

**LF8 - LF9 Constant Current Regulator**  
FERRORESONANT, AIR-COOLED

**Spare Parts**

SP\_3098, Rev. C, 2023/12/13





## 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 C22.2 No.180:13 (R2018) regulations. The CSA 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 below, 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 manufactured by ADB SAFEGATE 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 applicable sales agreement for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

### FAA Certified products manufactured by ADB SAFEGATE

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 LED products (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). These FAA certified constant current (series) powered LED products must be installed, interfaced and powered with and through products certified under the FAA Airfield Lighting Equipment Program (ALECP) to be included in this 4 (four) year warranty. This includes, but is not limited to, interface with products such as Base Cans, Isolation Transformers, Connectors, Wiring, and Constant Current Regulators.



## Note

See your sales order contract for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

---

## 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.

## Copyright Statement

This manual or parts thereof may not be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, nor otherwise, without the author's prior written consent.

This manual could contain technical inaccuracies or typographical errors. The author reserves the right to revise this manual from time to time in the contents thereof without obligation of the author to notify any person of such revision or change. Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and the author disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the buyer from making their own experiments and tests.

# TABLE OF CONTENTS

<b>1.0 Ferro Constant Current Regulator .....</b>	<b>1</b>
1.1 Constant Current Regulator .....	1
<b>2.0 LF8/9 CCR Parts .....</b>	<b>3</b>
2.1 CCR Kits .....	3
2.2 Ferro Parts Diagrams .....	4
2.3 Ferro Spare Parts .....	8
<b>A.0 SUPPORT .....</b>	<b>11</b>
A.1 ADB SAFEGATE Website .....	11
A.2 Recycling .....	11
A.2.1 Local Authority Recycling .....	11
A.2.2 ADB SAFEGATE Recycling .....	11



# 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

<b>FAA:</b>	L-828/L-829 AC 150/5345-10 (Current Edition)
<b>ICAO:</b>	Aerodrome Design Manual Part 5, para. 3.2.1.4 to 3.2.1.6.
<b>T/C:</b>	Transport Canada CCR Specification K290-2. Canadian Department of National Defense 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

#### 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 Breaker<sup>2</sup>
- 6 = 230 V, 50 Hz, without Circuit Breaker<sup>2</sup>
- 7 = 380 V, 50 Hz, without Circuit Breaker<sup>2</sup>
- 8 = 400 V, 50 Hz, without Circuit Breaker<sup>2</sup>
- 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 Breaker<sup>2</sup>
- G = 230 V, 50 Hz with Circuit Breaker<sup>2</sup>
- H = 380 V, 50 Hz with Circuit Breaker<sup>2</sup>
- I = 400 V, 50 Hz with Circuit Breaker<sup>2</sup>
- J = 220 V, 60 Hz with Circuit Breaker
- K = 347 V, 60 Hz with Circuit Breaker

LF X N X 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-Step<sup>1</sup>
- 3 = 3-Step<sup>1</sup>
- 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

- <sup>1</sup> Single-step and 3-step, 20 A are not recognized by the FAA.
- <sup>2</sup> 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

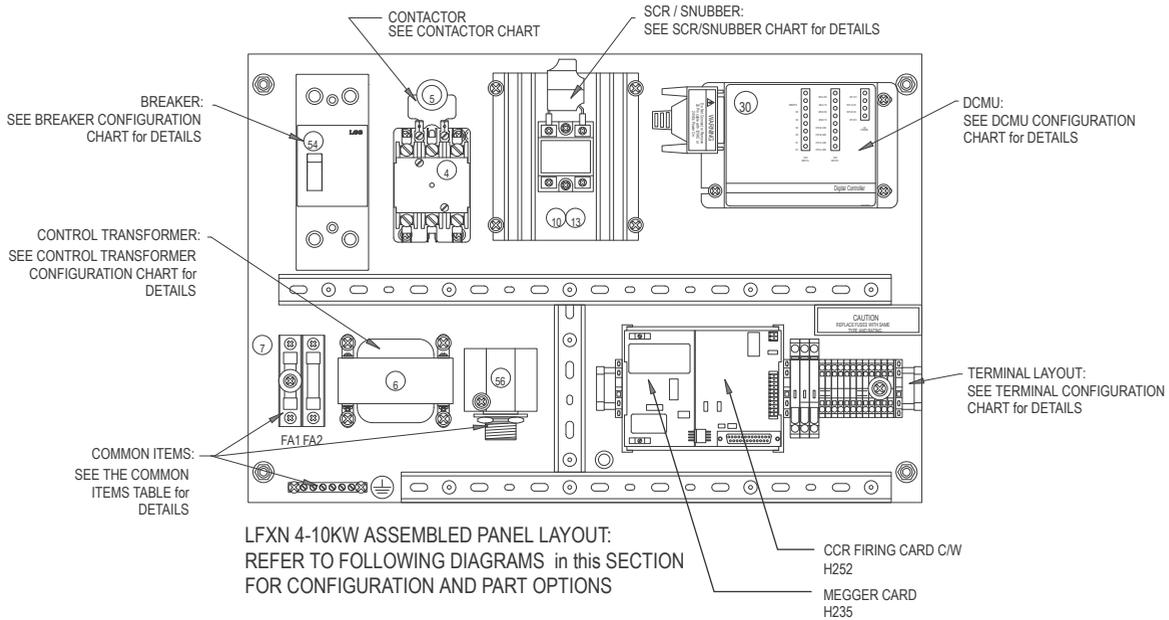
Call ADB SAFEGATE

### Note

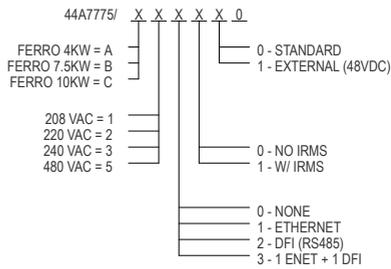
All CCRs can be stacked to save floor space. Regulators up to 7.5 kW can be stacked 3 units high using the floor mounting / stacking C-channels. Larger regulators can be stacked 2 high.

## 2.2 Ferro Parts Diagrams

Figure 1: Ferro Component Plate Layout Diagram



### 4-10KW - PANEL CONFIGURATIONS



44A7775-XXXXX0 | F

Figure 2: DCMU - Options

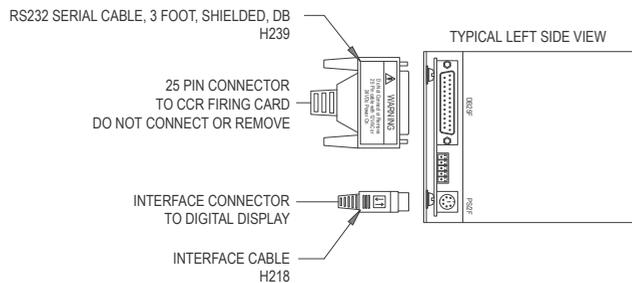
30 CONFIGURE FOR 3RD X AS FOLLOWS:

44A7775/ - - - X - - - 0

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

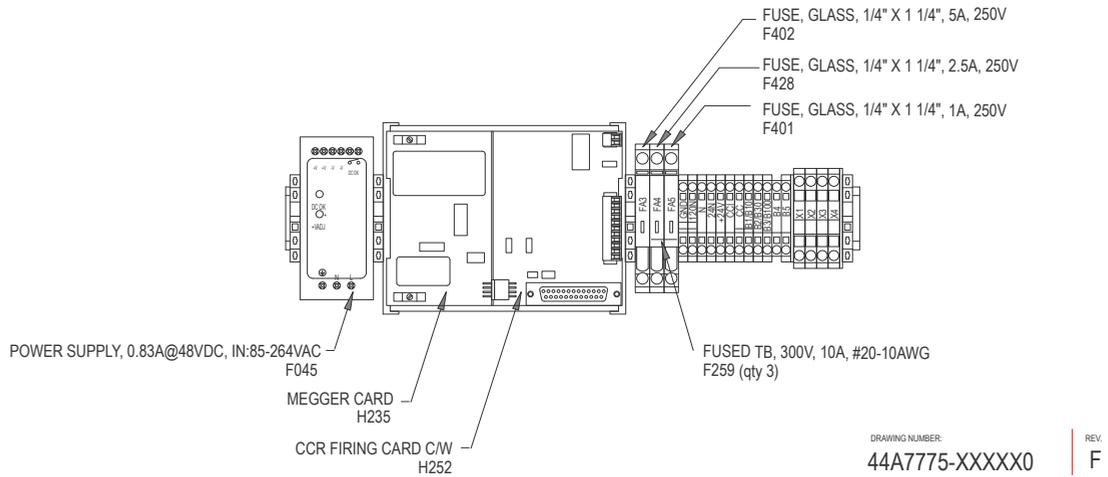
Item	Part Number	Description	EA	QTY
30	H273	DCMU CCR/PANEL NO ETH	EA	1
30	H272	DCMU CCR/PANEL A	EA	1
30	H275	DCMU CCR/PANEL RS485	EA	1
30	H789	DCMU CCR/PANEL ENET+DFI	EA	1

### DIGITAL CONTROL MONITORING UNIT (DCMU) DETAIL & CONNECTIONS

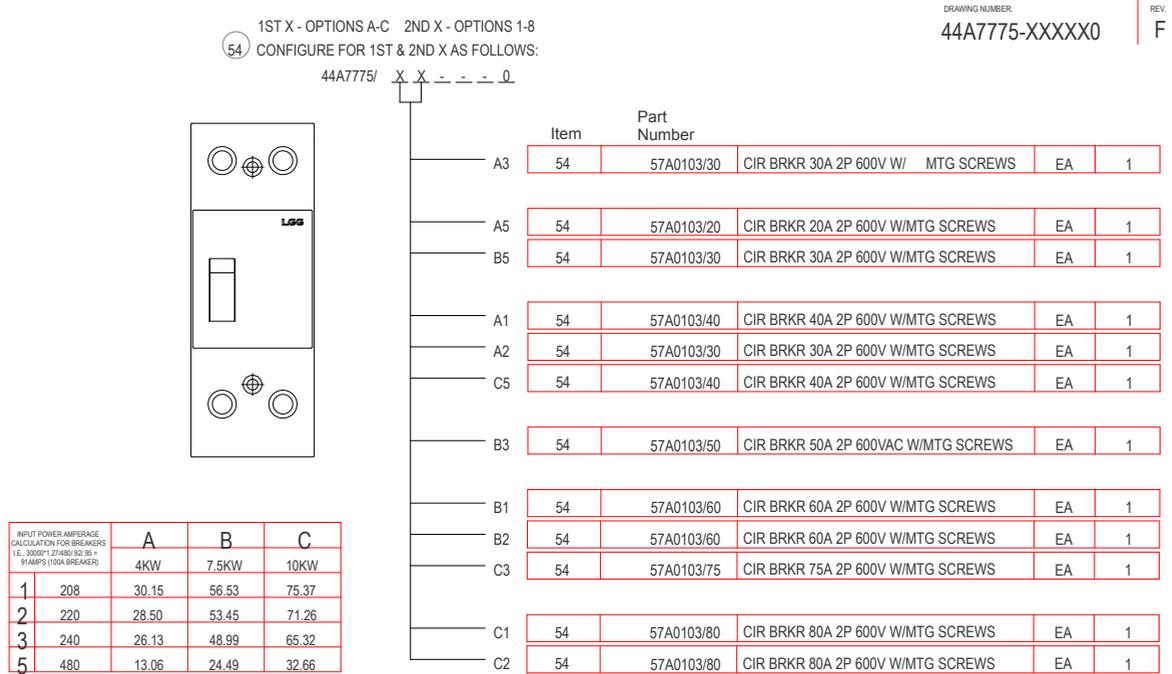


DRAWING NUMBER: 44A7775-XXXXX0 | REV: F

**Figure 3: Terminal Layout**

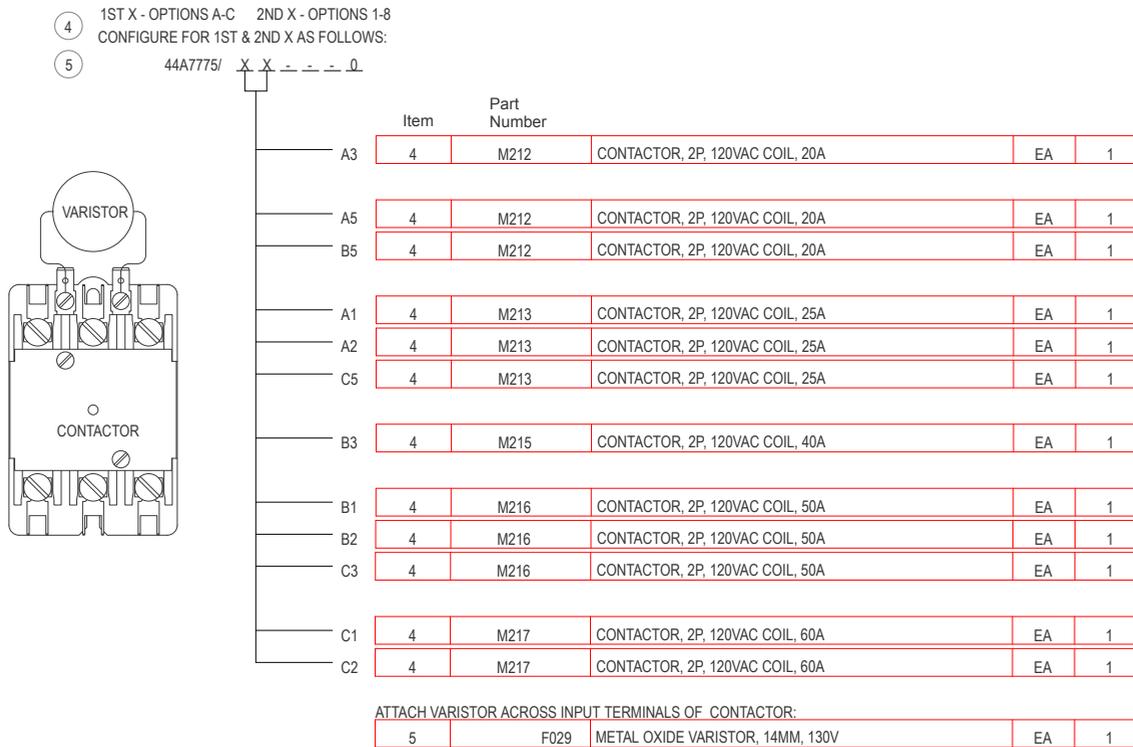


**Figure 4: Breaker Selector Chart**

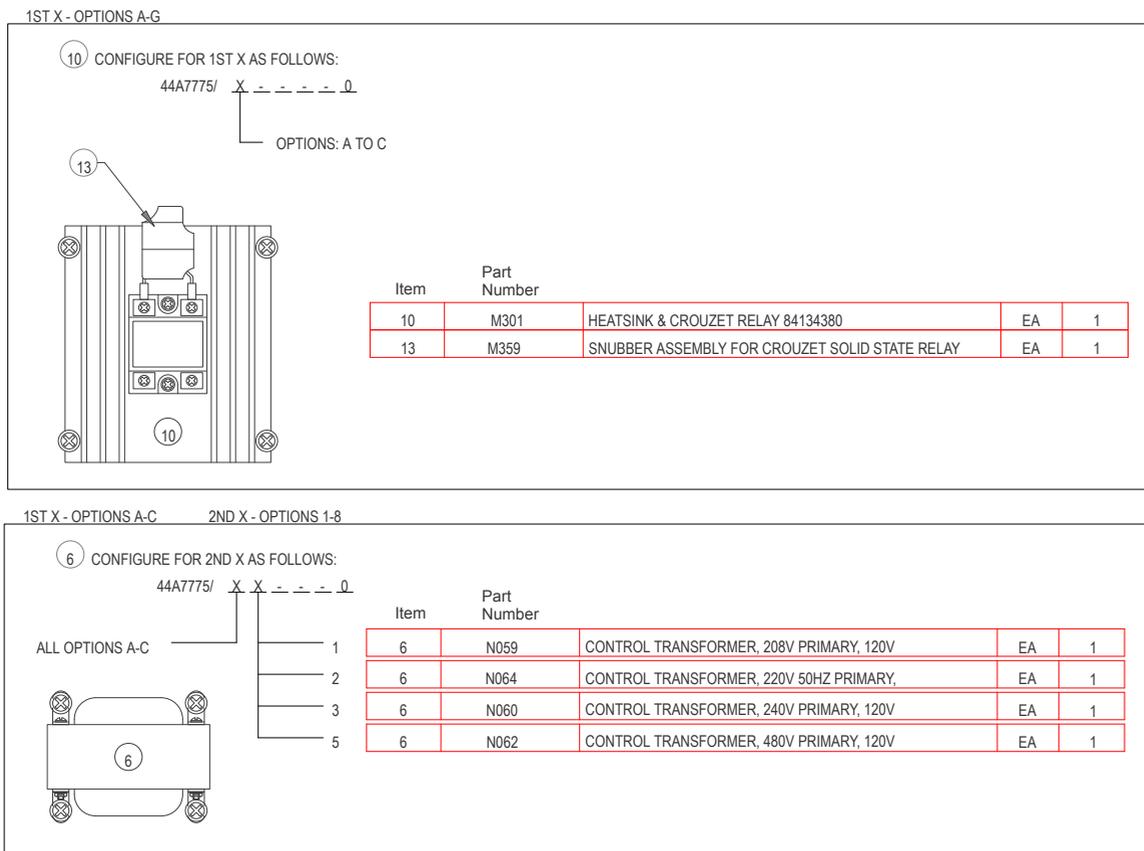


INPUT POWER AMPERAGE CALCULATION FOR BREAKERS I.E. 3000FT <sup>2</sup> (27480/50) = 549 AMP (100A BREAKER)			
	A	B	C
1	208	30.15	56.53
2	220	28.50	53.45
3	240	26.13	48.99
5	480	13.06	24.49

**Figure 5: Contactor Selection Chart**

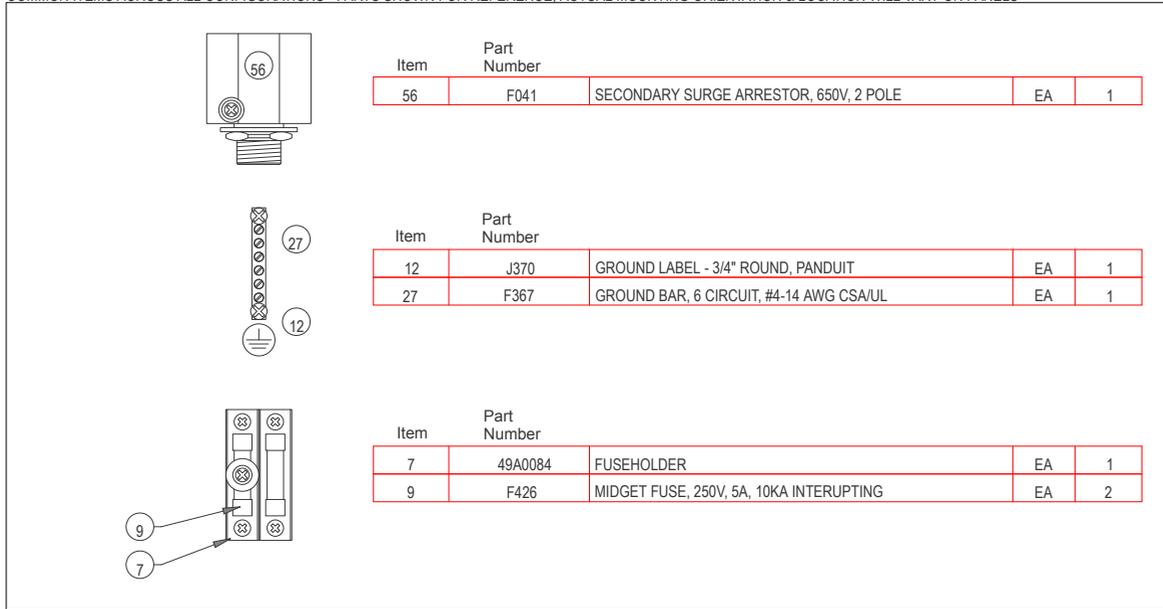


**Figure 6: Snubber and Transformer Selection Charts**



### 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

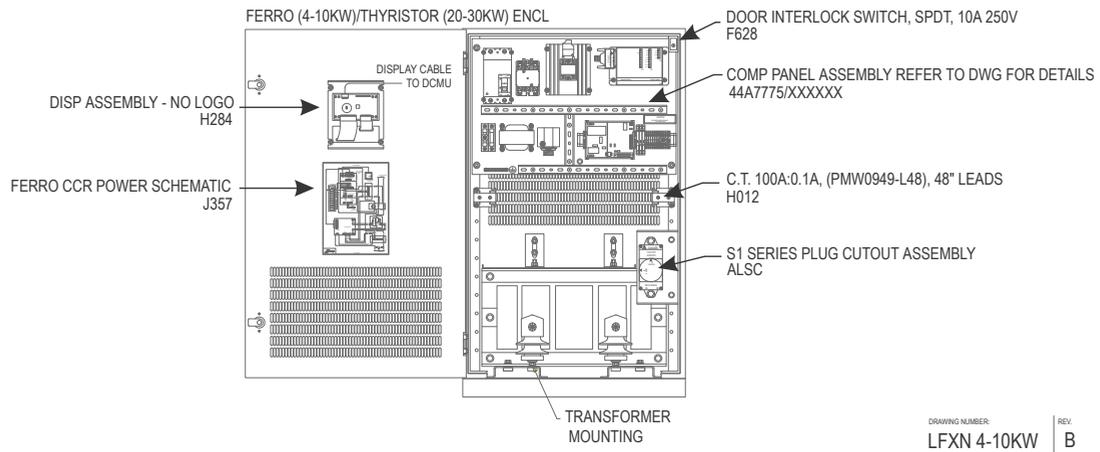
Create a sufficiently large stock of spare parts to maintain the unit and the fixtures in the field. Consider acquiring approximately 10% spare final assemblies (with a minimum quantity of 1) for the total amount of equipment in the field. This allows for repairs to be made in the shop. Components that 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 at least one of each spare, or for larger installations, at least 10% of the total units installed.

**Table 1: Spare Parts**

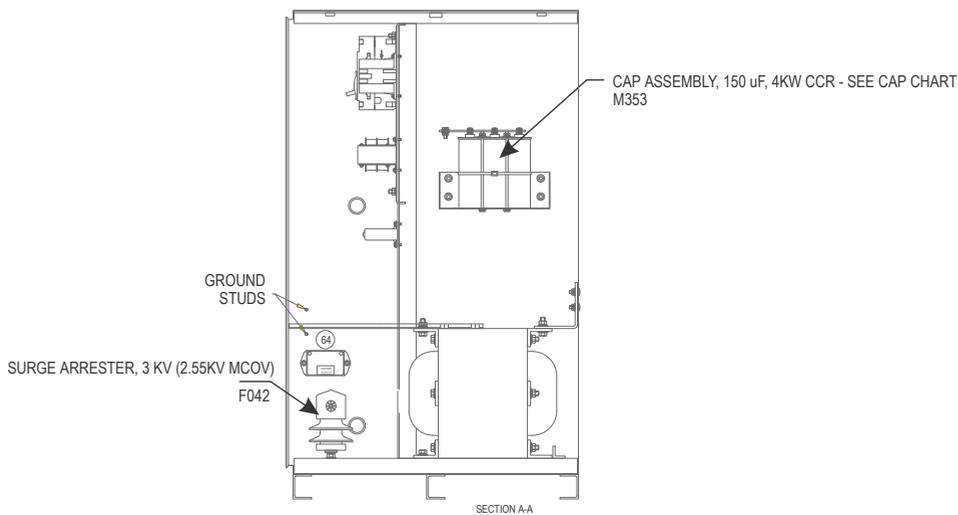
Description	PART #
Inner Mounting Panel for AD042P01 Enclosure	L916
Contactora, Definite Purpose, 2P, 120VAC Coil, 25A	M212
Contactora, ICE, 3P, 120Vac coil, 150A	M222
Metal Oxide Varistor, 14mm, 130V (old PN TMOV14R130E) new part is Lead Free	F029
Dead-front Fuse Puller, for Midget or Class CC Fuses	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**

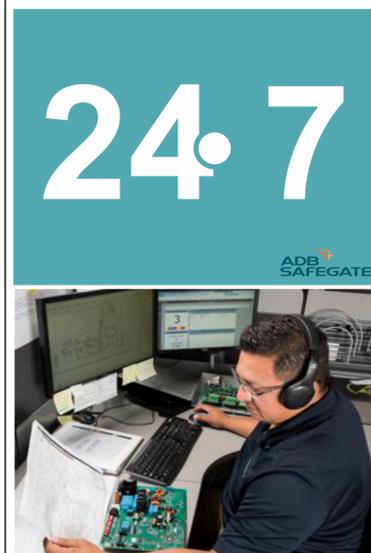
**ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304**

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, prior to calling, please ensure the following:

- Review the product's manual and troubleshooting guide.
- Be located with the product ready to troubleshoot.
- Have all necessary information available: airport code/company name, customer id number, contact phone number/email address, product/part number.
- Have a *True RMS* meter available and any other necessary tools.



#### Note

For more information, see [www.adbsafegate.com](http://www.adbsafegate.com), or contact ADB SAFEGATE Support via email at [support@adbsafegate.com](mailto:support@adbsafegate.com) or

Europe: +32 2 722 17 11

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

China: +86 (10) 8476 0106

Middle East and Africa: +971 4 452 7575

## A.1 ADB SAFEGATE Website

The ADB SAFEGATE website, [www.adbsafegate.com](http://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.

## Company Addresses

ADB SAFEGATE, Belgium	ADB SAFEGATE BV Leuvensesteenweg 585, B-1930 Zaventem Belgium
Contact: Tel.: +32 2 722 17 11 Fax: +32 2 722 17 64	Email: <a href="mailto:marketing@adbsafegate.com">marketing@adbsafegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a>
ADB SAFEGATE, Americas	ADB SAFEGATE Americas LLC 700 science Blvd, Columbus OH 43230, USA
Contact: Tel.: +1 (614) 861 1304 Fax: +1 (614) 864 2069	Email: <a href="mailto:sales.us@adbsafegate.com">sales.us@adbsafegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a>
ADB SAFEGATE, Sweden	ADB SAFEGATE Sweden AB Djurhagegatan 19 SE-213 76 Malmö Sweden
Contact: Tel.: +46 (0)40 699 17 00 Fax: +46 (0)40 699 17 30	Email: <a href="mailto:marketing@adbsafegate.com">marketing@adbsafegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a>
ADB SAFEGATE, China	ADB SAFEGATE Airfield Technologies Ltd. China Unit 603, D Block, CAMIC International Convention Center, No 3, Hua Jia Di East road, ChaoYang district, Beijing 100102 P.R. China
Contact: Tel.: +86 (10) 8476 0106 Fax: +86 (10) 8476 0090	Email: <a href="mailto:china@safegate.com">china@safegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a>
ADB SAFEGATE, Germany	ADB SAFEGATE Germany GmbH Konrad-Zuse-Ring 6, D-68163 Mannheim Germany
Contact: Tel.: +49 (621) 87 55 76-0 Fax: +49 (621) 87 55 76-55	Email: <a href="mailto:marketing@adbsafegate.com">marketing@adbsafegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a>



## Powering Your Airport Performance from Approach to Departure

[adbsafegate.com](https://adbsafegate.com)

Copyright © ADB SAFEGATE, all rights reserved

