

	SONARtrac® Technical Note	
	TN0006	Date: 16Oct25
	Subject: Changing Transmitter 4-20mA Output From Internal to External Power	Revision 03
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Problem:

I need to change my transmitter 4-20mA output from internal power to external power. Please provide details.

(Section **A** – legacy SONARtrac, Section **B** - SONARtrac digital)



legacy SONARtrac



SONARtrac digital

Resolution:

A. For legacy SONARtrac, in order to change from internal powering of the 4-20mA outputs proceed as follows.

• Externally Powered 4-20mA Loop Configuration

The connections for a 4-20mA interface configured as “Externally Powered” are shown below. The maximum value of V_{EXT} should be chosen such that the maximum applied voltage between V_{EXT} and local ground and I_{OUT} and local ground shall be within the range of +30V / -10V and current limited to 100mA. The maximum value of R_L is determined by the following equation:

$$R_{L \text{ Max}} = (V_{EXT} - 8.35) / 0.022$$

For example, with $V_{EXT} = 24\text{VDC}$:

$$R_{L \text{ Max}} = (24 - 8.35) / 0.022 = 711 \Omega$$

In the externally powered configuration, the 4-20mA interface is capacitively isolated from the rest of the transmitter electronics provided that the applied voltages are within +30V / -30V.

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B. For SONARtrac digital

• Externally Powered 4-20mA Loop Configuration

The customer's cable effectively brings the customer's +24V supply output to J8-2 (for ANA OUT #1) or to J8-6 (for ANA OUT #2) and has the return of their 24V supply going through a current sense resistor to J8-3 (for ANA OUT #1) or to J8-7 (for ANA OUT #2). The maximum value for R_L is determined by the following equation:

$$R_{L \text{ Max}} = (V_{\text{EXT}} - 10.0) / 0.021$$

For example, with $V_{\text{EXT}} = 24\text{VDC}$:

$$R_{L \text{ Max}} = (24-10) / 0.021 = 666 \, \Omega$$

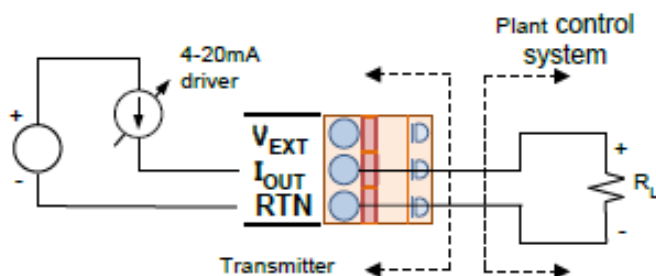


Figure 3 Internally (transmitter) Powered 20mA Loop

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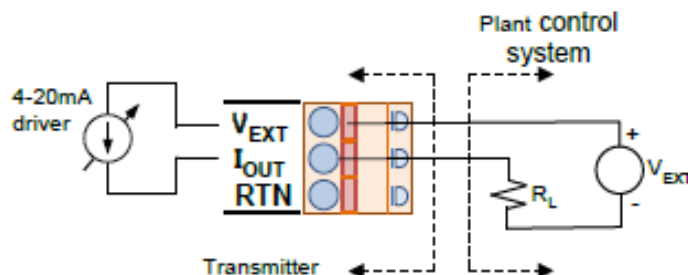


Figure 4 Externally Powered 4-20mA Loop

• Wiring Changes

Refer to Figure 3 & 4 above. Change the terminal board wiring of the transmitter from I_{OUT} and RTN being wired to V_{EXT} and I_{OUT} being wired (observe desired polarity).

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• Transmitter Menu Changes

There are no menu configuration changes necessary. The wiring configuration chosen will be recognized by the transmitter.

If there are any questions, please contact CIDRA Technical Support

Revision History

Rev	Date	Changed By	Approved By	Change Description
01	22Aug07	Markoja	M. Sapack	Initial Release
02	7/29/08	V. Rojas-Haines	V. Rojas-Haines	Update Figures and name
03	10/16/25	Griffin	Griffin	Added <i>SONARtrac digital</i> info

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