



Single-Channel PAPI, Precision Approach Path Indicator
Type L-880 & L-881, Style A (Voltage-Powered) & Style B
(Current-Powered)

Spare Parts

SP_2082, Rev. C, 2022/05/13



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 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 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 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.

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.

© ADB SAFEGATE BV

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 ADB SAFEGATE BV's prior written consent.

This manual could contain technical inaccuracies or typographical errors. ADB SAFEGATE BV reserves the right to revise this manual from time to time in the contents thereof without obligation of ADB SAFEGATE BV 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 ADB SAFEGATE BV 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

1.0 Single Channel PAPI Overview	1
1.1 Single Channel Precision Approach Path Indicator	1
2.0 Single Channel PAPI Parts	3
2.1 Spare Parts	11
A.0 SUPPORT	13
A.1 ADB SAFEGATE Website	13
A.2 Recycling	14
A.2.1 Local Authority Recycling	14
A.2.2 ADB SAFEGATE Recycling	14

1.0 Single Channel PAPI Overview

This manual provides instructions for installation, operation and maintenance of the ADB SAFEGATE Single Channel Precision Approach Path Indicator (PAPI) system.

Single Channel PAPI systems provide visual approach path guidance to pilots of landing aircraft.



1.1 Single Channel Precision Approach Path Indicator

Compliance with Standards

FAA:	L-880 / L-881 AC 150/5345-28 (Current Edition). ETL Certified.
ICAO:	Annex 14, Vol. 1, para. 5.3.5.23 to 5.3.5.45

Uses

The PAPI system uses a one light channel unit to provide the pilot precise visual information, enabling the approach procedure to be performed with the utmost accuracy and safety.

The Type L-880 PAPI system consists of four light units located at the side of the runway adjacent to the origin of the glide path. The nominal glide slope angle is midway between the angular settings of the central pair of the four units. If an aircraft is on the correct approach path, the pilot will see two red and two white light indicators. If the aircraft approach is too high, an increased number of white light indicators will be seen. If the approach is too low, the pilot will note an increased number of red light indicators.

The Type L-881 PAPI system is identical to the L-880, except only two light units (instead of four) are used. The nominal glide slope is midway between the angular settings of the two units, and when the pilot is on or close to the correct approach path, the unit nearest the runway will be seen as red and the other unit as white.

The Style A system is for use with an AC voltage input. The Style B system is for use on 6.6 A or 20 A series circuits. An electronic in-clinometer assembly, which is a mercury-free product, is provided on each PAPI unit to de-energize all light units if the optical pattern of any light unit is raised between 0.5° and 1.0° or lowered between 0.25° and 0.5° with respect to the setting angle of the light unit.

Electrical Supply

Each Type A PAPI system is powered from a Control box. Each Type B PAPI light unit is powered with 6.6 A maximum via a 6.6A/6.6 A or 20 A/6.6 A 300 W isolation transformer. A field splice kit is supplied with each light unit to provide for external electrical connections between PAPI system components.

Style A¹	
Input Voltage: 240 VAC, ±10%, 50/60 Hz L-880 (4-box) 3-lamps/light unit	1,700 VA max. ²
Input Voltage: 208/220/240 VAC, ±10%, 50/60 Hz L-881 (2-box) 3-lamps/light unit	1,612 VA max. ³

Style B⁴	
Three Lamps – 6.6 A through one 300 W isolation transformer (each light unit)	
L-880 (4-Box) – Total CCR Load:	1,448 VA max.
L-881 (2-Box) – Total CCR Load:	724 VA max.

Notes

- ¹ As seen at input of Primary PAPI.
- ² Limit on distance from Primary to first light unit is 30 ft (9.1 m).
- ³ Limit on distance from Primary to first light unit is 150 ft (45.7 m).
- ⁴ VA calculation includes PAPI light units and isolation transformers.

2.0 Single Channel PAPI Parts

To order parts, call ADB SAFEGATE Customer Service or your local representative.

This section provides parts drawings, along with part numbers. Refer to the “Schematics” for connections and wiring information.

Single Channel PAPI Ordering Code

PAP□ / □□□

Style

A = PAPI A (Voltage powered)^{1,2}

B = PAPI B (Current powered)

Type

2 = L-881 (2 Box)

4 = L-880 (4 Box)

Housing

0 = Aluminum Light Units (Standard)

1 = 316 Stainless Steel³

Interlock

0 = Without Interlock (PAPI A or B)

1 = With Interlock (PAPI A Only)⁴

Notes

- 1 L-881 input voltage is 208/220/240 VAC. L-880 input voltage is 240 VAC only.
- 2 Not ETL certified configuration.
- 3 For both the Style A and Style B PAPI, the light unit housing is stainless steel. For the Style A PAPI, the control box housing is also stainless steel.
- 4 Available only with the PAPI A. Interlock Relay Option provides ON/OFF control through current sensing of the runway series circuit during nighttime operations. During daytime, the PAPI is activated at the 100% step.

Single Channel PAPI EMT Kit

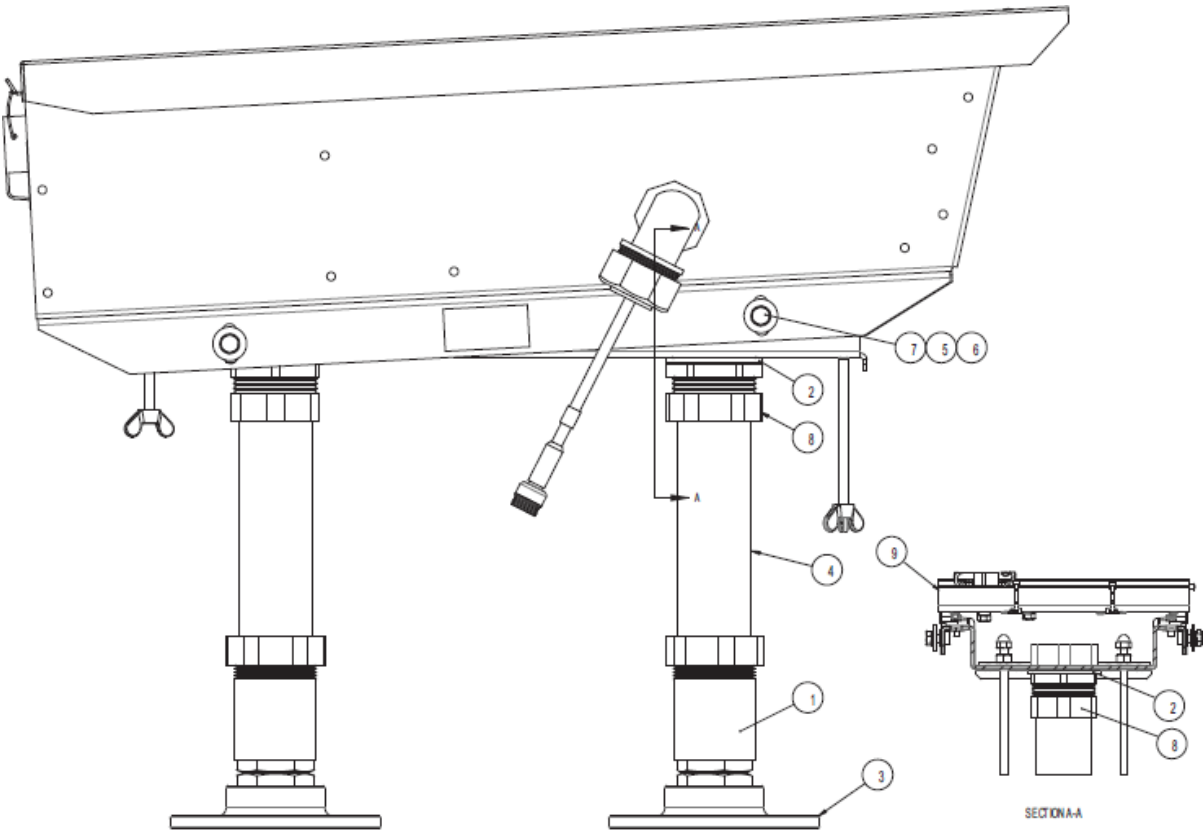
94A0616 / □

Type

2 = L-881 (2 Box)

4 = L-880 (4 Box)

Figure 5: Installation Parts - 117A0039



Item No.	Part Number	Description	Qty.	Note
1	44B0180	Coupling, Frangible 2" EMT MS-17814-1	2	Provided with Enclosure
2	60A3346	Single-Channel PAPI Mounting Spacer	2	Provided with Enclosure
3	62B0107-2	Mounting Flange Plain Finish	2	Provided with Enclosure
4	N/A	2-inch EMT 2 3/16 OD ¹	2	Provided by Contractor
5	N/A	M8 Flat Washer	4	Provided with Enclosure
6	N/A	M8 Split Lockwasher	4	Provided with Enclosure
7	N/A	M8 X 16 Hex Bolt	4	Provided with Enclosure
8	77A0009	Compression Coupling 2" EMT	2	Provided with Enclosure
9	94A0496	Optional Single-Channel PAPI Extended Elevation Kit ²	1	Optional Kit

Notes

- ¹ 2-inch diameter EMT tubing (2-3/16 OD) to be provided and installed by contractor. Length to be determined at installation to adjust for uneven terrain and to mount optical box at correct elevation above the runway. 2-inch EMT tube to extend 3-1/4" into frangible coupling and full insertion into compression coupling to ensure stable installation. Tube must be painted international orange per FED-STD-595, Color 12197 to provide corrosion protection.
- ² 94A0496 extended elevation kit is optional for elevations in excess of 5 degrees.

Figure 6: Single Channel PAPI Light Unit - 44A6853

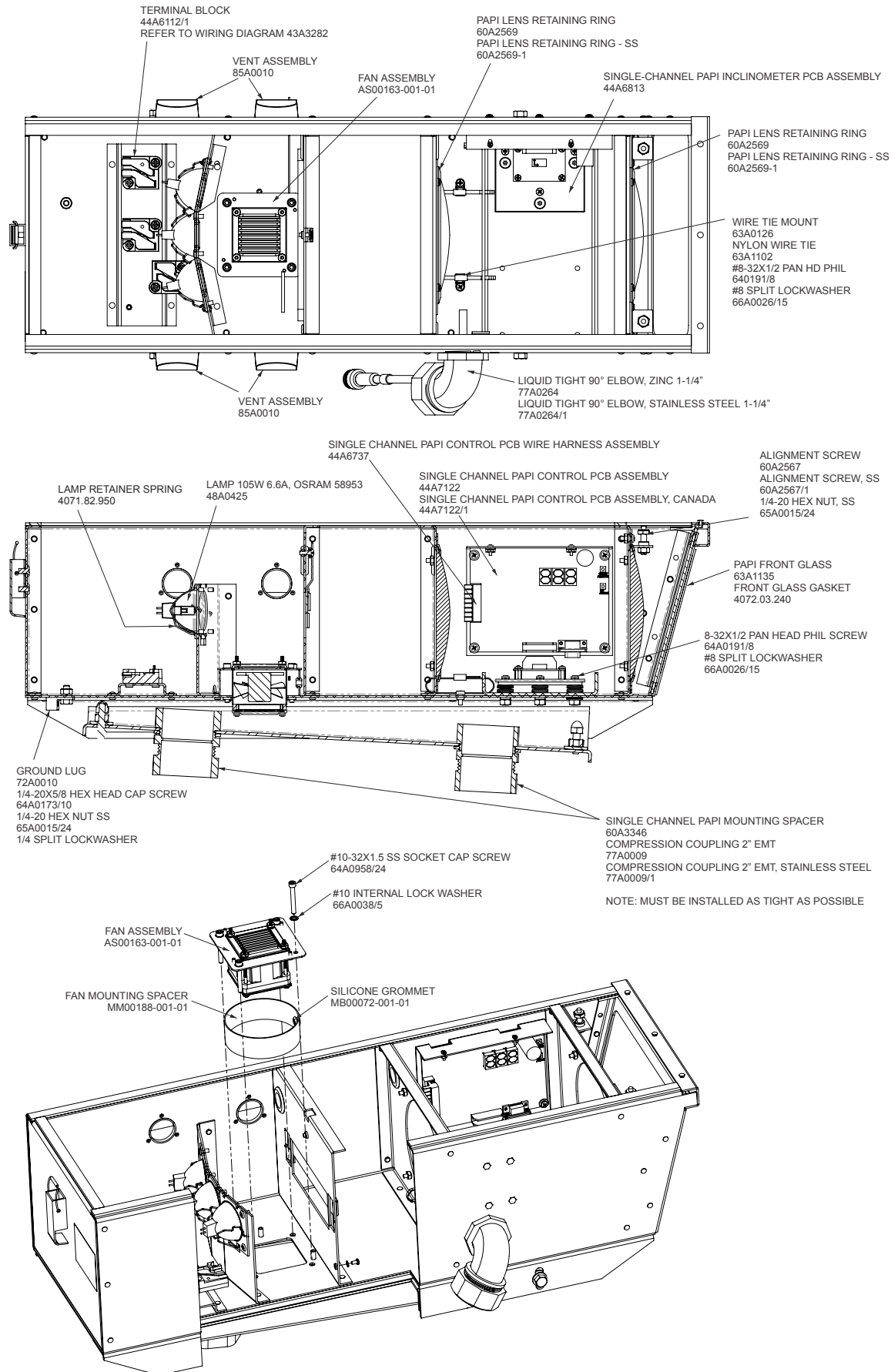


Figure 7: Single Channel PAPI Light Unit - 44A6853 (Continued)

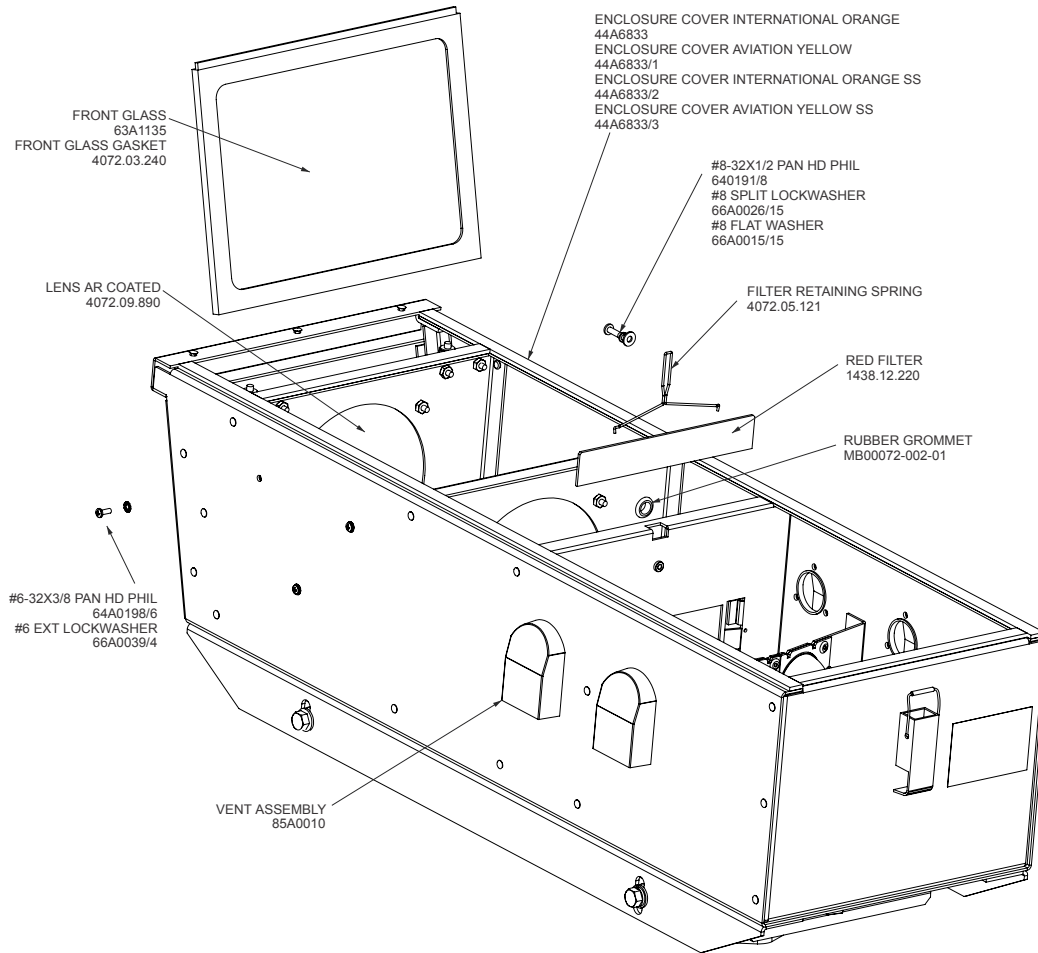
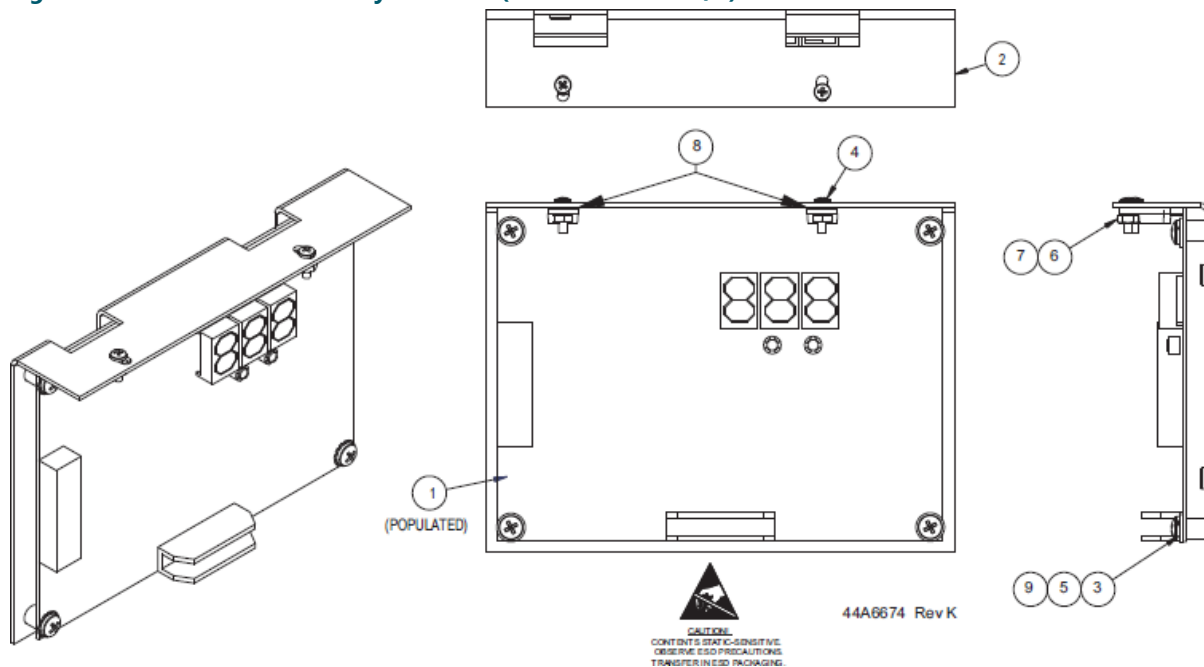


Table 1: Single Channel PAPI Light Unit Parts

Part Number	Description	Qty. 44A6853	Qty. 44A6853-C	Note
44A7122	Single-Channel PAPI Control PCB Assembly (Standard Version)	1	-	Tilt Switch Enabled
44A7122/1	Single-Channel PAPI Control PCB Assembly (Canada Version)	-	1	Tilt Switch Disabled
44A6737	Single-Channel PAPI Wire Harness Assembly	1	1	
44A6813	Single-Channel PAPI Inclinator PCB Assembly	1	1	
63A0126	Wire Tie Mount	2	2	
63A1102	Nylon Wire Tie	2	2	
64A0191/8	#8-32 X 1/2 Pan Head Phillips	14	14	
66A0026/15	#8 Split Lockwasher	20	20	
65A0015/15	#8-32 Hex Nut	8	8	
72A0010	Ground Lug	1	1	
64A0173/10	1/4-20 X 5/8 Hex Head	1	1	
65A0015/24	1/4-20 Hex Nut, SS	1	1	

Table 1: Single Channel PAPI Light Unit Parts (Continued)

Part Number	Description	Qty. 44A6853	Qty. 44A6853-C	Note
66A0026/24	1/4 Split Lockwasher	1	1	
64A0198/6	#6-32 X 3/8 Pan Head Phillips	3	3	
66A0039/4	#6 Ext Lockwasher	3	3	
77A0264	Liquid Tight 90° Elbow, Zinc 1-1/4"	1	0	
77A0264/1	Liquid Tight 90° Elbow, Stainless 1-1/4"	0	1	
89A0267/02	14-Pin Ribbon Cable, 2" Long	1	1	
85A0010	Vent Assembly	4	4	
AS00163-001-01	Fan Assembly	1	0	
64A0958/24	#10-32 X 1.5 Socket Cap Screw SS	4	4	
66A0038/5	#10 Internal Lockwasher	4	4	
1438.12.220	Red Filter	1	1	
4072.05.121	Filter Retaining Spring	1	1	
63A1135	Front Glass	1	1	
4072.03.240	Front Glass Gasket	1	1	
4072.09.890	Lens AR Coated	2	2	

Figure 8: Control Board Assembly 44A7122 (Canada: 44A7122/1)

Table 2: Control Board Parts

no.	Part Number	Description	Units	Qty.
1	44A7122 or 44A7122-C	Control Board Assembly		
2	60A3270	Single-Channel PAPI Control PCB Bracket		
3	64A0191/4	Screw, 8-32 X 1/4, Pan Head, Phil, SS	Ea.	4
4	64A0169/6	Screw, 4-40 X 3/8, Pan Head, Phil, SS	Ea.	2

Table 2: Control Board Parts (Continued)

no.	Part Number	Description	Units	Qty.
5	66A0039/5	#8 Ext. Lockwasher, SS	Ea.	4
6	65A0015/7	Hex Nut, 4-40, SS	Ea.	2
7	66A0039/2	#4 Ext. Lockwasher, SS	Ea.	2
8	63A0857	TO-220 Silicone Pad	Ea.	2
9	66A0015/15	#8 FLAT WASHER	Ea.	4

Figure 9: Power Control Unit (PCU) Assembly, Style A, 44A6752/XXX

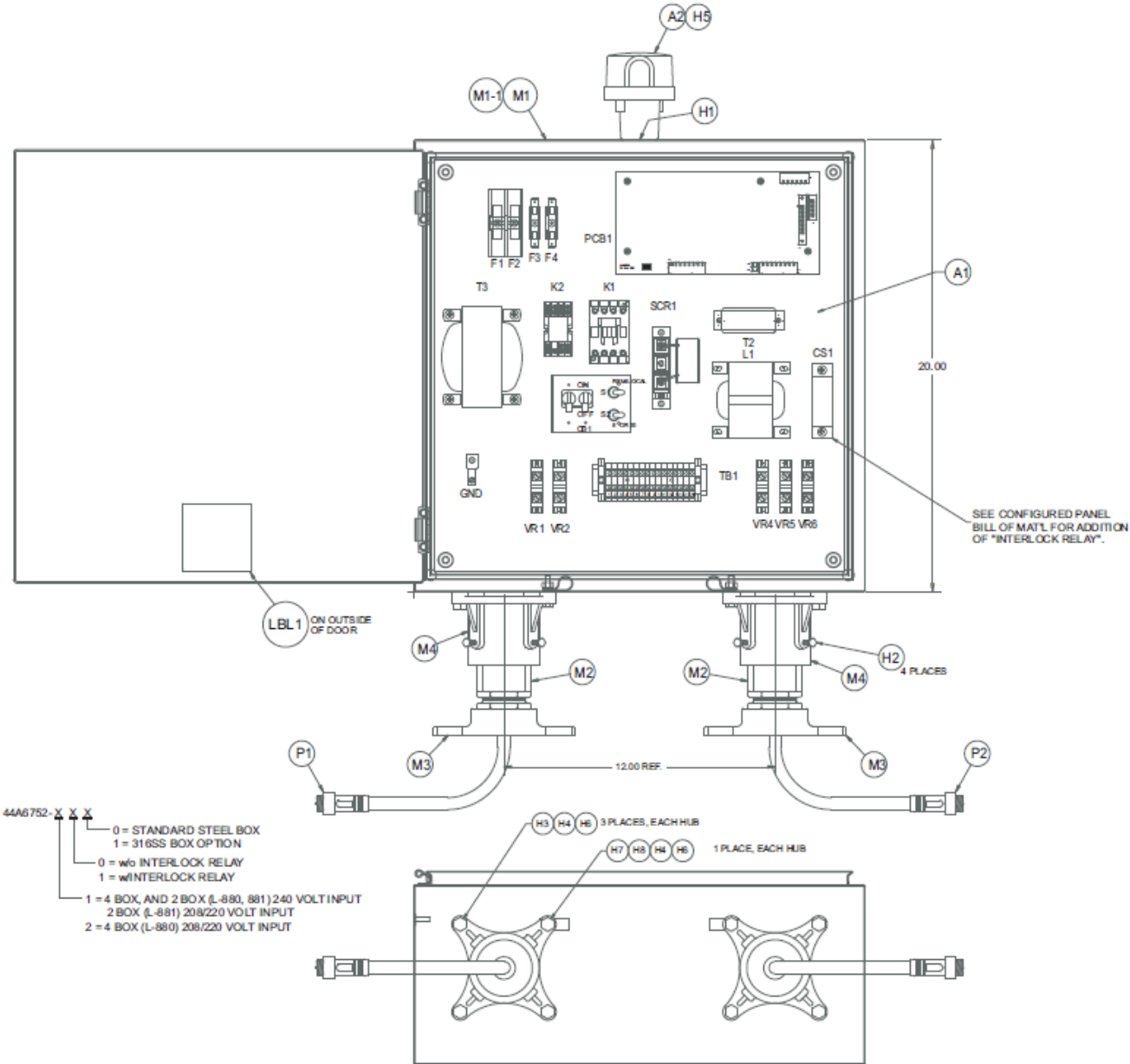
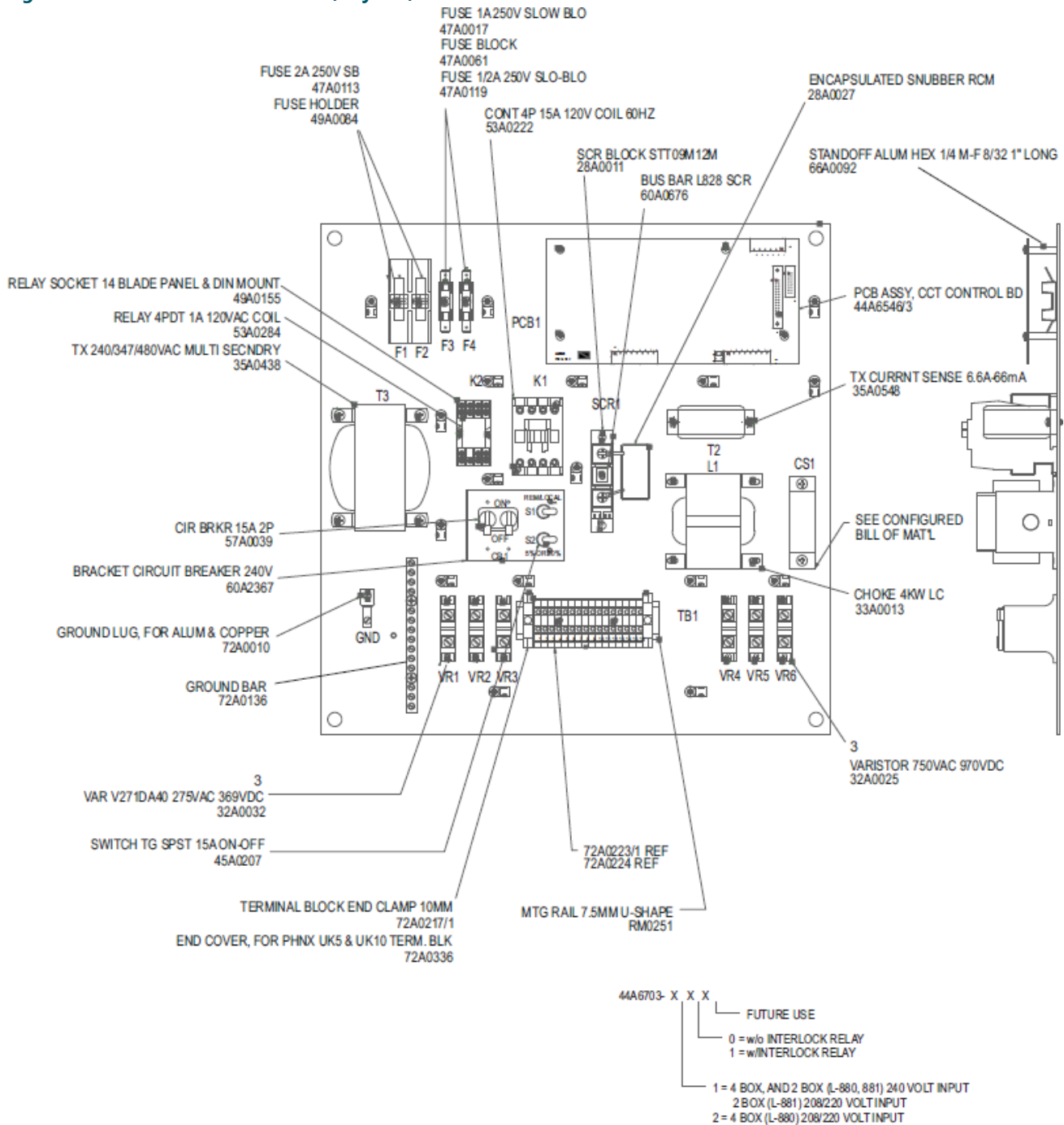


Table 3: Power Control Unit Parts

Item No.	Part Number	Qty.	Part Name/Description	Note
LBL1	42A0307	1	Label PAPI	
A1	44A6703/XXXX	1	PAPI A Panel Assembly	See Figure 23
A2	48A0089	1	Photocell 120VAC	
H1	49A0095	1	Photocell Socket	
M1	60A3324	1	PAPI Power Control Unit (PCU) Enclosure, SC PAPI	
M1-1	60A3324/1	1	PAPI Power Control Unit (PCU) Enclosure, SC PAPI, 316SS	
M2	62B0064	2	Coupling 2" Frangible, Black, Threaded 1 End	
M3	62B0107/2	2	Mounting Flange	
M4	62C0068	2	Hub Mounting	
H2	64A0173/12	4	Bolt, 1/4-20 X ¾ Hex Head	
H3	64A0173/16	6	Bolt, 1/4-20 X 1 Hex Head	
H4	64A0015/24	8	1/4-20 Hex Nut	
H5	65A0117	1	1/2-14 Sealing Nut	
H6	66A0026/24	8	1/4 Split Lockwasher	
P1, P2	73A0180	2	Male Plug w/8' Cord, 6 Conductor/16AWG	
H7	62A0138/1	2	Cable Clamp	
H8	64A0173/20	2	Bolt, 1/4-20 X 1-1/4" Hex Head	

Figure 10: Power Control Unit Panel, Style A, 44A6703



2.1 Spare Parts

It is recommended to create a sufficiently large stock of spare parts to maintain the Single Channel PAPI 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 less likely to need replacement, such as lenses, filters, gaskets and PCB sub-assemblies should be stocked in smaller quantities.

For the Single Channel PAPI unit, it is highly recommended to have a least one entire Single Channel PAPI unit as a spare for larger installations.

For the Single Channel PAPI see the table below for spares.

- Consider acquiring 10% spares for critical components noted as (A) in the table below. If only a small number of PAPI units are installed, consider acquiring at least 1 of each of the components noted as (A) below.
- Also consider acquiring 1% spares for parts noted as (B) in the table below. If it is important to have a robust level of spare parts on hand, and only a small number of PAPI units are installed, consider acquiring 1 of each of the components noted as (B) below.

Table 4: Light Unit Spare Parts

Part No.	Description	Location	Note	Spares
44A6853/S	SC PAPI Spare Light Unit			
44B0180	Frangible Coupling, 2-inch EMT	Figure 5		A
44A6813	Inclinometer PCB Assembly	Figure 6		B
48A0425	Lamp, 105W, 6.6A	Figure 6		A
1438.12.220	Red Filter	Figure 7		B
44A7122	Single Channel PAPI Control Board	Figure 6		B
AS00163-001-01	Fan Assembly	Figure 6		
94A0570/XXX	Baffle Kit	Figure 19		



Note

Inclinometer 44A6813 (RevE or earlier) or 44A6813/INSL is replaced by 44A6813 (RevF or later).



Note

Upon initial replacement of either of the older PAPI Control Boards 44A6674 or 44A6674-1 or the inclinometer PCB assembly 44A6813 (RevE or earlier), you must replace both items with new PAPI control boards 44A7122 or 44A7122-1 and 44A6813 (RevF or later).

Table 5: Power Control Unit Spare Parts

Part No.	Description	Location	Note	Spares
44A6546-3	CCT Control Board	Figure 9		B
62B0064	Frangible Coupling, Control Box	Figure 9		B
47A0017	Fuse, 1A, SB (F4)	Figure 10		A
47A0049	Fuse, 2A, SB (F1, F2)	Figure 10		A
47A0119	Fuse, 0.5A, SB (F3)	Figure 10		A
48A0089	Photocell	Figure 9		A
44A6853	SC PAPI Optical Box	Figure 6		B
44A6853-1	SC PAPI Optical Box, Stainless Steel	Figure 6		B

Table 5: Power Control Unit Spare Parts (Continued)

Part No.	Description	Location	Note	Spares
44A6853-C	SC PAPI Optical Box, Tilt Switch Disabled	Figure 6		B
28A0011	SCR	Figure 10		B
28A0027	Snubber, SCR	Figure 10		A
32A0028	Varistor, 575V AC, Input	Figure 10		A
32A0025	Varistor, 750V AC, Output	Figure 10		A

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**

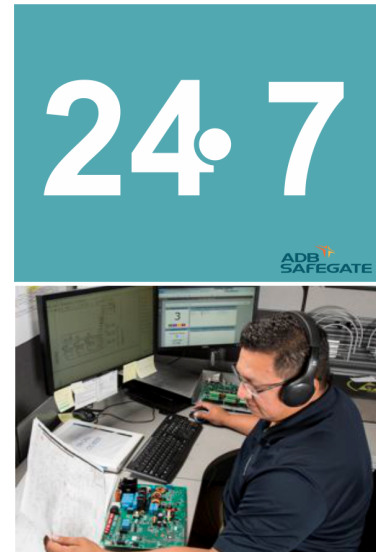
ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304

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

Brussels: +32 2 722 17 11

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.

Company Addresses

ADB SAFEGATE	ADB SAFEGATE, Belgium: Leuvensesteenweg 585, B-1930 Zaventem Belgium
Contact: Tel.: +32 2 722 17 11, Fax: +32 2 722 17 64	Email: marketing@adbsafegate.com Internet: www.adbsafegate.com
Americas LLC	ADB SAFEGATE, Americas: 977 Gahanna Parkway, Columbus, OH 43230 USA
Contact: Tel.: +1 (614) 861 1304, Fax: +1 (614) 864 2069	Email: sales.us@adbsafegate.com Internet: www.adbsafegate.com
ADB SAFEGATE Sweden AB	ADB SAFEGATE, Sweden: Djurhagegatan 19 SE-213 76 Malmö Sweden
Contact: Tel.: +46 (0)40 699 17 00, Fax: +46 (0)40 699 17 30	Email: marketing@adbsafegate.com Internet: www.adbsafegate.com
ADB SAFEGATE Airfield Technologies Ltd. China	ADB SAFEGATE, 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: china@safegate.com Internet: www.adbsafegate.com
ADB SAFEGATE Germany GmbH	ADB SAFEGATE Germany GmbH, Mannheim: Konrad-Zuse-Ring 6, D-68163 Mannheim Germany
Contact: Tel.: +49 (621) 87 55 76-0, Fax: +49 (621) 87 55 76-55	Email: marketing@adbsafegate.com Internet: www.adbsafegate.com



**Powering Your Airport Performance
from Approach to Departure**

adbsafegate.com

Copyright © ADB SAFEGATE, all rights reserved

