

ROSEMOUNT 644 TRANSMITTER IS APPROVED AS INTRINSICALLY SAFE WHEN USED IN CIRCUIT WITH AN APPROVED ASSOCIATED APPARATUS WHICH MEETS THE ENTITY PARAMETERS LISTED IN CLASS I, GROUPS A, B, C, D OR Ex ia CLASS I ZONE 0 IIC.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM, THE TRANSMITTER AND ASSOCIATED APPARATUS MUST BE WIRED IN ACCORDANCE WITH THE ASSOCIATED APPARATUS MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.

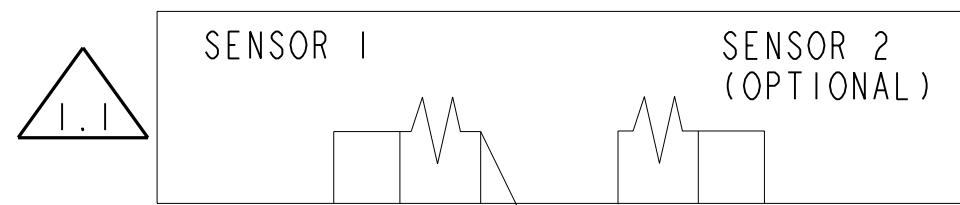
644 ENHANCED

FOR INSTALLATION IN CANADA

REVISION TABLE

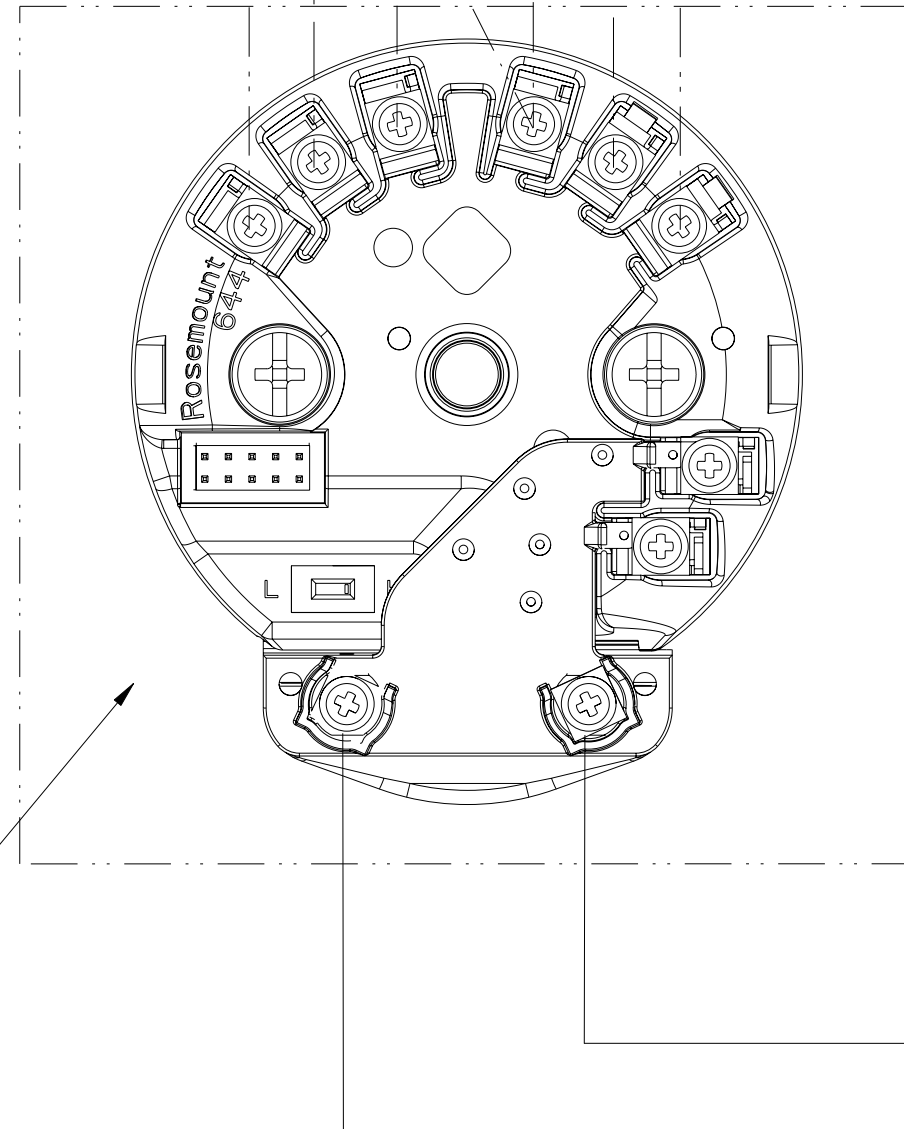
REVISION	ECO NO.	APP'D	DATE
AD	RTC1071216	MK	8/15/18
DESCRIPTION			
ADDED NA INSTALLATION INFO			

HAZARDOUS CLASSIFIED AREA



SENSOR TERMINAL OUTPUT PARAMETER LIMITS

$U_o = 13.6 \text{ Vdc}$
 $I_o = 80 \text{ mA}$
 $C_a = 0.72 \mu\text{F}$
 $L_a = 5.8 \text{ mH}$



LOOP TERMINAL INPUT PARAMETER LIMITS

$U_i = 30 \text{ Vdc}$
 $I_i = \text{SEE TABLE 1}$
 $P_i = 0.8 \text{ W}$
 OR
 $P_i = 0.67 \text{ W}$
 $C_i = 0.003 \mu\text{F}$
 $L_i = 0.0 \mu\text{H}$

AMBIENT TEMPERATURE LIMITS

$T_4 (-50 \leq T_a \leq 80^\circ\text{C})$
 $T_5 (-50 \leq T_a \leq 40^\circ\text{C})$
 OR
 $T_5 (-50 \leq T_a \leq 50^\circ\text{C})$
 $T_6 (-50 \leq T_a \leq 40^\circ\text{C})$

TABLE 1

T_a	80°C	70°C	60°C
I_i / I_o	150mA	170mA	190mA

NON-CLASSIFIED AREA

ASSOCIATED APPARATUS OUTPUT PARAMETER LIMITS

$U_o \leq 30 \text{ Vdc}$
 $I_o \leq \text{SEE TABLE 1}$
 $P_o \leq 0.8 \text{ W}$
 OR
 $P_o \leq 0.67 \text{ W}$
 $C_a > C_{\text{cable}} + C_i$
 $L_a > L_{\text{cable}} + L_i$

ASSOCIATED APPARATUS

POWER SUPPLY

- 1.9 OPTIONAL TRANSIENT PROTECTOR SHOWN. IF TRANSIENT PROTECTOR IS NOT INSTALLED, WIRES GO DIRECTLY TO '+' AND '-' TERMINALS ON TRANSMITTER.
- 1.8 THE 644 MUST BE INSTALLED IN A SUITABLE ENCLOSURE TO MEET INSTALLATION REQUIREMENTS STIPULATED IN THE CANADIAN ELECTRICAL CODE (CEC)
RECOMMENDED ROSEMOUNT ENCLOSURES:
UNIVERSAL HEAD: J5, J6, J7, J8
CONNECTION HEAD: R1, R2, R3, R4
- 1.7 THE ASSOCIATED APPARATUS MUST BE CSA APPROVED.
- 1.6 FOR INSTALLATION WITH THE GE OR GM OPTION CONSULT ROSEMOUNT DRAWING 03151-1009.
- 1.5 CONTROL EQUIPMENT CONNECTED TO BARRIER MUST NOT USE OR GENERATE MORE THAN 250 Vrms or Vdc.

1.4 THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS WITH ASSOCIATED APPARATUS WHEN THE FOLLOWING IS TRUE:

$V_{\text{max}} \text{ or } U_i \geq V_{\text{oc}}, V_f \text{ or } U_o;$
 $I_{\text{max}} \text{ or } I_i \geq I_{\text{sc}}, I_t \text{ or } I_o;$
 $P_{\text{max}} \text{ or } P_i \geq P_o;$
 $C_a > C_i + C_{\text{cable}};$
 $L_a > L_i + L_{\text{cable}}.$

1.3 ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT.

1.2 NO REVISION TO DRAWING WITHOUT PRIOR CSA APPROVAL.

1.1 ONLY APPROVED EQUIPMENT OR EQUIPMENT CLASSIFIED AS SIMPLE APPARATUS, SUCH AS THERMOCOUPLES AND RTD'S MAY BE CONNECTED TO SENSOR TERMINALS.

NOTES:

00644-2072

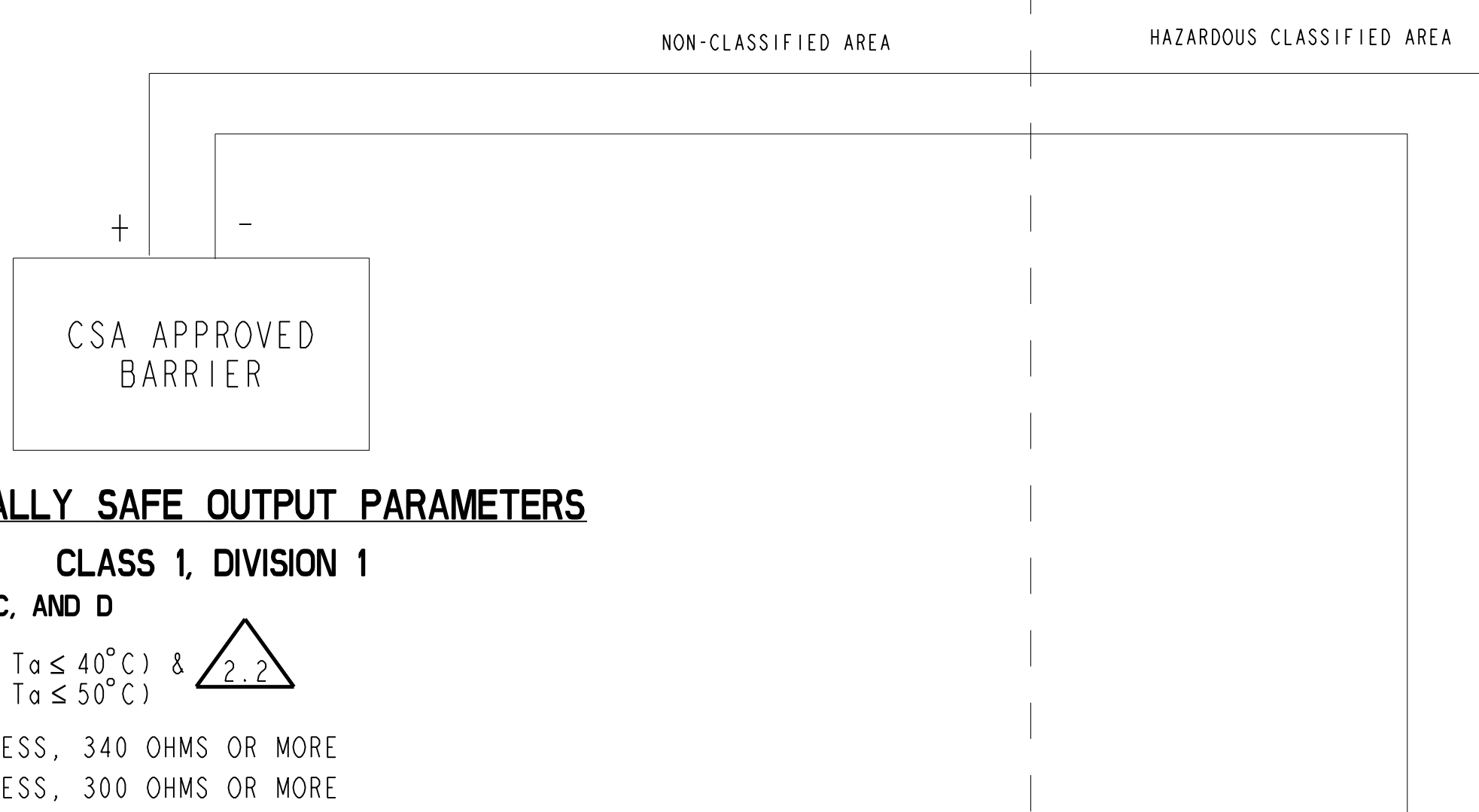
DRAWING NO.

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY.	SURFACE FINISH UNLESS OTHERWISE SPECIFIED	125°	3RD ANGLE		SIZE C	SCALE 3:2	REV AD
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES (mm). REMOVE ALL BURRS AND SHARP EDGES.		 200 Market Blvd Chanhassen, MN 55317 ROSEMOUNT TITLE INSTALL. DRAWING: 644 ENHANCED CSA. INTRINSIC SAFETY					
-DEC TOLERANCES- .X ± .1 [2.5] .XX ± .02 [0.5] .XXX ± .010 [0.25]							
FRACTIONS ± 1/32	ANGLES ± 2°	DR. Hiep Nguyen	6/4/12	DRAWING NO. 00644-2072			
DO NOT SCALE PRINT		CAD MAINTAINED. (PRO/E)	PRODUCT CODE	DOC TYPE	SHEET 1 OF 5		

CSA INTRINSIC SAFETY APPROVAL CONFIGURATION

644 ENHANCED CIRCUIT CONNECTION WITH CSA APPROVED BARRIER

Ex ia
Intrinsically Safe/Securite Intrinseque



INTRINSICALLY SAFE OUTPUT PARAMETERS

CLASS 1, DIVISION 1

GROUPS A, B, C, AND D

T6 (-50° ≤ Ta ≤ 40°C) & 2.2
 T5 (-50° ≤ Ta ≤ 50°C)

- 30V OR LESS, 340 OHMS OR MORE
- 28V OR LESS, 300 OHMS OR MORE
- 25V OR LESS, 240 OHMS OR MORE
- 22V OR LESS, 190 OHMS OR MORE

T5 (-50° ≤ Ta ≤ 40°C) & 2.3
 T4 (-50° ≤ Ta ≤ 80°C)

- 30V OR LESS, 310 OHMS OR MORE
- 28V OR LESS, 250 OHMS OR MORE
- 25V OR LESS, 200 OHMS OR MORE
- 22V OR LESS, 160 OHMS OR MORE

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT: La Substitution de composants peut compromettre la securite intrinseque.

UNIVERSAL HEAD ENCLOSURE OPTIONS:

J5, J6, J7, J8

CONNECTION HEAD ENCLOSURE OPTIONS:

R1, R2, R3, R4

TRANSMITTER MODEL NUMBERS:

644H, 644S

2.6 OPTIONAL TRANSIENT PROTECTOR MAY BE INSTALLED AS SHOWN ON SHEET 1.

2.5 FOR INSTALLATION WITH THE GE OR GM OPTION CONSULT ROSEMOUNT DRAWING 03151-1009.

2.4 THE 644 MUST BE INSTALLED IN A SUITABLE ENCLOSURE TO MEET INSTALLATION REQUIREMENTS STIPULATED IN THE CANADIAN ELECTRICAL CODE (CEC).

2.3 POWER LIMITED TO ≤ 0.8 WATTS TO ENSURE 2/3 RATING OF PROTECTION COMPONENTS.

2.2 POWER LIMITED TO ≤ 0.67 WATTS TO LIMIT THERMAL RISE.

2.1 ONLY APPROVED EQUIPMENT OR EQUIPMENT CLASSIFIED AS SIMPLE APPARATUS, SUCH AS THERMOCOUPLES AND RTD'S MAY BE CONNECTED TO SENSOR TERMINALS.

NOTES:

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY.	SURFACE FINISH UNLESS OTHERWISE SPECIFIED	125/	3RD ANGLE		SIZE C	SCALE 1:1	REV AD
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES (mm). REMOVE ALL BURRS AND SHARP EDGES.		ROSEMOUNT					
-DEC TOLERANCES-		EMERSON 200 Market Blvd Chanhassen, MN 55317					
.X ± .1 [2.5]	INSTALL. DRAWING: 644 ENHANCED						
.XX ± .02 [0.5]	CSA, INTRINSIC SAFETY						
.XXX ± .010 [0.25]	DR. Hiep Nguyen 6/4/12		DRAWING NO. 00644-2072				
FRACTIONS ± 1/32	ANGLES ± 2°	APP'D K. Norman 8/27/12		SHEET 2 OF 5			
DO NOT SCALE PRINT	CAD MAINTAINED. (PRO/E)	PRODUCT CODE	DOC TYPE	SHEET 2 OF 5			

DRAWING NO. 00644-2072

THE 644 IS APPROVED FOR CLASS 1, DIVISION 2, GROUPS A, B, C AND D HAZARDOUS (CLASSIFIED) LOCATIONS.

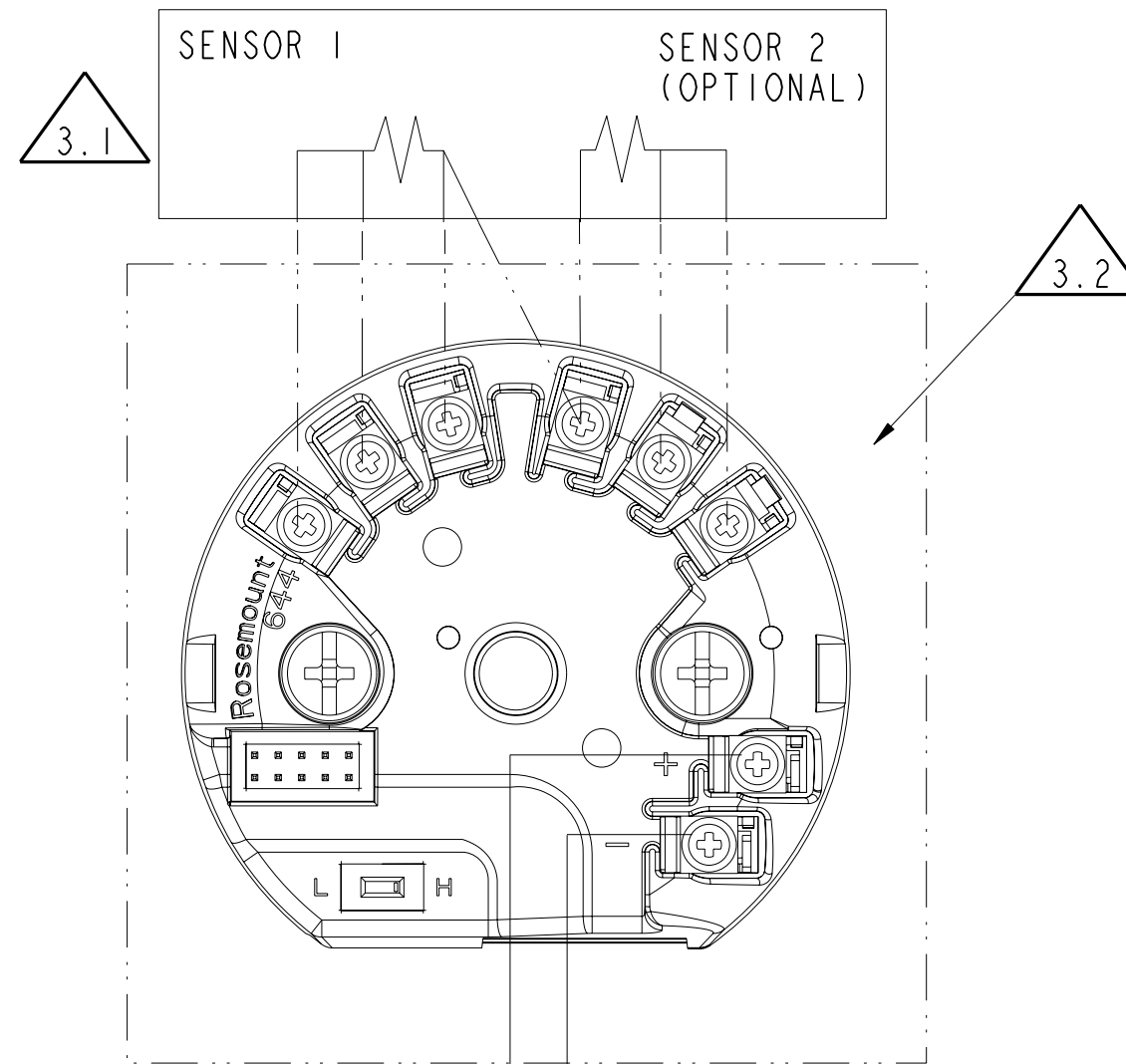
SENSORS MAY BE INSTALLED USING NON-INCENDIVE FIELD WIRING.

HAZARDOUS CLASSIFIED AREA

NON-INCENDIVE FIELD WIRING

SENSOR TERMINAL OUTPUT
PARAMETER LIMITS

$V_o = 13.6 \text{ Vdc}$
 $C_a = 0.74 \mu\text{F}$
 $L_a = 100 \text{ mH}$



GENERAL CLASS 1 DIV 2 WIRING

CONTROL SYSTEM
SUPPLY
12-42.4V

3.4 OPTIONAL TRANSIENT PROTECTOR MAY BE INSTALLED AS SHOWN ON SHEET 1.

3.3 FOR INSTALLATION WITH THE GE OR GM OPTION CONSULT ROSEMOUNT DRAWING 03151-1009.

3.2 THE 644 MUST BE INSTALLED IN A SUITABLE ENCLOSURE TO MEET INSTALLATION REQUIREMENTS STIPULATED IN THE CANADIAN ELECTRICAL CODE (CEC).

3.1 ONLY APPROVED EQUIPMENT OR EQUIPMENT CLASSIFIED AS SIMPLE APPARATUS, SUCH AS THERMOCOUPLES AND RTD'S MAY BE CONNECTED TO SENSOR TERMINALS.

NOTES:

DRAWING NO. 00644-2072

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY.		SURFACE FINISH UNLESS OTHERWISE SPECIFIED	125/	3RD ANGLE		SIZE C	SCALE 1:1	REV AD
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES (mm). REMOVE ALL BURRS AND SHARP EDGES.		 ROSEMOUNT 200 Market Blvd Chanhassen, MN 55317 INSTALL. DRAWING: 644 ENHANCED CSA, INTRINSIC SAFETY						
-DEC TOLERANCES-		DR. Hiep Nguyen 6/4/12 DRAWING NO. 00644-2072						
.X ± .1 [2.5]	.XX ± .02 [0.5]	APP'D K. Norman 8/27/12						
.XXX ± .010 [0.25]	FRACTIONS ± 1/32	DOC TYPE SHEET 3 OF 5						
ANGLES ± 2°	DO NOT SCALE PRINT	CAD MAINTAINED. (PRO/Ε)	PRODUCT CODE					

ROSEMOUNT 644 TRANSMITTER IS APPROVED AS INTRINSICALLY SAFE WHEN USED IN CIRCUIT WITH AN APPROVED ASSOCIATED APPARATUS WHICH MEETS THE ENTITY PARAMETERS LISTED IN CLASS I, II, III, GROUPS A, B, C, D, E, F AND G. AEx ia IIC T6...T4

TO ASSURE AN INTRINSICALLY SAFE SYSTEM, THE TRANSMITTER AND ASSOCIATED APPARATUS MUST BE WIRED IN ACCORDANCE WITH THE APPARATUS MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.

644 ENHANCED

FOR INSTALLATION IN THE UNITED STATES

HAZARDOUS CLASSIFIED AREA

NON-CLASSIFIED AREA

SENSOR TERMINAL OUTPUT PARAMETER LIMITS

$V_t = 11.36 \text{ Vdc}$
 $I_t = 8.1 \text{ mA}$
 $P_o = 23 \text{ mW}$
 $C_a = 1.7 \mu\text{F}$
 $L_a = 532 \text{ mH}$

LOOP TERMINAL INPUT PARAMETER LIMITS

$U_i = 30 \text{ Vdc}$
 $I_i = \text{SEE TABLE I}$
 $P_i = 0.8 \text{ W}$
 OR
 $P_i = 0.67 \text{ W}$
 $C_i = 0.003 \mu\text{F}$
 $L_i = 0.0 \mu\text{H}$

AMBIENT TEMPERATURE LIMITS

T4 ($-50 \leq T_a \leq 80^\circ\text{C}$)
 T5 ($-50 \leq T_a \leq 40^\circ\text{C}$)
 OR
 T5 ($-50 \leq T_a \leq 50^\circ\text{C}$)
 T6 ($-50 \leq T_a \leq 40^\circ\text{C}$)

ASSOCIATED APPARATUS OUTPUT PARAMETER LIMITS

$U_o \leq 30 \text{ Vdc}$
 $I_o \leq \text{SEE TABLE I}$
 $P_o \leq 0.8 \text{ W}$
 OR
 $P_o \leq 0.67 \text{ W}$
 $C_a > C_{\text{cable}} + C_i$
 $L_a > L_{\text{cable}} + L_i$

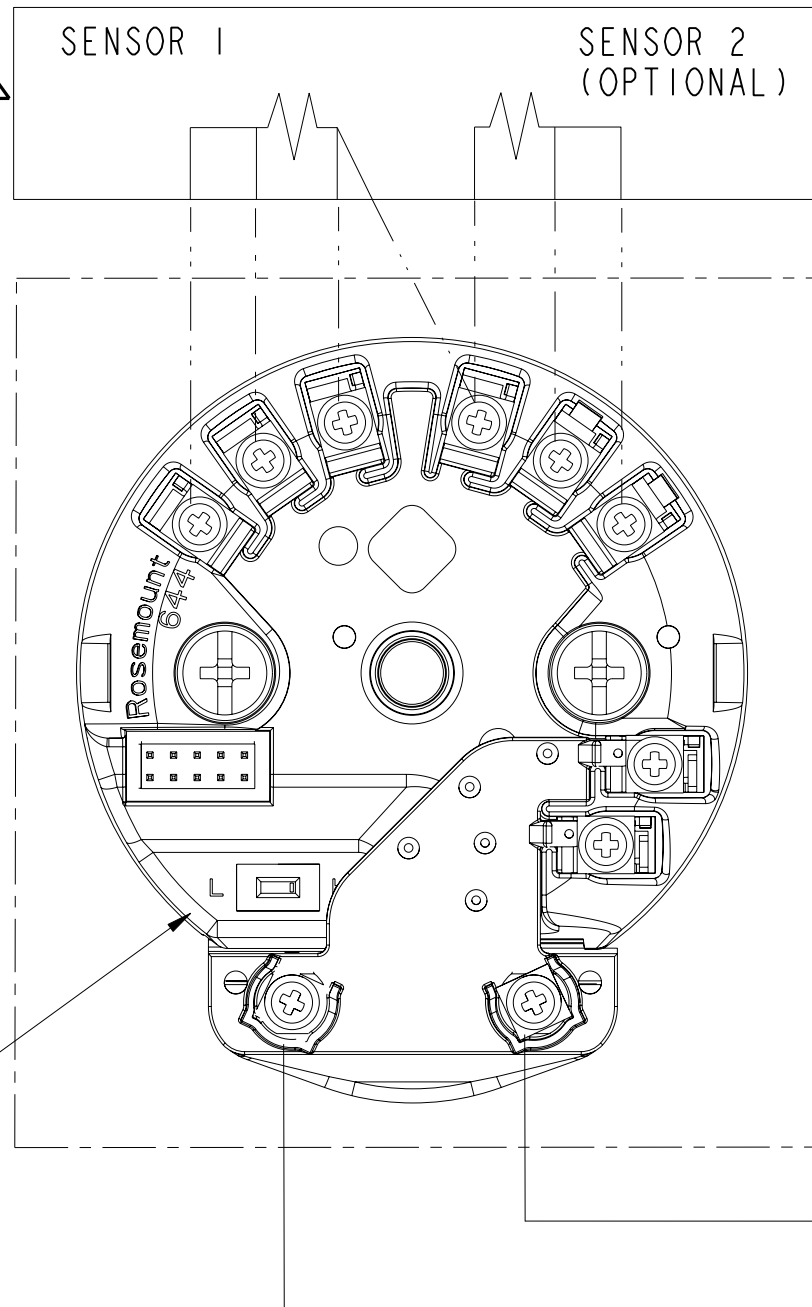


TABLE I

T_a	80°C	70°C	60°C
I_i / I_o	150mA	170mA	190mA

4.6 CONTROL EQUIPMENT CONNECTED TO BARRIER MUST NOT USE OR GENERATE MORE THAN 250 V_{rms} or V_{dc} .

4.5 CERTIFIED ENCLOSURE WITH DUST-TIGHT CONDUIT SEAL MUST BE USED WHEN INSTALLED IN CLASS II AND CLASS III ENVIRONMENTS.

4.4 THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS WITH ASSOCIATED APPARATUS WHEN THE FOLLOWING IS TRUE:

V_{max} or $U_i \geq V_{oc}$, V_t or U_o ;
 I_{max} or $I_i \geq I_{sc}$, I_t OR I_o ;
 P_{max} or $P_i > P_o$;
 $C_a > C_i + C_{\text{cable}}$;
 $L_a > L_i + L_{\text{cable}}$.

4.3 ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT.

4.2 NO REVISION TO DRAWING WITHOUT PRIOR CSA APPROVAL.

4.1 ONLY APPROVED EQUIPMENT OR EQUIPMENT CLASSIFIED AS SIMPLE APPARATUS, SUCH AS THERMOCOUPLES AND RTD'S MAY BE CONNECTED TO SENSOR TERMINALS.

4.10 FOR INSTALLATION WITH THE GE OR GM OPTION CONSULT ROSEMOUNT DRAWING 03151-1009.

4.9 THE ASSOCIATED APPARATUS MUST BE CSA APPROVED.

4.8 MUST BE INSTALLED IN AN ENCLOSURE MEETING THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE (ANSI/NFPA70) AND ANSI/ISA S82.01 AND S82.03. RECOMMENDED ROSEMOUNT ENCLOSURES:
UNIVERSAL HEAD: J5, J6, J7, J8
CONNECTION HEAD: R1, R2, R3, R4

4.7 INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSI/ISA-RP 12.06.01 "INSTALLATION OF INTRINSICALLY SAFE SYSTEM FOR HAZARDOUS (CLASSIFIED)

4.15 OPTIONAL TRANSIENT PROTECTOR SHOWN. IF TRANSIENT PROTECTOR IS NOT INSTALLED, WIRES GO DIRECTLY TO '+' AND '-' TERMINALS ON TRANSMITTER.

4.14 FOR INSTALLATION IN AMBIENTS GREATER THAN 60°C, USE WIRE RATED TO AT LEAST 90°C.

4.13 WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

4.12 WARNING: TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES READ, UNDERSTAND AND ADHERE TO ANY LIVE MAINTENANCE PROCEDURES.

4.11 WARNING: POTENTIAL ELECTROSTATIC CHARGING HAZARD. DO NOT RUB OR CLEAN WITH SOLVENTS OR DRY CLOTH.

NOTES:

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY.	SURFACE FINISH UNLESS OTHERWISE SPECIFIED	125/3RD ANGLE	SIZE C	SCALE 3:2	REV AD
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES (mm). REMOVE ALL BURRS AND SHARP EDGES.	ROSEMOUNT 8200 Market Blvd Chanhassen, MN 55317				
EMERSON					
INSTALL. DRAWING: 644 ENHANCED					
CSA, INTRINSIC SAFETY					
DR. Hiep Nguyen	6/4/12	DRAWING NO. 00644-2072			
APP'D K. Norman	8/27/12				
DO NOT SCALE PRINT	CAD MAINTAINED. (PRO/E)	PRODUCT CODE	DOC TYPE	SHEET 4 OF 5	

DRAWING NO. 00644-2072

THE 644 IS APPROVED AS NON-INCENDIVE FOR CLASS 1, DIVISION 2, GROUPS A, B, C, AND D HAZARDOUS (CLASSIFIED) LOCATIONS.

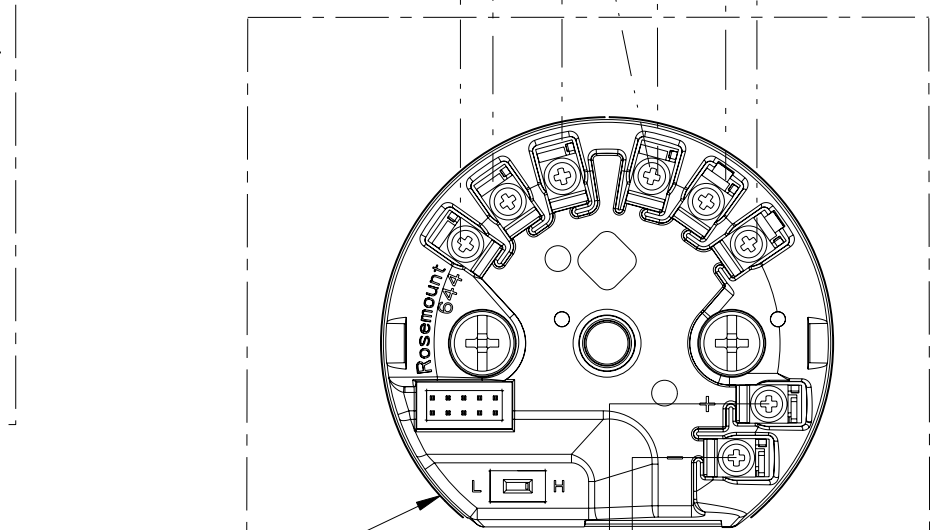
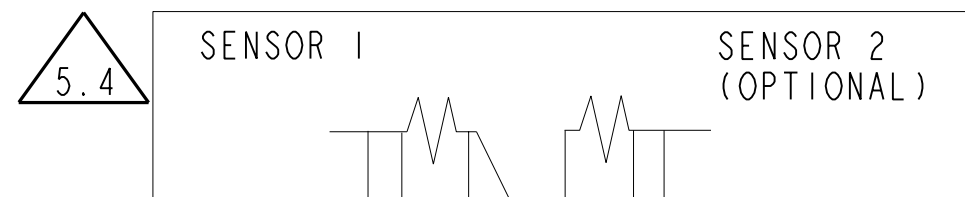
MAY BE INSTALLED IN DIVISION 2 LOCATION USING GENERAL DIVISION 2 WIRING METHODS OR NON-INCENDIVE FIELD WIRING AS IDENTIFIED BELOW.

HAZARDOUS AREA

NON-INCENDIVE FIELD WIRING

SENSOR TERMINAL OUTPUT
PARAMETER LIMITS

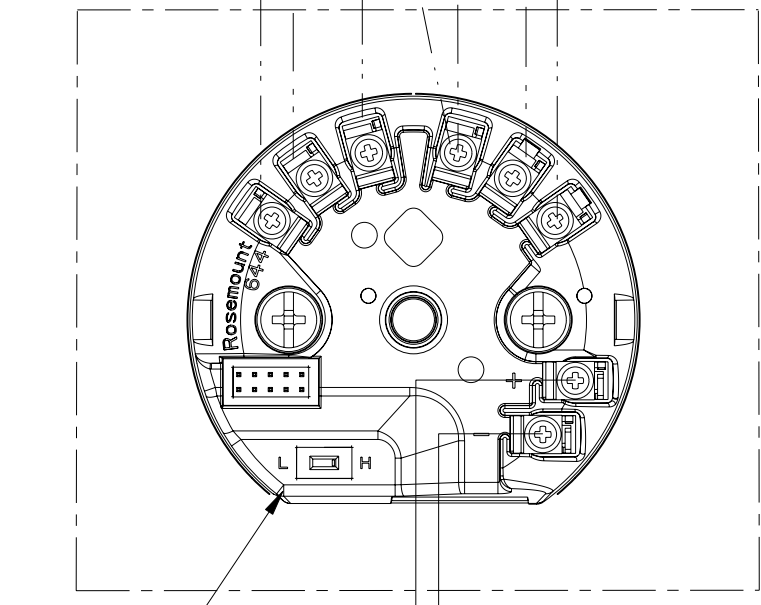
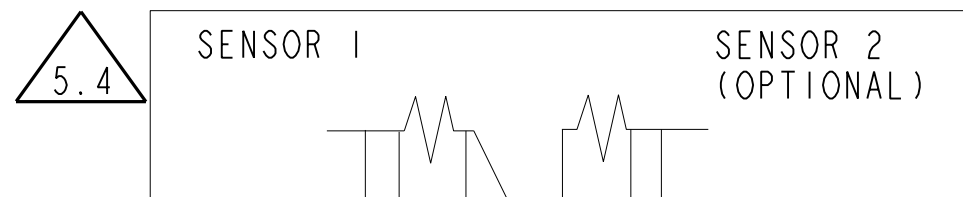
$V_t = 11.36 \text{ Vdc}$
 $C_a = 1.7 \mu\text{F}$
 $L_a = 532 \text{ mH}$



NON-INCENDIVE FIELD WIRING

SENSOR TERMINAL OUTPUT
PARAMETER LIMITS

$V_t = 11.36 \text{ Vdc}$
 $C_a = 1.7 \mu\text{F}$
 $L_a = 532 \text{ mH}$



LOOP TERMINAL INPUT
PARAMETER LIMITS

$U_i = 30 \text{ Vdc}$
 $C_i = 0.003 \mu\text{F}$
 $L_i = 0.0 \mu\text{H}$

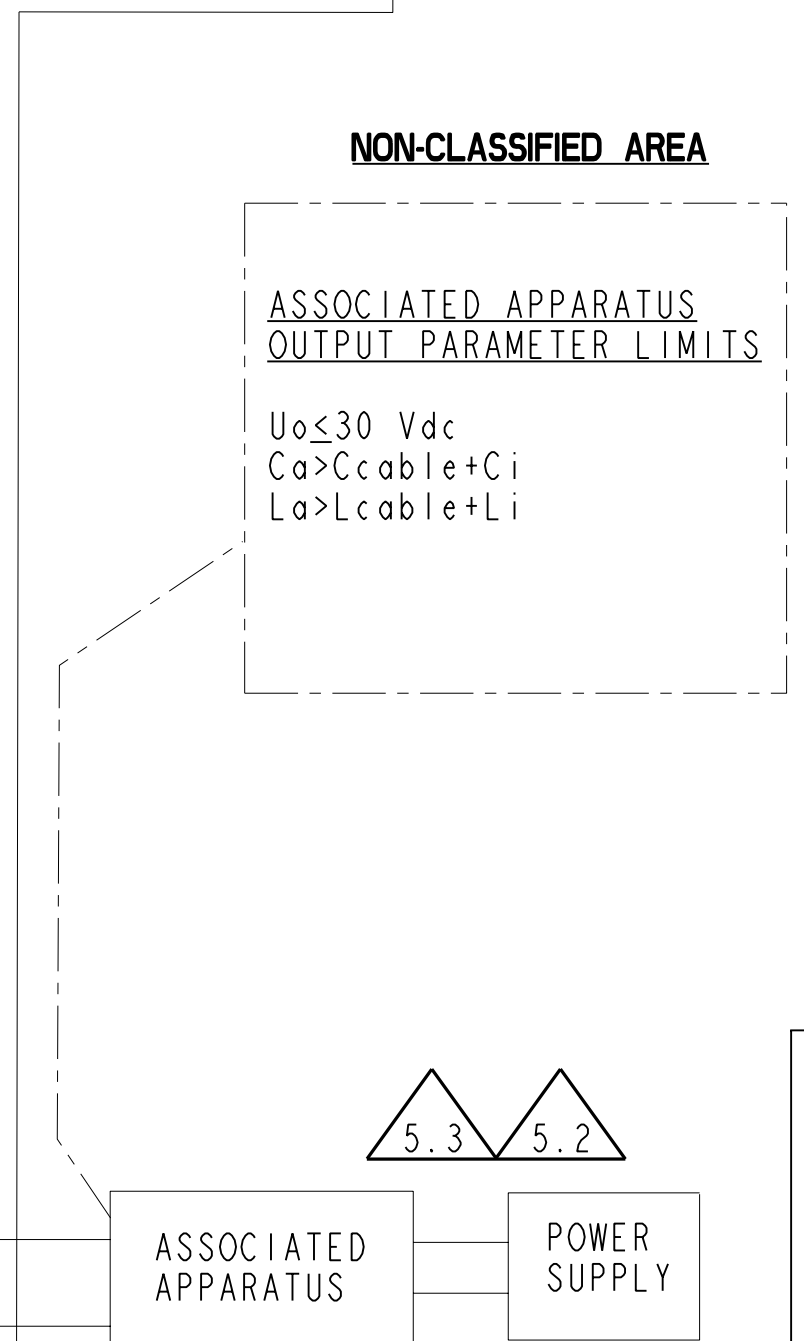
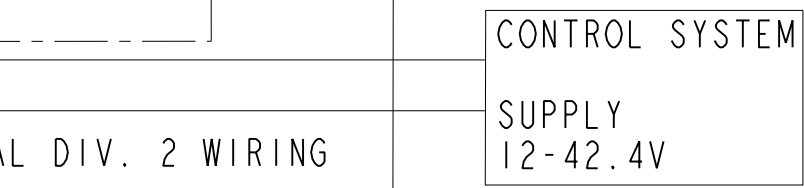
AMBIENT TEMPERATURE
LIMITS

T5 ($-50 \leq T_a \leq 80^\circ\text{C}$)
T6 ($-50 \leq T_a \leq 40^\circ\text{C}$)

NON-CLASSIFIED AREA

ASSOCIATED APPARATUS
OUTPUT PARAMETER LIMITS

$U_o \leq 30 \text{ Vdc}$
 $C_a > C_{\text{cable}} + C_i$
 $L_a > L_{\text{cable}} + L_i$



5.6 OPTIONAL TRANSIENT PROTECTOR MAY BE INSTALLED AS SHOWN ON SHEET 4.

5.5 FOR INSTALLATIONS IN AMBIENTS GREATER THAN 60°C , USE WIRE RATED TO AT LEAST 90°C .

5.4 ONLY APPROVED EQUIPMENT AND EQUIPMENT CLASSIFIED AS SIMPLE APPARATUS, SUCH AS THERMOCOUPLES AND RTD'S MAY BE CONNECTED TO SENSOR TERMINALS.

5.3 TO ASSURE A NON-INCENDIVE SYSTEM, THE TRANSMITTER AND ASSOCIATED APPARATUS MUST BE WIRED IN ACCORDANCE WITH THE ASSOCIATED APPARATUS MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.

5.2 THE ASSOCIATED APPARATUS MUST BE CSA APPROVED.

5.1 TRANSMITTER MUST BE INSTALLED IN A SUITABLE ENCLOSURE.

NOTES:

NON-INCENDIVE FIELD WIRING

FORM REV AD

DRAWING NO. 00644-2072

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY.		SURFACE FINISH UNLESS OTHERWISE SPECIFIED		125/	3RD ANGLE		SIZE C	SCALE 3:2	REV AD
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES (mm). REMOVE ALL BURRS AND SHARP EDGES.		EMERSON 8200 Market Blvd Chanhassen, MN 55317							
-DEC TOLERANCES-		INSTALL. DRAWING: 644 ENHANCED CSA, INTRINSIC SAFETY							
.X ± .1 [2.5]	.XX ± .02 [0.5]	DR. Hiep Nguyen		6/4/12	DRAWING NO. 00644-2072				
.XXX ± .010 [0.25]	FRACTIONS ± 1/32	APP'D K. Norman		8/27/12					
ANGLES ± 2'	DO NOT SCALE PRINT	CAD MAINTAINED. (PRO/E)	PRODUCT CODE	DOC TYPE	SHEET 5 OF 5				