



SM53

**RGT-102 Series
EGPWS Control Panel**



INSTALLATION AND OPERATION MANUAL

REV 4.00 July 12, 2005

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Periodically NAT will release manual amendments. In order to maintain the most accurate and up to date manual these amendments should be carried out immediately upon receipt and recorded on the following amendment record.

AMENDMENT RECORD				
Amendment Number	Amendment Date	Section(s) Changed	Date Entered	Entered By

Insert any Amendment Instruction sheets after this page.

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Section 1 Description

1.1 Introduction

This manual contains information on the RGT Series Switch/Annunciator Panel. All derivative products will be covered by manual supplements, which can be obtained from NAT as required.

Information in this section consists of purpose of equipment, features and specifications.

1.2 Purpose of Equipment

The RGT-102 is an advanced control panel for Enhanced Ground Proximity Warning Systems (EGPWS). The design incorporates user-friendly controls, multiple mounting options, panel lighting, and dual control installation capability.

Dual Control Installations

Providing the ability to have dual controls in the cockpit is an industry exclusive for the RGT-102. Aircraft installations are no longer restricted to limited panel locations. The controller can be mounted as either a single unit between both pilots or as two individual controls on either side. This provides more flexibility in mounting options and ensures easy accessibility for both pilots.

Controls

Each control panel provides DISPLAY and SYSTEM illuminated annunciator switches. The DISPLAY switch provides fast selection of enabling and disabling of the terrain (TERR) mode of the EGPWS system. The SYSTEM switch for all variants allows the override function of the system to be selected or deselected; this is indicated by the condition of the OVRD light of the upper half of the SYSTEM switch. Depending on the variant, the lower half of the SYSTEM switch provides status indication for FAULT, INOP or FAIL conditions of the EGPWS system. A protective clear cover over the SYSTEM switch prevents accidental activation.

Multiple Mounting Options

The RGT-102 is available in a 1.5" x 3.5" instrument panel CAM mount or 5.75" Dzus mount configuration for pedestal installations. An adapter plate (p/n 910-1410-215) is available to convert the instrument panel cam mount version to a Dzus mount, providing additional installation flexibility.

Panel Options

Panel lighting is standard white, 0-28 Vdc, or 0-5 Vac. Switch indicator displays can be driven directly by the aircraft 14/28 Vdc display bus or internally from a brightness bus that is controlled by the aircraft instrument panel power bus. Panel colours are black, grey, or brown.

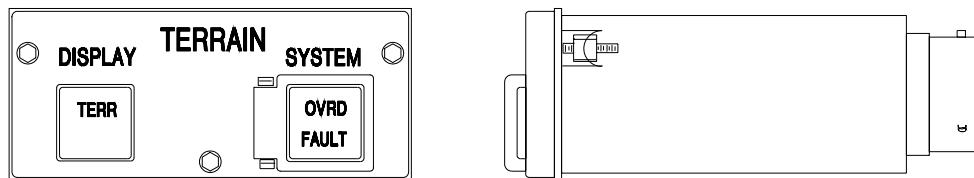
1.3 Specifications

1.3.1 Electrical Specifications

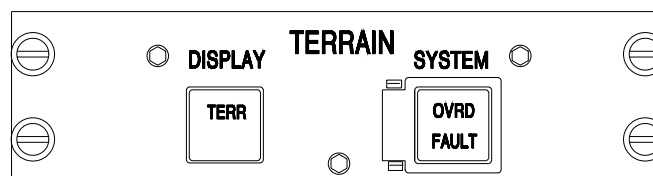
Power	27.5 Vdc @ 0.05 A max *or 27.5 Vdc @ 0.25 A max (*with internal indicator dimming bus.)
Panel Lights	0-5 Vac @ 0.20 A nominal 0-28 Vdc @ 0.075 A nominal
Indicator Lights	0-5 Vac, 0-28 Vdc, or, 14/28 Vdc

1.3.2 Physical Specifications

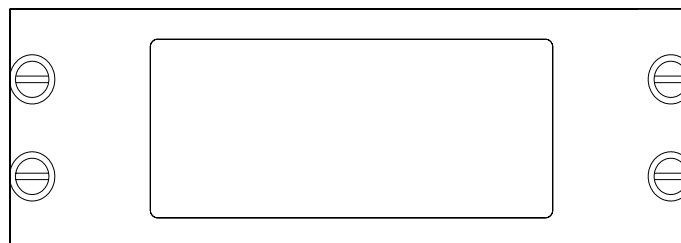
Dimensions	(CAM)	1.5" H x 3.5" W x 3.0" D
	(Dzus)	1.5" H x 5.75" W x 3.0" D
	Dzus adapter plate	1.875" H x 5.75" W x 3.0" D
Weight	(CAM)	0.5 lb.
	(Dzus)	0.6 lb.



1.5" H x 3.5" W x 3.0" D



1.5" H x 5.75" W x 3.0" D



Adapter Plate 1.875" H x 5.75" W

1.3.3 Unit Nomenclature

The unit nomenclature reflects the possible configuration options shown in the table below:

907-1102-	--_x	FAULT / INOP / FAIL	-xx_	Panel Colour	Lamp Voltage
Indicator dimming coupled to panel lamp dim bus	-01x	FAULT	-xx0		
Indicator dimming coupled to 14/28v indicator dim bus	-02x	FAULT	-xx1	Black	0-5 Vac
Indicator dimming coupled to panel lamp dim bus	-11x	INOP	-xx2	Grey	0-5 Vac
Indicator dimming coupled to 14/28v indicator dim bus	-12x	INOP	-xx3	Brown	0-5 Vac
Indicator dimming coupled to 14/28v indicator dim bus	-22x	FAIL	-xx4		
			-xx5	Black	0-28 Vdc
			-xx6	Grey	0-28 Vdc
			-xx7		
			-xx9		

Example:

From the table above, **907-1102-122** = 14/28 Vdc Indicator Dimming, Grey Panel, 0-5 Vac

1.3.4 Environmental Specifications

Temperature	(operating)	-55° C to +70° C
	(survival)	-55° C to +85° C
Altitude		55,000 ft
Humidity		95%
Environmental		RTCA DO-160D
FAA TSO Compliance		TSO-C92c

End of section 1

Section 2 Installation

2.1 Introduction

Information in this section consists of: unpacking and inspection procedures, installation procedures, post-installation checks, and installation drawings.

2.2 Unpacking and Inspection

Unpack the equipment carefully and locate the warranty card. Inspect the unit visually for damage due to shipping and report all such claims immediately to the carrier involved. Note that each unit should have the following:

- RGT Series Switch/Annunciator Panel
- Warranty Card
- Operator's Manual
- Release certification

Verify that all items are present before proceeding and report any shortage immediately to your supplier.

2.2.1 Warranty

Complete the warranty card information and send it to NAT when the installation is complete. If you fail to complete the warranty card, the warranty will be activated on date of shipment from NAT.

Note: An appropriately rated facility, e.g. Certified Aircraft Repair Station, must install this equipment in accordance with applicable regulations. NAT Ltd's warranty is not valid unless the equipment is installed by an authorized NAT Dealer. Failure to follow any of the installation instructions, or installation by a non-certified individual or agency will void the warranty, and may result in a non-airworthy installation.

2.3 Installation Procedures

2.3.1 Warnings

Do not bundle any lines from this unit with transmitter coax lines. Do not bundle any audio or DC power lines from this unit with 400 Hz synchro wiring or AC power lines. Do not position this unit or wiring from this unit next to any device with a strong alternating magnetic field such as an inverter, or significant audio interference will result.

2.3.2 Cabling and Wiring

All unshielded wire shall be selected in accordance with AC43.13-1B Change 1, Paragraphs 11-76 through 11-78. Wire types should be to MIL-W-22759 as specified in AC43.13-1B Change 1, Paragraphs 11-85, 11-86, and listed in Table 11-11. For shielded wire applications, use Tefzel MIL-C-27500 shielded wire with solder sleeves (for shield terminations) to make the most compact and easily terminated interconnect. Follow the wiring diagrams in Section 2.5 as required.

Allow 3 inches from the end of the wire to the shield termination to allow the backshell to be easily installed.

All wiring should be at least 22 AWG, except power and ground lines, which should be at least 20 AWG. Ensure that all ground connections are clean and well secured.

2.3.3 Post-Installation Checks

2.3.3.1 Voltage/Resistance Checks

Check the following:

- a) P1 pin <1> for continuity to ground (chassis and DC power ground).
- b) P1 pin <6> for +28 Vdc (panel lamps Hi).
- c) P1 pin <15> for continuity to ground (panel lamps Lo).
- d) P1 pin <16> for +14 or +28 Vdc (indicator bus).
- e) P1 pin <17> for +5 Vdc (panel lamps Hi).
- f) P1 pin <19> for +28 Vdc.

2.3.3.2 Power On Checks

- a) Install the RGT-102 and power up the aircraft's systems. Turn on the radios and accessories required for the system.
- b) Run through all installed functions. Refer to Section 3 for operation details.
- c) Ensure that the unit and its mating connector are secured before departure.

Upon satisfactory completion of all performance checks, make the required log entries and complete the necessary Regulatory Agency paperwork before releasing the aircraft for service.

2.4 Continued Airworthiness

Maintenance of the RGT-102 is 'on condition' only. Periodic maintenance of this product is not required.

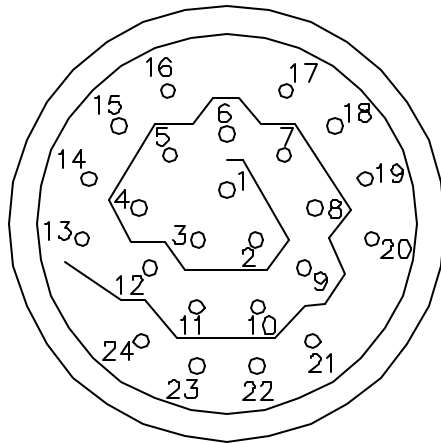
2.5 Installation Drawings

DRAWING	REV.	DESCRIPTION	TYPE	SERIAL #
907-1102-022\405-0	1.00	EGPWS Control Panel	Connector Map	All
907-1102- 222 \405-0	1.00	EGPWS Control Panel	Connector Map	466 and up
907-1102-022\521-0	1.00	EGPWS Control Panel	Environmental Qual Form	All
907-1102-022\905-0	1.00	EGPWS Control Panel	Faceplate	All
907-1102-022\922-0	1.10	EGPWS Control Panel	Mech. Installation	All
910-1410-215\900-0	1.00	Adaptor Mounting Panel	Orthographic	All

Section 2 ends after these Drawings

P1


24 PIN CIRCULAR FEMALE
MATING CONNECTOR



VIEW IS FROM REAR OF AIRFRAME CONNECTOR.

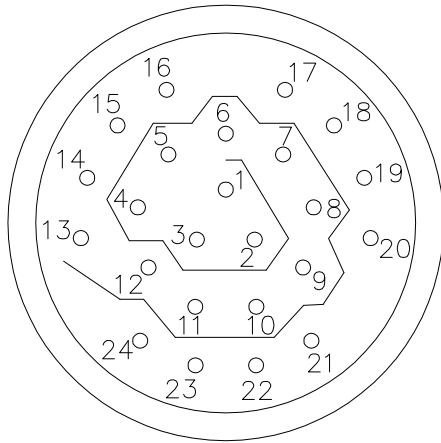
PIN	SIGNAL
1	CHASSIS & DC GROUND
2	N/C
3	N/C
4	N/C
5	N/C
6	PANEL LAMPS 28V HI
7	OVRD SYNC
8	N/C
9	OVRD INDICATOR TEST
10	TERRAIN INDICATOR TEST
11	FAULT/INOP INDICATOR TEST
12	N/C
13	N/C
14	N/C
15	PANEL LAMPS LO
16	INDICATOR 14/28V BUS
17	PANEL LAMPS 5V HI
18	OVRD TOGGLE
19	+28VDC
20	TERRAIN ON/OFF
21	OVRD ON/OFF
22	TERRAIN INDICATOR ON
23	FAULT/INOP INDICATOR ON
24	N/C

PROPRIETARY AND CONFIDENTIAL TO NAT LTD.

DESIGNED	EMH	 NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	JAN 31/00	TITLE	EGPWS CONTROL PANEL			
CHECKED	NAT 104	NAT 214				
APPROVED	NAT 107	SIZE	CAGE CODE	PART NO.	REV.	SHEET
FILE	405-0100.DWG	A	3AB01	907-1102-x2x	1.00	1/1
DWG. TYPE		CONNECTOR MAP		DWG. NO.907-1102-022\405-0		

P1




24 PIN CIRCULAR FEMALE
MATING CONNECTOR



VIEW IS FROM REAR OF AIRFRAME CONNECTOR.

PIN	SIGNAL
1	CHASSIS & DC GROUND
2	N/C
3	N/C
4	N/C
5	N/C
6	PANEL LAMPS 28V HI
7	OVRD SYNC
8	N/C
9	OVRD INDICATOR TEST/ON
10	TERRAIN INDICATOR TEST
11	FAIL INDICATOR TEST
12	N/C
13	N/C
14	N/C
15	PANEL LAMPS LO
16	INDICATOR 14/28V BUS
17	PANEL LAMPS 5V HI
18	OVRD TOGGLE
19	+28VDC
20	TERRAIN ON/OFF
21	OVRD ON/OFF
22	TERRAIN INDICATOR ON
23	FAIL INDICATOR ON
24	N/C

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DESIGNED	EMH	 NAT NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	FEB 17/03	TITLE				
CHECKED		EGPWS CONTROL PANEL				
APPROVED		SIZE	CAGE CODE	PART NO.	REV.	SHEET
		A	3AB01	907-1102-222	1.00	1/1
FILE	405-0100.DWG	DWG. TYPE	CONNECTOR MAP	DWG. NO. 907-1102-222\405-0		



ENVIRONMENTAL QUALIFICATION FORM

Description: RGT-102 Switch/Annunciator Panel Document #: 907-1102-022\521-0

NAT Part #: RGT-102 907-1102-xxx TSO #: C92c

Manufacturer's Specification and/or Other Applicable Specification: _____

RTCA DO-160D and ARINC 723

Manufacturer: Northern Airborne Technology Ltd.

Address: 1925 Kirschner Rd., Kelowna, BC, Canada. V1Y 4N7

Prepared By:



Checked By:



Approved By:

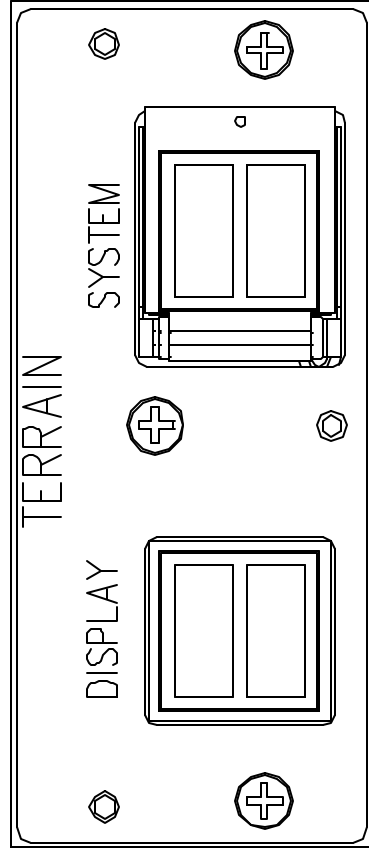


CONDITIONS	SECTION/ PARAGRAPH	DESCRIPTION OF CONDUCTED TESTS
Temperature and Altitude	4.0	Equipment tested to Category F1
Low Temperature	4.5.1	Equipment tested to Category F1 -55°C/-20°C
High Short-Time Operation Temp.	4.5.2	Equipment tested to Category F1 +70 °C
High Temperature	4.5.3	Equipment tested to Category F1 +55 °C
In Flight Loss of Cooling Test	4.5.4	Not Applicable
Altitude	4.6.1	Equipment tested to Category F1 55,000 ft.
Decompression	4.6.2	Equipment tested to Category F1 8,000 ft.
Overpressure	4.6.3	Equipment tested to Category F1 -15,000 ft.
Temperature Variation	5.0	Equipment tested to Category B
Humidity	6.0	Equipment tested to Category A
Operational Shock & Crash Safety	7.0	Equipment tested per DO-160D, 7.2.1, 7.3.1, 7.3.2
Operational Shock	7.2	Equipment tested per DO-160D, 7.2.1
Crash Safety	7.3	Procedure 7.3.1 & 7.3.2
Vibration	8.0	Equipment tested without shock mounts
	8.5.2	Curve B
	8.6	Curve R
Explosion	9.0	Equipment tested to Category E
Waterproofness	10.0	Equipment tested to Category W
Fluids Susceptibility	11.0	No test required.



CONDITIONS	SECTION/ PARAGRAPH	DESCRIPTION OF CONDUCTED TESTS
Sand and Dust	12.0	No test required.
Fungus	13.0	No test required
Salt Spray	14.0	No test required.
Magnetic effect	15.0	Equipment tested to Class Z
Power Input	16.0	Equipment tested to Category A & Z 16.5.2.1 16.5.2.2 16.5.2.3 16.5.2.4 16.5.2.5 16.5.4.1 16.5.4.2 16.5.4.3 16.5.4.4.
Voltage Spike	17.0	Equipment tested to Category A
Audio Frequency Conducted Susceptibility	18.0	Equipment tested to Category Z
Induced Signal Susceptibility	19.0	Equipment tested to Category A 19.3.1 19.3.2 19.3.3 19.3.4
Radio Frequency Susceptibility	20.0	Equipment tested to Category V 20.4 20.5
Radio Frequency Emission	21.0	Equipment tested to Category M 21.3 21.4
Lightning-induced Transient Susceptibility	22.0	Equipment tested to Category XXC3 22.5.2

End of Environmental Qualification Form



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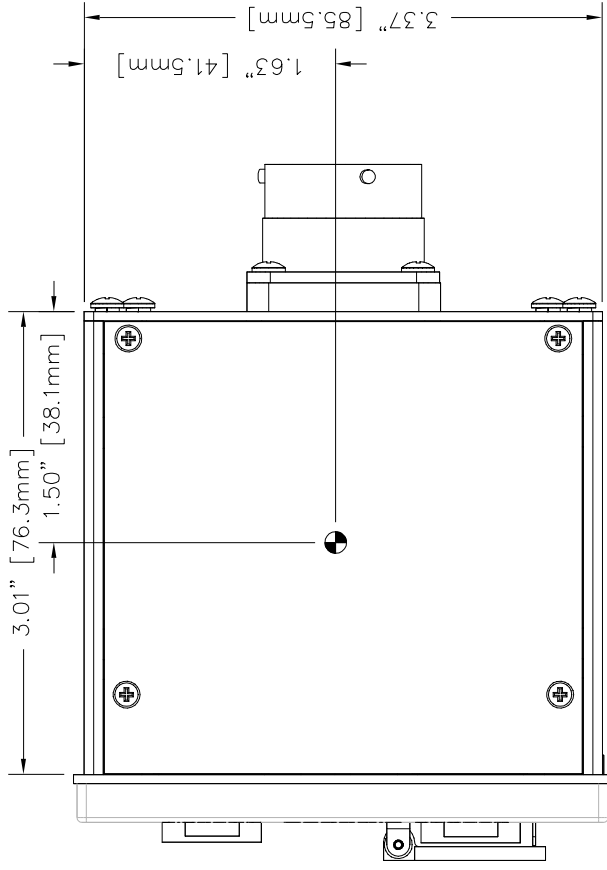
DESIGNED	EMH										
DRAWN	TAT										
DATE	JAN 31/00	TITLE		EGPWS		CONTROL PANEL					
CHECKED	NAT 239	NAT 214									
APPROVED	NAT 107	SIZE	A	CAGE CODE	3AB01	PART NO.	907-1102-xxx	REV.	1.00	SHEET	1/1
FILE	905-0100.DWG	DWG. TYPE	FACEPLATE	DWG. NO. 907-1102-022		905-0					



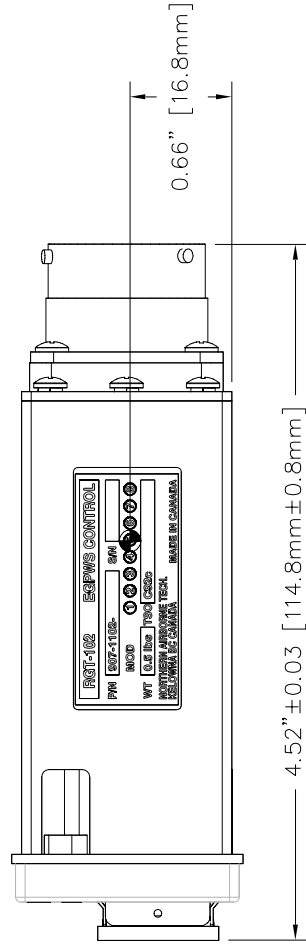
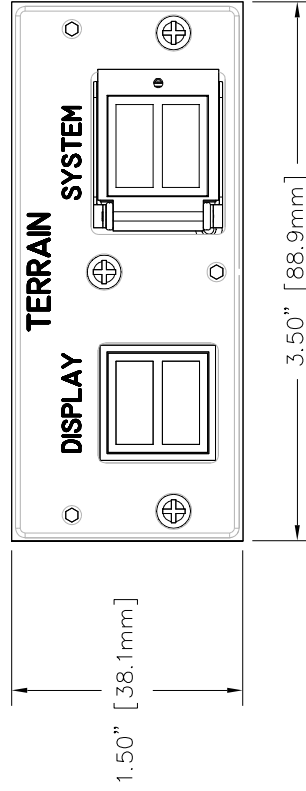
NORTHERN AIRBORNE TECHNOLOGY LTD.

REVISIONS

REV	DESCRIPTION	DATE	BY
1.01	UPDATED TO CURRENT NAT STANDARDS FROM EMH DWG. NO. 807-1102-001 SHT.1.	JAN 31/00	TAT
1.10	ECR#1645-PRODUCT LABEL CHG'D FROM EMH TO NAT.	APR 20/00	TAT

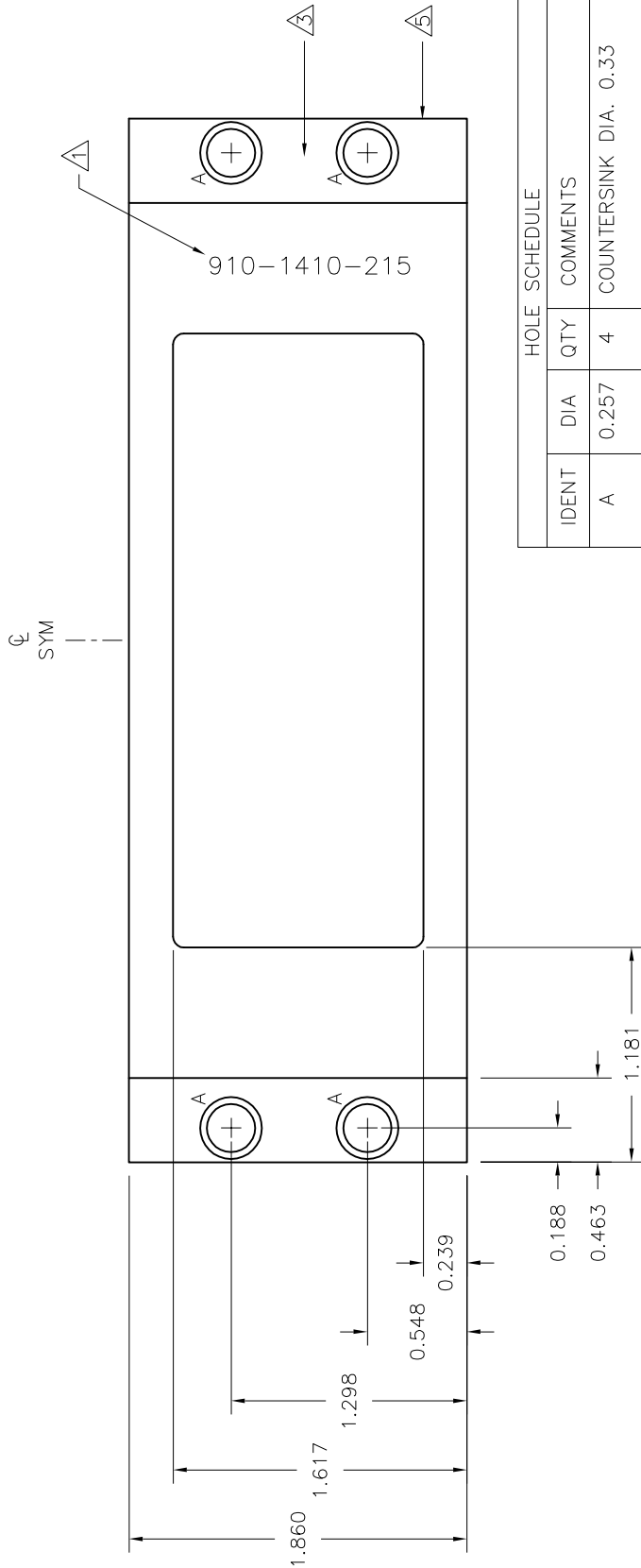
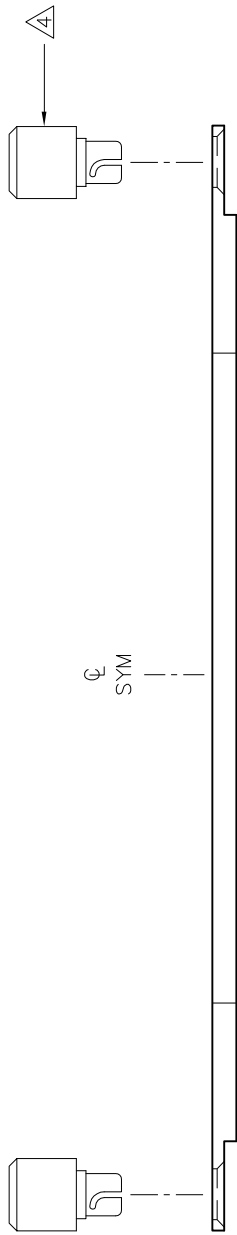


WEIGHT: 0.5 lbs. (0.23 kg)
 CENTER OF GRAVITY ±0.05"



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TOLERANCES UNLESS STATED OTHERWISE		DIMENSIONS IN INCHES	
0.X=+/-0.030	0.XX=+/-0.010	THIRD ANGLE PROJECTION	
0.XXX=+/-0.005	0.XXXX=+/-0.002		
ANGLE=+/- 0.5 DEG.			
MATERIAL			
FINISH			
DESIGNED	RHE	RHE	
DRAWN			
DATE	JAN 28/98		
CHECKED	NAT 228	NAT 214	
APPROVED	(NAT 107)		
FILE	922-0110.DWG	DWG. TYPE	MECH. INSTALLATION
		DWG. NO.	907-1102-xxx
		REV.	1.10
		SHEET	1/1
NAT NORTHERN AIRBORNE TECHNOLOGY LTD.			
TITLE EGPWS CONTROL PANEL			



HOLE SCHEDULE			
IDENT	DIA	QTY	COMMENTS
A	0.257	4	COUNTERSINK DIA. 0.33

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DESIGNED DRAWN		DIMENSIONS IN INCHES		TOLERANCES UNLESS STATED OTHERWISE		TAT		NAT NORTHERN AIRBORNE TECHNOLOGY LTD.	
DATE SEP 10/02		THIRD ANGLE PROJECTION		0.X=+/-0.030 0.XX=+/-0.010 0.XXX=+/-0.005 0.XXXX=+/-0.002 ANGLE=+/- 0.5 DEG.		CHECKED NAT PROD. 256 145		ADAPTOR MOUNTING PANEL	
APPROVED		NAT P/N 49-02-125		MATERIAL		SIZE		REV.	
FILE 900-0100-9101410215.DWG		SEE NOTE 2		FINISH		A		1.00	
DWG. TYPE ORTHOGRAPHIC						CAGE CODE 3AB01		SHEET 1/1	
PART NO. 910-1410-215						PART NO. 910-1410-215		DWG. NO. 9101410215\900-0	

- NOTES:
- 3/32 TEXT EMBOSSED IN METAL.
 - FINISH CHROMATE CONVERSION, THEN GREY FED-STD595A COLOR #36118 PAINT. DO NOT PAINT THIS VIEW.
 - INSERT 25-25-007 AFTER PAINT. EDGES ARE PAINTED.

Section 3 Operation

3.1 Introduction

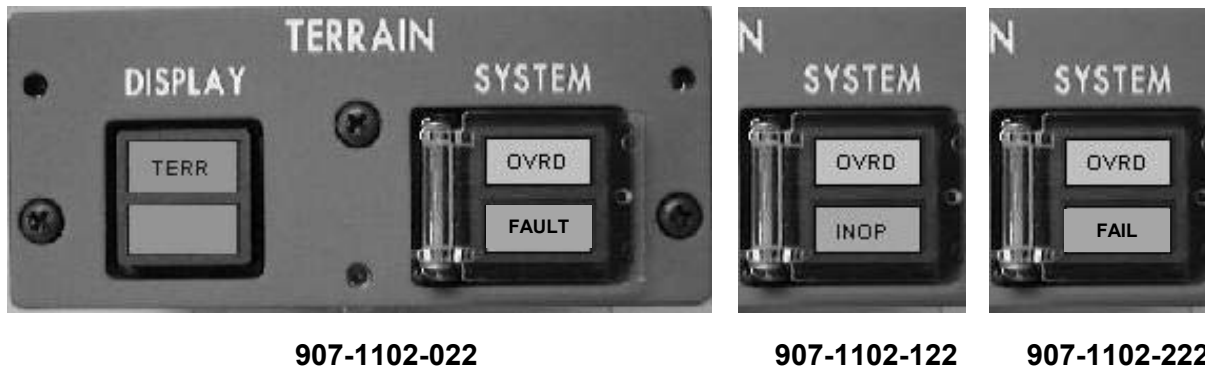
Information in this section consists of the functional and operational procedures for the RGT-102 Series Enhanced Ground Proximity Warning System (EGPWS) Control Panel.

3.2 General

The RGT-102 Series EGPWS Control Panel is mounted in the cockpit for flight-crew control of the terrain function of an installed ground proximity system, and includes function and fail-warning indicators.

3.3 Operation Specifics

All versions of the RGT-102 operate in a similar manner. Below are three variants of the RGT-102 showing the differences in the front-panel text.



Each control panel provides DISPLAY and SYSTEM illuminated annunciator switches.

3.3.1 DISPLAY

The TERR (terrain) switch provides fast manual selection/deselection of the terrain mode of the EGPWS. It illuminates blue when the terrain function is on.

3.3.2 SYSTEM

A protective clear cover over the SYSTEM switch prevents accidental activation.

The SYSTEM switch for all variants allows the override function of the system to be selected or deselected; this is indicated by the condition of the OVRD (override) light of the upper half of the SYSTEM switch. Depending on the variant, the lower half of the SYSTEM switch provides status indication - FAULT, INOP or FAIL conditions - of the EGPWS system.

FAULT, INOP, or FAIL - In the event of a system status change, the lower half of the SYSTEM annunciator illuminates amber in response to a signal from the EGPWS. This indicator is combined with an OVRD (override) switch.

OVRD - The OVRD (override) switch selects/deselects the system override function. It illuminates white when the override function is on.

End of section 3