

MODEL 1561 DANREADER

MODEL 1561 DANREADER ACCESS CONTROL UNIT

REFERENCE GUIDE

Part Number: 3-9000-721

Revision E

MAY 1999

DANIEL

**DANIEL INDUSTRIES, INC.
DANREADER ACCESS CONTROL UNIT
REFERENCE GUIDE**

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INTRODUCTION

Model 1561 Danreader is a computer controlled Access Control Unit (ACU) intended for use in distributed systems to restrict access to controlled areas or equipment operation. The Danreader provides an operator interface for the entry and access control portion of the system. The Danreader is made up of a Weigand-effect card reader, membrane keypad, LCD readout, two indicator LEDs and a microprocessor board with memory and communication interface to the central control computer. It is housed in a NEMA 4X weatherproof, aluminum enclosure and is intrinsically safe, rated for installation in Class I, Group C and D, hazardous locations. One of the two enclosure door latches has provisions for installing a padlock to limit access to the inside of the enclosure to authorized personnel.

The Model 1561 is powered by an external DC power source of 12 to 15 Vdc and uses a 4 - 20 mA current loop link to provide serial communication with the central computer. The control computer and DC power source are located outside the hazardous area. Diode barriers are installed in the communications and DC power lines to maintain intrinsic safety for Division 1 locations. No barriers are required for Division 2 installations.

MANUAL OVERVIEW

This manual provides information about the application, installation, operation and maintenance of the Danreader. Because it is a peripheral component of a much larger system, refer to the installed system manuals to obtain detailed information on how the ACU fits into the overall system operation.

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PRODUCT OVERVIEW

The Danreader Access Control Unit contains the necessary display, interface, communication and control functions to implement the steps of personnel identification for access to controlled areas or operation of controlled equipment by the card holder. The actual steps required to verify information entered by the ACU user are a function of the microcontroller program stored in two EPROMS on the Danreader processor board and an operating system program downloaded to RAM from the central computer at the time the ACU is activated. A Weigand-encoded card is issued to each of those requiring access and the card code number is validated and stored in a security file in the central computer. The first time the card is used, the card holder enters a Personal Identification Number (PIN) code and it is stored with the card information to form the basis of identification for future right to access by that cardholder.

GENERAL DESCRIPTION

The Model 1561 is composed of a Weigand-effect card reader head with "card in" microswitch and two LED indicators mounted in a card reader housing, a membrane keypad, a reflective LCD readout and a microprocessor board housed in a weatherproof, aluminum box. The card reader housing is mounted on the front of the enclosure by three bolts. The door of the enclosure is removable and may be replaced without dismounting the enclosure from its permanent mounting. The door is hinged on the side and may be fully opened for access to the field wiring terminals or to change settings on the microprocessor board. When closed, the door is pulled into a locked position by two screwdriver turned, vise-action latches.

CARD READER

The card reader provides the means by which the access card data is read and stored in a data buffer. The Weigand encoded access card is the size of a standard credit card and has a unique 32-bit code imbedded within the lamination at the time the card is manufactured. Unlike the standard "magnetic stripe" card, the encoding information cannot be corrupted or erased without destroying the card itself. The card has two rows of special alloy wires laminated in the card; one row representing "zeroes" and other "ones". Permanent magnets in the reader head set up a magnetic field through the wires as they pass the sensor and induce a signal in the sensing coil. The location of the coding wires in the card determine the polarity of the signal induced and thus whether it is read as a "zero" or "one". This type of coding generates a relatively high level signal in the sense head which provides a more reliable "read" under noisy or difficult conditions.

The card is inserted into the card reader slot past the scanner head and up to a mechanical stop. When the card approaches the stop a "card in" microswitch is actuated to signal the microprocessor of the access request and the authorization process begins. The card must remain in the reader with the microswitch actuated throughout the authorization procedure, otherwise the process is stopped and the system is reset to prepare for the next access request.

The red and green LED's on the card reader are controlled by the central computer and are used to call the attention of the card holder to changes in the information on the display. Red indicates an error or stop condition while green shows normal progression in the authorization process.

To insure intrinsic safety, four rectifier clamp diodes are installed across the inductive card reader head. The diodes are physically located on the back of the card reader and are potted in RTV to provide electrical isolation from the housing.

KEYPAD

The keypad is the data entry terminal for the card holder to respond to queries from the control computer when desiring access. It is a passive, membrane switch panel with 16 keys arranged in a 4 column by 4 row configuration and is connected by ribbon cable to a socket on the processor board. When a key is pressed, the closure is encoded into a four bit binary word by an integrated circuit on the processor board and transmitted to the control computer. An insert sheet behind the transparent top layer in the panel identifies the keys as follows:

0 - 9
CLEAR
ENTER
YES
NO
LOAD COMPLETE
CLEAR MESSAGE

DISPLAY

The display board consists of a 32 character, wide temperature range, liquid crystal display (LCD) with onboard character generator and segment drivers mounted on a carrier and interconnect board. A +5 Vdc to -5 Vdc inverter chip is provided on the interconnect board to provide the negative voltage for LCD contrast adjustment. A potentiometer is provided on the board to allow for contrast adjustment for the particular installation conditions. The display connects to a memory bus socket on the processor board via a ribbon cable. The display is assigned a memory address block and data is transferred to the display buffers the same way data is stored in RAM. The board is mounted on the back of the membrane switch for easy viewing through the transparent panel window. Connections are also available to drive additional 6-digit, numeric displays.

ACU PROCESSOR

The processor board contains the microprocessor and its associated peripherals including RAM, PROMs, +5 Vdc voltage regulator, DIP switch for unit address, and adjustable links for data rate and other selectable functions. The LED drivers, current loop communication receiver/driver and field wiring terminals are also mounted on this board. The low power CMOS, CDP1802 microprocessor operates from a single +5 Vdc supply at a clock frequency of 2.4 MHz. It utilizes 2 Kbytes RAM and 4 Kbytes EPROM for program and data storage.

SPECIFICATIONSSIZE

14.50"	(368 mm)	Wide
14.75"	(375 mm)	High
4.75"	(121 mm)	Deep

WEIGHT

15.50 LBS (7 kg)

INPUT

Power Source 12 - 15 Vdc, 35 mA

COMMUNICATIONS

Passive 2 wire, 4 - 20 mA Current Loop Serial Data
8 data bits
No parity
1 stop bit
Selectable 300 or 1200 baud rate by soldered wire link
Address selectable 1 - 255 by DIP switch on pc board
Optically isolated
Distance from current loop driver - Maximum 1000 ft. with 18 AWG wire

ACCESS CARD

Vinyl
Weigand encoded, 32-bit
Size - 3.375" (85 mm) long x 2.125" (54 mm) wide x 0.037" (1 mm) thick

DISPLAY

Liquid crystal, twisted nematic (TN)
Reflective type - no backlight
Wide temperature range: -20 to +50°C (-4 to +122°F)
Dot Matrix: 5 X 7 dot pattern
Character size: 0.144" x 0.214"
32 characters: arranged 16 characters x 2 lines
8 bit direct interface to microprocessor

ENVIRONMENTAL

Operating Temperature	-20 to +50°C (-4 to +122°F)
Storage Temperature	-40 to +85°C (-40 to + 185°F)
Humidity	5 to 95%, non-condensing

CERTIFICATIONS

UL rated for use in Class I, Division 1, Groups C and D locations when installed in accordance with DWG CE-12442. For Class 1, Division 2, Groups C and D installations refer to DWG CE-12425.

Housing rated NEMA 4X

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment to a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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INSTALLATION

MECHANICAL

The Model 1561 Danreader should be mounted on a vertical surface near the controlled access point or the equipment to be operated. The box is mounted using 4 each, 3/8" or M8 diameter fasteners through holes in the mounting tabs welded to the back of the box. Refer to DWG DE-19065 in the Appendix for the mounting pattern dimensions. For the convenience of those using the cardreader, it should be mounted under a cover or shelter that provides protection from rain or direct sunlight. Since the LCD visibility is best when viewed from directly in front, the box should be mounted such that the LCD display is at eye level and, for night and low ambient light conditions, should be illuminated from a source above and behind the user.

A padlock may be installed in the hasp over one of the door latches to deter access by unauthorized personnel.

ELECTRICAL



WARNING: To maintain the intrinsically safe characteristics of the Model 1561 Danreader in hazardous locations, it must be installed in accordance with DWG CE-12442 for Division 1 locations or DWG CE-12425 for Division 2 locations (see Appendix A).

To reduce the possibility of interference from other equipment or wiring, the power and communications wires should be separate, twisted, shielded pairs. Maximum distance between the active current loop driver and the Danreader is 1000 feet using 18 AWG wire.

ADDRESS SELECT

Assign the Danreader communications address by setting the switches of the Address Select switch (LK1) on the processor PC board. Address numbers 1 through 255 are available. These are set using 8-bit binary coding, with switch 1 being the LSB. For example, switch settings for address 1-10 and 255 are shown below. A blank below the switch number indicates the switch is OFF and a "1" indicates the switch is ON.

Address	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
1	1							
2		1						
3	1	1						
4			1					
5	1		1					
6		1	1					
7	1	1	1					
8				1				
9	1			1				
10		1		1				
*								
*								
255	1	1	1	1	1	1	1	1

DATA RATE SELECT

The communications data rate is normally 1200 Baud and the Baud Rate Sel solderable link (LK17) on the processor PC board is set for this rate at the factory. If this must be changed, the appropriate link connections are:

300 Baud	link 1 to 2	link 4 to 5
1200 Baud	link 1A to 3	link 4A to 6

OPERATION

In the following paragraphs, a typical card insertion and authorization procedure is described. Although details may vary for a particular application, the procedures are representative of the steps required to complete an access authorization.

CARD READER

Hold the access card between the thumb and first two fingers of the right hand with the thumb in the upper right hand corner near the card serial number. With the wide dimension of the card horizontal, place the lower left corner of the card on the track at the entrance to the card reader slot. While holding a slight downward pressure, push the card to the left into the card slot with a smooth, continuous motion until it contacts the mechanical stop at the end of the slot. The card must remain in this position with the "card-in" microswitch actuated throughout the authorization process.

LEDS

When the card is in place, the red LED will illuminate or flash until the card ID code has been read and identified. The green LED will turn on to prompt the operator to follow instructions on the LCD display for the next step in the process. For subsequent steps, the illuminated or flashing red LED usually indicates a wait or stop condition while the green LED indicates normal progression in the access authorization process.

DISPLAY

After the access request has been acknowledged by the central control computer, the display will ask for the card holder's Personal Identification Number (PIN). The operator should continue to observe the display throughout the access process for other messages that will be displayed detailing further steps until the process is complete.

KEYPAD

When the display message asks for the card holder's PIN number, enter the numbers, in sequence, leftmost number first, pressing the appropriate keys on the panel. For security reasons, the numbers entered are not displayed on the LCD, but the cursor will move to indicate the acceptance of each key entry. When all numbers have been entered, press the ENTER key on the panel. A similar procedure is used to answer any additional queries from the control computer. However, one key responses, such as YES or NO, may not require the ENTER key be pressed to complete the response.

Once the authorization or requested equipment operation is complete, remove the card from the card reader and the equipment will automatically reset to its initial state.

MAINTENANCE**CARD READER**

Periodically, the Model 1561 should be checked to ensure that the card reader slot is clean and free of dirt, grease or trash. The time between inspections will depend upon the conditions at the box location.

Slide an access card into the slot to ensure there is no interference to the normal card insertion. If a blockage is noted, insert a stiff sheet of paper (such as a piece of a manila file folder) or plastic sheet into the card slot near the closed end and then pull back to the open end to remove the offending material. Do not use screwdrivers or other metal objects as they could weaken or damage the permanent magnets in the card reader head. If a blockage occurs that can not be removed by this method, refer to the Card Reader Component Access section (page 5-3) for instructions on disassembly of the card reader housing.

MICROSWITCH ADJUSTMENT

Insert a valid access card into the card reader to initiate an access request. Just prior to the card reaching the mechanical stop, the microswitch should close and the authorization process initiated (flashing LED or display notification). If it does not, some minor adjustment of the actuation point is possible. Remove the hex head threaded plug from the end of the card reader housing to access the switch adjustment screw. Use a thin blade screwdriver to turn the adjustment screw a quarter turn clockwise then recheck. If further adjustments are required, make only small adjustments between each retest. If the screw reaches maximum travel without the proper switch closure, refer to the Card Reader Component Access section (page 5-3) for disassembly of the card reader housing for access to the switch for repair or replacement.

KEYPAD

The keypad should be kept clean and free of dirt or grease buildup in order to maintain visibility of the LCD display and the key markings. Clean only with a mild soap and water solution on a soft cotton cloth.



CAUTION: Do not use solvents or strong detergents to clean the keypad or display. The membrane covering on the panel will be damaged. Do not wipe the keypad or display opening with dry cloth or paper. Electrostatic discharge may damage electronic circuitry.

CARD READER COMPONENT ACCESS

The red and green LEDs, the "card-in" microswitch and card reader head are mounted inside the card reader housing. Follow these steps to disassemble the housing for access to the parts. Reassemble the card reader by performing the steps in reverse order.

- Unlock two vise-action latches on the door with a medium size, blade screwdriver and open the door.
- Disconnect the four LED wire connections from the ACU processor terminal board TB-1 terminals 9, 10, 11 and 12.
- Disconnect the two "card in" microswitch wires from TB-2 terminals 3 and 4.
- Disconnect the two card reader head wires from TB-2 terminals 1 and 2.
- Cut the nylon cable ties holding the cables to the LEDs, card reader head and microswitch.
- With a small blade screwdriver, loosen the RTV from enclosure at the cable entry holes.
- Support the card reader housing and unscrew the three M6 x 16 bolts holding it to the front panel. Guide the cables through the access holes as the housing is removed.
- When the card reader housing is off the panel, use a narrow blade screwdriver to remove the six M3 x 25 screws from recessed holes around the perimeter of the card reader housing base. Pull the cover plate away from the base, feeding the LED wires and current limiting resistors through the exit hole as the parts are separated.
- Either LED can be removed by unscrewing the threaded nut from the body of the LED.
- The card reader head can be removed by unscrewing the two 6-32 x 5/8" screws from the recessed holes in the housing back plate using a narrow blade screwdriver.

- The microswitch can be removed by unscrewing the four M2.5 x 6 screws from the switch mounting plate.



CAUTION: When the unit has been reassembled, take care to re-seal the two cable entry holes with RTV to maintain weather tightness of the enclosure.

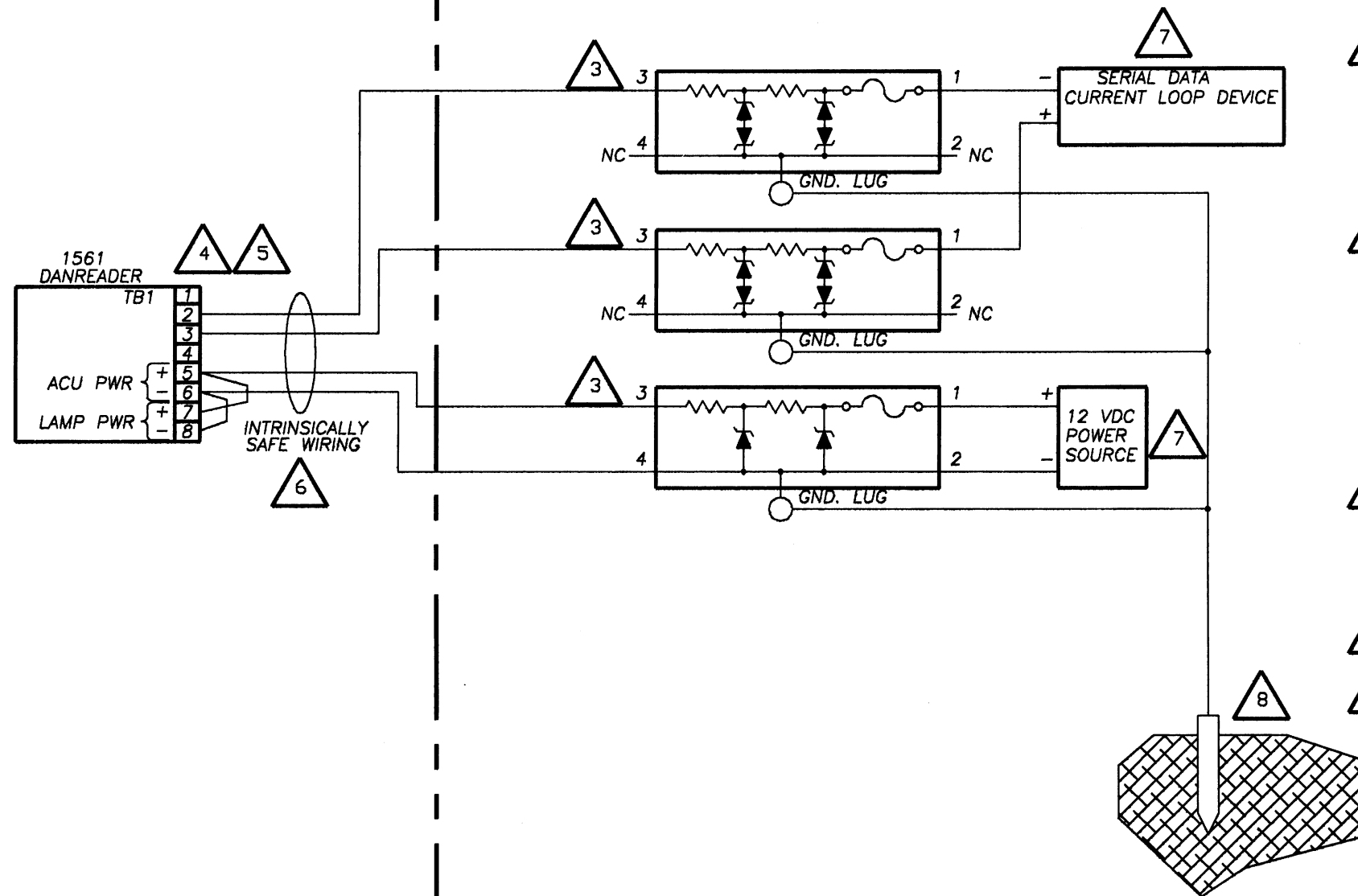
DRAWINGS

CE-12442	Field Wiring, Danreader, Class 1, Groups C and D, Division 1
CE-12425	Field Wiring, Danreader, Class 1, Groups C and D, Division 2
DE-19065	Outline Dimensions
DE-19039	1561 ACU Assembly
DE-12486	ACU Processor Schematic
BE-12483	Display Schematic

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HAZARDOUS LOCATION
CLASS I, GROUP C AND D

NON-HAZARDOUS LOCATION



NOTES:

1. THE DANIEL MODEL 1561 DANREADER IS INTRINSICALLY SAFE FOR INSTALLATION IN CLASS I, GROUP C AND D HAZARDOUS LOCATIONS.
2. HAZARDOUS LOCATION CLASS I, GROUP C AND D WIRING: WARNING TO MAINTAIN INTRINSIC SAFETY, CONNECTION TO THE MODEL 1561 DANREADER WHEN THE UNIT IS USED IN HAZARDOUS AREA APPLICATIONS REQUIRE USE OF ZENER DIODE BARRIERS WITH ENTITY PARAMETERS AS SHOWN. ALL INTRINSICALLY SAFE WIRING SHALL BE KEPT SEPARATE FROM NON-INTRINSICALLY SAFE WIRING. REFER TO NATIONAL ELECTRICAL CODE ARTICLE 504.

3 ZENER DIODE BARRIER PARAMETERS: (APPLIES TO ALL BARRIERS).

$V_{oc} \leq 20V$
 $I_{sc} \leq 147ma$
 $C_a \geq C_i + \text{"C" CABLE}$
 $L_a \geq L_i + \text{"L" CABLE}$

4 MAXIMUM SYSTEM PARAMETERS:

$V_t = 20V$: (MAXIMUM OPEN CIRCUIT VOLTAGE OF ANY COMBINATION OF TERMINALS.)
 $I_t = 441ma$: (MAXIMUM SHORT CIRCUIT CURRENT OF ANY COMBINATION OF TERMINALS.)

5 DANREADER ENTITY PARAMETERS: (APPLIES TO ALL CONNECTORS).

$V_{max} = 20V$
 $I_{max} = 441ma$
 $C_i = 0.12 \mu f$
 $L_i = 0.0 mh$

$V_{max} \geq V_t$
 $I_{max} \geq I_t$
 $C_i + \text{"C" CABLE} \leq C_a$
 $L_i + \text{"L" CABLE} \leq L_a$

6 POWER AND COMMUNICATION CABLE (CUSTOMER SUPPLIED).

GAUGE = 16 TO 24 AWG
 MAXIMUM CABLE LENGTH = 2000 FEET
 MAXIMUM CABLE CAPACITY = 60 pf/FT
 MAXIMUM CABLE INDUCTANCE = 2 uh/FT

7 MUST NOT BE CONNECTED TO EQUIPMENT THAT USES OR GENERATES MORE THAN 250 Vrms RELATIVE TO EARTH GROUND.

8 CONNECT BARRIER GROUND TERMINALS TO EARTH GROUND. RESISTANCE TO GROUND MUST NOT BE GREATER THAN 1 OHM.

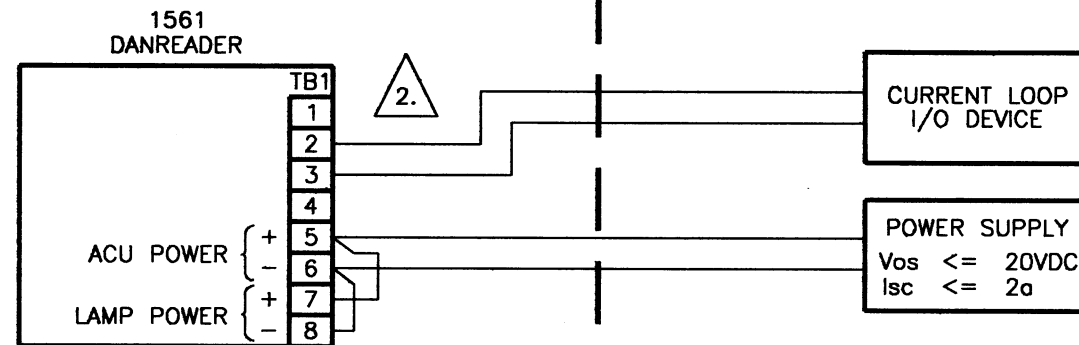
NEXT ASS'Y		USED ON		APPLICATION		MATERIAL		FINISH	
UNLESS OTHERWISE SPECIFIED: FINISH $\sqrt{\quad}$ ALL DIM. IN INCHES ANGULAR TOL $\pm 1/2^\circ$ FRACTIONAL TOL $\pm 1/64$ 3 PLACE DEC. $\pm .005$ 2 PLACE DEC. $\pm .010$ REMOVE ALL BURRS. BREAK SHARP EDGES DO NOT SCALE DWG.									
THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. IT SHALL NOT BE REPRODUCED AND SHALL BE RETURNED TO US ON DEMAND. ALL RIGHTS RESERVED.									
DATE	11-3-94	DATE	11-6-95	DATE	11-95	DATE	11-6-95	DATE	
BY	R.G.D.	BY	F.M.	BY	W.R.	BY	D.L.T.	BY	
REV.	DESCRIPTION	BY	DATE	A ERO 9521 AH/EM 11-95 FIELD WIRING DANREADER					
PART NO.		DWG. NO.		REV.		CE-12442 A			
FILE NO.		SCALE		012442A1.DWG NTS SHEET 1 OF 1					

HAZARDOUS LOCATION
CLASS I, GROUP C & D, DIVISION 2

NON-HAZARDOUS LOCATION

NOTES:

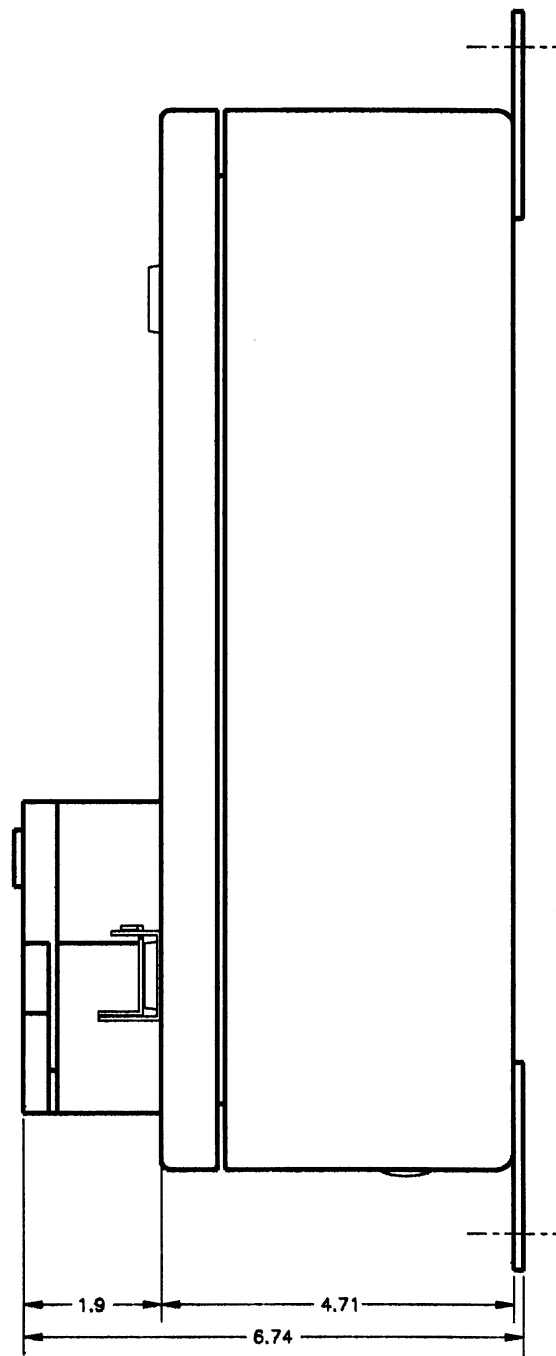
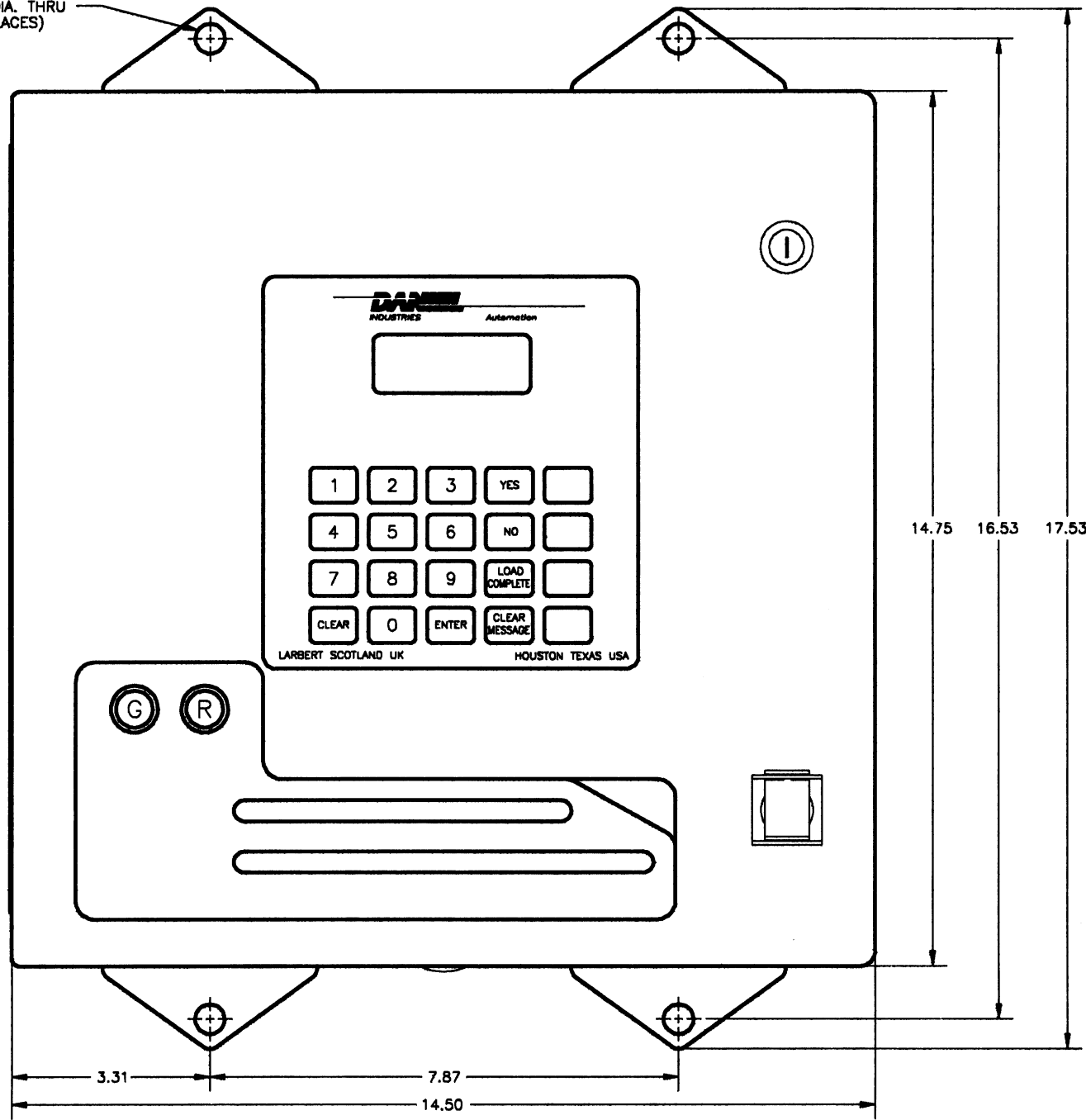
1. THE DANIEL MODEL 1561 DANREADER IS FOR INSTALLATION IN CLASS I, GROUP C AND D, DIVISION 2 HAZARDOUS LOCATIONS.
2. FIELD WIRING MUST BE INSTALLED IN CONDUIT AS SPECIFIED IN THE NATIONAL ELECTRIC CODE ARTICLE 501-4B.



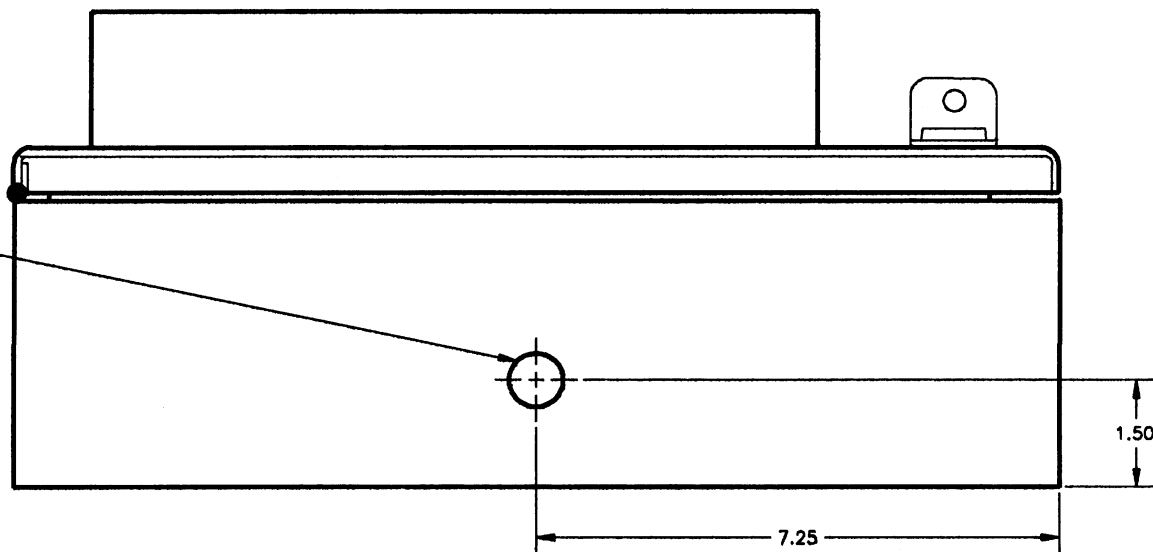
UNLESS OTHERWISE SPECIFIED:	<small>THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. IT SHALL NOT BE REPRODUCED AND SHALL BE RETURNED TO US ON DEMAND. ALL RIGHTS RESERVED.</small>
FINISH $\frac{63}{64}$	
ALL DIM. IN INCHES	
ANGULAR TOL. $\pm 1/2^\circ$	
FRACTIONAL TOL. $\pm 1/64$	
3 PLACE DEC. $\pm .005$	<small>DESIGNED BY</small> A. HAYS LIP <small>DATE</small> 5-12-95
2 PLACE DEC. $\pm .010$	<small>CHECKED BY</small> EM <small>DATE</small> 2-26-96
REMOVE ALL BURRS.	<small>APPROVED BY</small> WR <small>DATE</small> 2-26-96
BREAK SHARP EDGES	<small>DESIGNED BY</small> DLT <small>DATE</small> 3-5-96
DO NOT SCALE DWG.	<small>CHECKED BY</small>

A	ERO 9521	DT/EM	2-96
REV.	DESCRIPTION	BY	DATE
<small>Flow Products, Inc.</small> 8753 Pine Lake Dr. P.O. Box 55435 Houston, Texas 77255			
TITLE: FIELD WIRING DANREADER, CLASS I GROUP C & D, DIVISION 2			
FILE NO.	012425A1.DWG	DWG. NO.	CE-12425
SCALE	NTS	SHEET	1 OF 1

.50 DIA. THRU
(4 PLACES)



.75 DIA. THRU



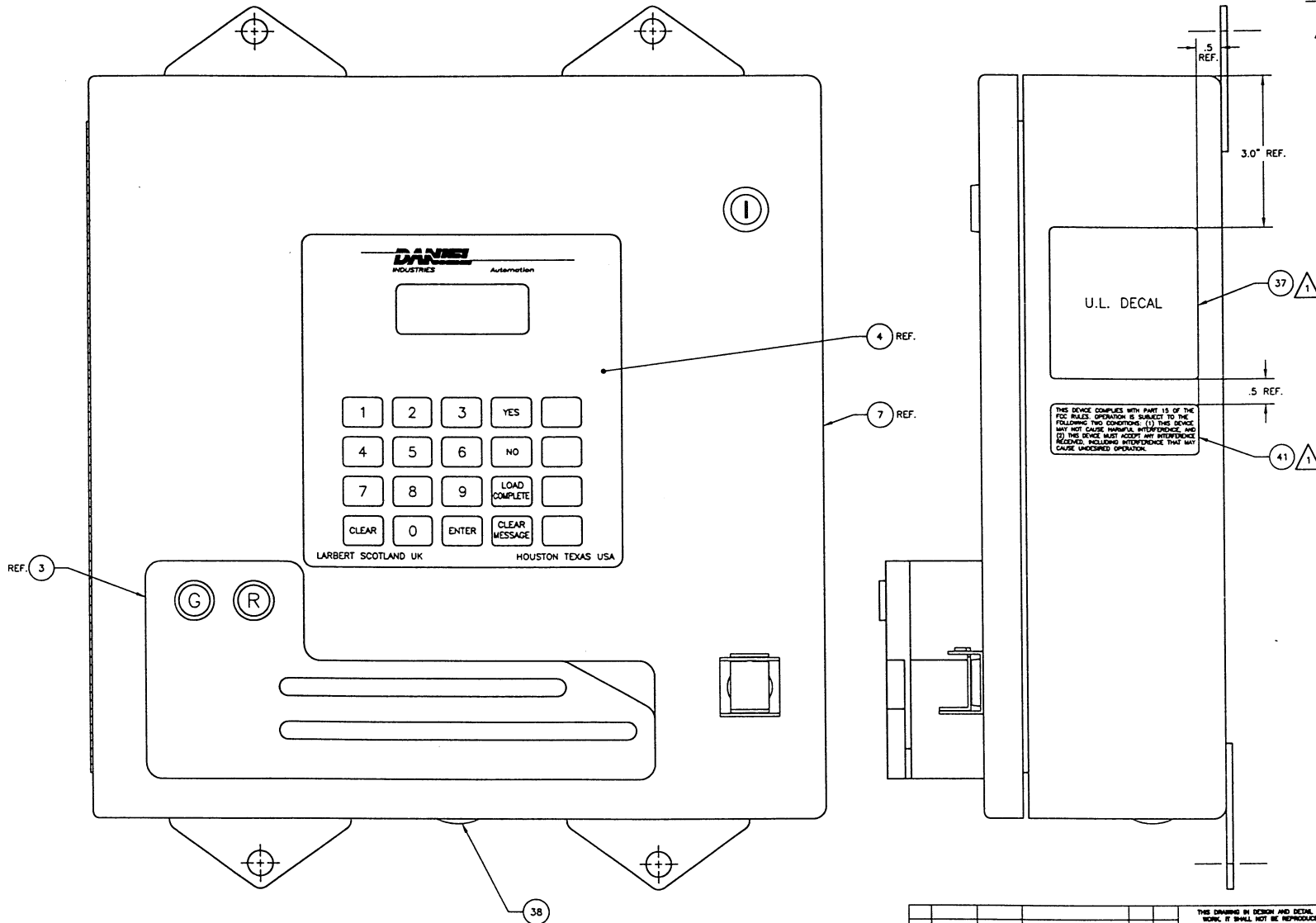
REV.	DESCRIPTION	BY	DATE
A	ERO 9521	AH/EM	7-95

UNLESS OTHERWISE SPECIFIED:
FINISH 63
ALL DIM. IN INCHES
ANGULAR TOL. $\pm 1/2^\circ$
FRACTIONAL TOL. $\pm 1/84$
3 PLACE DEC. $\pm .005$
2 PLACE DEC. $\pm .010$
REMOVE ALL BURRS.
BREAK SHARP EDGES.
DO NOT SCALE DWG.

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<p>OUTLINE & DIMENSIONAL DANREADER WITH ALUMINUM ENCLOSURE</p>			
<p>DATE: 5-30-85 BY: A. HAYSUP</p> <p>DATE: 7-18-85 BY: F.M.</p> <p>DATE: 8-8-85 BY: H.S.</p> <p>DATE: 11-8-85 BY: D.L.T.</p>	<p>REV. NO. 1-1561-051</p> <p>FILE NO. 019065A1.DWG</p>	<p>ENC. NO. DE-19065</p> <p>SCALE NTS</p>	<p>REV. A</p> <p>1 of 1</p>

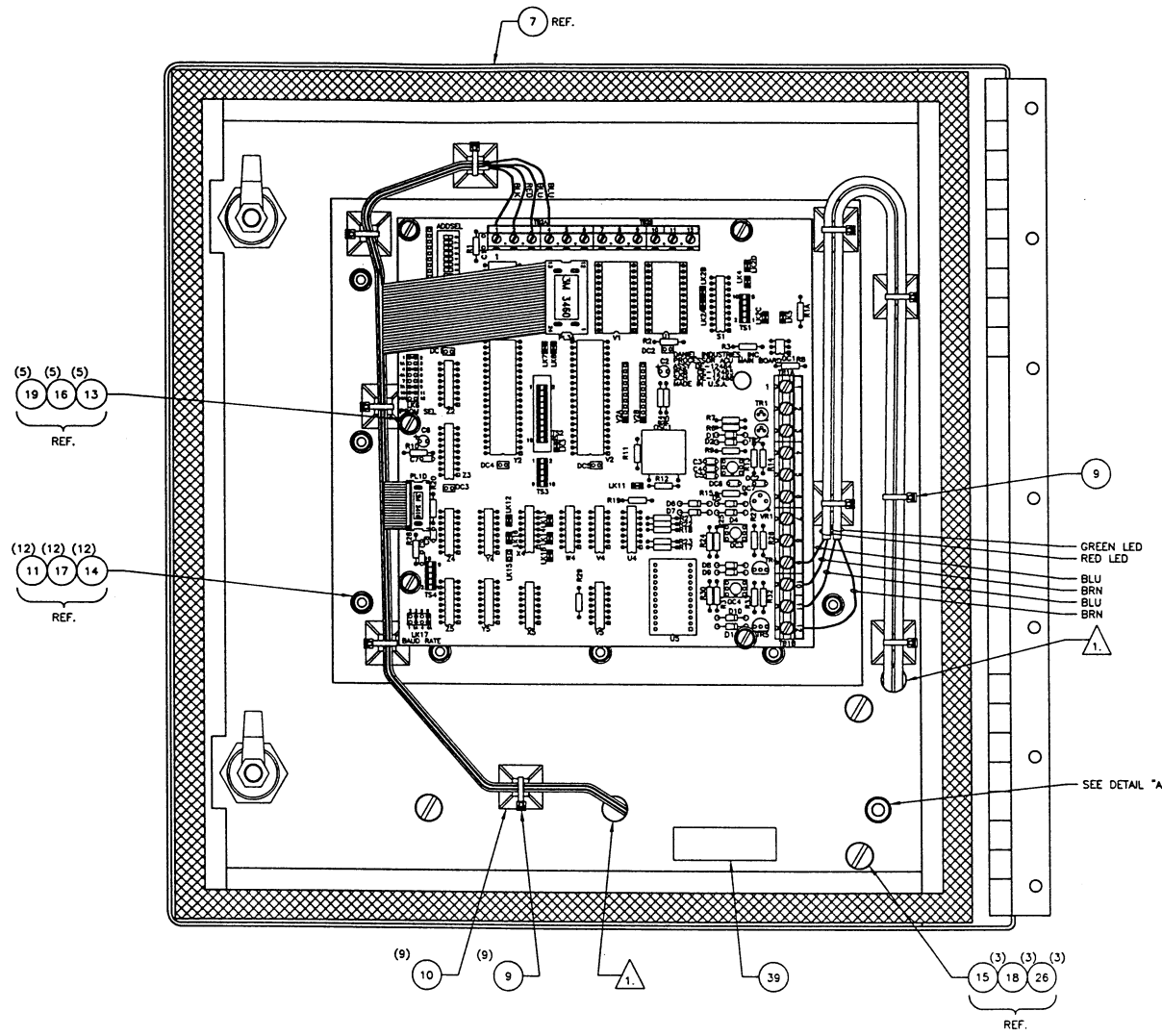
NOTES:

1 Wipe enclosure surface with alcohol to remove oil or other contaminants before installing decals. Locate approximately as shown.



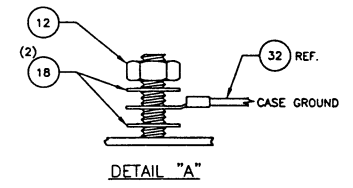
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

BLOCK NOT APPLICABLE BLOCK NOT APPLICABLE BLOCK NOT APPLICABLE		REV DATE DRN DESCRIPTION CHND APPD 7/95 AH ERD-9521 EM HS		PROD. FILE NO. - NONE FILENAME: DE1903901.DWG, DATE: 05-10-99, TIME: 9:23 A.M.		THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. IF IT SHALL NOT BE REPRODUCED AND SHALL BE RETURNED TO US ON DEMAND. ALL RIGHTS ARE RESERVED.		REVISIONS D 5-10-99 RD EDD-XX-15396 EM DLT C 3/96 AH EDD-8869 EM HS B 10/95 AH EDD-8722 EM HS A 7/95 AH ERD-9521 EM HS		DANIEL Daniel Measurement and Control TITLE DANREADER WITH ALUMINUM ENCLOSURE		DATE 03/13/95 DATE 10/20/95 DATE 10/27/95		DE-19039 1-1561-051		REV D 1 OF 4	
--	--	--	--	---	--	--	--	--	--	--	--	---	--	------------------------	--	-----------------	--



NOTES:

- 1. SEAL WIRING THROUGH HOLE WITH RTV-3145 (P/N 9-9960-101).



REVISION	DATE	BY	DESCRIPTION	CHKD	APPD
D	5-10-99	RD	ECO-XX-15396	EM	DLT
C	03/96	AH	ECO-8869	EM	HS
B	10/95	AH	ECO-8722	EM	HS
A	07/95	AH	ERO-9521	EM	HS
REV	DATE	DRN	DESCRIPTION	CHKD	APPD
PROJ. FILE NO.	- NONE				
FILENAME: DE1903902.DWG, DATE: 05-10-99, TIME: 9:43 A.M.					

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GENERIC TOLERANCES A UNLESS OTHERWISE NOTED ALL DIMENSIONS IN INCHES ARE Y&L'S LATEST REVISION

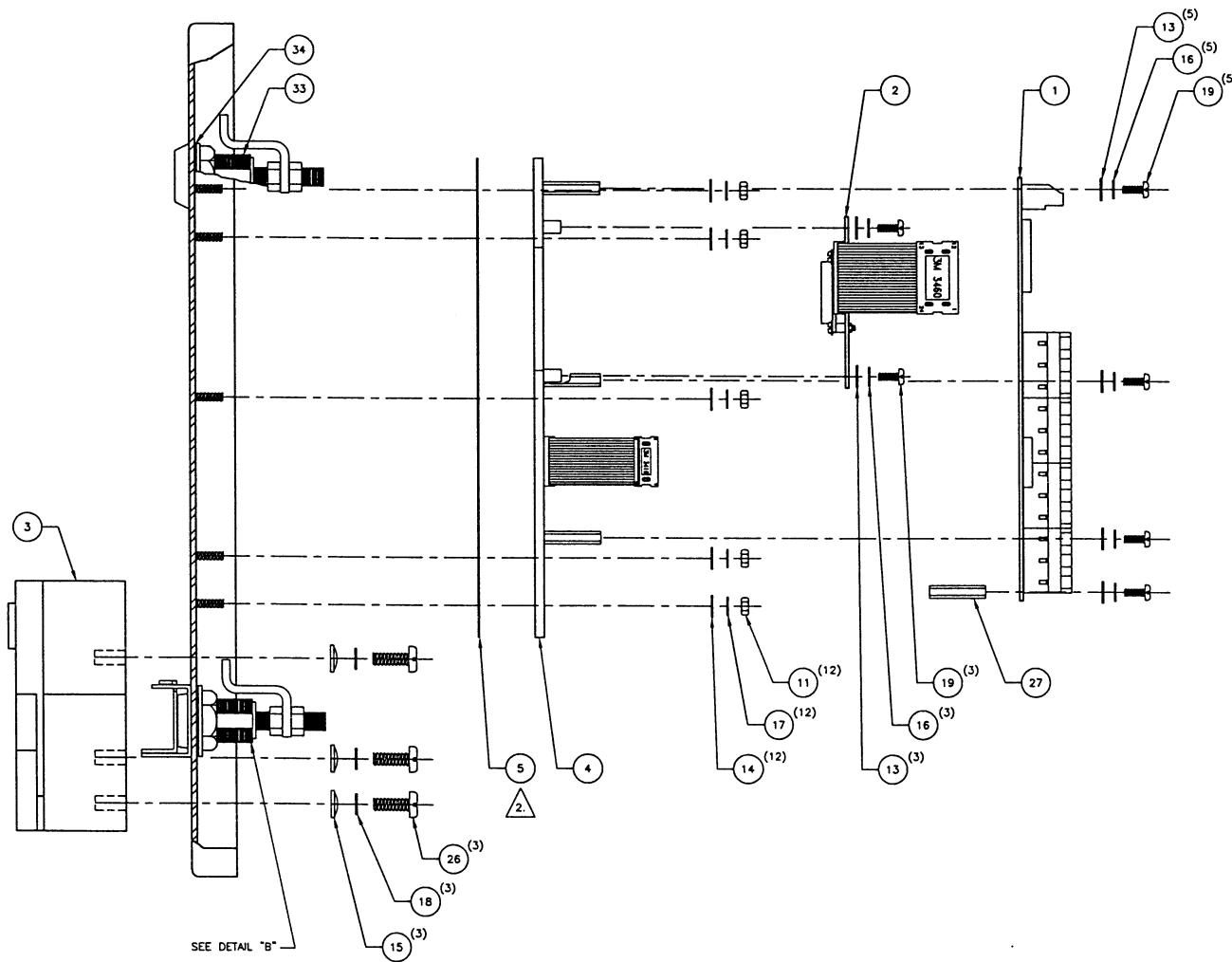
DANIEL
Daniel Measurement and Control

TITLE: UNIT ASSEMBLY
DANREADER WITH ALUMINUM ENCLOSURE

REV	AH	DATE	03/13/95	REV	DLT
CHKD	EM	DATE	10/20/95	REV	D
APPD	HS	DATE	10/27/95	SCALE	NTS

DE-19039

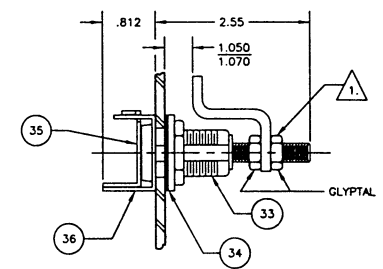
1-1581-051 2 OF 4



SEE DETAIL "B"

NOTES:

- 1. INSTALL SOUTHCO VISE-ACTION LATCH (4-9341-503) PER MFG'S INSTRUCTIONS WITHOUT SMALL LOCKWASHERS. TIGHTEN JAM NUTS SECURELY AFTER ADJUSTING PAWL FOR 1.050/1.070 SPACING IN UNLATCHED POSITION. APPLY PENETRATING THREADLOCK (PERMALOCK HL-126 OR EQUIV.) TO NUTS. APPLY RED GLYPHTAL TO NUT/THREAD JOINTS.
- 2. PRIOR TO INSTALLING THE KEYPAD GASKET (ITEM 5), COAT THE MOUNTING SURFACE ON THE PANEL FROM THE EDGE OF THE WINDOW BACK TO THE KEYPAD MOUNTING STUDS WITH A THIN COAT OF SILICONE COMPOUND (P/N 9-9860-022). INSTALL THE GASKET, THEN COAT THE BACK OF THE GASKET OVER THE SAME AREA WITH THE SILICONE COMPOUND.



DETAIL "B"
LATCH INSTALLATION

REV	DATE	DRN	DESCRIPTION	CHKD	APPD
D	5-10-99	RD	ECC-XX-15396	EM	DLT
C	03/96	AH	ECC-8869	EM	HS
B	10/95	AH	ECC-8722	EM	HS
A	07/95	AH	ECC-9521	EM	HS

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DANIEL
Daniel Manufacturing and Control

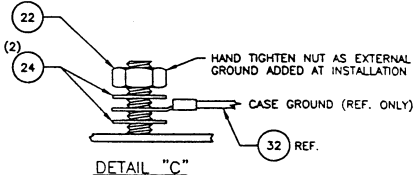
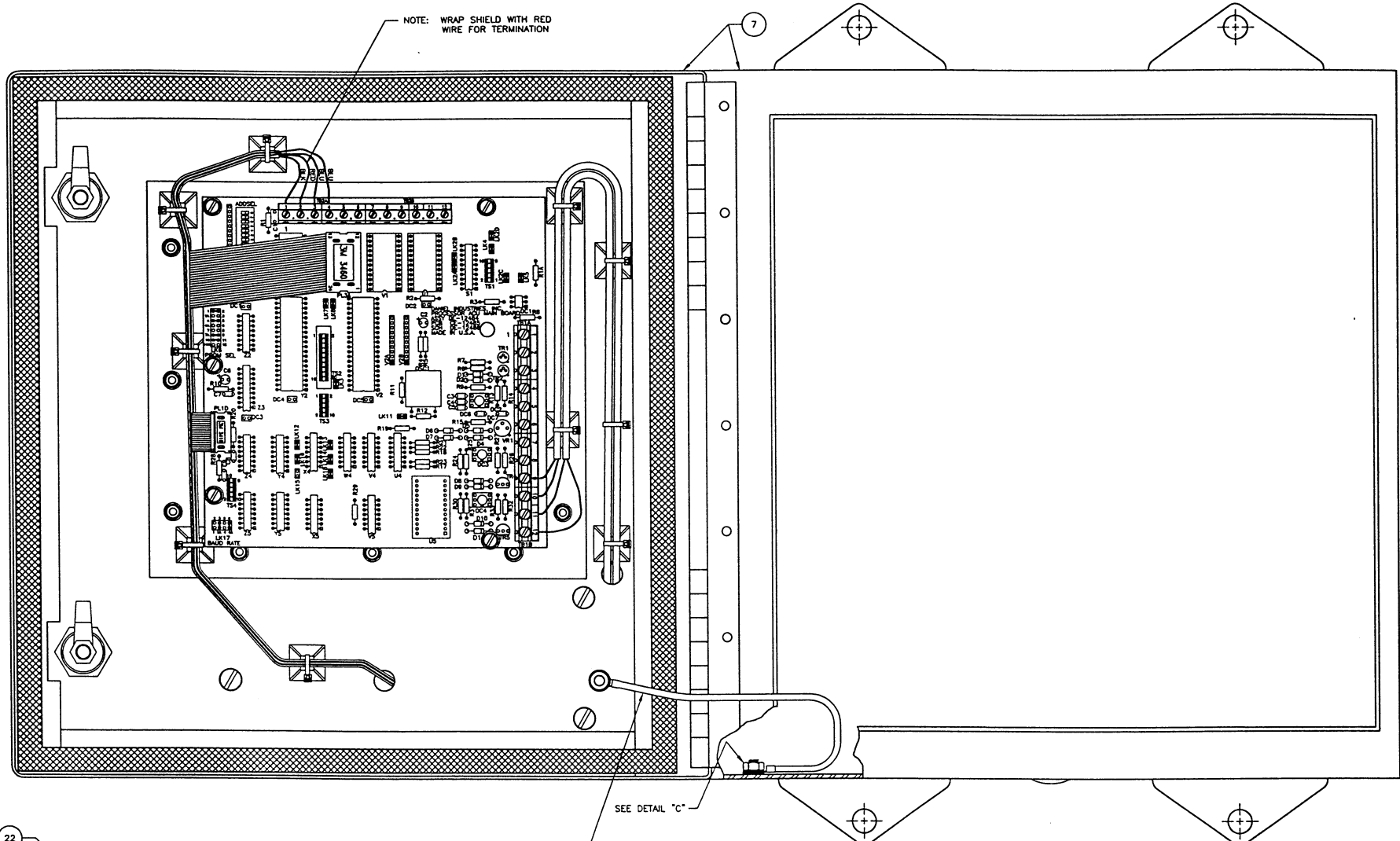
UNIT ASSEMBLY
DANREADER WITH ALUMINUM ENCLOSURE

REV: AH DATE: 03/13/95 REV: DL DATE: 03/13/95
 REV: EM DATE: 10/20/95 REV: HS DATE: 10/20/95
 REV: HS DATE: 10/27/95 REV: NTS DATE: 1-1561-051

DE-19039 3 OF 4

INCHES: BLOCK NOT APPLICABLE
 FEET: BLOCK NOT APPLICABLE
 PROJ. FILE NO. - NONE
 FILENAME: DE1903903.DWG, DATE: 05-10-99, TIME: 10:42 A.M.

NOTE: WRAP SHIELD WITH RED WIRE FOR TERMINATION



SEE DETAIL "C"

REV	DATE	DRN	DESCRIPTION	CHKD	APPD
D	5-10-99	RD	EDD-XX-15396	EM	DLT
C	03/96	AH	EDD-8869	EM	HS
B	10/95	AH	EDD-8722	EM	HS
A	07/95	AH	EDD-9521	EM	HS
REV	DATE	DRN	DESCRIPTION	CHKD	APPD
BLOCK NOT APPLICABLE					
BLOCK NOT APPLICABLE					
PROJ. FILE NO. - NONE					
FILENAME: DE190304.DWG, DATE: 05-10-99, TIME: 10:53 A.M.					

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GENERIC TOLERANCES & FINISHES PER ANSI Y14.3 LATEST REVISION

DANIRL
Danierl Measurement and Control

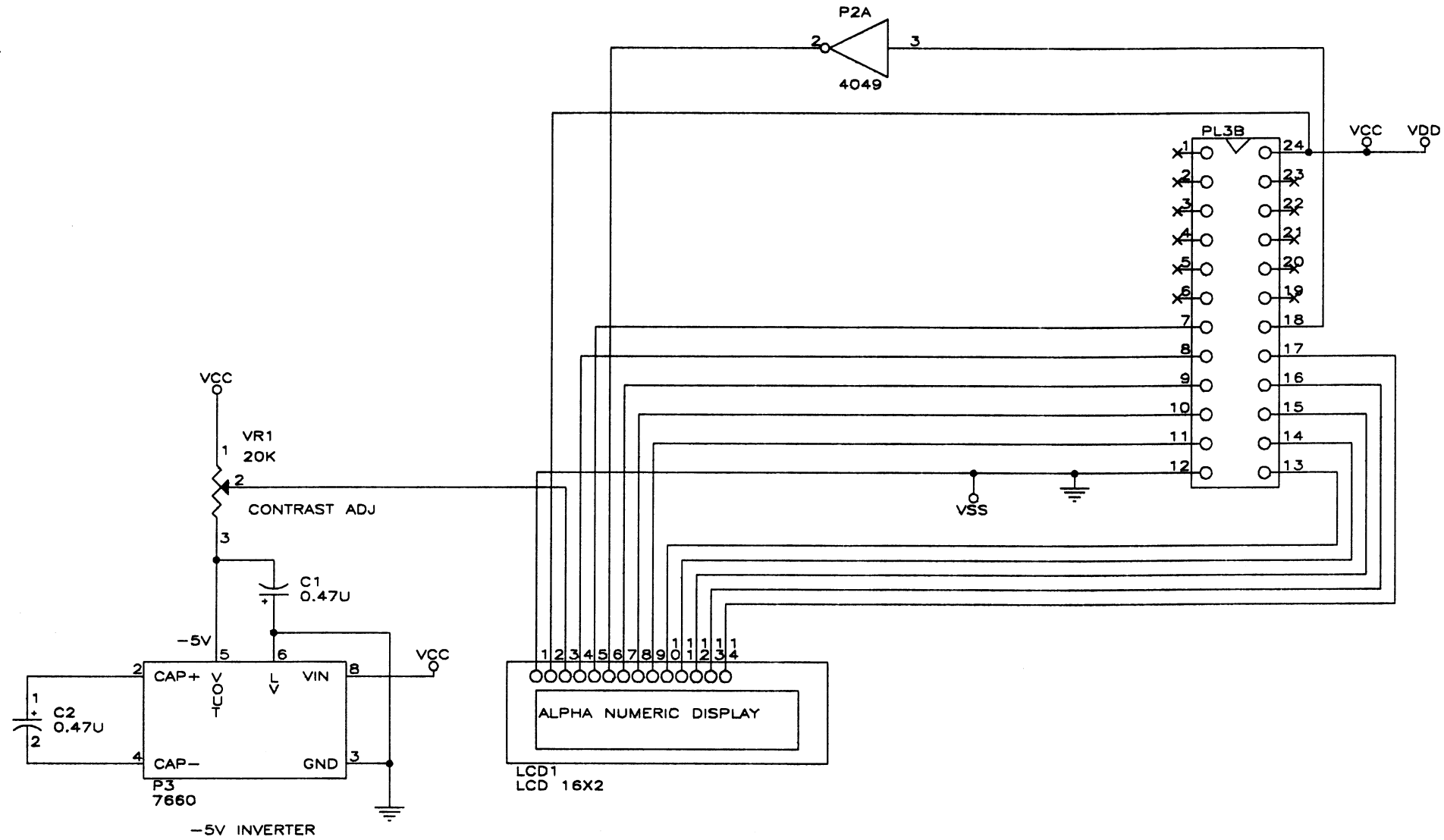
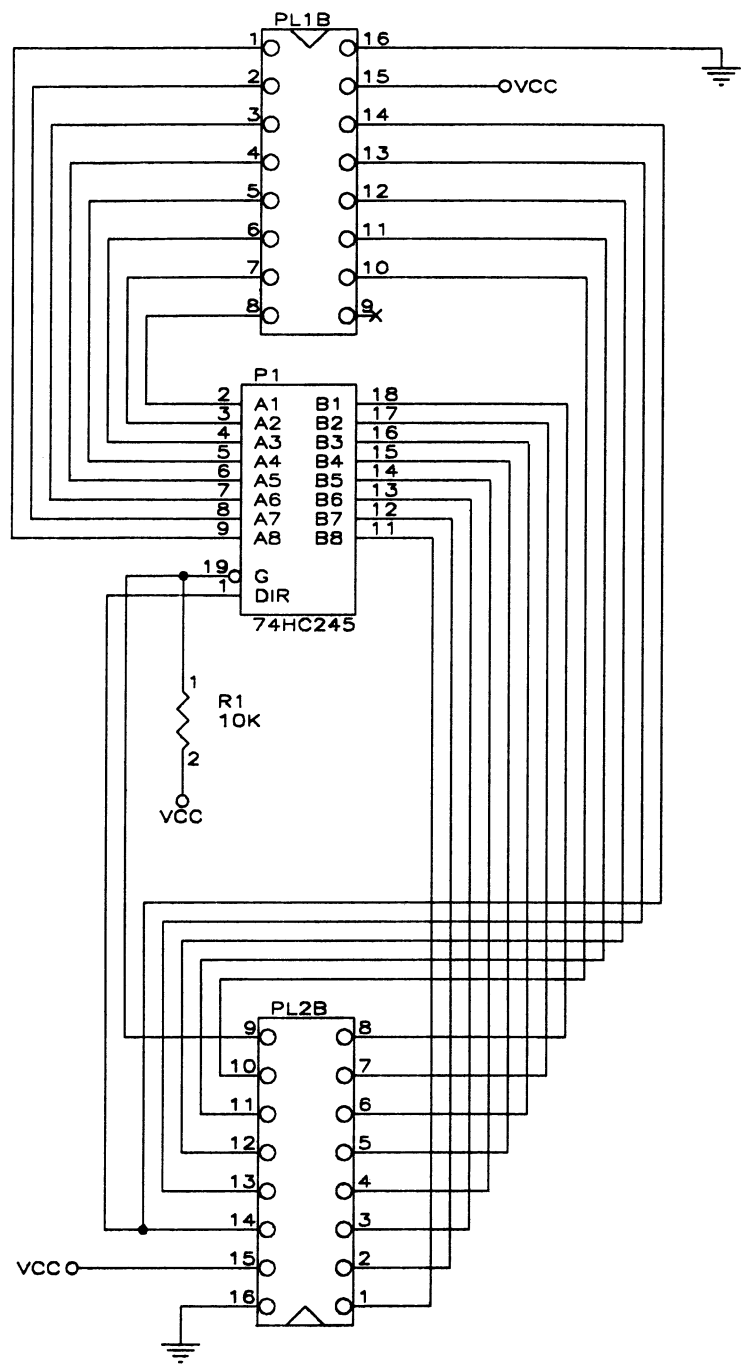
TITLE: UNIT ASSEMBLY
DANREDER WITH ALUMINUM ENCLOSURE

REV	DATE	BY	APP
03/13/95	03/13/95	EM	HS
10/20/95	10/20/95	EM	HS
10/27/95	10/27/95	EM	HS

DE-19039

1-1581-051

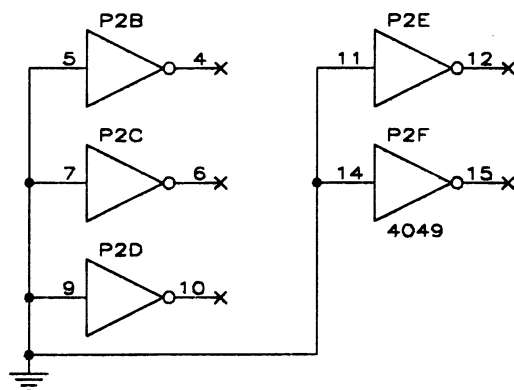
4 OF 4



NOTE:

1. P1, PL1B, PL2B AND R1 ARE NOT FITTED ON THIS ASSEMBLY.

UNUSED GATES



B	ECO 8907	AH/EM	5-96
A	ERO 9502	AH/EM	1-95
REV.	DESCRIPTION	BY	DATE

NEXT ASS'Y	USED ON
APPLICATION	
MAT'L.	
FINISH	

UNLESS OTHERWISE SPECIFIED:
 FINISH $\sqrt{63}$
 ALL DIM. IN INCHES
 ANGULAR TOL. $\pm 1/2^\circ$
 FRACTIONAL TOL. $\pm 1/64$
 3 PLACE DEC. $\pm .005$
 2 PLACE DEC. $\pm .010$
 REMOVE ALL BURRS.
 BREAK SHARP EDGES
 DO NOT SCALE DWG.

THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. IT SHALL NOT BE REPRODUCED AND SHALL BE RETURNED TO US ON DEMAND. ALL RIGHTS RESERVED.

DRN	DATE
A. HAYSLIP	10-17-94
CHKD	DATE
E.M.	1-24-95
APPD	DATE
H.S.	1-20-95
REL	DATE
D.L.T.	8-2-95
CERT	DATE

DANIEL Electronics
 Flow Products, Inc
 9753 Pine Lake Dr.
 P.O. Box 55435
 Houston, Texas 77255

TITLE:
 SCHEMATIC
 DISPLAY PCA
 DANREADER

PART NO.	DWG. NO.	REV.
3-1561-052	BE-12483	B
FILE NO.	SCALE	SHEET
012483B1.DWG	NTS	1 of 1

WARRANTY CLAIM REQUIREMENTS

To make a warranty claim, you, the Purchaser, must:

1. Provide Daniel with proof of the Date of Purchase and proof of the Date of Shipment of the product in question.
2. Return the product to Daniel within twelve (12) months of the date of original shipment of the product, or within eighteen (18) months of the date of original shipment of the product to destinations outside of the United States. The Purchaser must prepay any shipping charges. In addition, the Purchaser is responsible for insuring any product shipped for return, and assumes the risk of loss of the product during shipment.
3. To obtain Warranty service or to locate the nearest Daniel office, sales, or service center call (281) 897-2900, Fax (281) 897-2901, or contact:

Daniel Measurement Services
19203 Hempstead Highway
Houston, Texas 77065

When contacting Daniel for product service, the purchaser is asked to provide information as indicated on the following "Customer Problem Report".

Daniel Measurement Services offers both on call and contract maintenance service designed to afford single source responsibility for all its products.

Daniel Industries, Inc. reserves the right to make changes at any time to any product to improve its design and to insure the best available product.

DANIEL INDUSTRIES, INC.
CUSTOMER PROBLEM REPORT

FOR FASTEST SERVICE, COMPLETE THIS FORM, AND RETURN IT ALONG WITH THE AFFECTED EQUIPMENT TO CUSTOMER SERVICE AT THE ADDRESS INDICATED BELOW.

COMPANY NAME: _____

TECHNICAL CONTACT: _____ PHONE: _____

REPAIR P. O. #: _____ IF WARRANTY, UNIT S/N: _____

INVOICE ADDRESS: _____

SHIPPING ADDRESS: _____

RETURN SHIPPING METHOD: _____

EQUIPMENT MODEL #: _____ S/N: _____ FAILURE DATE: _____

DESCRIPTION OF PROBLEM: _____

WHAT WAS HAPPENING AT TIME OF FAILURE? _____

ADDITIONAL COMMENTS: _____

REPORT PREPARED BY: _____ TITLE: _____

IF YOU REQUIRE TECHNICAL ASSISTANCE, PLEASE FAX OR WRITE THE MAIN CUSTOMER SERVICE DEPARTMENT AT:

DANIEL MEASUREMENT SERVICES
ATTN: CUSTOMER SERVICE
19203 HEMPSTEAD HIGHWAY
HOUSTON, TEXAS 77065

PHONE: (281) 897-2900
FAX: (281) 897-2901

The sales and service offices of Daniel Industries, Inc. are located throughout the United States and in major countries overseas.

Please contact Daniel Measurement Services at 19203 Hempstead Highway, Houston, Texas 77065, or phone (281) 897-2900 for the location of the sales or service office nearest you.

Daniel Measurement Services offers both on-call and contract maintenance service designed to provide single-source responsibility for all Daniel Measurement and Control products.

Daniel Measurement and Control reserves the right to make changes to any of its products or services at any time without prior notification in order to improve that product or service and to supply the best product or service possible.

DANIEL
