

A - X5000

Material
0 = Stainless Steel - 3/4" NPT
2 = Stainless Steel - M25

Bluetooth
0 = Yes
1 = No

Place Holder
0 = Future Use

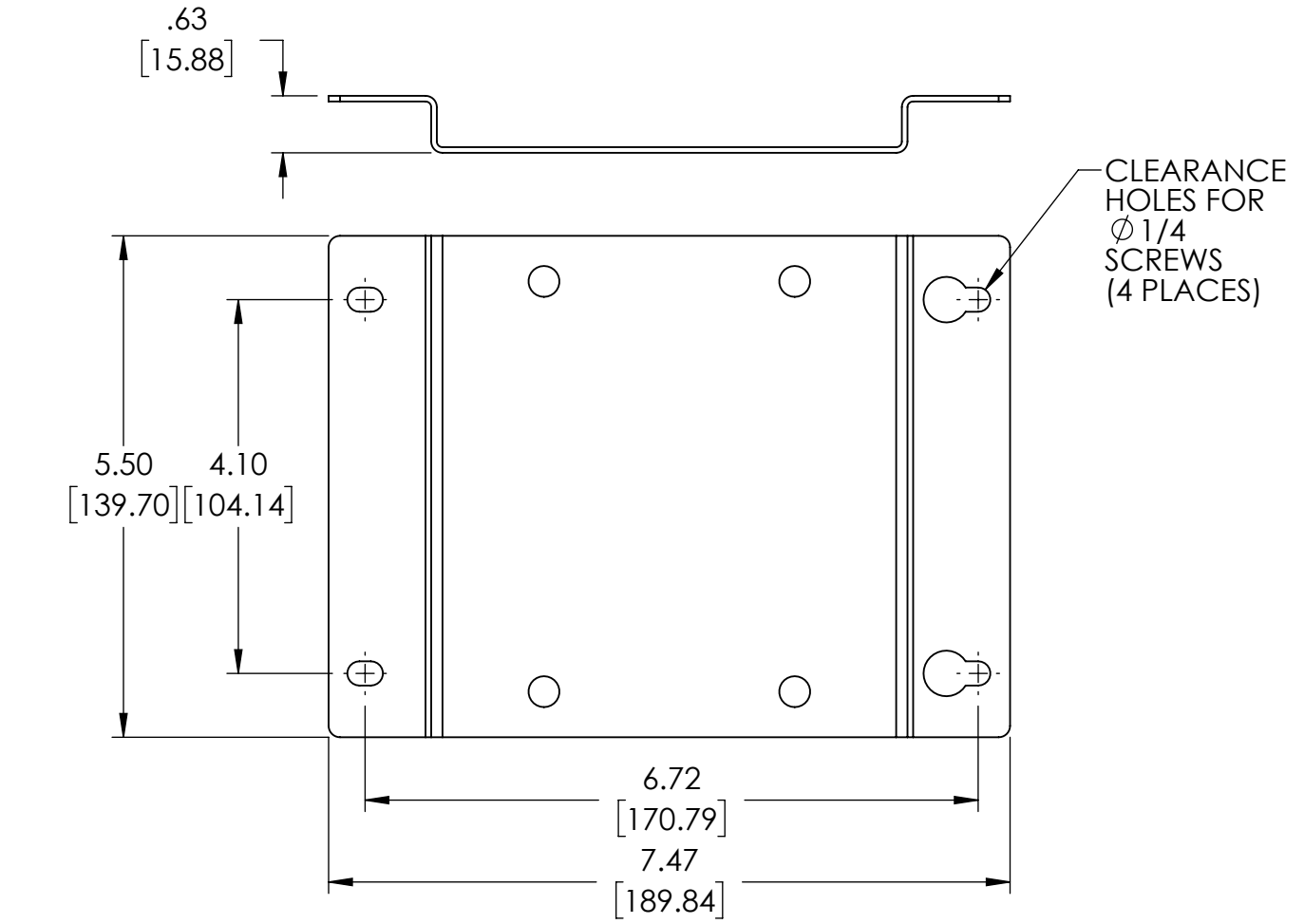
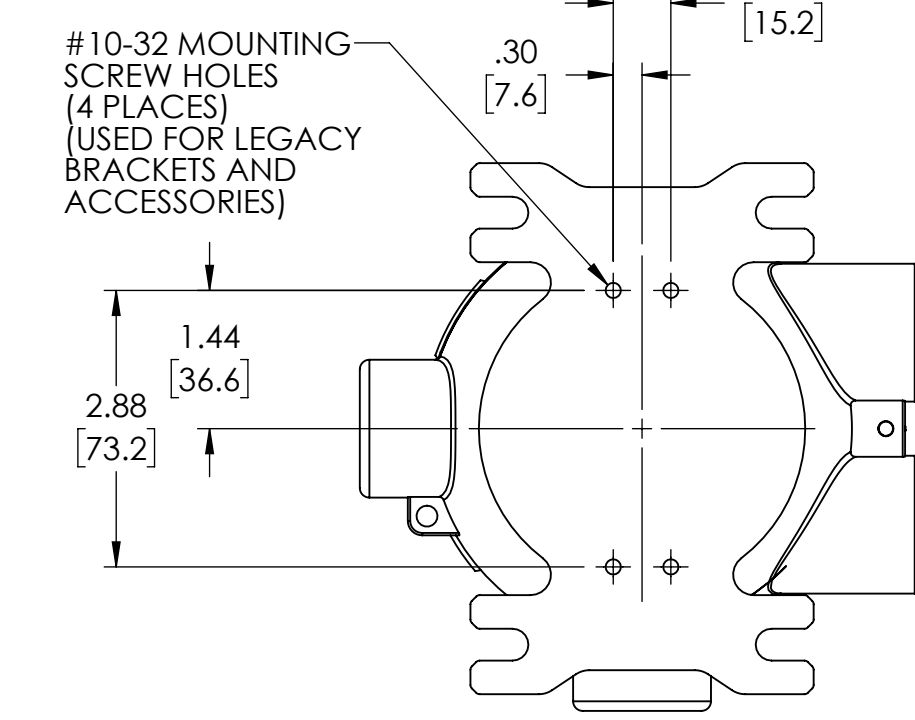
Sensor #2
Check Sensor Label
See Read First

Tag
0 = None
1 = Stainless Steel affixed tag

Approvals
A = ATEX/UKCA/IEC
B = INMETRO
C = China (CPA)
D = Marine (MED)
E = Marine (TA)
F = CSA
M = FM

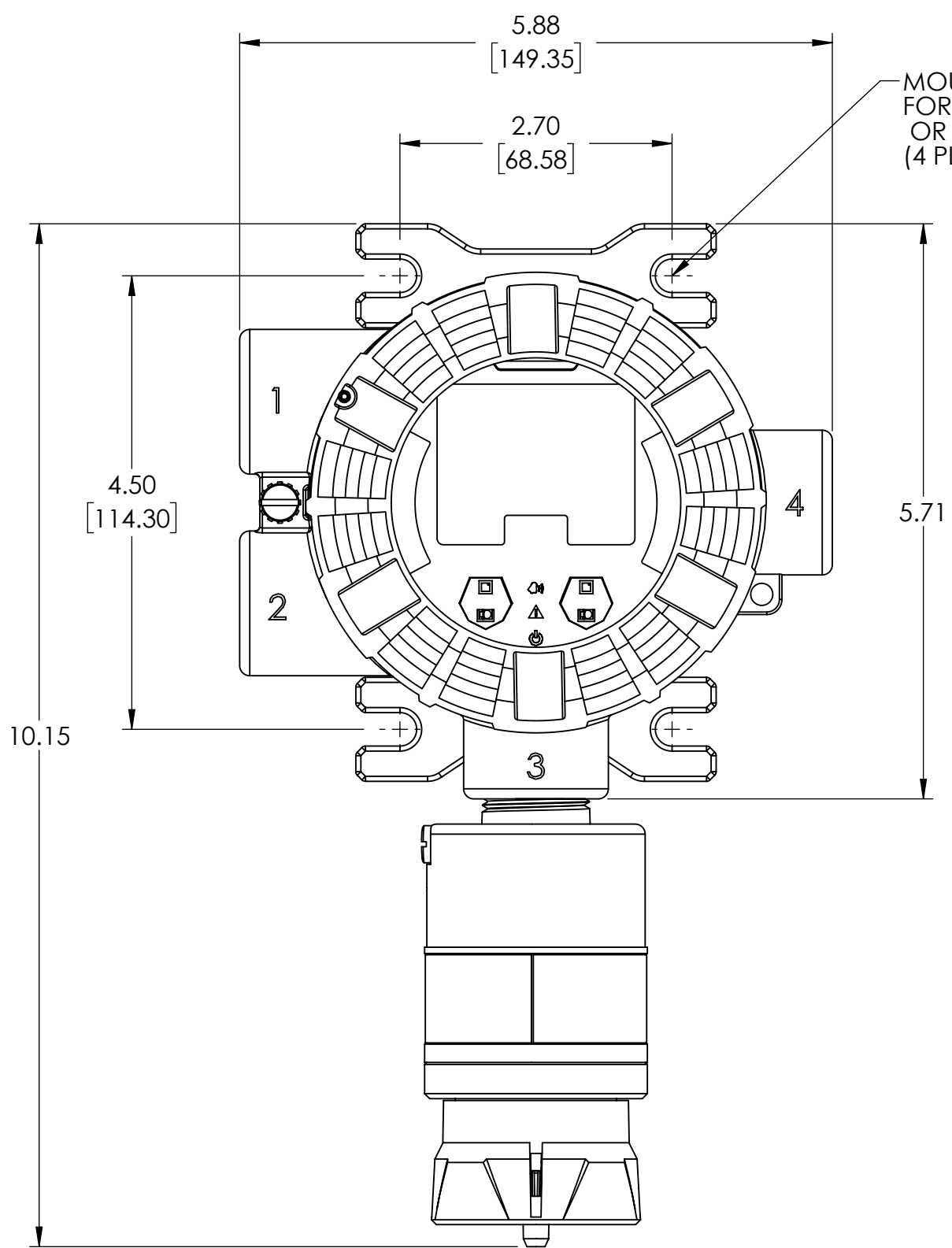
Outputs
0 = Analog/HART
1 = Analog/HART/Relays

Sensor #1
Check Sensor Label
See Read First

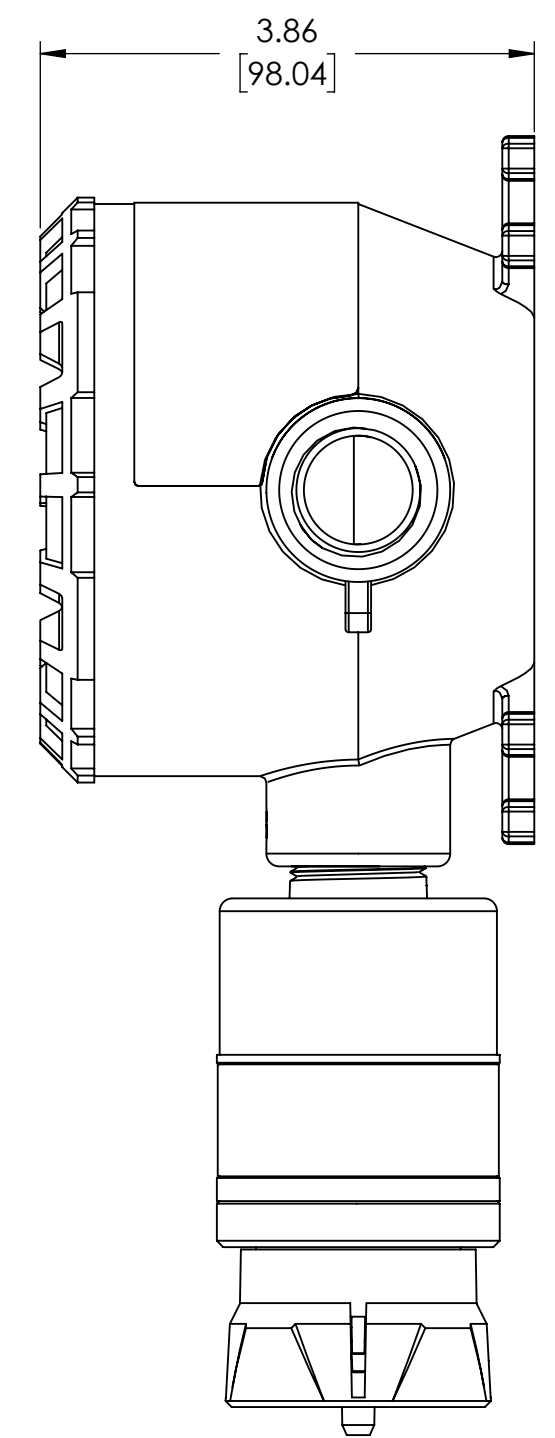


MOUNTING BRACKET
(REQUIRED FOR XIR PLUS SENSORS)
(PART NUMBER 10179361)

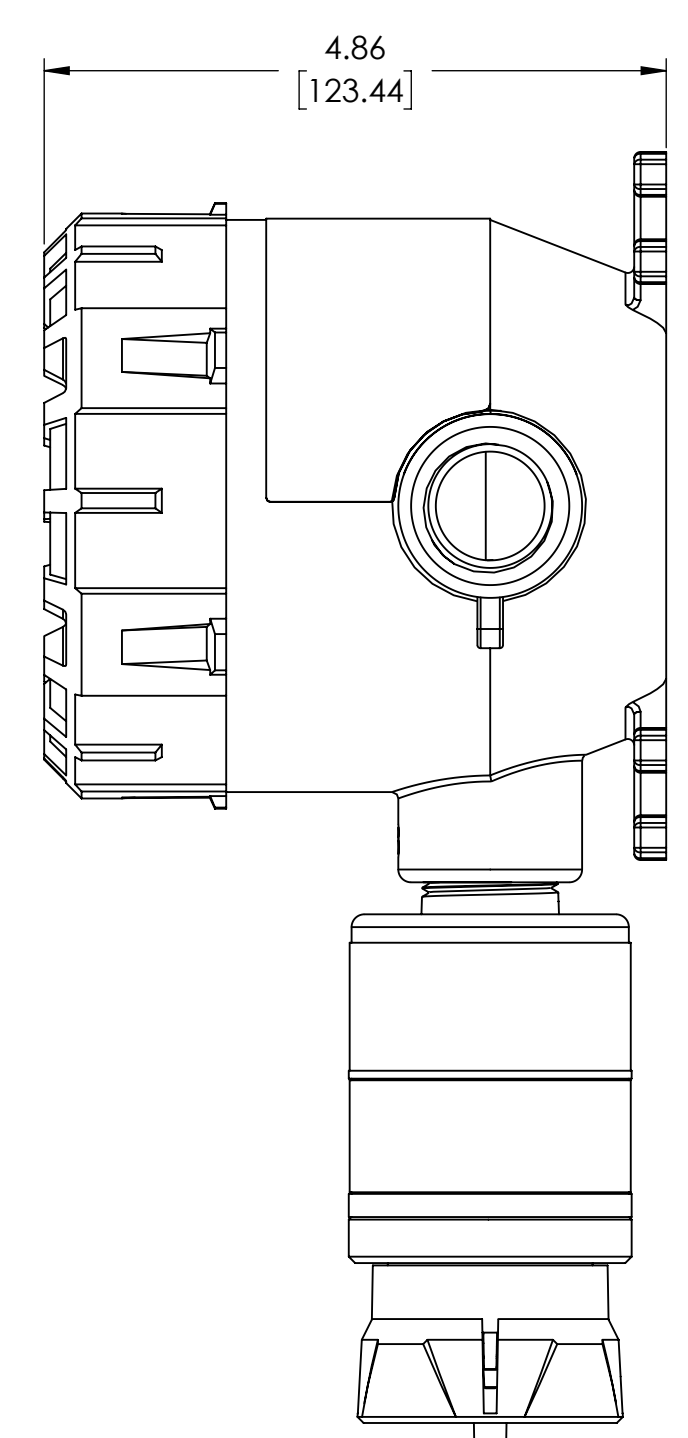
CLEARANCE HOLES FOR Ø 1/4 SCREWS (4 PLACES)



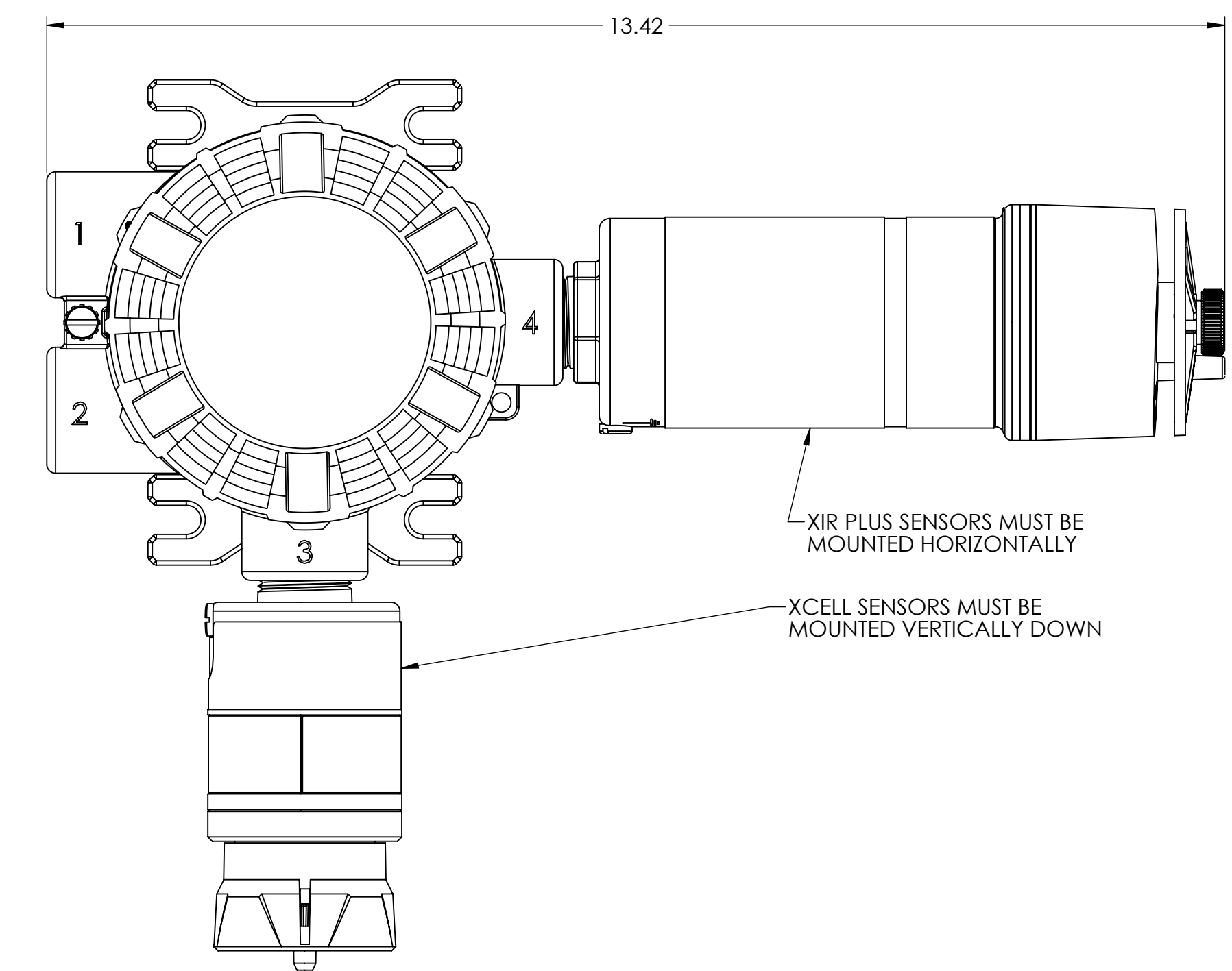
MOUNTING POINTS FOR 5/16" DIA. BOLT OR METRIC M8 BOLT (4 PLACES)



SHORT LID
(USED FOR MAIN BOARD WITHOUT RELAYS OR JUNCTION BOX BOARD)



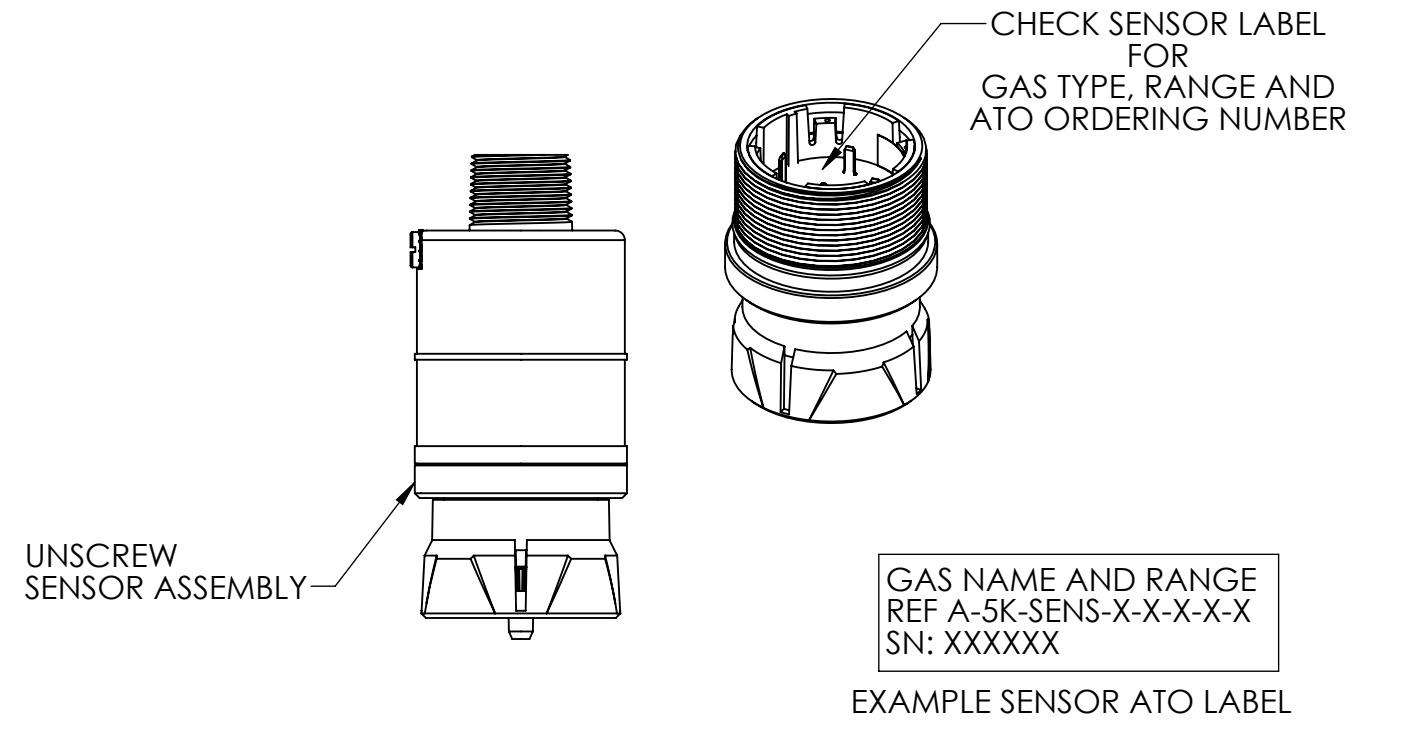
DEEP LID
(USED FOR MAIN BOARD WITH RELAYS)



XIR PLUS SENSORS MUST BE MOUNTED HORIZONTALLY

XCELL SENSORS MUST BE MOUNTED VERTICALLY DOWN

Read First



CUSTOMER _____
P.O. NO. _____
MSA NO. _____
LOCATION _____
TAG NO. _____
TOTAL NO. OF UNITS _____

NOTES:
1. DIMENSIONS SHOWN ARE IN INCHES [MILLIMETERS]

REVISIONS	
①	9-4-2017 ADDED SHT FOR REVISED WIRE LENGTH TABLES & PICTORIALS CR#800000021543 LRB JD
②	01-04-2018 ADDED GROUNDING SHEETS & INFO. & ALL ASSOC. NOTES CR#800000023657 LRB JD
③	01-23-2018 SHEET 3: ADDED RETROFIT NOTES CR#800000024223 LRB MK
④	SHEETS 4 & 5: REVISED "SHIELD" NOTATIONS & NOTES 2 & 4 CR#800000033474 LRB BRC
⑤	9-8-2020 A. ADDED SHEET 2 FOR JB5000 MTG INFO B. RENUMBERED SHEETS 2-6 TO 3-7 C. REMOVED NOTE 2 CR#800000043241 WJE FB
⑥	4-26-2022 A. SHEET 3: UPDATED VIEW TO SHOW 2 FERRITES B. SHEET 4: ADDED FERRITE NOTE TO POWER CONNECTIONS ON MAIN BOARD DIAGRAMS CR#800000053226 WJE JH
⑦	5-25-2022 A. SHT 1: UPDATED APPROVALS TO ADD B, C, D, E & M CR#800000054104 WJE JH

LIFECYCLE STATE: **Production** REVISION: **7**



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MSA STANDARD SHOP PRACTICES APPLY
JOB NO. 30012996 PH0705 APPROVAL AGENCY CODE: NIOSH ATTR. DOC.:
THIRD-ANGLE PROJECTION DO NOT SCALE DWG.

DRAWN BY: WJE DATE: 9-29-2016
CHECKED BY: C.STARTA DATE: 3-28-2017
PROJECT ENGR: N.CICCONE DATE: 3-28-2017
QUALITY ASSURANCE: J.DANNHARDT DATE: 3-28-2017
MANUFACTURING: M.ZIRNSAK DATE: 3-28-2017

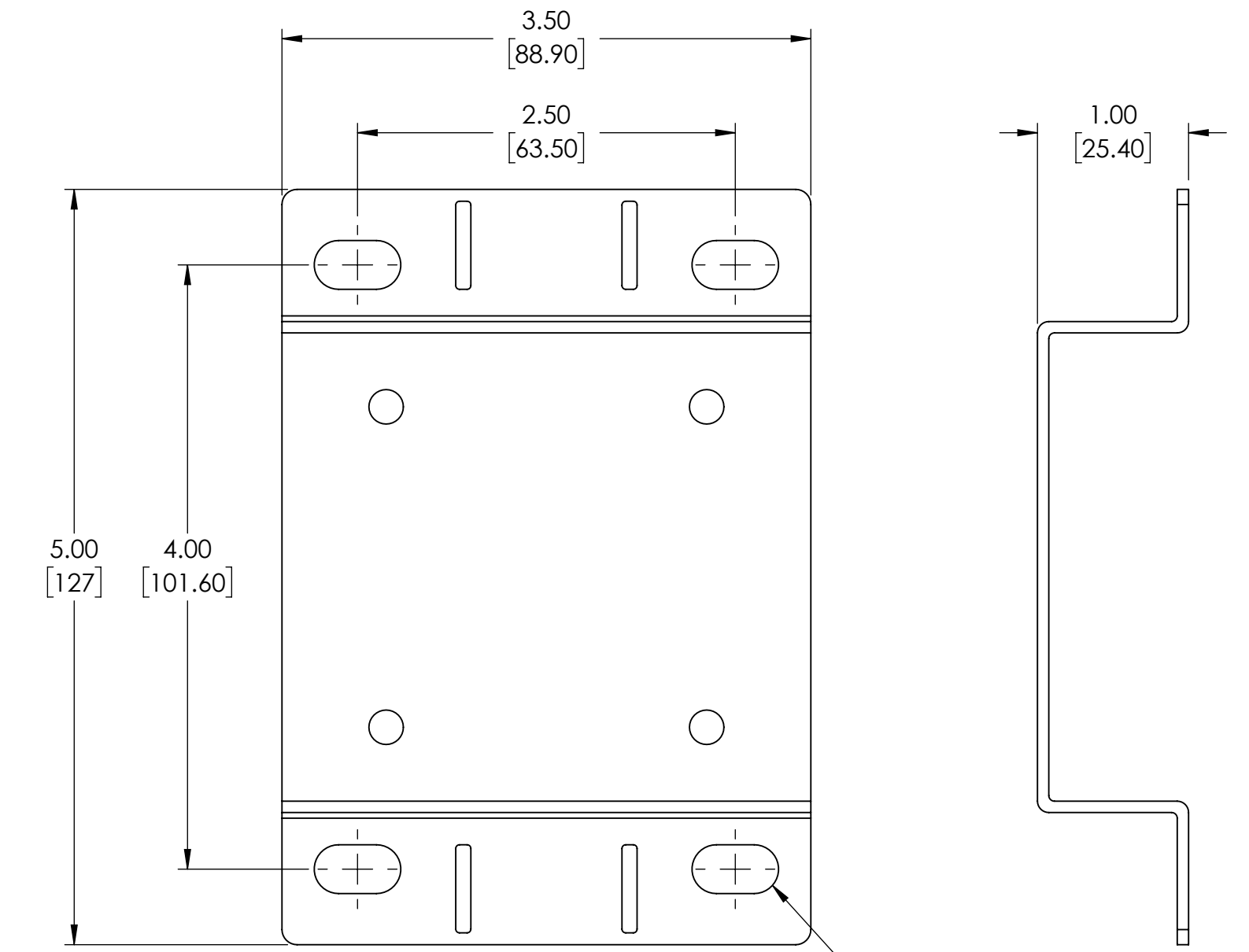
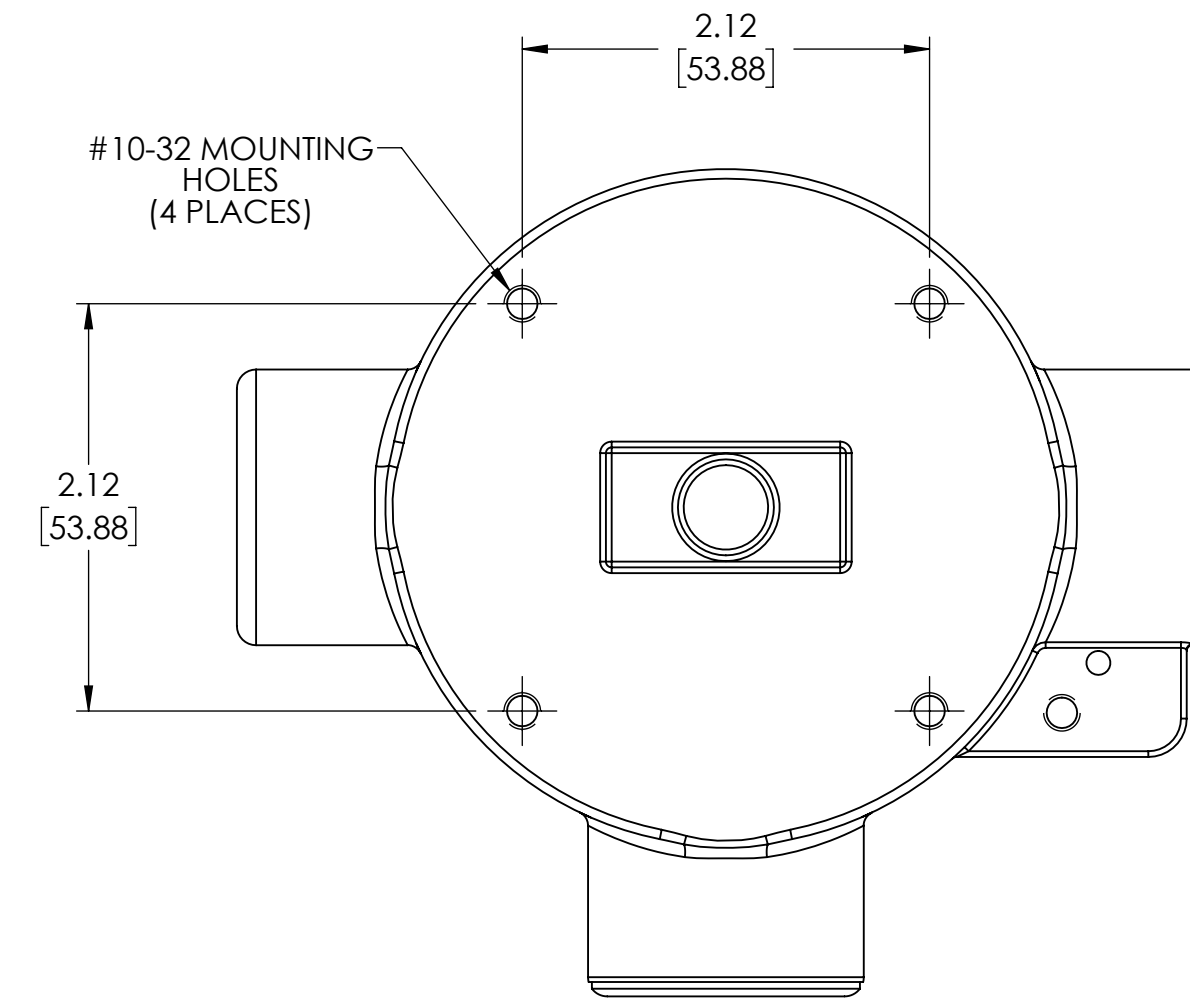
INSTALLATION OUTLINE, ULTIMA X5000

CADD REF: SK3015-1051 SCALE: 1:2

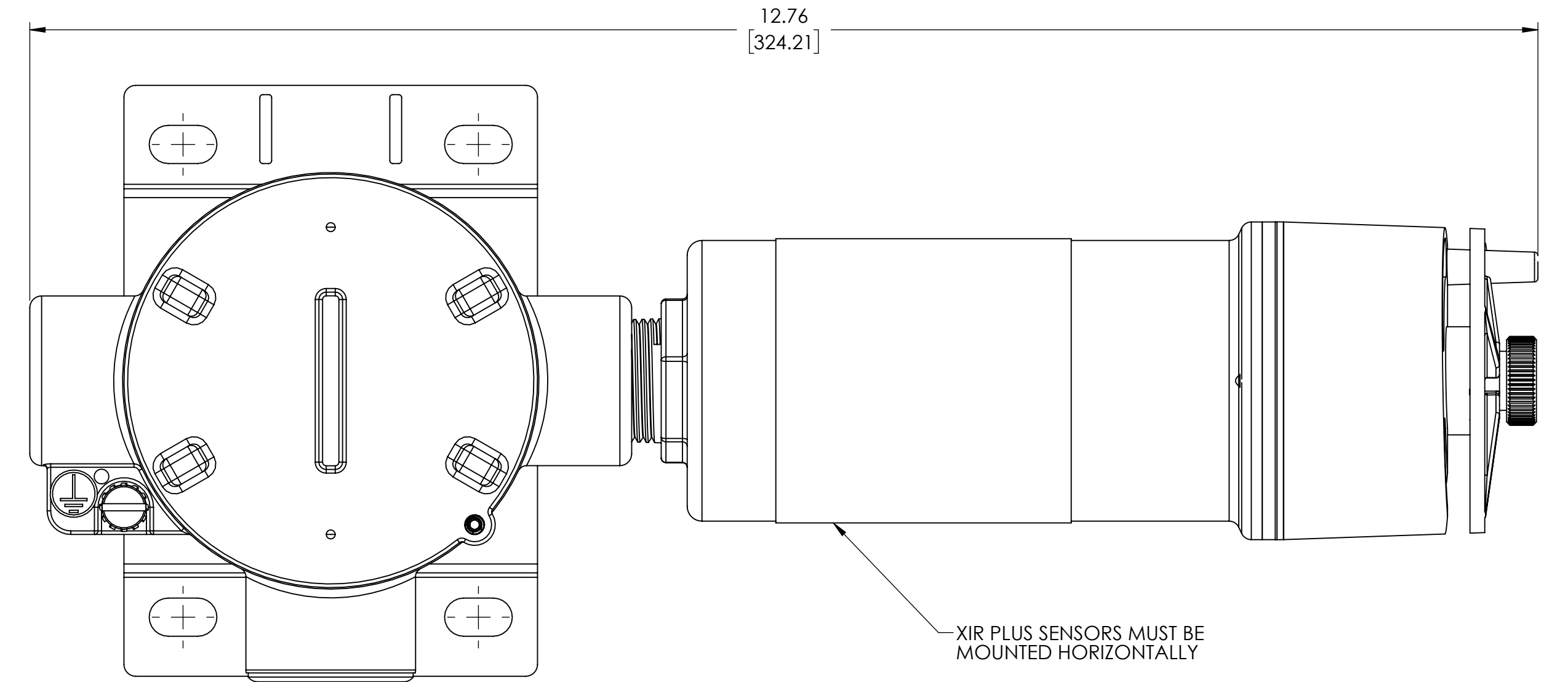
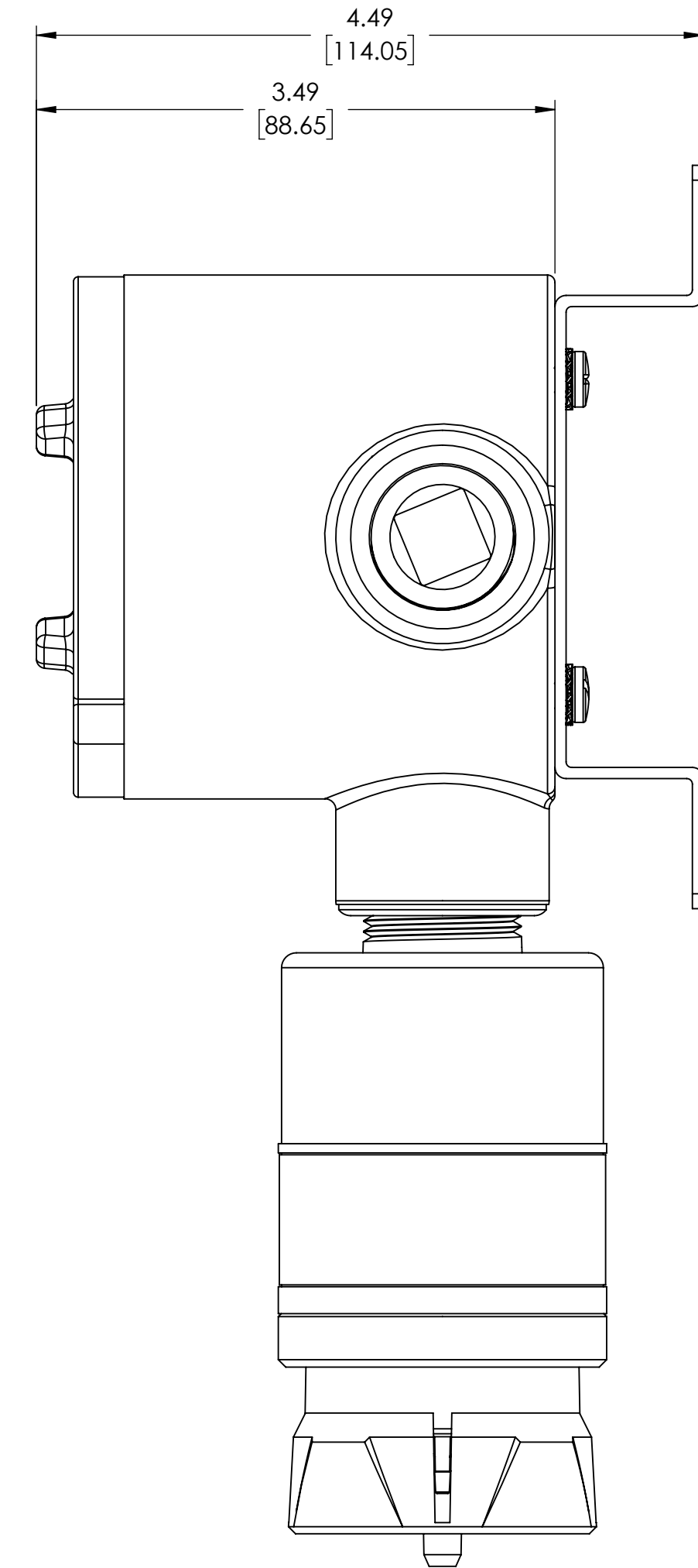
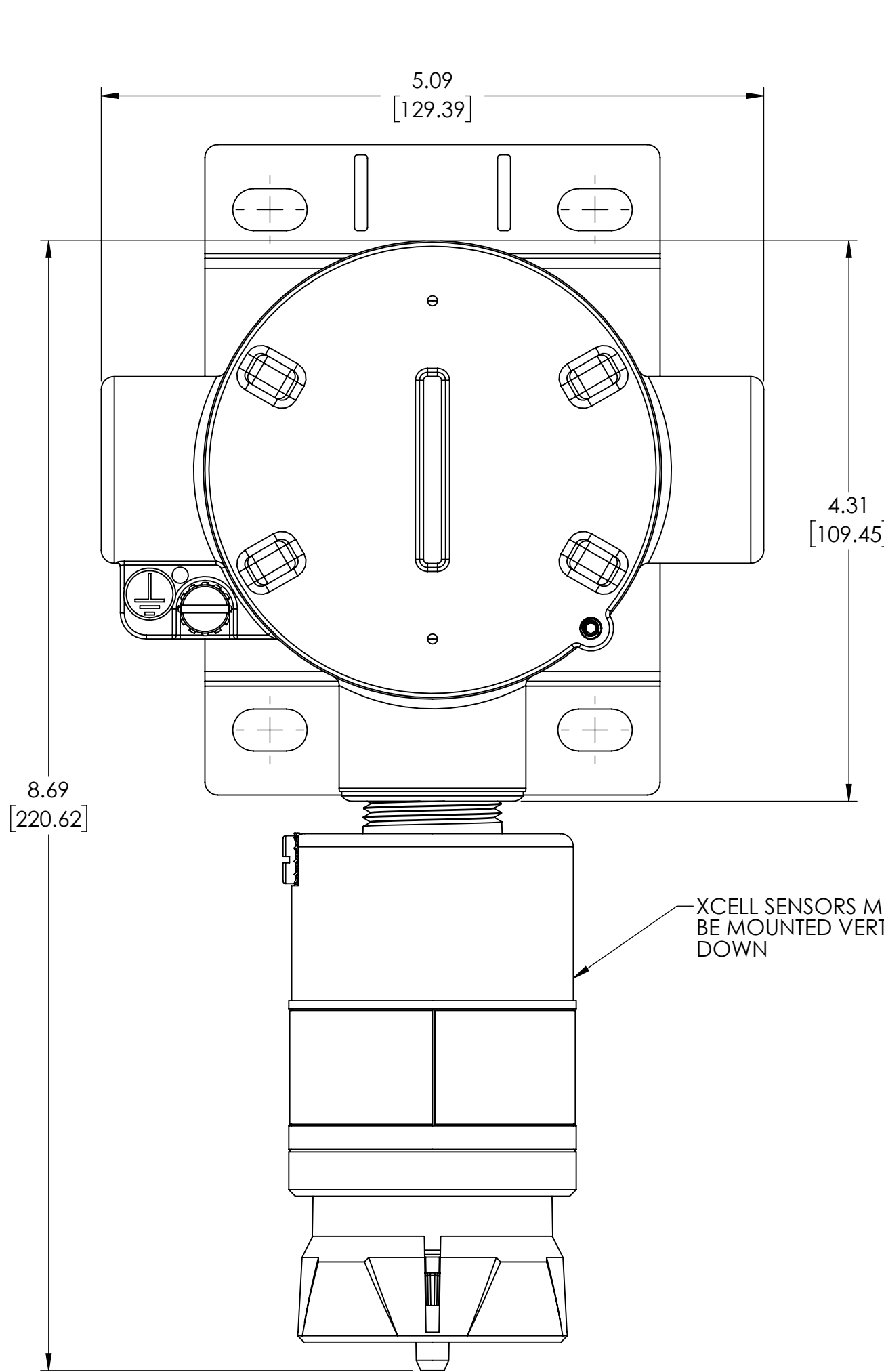
SHEET SIZE: **D SK3015-1051**

SHEET 1 OF 7

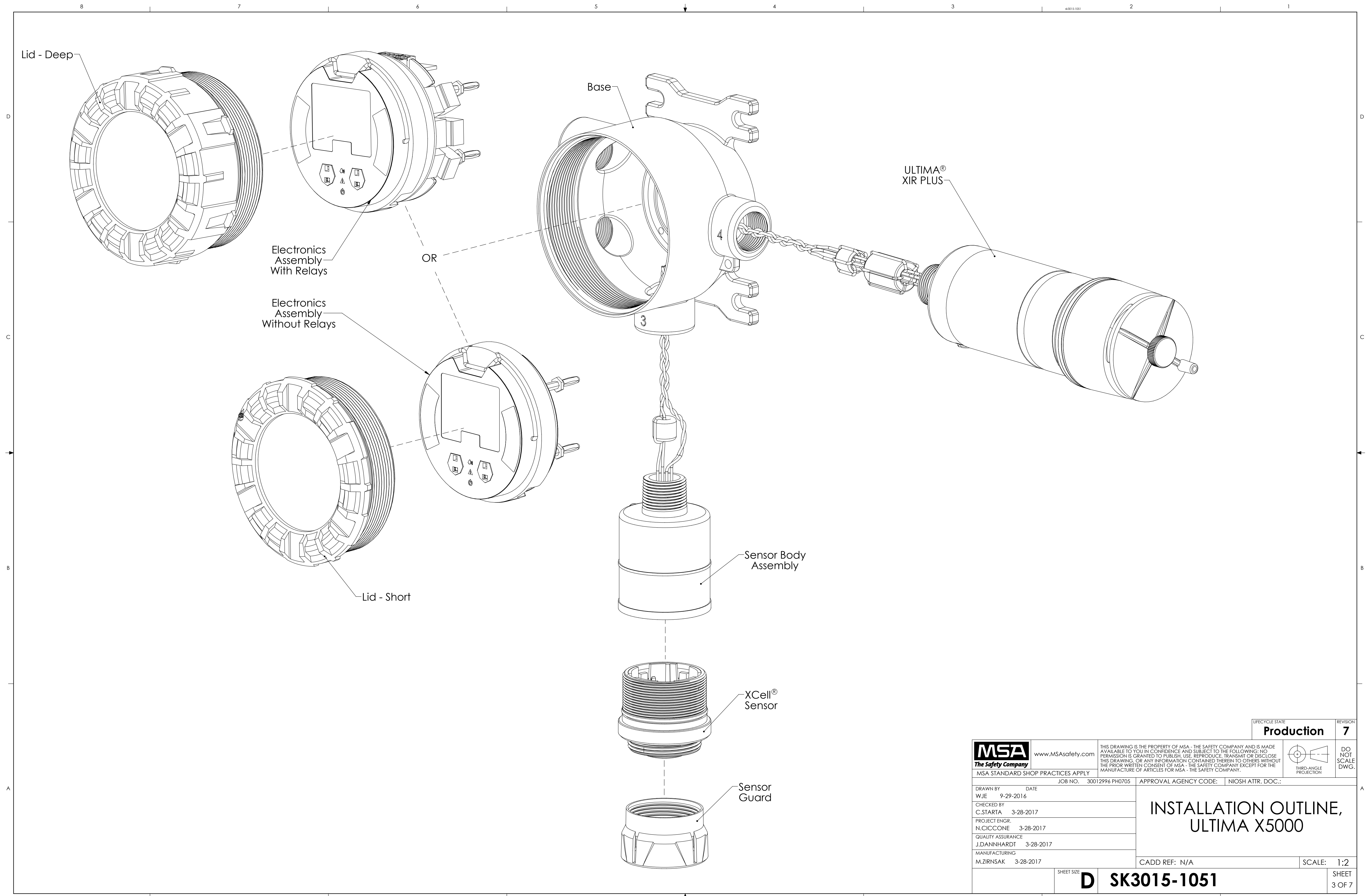
OPTIONAL REMOTE JUNCTION BOX JB5000



JB5000 MOUNTING BRACKET
MSA P/N 10206632



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MSA STANDARD SHOP PRACTICES APPLY		JOB NO. 30012996 PH0705	APPROVAL AGENCY CODE: NIOSH ATTR. DOC.:		
DRAWN BY WJE	DATE 9-29-2016	<h2 style="text-align: center;">INSTALLATION OUTLINE, ULTIMA X5000</h2>			
CHECKED BY C.STARTA	3-28-2017				
PROJECT ENGR. N.CICCONE	3-28-2017				
QUALITY ASSURANCE J.DANNHARDT	3-28-2017				
MANUFACTURING M.ZIRNSAK	3-28-2017				
SHEET SIZE D		SK3015-1051			SCALE: 1:1 SHEET 2 OF 7



Lid - Deep

Base

ULTIMA[®]
XIR PLUS

Electronics
Assembly
With Relays

OR

Electronics
Assembly
Without Relays

Lid - Short

Sensor Body
Assembly

XCell[®]
Sensor

Sensor
Guard

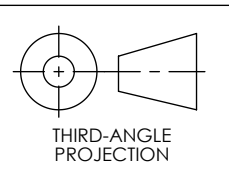
LIFECYCLE STATE
Production

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DO NOT SCALE DWG.

MSA STANDARD SHOP PRACTICES APPLY

JOB NO. 30012996 PH0705

APPROVAL AGENCY CODE: NIOSH ATTR. DOC.:

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N.CICCONI
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QUALITY ASSURANCE
J.DANNHARDT
3-28-2017
MANUFACTURING
M.ZIRNSAK
3-28-2017

**INSTALLATION OUTLINE,
ULTIMA X5000**

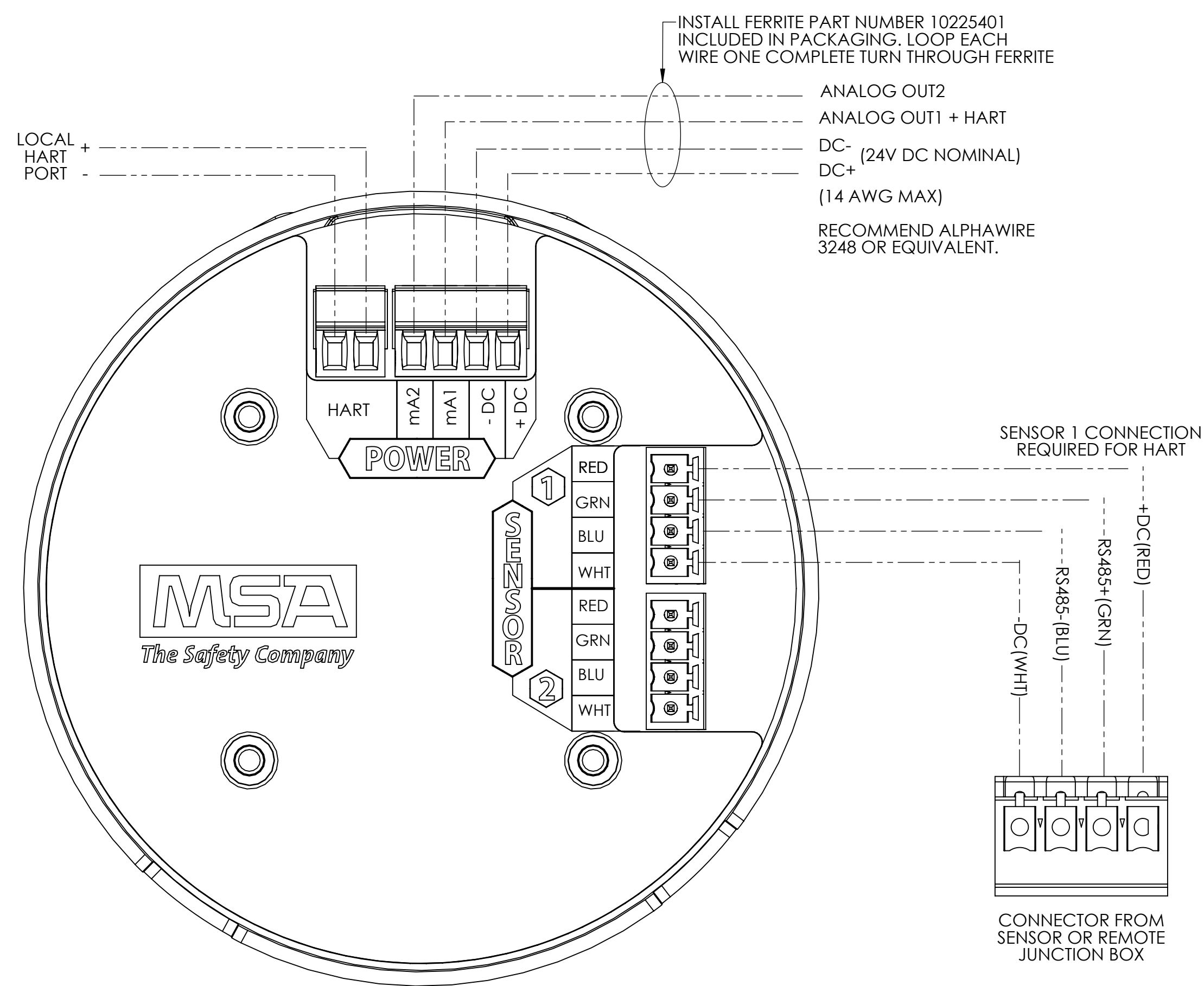
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SCALE: 1:2

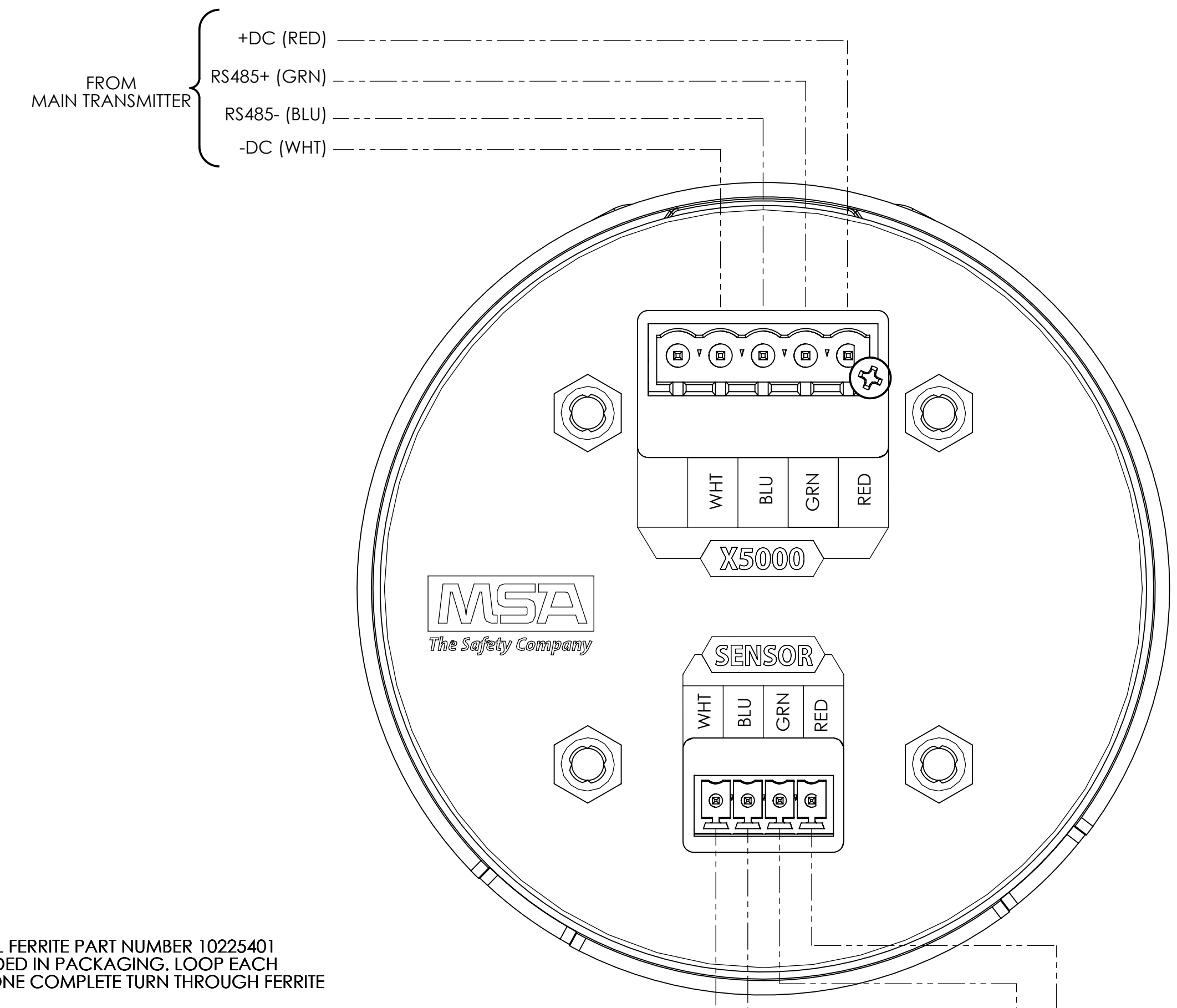
SHEET SIZE

D SK3015-1051

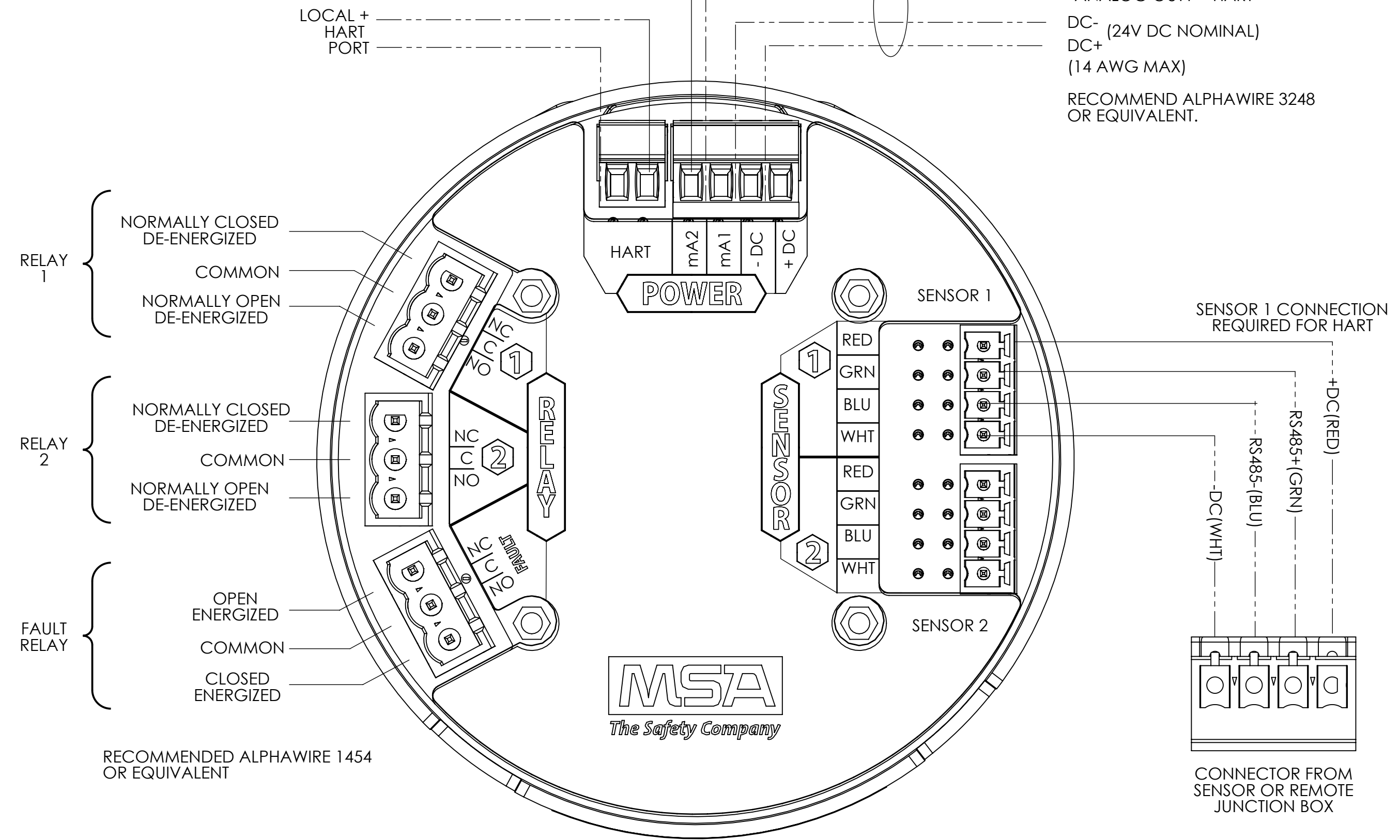
SHEET
3 OF 7



MAIN BOARD WITHOUT RELAYS



JUNCTION BOX BOARD (FOR REMOTED SENSOR)



MAIN BOARD WITH RELAY OPTION

RETROFIT APPLICATION NOTES:
 WHEN REPLACING AN EXISTING ULTIMA X WITH THE EQUIVALENT X5000 SENSOR TECHNOLOGY, THE FOLLOWING ITEMS NEED TO BE CHECKED IN ORDER FOR THE X5000 TO OPERATE:

1. WIRE GAUGE NEEDS TO BE 18-14 AWG TO THE X5000
2. SUFFICIENT POWER MUST BE SUPPLIED TO THE X5000 IN ACCORDANCE WITH THE MAXIMUM WIRE LENGTHS. SEE TABLES 1-3

IF THESE REQUIREMENTS ARE MET, PERFORMANCE OF THE X5000 SHOULD MEET THE NOISE IMMUNITY STANDARD EQUIVALENT OF THE ULTIMA X USING THE EXISTING WIRING; HOWEVER, THE INSTALLATION MAY NOT MEET THE LATEST EMC EN50270 NOISE IMMUNITY STANDARD THAT THE X5000 MEETS WITH THE GROUNDING AND WIRING SCHEME AS INDICATED IN THIS I/O DRAWING.

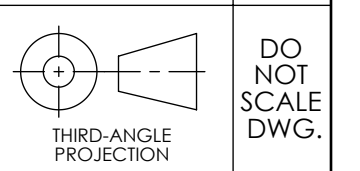
READ THE X5000 MANUAL CAREFULLY BEFORE INSTALLING OR USING THIS DEVICE. THE DEVICE WILL PERFORM AS DESIGNED ONLY IF IT IS USED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

- RELAY 1
 - NORMALLY CLOSED DE-ENERGIZED
 - COMMON
 - NORMALLY OPEN DE-ENERGIZED
- RELAY 2
 - NORMALLY CLOSED DE-ENERGIZED
 - COMMON
 - NORMALLY OPEN DE-ENERGIZED
- FAULT RELAY
 - OPEN ENERGIZED
 - COMMON
 - CLOSED ENERGIZED

RECOMMENDED ALPHAWIRE 1454 OR EQUIVALENT



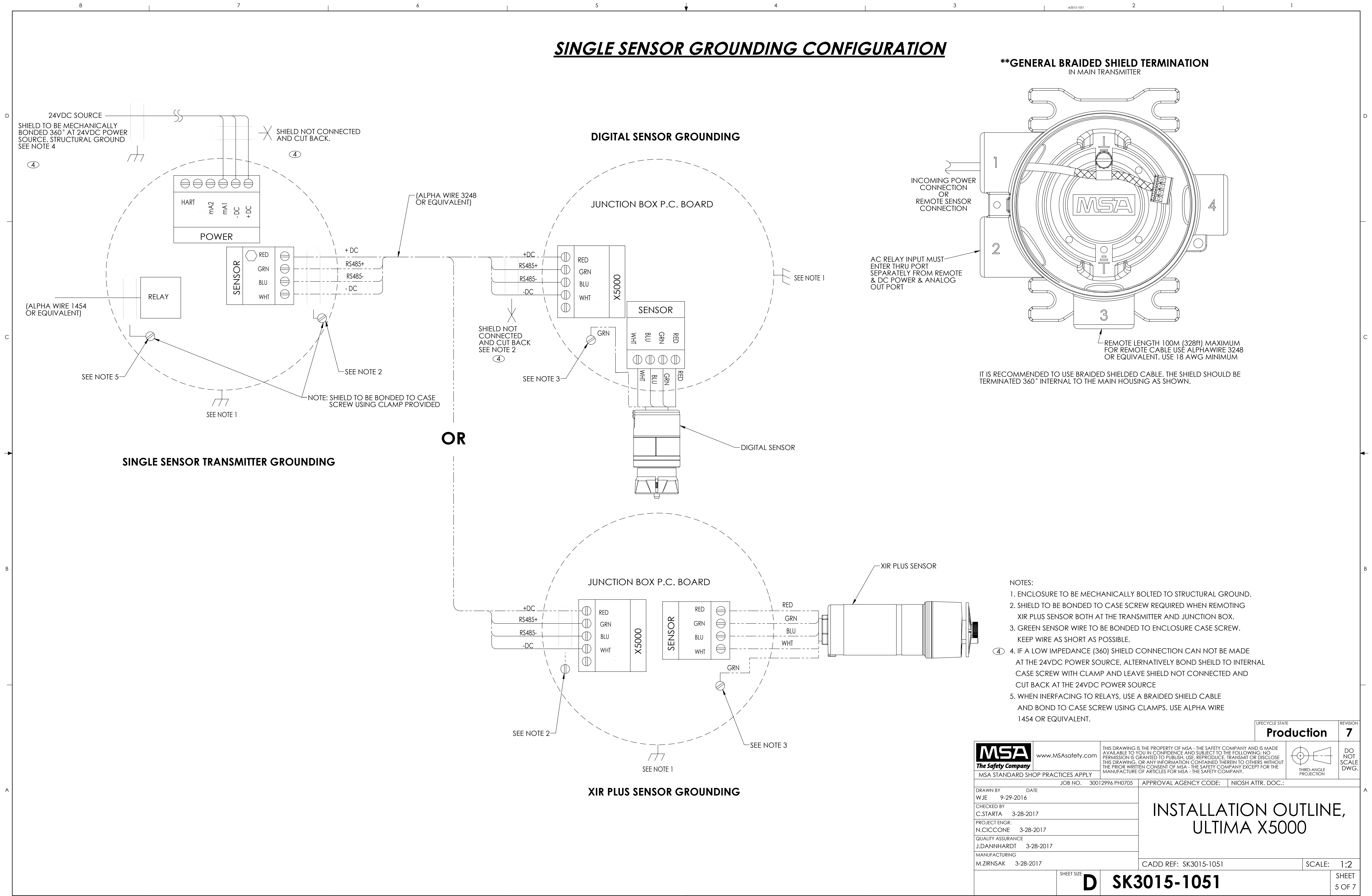
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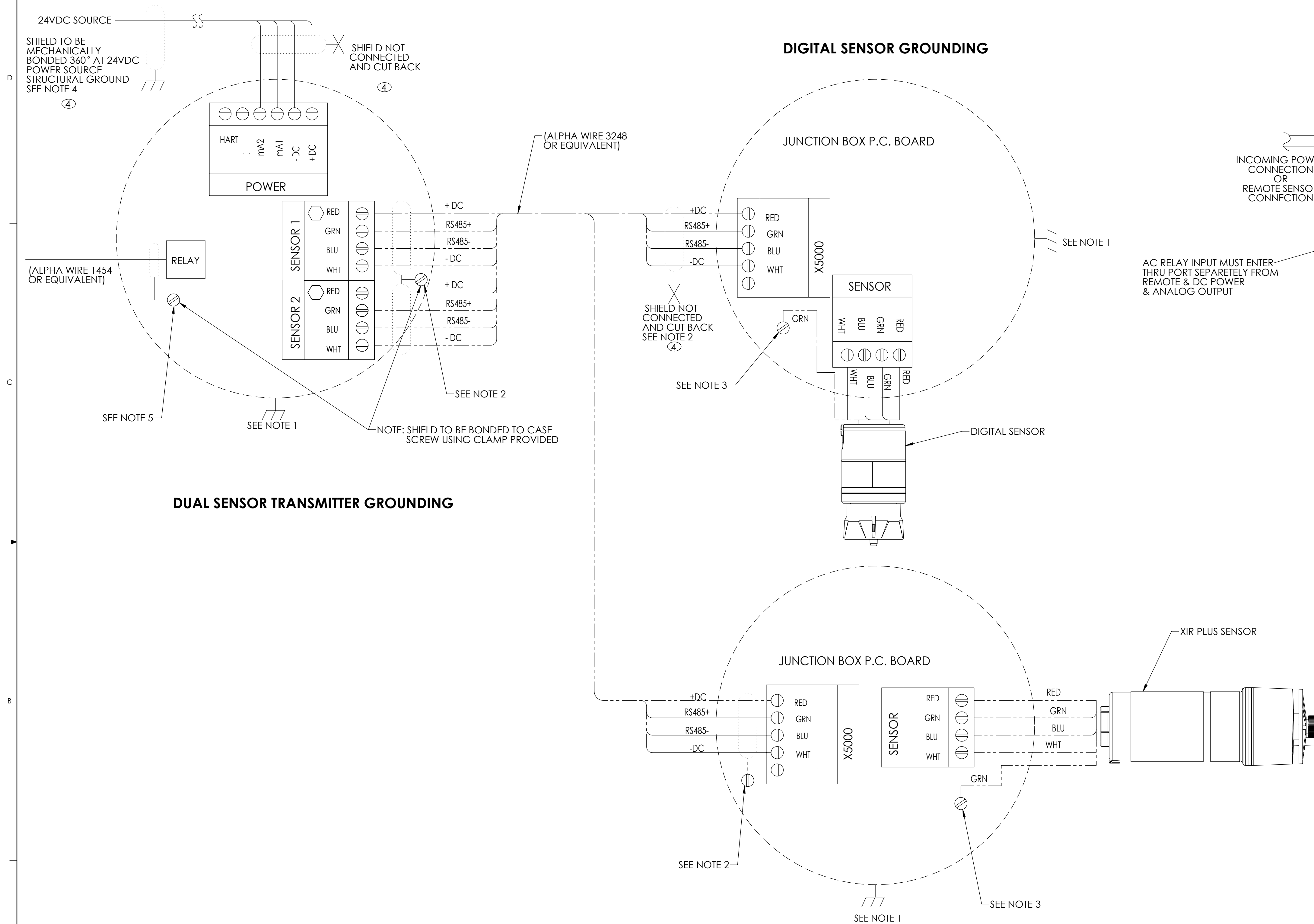
JOB NO.: 30012996 PH0705		APPROVAL AGENCY CODE: NIOSH ATTR. DOC.:	
INSTALLATION OUTLINE, ULTIMA X5000			
CADD REF: SK3015-1051		SCALE: 1:2	

SINGLE SENSOR GROUNDING CONFIGURATION

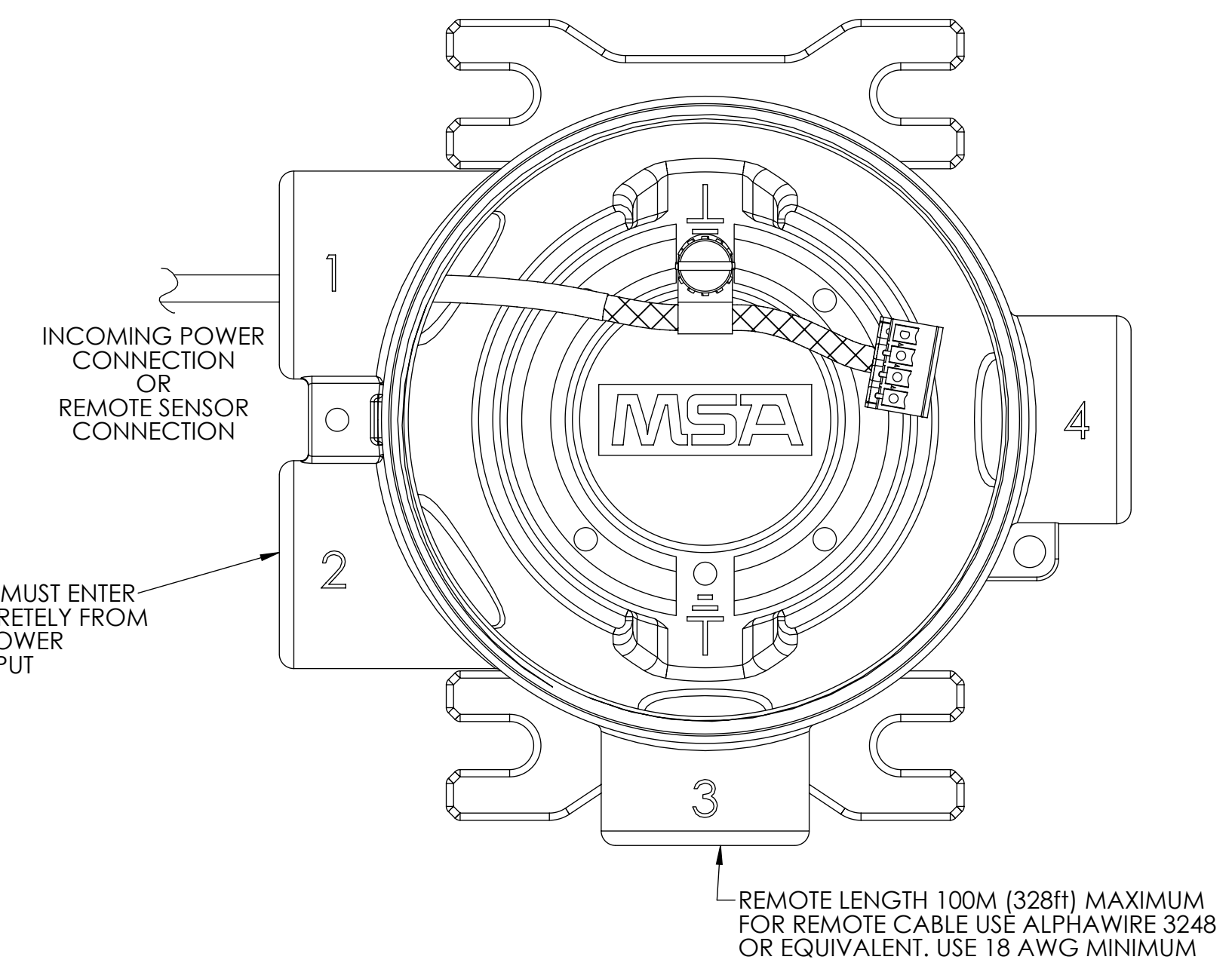


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MSA STANDARD SHOP PRACTICES APPLY		JOB NO. 30012996 PH0705	APPROVAL AGENCY CODE: NIOSH ATTR. DOC.:		Production			7
DRAWN BY: WJE	DATE: 9-29-2016	<h2 style="margin: 0;">INSTALLATION OUTLINE, ULTIMA X5000</h2>						SCALE: 1:2
CHECKED BY: C.STARTA	DATE: 3-28-2017							
PROJECT ENGR: N.CICCONE	DATE: 3-28-2017							
QUALITY ASSURANCE: J.DANNHARDT	DATE: 3-28-2017							
MANUFACTURING: M.ZIRNSAK	DATE: 3-28-2017							
SHEET SIZE: D		SK3015-1051				SHEET 5 OF 7		

DUAL SENSOR GROUNDING CONFIGURATION



**GENERAL BRAIDED SHIELD TERMINATION IN MAIN TRANSMITTER



IT IS RECOMMENDED TO USE BRAIDED SHIELDED CABLE. THE SHIELD SHOULD BE TERMINATED 360° INTERNAL TO THE MAIN HOUSING AS SHOWN.

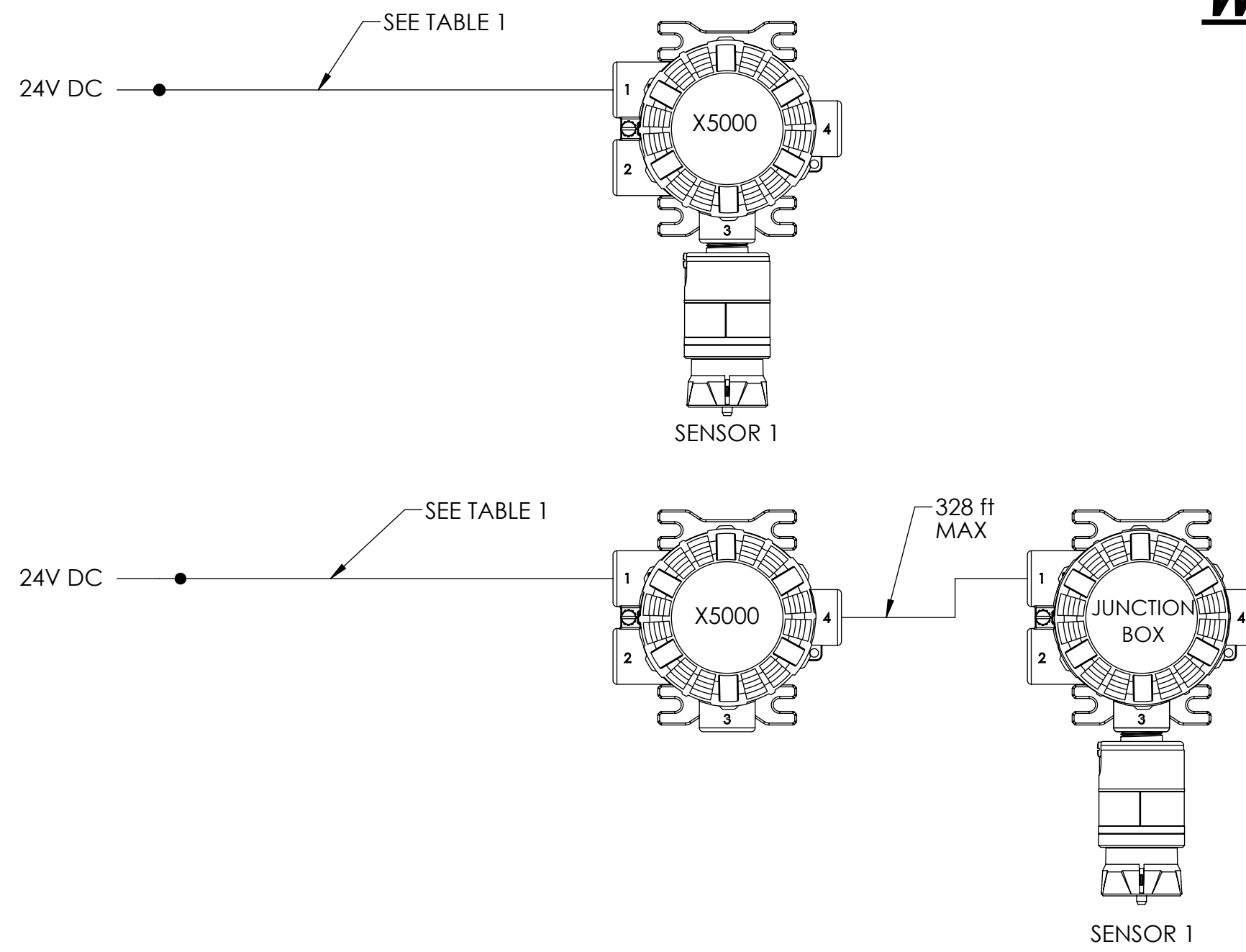
FOR DUAL REMOTED CONFIGURATIONS, TERMINATE THE BRAIDED SHIELD AT THE ADDITIONAL CLIPS IN THE MAIN HOUSING.

NOTES:

- ENCLOSURE TO BE MECHANICALLY BOLTED TO STRUCTURAL GROUND.
- SHIELD TO BE BONDED TO CASE SCREW REQUIRED WHEN REMOTING XIR PLUS SENSOR BOTH AT THE TRANSMITTER AND JUNCTION BOX.
- GREEN SENSOR WIRE TO BE BONDED TO ENCLOSURE CASE SCREW. KEEP WIRE AS SHORT AS POSSIBLE.
- IF A LOW IMPEDANCE (360) SHIELD CONNECTION CAN NOT BE MADE AT THE 24VDC POWER SOURCE, ALTERNATIVELY BOND SHIELD TO INTERNAL CASE SCREW WITH CLAMP AND LEAVE SHIELD NOT CONNECTED AND CUT BACK AT THE 24VDC POWER SOURCE
- WHEN INTERFACING TO RELAYS, USE A BRAIDED SHIELD CABLE AND BOND TO CASE SCREW USING CLAMPS. USE ALPHA WIRE 1454 OR EQUIVALENT.

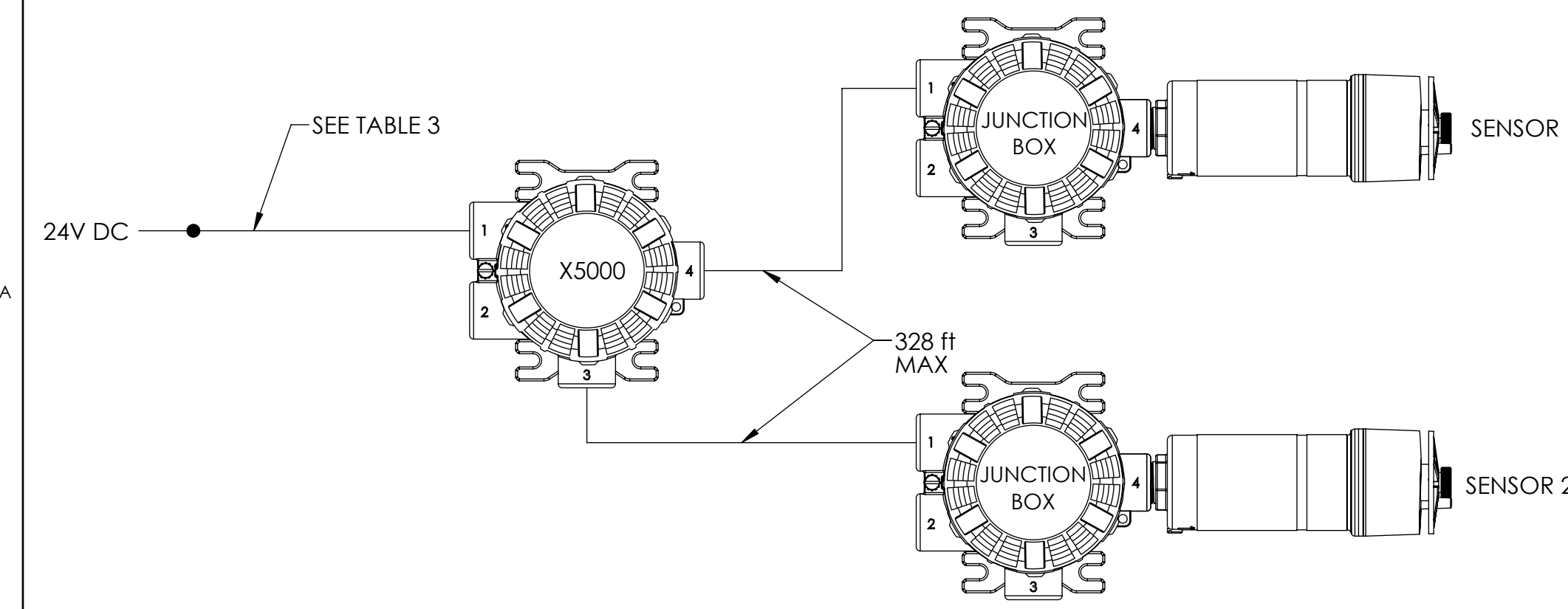
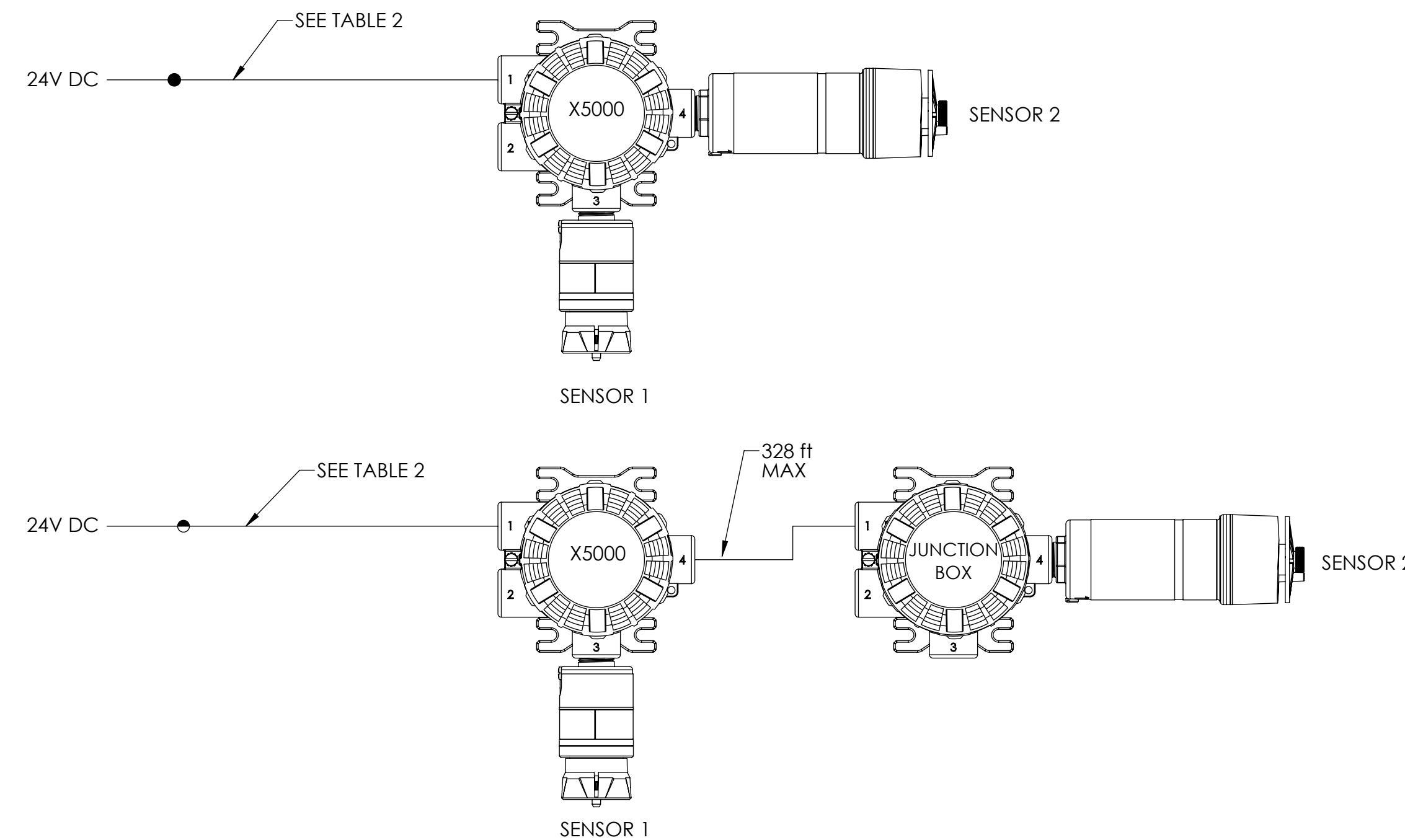
LIFECYCLE STATE		REVISION	
Production		7	
MSA STANDARD SHOP PRACTICES APPLY		DO NOT SCALE DWG.	
DRAWN BY: WJE DATE: 9-29-2016		APPROVAL AGENCY CODE: NIOSH ATTR. DOC.:	
CHECKED BY: C.STARTA DATE: 3-28-2017		<h2>INSTALLATION OUTLINE, ULTIMA X5000</h2>	
PROJECT ENGR: N.CICCONE DATE: 3-28-2017			
QUALITY ASSURANCE: J.DANNHARDT DATE: 3-28-2017			
MANUFACTURING: M.ZIRNSAK DATE: 3-28-2017		CADD REF: SK3015-1051	
SHEET SIZE: D		SCALE: 1:2	
<h1>SK3015-1051</h1>		SHEET 6 OF 7	

WIRING DISTANCES FROM POWER SUPPLY TO TRANSMITTER



Sensor Mounting	Sensor 1	Max Power (W)	Max Distance (FT) To Transmitter			
			24 VDC Supply			
			18 AWG	16 AWG	14 AWG	12 AWG
MOUNTED ON TRANSMITTER	Echem	2.8	2211	3337	5314	8440
	Catalytic	5.5	1548	2335	3719	5907
	XIR Plus	6.7	1184	1787	2846	4520
REMOTE MOUNTED ON JUNCTION BOX (UP TO 328 ft)	Echem	2.8	2210	3335	5313	8439
	Catalytic	5.5	1504	2294	3679	5867
	XIR Plus	6.7	1090	1697	2759	4435

Sensor Mounting	Sensor 1	Sensor 2	Max Power (W)	Max Distance (FT) To Transmitter			
				24 VDC Supply			
				18 AWG	16 AWG	14 AWG	12 AWG
TWO SENSORS Mounted on Transmitter	Echem	Echem	3.6	2078	3136	4994	7932
		Catalytic	5.3	1473	2223	3541	5623
		XIR Plus	7.0	1076	1623	2585	4106
	Catalytic	Echem	5.3	1473	2223	3541	5623
		Catalytic	10.6	1151	1736	2765	4392
		XIR Plus	10.9	893	1347	2146	3408
	XIR Plus	Echem	7.0	1076	1623	2585	4106
		Catalytic	10.9	893	1347	2146	3408
		XIR Plus	11.6	* One sensor must be remote mounted if using two XIR PLUS sensors			
ONE SENSOR mounted on junction box (328 ft Max), ONE SENSOR on transmitter	Echem	Echem	3.6	2096	3154	5012	7952
		Catalytic	5.3	1441	2193	3512	5596
		XIR Plus	7.0	982	1536	2501	4024
	Catalytic	Echem	5.3	1441	2193	3512	5596
		Catalytic	10.6	1124	1711	2741	4368
		XIR Plus	10.9	763	1225	2029	3295
	XIR Plus	Echem	7.0	982	1536	2501	4024
		Catalytic	10.9	763	1225	2029	3295
		XIR Plus	11.6	731	1135	1843	2961



Sensor Mounting	Sensor 1	Sensor 2	Max Power (W)	Max Distance (FT) To Transmitter			
				24 VDC Supply			
				18 AWG	16 AWG	14 AWG	12 AWG
TWO SENSORS mounted on junction box up to 328ft for 24V	Echem	Echem	3.6	2079	3134	4992	7932
		Catalytic	5.3	1421	2173	3492	5576
		XIR Plus	7.0	962	1516	2481	4004
	Catalytic	Echem	5.3	1421	2173	3492	5576
		Catalytic	10.6	1104	1691	2721	4348
		XIR Plus	10.9	743	1205	2009	3275
XIR Plus	Echem	7.0	962	1516	2481	4004	
	Catalytic	10.9	743	1205	2009	3275	
	XIR Plus	11.6	711	1115	1823	2941	

NOTES:

1. WHEN SIZING A SYSTEM'S 24V SUPPLY, A 1 AMP INRUSH CURRENT WITH A 1ms DURATION SHOULD BE CONSIDERED FOR EACH ULTIMA X5000 ON THE POWER SUPPLY

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MSA STANDARD SHOP PRACTICES APPLY		JOB NO. 30012996 PH0705		APPROVAL AGENCY CODE: NIOSH ATTR. DOC.:				DO NOT SCALE DWG.	
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SHEET SIZE D		SK3015-1051		SCALE: 1:1		SHEET 7 OF 7		INSTALLATION OUTLINE, ULTIMA X5000	