



LF8 - LF9 Constant Current Regulator
FERRORESONANT, AIR-COOLED

Spare Parts

SP_3098, Rev. A, 2020/08/11


**ADB
SAFEGATE**

A.0 Disclaimer / Standard Warranty

CE certification

The equipment listed as CE certified means that the product complies with the essential requirements concerning safety and hygiene. The European directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

ETL certification

The equipment listed as ETL certified means that the product complies with the essential requirements concerning safety and FAA Airfield regulations. The FAA directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

All Products Guarantee

ADB SAFEGATE will correct by repair or replacement per the applicable guarantee above, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB SAFEGATE written notice of such defects after delivery of the goods to Buyer. Refer to the Safety section for more information on Material Handling Precautions and Storage precautions that must be followed.

ADB SAFEGATE reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB SAFEGATE further reserves the right to require the return of such goods to establish any claim.

ADB SAFEGATE's obligation under this guarantee is limited to making repair or replacement within a reasonable time after receipt of such written notice and does not include any other costs such as the cost of removal of defective part, installation of repaired product, labor or consequential damages of any kind, the exclusive remedy being to require such new parts to be furnished.

ADB SAFEGATE's liability under no circumstances will exceed the contract price of goods claimed to be defective. Any returns under this guarantee are to be on a transportation charges prepaid basis. For products not manufactured by, but sold by ADB SAFEGATE, warranty is limited to that extended by the original manufacturer. This is ADB SAFEGATE's sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Standard Products Guarantee

Products of ADB SAFEGATE manufacture are guaranteed against mechanical, electrical, and physical defects (excluding lamps) which may occur during proper and normal use for a period of two years from the date of ex-works delivery, and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.



Note

See your sales order contract for a complete warranty description.

FAA Certified product installed in the United States and purchased or funded with monies through the Airport Improvement Program (AIP) installations guarantee

ADB SAFEGATE L858 Airfield Guidance Signs are warranted against mechanical and physical defects in design or manufacture for a period of 2 years from date of installation, per FAA AC 150/5345-44 (applicable edition).

ADB SAFEGATE L858(L) Airfield Guidance Signs are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition).

ADB SAFEGATE LED light fixtures (with the exception of obstruction lighting) are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition).



Note

See your sales order contract for a complete warranty description.

Liability



WARNING

Use of the equipment in ways other than described in the catalog leaflet and the manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in the manual.

ADB SAFEGATE cannot be held responsible for injuries or damages resulting from non-standard, unintended uses of its equipment. The equipment is designed and intended only for the purpose described in the manual. Uses not described in the manual are considered unintended uses and may result in serious personal injury, death or property damage.

Unintended uses, includes the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine ADB SAFEGATE replacement parts or accessories.
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards if not in contradiction with the general rules.
- Using materials or auxiliary equipment that are inappropriate or incompatible with your ADB SAFEGATE equipment.
- Allowing unskilled personnel to perform any task on or with the equipment.

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1.0 Ferro Constant Current Regulator

The CCR provides a constant current output (6.6A) to power airfield lighting series circuits used for runways, taxiways and approach lighting systems. The CCR has built-in monitoring and failsafe capabilities and meets the requirements of FAA L-828 and L-829 specifications. The CCR utilizes a distributed architecture and can be provided with redundant Ethernet or serial communication to an Airfield Lighting Control and Monitoring System (ALCMS). This instruction manual provides the information necessary to install, operate and maintain the CCR. If Integral L-847 Circuit Selector Switch Options 52 or 53 are provided, refer to The ADB SAFEGATE Product Center for additional information.



1.1 Constant Current Regulator

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.
T/C:	Transport Canada CCR Specification K290-2. Canadian Department of National Defence Standards.

Uses

Supplies three or five precision output levels to power series lighting circuits on airport runways and taxiways.

Overview

The LF8/LF9 Ferroresonant Constant Current Regulator (CCR) was designed to provide an economical solution for powering airfield lighting series circuits at General Aviation and commercial airports. With powerful control and monitoring capabilities, it is also ideally suited for airports operating in CAT II or III conditions.

2.0 LF8/9 CCR Parts

Ordering Code

CCR Type

- 8 = L-828 Ferroresonant
- 9 = L-829 Ferroresonant

Construction

- N = Stand Alone

Output kW Rating

- 01 = 1 kW, 6.6 A only
- 02 = 2 kW, 6.6 A only
- 04 = 4 kW, 6.6 A only
- 07 = 7.5 kW, 6.6 A only
- 10 = 10 kW, 6.6 A only
- 15 = 15 kW
- 20 = 20 kW
- 25 = 25 kW
- 30 = 30 kW

Class

- A = 6.6 A Output
- B = 20 A Output

Input Voltage & Breaker

- 1 = 208 V, 60 Hz, without Circuit Breaker
- 2 = 240 V, 60 Hz, without Circuit Breaker
- 3 = 480 V, 60 Hz without Circuit Breaker
- 4 = 600 V, 60 Hz without Circuit Breaker
- 5 = 220 V, 50 Hz, without Circuit Breaker²
- 6 = 230 V, 50 Hz, without Circuit Breaker²
- 7 = 380 V, 50 Hz, without Circuit Breaker²
- 8 = 400 V, 50 Hz, without Circuit Breaker²
- 9 = 220 V, 60 Hz, without Circuit Breaker
- B = 208 V, 60 Hz with Circuit Breaker
- C = 240 V, 60 Hz with Circuit Breaker
- D = 480 V, 60 Hz with Circuit Breaker
- E = 600 V, 60 Hz, with Circuit Breaker
- F = 220 V, 50 Hz with Circuit Breaker²
- G = 230 V, 50 Hz with Circuit Breaker²
- H = 380 V, 50 Hz with Circuit Breaker²
- I = 400 V, 50 Hz with Circuit Breaker²
- J = 220 V, 60 Hz with Circuit Breaker
- K = 347 V, 60 Hz with Circuit Breaker

LF X N X X X X X 0 X 00

Serial Communication

- 0 = None
- 1 = Redundant Ethernet Network Interface
- 2 = Redundant RS485 Network Interface
- 3 = Single Ethernet Network Interface
- 4 = Single RS485 Network Interface
- 5 = Single Ethernet & Single RS485

Output Load Taps

- 0 = None

Monitoring

- 0 = Standard Monitoring (L-828/L-829)
- 1 = Input Monitoring (L-829 only)
- 2 = IRMS (L-829 only)
- 3 = IRMS & Input Monitoring (L-829 only)

Brightness Steps

- 1 = Single-Step¹
- 3 = 3-Step¹
- 5 = 5-Step

Control Voltage

- A = 24 VDC Internal
- B = 24 VDC External
- C = 48 VDC Internal
- D = 48 VDC External
- E = 120 VAC Internal
- F = 120 VAC External

Notes

- ¹ Single-step and 3-step, 20 A are not recognized by the FAA.
- ² Not ETL Certified.

2.1 CCR Kits

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

Castor Kit, 10-30 kW Only

See: "Caster Kit (94A0733) Installation".

Floor Mounting/Stacking Kit

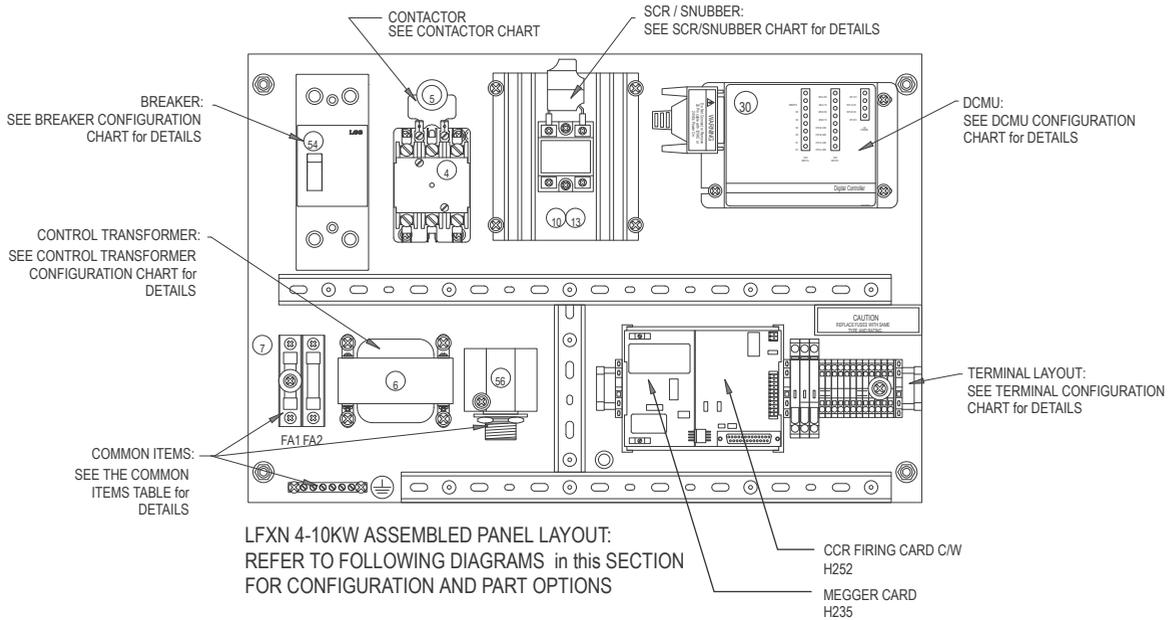
Call ADB SAFEGATE

Note

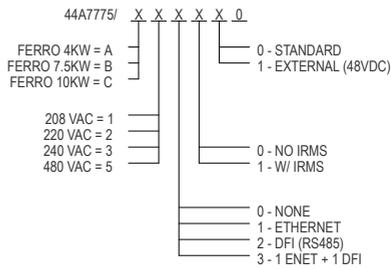
All CCRs can be stacked to save floor space. Regulators up to 7.5 kW can be stacked 3 units high using the floor mounting / stacking C-channels. Larger regulators can be stacked 2 high.

2.2 Ferro Parts Diagrams

Figure 1: Ferro Component Plate Layout Diagram



4-10KW - PANEL CONFIGURATIONS



44A7775-XXXXX0 | F

Figure 2: DCMU - Options

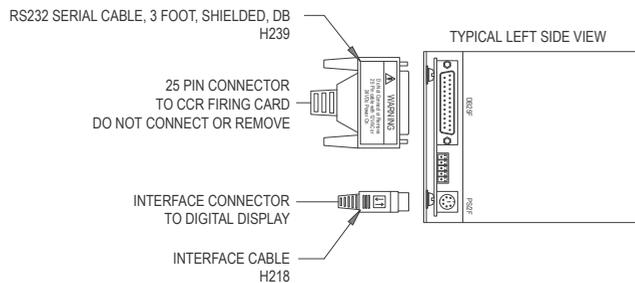
30 CONFIGURE FOR 3RD X AS FOLLOWS:

44A7775/ - - - X - - - 0

- 0 - NONE
- 1 - ETHERNET
- 2 - DFI (RS485)
- 3 - 1 ENET + 1 DFI

Item	Part Number	Description	EA	1
30	H273	DCMU CCR/PANEL NO ETH	EA	1
30	H272	DCMU CCR/PANEL A	EA	1
30	H275	DCMU CCR/PANEL RS485	EA	1
30	H789	DCMU CCR/PANEL ENET+DFI	EA	1

DIGITAL CONTROL MONITORING UNIT (DCMU) DETAIL & CONNECTIONS



DRAWING NUMBER: 44A7775-XXXXX0 | REV: F

Figure 3: Terminal Layout

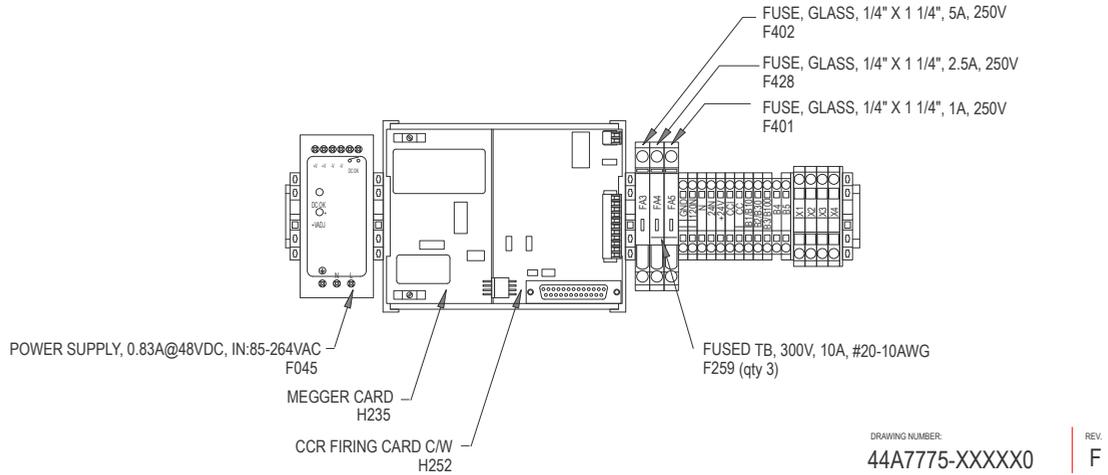
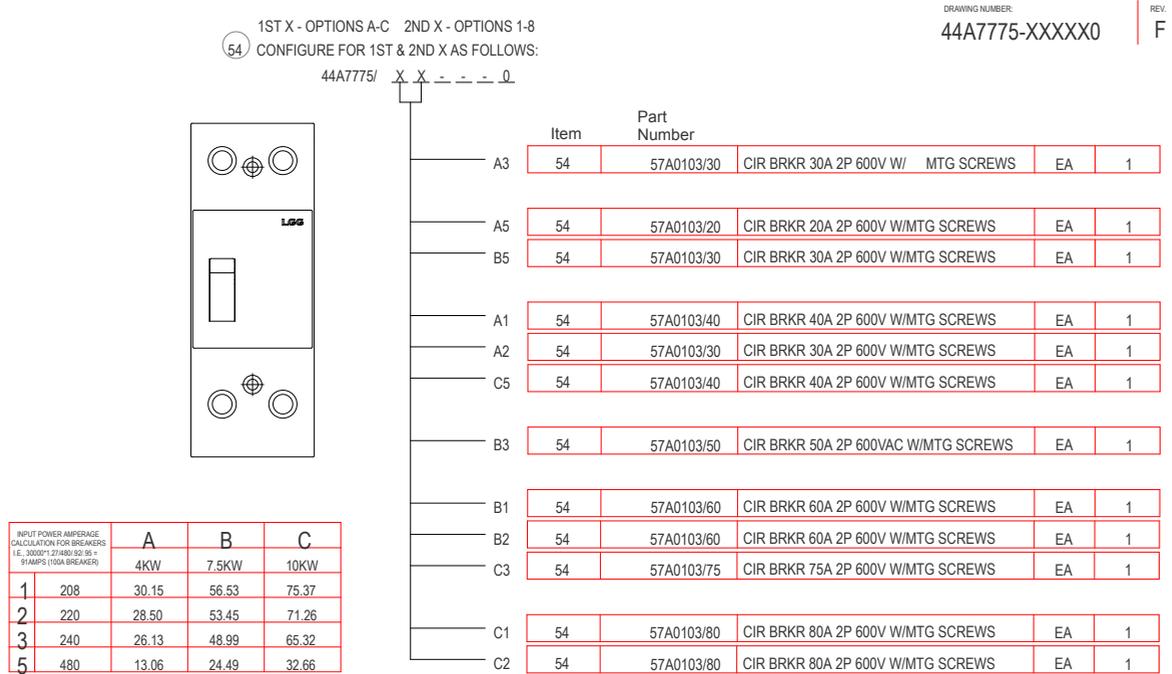


Figure 4: Breaker Selector Chart



INPUT POWER AMPERAGE CALCULATION FOR BREAKERS I.E. 33000* (27480/50) = 51AMPS (100A BREAKER)			
	A	B	C
1	208	30.15	56.53
2	220	28.50	53.45
3	240	26.13	48.99
5	480	13.06	24.49

Figure 5: Contactor Selection Chart

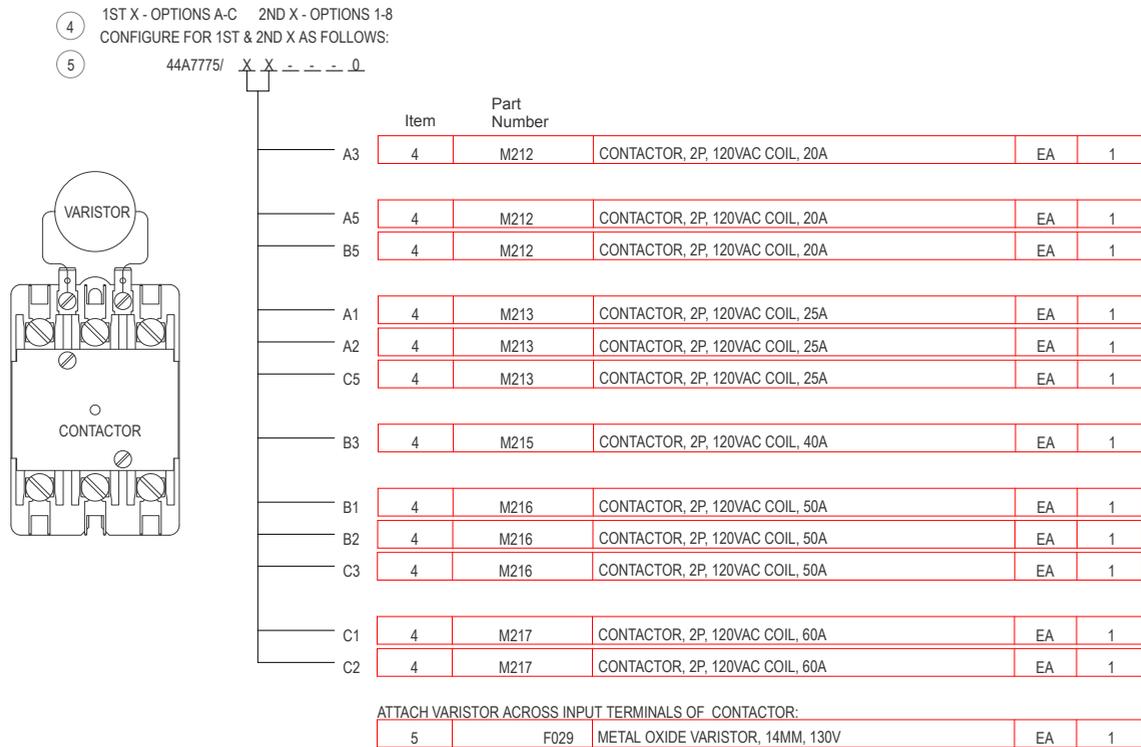


Figure 6: Snubber and Transformer Selection Charts

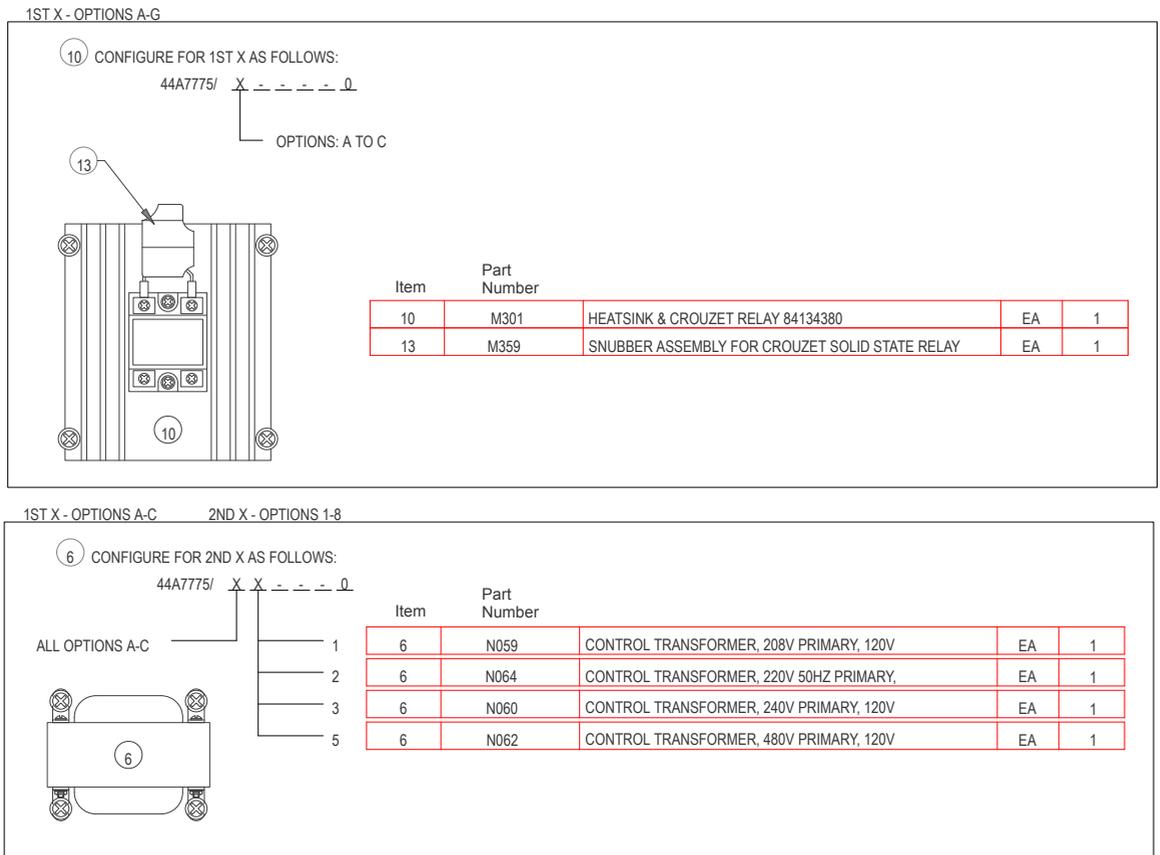
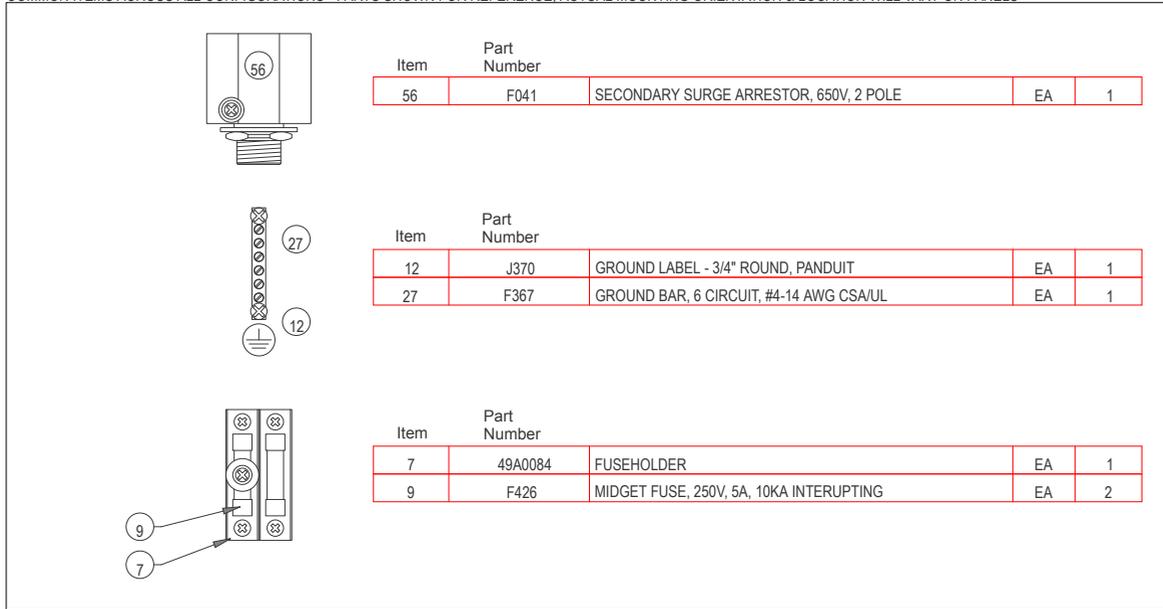


Figure 7: Common Components Chart

COMMON ITEMS ACROSS ALL CONFIGURATIONS - PARTS SHOWN FOR REFERENCE, ACTUAL MOUNTING ORIENTATION & LOCATION WILL VARY ON PANELS



2.3 Ferro Spare Parts

Create a sufficiently large stock of spare parts to maintain the unit and the fixtures in the field. Consider acquiring approximately 10% spare final assemblies (with a minimum quantity of 1) for the total amount of equipment in the field. This allows for repairs to be made in the shop. Components that are more likely to need replacement, such as prisms, prism gaskets and PCB subassemblies should be stocked in smaller quantities. For a single CCR, it is highly recommended to have a least one of each spare, or for larger installations, at least 10% of the total units installed.

Table 1: Spare Parts

Description	PART #
Inner Mounting Panel for AD042P01 Enclosure	L916
Contactora, Definite Purpose, 2P, 120VAC Coil, 25A	M212
Contactora, ICE, 3P, 120Vac coil, 150A	M222
Metal Oxide Varistor, 14mm, 130V (old PN TMOV14R130E) new part is Lead Free	F029
Dead-front Fuse Puller, for Midget or Class CC Fuses	F441
Midget Fuse, 600v, 5A, 100KA interrupting,	F416
Midget Fuse, 250V, 5A, 10kA Interrupting	F426
SCR Assembly, 90A c/w heatsink, bus bar, snubber, barrier, assembled	M322
Surge Arrester, 3 kV (2.55KV MCOV), HD V-Star Dist. Polymer, 10 kA, Cooper, c/w cover	F042
Door Interlock Switch, SPDT, 10A 250V, Momentary with Pull to Test, Cherry E69-30A	F628
Fuse, Glass, 1/4" x 1 1/4", 5A, 250V	F414
Fuse, Glass, 1/4" x 1 1/4", 2.5A, 250V	F428
Vacuum Fluorescent Display / Keypad Assembly	H286
Interface Cable 5 Ft, Display to DSP	H218
DCMU CCR/Panel Assembly (E+8i), 24V or 120V Inputs	H272
Spirit Series DCMU Firing Card, c/w 2 Pulse Transformers - Requires External CT	H258
Current Transformer, Panel Components, 100A : 0.1A, (PMW0949-L48), 48" leads	H012
RS232 Serial Cable, 3 Foot, Shielded, DB25M to DB25M	H239
Fuse, Glass, 1/4" x 1 1/4", 1A, 250V	F401
Secondary Surge Arrestor, 650V, 2 Pole	F041
S1 Series Plug Cutout Assembly, c/w terminal box, cover & In-Service Handle	ALSC
S1 Cutout Bracket	L925
Megger Card	H235
Megger Resistor Assembly, 2 M-ohm, 1%, 12.5W, 30" Wire Length	H777

Call your local ADB SAFEGATE representative for further information.

Figure 8: Parts: Ferro Front Assembly

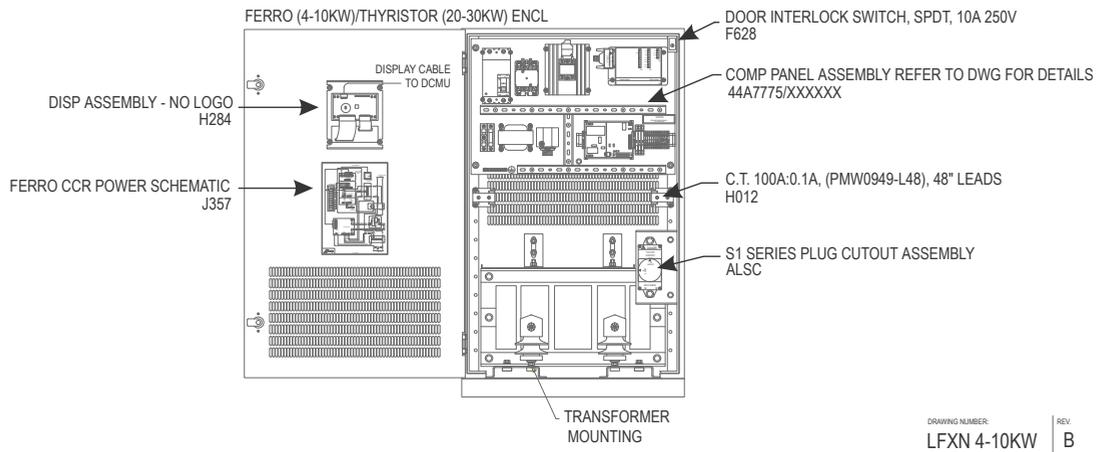


Figure 9: Parts: Ferro Side Assembly

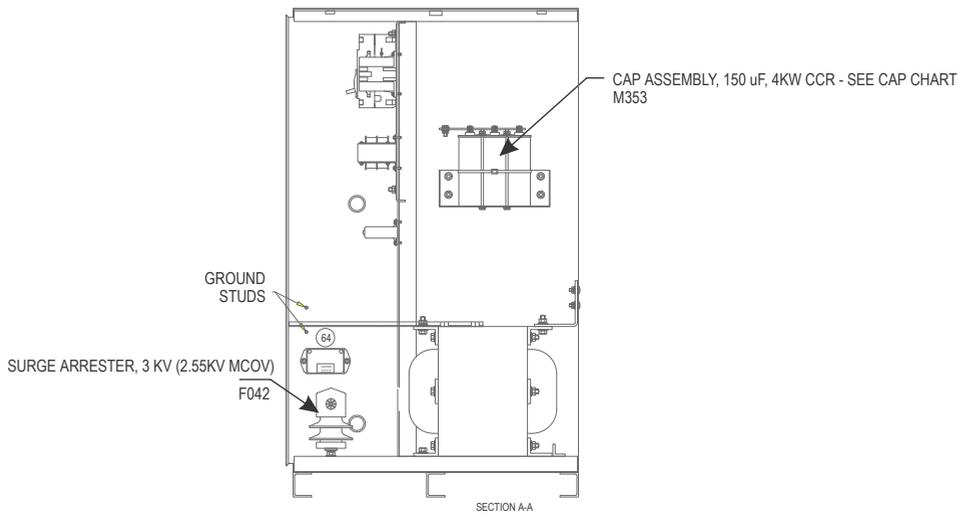


Figure 10: Parts: Ferro cores and capacitors

CAP CHART

11	M353	CAP ASSEMBLY, 150 uF, 4KW CCR	EA	1
	M352	CAP ASSEMBLY, 250 uF, 7.5KW CCR		
	M351	CAP ASSEMBLY, 300 uF, 10KW CCR		

Appendix A: SUPPORT

Our experienced engineers are available for support and service at all times, 24 hour/7 days a week. They are part of a dynamic organization making sure the entire ADB SAFEGATE is committed to minimal disturbance for airport operations.

ADB SAFEGATE Support

Live Technical Support - Americas

If at any time you have a question or concern about your product, just contact ADB SAFEGATE's technical service department. Trained in all areas of system issues, troubleshooting, quality control and technical assistance, our highly experienced Technical support specialists are available 24 hours a day, seven days a week to provide assistance over the phone.

ADB SAFEGATE Americas Technical Service & Support (US & Canada): +1-800-545-4157

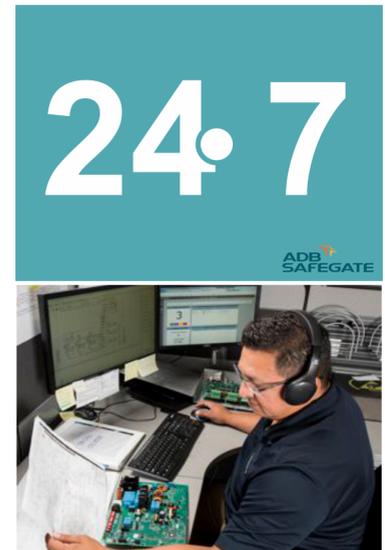
ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304

During regular business hours, you can also Chat with a Service Technician. We look forward to working with you!

Before You Call

When you have an airfield lighting or system control system problem it is our goal to support airfield maintenance staff as quickly as possible. To support this effort we ask that you have the following information ready before calling.

- The *airport code*
- If not with an airport, then company name (prefer customer id number)
- Contact phone number and email address
- Product with part number preferable or product number
- Have you reviewed the product's manual and troubleshooting guide
- Do you have a *True RMS* meter available (and any other necessary tools)
- Be located with the product ready to troubleshoot



Note

For more information, see www.adbsafegate.com, or contact ADB SAFEGATE Support via email at support@adbsafegate.com or

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Rest of Europe: +46 (0) 40 699 17 40

Americas: +1 614 861 1304. Press 3 for technical service or press 4 for sales support.

China: +86 (10) 8476 0106

A.1 ADB SAFEGATE Website

The ADB SAFEGATE website, www.adbsafegate.com, offers information regarding our airport solutions, products, company, news, links, downloads, references, contacts and more.

A.2 Recycling

A.2.1 Local Authority Recycling

The disposal of ADB SAFEGATE products is to be made at an applicable collection point for the recycling of electrical and electronic equipment. The correct disposal of equipment prevents any potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling. The recycling of materials helps to conserve natural resources. For more detailed information about recycling of products, contact your local authority city office.

A.2.2 ADB SAFEGATE Recycling

ADB SAFEGATE is fully committed to environmentally-conscious manufacturing with strict monitoring of our own processes as well as supplier components and sub-contractor operations. ADB SAFEGATE offers a recycling program for our products to all customers worldwide, whether or not the products were sold within the EU.

ADB SAFEGATE products and/or specific electrical and electronic component parts which are fully removed/separated from any customer equipment and returned will be accepted for our recycling program.

All items returned must be clearly labeled as follows:

- For *ROHS/WEEE* Recycling
- Sender contact information (Name, Business Address, Phone number).
- Main Unit Serial Number.

ADB SAFEGATE will continue to monitor and update according for any future requirements for *EU directives* as and when *EU member states* implement new *regulations* and or *amendments*. It is our aim to maintain our *compliance plan* and assist our customers.

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