POWER EQUIPMENT

CCT

Constant Current Regulator

THYRISTOR, AIR-COOLED

Shown with optional ACE

Compliance with Standards

FAA: L-828/L-829 AC 150/5345-10 (Current Edition). ETL Certified.

ICAO: Aerodrome Design Manual Part 5, para. 3.2.1.4 to 3.2.1.6.

Military: UFC 3-535-01; NAVAIR 51-50AAA-2

Uses

FAA L-828/L-829 & ICAO
Supplies three or five precision output levels to power series lighting circuits on airport runways and taxiways.

Features

- Solid-state operation with no relays eliminates mechanical failures.
- Optional integrated ACE3 unit with 7-inch LCD touchscreen display provides state-of-the-art remote control and L-829 monitoring capability. The new touchscreen design allows all measurements – output True-RMS current and voltage, VA, watts, lamps-out, and series circuit insulation resistance value – to be displayed simultaneously. A visual indication is also provided for FAA-monitored parameters, including open circuit, overcurrent, loss of input power, loss of input voltage, low VA (drop in load VA of 10%), Remote/Local status, and incorrect output current.
- To minimize the floor space required in a vault, ADB Safegate 4-30 kW regulators can be stacked using a stacking kit. See Kits section for details.
- Available in one class and two styles:
  Class 1 = 6.6 A maximum output current
  Style 1 = 3 Brightness Steps
  Style 2 = 5 Brightness Steps
- Power taps on output winding of main transformer provide efficient (high primary power factor) operation at all load levels: 10% taps from 10% to 100%.
- If input power loss occurs, operation will resume within five seconds after restoration of input power.
- Number of Brightness Steps can be changed in the field (between 3 and 5 Steps).
- Field upgradable from L-828 to L-829 with touchscreen LCD ACE3 unit.
- Input and output lightning protection included.

Theory of Operation

Solid-state control and monitoring feedback circuitry is used for output current regulation of ±3% and input voltage variation of -5% to +10% of nominal. If the load on the regulator varies, a gating signal controlled by feedback circuitry changes the control circuit conduction angle in order to control the power to the main transformer. This maintains the transformer's output current at the preset brightness level.

ACE3 Unit

The optional ACE3 unit provides L-829 monitoring and optional megging or CCR input monitoring capability.

- CCR input voltage
- CCR run-time by step
- CCR cycle count

Optional CCR input monitoring indicates the following:

- CCR input current
- CCR input volt-amps (VA)
- CCR input power (watts)
- CCR input power factor
- CCR % efficiency

The ACE3 unit is also a component of ADB SAFEGATE's distributed control and monitoring system. Each unit can be easily connected to an Airport Lighting Control & Monitoring System (ALCMS) by simply adding redundant communication wires. More information can be found on the ACE3 data sheet 3097.

Application

The CCT-Type CCR should not be used to power an L-849 REIL system using xenon flash lamps unless the CCR is at least half loaded with steady burning lights. The CCT-Type CCR should not be used to power Runway Guard Lights using incandescent (tungsten-halogen) lamps regardless of load. Do not route output cable in the vicinity of other wiring sensitive to electromagnetic interference or radio frequency interference. See CSF regulator data sheet 3055 for these applications.

Environmental Operating Conditions

Temperature:	-40 °C to +55 °C (-40 °F to +131 °F)
Humidity:	10 to 95%
Altitude:	0 to 6,600 ft (2,000 m)

CCT

Ordering Code

CCT XX XX - X X XX

Amperage
66 = 6.6 A output

Size
04 = 4 kW
05 = 5 kW
07 = 7.5 kW
10 = 10 kW
15 = 15 kW
20 = 20 kW
25 = 25 kW
30 = 30 kW

Output Range
3 = 3-step without Series Cutout
4 = 3-step with Series Cutout[1]
5 = 5-step without Series Cutout
6 = 5-step with Series Cutout[1]

Input Voltage with 6.6 A Output
1 = 208, 60 Hz
2 = 240, 60 Hz
3 = 480, 60 Hz
4 = 347, 60 Hz
5 = 220, 60 Hz
6 = 400, 50 Hz[2]
7 = 208, 50 Hz[2]
8 = 220, 50 Hz[2]
9 = 230, 50 Hz[2]
A = 240, 50 Hz[2]
B = 380, 60 Hz

Monitoring and Additional Options (See Application Notes)
00 = L-828
33 = L-829 Monitoring; w/out input monitoring (ACE3)
53 = L-829 Monitoring with IRMS; w/out input monitoring (ACE3)
73 = L-829 Monitoring; with input monitoring (ACE3)[3]
83 = L-829 Monitoring with IRMS; with input monitoring (ACE3)[3]
3A = L-829 Monitoring; w/out input monitoring (ACE2)
5A = L-829 Monitoring with IRMS; w/out input monitoring (ACE2)
3G = L-829 Monitoring; with input monitoring (ACE2)
5G = L-829 Monitoring with IRMS; with input monitoring (ACE2)

Ordering Code Notes

- A ferroresonant CCR is preferred for airports that require low output harmonic content (EMI) or that have varying loads, such as Runway Guard Lights using incandescent (tungsten-halogen) lamps, L-849 REILs using xenon flash lamps, or Runway Status Lights (RWSL).

[1] Not ETL Certified with 20, 25, or 30 kW CCR.
[2] Not ETL Certified.
[3] ACE3 includes input voltage monitoring. If input current and input power monitoring is needed, then select option 73 or 83.

CCR Kits

Various kits are available to customize CCRs for specific application requirements.

Current Sensing Relay Kit	**94A0343**
Provides a dedicated contact closure if CCR output current is present.	
Time Meter Kit	**94A0263/1GH**
Provides CCR run-time information on L-828 CCRs. This feature is included with Monitoring Option 6.	
CCR Output Analog Voltmeter Kit	**Part No.**
7.5 kW 10-15 kW 20-30 kW	94A0128 94A0129 94A0130
Input Lightning Protection Kit, 208-480 VAC	**94B0011**
Provides input lightning protection for older CCRs. Input lightning protection is included and required for CCRs certified according to FAA AC 150/5345-10F or later.	
Stacking Kit	**94A0475-XX**
Provides ability to stack 4 to 30 kW CCRs. The first X is for the bottom CCR and the second X is for the top CCR. The frame sizes are L, M, and S. There are six allowable combinations: LL, LM, LS, MM, MS, and SS. When stacking ADB Safegate regulators, the upper regulator must be the same frame size or smaller than the bottom regulator. See data sheet 2096 for more details.	
Alternate SCO Kit	**94A0341**
This kit is used to install an internal SCO Series Circuit Cutout (PN 1475.92.030). This kit is only available with Output Range options 3 or 5.	

Application Notes

Monitoring Option	Description	Application
00	None	Standard L-828 supplied with analog ammeter
3X	L-829 Monitoring (ACE)	Includes FAA L-829 monitoring equipment (ACE2 and ACE3). Following options are for ACE2 only: • If application is for connection to ADB SAFEGATE L-890 ALCMS: Add a "/A" to end of Ordering Code. The ACE unit will then be programmed to provide monitoring data via redundant communication links. • If application is for a stand-alone L-829 CCR: Ordering Code is not changed. The ACE unit is programmed to deactivate a dry contact closure if a fault is present. The fault alarm can then be connected to any external monitoring system.
5X	L-829 Monitoring (ACE) and IRMS	Includes FAA L-829 and IRMS equipment (ACE2 and ACE3). Following options are for ACE2 only: • If application is for connection to ADB SAFEGATE L-890 ALCMS: Add a "/A" to end of Ordering Code. The ACE unit will then be programmed to provide monitoring data via redundant communication links. • If application is for a stand-alone L-829 CCR with Insulation Resistance Monitoring: Ordering Code is not changed. The ACE unit is programmed to deactivate a dry contact closure if a fault is present. The fault alarm can then be connected to any external monitoring system.
73	L-829 Monitoring (ACE3) with Input Monitoring	Includes FAA L-829 monitoring equipment (ACE3 only). ACE3 includes input voltage monitoring. Contact the sales department for input current monitoring availability.
83	L-829 Monitoring (ACE3) with Input Monitoring and IRMS	Includes FAA L-829 monitoring equipment. This option adds an IRMS (ACE3 only). ACE3 includes input voltage monitoring. Contact the sales department for input current monitoring availability.

Electrical Supply

Power Input:	60 Hz, single-phase available in 208, 220, 240, 347, 380 and 480 VAC 50 Hz, single-phase available in 208, 220, 230, 240, 380 and 400 VAC
Power Factor:	0.90 minimum for 4 kW to 10 kW 0.95 minimum for 15 kW to 30 kW
Efficiency:	90% minimum for 4 kW to 20 kW 92% minimum for 30 kW
Remote Control:	120 VAC, 50/60 Hz (Internal or External) or +48 VDC, ±10% (External)

Weights and Dimensions

CCR Size	Dimensions (H x W x D)	Weight lb (kg)
4, 7.5 and 10 kW	33 x 24 x 25 - in 83.8 x 61 x 63.5 - cm	4 kW: 215 (91.5) 7.5 kW: 265 (120.2) 10 kW: 302 (137)
15, 20, and 30 kW	36 x 29 x 30 - in 91.4 x 73.7 x 76.2 - cm	15 kW: 470 (213.5) 20 kW: 553 (250.9) 30 kW: 705 (320)