

QTY. REVISION CODE

A - 9000 - [] - [] - [] - [] - [] - [] - [] - [] - []

[0] [1] [2] [3] [4] [5] [6] [7] [8]

0 MATRIX REVISION LEVEL

1 ENCLOSURE TYPE: ①

- R - Rack Mount
- P - General Purpose Plastic
- MS - Nema 4X Metal, 5 card
- MD - Nema 4X Metal, 10 card
- XS - XP Single Board
- XD - XP Dual Board
- SS - Nema 4X Stainless Steel, 5 card
- SD - Nema 4X Stainless Steel, 10 card

2 No. OF 9020 SENSOR CHANNEL 2-WIRE BOARDS (Dual Channel) *

0-10 (2 Sensor Points per Channel) ie: 5 = 10 points

3 No. OF 9010 SENSOR CHANNEL 2-WIRE BOARDS (Single Channel) *

0 - 10

4 No. OF 9020 SENSOR CHANNEL 3-WIRE BOARDS FOR 3-WIRE SENSORS (Dual Channel)

0 - 10 (2 Sensor Points per Channel) ie 5 = 10 points

5 No. OF 9010 SENSOR CHANNEL 3-WIRE BOARDS FOR 3-WIRE SENSORS (Single Channel)

0 - 10

6 POWER SUPPLY VOLTAGE:

- 1 - 110 VAC
- 2 - 220 VAC
- 3 - 24VDC

7 TLV STEL AND TWA FUNCTIONS:

- 0 - NONE
- 1 - YES

8 CUSTOM:

C -

- * IF ① = R, ② & ③ & ④ & ⑤ ≤ 10
- * IF ① = P, ② & ③ & ④ & ⑤ ≤ 1
- * IF ① = MS, ② & ③ & ④ & ⑤ ≤ 5
- * IF ① = MD, ② & ③ & ④ & ⑤ ≤ 10
- * IF ① = XS, ② & ③ & ④ & ⑤ ≤ 1
- * IF ① = XD, ② & ③ & ④ & ⑤ ≤ 2
- * IF ① = SS, ② & ③ & ④ & ⑤ ≤ 5
- * IF ① = SD, ② & ③ & ④ & ⑤ ≤ 10

①

ULTIMA XIR MAXIMUM CABLE LENGTH AND 4-20 mA SIGNAL LOAD

| POWER SUPPLY | 24 VOLTS | |
|----------------------------------|-----------|------------------|
| CONFIGURATION | NO RELAYS | RELAYS INSTALLED |
| 18 AWG CABLE (6.6 OHMS/1000 FT.) | 2000 FT. | 1500 FT. |
| 16 AWG CABLE (4.2 OHMS/1000 FT.) | 3500 FT. | 2500 FT. |
| 14 AWG CABLE (2.6 OHMS/1000 FT.) | 5000 FT. | 4000 FT. |
| MAXIMUM LOAD ON 4-20 mA SIGNAL | 600 OHMS | |

ULTIMA XE CABLE LENGTH AND WIRE SIZE (TOXIC GAS OR OXYGEN) SENSOR, 4-20 mA SIGNAL OUTPUT (TWO WIRE SENSOR)

| WIRE SIZE | MAXIMUM CABLE LENGTH IN FEET @ 24 VDC | MAXIMUM LOAD RESISTANCE |
|-----------|---------------------------------------|-------------------------|
| 22 AWG | 7000 | 600 Ohms |

ULTIMA XE CABLE LENGTH AND WIRE SIZE (COMBUSTIBLE GAS) SENSOR, 4-20 mA SIGNAL OUTPUT (THREE WIRE SENSOR)

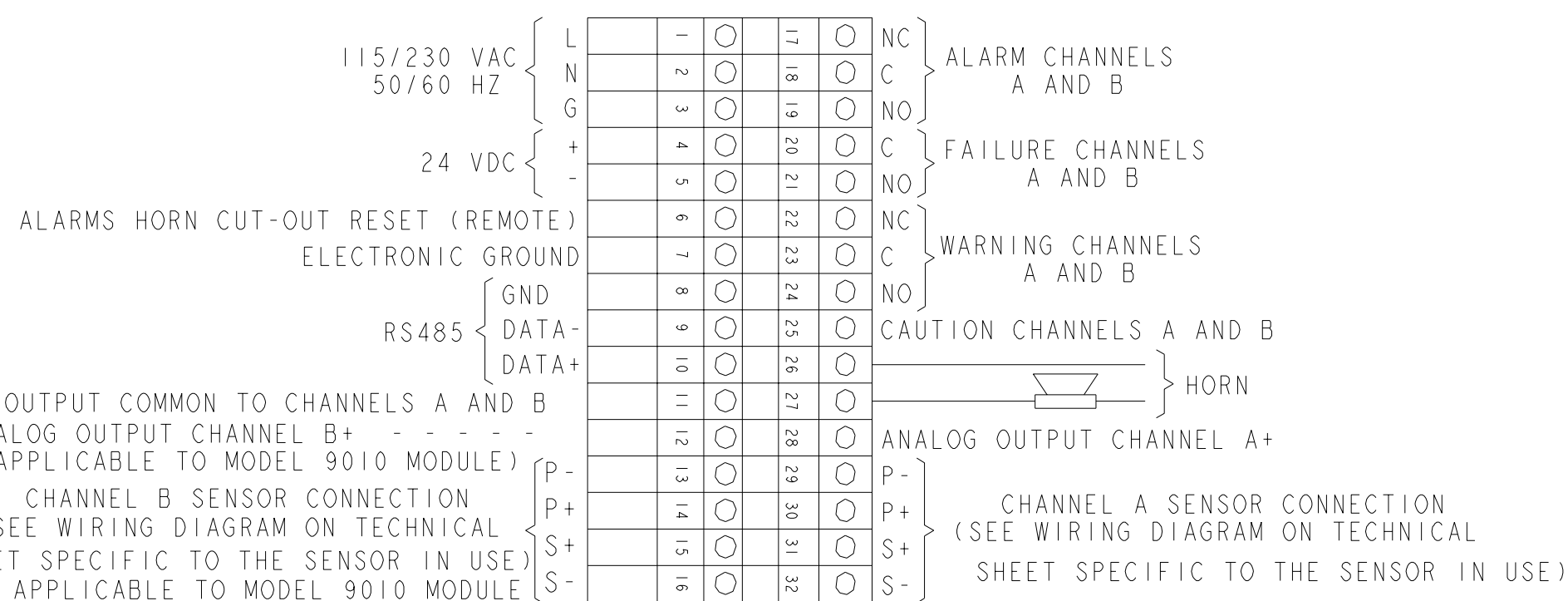
| WIRE SIZE | MAXIMUM CABLE LENGTH IN FEET @ 24 VDC | MAXIMUM LOAD RESISTANCE |
|-----------|---------------------------------------|-------------------------|
| 22 AWG | 1000 | 600 Ohms |
| 18 AWG | 2500 | |
| 16 AWG | 4200 | |
| 12 AWG | 10000 | |

ULTIMA XE CABLE LENGTH AND WIRE SIZE (POWER SUPPLY 24 VDC) (TOXIC GAS OR OXYGEN) SENSOR, 4-20 mA SIGNAL OUTPUT (THREE WIRE SENSOR)

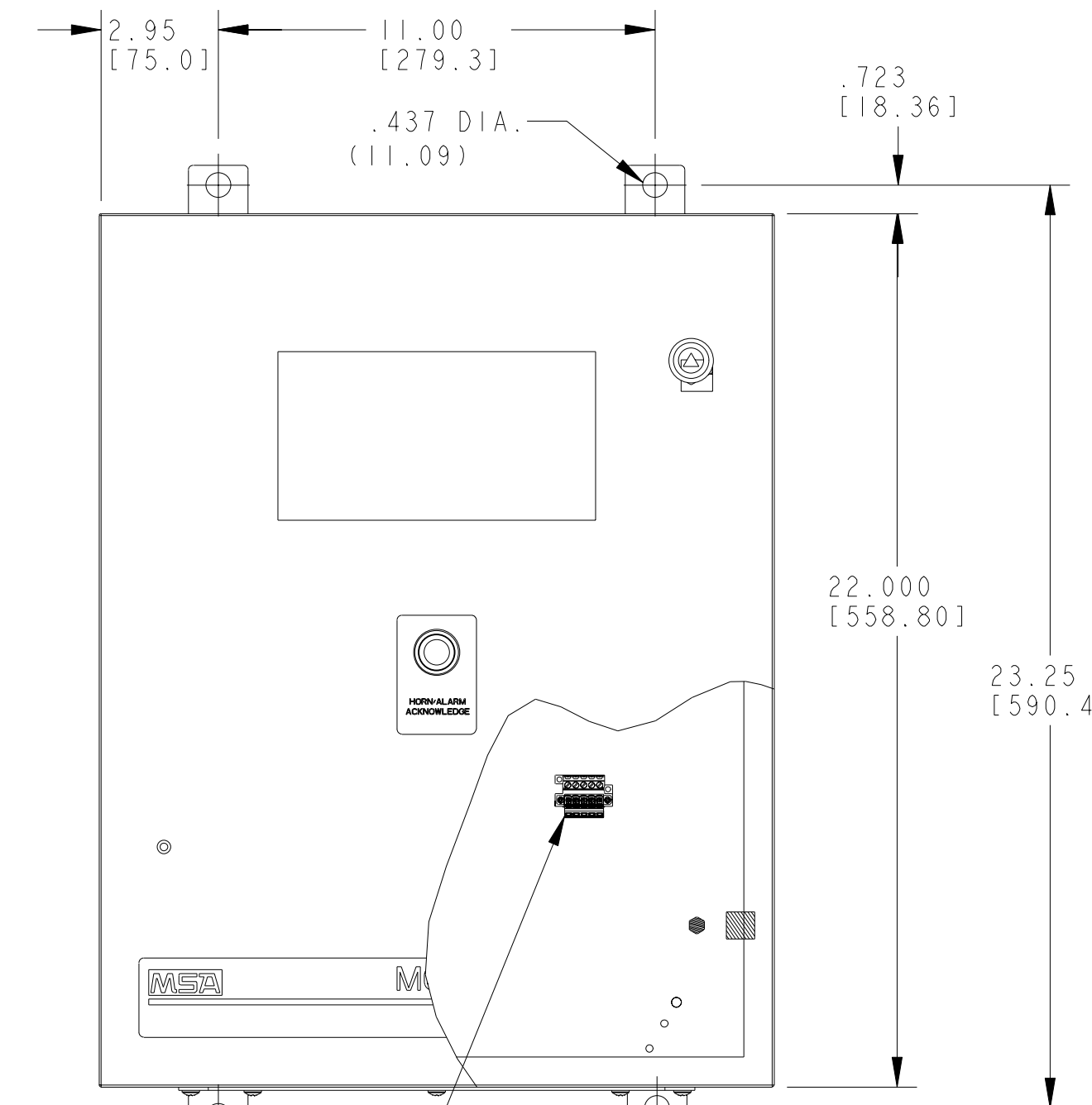
| WIRE SIZE | MAXIMUM CABLE LENGTH IN FEET @ 24 VDC | MAXIMUM LOAD RESISTANCE |
|-----------|---------------------------------------|-------------------------|
| 22 AWG | 12000 | 600 Ohms |

ULTIMA XE POWER CABLE DISTANCES WITH INTERNAL RELAYS (4-20 mA MODEL)

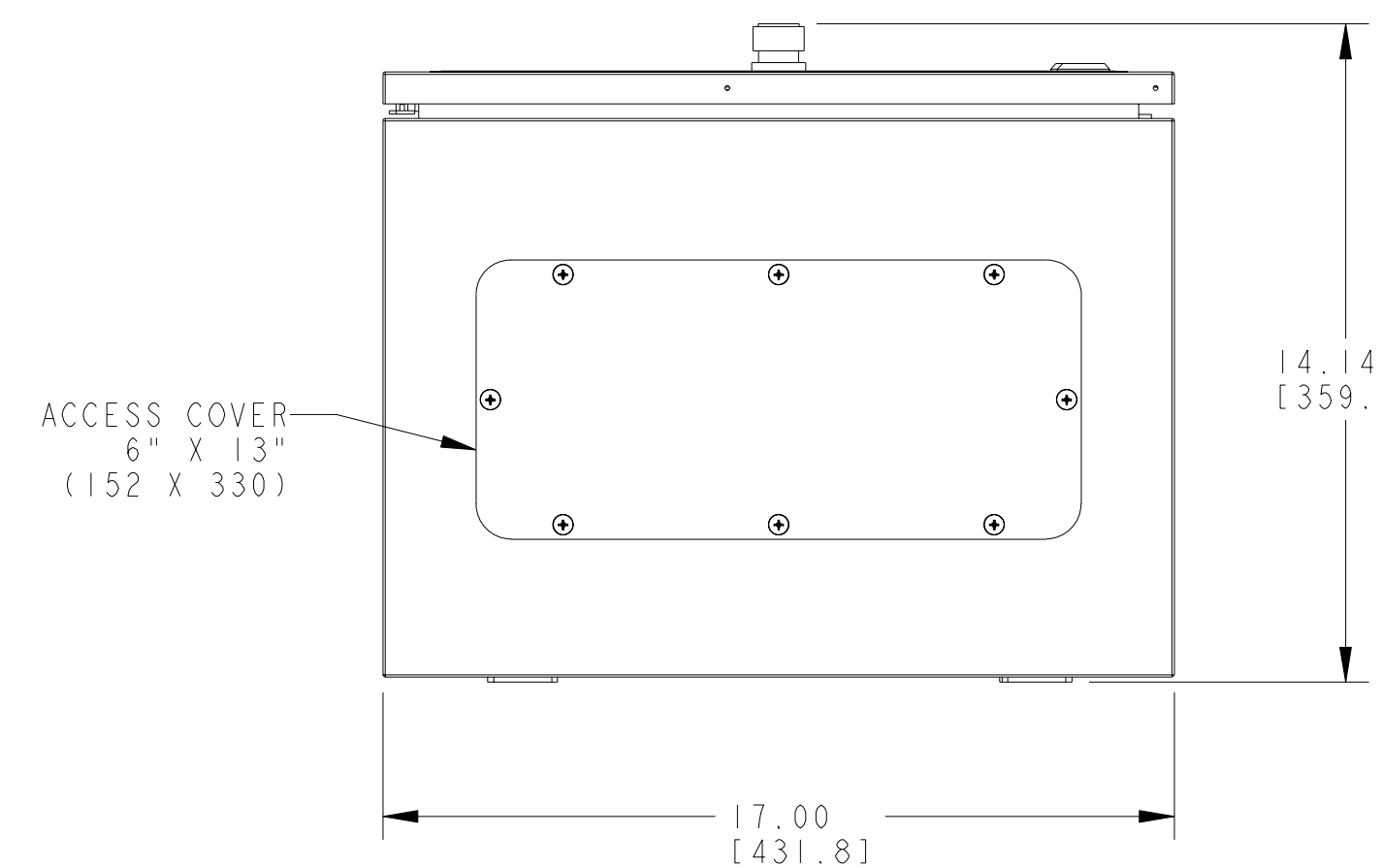
| SENSOR TYPE | POWER SUPPLY VOLTAGE | WIRE SIZE | MAXIMUM CABLE LENGTH (IN FEET) | MAXIMUM LOAD RESISTANCE (mA OUTPUT ONLY) |
|-----------------------|----------------------|-----------|--------------------------------|--|
| CATALYTIC COMBUSTIBLE | 12 VDC | 16 AWG | 900 | 300 Ohms |
| CATALYTIC COMBUSTIBLE | 24 VDC | | 3000 | 600 Ohms |
| TOXIC OR OXYGEN | 12 VDC | | 2500 | 300 Ohms |
| TOXIC OR OXYGEN | 24 VDC | | 8000 | 600 Ohms |



TYPICAL MODULE WIRING



CUSTOMER POWER TERMINAL BLOCK



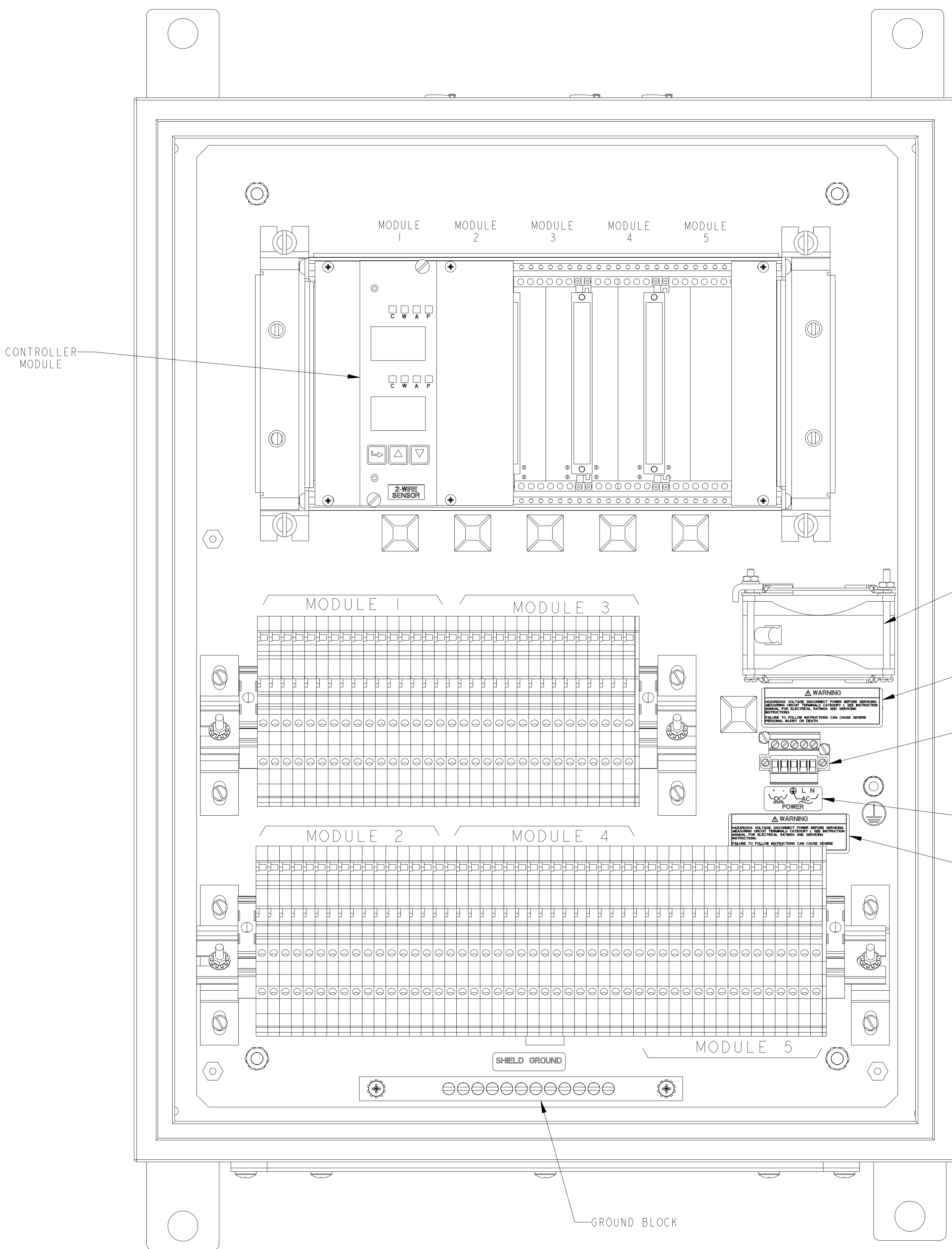
- NOTES:
- DIMENSIONS SHOWN IN INCHES AND [MILLIMETERS].
 - FROM LEFT TO RIGHT CARD SLOT No. 1 MUST ALWAYS CONTAIN A CONTROL MODULE.

- 9B WEIGHT: MS - APPROX. WEIGHT 50 LBS. (22.6 KG.)
 SS - APPROX. WEIGHT 67 LBS. (30.5 KG.)
 MATERIAL: MS - 14 GA. STEEL POLYESTER POWDER COAT FINISH.
 SS - 316 STAINLESS STEEL.

| | | | |
|---|---|---|---|
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| MSA STANDARD SHOP PRACTICES APPLY | CODE SYMBOLS | JOB NO. 30006520 PH0705 | APPROVAL AGENCY CODE: NO INTOSH ATTR. DOC.: |
| CRITICAL Δ | MINOR (NO MARK) | DRAWN BY GT | DATE 1-14-05 |
| MAJOR A Δ | | CHECKED BY W. BARBISH | 11-9-06 |
| MAJOR B Δ | | PROJ. ENGR. W. BARBISH | 11-9-06 |
| 100% INSPECTION Δ | | QUALITY ASSURANCE J. DANNHARDT | 11-29-06 |
| TOLERANCES UNLESS OTHERWISE SPECIFIED | | MANUFACTURING H. TRACHSEL | 12-5-06 |
| FRACTIONAL ± 1/64 | | | |
| 2 PL DEC. ± 0.01 | | | |
| 3 PL DEC. ± 0.005 | | | |
| ANGULAR ± 1 deg. | | | |
| SEE MSA STANDARD SHOP PRACTICES FOR DRILLED HOLE TOLERANCES | | | |
| D. | | INSTALLATION OUTLINE, MS NEMA 4X METAL ENCLOSURE, and SS NEMA 4X ST. STL. ENCLOSURE, MODEL 9010/9020 | |
| | | CADD REF: SK3015-1005 | SCALE: 0.250 |
| | | SK3015-1005 | |
| | | SHEET 1 OF 2 | |

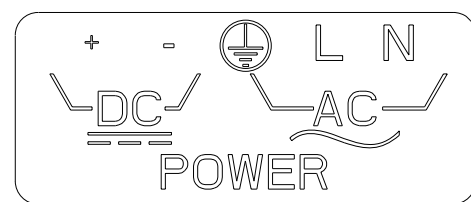
CUSTOMER _____
 P.O.# _____
 MSA# _____
 LOCATION _____
 TAG# _____
 TOTAL NO. OF UNITS _____

| REVISIONS | |
|--------------------|---|
| ① | 7-22-2005 INITIAL RELEASE REVISED MATRIX CODE I, ADDED OPTIONS SS AND SD, REMOVED ITEM # REFERENCE GJT WLB |
| ② | 8-3-2005 INITIAL RELEASE ADDED BREAK OUT VIEW TO SHOW CUSTOMER PWR TERMINAL BLOCK LCR WLB |
| ③ | 8-18-2006 INITIAL RELEASE REMOVED "TYPICAL SENSOR CONFIGURATIONS" TABLE GJT WLB |
| ④ | 8-22-2006 INITIAL RELEASE ADDED NOTES 1 & 2 AND ENCLOSURE WEIGHT AND MATERIAL SPECIFICATIONS GJT WLB |
| ⑤ | 8-28-2006 INITIAL RELEASE REVISED MATRIX CODE I, OPTION P: General Purpose Plastic WAS Nema 4X Plastic GJT WLB |
| ⑥ | 9-28-2006 INITIAL RELEASE A. REVISED MATRIX CODE I, ADDED OPTION Z B. REVISED MATRIX CODE 7, ADDED OPTIONS 1 & 2 WJF WLB |
| ⑦ | 11-2-2006 INITIAL RELEASE REVISED IF STATEMENTS TO ADD OPTIONS SS & SD AND ADD MATRIX CODES 4 & 5 WJF WLB |
| DEC 05 2006 | |
| ⑧ | 4-30-2008 ADDED SHEET 2 ECO#70000001963A LRB JMF |
| MAY 01 2008 | |
| ⑨ | 11-18-2008 A. REMOVED "OPTION Z" FROM MATRIX CODE I B. ADDED "SS" VALUES TO WEIGHT & MATERIAL NOTES C. ADDED "SS NEMA 4X ST. STL. ENCLOSURE" TO DRAWING TITLE ECO-70000002315A GJT JS |
| NOV 20 2008 | |

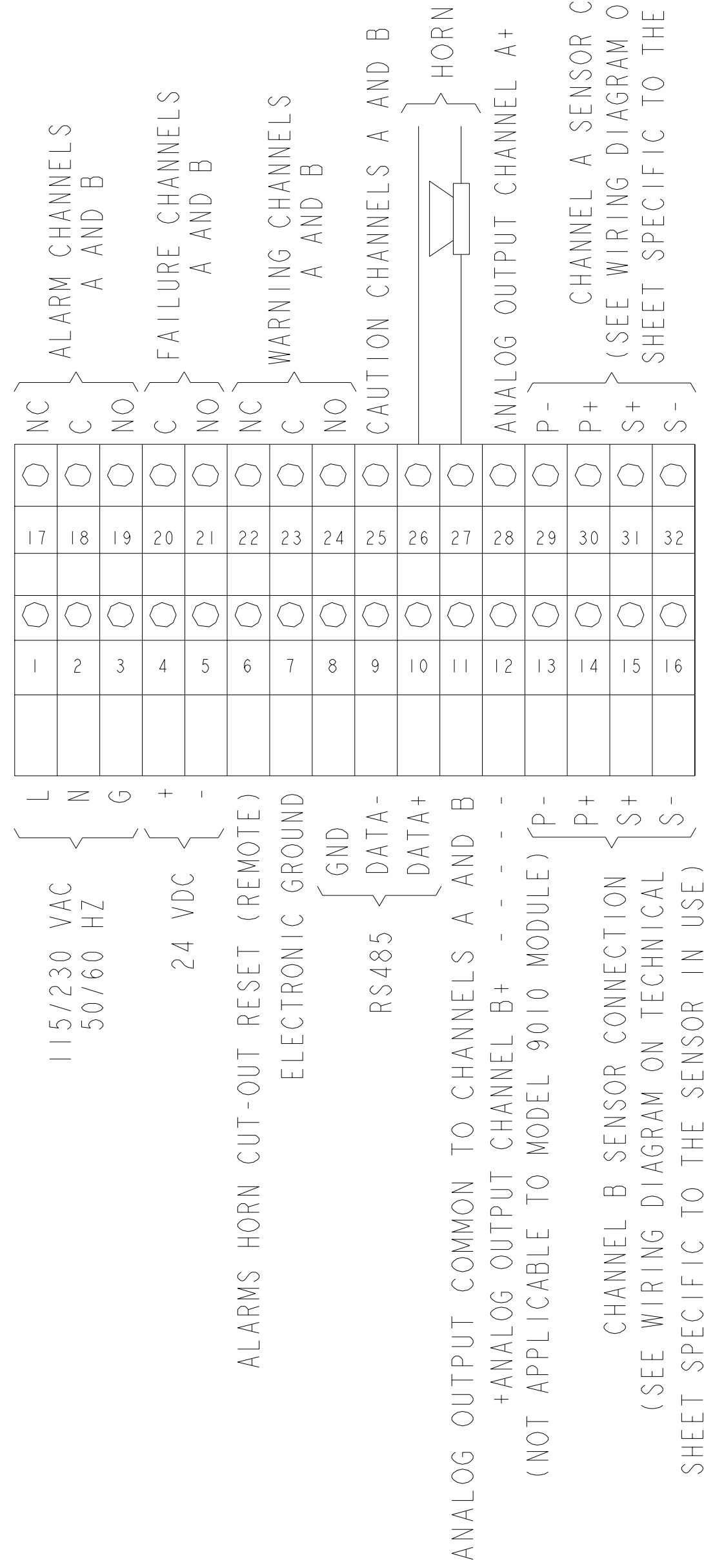


⚠ WARNING
HAZARDOUS VOLTAGE: DISCONNECT POWER BEFORE SERVICING. MEASURING CIRCUIT TERMINALS CATEGORY I. SEE INSTRUCTION MANUAL FOR ELECTRICAL RATINGS AND SERVICING INSTRUCTIONS.
FAILURE TO FOLLOW INSTRUCTIONS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

DETAIL A



DETAIL B



TYPICAL MODULE WIRING

MS NEMA 4X METAL ENCLOSURE and SS NEMA 4X STAINLESS STEEL ENCLOSURE
MODEL 9010/9020

| | | | | |
|---|---------------------------------------|---|---|-------------------|
| AUTHORIZED COUNTRY | MSA | MINE SAFETY APPLIANCES CO. PITTSBURGH, PA 15230, USA | THIS DRAWING IS THE PROPERTY OF MSA AND IS MADE AVAILABLE TO YOU IN CONFIDENCE AND SUBJECT TO THE FOLLOWING: NO PERMISSION IS GRANTED TO PUBLISH, USE, REPRODUCE, TRANSMIT OR DISCLOSE THIS DRAWING, OR ANY INFORMATION CONTAINED THEREIN TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF MSA EXCEPT FOR THE MANUFACTURE OF ARTICLES FOR MSA. SCHUTZVERMERK NACH DIN 34 BEACHTEN. MSA AUER GmbH. | DO NOT SCALE DWG. |
| MSA STANDARD SHOP PRACTICES APPLY | CODE SYMBOLS | JOB NO. 30006520 PH0705 | APPROVAL AGENCY CODE: NO INTOSH ATTR. DOC.: | |
| CRITICAL ⚠ | MAJOR A ⚠ | DRAWN BY GT | DATE 1-14-05 | |
| MAJOR B ⚠ | MINOR (NO MARK) | CHECKED BY W. BARBISH | PROJ. ENGR. 11-9-06 | |
| 100% INSPECTION ⚠ | TOLERANCES UNLESS OTHERWISE SPECIFIED | W. BARBISH 11-9-06 | QUALITY ASSURANCE | |
| FRACTIONAL ± 1/64 | 2 PL DEC. ± 0.01 | J. DANNHARDT 11-29-06 | MANUFACTURING | |
| 3 PL DEC. ± 0.005 | ANGULAR ± 1 deg. | H. TRACHSEL 12-5-06 | CADD REF: SK3015-1005 | SCALE: 1:000 |
| SEE MSA STANDARD SHOP PRACTICES FOR DRILLED HOLE TOLERANCES | | D. | SK3015-1005 | SHEET 2 OF 2 |

**INSTALLATION OUTLINE,
MS NEMA 4X METAL ENCLOSURE,
and
SS NEMA 4X ST. STL. ENCLOSURE,
MODEL 9010/9020**