OPOS Test Checklist and FAQ's

Avery Weigh-Tronix/Salter Brecknell provides several scales as well as an OPOS Service Object (S.O.) software driver that can be integrated into your POS system.

There are three critically important functional areas of the scale/driver combination that will be part of your POS system;
1. Scale RS-232 serial communications
2. Scale communications working in conjunction with the S.O.
3. Scale communications working in conjunction with the S.O. and the C.C.O.

Each of these functional areas should be tested and verified before attempting to access the scale from within your POS application.

This checklist outlines a step-by-step process that will help you test and verify proper operation of these important functions. It is recommended that these steps be performed in the order that they are presented.

1) Configure the Scale
This is necessary so that the scale can communicate with your computer.

- Configure the scale Protocol for: **Ecr**
- Configure the scale serial communications for: **96-E** (i.e. 9600 Baud, Even Parity)

2) Install the WTScaleAdmin Application
This program is used to test communications, set a profile and verify OPOS control functionality.

- Install the WTScaleAdmin v2.0 administration utility.

Note: this package also automatically installs OPOS CCO v1.6 for Scales by default.

3) Install the OPOS CCO v1.13 (Optional)
At this point you may install the newer OPOS CCO v1.13 for Scales is you wish.

4) Setup a WTScaleAdmin Profile

- Launch the WTScaleAdmin application.
- Click on the **Scale Profile** tab.
- In the **Profile Details** section, verify that the **Service Version** indicated reflects the correct version (i.e. 1.6 or 1.13) of the CCO that you desire.
- Make note of your profile name as you will need to refer to it later.
- In the **Serial Communications** section, select the RS-232 **Serial Port** to be used on your computer.
- In the **Serial Communications** section, set the **Baud Rate**, **Data Bits** and **Parity** to match the settings of the scale (i.e. **9600**, **7**, **Even** respectively).
- In the **Scale/SO Instance** section, type in a **Profile Name** of your choosing, then click the **Add** button.

5) Perform Preliminary Scale Communications Test – (Verifies Scale)

This test verifies simple (low-level) serial communications between the scale and your computer. This test is important because it completely bypasses the Service Object and Common Control Object.

- Click on the **Scale Test** tab.
- In the **Serial Communications** section, select the RS-232 **Serial Port** to be used on your computer.
- In the **Serial Communications** section, set the **Baud Rate**, **Data Bits** and **Parity** to match the settings of the scale.
- Connect a DB9 RS-232 serial cable between the scale and the computer Serial COM port.
- Make sure that the scale is powered-on and displaying a non-zero weight value.
- In the **Test** section, select 'Request weight: W<CR>' from the **Scale Function** drop-down list, then click the **Send** button.

    The Scale Response should immediately indicate the displayed weight along with other special control characters. For example: `<LF>01.400LB<CR><LF>S00<CR><ETX>`

IMPORTANT

Do not proceed further until this test is successful. The Scale/OPOS Control combination will not work within your POS application if this test failed. Check all scale settings, cable connections and WTScaleAdmin Scale Test settings and retry.

If you are unable to run this test successfully you may contact the Salter Brecknell service group at the address provided at the end of this document.

6) Perform Service Object Test – (Verifies Scale and S.O.)

This test verifies that serial communications between the scale and the Service Object installed on your computer. This test is important because it omits the Common Control Object.

- Close/Exit the WTScaleAdmin application if it is currently open.
- Launch the WTScaleSO Test Program.
- In the **Scale Profile** section, enter the profile name exactly as you created it in the WTScaleAdmin program previously.
- Click on the **Connect** button.
- Observe the **Status** display. If the Open, Claim, and Enabled results all indicate **SUCCESS**, then the scale and Service Object are functioning properly.
- In the **Scale Data** section, click on the **Read Weight** button.

  The Scale Response should immediately indicate the displayed weight along with other information in the Status section.

IMPORTANT

Do not proceed further until this test is successful. The Scale/OPOS Control combination <u>will not</u> work within your POS application if this test failed. Check all scale settings, cable connections and WTScaleAdmin Scale Test settings and retry.

If you are unable to run this test successfully you may contact the Salter Brecknell service group at the address provided at the end of this document.

7) Perform Interactive Check Health Test (Verifies Scale, S.O. and C.C.O.)

This test verifies that the scale, Service Object, and Common Control Object all work together successfully to acquire weight data from the scale.

- Close/Exit the WTScaleSO Test Program if it is currently open.
- Launch the WTScaleAdmin application.
- Click on the **Common** tab.
- In the **Common Methods** section, click on the **Open** button.
- In the **Common Methods** section, click on the drop-down list box next to the ClaimDevice button and choose the **500 mSec** selection.
- In the **Common Methods** section, click on the **ClaimDevice** button.
- In the **Common Properties** section, <u>check the box </u>next to **DeviceEnabled** property.

Examine the status bar along the bottom of the screen and verify that Opened: **YES**, Claimed: **YES** and Enabled: **YES** are indicated.

- If status indicates Opened: **YES**, Claimed: **YES** and Enabled: **YES**, then click on the drop-down list box next to the CheckHealth button and choose the **OPOS_CH_INTERACTIVE** selection in the **Common Methods** section.
- In the **Common Methods** section, click on the **CheckHealth** button.

A test panel should now pop-up and display the same weight value as on the scale. The test weight display value should change along with the scale weight changes, but will be shown only when the value is STABLE.

IMPORTANT

Do not proceed further until this test is successful. The Scale/OPOS Control combination <u>will not</u> work within your POS application if this test failed. Check all scale settings, cable connections and WTScaleAdmin Scale Test settings and retry.

If you are unable to run this test successfully you may contact the Salter Brecknell service group at the address provided at the end of this document.

8) DONE

If the interactive health check was successful, then you may now click on the test panel Close button and may proceed to attempting full integration with your POS application.

Frequently Asked Questions

Q1: Can we use an off-the-shelf 9-pin RS-232/USB adapter cable to connect a scale to a computer using the Avery Weigh-Tronix OPOS Scale Service Object?

A1: Maybe. However, due to the wide variation in quality and RS-232 compatibility when used with varying desktops, laptops and operating systems, it is beyond the control of Avery Weigh-Tronix to guarantee that any given adapter will work in your system. It is recommended that physical RS-232 COM port hardware devices be used instead if possible.

Why Most Low-Cost USB/Serial Adapters Do NOT Work With Win7 and Vista

The Short Explanation.
Most low-cost USB to Serial adapters does not work with Windows 7 and Vista 32/64-bit because these adapters are made with a low-cost processor chip meeting only a minimum of the industry's standard requirements. The physical quality of the chip is usually fine however the drivers for the chipset are often poorly written programs which makes the adapter unstable and unreliable and not fully compatible with Windows 7 and other current operating systems. Because of this you will in most cases be unable to make a low-cost adapter work with Windows 7 and Vista, especially the 64-bit versions, and you can expect some of the following typical errors:

- Computer freeze
- Invalid debug DLL
- Computer crashing

- Driver problems
- Unable to connect to your device
- Unable to establish a COM port

The long technical explanation.
Most low-cost USB to Serial adapters (also called USB to RS232 adapters or converters) are not "true serial", they handle only approximately 60% of the 'common' RS232 uses/devices, which means that they will only work with slightly more than half of all commonly used serial devices such as printers, GPS units, handheld devices, scales, cameras and other typical serial devices.

Other problems you might experience with a low-cost adapter.
Due to latencies (data delays) and the way data is transmitted, a USB adapter cannot be 100% transparent to the device you are connecting to your computer, so among other things successful communication is a matter of timing between data sent from your computer, converted by the adapter and then received by your serial device. If this timing is off just slightly you will be unable to communicate successfully.
Many programs and devices were written and constructed for a serial port having a 16-character FIFO - or possibly for the original serial port that didn't have any FIFO at all. Several USB adapters have hundreds of bytes of FIFO, so it matters a lot if the data is sent using bulk transfers, and if the device is using any type of control transfer. This scenario is giving many low-cost adapters bad timing issues with many programs and devices, which in general means that it won't work properly with either your computer or the device you connect to the adapter.

What is limited compatibility?
Since most low-cost USB to Serial adapters use a low-cost processor chip, they have only limited compatibility with Windows Vista and Windows 7. Limited compatibility means that either the adapter or the driver might or might not work with your Vista/7 computer, it all depends on your computer's particular hardware, installed Windows components and service packs, conflicting drivers and other peripheral devices, and even your processors bios version. A high-quality adapter with well-written drivers address all these factors which are hard-coded into the drivers and makes sure that all these processes, timing, hardware and everything else goes smooth so you can communicate with your serial device properly.

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Q2: What's the quickest way to determine if an adapter will work in my POS system?

A2: The quickest way is to actually attempt to read weight data from the scale using the adapter. To do this, the link between the scale and the computer should be as direct and simple as possible. That is, the Service Object (SO) and Common Control Object (CCO) should not be part of the communications path. The WTScaleAdmin application can be used to do the test and has the ability to communicate with the scale by completely bypassing the SO and CCO driver layers.

After installing your adapter (and its latest driver software from the manufacturer's website), you should determine (and/or set) the desired COMx port using the Device Manager on your computer.

Assuming you already have the WTScaleAdmin application installed, you can follow the instructions given in Steps **1** and **5** above to see if you are able to communicate with the scale using your adapter. Note that for this test, you do not need to have a 'profile' set in the WTScaleAdmin application. If you are able to read the scale weight data, then the adapter is compatible. Otherwise, you may have to try locating and testing a different adapter

Q3: Any suggestions when trying to use RS-232/USB adapters?

A3: An RS-232/USB adapter cable should be of premium or professional grade quality and install a 'virtual com port' driver that can be mapped as a standard COM port through the Device Manager on your computer.

If a physical COM port is available on the computer, every effort should be made in order to make that port available for scale communications. For example, perhaps another serial peripheral device could operate using an adapter which would free-up the COM port.

Make sure you get the latest drivers. Initially you can try the drivers contained on the CD, but they are often older than the ones on the manufacturer's website. After you install the drivers, it will appear as a valid COM port to all of your applications. Find out from the Device Manager what the COMx name is (COM1, COM2, COM6 etc) of the USB-Serial device, and if possible renumber it to use a low (e.g. COM1 or COM2) number, then reference that COM port number in your software just as if you were referencing a real COM port.

Note: Many software applications and hardware (e.g. modems) like to work with COM1, and will not let any other applications use it. Try using COM2 first if possible. Otherwise, you may need to disable some other software or device already running on COM1 or COM2 to release one of those ports.

Another problem with many USB adapters is that they don't fully comply with the RS232 voltage level standards. This causes failures in communication to some equipment. The standard requires the transmitter to use +12V and -12V, but requires the receiver to distinguish voltages as low as +3V and -3V. Many of the USB to RS232 adapters use levels of only +5 and -5 volts and in some low-cost devices they use only +5 volts and 0 volts. These types of devices will likely fail.

Revision: 1.0

Q4: Any other options for laptop adapters?

A4: Another option is a PC Card serial port. If your laptop has a PC Card or a CF card slot some manufacturers make a line of serial ports that use these slots. The nice thing about these is that they work as a regular built-in serial port.