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DCRK SERIES

- Digital programming
- 5 or 7 step configuration in 96x96mm housing
- 8 or 12 step configuration in 144x144mm housing
- Capacitor overload protection
- Internal panel temperature sensor
- TTL/RS232 programming interface
- Automatic set-up function
- Configurable alarms.



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DCRJ SERIES

- Digital programming
- 8 or 12 step configuration in 144x144mm housing
- Dual displays
- Independent voltage measure input
- Capacitor overload protection
- Internal-external panel temperature sensor
- RS232 programming and supervision interface
- RS485 supervision interface
- Voltage and current harmonics measurements
- Event log
- Automatic set-up function (adjustable)
- Configurable alarms
- Suitable for medium voltage systems.



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DCRJ12F TYPE (STATIC OUTPUTS)

- Digital programming
- 11 step + 1 alarm configuration in 144x144mm housing
- Dual displays
- Independent voltage measure input
- Capacitor overload protection
- Internal-external panel temperature sensor
- RS232 programming and supervision interface
- Voltage and current harmonics measurements
- Event log
- Configurable alarms.

DESCRIPTION

	DCRK	DCRJ	DCRJ12F
Front plate			
3-digit display	●	●	●
4-digit display supplement		●	●
4 operation keys	●	●	●
1 function key		●	●
7 LED indicators for main functions and measures	●	●	●
14 LED indicators for main functions and measures		●	●
Control - Functions			
Automatic recognition of current flow	●	●	●
4-quadrant operation	●	●	●
Independent voltage input		●	●
Three-phase voltage control		●	●
Medium-voltage usage		●	●
Phase-Neutral connection in 3-phase systems		●	●
Programmable input as functional or remote temperature sensor		●	●
Keypad lock	●	●	●
TTL/RS232 communication interface	●		
RS232 communication interface		●	●
Isolated RS485 communication interface		●	●
Automatic set-up function (adjustable)	●	●	●
Easy current transformer setting function	●	●	●
Set-up and automatic panel test software	●	●	●
Remote supervision software		●	●
Real time clock with back-up battery		●	●
Current and voltage waveform captures, related to harmonic events		●	●
Events logging such as: alarms, power ON, power OFF, set-up changes, etc.		●	●
Measurements			
Instantaneous displacement power factor (cosφ)	●	●	●
Instantaneous and average weekly power factor	●	●	●
Voltage and current	●	●	●
Reactive power to reach set-point value	●	●	●
Total reactive power	●	●	●
Capacitor overload	●	●	●
Electric panel temperature	●	●	●
Maximum voltage and current value	●	●	●
Maximum capacitor overload value	●	●	●
Maximum panel temperature value	●	●	●
Maximum capacitor temperature value	●	●	●
Active and apparent power	●	●	●
Current and voltage harmonic analysis	●	●	●
Current and voltage harmonic waveform logged at overload events	●	●	●
Step "var" value	●	●	●
Number of switching measures per step	●	●	●
Protection functions			
Voltage too high and too low	●	●	●
Current too high and too low	●	●	●
Over compensation (capacitors disconnected and cosφ higher than set-point)	●	●	●
Under compensation (capacitors connected and cosφ lower than set-point)	●	●	●
Capacitor overload	●	●	●
Capacitor overload on all 3 phases	●	●	●
Over temperature	●	●	●
No-voltage release protection	●	●	●
Capacitor bank failure	●	●	●
Over maximum harmonic distortion level limit	●	●	●
Programmable alarm properties (enable, trip delay, relay energising, etc.)	●	●	●

- ◆ *Microprocessor supervision and control*
- ◆ *Accurate current evaluation with TRMS readings*
- ◆ *Automatic rational adjustment*
- ◆ *Versions with 5, 7, 8 or 12 steps; one with static outputs*
- ◆ *Use in co-generation systems*
- ◆ *Communication serial interfaces*
- ◆ *ASCII and Modbus®-RTU communication protocols.*

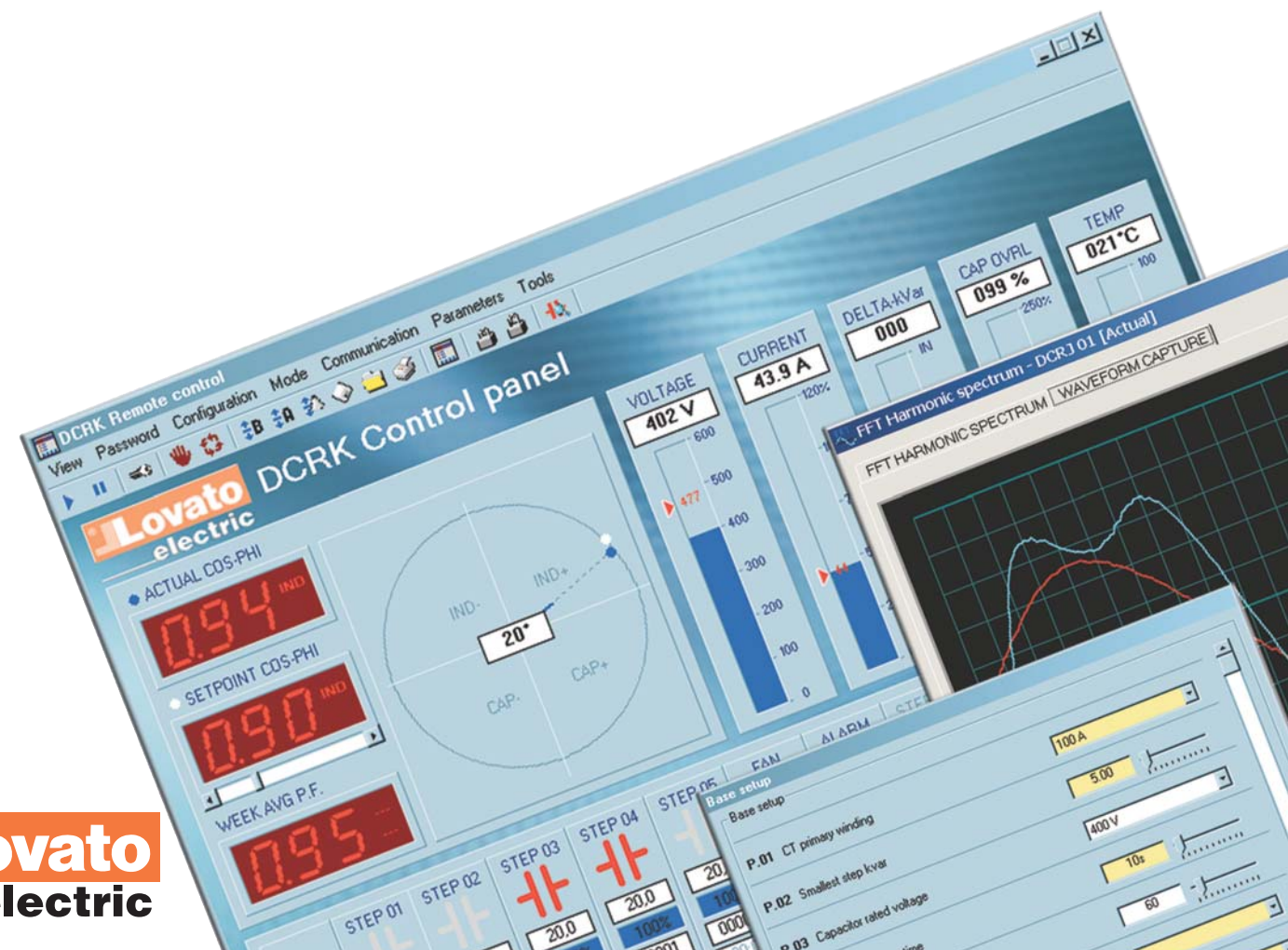


Automatic power factor controllers

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DCRK series



DCRK5-DCRK7



DCRK8-DCRK12

Order code	Steps	Flush-mount housing size	Qty per pkg	Weight
	n°	[mm]	n°	[kg]
DCRK 5	5	96x96	1	0.365
DCRK 7	7	96x96	1	0.375
DCRK 8	8	144x144	1	0.640
DCRK 12	12	144x144	1	0.660

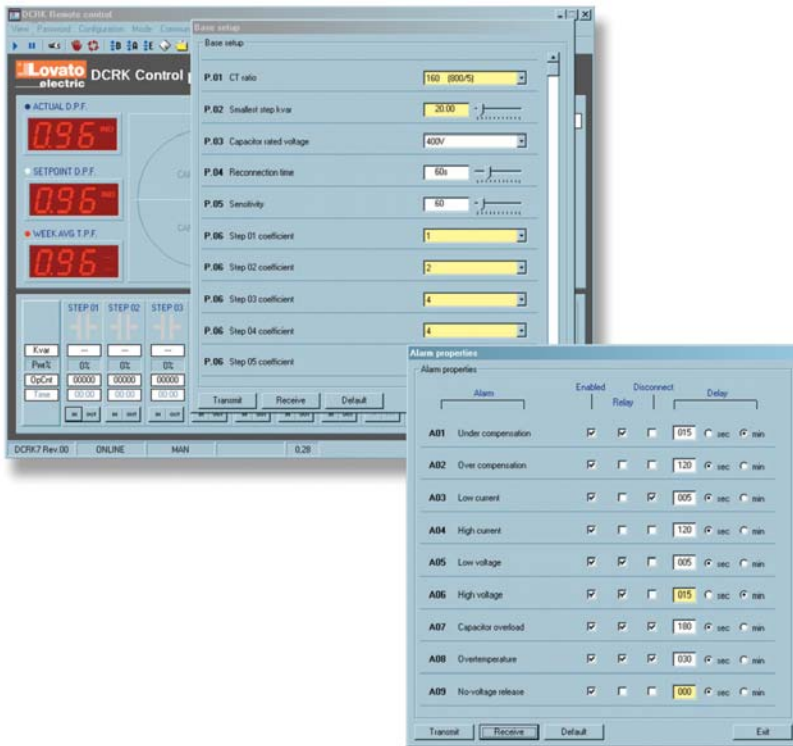
Software

Order code	Description	Qty per pkg	Weight
		n°	[kg]
DCRK SW	Set-up and automatic test software complete with cable 51 C11	1	0.246

Accessories and spare parts

51 C11	PC ↔ DCRK connecting cable 2.8m long, for TTL/RS232 communication port	1	0.090
31 PACR	Front protective cover for DCRK8 and DCRK12 types, IP54	1	0.107
31 PA96X96	Front protective cover for DCRK5 and DCRK7 types, IP54	1	0.077

Example of main window frame using DCRK SW software



General characteristics

- 5, 7, 8 and 12 step versions, the last two of which are programmable as alarm and/or fan control
- Digital microprocessor controller for automatic power factor correction systems with output relays for the connection and disconnection of capacitor banks
- For co-generation systems; 4 quadrant operation
- Accurate and reliable power factor control of a system even in presence of high current and voltage harmonic content
- Warrants optimal capacitor use for increased life by the rational control of the capacitor operation and connection time
- Average weekly power factor measure (last 7 days)
- Adjustable tripping sensitivity, integral switching time
- Adjustable reconnection time delay
- No-voltage release protection
- Protection against capacitor overload and panel overheating
- Automatic set-up function (adjustable)
- TTL/RS232 interface with personal computer for: fast set-up, function and alarm customising and automatic electric panel testing.

Operational characteristics

- Voltage circuit
 - Auxiliary supply and control voltage Ue: 380-415VAC standard; 220-240VAC on request 415-440VAC on request 440-480VAC on request 480-525VAC on request
 - Rated frequency: 50/60Hz ±1% self configurable
- Power consumption:
 - 6.2VA (DCRK5 and DCRK7)
 - 5VA (DCRK8 and DCRK12)
- Current circuit
 - Rated current Ie: 5A (1A on request)
 - Overload peak: 20Ie for 10ms
 - Power consumption: 0.65W
- Measurements and controls
 - Power factor adjustment: 0.8 inductive - 0.8 capacitive
 - Voltage measure range: -15 to +10% Ue
 - Current measure range: 2.5 to 120% Ie
 - Temperature measure range: -30...+85°C
 - Capacitor overload current range: 0-250%
 - Type of voltage and current measure: TRMS
 - Reconnection time of same step: 5-240s
 - Tripping sensitivity: 5-600s/step
- Output relays
 - 5, 7, 8 or 12 steps, the last of which is isolated
 - Contact configuration: Normally Open (NO); the last contact of DCRK8-DCRK12 is a changeover type
 - Rated capacity: 5A 250VAC (AC1)
 - Maximum capacity of common terminal: 12A
 - Rated operational voltage: 250VAC
 - Operational category: B300
 - Maximum switchable voltage: 440VAC
- Housing
 - Flush mounting
 - Degree of protection on front: IP54 for DCRK5 and DCRK7. IP41 for DCRK8 and DCRK12 (IP54 with 31 PACR protective cover).

Certifications and compliance

Certifications obtained: cULus, GOST. Compliant with standards: IEC/EN 61010-1, EN5501, IEC/EN 61000-6-2, UL508, CSA C22.2 n° 14; also IEC/EN 60950-1 for 51 C11 cable.

Contactors for power factor correction

See section 3, page 3-12.

DCRJ series



DCRJ8-DCRJ12
DCRJ12F

① "3Com-U.S. Robotics" 56k V.92 FAXMODEM model 5630, with RS232 interface, complete with PC connecting cable, compatible with LOVATO ELECTRIC remote control software.

② RS232/RS485 opto-isolated converter drive, 38,400 Baud-rate maximum, automatic or manual TRANSMIT line supervision, 220...240VAC ±10% supply (110-120VAC on request).

Order code	Steps	Flush-mount housing size	Qty per pkg	Weight
	n°	[mm]	n°	[kg]

Version with relay outputs.

DCRJ 8	8	144x144	1	0.916
DCRJ 12	12	144x144	1	0.930

Version with static outputs.

DCRJ 12F	11+1 relay output	144x144	1	0.870
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Software

Order code	Description	Qty per pkg	Weight
		n°	[kg]
DCRJ SW	Set-up, automatic test and remote control software complete with 51 C2 cable	1	0.246

Accessories and spare parts

51 C2	PC ↔ DCRJ connecting cable, 1.8 m long	1	0.090
51 C4	PC ↔ 4 PX1 converter drive connecting cable, 1.8 m long	1	0.147
51 C5	Analog modem ↔ DCRJ connecting cable, 1.8 m long	1	0.111
51 C6	4 PX1 converter drive ↔ DCRJ connecting cable, 1.8 m long	1	0.102
51 C9	4 PX1 ↔ Analog modem connecting cable, 1.8 m long	1	0.137
4 PX1	RS232/RS485 converter drive, galvanically isolated, 220-240VAC	1	0.600
NTC 01	Temperature sensor	1	0.150
31 PACR	Front protective cover, IP54 protection	1	0.107

General characteristics

- 8 and 12 step versions (DCRJ8-DCRJ12), the last two of which are programmable as alarm and/or fan control
- Version (DCRJ12F) with 11 static outputs plus 1 alarm relay output
- Digital microprocessor regulator for automatic power factor correction systems with output relays for the connection and disconnection of capacitor banks
- For medium voltage systems (separate voltage input) and co-generation (4 quadrant operation)
- Accurate and reliable power factor control of a system even in presence of high current and voltage harmonic content
- Warrants optimal capacitor use for increased life using rational control of the capacitor operation and connection time
- RMS voltage and current measure
- Measure of average weekly power factor (last 7 days), capacitor overload, electric panel temperature, voltage and current harmonic content
- Event viewing when harmonic overload limit exceeded
- Harmonic content analysis of logged events complete with relative waveforms
- Adjustable tripping sensitivity, integral switching time
- Adjustable reconnection time delay (DCRJ8-DCRJ12)
- No-voltage release protection
- Protection against capacitor overload and panel overheating
- Panel temperature sensor
- Connection to remote NTC temperature sensor
- Automatic set-up function (on DCRJ8 and DCRJ12)
- RS232 and RS485 serial ports
- Remote supervision software for personal computer interface and supervision for: fast set-up, function and alarm customising and automatic electric panel testing
- Modbus®-RTU and ASCII communication protocols
- Configuration of mixed static and electromechanical steps (DCRJ12F).

Operational characteristics

- Supply circuit
 - Dual auxiliary supply voltage Ue: 110-127 / 220-240VAC
 - Rated frequency: 50/60Hz ±5%
 - Power consumption: 9.7VA (DCRJ8-DCRJ12); 9.2VA (DCRJ12F)
- Voltage circuit
 - Three phases without neutral
 - Rated measuring voltage: 100-690VAC
 - Rated frequency 50/60Hz ±5%, self configurable
- Current circuit
 - Rated current Ie: 5A (1A on request)
 - Overload peak: 20Ie for 10ms
 - Power consumption: 0.3VA
- Measurements and controls
 - Type of voltage and current measurements: TRMS
 - Voltage measure range: 85-760VAC
 - Current measure range: 2.5 to 120% Ie
 - External temperature measure range: -40...+85°C
 - Capacitor overload current range: 0-250%
 - Power factor adjustment: 0.8 inductive - 0.8 capacitive
 - Reconnection time of same step: 5-240s (DCRJ8 - DCRJ12)
 - Tripping sensitivity: 5-600s/step
 - Sampling time: ≈20ms (DCRJ12F)
- Output relays for DCRJ8-DCRJ12
 - 8 or 12 steps, the last of which is isolated
 - Contact configuration: Normally Open (NO); the last of which is a changeover type
 - Rated capacity: 5A 250VAC (AC1)
 - Maximum capacity of common terminal: 12A
 - Rated operational voltage: 250VAC
 - Operational category: B300
 - Maximum switchable voltage: 440VAC
- Outputs for DCRJ12F
 - 11 static outputs for static contactors control
 - 1 alarm relay output
 - Opto-isolated bi-directional static outputs (Opto-Mosfet)
 - Maximum operational voltage: 40VDC-30VAC
 - Maximum operational current: 55mA
- Housing
 - Flush mounting
 - Degree of protection on front: IP41; IP54 with protective cover 31 PACR.

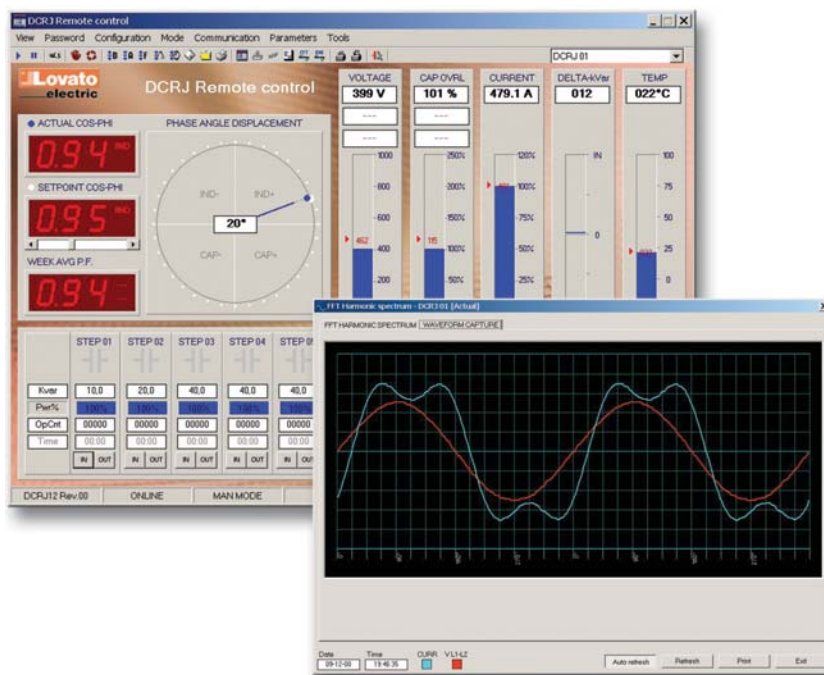
Certifications and compliance

Certifications obtained: cULus, GOST.
Compliant with standards: IEC/EN 61010-1, EN 55011, IEC/EN 61000-6-2, UL508, CSA C22.2 n° 14;

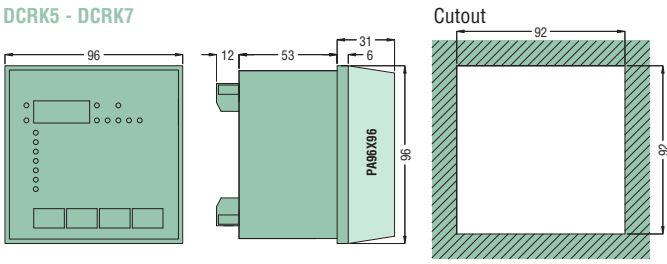
Contactors for power factor correction

For use with DCRJ8 or DCRJ12, see section 3, page 3-12.

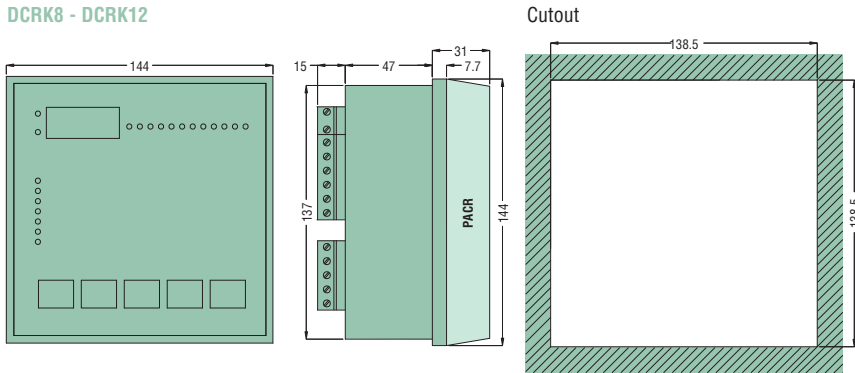
Example of main window frame using DCRJ SW software



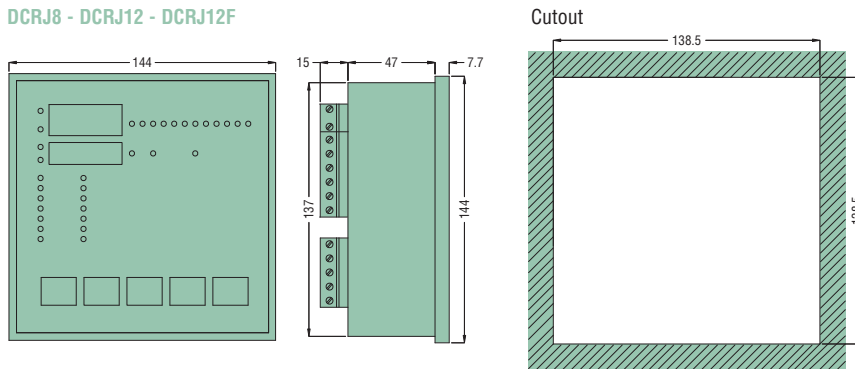
DCRK5 - DCRK7



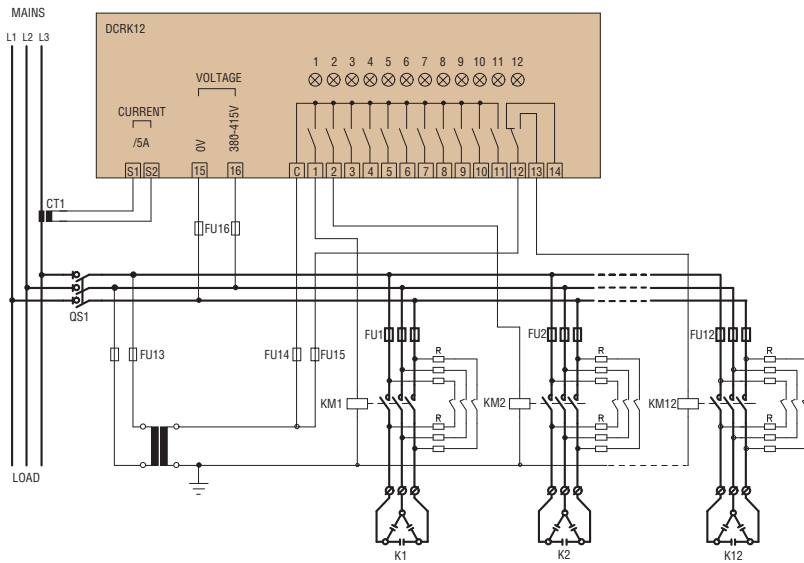
DCRK8 - DCRK12



DCRJ8 - DCRJ12 - DCRJ12F



DCRK... with BF...K contactors

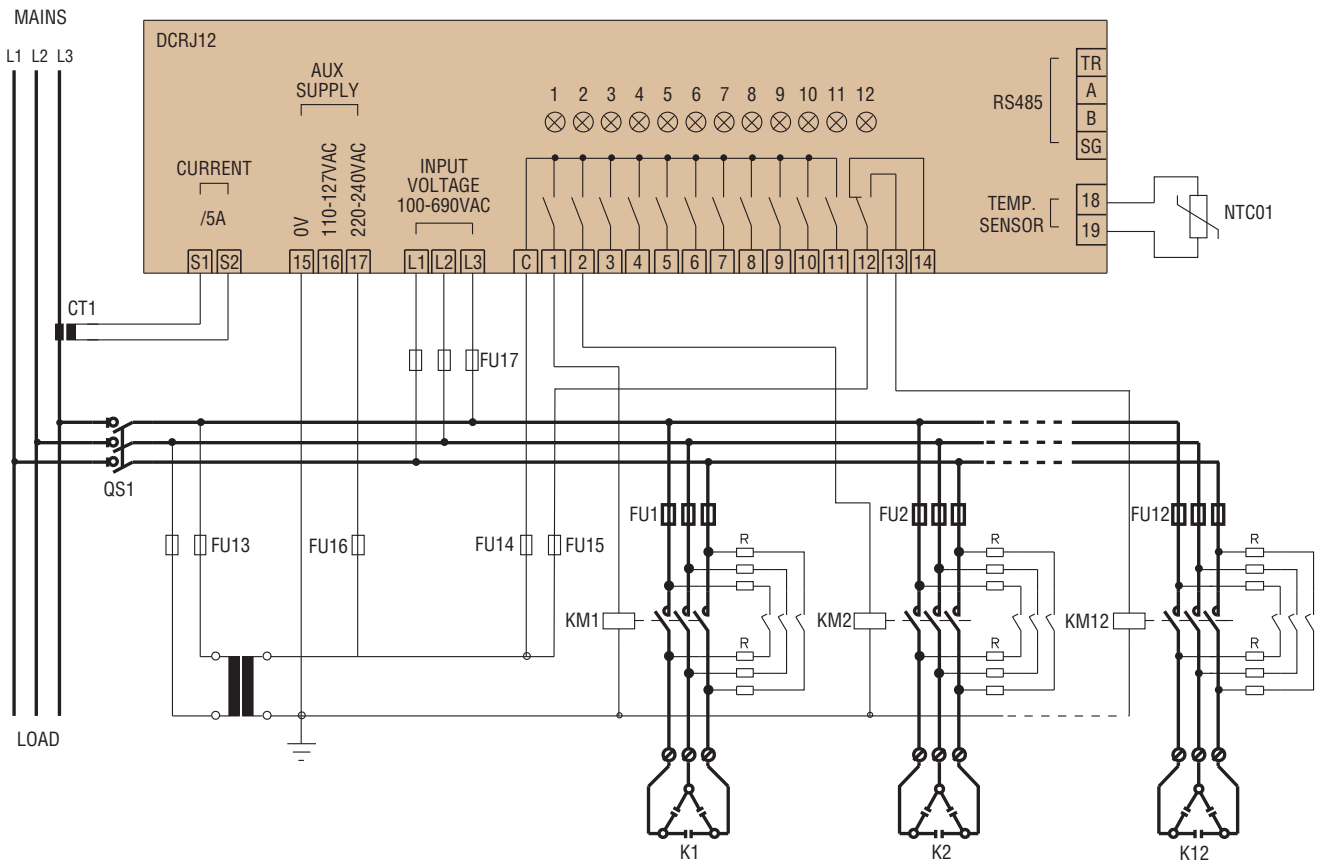


IMPORTANT!

- a. For three-phase connection, the voltage input must be connected between two phases only; the line current transformer must be connected on the remaining free phase.
- b. The polarity of the current input is irrelevant.

CAUTION! Always remove the power supply before operating on the terminals.

DCRJ... with BF...K contactors



IMPORTANT!

- a. For three-phase connection, the voltage input must be connected between two phases only; the line current transformer must be connected on the remaining free phase.
- b. The polarity of the current input is irrelevant.

CAUTION! Always remove the power supply before operating on the terminals.

Operational characteristics

TYPE	DCRK5 - DCRK7	DCRK8 - DCRK12	DCRJ8 - DCRJ12	DCRJ12F
AUXILIARY SUPPLY CIRCUIT				
Rated auxiliary voltage (Us)	①	①	110-127 / 220-240VAC ② (dual voltage)	110-127 / 220-240VAC ② (dual voltage)
Operating limit	—		-15 to +10%	
Operating frequency	—		50Hz or 60Hz ±5%	
Power consumption (maximum)	—		9.7VA	9.2VA
Maximum dissipation (output contacts excluded)	—		5.5W	
VOLTAGE CIRCUIT				
Control voltage	380-415VAC ② (self powered by monitored voltage)		100-690VAC	
Operating limit	-15 to +10%		85 to +760VAC	
Operating frequency	50 or 60Hz ±1% (self configurable)			
Power consumption	6.2VA	5VA	0.03VA	
Maximum dissipation (output contacts excluded)	2.7W	3W	—	
Maximum dissipation of each output contact (5A 250VAC load)	0.5W			
Immunity time for microbreaking	≤65ms		≤45ms	
No-voltage release	≥8ms			
CURRENT CIRCUIT				
Rated current Ie	5A (1A on request)			
Operating limit	0.125-6A			
Constant overload	1.2 Ie			
Short time withstand current	10 Ie for 1s			
Power consumption	0.65W		0.27VA	
DETECTION DATA				
Type of voltage and current detection	RMS			
Power factor adjustment	0.8 ind.-0.8 cap.			
Type of temperature sensor	Semiconductor (internal)		NTC01 (external)	
Temperature measurement range	-30...+85°C		-40...+85°C external	
RELAY OUTPUTS				
Number of outputs	5 or 7	8 or 12		1
Contact arrangement	1 each w/1 NO contact	7 or 11 contacts each with 1 NO + 1 changeover		1 changeover
Rated capacity Ith	5A - 250V (AC1)			
Maximum capacity of contact common	12A			
Maximum switching voltage	440VAC			
IEC/EN 60947-5-1 designation	B300			
Electrical life (at rated load)	10 ⁵ cycles			
Mechanical life	30x10 ⁶ cycles			
STATIC OUTPUTS				
Number of outputs	—		11	
Type of output	—		Opto-isolated bidirectional (Opto-Mosfet)	
Rated operational voltage	—		40VDC - 30VAC	
Rated operational current	—		55mA at 60°C	
CONNECTIONS				
Type of termination	Removable/plug-in			
Conductor cross section min-max	0.2-2.5mm ² (24-12AWG)			
AMBIENT CONDITIONS				
Operating temperature	-20...+60°C			
Storage temperature	-30...+80°C			
HOUSING				
Version	Flush mount 96x96mm		Flush mount 144x144mm	
Material	Self-extinguishing thermoplastic Noryl		Self-extinguishing thermoplastic LEXAN	

① Refer to data given under voltage circuit below.

② Other voltages available on request.