SERIES 900 & IS900 OPERATING INSTRUCTIONS V1.1 (DOC#90-900)

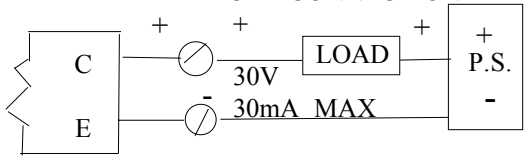
IMPORTANT NOTICE - WARNING:

These are common instructions for all 900 & IS900 Series Controllers, Transmitters and Displays. Please check your Model No. before making any connections. Failure to do so might damage the instrument beyond repair, and will void the lifetime warranty!

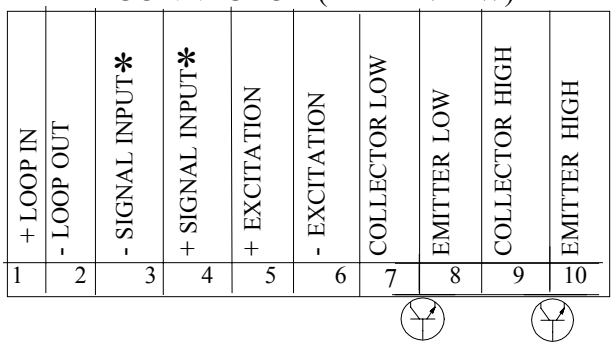
NOTES:

1. Input Signal must be floating (isolated) from power (+ & - Loop) Input by at least 1 MEGAOHM.
2. Optoisolated transistors are isolated from each other and from the circuit, and they can be common to the loop's power supply.

TYPICAL CONNECTION



CONNECTOR (REAR VIEW)



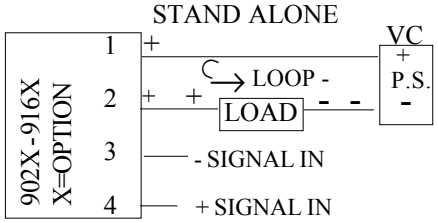
3. Models without controller option have no internal connections to terminals 7, 8, 9 & 10, unless it is a custom.

4.a Models **909**, **910** and **912** have internal excitation +E on terminal 5 and -E on 6. All others have no internal connection unless it is a custom.

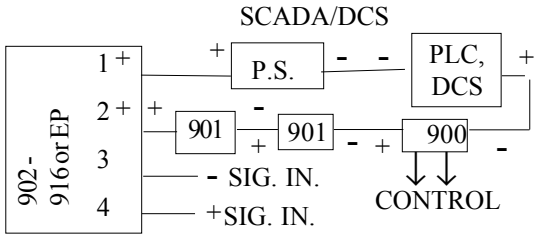
4.b Models **902-916** Typical Connection:

*4.c For Model #903, + in at Pin 3 & - in at Pin 4

STAND ALONE

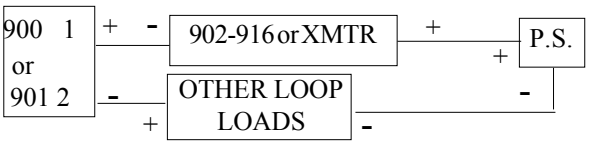


SCADA/DCS

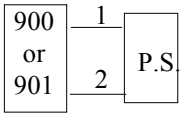


4.d Models **900 & 901** are Current Loop Powered (4-20mA), DO NOT CONNECT VOLTAGE AT ITS CURRENT LOOP INPUTS (1 & 2) WITHOUT LIMITING LOAD (30mA MAX.).

DO



DO NOT



5. PLEASE READ POWER SUPPLY CONSIDERATIONS ON DATA SHEET (Re. BURDEN)

6.0 ADJUSTMENTS/RECALIBRATION:

6.1 4 & 20mA ADJUSTMENT: (For Models with Transmitter Option)

NOTE: Factory calibration: "0" & F.S. = 4mA and full scale = 20mA. Apply your "0" or negative F.S. and adjust the "4ma" Pot (always before the 20mA Pot) for 4mA (or desired output), apply the positive full scale signal and adjust the "20mA" Pot for desired reading. Check the "4" & "20" Pots for fine tuning.

REMEMBER: If your unit does not have 4 & 20 Pots it is NOT a transmitter. If it does not have HL & LL Pots & LEDs, it is NOT a controller and if it does not have a display it does NOT have "Z&S" Pots.

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6.2 ZERO & SPAN ADJUSTMENTS: (All Models with Display Option)

6.3 Zero: (Always adjust before Span) - NOTE: Factory calibration: 4mA=000, 20mA=1000, except 902(pH)=0.00,14pH=14.00. Apply the "Low" current (ie. 4mA) and adjust the Zero Pot for desired reading (typically 000). Apply the "High" current (ie: 20mA) and adjust the Span Pot for desired reading. Check Zero & Span to fine tune the display. For other display readings adjust Zero (Z) & SPAN (S) as required.

6.3.1 HI & LO LIMITS ADJUSTMENTS: (All Models with Controller Option)
NOTE: "HI" and "LO" limits are factory set at 8 (LO) and 16 (HI) mA. Currents below 8mA will turn the "LO" (yellow) LED & O.C.T. on. Currents above 16mA will turn the "HI" LED & O.C.T. on.

6.3.2 Low Limit Adjustment: Apply your low limit current and adjust "LL" Pot until the LL yellow LED just turns on (or off) and back off the Pot 1/4 to 1/2 turn. Increase the current until the yellow LED goes off (or on). (Note: Clockwise increases the set point value) NOTE: The L.L. Turns on, on below set point currents.

6.3.3 High Limit Adjustment: Apply your high limit current and adjust "HL" Pot. until the red LED goes on (or off) and back off the Pot 1/4 to 1/2 turn. Decrease the input current/or increase it until the HL LED changes state. NOTE: H.L. turns on, on above set point currents.

7 Troubleshooting Tips:

7.1 No or little zero range: Span too low, increase it.

7.2 No or little span range: Too small or no signal input.

7.3 Little or no 4mA range: Too small or no signal input or too Low 20mA adjust (Gain).

7.4 Little or no 20mA range: 4mA set too high or no signal input.

7.5 Hi or Lo LED or O.C.T. Do not change with change in input: adjustment(s) or signal out of range.

7.6 No "Loop On" green LED: No power or loop current.

8. MOUNTING INFORMATION

Please refer to Mechanical Drawing:

Front Panel Mount: Make cutout for connector and drill the 2 mounting holes.

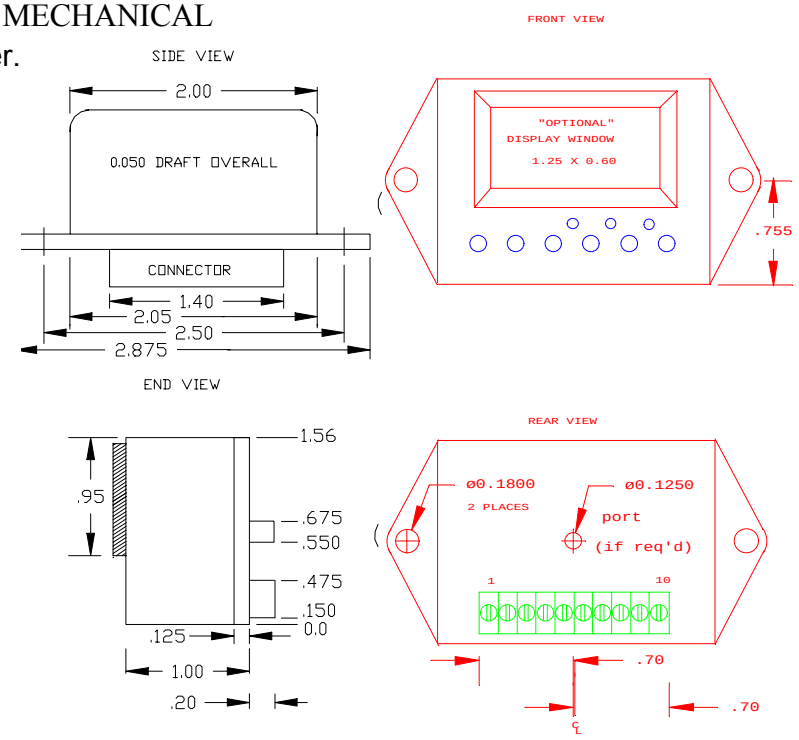
Rear Panel Mount: Make cutout for housing 1.525" x 2.025" with 1/8"R rounded corners and drill the 2 mounting holes.

DIN Rail Mount (35mm), Wall Mount and Pipe Mount: Contact OTEK for adapters available.

MECHANICAL

Terminal (TS1) connections vs. Model number.

Mod.# / Function	Loop 1	2	Signal 3	4	5	6	Control 7	8	9	10
IS900 / Controller	+L	-L	NC	NC	NC	NC	CL	EL	CH	EH
IS901 / Display Only	+L	-L	NC	NC	NC	NC	NC	NC	NC	NC
IS902 / PH	+L	-L	-S	+S	NC	NC				
IS903 / ORP	+L	-L	-S	+S	NC	NC				
IS904 / 4-20mADC	+L	-L	-S	+S	NC	NC				
IS905 / V,mA RMS	+L	-L	L	H	NC	NC				
IS906 / RTD	+L	-L	R	W	NC	NC				
IS907 /Thermocouple	+L	-L	-TC	+TC	NC	NC				
IS908 / R.H.	+L	-L	NC	NC	NC	NC				
IS909 / Press-Vac.	+L	-L	NC	NC	NC	NC				
IS910 / Strain-Gage	+L	-L	-S	+S	+E	-E				
IS911/Frequency Hz.	+L	-L	L	H	NC	NC				
IS912 / V.A.S.P.	+L	-L	NC	NC	NC	NC				
IS913 / mV,mADC	+L	-L	-S	+S	NC	NC				
IS914 / Conductivity	+L	-L	-S	+S	NC	NC				
IS915 / Moisture	+L	-L	-S	+S	NC	NC				



Note: For rear pabel mount, make panel cutout 2.015" x 1.515"
The unit will protrude 0.25" from the front of the panel.

NOTE: DEAR CUSTOMER:

Thank you for selecting OTEK's New 900 Series. This new product has undergone extensive testing to assure compliance with our specifications. We would appreciate any comments you may have on its appearance and performance, as well as any suggestions for improvements. Please feel free to contact us with your comments/suggestions via fax or e-mail to the attention of Dr. Fest. If you have any technical problems, you can call, fax or e-mail us. We would prefer you to fax your problems to us with a typical connection as to how you hooked up the unit for a more expedient and accurate reply.
Thank you for your cooperation!

1. The circuits indicated as Circuit 1, Circuit 2, Circuit 3 and Circuit 4 must be installed in seperate cables or in one cable with suitable insulation. Refer to instrument Society of America Recommended Practice ISA RP12.6, Wiring Practices for Hazardous (Classified) Locations Instrumentation, Part I, Intrinsic Safety.

2. Entity Parameters:

Terminals 1 and 2 (Circuit 1):	Terminals 3, 4, 5 and 6 (Circuit 2):
Vmax or Ui = 28.0Vdc	Vmax or Ui = 28.0Vdc
Imax or Ii = 50mA	Imax or Ii = 70mA
Ci = 20nF	Ci = 55nF
Li = 0uH	Li = 0uH

Terminals 7 and 8 (Circuit 3):	Terminals 9 and 10 (Circuit 4):
Vmax or Ui = 28.0Vdc	Vmax or Ui = 28.0Vdc
Imax or Ii = 50mA	Imax or Ii = 50mA
Ci = 0nF	Ci = 0nF
Li = 0uH	Li = 0uH

3. Barriers may be located in a Division 2 location if so approved.

4. Barrier output current must be limited by a resistor such that the output voltage-current plot is a straight line drawn between open circuit voltage and short-circuit current.

5. Barriers must be installed in accordance with barrier manufacturer's control drawing and Article 504 of the National Electrical Code, ANSI / NFPA 70, Section 18 of the Canadian Electrical Code, or other applicable codes or regulations.

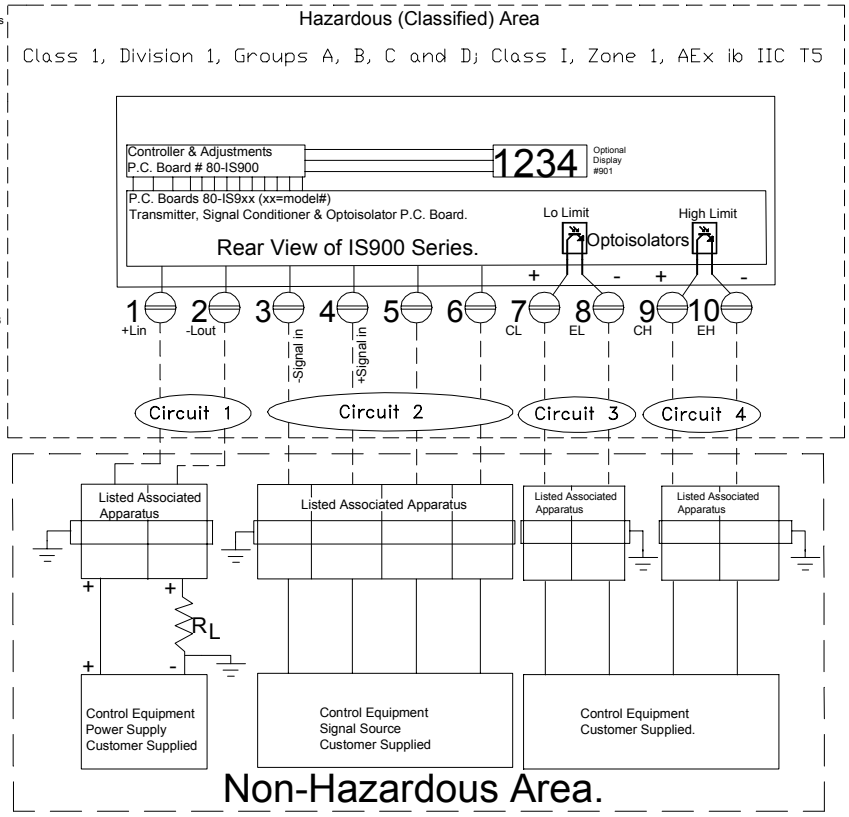
6. Selected barriers must be third party approved as associated apparatus providing intrinsically safe circuits for the application and must have a Voc or Uo (Circuits 1, 3 and 4) or Vt (Circuit 2) not exceeding Vmax or Ui, and an Isc or Io (Circuits 1, 3 and 4) or It (Circuit 2) not exceeding Imax or Ii of the intrinsically safe equipment as shown in Table 1.

7. Cable capacitance plus intrinsically safe equipment capacitance must be less than the marked capacitance (Ca or Co) shown on any barrier used. The same applies for marked inductance (La or Lo). Cable capacitance (Cc) or Cable inductance (Lc) should be taken from the cable specifications, or, where this information is not available, the values should be calculated as Cc = 60pF / ft. And Lc = 0.2uH / ft. These values must be included in the system calculations as shown in Table 1.

Table 1:

I.S. Equipment		Barrier
Vmax or Ui	>	Voc or Uo
Imax or Ii	>	Isc or Io
Ci + Cc	<	Ca or Co
Li + Lc	<	La or Lo

8. CONTROL EQUIPMENT MUST NOT USE OR GENERATE MORE THAN 250 V WITH RESPECT TO EARTH.



REV:	DATE
A	7-25-2000
B	10-1-2002

OTEK
4016 E. TENNESSEE ST. / TUCSON, AZ. 85714
TITLE: 900 Series Intrinsically safe control diagram.
SCALE: None | DRWN: DHF | APPR:
DATE: 07-25-00 | DWG NO: 86-IS900

FORM #F-ENG-006 REV B

Terminal (TS1) connections vs. Model number.

Mod.# / Function	Loop 1	Loop 2	Signal 3	Signal 4	Signal 5	Signal 6	Control 7	Control 8	Control 9	Control 10
IS900 / Controller	+L	-L	NC	NC	NC	NC	CL	EL	CH	EH
IS901 / Display Only	+L	-L	NC	NC	NC	NC	NC	NC	NC	NC
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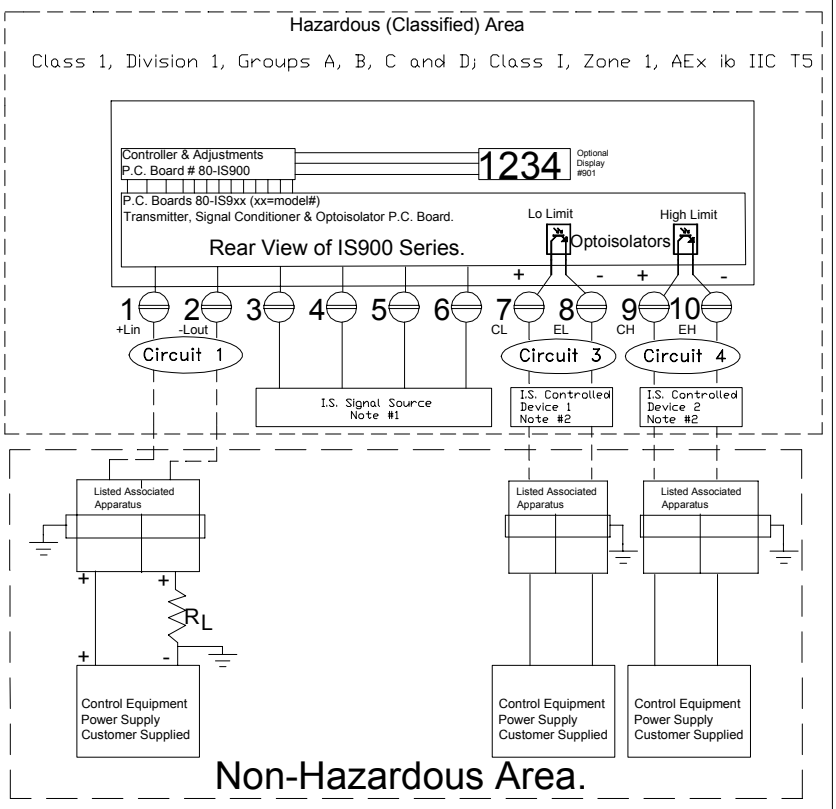
IS908 / R.H.	+L	-L	NC	NC	NC	NC				
IS909 / Press-Vac.	+L	-L	NC	NC	NC	NC				
IS910 / Strain-Gage	+L	-L	-S	+S	+E	-E				
IS911/Frequency Hz.	+L	-L	L	H	NC	NC				
IS912 / V.A.S.P.	+L	-L	NC	NC	NC	NC				
IS913 / mV,mADC	+L	-L	-S	+S	NC	NC				
IS914 / Conductivity	+L	-L	-S	+S	NC	NC				
IS915 / Moisture	+L	-L	-S	+S	NC	NC				

Notes:

1. See note 2 on sheet 1 for circuit parameters.
2. I.S. Devices connected in series with circuit 3 or circuit 4 must meet the following intrinsically safe equipment criteria: The Vmax or Ui of the IS900 series device and Vmax or Ui of all other series connected devices must be greater than or equal to the Voc or Vo of the barrier; The Imax or Ii of the IS900 series device and the Imax or Ii of all other series connected devices must be greater than or equal to the Isc or Io of the barrier; The Ci of the IS900 series device plus the Ci of all other series connected devices plus the capacitance of all cable must be less than or equal to the Ca or Co value of the barrier; the Li of the IS900 series device plus the Li of all other series connected devices plus the inductance of all cable must be less than or equal to the La or Lo value of the barrier.



Sheet 2 of 2

+L=+LOOP, -L=-LOOP, +S=+SIGNAL, -S=-SIGNAL, CH=COLLECTOR HI LIMIT, EH=EMITTER HIGH LIMIT, CL=COLLECTOR LO LIMIT, EL=EMITTER LO LIMIT, H=HIGH, R=RED, W=WHITE, +TC=THERMOCOUPLE+, -TC=THERMOCOUPLE-, +E=+EXCITATION, -E=-EXCITATION, NC=NOT CONNECTED, L=LOW.

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