CCR 30
Constant Current Regulator.

Application.
The constant current regulators CCR 30 are designed for the power control of airport lighting circuits with small, medium and high power requirements. Detailed tender specifications are available on CD-ROM.

Complies with Regulations.
- FAA AC 150/5345-10E
- IEC 61822 (Draft)
- ICAO Aerodrome Design Manual, Part 5

Features (standard).
- User selectable by configuration: operation according to FAA, IEC or customer specific
- Latch function for last selected intensity step integrated
- Maintenance-free solid state circuitry
- Output tapping of power transformer: 48 tapping steps for precise adaptation to any secondary load:
  - identical working point for all loads (operating conditions as under full load are achieved)
  - optimization of power factor
  - minimization of EMI (Electro Magnetic Interference) and crest factor
- Fully microprocessor controlled operation
- Only one control unit for all power ratings
- 3-step, 5-step or 8-step operation: user selectable by configuration
- Additional Non-Illumination Step* user selectable for 3-step and 5-step versions (8-step version: Non-Illumination Step default on step 1)
- Currents digitally adjustable for all intensity steps over full current range 1.3 $\text{A}_{\text{RMS}}$ to 6.6 $\text{A}_{\text{RMS}}$ using CCR display and function keys (including Non-Illumination Step*)
- Simultaneous display of CCR status, selected intensity step, actual current (RMS value), operating hours (in total and of selected intensity step)
- User selectable:
  - Switching CCR ON/OFF using
    a) ON-command or
    b) ON- and OFF-command or
    c) commands for intensity step inputs
  - Remote reset in case of open circuit trip enabled/disabled
  - Remote reset in case of overcurrent trip enabled/disabled

*no visible light output (maintenance step)
Features (standard) cont.

- Complete configuration and setting of all values as described before directly at the system (also applicable for options Lamp Failure Measurement and Insulation Resistance Measurement)
- Monitoring ‘output current corresponding to selected intensity step’ included
- Monitoring of ‘open circuit trip’ and ‘overcurrent trip’ included
- Monitoring of ‘mains low’ included (display of measurement)
- Range for control voltage 18 VDC to 60 VDC
- Internal +24 VDC power supply
- Unrestricted operation with circuit selector switches

Options.

- Saving of all configured and/or adapted data in interchangeable memory
- Lamp Failure Measurement (operation on all intensity steps over full temperature range from -40° C to +55° C, 2 thresholds for failure indication freely configurable, display of failed lamps)
- Insulation Resistance Measurement (2 thresholds for failure indication freely configurable, display of actual measured resistance)
- Display of input current, input power and power factor
- Internally mounted output lightning arresters
- Housing on rollers
- Housing stackable or with line-up arrangement
- Single Lamp Control and Monitoring integrated

Construction and Function.

The constant current regulator CCR 30 is designed as stand-alone unit, which is also stackable. Two or three units can be stacked depending on the size of housing (see fig. 3). The small housing (733mm) is used for regulators 2.5 kVA, 5.0 kVA, 7.5 kVA and 10 kVA. The larger housing (1,100mm) is used for regulators 15 kVA, 20 kVA, 25 kVA and 30 kVA. On request the housing can be used for line-up arrangement. To achieve a spacing of 600mm in width the constant current regulators are lined-up without sidewalls only using separation walls between the units (see fig. 5).

The constant current regulator CCR 30 is delivered with pre-set parameters according to customer’s order. When the power supply cable, output cable and control cable are connected the system is ready for operation. Changes due to customer’s operating conditions (e.g. changing preset values for output current on each intensity step) are possible at any time using built in CCR display and function keys. All changes can be saved in optionally interchangeable memory.
Ordering information.

Constant Current Regulator: CCR 30  **L-829** - 5 • 2.5 0 - 6.6 • L, I, Pi, Po, D, O - PIO - SLC - CE

- L-828
- L-829
- IEC
- CUST (customer specific)

- 3: 3 step
- 5: 5 step
- 8: 8-step

- 2.5: rating 2.5 kVA - 220 V/230 V/240 V
- 5.0: rating 5.0 kVA - 220 V/230 V/240 V
- 7.5: rating 7.5 kVA - 220 V/230 V/240 V
- 10: rating 10 kVA - 380 V/400 V/415 V
- 15: rating 15 kVA - 380 V/400 V/415 V
- 20: rating 20 kVA - 380 V/400 V/415 V
- 25: rating 25 kVA - 380 V/400 V/415 V
- 30: rating 30 kVA - 380 V/400 V/415 V

- 6.6: output current 6.6 A

- L: lamp failure measurement (not for L-828)
- I: insulation resistance measurement (not for L-828)
- Pi: measurement of input values U/I/P/cos phi (not for L-828)
- Po: measurement of output values U/P (not for L-828)
- D: data key (standard for L, I, Pi, Po, SIO, SLC, not for L-828)
- O: output overvoltage protection

- PIO: parallel interface 18 to 60 VDC (standard)
- PIO120: parallel interface 120 VAC (option on request)
- SIO485: serial interface RS 485 (option on request)
- SIOETH: serial interface Ethernet (option on request)

- SLC: single lamp control and monitoring (power components)

- CE: CE-filter integrated
### Technical Data.

<table>
<thead>
<tr>
<th>Category</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power ratings:</strong></td>
<td>- 2.5 kVA / 5.0 kVA / 7.5 kVA / 10 kVA / 15 kVA / 20 kVA / 25 kVA / 30 kVA</td>
</tr>
<tr>
<td><strong>Input voltage (VAC):</strong></td>
<td>- 220 V / 230 V / 240 V: power ratings 2.5 kVA / 5.0 kVA / 7.5 kVA</td>
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<tr>
<td></td>
<td>- 380 V / 400 V / 415 V: power ratings 10 kVA / 15 kVA / 20 kVA / 25 kVA / 30 kVA</td>
</tr>
<tr>
<td><strong>Frequency:</strong></td>
<td>- 50Hz / 60Hz (automatically detected and operated)</td>
</tr>
<tr>
<td><strong>Control voltage:</strong></td>
<td>- 18 - 60 VDC</td>
</tr>
<tr>
<td><strong>Output current (nom.):</strong></td>
<td>- 6.6 $A_{RMS}$</td>
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<tr>
<td><strong>Range of operation:</strong></td>
<td>- 1.3 $A_{RMS}$ to 6.6 $A_{RMS}$</td>
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<tr>
<td><strong>Current regulation:</strong></td>
<td>- full load up to short circuit, up to 30% lamp transformers running with no load at secondary</td>
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<tr>
<td></td>
<td>- Current regulation is done according to the configuration of the CCR:</td>
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<tr>
<td></td>
<td>FAA Style 1 Class 1 (3 step, 6.6 $A_{RMS}$)</td>
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<tr>
<td></td>
<td>FAA Style 2 Class 1 (5 step, 6.6 $A_{RMS}$)</td>
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<tr>
<td></td>
<td>IEC Style 1 (3 step, 6.6 $A_{RMS}$)</td>
</tr>
<tr>
<td></td>
<td>IEC Style 2 (5 step, 6.6 $A_{RMS}$)</td>
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<tr>
<td></td>
<td>8 step customer specific (6.6 $A_{RMS}$)</td>
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<tr>
<td></td>
<td>- Note: Currents on all intensity steps are customer adjustable over total range 1.3 $A_{RMS}$ to 6.6 $A_{RMS}$</td>
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<tr>
<td></td>
<td>- output current accuracy ± 1%</td>
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<tr>
<td></td>
<td>- power on to nominal current 500 ms</td>
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<td></td>
<td>- change of intensity step 250 ms</td>
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<td></td>
<td>- load variation 10% 75 ms until nominal current is reached</td>
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<td></td>
<td>- load variation 30% 80 ms until nominal current is reached</td>
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<tr>
<td></td>
<td>- load variation 50% 80 ms until nominal current is reached</td>
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<tr>
<td></td>
<td>- load variation &gt;50% limitation to &lt; 6.6 $A_{RMS}$ after 10ms 500 ms until nominal current is reached</td>
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<tr>
<td><strong>Transformer tappings:</strong></td>
<td>- primary tapping:</td>
</tr>
<tr>
<td></td>
<td>220 V / 230 V / 240 V: power ratings 2.5 kVA / 5.0 kVA / 7.5 kVA</td>
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<td>380 V / 400 V / 415 V: power ratings 10 kVA / 15 kVA / 20 kVA / 25 kVA / 30 kVA</td>
</tr>
<tr>
<td></td>
<td>- secondary tapping:</td>
</tr>
<tr>
<td></td>
<td>2 coils (48 output voltage steps)</td>
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<tr>
<td><strong>Efficiency:</strong></td>
<td>- 92% - 95% (depending on power ratings)</td>
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<tr>
<td><strong>Power factor:</strong></td>
<td>- 0.95 (the power factor for any load is achieved by setting the working point to nominal value via the secondary transformer tappings)</td>
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<tr>
<td><strong>Temperature range:</strong></td>
<td>- - 40°C to + 55°C</td>
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<tr>
<td><strong>Relative humidity:</strong></td>
<td>- 10% to 95% no condensation</td>
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