

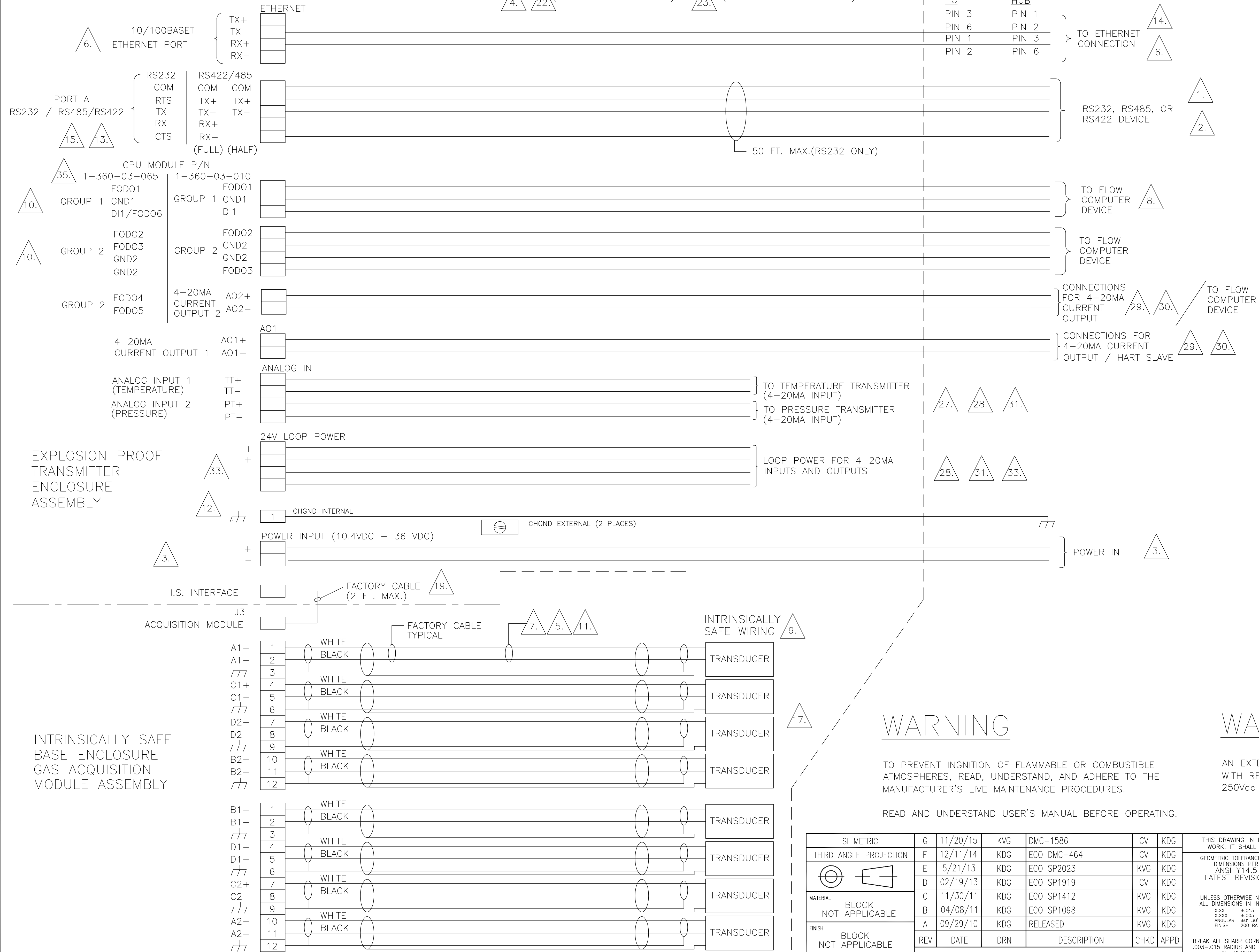
HAZARDOUS LOCATION CLASS I, GROUP C, D
HAZARDOUS LOCATION Ex d ia IIB T4

NON-HAZARDOUS LOCATION

MODEL 3410 SERIES ELECTRONICS

EXPLOSION-PROOF SEAL (FIELD PROVIDED) | EXPLOSION-PROOF WIRING (PER LOCAL CODE)

RJ45 CONNECTIONS



SI METRIC	G	11/20/15	KVG	DMC-1586	CV	KDG
THIRD ANGLE PROJECTION	F	12/11/14	KDG	ECO DMC-464	CV	KDG
MATERIAL	E	5/21/13	KDG	ECO SP2023	KVG	KDG
	D	02/19/13	KDG	ECO SP1919	CV	KDG
FINISH	C	11/30/11	KDG	ECO SP1412	KVG	KDG
	B	04/08/11	KDG	ECO SP1098	KVG	KDG
	A	09/29/10	KDG	RELEASED	KVG	KDG
	REV	DATE	DRN	DESCRIPTION	CHKD	APPD
PROJ. FILE NO. USM-01307	FILENAME: DMC005324G1.DWG, DATE: 11-20-15, TIME: 11:45 A.M.					

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GEOMETRIC TOLERANCES & DIMENSIONS PER ANSI Y14.5 LATEST REVISION			
DANIEL Daniel Measurement and Control			
TITLE 3410 SERIES ULTRASONIC METER SYSTEM WIRING DIAGRAM			
DRN KDG	DATE 09/29/10	DWG NO.	REV G
CHKD KVG	DATE 09/29/10	DMC-005324	
APPD KDG	DATE 09/29/10	SCALE NA	P/N
			SHT 1 OF 3

HAZARDOUS LOCATION CLASS I, GROUP C, D
HAZARDOUS LOCATION Ex d ia IIB T4

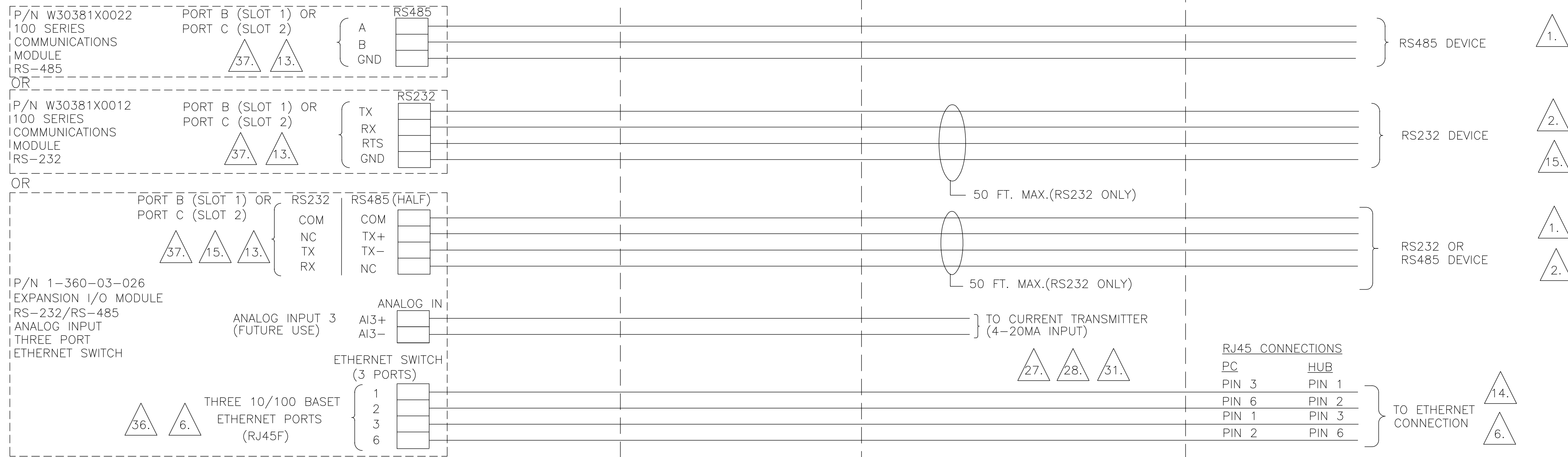
NON-HAZARDOUS LOCATION

EXPLOSION PROOF
TRANSMITTER
ENCLOSURE
ASSEMBLY

3410 SERIES ELECTRONICS
(OPTIONAL I/O MODULES)

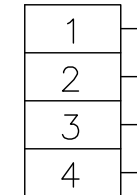
EXPLOSION-PROOF SEAL
(FIELD PROVIDED)

EXPLOSION-PROOF WIRING
(PER LOCAL CODE)

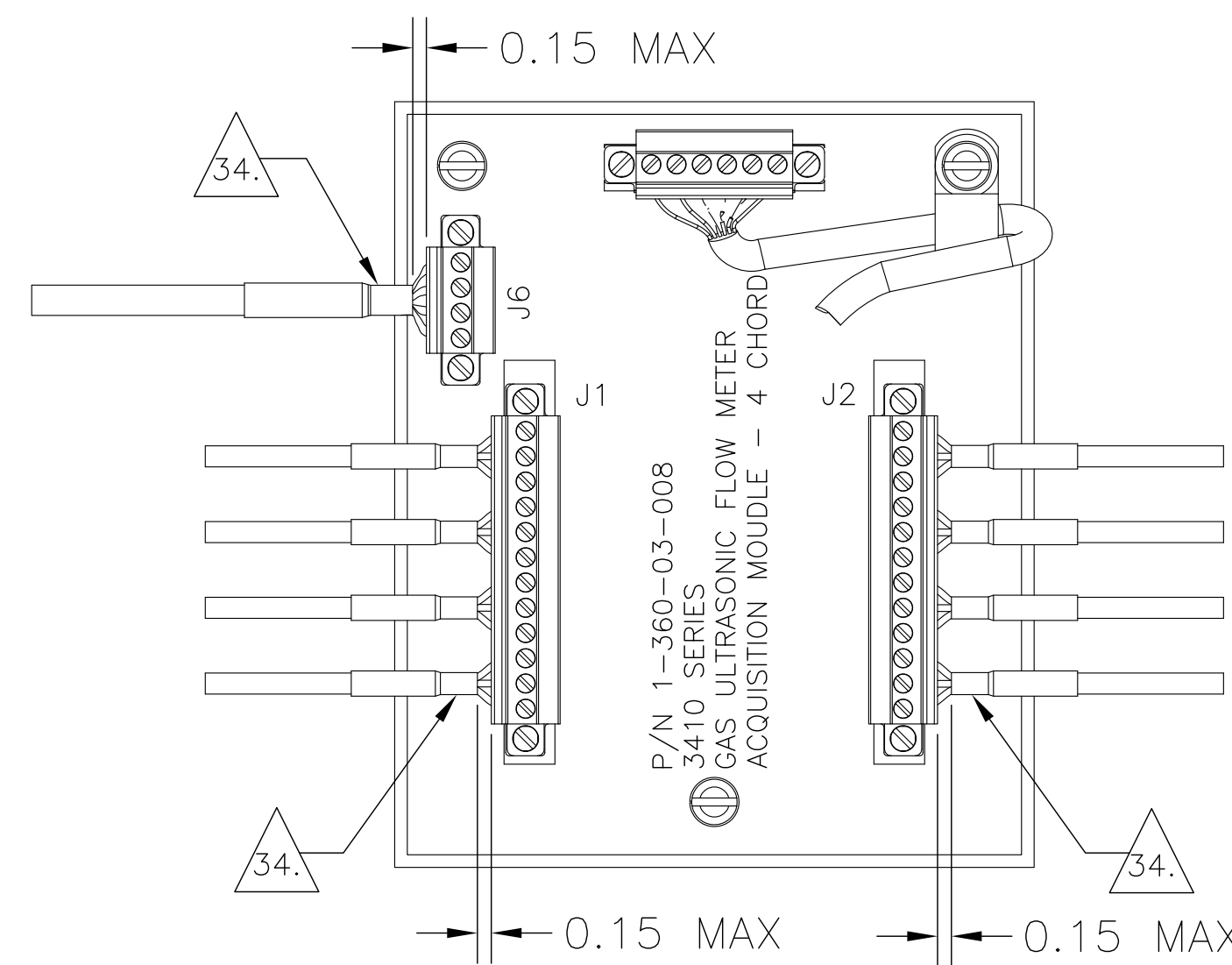
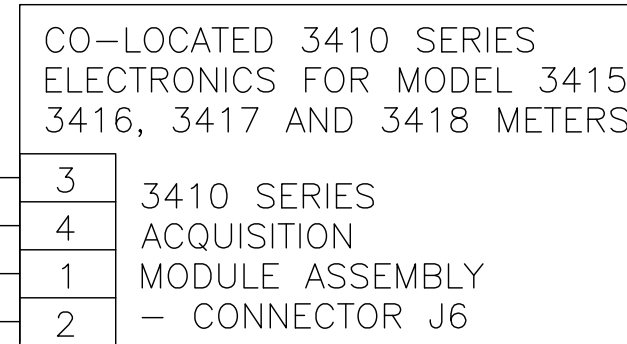


INTRINSICALLY SAFE
BASE ENCLOSURE
GAS ACQUISITION
MODULE ASSEMBLY

J6 (SEE NOTES BELOW)



INTRINSICALLY SAFE WIRING



- Terminal J6 is intended to provide power to the device it is connected to and may also receive power. The entity parameters assigned for terminal J6 are as follows:

Output parameters:	Input parameters:
Vt (or Uo) = 6.51 VDC	Vmax (or Ui) = 6.51 VDC
It (or Io) = 65.8 mA	Imax (or Ii) = 65.8 mA
Po = 107 mW	Pmax (or Pi) = 107 mW
Ca (or Co) = 500 uF	Ci = 0 uF
La (or Lo) = 32.8 mH	Li = 0 mH

- Selected intrinsically safe equipment must be third party listed as intrinsically safe for the application, and have intrinsically safe entity parameters conforming to Table 1.

I.S. Equipment	Terminal J6
Vmax (or Ui)	Voc or Vt (or Uo)
Imax (or Ii)	Isc or It (or Io)
Pmax, Pi	Po
Ci + Ccable	Ca (or Co)
Li + Lcable	La (or Lo)

- Intrinsically safe apparatus connected to terminal J6 that may provide power, must have intrinsically safe entity parameters conforming to Table 2.

Terminal J6	Intrinsically safe apparatus with output parameters
Vmax (or Ui)	Voc or Vt (or Uo)
Imax (or Ii)	Isc or It (or Io)
Pmax, Pi	Po
Ci + Ccable	Ca (or Co)
Li + Lcable	La (or Lo)

- Capacitance and inductance of the field wiring from the intrinsically safe equipment to the terminal J6 shall be calculated and must be included in the system calculations as shown in Table 1 and Table 2. Cable capacitance, Ccable, plus intrinsically safe equipment capacitance, Ci must be less than the marked capacitance, Ca (or Co), shown on any associated apparatus used. The same applies for inductance (Lcable, Li and La or Lo, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60 pF/ft., Lcable = 0.2 uH/ft.

- For installations in which both the Ci and Li of the intrinsically safe apparatus connected to terminal J6 exceeds 1% of the stated Co and Lo parameters (excluding the cable), then 50% of Co and Lo parameters are applicable and shall not be exceeded.

SI METRIC	G	11/20/15	KVG	ECO DCM-1586	CV	KDG
THIRD ANGLE PROJECTION	F	12/11/14	KDG	ECO DMC-464	CV	KDG
	E	5/21/13	KDG	ECO SP2023	KVG	KDG
	D	02/19/13	KDG	ECO SP1919	CV	KDG
	C	11/30/11	KDG	ECO SP1412	KVG	KDG
	B	04/08/11	KDG	ECO SP1098	KVG	KDG
	A	09/29/10	KDG	RELEASED	KVG	KDG
MATERIAL	BLOCK NOT APPLICABLE	REV	DATE	DRN	DESCRIPTION	CHKD APPD
FINISH	BLOCK NOT APPLICABLE	PROJ. FILE NO.	USM-01307	FILENAME:	DMC005324G2.DWG, DATE: 11-20-15, TIME: 11:45 A.M.	

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GEOMETRIC TOLERANCES & DIMENSIONS PER ANSI Y14.5 LATEST REVISION

UNLESS OTHERWISE NOTED ALL DIMENSIONS IN INCHES
 .xxx ±.015
 x.xxx ±.005
 ANGULAR ±1° 30'
 FINISH 200 RA MAX

DANIEL
Daniel Measurement and Control

TITLE: 3410 SERIES ULTRASONIC METER SYSTEM WIRING DIAGRAM

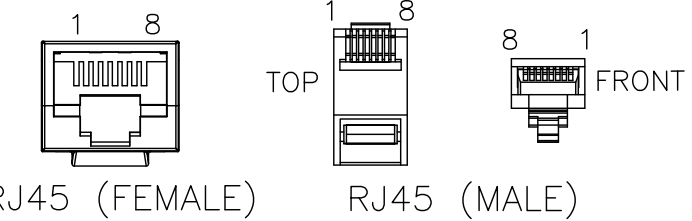
DRN	KDG	DATE	09/29/10	DWG NO.	DMC-005324	REV	G
CHKD	KVG	DATE	09/29/10	SCALE	NA	P/N	
APPD	KDG	DATE	09/29/10	SCALE	NA	P/N	

SHEET 2 OF 3

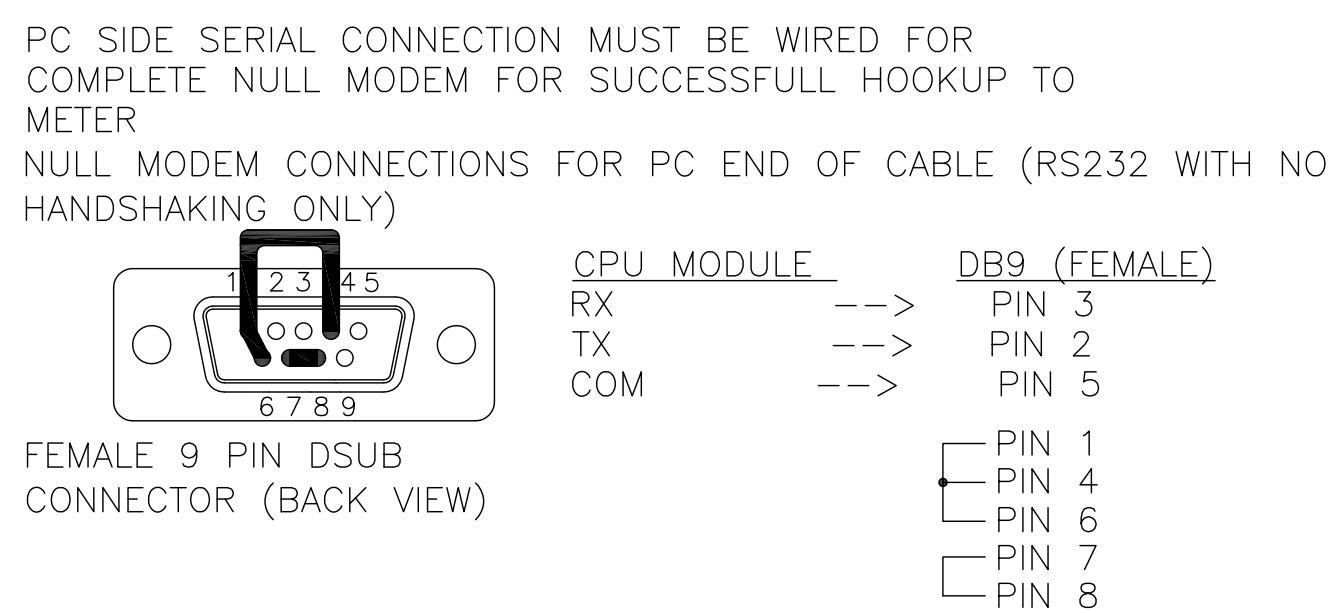
NOTES:

1. MAX LENGTH OF RS-485 WIRING IS 2,000 FT.
2. ETHERNET OR RS-422 IS THE PREFERRED COMMUNICATIONS INTERFACE. OPTIONALLY, RS-232 MAY BE USED FOR SHORT DISTANCES, (50 FT.)
3. POWER INPUT IS NOMINAL 24 VDC. INPUT RANGE 10.4-36V DC. POLARITY INSENSITIVE
4. AN EXPLOSION-PROOF SEAL IS REQUIRED WITHIN 457 MM(18 INCHES) OF THE ENCLOSURE.
5. TRANSDUCER CABLE IS 20 AWG. SHIELDED PAIR, 20 AWG DRAIN, BRAIDED SHIELD, REMKE INDUSTRIES OR EQUIVALENT, 15 FT. MAX.
6. FOR OPTIMUM DIAGNOSTIC INTERFACE, WIRING ETHERNET PORT IS RECOMMENDED. USE CAT5 ETHERNET CABLE
7. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE ARTICLE 504 OF THE NATIONAL ELECTRICAL CODE OR RULE 18-066 OF THE CANADIAN ELECTRICAL CODE.
8. DIGITAL INPUT 1 (DI1) IS CONTACT CLOSURE ONLY.
9. TRANSDUCER PAIRS REQUIRED

MODEL NO.	TRANSDUCER PAIRS REQUIRED	TYPICAL CHORDS USED
3414	4	A,B,C,D
3412	2	A,B
3411	1	A
3417,3418	8	2 x MODEL 3414
3416	6	1 x MODEL 3414 AND MODEL 3412
3415	5	1 x MODEL 3414 AND MODEL 3411
10. FODO OUTPUTS 1 THROUGH 6 CAN BE INDEPENDENTLY CONFIGURED TO FUNCTION AS FREQUENCY OUTPUTS OR DIGITAL STATUS OUTPUTS. THEY CAN EACH BE INDEPENDENTLY CONFIGURED TO DRIVE AS TTL OR OPEN COLLECTOR. FODO6 SHARES CONNECTIONS WITH DI1 ON CPU MODULE P/N 1-360-03-065. DI1/FODO6 FUNCTION IS SOFTWARE CONFIGURABLE. GROUP 1 OUTPUTS (GND1) ARE ELECTRICALLY ISOLATED FROM GROUP 2 OUTPUTS (GND2).
11. EXPOSITION PROOF TRANSMITTER ENCLOSURE AND INTRINSICALLY SAFE BASE ENCLOSURE MUST BE MOUNTED IN A REMOTE LOCATION OFF THE METER BODY IF THE PROCESS TEMPERATURE EXCEEDS THE LOWER OR UPPER AMBIENT RATING -40 °C TO 60 °C (-40 °F TO 140 °F). THE ELECTRONICS MUST BE MOUNTED NEXT TO THE METER BODY ON A PIPE STAND OR OTHER RIGID STRUCTURE.
12. TRANSDUCER CABLES (P/N 2-3-3400-194, 15 FT. LONG) SHALL BE USED TO CONNECT THE DANIEL 3410 SERIES ELECTRONICS TO THE TRANSDUCERS INSTALLED IN A METER BODY FOR PROCESS FLUID TEMPERATURES UP TO 100 °C (212 °F). IN ANY CONFIGURATION, THE TOTAL CABLE LENGTH SHALL NOT EXCEED 4.7 METERS (15 FEET) BETWEEN THE ACQUISITION MODULE AND ANY TRANSDUCER.
13. THE INTERNAL GROUNDING TERMINAL SHALL BE USED AS THE PRIMARY EQUIPMENT GROUND. THE EXTERNAL GROUND TERMINAL IS ONLY A SUPPLEMENTAL BONDING CONNECTION WHERE LOCAL AUTHORITIES PERMIT OR REQUIRE SUCH A CONNECTION.
14. COMM SIGNAL NAMING CONVENTION IS WITH RESPECT TO METER. (I.E. PC - TX -> METER - RX)
15. RJ45 SOCKET NUMBERING AND T568B WIRING FOR STANDARD PATCH CABLING. ETHERNET PORTS AUTOMATICALLY DETECT DIRECT PC OR HUB CONNECTION. CROSSOVER NOT REQUIRED FOR DIRECT PC CONNECTION



CPU MODULE	RJ45 (MALE) MODULE	EXPANSION RJ45 (FEMALE)	RJ45 (MALE)
TX+	--> PIN 1 (O/W)	PIN 1 -->	PIN 1 (O/W)
TX-	--> PIN 2 (O)	PIN 2 -->	PIN 2 (O)
RX+	--> PIN 3 (G/W)	PIN 3 -->	PIN 3 (G/W)
RX-	--> PIN 6 (G)	PIN 6 -->	PIN 6 (G)



CPU MODULE DIP SWITCH SETTINGS

SWITCH	DESCRIPTION
PORT A	PORT A OVERRIDE
DHCP	DHCP SERVER ENABLE
WRITE PROT.	MEMORY PROTECT

TO ENABLE THE PORT A OVERRIDE, SWITCH MUST BE MOVED FROM THE OFF TO ON POSITION. PORT A WILL BE SET TO 19200,8,N,1 ID 32 FOR TWO MINUTES.

MODEL 3410 SERIES TRANSDUCERS TYPE T-11, T-12, T-21, T-22, T-31, T-32, AND T-41.

THE TRANSDUCERS ARE NOT INTENDED FOR USE ACROSS A BOUNDARY WALL.

THE TEMPERATURE CLASSIFICATION OF THE TRANSDUCERS IS T4 UNLESS THE ELECTRONICS ENCLOSURE IS REMOTELY MOUNTED FROM THE METER BODY. IF THE ELECTRONICS ENCLOSURE IS NOT MOUNTED TO THE METER BODY, REFER TO THE CERTIFICATION LABEL DMC-006036 ON THE METER BODY FOR THE APPROPRIATE CLASSIFICATION OF THE TRANSDUCERS, T4 OR T3.

PROCESS TEMPERATURE MUST NOT EXCEED THE OPERATING TEMPERATURE RANGE OF THE TRANSDUCERS AS INDICATED IN THE TABLE BELOW.

TRANSDUCER TYPE	PROCESS TEMPERATURE RANGE
T-11	-20 °C (-4 °F) TO +100 °C (+212 °F)
T-12	-20 °C (-4 °F) TO +100 °C (+212 °F)
T-21 (W-01)	-20 °C (-4 °F) TO +100 °C (+212 °F)
T-22 (W-02)	-50 °C (-58 °F) TO +100 °C (+212 °F)
T-31 (W-03)	-20 °C (-4 °F) TO +100 °C (+212 °F)
T-32 (W-04)	-50 °C (-58 °F) TO +100 °C (+212 °F)
T-41 (W-01)	-50 °C (-58 °F) TO +100 °C (+212 °F)

THE 3410 SERIES METER STANDARD ENCLOSURE OPTION HAS ONE AVAILABLE SLOT FOR A SINGLE I/O MODULE. THE RETROFIT ENCLOSURE OPTION HAS TWO AVAILABLE SLOTS FOR TWO I/O MODULES. RETROFIT OPTION SUPPORTS INSTALLATION OF ONLY ONE EXPANSION I/O MODULE WITH ETHERNET SWITCH (P/N 1-360-03-026) IN EITHER SLOT

FACTORY CABLE INCLUDES EXPLOSION PROOF SEAL.

DIMENSIONS OF FLAMEPROOF JOINTS ARE OTHER THAN THE RELEVANT MINIMUM OR MAXIMUM SPECIFIED IN TABLE 3 OF EN/IEC 60079-1:2007. PLEASE CONTACT MANUFACTURER FOR DETAILS.

ALL CABLE ENTRY DEVICES SHALL BE CERTIFIED IN TYPE OF EXPLOSION PROTECTION FLAMEPROOF ENCLOSURE 'd', SUITABLE FOR THE CONDITIONS OF USE AND CORRECTLY INSTALLED.

IECEx UL 11.0004X CERTIFICATE NOTE: TABULATION OF ADDITIONAL PREVIOUS EDITIONS APPLIED

THE FOLLOWING ADDITIONAL PREVIOUS EDITIONS OF STANDARDS NOTED UNDER THE "STANDARDS" SECTION OF THIS CERTIFICATE WERE APPLIED TO INTEGRAL COMPONENTS AS ITEMIZED BELOW. THERE ARE NO SIGNIFICANT SAFETY RELATED CHANGES BETWEEN THESE PREVIOUS EDITIONS AND THE EDITIONS NOTED UNDER THE "STANDARDS" SECTION.

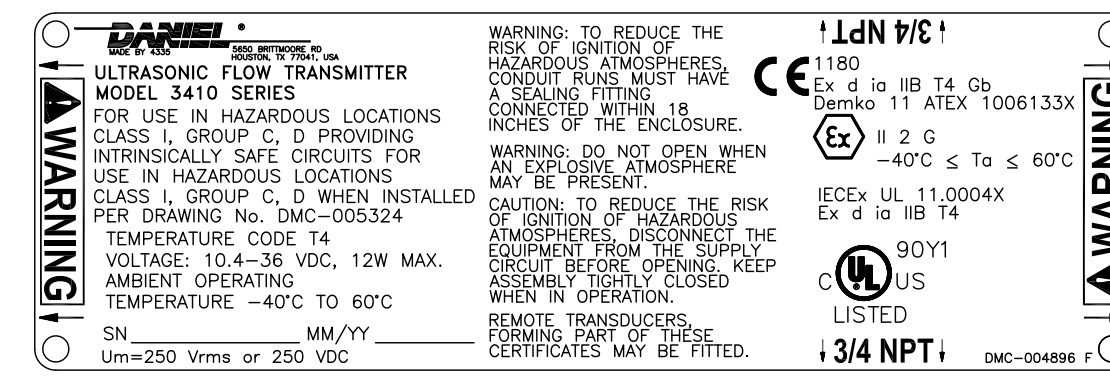
BLANKING ELEMENTS MODEL NUMBER PA-D-3-0-30 OR PA-D-1-1-30 MANUFACTURED BY REDAPT.	IEC 60079-0:2009
THREAD ADAPTERS MODEL NUMBER RD-U-3-0-30-04 OR RD-U-1-1-30-04 MANUFACTURED BY REDAPT.	IEC 60079-0:2009

FIELD WIRING MUST BE RATED FOR 75 °C OR HIGHER. FOR AMBIENT TEMPERATURES BELOW -10 °C (14 °F), USE FIELD WIRING SUITABLE FOR THE MINIMUM AMBIENT TEMPERATURE.

REFER TO THE APPROPRIATE INSTRUCTION MANUAL FOR INSTRUCTIONS FOR SAFETY INCLUDING PUTTING INTO SERVICE, USE, ASSEMBLING AND DISMANTLING, MAINTENANCE, INSTALLATION, AND ADJUSTMENT.

3-9000-759 3410 SERIES INSTALLATION MANUAL
3-9000-769 3410 SERIES MAINTENANCE AND TROUBLESHOOTING MANUAL

LABEL FOR 3410 SERIES FLOW METER: DATE CODE IS INCLUDED IN THE SERIAL NUMBER. SERIAL NUMBER FORMAT SHALL BE "YY-WWXXXX" WHERE: YY = 2-DIGIT YEAR OF MANUFACTURE WW = WEEK OF MANUFACTURE (01-52) XXXX = SEQUENTIALLY INCREMENTING NUMBER



FOR THE U.L. U.S. MARK INVESTIGATION, THE DEVICE COMPLIES TO THE FOLLOWING STANDARDS FOR USE IN THE UNITED STATES:
UL 1203, 4TH EDITION
UL 508, 17TH EDITION
UL 913, 7TH EDITION

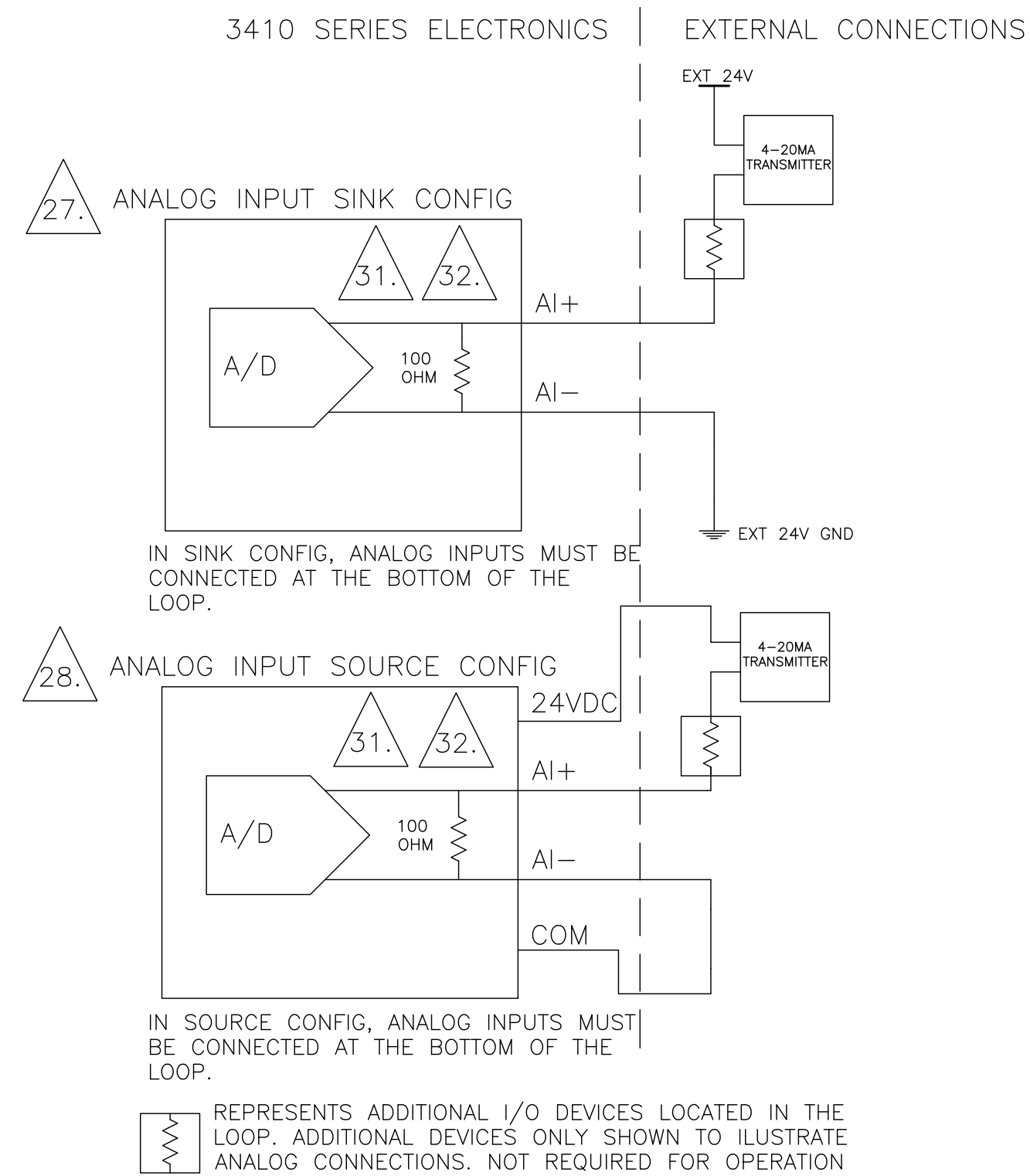
FOR THE U.L.-C MARK INVESTIGATION, THE DEVICE COMPLIES TO THE FOLLOWING STANDARDS FOR USE IN CANADA:
CAN/CSA C22.2 No. 30-M1986, REV. 1988-11
CAN/CSA C22.2 No. 14-10
CAN/CSA C22.2 No. 157-92

FOR THE ATEX MARK INVESTIGATION, THE DEVICE COMPLIES TO THE FOLLOWING STANDARDS FOR USE IN THE EUROPEAN UNION:

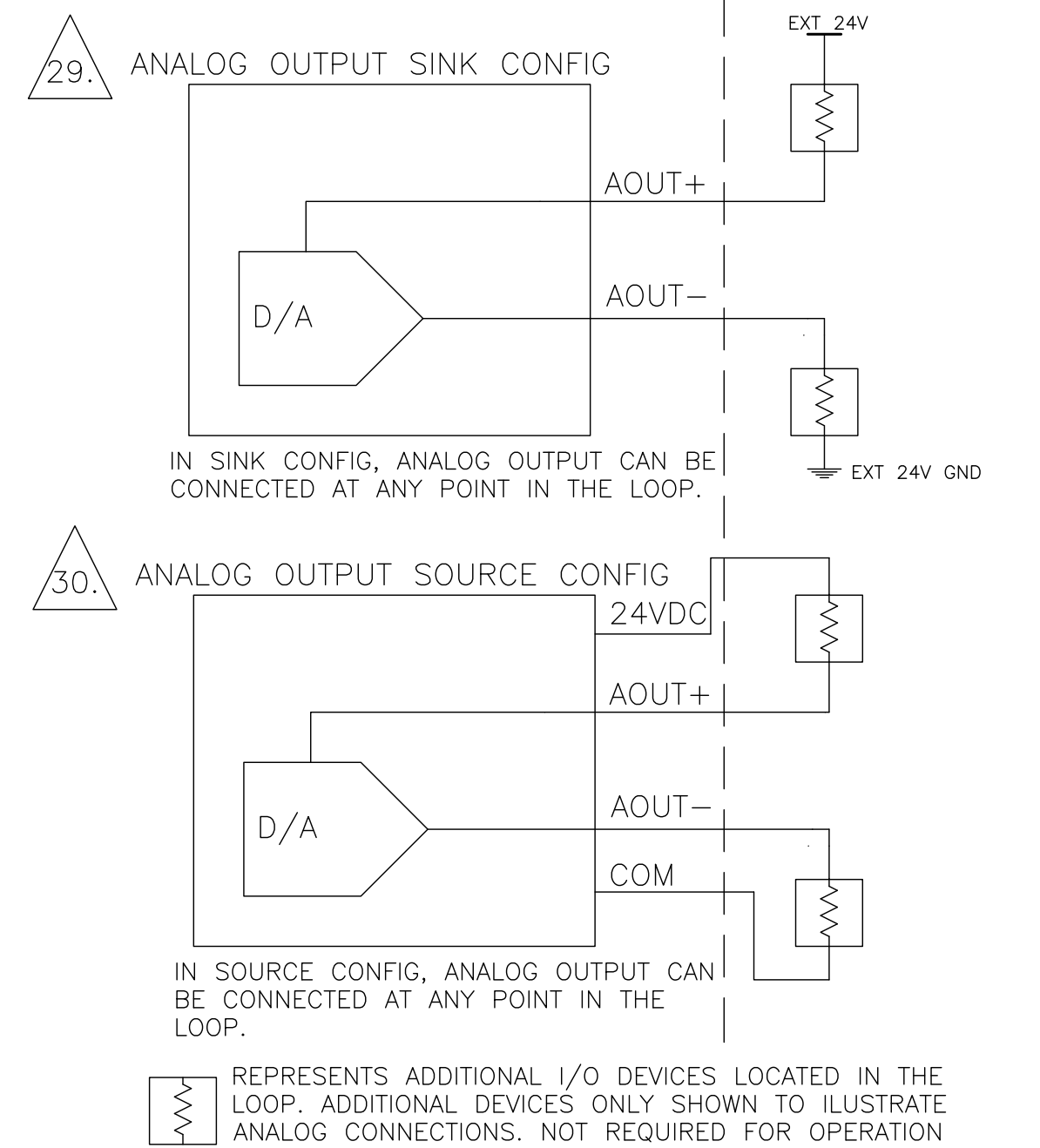
EN 60079-0:2012
EN 60079-1:2007
EN 60079-11:2007

FOR THE IECEx MARK INVESTIGATION, THE DEVICE COMPLIES TO THE FOLLOWING STANDARDS:

IEC 60079-0:2012
IEC 60079-1:2007
IEC 60079-11:2006



3410 SERIES ELECTRONICS | EXTERNAL CONNECTIONS



27. ANALOG INPUT SINK CONFIG
28. ANALOG INPUT SOURCE CONFIG
29. ANALOG OUTPUT SINK CONFIG
30. ANALOG OUTPUT SOURCE CONFIG
31. ANALOG INPUT 1 AND ANALOG INPUT 2 ARE FUNCTIONALLY IDENTICAL AND ARE NOT ELECTRICALLY ISOLATED FROM EACH OTHER. THE '-' TERMINALS OF ANALOG INPUTS ARE COMMON TO EACH OTHER.
32. ANALOG INPUT 1 AND ANALOG INPUT 2 HAVE ADDITIONAL 150 OHMS LOOP IMPEDANCE FOR COMPLIANCE WITH HART COMMUNICATION REQUIREMENTS.
33. 24 VOLTS DC OUTPUT CAN BE USED TO SOURCE POWER TO ONE OR MORE OF THE ANALOG INPUTS OR OUTPUTS.
34. MODEL 3415, 3416, 1417 AND 3418: CABLING TO CONNECTORS J1, J2 AND J6 ON ACQUISITION MODULE SHALL HAVE DISCRETE WIRES RESTRAINED USING SHRINK TUBING AS SHOWN ON SHEET 2.
35. I/O CONFIGURATION CHANGES BASED ON CPU MODULE P/N. REFER TO PRODUCT MANUAL FOR FULL DETAILS.
36. EXPANSION MODULE HAS THREE ETHERNET PORT SWITCH WHERE PORT LABELED "3" IS INTENDED FOR CONNECTING TO ETHERNET PORT OF CPU MODULE, AND PORTS LABELED "1" AND "2" ARE AVAILABLE FOR USER.
37. SERIAL I/O MODULE INSTALLED IN SLOT 1 (ADJACENT TO CPU MODULE) IS PORT B, AND SERIAL I/O MODULE INSTALLED IN SLOT 2 IS PORT C. SLOT 2 IS ONLY AVAILABLE WITH RETROFIT ENCLOSURE OPTION.

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THIRD ANGLE PROJECTION	F	12/11/14	KDG	ECO DMC-464	CV	KDG	
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	D	02/19/13	KDG	ECO SP1919	CV	KDG	
	C	11/30/11	KDG	ECO SP1412	KVG	KDG	
	B	04/08/11	KDG	ECO SP1098	KVG	KDG	
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MATERIAL	BLOCK NOT APPLICABLE	REV	DATE	DRN	DESCRIPTION	CHKD APPD	
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GEOMETRIC TOLERANCES & DIMENSIONS PER ANSI Y14.5 LATEST REVISION

UNLESS OTHERWISE NOTED ALL DIMENSIONS IN INCHES
xxx ±.015
xxx ±.005
ANGULAR ±0.30°
FINISH 200 RA MAX

BREAK ALL SHARP CORNERS TO .003-.015 RADIUS AND REMOVE ALL BURRS

DANIEL
Daniel Measurement and Control

TITLE 3410 SERIES ULTRASONIC METER SYSTEM WIRING DIAGRAM

DRN KDG	DATE 09/29/10	DWG NO.	REV
CHKD KVG	DATE 09/29/10	DMC-005324	G
APPD KDG	DATE 09/20/10	SCALE NA	P/N

SHT 3 OF 3