



ZITARES CC

Constant current control gear, 4-channel, dimmable



ECG versions

Model	Order no.	Output currents ¹⁾	Output power
CCD435-70LS-01/220-240/1-10V	10079000	4 x 350 mA	max. 70 W
CCD470-140LS-01/220-240/1-10V	10079004	4 x 700 mA	max. 140 W
CCD435-70LS-01/220-240/DALI	10079001	4 x 350 mA	max. 70 W
CCD470-140LS-01/220-240/DALI	10079005	4 x 700 mA	max. 140 W

¹⁾ Additional output currents can be selected by parallel connection of the outputs of the ECG, see table „Selectable output currents“

Performance characteristics

- Dimmable 4-channel ECG for constant current operation of LED modules
- Asymmetrical load for the output channels is admissible
- Selection of additional output currents by means of parallel connection of the output channels
- SELV output voltage ≤ 60 VDC
- Very high efficiency of up to 93 % (100 % load)
- Soft start and low output current ripple
- For use in luminaires of protection class I
- ECG extensively protected against abnormal operating conditions at the output e.g. short-circuit, open circuit or overload
- Suitable for direct current operation and application in combination with central battery installations
- Overvoltage protection of the DALI and 1–10 V interfaces up to 264 VAC
- Push-Dim function of DALI interface: switching and dimming via push-button
- Settable recovery function: automatic switch-on after mains failure
- Dimming range: 1 ... 100 % luminous flux
- PWM dimming with 500 Hz for flicker-free light and prevention of stroboscopic effects
- Identical dimensions for dimmable and non-dimmable versions
- Conformance with international regulations, regarding safety and operation, electromagnetic compatibility and immunity to interference
- Nominal service life: 50,000 h with failure rate ≤ 10 % and operation at $t_c = t_{c,max}$

Applications

Office
 Education
 Industrial

Markings





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General technical data

Mains voltage supply	
Rated voltage range	220 ... 240 V
Max. permanent voltage range (continuous)	198 ... 264 V
Rated frequency	0 / 50 ... 60 Hz
Battery operation	
Voltage range for continuous operation	198 ... 278 VDC
Lowest limiting value for temporary operation	176 VDC
Mains overvoltage	
Overvoltage protection	350 VAC / 2 h
Automatic switch-off of the LEDs at	appr. 320 VAC
Protection against voltage peaks	
Voltage peaks L - N	1 kV
Voltage peaks L/N -PE	2 kV
Starting time	
Time to 100% luminous flux	< 0.5 s
Total harmonic distortion	
At 100% to load operation	< 10 %
Output data	
Tolerance of output current	+/- 5 %
Max. ripple of output current	+/- 10 %
Max. wire length to LED module	2 m
Galvanic separation to mains input	yes, test voltage 3.75 kV
Protection functions output side	
Overload operation	yes; limitation of output voltage and reduction of output current
Underload protection	yes; pulsed operation
Short-circuit operation	yes; pulsed operation and reduced current amplitude
Open-circuit operation	yes; output voltage max. 60 VDC (SELV equiv.)
Hot plug-in	allowed; protection of LED module has to be ensured
Lifetime	
Operation at $t_c = t_{c,max}$	50.000 h; failure rate $\leq 10 \%$
Operation at $t_c = t_{c,max} - 10 \text{ K}$	100.000 h; failure rate $\leq 10 \%$
Dimming operation	
Dimming interfaces, depending on ECG model	DALI & Push-Dim or 1-10V
Control current for 1-10 V versions	$\leq 0,6 \text{ mA}$
Overvoltage protection of interface	264 VAC
Galvanic separation to output side	yes, test voltage 3.75 kV
Stand-by power losses	$\leq 0.3 \text{ W}$
Dimming range for luminous flux	1 ... 100 %
Dimming technology	500 Hz (PWM)
Max. number of ECG for Push-Dim control	25
Connection terminals	
Type	90°-terminal with key ¹⁾
Wire cross section	0.5 mm ² - 1.5 mm ²
Wire stripping length	7.5 mm - 8.5 mm
Thermal protected device	
Max. surface temperature acc. to EN 61347-1/C5e	+ 110° C
Degree of protection	
ECG-housing	IP 20

¹⁾ Terminals and ECG construction are designed for an automatic wiring with robots



ZITARES CC

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Temperatures (operation)

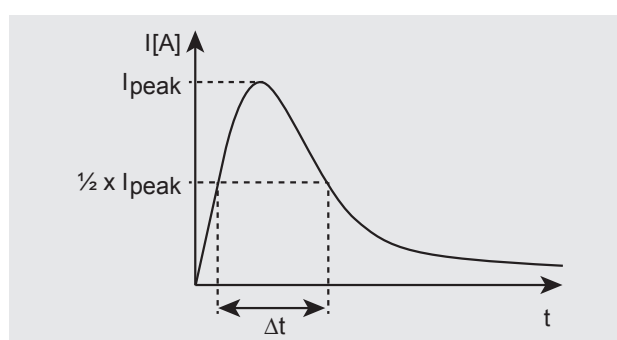
Model	Ambient (t _a)	Case (t _c)
CCD435-70LS...	- 25 °C ... + 60 °C	max. + 80 °C
CCD470-140LS...	- 25 °C ... + 50 °C	max. + 80 °C

Circuit breaker / Inrush current

Model	typ. I _{peak} / Δt	Number of ECG at one single-pole circuit breaker (CB)				
		LS-Typ	10 A	16 A	20 A	25 A
CCD435-70LS...	62 A / 220 μs	B	5	9	11	14
CCD470-140LS...		C	9	15	19	24

- Data for U_{supply} = 230 VAC, mains impedance = 1 Ω
- In case of multi-polar CB the maximum number is reduced by 20 %
- The max. number may differ depending on CB manufacturer. Please consider the specifications of the manufacturer.
- Basically, CB with C-characteristics are recommended to be used in lighting groups.

Typical current - time profile when switching on



Operating data

Model	Input current ¹⁾ A	Input power ¹⁾ W	Power factor ¹⁾	ECG efficiency ¹⁾ %	Output currents ⁴⁾ mA	Output voltage / channel V	Total output power ^{2), 3)} W
CCD435-70LS...	0,36	76	0,98	92	4 x 350	15 ... 50	20 ... 70
CCD470-140LS...	0,72	150	0,98	93	4 x 700	10 ... 50	28 ... 140

- All specifications with 230 VAC nominal operation and 100 % load
- Power output in undimmed operation should not go below 10 % of the maximum permissible value
- Asymmetric load distribution on the outputs is permissible
- Further output currents can be selected via parallel switching of the ECG outputs, see the table „Selectable output currents“

Selectable output currents

Output current	CCD435-70LS ...					CCD470-140LS ...					
350 mA	4 x	2 x		1 x							
700 mA		1 x	2 x			4 x	2 x		1 x		
1.050 mA				1 x							
1.400 mA					1 x		1 x	2 x			
2.100 mA									1 x		
2.800 mA										1 x	
see „Wiring diagrams“	diagram	1	2	3	4	5	1	2	3	4	5

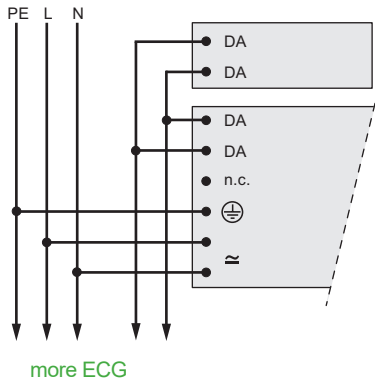


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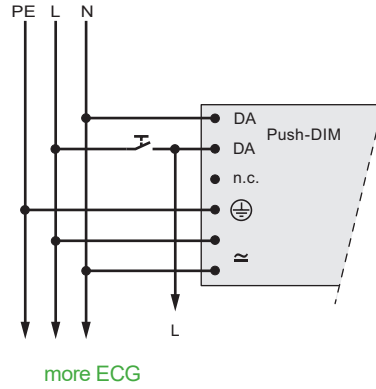
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Wiring diagrams ECG input

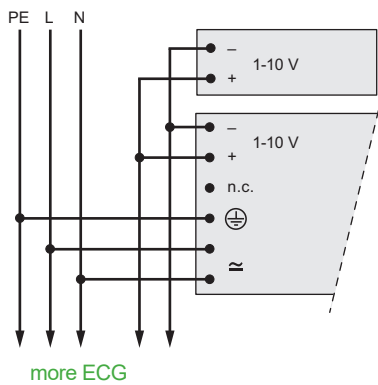
A Connection of ECG input side for DALI control



B Connection of ECG input side for control via push-button

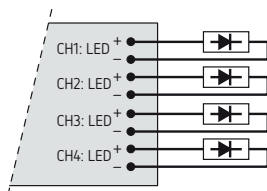


C Connection of ECG input side for 1 - 10V control

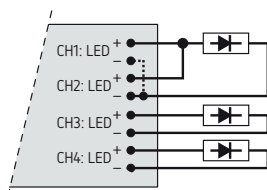


Wiring diagrams ECG output

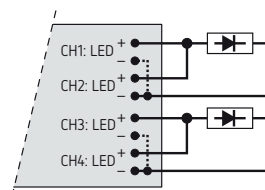
1 Connection of ECG output side



2 Connection of ECG output side



3 Connection of ECG output side



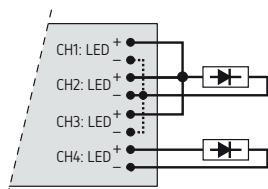


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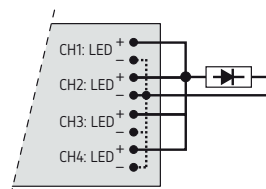
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Wiring diagrams ECG output

4 Connection of ECG output side

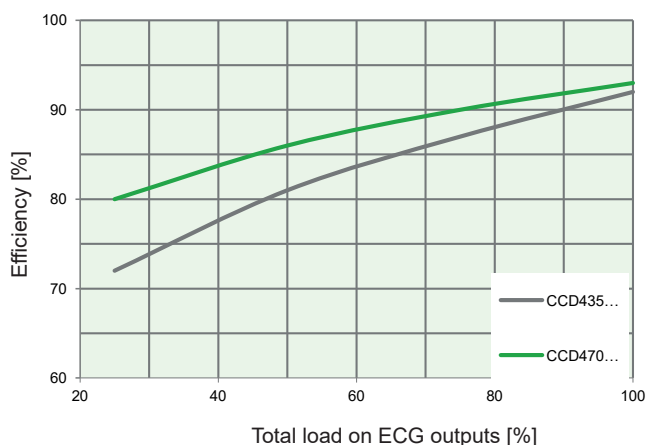


5 Connection of ECG output side

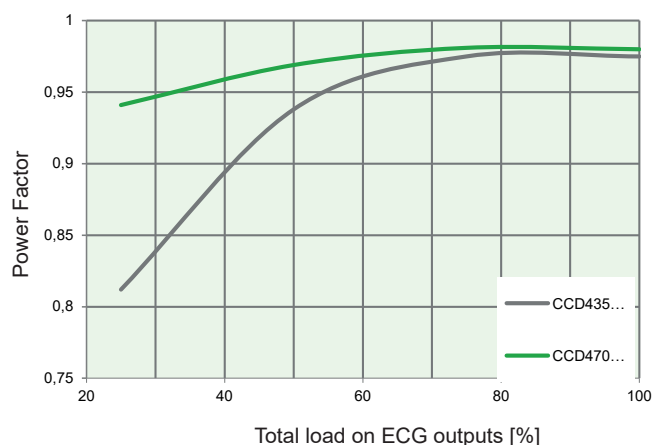


Efficiency and power factor

Efficiency vs. output load



Power factor vs. output load



Push-button operation / supplementary functions

Push-button operation

In addition to control via DALI control signals, the DALI interface can also be used for switching and dimming via a push-button.

Button press	Status: LEDs switched off, ECG in standby mode	Status: LEDs switched on
Short button press	Switching on of LEDs to the last dimming level (memory function)	Switching off of LEDs and saving of current dimming level; ECG in standby mode
Long button press	Switching on of LEDs to the last dimming level and then dimming up or dimming down	Dimming up or dimming down of LEDs; each release and re-pressing of the button reverses the dimming direction

Recovery function - behaviour after mains power interruption

The behaviour of the ECG after mains power interruption can be specified via the recovery function.

Recovery function activated: (factory setting) After return of mains voltage the ECG returns to the operating mode before power interruption. If the lighting system is switched on, the last set dimming level is called up.

Recovery function deactivated: (factory setting) After return of mains voltage the ECG switches the lighting to 100 % luminous flux.

Synchronisation of the ECG

If synchronising the ECG is needed in an application, this can be implemented via a push-button connected to the DALI interface. When the lighting system is switched on the push-button must be pressed and held for approximately 10 s until the complete system is increased to 100 % luminous flux. All ECGs are then synchronised after releasing the push-button.

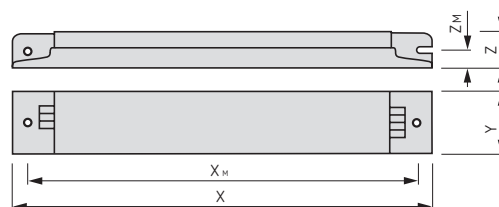


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ECG dimensions

Model	X	X _M	Y	Z	Z _M
	mm	mm	mm	mm	mm
CCD435-70LS...	360	350	39	21	9
CCD470-140LS...	360	350	39	21	9



Logistic data

Model	Order no.	EAN	Weight ECG kg	ECG PU ¹⁾ St.	Dimensions PU ¹⁾ mm	Weight PU ¹⁾ kg
CCD435-70LS-01/220-240/1-10V	10079000	4046189027403	0,395	30		
CCD470-140LS-01/220-240/1-10V	10079004	4046189027441	0,395	30		
CCD435-70LS-01/220-240/DALI	10079001	4046189027410	0,395	30		
CCD470-140LS-01/220-240/DALI	10079005	4046189027458	0,395	30		

¹⁾ Packaging unit

Conformance with regulations

EN 61347-1	General and safety requirements
EN 61347-2-13	Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules
EN 62384	D.C. or A.C. supplied electronic control gear for LED modules - Performance requirements
EN 61547	Equipment for general lighting purposes - EMC immunity requirements
EN 55 015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 62386-102	Digital addressable lighting interface - General requirements - Control gear
EN 62386-207	Digital addressable lighting interface. Particular requirements for control gear. LED modules (device type 6)
IEC 60 068-2-6	Environmental testing: Tests – Test Fc: Vibration (sinusoidal)
IEC 60 068-2-27	Environmental testing: Tests – Test Ea and guidance: Shock