

# Scrap Dragon Universal Scale Interface

## Description, Guidelines & Requirements

### General

The Scrap Dragon Universal Scale Interface takes advantage of the continuous mode computer output that is produced by most electronic scale indicators. Technically this is called asynchronous non-polling simplex communication and is similar to the method used to update external scoreboards. The company that maintains your scales can provide the required cables and program the scale indicator to meet these requirements.

### Scale indicator requirements

The scale indicator must be capable of outputting a continuous signal for computer interfacing on at least one serial port (RS232C). A minimum of 10 updates per second (transmission rate of one data record every 100 milliseconds) is preferred.

### Physical connection

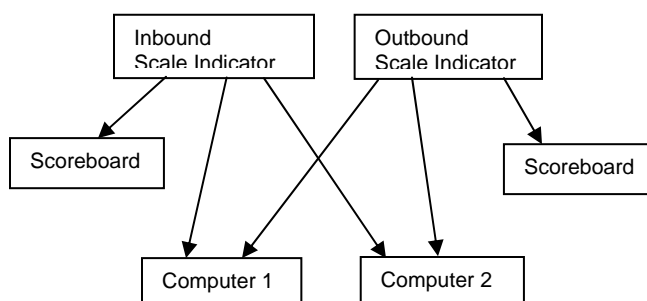
The scale is connected to the computer using an RS232 serial connection. Since no data is transmitted from the computer to the scale, it is only necessary to connect the transmit pin on the scale to the receive pin on the computer and signal ground to signal ground. The basic pin outs are as follows:

Scale Indicator	9 pin	25 pin		Computer - 9 pin female	
Transmit	Pin 3	Pin 2	→	Pin 2	Receive
Signal ground	Pin 5	Pin 7	→	Pin 5	Signal Ground

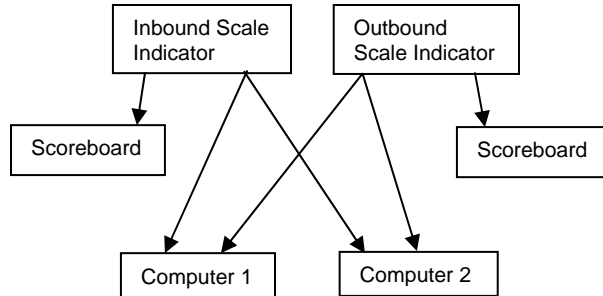
### Multiple Scales and Indicators

It is often necessary to have multiple computers reading the same scale, or to have multiple scales attached to a single computer, or both. Each workstation running Scrap Dragon can read weights from up to 4 different scales. There are 3 ways that multiple scales and/or multiple computers can be connected.

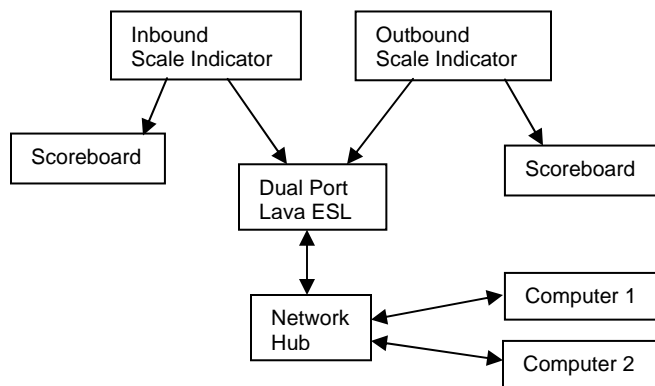
1. Direct connection using multiple serial ports on the indicator(s) connected to multiple serial ports on the computer(s). This requires a serial port on the indicator for each computer and a serial port in the computer for each indicator.



2. Direct connection using a single serial port on the indicator(s) connected to multiple serial ports on the computer. If additional ports are unavailable on the scale indicator, but sufficient ports are available on each computer, then a 'Y' cable can be used to connect the computers as follows.



3. Connection using Serial to Ethernet conversion. Using the Lava ESL (ether-serial link), the serial output of the scale is converted to Ethernet which can then be read from any computer on the local area network without the need for a serial port in each computer.



## Scale indicator configuration

The serial ports on the scale indicator must be programmed to produce the required output. The exact procedures and parameters vary for each device. Consult your scale indicator manual for specific instructions or ask your scale maintenance company to perform the required configuration. See the programming guidelines below for typical parameter setting.

## Scale configuration guidelines

These vary by manufacturer and device. Not all will apply in every case.

Parameter	Setting
Serial port enable/disable	Enable
RS232 or 20 ma current loop	RS232
Communications Mode	Continuous
With Checksum	No

Single Line or GTN	Single Line – Gross only
Lb or kg	Lb
Simplex or duplex	Simplex
Data Format	Condec or Computer
Start of Text	ASCII 2
Suggested communication parameters:	
Baud	9600
Data Bits	8
Stop Bits	1
Parity	None

Provided that the output is continuous, Scrap Dragon can be configured to work with a variety of communication parameters and data formats. **Completing a Scrap Dragon Universal Scale Interface Worksheet for each scale indicator will facilitate the configuration of the Scrap Dragon Universal Scale Interface.**

## Testing the interface

The easiest and most reliable way to test the interface is by using the Windows communications program, Hyper Terminal. This test should be done before attempting to configure the Scrap Dragon Universal Scale Interface. Using HyperTerminal set up a direct connection to the com port. Set up the baud rate, data bits, stop bits and parity to match those programmed in the indicator. If the interface is working correctly you will see the data stream that is being output from the scale. If not, verify that the cable is made correctly, and that the indicator has been programmed for continuous output.

## Analyzing the data string

Scrap Dragon will only read from a scale indicator that is in **pounds**, is in **gross mode** and is **not in motion**. To properly configure the Scrap Dragon Universal Scale Interface, analyze the position and value of the characters in the string and note them on the attached worksheet. Place some weight on the load cell to determine if a motion character is indicated. For the purpose of configuration, it is important to determine:

1. The character that is used to indicate the start of text, usually ● (ASCII 2)
2. The starting and ending position of the weight, including the minus sign, when negative.
3. The position that indicates the units (lb or kg) and the character that indicates pounds.
4. The position that indicates motion and the character that indicates that the scale is stable (no motion, usually a space).
5. The position that indicates the mode (Gross, Tare, Net) and the character that indicates Gross Mode.

## Configuring the Scrap Dragon Universal Scale Interface

To configure Scrap Dragon to read from the attached scales, the parameters have to be specified in Scrap Dragon, Back Office, Maintenance, Setup, Local Computer Options, Peripherals Tab.

The screenshot shows the 'This Computer Settings' window with the 'Peripherals' tab selected. The window title bar includes 'This Computer Settings', version '7.0416', and the file path 'C:\DRAGONLOCAL\ocdefs.dbf'. The 'Peripherals' tab is active, showing various configuration sections. The 'ID Data Capture Configuration' section includes options for 'ID Capture Device' (None, Mag Stripe Reader, OCR Scanner) and 'OCR Setup' (Country: United States, State: Georgia, Auto Detect State checked). The 'Other Peripheral Options' section includes checkboxes for 'ATM Encoder', 'EZCash', and 'Signature Pad', each with associated IP Address and Port fields. The 'Scale Configuration' section is highlighted with a red box, showing 'Interface By' options (Number, Custom Program, None (manual entry)) and a table for scales. The '# of Scales' dropdown is also highlighted with a red box and set to '2'. The 'Attached Scales' button is visible below the scale table.

Scale	Button Label	Interface By	Value	...
Scale 1	platform scale	Number	1	...
Scale 2	truck scale	Number	3	...
Scale 3		Number		...
Scale 4		Number		...

Manual Gross Weight: A  
Manual Tare Weight: A  
Attached Scales: # of Scales: 2  
Save Exit

Select “Interface By Number” and set the “# of Scales” to the actual number of scales attached. Click “Save”, then click ‘Attached Scales’. If no scales have been defined, then the system will display a warning indicating that the first scale is being added. If scales have already been defined, then either select a scale to edit or add a new one.

This Computer Settings

**Attached Scales** 7.0117

Module: **List** Details

**Identification**

Scale Number: 1 Scale ID: NF Last Change: 05/13/2007

Make: Rice Lake Changed By: 104

Model: IQ-300 Unit Increment: 1

**Communication**

☒ Keep port open  
☐ Open/Close with read

Comm Port: 1 Baud Rate: 9600 Data/Stop: 8/1 Parity: 0 Buffer Size: 1024

**Data String**

☐ Data Logging (Debug Mode)

Max Chars to Read (150): 150 # of Matching Reads (0): 0

Weight Begins: 3 Weight Ends: 9 Start of Text: chr(2)

Motion Position: 12 No Motion Char: chr(32)

Units Position: 10 lb Units Char: chr(76)

Mode Position: 11 Gross Mode Char: chr(71)

Prev Next Add Delete Save Undo Exit

If the “List” tab is selected, switch to the ‘Details’ tab.

### Identification

Enter a 2 character “Scale ID”. Select the make from the predefined list and enter the model number. Indicate the Unit Increment (division) of the scale, usually 1 pound for platform scales and 20 pounds for truck scales.

### Communication

The comm parameters must be set as programmed in the indicator. The receive buffer size is normally 1024. If the port is shared using a Lava ESL, the program will have to open and close the port with each read, otherwise, it is much faster to keep the port open while Scrap Dragon is running.

### Data String

Selecting the make from the predefined list will complete much of the Data String information if the scale manufacturer uses a known, static data format. Highly programmable indicators such as GSE and Weightronix will have to be manually configured to match the string which has been programmed in the indicator.

The “maximum characters to read” is normally set to 150 which will allow the program to timeout after approximately 10 unsuccessful attempts to get a steady weight reading. The “# of matched reads” is normally set to zero, which will use the first good read. For higher accuracy, but slower read times and more read failures, it can be set to a value of 1 or more. Save and exit after all attached scales have been defined.

**This Computer Settings** 7.0416 C:\DRAGONLOCAL\locdefs.dbf

Modules | **Peripherals** | Scale Printing | Cashier Printing | Sell Printing | Other Printing | Imaging

**ID Data Capture Configuration**

ID Capture Device

☐ None

☐ Mag Stripe Reader

☒ OCR Scanner

**OCR Setup**

Country: United States

State: Georgia

☒ Auto Detect State

Calibrate Clean

**Other Peripheral Options**

IP Device Sharing

	IP Address	Port
<input type="checkbox"/> ATM Encoder	192.168.1.	3033
<input type="checkbox"/> EZCash	192.168.0.	1001
<input type="checkbox"/> Signature Pad	pleskinen.	3337

ATM Encoding Type: DEMO

**Scale Configuration**

Button Label	Interface By		
	<input checked="" type="radio"/> Number	<input type="radio"/> Custom Program	<input type="radio"/> None (manual entry)
Scale 1 platform scale	1		
Scale 2 truck scale	3		
Scale 3			
Scale 4			

Manual Gross Weight: A Manual Tare Weight: A

Attached Scales: # of Scales: 2

Save Exit

On the peripherals tab, indicate the button label and scale number for each attached scale. Save and Exit. Test the scale reading using the scrap buying module.

## Troubleshooting Error Messages

### **Unable to open comm port.**

If this error occurs in Scrap Dragon, verify that the port isn't still open in HyperTerminal. If the port is not open in HyperTerminal and you still get the message in Scrap Dragon, then try and open the port in HyperTerminal. Normally, if the port can't be opened in Scrap Dragon then it also can't be opened in HyperTerminal. In HyperTerminal, the error often includes a message that the port is in use by another telephony device.

Look for other devices that might be trying to use the comm port, such as HotSync Manager. Sometimes, Windows will detect the continuous output from a scale and think that it is receiving input from a serial ball point mouse. Windows will then automatically install the serial ball point mouse which will prevent Scrap Dragon or HyperTerminal from opening the port. To resolve this, go into the Windows Device Manager and disable the Microsoft Serial Ball Point Mouse.

### **Unable to get a steady reading from the scale**

#### **Indicator must be in pounds**

#### **Indicator must be in Gross mode.**

Verify that the indicator is in pounds, is in gross mode and that the load cell is not in motion. If the errors persist, then this indicates that the data string isn't specified correctly.

To analyze the string, go into Scrap Dragon, Back Office, Maintenance, Setup, Local Computer Options, Peripherals Tab, Attached Scales. Select "Data Logging (Debug Mode)". Save and Exit. Then test the weight reading again in scrap buying. Status windows will display the parsing of the data. When the maximum number of characters have been read (this will take longer than without data logging on) and the error message has been received, a grid will be displayed indicating the ASCII code and the position of each character read. This information can be used to fine tune the parameters in the definition of the attached scales. Call Scrap Dragon tech support for assistance with analyzing this information.