

Addendum to TI-700 Installer's Manual For ACTIVE Analog Output Option 07152k14

GENERAL INFORMATION

This digital indicator provides an active analog output from two terminals designated 'O' and 'G'. The output terminals are realized at J1 on a small circuit board located inside the unit.

Two types of active analog output are available:

1. 4-20 mA¹
2. 0-10 V

Select between the two types by positioning a jumper across JP1 on the small circuit board and configuring F24. (Refer to table below)

F24 Analog Output Function	Selects the OPTIONAL active analog output function. "oFF" = Off "4-20 mA" = 4-20 mA "0-10V" = 0-10V	oFF (✓) 4-20 mA 0-10V
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The calibration of the active analog output is independent of the scale calibration (F16/F17). Use F23 to calibrate (adjust) the analog output.

In normal operating mode, the analog output tracks the displayed weight, so you must first have the indicator configured and calibrated correctly for it to work properly.

NOTE1: *The unit ships from the factory pre-configured to 4-20 mA.*

NOTE2: Unlike typical 2-wire transmitters, an external DC power supply is not required when the indicator is configured for 4-20 mA.

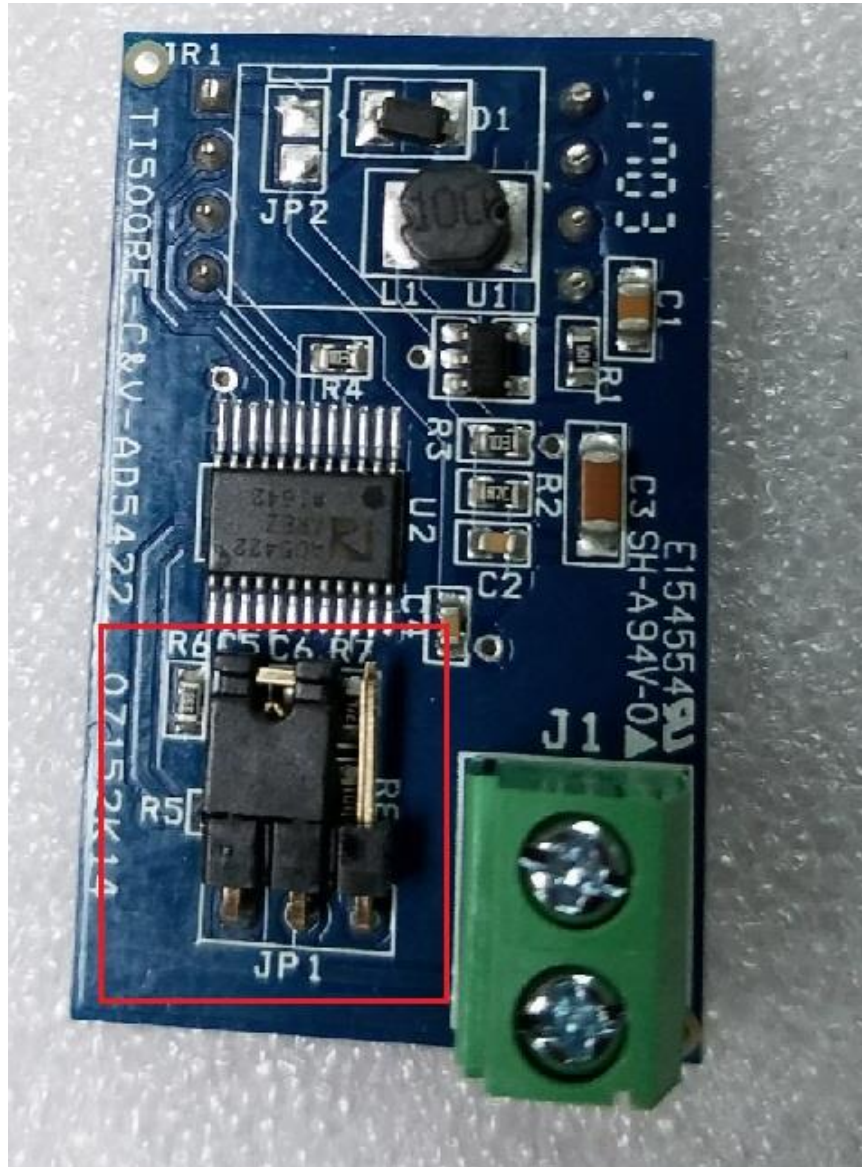
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¹ Actual range is 0 – 24 mA

**Addendum to TI-700 Installer's Manual
For ACTIVE Analog Output Option 07152k14**

How to configure the active analog output for 4-20 mA:

1. Remove power and carefully open the unit.
2. Locate the small circuit board marked "07152K14" and position the jumper onto JP1 as shown below:



3. Set F24 to "4-20 mA"

Addendum to TI-700 Installer's Manual For ACTIVE Analog Output Option 07152k14

How to configure the active analog output for 0-10 V:

1. Remove power and carefully open the unit.
2. Locate the small PCBA marked "07152K14" and position the jumper onto JP1 as shown below:



3. Set F24 to "0-10u"

Addendum to TI-700 Installer's Manual For ACTIVE Analog Output Option 07152k14

Coarse Calibration (F23)

Use F23 to perform a coarse calibration of the analog output by inputting the numbers from the table below. At the prompt, use the keypad to derive the numbers.

Use the TARE key to decrease the displayed number by 1
Use the PRINT key to increase the displayed number by 1
Use the ZERO key to decrease the displayed number rapidly (*)
Use the UNITS key to increase the displayed number rapidly (*)

When done, press the SET (MODE) key.

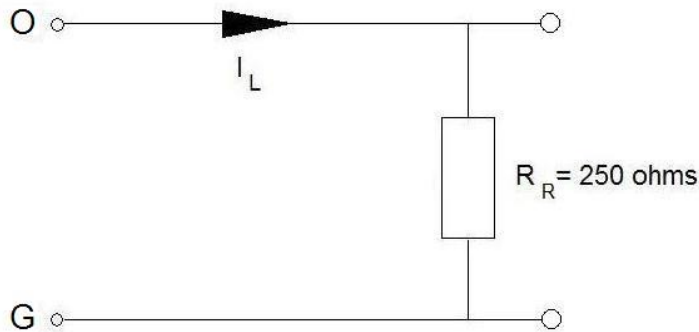
(*) especially if this key is pressed and held

Desired Output at Zero	dA-0	Desired Output at Full Scale	dA-1
0 mA	50	24 mA	65530
4 mA	10997	20 mA	54848
0 V	50	10 V	55360

NOTE: Numbers shown in bold are factory default

4-20 mA Analog Output

A 16-bit DAC is used along with a current loop transmitter. The current flows out of the 'O' terminal and back into the 'G' terminal.



Addendum to TI-700 Installer's Manual For ACTIVE Analog Output Option 07152k14

Here is how to bench test the 4-20 mA output:

You will need a 250-ohm precision resistor (1/4W is okay) and a digital multimeter.

1. Make sure that the TI-700 and the analog output board are configured for 4-20 mA. (see previous section)
2. If necessary, perform a coarse calibration (F23) – see previous section.
3. With the AC power disconnected from the TI-700, connect the 'O' and 'G' wires to an external 250 Ω precision resistor as shown in the test diagram above.
4. Set your digital multimeter to VDC
5. Apply power and execute the F23 procedure (refer to the setup/operation manual for instructions on how to access the 'F' menu).
The screen will show "dA-0" followed by a number
6. The analog current output should be 4 mA; therefore, the voltage measured across R_R should be about 1 VDC. (4 mA * 250 Ω)
7. Use the keypad to digitally fine tune (adjust) the measured voltage to exactly 1 VDC.
Use the TARE key to decrease the displayed number by 1
Use the PRINT key to increase the displayed number by 1
Use the ZERO key to decrease the displayed number rapidly (*)
Use the UNITS key to increase the displayed number rapidly (*)
8. When done, press the SET (MODE) key.
The screen will show "dA-1" followed by a number
9. The analog current output should be 20 mA; therefore, the voltage measured across R_R should be about 5 VDC. (20 mA * 250 Ω)
10. Use the keypad to digitally fine tune (adjust) the measured voltage to exactly 5 VDC.
Use the TARE key to decrease the displayed number by 1
Use the PRINT key to increase the displayed number by 1
Use the ZERO key to decrease the displayed number rapidly (*)
Use the UNITS key to increase the displayed number rapidly (*)
11. When done, press the SET (MODE) key.
The screen will revert up to the F23 menu header
12. Exit to normal operating mode.
At zero weight, the output will be 4 mA (or 1 VDC)
At maximum scale capacity, the output will be 20 mA (or 5 VDC).

NOTE 1: You may also use an ammeter in series with the resistor to measure the current

(*) especially if this key is pressed and held

Addendum to TI-700 Installer's Manual For ACTIVE Analog Output Option 07152k14

Here is how to connect the 4-20 mA output to your controller:

Please note that this TI-700 option board does not require use of the +24 VDC output terminals typically provided by your controller's analog input module.

1. First, determine if your controller requires an external receiver resistor as it may already be built-in to the analog input circuit of your controller. If it is not built-in, then you must add the receiver resistor externally to the input terminal.

NOTE: When adding an external receiver resistor, you must do so at the controller input terminal, and *not* at the TI-700 output terminal.

2. Connect the TI-700 to the controller as follows:
Connect 'O' on the TI-700 to the analog input terminal of your controller
Connect 'G' on the TI-700 to the common (ground) terminal of your controller
3. If your controller has both a voltage input (V_{in}) and a current input (I_{in}) then you may need to configure your controller to read the current input

0-10 V Analog Output

Set your digital multimeter to VDC and then simply measure the output voltage directly across the 'O' and 'G' terminals. A receiver resistor is *not* required – this output should be connected to a high impedance input.

Here is how to bench test the 0-10 V output:

You will need a digital multimeter.

1. Make sure that the TI-700 and the analog output board are configured for 0-10 V. (see previous section)
2. Perform a coarse calibration (F23) – see previous section.
3. Set your digital multimeter to VDC
4. Apply power and execute the F23 procedure (refer to the setup/operation manual for instructions on how to access the 'F' menu).
The screen will show "dA-0" followed by a number
5. The analog output should measure 0 VDC
6. Use the keypad to digitally fine tune (adjust) the measured voltage to exactly 0 VDC.
Use the TARE key to decrease the displayed number by 1
Use the PRINT key to increase the displayed number by 1
Use the ZERO key to decrease the displayed number rapidly (*)
Use the UNITS key to increase the displayed number rapidly (*)

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**Addendum to TI-700 Installer's Manual
For ACTIVE Analog Output Option 07152k14**

7. When done, press the SET (MODE) key.
The screen will show "dA-1" followed by a number
8. The analog output should measure 10 VDC
9. Use the keypad to digitally fine tune (adjust) the measured voltage to exactly 10 VDC.
Use the TARE key to decrease the displayed number by 1
Use the PRINT key to increase the displayed number by 1
Use the ZERO key to decrease the displayed number rapidly (*)
Use the UNITS key to increase the displayed number rapidly (*)
10. When done, press the SET (MODE) key.
The screen will revert up to the F23 menu header
11. Exit to normal operating mode.
At zero weight, the output will be 0 VDC
At maximum scale capacity, the output will be 10 VDC.

Here is how to connect the 0-10 V output to your controller:

1. Connect the TI-700 to the controller as follows:
Connect 'O' on the TI-700 to the analog input terminal of your controller
Connect 'G' on the TI-700 to the common (ground) terminal of your controller
2. If your controller has both a voltage input (V_{in}) and a current input (I_{in}) then you may need to configure your controller to read the voltage input

(*) especially if this key is pressed and held

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