltage harmonic analysis		● up to 15th		● up to 31st
Var-measured value per step		●		●
Number of switches for each step		●		●
PROTECTIONS				
Voltage too high and too low		●		●
Current too high and too low		●		●
Overcompensation (capacitors disconnected and $\cos\phi$ higher than set-point)		●		●
Undercompensation (capacitors connected and $\cos\phi$ lower than set-point)		●		●
Capacitor overload		●		●
Capacitor overload on all 3 phases				●
Over-temperature		●		●
Mains micro-breaking		●		●
Capacitor bank failure		●		●
Over maximum no. of switches		●		●
Over maximum harmonic distortion level limit		●		●
Programmable alarm property (enable, trip delay, relay energising, etc.)		●		●
Capacitor protection				● with EXP10 16



DCRM series



DCRM 2

Order code	Steps	Auxiliary supply voltage	Qty per pack	Weight
	no.	[V]	no.	[kg]
Single- and three-phase low-voltage systems.				
DCRM 2	2	380...415VAC	1	0.284

General characteristics

The DCRM allows the reactive current of a system to be controlled.

It can correct to the best $\cos\phi$ value possible, reducing the request for reactive current from the mains.

It can control the connection of two capacitor banks.

Each one can be individually enabled and its power can be set through a dedicated trimmer.

It is also possible to adjust the time for connection and disconnection of the capacitors, thereby modifying the reaction speed of the system.

The controller can be used both in three- and single-phase wiring.

Operational characteristics

- auxiliary supply voltage:
 - 380...415VAC standard
 - 220...240VAC and 440...480VAC on request
- rated frequency: 50/60Hz
- 80...528VAC voltage measurement input
- current measurement input:
 - by CT /5A
 - measuring range: 0.1...6A
 - measurement type: true root mean square (TRMS)
 - automatic identification of CT connection polarity (straight / inverted)
- relay outputs:
 - 2 relays (steps), each with 1 changeover contact
 - rated current: 8A 250VAC (AC1)
 - individual enablement of control of the two relays
- modular DIN 43880 housing (3 modules)
- IEC degree of protection: IP40 on front (if placed in IP40 housing and/or electrical panel), IP20 terminals.

ADJUSTMENTS

"C/K Step 1"	C/K ratio step 1 (0.15...2)
"C/K Step 2"	C/K ratio step 2 (0.15...2)
"Connection delay"	Step connection delay 1...60s
"Disconnection delay"	Step disconnection delay 0.1...60s
"System configuration"	Single- or three-phase wiring selection.

INDICATIONS

- 1 green LED for power on and inhibition time
- 2 red LEDs for relay connection.

Certifications and compliance

Certifications obtained: cULus, EAC.

Compliance with standards: IEC/EN 60255-5, IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 no. 14.

DCRL series



DCRL 3 - DCRL 5



DCRL 8

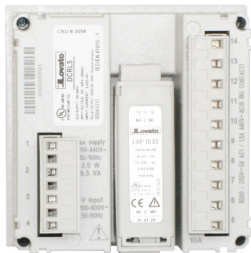


EXP80 00



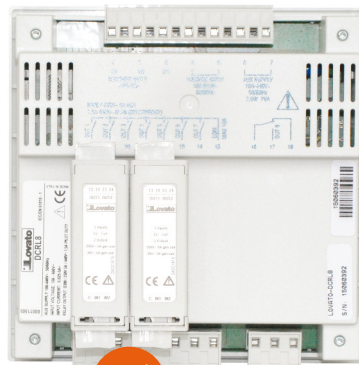
EXP 10...

Snap-in fixing of EXP... expansion modules
DCRL 3 - DCRL 5 with 1 module



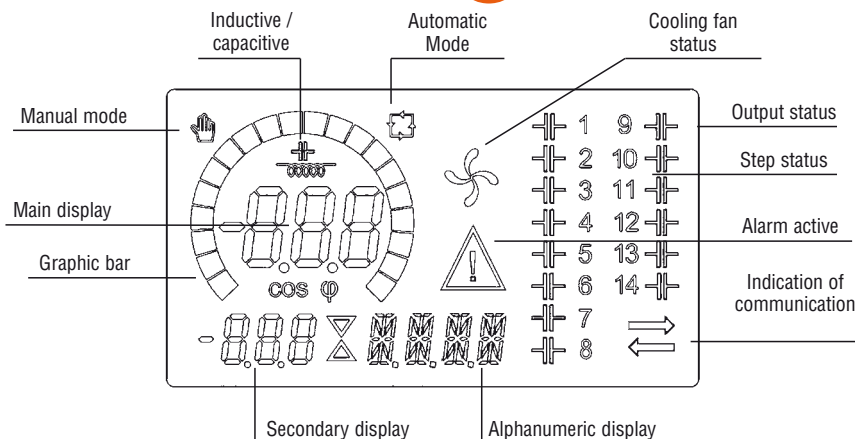
MAX 1

DCRL 8 with 2 modules



MAX 2

Backlit icon LCD



Order code	Description	Qty per pack	Weight
		no.	[kg]

Single- and three-phase low- and medium-voltage systems.

DCRL 3	3 steps, expandable up to 6 steps, 100...440VAC	1	0.340
DCRL 5	5 steps, expandable up to 8 steps, 100...440VAC	1	0.340
DCRL 8	8 steps, expandable up to 14 steps, 100...440VAC	1	0.640

new

Order code	Description	Qty per pack	Weight
EXP80 00	Plastic insert for customisation label (only for DCRG 8)	10	0.050

Order code	Description
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EXPANSION MODULES.
Additional steps.

EXP10 06	2 relay outputs to increase number of power factor correction steps
EXP10 07	3 relay outputs to increase number of power factor correction steps

new

Inputs and outputs.

EXP10 03	2 relay outputs 5A 250VAC
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Communication ports.

EXP10 10	Opto-isolated USB interface
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Opto-isolated ETHERNET interface (only for DCRL 8)

General characteristics

The DCRL series was developed with advanced functionality and produced with a dedicated ultra-compact housing. It combines modern front design with practical mounting and expandability (EXP... modules). Its main features are:

- backlit icon LCD with excellent information display
- alarm codes with scrolling texts, programmable in 6 languages (Italian, English, Spanish, French, German and Portuguese)
- connection in single or three phase lines and co-generation systems with 4-quadrant operation
- voltage measurement input independent of supply and which can be used in medium-voltage lines with VTs
- drastic reduction in the number of switching operations
- balanced use of steps with same power rating
- measurement of reactive power installed for each step
- capacitor over-current protection
- panel over-temperature protection via internal sensor
- accurate micro-breaking protection
- vast choice of measurements available, including voltage and current THD with single harmonic analysis up to the 15th order.
- wide voltage measurement range
- high accuracy of true root mean square (TRMS) measurements
- front optical USB (CX 01) and Wi-Fi (CX 02) communication port for PC, smartphone and tablet connection
- compatible with ETHERNET communication modules EXP10 13 (only for DCRL 8)
- compatible with Synergy supervision software, Xpress remote control and configuration software and with the Sam1 application for Android/iOS.
- customisation with label on front (only for DCRL 8).

Operational characteristics

- supply:
 - auxiliary voltage: 100...440VAC
 - frequency: 50/60Hz ±10%
- voltage input:
 - rated voltage: 600VAC L-L (346VAC L-N)
 - frequency range: 45...65Hz
- current input
 - single-phase connection
 - rated current: 1A or 5A, configurable
- measurements and control:
 - power factor adjustment: 0.5ind...0.5cap.
 - voltage measurement range: 50...720VAC L-L; 50...415VAC L-N
 - current measurement range: 0.025...1.2A for 1A full scale; 0.025...6A for 5A full scale
 - type of voltage and current measurement: true root mean square (TRMS).
- relay outputs (steps):
 - DRCL 3: 3 outputs
 - DCRL 5: 5 outputs
 - DCRL 8: 8 outputs
 - contact arrangement: NO; the last is a changeover
 - rated current: 5A 250VAC AC1
- flush-mount housing:
 - DCRL 3, DCRL 5 (96x96mm / 3.78x3.78"); DCRL 8 (144x144mm / 5.67x5.67")
- IEC degree of protection:
 - DCRL 3, DCRL 5 IP54 and DCRL 8 IP65 on front; IP20 on terminals for all.

Certifications and compliance

Certifications obtained: cULus, EAC, RCM. Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 no. 14.

Contactors for power factor correction

See section 1, page 1-13.

Software: Synergy, Xpress and Sam1

See section 16.

Exp expansion modules

See section 16.

DCRG series



DCRG 8

new

Order code	Description	Qty per pack	Weight
	no.	no.	[kg]
DCRG 8	8 steps, expandable up to 24 steps, 100...440VAC	1	0.980
DCRG 8IND	8 steps, expandable up to 24 steps, 100...440VAC, for capacitive reactive power factor correction	1	0.980

Accessories.

Order code	Description	Qty per pack	Weight
NTC 01	Remote temperature sensor, length 3m/118,11"	1	0.150

EXPANSION MODULES

Additional steps.

Order code	Description
EXP10 06	2 relay outputs to increase number of power factor correction steps
EXP10 07	3 relay outputs to increase number of power factor correction steps

new



EXP 10...

Inputs and outputs.

EXP10 00	4 opto-isolated digital inputs
EXP10 01	4 opto-isolated static outputs to increase number of static steps
EXP10 02	2 digital inputs and 2 opto-isolated static outputs
EXP10 03	2 relay outputs 5A 250VAC
EXP10 04	2 PT100 opto-isolated analogue inputs, either 0/4...20mA, 0...10V or 0...±5V
EXP10 05	2 opto-isolated analogue inputs 0/4...20mA, 0...10V or 0...±5V
EXP10 08	2 opto-isolated digital inputs and 2 relay outputs 5A 250VAC
EXP10 16	Capacitor protection with 2 inputs for temperature measurement with NTC sensors and 2 three-phase measurement inputs

Communication ports.

EXP10 10	Opto-isolated USB interface
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Opto-isolated ETHERNET interface with web server function
EXP10 14	Opto-isolated Profibus-DP interface

Other functions.

EXP10 30	Data memory, calendar-clock with backup reserve energy for data logging
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Maximum expandability DCRG 8 / DCRG 8IND

DCRG 8 / DCRG 8IND	EXP10 06	EXP10 07	EXP10 01	TOTAL STEPS	
				Relay	Static
Controller	Module with 2 relay outputs	Module with 3 relay outputs	Module with 4 static outputs		
Steps	no. of modules	no. of modules	no. of modules		
8	4 (2 steps)	–	–	16	–
8	2 (2 steps)	max. 2 (3 steps)	–	18	–
8	–	–	max. 4 (4 steps)	8	16

Snap-in fixing of 4 EXP... expansion modules DCRG 8 / DCRG 8IND



MAX 4

General characteristics

The DCRG automatic power factor controller satisfies the technical requirements of modern electrical systems in industry.

It is designed to satisfy them, with the option of extending its functionality by using specific EXP series expansion modules. Mention should also be made of the optical communication port as standard, for programming the controller, diagnostics and data download.

The backlit graphic LCD facilitates data reading even in poor lighting conditions and permits the display of system information clearly and intuitively.

Its main features are:

- 128x80-pixel backlit graphic LCD with texts in 10 languages: Italian, English, Spanish, French, German, Czech, Polish, Russian, Portuguese and one customisable
- connection in single- and three-phase lines as well as three-phase lines with neutral control and cogeneration systems (4 quadrants)
- capacitive reactive power factor correction (DCRG 8IND)
- independent power factor correction for each single phase (SPPFC)
- use with medium-voltage lines with VTs
- capability for correct operation even in systems characterised by high harmonic content
- drastic reduction in the number of switching operations
- balanced use of steps with same power rating
- measurement of reactive power installed for each step
- recording of the number of connections for each step
- capacitor over-current protection on all three phases
- panel over-temperature protection via internal sensor and external sensor
- accurate micro-breaking protection
- current and voltage harmonic analysis
- quick CT programming function
- USB (CX 01) and Wi-Fi (CX 02) communication port for PC, smartphone and tablet connection
- Modbus-RTU TCP and ASCII communication protocol
- compatible with Synergy supervision software, Xpress remote control and configuration software and with the Sam1 application for Android/iOS
- sending and reception of SMSs, sending of e-mails with alarm diagnosis and data files, FTP Client function (with EXP1012 and EXC M3G 01)

Operational characteristics

- voltage measurement circuit:
 - auxiliary supply voltage: 100...415VAC
 - rated frequency: 50/60Hz (±10%)
- current measurement circuit:
 - single- and three-phase input
 - rated current: 5A (1A programmable)
- measurements and control:
 - power factor adjustment: 0.5ind...0.5cap.
 - voltage measurement range: 50...720VAC
 - current measurement range: 0.025...6A
 - temperature measurement range: -30...+85°C
 - capacitor overload current measurement range: 0...250%
 - type of voltage and current measurement: true root mean square (TRMS).
- relay outputs:
 - 7 each with NO contact and the last as changeover
 - rated current: 5A 250VAC AC1
- flush-mount housing (144x144mm / 5.67x5.67")
- IEC degree of protection: IP65 on front; IP20 on terminals.

Certifications and compliance

Certifications obtained: cULus, EAC, RCM (only for DCRG 8).

Compliant with standards: IEC 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 no. 14.

Contactors for power factor correction

See section 1, page 1-13.

Software: Synergy, Xpress and Sam1
See section 16.

EXP expansion modules

See section 16.

Accessories for DCRL and DCRG



51 C4



EXC M3G 01

Order code	Description	Qty per pack	Weight
		no.	[kg]
51 C2	Connection cable PC↔DCRL/DCRG+ EXP10 11 length 1.8m (0.07")	1	0.090
51 C4	Connection cable PC↔converter 4 PX1, length 1.8m (0.07")	1	0.147
51 C5	Connection cable DCRL/DCRG+ EXP1011↔Modem length 1.8m (0.07")	1	0.111
51 C6	Connection cable DCRG+EXP10 11↔ converter 4 PX1, length 1.8m (0.07")	1	0.102
51 C9	Connection cable PC↔Modem, leng. 1.8m (0.07")	1	0.137
EXC CON 01	RS485/ Ethernet converter, 12...48VDC, including DIN rail fixing kit	1	0.400
4 PX1	RS232/RS485 converter, galvanically isolated, supply 220...240VAC (or 110...120VAC)	1	0.600
EXC M3G 01	RS485 Gateway/3G modem, 9.5...27VAC/9.5...35VDC, including antenna and programming cable	1	0.340

① Contact our Customer Service office 1 800 252 995.

② Opto-isolated RS232/RS485 bench converter, 38,400 Baud-rate max., automatic or manual TRANSMIT line management, 220...240VAC ±10% supply (110...120VAC on request).

Communication devices



CX 01



CX 02

Order code	Description	Qty per pack	Weight
		no.	[kg]
CX 01	Connection cable PC↔DCRL/DCRG, with optical USB connector for programming, data download, diagnostics and updating firmware	1	0.090
CX 02	Wi-Fi connection device for PC↔DCRL/DCRG, for downloading data, programming, diagnostics and cloning	1	0.090

General characteristics

Communication and connection devices to connect the DCRL and DCRG power factor controllers to personal computers, smartphones and tablets.

CX 01

This USB/optical connector, complete with cable, permits connection of the power factor controller with a PC without needing to disconnect the electrical panel supply, in order to:

- program parameters
- copy the settings to external units
- download data and events
- carry out diagnostics
- update the firmware.

The PC identifies the connection as a standard USB.

CX 02

Via Wi-Fi connection, the power factor controllers can be viewed from PCs, smartphones and tablets without having to connect cables, in order to:

- program parameters
- download data and events
- carry out diagnosis and cloning of the device.

For dimensions, wiring diagrams and technical characteristics, consult the manuals available online in the Download section of the following website:
www.LovatoElectric.com



DCTM3 400...

See Section 1 for capacitor contactors

Order code	Step power	Qty per pack	Weight
	[kvar]	no.	[kg]
DCTM3 400 030	Module for 30kvar step, 400...480VAC	1	4.300
DCTM3 400 050	Module for 50kvar step, 400...525VAC	1	4.300
DCTM3 400 100	Module for 100kvar step 400...525VAC	1	5.600

Power rating available depending on voltage

	DCTM3 400 030	DCTM3 400 050	DCTM3 400 100
Current Ie [A]	43A	72A	144A
Voltage [VAC]	Power [kvar]	Power [kvar]	Power [kvar]
400	30	50	100
440	33	55	110
480	36	60	120
525	—	66	131

General characteristics

- suitable for dynamic (fast) power factor correction
- connection at current flow zero-crossing
- capacitor over-current protection on connection
- over-temperature protection via built-in sensor.

Operational characteristics

- 30kvar, 50kvar and 100kvar steps
- rated operating voltage:
 - 400...480VAC for DCTM3 400 030
 - 400...525VAC for DCTM3 400 050 and DCTM3 400 100
- auxiliary fan supply voltage: 230VAC (only for DCTM3 400 100)
- rated frequency: 50/60Hz
- control circuit: 8...30VDC
- controlled voltages: 2
- forced ventilation: DCTM3 400 100 only
- ambient conditions:
 - operating temperature: -10...+45°C
 - use at higher temperatures with power derating
- IEC degree of protection: IP10.

INDICATIONS

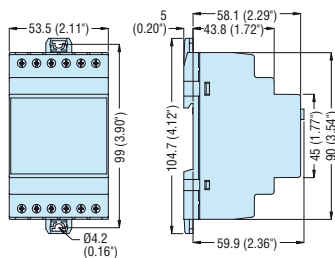
- auxiliary power on
- over-temperature alarm
- trigger LED.

Compliance:

Compliant with standards: EN 50178.

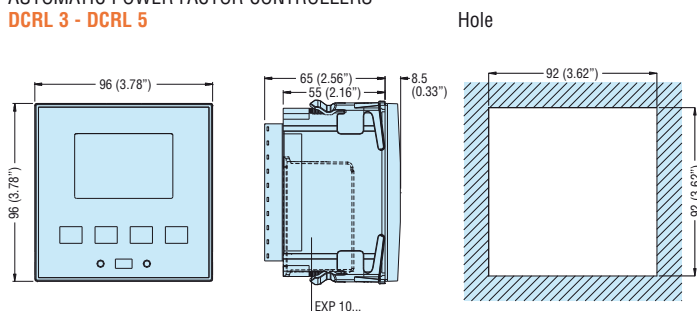
REACTIVE CURRENT CONTROL RELAY

DCRM 2

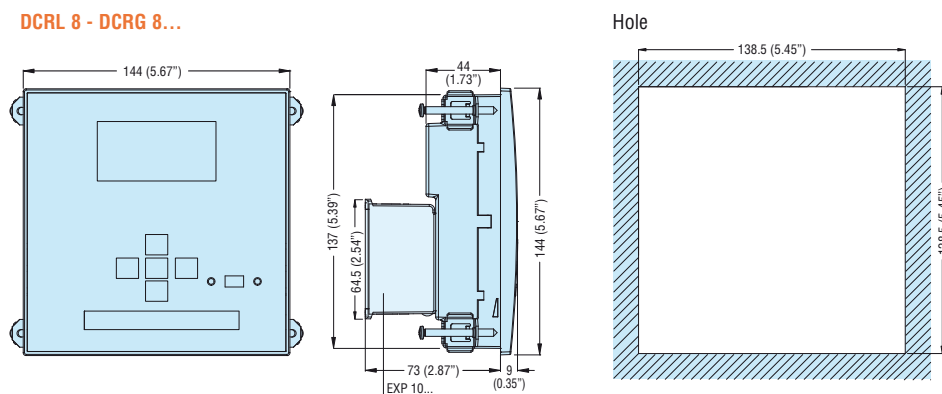


AUTOMATIC POWER FACT CONTROLLERS

DCRL 3 - DCRL 5

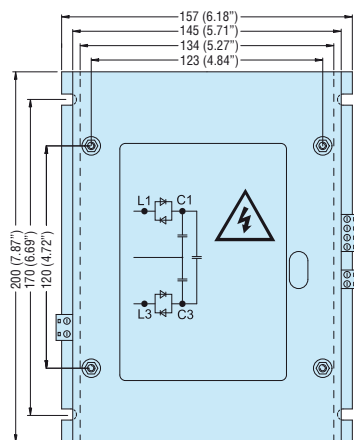


DCRL 8 - DCRG 8...

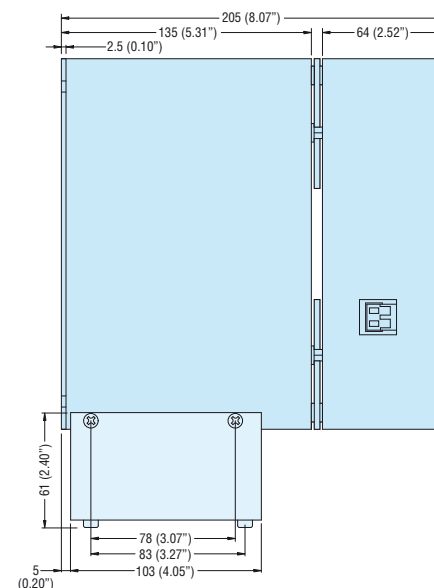
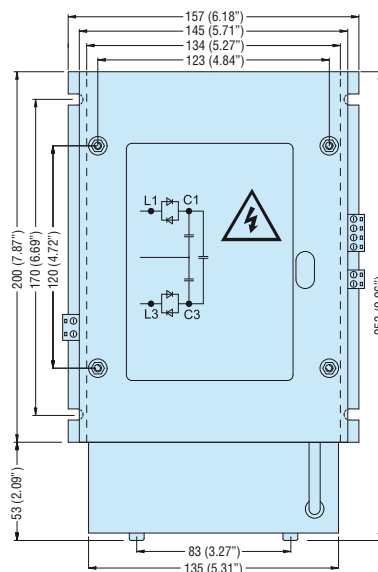


THYRISTOR MODULES

DCTM3 400 030 - DCTM3 400 050



DCTM3 400 100



KNK3053 Cylindrical LV Power Factor Correction Capacitors

- Three phase power factor correction capacitors up to 40kVAR
- Aluminium case with M12 mounting stud and screw terminals
- Self-healing metalized polypropylene dielectric
- Dry type with non PCB polyurethane resin
- Overpressure disconnection system
- Discharge resistors externally fitted



Order Code	525V 50Hz		415V 50Hz *		Capacitance (uF)	Dimensions D x H (mm)	Weight (kg)
	Qn (kvar)	In (A)	Qn (kvar)	In (A)			
ISKNK10535205B	5	5.5	3.1	4.3	3 x 19.3	75 x 165	0.9
ISKNK10535207B	7.5	8.2	4.7	6.5	3 x 28.9	75 x 210	1.1
ISKNK10535210B	10	11	6.2	8.7	3 x 38.5	75 x 245	1.4
ISKNK10535212B	12.5	13.7	7.8	10.8	3 x 48.1	75 x 245	1.4
ISKNK10535215B	15	16.5	9.4	13.0	3 x 57.7	90 x 210	1.5
ISKNK10535220B	20	22	12.5	17.4	3 x 77	90 x 285	2.1
ISKNK10535225B	25	27.5	15.6	21.7	3 x 96.2	116 x 210	2.5
ISKNK10535230B	30	33	18.7	26.1	3 x 115.5	116 x 245	2.6
ISKNK10535240B	40	44	25	34.8	3 x 154	116 x 285	3.2

* Equivalent KVAR of 525V capacitor on 415V supply.

Specifications:

Rated voltage: Un 220-800V 50/60Hz
(Standard stocked range is 525V 50Hz suitable for harmonic filter reactors)

Connection: Delta

Dielectric: Polypropylene

Dielectric losses: ≤ 0.2 W/kvar

Total losses: ≤ 0.45 W/kvar

Max. Overvoltage: 1.1 x Un (8h/day)
1.2 x Un
(5m – 200 times per lifetime)
1.3x Un
(1m – 200 times per lifetime)

Max. Overcurrent: 1.5 x In

Inrush Current: 200 x In

Isolation level: 4/- kV rms

Power tolerance: -5/+10 %

Protection: IP00

Temp rating (°C): -40/D (max 55°C, max mean 24h 45°C, max mean 1 year 35°C)

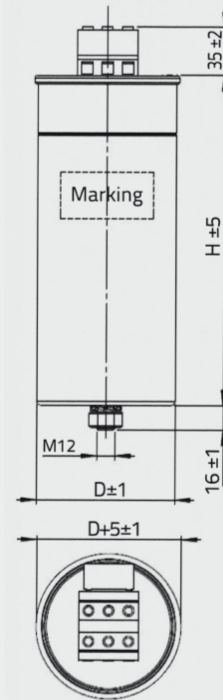
Lifetime: > 120,000 h

Connection: Screw terminals 2 x 16mm²/phase for D=75mm
2 x 25mm²/phase for D≥90mm

Discharge Resistor: to 75V ≤ 3 min

Construction: Aluminium can

Standards: IEC 60831, EN 60831



Dimensions in mm

RTFX Detuned Reactors for Capacitor Banks

- 7% detuned (resonant frequency 189.5Hz) up to 100kVAr
- Single layer aluminium windings with copper bus bar terminals
- Thermal sensor included as standard



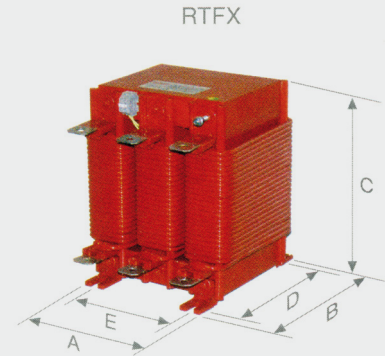
Specifications:

Rated voltage:	Line voltage 415V 50Hz (For capacitor voltages up to 525V)
Isolation:	Class F - 155°C
Winding:	Class HC- 200°C
Thermal overload factor:	5%
Resonance frequency:	180Hz (P=7%)
Max. Overcurrent:	6%
Inrush Current:	200 x In
Test voltage:	3kV (1 min, 50Hz)
Harmonic currents:	I3 =8%, I5= 31%, I7=13%
Protection:	IP00
Temp rating (°C):	+45°C
Connection:	Copper bar terminals
Construction:	Aluminium single layer windings
Standards:	IEC/EN/UNE-EN 60076-6, CE

Detuned reactors are designed according to the capacitor rated voltage and Q and the line voltage. Codes shown are for stocked versions.

Other values are available on request.

Order Code	Capacitor Rating (525V)	Effective Rating (415V)	Nominal Current	Dimensions A x B x C (mm)	Weight (kg)
18RTFX13	20kVAr	13.4kVAr	18.7A	180 x 126 x 220	12.0
18RTFX25S	37.5kVAr	25kVAr	35.0A	180 x 156 x 220	16.8
18RTFX30S	45kVAr	30kVAr	42.0A	180 x 176 x 220	20.0
18RTFX50S	75kVAr	50kVAr	81.5A	180 x 201 x 220	26.0



FIN538S1 Three Phase EMI Filter



- Three phase EMI filter to comply with EN61000-6-4
- Nominal voltage 600VAC
- Rated currents from 3-2500A
- Very high differential and common mode attenuation

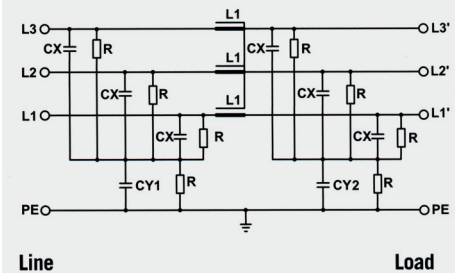
Specifications:

Rated voltage: 0-600VAC 50/60Hz
 Phase to phase test: 2400VDC (2s)
 Phase to earth test: 3200VDC (2s)
 Nominal leakage current: <10mA (worst condition <80mA)
 Power tolerance: -5/+10 %
 Protection: IP00
 Temp rating (°C): -40 to +85°C
 Connection: Screw terminals up to case size 5
 M12 studs case 6
 Bus bars case 7 to 12
 Construction: Aluminium
 Approvals: RoHS, UL

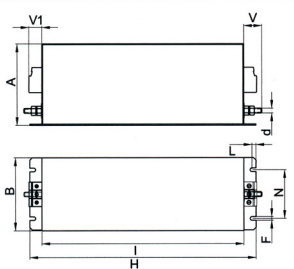
Order Code	Rated Current (A) 40°C (50°C)	Power Loss (W)	Case Size	Dimensions H x B x A (mm)	Weight (kg)
27FIN538S1007M	8 (7)	3	1	250 x 90 x 100	1.3
27FIN538S1016M	18 (16)	4	1	250 x 90 x 100	1.3
27FIN538S1030M	34 (30)	10	1	250 x 90 x 100	1.3
27FIN538S1042M	47 (42)	18	2	270 x 90 x 100	1.5
27FIN538S1055M	60 (55)	23	2	270 x 90 x 100	1.5
27FIN538S1075M	83 (75)	37	3	270 x 85 x 135	2.2
27FIN538S1100M	110 (100)	52	4	270 x 90 x 155	3.2
27FIN538S1130M	142 (130)	65	4	270 x 90 x 155	3.2
27FIN538S1180M	200 (180)	77	5	380 x 125 x 170	5.1
27FIN538S1250V	272 (250)	80	6	356 x 220 x 90	9.0
27FIN538S1280V	290 (280)	80	6	356 x 220 x 90	9.0
27FIN538S1320BC	330 (320)	80	7	356 x 220 x 90	9.0
27FIN538S1360BC	390 (360)	105	8	420 x 230 x 130	13.5
27FIN538S1400BC	435 (400)	110	8	420 x 230 x 130	13.5
27FIN538S1500BC	545 (500)	102	8	420 x 230 x 130	13.5
27FIN538S1600BC	654 (600)	108	9	510 x 230 x 130	19.0
27FIN538S1750BC	800 (750)	96	9	510 x 230 x 130	19.0
27FIN538S1900BC	940 (900)	80	10	510 x 250 x 160	27.0
27FIN538S11000BC	1050 (1000)	115	10	510 x 250 x 160	27.0
27FIN538S11250BC	1290 (1250)	101	10	510 x 250 x 160	27.0
27FIN538S11500BC	1550 (1500)	120	11	560 x 300 x 180	30.0
27FIN538S11750BC	1800 (1750)	135	11	560 x 300 x 180	30.0
27FIN538S12000BC	2040 (2000)	138	12	610 x 350 x 225	68.0

Filters for special applications are available on request.

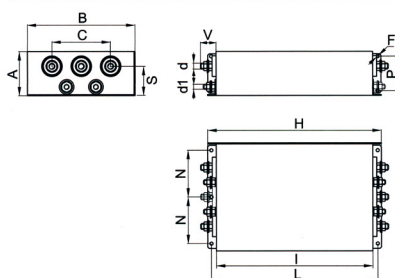
ELECTRIC DIAGRAM



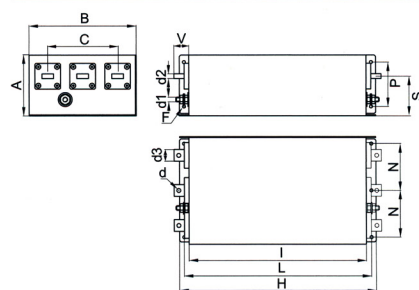
CASE 1/2/3/4/5



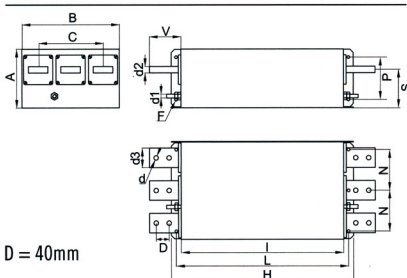
CASE 6



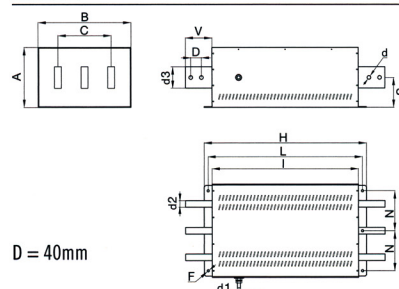
CASE 7/8/9



CASE 10/11



CASE 12



Three Phase Parallel Filter

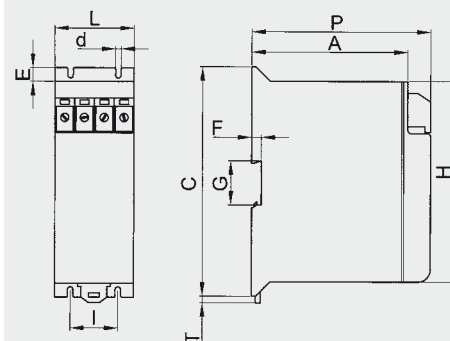


- Reduces radio frequency interference in range 30kHz to 10MHz
- Independent of the current
- DIN rail mounting
- Used in combination with line filters for servo drive applications

Specifications:

Rated voltage:	Nominal voltage 600V 50/60Hz
Capacitors:	Metalized film polypropylene
Resistors:	Metallic layer
Test voltage:	Phase to ground up to 3kV DC
Leakage current:	<25mA
Protection:	IP00
Temp rating (°C):	-40 to +85°C
Connection:	Terminals
Dimensions:	59w x 146h x 130d (mm)
Weight:	1.1kg
Standards:	IEC 68, CE, UL

Order Code	Nominal Voltage	Rated Capacitance C1 (±10%)	Rated Resistance (± 20%)	Frequency Range
27FIN130SP001M	600Vac	7uF	3.3MΩ	50kHz – 5MHz
27FIN230SP001M	600Vac	10uF	3.3MΩ	50kHz – 5MHz
27FIN730001M	750Vac	1uF	3.3MΩ	30kHz – 10MHz
27FIN730002MC	600Vac	1uF	3.3MΩ	30kHz – 10MHz
27FIN730001MLCP	480Vac	1uF	3.3MΩ	30kHz – 10MHz
27FIN735001M	650Vac	10uF	3.3MΩ	30kHz – 10MHz
27FIN740068M	480Vac	0.68uF	3.3MΩ	30kHz – 10MHz



RTLX Input Line Reactors

- Three phase line reactors for AC drives
- Reduces drive generated harmonics
- Rated currents from 2.5-1000A
- Thermal over temperature protection
- Custom designs available



Specifications:

Rated voltage:	Line voltage 380-460V 50/60Hz
Isolation:	Class F - 155°C
Winding:	Class HC- 200°C
Thermal overload factor:	5%
Voltage drop:	4% at 400V 50Hz and nominal current
Test voltage:	3kV (1 min, 50Hz)
Protection:	IP00
Temp rating (°C):	+40°C
Temperature rise:	<90°C
Connection:	Terminals or lugs
Construction:	Aluminium windings
Standards:	IEC/EN/UNE-EN 60076-6, CE

Order Code	Rated Current (A) 40°C	Motor Rating (kW)	L (mH)	Dimensions A x B x C (mm)	Fig.	Weight (kg)
18RTLX025	2.5	0.75	11.762	120 x 74 x 107	1	1.4
18RTLX040	4	1.1	7.351	120 x 74 x 107	1	1.4
18RTLX050	5	1.5	5.881	120 x 74 x 107	1	1.6
18RTLX063	6.3	2.2	4.667	120 x 74 x 107	1	1.9
18RTLX080	8	3	3.676	120 x 84 x 107	1	2.3
18RTLX100	10	4	2.941	120 x 84 x 107	1	2.7
18RTLX160	16	5.5	1.838	150 x 135 x 185	1	5.1
18RTLX200	20	7.5	1.470	150 x 140 x 185	1	5.9
18RTLX250	25	11	1.176	150 x 145 x 185	1	6.5
18RTLX315	31.5	15	0.933	150 x 155 x 185	1	7.9
18RTLX400	40	18.5	0.735	150 x 165 x 185	1	9.2
18RTLX500	50	22	0.588	180 x 150 x 220	1	10.6
18RTLX630	63	30	0.467	180 x 155 x 220	1	11.6
18RTLX800	80	37	0.368	180 x 165 x 220	1	13.7
18RTLX1000	100	45	0.294	180 x 205 x 220	1	20.7
18RTLX1250	125	55	0.235	180 x 185 x 220	1	22.8
18RTLX1600	160	75	0.184	180 x 207 x 220	2	26.1
18RTLX2000	200	90	0.147	240 x 173 x 290	2	32.8
18RTLX2500	250	110-132	0.118	240 x 188 x 290	2	38.5
18RTLX3150	315	160	0.093	340 x 234 x 375	2	46.5
18RTLX4000	400	185-200	0.074	340 x 254 x 375	2	57
18RTLX5000	500	220-250	0.059	340 x 289 x 375	2	74
18RTLX6300	630	280-315	0.047	360 x 371 x 525	2	102
18RTLX8000	800	370-400	0.037	360 x 381 x 525	2	115
18RTLX10000	1000	450-500	0.029	360 x 421 x 525	2	142

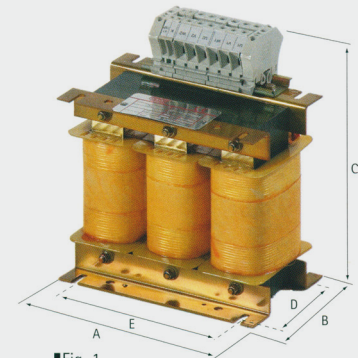


Fig. 1

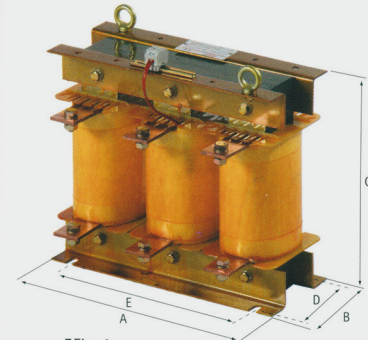


Fig. 2

RTOX Output Line Reactors



- Three phase output reactors for AC drives
- Attenuate voltage spikes on drive output
- Reduction of reflection effect on long cable lengths between drive and motor
- Recommended for cable length of 50m+
- Rated currents from 2.5-630A
- Thermal over temperature protection
- Custom designs available

Specifications:

Rated voltage:	Line voltage 380-460V 50/60Hz
Isolation:	Class F - 155°C
Winding:	Class HC- 200°C
Thermal overload factor:	5%
Voltage drop:	3% at 400V 50Hz and nominal current
Test voltage:	3kV (1 min, 50Hz)
Protection:	IP00
Temp rating (°C):	+40°C
Temperature rise:	<90°C
Connection:	Terminals or lugs
Construction:	Aluminium windings
Standards:	IEC/EN/UNE-EN 60076-6, CE

Order Code	Rated Current (A) 40°C	L (mH)	Dimensions A x B x C (mm)	Fig.	Weight (kg)
18RTOX025	2.5	8.821	150 x 110 x 184	1	2.0
18RTOX040	4	5.513	150 x 120 x 185	1	3.2
18RTOX050	5	4.411	150 x 120 x 185	1	3.3
18RTOX063	6.3	3.501	150 x 120 x 185	1	3.4
18RTOX080	8	2.757	150 x 125 x 185	1	4.0
18RTOX100	10	2.205	150 x 130 x 185	1	4.7
18RTOX160	16	1.378	150 x 140 x 185	1	6.3
18RTOX200	20	1.103	150 x 150 x 185	1	7.8
18RTOX250	25	0.882	150 x 155 x 185	1	8.5
18RTOX315	31.5	0.700	180 x 150 x 220	1	11.1
18RTOX400	40	0.551	180 x 165 x 220	1	13.9
18RTOX500	50	0.441	180 x 180 x 220	1	16.7
18RTOX630	63	0.350	180 x 205 x 220	1	21.3
18RTOX800	80	0.276	240 x 175 x 294	1	27.3
18RTOX1000	100	0.221	240 x 190 x 294	1	32.4
18RTOX1250	125	0.176	240 x 215 x 294	1	40.7
18RTOX1600	160	0.138	340 x 219 x 375	2	38.7
18RTOX2000	200	0.110	340 x 239 x 375	2	49.1
18RTOX2500	250	0.088	340 x 259 x 375	2	59
18RTOX3150	315	0.070	340 x 294 x 375	2	77
18RTOX4000	400	0.055	340 x 319 x 375	2	93
18RTOX5000	500	0.044	410 x 319 x 445	2	128
18RTOX6300	630	0.035	410 x 359 x 445	2	159

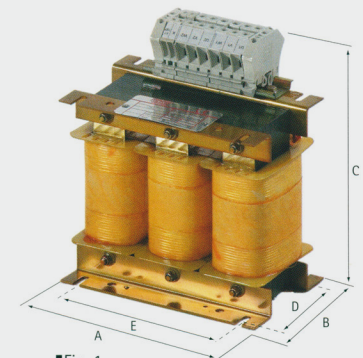


Fig. 1

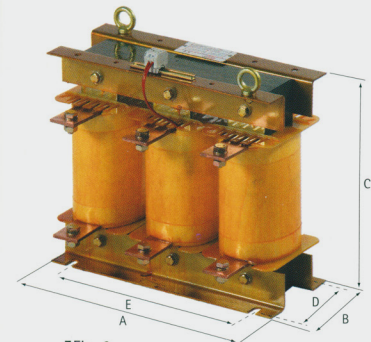
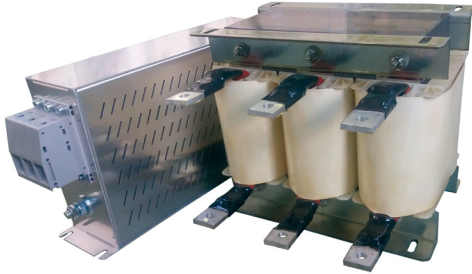


Fig. 2

FIN905SF Sine Wave Filter

- Converts PWM output into sinusoidal wave
- DV/DT reduction
- Reduces motor losses and increases motor life
- Recommended for cable length of 100m+
- Rated currents from 5-880A
- Custom designs available



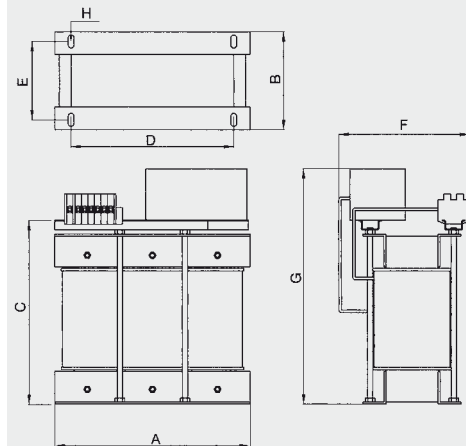
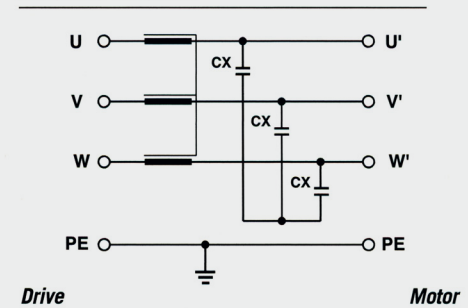
Specifications:

Rated voltage:	Line voltage 480V 50/60Hz
Isolation:	Class F - 155°C
Winding:	Class HC- 200°C
Max. output frequency:	<70Hz
Test voltage:	3kV (1 min, 50Hz)
Protection:	IP00
Temp rating (°C):	+40°C
Temperature rise:	<90°C
Connection:	Terminals
Standards:	IEC/EN/UNE-EN 60076-6, CE

Order Code	Rated Current (A) 40°C	L (mH)	Min. PWM Frequency (kHz)	Power Loss (W)	Dimensions A x G x F (mm)	Weight (kg)
27FIN905SF005M	5	13	4	67	150 x 250 x 150	3.5
27FIN905SF008M	8	6.9	4	79	150 x 250 x 150	4.5
27FIN905SF010M	10	5.2	4	88	150 x 250 x 150	5.2
27FIN905SF016M	16	3.1	4	116	180 x 280 x 225	8.8
27FIN905SF025M	25	2.4	4	151	180 x 280 x 225	9.5
27FIN905SF036M	36	1.6	4	175	240 x 340 x 225	14.4
27FIN905SF045M	48	1.1	4	250	240 x 340 x 225	17.3
27FIN905SF060M	60	0.85	3	282	240 x 340 x 225	22
27FIN905SF075M	75	0.75	3	340	300 x 410 x 205	28.5
27FIN905SF115M	115	0.5	3	575	300 x 310* x 225	38
27FIN905SF180M	180	0.3	3	695	480 x 420* x 355	55
27FIN905SF260M	260	0.2	3	895	520 x 340* x 355	88
27FIN905SF410B	410	0.13	3	1170	520 x 340* x 355	96
27FIN905SF480B	480	0.11	3	1390	520 x 340* x 355	108
27FIN905SF660B	660	0.08	2	2050	520 x 460* x 395	176
27FIN905SF750B	750	0.07	2	2900	530 x 520* x 435	195
27FIN905SF880B	880	0.05	2	3450	650 x 630* x 475	230

* Dimension C - filters supplied with capacitors separate

ELECTRIC DIAGRAM



Dimensions in mm

FINHRM5 Passive Harmonic Filter

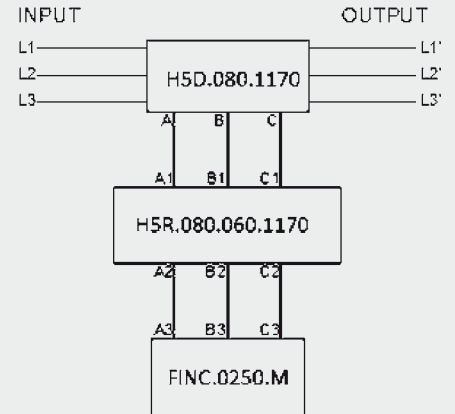


- Reduces THD up to 5%
- Current up to 750A
- Series connection also provide protection against external harmonics
- Open frame design available

Order Code	Rated Current (A) 50°C	Rated Power (kW) 400Vac	Power Loss (W)
27FINHRM5010M	10	4	55
27FINHRM5016M	16	7.5	105
27FINHRM5032M	32	15	210
27FINHRM5045M	45	22	273
27FINHRM5080M	80	40	398
27FINHRM5120M	120	60	492
27FINHRM5160M	160	80	590
27FINHRM5210M	210	105	610
27FINHRM5260M	260	130	780
27FINHRM5320M	320	160	940
27FINHRM5400M	400	200	940
27FINHRM5460M	460	230	1280
27FINHRM5600M	600	280	1480
27FINHRM5750M	750	360	1690

Specifications:

Rated voltage: Nominal voltage up to 480V 50Hz
 Peak current: 150% for 60s every 10min (@ 50°)
 THDI reduction: <5%
 Reactive power on no load: 25%
 Construction: In case or open frame
 Temp rating (°C): +40°C
 Connection: Terminals (lugs or bus bar on larger sizes)
 Standards: CE, RoHS



FINHRMA Active Harmonic Filter

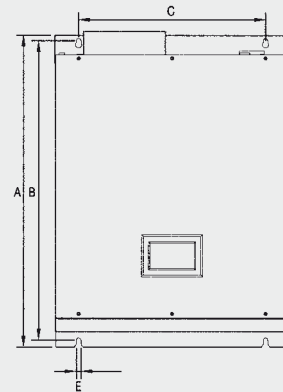
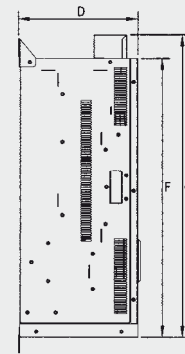


- Reduces THD up to 95%
- 35 to 150A suitable for 3 or 4 wire systems
- Compensates 2nd to 50th order harmonics
- Combination of power factor and harmonic correction
- Touch screen LCD HMI
- Protection against over voltage, under voltage, over current and over temperature.
- Can be connected in parallel to reach higher current ratings
- Wall or 19" rack mount

Specifications:

Rated voltage:	380- 480V 50/60Hz (up to 690V on some sizes)
Rated compensation current:	25 to 90A (300% on neutral)
Efficiency:	>97%
Residual THD(I):	<5%
Reaction time:	<50us
Overall response time:	<5ms
Switching frequency:	20kHz
Communication:	RS485 (Modbus TCP/IP)
Current transformer:	150:5 to 10,000:5
Protection:	IP20
Temp rating (°C):	-10 to +40°C
Connection:	Terminals
Standards:	CE, RoHS

Order Code	Rated Current (A)	Rated Voltage (Vac)	Grid Structure	Cooling	Dimensions A x G x D (mm)	Weight (kg)
27FINHRMA03553FW	35	480 (-20+15%)	3W	Air 359L/s	665 x 640 x 253	35
27FINHRMA03554FW	35	480 (-20+15%)	3W +N	Air 359L/s	665 x 640 x 253	35
27FINHRMA05053FW	50	480 (-20+15%)	3W	Air 359L/s	665 x 640 x 253	48
27FINHRMA05054FW	50	480 (-20+15%)	3W +N	Air 359L/s	665 x 640 x 253	48
27FINHRMA07553FW	75	480 (-20+15%)	3W	Air 359L/s	665 x 640 x 253	66
27FINHRMA07554FW	75	480 (-20+15%)	3W +N	Air 359L/s	665 x 640 x 253	66
27FINHRMA09053FW	90	480 (-20+15%)	3W	Air 359L/s	665 x 640 x 253	66
27FINHRMA09054FW	90	480 (-20+15%)	3W +N	Air 359L/s	665 x 640 x 253	66
27FINHRMA09073FW	90	690 (-30+15%)	3W	Air 359L/s	665 x 640 x 253	66
27FINHRMA10043FW	100	400 (-40+15%)	3W	Air 300L/s	625 x 600 x 235	36
27FINHRMA10044FW	100	400 (-40+15%)	3W +N	Air 300L/s	625 x 600 x 235	36
27FINHRMA15043FW	150	400 (-40+15%)	3W	Air 405L/s	557 x 560 x 270	48
27FINHRMA15044FW	150	400 (-40+15%)	3W +N	Air 405L/s	557 x 560 x 270	48



Dimensions in mm

EL Series

- Motor starting capacitors
- Bakelite case with terminal cover
- Quick connect terminals
- Supplied with mounting bracket



Order Code	Capacitance/Voltage		Dimension Ø x L (mm)
	uF	V	
COEL025320	25~31.5	320	46 x 98
COEL031320	31.5~40	320	46 x 98
COEL040320	40~50	320	46 x 98
COEL050320	50~63	320	46 x 98
COEL063320	63~80	320	46 x 98
COEL080320	80~100	320	46 x 98
COEL100320	100~125	320	46 x 98
COEL125320	125~160	320	46 x 98
COEL160320	160~200	320	46 x 98
COEL200320	200~250	320	46 x 98
COEL250320	250~315	320	46 x 98
COEL315250	315~400	250	46 x 98

Specifications:

Rated voltage:	320 V 50-60Hz (315-400uF rated at 250V)
Dielectric:	Polypropylene
Loss Factor:	< 0.1
Test voltage:	1.4 Un x 1 sec (between terminals) 1.5kV x 5 sec (between terminals and case)
Duty Cycle:	20 starts per hour max.
Protection:	IP41
Temp rating (°C):	-25 to +75
Connection:	faston 6.3mm terminals
Construction:	Bakelite can, cadmium plate steel bracket
Standards:	EN 60252

MK Series



- Motor run capacitors
- Plastic case with twin insulated cable
- Optional faston terminals
- M8 metal mounting/earthing stud

Order Code	Capacitance μF	Dimension $\text{\O} \times \text{L}$ (mm)
COMK010450T	1.0	30 x 57
COMK012450T	1.25	30 x 57
COMK015450T	1.5	30 x 57
COMK020450T	2.0	30 x 57
COMK025450T	2.5	30 x 57
COMK031450T	3.15	30 x 57
COMK040450T	4.0	30 x 57
COMK050450T	5.0	30 x 57
COMK063450T	6.3	30 x 70
COMK080450T	8.0	30 x 70
COMK100450T	10.0	35 x 70
COMK125450T	12.5	40 x 70
COMK150450T	15	40 x 70
COMK200450T	20	40 x 94
COMK250450T	25	45 x 94
COMK300450T	30	45 x 94
COMK350450T	35	50 x 94
COMK400450T	40	50 x 94
COMK450450T	45	50 x 120
COMK500450T	50	50 x 120
COMK600450T	60	55 x 120
COMK700450T	70	60 x 120
COMK800450T	80	60 x 120

Specifications:

Rated voltage: 450 V 50-60Hz
 Dielectric: Polypropylene
 Capacitance tolerance: $\pm 5\%$
 Loss Factor: $< 5 \times 10^{-4}$
 Test voltage: 2 Un x 2 sec
 (between terminals)
 2kV x 2 sec
 (between terminals and case)
 Protection: IP00
 Temp rating ($^{\circ}\text{C}$): -25 to +85
 Connection: 250mm insulated twin cable
 Construction: Plastic can
 Standards: EN 60252