



## ZITARES CC

Constant current control gear, 4-channel, dimmable



### ECG versions

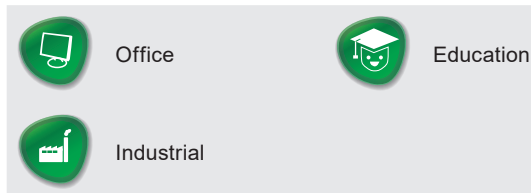
| Model                         | Order no.       | Output currents <sup>1)</sup> | Output power |
|-------------------------------|-----------------|-------------------------------|--------------|
| CCD435-70LS-01/220-240/1-10V  | <b>10079000</b> | 4 x 350 mA                    | max. 70 W    |
| CCD470-140LS-01/220-240/1-10V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

<sup>1)</sup> 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



### Markings





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### General technical data

|   |   |
|---|---|
| <b>Mains voltage supply</b>                     |   |
| Rated voltage range                             | 220 ... 240 V   |
| Max. permanent voltage range (continuous)       | 198 ... 264 V   |
| Rated frequency                                 | 0 / 50 ... 60 Hz  |
| <b>Battery operation</b>                        |   |
| Voltage range for continuous operation          | 198 ... 278 VDC   |
| Lowest limiting value for temporary operation   | 176 VDC   |
| <b>Mains overvoltage</b>                        |   |
| Overvoltage protection                          | 350 VAC / 2 h   |
| Automatic switch-off of the LEDs at             | appr. 320 VAC   |
| <b>Protection against voltage peaks</b>         |   |
| Voltage peaks L - N                             | 1 kV  |
| Voltage peaks L/N -PE                           | 2 kV  |
| <b>Starting time</b>                            |   |
| Time to 100% luminous flux                      | < 0.5 s   |
| <b>Total harmonic distortion</b>                |   |
| At 100% to load operation                       | < 10 %  |
| <b>Output data</b>                              |   |
| 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   |
| <b>Protection functions output side</b>         |   |
| 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               |
| <b>Lifetime</b>                                 |   |
| 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 $\leq 10 \%$                              |
| <b>Dimming operation</b>                        |   |
| 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  |
| <b>Connection terminals</b>                     |   |
| Type  | 90°-terminal with key <sup>1)</sup>                               |
| Wire cross section                              | 0.5 mm <sup>2</sup> - 1.5 mm <sup>2</sup>                         |
| Wire stripping length                           | 7.5 mm - 8.5 mm   |
| <b>Thermal protected device</b>                 |   |
| Max. surface temperature acc. to EN 61347-1/C5e | + 110° C  |
| <b>Degree of protection</b>                     |   |
| ECG-housing                                     | IP 20   |

<sup>1)</sup> Terminals and ECG construction are designed for an automatic wiring with robots



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### Temperatures (operation)

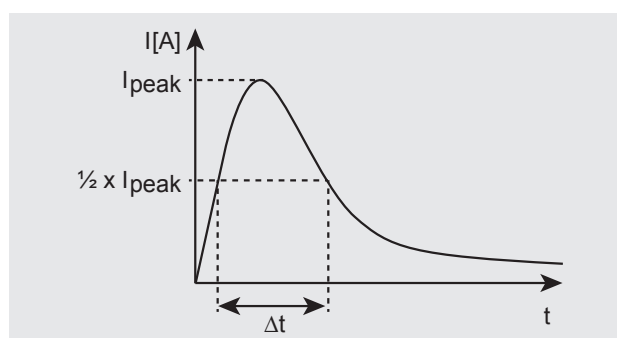
| Model           | Ambient (t <sub>a</sub> ) | Case (t <sub>c</sub> ) |
|-----------------|---------------------------|------------------------|
| CCD435-70LS...  | - 25 °C ... + 60 °C       | max. + 80 °C           |
| CCD470-140LS... | - 25 °C ... + 50 °C       | max. + 80 °C           |

### Circuit breaker / Inrush current

| Model           | typ. I <sub>peak</sub> / 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<sub>supply</sub> = 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 <sup>1)</sup><br>A | Input power <sup>1)</sup><br>W | Power factor <sup>1)</sup> | ECG efficiency <sup>1)</sup><br>% | Output currents <sup>4)</sup><br>mA | Output voltage / channel<br>V | Total output power <sup>2), 3)</sup><br>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 |

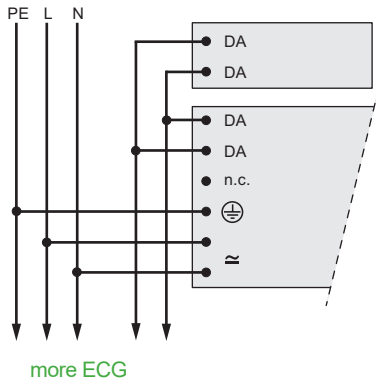


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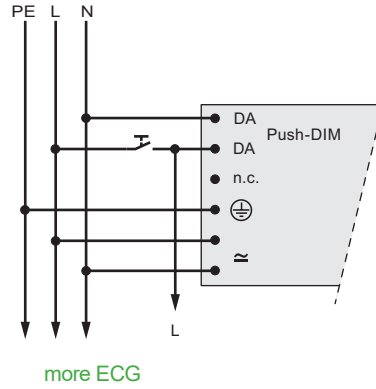
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## Wiring diagrams ECG input

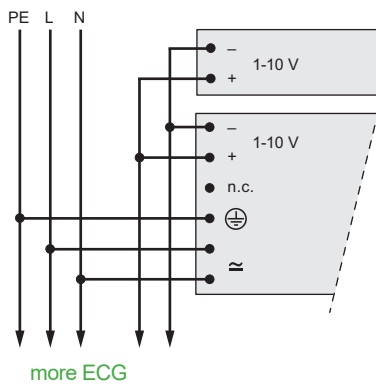
A Connection of ECG input side for DALI control



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

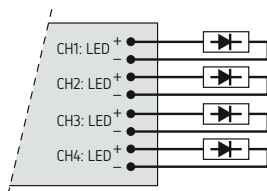


C Connection of ECG input side for 1 - 10V control

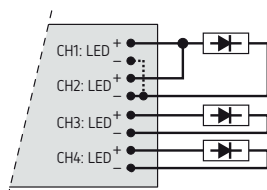


## Wiring diagrams ECG output

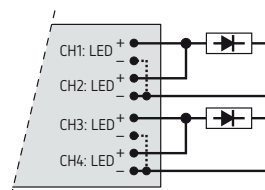
1 Connection of ECG output side



2 Connection of ECG output side



3 Connection of ECG output side



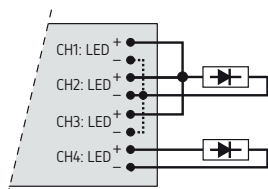


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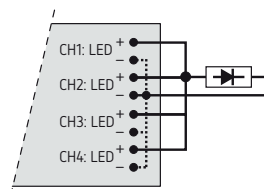
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### Wiring diagrams ECG output

4 Connection of ECG output side

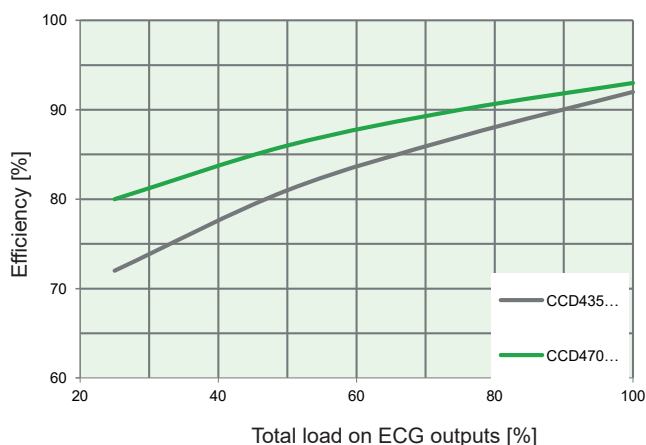


5 Connection of ECG output side

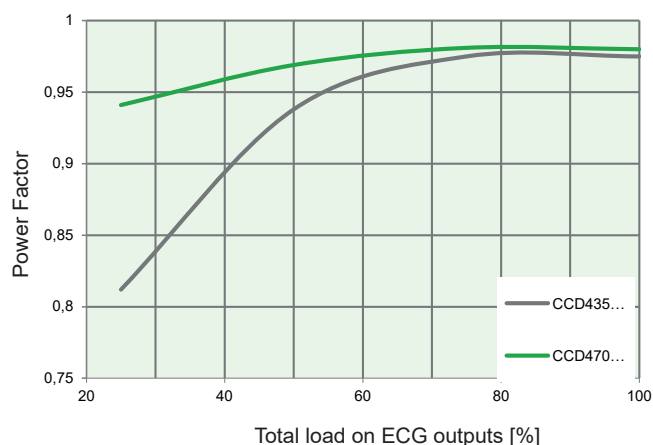


### Efficiency and power factor

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.

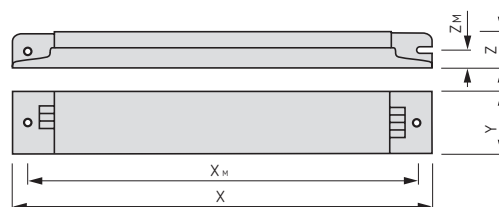


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### ECG dimensions

| Model           | X   | X <sub>M</sub> | Y  | Z  | Z <sub>M</sub> |
|-----------------|-----|----------------|----|----|----------------|
|                 | 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<br>kg | ECG PU <sup>1)</sup><br>St. | Dimensions PU <sup>1)</sup><br>mm | Weight PU <sup>1)</sup><br>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                          |                                   |                               |

<sup>1)</sup> 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  |