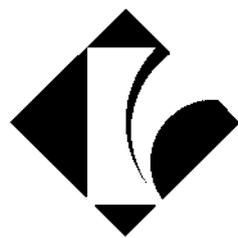


SMART WEIGHING SOLUTIONS



rinstrum

5200
(Totaliser/Checkweigher)
Digital Indicator
Communications
Manual

For use with Software Versions 1.0 and above

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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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1. Introduction

This manual details the extended networking capabilities (communications protocol) of the **5200**.

The extended protocol allows for complete calibration and control of a multi-drop network of up to 32 **5200** instruments. This protocol is used by the **View5200** program to calibrate and configure the **5200** instruments. The Viewer **TEST** tab can be used as a convenient terminal to test the **5200** communications.



Figure 1: Rinstrum 5200 Digital Indicator

1.1. Audience

This manual is aimed at the designer or installer who is familiar with the operation and setup of the **5200** Totaliser/Checkweigher (Catchweigher).

1.2. Scope

This manual lists all of the commands for the extended protocol in alphabetical order. In practice only a small subset of these commands would be used to control operational parameters. The Command Summary on page 56 groups the commands into related functions.

1.3. Manuals

For more information on the **5200 Totaliser/Checkweigher**, refer to the **5200 Reference Manual**, **5200 Operator Manual**, **5200 Quick Start Manual** or the **5200 Applications Manual** (available from www.rinstrum.com).

1.4. Document Conventions

The following document conventions are used throughout this manual.

Bold Text	Bold text denotes words and phrases to note.
^	This symbol denotes one space (used in 5200 Commands)
...	Ellipses indicate an incomplete listing. For space considerations in this Manual complete listings of returned Command responses may not be shown.

2. Connection of the 5200 Network

2.1. RS-232 Connection

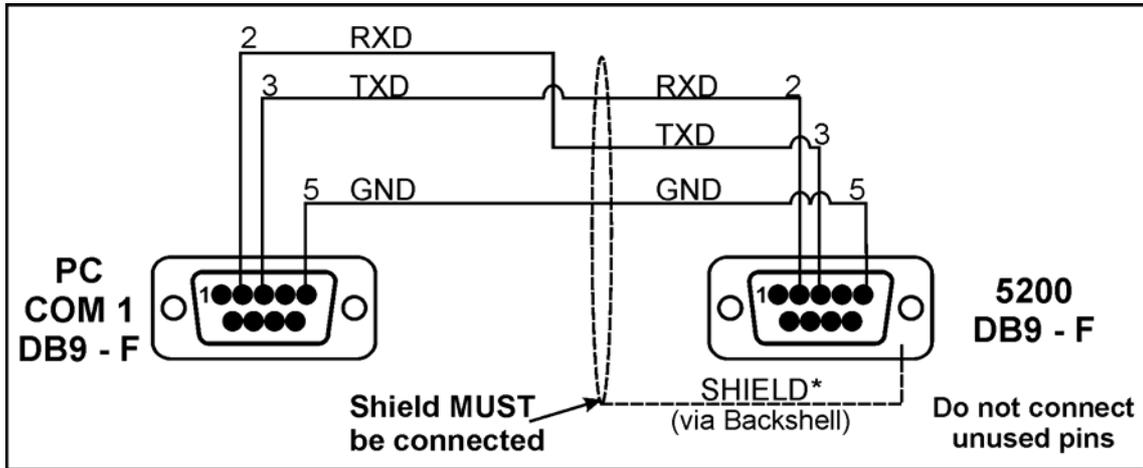


Figure 2: RS-232 Network Connection - 5200 to PC Using COM1

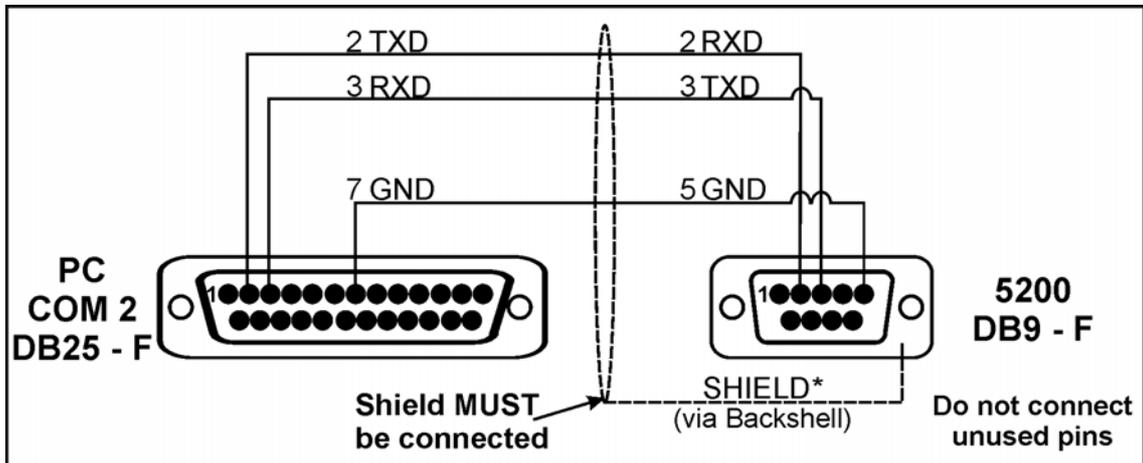


Figure 3: RS-232 Network Connection - 5200 to PC Using COM2

2.2. RS-485 Connection

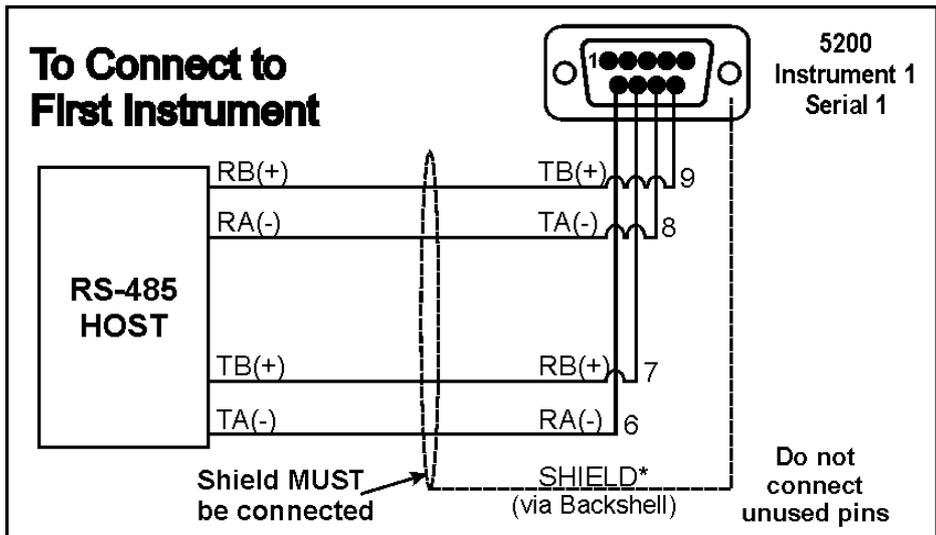


Figure 4: Multi-Drop Networking Connections - Connecting to First Instrument

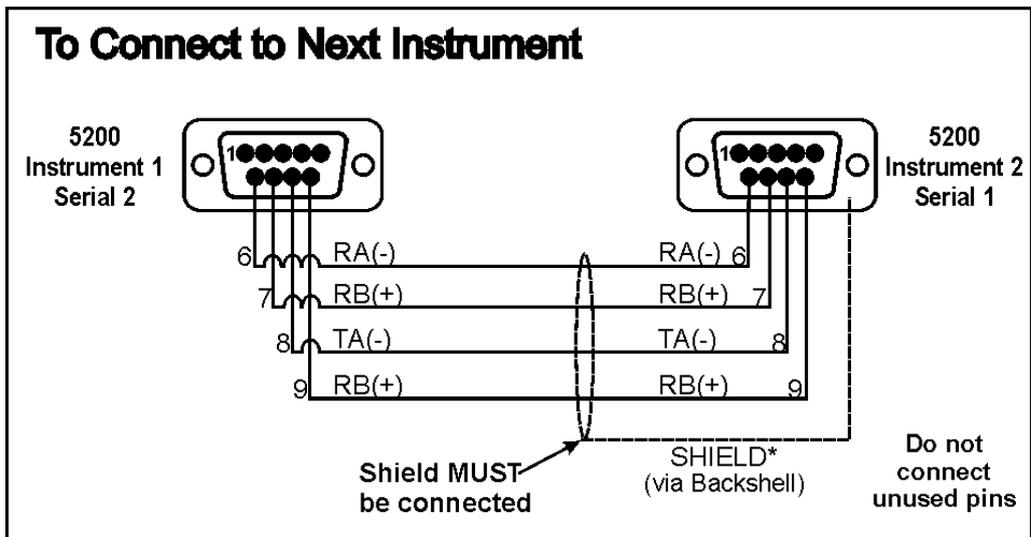


Figure 5: Multi-Drop Networking Connections - Connecting to Next Instrument

2.3. Overview

2.3.1. Commands and Queries

- A **Command** consists of three ASCII characters (eg. **IDN**).
- A **Query** consists of four ASCII characters (the last character being a question mark) (eg. **IDN?**).

Before a command or query can be sent, the instrument, which should execute that command, must be selected. Refer to Sxx: Select Instrument page 48 for more information.

2.3.2. Responses

The **5200** will return one of the following responses:

Response	Description
0	Indicates that a command has been accepted.
1	Indicates that a command failed due to motion.
2	Indicates that a command failed due to an out-of-range condition.
3	Indicates that a command failed due to system errors.
?	Indicates that the command was either not understood or could not be performed.

Specific queries cause the **5200** to respond with the data requested by the query. For example, if the **5200** was setup with **address 4** it would respond with **04** to the **ADR?** query.

2.3.3. Parameters

The following rules apply to parameters:

- A command or query can be followed by one or more parameters.
- Parameters are either numeric (eg. 3000) or strings (eg. "**Fred**").
- String parameters are delimited by quote characters (" ASCII 34). They are taken literally (ie. "**AbCd**" is not the same as "**abcd**").
- Numeric parameters are variable and leading and trailing spaces are ignored (ie. **003**, **03** and **3** are identical).
- Parameters are separated by the comma character (, ASCII 44).
- Most parameters may be left out completely. This makes it possible to change one parameter without altering the others. For example **IAD1,,2;** would change only the position of the decimal place.

2.3.4. Termination

Termination characters are sent to define the end of a command, query or response. The following are permissible termination characters:

Termination Character	ASCII Code(s)
;	59
LF	10
CRLF	13 10
LFCR	10 13

For example, **ADR?;** is the same as **ADR? CRLF**.

Note: The **5200** invariably uses **CRLF** as the termination of its responses.

2.3.5. Trade Counter

All trade relevant functions are guarded by the trade counter. There is no difference in changing settings via the communications interface or via the front panel. If the counter reaches 60000 the **5200** operation is blocked and it must be returned to the factory.

Note that the **5200** does not check to see if the new data is different from the old data before incrementing the Trade Counter, so sending **IAD1,6000** will increment the counter even if the **5200** is already setup with a fullscale of 6000 kg.

It is possible to block all changes to trade relevant parameters by setting a Full Setup Passcode. If such a passcode has been set, trade parameters can only be changed via the serial port after a **PCD** command has been sent with the correct passcode.

2.4. Command Details

2.4.1. ACL: Set Automatic Temperature Calibration On/Off

This is used to set the Automatic Temperature Calibration On/Off.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	-----	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Temperature calibration during no motion	0 to 1 (0: Off, 1: On)	1	No
2	Temperature calibration during motion	0 to 1 (0: Off, 1: On)	1	No

The **5200** performs an automatic temperature calibration to ensure that changes in ambient temperature do not affect accuracy. During this calibration no new data is received. The time taken for this calibration depends on the sync frequency according to the following formula: $6 / \text{sync frequency (seconds)}$.

This feature cannot be used in Trade mode and both parameters are set to ON when the instrument is reset.

2.4.2. ADR: Set Address

This is used to set the address of an instrument.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Address	0 to 31	31	No
2	Serial Number	0000001 to 9999999	Factory Set	No - Command Only

Each **5200** must be assigned a unique address to enable the implementation of a multi-drop network. The **ADR** command is used to assign the instrument address via the communications network.

The following procedure can be used if a **5200** (with a known serial number) and an unknown (or not unique) address is attached to a multi-drop network.

- Select all instruments using the **S99** command.
- Send the **ADR** command with the new address and the serial number of the chosen instrument. The **ADR** command will execute only for the instrument with the correct serial number. **Note:** The serial number parameter is used exclusively for this task.
- Continue until all instruments have unique addresses.

If the serial number is not known, the instruments must be turned on one at a time. The combination of the **S99** and **ADR** commands can be used to set the addresses.

Example 1: Change Address of Instrument from 1 to 2

Command	Response	Details
S01;		Select Instrument 1
ADR2;	0 CRLF	Set Address to 2
TDD1;	0 CRLF	Save Change
S02;		Select New Instrument 2
IDN?;	" ", "01234567", "5200", 0 CRLF	Ask for ID

Example 2: Two Instruments (Unknown Addresses) Configured Using Serial Numbers

Command	Response	Details
S99;		Select All Instruments
ADR01, "123456";	0 CRLF	Instrument With Serial No. "123456" Gets Address 01
ADR02, "123457";	0 CRLF	Instrument With Serial No. "123457" Gets Address 02
S01;TDD1; S02;TDD1;	0 CRLF	Save Address Against Power Loss
S01;		Select New Instrument 1
IDN?;	" ", "0123456", "V1.0", "5200", 0 CRLF	Ask for ID

2.4.3. ASF: Set Filtering

This is used to set the filtering characteristics of an instrument.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	With TDD1	On TDD1	No

Parameter Details

Parameter	Description	Range		Default	Required
1	Number of consecutive readings to average	0	1	9	No
			
		9	10		
		10	25		
		11	50		
		12	75		
		13	100		
		14	200		
2	Anti-Jitter Setting	0	Off	0	No
		1	Fine		
		2	Course		

Example

Command	Response	Details
S01;		Select Instrument 1
ASF?;	10,00,00 CRLF	Query Filtering Setting
ASF4,1;	0 CRLF	Changed to a 5 reading average with fine anti-jitter filtering
TDD1;	0 CRLF	Save New Settings

2.4.4. BDR: Set Baud Rate

This is used to set the communication parameters, baud rate, parity, etc.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
8	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required	
1	Port	0 1	Serial 1 Serial 2	- -	Yes
2	Baud Rate	0 1 2 3 4 5 6	300 600 1200 2400 4800 9600 19200	5	No
3	Parity	0 1 2	None Odd Even	0	No
4	Data bits	7,8	8	No	
5	Stop bits	1,2	1	No	
6	Termination Resistors	0 1	OFF ON	0	No
7	RS-232/ RS-485 (Serial 1 only)	0 1	RS-485 RS-232	0	No
8	CTS (Serial 2 only)	0 1	OFF ON	0	No

Example

Change baud rate of instrument 1 serial 1.

Command	Response	Details
S01;		Select Instrument 1
BDR?0;	0,5,0,8,1,0,0,0 CRLF	Query Baud Rate Setting
BDR0,3;	0 CRLF Note: Reply is sent using the new settings if using the changed port.	Settings changed to 2400 baud
TDD1;	0 CRLF	Save New Settings

2.4.5. CDL: Set Zero

Set the zero dead load cancellation. This is equivalent with pressing the <ZERO> key on the front of the instrument.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
0	Automatic	Immediately	No

Example

Set Zero.

Command	Response	Details
S01;		Select Instrument 1
CDL;	0 CRLF	Zero dead load set successfully
CDL;	2 CRLF	Failed due to weight out of zero range

2.4.6. CHK: Set Checkweigh (Catchweigh) Options

Set the checkweigh options.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
12	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Trigger Option	0 1	-	No
2	Weight Trigger Level	999999 to -999999	100	No
3	Weight Trigger Reset Level	999999 to -999999	0	No
4	Pre-average Delay	0 to 30000 (x0.01s)	100	No
5	Average time	0 to 30000 (x0.01s)	100	No
6	Display Option	0 1 2	0	No
7	Display Timeout	0 to 30000 (x0.01s)	300	No
8 to 12	No Grade Name, Grade 1 Name to Grade 4 Name	6 character string	"G0" to "G4"	No

Example

Set trigger option to weight trigger.

Command	Response	Details
S01;		Select Instrument 1
CHK?;	0,100,0,100,100,0,300,"G0","G1", "G2","G3","G4" CRLF	Query checkweigh settings
CHK1;	0 CRLF	Trigger changed to weight
TDD1;	0 CRLF	Save New Settings

2.4.7. CLK: Set Clock

Set the time and date.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
6	Automatic	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Hour	0 to 23	-	No
2	Minute	0 to 59	-	No
3	Second	0 to 59	-	No
4	Date	1 to 31	-	No
5	Month	1 to 12	-	No
6	Year	0 to 99 (or 2000 to 2099)	-	No

The year may be in 2 digit or 4 digit format. The **5200** will always respond to queries in 2 digit format.

Example

Command	Response	Details
S01;		Select Instrument 1
CLK?;	5,5,55,22,4,0 CRLF	Query date and time
CLK15,40,0,5,2,2003;	0 CRLF	Change to 3:40pm 5/2/2003
CLK15,40,0,5,2,3;	0 CRLF	Same as above

2.4.8. COF: Set Output Format

This is used to set the default output format and reading of the **MSV?** query. It also sets the format for the automatic serial outputs.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Format Setting	0 to 11	6	No

Binary Formats

Format	Data	Order
0	4 Byte (binary) CRLF	MSB before LSB(=00H)
2	2 Byte (binary) CRLF	MSB, LSB
4	4 Byte (binary) CRLF	LSB(=00H) before MSB
6	2 Byte (binary) CRLF	LSB, MSB
8	4 Byte (binary) CRLF	MSB before LSB(=Status)

ASCII Formats

Format	Parameter 1	Parameter 2	Parameter 3
1, 3	Weight (8)		CRLF
5, 7	Weight (8)	, Address(2)	CRLF
9, 10	Weight (8)	, Address(2)	, Status (3) CRLF
11	Weight (8)	, Address(2)	, Extended Status (3) CRLF

Values in brackets signify the number of characters in the fixed length response.

The weight format is the sign (space or minus), followed by 7 digits 0 to 9 including the decimal point if used.

The binary formats are useful for **PLC** communications in applications where conversion of the ASCII weight string is not possible. The binary outputs can generally be used directly by the **PLC**.

Status Details

Status	Description	Bit	Comment
001	Overload	0	Weight reading out of range. Underload or overload.
002	Standstill	1	
004	Gross	2	
008	Range 2 Active	3	Only used with multi-range or multi-interval.
016	Output 1 Active	4	
032	Output 2 Active	5	
064	Output 3 Active	6	
128	Output 4 Active	7	
256	Centre of Zero	8	This status bit is only available in the extended status - Format 11 only.

Note: The status bits are added together. For example, a status of 6 (4+2) means the weight reading is gross, not within centre of zero, there is no motion and all limit values are inactive.

Example 1: General Use

Command	Response	Details
S01;		Select Instrument 1
COF?;	3 CRLF	Query Format
MSV?;	-00001.0 CRLF	Query Weight Reading
COF9;	0 CRLF	Change to Format 9
TDD1;	0 CRLF	Save New Setting
MSV?;	-00001.0,01,006 CRLF	Query weight reading using the new format

Example 2: Use of Binary Format for PLC Use

Command	Response	Details
Initialisation		
S01;		Select Instrument 1
COF8;	0 CRLF	Set Format 8
TDD1;	0 CRLF	Save Format Setting
PLC Operation		
MSV?;		<p>Query weight reading using the new format. In this example the weight is a stable gross reading of 1000kg.</p> <p>COF 8 replies with:</p> <p><24 bits of weight><8 bit status> CRLF</p> <p>The hexadecimal values of the returned data are <00><03><E8><06><0C><0A> but this data is not printable directly.</p>

2.4.9. CWT: Set Calibration Weight

Set the calibration weight to be used for span calibration. This must be set before using the **LWT**; span calibration command.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Calibration Weight	2% - 100% of fullscale weight. (Send IAD? to read fullscale setting)	3000	No

Example

Command	Response	Details
S01;		Select Instrument 1
CWT?;	3000 CRLF	Query calibration weight setting
CWT4000;	0 CRLF (Note that weight is sent without any decimal point. So 400.0 kg is send as 4000 not 400.0)	Change Calibration Weight to 4000
TDD1;	0 CRLF	Save new setting

2.4.10. DSP: Set Display Options

Set the backlight and auxiliary display operation.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range		Default	Required
1	Backlight	0	OFF	1	No
		1	ON		
2	Auxiliary Display	0	OFF	0	No
		1	TIME		

Example

Command	Response	Details
S01;		Select Instrument 1
DSP?;	1,0 CRLF	Query display options
DSP0;	0 CRLF	Switch backlight off
TDD1;	0 CRLF	Save new setting

2.4.11. DTF: Set time and date format

Sets the time and date default formats for printing.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
4	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required	
1	Date Format	0	Day, month, 2-digit year	0	No
		1	Day, month, 4-digit year		
		2	Month, day, 2-digit year		
		3	Month, day, 4-digit year		
		4	2-digit year, month, day		
5	4-digit year, month, day				
2	Date Separator	0	/ forward slash	0	No
		1	– minus sign		
		2	. decimal point		
3	Time Format	0	24 hour	0	No
		1	12 hour		
4	Time Separator	0	: colon	0	No
		1	. decimal point		

Example

Command	Response	Details
S01;		Select Instrument 1
DTF?;	0,0,1,0 CRLF	Query time and date format
DSP1,,1;	0 CRLF	Switch to 4-digit year and use decimal point as the time separator.
TDD1;	0 CRLF	Save new setting

2.4.12. ENU: Set Units

Sets the units of weight to be displayed and printed.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	With TDD1	Immediately	Yes

Parameter Details

Parameter	Description	Range	Default	Required
1	Weight units	0 1 2 3 4	none g kg lb t	2 No

Example

Command	Response	Details
S01;		Select Instrument 1
ENU?;	2 CRLF	Query units
ENU1;	0 CRLF	Change units to grams
TDD1;	0 CRLF	Save new setting

2.4.13. ESR: Query Error Status

This is used to query the error status of the instrument.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	-	-	No

Parameter Details

Parameter	Description	Range		Default	Required
1	Select Type of Status Information	0	Normal	0	No
		1	Latched		

The **5200** contains both current and latched error status flags. The latched errors are only cleared by resetting the instrument (ie. using the **RES** command or powering off). The response string is four hexadecimal characters representing the 16 error bits.

Error Codes

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

The status bits are additive. For example, if the load cell cable is disconnected and therefore neither sense line is connected, the resulting status setting will be 00C0 (0040 + 0080). 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)

Example

Command	Response	Details
S01;		Select Instrument 1
ESR?;	0000 CRLF	No Current Errors
ESR?1;	0030 CRLF	Positive and Negative Sense lines were not connected at some time in the past.

2.4.14. FCN: Function Key Setting

Alter the role of the front panel function key.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range		Default	Required
1	Function setting	0	None	0	No
		1	Check		
		2	Total		
		3	Hold		
		4	Peak Hold		
		5	Count		

Example

Command	Response	Details
S01;		Select Instrument 1
FCN?;	0 CRLF	Query current function
FCN3;	0 CRLF	Set function key to HOLD key
TDD1;	0 CRLF	Save setting

2.4.15. FOP: Force Output

Use this command to force an output either On or Off. This is only available for outputs that are setup with no other function. Use the query to obtain the state of the four outputs.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
4	-	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Output 1	0 1	Output 1 OFF Output 1 ON	0 No
2	Output 2	0 1	Output 2 OFF Output 2 ON	0 No
3	Output 3	0 1	Output 3 OFF Output 3 ON	0 No
4	Output 4	0 1	Output 4 OFF Output 4 ON	0 No

Example

Command	Response	Details
S01;		Select Instrument 1
FOP?;	0,0,0,1 CRLF	Output 4 is ON. All others are OFF.
FOP,,1;	0 CRLF	Drive output 3 ON.
FOP,,0;	0 CRLF	Drive output 3 OFF.

2.4.16. IAD: Set Scale Build

This is used to set the scale build parameters.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
8	With TDD1	Immediately	Yes

Parameter Details

Parameter	Description	Range	Default	Required
1	Range	1 to 2	1	No
2	Nominal Load (CAP1 or CAP2)	100 to 999999	CAP1: 3000 CAP2: 6000	No
3	Number of right side digits (decimal point position)	0 to 5	0	No
4	Resolution	1 1 2 2 3 5 4 10 5 20 6 50 7 100	E1: 1 E2: 2	No
5	x 10 mode	0 OFF 1 ON	0	No
6	Additive Tare	0 to fullscale	0	No
7	Interlock	0 to fullscale	20	No
8	Automatic Tare	0 OFF 1 ON	0	No

Note that the fullscale weight of the instrument is set to Nominal Load 1 for single range installations, and Nominal Load 2 for dual-range and dual-interval installations. In single range installations Nominal Load 2 is not used.

Example

Command	Response	Details
S01;		Select Instrument 1
IAD?1;	1,3000,0,1,0,0,20,0 CRLF	Query current scale build parameters
IAD1,4000,1,2,0;	0 CRLF	Range=Single, CAP1=4000, Decimal Point position=1, E1=2, x10 mode is off.
TDD1;	0 CRLF	Save Setting

If **IAD?** is issued without the range parameter then the returned data is range 1 for single range setup or range 2 for dual interval or dual range setup. In this way it is possible to query the maximum load without the need to issue a **WMD?** Command to determine the weighing mode.

2.4.17. ICR: Set Measurement Rate

Set the fundamental measurement frequency of the instrument.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	With TDD1	Immediately	Yes

Parameter Details

Parameter	Description	Range	Default	Required
1	Measurement rate in Hz	12.5 to 60	50	No

Example

Command	Response	Details
S01;		Select Instrument 1
ICR?;	50 CRLF	Query measurement rate
ICR60;	0 CRLF	Change to 60Hz
TDD1;	0 CRLF	Save Setting

2.4.18. IDN: Set Identification

This is used to set the instrument identification string.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	With TDD1	Immediately	No

Command Parameter Details

Parameter	Description	Range	Default	Required
1	Identification String	15 Characters	""	No

Query Parameter Details

Parameter	Description	Range	Default	Required
1	Identification String	15 Characters	""	-
2	Serial Number String	0000000 to 9999999	(Serial Number)	-
3	Version String		(Version)	-
4	Model		5200	-
5	Licence configuration			-

Note: Only the identification string may be changed. Other parameters are fixed at the factory and are available for information only by using the **IDN?** query.

Example

Command	Response	Details
S01;		Select Instrument 1
IDN?;	" " ,"1549061","V1.0P0","5200",0 CRLF	Query Current Identification
IDN"Silo X";	0 CRLF	Change Identification String to "Silo X"
TDD1;	0 CRLF	Save Setting

2.4.19. LBT: Button lock settings

Sets the operation status of each of the four front panel buttons.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range		Default	Required
1	Button	0 1 2 3	Zero Tare Gross/net Print	0	No
2	Operation	0 1 2	Lock Normal No add to totals (print key only)	1	No

Note: Operation 2 only applies to the <PRINT> key. In this mode, printing is possible but the current weight will not be added to the product totals. This is a useful feature for checkweighing where totalising is done automatically.

Example

Command	Response	Details
S01;		Select Instrument 1
LBT?0	1 CRLF	Zero button is set to normal operation
LBT0,0;	0 CRLF	Block operation of the Zero button
TDD1;	0 CRLF	Save Setting

2.4.20. LDW: Calibrate Zero Dead Weight

This command is used to calibrate the zero dead weight. It is possible to calibrate the zero dead weight by either having no load on the scale base or by entering the calculated signal directly.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
0 (2 if using direct zero calibration)	With TDD1	Immediately	Yes

Parameter Details

Parameter	Description	Range	Default	Required
1	Calibration type	0 Normal calibration 1 Direct calibration	0	No
2	Signal Value of zero (in mV/V x 10000)	Signed number (decimal) with no decimal points		No

The **LDW?1**; query returns the zero value in mV/V.

- **Calibration with Weight**

Due to increased averaging, this calibration process takes some time to complete. As a result it is necessary to monitor the calibration process to determine when it is finished. To do this, issue a **LDW?**; query. Following is a list of possible responses.

Calibration Status

Status value	Description
0	Calibration finished successfully
1	Calibration in process (busy)
101	Error Zero to high (>2mV/V) Calibration aborted
102	Error Zero to low (<-2mV/V) Calibration aborted

Example

Command	Response	Details
S01;		Select Instrument 1
LDW;	0 CRLF	Start Zero Calibration
LDW?;	1 CRLF	Query Status of Zero Calibration Process
LDW?;	1 CRLF	Still Busy
LDW?;	0 CRLF	Zero Calibration Finished (Raw Zero Value)
TDD1;	0 CRLF	Save Setting

- **Direct Calibration**

Example

Command	Response	Details
S01;		Select Instrument 1
LDW1,5076;	0 CRLF	Set Zero Dead Load to 0.5076mV/V
LDW?1;	^^^5076 CRLF	Zero Dead Load is 0.5076mV/V
TDD1;	0 CRLF	Save Setting

2.4.21. LIC: Linearisation

This command gives access to the multi-point linearisation functions. A special query, LIC?;, is available to verify the linearisation correction.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	With TDD1	Immediately	Yes

Command Parameter Details

Parameter	Description	Range	Default	Required
1	Linearisation Point	1 to 5	1	No
2	Test Weight	0.999999	-	No

Query Parameter Details

Parameter	Description	Range
1	Percentage of fullscale weight reading	-100 to 100
2	Correction (in weight unit x10)	-100000 to 100000

To clear one of the linearisation points leave the test weight value off.

Example

Command	Response	Details
S01;		Select Instrument 1
LIC1;	0 CRLF	Clear linearisation point 1
LIC?1;	0,0 CRLF	No correction for point 1
MSV?;	120.5 CRLF	Query measured weight value
LIC1,1200;	0 CRLF	Correct for the current test weight of 120.0kg (Note that weight is sent without any decimal point. So 400.0 kg is sent as 4000 not 400.0)
LIC?1;	24,-50 CRLF	Current linearisation is approximately -5.0 kg at 24% of fullscale reading.
TDD1;	0 CRLF	Save Setting

2.4.22. LIV: Set Limit Value

This is used to set parameters for the setpoints.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
10	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Setpoint Number	0 to 3	-	Yes
2	Hysteresis	0 to 999999	0	No
3	Type	0 None 1 Active 2 Checkweigh Output 3 Error 4 Motion 5 Zero 6 Net 7 Hold	0	No
4	Source	0 Gross Reading 1 Net Reading 2 Displayed Reading (gross/net)	1	No
5	Direction	0 Over 1 Under	0	No
6	Logic	0 High 1 Low 2 Pulse 3 Repeat	0	No
7	Alarm	0 None 1 Single Beeps 2 Double Beeps 3 Continuous Beep 4 Flash Display	0	No
8	Pulse: Delay	0 to 30000 (x100 seconds)	0	No
9	Pulse: ON Time	0 to 30000 (x100 seconds)	0	No
10	Pulse: OFF Time	0 to 30000 (x100 seconds)	0	No

Note: Setpoint targets are set for each product using the PRD command.

Example

Command	Response	Details
S01;		Select Instrument 1
LIV?0;	0,0,0,1,0,0,0,0,0 CRLF	Query Setpoint 1 Parameters
LIV0,5,1,,1,1;	0 CRLF	Change to: Hysteresis = 5 Type = Active Direction = Under Logic = Low
TDD1;	0 CRLF	Save Setting

2.4.23. LWT: Calibrate Span

This is used to calibrate the span. It is possible to calibrate the span by either having no load on the scale base or by entering the calculated signal directly.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
0 (2 if direct calibration)	With TDD1	Immediately	Yes

Parameter Details

Parameter	Description	Range	Default	Required
1	Calibration Type	0 Normal calibration 1 Direct calibration	0	No
2	Signal Value of Span (in mV/V x 10000)	Signed number (decimal) with no decimal points		No

The **LWT?1**; query returns the span calibration.

- **Calibration with Weight**

Due to increased averaging, this calibration process takes some time to complete. As a result it is necessary to monitor the calibration process to determine when it is finished. To do this, issue a **LWT?** Query. Following is a list of the possible calibration status responses.

Calibration Status

Status Value	Description
0	Calibration finished successfully
1	Calibration in process (busy)
103	Error Span to low (<0.1mV/V) Calibration aborted
104	Error Span to high (>3.0mV/V) Calibration aborted
105	No zero calibration

Example

Command	Response	Details
S01;		Select Instrument 1
LWT;	0 CRLF	Start span calibration.
LWT?;	1 CRLF	Query status of Span Calibration Process
LWT?;	1 CRLF	Still Busy
LWT?;	0 CRLF	Span Calibration Finished
TDD1;	0 CRLF	Save Setting

- **Direct Calibration**

By using the parameters a calculated span can be set.

Example

Command	Response	Details
S01;		Select Instrument 1
LWT1,12500;	0 CRLF	Set Span at fullscale to 1.25mV/V
LWT?1;	^^^12500 CRLF	Span is 1.25mV/V
TDD1;	0 CRLF	Save Setting

2.4.24. MSV?: Query Measured Weight Value

This is used to query weight readings.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	-	-	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Type of Reading	1 2 3 4 5	1	No
2	Number of consecutive readings	0 to 60000 (0: continuous output)	1	No

Example

Command	Response	Details
S01;		Select Instrument 1
COF3;	0 CRLF	Set Format 3
MSV?;	00200.0 CRLF	Query displayed weight
MSV?2;	00400.0 CRLF	Query gross weight
MSV?2,4;	00400.0 CRLF 00400.0 CRLF 00400.0 CRLF 00400.0 CRLF CRLF	Query the next 4 consecutive gross weight readings
MSV?,0;	00200.0 CRLF 00200.0 CRLF 00200.0 CRLF ...	Enable Continuous Output
STP;		Stop Continuous Output

Note that the **CRLF** is sent after each reading for the ASCII formats but not for the binary formats. With the binary formats a single **CRLF** is sent at the end of the response regardless of the number of readings requested.

To stop continuous output send a **STP;** command. During continuous output the **5200** will not respond to other commands.

The format of data returned from the **MSV?** command is controlled by the COF setting. See the **COF** command for details on the available formats.

2.4.25. MTD: Motion Setting

Set the motion option.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	With TDD1	Immediately	Yes

Parameter Details

Parameter	Description	Range	Default	Required	
1	Motion setting	0	OFF	2	No
		1	0.5d in 1 sec		
		2	1.0d in 1 sec		
		3	2.0d in 1 sec		
		4	5.0d in 1 sec		
		5	0.5d in 0.5 sec		
		6	1.0d in 0.5 sec		
		7	2.0d in 0.5 sec		
		8	5.0d in 0.5 sec		
		9	0.5d in 0.2 sec		
		10	1.0d in 0.2 sec		
		11	2.0d in 0.2 sec		
12	5.0d in 0.2 sec				

Example

Command	Response	Details
S01;		Select Instrument 1
MTD?;	2 CRLF	Query motion setting
MTD1;	0 CRLF	Set motion detection to 0.5 divisions in 1 second.
TDD1;		Save Setting

2.4.26. PCD: Motion Setting

Enter the full passcode to unlock access to the trade specific settings.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	-	Immediately	No

The FULL passcode is used to control access to trade sensitive parameters. If this passcode is used it also blocks communications access to these same parameters. Settings may be read but not written to without first entering the correct passcode via the **PCD** command. **PCD?** Is used to query whether access is currently blocked. To lock instrument again issue **PCD** without the passcode.

Parameter Details

Parameter	Description	Range	Default	Required
1	Passcode	1 to 999999	-	No

Example

Command	Response	Details
S01;		Select Instrument 1
PCD?;	1 CRLF	Instrument is locked
PCD1234;	0 CRLF	Passcode 1234 accepted
IAD,,,1;	0 CRLF	Put unit in x10 mode.
PCD;	0 CRLF	Lock instrument again

2.4.27. PEV: Custom Print Events

Set the custom print events. Refer to the **5200 Digital Indicator Reference Manual** for more information.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
3	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Port	0 1	Serial 1 Serial 2	- Yes
2	Event code	129 to 143	-	Yes
3	Event string	Up to 200 characters	""	No

Example

Command	Response	Details
S01;		Select Instrument 1
PEV?0,143;	0,143,"\013\010\178" CRLF	Query new line event
PEV0,143,"\013\010\013\010\178";	0 CRLF	Use double line spacing
TDD1;	0 CRLF	Save changes

2.4.28. PRD: Product Information

Sets the product information and reads the totals information for each product plus the session and grand totals.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
23	Automatic	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Name	6 character string	-	No
2	Product ID	0 1 2 to 41	Grand Total Session Total Product Totals	No
3	Current product Flag	0 1	Not current product Current active product	No
4	Preset Tare	-999999 to 999999	0	No
5	Counting Sample Weight	-999999 to 999999	1000	No
6	Counting Sample Count	-999999 to 999999	0	No
7	Setpoint Target 1	-999999 to 999999	0	No
8	Setpoint Target 2	-999999 to 999999	0	No
9	Setpoint Target 3	-999999 to 999999	0	No
10	Setpoint Target 4	-999999 to 999999	0	No
11	Total Weight	0 to 9999999	0	No
12	Number of Adds	0 to 9999999	0	No
13	Total Pieces	0 to 9999999	0	No
14	No Grade Count	0 to 32000	0	No
15	No Grade Weight	0 to 9999999	0	No
16	Grade 1 Count	0 to 32000	0	No
17	Grade 1 Weight	0 to 9999999	0	No
18	Grade 2 Count	0 to 32000	0	No
19	Grade 2 Weight	0 to 9999999	0	No
20	Grade 3 Count	0 to 32000	0	No
21	Grade 3 Weight	0 to 9999999	0	No
22	Grade 4 Count	0 to 32000	0	No
23	Grade 4 Weight	0 to 9999999	0	No

Using this command, all details about a product and its totals can be read. The name, current product flag, preset tare, sample weight, sample count and targets can be written to the instrument for each product.

The product id is a unique number for each product. Product IDs 0 and 1 are reserved for the Grand Total and Session Total respectively. The correct product can be specified using either the name or the product ID. When both are specified, the product ID takes precedent and the product name will be changed to match the specified name.

2.4.29. PRS: Printer Settings

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
8	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Page Height	0 to 255 (0: unlimited)	0	No
2	Page Width	0 to 255 (0: unlimited)	40	No
3	Lines Between Tickets.	0 to 10	0	No
4	Spaces inserted at the start of each line	0 to 10	0	No
5	Print Mode	0 Normal 1 Automatic	0	No
6	User String Name 1	6 character string	"S1"	No
7	User String Name 2	6 character string	"S2"	No
8	User String Name 3	6 character string	"S3"	No

Example

Command	Response	Details
S01;		Select Instrument 1
PRS?;	0,40,0,0,0,"S1","S2","S3" CRLF	Query print settings
PRS,80;	0 CRLF	Change page width to 80
TDD1	0 CRLF	Save changes

2.4.30. PRT: Print

Force the instrument to print, query the print log or query the unique print id.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	-	-	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Port Number	0 1	Serial 1 Serial 2	- Yes
2	Format string	String. Length <=200.	""	No

A 1024 character log is kept of printed data for each port. This data is read 1 line at a time and is cleared after the first read. To read this data use **PRT?0** or **PRT?1**. When there is no more data, an empty string ("") is returned. If the port number is left off, the print ID of the last print ticket is sent.

A custom string can be printed using the **PRT** command. If the custom string is to be sent **from** the same port that the **PRT** command is sent **to**, no reply is sent other than the print output. Otherwise **0 CRLF** is returned as per normal. This command is not compatible with the CTS connection on Serial 2. Sending a **PRT** command without the port number specified, is the same as pressing the **<PRINT>** key.

Example

Command	Response	Details
S01;		Select Instrument 1
PRT0,"\230\013\010";	^^^429kg CRLF	Send the current weight from serial 1 (using serial 1)
PRT1,"\230\013\010";	0 CRLF	Send the current weight from serial 2 (using serial 1)
PRT?1;	^^^429kg CRLF	Query the print log for serial 1
PRT?1;	"" CRLF	No more data
PRT?;	000005 CRLF	Query the print ID

2.4.31. PST: Print strings

Set the print strings. Print strings include the header, footer and the three user strings. Refer to the **5200 Digital Indicator Reference Manual** for more information.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	With TDD1	immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	String Token	172 to 177	-	Yes
2	String	String. Length <= 230 characters (String IDs 172 to 174: Length <= 6 characters)	""	No

Example

Command	Response	Details
S01;		Select Instrument 1
PST?175;	"" CRLF	Query the print header
PST?175,"McFarlan Meats\013 \010Ph: 3375 3120";	0 CRLF	Set the print header to: McFarlan Meats Ph: 3375 3120
TDD1;	0 CRLF	Save the changes

2.4.32. RBT: Remote Button Settings

Setup the function of each of the remote inputs or artificially simulate a remote input.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
3	With TDD1	immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Input number	1 to 4	1	No
2	Operation	0 None 1 Zero 2 Tare 3 Gross/Net 4 Print 5 Function/Accept 6 Blank 7 Lock 8 Check 9 Total 10 Hold 11 Peak hold 12 Count	0	No
3	Duration of simulated press	0 Short press 1 Long press	0	No

If parameter 2 is omitted, the function of the remote button is executed as if the remote input itself had been used.

Example:

Command	Response	Details
S01;		Select Instrument 1
RBT?1;	0 CRLF	Query operation of input 1
RBT1,10;	0 CRLF	Set input 1 as a toggle hold button
TDD1;	0 CRLF	Save Setting
RBT1;	0 CRLF	Toggle the hold ON

2.4.33. RES: Reset

This is used to simulate a power-on reset.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
0	-	-	No

Example

Command	Response	Details
S01;		Select Instrument 1
RES;		Reset Instrument

2.4.34. SER: Set Serial Communications Settings

This is used to set the serial mode settings for each serial port.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
7	With TDD1	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Port Number	0 1	Serial 1 Serial 2	- Yes
2	Mode	Serial 1 0 OFF 1 ON (low) 2 ON (high) 3 Network	Serial 2 0 OFF 1 ON (low)	0 No
3	Format (ON modes only)	0 Auto A 1 Auto B 2 Auto C 3 Auto D 4 Auto E 5 Print A 6 Print B 7 Print C 8 Custom	0	No
4	Auto source	0 Displayed Reading 1 Gross Reading 2 Net Reading 3 Full Display	0	No
5	Auto Start Character	0 to 255 (ASCII code)	2	No
6	Auto End Character 1	0 to 255 (ASCII code)	3	No
7	Auto End Character 2	0 to 255 (ASCII code)	0	No

Example

Command	Response	Details
S01;		Select Instrument 1
SER?1;	1,0,0,0,2,3,0 CRLF	Query Serial 2 settings
SER1,1,5;	0 CRLF	Set for Print Format A
TDD1;	0 CRLF	Save Setting

2.4.35. STP: Stop Continuous Transfer

This is used to stop continuous weight transmission started by **MSV?0**.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
0	-	-	No

Example

Command	Response	Details
S01;		Select Instrument 1
MSV?0;	^^^^2345 CRLF ^^^^2346 CRLF ^^^^2347 CRLF ...	Start Continuous Data Transmission
STP;		Stop Continuous Data Transmission

2.4.36. Sxx: Select Instrument

This is used to select one or more instruments with which to communicate.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
Special case	-	-	No

xx Range Options

xx Range	Operation	Use
00 to 31	Select a single instrument with the matching address 00 to 31. All other instruments are de-selected.	Communication with single instrument.
96	De-select all instruments.	
97 to 98	All instruments will execute commands but none will respond.	Network blanket command without reply.
99	All instruments are selected and will respond. Reply contention problems if more than one instrument is on the network.	Only a single instrument (possibly of unknown address) is present on the network.

Example

Command	Response	Details
S01;		Select Instrument 1
MSV?;	^^^400.0 CRLF	Query Current Weight
S02;		Select Instrument 2
MSV?;	^^^623.5 CRLF	Query Current Weight
S96;		De-Select All Instruments

2.4.37. TAR: Tare

Force a Tare operation. This command is the same as pressing the <TARE> key on the instrument except that it does not wait for no motion.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
0	Automatic	Immediately	No

Example

Command	Response	Details
S01;		Select Instrument 1
MSV?3;	^^^400.0 CRLF	Query Net Weight
TAR;	0 CRLF	Tare
MSV?3;	^^^^^0.0 CRLF	Query Net Weight
MSV?2;	^^^400.0 CRLF	Query Gross Weight

2.4.38. TAS: Gross/Net

Select Gross or Net weight display.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	Automatic	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Gross/Net	0 1	Net Gross	- No

Example:

Command	Response	Details
S01;		
MSV?;	00200.0 CRLF	Query current weight
TAS?;	0 CRLF	Instrument is in net mode
TAS1;	0 CRLF	Switch to gross weight
MSV?;	00400.0 CRLF	Query current weight
TAS?;	1 CRLF	Instrument is in gross mode

2.4.39. TAV: Set Tare Value

Set a numeric tare value directly.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	Automatic	Immediately	No

Parameter Details

Parameter	Description	Range	Default	Required
1	Tare Value	0 to fullscale	-	No

Example:

Command	Response	Details
S01;		
MSV?2;	00300.0 CRLF	Query net weight
TAV?;	1000 CRLF	Tare value is 100.0
TAV2000;	0 CRLF	Set tare value to 200.0
MSV?2;	00200.0 CRLF	Query net weight
TAV?;	2000 CRLF	Tare value is 200.0

2.4.40. TDD: Load/Save Setup

This is used to save or restore instrument settings.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
1	-	-	Yes (TDD0 only)

Parameter Details

Parameter	Description	Range		Required
1	Command	0	Load ROM default values	Yes
		1	Save current settings	
		2	Reload previous settings	
		3	Clear session total	
		4	Clear all products	
		5	Delete all products	

When this command is used as a query, calibration count is returned.

Example

Command	Response	Details
S01;		Select Instrument 1
IDN"Site A";	0 CRLF	Set ID string
TDD1;	0 CRLF	Save Settings

2.4.41. VAL?: mV/V Value Query

Query the current mV/V signal value. The result is returned such that 20000 = 2.0000 mV/V.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
0	-	-	No

Example

Command	Response	Details
S01;		Select Instrument 1
VAL?;	5097 CRLF	Current loadcell signal is 0.5097mV/V.

2.4.42. WMD: Set Weighing Mode

Set the weighing mode of the instrument. This selects between Single Range, Dual Range and Dual Interval weighing modes.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
2	With TDD1	Immediately	Yes

Parameter Details

Parameter	Description	Range		Default	Required
1	Weighing Mode	1	Single Range	1	No
		2	Dual Range		
		3	Dual Interval		
2	Trade Mode	0	Trade	0	No
		1	Industrial		

Use the **WMD** command to setup the weighing mode of the instrument. This setting is a fundamental scale build parameter and should be used along with the **IAD** and **ICR** commands before the instrument is calibrated.

Example

Command	Response	Details
S01;		
WMD?;	1,0 CRLF	Query current weighing mode
WMD2,1;	0 CRLF	Change to dual range, industrial mode
WMD?;	2,1 CRLF	Weighing mode is dual range, industrial
TDD1;	0 CRLF	Save settings

2.4.43. ZST: Zero Settings

Set the various options associated with zero balance.

General Details

No. of Parameters	Save Changes	Changes Used	Increment Trade Counter
4	With TDD1	Immediately	Yes (except for Zero on Startup)

Parameter Details

Parameter	Description	Range	Default	Required
1	Initial Zero	0 1	OFF ON	0 No
2	Zero Tracking	0 1 to 12	OFF 0.5d in 1sec 5d in 0.2sec	0 No
3	Zero Range	1 2 3 4	-20% to 20% -100% to 100% -2% to 2% -1% to 3%	3 No
4	Zero Dead Band	0 to fullscale	0	No

Example

Command	Response	Details
S01;		
ZST?;	0,0,3,0 CRLF	Query current zero settings
ZST1;	0 CRLF	Change to zero on startup
ZST,,,10;	0 CRLF	Change Zero Dead Band to 10
ZST?;	1,0,3,10 CRLF	Query new settings
TDD1;	0 CRLF	Save settings

3. Command Summary

3.1. Set Communication Parameters

Command	Description	Page
ADR	Set instrument address	10
BDR	Set communications parameters	13
IDN	Set instrument identification	29
SER	Serial options	46
Sxx	Select instrument for communication	48

3.2. Set Scale Build

Command	Description	Page
IAD	Set max1,e1,max2,e2,decimal point,x10 mode	27
WMD	Select weighing mode	54
ENU	Select weight units	22
ICR	Set measurement frequency.	28
PCD	Enter Full Passcode	37

3.3. Calibration

Command	Description	Page
LDW	Calibrate Zero Dead Load	31
CWT	Set calibration weight	19
LWT	Calibrate Span	34
LIC	Linearisation	32
VAL?	MV/V signal strength query	53

3.4. Set Scale Options

Command	Description	Page
ACL	Set Automatic Temperature Calibration On/Off	10
ASF	Set filtering options	12
COF	Set output format for MSV?	17
CLK	Set time & date	16
DSP	Set display options	20
FNC	Function Key Setting	25
LBT	Button Lock	30
MTD	Motion Setting	36
DTF	Set default date/time format	21
PEV	Custom print events	38
PRS	Printer Settings	41
PST	Set printer headers and footers	43
RBT	Remote Input Operation	44
ZST	Zero Settings	55

3.5. Product Totalising and Checkweighing Settings

Command	Description	Page
PRD	Batch Control	39
CHK	Material Settings	15
LIV	Setpoint parameters	33

3.6. General Commands

Command	Description	Page
CDL	Set Zero Dead Load.	14
PRT	Force print	42
TAR	Tare instrument	49
TAS	Select Gross or Net	50
TAV	Set numeric Tare	51
TDD	Save or restore instruments settings	52

3.7. Queries

Command	Description	Page
ESR?	Query error status	23
VAL?	Query mV/V value	53
MSV?	Query weight readings	35
STP	Stop continuous weight transmission	47

3.8. Test Commands

Command	Description	Page
RES	Reset Instrument	45
FOP	Force Output	26

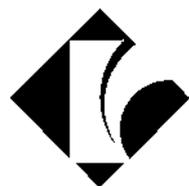
3.9. Common Commands

Command	Description	Page
Sxx	Select instrument	46
COF	Set MSV Output Format	14
MSV?	Query weight readings	35

Notes:

Notes:

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