

Addendum to TI-500E SS Installer's Manual For ACTIVE Analog Output Option 05262K14

OVERVIEW OF CHANGES

1. For Version Code 1.7 and higher please disregard the ANALOG OUTPUT OPTION INFO section found in the current manual and use the information presented here instead.
2. The F23 instructions have changed
3. An additional menu selection has been added (F24)

GENERAL INFORMATION

This digital indicator provides an active analog output from two terminals designated 'O' and 'G'. The output terminals are found on J2 which is present on the option PCBA located inside of the unit.

There are two types of active analog outputs available:

1. 4-20 mA¹
2. 0-10 V

Select between the two types by positioning the JP1 shunt block inside of the unit and also configuring F24. (Refer to table below)

| | | |
|---|--|-------------------|
| F24 Analog Output Function | Selects the active analog output function. "0" = 4-20 mA "1" = 0-10V | 0 (✓) 1 |
|---|--|-------------------|

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 in order 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.

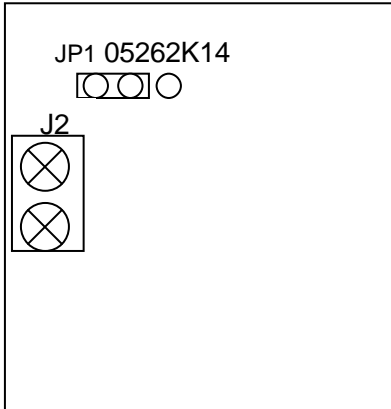
Continued =>

¹ Actual range is 0 – 24 mA

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

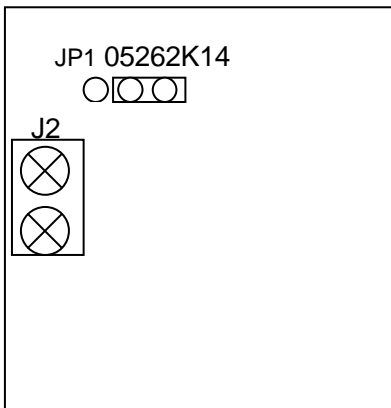
1. Remove power and carefully open up the unit.
2. Locate the small PCBA marked "05262K14" and position the shunt block (jumper) as shown below:



3. Set F24 to "0"

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

1. Remove power and carefully open up the unit.
2. Locate the small PCBA marked "05262K14" and position the shunt block (jumper) as shown below:



3. Set F24 to "1"

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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.

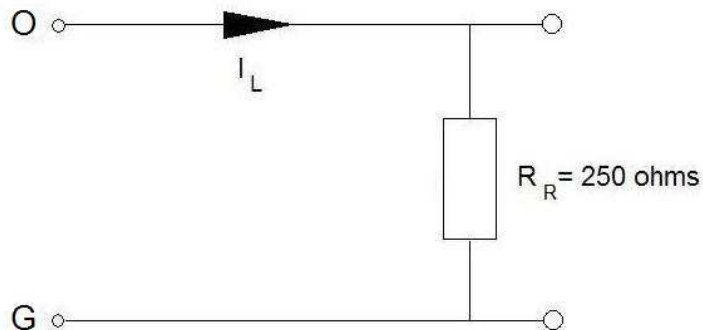
(*) especially if this key is pressed and held

| 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.



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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-500E SS 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-500E SS, 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 back 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

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

Please note that this TI-500E SS 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-500E SS output terminal.

2. Connect the TI-500E SS to the controller as follows:
Connect 'O' on the TI-500E SS to the analog input terminal of your controller
Connect 'G' on the TI-500E SS 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-500E SS 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 (*)

(*) especially if this key is pressed and held

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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 back 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-500E SS to the controller as follows:
Connect 'O' on the TI-500E SS to the analog input terminal of your controller
Connect 'G' on the TI-500E SS 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