

REVISIONS				REVISIONS			
REV	DESCRIPTION	DATE	APPROVED	REV	DESCRIPTION	DATE	APPROVED
A	IN NOTE 2: ADDED NON-INTRINSICALLY SAFE WIRING..... ADDED MODEL ES825-200-F	013097		D	REMOVE SHEET 3. ADD NOTES2A-F REMOVE CABLE REFERENCES AND PINS MP451,461,462,463 ES825-100F	061301	
B	ADDED NOTE 11, 6 AMPS WAS 8 AMPS	041299		E	REMOVE NOTES 5-8	071301	
C	REMOVE MODEL MP460, ADD MODEL MP 462 OR MP463. REMOVE PATRIOT 7032. ADD MODEL ES825-100(F), LS600 SERIES, LS610, RSU800 SERIES AND HS100 SERIES.	010201					

**IMPORTANT NOTES-READ CAREFULLY BEFORE INSTALLATION**

**NOTES - INTRINSIC SAFETY**

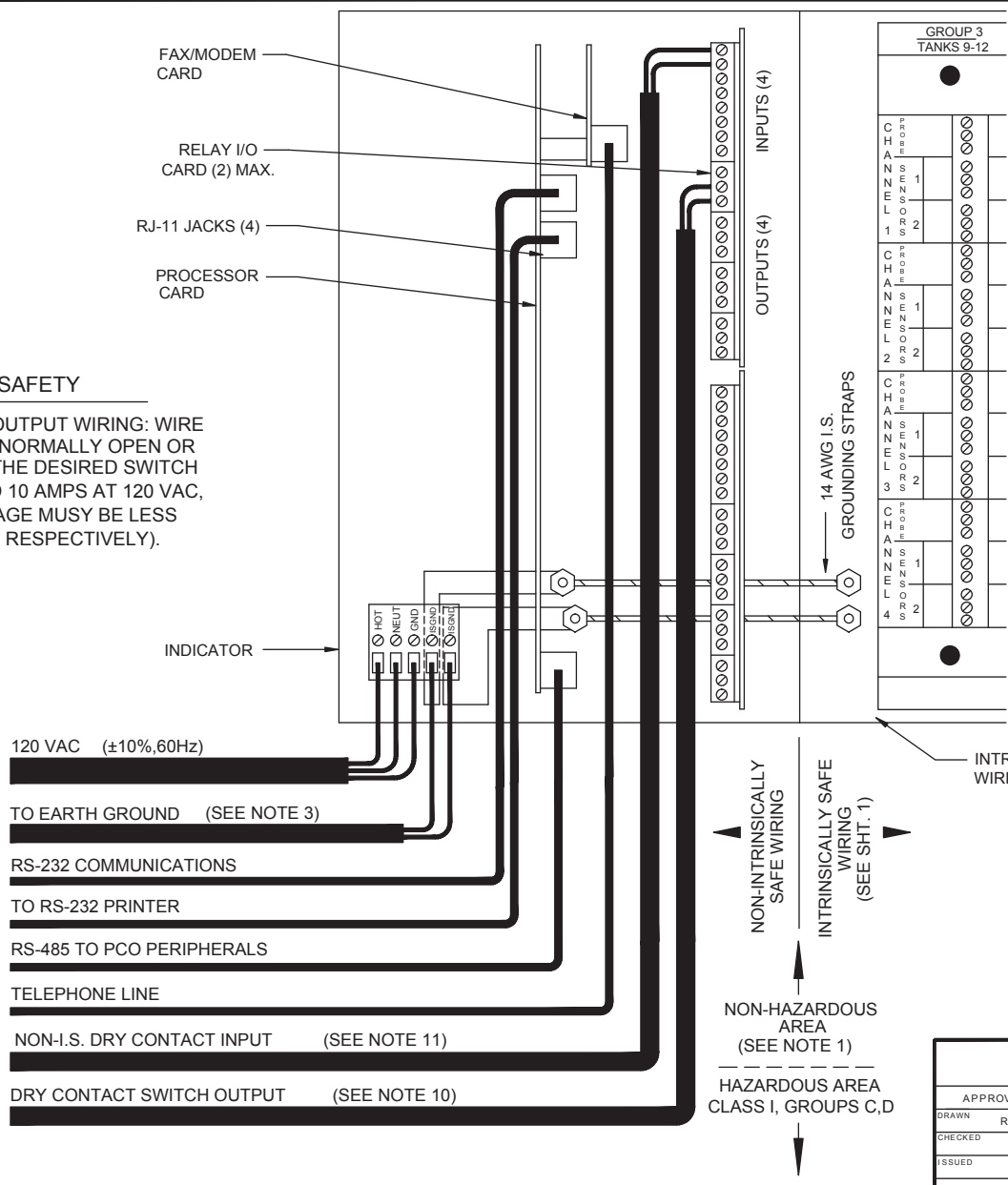
- INDICATOR MOUNTING: MOUNT AS CLOSE AS POSSIBLE TO THE DIVIDING BOUNDARY OF THE HAZARDOUS AND NON HAZARDOUS AREAS. NEVER MOUNT INSIDE THE HAZARDOUS AREA.
- INTRINSICALLY SAFE INPUT WIRING: WIRE AND INSTALL IN ACCORDANCE WITH ARTICLE 504 OF NATIONAL ELECTRICAL CODE ANSI/NFPA 70. NON-INTRINSICALLY SAFE WIRING CANNOT BE RUN IN CONDUIT OR OPEN RACEWAYS TOGETHER WITH INTRINSICALLY SAFE WIRING.
  - THE MAGNETOSTRICTIVE PROBE INPUTS AND THE SENSOR INPUTS ARE TWO DIFFERENT INTRINSICALLY SAFE CIRCUITS AND MUST BE INSTALLED IN SEPARATE CABLES OR IN ONE CABLE WHICH HAS SUITABLE INSULATION. REFER TO NEC ARTICLE 504-30 (b) OR CEC APPENDIX F6.3 FOR ADDITIONAL INFORMATION.
  - I.S. ELECTRO-OPTO/DRY CONTACT ENTITY PARAMETERS: (between ground and any ungrounded contact)  $V_t=29.4$  Volts;  $I_t=0.149$  Amps;  $C_a=0.88\mu F$ ;  $L_a=10mH$ .
  - MAGNETOSTRICTIVE PROBE ENTITY PARAMETERS: (between ground and any ungrounded contact)  $V_t=29.4$  Volts;  $I_t=0.149$  Amps;  $C_a=0.88 \mu F$ ;  $L_a=10 mH$ .
  - IF THE ELECTRICAL PARAMETERS OF THE CABLE ARE UNKNOWN, THE FOLLOWING VALUES MAY BE USED. Capacitance-60 pF/ft; Inductance-0.20 uH/ft.
  - IN ORDER TO DETERMINE THE SUITABILITY OF THE CONNECTION BETWEEN THE TMS3000 AND INTRINSICALLY SAFE DEVICES, THE TOTAL PARAMETERS FOR EACH INTRINSICALLY SAFE CIRCUIT (Magnetic Probe Inputs Circuit or Sensor Inputs Circuit) must be determined.  
 First the  $C_c$  and  $L_c$  of each cable is calculated using length and the manufactures specified parameters or the values given in note (d). The  $C_c$  and  $L_c$  for each intrinsically safe circuit is then determined by adding the  $C_c$  and  $L_c$  for all cables used in each circuit (Magnetic Probe Inputs Circuit or Sensor Inputs Circuit).  
 The  $C_i$  and  $L_i$  for each intrinsically safe circuit is then determined by adding the  $C_i$  and  $L_i$  for all devices connected to each circuit (Magnetic Probe Inputs Circuit or Sensor Inputs Circuit).
- TMS3000 I.S. EQUIPMENT
 

$V_t$	$\leq$	$V_{max}$	(smallest $V_{max}$ of any I.S. device in circuit)
$I_t$	$\leq$	$I_{max}$	(smallest $I_{max}$ of any device in circuit)
$C_a$	$\geq$	$C_i+C_c$	(using $C_i$ and $C_c$ totals for each circuit)
$L_a$	$\geq$	$L_i+L_c$	(using $C_i$ and $C_c$ totals for each circuit)
- WARNING: TO INSURE INTRINSIC SAFETY, A 12 AWG. WIRE MUST BE CONNECTED TO EACH TERMINAL ON THE EARTH GROUND TERMINAL BLOCK. EACH WIRE MUST THEN BE CONNECTED TO THE SYSTEM EARTH GROUND. THE RESISTANCE BETWEEN THE EARTH GROUND TERMINAL BLOCK AND EARTH GROUND SHALL BE LESS THAN 1 OHM.
- INDICATOR CANNOT BE CONNECTED TO EQUIPMENT THAT USES OR GENERATES MORE THAN 250 VOLTS WITH RESPECT TO EARTH.

LISTED INDICATOR MODEL NUMBER  
MODEL TMS 3000

<b>PNEUMERCATOR COMPANY</b>			
INTRINSICALLY SAFE LOOP		MODEL TMS 3000	
APPROVALS	DATE	SIZE	CAGE CODE
DRAWN R. KHARE	102695	D	47876
CHECKED		DWG. NO.	50183
ISSUED		SCALE	1/1
DO NOT SCALE DRAWING		SHEET 1 OF 2	

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D	REMOVE SHEET 3, ADD NOTES 2A-F REMOVE CABLE REFERENCES AND P/N'S MP451, 461, 462, 463 ES825-100F	061301	
E	REMOVE NOTES 5-8	071301	



**NOTES - NON-INTRINSIC SAFETY**

- 10. DRY CONTACT SWITCH OUTPUT WIRING: WIRE TO COMMON AND EITHER NORMALLY OPEN OR NORMALLY CLOSED FOR THE DESIRED SWITCH CONTACT. OUTPUT RATED 10 AMPS AT 120 VAC, 6 AMPS AT 240 VAC. VOLTAGE MUST BE LESS THAN 120 VAC OR 240 VAC RESPECTIVELY).
- 11. NEC CLASS 2 CIRCUITS.

- 120 VAC (±10%,60Hz)
- TO EARTH GROUND (SEE NOTE 3)
- RS-232 COMMUNICATIONS
- TO RS-232 PRINTER
- RS-485 TO PCO PERIPHERALS
- TELEPHONE LINE
- NON-I.S. DRY CONTACT INPUT (SEE NOTE 11)
- DRY CONTACT SWITCH OUTPUT (SEE NOTE 10)

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ISSUED				SIZE D	CAGE CODE 47876	DWG. NO. 50183	REV. E
DO NOT SCALE DRAWING				SCALE 1/1			SHEET 2 OF 2