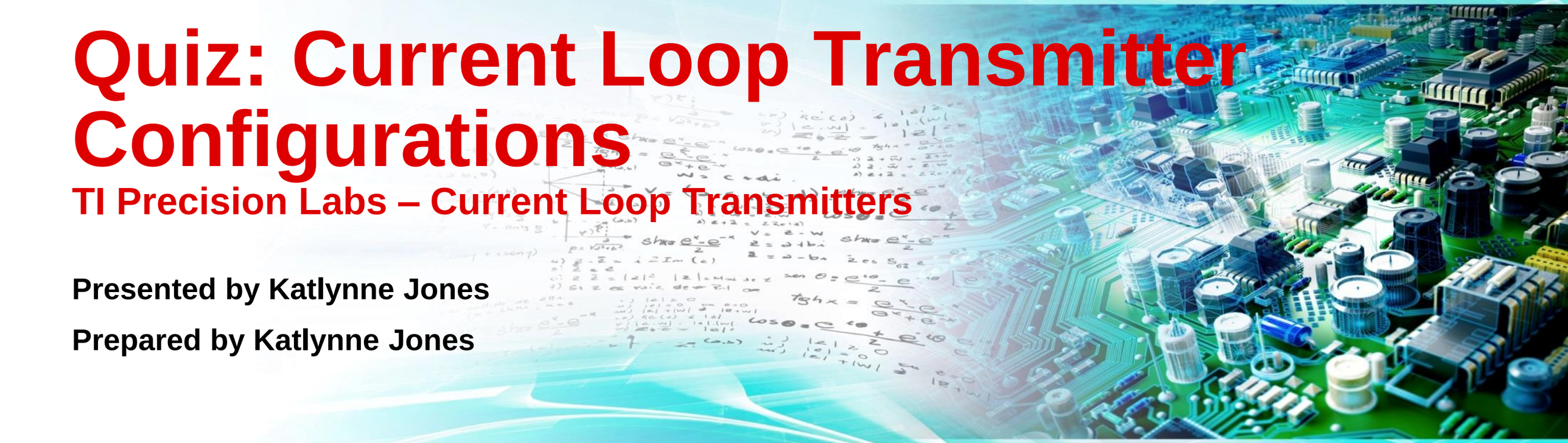
Quiz: Current Loop Transmitter Configurations

TI Precision Labs – Current Loop Transmitters



Presented by Katlynne Jones

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Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Question

1. Which type of transmitter has a current budget of 4mA?

    a) 2-wire transmitter
    b) 3-wire transmitter
    c) 4-wire transmitter
    d) None of the above

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Answer

1. Which type of transmitter has a current budget of 4mA?

   a) **2-wire transmitter**
   b) 3-wire transmitter
   c) 4-wire transmitter
   d) None of the above

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Question

2. Which type of transmitter can provide isolation schemes such as, fully isolated, power-isolated, and output-isolated?

a) 2-wire transmitter
b) 3-wire transmitter
c) 4-wire transmitter
d) None of the above

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Answer

2. Which type of transmitter can provide isolation schemes such as, fully isolated, power-isolated, and output-isolated?

a) 2-wire transmitter
b) 3-wire transmitter
c) 4-wire transmitter
d) None of the above

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3. The XTR117, a 2 wire transmitter, is supplying a sensor that consumes 3.72mA of current. Taking into account the max quiescent current of the XTR117 over temperature, does this transmitter meet the current budget discussed in the video?

   a) Yes
   b) No

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3. The XTR117, a 2 wire transmitter, is supplying a sensor that consumes 3.72mA of current. Taking into account the max quiescent current of the XTR117 over temperature, does this transmitter meet the current budget discussed in the video?

a) **Yes**

b) No

The XTR117 has a max quiescent current of 250µA over temperature. Adding this to the 3.72mA of the sensor, the design does meet the current budget limit of 4mA.

			MIN	TYP	MAX	
POWER SUPPLY						
Specified Voltage Range	V+			+24		V
Operating Voltage Range			+7.5		+40	V
Quiescent Current	I_Q			130	200	µA
Over Temperature		**T_A = –40°C to +125°C**			**250**	**µA**

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4. The XTR116, a 2 wire transmitter, is supplying a sensor that consumes 3.72mA of current. Taking into account the max quiescent current of the XTR116 over temperature, does this transmitter meet the current budget discussed in the video?

   a) Yes
   b) No

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Answer

4. The XTR116, a 2 wire transmitter, is supplying a sensor that consumes 3.72mA of current. Taking into account the max quiescent current of the XTR116 over temperature, does this transmitter meet the current budget discussed in the video?

a) Yes

b) No

The XTR116 has a max quiescent current of 300µA over temperature. Adding this to the 3.72mA of the sensor, the design is over the current budget limit of 4mA.

			MIN	TYP	MAX				
POWER SUPPLY	V+								
Specified				+24			*		V
Voltage Range			+7.5		+36	*		*	V
Quiescent Current				200	250		*	*	µA
Over Temperature, –40°C to +85°C				240	300		*	*	µA

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Question

5. Which transmitter would be best suited for sending data from a submersible temperature sensor to a control station?

a) 2-wire transmitter
b) 3-wire transmitter
c) 4-wire transmitter
d) None of the above

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5. Which transmitter would be best suited for sending data from a submersible temperature sensor to a control station?

a) 2-wire transmitter

b) 3-wire transmitter

c) 4-wire transmitter

d) None of the above

A 2-wire transmitter is loop supplied and would be able to provide power to a submersible temperature sensor.

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Question

6. Which transmitter would be best suited for sending control signals to a heater to adjust the temperature in the room?

a) 2-wire transmitter
b) 3-wire transmitter
c) 4-wire transmitter
d) None of the above

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Answer

6. Which transmitter would be best suited for sending control signals to a heater to adjust the temperature in the room?

a) 2-wire transmitter
b) 3-wire transmitter
c) 4-wire transmitter
d) None of the above

A heater won’t require power to be sent from the control station. A 3-wire transmitter can be positioned near the control station or the heater and share that local supply.

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7. What other common current output ranges are available to 3-wire and 4-wire transmitters? Select all that apply:

   a) 0-20mA
   b) 0-24mA
   c) 0-36mA
   d) 0-100mA

Quiz: 2-wire vs. 3-wire 4-20mA Transmitters || Answer

7. What other common current output ranges are available to 3-wire and 4-wire transmitters? Select all that apply:

a) 0-20mA

b) 0-24mA

c) 0-36mA

d) 0-100mA

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8. True/False: You cannot connect multiple 3-wire transmitters to sensors or DACs with multiple outputs without isolation.

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8. True/**False**: You cannot connect multiple 3-wire transmitters to sensors or DACs with multiple outputs without isolation.

False: You can connect multiple 3-wire transmitters to sensors or DACs with multiple outputs without isolation. You cannot connect multiple 2-wire transmitters together without isolation. This is because the IRETs of each transmitter are floating and cannot be connected together or to any other ground in the system.

Thanks for your time!

To find more Current Transmitter technical resources and search products, visit:
https://www.ti.com/amplifier-circuit/special-function/4-20ma-signal-conditioners.html