

### **TN0006**

Subject: Changing Transmitter 4-20mA Output From Internal to External Power

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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)







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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Tel. 203-265-0035	Fax. 203-294-4211	www.cidra.com



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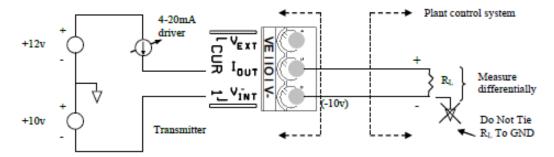


Figure 1 Internally (transmitter) Powered 4–20mA Loop

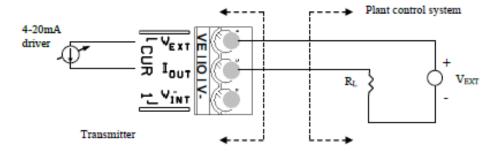


Figure 2 Externally Powered 4–20mA Loop

#### Wiring Changes

Refer to Figure 1 & 2 above. Change the terminal board wiring of the transmitter from  $I_{OUT}$  and  $V_{INT}$  being wired to  $V_{EXT}$  and  $I_{OUT}$  being wired (observe desired polarity).

### Transmitter Menu Changes

- 1. Press any key of the front panel display except the ENTER key and 'Basic Config' will be displayed on Line 1 of the transmitter display.
- 2. Press the \( \) Arrow key once and 'Output Config' will be on Line 1 of the transmitter display.
- 3. Press the ENTER key and '4-20mA CH 1' will be displayed on Line 2 of the transmitter display. (If 4-20mA 2 channel is desired press the ↓ Arrow key again.)
- 4. Press the ENTER key and 'Output Select' will be displayed on Line 3 of the transmitter display.
- 5. Press the ↓ Arrow key once and 'Power Sel' will be displayed on Line 3 and 'Internal' will be displayed on Line 4 of the transmitter display.
- 6. Press the ENTER key and 'Internal' will be highlighted.
- 7. Press the \$\psi\$ Arrow key once and 'External' will be displayed on Line 4 of the transmitter display.
- 8. Press the ENTER key to set this selection and then press the EXIT key. The transmitter will restart.

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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:

 $R_{L \text{ Max}} = (V_{EXT} - 10.0) / 0.021$ For example, with  $V_{EXT} = 24VDC$ :  $R_{L \text{ Max}} = (24-10) / 0.021 = 666 \Omega$ 

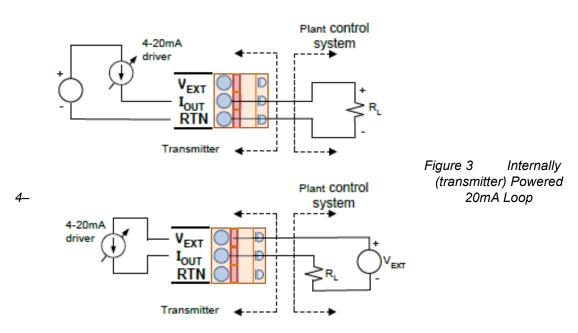


Figure 4 Externally Powered 4–20mA Loop

#### 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 SONARtrac digital info

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