SMART WEIGHING SOLUTIONS

rinstrum

5230
(Truck Weigher)
Digital Indicator
Quick Start Manual

For use with Software Versions 2.0 and above

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SPECIAL NOTE
Trade Use of the Rinstrum 5230

This manual may occasionally make reference to Trade Use settings of the **5230.** Only properly marked Trade Certified versions of the **5230** can be used in **Legal for Trade** applications. Trade Certification is available only on **5230** units with software Versions 2.0 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 -

Table Of Contents

1. Introduction

The **Rinstrum 5230** is a precision industrial digital indicator using the latest technology to ensure fast and accurate weight readings. The **5230** has been optimised for truck weighing applications and is capable of storing information on up to 200 truck/product/destination IDs.

1.1. Approvals

- C-tick approved
- CE, OIML and NSC approved

1.2. Features

- 20mm alphanumeric LCD display (LED back-lighting).
- Four independent remote inputs (optional).
- Full digital setup and calibration.
- Six wire load cell wiring.
- Single, multiple and variable axle weighings.
- Truck, Product and Destination totalisation.
- Five point linearity correction.
- Adjustable anti-vibration filter.
- Real Time Clock and Calendar.
- Two optional expansion cards are available (Setpoint and Combo).

1.3. Manuals

For more information on the **5230 Truck Weigher**, refer to the **5230 Digital Indicator Reference Manual**, **5230 Operator Manual**, **5230 Applications Manual** or the **5230 Communications Manual** (available from www.rinstrum.com).

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 (Trade 6000 divisions at 0.5μV/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 12 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 10VA
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

3. Installation

The following steps are required to setup the **5230** indicator.
- Inspect unit to ensure good condition.
- Ensure mounting options and connectors are available.
- Use connection diagrams to wire up load cell, power and auxiliary cables as required. Connectors for all cables are supplied with indicator.
- Follow instructions in the Instrument Setup - Full Digital section page 14 to configure and calibrate instrument.
- Enter passcode to protect settings from tampering. Record passcode for future reference.
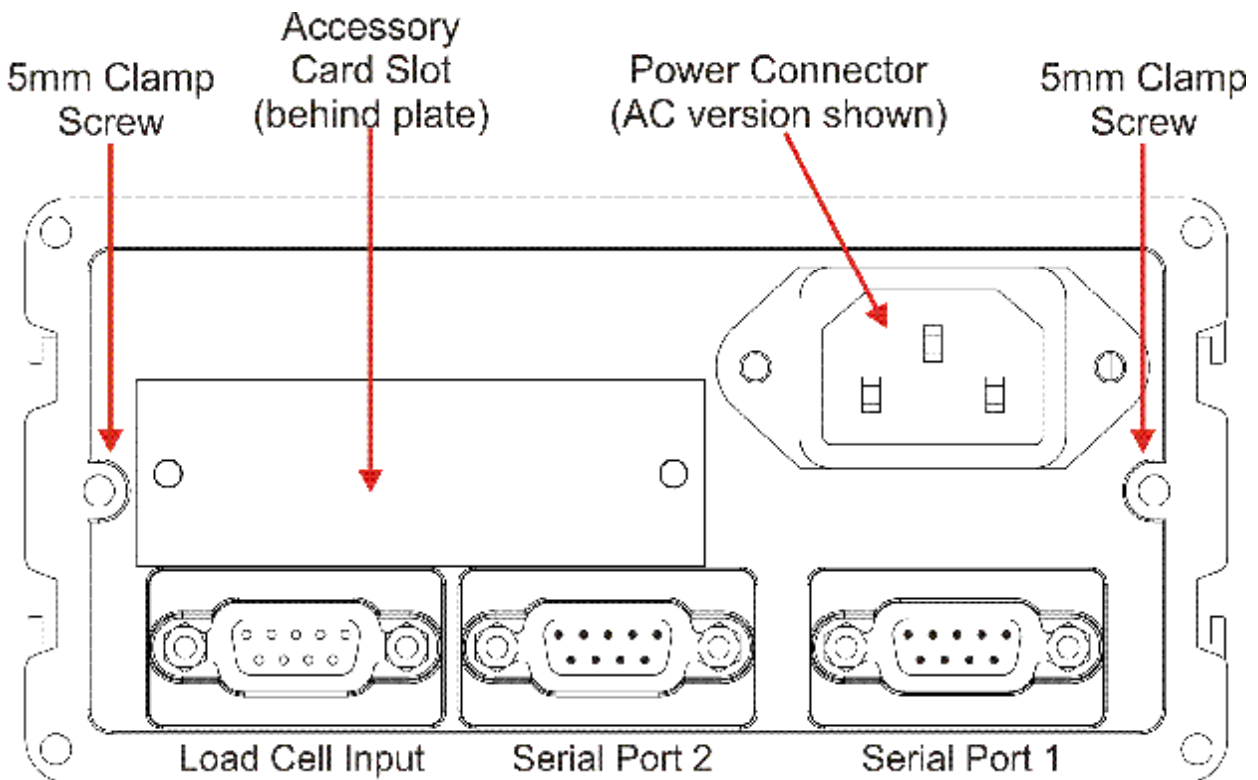
4.   Warnings

4.1.   General

- Unit 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.
- Unit and load cell cable are sensitive to electrical noise. Install well away from any power or switching circuits.

4.2.   DC Power Supply

- DC supply need not be regulated provided it is free of excessive electrical noise and sudden transients.
- Unit can be operated from high quality plug-pack provided there is sufficient capacity to drive both it and load cells.
- Use plug packs with a rating of 12VDC to 24VDC with output rating of 10VA.

4.3.   Load Cell Signals and Scale Build

- Very low output scale bases can be used but may induce some instability in weight readings when used with higher resolutions (ie. higher output/lower number of divisions equals greater display stability/accuracy).

4.4.   Configuration Issues

- Configuration and calibration can be performed from front panel, using digital setup. When Setup is used, all menu items are accessible and care must be taken to ensure no accidental changes are made to calibration and trade settings.
- Enter a passcode to prevent unauthorised or accidental tampering.

5. Connections
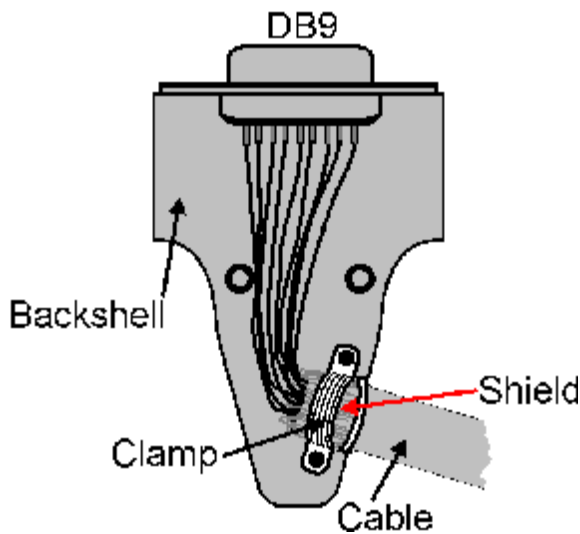
5.1.   Cable Shield Connection and Earthing

- Care should be taken when connecting shields to maximise EMC immunity and minimise earth loops and cross-talk (interference) between instruments.
- For EMC immunity, termination of the load cell shield at the 5230 end is important (ie. with connection to the 5230 case via the shield connection).
- The 5230 enclosure is directly connected to the shield connections on the cables.
- The 5230 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 unit complies with relevant EMC standards provided case ground connection is correctly made. Resistance measured between 5230 case and nearest earth point should be less than 2 ohms.
- If static problems are expected, options 0084/0085 may be required to protect the serial outputs.
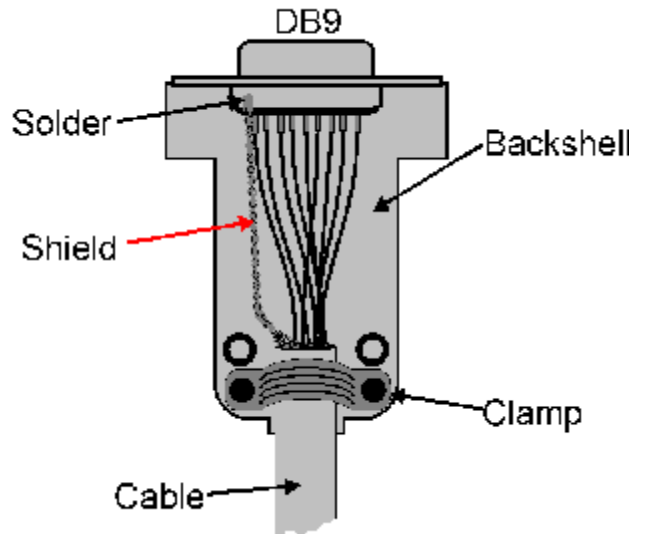
5.2. Connecting Shields

To obtain full EMC resistance with the 5230, 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.

Backshell with Shield Clamp (Preferred for Load Cells)	Backshell without Shield Clamp
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.

5.3. Unused Pins

Unused pins are __NOT__ to be connected.
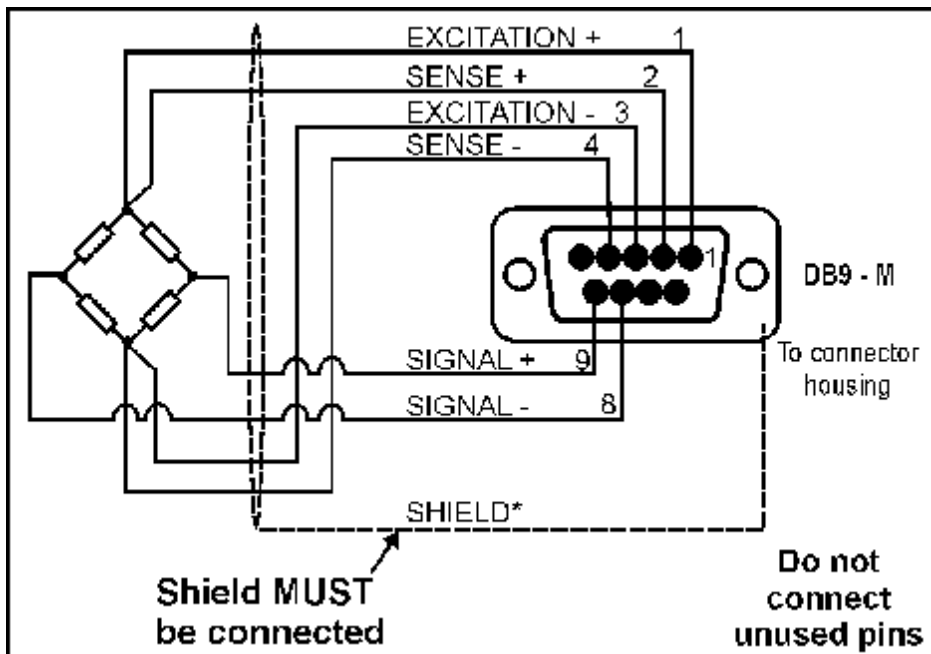
Reason: The functions of the pins may not be compatible with equipment at the other end (eg. connecting output pins to a PC communications port may affect the operation of the PC).
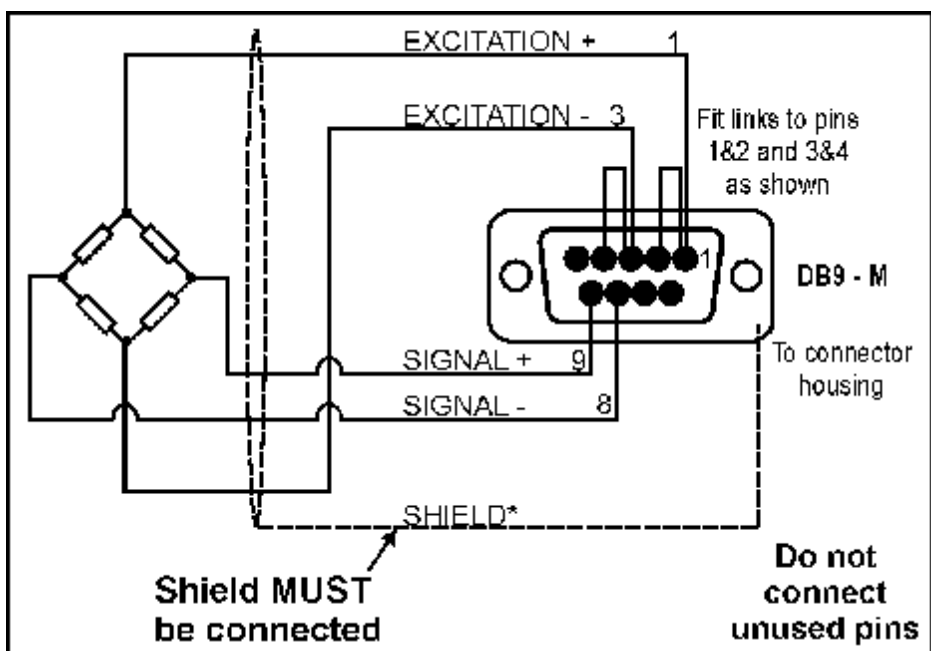
5.4. Load Cell Connection

5.4.1. 6-Wire Connection

*For more information on shielding refer to page 7.

5.4.2. 4-Wire Connection

*For more information on shielding refer to page 7.

5.4.3. Serial 1: RS-232 Networking Port
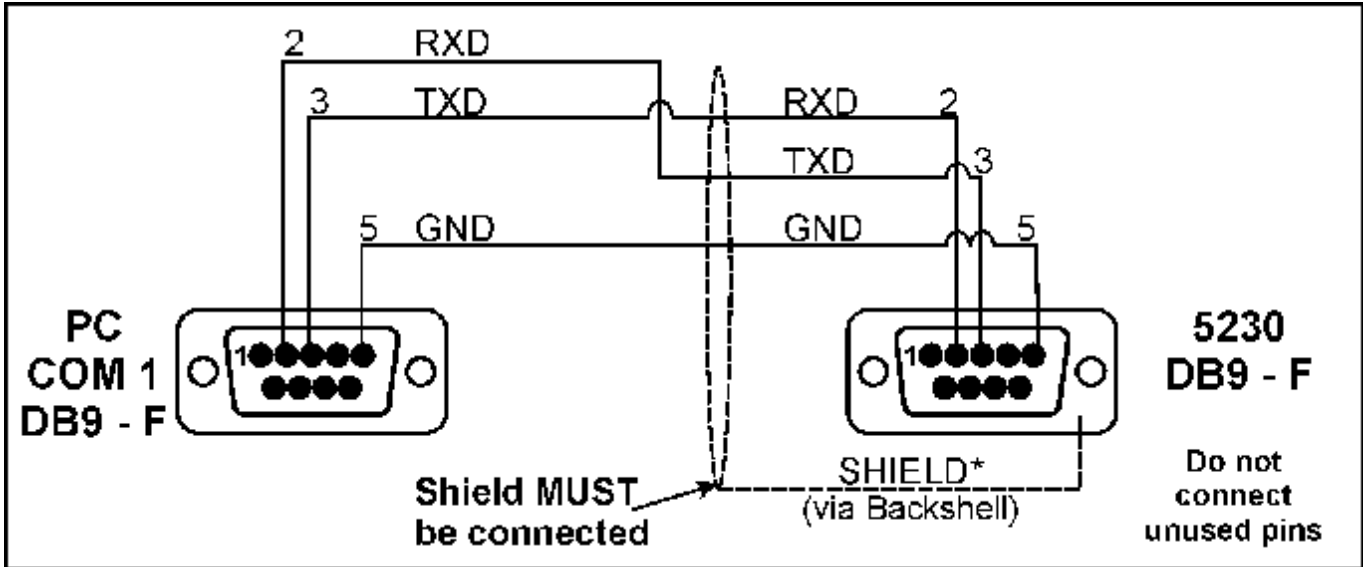
*For more information on shielding refer to page 7.

Note: Do NOT connect unused pins. For more information refer to page 8**.**

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)
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

5.4.4. Serial 1: RS-485 Networking Port
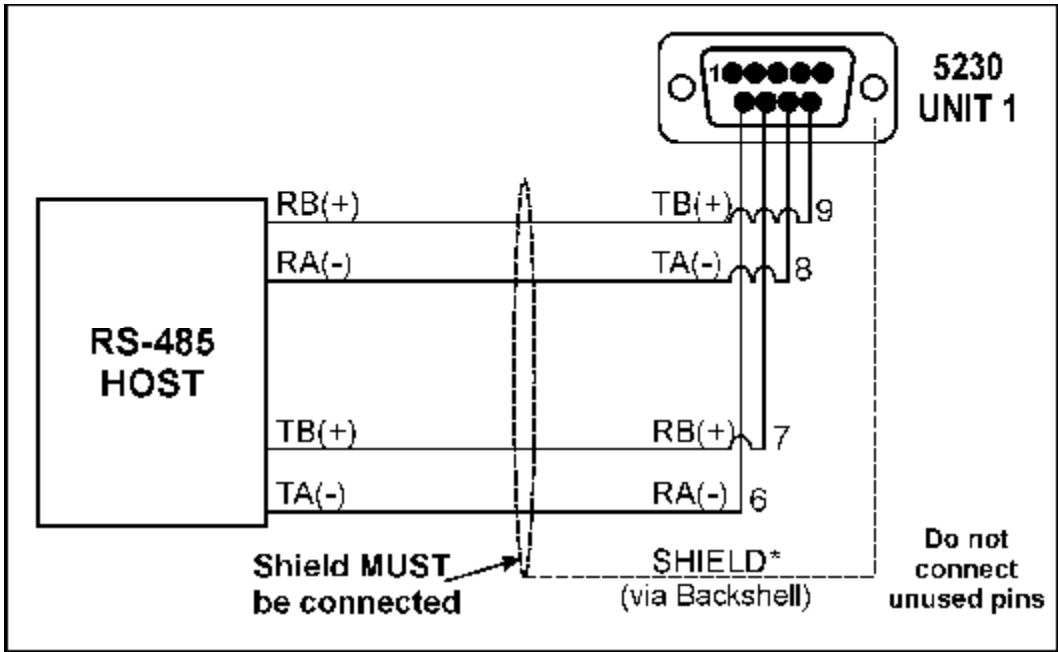
Pin No	Function	Description	Connect to
6	RA(-)	RS-485 Receive A (-)	External Network
7	RB(+)	RS-485 Receive B (+)	External Network
8	TA(-)	RS-485 Transmit A (-)	External Network
9	TB(+)	RS-485 Transmit B (+)	External Network
Backshell	Shield		Cable Shield

5.4.5. Multi-Drop Networking
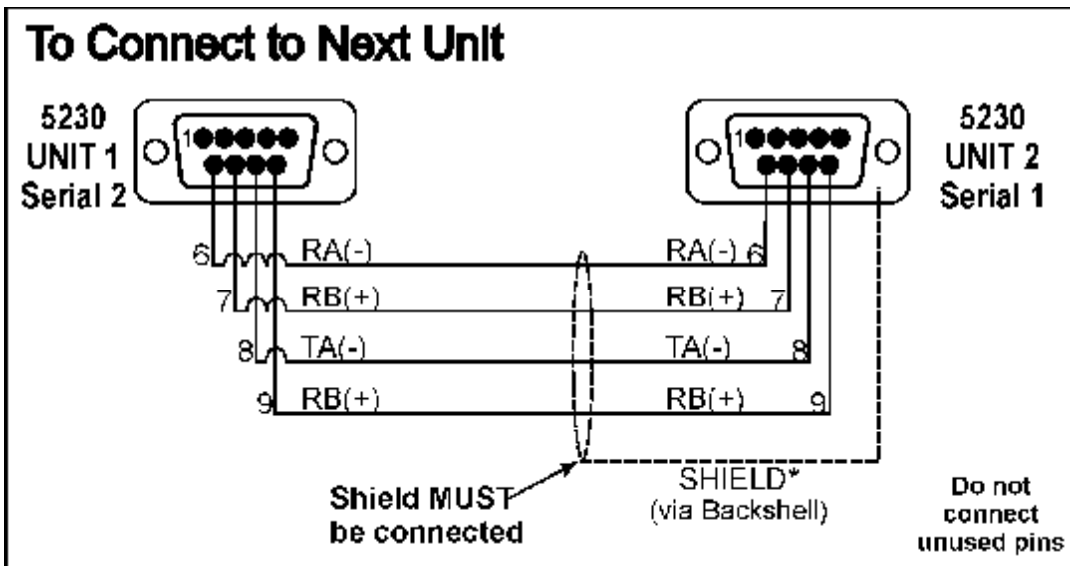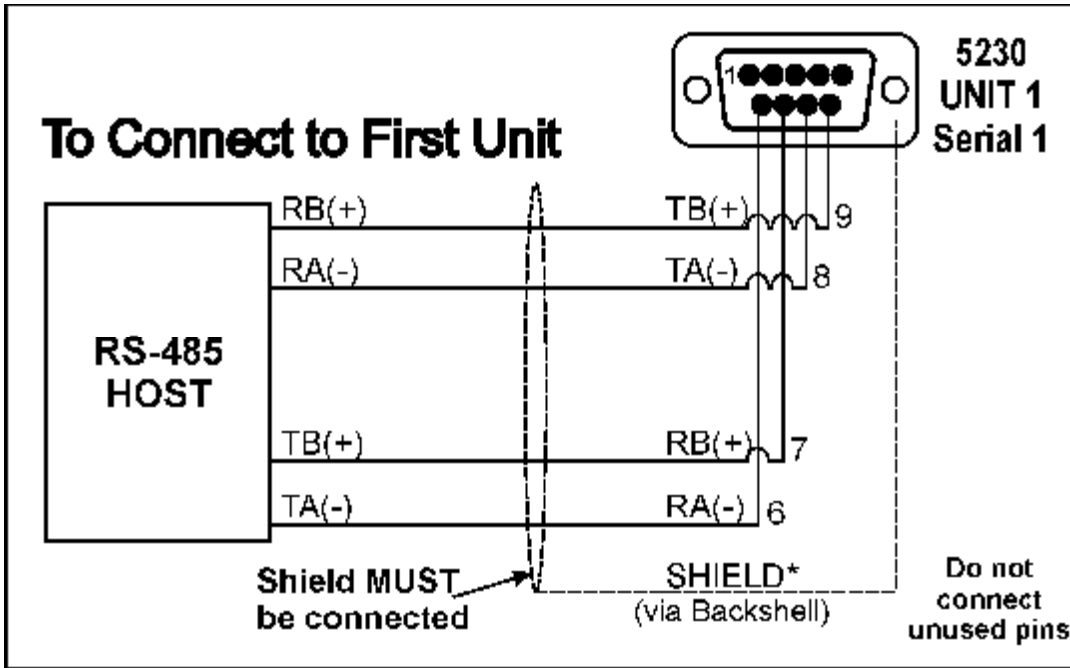
Cable 1			Cable 2			
Network Master	**5230 Unit 1 – Serial 1**		**5230 Unit 1 – Serial 2**		**5230 Unit 2 – Serial 1**	
Function	Function	Pin	Function	Pin	Function	Pin
TA(-)	RA(-)	6	RA(-)	6	RA(-)	6
TB(+)	RB(+)	7	RB(+)	7	RB(+)	7
RA(-)	TA(-)	8	TA(-)	8	TA(-)	8
RB(+)	TB(+)	9	TB(+)	9	TB(+)	9

5.4.6. Serial 2: Printer Port

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.			

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.

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.**

5.4.7. Power

POWER 12 TO 24 Volts DC 10VA - +	**Warning** **For 5230 use only 12-24 VDC** Voltages outside this range may cause improper operation or damage.

6. Instrument Setup - Full Digital

Full Digital Setup provides access to configure and calibrate the instrument.

- Ensure the instrument is On. Press and hold both the **<ZERO>** and **<FIND>** keys together for two seconds.
- To exit and return to Operator Interface, press the **<ZERO>** and **<FIND>** keys together for two seconds or select **- End -** from the menus.

6.1. Trade Critical Settings

Ä	Indicates setting is available only in Full Setup and is trade critical. The Trade counter will be incremented if setting is changed.
®	Indicates functions are only suitable for remote inputs.

6.2. Settings

The following tables identify the settings available in the **5230**.

GRP ZERO →0←	ITM FIRST ①	SEL SECOND ②	EDT PRINT ⊙ Underline = Defaults	OK ACCEPT ✓
BUILD	TYPE⊗	Display Type	<u>Single</u>, Dual Range, Dual Interval	Save
	DP⊗	Decimal Point Position	<u>000000</u>, 00000.0, 0000.00, 000.000, 00.0000, 0.00000	Save
	CAP1⊗	Full Scale 1, Max Capacity, Lower Range	\<SEL\> changes position, \<EDT\> changes digit. Default: 3000	Save
	E1⊗	Resolution (Count-By), Lower Range	<u>1</u>, 2, 5, 10, 20, 50, 100	Save
	CAP2⊗	Full Scale 2, Max Capacity, Upper Range	\<SEL\> changes position, \<EDT\> changes digit. Default: <u>6000</u>	Save
	E2⊗	Resolution (Count-By), Upper Range	1, <u>2</u>, 5, 10, 20, 50, 100	Save
	UNITS⊗	Units of Measure	none, g, <u>kg</u>, lb, t	Save
	SYNC⊗	A/D Sync Filter	12.5, 15, 25, 30, <u>50</u>, 60	Save
OPTION	USE⊗	Industrial or Trade Use	<u>TRADE</u> (Trade), INDUST (Industrial) (+ and – weighing)	Save
	FILTER	Reading Average	1, 2, 3, 4, 5, 6, 7, 8, 9, <u>10</u>, 25, 50, 75, 100, 200	Save
	JITTER	Anti-Jitter (Weight Stabilisation)	<u>Off</u>, Fine, Course	Save
	MOTION⊗	Motion Detection	Off, 0.5-1.0(fine), <u>1.0-1.0</u>, 2.0-1.0, 5.0-1.0 0.5-0.5 1.0-0.5, 2.0-0.5, 5.0-0.5 0.5-0.2 1.0-0.2, 2.0-0.2, 5.0-0.2 (coarse) Default = 1.0 Division in 1.0 Second	Save
	INIT.Z	Initial Zero at Power Up	<u>OFF</u>, ON	Save
	Z.TRAC⊗	Zero Tracking Sensitivity	<u>Off</u>, 0.5-1.0(fine), 1.0-1.0, 2.0-1.0, 5.0-1.0 0.5-0.5 1.0-0.5, 2.0-0.5, 5.0-0.5 0.5-0.2 1.0-0.2, 2.0-0.2, 5.0-0.2 (coarse)	Save
	Z.RANGE⊗	Zero Operating Range	<u>02-02</u>, 01-03, 20-20, 100-100 Default: 02-02 (-2% to +2%)	Save
	Z.BAND⊗	Zero Dead Band	\<SEL\> changes position, \<EDT\> changes digit. Default: 0 (ie. -0.5 to 0.5 graduations)	Save

GRP ZERO	ITM FIRST	SEL SECOND	EDT PRINT		OK ACCEPT
				Underline = Defaults	
CAL	ZERO⊗	Zero Calibration Routine (Current weight displays)	Remove all weight. <OK> starts routine (Z.in P displays). <ITM> key to exit, <OK> to repeat routine.		
	SPAN⊗	Span Calibration Routine (Current weight displays)	Add test weight. <OK> to show calibration weight value. Set correct weight with numeric keypad. <OK> starts routine (S.in P displays). <ITM> key to exit, <OK> to repeat routine.		
	ED.LIN⊗	Edit Linearisation Points L1. - - - Select Linearisation point 1 to 5 (L2, L3, L4, L5). (Approx. % of fullscale)	Set capacity of test weight. Set correct weight with numeric keypad. <OK> starts routine (L.in P displays). <ITM> key to exit, <OK> to repeat routine.		
	CLR.LIN⊗	Clear Linearisation Points L1. - - - Select Linearisation point 1 to 5 (L2, L3, L4, L5) (Approx. % of fullscale)	<OK> to clear point or <ITM> key to exit.		
	DIR.ZER⊗	Direct mV/V Zero Calibration	Remove all weight. <OK> starts routine (displays current weight). <OK> (displays current weight as mV/V). Set correct mV/V signal strength with numeric keypad. <OK> to accept setting. <ITM> key to exit, <OK> to repeat routine.		

	DIR.SPN⊗	Direct mV/V Span Calibration	Add test weight. <OK> starts routine (displays current weight). <OK> (displays current weight as mV/V). Set correct mV/V signal strength equal to calculated span mV/V for scale with numeric keypad. <OK> to accept setting. <ITM> key to exit, <OK> to repeat routine.	
	FAC.CAL⊗	Restore Factory Calibration Cont.N (No) Cont.Y (Yes)	<u>Cont.N</u> Warning: Choosing Cont.Y will restore default factory calibration.	Save
SPEC	PASSCD	FULL.PC Full Setup Passcode	(<u>000000</u> no passcode). Set 1 to 6 digit passcode with numeric keypad.	Save
		SAFE.PC Safe Setup Passcode	(<u>000000</u> no passcode). Set 1 to 6 digit passcode with numeric keypad.	Save
		OPER.PC Operator Passcode	(<u>000000</u> no passcode). Set 1 to 6 digit passcode with numeric keypad.	Save
		OP.ACC Operator Access Settings Allow Change Sequence No Allow Setting Targets Allow Clear IDs Allow Delete IDs Allow Create New IDs	<u>S T C D N</u> Letter indicates function is enabled. (-) Dash indicates function has been disabled. If function has been disabled but an Operator Passcode has been set, function can be performed only after Operator Passcode has been entered.	Save
	FUNCTN	REM 1 to 4 ® Remote Key Settings	NONE, ZERO, FIRST, SECOND, PRINT, ACCEPT, BLANK, LOCK, FILL, PAUSE, INT.LOC Defaults: REM 1 = First, REM 2 = Second, REM 3 = Print, REM 4 = Accept	Save
	B.LIGHT	Backlight Operation	<u>ON</u>, OFF	Save
	AUX.DSP	Auxiliary Display	<u>OFF</u>, TIME, FILL (Percentage completion of each material during batching.)	Save

GRP ZERO →0←	ITM FIRST 1	SEL SECOND 2	EDT PRINT ⊙ Underline = Defaults	OK ACCEPT ✓

TRUCK	OPER	Truck Weighing Operation Setup
		
		N I S D P
		Normal
		Automatic
		 I Print ID
		 - No Print ID
		  Single
		  Multiple
		  Variable
		   Destination ID
		   - No Destination ID
		    Product ID
		    - No Product ID
			NISDP
			(Default Truck Weighing Operation Setup)
			
			N Normal (Operator manually accepts weight).
			A Automatic reading accepted (with no motion).
			I Prompt for Print ID during normal weighing.
			- No Prompt for Print ID
			S Single axle weighing.
			M Multiple axle weighing.
			V Variable axle weighing.
			D Prompt for Destination ID
			- No Prompt for Destination ID
			P Prompt for Product ID
			- No Prompt for Product ID
				Save

	TAR.EXP	Preset Tare Expiry Period	7 Days, 14 Days, IMMED, NEVER	Save
	UNIT.ID	Unit Identifier 00 to 99		Save
	DSTURB	Required Weight Disturbance (Multiple and Variable Axle) Enter with numeric keypad.		Save
	TRK.MIN	Minimum Truck Weight Enter with numeric keypad.		Save

SER.P1	TYPE	Serial Port 1 Output Type	OFF: Disables the output. NET: Sets the unit to function a network device. AUTO.LO: Enables automatic transmission at 10Hz.	Save
	ADDRES (Type=Net)	Serial Address 00 to 31 Enter with numeric keypad.		Save
	AUT.OPT (Type=Auto. Lo)	AUT.TYP Auto Output Format Type	AUTO A, B, C, D, E and CUSTOM	Save
		SRC Auto Output Source	DISP: Displayed reading automatically transmitted. FULL: All data displayed transmitted (including prompts and messages)	Save
		AUT.FMT Auto Output Format 1.01 to 1.50 <SEL> changes column no.	<EDT> or alphanumeric keypad used to enter character.	Save
	BAUD	Serial Port 1 Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200	Save
	BITS	Serial Format Options <SEL> changes position Position 1: Parity Position 2: Data Bits Position 3: Stop Bits Position 4: Termination Resistors Position 5: Interface	N 8 1 - 2 (Default Serial Format Options) <EDT> changes digit Parity: N None, O Odd, E Even Data Bits: 7 or 8 data bits Stop Bits: 1 or 2 stop bits Termination Resistors: (-) None or T Present Interface: (2) RS-232 or (4) RS-485	Save

GRP ZERO →O←	ITM FIRST 1	SEL SECOND 2	EDT PRINT ⊙	OK ACCEPT ✓
			Underline = Defaults	
SER.P2	TYPE	Serial Port 2 Output Type	OFF: Disables the output. AUTO.LO: Enables automatic transmission at 10Hz. PRINT: Enables output for printing driving	Save
	PRN.OPT (Type=Print)	PRN.TYP Printer Output Ticket Type	Fixed 1, 2, 3, Tally, Custom	Save
		HEADER Print Header/Footer Text 1.01 to 6.30 <SEL> changes column number	<EDT> or alphanumeric keypad used to enter character.	Save
		HDR.FMT Header Format 1.01 to 1.100 <SEL> changes column number	<EDT> or alphanumeric keypad used to enter character.	Save
		FTR.FMT Footer Format 1.01 to 1.100 <SEL> changes column number	<EDT> or alphanumeric keypad used to enter character.	Save
		SPACE Margin Space CC:R1 and ROWS 2	Use alphanumeric keypad to enter numbers.	Save

	AUT.OPT (Type= Auto.Lo)	AUT.TYP Auto Output Format Type	AUTO A, B, C, D, E and CUSTOM	Save
		SRC Auto Output Source	DISP: Displayed reading automatically transmitted. FULL: All data displayed transmitted (including prompts and messages)	Save
		AUT.FMT (Aut.Typ=Custom) Auto Output Format 1.01 to 1.50 <SEL> changes column number	<EDT> or alphanumeric keypad used to enter character.	Save
	BAUD	Serial Port 1 Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200	Save
	BITS	Serial Format Options <SEL> changes position Position 1: Parity Position 2: Data Bits Position 3: Stop Bits Position 4: Termination Resistors	N 8 1 - (Default Serial Format Options) <EDT> changes digit Parity: N None, O Odd, E Even Data Bits: 7 or 8 data bits Stop Bits: 1 or 2 stop bits Termination Resistors: (-) None or T Present	Save

GRP ZERO →0←	ITM FIRST 1	SEL SECOND 2	EDT PRINT ⊙ Underline = Defaults	OK ACCEPT ✓
SET.PTS	SET.TYP	SETP 1, 2, 3, 4 Setpoint Settings	<u>NONE</u>: Disables the setpoint. ACTIVE: Always active SLOW: Material fill (Setpoint 1 only) MEDIUM: Material fill (Setpoint 2 only) FAST: Material fill (Setpoint 3 only) FINISH: External system synchronisation (Setpoint 4 only) TOL: Tolerance condition (Material fills only) RUN: Used when running a batch PAUSE: Used when paused ERROR: Used with errors MOTION: Used with motion in weight reading. ZERO: Used when weight reading within zero band AXLE: Used during First/Second weigh when axle weight accepted.	Save
	GEN.OPT	OPTION (Operating Options)	<u>E D </u> - (Default Operation Options) E Pause on Error enabled - Pause on Error disabled D Delay before Fill enabled - Delay before Fill disabled F One Feeder only enabled - One Feeder only disabled	Save
		TOL.ACT Tolerance Action	<u>None</u>: No response for the batch Beep: Unit sounds a beep and continues Pause: Unit pauses batching operation	Save
	IN-FLT	IN.FLT 1, 2, 3, 4 In-Flight Settings	Use numeric keypad to enter in-flight weight for setpoint.	Save
	TOL	TOL 1, 2, 3, 4 Tolerance Settings	Use numeric keypad to tolerance (hysteresis) for setpoint.	Save

	DELAY	Delay Options (controls speed of batching process) FIN.DLY: Finish Pulse BLOCK: Blockage Delay	FIN.DLY: Sets the time for operation of a Finish Relay (Used when Setpoint 4=Finish) Default: <u>1.0 seconds</u> BLOCK: Sets the time to expire (no motion) during filling before pausing batch. Default: <u>0.0 seconds</u>	Save
	JOG	Jogging Options JOG.ON: Jog On time JOG.OFF: Jog Off time JOG.SET: Jogging sets	JOG.ON: Sets time between each jog in 0.1 second increments. Default: <u>0.5 seconds</u> JOG.OFF: Sets the off time between each jog in 0.1 second increments. Default <u>1.0 seconds</u> JOG.SET: Sets number of jog cycles before no motion. Default: <u>1</u>	Save
ANALOG	TYPE	Analog Output Type	<u>OFF</u>: 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	Save
	CAL.LO	Calibrate Zero Output UP: Up (Increase output level) UP.FST: Up Fast (Increase output level at higher rate) DN: Down (Decrease output level) DN.FST: Down Fast (Decrease output level at higher rate)	UP or DN: The <EDT> key is used to adjust the output in small increments. UP.FST or DN.FST: The <EDT> key is used to adjust the output in large increments.	Save
	CAL.HI	Calibrate Fullscale Output UP: Up (Increase output level) UP.FST: Up Fast (Increase output level at higher rate) DN: Down (Decrease output level) DN.FST: Down Fast (Decrease output level at higher rate)	UP or DN: The <EDT> key is used to adjust the output in small increments. UP.FST or DN.FST: The <EDT> key is used to adjust the output in large increments.	Save
	FRC.AN1	Force Analog Output	LO, HIGH Default: not applicable	

GRP ZERO →0←	ITM FIRST 1	SEL SECOND 2	EDT PRINT ⊙ Underline = Defaults	OK ACCEPT ✓
CLOCK	TIME	Set Time 24 hour clock Currently set time displays	Set time in the format HH.MM Use numeric keypad to enter numbers.	Save
	DATE	Set Date DD.MM, then currently set date displays. After setting the date, YEAR, then currently set year displays.	Set day and month in the format DD.MM Then set the year in the format YYYY	Save Save
	QA.OPT⊗	Enable Quality Assurance Option	OFF, ON (Flashes QA Due from the day after QA due date)	Save
	QA.DATE⊗	Quality Assurance Due Date DD.MM, then currently set date displays. After setting the date, YEAR, then currently set year displays.	Set day and month in the format DD.MM Then set the year in the format YYYY	Save Save
	DTE.FMT	Date Format	DD.MM.Y2, DD.MM.Y4, MM.DD.Y2, MM.DD.Y4, Y2.MM.DD, Y4.MM.DD	Save
	TME.FMT	Time Format	24HOUR, 12HOUR	Save
	DTE.SEP	Date Separator Character	/ Slash (eg. 30/08/2003) - Dash (eg. 30-08-2003) . Dot (eg. 30.08.2003)	Save
	TME.SEP	Time Separator Character	: Colon (eg. 17:37) . Dot (eg. 17.37)	Save

TEST	SCALE	Scale Base Test Display	Displays load cell output in mV/V (calibrated to 0.1% worst case) Trade Mode=5 sec display	
	HI.RES	Resolution x 10 Mode	<u>OFF</u>, ON	Save
	FRC.OUT	Force Outputs of Setpoint Card	OFF: All outputs off. ON1: Output 1 on. ON2: Output 2 on. ON3: Output 3 on. ON4: Output 4 on. Default: not applicable	
	TST.INP	Test Inputs of Setpoint Card	<u>- - - -</u> (Default display) Activating each input advances through each input (eg. - - 3 - indicates input 3 is active). Setpoint Card - 4 inputs available. Combo Card - 1 input available.	
	O.LOAD	Overload Counter Records number of times scale overloaded (ie. 135% of fullscale).		
FACTRY	CLR.1ST	Clear All First Weights Cont N (No) Cont Y (Yes)	<u>Cont N</u> **Warning**: Choosing **Cont Y** will clear all first weights to zero.	Save
	CLR.IDS	Clear All IDs from Indicator Cont N (No) Cont Y (Yes)	<u>Cont N</u> **Warning**: Choosing **Cont Y** will clear all IDs from the indicator (regardless of whether there are weights stored for the IDs).	Save
	SEQ.ID⊗	Sequence Identifier	Use numeric keypad to set sequence identifier number.	Save
	DEFLT⊗	Restore Factory Defaults Cont.N (No) Cont.Y (Yes)	<u>Cont.N</u> **Warning**: Choosing **Cont.Y** will clear all stored data except calibration.	Save
- END -	EXIT SETUP	Return to Operator Interface		Save

7.   Safe and Operator Setup

7.1. Safe Setup

Safe Setup restricts access to the Trade Critical settings. Items marked with Ä indicate that the setting is trade critical.
- To access **Safe Setup**, first ensure the instrument is on. Then press and hold both the **<SECOND>** and **<FIND>** keys together for two seconds.

7.2. Operator Setup

The **Target Operator Menu** provides access to adjusting setpoint targets.
- To access the **Target Operator Menu**, first ensure the instrument is on. Then press and hold both the **<TARGET>** key for two seconds.

The **ID Operator Menu** provides access to altering the Reference ID.
- To access the **ID Operator Menu**, first ensure the instrument is on. Then press and hold both the **<ID>** key for two seconds.
- Note: The Sequence ID can only be altered in Full Setup with the **FACTRY:SEQ.ID** setting.

8.   Special Functions

The **5230** has up to four independent remote input functions (**FUNCTN:REM 1, 2, 3 or 4**) that may be triggered by external keys connected to the auxiliary cards. The function of each of these keys may be configured to any of the options detailed below.

8.1. Front Panel Keys

Zero, First, Second, Print and Accept

8.2. BLANK®

This function allocates the selected input as a blanking input. When active this input causes the front display to be blanked to dashes (- - - - - -) 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.

8.3. Lock®

This 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.

8.4. Fill®

Use this function to combine the Fill/Pause/Abort functions into a single key. A single press will start the batch or pause a running batch. A long press will abort the batch.

8.5. Pause/Abort®

This key will pause the batching process. A long press of the key will abort the batch completely. To re-start press the Fill key.

8.6. Interlock®

An interlock input is used to indicate that it is safe to start filling product (eg. when truck is on the scale). If during the filling process, the interlock signal is lost, the batching process is paused and the filling is stopped. Do not allocate any of the inputs to this function if you do not wish to use interlocking.

9.   Accessories and Options

9.1. Installing Setpoint and Combo Cards

- Isolate the **5230** 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.
- Each option card is installed into a slot in the back panel of the **5230**. 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 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.

9.2. Setpoint Card (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
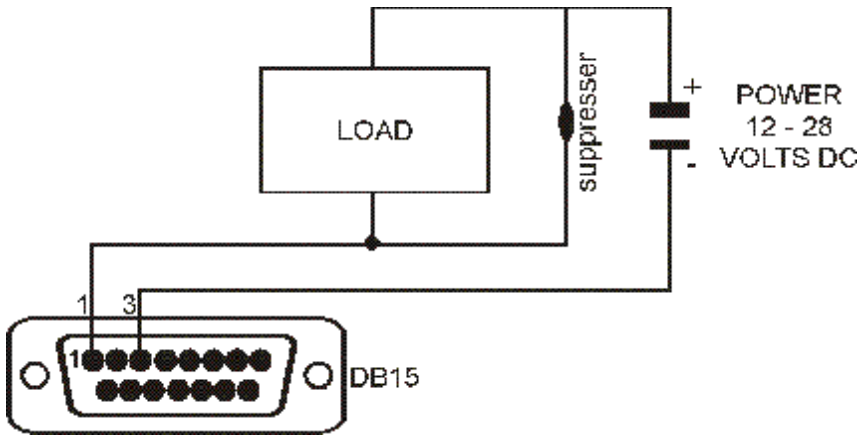
This circuit diagram shows a typical connection for one of the outputs. Each driver is protected against electrical noise, but it is strongly recommended that spark suppressors be fitted across any inductive loads such as relay and solenoid coils.

9.3. Setpoint Card (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.
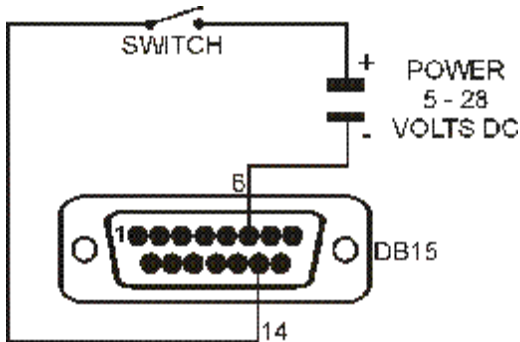
The following table shows the connections for the I/O card.

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

9.4. Combo Card

- Card provides either a -10 to 10 Volt analog output or a 4 to 20mA analog output.
- It also provides two outputs and one input as per the setpoint card. The outputs are isolated from the input and the analog outputs.
- Current loop driver is active and supplies the source of power for the loop.
- Maximum circuit impedance must not exceed 500 ohms.
- Range of output is extended to include 0 to 24mA (allows readings outside 0 to fullscale to be detected).
- Voltage output can drive into loads down to 2,000 ohms.
- Voltage output can be used with negative as well as positive weights (0V = zero weight and 10V = fullscale weight).
- Shielded cable should be used for connecting the analog outputs to external devices.
- 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.

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

9.5.   Fine Adjustment of Analog Outputs

The low (0V or 4mA) outputs and high outputs (10V or 20mA) are calibrated from the keypad (CAL.LO and CAL.HI). 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.

The fine adjustment procedure:

• 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.

10.   Setpoint Messages

Message	Description
READY	This is displayed every 5 seconds at the end of the batch to indicate that the batch is finished and the instrument is waiting for another batch to be started.
PAUSE OPER	This is displayed every 5 seconds to indicate that the batch has been paused by the operator
PAUSE OL, PAUSE UL, PAUSE ER	This message indicates that the batch has been paused due to overload (OL), underload (UL) or Error (ER) detection.
PAUSE TOL	This message indicates that the batch has been paused because the filling error in the last material filled is outside tolerance.
PAUSE I.LOC	This message indicates that the batch is paused due to the loss of the interlock signal during the filling of a material.
PAUSE PROG	This message indicates that the batch is paused due to a programmed pause step enabled by entering 0.0 seconds for a material delay.
PAUSE BLOCK	This message indicates that the batch is paused due to a blockage in the filling process
NO TARGET	This message indicates that the batch has not started due to the fact that there are no target weights entered.

11.   Weighing Error Messages

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.	Increase the Zero Range (Z.RANGE)
(STABLE) (ERROR)	Scale motion has prevented a <FIRST>, <SECOND> 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.

12. Setup Errors

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.

13. Calibration Errors

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.

14. Diagnostic Errors

Error	Description	Resolution
(E 0001)	Power supply voltage too low.	Check supply
(E 0002)	Power supply voltage too high.	Check scale / cables
(E 0004)	Load cell excitation voltage too low.	Check scale / supply
(E 0008)	Load cell excitation voltage too high.	Check scale / supply
(E 0010)	Temperature outside of allowable limits.	Check location
(E 0020)	Scale build is incorrect. Number of graduations set <100 or >100000.	Fix up scale build
(E 0040)	Positive sense line not connected.	Check connection
(E 0080)	Negative sense line not connected.	Check connection
(E 00C0)	Neither sense line connected	Check connection
(E 0100)	Digital setup information lost.	Re-enter setup
(E 0200)	Calibration information lost.	Re-calibrate
(E 0300)	All setup information lost	Enter setup and calibrate
(E 0400)	Factory information lost.	Service
(E 0800)	EEPROM memory chip failed	Service
(E 2000)	Clock calendar chip failed.	Service
(E 4000)	Battery backed RAM lost data.	Re-enter setup
(E 8000)	EPROM memory chip failed.	Service

The **E** type error messages are additive. For example, E0005(0001+0004) would indicate that both Excitation and Power Supply Voltage are low. 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)

Notes:

Notes:

SMART WEIGHING SOLUTIONS

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