S M A R T W E I G H I N G S O L U T I O N S

rinstrum

5200

(Totaliser/Checkweigher)

Digital Indicator
Reference Manual

For use with Software Versions 1.0 and above

Copyright

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SPECIAL NOTE
Trade Use of the Rinstrum 5200

This manual may occasionally make reference to Trade Use settings of the **5200**. Only properly marked Trade Certified versions of the **5200** can be used in **Legal for Trade** applications. Trade Certification is available only on **5200** instruments with software Versions 1.0 and above.

Some individual settings may not be legal for trade use. Please check regulations with the appropriate Weights and Measures Authority.

"Everything should be made as simple as possible, but not simpler."

- Albert Einstein -

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Table of Contents

1.   Introduction

The **Rinstrum 5200** is a precision digital indicator using the latest Sigma-Delta A/D converter to ensure extremely fast and accurate weight readings. The **5200** can be used as either a desktop or panel-mount instrument. The **5200** can be used as a general purpose indicator but also specialises in Product Totalising and Checkweighing (Catchweighing). Single Product Totalising is available as a standard feature with the **5200**. The Multiple Product Totalising feature (with up to 100 products) and the Checkweighing feature (with five bands) are also available when purchasing the optional "Smart" Software Option license.

The setup and calibration of the **5200** are digital, with a non-volatile security store (NVRAM) for all setup parameters. The NVRAM store ensures day to day operating settings (Zero, Tare, Clock, etc.) are retained when power is removed. There is a built-in clock for date-stamping printed outputs.

The instrument has up to four internal trip points with status display on the front panel. Output drive of these setpoints is provided by the optional setpoint card or combo card.

Two optional expansion cards are available for the **5200**. The first is the Setpoint card, which provides four opto-isolated open-collector output drive transistors and four opto-isolated inputs. The second is the Combo card that combines the analog and setpoint functions to provide one opto-isolated input and two opto-isolated open-collector outputs, along with a –10 to 10V or 4-20mA analog output.

The **5200** provides two serial outputs. These allow communication with external computers, PLCs, printers and remote displays. Serial 1 provides both RS-232 and full duplex RS-485 drivers. Serial 2 provides RS-232 only. An optional RS-232 to Current Loop converter is also available which converts the RS-232 output to a passive 20mA current loop transmitter.

Figure 1: Rinstrum 5200 Digital Indicator

1.1. The Manuals

This Reference Manual is part of a set of manuals covering the setup and operation of the Rinstrum **5200**. The set includes the following:

- **Reference Manual** - Contains detailed information on the calibration and setup of the **5200**. This manual is intended for use by Scale Technicians who are installing the instrument.
- **Operator Manual** - Aimed at the operation of the **5200**, and covers the day to day operation of the instrument. This includes details of the operation of the front panel and external key functions.
- **Quick Start Manual** - Intended for Scale Technicians who are familiar with the **5200** and simply need a quick reference to menu options and connection diagrams, etc.
- **Applications Manual** - Contains descriptions of commonly used functions and their associated settings.
- **Communications Manual** - Contains details on the extended networking capabilities (communications protocol) of the **5200**.

1.2. Document Conventions

The following document conventions are used throughout this manual.

Bold Text	Bold text denotes words and phrases to note.
\<Key\>	**\<Key\>** denotes a Keypad key. **Note:** In the Specifications section the **<** symbol means **less than** and the **>** symbol means **greater than**.
Item vs Field	Item and Field are interchangeable however Item is generally used to describe settings in the keypad, whereas Field is generally used to describe settings in the Viewer.
…	Ellipses indicate an incomplete listing. For space considerations in this Reference Manual complete listings may not be shown.
^	This symbol denotes one space (used in Automatic Formats page 113).
⊗	Items marked with ⊗ indicate that the setting is available only in Full Setup and is trade critical. When trade critical settings are changed the trade counter will be incremented.
®	Functions marked with ® are only suitable for remote inputs.

2.   Specifications

Performance	
Display	Backlit LCD with 20mm, 6 digit primary display
Display Resolution	Up to 100,000 divisions, minimum of 0.15 μV/division
Count-by	1, 2, 5, 10, 20, 50, 100 (Entered in Displayed Weight)
Operating Modes	Single Range, Dual Interval and Dual Range
Zero Cancellation	+ / – 2.0mV/V
Span Adjustment	0.1mV/V to 3.0mV/V full scale
Stability/Drift	Zero: < 0.1uV/°C, Span < 10ppm/°C, Linearity: < 20ppm, Noise: < 0.05μV p-p
Operating Environment	Temperature –10 to +50°C, humidity < 90% non condensing
Digital	
Setup and Calibration	Full digital with visual prompting in plain messages
Memory Retention	Full non-volatile operation
Digital Filter	Averaging from 1 to 200 consecutive readings
Zero Range	Adjustable from 4% to 100% of full capacity
A/D Converter	
Type	24 bit Sigma Delta
Resolution	8,388,608 internal counts
A/D Sync Filter	Adjustable, 12.5 to 60 cycles / second, FIR filter > 80dB
Load Cells	
Excitation	8 volts for up to 8 x 350 ohm load cells
Load Cell Connection	6 wire + shield
Serial Comms	
Serial Outputs	Dual RS-232, plus RS-485
Capabilities	Automatic transmit, network or printer drive
Clock	Battery backed clock and calendar fitted
Power Supply	
DC	12/24VDC 10VA
AC	86 - 260VAC 48 - 62Hz 3-5VA
Dimensions	
Body Size	135mm wide x 65mm high x 105mm deep
Front Bezel	179mm wide x 82mm high (Overhang is 20mm on left and 23mm on right of Bezel)
Panel cutout	DIN 43 700 -137(+1)mm wide x 68(+1)mm high
Options	
Setpoint Option Card	4 x isolated 50volt, 500mA open collector transistor drives and 4 x isolated digital inputs (5V to 28V)
Combo Option Card	–10 to 10V or 4-20mA opto-isolated analog output, two outputs and one input as per the setpoint option card
No. of Option Slots	One standard
Features	
Standard Features	C-tick approved. CE, OIML and NSC Approved
	Five point linearity correction
	Adjustable anti-vibration filter
	Single Product Totalising
"Smart" Software Options	Multiple Product Totalising Checkweighing (Catchweighing)

3. Installation

3.1. Introduction

The following steps are required to set up the indicator.
- Inspect indicator to ensure good condition.
- Use connection diagrams to wire up load cell, power and serial ports as required.
- Connect Power to indicator to turn the instrument On.
- Refer to the Setup (Keypad) section page 43 or the 5200 Viewer section page 62 for information on configuring the instrument.
- Refer to the Calibration section page 107 for information on calibrating the instrument.
- Refer to the "Smart" Software Option section page 15 for information on enabling any software options.
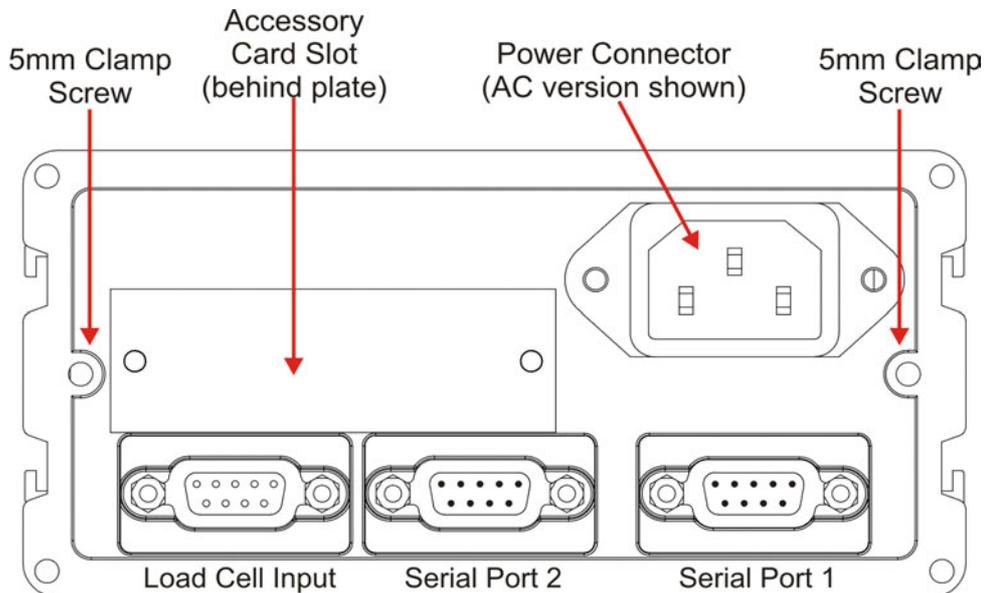
Figure 2: Rinstrum 5200 Rear Plate

3.2. General Warnings

- Indicator not to be subject to shock, excessive vibration or extremes of temperature (before or after installation).
- Inputs are protected against electrical interference, but excessive levels of electro-magnetic radiation and RFI may affect the accuracy and stability.
- The instrument should be installed away from any sources of excessive electrical noise.
- The load cell cable is particularly sensitive to electrical noise and should be located well away from any power or switching circuits.
- To ensure EMC or for RFI immunity, termination of the load cell shield at the **5200** end is important (ie. with a sound connection to the **5200** case via the DB9 backshell).

3.3. Electrical Safety

- For your protection all mains electrical hardware must be rated to the environmental conditions of use.
- The mains electrical outlet must be of protection earth contact.
- Pluggable equipment must be installed near an easily accessible power socket outlet. A permanently connected supply must have a readily accessible disconnect device.
- To avoid the possibility of electric shock or damage to the instrument, always switch off or isolate the instrument from the power supply before maintenance is carried out.

3.4. Cleaning

- To maintain the instrument, never use harsh abrasive cleaners or solvents. Wipe the instrument with a soft cloth **slightly** dampened with warm soapy water.

3.5. Panel Mounting

- Panel mounting requires the optional mounting kit, consisting of a pair of clamp slides.
- Remove the two 5mm screws attaching the side clamp slides to the rear of the case.
- Remove the slides to the rear.
- Fit the case into the panel from the front.
- Replace the slides into the slots.
- Replace the two 5mm clamp screws.
- Do not over-tighten the screws as this could damage the case.

3.6. DC Power Supply
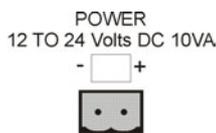
The DC supply need not be regulated, provided that it is free of excessive electrical noise and sudden transients. The **5200** can be operated from high quality plug-packs assuming there is sufficient capacity to drive both the instrument and the load cells.

Figure 3: Power Connection

3.7. AC Power Supply

The AC power supply for the **5200** can operate over a wide range of AC voltages. This power supply automatically adjusts to the incoming voltage. This means that the **5200** is extremely tolerant of voltage dips and brown out conditions, especially when running off 220 or 240VAC mains.

The **5200** uses a standard IEC power inlet.

3.8. Load Cell Signals and Scale Build

Very low output scale bases can be used with the **5200**, but may induce some instability in the weight readings when used with higher resolutions. Generally speaking, the higher the output or the lower the number of divisions, the greater the display stability and accuracy.

The **5200** has a milliVolt-per-Volt meter test mode that can be used to check scale base signal output levels. Refer to SCALE (Scale Base Test Display) page 60.

3.9. Connecting Shields

To obtain full EMC or for RFI immunity with the **5200**, the load cell shield MUST be connected electrically to the metal shell of the DB9 connector. Refer to diagrams below or to instructions supplied with connector.

The easiest way to connect the cable shield to the DB9 backshell is to fold the shield wires back over the outside of the cable insulation so the cable clamp of the backshell makes good electrical contact with the shield when installed.

A method for connecting the cable shield to the DB9 is to twist the shield wires together and solder the ends to the DB9 casing.
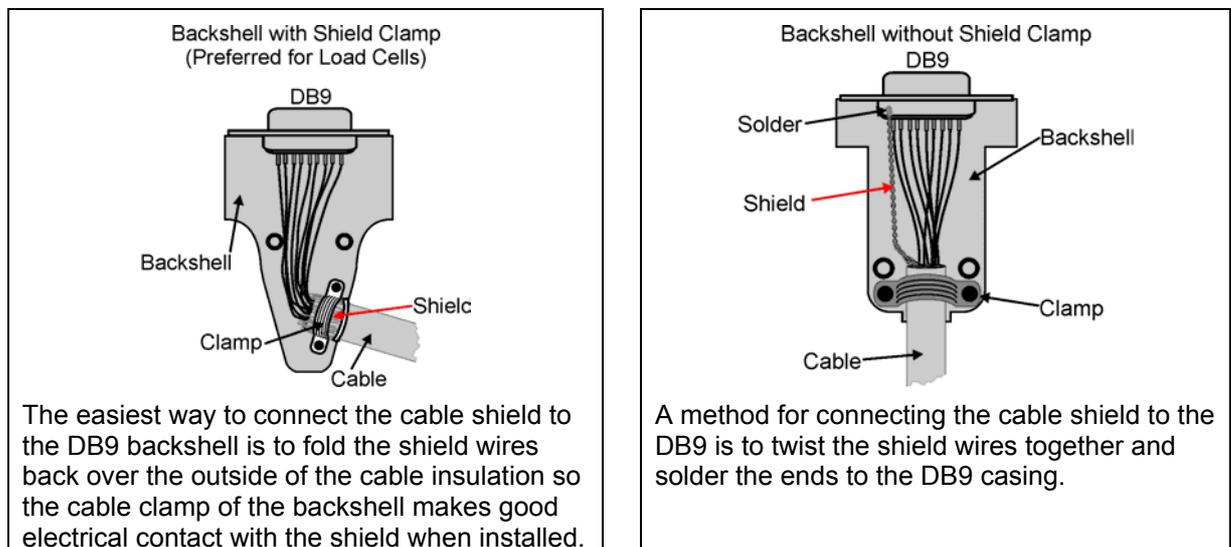
Figure 4: Cable Shield Connection

3.9.1. Cable Shield Connection and Earthing

- Care should be taken when connecting shields to maximise RFI immunity and minimise earth loops and cross-talk (interference) between instruments.
- For RFI immunity, termination of the load cell shield at the **5200** end is important (ie. with connection to the **5200** case via the shield connection).
- The **5200** enclosure is directly connected to the shield connections on the cables.
- The **5200** should be connected to earth via a single reliable link to avoid earth loops.
- Where each instrument is separately earthed, interconnecting cable shields should be connected at one end only.
- **Caution:** Some load cells connect the cable shield directly to the load cell (and therefore the scale base). Connection of the shield in this situation may be site specific.
- The instrument complies with relevant EMC standards, and will carry full CE approval (pending) **provided** case ground connection is correctly made. Resistance measured between **5200** case and nearest earth point should be less than 2 ohms.

3.10. Unused Pins

It is important to note that unused pins must NOT be connected. The reason being that the functions of the pins may not be compatible with equipment at the other end (eg. connecting output pins to a PC communications port may affect the operation of the PC). Consequently many commercial communications cables are not suitable for use.

3.11. Load Cell Connection

3.11.1. 6-Wire Connection

The connection is made using a standard DB9 male plug that is supplied with the indicator. The load cell is wired for a 6-wire system as follows:

Pin	Function		Pin	Function
1	Positive Excitation		8	Negative Signal
2*	Positive Sense		9	Positive Signal
3	Negative Excitation		5,6,7	Not connected
4*	Negative Sense			* Sense lines MUST be connected.

Table 1: 6-Wire Connections
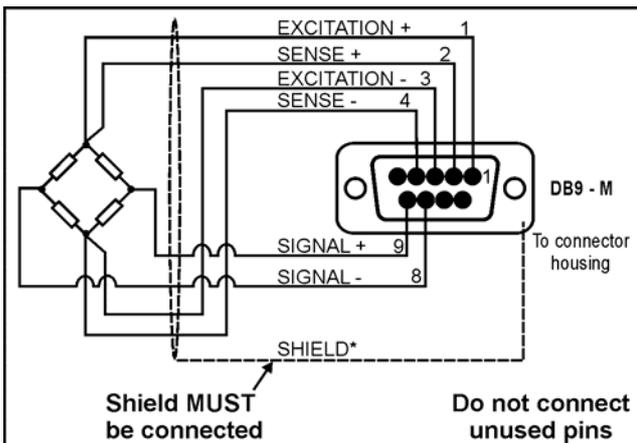
* For more information on Connecting Shields refer to page 10.

When wiring load cells, use only high quality shielded multi-core cable. The cable should be run as far away from any other cabling as possible (minimum separation distance 150mm).

3.11.2. 4-Wire Connection

Figure 6: 4-Wire Connection
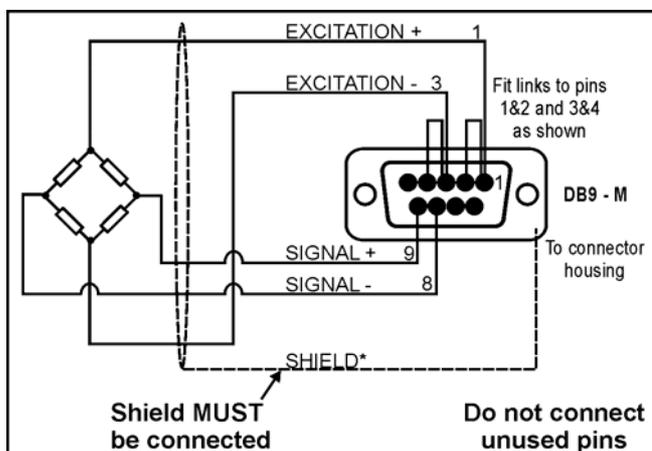
* For more information on Connecting Shields refer to page 10.

When a 4-wire load cell system is connected, pins 1 & 2, and pins 3 & 4 must be joined by solder bridge or wire bridge. This is to ensure that the excitation voltages are fed into the sense inputs (pins 2 and 4). Failure to do this will result in the incorrect operation of the instrument.

3.12. Serial Ports

3.12.1. Serial 1: Networking Port

All connections for this port are via the Serial 1 connector. This is a standard DB9 socket requiring a female DB9 plug. The RS-232 and RS-485 interfaces are connected in parallel within the **5200**, and both output exactly the same message. Note that the **5200** supports only 4-wire full duplex RS-485.

The connections for the outputs are shown below:

DB9 Pin No	Function	Description	Connect to
2	RXD	RS-232 Receive Line	External Device Transmitter (Usually Pin 3)
3	TXD	RS-232 Transmit Line	External Device Receiver (Usually Pin 2)
5	GND	RS-232 Digital Ground	External Device Digital Ground (Usually Pin 5)
Backshell	Shield		Cable Shield

Table 2: Serial 1: RS-232 - Networking Port - Connection Outputs
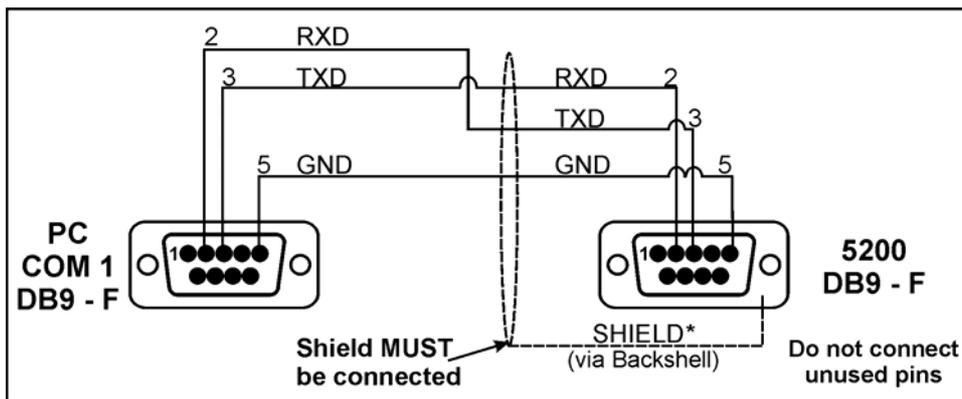
Figure 7: RS-232 Network Connection - 5200 to PC Using COM1
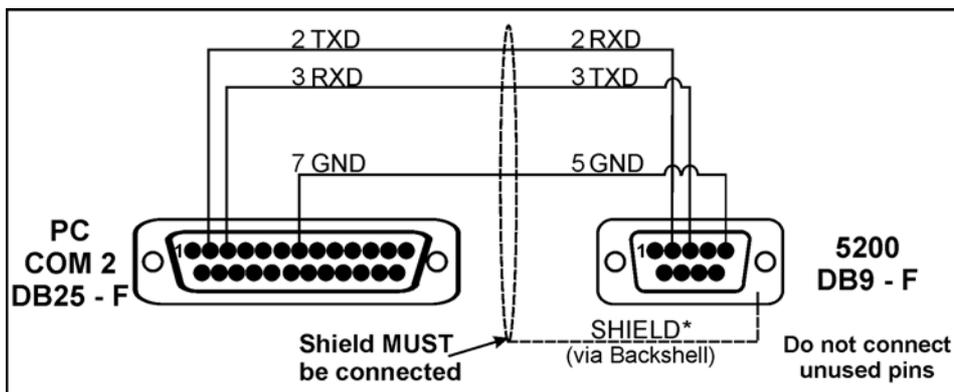
Figure 8: RS-232 Network Connection - 5200 to PC Using COM2

Pin No	Function	Description	Connect to
6	RA(-)	RS-485 Receive A (-)	External Network
7	RB(+)	RS-485 Receive B (+)	External Network
8	TA(-)	RS-485 Transmit A (-)	External Network
9	TB(+)	RS-485 Transmit B (+)	External Network
Backshell	Shield		Cable Shield

Table 3: Serial 1: RS-485 - Networking Port - Connection Outputs
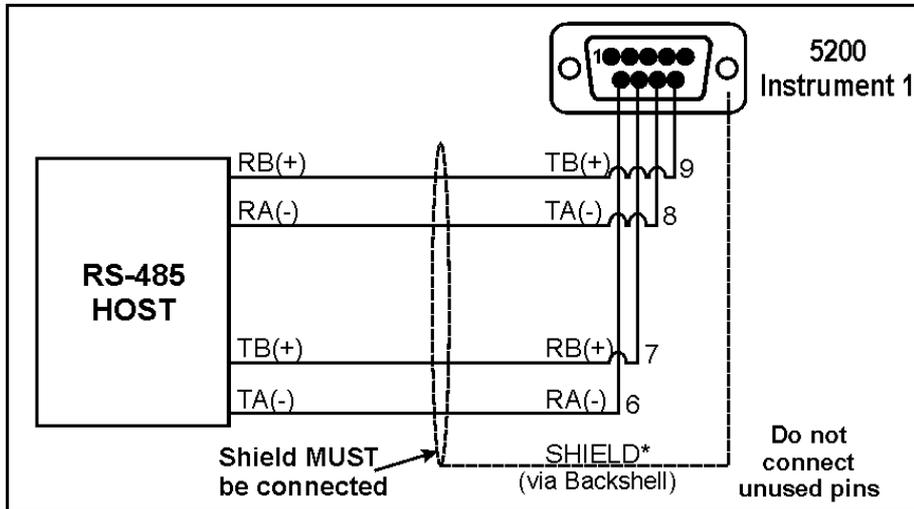
Figure 9: RS-485 – Networking Connection

3.12.2. Multi-Drop Networking

The following table shows how to connect a number of instruments in an RS-485 4-wire multi-drop network:

Cable 1			Cable 2				
Network Master	**5200 Instrument 1 – Serial 1**		**5200 Instrument 1 – Serial 2**		**5200 Instrument 2 – Serial 1**	
Function	Function	Pin	Function	Pin	Function	Pin
TA(-)	RA(-)	6	RA(-)	6	RA(-)	6
TB(+)	RB(+)	7	RB(+)	7	RB(+)	7
RA(-)	TA(-)	8	TA(-)	8	TA(-)	8
RB(+)	TB(+)	9	TB(+)	9	TB(+)	9

Table 4: Multi-Drop Networking Connections

Note: For more than two instruments, duplicate Cable 2 between each new instrument and the network.

The end devices in a multi-drop RS-485 network may need to be provided with termination resistors to terminate the network. These resistors are built into the **5200** and they can be enabled or disabled using the digital setup. Refer to Serial Outputs page 112 for more information.
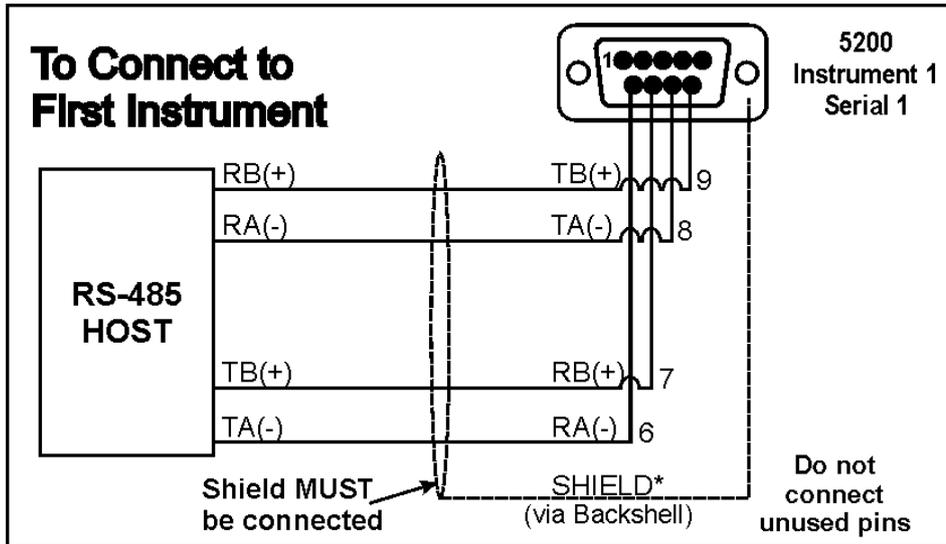
Figure 10: Multi-Drop Networking Connections - Connecting to First Instrument
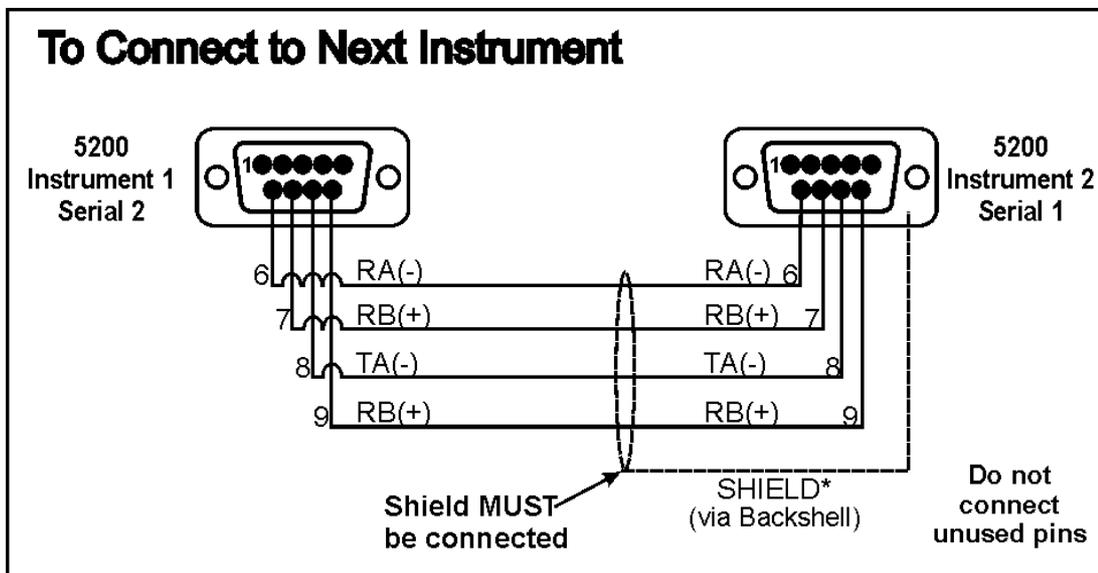
Figure 11: Multi-Drop Networking Connections - Connecting to Next Instrument

3.12.3.   Serial 2: Printer Port

All connections for this port are via the Serial 2 connector. This is a standard DB9 socket requiring a female DB9 plug. The RS-232 interface is the only output from the Serial 2 connector. The connections for this are shown below.

Note 1: Pins 6, 7, 8 and 9 on the Serial 2 connector are connected directly to pins 6, 7, 8 and 9, respectively on the Serial 1 connector. This provides for convenient implementation of multi-drop RS-485 communications.

Note 2: DTR (pin 4) and RXD (pin 2) are connected together internally. This means that it is possible to use the DTR line for printer paper detect or the RXD line for PC communications but not both simultaneously. **Do not connect both wires.**

Pin No.	Function	Description	Connect To
1	PWR	12VDC out	Do not connect
2**	RXD	RS-232 Receive Line	External Device Transmitter (Usually Pin 3 on PC)
3	TXD	RS-232 Transmit Line	External Device Receiver (Usually Pin 3 on printer or Pin 2 on PC)
4**	DTR	DTR Handshake Line	External Device Busy Line (Usually Pin 20 on printer)
5	GND	Digital Ground	External Device Digital Ground (Usually Pin 7 on printer)
6*	RA(-)	RS-485 Receive A (-)	External Network
7*	RB(+)	RS-485 Receive B (+)	External Network
8*	TA(-)	RS-485 Transmit A (-)	External Network
9*	TB(+)	RS-485 Transmit B (+)	External Network
Backshell	Shield		Cable Shield
*	See **Note 1**.		
**	See **Note 2**.		

Table 5: Serial 2: Printer Port

3.13. "Smart" Software Option

Multiple Product Totalising and **Checkweighing** are optional extras with the **5200**. The standard instrument does not have these options enabled. To enable these options it is necessary to purchase a software option code that may be entered into the instrument by the factory at the time of purchase or it may be entered via the setup menus at any time thereafter.

This system provides for a maximum amount of flexibility. For example the **5200** can be purchased at a very competitive price, without paying for options you don't need. If, at a later date the option is required, the upgrade can be made on site without the need to return the instrument to the factory. This also makes it far easier to take advantage of bulk discounts.

The software option code is unique to each instrument. To purchase a software option code for an existing instrument, contact Rinstrum and identify the instrument's serial number (see sticker on rear of the instrument).

3.13.1. Procedure to Enter a Software Option Code into the 5200

- Access Full or Safe Setup. For Full Setup press and hold the **<ZERO>** and **<FIND>** keys together for two seconds. For Safe Setup press and hold the **<GROSS/NET>** and **<FIND>** keys together for two seconds.
- Press the **<ZERO>** key repeatedly to display the **FACTRY** menu.
- Press the **<TARE>** key repeatedly to display the **CONFIG** menu.
- Press the **<GROSS/NET>** key to access the **CONFIG** menu. The display then prompts with **CONFIG ENTER CODE**.
- Enter the six-digit software option code.
- Press **<OK>** when complete.

Note: If the Software Option Code is already enabled, accessing the CONFIG menu will display the message **CONFIG SP.FCN ENTER CODE**.

4.   Data Entry (Keypad)

Throughout the **5200** operator interface and setup, various data entry methods are used. Both the viewer and the keypad are used to enter data. The keypad methods are described in this section. Refer to Basic Operation page 21 for detailed descriptions of each key.

When using the **5200 Keypad** for normal operation, press the key on keypad to initiate the feature.

4.1.   Editing Annunciators

When in Setup the **5200 Keypad** displays editing annunciators depending on the keypad key being pressed. Figure 12 identifies each of the editing annunciators. When in Setup, press the corresponding blue keypad key (below the annunciator) to choose **GRP** (Group), **ITM** (Item), **SEL** (Select), **EDT** (Edit) or **OK**.
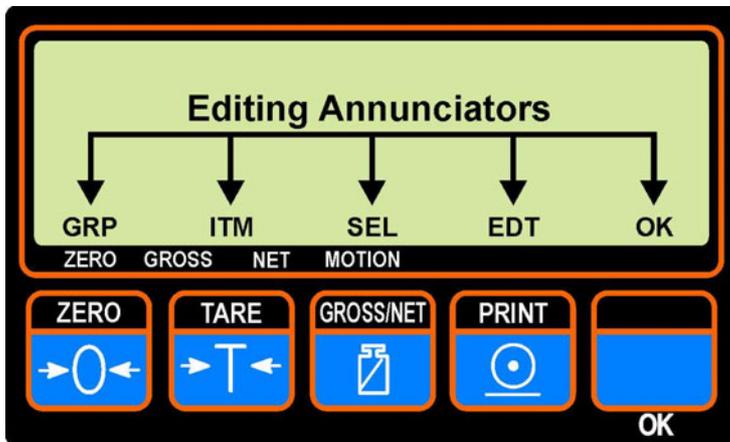
Figure 12: Rinstrum 5200 Keypad - Editing Annunciators

Annunciator	Key Name	Description
GRP	ZERO	Lit when in the main GROUP menu. Steps through the list of Groups.
ITM	TARE	Lit when in the ITEMS menus. Steps through the list of Items.
SEL	GROSS/NET	Lit when the **<GROSS/NET>** key is active for editing. Steps through the list of Sub-Items. Also moves the editing cursor in some editing modes.
EDT	PRINT	Lit when the **<PRINT>** key is active for editing. Steps through the available options when editing a particular item.
OK	OK (FUNCTION)	Lit when the **<OK>** key is available for use. Press this key to edit an item or to save changes and return to the menus.

4.2. Numeric Entry

A numeric entry allows the input of numbers. When entering a number the display will show digits with the current setting flashing. The numeric keypad keys (0 to 9) are pressed to enter a digit from the right, moving all existing digits left one place. To delete a single digit, the **<ESC/C>** key can be used. Pressing and holding the **<ESC/C>** key for two seconds will cancel the entire entry. The **<OK>** key will accept the number that has been entered.

Upper and lower limits are placed on some entries and an entry outside this range will cause the **5200** to display dashes (ie. **- - - - - -**), and then revert to the previous correct value.

Example: When in Setup, follow the steps below to set Clock, Time.

• Press **<GRP>** repeatedly to display the **CLOC** group.
• Press **<ITM>** repeatedly to display the **TIME** item.
• Press **<SEL>** to select **TIME** and display the current setting (eg. 09.55).
• The current number of digits will be flashing. Using a 24-hour clock format enter (via the alphanumeric keypad) the digits for the new time (eg. 13.55).
• When correct, press **<OK>** to accept the change and re-display the item name.

4.3. Selections and Options

Items with Single Options: Some items allow the selection of an option for a single setting. When a Group and Item have been chosen, the **<SEL>** key is used to display the current setting for that item. The **<EDT>** key can be used to cycle through the options for that item.   Refer to Selection Methods page 18 for more information. When the desired option is displayed the **<OK>** key can be pressed to accept the displayed option and re-display the item name. Pressing and holding the **<ESC/C>** key for two seconds will abort the selection and revert to the original setting.

Example: When in Setup, follow the steps below to set Serial 1, Baud.

• Press **<GRP>** repeatedly to display the **SER.P1** group.
• Press **<ITM>** repeatedly to display the **BAUD** item.
• Press **<SEL>** to select **BAUD** and display the current setting.
• Press **<EDT>** to cycle through the options.
• When the desired option is displayed press **<OK>** to accept the setting and re-display the item name.

4.3.1. Selection Methods

When in Setup a selection entry requires the choice of a single item from a list of options. For the currently displayed item, the **<EDT>** key can be used to cycle through the available options. To cycle through items in the reverse order press the **<ESC/C>** key. Pressing the **<OK>** key will select the current item. Pressing and holding the **<ESC/C>** key for two seconds will abort the selection and revert to the original setting.

Due to the large number of options available within some selection entries, the keypad can be used to provide alternate methods for navigating through the entries. Similar to a standard computer keyboard, the keypad keys have been assigned the following functions:
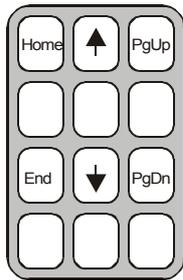
Key	Function
Home / End	First/Last item in list
↑ / ↓	Up/Down one item in list
PgUp / PgDn	Up/Down five items in list

4.3.2. Items with Multiple Options

Some items allow the selection of an option for multiple settings. When a Group and Item have been chosen, the **<SEL>** key is used to display the current settings for that item. For example the **SER.P1**, **BITS** item displays **n81-4-**. Each of the five character positions allows for different options to be set. The **<SEL>** key is pressed to select a digit to change. When the digit is selected (flashing) the **<EDT>** key is pressed to cycle through the options for that digit. When the desired choices are displayed the **<OK>** key can be pressed to accept the choices and re-display the item name. Pressing and holding the **<ESC/C>** key for two seconds will abort all of the choices and revert to the original settings.

Example: When in Setup, follow the steps below to set Serial 1, Bits. Note: the alphanumeric keypad is disabled for this setting.

• Press **<GRP>** repeatedly to display the **SER.P1** group.
• Press **<ITM>** repeatedly to display the **BITS** item.
• Press **<SEL>** to select **BITS** and display the current setting (eg. n81-4-).
• The currently chosen digit will be flashing. Press **<SEL>** to advance to the next digit.
• When the digit to be set is flashing press **<EDT>** to cycle through the options for that digit.
• When the desired digit option is flashing press **<OK>** to accept the setting and re-display the item name.

4.4. Alphanumeric Keypad Entry

4.4.1. Basic Entry

An alphanumeric entry allows the input of a string of up to six characters. The **5200** will display the active character flashing. An example of this style of entry is **ABC 12**. The keypad keys are used to enter a specific character. For example, to display the letter **L**, press the **5** key multiple times.

The **< 0 / ␣ >** key is used to enter spaces.

Note: If successive characters are to be entered from the same keypad button, you must wait (approximately two seconds) for the next active character position to flash before entering the next character. The **<FIND>** key can be pressed between each character to eliminate this wait. This wait is not necessary if successive characters are entered from different keypad buttons.

At any time the **<OK>** key can be pressed to accept the currently displayed string of characters. Pressing the **<ESC/C>** key will remove the last entered character. Pressing and holding the **<ESC/C>** key for two seconds will cancel the string entry.

Example: When in Setup, follow the steps below to set Serial 1, Name.

• Press **<GRP>** repeatedly to display the **SER.P1** group.
• Press **<ITM>** repeatedly to display the **NAME** item.
• Press **<SEL>** to select **NAME** and display the current setting (eg. ABC).
• If no name has been previously set, the currently chosen digit will be flashing. Press **<FIND>** to advance to the next digit. If a name has been previously set, a new name can be entered by pressing the first character for the new name on the alphanumeric keypad. The remaining characters for the new name can then be entered.
• When the digit to be set is flashing press enter the character from the alphanumeric keypad.
• When all the desired characters have been entered press **<OK>** to accept the setting and re-display the item name.

4.4.2. Advanced Entry

An advanced alphanumeric entry allows the input of strings longer than six characters as well as characters that are not available on the keypad keys. The **5200** will display the string in either of the following formats **001.065** or **001. A**. The first format is **PPP.CHR**, where **PPP** is the character position, and **CHR** is the ASCII number of the character. The latter format is essentially the same as the first format, however **CHR** displays the actual character. The **<FIND>** key will switch between the two formats. To enter a character in the first format, the keypad may be used to enter a number. In the second format, the keypad keys will enter the letter/number displayed on the key, in the same fashion as the Basic Entry.

The **<SEL>** key will advance to the next position, and the **<EDT>** key will increment the current character. The **<OK>** key will accept the character and move to the next one. Press the **<OK>** key again to accept the changes. Press and hold the **<ESC/C>** key for two seconds to cancel the entry of a particular character.

Note: The **<FIND>** key can be used to toggle between the character and it's hexadecimal value.

Example: When in Setup follow the steps below to set the Serial 1, Header.

• Press **<GRP>** repeatedly to display the **SER.P1** group. Note: in this example the TYPE has been set to ON.LO and the FORMAT to PRINT.A
• Press **<ITM>** repeatedly to display the **PRN.OPT** item.
• Press **<SEL>** to select **HEADER** and display the current setting. Note: If a header has been previously set, the first header character will be flashing (eg. 001. A). If no header has been previously set the first header character will show no character (eg. 001.).
• Enter the first character from the alphanumeric keypad. Note: Use the **<FIND>** key to toggle between the character and it's hexadecimal value.
• Press **<OK>** to advance to the next character (eg. 002.). Enter the character from the alphanumeric keypad. Repeat this step until all characters are entered.
• Press **<OK>** to accept the changes and return to the Header menu item.

5. Basic Operation (Keypad)

In its most basic configuration, the **5200** provides a simple weight readout with optional printing and serial output capability. More advanced configurations allow for product totalising and checkweighing. Refer to Operator Procedures (Keypad) page 32.

5.1. 5200 Specific Weighing Terminology

| Totalising	The process of adding the weight of individual items to generate a total weight.
Product	A product is a type of item to be weighed. The **5200** can store up to 100 products. Each product has it's own preset tare and total weight, etc.
Session Total	A session total contains the amount of weight added regardless of the product selected. The session totals can be cleared independently of the product and grand totals. The time between clearing the session totals is called a session.
Grand Total	The grand total is the total amount of weight added regardless of product or session. The grand total is the sum of the product totals. The grand total cannot be cleared independently of the product or session totals.

5.2. Display and Controls
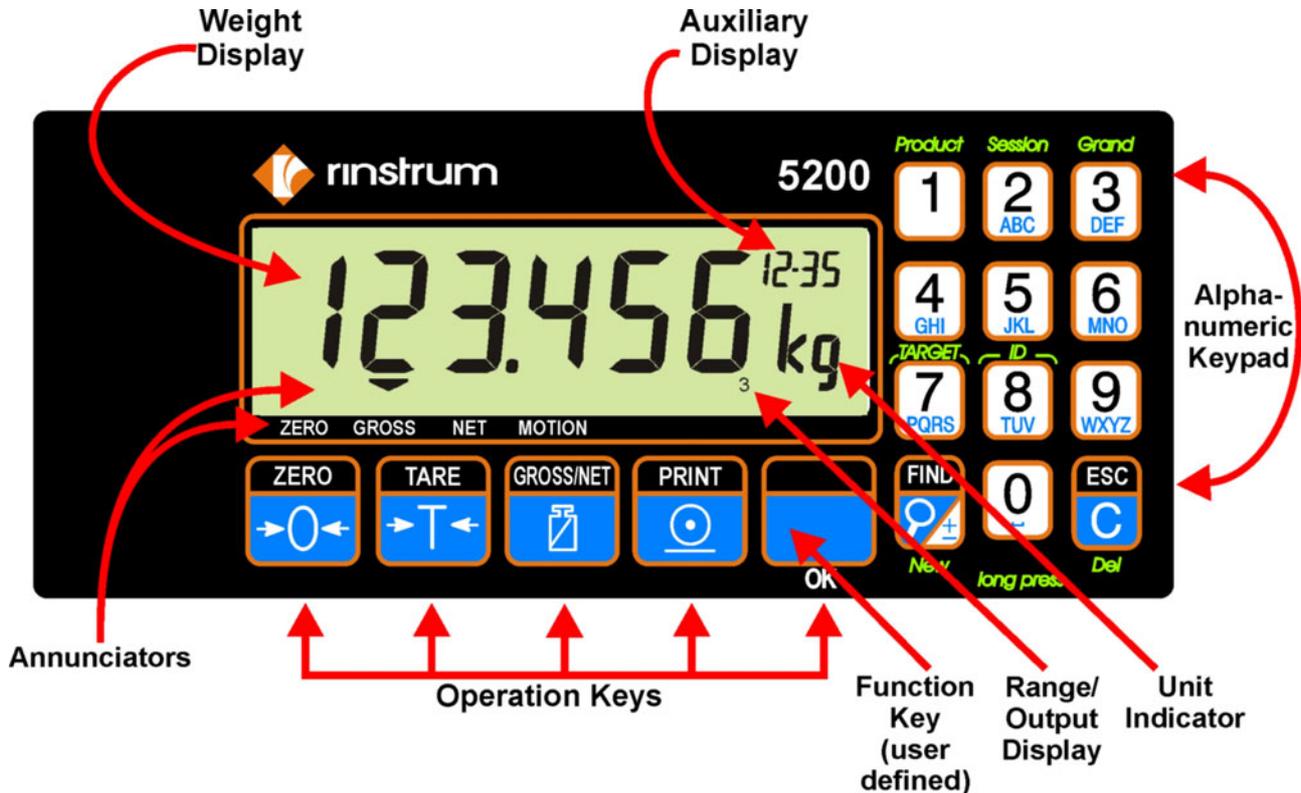
Figure 13: 5200 - Display and Controls Illustration

5.2.1. Front Panel: Visual Display

The front panel of the **5200** has a six-digit LCD display. The **5200** also has a full numeric 17 key keypad. Figure 13 shows the main elements of the front panel.

The **5200** has various main display sections for the visual output of weight information. Each display section is described below:

- **Weight Display**

  The Weight Display indicates the weight readings, setup information, errors and warnings.

- **Auxiliary Display**

  This Auxiliary Display is used to provide additional information related to the task currently being performed. It may also be configured to show other information when not in use (eg. current time). Refer to Display Settings: Auxiliary Display (AUX.DSP) page 75.

Code	Description
CNT	Count
GR- or GRn	Grade Number (where n is the Grade number) GR- stands for No Grade Name
HLD	Hold
N-n	User String Name (where n is the User String Name number). Refer to <u>USR.NAM</u> (User String Name Menu) page 54 and User Strings (USR.NAM) Sub-Tab page 85
PK	Peak Hold
P-nn	Product Total, Session Total or Grand Total Index Number (where nn is the Product Index Number). Refer to Index page 92.
PT	Preset Tare
S-n	User String (where n is the User String number). Refer to User String 1, 2 and 3 page 85.
SPT	Setpoint Target
TOT	Total
⌴	Zero Band: Lit when the displayed weight is within the zero 'dead' band setting.

- **Alphanumeric Keypad**

  The alphanumeric keypad on the **5200** is similar to a standard telephone keypad. Refer to Data Entry page 16 for methods.

  Escape/Clear Key: Press the **<ESC/C>** key (Escape/Clear) to clear individual keypad entries. Press and hold the **<ESC/C>** key for two seconds to clear all of the current keypad entries and revert to normal operation. When in setup the **<ESC/C>** key can be used to cycle through choices in the reverse direction.

- **Unit Indicator**

  The Unit Indicator displays the units of the weight reading as either grams (g), kilograms (kg), pounds (lb), tonnes (t) or none ( ).

- **FRONT Function Key**

  The **<FRONT>** key can be programmed to perform the extended functions and when in setup this key is used to accept commands. Refer to OK (FRONT FUNCTION) Key page 25.

- **Range / Output Display**

  When the indicator is in **Dual Range** or **Dual Interval** mode, the current range in use is shown (eg. R1). If the indicator is in a single range mode, the output status of the four setpoints is shown (eg. 3).

- **Annunciators**

  There are two groups of annunciators - Status Annunciators and Editing Annunciators.

  Status Annunciators: Status Annunciators are a number of small triangles that show the status of the displayed reading.

Annunciator	Meaning
ZERO	Lit when the displayed reading is within $\pm$ ¼ of a division of true zero.
GROSS	Lit when the display reading represents GROSS weight.
NET	Not used in the **5200**.
MOTION	Lit when the displayed reading is not stable.

  Editing Annunciators: Refer to Editing Annunciators page 16.

5.3. Operation Keys

The **5200** has the following operation keys:

These operation keys have two functions.

5.3.1. Primary Function

Available during normal weighing. This function is indicated by the symbol on the key.   A single press of each operation key triggers the weighing operation printed on it. If the key beeps normally, but does not appear to trigger the desired action it is probably waiting for the weight reading to settle before the action can proceed.

5.3.2. Editing Function

Available during digital setup and calibration. This function is displayed using the editing annunciators above each key.   Refer to Editing Annunciators page 16.

5.3.3. Stability Considerations

Once the **<ZERO>**, **<TARE>** or **<PRINT>** key is pressed the instrument waits for a stable valid reading before performing the associated operation. If the weight readings remain unstable or invalid due to some diagnostic error for longer than 10 seconds the operation is cancelled and the **STABLE ERROR** message is displayed. Refer to Error Messages page 132.

To improve the stability of the weight reading, increase the filtering or relax the motion detection criteria. Refer to Filter (FILTER) (Reading Average) page 71 and Motion (MOTION) (Detection) ⊗ page 72.

5.3.4. ZERO Key

When an empty scale has drifted away from a true zero reading, this key is used to perform a zero adjustment on the scale display. The zero adjustment is stored by the **5200** when power is removed and is re-used when next powered up.

The amount of weight that may be cancelled by the **<ZERO>** key is limited via a setting in the Setup of the instrument. Refer to Zero Range (Z.RANGE) (Allowable Zero Operating Range) ⊗ page 72 for more information.

De-Zero: A two second press of the **<ZERO>** key clears the zero setting. This function is not available in Trade mode.

5.3.5. TARE Key

This key is used to temporarily set the scale to zero (such as cancelling the weight of a container before performing a filling operation). The display will show the NET weight and the NET annunciator will be lit.

The **<TARE>** key can operate over the entire valid range of the display. In Trade Mode the **<TARE>** key will not operate if the displayed gross weight is less than or equal to zero. A negative tare is permitted in Industrial Mode.

The weight tared is deducted from the allowable range of the scale, reducing the maximum weight that can be displayed.

- **Preset Tare Entry**

To enter a Tare weight directly, enter the weight value using the numeric keys and then press the **<TARE>** key. The display will flash while the tare weight is being edited, and then show the preset tare value with the auxiliary display showing **PT**.

It is also possible to enter multiple Tare values by pressing and holding the **<TARE>** key for two seconds after entering the tare value. In this way it is possible to add numerous values to the preset tare.

To clear a preset tare either return the display to gross mode via the **<GROSS/NET>** key, or enter a zero value for the preset tare.

5.3.6. GROSS/NET Key

This key toggles the weight display between the Gross weight and the Net weight (provided that a Tare has previously been acquired). When switching from gross to net, the preset tare value is shown for one second.

5.3.7. PRINT Key

The **<PRINT>** key is used to add weighings to the currently selected product. (Note: The **<PRINT>** key will not add to totals if there is no current active product.) If a printer or computer has been attached to the **5200** and the manual print function selected, the **<PRINT>** key will also trigger an output according to the selected print format. Refer to Print Formats page 114 for more information. While viewing totals the **<PRINT>** key is used to print totals.

5.3.8. OK (FRONT FUNCTION) Key

When leaving the factory, the **<FRONT>** function key is blank and has no primary function pre-programmed. The primary role of this key can be selected from a number of different functions including peak-hold, counting, etc. Refer to Special Functions page 126 for details of the available functions. Each primary function has an associated overlay sticker that should be applied to the function key to label the function.

Long Press: A long press of the Function Key may be used for certain functions depending on the primary function of the key.

When in setup this key also serves as the **<OK>** key, which is used to accept commands and continue to the next step.

5.4. Alphanumeric Keypad Keys

The **5200** has the
following alphanumeric
keypad keys:

5.4.1. Product, Session or Grand Keys (Total Keys)

Key	
Short Press(s)	Where data entry is required, short press(s) of these keys will cycle through the alphanumeric characters on the key (eg. 2, A, B, C).
Long Press	A long press of these keys displays the totals information for the current product, session or grand totals respectively. The display will alternate between the total name and the total weight. Press the **<FIND>** key to step through the other available information of the selected total.

Refer to Operator Procedures (Keypad) page 32 for more information.

5.4.2. TARGET Key

 This key is used to adjust setpoint targets for the current product. The **5200** calculates a trip point based on the values of target and direction of operation. The function of this key can be restricted by the use of an Operator Passcode.

The default for all targets is set to **0** (zero). Targets may be entered as positive or negative values.

Refer to Setting Targets for Each Product (via the Operator Menu) page 33 for procedure to set Target. For information on **LIM 1** to **LIM 4** refer to Active setpoints page 124. For information on **CHK 1** to **CHK 4** (checkweighing) refer to Checkweigh setpoints page 30.

5.4.3. ID Key

This key is used to set up to three user-defined strings. These user strings can be used with printouts. The strings consist of two parts, a String Name (which identifies the string) and a User String (which is the data identified by the String Name). Each String Name or User String can consist of up to six alphanumeric characters.

The **String Name** can be set from the keypad setup (refer to <u>USR.NAM</u> (User String Name Menu) page 85) or from the viewer (refer to User Strings (USR.NAM) Sub-Tab page 85). The default String Names are **S1**, **S2** and **S3**.

The **User String** can be set from the keypad via this ID key or from the viewer (refer to User Strings (USR.NAM) Sub-Tab page 85). The default User Strings are blank.

5.4.4. FIND Key

This key has multiple uses depending on the procedure. Refer to Operator Procedures (Keypad) page 32 for specific uses. The following table lists the uses.

Short Press	• Searching for and selecting product names. • Display other information relating to the type of total (ie. Product, Session or Grand Total). • When in keypad setup this key can toggle between the character and it's hexadecimal value when entering alphanumeric characters. • When entering numeric characters (eg. Targets) this key can be used to change to a negative value.
Long Press	• Create (add) new products names.

5.4.5. ESC/C Key

This key has multiple uses depending on the procedure. Refer to Operator Procedures (Keypad) page 32 for specific uses. The following table lists the uses.

Short Press	• Used as an undo key during editing and any point in the process the **<ESC/C>** key will cancel the last operation. • During setup used to reverse direction when selecting any items from lists. • Used to perform a **backspace** function when entering numbers.
Long Press	• When in setup press and hold the **<ESC/C>** key for two seconds to ABORT an operation and return to the menu without making any changes. • During normal operation this key is used in conjunction with other keys to clear entries or totals and/or delete Products.

6. Totalising Description

6.1. Overview

- The **5200** can totalise up to 100 different products.
- The totals can be viewed on the instrument, printed or output using serial communications.
- The totalising operates seamlessly with the checkweighing functionality. Refer to Checkweighing Description page 30 for more information.
- Session and Grand Totals are available.

6.2. 5200 Totals

There are three kinds of totals: Product Totals, Session Total and Grand Total.

6.2.1. Product Totals

A product is a type of item to be weighed. For each product, a separate product total is kept. In addition to the totals information, each product also stores preset tare, setpoint targets and counting sample information. This information is available when the product is active. Only a single product is active at any time.

6.2.2. Session Total

The session total totalises all product adds regardless of the active product. It can be cleared independently of the product and grand totals.

6.2.3. Grand Total

The grand total totalises all product adds regardless of the active product or session. It can not be cleared independently of the product totals. Therefore, the Grand Total weight is always the sum of the product total weights.

6.3. Information Stored For Each Total

Information	Data Type	Range	Other Info
Name	String	6 characters	Names should be unique
Total weight	Number	2147483647 to -2147483648	Decimal place will be according to that configured in the build menu
Number of adds to total	Number	0 to 2147483647	
Total pieces	Number	2147483647 to -2147483648	If counting is used
Total weight for each grade	Numbers	2147483647 to -2147483648	If checkweighing is used. Decimal place will be according to that configured in the build menu
Total number of items in each grade	Numbers	0 to 32767	If checkweighing is used
Preset tare	Number	2147483647 to -2147483648	Decimal place will be according to that configured in the build menu
Setpoint target for each of the 4 setpoints	Numbers	2147483647 to -2147483648	Decimal place will be according to that configured in the build menu
Counting sample size and weight	Numbers	2147483647 to -2147483648	Decimal place will be according to that configured in the build menu

6.4. Operator Procedures

- Refer to Operator Procedures (Keypad) starting on page 32 and Operator Procedures (Viewer) starting on page 100.

6.5. Totalising Printing

- There are three standard print formats. Refer to Print Formats page 114.
- The print format is fully customisable. Refer to Custom Formats page 115.
- The viewer has a wizard that can assist in designing custom print formats. Refer to "Pre-defined" Toolbar page 83.

6.6. "Smart" Software Option

- Single product totalising is available as standard.
- Multiple product totalising is only available with the "Smart" Software Option. Refer to "Smart" Software Option page 15

7. Checkweighing Description

The **5200** can be used as a checkweigher with up to five grades (bands). It can drive four outputs with an additional option card. Checkweighing is configured using the setpoints menu. This menu is also accessible via the operator target menu.

7.1. Connection

Refer to Accessories and Options page 128 for the method of connection for the external output drivers.

7.2. Checkweigh Operation

The following are the steps in the checkweighing sequence:

1	**Trigger:** Wait for checkweigh trigger. The trigger type can be configured via the keypad or viewer. There are two types of triggers available for use • **Weight Trigger:** The **5200** can use an increasing weight change to trigger. When the weight rises above a preset value, the sequence is started. Before the sequence can be started again, the trigger must be reset by the weight going below a separate preset limit. • **Input Trigger:** A short press of the checkweigh key will start the checkweigh sequence even if the trigger has not been reset. This key can be assigned to an external input and/or the **5200** function key. A PLC or object detection equipment can be connected to an external input.
2	**Delay:** Wait for a set time. After triggering, the **5200** will wait a specified time before beginning the weight averaging. The delay can be set from 0.00 seconds to 300.00 seconds with resolution according to the sync frequency.
3	**Weight Averaging:** Averages for a set time. The duration of the averaging step is configured in seconds. The averaging time can be set from 0.00 seconds to 300.00 seconds with resolution according to the sync frequency.
4	**Decision:** After the weight is determined, a band is chosen and outputs and display are activated. A band is chosen according to the targets specified in the setpoint setup. The targets form the lower limit for each band. The No Grad band is used when the weight is less than the lowest band limit. This band has no corresponding output. The **5200** makes the new data available to the user via the display and outputs. Only a single checkweigh output is activated at one time. The Display Option and Display Timeout control the display. The **Display Option** gives provides three options for the display function: • Weight: Display the checkweight. When checkweigh results are displayed, the auxiliary display shows **CHK**. • Grade: Display to check band. Grade names are displayed. • Normal: Do not display check weigh results. The **Display Timeout** setting will cause the check results to display for a fixed length of time before returning to dashes (ie. **- - - - - -**). A long press of the checkweigh key overrides the timeout and toggles between the displays. The output operation is defined in the setpoint type menu items. The logic can be high, low, pulse or repeated pulse. Three delays define the pulse or repeat characteristics.
5	**Reset Trigger:** Wait for trigger reset (weight trigger) or (go to step 1). The weight trigger is not available to start a second sequence until the weight drops below a value defined in Trigger Reset Level. The reset weight should be set below the trigger weight. This is not required for an input trigger. A new checkweigh cycle can begin while the outputs are pulsing.
	Go to Step 1

7.3. Multiple Product Checkweighing

- The **5200** can do multiple product checkweighing.
- The grade limits are kept for each product.
- Each product has its own preset tare to account for packaging.
- The custom format is used for printing. Refer to FORMAT (Output Format) page 51.

7.4. Checkweigh Totalising

- The total weight and **number of** items checked in each grade is stored with product, session and grand totals.
- Grade counts and total weights are incremented at the end of the averaging step.
- Generally, to avoid problems, the **<PRINT>** key should be set to not add to totals. Refer to KEY.LOC (Front Panel Key Locking) page 49 or Front Key Settings (KEY.LOC): Zero, Tare, Gross/Net, Print and Function (FRONT) page 74.

7.5. Viewing Results

- The product, session and grand total weights, counts and grade counts can be displayed using the view total functionality. Refer to Change Checkweigh Display page 35 and Viewing Totals and Displaying Other Checkweigh Total Information page 35.
- Totals can also be printed.
- The grade weights can be printed but not displayed.

7.6. Setpoint Targets

- The setpoint target for each checkweigh output is the **lower** limit of the grade.
- Not all setpoint outputs must be used as checkweigh outputs.
- Checkweigh setpoint targets **must** be ordered in ascending order, (ie. SP2.target must be greater than SP1.target).
- If the check weight is less than the lowest target (grade limit) the no grade category is used.

7.7. Operator Procedures

- Refer to Operator Procedures (Keypad) starting on page 32 and Operator Procedures (Viewer) starting on page 100.

7.8. Checkweigh Printing

- There is printing support for checkweighing. Refer to Serial Outputs page 112. To View Printed Output refer to page 37.
- The Wizard can be used to set up print formats. Refer to "Pre-defined" Toolbar page 83.
- There is a single custom event (EV.CHCK). Refer to Custom Events page 116.

7.9. "Smart" Software Option

- Checkweighing is only available with the "Smart" Software Option. Refer to "Smart" Software Option page 15

8. Operator Procedures (Keypad)

This section describes the **keypad** method for performing common operator procedures.

8.1. Managing Product Names

The procedures in this section apply to both Totalising and Checkweighing.

8.1.1. Create New Product Name

Valid names can include up to six alphanumeric characters and spaces. The Product Name must be unique to other IDs. An attempt to duplicate a name will result in the **PROD EXISTS** error message. A maximum of 100 Product Names can be created.

• Press and hold the **<FIND>** key for two seconds. The instrument will display dashes (ie. **- - - - - -**).
• Enter the Product Name.
• Press the **<OK>** key to create the Product Name. When the Product Name has been created successfully the instrument will display the message **DONE** and then return to the normal display.

8.1.2. Delete Product Name

A Product Name can only be deleted via the keypad if the total weight is zero. Refer to Clear Grand Total page 36. The error message **NOT CLEAR** will display if an attempt is made to delete a Product Name where the total weight is not zero.

• Search for and select a Product Name. Refer to Search and Select Existing Product Name page 32.
• Press and hold the **<PRODUCT>** key for two seconds. The selected Product Name and the current total weight reading for that product will flash alternately.
• Press and hold the **<ESC/C>** key for two seconds. **Note:** The product cannot be deleted unless the total weight is zero.
• The instrument will prompt to delete the Product Name with **DEL N**. Use the **<FIND>** key to switch between **DEL N** (No) and **DEL Y** (Yes).
• To **delete** the Product Name, display **DEL Y** and then press the **<OK>** key. The instrument will return to normal operation.
• To **abort** the procedure, display **DEL N** and then press the **<OK>** key. The selected Product Name and the current total weight reading for that product (ie. **0**) will flash alternately. Press the **<OK>** key to return to normal operation.

8.1.3. Search and Select Existing Product Name

- **Search Most Recent Product Name**

This method cycles through the 10 most recent Product Names.

• Press the **<FIND>** key repeatedly to step through the 10 most recent Product Names.
• When the desired Product Name is located, press the **<OK>** key to select it. The instrument will return to displaying the current weight.
• **Note:** For combined Search/Add steps refer to Section 8.3.2 page 34.

- **Search All Product Names**

  This method searches through all of the Product Names.

• Press the **<FIND>** key. The most recent Product Name will display.
• Enter the first character of the Product Name to find. If there are no Product Names beginning with the character entered, the display will show the character followed by dashes (eg. A **- - - - -**).
• Press the **<FIND>** key to step through all Product Names starting with that character.
• When the desired Product Name is located, press the **<OK>** key to select it. The instrument will return to displaying the current weight.
• **Note:** For combined Search/Add steps refer to Section 8.3.2 page 34.

8.2. Managing Targets and User Strings

8.2.1. Setting Targets for Each Product (via the Operator Menu)

• Use a search method described previously to search for and select a Product Name.
• Press and hold the **<TARGET>** key for two seconds to access the Target Operator menu. The instrument will alternate the setpoint ID and the current target weight (ie. **LIM 1** to **LIM 4** for Active Setpoints or **CHK 1** to **CHK 4** for Check Setpoints).
• Press the **<FIND>** key to cycle through the available setpoint IDs allowing them to be viewed.
• To change a target value, enter the new value using the keypad.
• Press the **<OK>** key to accept the new target weight. The instrument will alternate the changed setpoint ID with the new target.
• Press the **<OK>** key to return to normal operation.

8.2.2. Setting User Strings (via the Operator Menu)

Only the user string (not the string name) can be altered from the **<ID>** key on the keypad.

• Press and hold the **<ID>** key for two seconds to access the ID Operator menu. The instrument will alternate the first string name, (eg. S1 or BUYER, etc.) and the current user string (eg. "   " or BOB, etc.).
• Press the **<FIND>** key to cycle through the currently set String Names (eg. BUYER, SELLER, AGENT) allowing them to be viewed.
• To change a User String, enter the new user string using the keypad (maximum six alphanumeric characters).
• Press the **<OK>** key to accept the new User String. The instrument will alternate the String Name (eg. BUYER) with the new User String (eg. FRANK)
• Press the **<OK>** key to return to normal operation.

8.3. Totalising Procedures

Each of these procedures assumes the **5200** has been set up for product totalising.

8.3.1. Add Weight to Product Total

• Use a search method described previously to search for and select a Product.
• Place weight on the scale.
• Press the **<PRINT>** key.
• The instrument will flash the message **ADDED** when the weight has been successfully added. The message **ADD FAILED** will flash if unsuccessful. Adds can fail because there was motion on the scale, the interlock criteria has not been met or due to a system error. Refer to BUILD (Scale Build Menu) page 45 and Error Messages page 132.

8.3.2. Search for Product Name/Add Weight to Product Total (Combined Steps)

• Place weight on the scale.
• Use the **<FIND>** key (as described in the previous search methods) to locate the desired Product.
• When the desired Product is located, press the **<PRINT>** key.
• The instrument will flash the message **ADDED** when the weight has been successfully added. The message **ADD FAILED** will flash if unsuccessful. Adds can fail because there was motion on the scale, the interlock criteria has not been met or due to a system error. Refer to BUILD (Scale Build Menu) page 45 and Error Messages page 132.

8.3.3. Undo the Last Add to the Current Product Total

This function is used to undo the most recently added weight and count from the selected Product total. This function can be performed only when the user assignable function on the keypad has been set to **TOTAL**. Refer to Special Functions page 126 for details of the available functions.

• Ensure the keypad **<FUNCTION>** key has been set to **<TOTAL>**.
• To undo the most recently added weight and count, press and hold the **<TOTAL>** key for two seconds.

8.3.4. Viewing Totals and Displaying Other Totalising Information

• Press and hold either the **<PRODUCT>, <SESSION>** or **<GRAND>** key for two seconds.
• Press the **<FIND>** key to cycle through other information relating to the specific type of total.
• When Totalising, the display will cycle through the following: 1. **Product Name / Total Weight:** For example, Apples (P-02) and 19 kg (TOT) which indicates the total weight for Product 2 Apples is 19 kg. 2. **Product Name / Total Current Count:** For example, Apples (P-02) and 8 c (TOT) which indicates that 8 adds have been performed for Product 2 Apples. Note: Other information may be available depending on the system setup.
• Press **<OK>** to return to the normal display.

8.4. Checkweigh Procedures

Each of these procedures assumes the **5200** has been set up for checkweighing.

8.4.1. Checkweigh Using Weight Trigger

• Place weight on the scale.
• The weight will automatically trigger the checkweigh.

8.4.2. Checkweigh Using Input Trigger

• Place weight on the scale.
• Press the **Checkweigh Input** button to trigger the checkweigh. Depending on the setup, the Checkweigh Input button could be either the **<FRONT>** function key or a Remote Input.

8.4.3. Change Checkweigh Display

This procedure is used to cycle through the three Display Options (ie. Normal, Weight and Grade). The last shown Display Option will remain in effect until the instrument is powered down. It is important to note that this procedure will **not** alter the default start-up Display Option (ie. when the instrument is next powered up the default Display Option, saved in Setup, will be used.)

• After a checkweigh has been triggered, press and hold the **Checkweigh Input** button for two seconds. Note: This function is available for the **<FRONT>** function key only.
• The display will show either the normal weight, the last checkweight (auxiliary display is CHK) or the Grade Name for the last checkweight (auxiliary display is CHK).

8.4.4. Viewing Totals and Displaying Other Checkweigh Total Information

• Press and hold either the **<PRODUCT>, <SESSION>** or **<GRAND>** key for two seconds.
• Press the **<FIND>** key to cycle through other information relating to the specific type of total. • When Checkweighing, the display will cycle through the following: 1. **Product Name / Total Weight:** For example, Apples (P-02) and 19 kg (TOT) which indicates the total weight for Product 2 Apples is 19 kg. 2. **Product Name / Total Current Count:** For example, Apples (P-02) and 8 c (TOT) which indicates that 8 adds have been performed for Product 2 Apples. 3. **Product Name / Total Current Grade Number Count:** For example, Apples (P-02) and 3 c (GR2) which indicates that 3 adds, falling into the Grade 2 range, have been performed for Product 2 Apples. **Note:** When the Total Current Grade Number Count shows **GR-** in the auxiliary display it indicates the add(s) fell in a range below the target for Grade 1.

8.5. Clearing Totals

The procedures in this section apply to both Totalising and Checkweighing.

8.5.1. Clear Product Total

Product totals cannot be cleared individually or separately from the Grand Total.

8.5.2. Clear Session Total

Session totals can be cleared without affecting the individual Product Totals or the Grand Total.

- **Method 1 (Print and Clear):**

• Press and hold the **<PRINT>** key for two seconds. Depending on the print configuration of the instrument, the Session Total will print. (Note: Print Format C does not print Session Totals).
• The instrument will display the message **CLEAR SES.T ?** and then prompt to clear the Session Total with **CLR N**. Use the **<FIND>** key to switch between **CLR N** (No) and **CLR Y** (Yes).
• To **clear** the Session Total and return to normal operation, display **CLR Y** and then press the **<OK>** key.
• To **abort** the procedure and return to normal operation, display **CLR N** and then press the **<OK>** key.

- **Method 2 (Clear Only):**

• Press and hold the **<SESSION>** key for two seconds. The instrument will alternate the message **SES.TOT** and the current Session Total weight reading.
• Press and hold the **<ESC/C>** key for two seconds.
• The instrument will then prompt to clear the Session Total with **CLR N**. Use the **<FIND>** key to switch between **CLR N** (No) and **CLR Y** (Yes).
• To **clear** the Session Total, display **CLR Y** and then press the **<OK>** key. The instrument will alternate the message **SES.TOT** and the cleared Session Total weight (ie. **0**).
• To **abort** the procedure, display **CLR N** and then press the **<OK>** key. The instrument will alternate the message **SES.TOT** and the current Session Total weight.
• Press the **<OK>** key to return to normal operation.

8.5.3. Clear Grand Total

Clearing the Grand Total clears the Grand Total as well as Product Totals and the current Session Total.

• Press and hold the **<GRAND>** key for two seconds. The instrument will alternate the message **GRAND.T** and the current Grand Total weight reading.
• Press and hold the **<ESC/C>** key for two seconds.
• The instrument will then prompt to clear the Totals with **CLR N**. Use the **<FIND>** key to switch between **CLR N** (No) and **CLR Y** (Yes).
• To **clear** the Grand Total, display **CLR Y** and then press the **<OK>** key. The instrument will alternate the message **GRAND.T** and the cleared Grand Total weight (ie. **0**).
• To **abort** the procedure, display **CLR N** and then press the **<OK>** key. The instrument will alternate the message **GRAND.T** and the current Grand Total weight.
• Press the **<OK>** key to return to normal operation.

8.6.   View Printed Output

Up to two kilobytes of printer data is buffered in the instrument. This can be viewed in the **Printed Output** window at a later time.

- Choose **View | Printed Output** from the menu.
- **Port 1** or **Port 2** identifies the port from which to receive data.
- The **Clear** button clears the printed output from the window.
- The **Save** button is used to save the printed output to a text file (Text Files (*.txt)).
- The **OK** button closes the printed output window.
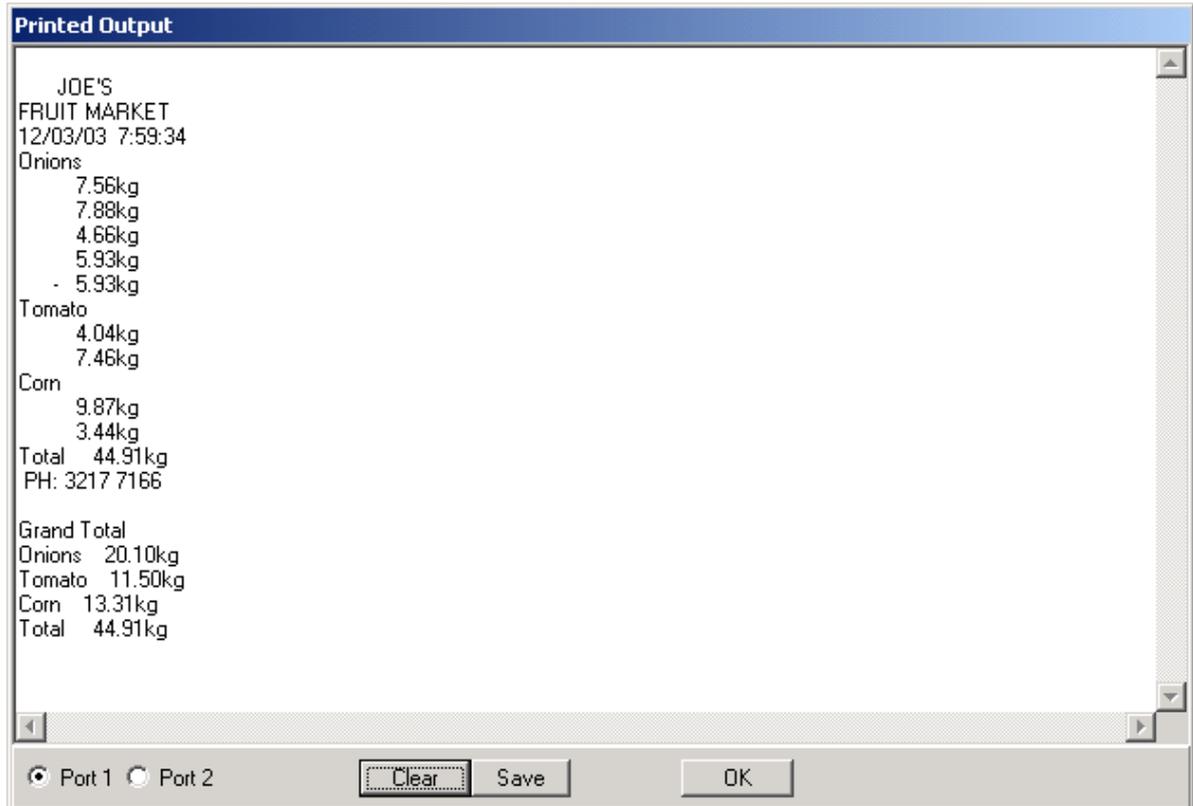
Figure 14: Printed Output Window

9.   Configuration Issues

9.1.   General Setup Information

The **5200** configuration and calibration are performed by using the front panel keypad and/or the **5200** Viewer. Some settings are available only via the keypad. Most settings are available via both the keypad and viewer.

9.2.   Basic Weighing Terminology

The following terms are used throughout the setup procedure. Knowledge of these basic weighing terms is beneficial in setting up and calibrating the **5200**.

Note: Detailed descriptions of these and other terms used in this Reference Manual are described in the Glossary Terms page 135.

Term	Definition
Units	Units of measurement (kilograms, tonnes, pounds, etc.).
Range	Total change in weight between zero gross load and full capacity gross load
Resolution or Count-by	Smallest change in weight units that the display can show.
Graduations	Maximum number of display steps between zero gross load and full capacity gross load. It is equal to the range divided by the count-by.
Division	A single graduation.

Example

A 10,000kg 2.0mV/V load cell is used in an application requiring a 5000kg range, with weight displayed in 5kg increments.

The values are:
- Units = kg
- Range = 5000
- Count-by = 5

Calculating the graduations:	$\text{Graduations} = \dfrac{\text{Range}}{\text{Count-by}} = \dfrac{5000}{5} = 1000 \text{ divisions}$
Signal voltages can be calculated as follows:	
Calculating the full scale signal (load cell):	$\text{Full Scale Signal} = \dfrac{\text{Range}}{\text{Load Cell Capacity}} = \dfrac{5000}{10000} \times 2.0\text{mV/V} = 1.0\text{mV/V}$
Since the 5200 uses 8V load cell excitation, the absolute signal voltage is:	$\text{Absolute Signal Voltage} = \text{Excitation Voltage} \times \text{Full Scale Signal} = 8\text{V} \times 1.0\text{mV/V} = 8.0\text{mV}$
Calculating the signal resolution:	$\text{Signal Resolution} = \dfrac{\text{Absolute Signal Voltage}}{\text{Number of Graduations}} = \dfrac{8.0\text{mV}}{1000 \text{ divisions}} = 0.008\text{mV / division} \equiv 8\mu\text{V}$

9.3. Dual Interval and Dual Range Operation

The **5200** provides both Dual Interval and Dual Range modes of operation as well as the traditional single range setting. In non-trade operation, up to 100,000 divisions are available. It is rare for the precision of the displayed reading to be a problem. However, in Trade applications, where the number of divisions that can be legally displayed is limited, the use of Dual Interval or Dual Range operation allows greater precision in the displayed readings without exceeding the maximum number of graduations available in the certification of the load cell.

Both of these modes of operation allow for the **5200** to operate with two count-by settings. This makes it possible to weigh using fine increments for a low weight range and coarse increments in a high range. For example, the **5200** could be configured to weigh up to 2kg in 1g increments and from 2kg up to 5kg using 2g increments.

Dual Interval and Dual Range are identical in many respects and can be treated the same for the purposes of setup and calibration. The difference between the two comes about in the operation of the scale.

Dual Range Operation: With Dual Range operation the range is determined based on the gross weight. Once the scale changes from low range to high range it may not change back to low range again until the scale is returned to a stable zero reading.

Dual Interval Operation: Dual Interval operation is based on the net weight and no restrictions are placed on the change from the high interval to the low interval. With Dual Interval operation it is therefore possible to weigh in the low interval with high tare weights.

The **5200** is equally accurate in either mode. However, due to tolerance (hysteresis) effects in many load cells, it may not be possible for them to operate accurately in Dual Interval mode. In these cases, Dual Range mode ensures that the weight readings taken from the load cell are accurately displayed during loading and unloading operations.

9.4. Direct mV/V Calibration

It is possible to calibrate the **5200** without test weights if the output capacity of the load cell is known. Where it is impractical to use test weights (eg. for some weigh bridges), this mode of operation allows the mV/V signal strength at no load as well as the mV/V signal strength of the span to be entered directly. This type of calibration is only as accurate as the load cell output figures but for many applications this is more than adequate. Extended features like multi-range and linearisation are not compatible with this form of calibration.

9.5. Filtering Techniques

The **5200** includes advanced filtering options, which allow it to be optimised to produce the most accurate readings possible in the shortest time. There is a trade-off between noise filtering and the step response time of the system. The step response is defined as the time between placing a weight on the scale and the correct stable weight reading being displayed. This does not affect the number of readings per second that are taken. It simply defines the amount of time that is required to determine a final weight reading.

9.5.1. FIR (Finite Impulse Response) Filter

The first level of filtering provided is a FIR filter that is linked to the measurement rate. The measurement rate is set with the **Synch Filter** field. Refer to Synch Filter (SYNC) (A/D Synchronisation Frequency) ⊗ page 69. This filter is a very high performance tuned filter that provides up to 180dB of attenuation at multiples of the sync filter frequency and broadband filtering of between 40 and 80dB. For example, setting the sync filter frequency to 25Hz would provide 180dB of noise rejection at frequencies of 25, 50, 60 … Hz.

Changes to the sync filter setting effect the calibration of the system, so it is wise to determine the primary noise frequency of the system prior to calibration. Often the primary noise source is the mains power so the sync filter is usually set to 50 or 60Hz, depending on mains frequency. However, for applications with high levels of mechanical noise, it is better to tune this filter to the natural frequency of the scale.

The FIR filter introduces a delay of three samples to the step response. Therefore, at a sync frequency of 50Hz, where readings are taken every 20 milliseconds, a delay of 60 milliseconds is introduced between a weight change and the final weight reading.

9.5.2. Digital Averaging

In addition to the FIR filter the **5200** has two levels of digital averaging. The first level is a fixed length sliding window average. Here, the average of the last 'n' readings is calculated. As each new reading is taken the oldest reading is discarded and a new average is calculated. The length of the window can be configured in steps from one reading to 200 readings. It is set using the **Filter** field. Refer to Filter (FILTER) (Reading Average) page 71. Each reading in the average adds a delay to the step response equal to the measurement period. For example, an average of 10 readings with a **Sync Filter** frequency of 50Hz, results in the following total step response:

(10 + 3) samples x 20 milliseconds = 260 milliseconds

The second level of averaging is similar to the first except it has a variable length window that grows from one reading up to a maximum of 10 readings. If a disturbance on the scale is detected, the old readings are discarded and a new average starts all over again. Each of the 10 readings is calculated over the window length of the fixed average. In this way very long-term averages are calculated without introducing any delays. The amount of fluctuation that causes the averaging to be restarted can be set to Off, Fine or Coarse in the **Anti-Jitter** field. Refer to Anti-Jitter (JITTER) (Weight Stabilisation) page 72. The **Coarse** setting is more tolerant of weight change than the **Fine** setting, and the **Off** setting disables this level of filtering.

9.6. Trade vs Industrial Mode

The **5200** may be operated in Trade or Industrial mode. The following table lists the operational differences for each of the two modes:

Element	Trade	Industrial
Underload	−1% or −2% of fullscale depending on zero range setting	−105% of fullscale
Overload	Fullscale +9 divisions	105% of fullscale
Tare	Tare values must be > 0	No restrictions on Tare
De-Zero	Not available	Clear the zero setting with a 2 second press of the Zero Key
Test Modes	Limited to 5 seconds	Unlimited time allowed

9.7. Setup Counter

Within Digital Setup there are a number of critical steps that can affect the calibration and/or trade performance of the **5200**. If any of these steps are altered, the trade certification of the scale could be voided.

The **5200** provides a built in Setup Counter to monitor the number of times the critical steps are altered. The value of this counter is stored within the instrument and can only be reset at the factory. Each time a critical step is altered, the counter will increase by one. Whenever the **5200** is powered up, or setup mode is entered, the current value in the counter is displayed briefly (eg. C00010).

The value of this counter is written on the tamperproof trade label on the front of the indicator for trade-certified applications and functions as an electronic seal. If any trade critical settings are changed on the instrument, the current value of the trade counter will be different from the recorded value and the seal is broken.   If an attempt is made to alter a trade critical setting while in Safe Setup, the instrument will respond with the **ENTRY DENIED** message.

9.8. Passcodes

The **5200** has three levels of passcodes to provide a security lock on accessing Setup via the keypad.
- Full Setup Passcode: Level 1 (highest)
- Safe Setup Passcode: Level 2
- Operator Passcode: Level 3 (lowest)

The higher-level passcodes can be used on lower levels. For example, the Full Setup passcode could be used for all levels of passcode and the Safe Setup passcode could be used for either Safe Setup or Operator passcodes.

Note: When accessing Setup via the Viewer, the passcode is prompted if Write Settings function is chosen.

9.8.1. Operator Passcode

The Operator Passcode prevents access to the <TARGET> and <ID> keys on the Keypad. Refer to PASS.CD:OPER.PC (Set Operator Passcode) page 49 for more information.

9.8.2. Safe Setup Passcode

The passcode for Safe Setup prevents access to Safe Setup. In Safe Setup, all trade critical setup functions are blocked. Refer to PASS.CD:SAFE.PC (Set Safe Setup Passcode) page 49 for more information.

9.8.3. Full Setup Passcode

The passcode for Full Setup prevents any access to Full Setup via the Keypad and Viewer. Refer to PASS.CD:FULL.PC (Set Full Setup Passcode) page 48 for more information.

10. Setup (Keypad)

The **5200** digital setup facilities provide the means to configure and calibrate the instrument. The configuration and calibration can be performed by using both the front panel keypad and the Viewer. This section describes the keypad setup. For information on the Viewer refer to the 5200 Viewer section page 62.

Note: In this manual where settings can be configured by using either the instrument keypad or the viewer, the 5200 Viewer section (starting on page 62) will usually contain the bulk of the details.

Data entry methods explained in Section 4 - Data Entry (Keypad) page 16 are used throughout keypad setup.

The **5200** provides three methods to access the Setup area. The **Full Setup** method provides access to all functions in Setup. The **Safe Setup** method restricts access to the Trade Critical Settings. The **Operator Menu Setup** method accesses only the Target and ID functions. If an attempt is made to alter a trade critical setting while in Safe Setup, the instrument will respond with the **ENTRY DENIED** message.

WARNING
All items in all menus will be enabled in **Full Setup**.
Care should be taken to avoid inadvertently altering the Build or Calibration settings.

10.1. Accessing Setup

Full Setup	Safe Setup	Operator Menu Setup
ZERO + FIND	GROSS/NET + FIND	TARGET 7 PQRS OR ID 8 TUV
To access **Full Setup**, first ensure the instrument is on. Then press and hold both the **<ZERO>** and **<FIND>** keys together for two seconds.	To access **Safe Setup**, first ensure the instrument is on. Then press and hold both the **<GROSS/NET>** and **<FIND>** keys together for two seconds.	To access **Operator Menu Setup**, first ensure the instrument is on. Then press and hold either the **<TARGET>** key or the **<ID>** key for two seconds.
When accessing **Full** or **Safe Setup** the **5200** will beep twice and then display the following: • Full Setup or Safe Setup • Software Version (eg. V1.0) • Setup Access Count (eg. C 00010) If a passcode has been configured, this passcode must be entered to gain access. Refer to PASS.CD:FULL.PC (Set Full Setup Passcode) page 48 and PASS.CD:SAFE.PC (Set Safe Setup Passcode) page 49 for more information. • The first item in the Group list (ie. **BUILD**) will then display.		When accessing either of the **Operator Menu Setups** the **5200** will beep twice and then display the first setting. Refer to TARGET Key page 26 and ID Key page 27 for more information.

10.2. Exiting Full or Safe Setup

There are three methods for exiting Full or Safe Setup and returning to the Operator Interface.

- **Method 1:** Press and hold both the **<ZERO>** and **<FIND>** keys together for two seconds.
- **Method 2:** Press and hold both the **<GROSS/NET>** and **<FIND>** keys together for two seconds.
- **Method 3:** Press the **<GRP>** key repeatedly. When **- End -** displays press **<OK>**.

The **5200** will beep and then display the following:
- Software Version (eg. 1.0)
- Setup Access Count (eg. C 00010)
- The current weight will then display.

10.3. Exiting Operator Menu Setup

There is one method for exiting either the Target or the ID Operator Menu Setup and returning to the Operator Interface.

- Press the **<OK>** key.

10.4. Groups and Items

All keypad setup options in the **5200** are organised in a tree structure made up of **Groups** and **Items**. To simplify this document, Groups and Items will be notated as follows (GROUP:ITEM).

10.4.1. GRP (Groups)

Keypad setup is divided into a series of **Groups**. Each group has a distinctive group title. All options in any one group have related functions. The **<GRP>** key can be used to cycle through the available groups. The **<ESC/C>** key can be used to cycle through groups in the reverse direction.

10.4.2. ITM (Items)

Each group is divided into individual **Items**. Each item represents a parameter that can be changed. Pressing the **<ITM>** key will enter the displayed group, allowing access to the items within the group. The **<SEL>** key can be used to cycle through the available items. The **<EDT>** key is then used to edit the item. The **<ESC/C>** key can be used to cycle through items in the reverse direction.

10.4.3. SEL (Select Sub-Items)

Where a large number of related settings exist, a **sub-group** of **sub-items** is included under an item. Pressing the **<SEL>** key will select a particular sub-item and cycle through the available items within that item. The **<EDT>** key is then used to edit the item. The **<ESC/C>** key can be used to cycle through items in the reverse direction.

10.5. Setup Menus

The following sections describe the setup parameters of each of the Groups and Items in the keypad setup.

10.5.1. BUILD (Scale Build Menu)

Settings in this group configure the indicator to suit the current application. It is important to fully set the options within this group before calibration is attempted. Later changes to items within this group may invalidate the current calibration data.

- **TYPE (Display Type)** ⊗

  Sets the type of display to suit the application.

  Options are:
  - SINGLE:
  - DUAL R: Dual Range (Refer to Dual Interval and Dual Range Operation page 39.)
  - DUAL I: Dual Interval (Refer to Dual Interval and Dual Range Operation page 39.)
  - Default: SINGLE

- **DP (Decimal Point Position)** ⊗

  Sets the location of the decimal point on the display. To avoid confusion, set this parameter first so that all other weight related values are displayed with the decimal point in the correct position.
  - Can be set from 000000 (none) to 0.00000
  - Default: 000000

- **CAP1 (Full Scale 1 - Max Capacity 1 (Lower Range))** ⊗

  Refer to Full Scale 1 (CAP1) (Max Capacity 1 (Lower Range)) ⊗ page 69 for information on this setting.

- **E1 (Resolution 1 - Count-By 1 (Lower Range))** ⊗

  Refer to Resolution 1 (E1) (Count-By 1 (Lower Range)) ⊗ page 69 for information on this setting.

- **CAP2 (Full Scale 2 - Max Capacity 2 (Upper Range))** ⊗

  Refer to Full Scale 2 (CAP2) (Max Capacity 2 (Upper Range)) ⊗ page 70 for information on this setting.

- **E2 (Resolution 2 - Count-by 2 (Upper Range))** ⊗

  Refer to Resolution 2 (E2) (Count-by 2 (Upper Range)) ⊗ page 70 for information on this setting.

- **AD.TARE (Additive Tare Limit)** ⊗

  Refer to Additive Tare (AD.TARE) ⊗ page 69 for information on this setting.

- **UNITS (Weighing Units - Units of Measure)** ⊗

  Refer to Weighing Units (UNITS) (Units of Measure) ⊗ page 69 for information on this setting.

- **SYNC (Synch Filter) (A/D Synchronisation Frequency)** ⊗

  Refer to Synch Filter (SYNC) (A/D Synchronisation Frequency) ⊗ page 69 for more information on this setting.

10.5.2. OPTION (Scale Options Menu)

Settings in this group configure the operating parameters of the scale. Only **some** of these settings may be changed after calibration without affecting the calibration accuracy.

- **USE (Scale Usage)** ⊗

  The basic use of the scale must be set here. Refer to Usage (USE) (Scale Use) ⊗ page 71 for more information on this setting.
  - Options are: TRADE and INDUST (Industrial)
  - Default: INDUST

- **FILTER (Filtering - Reading Average)**

  Refer to Filter (FILTER) (Reading Average) page 71 for information on this setting.

- **JITTER (Anti-Jitter - Weight Stabilisation)**

  Refer to Anti-Jitter (JITTER) (Weight Stabilisation) page 72 for more information on this setting.

- **MOTION (Motion Detection)** ⊗

  Sets how much weight variation over a defined time period is allowed before the displayed weight is deemed to be unstable. This value is displayed in weight change (0.5, 1.0, 2.0 or 5.0 divisions (graduations)) per time period (1.0, 0.5 or 0.2 seconds). When set to **NONE** the motion detection is ignored and the **ZERO**, **TARE** and **PRINT** actions are instantaneous.
  - Options are: (displayed as div - seconds)

Off		
0.5 - 1.0 (fine)	0.5 - 0.5	0.5 - 0.2
1.0 - 1.0	1.0 - 0.5	1.0 - 0.2
2.0 - 1.0	2.0 - 0.5	2.0 - 0.2
5.0 - 1.0	5.0 - 0.5	5.0 - 0.2 (coarse)

  - Default: 1.0 - 1.0 (1.0 division per 1.0 second)

- **INIT.Z (Initial Zero)**

  Refer to Initial Zero (INIT.Z) page 73 for more information on this setting.

- **Z.TRAC (Zero Tracking Sensitivity)** ⊗

  Zero tracking allows the display to adjust for minor changes in the zero balance of the scale. The zero track limit sets the fastest rate of change that is allowed to be compensated automatically. This value is displayed in the number of divisions (0.5, 1.0, 2.0 or 5.0 divisions (graduations)) per time period (1.0, 0.5 or 0.2 seconds). When set to **NONE** the Zero Tracking facility is disabled.
  - Options are:

Off		
0.5 - 1.0 (fine)	0.5 - 0.5	0.5 - 0.2
1.0 - 1.0	1.0 - 0.5	1.0 - 0.2
2.0 - 1.0	2.0 - 0.5	2.0 - 0.2
5.0 - 1.0	5.0 - 0.5	5.0 - 0.2 (coarse)

  - Default: Off

- **Z.RANGE (Zero Range - Allowable Zero Operating Range)** ⊗

  This setting restricts the range over which the Zero functions can operate.
  - Options are: 02-02; 01-03; 20-20; 100.100.
  - Default: 02-02 (–2% to +2%)

- **Z.BAND (Zero Band)** ⊗

  Refer to Zero Band (Z.BAND) ⊗ page 73 for more information on this setting.

- **I.LOCK (Totaliser Interlock)**

  Refer to Interlock (I.LOCK) page 73 for more information on this setting.

- **AUTO.T (Auto Tare)**

  Refer to Automatic Tare (AUTO.T) page 73 for more information on this setting.

10.5.3. CAL (Scale Calibration Menu)

Items within this group perform various calibration routines. For detailed scale calibration procedures refer to Calibration page 107. Certain items in Scale Build, Special and Options can affect the calibration of the scale. Always check that these sections are correctly configured to suit the current application before attempting to calibrate the scale.

- **ZERO (Zero Calibration)** ⊗

  Refer to Calibration (CAL): Zero Calibration (ZERO) ⊗ page 95 for more information on this setting.

- **SPAN (Span Calibration)** ⊗

  Refer to Calibration (CAL): Span Calibration (SPAN) ⊗ page 95 for more information on this setting.

- **ED.LIN (Edit Linearisation Points)** ⊗

  Refer to Set or Edit Linearisation Points page 110 for more information on this setting.

- **CLR.LIN (Clear Linearisation Points)** ⊗

  Refer to Clear Linearisation Points page 111 for more information on this setting.

- **DIR.ZER (Direct mV/V Calibration - Zero Calibration Routine)** ⊗

  Refer to Direct mV/V Calibration (Zero Calibration Routine) page 109 for more information on this setting.

- **DIR.SPN (Direct mV/V Calibration - Span Calibration Routine)** ⊗

  Refer to Direct mV/V Calibration (Span Calibration Routine) page 109 for more information on this setting.

- **FAC.CAL (Restore Default Factory Calibration)** ⊗

  Select this choice to restore default factory calibration.

  When this function is chosen the indicator will prompt to continue with **CONT N**. Use the **<PRINT>** key to switch between **N** (No) and **Y** (Yes). The **<OK>** key is used to accept your choice (**DONE** will flash briefly) and return to the **FAC.CAL** item.

10.5.4.   SPEC (Special Settings Menu)

Settings in this group control features including passcodes, key locking, remote functions and display settings.

- <u>**PASS.CD**</u> **(Passcode Menu)**

  The functions in this section allow access to setting three levels of passcodes and also to enabling or disabling operator access to specific functions. When the instrument prompts to **ENTER PASS,** if an incorrect passcode is entered, the instrument will display **NO ENTRY** and return to normal operation.

  To restrict access to writing settings from the Viewer to the Instrument, the Full Setup Passcode must be set.

  Passcode setting functions are available only via setup in the keypad.

- **PASS.CD:FULL.PC (Set Full Setup Passcode)**

  The passcode for Full Setup prevents any access to Full Setup via the keypad and viewer. The default passcode setting is **0** (allows free access). This code is used to prevent any unauthorised or accidental tampering in the instrument setup. Any other number will restrict access. The **FULL.PC** passcode can only be set from Full Setup on the keypad. Numeric characters only are allowable for passcodes.
  - Range: 0 to 999999
  - Default: 0

When writing settings to the instrument that have been changed via the Viewer the following prompt appears requesting the passcode.

It is important to note that when restricting access via the Full Setup Passcode, the code must not be forgotten. It is only possible to circumvent the code at the factory. Care must be taken to ensure that the instrument does not become permanently locked.

- **PASS.CD:SAFE.PC (Set Safe Setup Passcode)**

  The passcode for Safe Setup prevents access to all Trade Critical setup functions via the keypad. When the Safe Setup Passcode is set the Full Setup Passcode should also be set. The default passcode setting is **0** (allows free access). Any other number will enable the passcode functions and restrict access to Trade Critical functions. The **SAFE.PC** passcode can be set from Full or Safe Setup on the keypad. Numeric characters only are allowable for passcodes.
  - Range: 0 to 999999
  - Default: 0

- **PASS.CD:OPER.PC (Set Operator Passcode)**

  The Operator Passcode prevents access to the **<TARGET>** and **<ID>** keys on the keypad. The default passcode setting is **0** (allows free access). Any other number will enable the passcode functions and restrict access. The **OPER.PC** passcode can be set from Full or Safe Setup on the keypad. Numeric characters only are allowable for passcodes.
  - Range: 0 to 999999
  - Default: 0

- **KEY.LOC (Front Panel Key Locking)**

  This item allows individual keys to be locked and unlocked. The display shows **ZTGPF** to indicate each of the front panel keys (eg. **<ZERO>**, **<TARE>**, **<GROSS/NET>, <PRINT>**, **<FRONT>**). A locked key will show a dash (-) instead of a letter. For example **-TG-F** means that the **<ZERO>** and **<PRINT>** keys are locked.

  The **<PRINT>** key can also be set to the option **N** which means the weight can print but will not be added to the product total. This feature is useful for checkweighing applications.

  Refer to Special Functions page 126 for details of the available functions.

- **FUNCTN** **(Front Panel and Remote Key Menu)**

  The items in this menu allow access to configuring the functions of all user-defined keys. This includes the user defined **<FRONT>** function key and up to four remote (external) keys.

- **FUNCTN:FRONT (User Defined Function Key)**

  This sets the function of the front panel user defined function key. Refer to Special Functions page 126 for details of the available functions.

- **FUNCTN:REM 1, 2, 3 and 4** **(Remote Key Settings)**

  Refer to Remote Key Settings (FUNCTN): Remote 1, 2, 3 and 4 (REM 1 to REM 4) page 75 for more information on these settings.

- **B.LIGHT** **(Backlight)**

  Refer to Display Settings: Backlight (B.LIGHT) page 75 for more information on this setting.

- **AUX.DSP** **(Auxiliary Display)**

  Refer to Display Settings: Auxiliary Display (AUX.DSP) page 75 for more information on this setting.

10.5.5. SER.P1 and SER.P2 (Serial 1 and Serial 2 Communications Menu)

Settings in this group configure the serial port communications options for auto outputs, printers and networking. Refer to Serial Outputs page 112 for more information.

- **SER.P1:TYPE (Serial Port 1 Output)**

  Sets the function of the first serial output. The port can be disabled or set to run as an automatic output (or printing) or a network device.

  Options are:
  - OFF: Disables the port.
  - ON.LO: Enable automatic transmission at 10Hz or printing.
  - ON.HI: Enable automatic transmission at the frequency entered in the SYNC item or printing. Refer to SYNC (Synch Filter) (A/D Synchronisation Frequency) $\otimes$ page 46
  - NET: Sets the instrument to function as a network device.
  - Default: NET

- **SER.P2:TYPE (Serial Port 2 Output)**

  Sets the function of the second serial output. The port can be disabled or set to run as an automatic output (or printing) device.

  Options are:
  - OFF: Disables the output (can be used as a network port).
  - ON: Enables automatic transmission at 10Hz or printing.
  - Default: Off

- **FORMAT (Output Format)**

  This sets the output format of the Port.

  Format options are available only with the following settings.

Port 1	TYPE = ON.LO or ON.HI
Port 2	TYPE = ON

  Options are:
  - AUTO.A and AUTO.E: Standard Rinstrum output formats
  - PRINT.A to PRINT.C: Standard print formats
  - CUSTOM: User programmable custom output format
  - Default: AUTO.B

  Refer to Serial Outputs page 112 for descriptions of the formats.

- **NET.OPT (Network Options Menu - Port 1 only)**

  The Network Options subgroup contains items associated with networking.

- **NET.OPT:ADDRES (Serial Address - Port 1 only)**

  This is the address of the **5200** (used in network applications).
  - Range: 00000 to 000031
  - Default: 000031

- **NAME (Instrument ID - Port 1 only)**

  Refer to Name (NAME) page 79 for more information on this setting.

- **AUT.OPT (Automatic Transmission Options Menu)**

  The automatic transmission options subgroup configures items associated with serial transmission of weight data.

  Automatic Transmission options are available only with the following settings.

Port 1	TYPE = ON.LO or ON.HI FORMAT = AUTO.A to AUTO.E or CUSTOM
Port 2	TYPE = ON FORMAT = AUTO.A to AUTO.E or CUSTOM

- **AUT.OPT:SRC (Auto Output Source)**

  This sets the weight source for the automatically transmitted data.

  Options are:
  - DISP: Displayed reading (gross or net)
  - GROSS: Gross weight
  - NET: Net weight
  - FULL: All data displayed is transmitted
  - Default: DISP

- **AUT.OPT:ST.CHR (Start Character)**

  Refer to Start Character (ST.CHR) page 80 for more information.

- **AUT.OPT:END.CH1 (First End Character)**

  Refer to End Character 1 (END.CH1) page 80 for more information.

- **AUT.OPT:END.CH2 (Second End Character)**

  Refer to End Character 2 (END.CH2) page 80 for more information.

- <u>**PRN.OPT**</u> **(Printer Options Menu)**

  The print options subgroup contains items associated with printing.

  Printer options are available only with the following settings.

Port 1	TYPE = ON.LO or ON.HI FORMAT = PRINT.A to PRINT.C or CUSTOM
Port 2	TYPE = ON FORMAT = PRINT.A to PRINT.C or CUSTOM

- **PRN.OPT:MODE (Printing Mode)**

  Refer to Mode (MODE) page 81 for more information.

- **PRN.OPT:HEADER (Print Ticket Header Text)**

  This setting sets the print header string. The instrument prompts with the position of the first character (ie. 001). Using the alphanumeric keypad, enter the first character and press **<OK>** to accept and display the position for the next character (eg. 002). When all characters have been entered, press **<OK>** to return to the HEADER menu item.
  - Default: None

- **PRN.OPT:FOOTER (Print Ticket Header Text)**

  This setting sets the print footer string. The instrument prompts with the position of the first character (ie. 001). Using the alphanumeric keypad, enter the first character and press **<OK>** to accept and display the position for the next character (eg. 002). When all characters have been entered, press **<OK>** to return to the FOOTER menu item.
  - Default: None

- **PRN.OPT:NEW.PAG (New Page String)**

  This setting sets the string to print on a new page. The instrument prompts with the position of the first character (ie. 001). Using the alphanumeric keypad, enter the first character and press **<OK>** to accept and display the position for the next character (eg. 002). When all characters have been entered, press **<OK>** to return to the NEW.PAG menu item.
  - Default: None

- **PRN.OPT:SPACE (Margin Space)**

  The margin space item allows the number of rows and columns of space to leave for each printout. This setting is entered in **CC.R1** format, where **CC** specifies the number of columns of blank space and **R1** specifies the number of rows of blank space. CC and R1 can be set from **00 to 09** to select up to **9** columns or **9** rows of blank space. A value of **10** will force a printer Form Feed.
  - 00 to 09: Forces blank columns and rows
  - 10: Forces a printer form feed
  - Default: 00.00 (zero columns and zero rows)

- **PRN.OPT:PAGE.H (Page Height)**

Refer to Page Height (PAGE.H) page 81 for more information.

- **PRN.OPT:PAGE.W (Page Width)**

Refer to Page Width (PAGE.W) page 81 for more information.

- <u>**CUSTOM**</u> **(Custom Format Menu)**

The Custom Format menu contains the various custom format strings available. These strings can contain ASCII characters plus special tokens.

For more information refer to Custom Format page 115.

Custom options are available only with the following settings.

Port 1	TYPE = ON.LO or ON.HI FORMAT = CUSTOM
Port 2	TYPE = ON FORMAT = CUSTOM

- **CUSTOM:EACH.P1 and EACH.P2 (Each Product Strings)**

The information in this section is valid for the items EACH.P1 and EACH.P2.

The product strings are special types of custom strings. These strings are sent **n** times where **n** is the number of products defined.
- Default: none

- **CUSTOM:EV.PRD.T (Product Total Event)**

This string is sent when the product total is printed
- Default: none

- **CUSTOM:EV.SES.T (Session Total Event)**

This string is sent when the session total is printed
- Default: none

- **CUSTOM:EV.GR.T (Grand Total Event)**

This string is sent when the grand total is printed
- Default: none

- **CUSTOM:EV.ADD (Add Event)**

This string is sent when a weight is added to a product total.
- Default: none

- **CUSTOM:EV.CHCK (Check Event)**

This string is sent when a new check weight is available.
- Default: none

- **CUSTOM:EV.HOLD (Hold Event)**

This string is sent when the weight is held.
- Default: none

- **CUSTOM:EV.STAB (Stable Event)**

This string is sent each time there is a motion reading and then a stable reading.
- Default: none

- **CUSTOM:EV.AUTO (Automatic Transmit Event)**

  This string is sent at 10Hz (or the sync frequency depending on setup).
  - Default: none

- **CUSTOM:EV.T.NEW (New Ticket Event)**

  This string is sent before anything else for a new ticket.
  - Default: none

- **CUSTOM:EV.P.NEW (New Product Event)**

  This string is sent before any product specific info is sent for a new product.
  - Default: none

- **CUSTOM:EV.P.END (New Product Event)**

  This string is sent before a new product when the product is changed.
  - Default: none

- **CUSTOM:EV.NORM (New Product Event)**

  This string is sent when the print key is pressed without a valid active product (No product add).
  - Default: none

- **CUSTOM:EV.NEW.L (New Line Event)**

  When this command is used, the new line string (including any additional characters) will be sent. If a predefined format is not being used (ie. if you are completely defining the custom format), all characters including CR LF need to be entered in this event.
  - Default: none

- **<u>USR.NAM</u> (User String Name Menu)**

  This option is used to set the User String Names. User String Names are used to identify User Strings. User Strings can be set from the ID key or the User Strings Sub-Tab. Refer to ID Key page 27 and User Strings (USR.NAM) Sub-Tab page 85.

  User Name options are available only with the following settings.

Port 1	TYPE = ON.LO or ON.HI FORMAT = PRINT.A to PRINT.C or CUSTOM
Port 2	TYPE = ON FORMAT = PRINT.A to PRINT.C or CUSTOM

- **USR.NAM:USR.NM1 to USR.NM3 (User String Names)**

  The information in this section is valid for the items USR.NM1 to USR.NM3.

  Each of the three User Names is set here. These names are used in the Operator Menu when the ID key is used. Valid entries are up to six alphanumeric characters and spaces.
  - Default: S1, S2 and S3

- **BAUD (Serial Baud Rate)**

  Refer to Baud Rate (BAUD) page 78 for more information.

- **BITS (Serial Format Options)**

  The bits options allow the data transmission bit pattern and interface to be changed. The Port 1 (SER.P1) display will show the current setting in the following form (n81-4-).

  Each character has a meaning as shown below.

  Options are:
  - N or O or E: Parity bit: (N) None, (O) Odd, (E) Even
  - 8 or 7: Number of data bits
  - 1 or 2: Number of stop bits
  - - or T: Termination resistors: (-) None, (T) Termination resistors present (Serial 1 only)
  - 2 or 4: Interface: (2) RS-232 or (4) RS-485 (Serial 1 only)
  - - or D: DTR handshake: (-) Disabled, (D) Enabled (Serial 2 only)
  - Default: Port 1: n81-4- and Port 2 n81-2-. For most applications the default setting is applicable.

10.5.6. SET.PTS (Setpoints)

Settings in this group configure the operational logic of the setpoint system. Refer to Setpoints page 123 for a detailed explanation of the items in this group.

- **SET.TYP (Setpoint Type)**

  This item sets the type and options for each setpoint. The information in this section is valid for Setpoint 1, 2, 3 and 4 (SETP 1, 2, 3 and 4).
  - Setpoint Type Options are: NONE, ACTIVE, CHECK, ERROR, MOTION, ZERO, NET and HOLD.
  - Default: NONE

  After selecting a Setpoint Type the **<OK>** key is pressed to display the setpoint options. The Setpoint Type determines which other setpoint choices will be available for configuration. Options displayed as an underscore (ie. _) **are not** available. Options displayed as a dash (ie. **–**) **are** available for configuration.

Position	Configuration Setting	For more information refer to:
First	Source	Source page 87
Second	Direction	Direction page 87
Third	Logic	Logic page 87
Fourth	Alarm	Alarm page 87

  For example if **SETP 1** is set to **ACTIVE** the default format is (**G O H –**). In this example the **G** in the first position indicates that the Source defaults to GROSS. The **O** in the second positions indicates the Direction defaults to OVER and the **H** in the third position indicates the Logic defaults to HIGH. The **–** (dash) in the fourth position indicates the Alarm is set to NONE.

- **<u>HYS</u> (Setpoint Hysteresis Options Menu)**

  This option is used to set the Setpoint Hysteresis (Tolerance). For more information refer to Hysteresis (HYS) page 87.

- **HYS:HYS 1 to HYS 4 (Setpoint Hysteresis)**

  The information in this section is valid for the items HYS 1 to HYS 4.

  Each of the three Setpoint Hysteresis settings is set here.
  - Default: 0

- **<u>CHK.OPT</u> (Checkweighing Options Menu)**

  Note: This option appears only where a **SET.TYP** has been set to **CHECK**.

- **CHK.OPT:TRG.OPT (Trigger Option)**

  Sets the checkweigh trigger condition.

  Options are:
  - INPUT: Trigger on checkweigh input
  - WEIGHT: Trigger on checkweigh input and weight level
  - Default: INPUT

- **CHK.OPT:TRG.LEV (Trigger Level)**

  Refer to Trigger Level (TRG.LEV) page 88.

- **CHK.OPT:TRG.RST (Trigger Reset Level)**

  Refer to Reset Level (TRG.RST) page 89.

- **CHK.OPT:PRE.DLY (Pre-Sample Delay)**

  Refer to Pre-Sample Delay (PRE.DLY) page 89.

- **CHK.OPT:WGHT.AV (Averaging Time)**

  Refer to Averaging Time (WGHT.AV) page 89.

- **CHK.OPT:DSP.OPT (Display Option)**

  Refer to Display Option (DSP.OPT) page 89.

- **CHK.OPT:DISP.TO (Display Timeout)**

  Refer to Display Timeout (DISP.TO) page 89.

- **CHK.OPT:GRADE.1 to GRADE.4 and NO.GRAD (Grade Names)**

  Refer to Grade 1 Name to Grade 4 Name (GRADE.1 to GRADE.4), No Grade Name (NO.GRAD) page 89.

- **PLS.PRE (Pulse: Delay Before ON Menu)**

  Note: This option appears only where the **SET.TYP** has been set to **ACTIVE** or **CHECK** and the **LOGIC** set to **PULSE** or **REPEAT**.

- **PLS.PRE:DELAY.1 to DELAY.4 (Delay Before ON)**

  Refer to Delay Before On (PLS.PRE) page 88.

- **PLS.ON (Pulse: ON Time Menu)**

  Note: This option appears only where the **SET.TYP** has been set to **ACTIVE** or **CHECK** and the **LOGIC** set to **PULSE** or **REPEAT**.

- **PLS.ON:ON.TIM.1 to ON.TIM.4 (Pulse: ON Time)**

  Refer to On Time (PLS.ON) page 88.

- **PLS.PST (Pulse: Delay After ON Menu)**

  Note: This option appears only where the **SET.TYP** has been set to **ACTIVE** or **CHECK** and the **LOGIC** set to **PULSE** or **REPEAT**.

- **PLS.PST:OFF.TM.1 to OFF.TM.4 (Pulse: Delay After ON)**

  Refer to Delay After On (PLS.PST) page 88.

10.5.7. ANALOG (Analog Settings)

Items within this group set the options for the optional analog output and combo cards. These setup functions are available only via the keypad setup (not the viewer).

- **SRC (Analog Output Source)**

  Selects the reading source for analog output.

  Options are:
  - DISP: Displayed weight reading, either gross or net.
  - GROSS: Gross weight only.
  - NET: Net weight only.
  - Default: DISP

- **TYPE (Analog Output Type)**

  Selects a range of voltage or current outputs.

  Options are:
  - OFF: Analog output disabled
  - VOLT: Voltage Output (-10v to 10v, 0v at 0 weight)
  - CUR: 4-20 mA current output
  - ABS.CUR: Absolute weight reading, output as 4-20mA current output
  - Default: OFF

- **CAL.LO (Calibrate Zero Output)**

  This allows a fine calibration of the analog output corresponding to zero weight at either 4mA or 0V, depending on the Analog Output Type.

  Options are:
  - UP: Up
  - UP.FST: Up Fast
  - DN: Down
  - DN.FST: Down Fast

  Note: When **UP** or **DN** is displayed, the **<EDT>** key is used to adjust the output in **small** increments. When **UP.FST** or **DN.FST** is displayed, the **<EDT>** key is used to adjust the output in **large** increments.

- **CAL.HI (Calibrate Fullscale Output)**

  This allows a fine calibration of the analog output corresponding to fullscale weight at either 20mA or 10V, depending on the analog output type.

  Note: The range of adjustment in Zero and Fullscale is around 9mA or 7VDC that allows for a complete range of voltage or current outputs. For example, it is possible to setup the voltage output to operate from 2 to 10V, 1 to 5V, 0 to 10V, etc., by changing the Zero and Fullscale analog calibrations.

  Options are:
  - UP: Up
  - UP.FST: Up Fast
  - DN: Down
  - DN.FST: Down Fast

  Note: When **UP** or **DN** is displayed, the **<EDT>** key is used to adjust the output in **small** increments. When **UP.FST** or **DN.FST** is displayed, the **<EDT>** key is used to adjust the output in **large** increments.

- **FRC.AN1 (Force Analog Output)**

  Test analog output. This function toggles the analog output between low (0V or 4mA) and high (10V or 20mA), to allow the analog output function to be tested independent of the weight readings.

  Options are:
  - LO: Low
  - HI: High
  - Default: LO

10.5.8. CLOC (Clock Options)

Items within this group set time and date related functions.

- **TIME (Set Time)**

  The correct time may be entered in this item. The time is entered in the format (00.HH.MM), where HH is the hours in 24-hour format (00-23) and MM is the minutes (00-59). The time can also be set with the Viewer. Refer to Current Time and Date: Time (TIME) (24 hour) (hh:mm:ss) page 91.

- **DATE (Set Date)**

  The current date may be entered in this item. The date is entered in European format (DD.MM.YYYY), where DD is the day of the month (01 – 31),   MM is the month of year (01 – 12) and YYYY is the year (2000-2099). The **5200** requests the day and month first, followed by the year. The date can also be set with the Viewer. Refer to Current Time and Date: Date (DATE) (dd/mm/yyyy) page 91.

- **QA.OPT (Enable Quality Assurance Option)** ⊗

  Refer to Quality Assurance: Enable QA Option (QA.OPT) ⊗ page 91 for more information on this setting.

- **QA.DATE (Next Quality Assurance Due Date)** ⊗

  The date when the next calibration check is due may be entered in this item. The date is entered in European format (DD.MM.YYYY), where DD is the day of the month (01 – 31), MM is the month of year (01 – 12) and YYYY is the year (2000-2099). The **5200** requests the day and month first, followed by the year. The date can also be set with the Viewer. Refer to Quality Assurance: Next QA Due Date (QA.DATE) (dd/mm/yyyy) ⊗ page 91.
    - Default: 1/01/2099

- **DTE.FMT (Date Format)**

  Sets the format in which dates are printed. Options are:

Standard Date	American Date	International Date
DD.MM.Y2: (eg. 30.08.02)	MM.DD.Y2: (eg. 08.30.02)	Y2.MM.DD: (eg. 02.08.30)
DD.MM.Y4: (eg. 30.08.2002)	MM.DD.Y4: (eg. 08.30.2002)	Y4.MM.DD: (eg. 2002.08.30)
    - Default: DD.MM.Y2

- **TME.FMT (Time Format)**

  Refer to Time and Date Format: Time Format (TME.FMT) page 90 for more information on this setting.

- **DTE.SEP (Date Separator)**

  Refer to Time and Date Format: Date Separator (DTE.SEP) page 91 for more information on this setting.

- **TME.SEP (Time Separator)**

  Refer to Time and Date Format: Time Separator (TME.SEP) page 90 for more information on this setting.

10.5.9. TEST (Special Test Functions)

Items within this group allow access to the testing routines for the **5200**. With these routines the scale base output can be monitored and the optional accessory cards can be tested.

- **SCALE (Scale Base Test Display)**

  Used to test the scale base for load cell or connection errors. It sets up the **5200** as a simple test meter to measure the load cell input. Display reads in milliVolts-per-Volt, factory calibrated to 0.1% worst case. In TRADE mode this display is only active for five seconds before returning to the menu.

- **HI.RES (High Resolution Display for Scale Testing)**

  Refer to High Resolution: x10 (TEST:HI.RES) (High Resolution Display for Scale Testing) page 69 for more information on this setting.

- **FRC.OUT (Force Outputs of Setpoint Card)**

  Forces each of the output drivers of the Setpoint card in turn. All outputs turn OFF when leaving this step. **Serial PLC outputs are NOT activated by this test.** Pressing the **<EDT>** key will advance through each output. Pressing the **<OK>** key will turn all outputs off and exit the test.

  Note: On a setpoint card, all four outputs are present. On a combo card, only outputs 1 and 2 are available.

  Options are:
  - OFF: All outputs off.
  - ON1: Output 1 on.
  - ON2: Output 2 on.
  - ON3: Output 3 on.
  - ON4: Output 4 on.
  - Default: OFF

- **TST.INP (Test Inputs of Setpoint Card)**

  The input test allows each of the inputs from the setpoint or combo card to be tested. All four external inputs are displayed at the same time. The status of each input is changed as contact closures are detected. A dash (**-**) indicates an input is not present. A number (1 to 4) indicates a particular input is active. For example, **- - 3 -** would indicate that input number three is active.

  Note: On a setpoint card, all four inputs are available. On a combo card, only input 1 is available.

- **O.LOAD (Overload Counter)**

  This menu item records the number of times the scale has been overloaded. An overload condition is defined as 135% of fullscale.

10.5.10. FACTRY (Factory Adjustment Menu)

- **DEFLT (Restore Factory Defaults)**

  This setting restores the digital setup of the **5200** back to the original "new" settings installed at the factory. The main use of this routine is to completely reset a **5200** that is being installed on a different scale. Restoring the factory defaults does not affect the calibration nor does it affect the User Strings. To reset the calibration to factory condition, refer to FAC.CAL (Restore Default Factory Calibration) ⊗ page 48.

  When this function is chosen the indicator will prompt to continue with **CONT N**. Use the **<PRINT>** key to switch between **N** (No) and **Y** (Yes). The **<OK>** key is used to accept your choice (DONE will flash briefly) and return to the **DEFLT** item.

- **DEL.PRD (Delete Products)**

  This setting deletes all products regardless of whether totals have been cleared or not.

  When this function is chosen the indicator will prompt to continue with **CONT N**. Use the **<PRINT>** key to switch between **N** (No) and **Y** (Yes). The **<OK>** key is used to accept your choice (**DONE** will flash briefly) and return to the **DEFLT** item.

- **CONFIG (Software License)**

  This item is used to enter the software option code that enables the optional multiple product totalising and checkweighing features in the **5200**.   Refer to "Smart" Software Option page 15 for more information.

10.5.11. -End- (Leaving Setup)

Refer to Exiting Full or Safe Setup page 44.

11. 5200 Viewer

The **5200 Viewer** is used to set up most aspects of the **5200** and can also be used during normal weighing operations. Many of the Operator Procedure detailed on page 32 can also be performed with the **5200 Viewer**.

Note: The **5200 Viewer** uses standard Windows methods for changing settings and entering data. Procedures are sometimes simpler when using the Viewer than when using the Keypad. Refer to Data Entry page 65. Some common operator procedures (using the Viewer) are detailed in Operator Procedures (Viewer) starting on page 100.

11.1. Keypad vs Viewer (Keystroke Equivalents)

The following table defines the equivalent methods for using the mouse (for the Viewer) vs the keypad.

Keypad	Mouse
Press a key	Click a key
Press and Hold a key for two seconds	Shift + Click a key
Press two keys together (eg. <ZERO> + <FIND>)	Not available in Viewer

Table 6: Keypad vs Viewer (Keystroke Equivalents)

11.2. Connecting Viewer to Instrument

- Before you begin ensure the following are connected: Power supply, Serial cable to the PC and Load cell.   If Serial settings other than the factory defaults are required, ensure the **SERIAL** settings (available via the keypad keys) have been completed. Refer to SER.P1 and SER.P2 (Serial 1 and Serial 2 Communications Menu) page 50 for more information. The **Factory Default Settings** are shown in the Com Port Settings figure below.
- Run the viewer application file. The **5200 Viewer** displays.
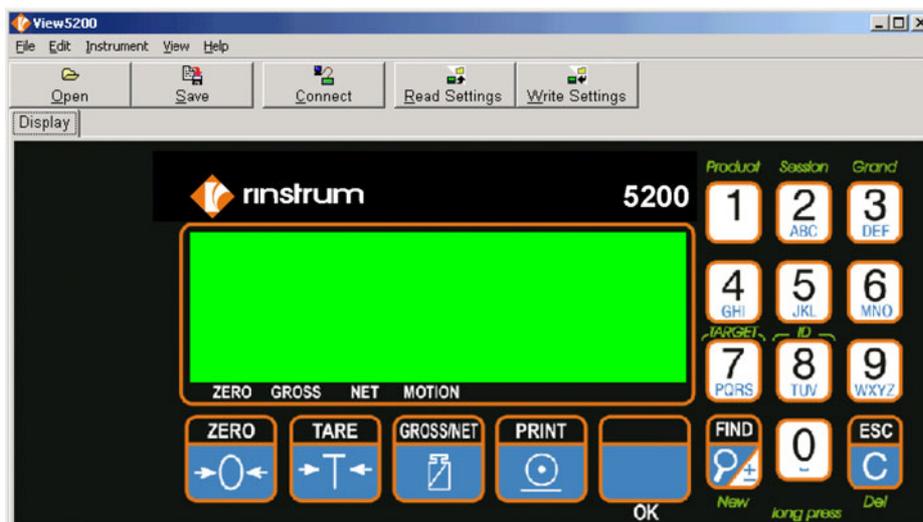
- Click the **Connect** button in the toolbar. The **Com Port Settings** dialog box displays. Choose settings to **exactly match** the **SERIAL** settings made via the instrument keypad. This **Com Port Settings** figure displays the **Factory Default Settings**.

  - **COM:** Choose the Com port (eg. COM1) on the PC to which the instrument is connected.
  - **Baud:** Choose the Baud setting (eg. 9600).
  - **Parity:** Choose the Parity setting (eg. None).
  - **Data Bits:** Choose the Data Bits setting (eg. 8)
  - **Stop Bits:** Choose the Stop Bits setting (eg. 1).
  - **Unit Address:** Choose the Instrument Address (eg. Any, 31, etc.).

- Choose **OK** when complete. The **5200 Viewer** will then mimic the actual display on the instrument.
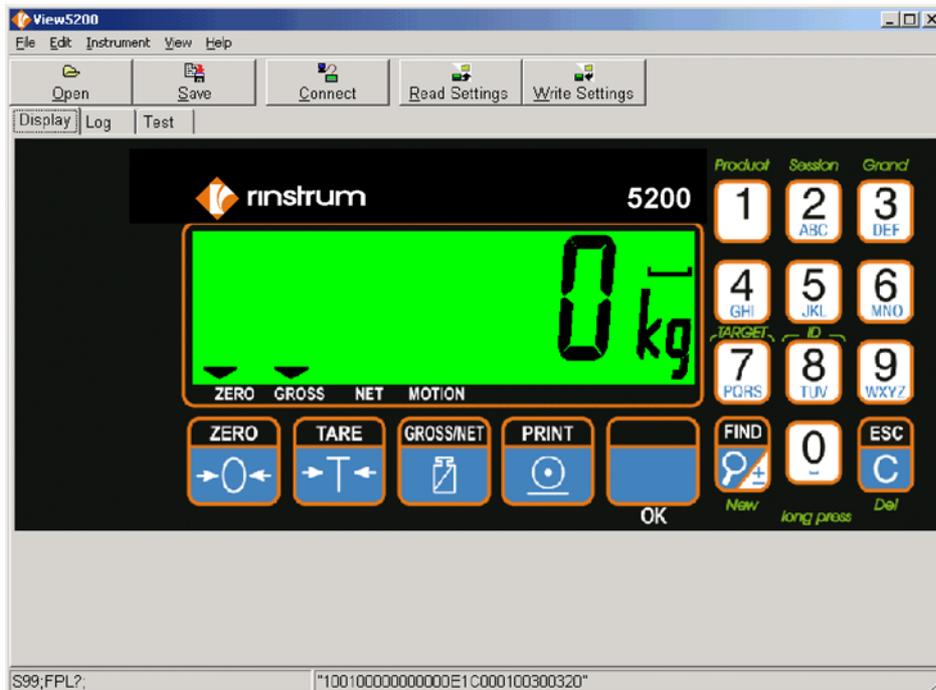
- The **Display Tab** on the Viewer (or the keypad on the instrument) can now be used for normal weighing operations. Refer to Basic Operation page 21 for information on normal weighing operations.

- The **Log Tab** and **Test Tab** also display. Refer to Log Tab page 97 and Test Tab page 99 for more information.

11.3. Disconnecting Viewer from Instrument

- Choose **File | Exit** from the menu.

11.4. Reading Instrument Settings into Viewer

To configure the instrument via the Viewer, its settings must first be read into the Viewer.

• Before you begin ensure all steps in Section 11.1 page 62 have been completed.
• Click the **Read Settings** button in the toolbar. The **Reading Settings from Instrument** dialog box displays. Wait…
• After the settings have been read completely the **5200 Viewer** will reflect the actual display on the instrument as well as showing extra Tabs for changing settings.
• The Viewer (or the keypad) can now be used for normal weighing operations.
• The Tabs for Settings, Products, Calibration, Log and Test can be used to change settings, view results or test the instrument.
• Refer to Basic Operation page 21 for information on normal weighing operations. Refer to Setup page 43 for information on setup.
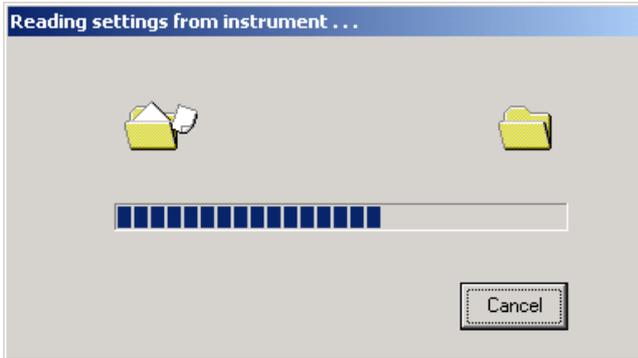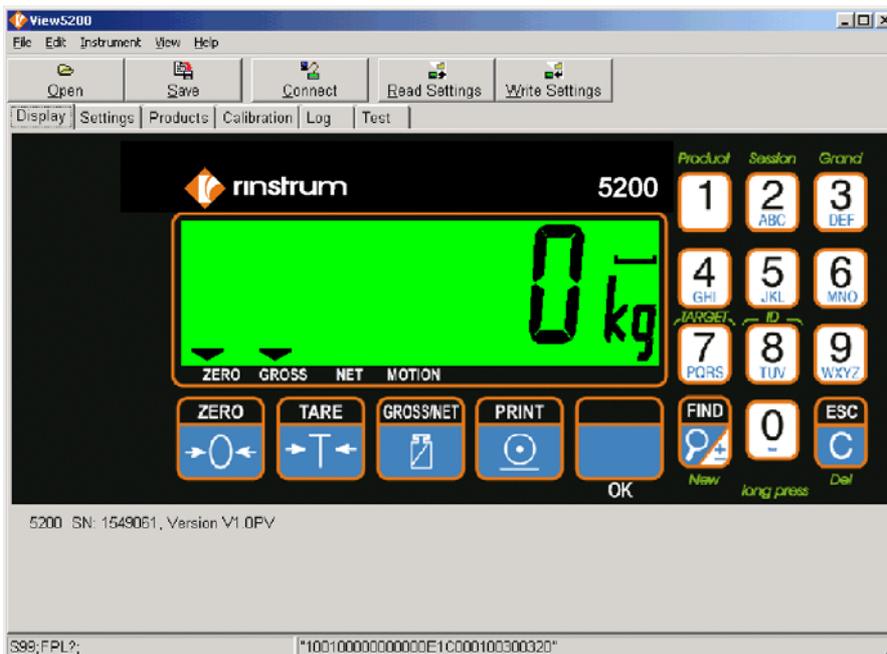
11.5. Exiting (Closing) the Viewer

Settings should be saved and/or written to the instrument before exiting. Refer to Save and Restore Viewer Settings and Log Data page 100.

- To exit the Viewer choose **File | Exit**.

11.6. Tour of the Viewer

11.6.1. Data Entry

The **5200 Viewer** uses standard Windows methods for changing settings and entering data. Figure 15 identifies the various types of settings used in the viewer. Refer to your Microsoft Windows manual for more detailed instructions on Windows methods.
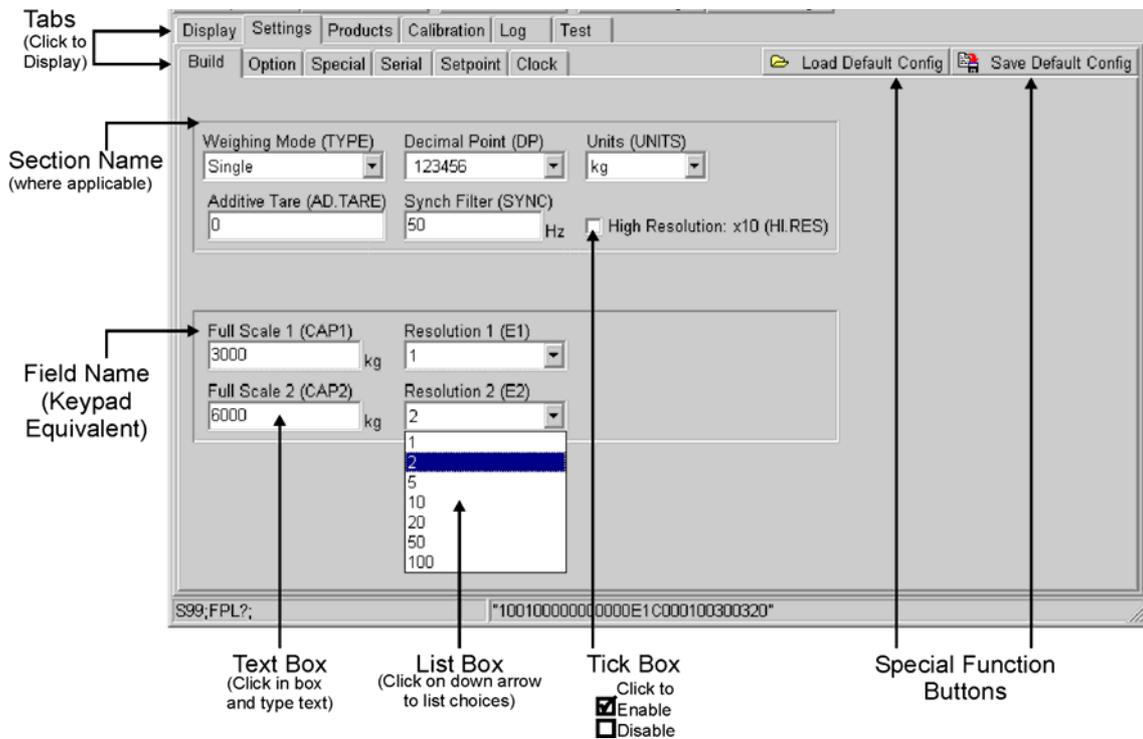
Figure 15: 5200 Viewer - Tour of Tabs

11.6.2. Menu

The Menu is across the top of the Viewer window and provides access to the choices listed in the following table. File Edit Instrument View Help
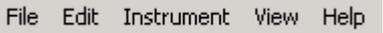
Menu	Choices	Description
File	**Open** Refer to Sections 12.1.3 and 12.1.5 starting on page 100.	Open a previously saved instrument settings or log data file. • Same as Open toolbar button. • File Types are: -RI Settings (*.RIS) -RI Log (*.LOG)
	Save Refer to Section 12.1.4 and 12.1.6 starting on page 100.	Save the current instrument settings or log data to a file. • Same as Save toolbar button. • File Types are: -RI Settings (*.RIS) -RI Log (*.LOG)
	Import Config Files Refer to Section 12.2.1 page 101.	Import User Configuration Files. • File Types are: -RI User Configurations (*.RIU, *.RIF)
	Export Config Files Refer to Section 12.2.2 page 102.	Export User Configuration Files. • File Types are: -RI User Configurations (*.RIU, *.RIF)
	Connect Refer to Section 11.2 page 62.	Connect to an instrument. • Same as Connect toolbar buttons. • To Disconnect refer to 11.3 page 63.
	Exit Refer to Section 11.5 page 65.	Exit the program.
Edit	**Setup Chart**	Used to configure the log view. • Refer to Log Tab page 97 for more information.
Instrument	**Read Settings** Refer to Section 12.1.1 page 100.	Read the current settings from the indicator. • Same as Read Settings toolbar button. • Dialog box appears to display progress.
	Write Settings Refer to Section 12.1.2 page 100.	Write the current settings to the indicator. • Same as Write Settings toolbar button. • Dialog box appears to display progress.
View	**Printed Output** Refer to Section 8.6 page 37.	View the printed output buffer of the connected instrument.
Help	**Help**	Displays this **5200 Digital Indicator (Totaliser/Checkweigher) Reference Manual**.
	About	Display the Help "About" information.

11.6.3. Viewer Toolbar

The toolbar is the set of buttons positioned under the Menu. It provides an alternative to using the Menu for the more commonly used functions.

Refer to the Menu section page 65 for more information on the toolbar buttons.

Button	Description
Open	Open a previously saved instrument settings or log data file. • Same as File | Open.
Save	Save the current instrument settings or log data to file. • Same as File | Save.
Connect	Connect to an instrument. • Same as File | Connect.
Read Settings	Read the settings from the indicator. • Unavailable if disconnected. • Same as Instrument | Read Settings.
Write Settings	Write the current settings to the indicator. • Unavailable if disconnected. • Same as Instrument | Write Settings.

11.7. Viewer Tabs

The Viewer **Display Tab** is explained in the Display and Controls section beginning on page 21. The remaining **5200 Viewer** Tabs (Settings, Products, Calibration, Log and Test) are displayed and explained in 5200 Viewer section beginning on page 62.

11.7.1. Tabs, Sections and Fields

All viewer setup options in the **View5200** viewer are organised in a structure made up of **Tabs**, **Sections** and **Fields**.   The **Settings** tab also contains **Sub-Tabs**. To simplify this document Tabs, Sub-Tabs, Sections and Fields will be notated as follows (Tab/Sub-Tab:Section:Field).

TAB / SUB-TABS	Viewer setup is divided into a series of Tabs (and Sub-Tabs). Each tab has a distinctive title. All options in any one tab have related functions.
SECTION	Most viewer tabs are divided into individual Sections. All options in any one section have related functions. Where required, the equivalent keypad setting will be identified in brackets (eg. Remote Key Settings (FUNCTN)).
FIELD	Each section is divided into individual Fields. Each field represents a parameter that can be changed. Where required, the equivalent keypad setting will be identified in brackets (eg. Remote 1 (REM 1)). Refer to Data Entry page 16 for information on data entry.

11.7.2. Display Tab

Refer to Display and Controls page 21 for information on the Display Tab.

11.7.3. Settings / Build Tab

Items in the **BUILD** tab are used to configure the indicator to suit the current application. It is important to fully set the options within BUILD before calibration is attempted. Later changes to items within this group may invalidate the current calibration data.
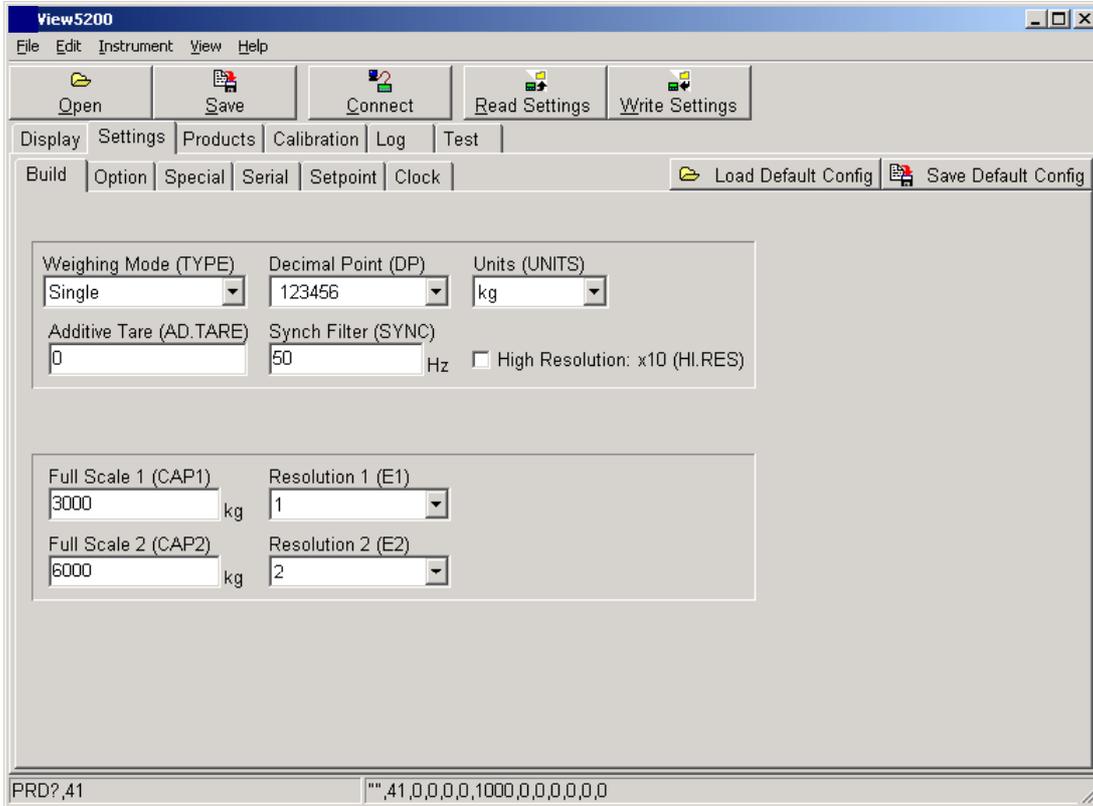
Figure 16: Viewer - Settings / Build Tab

- **Weighing Mode (TYPE) (Display Type)** ⊗

  Selects the type of display to suit the application.

  Options are:
  - Single
  - Dual Range (Refer to Dual Interval and Dual Range Operation page 39.)
  - Dual Interval (Refer to Dual Interval and Dual Range Operation page 39.)
  - Default: Single

- **Decimal Point (DP) (Position)** ⊗

  Sets the location of the decimal point on the display. To avoid confusion, set this parameter first so that all other weight related values are displayed with the decimal point in the correct position.
  - Can be set from 123456 (none) to 1.23456
  - Default: 123456

- **Weighing Units (UNITS) (Units of Measure)** ⊗

  Sets the units of measure for display and printing.
  - Options are: (g) grams, (kg) kilograms, (lb) pounds, (t) tonnes, (none) other units.
  - Default: kg

- **Additive Tare (AD.TARE)** ⊗

  Sets the amount of additive tare available. This is the maximum amount of weight that can be tared off the scale and still weigh to fullscale in net mode.
  - Default: 0

- **Synch Filter (SYNC) (A/D Synchronisation Frequency)** ⊗

  The A/D Synchronisation Frequency Filter sets the primary anti-noise filter of the **5200**. It will deliver optimum stability in a 50Hz environment when set to 12.5, 25 or 50Hz. This setting sets the number of readings taken per second. For example, a setting of 50 means that the instrument will take 50 readings per second.
  - Options are: 12.5, 15, 25, 30, 50 and 60 (setting steps)
  - Default: 50

- **High Resolution: x10 (TEST:HI.RES) (High Resolution Display for Scale Testing)**

  Allows the high resolution (x10) display mode to be turned On or Off. Once enabled, the **5200** will remain in high resolution mode until switched back to normal weighing in this step.
  - Options are: On or Off
  - Default: Off

- **Full Scale 1 (CAP1) (Max Capacity 1 (Lower Range))** ⊗

  Sets the nominal maximum capacity (or Range) of the scale in Single Range mode, or sets the maximum value of the lower range in Dual Range or Dual Interval mode. Refer to Weighing Mode (TYPE) (Display Type) ⊗ page 68. This is set in weighing units (eg. kg, t, etc.), with the decimal point in place. For example, if a scale is to weigh 500.0kg in 0.5kg increments, then set Full Scale 1 to 500.0 and set Resolution 1 to 0.5.
  - Default: 3000

- **Resolution 1 (E1) (Count-By 1 (Lower Range))** ⊗

  Sets the resolution (or Count-by) of the display for single range, or sets the resolution of the lower range in dual mode. The resolution is the number by which the indicator will count-by. This is set in weighing units with the decimal point in place.
  - Options are: 1, 2, 5, 10, 20, 50 or 100
  - Default: 1

- **Full Scale 2 (CAP2) (Max Capacity 2 (Upper Range))** ⊗

  Sets the maximum capacity of the upper range in Dual Range and Dual Interval modes. This defines the maximum capacity of the scale in Dual Range or Dual Interval mode. This setting is ignored in Single range mode. For example, if a scale is to weigh in 0.05kg to 100.00kg and then in 0.10kg to 300.00kg then set Full Scale 2 to 300.00, Resolution 2 to 0.10, Full Scale 1 to 100.00 and Resolution 1 to 0.05.
  - Default: 6000

- **Resolution 2 (E2) (Count-by 2 (Upper Range))** ⊗

  Sets the resolution (or Count-by) of the upper range in Dual Range mode. This is set in weighing units with the decimal point in place.
  - Options are: 1, 2, 5, 10, 20, 50 or 100
  - Default: 2

11.7.4. Settings / Option Tab

Fields within this Tab are used to configure the operating parameters of the scale. Only **some** of these fields may be changed after calibration without affecting the calibration accuracy.
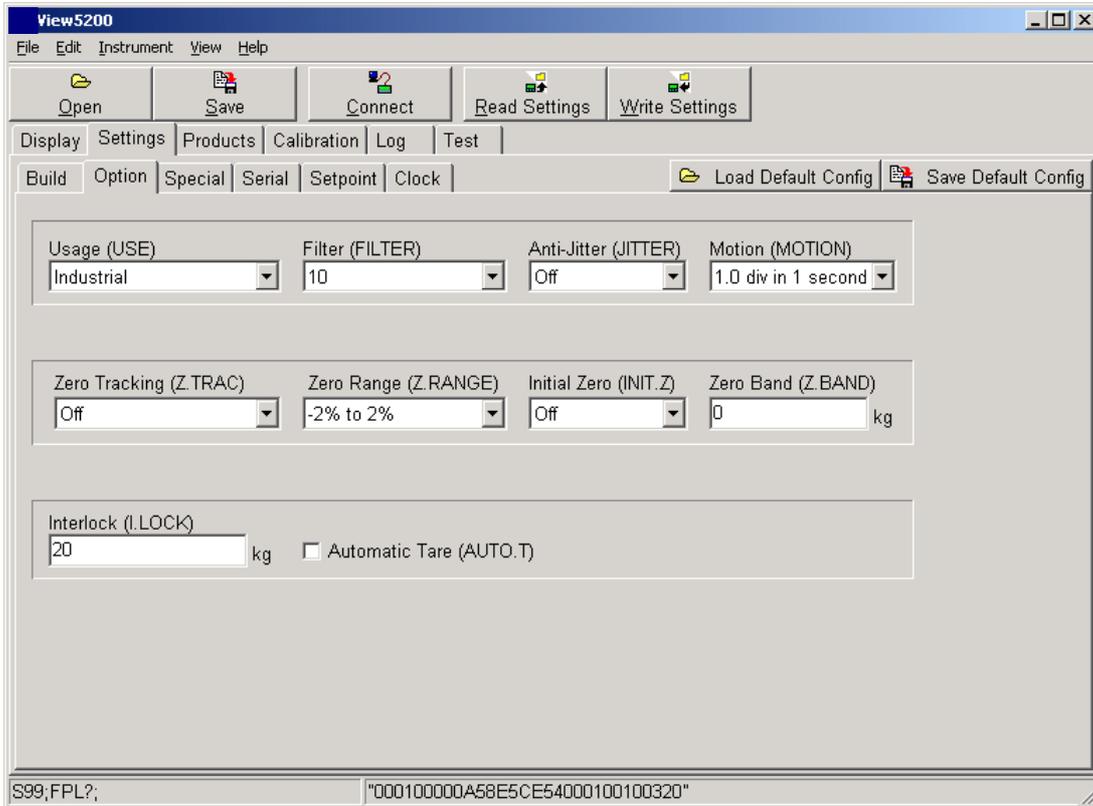
Figure 17: Viewer - Settings / Option Tab

- **Special Function Buttons: Load Default Config and Save Default Config**

    Refer to Load Default Config and Save Default Config page 103 for more information.

- **Usage (USE) (Scale Use)** ⊗

    The basic use of the scale must be set here. This setting configures the **5200** for either Industrial or Trade operation. Trade configuration will limit the operation of the instrument to comply with OIML provisions. Industrial configuration removes all restrictions on operation. Refer to Trade vs Industrial Mode page 41 for more information.
    - Options are: Industrial or Trade
    - Default: Industrial

- **Filter (FILTER) (Reading Average)**

    The **5200** can average a number of sequential readings when calculating the displayed weight. This is used to dampen unwanted weight fluctuations caused by vibrations or dynamic forces. High settings will stabilise the display at the expense of rapid response to sudden weight changes.
    - Options are: 1 to 10, 25, 50, 75, 100, 200 (number of readings)
    - Default: 10 (readings)

- **Anti-Jitter (JITTER) (Weight Stabilisation)**

  This feature can automatically damp out small weight fluctuations without affecting the speed of response to rapid weight changes (separate to averaging). Useful for stabilising minor changes in weight readings.
  - Options are: Off, Fine or Coarse
  - Default: Off

- **Motion (MOTION) (Detection)** ⊗

  Sets how much weight variation over a defined time period is allowed before the displayed weight is deemed to be unstable. This value is displayed in weight change (0.5, 1.0, 2.0 or 5.0 divisions (graduations)) per time period (1.0, 0.5 or 0.2 seconds). When set to **Off** the motion detection is ignored and the **ZERO** and **PRINT** actions are instantaneous.
  - Options are:

Off		
0.5 div in 1 second (fine)	0.5 div in 0.5 seconds	0.5 div in 0.2 seconds
1.0 div in 1 second	1.0 div in 0.5 seconds	1.0 div in 0.2 seconds
2.0 div in 1 second	2.0 div in 0.5 seconds	2.0 div in 0.2 seconds
5.0 div in 1 second	5.0 div in 0.5 seconds	5.0 div in 0.2 seconds (coarse)

  - Default: 1.0 div in 1 second

- **Zero Tracking (Z.TRAC) (Sensitivity)** ⊗

  Zero tracking allows the display to adjust for minor changes in the zero balance of the scale. The zero track limit sets the fastest rate of change that is allowed to be compensated automatically. This value is displayed in the number of divisions (0.5, 1.0, 2.0 or 5.0) per time period (1.0, 0.5 or 0.2 seconds). When set to Off the Zero Tracking facility is disabled.
  - Options are:

Off		
0.5 div in 1 second (fine)	0.5 div in 0.5 seconds	0.5 div in 0.2 seconds
1.0 div in 1 second	1.0 div in 0.5 seconds	1.0 div in 0.2 seconds
2.0 div in 1 second	2.0 div in 0.5 seconds	2.0 div in 0.2 seconds
5.0 div in 1 second	5.0 div in 0.5 seconds	5.0 div in 0.2 seconds (coarse)

  - Default: Off

- **Zero Range (Z.RANGE) (Allowable Zero Operating Range)** ⊗

  This setting restricts the range over which the Zero functions can operate.
  - Options are: –20% to 20%, –100% to 100%, –2% to 2% or –1% to 3%
  - Default: –2% to 2%

- **Initial Zero (INIT.Z)**

  This function can be used to automatically zero the indicator during power-up. The amount of weight that can be zeroed is limited to +/– 10% of Range. If the weight is outside this range on power-up, the instrument displays briefly displays **Z.IN P** and then the **ZERO ERROR** flashes. The weight then displays.
  - Options are: On or Off
  - Default: Off

- **Zero Band (Z.BAND)** ⊗

  This is an adjustable margin either side of true zero that defines the Zero 'Dead' Band. The Zero Band is used by the automated functions of the **5200** to determine Zero Load. For example, a setting of 4 specifies that readings between -4.5 and 4.5 are considered to be zero.
  - Settable over the full weight range. Always enter a number in multiples of display units. Refer to Full Scale 1 (CAP1) (Max Capacity 1 (Lower Range)) ⊗ page 69
  - Default: 0 (ie. –0.5 to 0.5 graduations)

- **Interlock (I.LOCK)**

  This is the minimum weight change required to re-arm the product totaliser.
  - Default: 20

- **Automatic Tare (AUTO.T)**

  This sets whether or not to do a tare after an add operation is performed.
  - Options are: On or Off
  - Default: Off

11.7.5. Settings / Special Tab

Fields in this Tab control features including front and remote key settings and display settings.
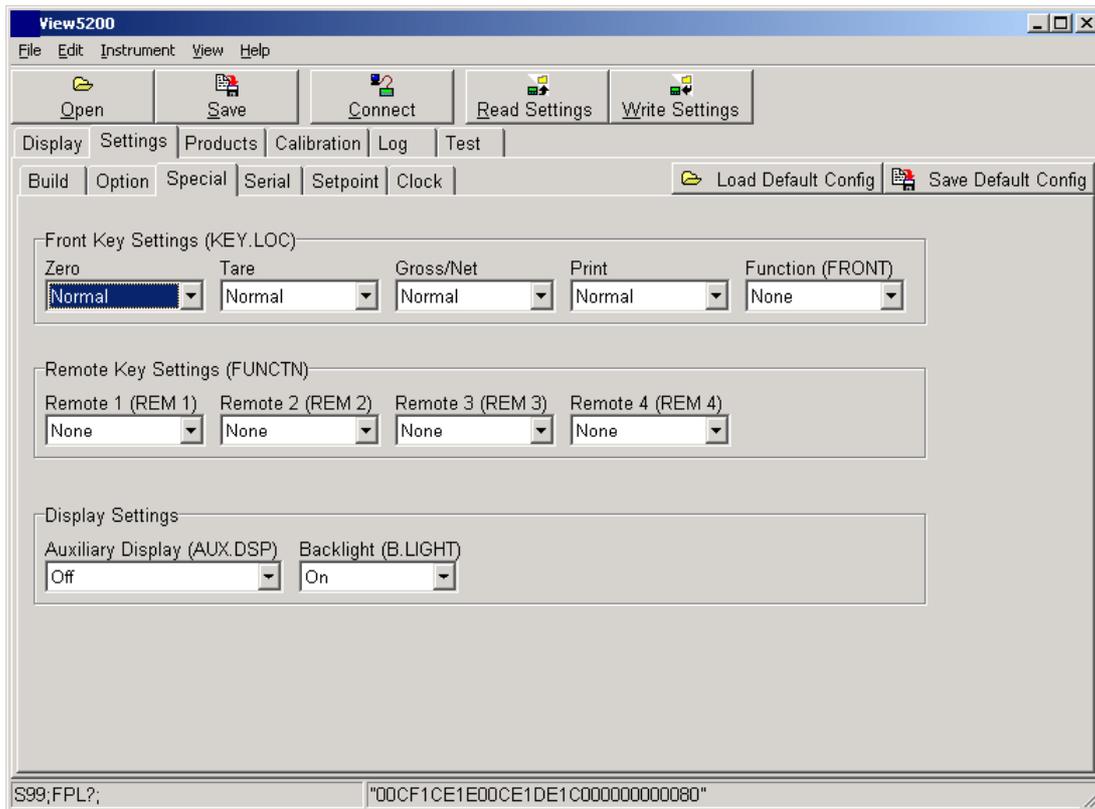
Figure 18: Viewer - Settings / Special Tab

- **Front Key Settings (KEY.LOC): Zero, Tare, Gross/Net, Print and Function (FRONT)**

  This item allows individual keys to be locked and unlocked. It also sets the function of the front panel user defined function key.

  Options for the **Zero**, **Tare**, **Gross/Net** and **Print** keys are:
  - Lock: Key will not function.
  - Normal: Key will function as normal.
  - Default: Normal

  The **Print** key has an additional option:
  - No Add to Total: Key is enabled and can print but will not add weight to the total (useful for checkweighing).

  Options for the **Function (FRONT)** key are:
  - None, Check, Total, Hold, Peak Hold and Count. Refer to Special Functions page 126 for details of the available functions.
  - Default: None

- **Remote Key Settings (FUNCTN): Remote 1, 2, 3 and 4 (REM 1 to REM 4)**

  The Remote Key Settings section configures the four remote (external) keys. These fields set the functions of the external inputs on the setpoint or combo card. Either the setpoint or combo cards can be inserted. The setpoint card allows Remote Keys 1 to 4. The combo card allows Remote Key 1 only. Refer to Special Functions page 126 for details of the available functions.
    - Options are: None, Zero, Tare, Gross/Net, Print, Func, Blank, Lock, Check, Total, Hold, Peak Hold, Count
    - Default: None

- **Display Settings: Auxiliary Display (AUX.DSP)**

  This sets the function of the auxiliary display.

  Options are:
    - Off: Blank
    - Time: Displays the current time in 12 hour format
    - Default: Off

- **Display Settings: Backlight (B.LIGHT)**

  Sets the operation of the backlight.

  Options are:
    - Off: Backlight is off
    - On: Backlight is always on
    - Default: On

11.7.6. Settings / Serial / Port 1 and Port 2 Tabs

Settings in these Tabs configure the serial port communications options. For Port 1 the choices are for auto outputs, printing and networking. For Port 2 the choices are for auto outputs and printing. Refer to Serial Outputs page 112 for more information. In this section the fields that are common to all screens will be described first

The **Mode (TYPE)** field determines whether sub-tabs display in the Serial Tabs.

- **Port 1: Mode=Network or Off   OR   Port 2: Mode=Off**

  When the Mode has been set to Network or Off for both Port 1 and Port 2 no sub-tabs will display.
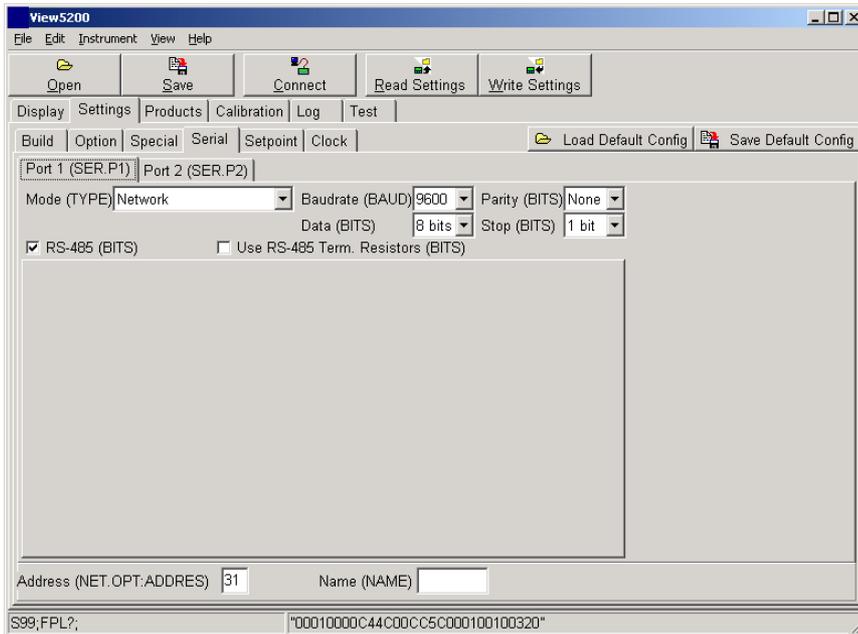
Figure 19: Viewer - Settings / Serial / Port 1 Tab (Mode: Network)
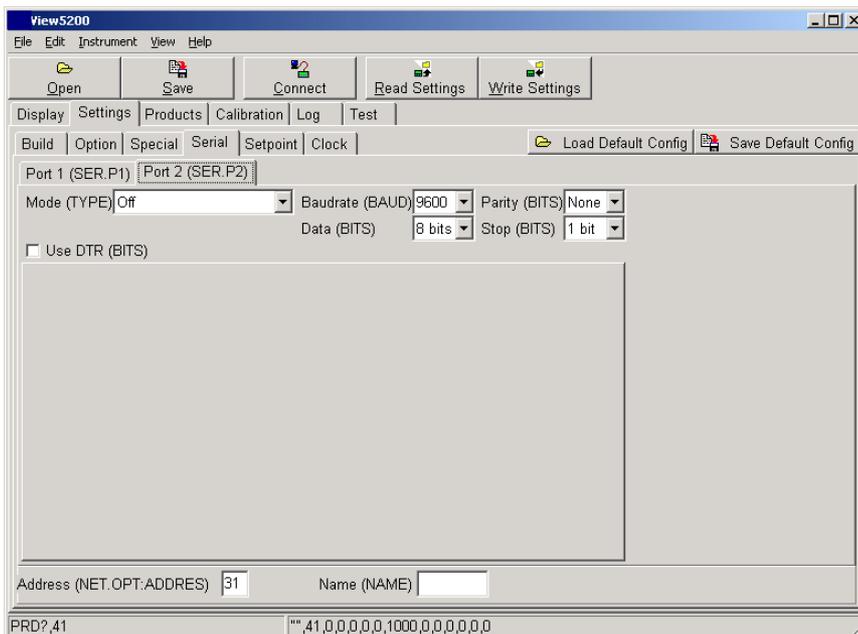
Figure 20: Viewer - Settings / Serial / Port 2 Tab (Mode: Off)

- **Port 1: Mode=On (Printing or Auto Lo) or On (Printing or Auto Hi)   or Port 2: Mode=On**

  When the Mode has been set to On for Port 1 or Port 2 the **Format (FORMAT)** field determines which sub-tabs will display. The sub-tabs displayed in the following figures apply to both Port 1 and Port 2.
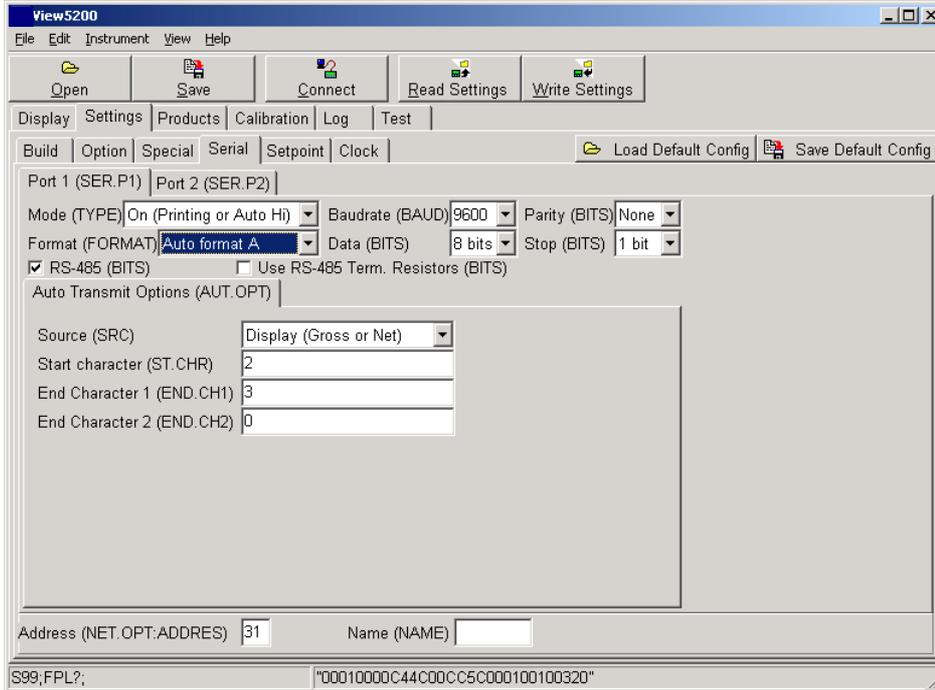
Figure 21: Viewer - Settings / Serial / Port 1 & 2 Tab (Mode: On) (Format: Auto Format A to E)
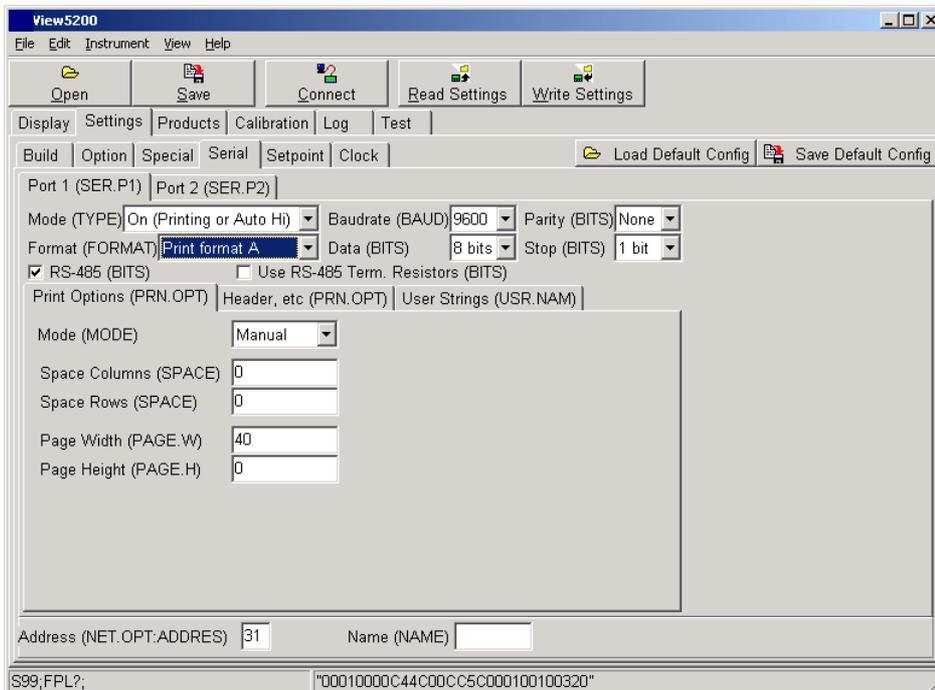
Figure 22: Viewer - Settings / Serial / Port 1 & 2 Tab (Mode: On) (Format: Print Format A to C)
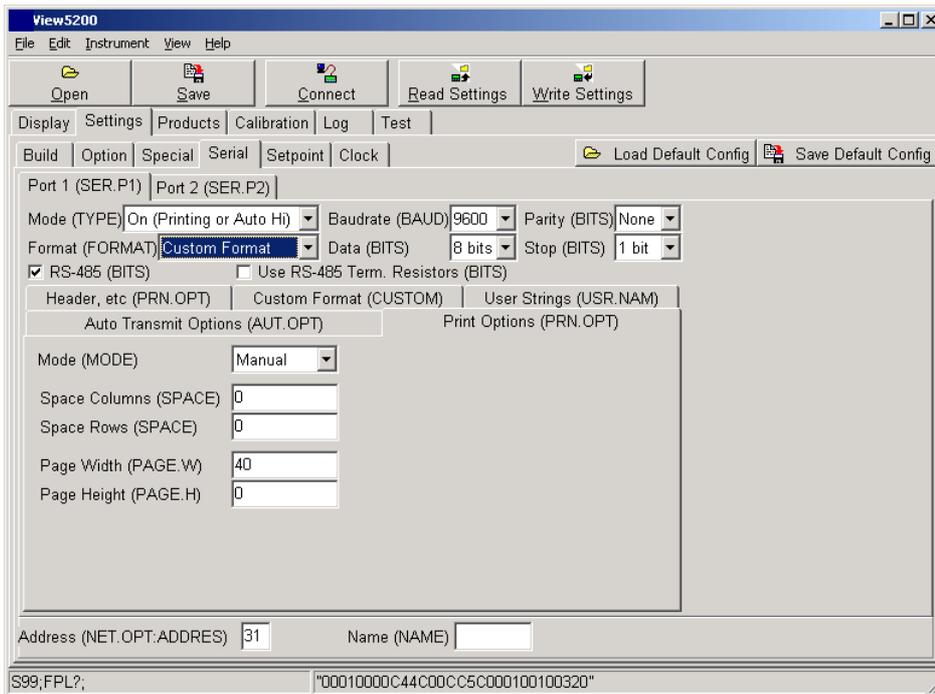
**Figure 23: Viewer - Settings / Serial / Port 1 & 2 Tab (Mode: On)
(Format: Custom Format)**

- **Mode (TYPE) (Serial Port 1 Output)**

  Sets the function of the first serial output. The port can be disabled or set to run as an automatic output (or printing) or a network device.

  Options are:
  - Off: Disables the output.
  - On (Printing or Auto Lo): Enables automatic transmission at 10Hz or printing
  - On (Printing or Auto Hi): Enables automatic transmission at the frequency entered in the SYNC item or printing. Refer to SYNC (Synch Filter) (A/D Synchronisation Frequency) ⊗ page 46
  - Network: Sets the instrument to function as a network device.
  - Default: Net

- **Mode (TYPE) (Serial Port 2 Output)**

  Sets the function of the second serial output. The port can be disabled or set to run as an automatic output (or printing) device.

  Options are:
  - Off: Disables the output (network commands will still work)
  - On: Enables automatic transmission at 10Hz or printing
  - Default: Off

- **Baud Rate (BAUD)**

  The baud rate item determines the serial data transmission speed for both serial port 1 and port 2.
  - Options are: 300, 600, 1200, 2400, 4800, 9600 and 19200
  - Default: 9600

- **BITS**

  The following bits options allow the data transmission bit pattern and interface to be changed.

- **Parity (BITS)**

  Options are:
  - None, Odd or Even
  - Default: None

- **Data (BITS)**

  Options are:
  - 7 bits or 8 bits
  - Default: 8 bits

- **Stop (BITS)**

  Options are:
  - 1 bit or 2 bits
  - Default: 1 bit

- **RS-485 (BITS) (Port 1 only)**

  Options are:
  - Enabled or Disabled
  - Default: Enabled

- **Use RS-485 Term. Resistors (BITS) (Port 1 only)**

  Options are:
  - Enabled or Disabled
  - Default: Disabled

- **Use DTR (Port 2 only)**

  Use DTR handshake.

  Options are:
  - Enabled or Disabled
  - Default: Disabled

- **ADDRESS (NET.OPT:ADDRES)**

  This is the address of the **5200** (used in network applications).
  - Range: 00 to 31
  - Default: 31

- **Name (NAME)**

  This sets the ID string for the instrument. Valid entries are up to six alphanumeric characters and spaces.
  - Default: None

The following sections illustrate and describe each of the sub-tabs in the Serial Port 1 and Port 2 Tabs when **Mode (TYPE)** is set to one of the **ON** options.

- **Auto Transmit Options (AUT.OPT) Sub-Tab**

    Format = Auto Format A to E

Figure 24: Auto Transmit Options (AUT.OPT) Tab

- **Source (SRC) (Auto Output Source)**

    This sets the weight source for the automatically transmitted data.

    Options are:
    - Display (Gross or Net): Displayed reading
    - Gross: Gross weight
    - Net: Net weight
    - Full Display: All data displayed is transmitted
    - Default: Display (Gross or Net)

- **Start Character (ST.CHR)**

    Sets the character sent at the start of the automatic message string.

    Options are:
    - Can be set to any valid ASCII character.
    - If set to Null (0), no character will be sent in this position.
    - Default: 2 (Start of Text (STX))

- **End Character 1 (END.CH1)**

    Sets the first of the two characters sent at the end of the automatic message string.

    Options are:
    - Can be set to any valid ASCII character.
    - If set to Null (0), no character will be sent in this position.
    - Default: 3 (End of Text (ETX))

- **End Character 2 (END.CH2)**

    Sets the second of the two characters sent at the end of the automatic message string.

    Options are:
    - Can be set to any valid ASCII character.
    - If set to Null (0), no character will be sent in this position.
    - Default: 0 (No character sent)

- **Print Options (PRN.OPT) Sub-Tab**

Format = Print Format A to C

Figure 25: Print Options (PRN.OPT) Tab

- **Mode (MODE)**

This sets the printing mode.

Options are:
- MANUAL: Manual printing using the **<PRINT>** key.
- AUTO: Automatic printing with every new stable (motionless) reading.
- Default: MANUAL

- **Space Columns (SPACE)**

The Space Columns field allows the number of columns of space to leave for each printout. This option can be set from **0** to **9** to select up to **9** columns of blank space.
- Range: 0 to 9: Forces 0 to 9 columns of space
- Default: 0 (zero columns)

- **Space Rows (SPACE)**

The Space Rows field allows the number of rows of space to leave for each printout. This option can be set from **0** to **9** to select up to **9** rows of blank space. A value of **10** will force a printer Form Feed.
- Range: 0 to 9: Forces 0 to 9 rows of space
- 10: Forces a printer form feed
- Default: 0 (zero rows)

- **Page Width (PAGE.W)**

This setting determines the maximum number of characters in each line.
- 0: Disables line tracking features
- Default: 40

- **Page Height (PAGE.H)**

This setting determines the maximum number of lines in each page.
- 0: Disables page tracking features
- Default: 0

- **Header, etc. (PRN.OPT) Sub-Tab**

Format = Print Format A to C

The number of lines for the Header, Footer or New Page is not directly restricted but combined, the total can not exceed 225 characters.

The fields in this Tab can use the Other Characters / Codes. Refer to page 118.
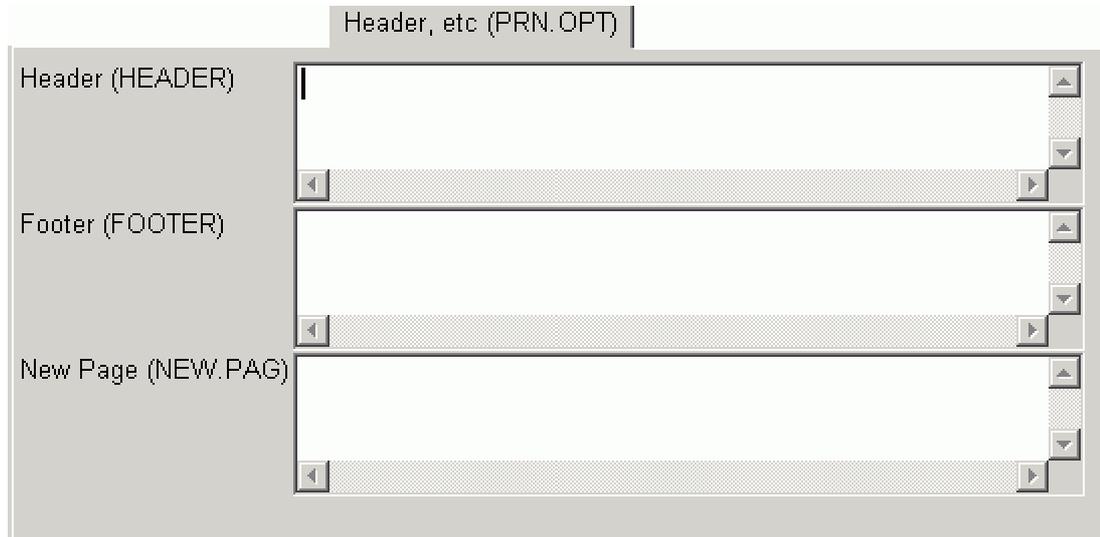
Figure 26: Header, etc (PRN.OPT) Tab

- **Header (HEADER)**

This field is used to enter the text or codes to print in the header.
  - Default: none

- **Footer (FOOTER)**

This field is used to enter the text or codes to print in the footer.
  - Default: none

- **New Page (NEW.PAG)**

This field is used to enter the text or codes to print on each new page.
  - Default: none

- **Custom Format (CUSTOM) Sub-Tab**

  The Custom Format tab is available to create formats from scratch or to make use of pre-defined formats. Formats can be modified by manually inserting or deleting characters or codes. Refer to Custom Formats page 115. Preset tokens described in the Other Characters / Codes section starting on page 118 can also be used.
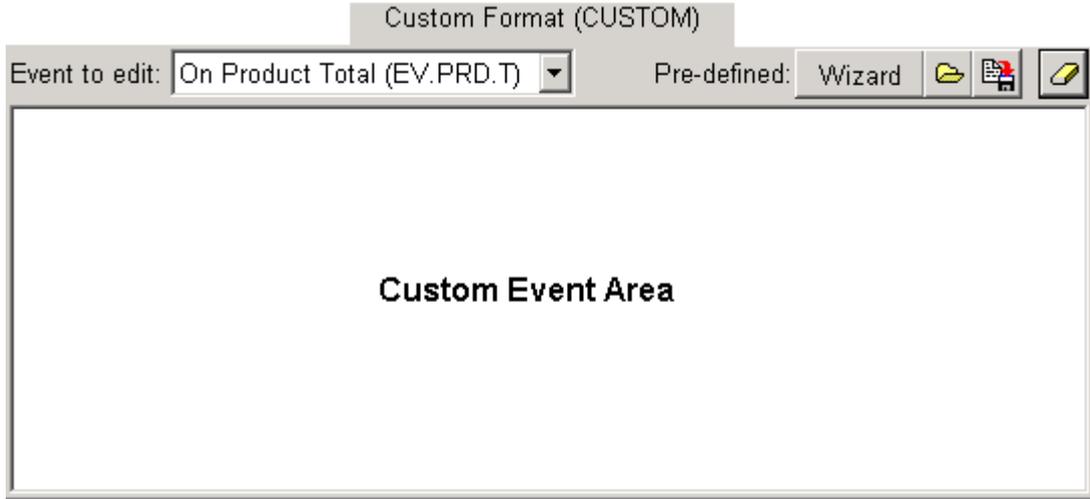
Figure 27: Custom Format (CUSTOM) Tab

  The following illustrates a sample of the characters and codes used in the **On Product Total** event when the pre-defined **Print Format A** is used.
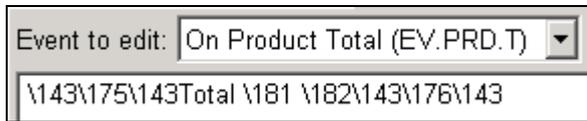
- **Event to Edit**

  The **Event to edit** list box contains a list of all events. To edit an event, select it from the list and manipulate the data in the Custom Event Area. Refer to Custom Events page 116 for descriptions of each event.

- **"Pre-defined" Toolbar**

  The Pre-defined toolbar contains buttons for use when pre-defined formats are required.
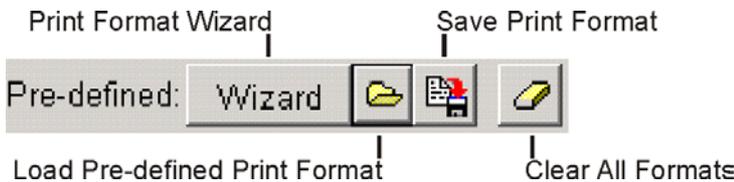
  - **Wizard:** The print format wizard prompts the operator with questions relating to what is required for the print format. After a choice is made for each question, choose the **Next** button. When the final question has been answered, click the **Done** button.

- **Load Pre-defined Print Format:** This button is used to list pre-defined formats. Factory supplied formats are Auto Format A to E and Print Format A to C. Any other formats are user defined.

  - Choose the **Load Pre-defined Print Format** button. The Load Print Format dialog box appears. The figures below illustrate a sample of an Auto Format and a Print Format.

    Auto Format
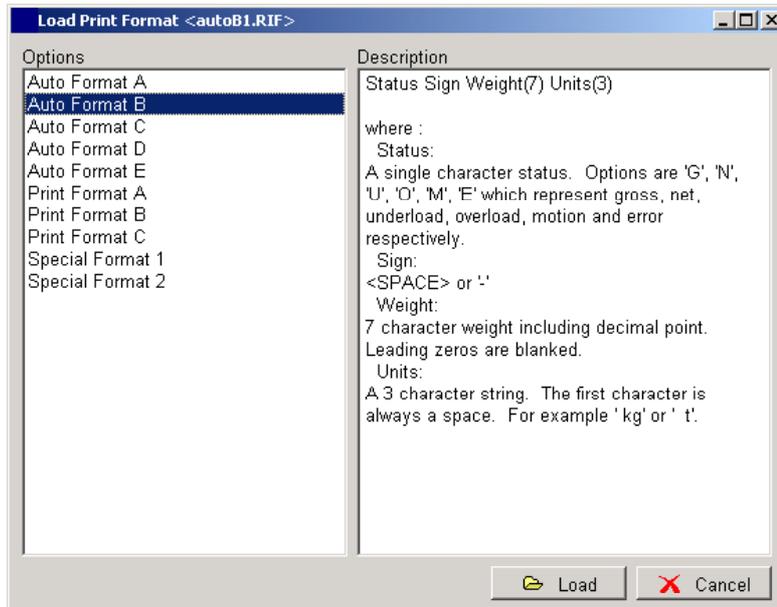
    Print Format
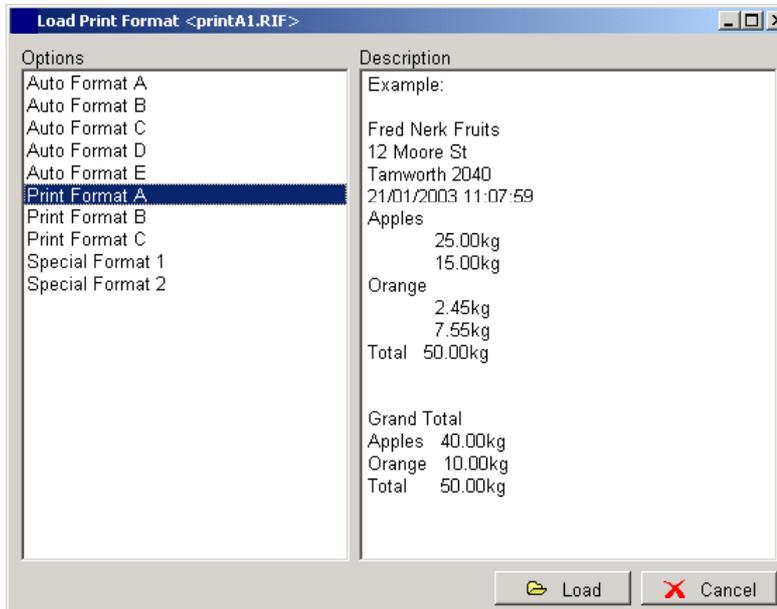
  - In the **Options** section, click the title of the file to be loaded to view it's description.
  - Click the **Load** button to load the format.

- **Save Print Format:** This button is used to save user defined formats.

<table>
<tr><td>

- Choose the **Save Print Format** button. The Save Print Format: Title and Description dialog box appears.

</td></tr>
<tr><td>

- Enter the **Title** and **Description** for the saved format.

</td></tr>
<tr><td>

- Click the **Save** button to continue. The **Save As** dialog box displays.

</td></tr>
<tr><td>

- Enter the file name for the file to be saved. **Do not alter the default directory location from View5200**.

</td></tr>
<tr><td>

- Click the **Save** button to save the .RIF file.

</td></tr>
</table>
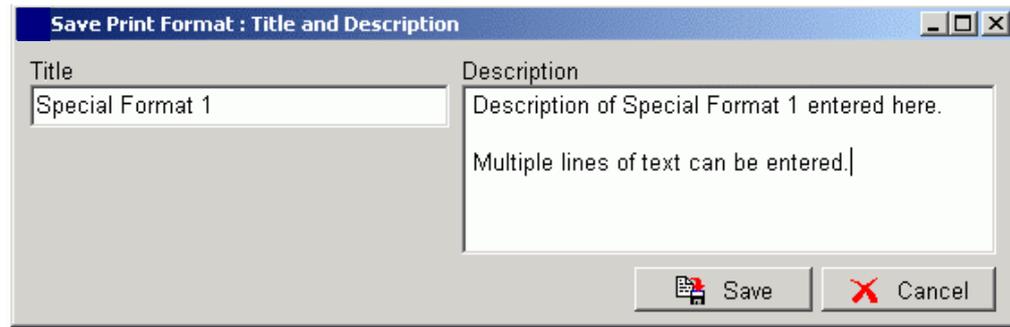
- **Clear All Events:** This button is used to clear all characters and codes in all events.

- **User Strings (USR.NAM) Sub-Tab**

  Format = Print Format A to C or Custom Format

  The User Strings tab is used to set up to three String Names and three corresponding User Strings.
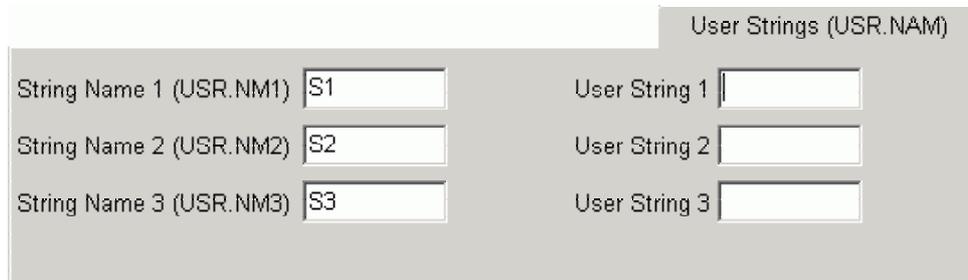
- **String Name 1, 2 and 3 (USR.NM1, 2 and 3)**

  Each of the three String Names is set here. These names are used in the Operator Menu when the ID key is used. Valid entries are up to six alphanumeric characters and spaces.
  - Default: S1, S2 and S3

- **User String 1, 2 and 3**

  Each of the three User String names can be set here. These names are used in the Operator Menu when the ID key is used. Valid entries are up to six alphanumeric characters and spaces.
  - Default: none

- **Other Characters/Codes Section**

  Refer to Other Characters / Codes page 118.

11.7.7. Settings / Setpoint Tab

Fields within this Tab configure the operational logic of the setpoint system. Refer to Setpoints page 123 for a detailed explanation of the fields in this Tab, batching and setpoints.

The information in this section is valid for Setpoint Tabs 1, 2, 3 and 4. Fields that are not used in the current configuration will be hidden.
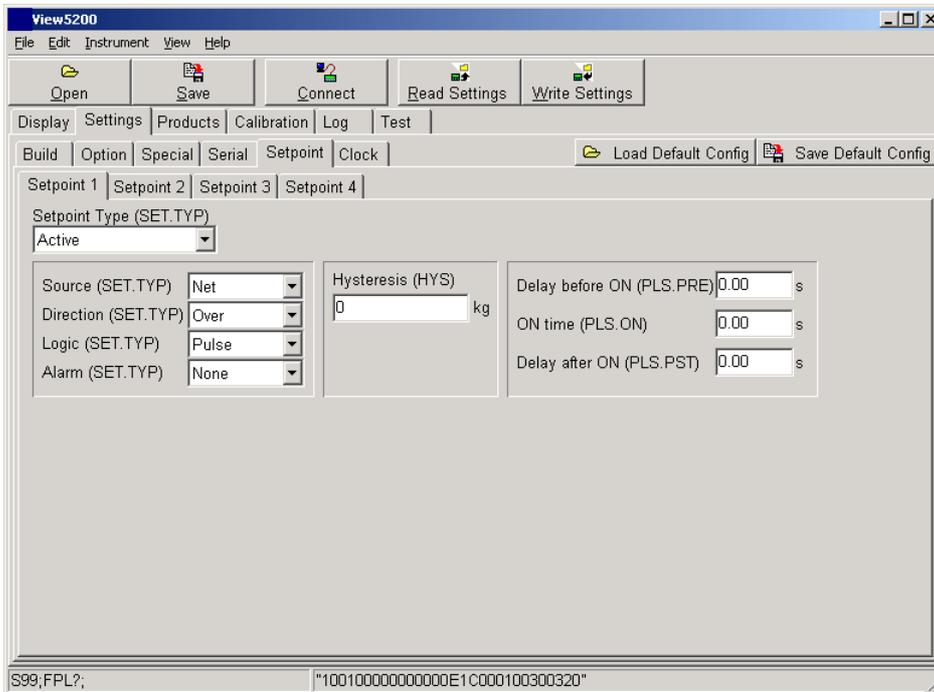
Figure 28: Viewer - Settings / Setpoint Tab (Setpoint Type=Active and Logic=Pulse)
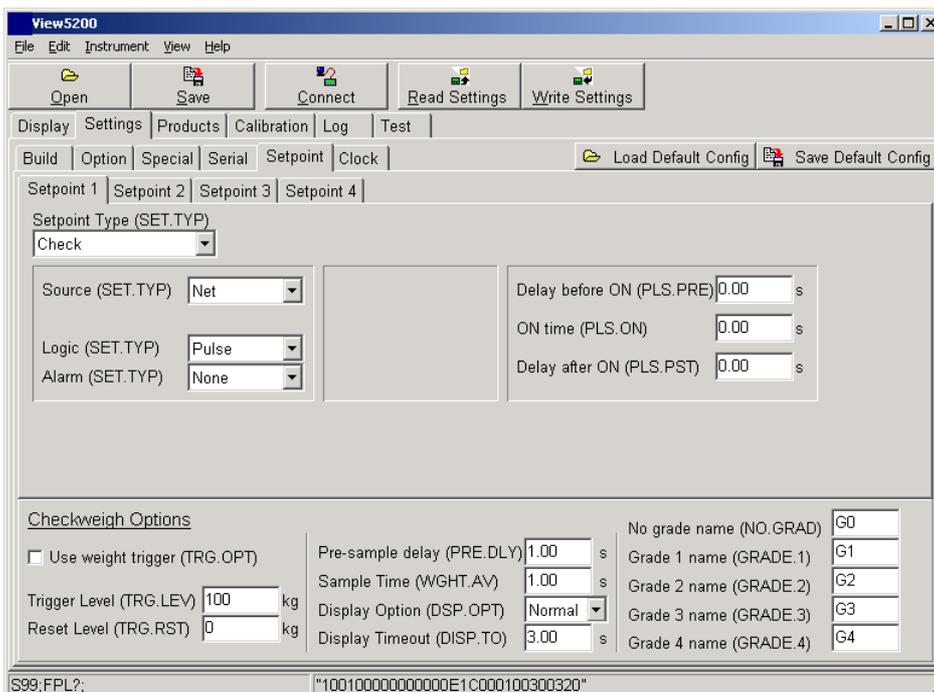
Figure 29: Viewer - Settings / Setpoint Tab (Setpoint Type=Check and Logic=Pulse)

- **Setpoint Type (SET.TYP)**

  Each of the four setpoints can be assigned a specific type. Refer to Setpoint Types page 124 for details of each.
  - Options are: None, Active, Check, Error, Motion, Zero, Net and Hold
  - Default: None

- **Source (SET.TYP)**

  This field sets the source of the weight for the setpoint and displays only when the Setpoint Type field is set to Active or Check. Refer to Source (Gross, Net, Reading) page 125 for details.
  - Options are: Gross, Net and Reading
  - Default: Net

- **Direction (SET.TYP)**

  This field sets the direction for the setpoint and displays only when the Setpoint Type field is set to Active. Refer to Direction (Over, Under) page 125.
  - Options are: Over and Under
  - Default: Over

- **Logic (SET.TYP)**

  This field sets the logic level for the setpoint. Refer to Logic (High, Low, Pulse, Repeat) page 125 for details.
  - Options are: High, Low, Pulse and Repeat
  - Default: High

- **Alarm (SET.TYP)**

  The alarm setting is used to configure an alarm to activate while a setpoint is active. The alarms are in the form of beeps emitted by the **5200** or a flashing display.
  - Options are: None, Single Beeps, Double Beeps, Continuous Beeps and Flash Display
  - Default: None

- **Hysteresis (HYS)**

  This field sets the hysteresis (tolerance) for the setpoint.

  The hysteresis/tolerance value forces a preset margin in the trip point. This stops the output from 'chattering' due to minor weight fluctuations at the trip point value. For increasing weights (Over) the hysteresis is used below the trip point and for decreasing weights (Under) it is used above the trip point.

  This same value is used at the end of a fill sequence to check if the final weight is close enough to target.
  - Default: 0

- **Pulse Options**

  These options appear only where the **SET.TYP** has been set to **ACTIVE** or **CHECK** and the **LOGIC** set to **PULSE** or **REPEAT**.

- **Delay Before On (PLS.PRE)**

  Sets the seconds (x.xx) before the setpoint output switches ON.

  Pre-Pulse Time: When pulse or repeated pulse setpoint logic is chosen, the time between when the setpoint becomes active and when the pulse switches on is set here.
  - Default: 0.00

- **On Time (PLS.ON)**

  Sets the seconds (x.xx) that the setpoint output remains ON.

  Pulse On Time: When pulse or repeated pulse setpoint logic is chosen, the time length of the pulse is set here.
  - Default: 0.00

- **Delay After On (PLS.PST)**

  Sets the seconds (x.xx) before the pulse is repeated.

  Post-Pulse Time: When pulse or repeated pulse setpoint logic is chosen, a minimum off time after the pulse can be set here.
  - Default: 0.00

- **Checkweigh Options**

  These options help to configure the checkweigh operation and display only when the Setpoint Type field is set to Check.

- **Use Weight Trigger (TRG.OPT)**

  Sets the checkweigh trigger condition.

  Options are:
  - Disable: Trigger on checkweigh input
  - Enable: Trigger on checkweigh input and weight level
  - Default: Disable

- **Trigger Level (TRG.LEV)**

  Sets the weight used for triggering the checkweigh sequence.

  When the trigger option is configured to use weight triggering, the level at which the checkweigh sequence is started is set here.
  - Default: 100

- **Reset Level (TRG.RST)**

  Sets the weight used to reset the checkweigh weight trigger.

  When weight triggering is used, the trigger mechanism must be reset before the sequence can be started a second time. When the weight drops below this value, the trigger is re-armed.
  - Default: 0

- **Pre-Sample Delay (PRE.DLY)**

  This sets the delay (in seconds x.xx) between triggering and averaging starting

  After a checkweigh sequence has been triggered, a fixed delay can be entered before the **5200** starts averaging.
  - Default: 1.00

- **Averaging Time (WGHT.AV)**

  Sets the seconds (x.xx) to perform averaging.

  The time to accumulate the average is set here.
  - Default: 1.00

- **Display Option (DSP.OPT)**

  Sets the display function while checkweighing.

  When a new checkweight is available, the display can be set to show no change, display the checkweight or display the check grade name

  Options are:
  - Normal: The display stays in normal weighing mode.
  - Weight: The display shows the last check weight.
  - Grade: The display shows the last grade (product category).
  - Default: Normal

- **Display Timeout (DISP.TO)**

  Sets the number of seconds (x.xx) before the check display times out and shows dashes (**- - - - - -**). A value of **0** (zero) disables this feature.
  - Default: 3.00

- **Grade 1 Name to Grade 4 Name (GRADE.1 to GRADE.4), No Grade Name (NO.GRAD)**

  Sets the string displayed for each grade. The name that is displayed for each grade (band) is set here.
  - Defaults:
    G0 - No Grade
    G1 - Grade 1
    G2 - Grade 2
    G3 - Grade 3
    G4 - Grade 4

11.7.8. Settings / Clock Tab

Fields within this Tab set time and date related functions.
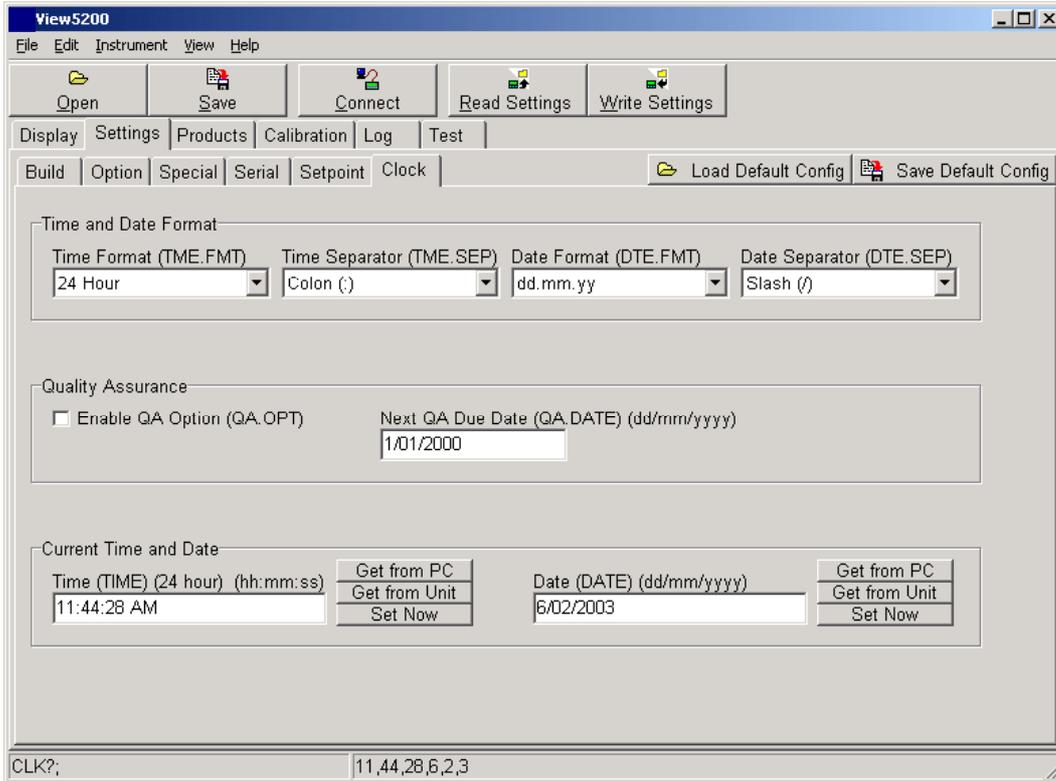
Figure 30: Viewer - Settings / Clock Tab

- **Time and Date Format: Time Format (TME.FMT)**

  Sets the format in which time is printed.

  Options are:
  - 12 Hour: Use 12 hour time format (with AM and PM) (eg. 05:37PM)
  - 24 Hour: Use 24 hour time format (eg. 17:37)
  - Default: 24 Hour

- **Time and Date Format: Time Separator (TME.SEP)**

  Sets the separator to be used for time printing.

  Options are:
  - Colon (**:**) (eg. 17**:**37)
  - Dot (**.**) (eg. 17**.**37)
  - Default: Colon (**:**)

- **Time and Date Format: Date Format (DTE.FMT)**

  Sets the format in which dates are printed. Options are:

Standard Date	American Date	International Date
dd.mm.yy: (eg. 30.08.02)	mm.dd.yy: (eg. 08.30.02)	yy.mm.dd: (eg. 02.08.30)
dd.mm.yyyy: (eg. 30.08.2002)	mm.dd.yyyy: (eg. 08.30.2002)	yyyy.mm.dd: (eg. 2002.08.30)

  - Default: dd.mm.yy

- **Time and Date Format: Date Separator (DTE.SEP)**

  Sets the separator to be used for date printing.

  Options are:
  - Slash (/) (eg. 30/08/2002)
  - Dash (-) (eg. 30-08-2002)
  - Dot (.) (eg. 30.08.2002)
  - Default: Dash (-)

- **Quality Assurance: Enable QA Option (QA.OPT)** ⊗

  Allows the quality assurance calibration due alarm to be turned **On** or **Off**. When enabled the **5200** will display **QA DUE**, from the day after the date set in the **Next QA Due Date** field.

  Options are: Off or On
  - Default: Off

- **Quality Assurance: Next QA Due Date (QA.DATE) (dd/mm/yyyy)** ⊗

  The date when the next calibration check is due may be entered in this field. The date is entered in the format **dd/mm/yyyy**, where **dd** is the day of the month (01-31), **mm** is the month of year (01-12) and **yyyy** is the year (2000-2099).
  - Default: 1/01/2000

- **Current Time and Date: Time (TIME) (24 hour) (hh:mm:ss)**

  The time can be entered in this field. The time is entered in the format **hh:mm:ss**, where **hh** is the hours, **mm** is the minutes and **ss** is the seconds. The time can be entered in either a 24 or 12-hour format. The time can be entered manually or can be set using the **<Get from PC>** or the **<Get from Unit>** buttons. Using either of these buttons automatically enters the time in a 12 hour format (using AM and PM). The **<Set Now>** button is clicked to set the time in the instrument. To set time from the keypad refer to TIME (Set Time) page 59.

  Note: The instrument will display only a 12 hour format but a printout will show a 24 hour format.

- **Current Time and Date: Date (DATE) (dd/mm/yyyy)**

  This field is used to set the date. The date can be entered in the format **dd/mm/yyyy**, where **dd** is the day of the month (01-31), **mm** is the month of the year (01-12), and **yyyy** is the year (2000-2099). The date can be entered manually or can be set using the **<Get from PC>** or the **<Get from Unit>** buttons. The **<Set Now>** button is clicked to set the date in the instrument. To set the date from the keypad refer to DATE (Set Date) page 59.

11.7.9.   Products Tab

The Products Tab is used to manage products and view totals.
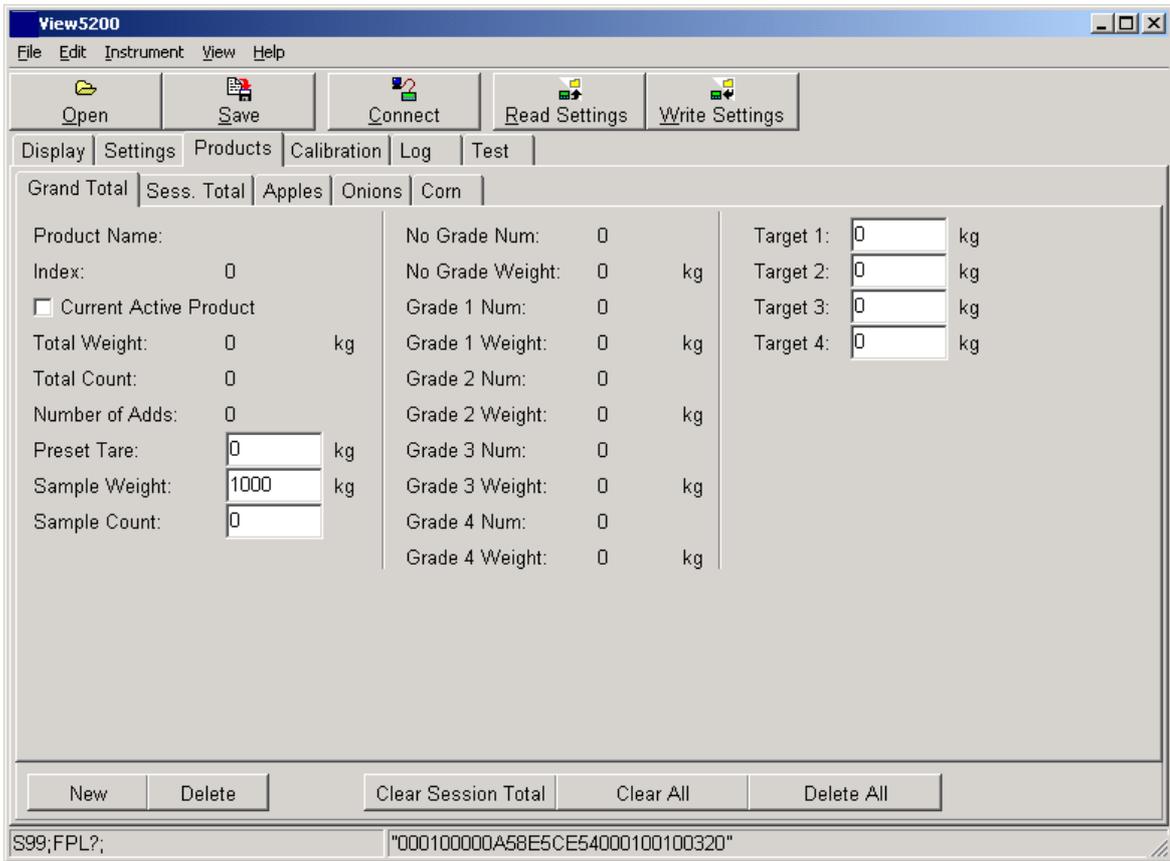
Figure 31: Viewer - Products Tabs

- **Product Name**

  The **Product Name** field is used to enter the name for the product. The name can be up to six alphanumeric characters and spaces.

  Renaming a Product: Enter a new name in this field to rename a product.

- **Index**

  The **Index** field is a read-only field. The Session Total tab is identified as Index 1. Each new product will be assigned the next sequential number. If a product is deleted, the next new product will re-use the deleted product's index number.

- **Current Active Product**

  This tick box will be checked for the currently selected product (including the Grand Total and Session Total.

- **Total Weight**

  The **Total Weight** field is a read-only field. It displays the current total weight for the displayed product.

- **Total Count**

  The **Total Count** field is a read-only field. It displays the current total counts for the displayed product. Counts are based on the sample weight and sample count fields.

- **Number of Adds**

  The **Number of Adds** field is a read-only field. It displays the total number of times a weight was added for the displayed product.

- **Preset Tare**

  The **Preset Tare** field is used to enter the preset tare weight.
  - Default: 0

- **Sample Weight**

  The **Sample Weight** field is used in conjunction with the **Sample Count** field. For example if four widgets weigh 1kg then the number **1** could be entered in this field to indicate 1kg. Each time 1kg of widgets is added the **Total Count** would increase by **4**.
  - Default: 1000

- **Sample Count**

  The **Sample Count** field is used in conjunction with the **Sample Weight** field. For example if four widgets weigh 1kg then the number **4** could be entered in this field to indicate 4 widgets. Each time 1kg of widgets is added the **Total Count** would increase by **4**.
  - Default: 0

- **No Grade Num**

  The **No Grade Num** field is a read-only field. It is used with checkweighing and displays the number of weighed items that were **not** within the specified grades (ie. items with a weight below the amount set in the Target 1 field).

- **No Grade Weight**

  The **No Grade Weight** field is a read-only field. It is used with checkweighing and displays the total weight of weighed items that were **not** within the specified grades (ie. items with a weight below the amount set in the Target 1 field).

- **Grade Num 1 to 4**

  The **Grade Num 1 to 4** fields are read-only fields. They are used with checkweighing and display the number of weighed items that are within each grade. The lower weight for each Grade is set in the appropriate Target field. Refer to Checkweigh page 30 and Setpoints page 123 for more information.

- **Grade Weight 1 to 4**

    The **Grade Weight 1 to 4** fields are read-only fields. They are used with checkweighing and display the total weight of weighed items that are within each grade. The lower weight for each Grade is set in the appropriate Target field.   Refer to Checkweigh page 30 and Setpoints page 123 for more information.

- **Target 1 to 4**

    The **Target 1 to 4** fields are used to set the target weights for Setpoint 1 to 4. For checkweighing, the target weight is the low boundary for each band. Checkweights below the smallest band can be displayed but not output using setpoints. Added weights falling within each Target range will be reflected in the appropriate Grade Num and Grade Weight field.
    - Default: 0

- **New Button**

    The **New** button is used to create a new product. A new product tab displays.

- **Delete Button**

    The **Delete** button is used to delete a product.

- **Clear Session Total Button**

    The **Clear Session Total** button clears the Total Weighs, Total Count and Number of Adds from the current session.   The new settings are automatically written back to the instrument.

- **Clear All Button**

    The **Clear All** button clears all Total Weights, Total Counts and Number of Adds from all products, the current session and the grand total. The new settings are automatically written back to the instrument.

- **Delete All Button**

    The **Delete All** button deletes all products regardless of whether they have been cleared.   The new settings are automatically written back to the instrument.   The grand total and session total are cleared but cannot be deleted.

11.7.10. Calibration Tab

Fields in this Tab perform various calibration routines. For scale calibration procedures refer to Calibration page 107. Certain items in the Build, Option and Special Tabs can effect the calibration of the scale. Always check that these Tabs are correctly configured to suit the current application before attempting to calibrate the scale.

> **Note:** Changes to settings in the Calibration Tab must be saved to the instrument (using **Write Settings**) to ensure calibration results are available for use each time the instrument is powered up. Refer to Write Settings to Instrument page 100 for more information.
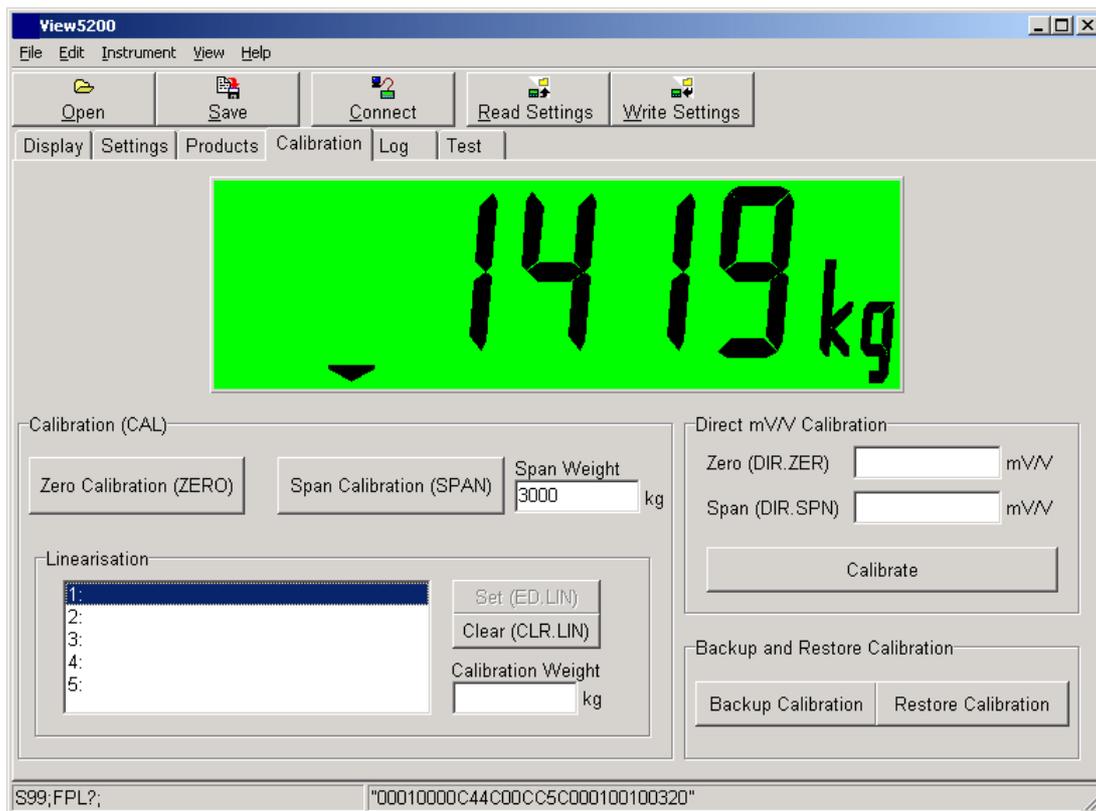
Figure 31: Viewer - Calibration Tab

- **Calibration (CAL): Zero Calibration (ZERO)** ⊗

  Select to start a Zero Calibration. While the zeroing is in progress the instrument display will show **Z.in.P**. For a detailed description on the zeroing and calibration procedures, refer to ZERO (Zero Calibration Routine) page 108.

- **Calibration (CAL): Span Calibration (SPAN)** ⊗

  After the span weight has been entered select this button to start a Span Calibration. While the span calculation is in progress the keypad display will show **S.in.P**. For a detailed description on the span and calibration procedures, refer to SPAN (Span Calibration Routine) page 108.

- **Calibration (CAL): Span weight**

  This field is used in conjunction with the **Span Calibration** button and is used to enter the span weight. Refer to refer to SPAN (Span Calibration Routine) page 108 for more information.

- **Linearisation: Set (ED.LIN)**

  This button is used to set the selected linearisation point as defined in the **Calibration Weight** field. Refer to Set or Edit Linearisation Points page 110 for more information.

- **Linearisation: Clear (CLR.LIN)**

  This button is used to clear the selected linearisation point as defined in the **Calibration Weight** field. Refer to Clear Linearisation Points page 111 for more information.

- **Linearisation: Calibration Weight**

  The **Calibration Weight** field is used to enter the weight to be used when setting a linearisation point.

- **Direct mV/V Calibration: Zero (DIR.ZER)**

  The **Zero (DIR.ZER) mV/V** field is used to enter the zero value for Direct mV/V Calibration. Refer to Direct mV/V page 39 and Direct mV/V Calibration page 109 for more information.

- **Direct mV/V Calibration: Span (DIR.SPN)**

  The **Span (DIR.SPN) mV/V** field is used to enter the fullscale value for Direct mV/V Calibration. Refer to Direct mV/V page 39 and Direct mV/V Calibration page 109 for more information.

- **Direct mV/V Calibration: Calibrate**

  The **Calibrate** button is used to utilise the setting in the **Zero (DIR.ZER) mV/V** field and **Span (DIR.SPN) mV/V** field for Direct mV/V Calibration. Refer to Direct mV/V page 39 for more information.

- **Backup and Restore Calibration: Backup Calibration**

  The **Backup Calibration** button allows the calibration details to be backed up to a file. The **Save File As Type** field should be set to Calibration Files (*.cal).

- **Backup and Restore Calibration: Restore Calibration**

  The **Restore Calibration** button allows the calibration details to be restored from a previously backed up file. The **Files of Type** field should be set to Calibration Files (*.cal).

11.7.11. Log Tab

The Log Tab is used to create a chart of the activity in the instrument. Refer to Save and Restore Viewer Settings and Log Data page 100 for information saving and opening log files.
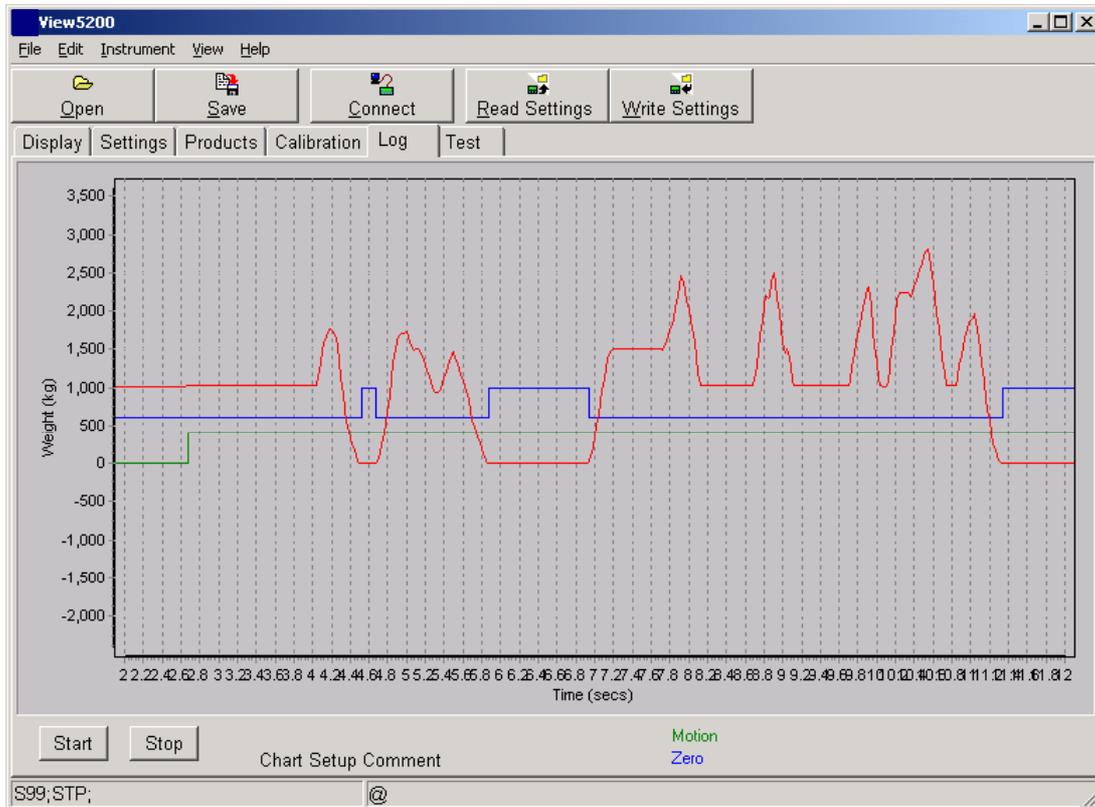
Figure 33: Viewer - Log Tab

- **Start**

    The **Start** button is used to begin logging activity. The **Logging** dialog displays to set specifics of activity to be logged.
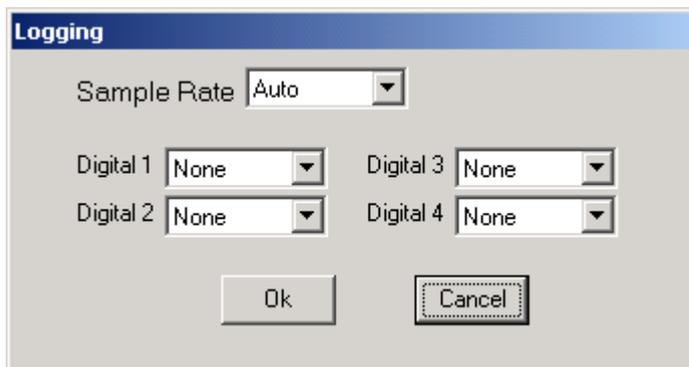
Sample Rate: This field determines the rate at which samples will be logged.

Options are:
- Auto: Automatically logs all changes in activity.
- 10 Hz: Ten samples every second.
- 1 Hz: One sample every second.
- 1/10 secs: One sample every 10 seconds.
- Default: Auto

Digital 1, 2, 3 and 4: The settings in these fields determine the type(s) of activity to be logged.

Options are:
- None: Logs the weight change only.
- Motion: Logs changes in the motion annunciator.
- Zero: Logs changes in the Zero annunciator.
- Input 1, 2, 3 or 4: Logs changes from Input 1 to 4.
- Output 1, 2, 3 or 4: Logs changes from Output 1 to 4.
- Default: None (for Digital 1 to 4)

- **Stop**

  Use this button to stop logging activity.

- **Moving Around Logs**

Use Left / Right Arrows	To scroll left / right
Use Up / Down Arrows	To scroll up / down

- **Log Chart Setup**

  The Log Chart Setup window is opened using the **Chart Setup** option in the **Edit** menu. This window enables the manual setting of zoom. It also gives an automatic **best-fit** option.
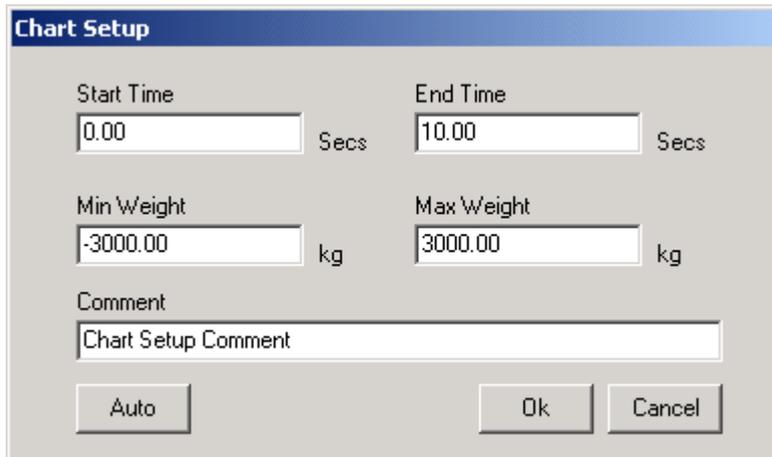
  The five parameters that can be set in this window are:

Parameter	Description
Start Time	The minimum value to display on the time axis.
End Time	The maximum value to display on the time axis.
Min Weight	The minimum value to display on the weight axis.
Max Weight	The maximum value to display on the weight axis.
Comment	A line of text that appears at the bottom of the chart and on the printout.

  The **Auto** button scales the chart to show all data points as large as possible (best fit).

11.7.12. Test Tab

The Test Tab is used to send commands to the instrument and to view responses. The output printed from the instrument can also be viewed here.
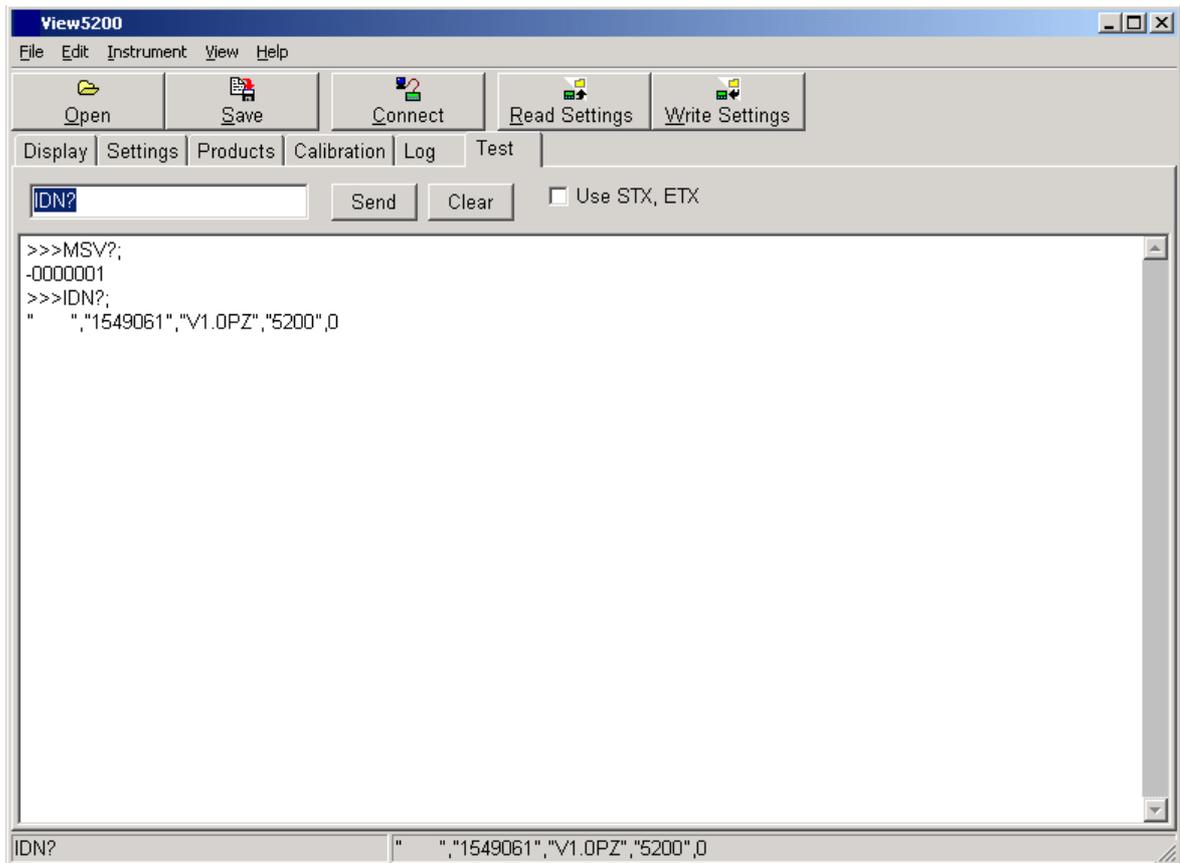
Figure 34: Viewer - Test Tab

- **Send**

  Sends the entered command to the instrument.

- **Clear**

  Clears all data from the Test Tab display area.

- **Use STX, ETX**

  When this field is enabled (ticked) the commands sent are enclosed with STX (ASCII 02) and ETX (ASCII 03) characters.

12. Operator Procedures (Viewer)

This section describes the **viewer** method for performing common operator procedures. When not stated in these procedures, it is assumed the instrument is on, connected and settings have been read

12.1. Save and Restore Viewer Settings and Log Data

Viewer settings can be read from an instrument, changed and written back to an instrument. These settings can be saved to a file for use at a later date. They can then be opened for use on the same or a different instrument (of the same type).

Log data can also be saved and then opened at a later time using the Viewer or any text editor.

12.1.1. Read Settings from Instrument

• Connect to instrument.
• Choose Read Settings.
• A dialog box displays the progress. Wait…
• Refer to Reading Instrument Settings into Viewer page 64 for more information.

12.1.2. Write Settings to Instrument

• Connect to instrument.
• Either read settings from instrument or open settings from a file.
• Edit the settings if required.
• Choose Write Settings. Note that if the instrument model/serial number doesn't match, you will be prompted if you want to continue. Also if a Full Setup Passcode has been configured you will be prompted for the passcode.
• A dialog box displays the progress. Wait…

12.1.3. Open Settings from a File

• Settings that have been previously saved to file can be opened (loaded) by choosing Open. (This function can be performed whether the instrument is connected or disconnected.)
• Choose the file type **RI Settings (*.RIS)**, select the directory/filename and choose Open.

12.1.4. Save Settings to a File

• After settings have been opened (loaded) from a file or read from the instrument they can be saved to a file by choosing Save. (This function can be performed whether the instrument is connected or disconnected.)
• Edit the settings if required.
• Choose the file type **RI Settings (*.RIS)**, select the directory, enter the filename and choose Save.

12.1.5. Open Log File Data from a File

• Log file data that has been previously saved to file can be opened (loaded) by choosing Open.
• Choose the file type **RI Log (*.LOG)**, select the directory/filename and choose Open.

12.1.6. Save Log File Data to a File

• After log file data has been opened (loaded) from a file or read from the instrument it can be saved to a file by choosing Save.
• Edit the settings if required.
• Choose the file type **RI Log (*.LOG)**, select the directory, enter the filename and choose Save.

12.2. User Configuration Files

This section describes the features used to import, export, load and save user configuration settings. The following table lists the settings that are saved.

SETTINGS TAB	Settings Saved
BUILD	None
OPTION	Interlock and Automatic Tare only
SPECIAL	All
SERIAL	All
SETPOINT	All
CLOCK	All

12.2.1. Import Config Files

This feature appears in the File menu and is used to import *.RIU files that have been previously saved on a different computer using the **Save Default Config** button. Refer to Figure 15 page 65. This button appears on the sub-tabs of the **Settings Tab.**

• Save the config file.
• Choose **File | Import Config Files** from the menu. The Import User Configuration Files dialog box displays.
• Select the directory and file name(s) to be imported.
• Click the **Open** button to import the .RIU file(s). When successfully completed the following Information dialog displays.
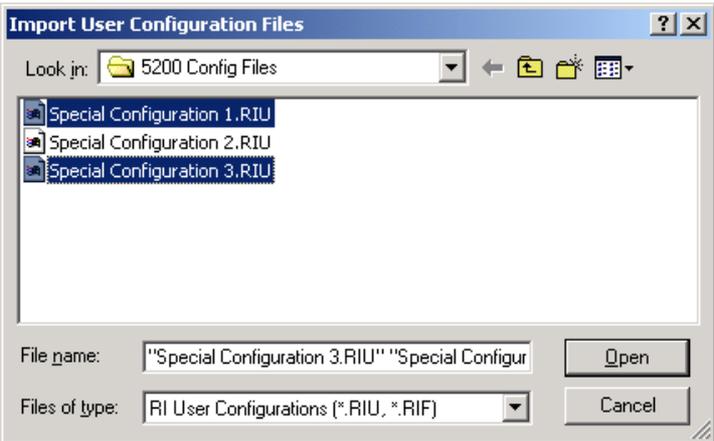
12.2.2. Export Config Files

This feature appears in the File menu and is used to export *.RIU files that have been previously saved using the **Save Default Config** button. Refer to Refer to Figure 15 page 65. This button appears on the sub-tabs of the **Settings Tab.**

- Save the config file.
- Choose **File | Export Config Files** from the menu. The Select Files to Export dialog box displays.
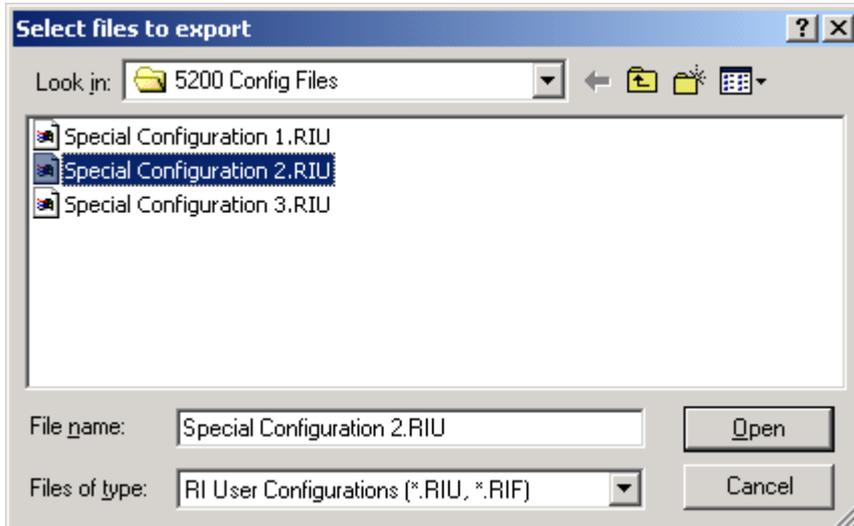
- Select the directory and file name(s) to be exported.
- Click the **Open** button to display the Select Directory dialog box.
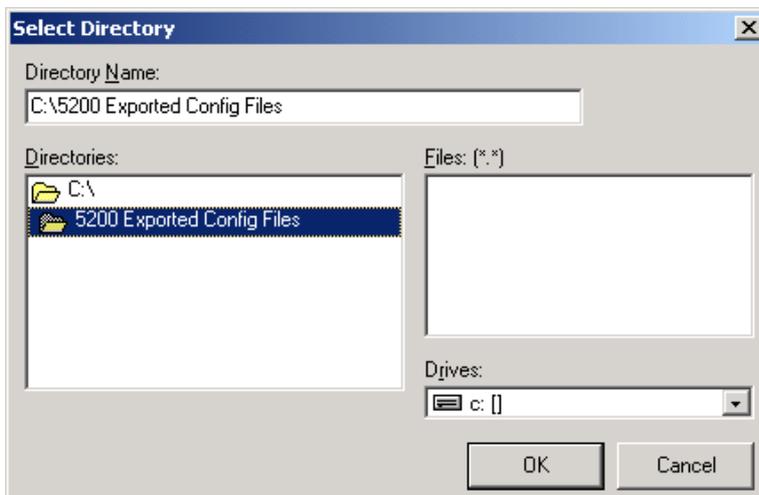
- Select the directory where exported files should be stored.
- Click the **OK** button to export the .RIU file(s). When successfully completed the following Information dialog displays.

12.2.3. Load Default Config

The **Load Default Config** button appears in the sub-tabs under the **Settings Tab**. When special settings have been imported, these settings can be loaded with this button.

• Import the relevant config file(s).
• Choose the **Load Default Config** button. The Load User Configuration dialog box appears. Load User Configuration <Special Configuration 2.RIU> Options Default Configuration Special Configuration 1 Special Configuration 2 Special Configuration 3 Description Description of Special Configuration 2 appears here. Multiple lines of details can be entered. Load   X Cancel
• In the **Options** section, click the title of the file to be loaded.
• Click the **Load** button to load the configuration.
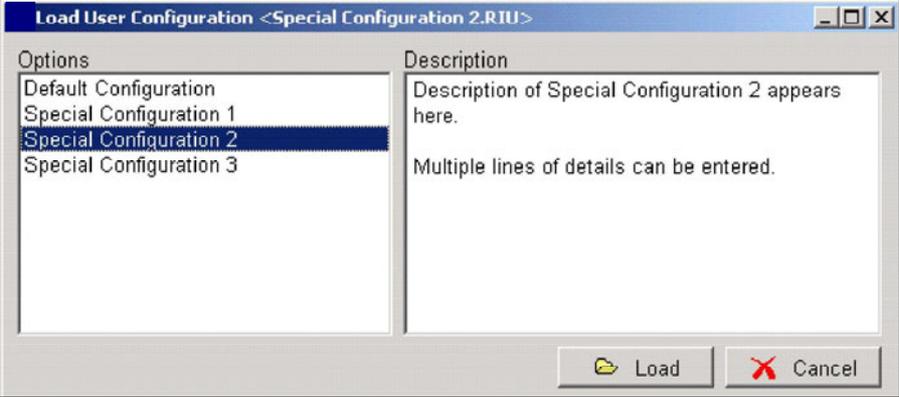
12.2.4. Save Default Config

The **Save Default Config** button appears in the sub-tabs under the **Settings Tab**. When special settings have been entered, these settings can be saved for future use with this button.

• Alter settings in the viewer.
• Choose the **Save Default Config** button. The Save User Configuration: Title and Description dialog box appears. Save User Configuration : Title and Description Title Special Configuration 3 Description Description of Special Configuration 3 entered here. Multiple lines of text can be entered. Save   X Cancel
• Enter the **Title** and **Description** for the saved configuration.
• Click the **Save** button to continue. The **Save As** dialog box displays.
• Enter the file name. (**Note:** The default directory (ie. View5200) must not be altered.)
• Click the **Save** button to save the .RIU file.
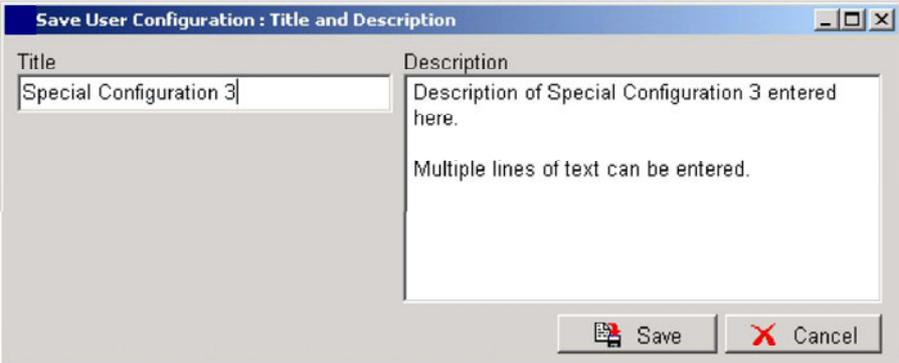
12.3.   Managing Product Names

12.3.1.   Create New Product Name

• Display the **Products** Tab.
• Click the **New** Button.
• Enter the Product Name in the **Product Name** field.
• Click in another field on the new tab or press the **ENTER** key on the keypad.

12.3.2.   Rename Product

• Display the **Products** Tab.
• Display the Sub-Tab for the product to change.
• Enter the new Product Name in the **Product Name** field.
• Click in another field on the new tab or press the **ENTER** key on the keypad.

12.3.3.   Delete Product

A Product should only be deleted via the Viewer if the total weight is zero. This **Warning** will display if an attempt is made to delete a Product where the total weight is not zero.
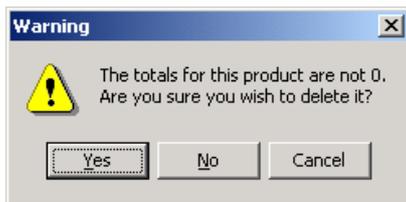
• Display the **Products** Tab.
• Display the Sub-Tab for the product to delete.
• Click the **Delete** Button.

12.4.   Search and Select Existing Product Name

• Display the **Products** Tab.
• Click the Sub-Tab for the desired product.
• Note: When Sub-Tabs display beyond the scope of the window, click the arrows ◄ ► to view Sub-Tabs to the left and right.

12.5.   Managing Targets and User Strings

12.5.1.   Setting Targets for Each Product

• Display the **Products** Tab.
• Display the Sub-Tab for the product to change.
• Enter the targets in the **Target 1** to **Target 4** fields.

12.5.2. Setting User Strings

This procedure assumes Serial:Port 1 or 2 has been set up to display the User Strings Sub-Tab.

• Display the **Serial** Tab.
• Display the Sub-Tab for the desired port (ie. Port 1 or Port 2).
• Click the **User Strings** Sub-Tab.
• Enter the new user string in the **User String 1** to **User String 3** fields.

12.6. Totalising Procedures

Refer to Totalising Procedures page 34. Use the Viewer Display Tab and the Mouse to click buttons.

12.6.1. Viewing Totals and Displaying Other Totalising Information

• Display the **Products** Tab.
• Display the Sub-Tab for the information to view (ie. a specific Product Tab, the Sess. Total Tab or the Grand Total Tab)

12.7. Checkweigh Procedures

Refer to Checkweigh Procedures page 35. Use the Viewer Display Tab and the Mouse to click buttons.

12.7.1. Viewing Totals and Displaying Other Checkweigh Total Information

• Display the **Products** Tab.
• Display the Sub-Tab for the information to view (ie. a specific Product Tab, the Sess. Total Tab or the Grand Total Tab)

12.8. Clearing Totals

Refer to page 35. Use the Viewer Display Tab and the Mouse to click buttons.

12.8.1. Clear Product Total

Product totals cannot be cleared individually or separately from the Grand Total.

12.8.2. Clear Session Total (Clear Only)

Session totals can be cleared without affecting the individual Product Totals or the Grand Total.

• Display the **Products** Tab.
• Click the **Clear Session Total** button. The following Confirmation message displays.
• Click Yes, No or Cancel to confirm your choice.
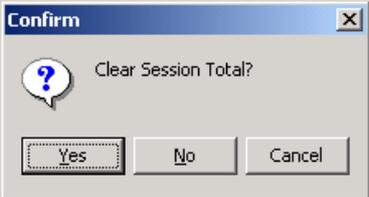
12.8.3. Clear Grand Total

Clearing the Grand Total clears the Grand Total as well as Product Totals and the current Session Total.

• Display the **Products** Tab.
• Click the **Clear All** button. The following Confirmation message displays.
• Click Yes, No or Cancel to confirm your choice.
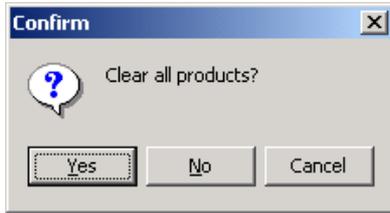
12.8.4. Delete All Product Names

• Display the **Products** Tab.
• Click the **Delete All** button. The following Confirmation message displays.
• Click Yes, No or Cancel to confirm your choice.
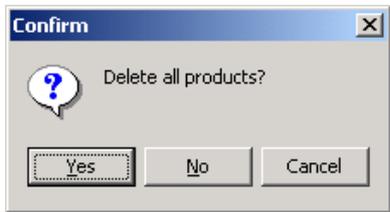
13. Calibration

The calibration of the **5200** indicator is fully digital. The calibration results are stored in permanent memory for use each time the instrument is powered up.

Note: Some of the digital setup steps can affect calibration. The BUILD and OPTION settings MUST be configured before calibration is attempted. Most importantly, the Weighing Mode (TYPE) setting must not be changed after calibration.

To perform a calibration, select the **Calibration** Tab in the **Viewer** or the **CAL** Group in the **Indicator Setup**.

Note: Due to restrictions in Trade Use applications, the calibration routines are not available in Safe setup. Trade critical calibration can be accessed only through Full Setup.

The calibration programme will automatically prevent the **5200** from being calibrated into an application outside of its specification. If an attempt is made to calibrate the **5200** outside of the permitted range, an error message will display and the calibration will be abandoned. Refer to Error Messages page 132.

The **5200** has a wide-range amplifier. The non-trade calibration range of the instrument extends well beyond the Trade approved range.

Note: It should not be assumed that just because the 5200 has successfully calibrated a scale, that the scale is correct for trade use. Always check the scale build against the approval specification.

13.1. Write Settings to Instrument / Read Settings from Instrument

- Changes to settings in the Calibration Tab must be saved to the instrument to ensure the changes are available for use each time the instrument is powered up. Refer to Write Settings to Instrument page 100 for more information.
- Changes to settings in the CAL group in the indicator Full Setup must be read into the Viewer to ensure the changes are available for use each time the Viewer is used. Refer to Read Settings from Instrument page 100.

13.2. Performing a Digital Calibration with Test Weights
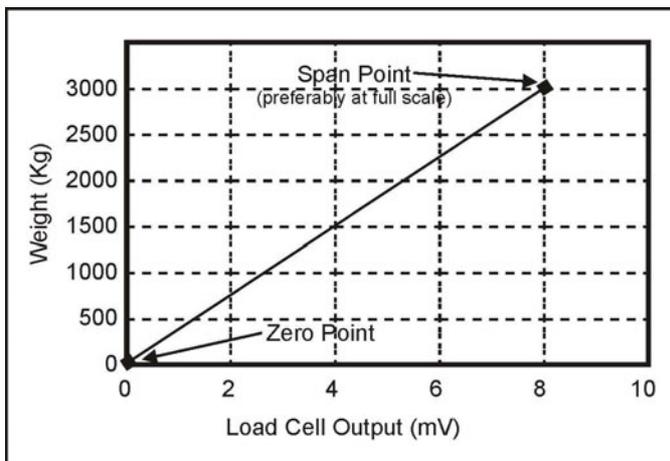
Figure 35: Chart - Zero and Span Points to Interpolate Weight from Load Cell

This type of calibration is used for single range as well as dual range and dual interval modes of operation. The **ZERO** setting specifies a gross zero point for the scale. The **SPAN** setting specifies a second point (preferably close to fullscale) used to convert the A/D readings into human readable units (eg. kg). It is important that an initial zero calibration is performed before any span calibrations. The chart shown here demonstrates how the **5200** uses the zero and span points to interpolate a weight reading from the load cell reading.

13.2.1. ZERO (Zero Calibration Routine)

- **Viewer Method**

  Set from the Viewer **CALIBRATION** Tab.

• Remove all weight from the scale structure.
• Click the **Zero Calibration (ZERO)** button to perform the Zeroing routine. The viewer display will show the current weight.   The instrument display will show **Z.in.P** to indicate that zeroing is in progress. When the process is complete the viewer and keypad display will flash the prompt **DONE** and then return to the weight to allow the zero to be checked.

- **Keypad Method**

  Set from the Indicator **CAL:ZERO** item.

• Press the **<OK>** key to perform the Zeroing routine. The display will show the current weight. Remove all weight from the scale structure.
• Press the **<OK>** key again to execute a Zero Calibration. The display will show **Z.in.P** to indicate that zeroing is in progress. When the process is complete the display will return to weight to allow the zero to be checked.
• Press the **<ITM>** key to leave the Zeroing routine or **<OK>** to repeat the operation.

13.2.2. SPAN (Span Calibration Routine)

- **Viewer Method**

  Set from the Viewer **CALIBRATION** Tab.

• Add the calibration test mass to the scale. The minimum acceptable span calibration weight is 2% of the scale range. A weight this small may limit the calibration accuracy. The closer the test weight is to full range the better the accuracy.
• Enter the span weight in the **Span Weight** field.
• Click the **Span Calibration (SPAN)** button to perform the Span setting routine. The instrument and viewer will display **S.in.P** to show that spanning is in progress. When the process is complete the display will flash the prompt **DONE** and then return to the weight to allow the new weight reading to be checked.

- **Keypad Method**

  Set from the Indicator **CAL:SPAN** item.

• Press the **<OK>** key to perform the Span setting routine. The display will show the current weight on the scale.
• Add the calibration test mass to the scale. The minimum acceptable span calibration weight is 2% of the scale range. A weight this small may limit the calibration accuracy. The closer the test weight is to full range the better the accuracy.
• Press the **<OK>** key to show the calibration weight value. Change this to the correct calibration weight using the alphanumeric keypad.
• Press the **<OK>** key to trigger the Span Calibration routine. The display will show **S.in.P** to show that spanning is in progress. When the process is complete the display will return to weight to allow the new weight reading to be checked.
• When the Span Calibration is complete, press the **<ITM>** key to leave the Spanning routine or press **<OK>** to repeat the operation.

13.3. Direct mV/V Calibration (Zero Calibration Routine)

- **Viewer Method**

  Set from the Viewer **CALIBRATION** Tab.

• The **Zero (DIR.ZER) mV/V** field is used to enter the zero value for Direct mV/V Calibration.
• Press the **CALIBRATE** button.

- **Keypad Method**

  Set from the Indicator **CAL:DIR.ZER** item. This function uses the current zero calibration mV/V value.

• Press the **<OK>** key to start the zero routine running. The display will show the current weight.
• Press the **<OK>** key. The display will show the current weight as mV/V.
• Enter the mV/V signal strength reading for zero load. The mV/V signal for the weight on the scale at this time is used as the default. If there is no load on the scale then use the mV/V setting as is, otherwise enter the correct mV/V reading for zero weight by using the numeric keys.
• Press the **<OK>** key to accept this setting as the zero calibration.
• Press the **<ITM>** key to return to the **DIR.ZER** item.

13.4. Direct mV/V Calibration (Span Calibration Routine)

- **Viewer Method**

  Set from the Viewer **CALIBRATION** Tab.

• The **Span (DIR.SPN) mV/V** field is used to enter the span (fullscale) value for Direct mV/V Calibration.
• Press the **CALIBRATE** button.

- **Keypad Method**

  Set from the Indicator **CAL:DIR.SPN** item.

• Press the **<OK>** key to start the Span setting routine. The display will show the current weight.
• Press the **<OK>** key. The display will show the current weight as mV/V.
• Enter the mV/V reading to equal the calculated span mV/V for the scale. The span mV/V is the calculated difference in signal between zero weight and fullscale weight on the scale base.
• Press the **<OK>** button to accept this setting as the span calibration
• Press the **<ITM>** key to return to the **DIR.SPN** item.

•

13.5. Using Linearisation

This section provides instructions on the use of the linearisation. Linearisation may be applied to any type of scale weighing mode. Linearisation is used to approximate the weight output to a non-linear scale. The chart below shows a non-linear characteristic for the load cell output. From the chart, it can be seen that the trace with no linearisation applied is a poor approximation to the real characteristic. By applying one or more linearisation points, more accurate weight readings can be achieved.
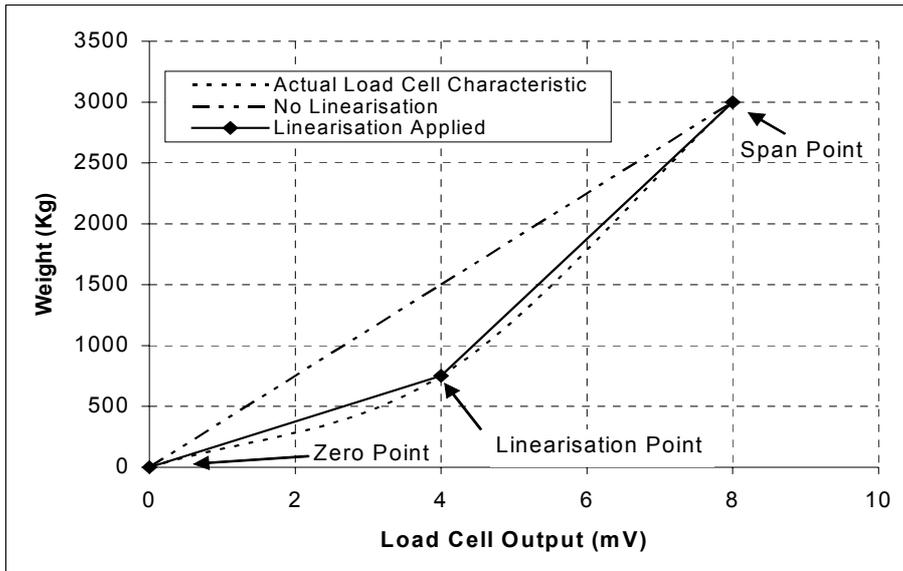
Figure 36: Chart - Non-Linear Characteristic for Load Cell Output

To perform a linearisation, a calibration of the zero and span points must have been performed. Both the zero and span calibration points are used in the linearisation of the scale base. These two points are assumed to be accurately set and thus have no linearisation error. Note that the linearisation points are not restricted to lie between the zero and span points. They may also be placed above the span point, and below the zero point.

A maximum of five linearisation points can be set independently anywhere in the operating range of the scale. Unused or unwanted points may be also cleared.

13.5.1. Set or Edit Linearisation Points

• **Viewer Method**

Set from the Viewer **CALIBRATION** Tab.

• Add the test weight to the scale.
• Enter the calibration weight
• Click to select one of the five linearisation points.
• Click the **Set (ED.LIN)** button.

- **Keypad Method**

Set from the Indicator **CAL:ED.LIN** item.

- Press the **<OK>** key to view the list of linearisation points currently in use.
- Press the **<SEL>** key to step through the list of points. Each point is shown as **Ln.ppp** where **n** is the point number (1 to 5), and **ppp** is the approximate percentage of full scale where the linearisation is applied. For example, **L1.050** indicates that linearisation point one is active and was entered at about 50% of full scale. Unused linearisation points are shown with a row of dashes (eg. L2.**- - -**).
- Press **<OK>** to change the linearisation point selected or press **<ITM>** to exit without making any changes.
- After pressing **<OK>**, the current weight reading is displayed. Add the calibration test mass to the scale. The closer the test mass is to the point of maximum error in linearity the more effective will be the correction. Press **<OK>** to enter a corrected weight value for this point or **<ITM>** to exit without making changes.
- Enter the new weight from the keypad.
- Press the **<OK>** key to trigger the Linearisation routine. When the process is complete the display will show the weight to allow the new weight reading to be checked before returning to the menus. Press **<ITM>** to leave the routine or **<OK>** to repeat the operation.

13.5.2. Clear Linearisation Points

- **Viewer Method**

Cleared from the Viewer **CALIBRATION** Tab.

- Click to select one of the five linearisation points.
- Click the **Clear (CLR.LIN)** button.

- **Keypad Method**

Set from the Indicator **CAL:CLR.LIN** item.

- Press the **<OK>** key to view the list of linearisation points currently in use.
- Press the **<SEL>** key to step through the list of points. Each point is shown as **Ln.ppp** where **n** is the point number (1 to 5), and **ppp** is the approximate percentage of full scale where the linearisation is applied. For example, **L1.050** designates that linearisation point one is active and was entered at about 50% of full scale. Unused linearisation points are shown with a row of dashes (eg. L2. ---).
- Press **<OK>** to clear the linearisation point selected or press **<ITM>** to exit without making any changes.
- Once **<OK>** has been pressed, the linearisation point will be cleared, and the display will return to **CLR.LIN**.

Note: All linearisation points are cleared by restoring the default calibration of the instrument. The zero and span settings are also cleared by this process.

13.6. Restore Factory Calibration

This option is available only through Full Setup on the indicator. Refer to FAC.CAL (Restore Default Factory Calibration) ⊗ page 48 for more information.

14. Serial Outputs

The **5200** provides a number of serial output options allowing communications with external devices such as printers, computers, PLCs or remote displays.

Two serial outputs are available, each on a separate DB9 connector socket. For wiring connections and pinouts, refer to Serial Ports page 12. The **5200** requires an external converter to transmit in TTY Current Loop (20mA).

Serial Port 1 is bi-directional (in both RS-232 and RS-485). The functions available for serial port 1 include:

• Automatic Weight Output	• Networked Communications	• Printing

Serial Port 2 provides RS-232 reception and transmission (with DTR handshake, and can be configured to perform the following functions:

• Automatic Weight Output	• Weight Printing

All printer and serial output options are enabled and configured using the **Serial** menu in the keypad digital setup procedure and in the Viewer **Settings Serial** Tab.

Note: Each serial port can set an individual baud rate and bit settings. The baud rate and bit settings can be changed from Full or Safe Setup on the keypad (SER.P1:BAUD or SER.P2:BAUD and SER.P1:BITS or SER.P2:BITS).

Computer communications can range from simple automatic streamed output, through to multi-drop networked systems. The **5200** can be programmed and calibrated via the network. The setup counter is incremented when the calibration related steps are accessed via the serial port. This means that calibration via the serial port cannot be carried out without effecting the certification of a trade installation.

Printer driving allows for three basic printer outputs. The format of the printer ticket may be changed to suit any application by entering special characters into the custom ticket format strings. An automatic print mode is available where the **5200** automatically generates printouts at the appropriate time in the weighing process.

14.1. Automatic Weight Output

The automatic output is normally used to drive remote displays, a dedicated computer or PLC communications. The output generates a simple, configurable weight message at intervals programmed in the digital setup. The Automatic facilities are available from both serial ports. The format for automatic outputs is set in SER.P1:FORMAT and SER.P2:FORMAT. Refer to FORMAT (Output Format) page 51.

14.1.1. Auto Weight Format String

The **5200** auto weight string can be one of five standard strings (Auto A to Auto E), or a user programmable string (Custom). In a standard weight format string (Auto A to Auto E), the weight reading is selected according to the weight source. When using the Keypad the settings are in the SER.P1 or SER.P2 group, AUT.OPT:SRC item. When using the Viewer the settings are in SETTINGS/SERIAL/PORT 1/AUTO TRANSMIT OPTIONS (AUT.OPT) and SETTINGS/SERIAL/PORT 2/AUTO TRANSMIT OPTIONS (AUT.OPT) tabs, SOURCE (SRC) field. The start and end characters are included in the format. In a user programmable weight format string (Custom), the weight source is selected via codes in the string and the start and end characters must be entered manually.

14.1.2. Automatic Formats

The five standard weight formats (Auto Format A to E) are detailed below.

Format	Description
Auto A	**\<STX> \<SIGN> \<WEIGHTA(7)> \<STATUS> \<ETX>**
Auto B	**\<STX> \<STATUS> \<SIGN> \<WEIGHTA(7)> \<UNITS(3)> \<ETX>**
Auto C	**\<STX> \<SIGN> \<WEIGHTA(7)> \<S1> \<S2> \<S3> \<S4> \<UNITS(3)> \<ETX>**
Auto D	**\<STX> \<SIGN> \<WEIGHTA(7)> \<ETX>**
Auto E	**\<STX> \<SIGN> \<WEIGHTB(7)> \<S5> \<UNITS(3)> \<MODE(4)> \<ETX>**

Where
- **STX:** Start of transmission character (ASCII 02).
- **ETX:** End of transmission character (ASCII 03).
- **SIGN:** The sign of the weight reading (space for positive, dash (-) for negative).
- **WEIGHTA(7):** A seven-character string containing the current weight including the decimal point. If there is no decimal point, then the first character is a space. Leading zero blanking applies.
- **WEIGHTB(7):** A seven-character string containing the current weight including the decimal point. If no decimal point is used a decimal point follows the 6 digits of weight data. Leading zeros are shown.
- **STATUS:** Provides information on the weight reading. The characters G/N/U/O/M/E represent Gross / Net / Underload / Overload / Motion / Error, respectively.
- **UNITS(3):** A three character string, the first character being a space, followed by the actual units (eg. ^kg or ^^t). If the weight reading is not stable, the instrument's string is sent as ^^^.
- **S1:** Displays G/N/U/O/E representing Gross / Net / Underload / Overload / Error, respectively.
- **S2:** Displays M/^ representing motion / stable, respectively.
- **S3:** Displays Z/^ representing centre of zero / non-zero, respectively.
- **S4:** Displays 1/2/- representing range 1/2 in dual-interval and dual range mode and a dash (-) otherwise.
- **S5:** Displays ^/m/c representing stable / motion / over or under capacity, respectively.
- **MODE:** Four characters ^g^^ or ^n^^ for gross or net weight.

14.2. Printer Output

The printer weight output is used to drive printers. The format for printed outputs is set in SER.P1:FORMAT and SER.P2:FORMAT. Refer to FORMAT (Output Format) page 51.

14.2.1. Print Formats

The **5200** has three standard print formats (Print Format A to C). They are designed for product totalising.

The following are examples of ticket formats for Print Format A, B and C. These formats can be customised by using the preset tokens. Refer to Other Characters / Codes page 118.

Print format A	Print format B	Print format C

```Joe's Fruit & Veg```
```30 Yarmouth Pde```
```Tamworth NSW 2040```
```13/03/03 11:09:27```
```Onions```
```   4.06kg```
```   5.04kg```
```   3.15kg```
```Apples```
```   5.02kg```
```   4.48kg```
```   6.15kg```
```Total   27.90kg```
```Thank You!```
 	
```Grand Total```
```Apples   15.65kg```
```Onions   12.25kg```
```Total   27.90kg```
	```Joe's Fruit & Veg```
	```30 Yarmouth Pde```
	```Tamworth NSW 2040```
	```13/03/03 11:12:30```
	```Onions 8.31kg, 3.94kg,```
	``` 5.36kg, 7.81kg, Apples```
	``` 3.70kg, 4.48kg, 2.28kg,```
	``` 7.17kg,```
	```Total 43.05kg```
	```Thank You!```
	
	```Grand Total```
	```Apples 17.63kg```
	```Onions 25.42kg```
	```Total 43.05kg```
		```Joe's Fruit & Veg```
		```30 Yarmouth Pde```
		```Tamworth NSW 2040```
		```13/03/03 11:20:52```
		```Onions 4.91kg```
		```Thank You!```
		
		```Joe's Fruit & Veg```
		```30 Yarmouth Pde```
		```Tamworth NSW 2040```
		```13/03/03 11:21:02```
		```Apples 3.60kg```
		```Thank You!```
		
		```Joe's Fruit & Veg```
		```30 Yarmouth Pde```
		```Tamworth NSW 2040```
		```13/03/03 11:21:07```
		```Apples 6.48kg```
		```Thank You!```
		
		```Grand Total```
		```Apples 10.08kg```
		```Onions 4.91kg```
		```Total 14.99kg```

14.2.2. Printer Modes

Printing is initiated by pressing the **<PRINT>** key. The **5200** can also be set for automatic printing. Automatic printing triggers an output when the scale reaches **no motion** with a weight above the **preset zero 'dead' band**. The mode item is used to set the printing mode. Refer to PRN.OPT:MODE (Printing Mode) page 52.

14.2.3. Printer Space

It is possible to specify the number of columns and rows of space to leave around each printout. This allows each printout to be separated from the next by a number of rows of white space and allows the printouts to be centred on the page.

The printer space can be set from the viewer or the keypad. Refer to PRN.OPT (Printer Options Menu) page 52 and Print Options (PRN.OPT) Sub-Tab page 81.

14.2.4. Headers and Footers

The characters at the top and bottom of the printed ticket can be edited to provide custom headers and footers (eg. company names, phone numbers, etc.). The header and footer can be edited from the keypad or viewer. For the keypad refer to PRN.OPT:HEADER (Print Ticket Header Text) page 52 and PRN.OPT:FOOTER (Print Ticket Header Text) page 52. For the viewer refer to Header, etc. (PRN.OPT) Sub-Tab page 82.

Headers, Footers and New Page can be customised by using the preset tokens. Refer to Other Characters / Codes page 118.

Example: In the example below the Header table shows the coded entry for "JOE'S FRUIT & VEG". The **&** would be entered as **19.038** for character **19**, ASCII Code **038**. The footer is created using the same methods.

Header Example:

No.	01	02	03	04	05	06	07	08	09	10	11			
					J	O	E	'	S	CR	LF			
ASCII	032	032	032	032	074	079	069	039	083	013	010			
No.	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
		F	R	U	I	T		&		V	E	G	CR	LF
ASCII	032	070	082	085	073	084	032	038	032	086	069	071	013	010

Footer Example:

No.	01	02	03	04	05	06	07	08	09	10	11	12	13	14
		P	H		3	2	1	6	7	1	6	6	CR	LF
ASCII	032	080	072	032	051	050	049	054	055	049	054	054	013	010

14.2.5. Custom Formats

Ticket format information can be entered to define the exact style of a ticket printout. The ticket can be configured from the keypad using the <u>CUSTOM</u> (Custom Format Menu) (refer to page 53) or from the Viewer using the Custom Format (CUSTOM) Sub-Tab (refer to page 83).

When configuring the ticket from the keypad the NULL code (ASCII 000) is to be entered as the last character in the string. Each format character can be a literal ASCII code (eg. **065** for **A**) or a special format character (eg. **179** for the date). Refer to Preset Tokens page 118 for lists of other characters. When the message is complete the **<OK>** key is pressed to return to the menus.

Qualifiers can also be used. Qualifiers are tokens that do not cause any characters to be transmitted but set up the format of other tokens to follow.

The custom ticket definition is separated into a number of simple events. Each event corresponds to a simple action and can be altered using the preset tokens. Refer to Other Characters / Codes page 118.

- **Custom Events**

Menu Item	Viewer Event Name	Trigger (Action)
EV.PRD.T	On Product Total	Print key is pressed while displaying the product total.
EV.SES.T	On Session Total	Print key is pressed while displaying the session total OR a long press of the print key.
EV.GR.T	On Grand Total	Print key is pressed while displaying the grand total.
EV.ADD	On Add to total: Print Key	Print key is pressed with a valid product active.
EV.CHCK	On Checkweigh	A new checkweigh result is available.
EV.HOLD	On Hold	A weight has been held.
EV.STAB	On Stable	This string is sent each time there is a motion reading, a zero reading and then a stable reading.
EV.AUTO	On Auto	Automatic transmit format. This event is triggered at the auto transmit frequency.
EV.T.NEW	On New Ticket	A new ticket is being started. The print key has been pressed for the 1st time since the last session total print.
EV.P.NEW	On New Product	A new product is being started. The print key has been pressed with a new product.
EV.P.END	On End Product	A product is being changed to a different product.
EV.NORM	On Print: No add	The print key is pressed with no active product. (No add to totals)
EACH.P1	Every Product 1	This event has no real action associated with it. It is used by other events. This string is sent for each product whose total weight is greater than 0 (zero).
EACH.P2	Every Product 2	This event has no real action associated with it. It is used by other events. This string is sent for each product whose total weight is greater than 0 (zero).
EV.NEW.L	On Newline	When this command is used, the new line string (including any additional characters) will be sent.

Note: Multiple events can be sent because of a single event. For example, when the **<PRINT>** key is pressed for the first time, three events are called: **On New Ticket**, **On New Product** and **On Add to total: Print Key**. The format characters used to define these strings are the same as those specified for the custom automatic output string.

The following table shows a coded entry for the EV.ADD event to generate a custom ticket.

No.	01	02	03	04	05	06	07	08	
	Header	I	D	:		Consec number	CR	LF	
ASCII	175	073	068	058	032	239	013	010	

No.	09	10	11	12	13	14	15	16	17	18
	Date		Time	CR	LF	Displayed Weight		Status 1	CR	LF
ASCII	179	032	180	013	010	230	032	242	013	010

The printout from this configuration is shown below:

```
        JOE'S
     FRUIT & VEG
ID: 000005
01/10/2002
10:25:30
       25.5kg N
```

14.3. Networking the 5200

The standard **5200** protocol supports two levels of networking - **Basic** and **Extended**. The **Basic** level allows for simple weight acquisition by a PLC or computer from a number of **5200s** on a simple RS-232 or RS-422 network. The **Extended** network language allows for full control over all functions of the instrument. The section here describes only the **Basic** command structure. The **Extended** structure is described in the Communications manual.

14.3.1. Basic Commands

The **5200** may be configured to respond to commands received via the serial port from a PLC or PC. The Port 1 serial setup (SER.P1:TYPE) must be configured to NET. In addition, the address of the **5200** must be set from the SER.P1:NET.OPT:ADDRESS item.

The command structure for basic networking is:

<div align="center">

STX - "K" - (Command) - POLL - ETX

</div>

where:

"K"   is ASCII upper case letter **K** (ASCII 75)

POLL   is two digits giving this instrument's network address (eg. '01' for address 1)

Command   is a single character from the list below

Nine commands are supported at the basic level of networking. The commands are as follows:

"z"	Simulate **ZERO** key operation ('Z' for long press)
"t"	Simulate **TARE** key operation ('T' for long press)
"g"	Simulate **GROSS/NET** key operation
"P"	Simulate **PRINT** key operation
"p"	Print to network port (Serial port 1). This triggers the transmission of the current weight using the format as set in the Auto format type (SER.P1:AUTO.OPT:TYPE) item.
"q"	Simulate **PRINT** key operation. ('Q' = Print long press)
"f"	Simulate **FUNCTION** key operation. ('F' = Function long press).

RS-422 and RS-485 Termination Resistors

The termination resistors required by RS-422 and RS-485 networks are built into the **5200**. The resistors are used to terminate the ends of the network to provide a balanced loading. The termination resistors in the **5200** are enabled by the BITS settings (SER.P1:BITS or SER.P2:BITS) in the keypad setup.

15. Other Characters / Codes

A variety of preset tokens are available for customising the print output when setting Serial options via the Viewer. These preset tokens are in an area called **Other Characters/Codes**.
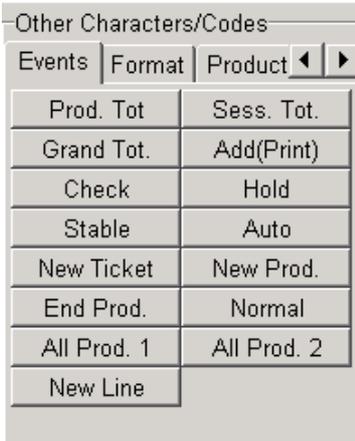
The Other Characters/Codes section is available only with the following formats and sub-tabs.

Format: Print Format A to C
        Sub-Tab: Header, etc. (PRN.OPT)

Format: Custom Format
        Sub-Tab: Header, etc. (PRN.OPT)
                     Custom Format (CUSTOM)

Click the left and right arrows to display more Tabs to the left or right.

15.1. Viewing and Entering Other Characters/Codes with the Viewer
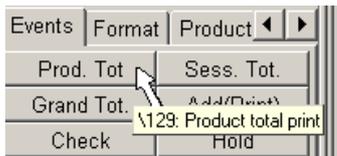
Viewing: Hover the mouse cursor over any button to briefly display the character/code.

Entering: Click the cursor at the position to enter the code and then click the appropriate character or code button.

15.2. Preset Tokens

The following tables list all preset tokens that are available in the **Other Characters/Codes** section of the Viewer. These tokens can also be used when customising the print output via the keypad. Refer to <u>CUSTOM</u> (Custom Format Menu) page 53.

15.2.1. Events Tokens

ASCII	Viewer Button	Token Description
129	Prod Tot.	Product Total Print
130	Sess Tot.	Session Total Print
131	Grand Tot.	Grand Total Print
132	Add (Print)	Add to Product (Print Key)
133	Check	New Check Weight
134	Hold	Weight Held
135	Stable	Weight has become Stable
136	Auto	Automatic Output
137	New Ticket	New Ticket
138	New Prod.	New Product in Ticket
139	End Prod.	End of Product in Ticket
140	Normal	Print Key (no add to product)
141	All Prod. 1	For Every Product
142	All Prod. 2	For Every Product
143	New Line	New Line (use SPACE setting)

15.2.2. Format Tokens

ASCII	Viewer Button	Token Description	Comment
146	Wgt 5	5 character weight string	
147	Wgt 6	6 character weight string	
148	Wgt 7	7 character weight string	
149	Wgt 8	8 character weight string	Default
150	Wgt 9	9 character weight string	
151	Wgt 10	10 character weight string	
152	no +/-	No Sign Characters	
153	' '/'-'	Sign character send as ' ' for positive and '-' for negative	Default
154	'0'/'-'	Sign character send as '0' for positive and '-' for negative	
155	'+'/'-'	Sign character send as '+' for positive and '-' for negative	
156	no '.'	No decimal point sent	
157	'.'	Decimal point sent as '.'	Default
158	','	Decimal point sent as ','	
159	"123"	Weight sent without leading characters (eg. '123')	
160	" 123"	Weight sent with ' ' (space) for leading characters (eg. " 123")	Default
161	"00123"	Weight sent with '0' (zero) for leading characters (eg. "00123")	Default
162	"123E"	Show weight on error	
163	"---E"	Show dashes for weight on error	
164	" E"	Show spaces for weight on error`	
165	"123G"	Use uppercase status characters	
166	"123g"	Use lowercase status characters	
167	"123t"	Show units	
168	"123."	Show '.' even if it is at the end of the number	
169	no pg	Turn page and line tracking off	

15.2.3. Product Tokens

ASCII	Viewer Button	Token Description
181	Name	Product: Name
182	Total Wgt	Product: Total weight
183	Total Cnt	Product: Total counts
184	Total Num	Product: Number of adds
185	Last Wgt Add	Product: Last add weight
186	Last Cnt Add	Product: Last add counts
187	No Grade Num	Product: No grade number of adds
188	Grade 1 Num	Product: Grade 1 number of adds
189	Grade 2 Num	Product: Grade 2 number of adds
190	Grade 3 Num	Product: Grade 3 number of adds
191	Grade 4 Num	Product: Grade 4 number of adds
192	No Grade Wgt	Product: No grade total weight
193	Grade 1 Wgt	Product: Grade 1 total weight
194	Grade 2 Wgt	Product: Grade 2 total weight
195	Grade 3 Wgt	Product: Grade 3 total weight
196	Grade 4 Wgt	Product: Grade 4 total weight
197	Preset Tare	Product: Preset tare weight

15.2.4. Session Total Tokens

ASCII	Viewer Button	Token Description
198	Name	Session: Name
199	Total Wgt	Session: Total weight
200	Total Cnt	Session: Total counts
201	Total Num	Session: Number of adds
202	Last Wgt Add	Session: Last add weight
203	No Grade Num	Session: No grade number of adds
204	Grade 1 Num	Session: Grade 1 number of adds
205	Grade 2 Num	Session: Grade 2 number of adds
206	Grade 3 Num	Session: Grade 3 number of adds
207	Grade 4 Num	Session: Grade 4 number of adds
208	No Grade Wgt	Session: No grade total weight
209	Grade 1 Wgt	Session: Grade 1 total weight
210	Grade 2 Wgt	Session: Grade 2 total weight
211	Grade 3 Wgt	Session: Grade 3 total weight
212	Grade 4 Wgt	Session: Grade 4 total weight
213	Preset Tare	Session: Preset tare weight

15.2.5. Grand Total Tokens

ASCII	Viewer Button	Token Description
214	Name	Grand Total: Name
215	Total Wgt	Grand Total: Total weight
216	Total Cnt	Grand Total: Total counts
217	Total Num	Grand Total: Number of adds
218	Last Wgt Add	Grand Total: Last add weight
219	No Grade Num	Grand Total: No grade number of adds
220	Grade 1 Num	Grand Total: Grade 1 number of adds
221	Grade 2 Num	Grand Total: Grade 2 number of adds
222	Grade 3 Num	Grand Total: Grade 3 number of adds
223	Grade 4 Num	Grand Total: Grade 4 number of adds
224	No Grade Wgt	Grand Total: No grade total weight
225	Grade 1 Wgt	Grand Total: Grade 1 total weight
226	Grade 2 Wgt	Grand Total: Grade 2 total weight
227	Grade 3 Wgt	Grand Total: Grade 3 total weight
228	Grade 4 Wgt	Grand Total: Grade 4 total weight
229	Preset Tare	Grand Total: Preset tare weight

15.2.6. Reading Tokens

ASCII	Viewer Button	Token Description
230	Display	Displayed weight (Gross/Net)
231	Gross	Gross weight
232	Net	Net weight
233	Counts	Number of counts
252	Disp Str	Displayed string
253	DispUnits	Displayed units
251	Units	Units of last sent weight
237	Auto	Auto weight (according to auto source setting)
234	Check Wgt	Last check weight
254	Check Grade	Last check grade name
235	Held Wgt	Held weight
236	Held Cnt	Held counts

15.2.7. User Strings Tokens

ASCII	Viewer Button	Token Description
172	User String 1	User defined string
173	User String 2	User defined string
174	User String 3	User defined string
175	Header	Header string
176	Footer	Footer string
177	New Page	String sent on new page

15.2.8. Other Tokens (Status)

ASCII	Viewer Button	Token Description
241	Status 0	Status 0 (**E**rror, **O**verload, **U**nderload, **M**otion, **N**et, **G**ross) uses last weight sent for gross/net
242	Status 1	Status 1 (**E**rror, **O**verload, **U**nderload, **N**et, **G**ross) according to last weight sent for gross/net
243	Status 2	Status 2 (**M**otion, ' ')
244	Status 3	Status 3 (Centre of **Z**ero, ' ')
245	Status 4	Status 4 (-, Range **1**, Range **2**) uses last weight sent for range
246	Status 5	Status 5 (**C**, **M**otion, ' ')
247	Status 6	Status 6 (**_N__** Net, **_G__** Gross) uses last weight sent for gross/net
248	Status 7	Status 7 (**E**rror, **O**verload, **U**nderload, **M**otion, **N**et, **G**ross) according to automatic transmit reading for gross/net

15.2.9. Other Tokens (Misc)

ASCII	Viewer Button	Token Description
178	Space H	A number of ' ' as defined by the SPACE setting
179	Date	Date
180	Time	Time
238	ID	ID
239	Consec	Consecutive number
240	Ticket End	Ticket end
249	Auto start	Auto start character
250	Auto end	Auto end character

15.2.10. ASCII Codes

Refer to ASCII Codes page 131 for a complete list of ASCII codes.

ASCII	Viewer Button	Token Description
000	NULL	Null
001	SOH	Start of Heading
002	STX	Start of Text
003	ETX	End of Text
004	EOT	End of Transmission
005	ENQ	Enquiry
006	ACK	Acknowledge
007	BEL	Bell
008	BS	Backspace
009	HT	Horizontal Tab
010	LF	Linefeed
011	VT	Vertical Tab
012	FF	Form Feed
013	CR	Carriage Return
014	SO	Shift Out
015	SI	Shift In

ASCII	Viewer Button	Token Description
016	DLE	Data Link Escape
017	DC1	Device Control 1
018	DC2	Device Control 2
019	DC3	Device Control 3
020	DC4	Device Control 4
021	NAK	Negative Acknowledge
022	SYN	Synchronous Idle
023	ETB	End of Transmission Block
024	CAN	Cancel
025	EM	End of Medium
026	SUB	Substitute
027	ESC	Escape
028	FS	File Separator
029	GS	Group Separator
030	RS	Record Separator
031	US	Unit Separator

In the Viewer there are two buttons at the bottom of the ASCII Tab that can be customised by the user. This figure illustrates the viewer defaults.

Custom: \129   \128   \255

To customise a button do the following:
- Delete the current entry in the **Custom** field.
- Enter the new code in the **Custom** field
- Click one of the two buttons. The following figure illustrates customised buttons.

Custom: \066   \068   \066

- **Printer Control**

    Most printers use embedded control characters to specify different fonts, colors and paper cutting. Consult your printer manual for details of these control characters. Enter the control characters directly into the printer ticket format string to create the desired printing effects.

16.   Setpoints

The **5200** is capable of working with four internal setpoints. The status of the setpoints is displayed on the LCD. Each setpoint can be configured to perform a particular function and may be associated with a physical output driver. The **5200** can drive two or four outputs, depending on which option card is fitted.

16.1. Connection

Refer to Accessories and Options page 128 for the method of connection of the external output drivers.

16.2. Basic Setpoint Operation

In order to use setpoints, they must first be configured from the viewer or the keypad. Once the configuration has been performed, targets can be entered directly from the keypad without requiring access to the setup menus. Refer to TARGET Key page 26 for more information.

The following sections describe each of the available setpoint settings.

16.2.1. Configuring a Setpoint

Setpoints define outputs that are activated when certain conditions are met. The setpoint type defines the conditions to be met to activate the output. Active setpoints are based on weight. Other setpoints are used to indicate checkweigh grades and indicate conditions within the **5200** (eg. overload).

The operation of active weight setpoints is demonstrated in the diagram below. Also illustrated are the roles of target and hysteresis settings
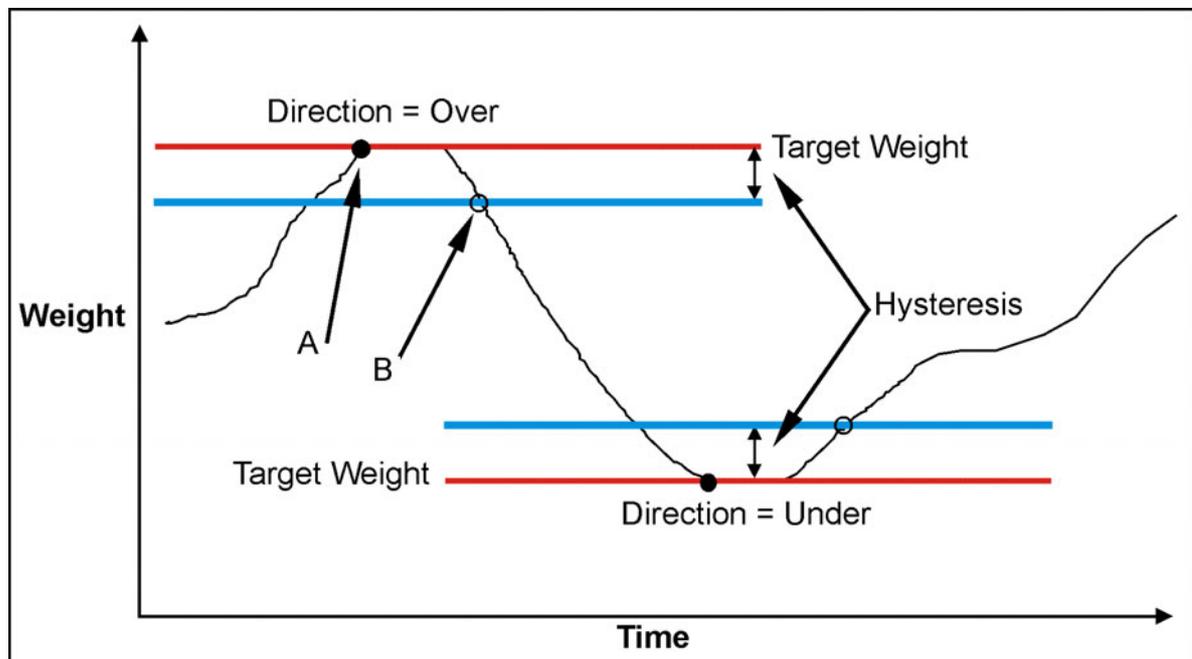
Figure 37: Setpoint Operation – Over vs Under

- **Active Setpoints:** Note the difference between **Over** and **Under** directions.
- If the Logic is set to **High** the output is turned on at point **A** and off again at point **B**. If the Logic is set to **Low** the output is turned off at point **A** and on again at point **B**.

16.3. Setpoint Types (SET.TYP)

Each of the four setpoints is assigned a specific type and a number of options. Not all options are available with every type. Below is a list of all of the different setpoint types along with the options available for each.

16.3.1. None

This is the default setting and disables the setpoint when not in use. These setpoints may be driven directly via the comms.

16.3.2. Active

Setpoints of this type are always active. Active setpoints are applicable to level control and overload alarms, etc. The target for an active setpoint can be set from the **LIM1** to **LIM4** item(s), which appear by pressing the **<TARGET>** key. Refer to TARGET Key page 26.

The options applicable to active setpoints are as follows:
- Source
- Logic
- Hysteresis
- Direction
- Alarm
- Pulse Times

16.3.3. Check

Check setpoints are used to configure and drive checkweigh bands. Check setpoints must be ordered with the band with the smallest limit in the lowest setpoint number. The lower limit of each band can be set from the **CHK 1** to **CHK 4** item(s), which appear by pressing the **<TARGET>** key. Refer to TARGET Key page 26.

The options applicable to active setpoints are as follows:
- Source
- Alarm
- All Checkweigh Options (refer to Checkweigh page 30)
- Logic
- Pulse Times

16.3.4. Error

This is a status output that is normally energised and is turned off when the **5200** detects an operation error (eg. broken load cell cable).
- Logic
- Pulse Times
- Alarm

16.3.5. Motion

This is a status output that is energised whenever the **5200** detects motion in the weight reading.
- Logic
- Pulse Times
- Alarm

16.3.6. Zero

This is a status output that is energised whenever the weight reading is within the zero band. If the **5200** is operating in Trade Mode, and the zero band is set to zero, then this output follows the Centre of Zero annunciator.
- Logic   • Pulse Times
- Alarm

16.3.7. Net

This is a status output that is energised whenever the **5200** is in NET mode.
- Logic   • Pulse Times
- Alarm

16.3.8. Hold

This is a status output that is energised whenever the **5200** reading is held.
- Logic   • Pulse Times
- Alarm

16.4. Setpoint Options (SET.TYP)

To increase flexibility of the setpointing system, options are available for each type of setpoint. After selecting the setpoint type, the options available for the particular setpoint are displayed and can be configured. Description of each option follows.

Note: Not all options are available for all setpoints types. Refer to Setpoint Types page 124.

16.4.1. Source (Gross, Net, Reading)

Select whether this setpoint uses gross weight, net weight or uses displayed weight (reading).

16.4.2. Direction (Over, Under)

Use **Over** if weight increases towards the setpoint target.   Use **Under** for a reduction in weight toward the setpoint. Refer to Figure 37 page 123.

16.4.3. Logic (High, Low, Pulse, Repeat)

This logic level determines the logical sense of the output.
- Logic **High** is the normal operation of the output. Consider the example of an overload alarm where the output is ON for weights over the target value and OFF otherwise. This corresponds to Logic High operation.
- Logic **Low** reverses the operation of the output so it would be ON below the target and OFF above it.
- Logic **Pulse** allows for an output to become active for a fixed period of time before switching off until the setpoint becomes active again.
- Logic **Repeat** allows the pulse to be repeated until the setpoint switches off.

17.   Special Functions

17.1. Introduction

The **5200** has up to four independent remote input functions that may be triggered by external keys connected to the optional accessory cards. In addition there is a single general purpose function key on the front panel of the **5200**. The function of each of these keys can be configured to any of the options detailed below. Refer to KEY.LOC (Front Panel Key Locking) page 49, <u>FUNCTN</u> (Front Panel and Remote Key Menu) page 50 and Settings / Special Tab page 74 for details on how to configure the front panel function key and remote input functions. Not all remote functions are available on the front panel function key. Functions that are only suitable for remote inputs are marked with ® below.

17.2. Front Panel Keys (ZERO, TARE, GROSS/NET, PRINT) ®

The function of each of these front panel keys can be left to perform their **normal** operation or they can be **locked** which disables the key.

The **<PRINT>** key can also be set to **No Add to Total**, which means the weight can print but will not be added to the totals.

17.3. Front Panel Function Key (FRONT) ®

The **<FRONT>** function key can be set to None, Check, Total, Hold, Peak Hold or Count. Each of these functions are described below.

17.4. Remote Keys (Remote 1 (REM 1) to Remote 4 (REM 4))

Remote 1 to Remote 4 can be set to None, Zero, Tare, Gross/Net, Print, Func, Blank, Lock, Check, Total, Hold, Peak Hold or Count. Each of these functions are described below.

17.5. Special Functions

17.5.1.   None

No function has been assigned.

17.5.2.   Zero, Tare, Gross/Net, Print, Func

The remote inputs can be set to function as any of the front panel operation keys including any special function assigned to the blank **<FRONT>** panel function key.

17.5.3.   ® Blank

The **Blanking** function allocates the selected input as a blanking input. When active this input causes the front display to be blanked to dashes (ie. **- - - - - -**) and blocks the operation of the front keys. This function is intended for use with tilt sensors on mobile weighing platforms to block operation of the weight indicator if the scale is not level.

17.5.4. ® Lock

This **Locking** function allocates the selected input as a locking input. When active all keys, including the remote keys are blocked. This may be used with a keylock switch to lock the instrument when not in use.

17.5.5. Check (Checkweigh)

- The **Check** function is used with checkweighing. Going from inactive to active starts a checkweigh sequence.

17.5.6. Total

The **Total** function is used with product totalising.
- A short press does a grand total print.
- A long press deletes the last weight added.

17.5.7. Hold and Peak Hold

The **Hold** function implements a manual **Hold**. The **Peak Hold** function implements a manual **Peak Hold** (ie. the largest absolute weight (either positive or negative) is stored in the peak value). The auxiliary display shows HLD (for hold) or PK (for peak hold) to indicate that the displayed weight is a held weight and not the current weight.
- Press the **<HOLD>** key once to hold the displayed weight. Press the key again to return the display to normal weighing.
- A long press toggles the display between the held weight and the held pieces.

The peak hold is initialized when the peak hold button is pressed.

There is a single hold event (EV.HOLD). Refer to CUSTOM:EV.HOLD (Hold Event) page 53 or Event to Edit page 83.

17.5.8. Count

The **Count** function is used to implement parts counting. Sample size and weight is stored for each product.
- Press the **<COUNT>** key to switch between weight display and counts display. The instrument's annunciator will display **p** to indicate pieces.
- Press and hold this key to enter the sample quantity and then press the **<OK>** key. At this point it is possible to enter the sample weight directly using the numeric keys or use the weight of the current sample as the sample weight.

18. Accessories and Options

18.1. Introduction

The **5200** can be expanded by the installation of optional accessory cards. Two different cards are available for the **5200** - the setpoint card and the combo card.

18.2. Installing Option Cards

- Isolate the **5200** from the power before attempting to install an accessory card.
- Avoid excess handling of the accessory card as each card contains static sensitive devices.
- Hold the card by the edges or mounting plate as much as possible.
- Each option card is installed into a slot in the back panel of the **5200**. The slot is accessed by removing the cover plate at the top left.
- The connector lead is attached to the inside of this plate.
- Separate the lead from the plate, taking care not to lose the lead inside the instrument.
- Discard the plate, but retain the two mounting screws.
- Clean any remnants of tape from the lead connector.
- Plug the lead connector onto the four-pin socket on the accessory card. The connector only fits one way around.
- Slide the card into the slot in the back of the instrument (cable end first), until the mounting plate is fitted against the back plate.
- Re-install the two retaining screws.

IMPORTANT NOTE

The EMC and RFI immunity of the accessory card depends on a sound electrical connection between the support plate and the case of the instrument. Make sure that this connection is as sound as possible when refitting the two retaining screws.

18.3. Setpoint Card

The standard **5200** displays the results of the checkweigh or setpoint functions on the front panel annunciator LEDs only. These signals can be used to drive external devices by installing an output driver card. The card carries four independent opto-isolated open-collector transistor drivers. These can be used to operate external devices such as relays, signal lamps or PLC inputs. The card also has four opto-isolated remote inputs. The function of each input can be selected. Refer to Special Functions page 126 for details of the available functions.

18.3.1. Output Drivers

The output stage does not contain a power source and must be powered externally. The external supply should be from 12 to 28 volts DC and the maximum load current must be less than 0.5A
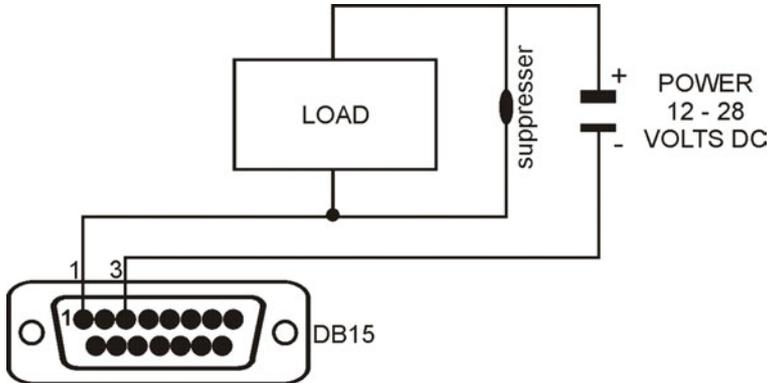
This circuit diagram shows a typical connection for one of the outputs. Each driver is protected against electrical noise, but it is strongly recommended that spark suppressors be fitted across any inductive loads such as relay and solenoid coils.

18.3.2. Remote Inputs

Each input is opto-isolated and requires a voltage input of between 5 and 28 volts DC to trigger. The following diagram shows a typical input circuit.
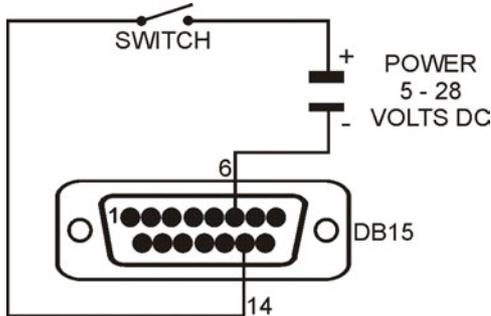
The following table shows the connections for the I/O card.

Pin No.	Function	Description	Connect To
1	OUT 1	Output 1	Load 1
9	OUT 2	Output 2	Load 2
2	OUT 3	Output 3	Load 3
10	OUT 4	Output 4	Load 4
3	OUTCOM	Output Common	Output Supply Negative
6	INCOM	Input Common	Input Supply Negative
14	IN 1	Remote Function 1	Contacts 1
7	IN 2	Remote Function 2	Contacts 2
15	IN 3	Remote Function 3	Contacts 3
8	IN 4	Remote Function 4	Contacts 4
SHELL	CH.GND	Chassis Ground	Cable Shield

18.4. Combo Card

This card provides either a –10 to 10 Volt analog output or a 4 to 20mA analog output. In addition it also provides two outputs and one input as per the setpoint card. The outputs are isolated from the input and the analog outputs. Refer to Output Drivers and Remote Inputs page 129 for more information

The current loop driver is active and supplies the source of power for the loop. The maximum circuit impedance must not exceed 500 ohms. The range of output is extended to include 0 to 24mA that allows for readings outside 0 to fullscale to be detected.

The Voltage output can drive loads down to 2,000 ohms. The voltage output can be used with negative as well as positive weights with 0V representing zero weight and 10V representing fullscale weight.

Shielded cable should be used for connecting the analog outputs to external devices.

With the Combo card, either voltage or current output must be selected. It is not possible to drive both simultaneously. Fine adjustment of the analog output is possible using the **CAL.LO** and **CAL.HI** options in the Analog menu. Refer to ANALOG (Analog Settings) page 57.

The following table shows the connections for the Multi card.

Pin No.	Function	Description	Connect To
1	OUT 1	Output 1	Load 1
9	OUT 2	Output 2	Load 2
3	OUTCOM	Output Common	Output Supply Negative
6	INCOM	Input Common	Input Supply Negative
14	IN 1	Remote Function 1	Contacts 1
4	V (+)	Voltage Output Positive	Minimum load 2000 ohms
5	I (+)	Current Loop Output	Maximum load 500 ohms
12	V(-)	Voltage Output Negative	
13	I (-)	Current Loop Return	
SHELL	CH.GND	Chassis Ground	Cable Shield

18.4.1.   Fine Adjustment of Analog Outputs

The analog outputs from either the combo card or analog output card are factory calibrated and can be used directly as shipped. In some applications, however, it is necessary to fine-tune the output to achieve maximum performance.

The low (0V or 4mA) outputs and high outputs (10V or 20mA) are calibrated from the keypad. Refer to CAL.LO (Calibrate Zero Output) page 58 and CAL.HI (Calibrate Fullscale Output) page 58 for more information.

Calibrate the low output first followed by the high output. The FRC.AN1 item is used to force the output Lo and Hi as a final check. Refer to FRC.AN1 (Force Analog Output) page 58 for more information.

The fine adjustment procedure is carried out as follows:
- Use an external instrument to measure the analog output.
- Access the keypad setup menu.
- Press **<GRP>** repeatedly to display the **ANALOG** group.
- Press **<ITM>** repeatedly to display the **CAL.LO** or **CAL.HI** item.
- Press **<SEL>** to cycle through the options.
- When the desired option is displayed press **<OK>** to accept the setting and re-display the item name.

19. Appendix

19.1. ASCII Codes

The following table lists the ASCII codes for control and printable characters.

Code	Char	Code	Char	Code	Char	Code	Char	Code	Char
000	NULL	026	SUB	052	'4'	078	'N'	104	'h'
001	SOH	027	ESC	053	'5'	079	'O'	105	'i'
002	STX	028	FS	054	'6'	080	'P'	106	'j'
003	ETX	029	GS	055	'7'	081	'Q'	107	'k'
004	EOT	030	RS	056	'8'	082	'R'	108	'l'
005	ENQ	031	US	057	'9'	083	'S'	109	'm'
006	ACK	032	' ' (space)	058	':'	084	'T'	110	'n'
007	BEL	033	'!'	059	';'	085	'U'	111	'o'
008	BS	034	'"'	060	'<'	086	'V'	112	'p'
009	HT	035	'#'	061	'='	087	'W'	113	'q'
010	LF	036	'$'	062	'>'	088	'X'	114	'r'
011	VT	037	'%'	063	'?'	089	'Y'	115	's'
012	FF	038	'&'	064	'@'	090	'Z'	116	't'
013	CR	039	'''	065	'A'	091	'['	117	'u'
014	SO	040	'('	066	'B'	092	'\'	118	'v'
015	SI	041	')'	067	'C'	093	']'	119	'w'
016	DLE	042	'*'	068	'D'	094	'^'	120	'x'
017	DC1	043	'+'	069	'E'	095	'_'	121	'y'
018	DC2	044	','	070	'F'	096	'`'	122	'z'
019	DC3	045	'-'	071	'G'	097	'a'	123	'{'
020	DC4	046	'.'	072	'H'	098	'b'	124	'|'
021	NAK	047	'/'	073	'I'	099	'c'	125	'}'
022	SYN	048	'0'	074	'J'	100	'd'	126	'~'
023	ETB	049	'1'	075	'K'	101	'e'	127	DEL
024	CAN	050	'2'	076	'L'	102	'f'		
025	EM	051	'3'	077	'M'	103	'g'		

19.2. Error Messages

A number of error messages may be displayed to warn of operation outside of the acceptable limits. These messages are described below. Short messages (XXXXX) will appear as a single message on the display. Longer messages (XXXXX)(YYYYY) will appear on the display in two parts, first the (XXXXX) part, then the (YYYYY) part.

19.2.1. Weighing Errors

These messages show status messages or errors that have occurred during the normal weighing operation.

Error	Description	Resolution
(U - - - - -)	The weight is below the minimum allowable weight reading.	Increase the weight or decrease the minimum allowable weight reading.
(O - - - - -)	The weight is above the maximum allowable weight reading. Warning - overloading may damage mechanical scale elements.	Check the condition of load cell connections. Check for damaged load cell.
(ZERO) (ERROR)	The weight reading is beyond the limit set for Zero operation. The operation of the **<ZERO>** key is limited in the setup during installation. Zero cannot be performed at this weight.	Use the TARE function instead or increase the Zero Range (Z.RANGE)
(STABLE) (ERROR)	Scale motion has prevented a **<ZERO>, <TARE>** or **<PRINT>** operation from occurring on command.	Try the operation again once the scale is stable.
(PRINT) (ERROR)	A printer problem has prevented the printout from being completed.	Look for loss of printer power, no paper or cable fault.
(QA) (DUE)	The calibration due date has been set and the current date exceeds this limit.	Press any key to clear the warning for 1 hour. To clear the warning permanently, recalibrate the instrument and set a new QA due date. Refer to Quality Assurance: Next QA Due Date (QA.DATE) (dd/mm/yyyy) ⊗ page 91.

19.2.2. Setup Errors

These messages warn of setup entries that are not acceptable to the **5200** programme.

Error	Description	Resolution
(RES) (LO)	The scale build is configured for less than 100 graduations.	Check the resolution (count-by) and capacity settings.
(RES) (HIGH)	The scale build is configured for more than 100,000 graduations.	Check the resolution (count-by) and Capacity settings.

19.2.3. Calibration Errors

These messages warn of incorrect calibration technique or of attempts to calibrate the **5200** beyond it's specification.

Error	Description	Resolution
(ZERO) (HI)	The load cell output is beyond allowable zero calibration range.	Check for incorrect scale connection. Reduce the dead load, or shunt the load cells.
(ZERO) (LO)	The load cell output is below allowable zero calibration range.	Check for incorrect scale connection. Increase the dead load, or shunt the load cells.
(SPAN) (LO)	The load cell signal range (span) is too small for these settings.	Incorrect span weight entered. Scale wiring incorrect. Wrong load cell capacity (too large). Wrong or no calibration weight added to scale.
(SPAN) (HI)	The load cell signal range (span) is too large for these settings.	Incorrect span weight entered. Scale wiring incorrect. Load cell capacity too small for application.
(NO) (ZERO)	There is no valid zero calibration so the span calibration cannot proceed.	Perform a Zero calibration.

19.2.4. Diagnostic Errors

The **5200** continually monitors the condition of the internal circuits. Any faults or out-of-tolerance conditions are shown on the display as an **E** type error message. In the table below the following terms are used:

- Check = this item can be checked on site by service personnel
- Service = the **5200** must be returned for factory service

Error	Description	Resolution
(E 0001)	The power supply voltage is too low.	Check supply
(E 0002)	The power supply voltage is too high.	Check scale / cables
(E 0004)	The load cell excitation voltage is too low.	Check scale / supply
(E 0008)	The load cell excitation voltage is too high.	Check scale / supply
(E 0010)	The temperature is outside of allowable limits.	Check location
(E 0020)	Scale build is incorrect. The number of graduations has been set less than 100 or greater than 100000.	Fix up scale build
(E 0040)	The positive sense line is not connected.	Check connection
(E 0080)	The negative sense line is not connected.	Check connection
(E 00C0)	Neither sense line is connected	Check connection
(E 0100)	The digital setup information has been lost.	Re-enter setup
(E 0200)	The calibration information has been lost.	Re-calibrate
(E 0300)	All setup information has been lost	Enter setup and calibrate
(E 0400)	The factory information has been lost.	Service
(E 0800)	The EEPROM memory storage chip has failed	Service
(E 2000)	The Clock calendar chip has failed.	Service
(E 4000)	The battery backed RAM has lost data.	Re-enter setup
(E 8000)	The EPROM memory storage chip has failed.	Service

The **E** type error messages are additive. For example if a condition is detected where the power supply voltage is low, resulting in a reduction of excitation voltage, the resulting Error messages will be **E 0005** (0001 + 0004). The numbers add in hexadecimal as follows:

1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - A - B - C - D - E - F

(For example, 2 + 4 = 6, or 4 + 8 = C)

19.3. Glossary Terms

Term	Definition
Band	See Grade
Checkweigh	Catchweigh
Count-by	The smallest change in weight units that the display can show. See also Resolution.
Division	A single graduation.
DTR	Data Terminal Ready
EEPROM	Electrically Erasable Programmable Read-Only Memory
EMC	Electromagnetic Compatibility Regulation
FIR	Finite Impulse Response
Fullscale	The maximum gross weight allowed on the scale. This is used to detect overload and underload conditions, etc.
Grade	Used with checkweighing procedures. Relates to the different categories for each product (eg. High, OK, Low).
Graduations	The maximum number of display steps between zero gross load and full capacity gross load. It is equal to the Fullscale divided by the resolution.
IEC	International Electrotechnical Commission
Min	A metrological term. In this instance Min equates to 20 divisions.
OIML	International Organization of Legal Metrolology
PLC	Programmable Logic Controller
Range	Total change in weight between zero gross load and full capacity gross load (ie. the nominated total capacity of the scale). It is always given in displayed weight units.
Resolution	The smallest change in weight units that the display can show. See also Count-by.
RFI	Radio Frequency Interference
RS-232, RS-485	Standards for communications hardware layers.
Step Response	The time between placing a weight on the scale and the correct stable weight reading being displayed
SYNC Frequency	The sampling frequency of the analog-to-digital converter.
Transients	A temporary voltage oscillation or spike caused by a sudden change of load (or other external influence).
Units	The actual units of measurement (kilograms, tonnes, pounds, etc.).
Viewer	The **5200** PC Viewer package (**View5200**).

19.4. List of Figures

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Notes:

SMART WEIGHING SOLUTIONS

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