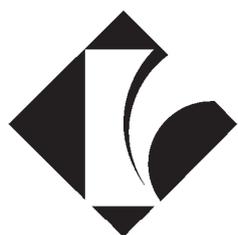


SMART WEIGHING SOLUTIONS



rinstrum

400 Series
(K410, K411, K412)
Batching Indicator
Operator Manual

RI00-614-120

Copyright

All Rights Reserved. No part of this document may be copied, reproduced, republished, uploaded, posted, transmitted, distributed, stored in or introduced into a retrieval system in any form, or by any means (electronic, mechanical, photocopying, recording or otherwise) whatsoever without prior written permission of Rinstrum Pty Ltd.

Disclaimer

Rinstrum Pty Ltd reserves the right to make changes to the products contained in this manual in order to improve design,
performance or reliability.

The information in this manual is believed to be accurate in all respects at the time of publication, but is subject to change without notice. Rinstrum Pty Ltd assumes no responsibility for any errors or omissions and disclaims responsibility for any consequences resulting from the use of the information provided herein.

Table of Contents

1. INTRODUCTION	3
2. SAFETY	4
2.1. Operating Environment.....	4
2.2. Electrical Safety	4
2.3. Cleaning.....	4
3. BASIC OPERATION	5
3.1. User Interface Display and Controls	5
3.2. Display	6
3.3. Annunciators	7
3.4. Keypad.....	8
3.5. Basic Operation	9
Power Key	9
Zero Key.....	10
Tare Key.....	10
Recipe Key	10
3.6. Stability Considerations	11
3.7. Security	11
4. ADDITIONAL FUNCTIONS	12
4.1. System Time and Date (Clock - 1 key)	12
4.2. Display View (View – 2 key)	12
4.3. Reports (Report - 3 key)	13
4.4. Totals (Total - 4 key).....	13
4.5. ID Names (ID – 5 key)	14
4.6. Pulse Timers (Timers – 6 key).....	14
4.7. Set Point Targets (Target – key 7).....	15
4.8. Flight Settings (Flight – key 8)	15
4.9. Tolerance (Tol – key 9).....	16
4.10.Lock	16
4.11.Alibi	17
Switching to Alibi Mode	17
Returning from Alibi Mode.....	17
Viewing DSD records in Alibi mode	17
4.12.Accessory Modules (Acc – 0 key).....	18
Ethernet module	18
4.13.Product Selection.....	19

4.14.Add Product (K410 and K411).....	19
4.15.Add Product (K412)	20
4.16.Delete Product	20
4.17.Rename Product (K410 and K411).....	21
4.18.Rename Product (K412).....	21
5. FUNCTION KEYS	22
Overview	22
Print, Report Key	22
Single Key	22
Blanking Input.....	22
Start.....	23
Pause, Abort, PSE.ABT, SUSPND	23
Test	24
6. ERROR MESSAGES	25
6.1. Weighing Errors	25
6.2. Pause Conditions.....	26
6.3. Diagnostic Errors	27

1. Introduction

This instrument is a precision digital indicator designed for gain in weight batching applications. It supports up to 32 input/outputs.

It may be operated from either a DC power source ($12V_{DC}$ to $24V_{DC}$) or AC power (optional 110 – 240 VAC). There is a soft power on/off function that retains memory of its state. Once an instrument is turned on it will automatically start up again if the external power is interrupted.

The indicator supports optical communications as a standard which allows a temporary isolated communications link to be established with a PC. Software upgrades, the use of computerised setup and calibration can then be done using a PC.



2. Safety

2.1. Operating Environment

- Operating Temperature: –10 to 50°C
- Humidity: <90% non-condensing
- Operating Voltage: Shown on Rear Label

2.2. Electrical Safety

- For your protection all mains electrical hardware must be rated to the environmental conditions of use.
- Pluggable equipment must be installed near an easily accessible power socket outlet.
- 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.

2.3. 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.

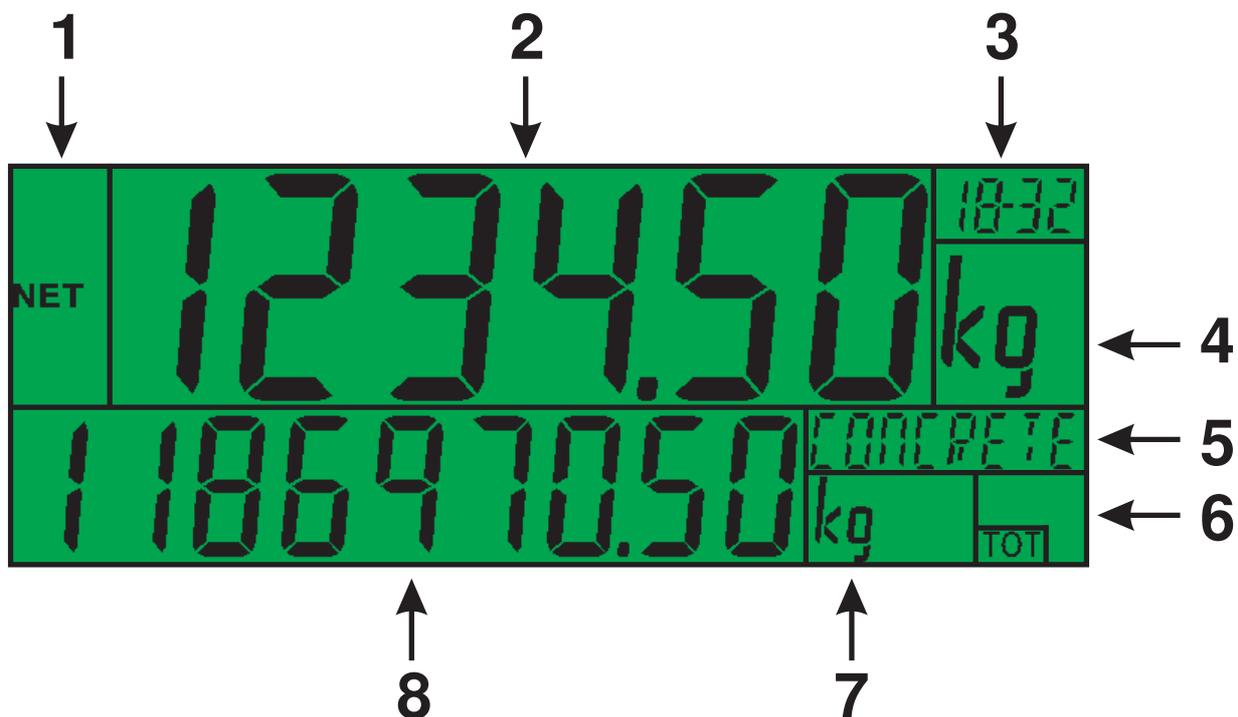
3. Basic Operation

3.1. User Interface Display and Controls



Code	Description
1	Display
2	Opto-link connection point
3	Power Key
4	Function Keys (Fixed)
5	Function Keys (user defined)
6	Numeric Keypad

3.2. Display



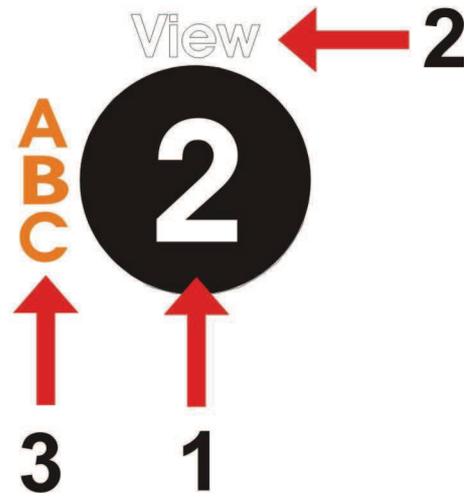
Code	Description
1	Primary Annunciators
2	Primary Display
3	Auxiliary Display
4	Primary Units
5	Secondary ID
6	Miscellaneous Annunciators
7	Secondary Units
8	Secondary Display

3.3. Annunciators

Primary Annunciators		
HOLD	HOLD	Visible when the displayed reading is held.
NET	NET	Visible when the displayed reading represents Net weight.
→0←	ZERO	Visible when the gross reading is within $\pm \frac{1}{4}$ of a division of true zero.
	MOTION	Visible when the displayed reading is not stable.
	ZERO BAND	Visible when the displayed weight is within the zero 'dead' band setting.
	RANGE	Indicates current range (for dual range/interval).

Miscellaneous Annunciators		
	Rotating	RUN - Batch running
	Stationary and flashing	PAUSE - Batch paused
	Lit	Time Delay - Time annunciator lit while a time delay is in progress at the start or end of a stage.
	Flashing	WAIT - Time annunciator flashes when the instrument is waiting for an input during a WAIT stage.
		Bars indicate Slow, Medium and Fast speed filling in progress

3.4. Keypad



Code	Description	
1	Numeric Button	0-9
2	White Characters	Additional Functions (Hold 2 seconds)
3	Orange Characters	(Alpha and Symbols)
	Cancel	Undo last command; step backwards (including in menus).
	Up	Move cursor backwards; previous option
	Down	Move cursor forwards; next option
	OK	Accept this choice
	Decimal Point	Place decimal point
	+/-	Change to negative or positive number; access or exit Alibi

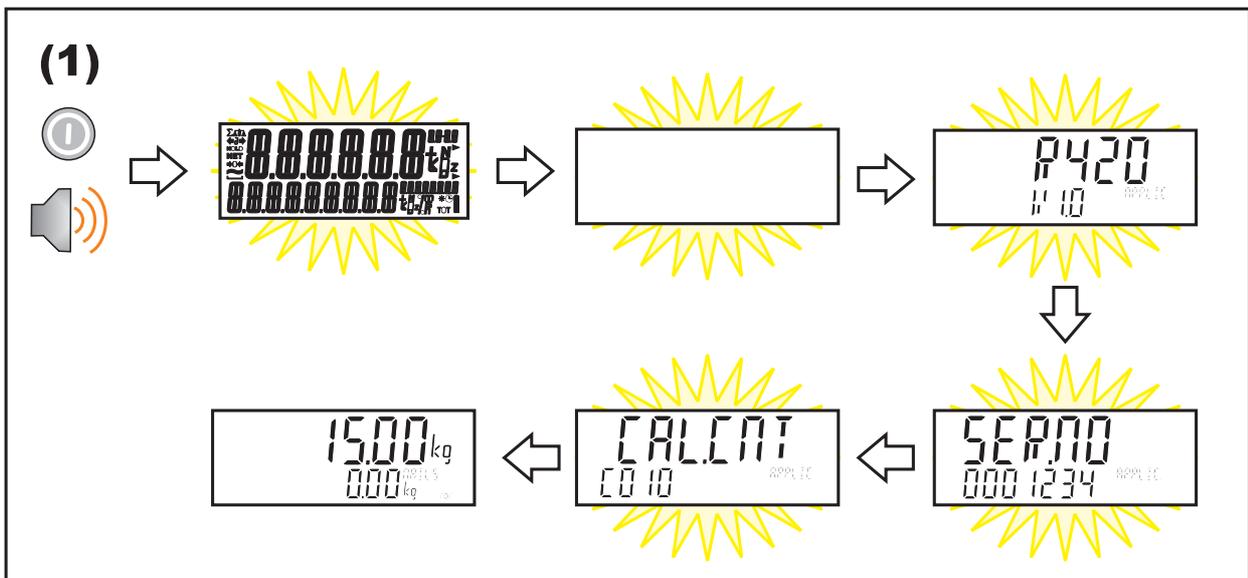
3.5. Basic Operation

Legend:

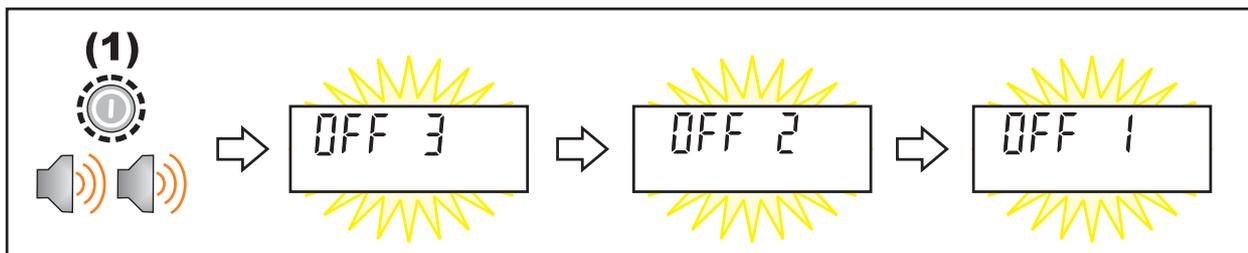
-  Press  Single beep
-  Press and hold  Double beep
-  Display flashing

Power Key

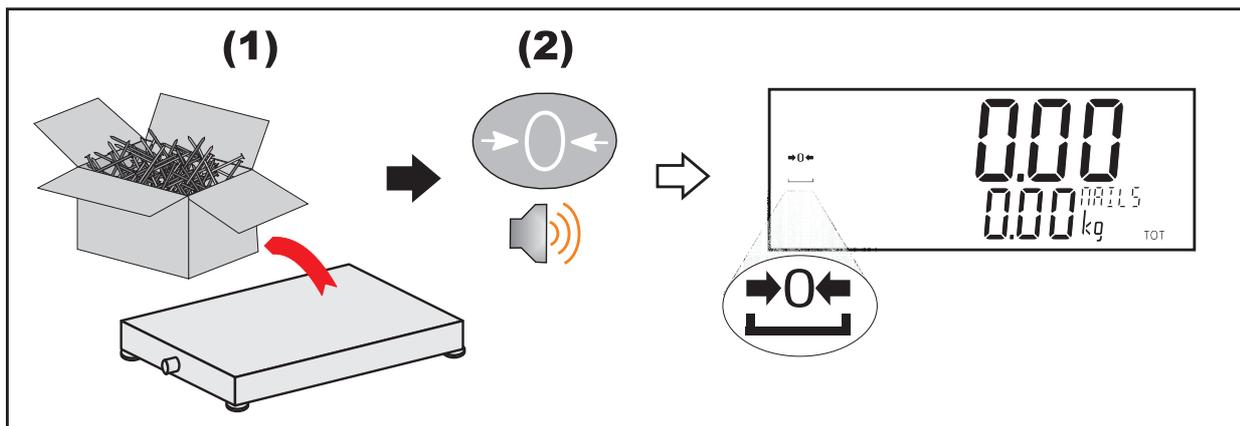
ON Instrument



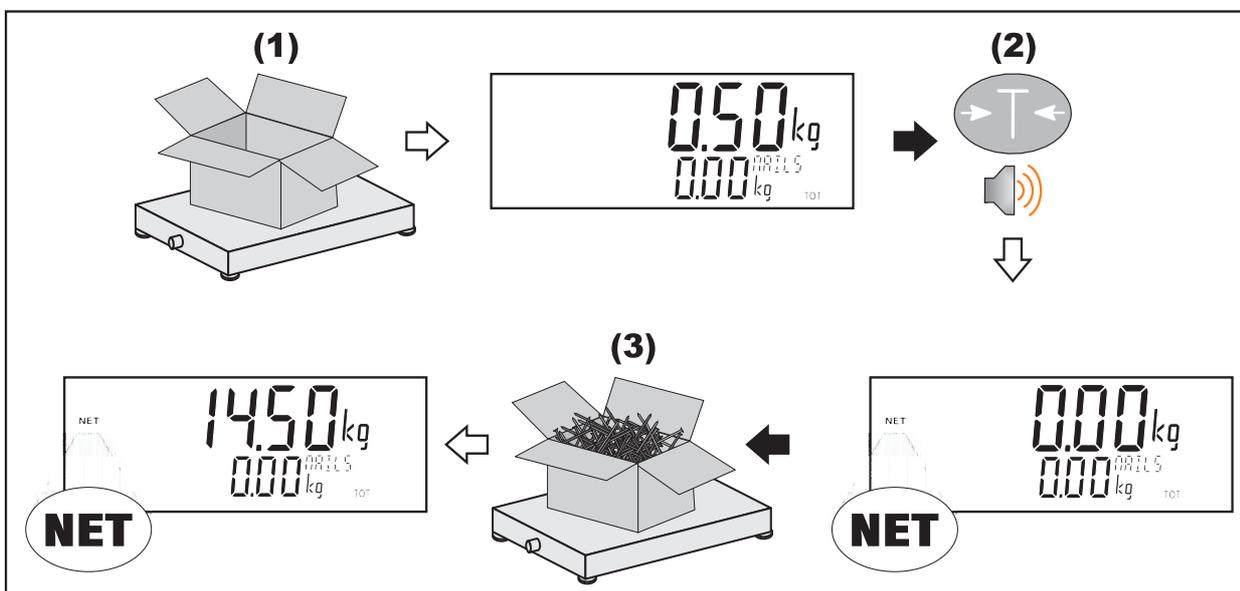
OFF Instrument



Zero Key

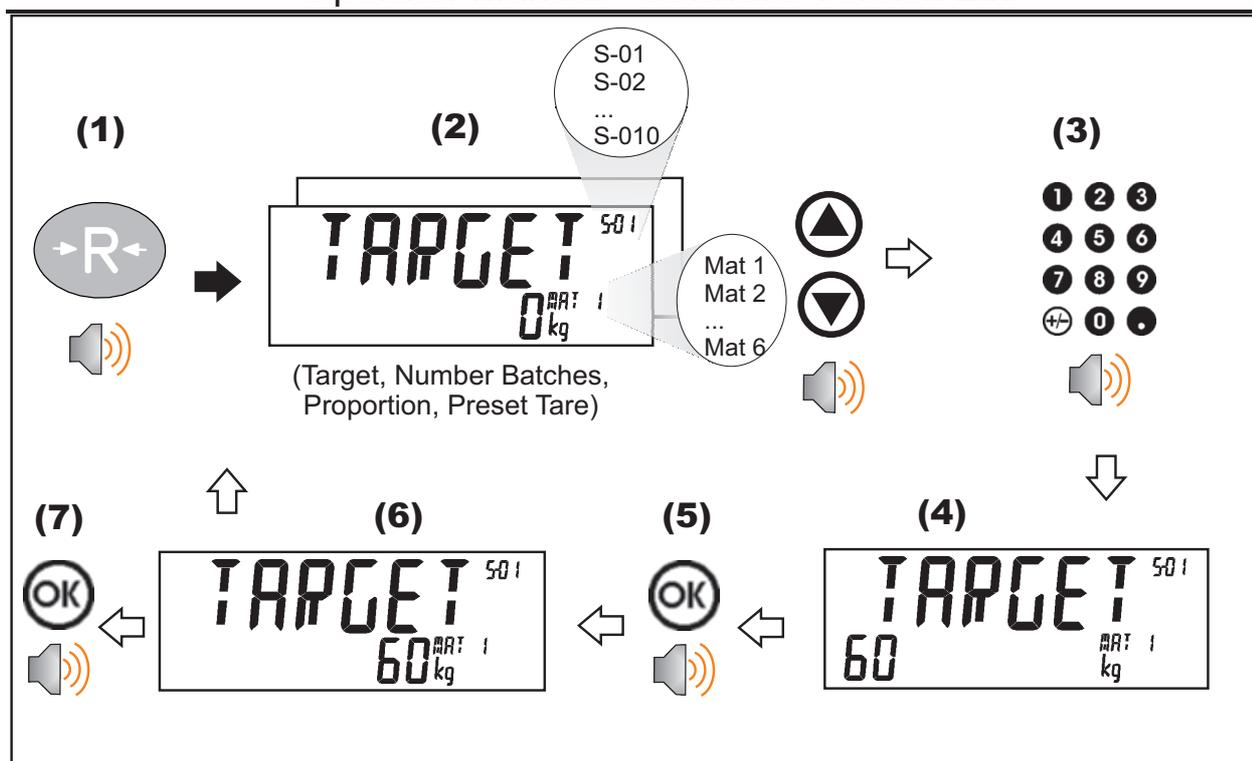


Tare Key



Recipe Key

<RECIPE> is used to enter product recipe details. The recipe details of target for each fill, number of batches, proportion and preset tare are shown for operator entry, if they have been enabled in the batching setup.



3.6. Stability Considerations

Some functions (E.g. Tare and Zero) require a stable weight. These functions will wait for up to 10 seconds for stable weight.

3.7. Security

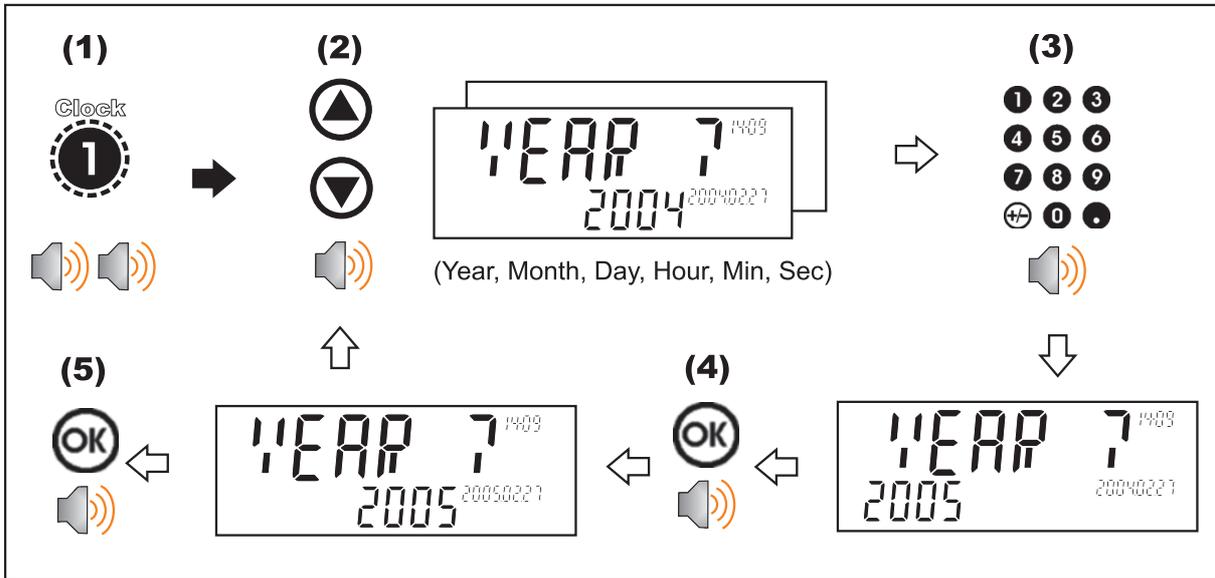
All keyboard functions can be locked in setup. The locking options are:

- Disabled
- Operator Passcode required
- Safe Setup Passcode required
- Enabled

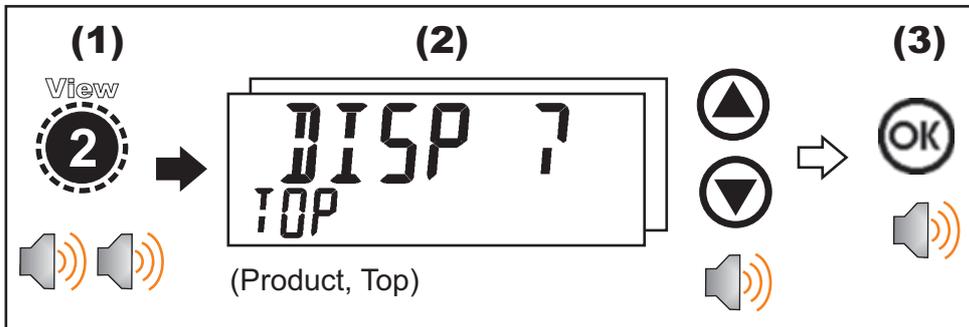
Operator Passcodes only need to be entered once. The system can be locked using the Lock key.

4. Additional Functions

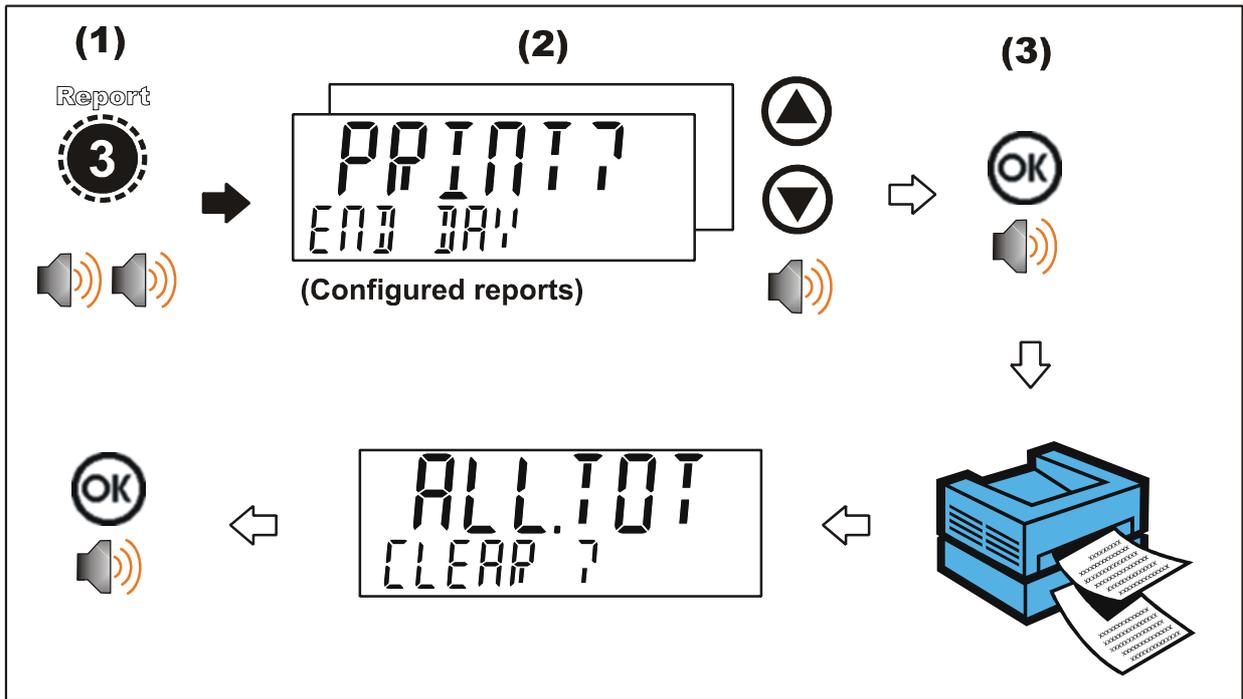
4.1. System Time and Date (Clock - 1 key)



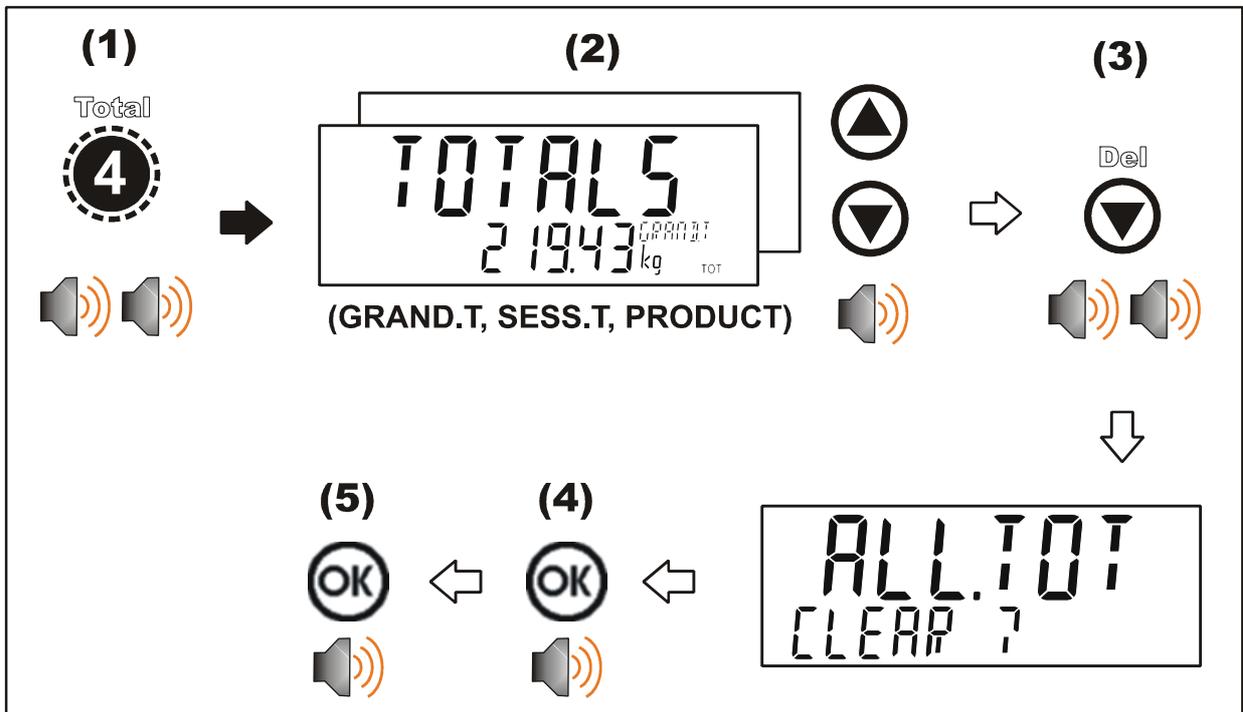
4.2. Display View (View – 2 key)



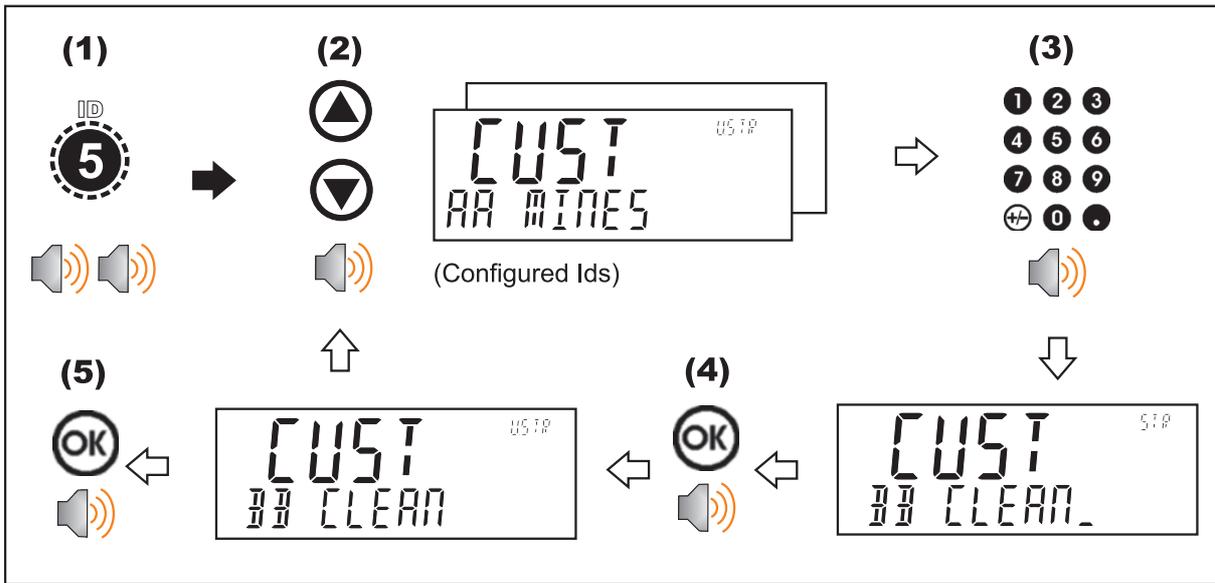
4.3. Reports (Report - 3 key)



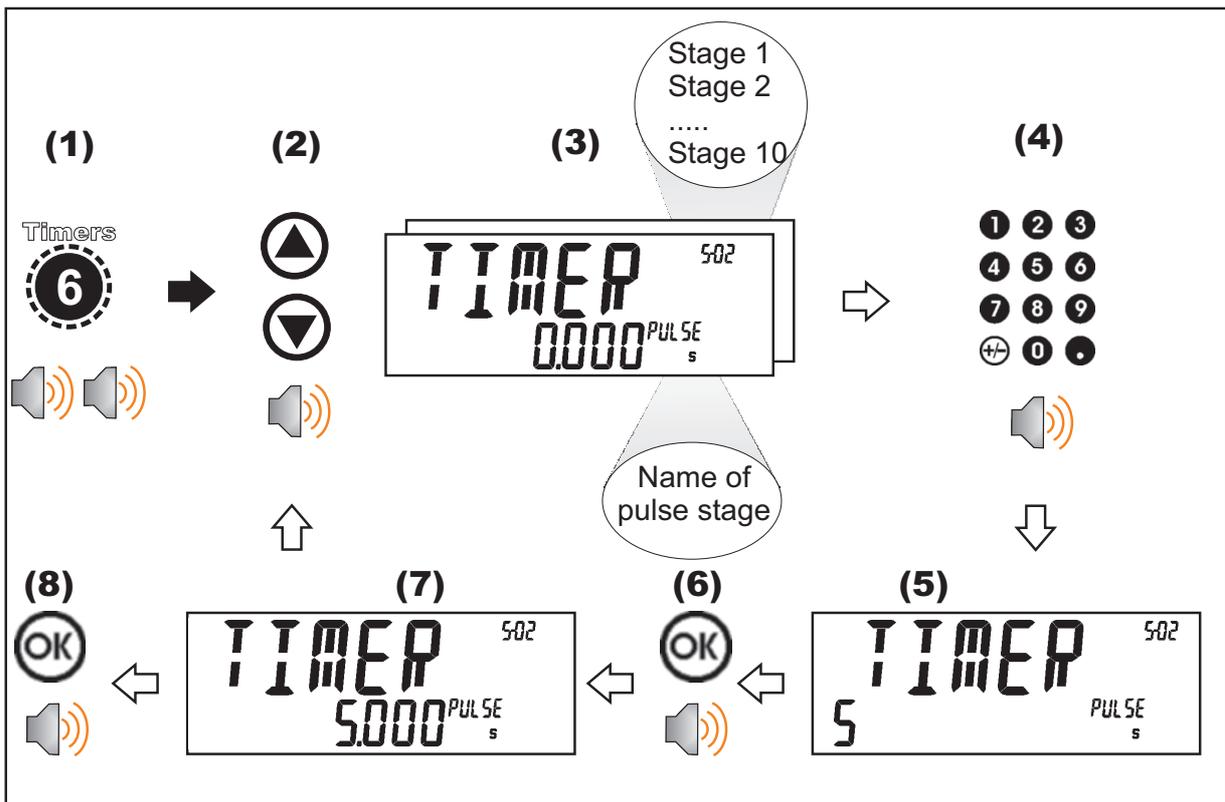
4.4. Totals (Total - 4 key)



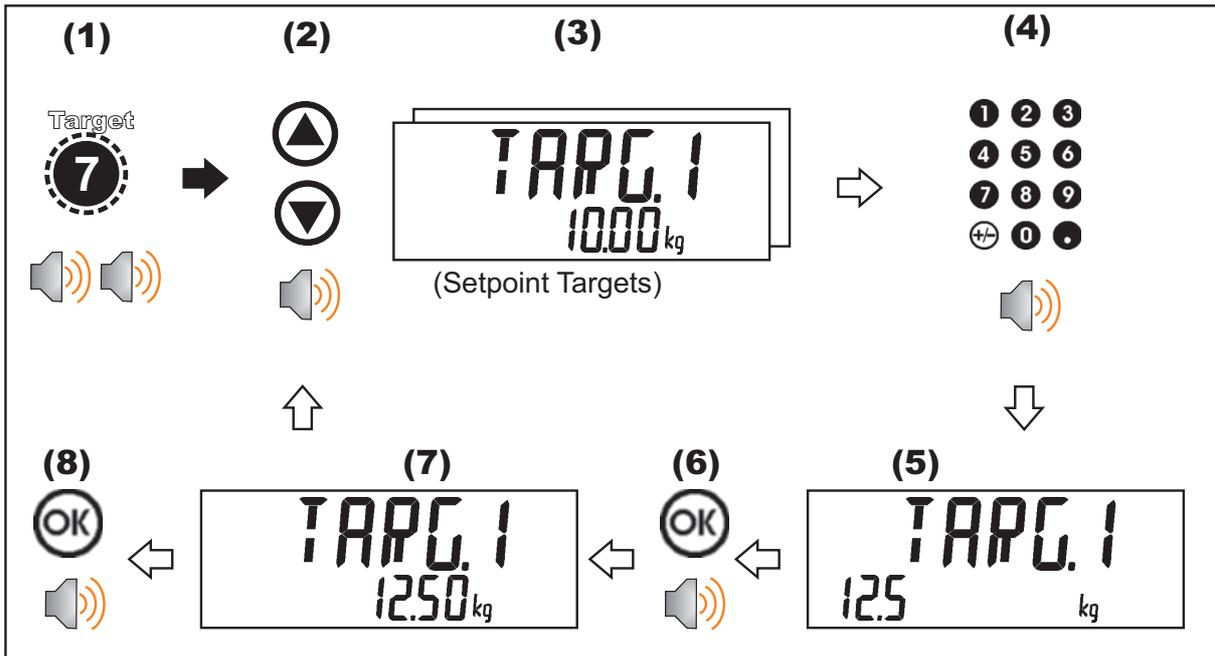
4.5. ID Names (ID – 5 key)



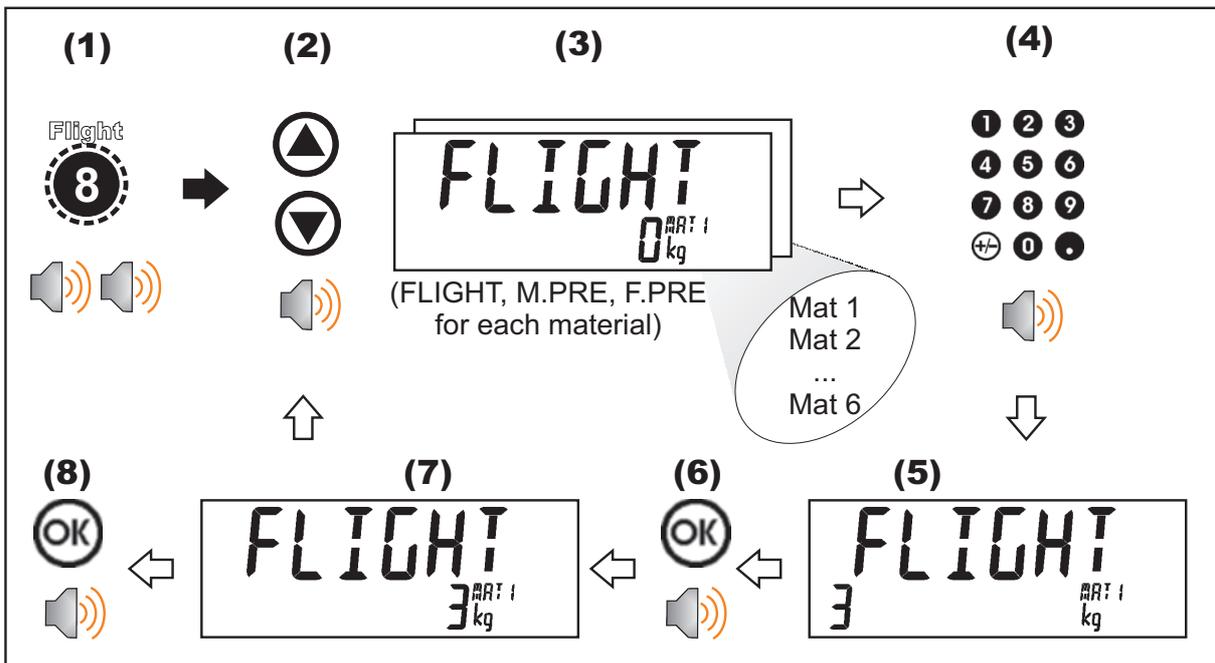
4.6. Pulse Timers (Timers – 6 key)



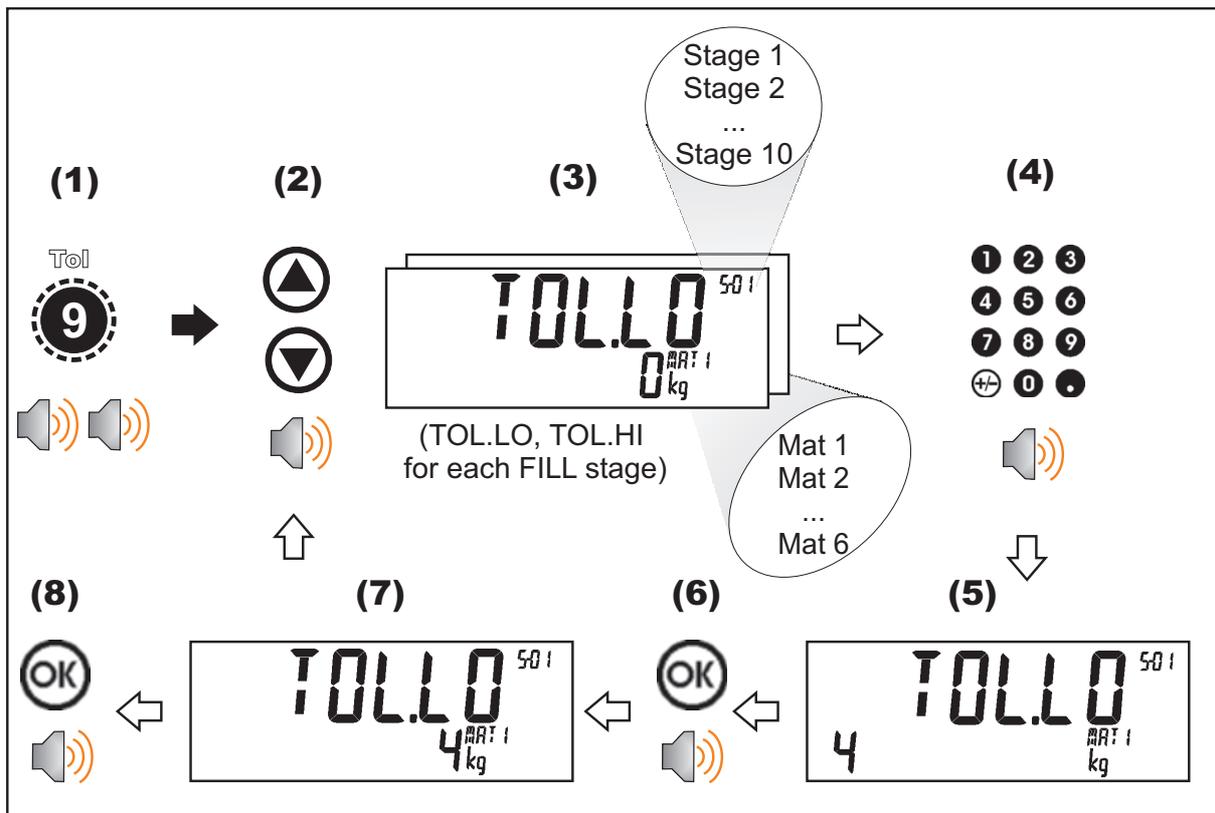
4.7. Set Point Targets (Target – key 7)



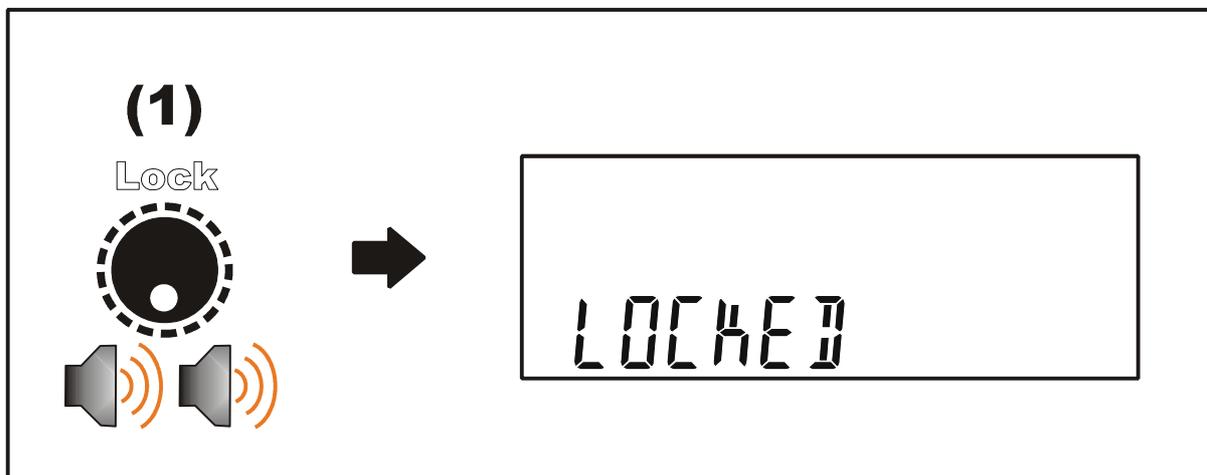
4.8. Flight Settings (Flight – key 8)



4.9. Tolerance (Tol – key 9)

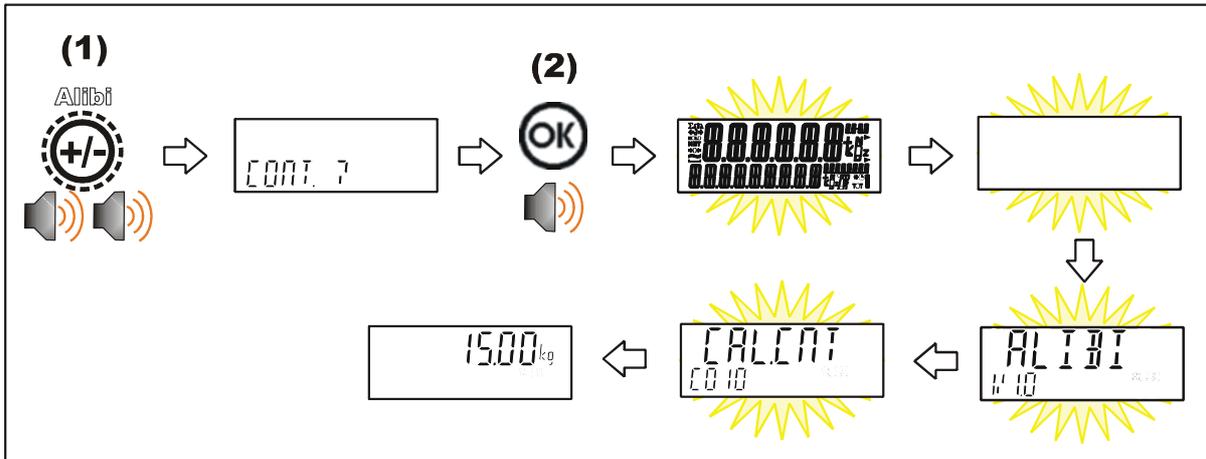


4.10. Lock

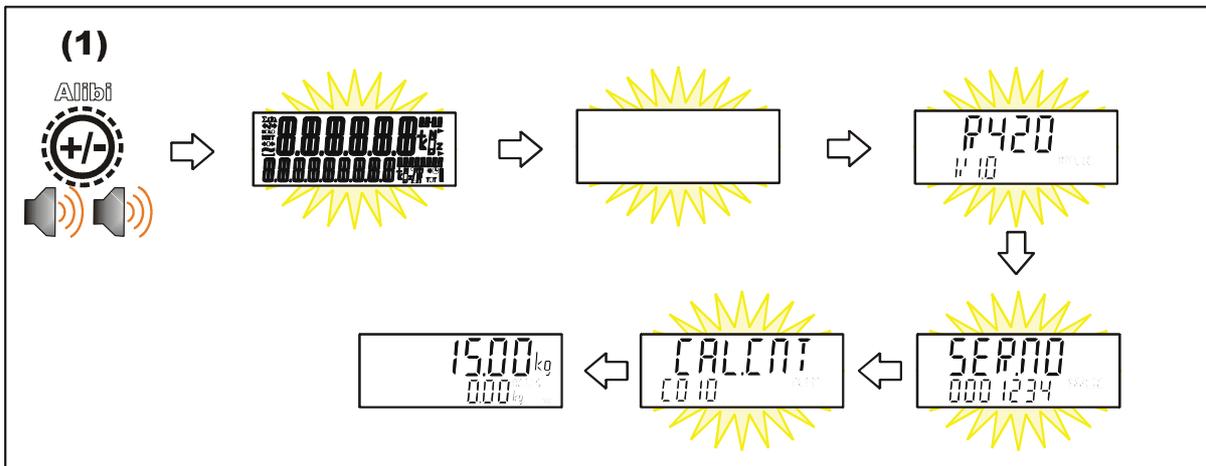


4.11. Alibi

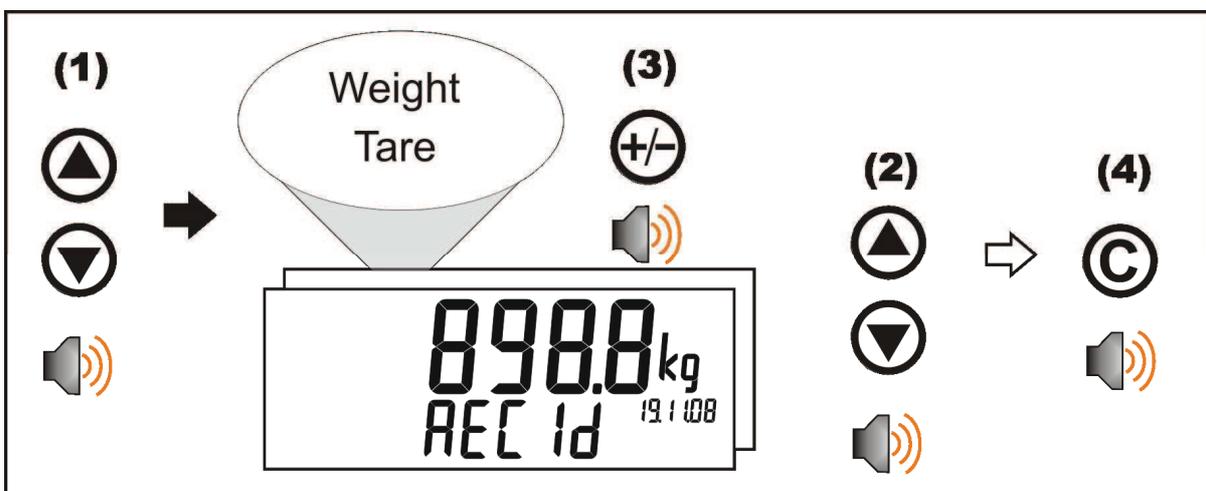
Switching to Alibi Mode



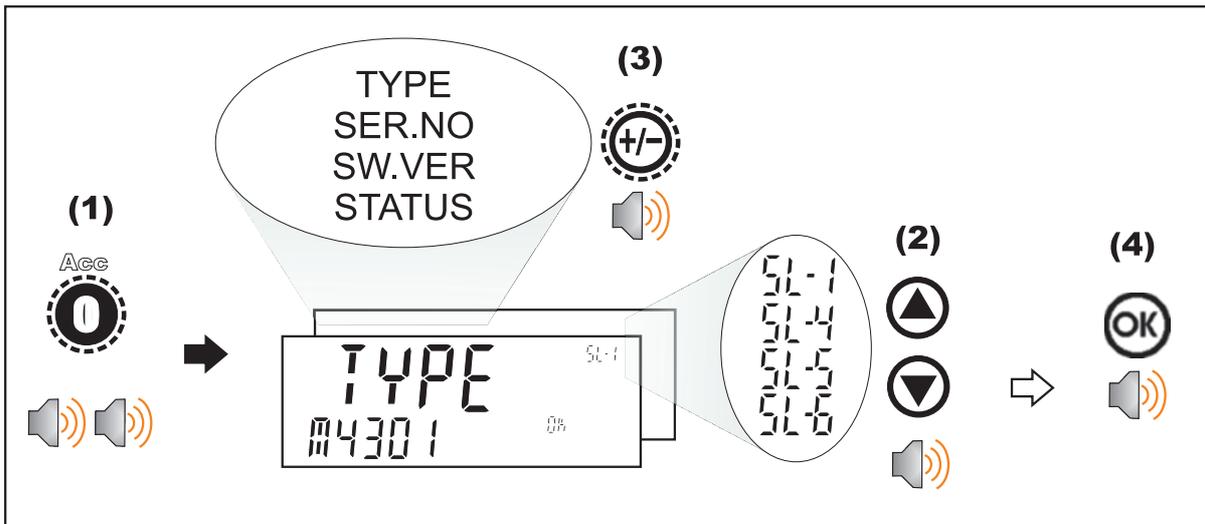
Returning from Alibi Mode



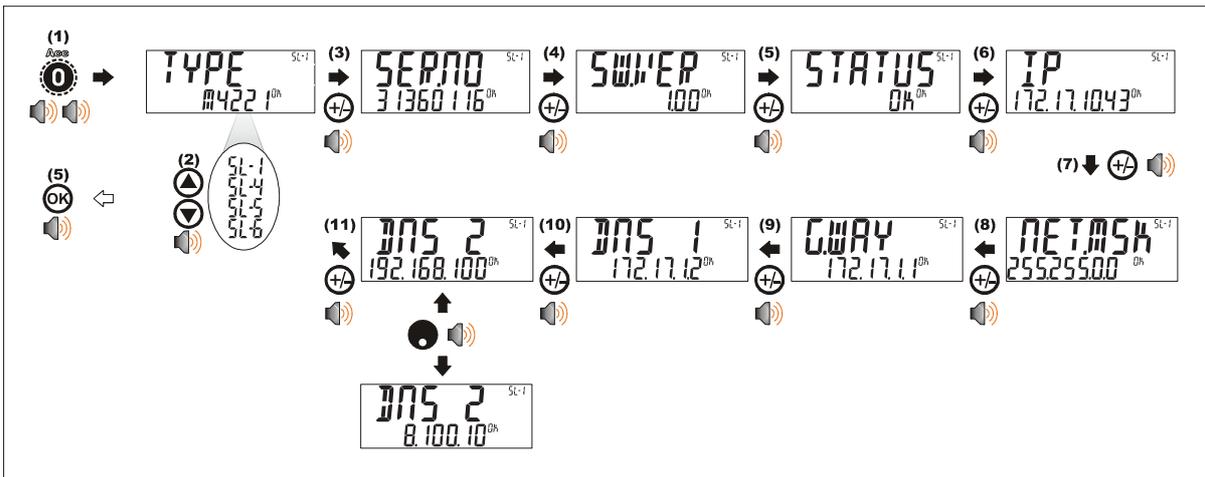
Viewing DSD records in Alibi mode



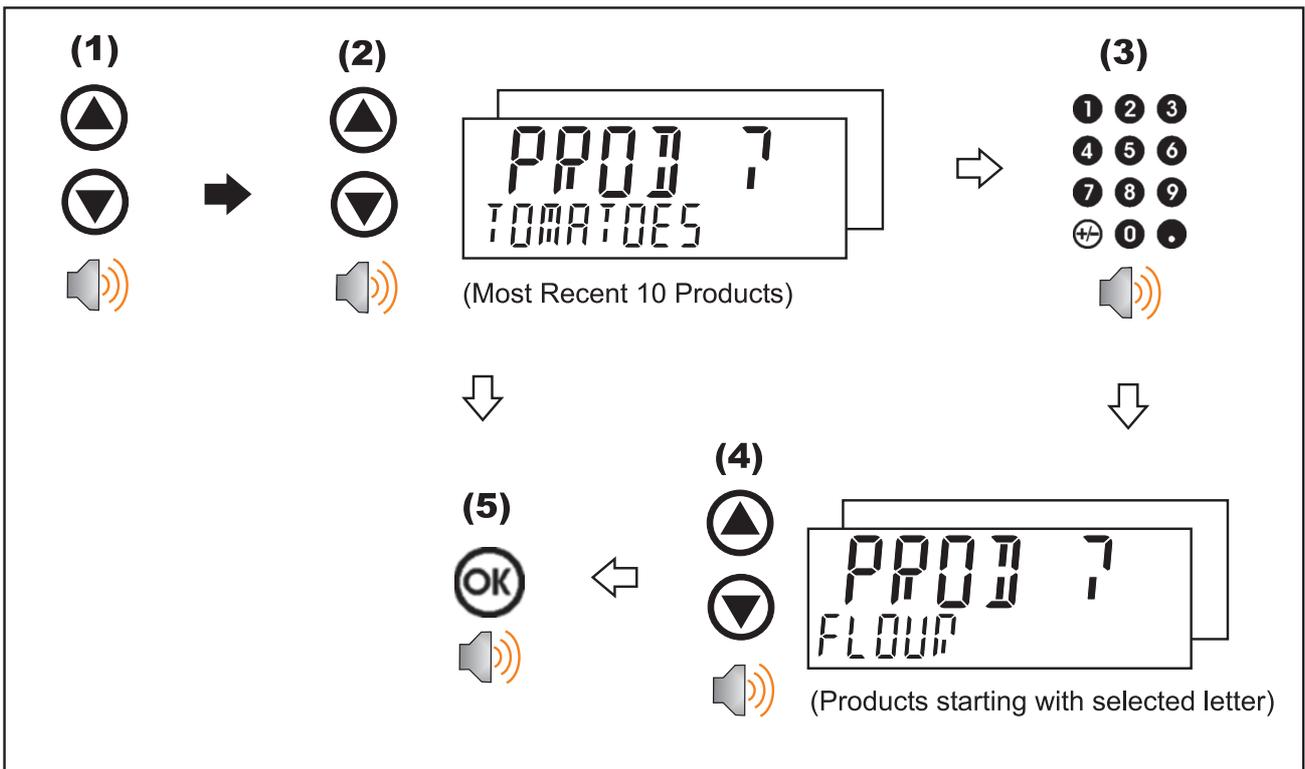
4.12. Accessory Modules (Acc – 0 key)



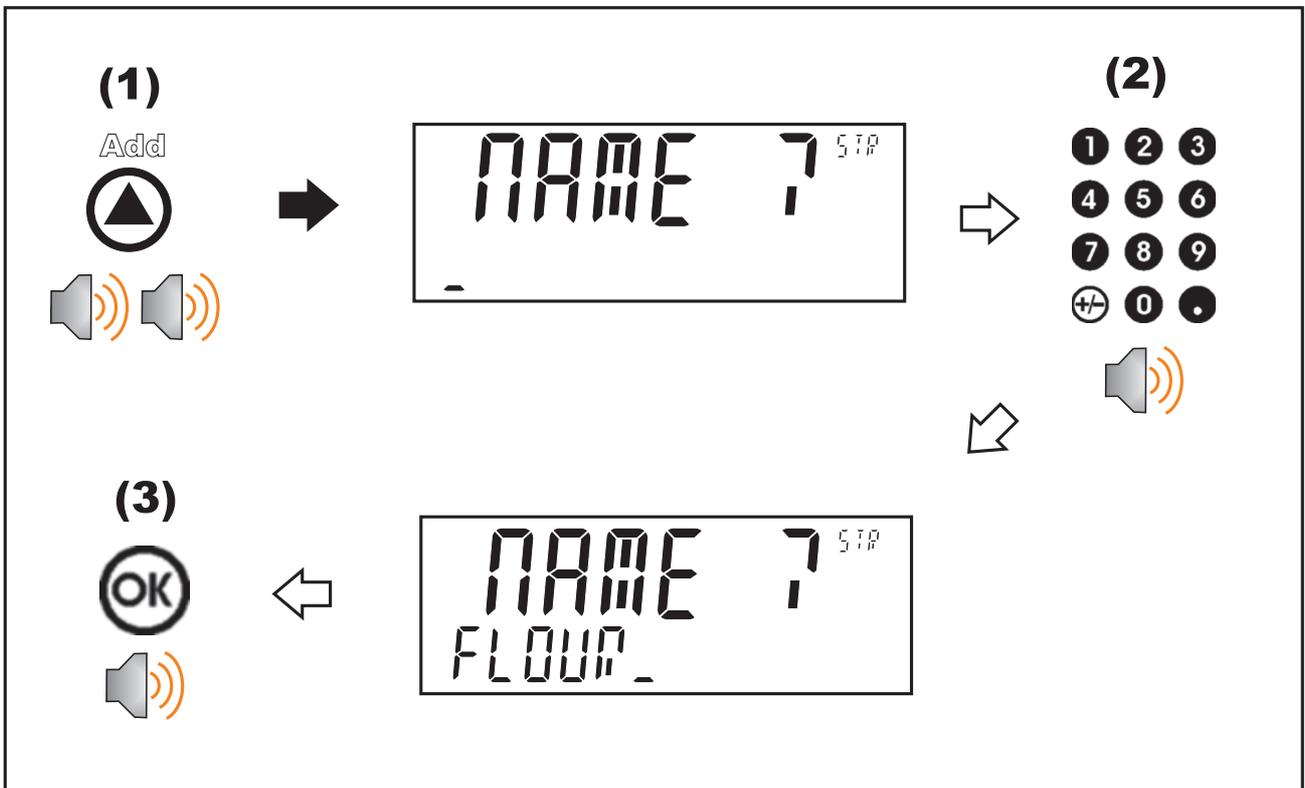
Ethernet module



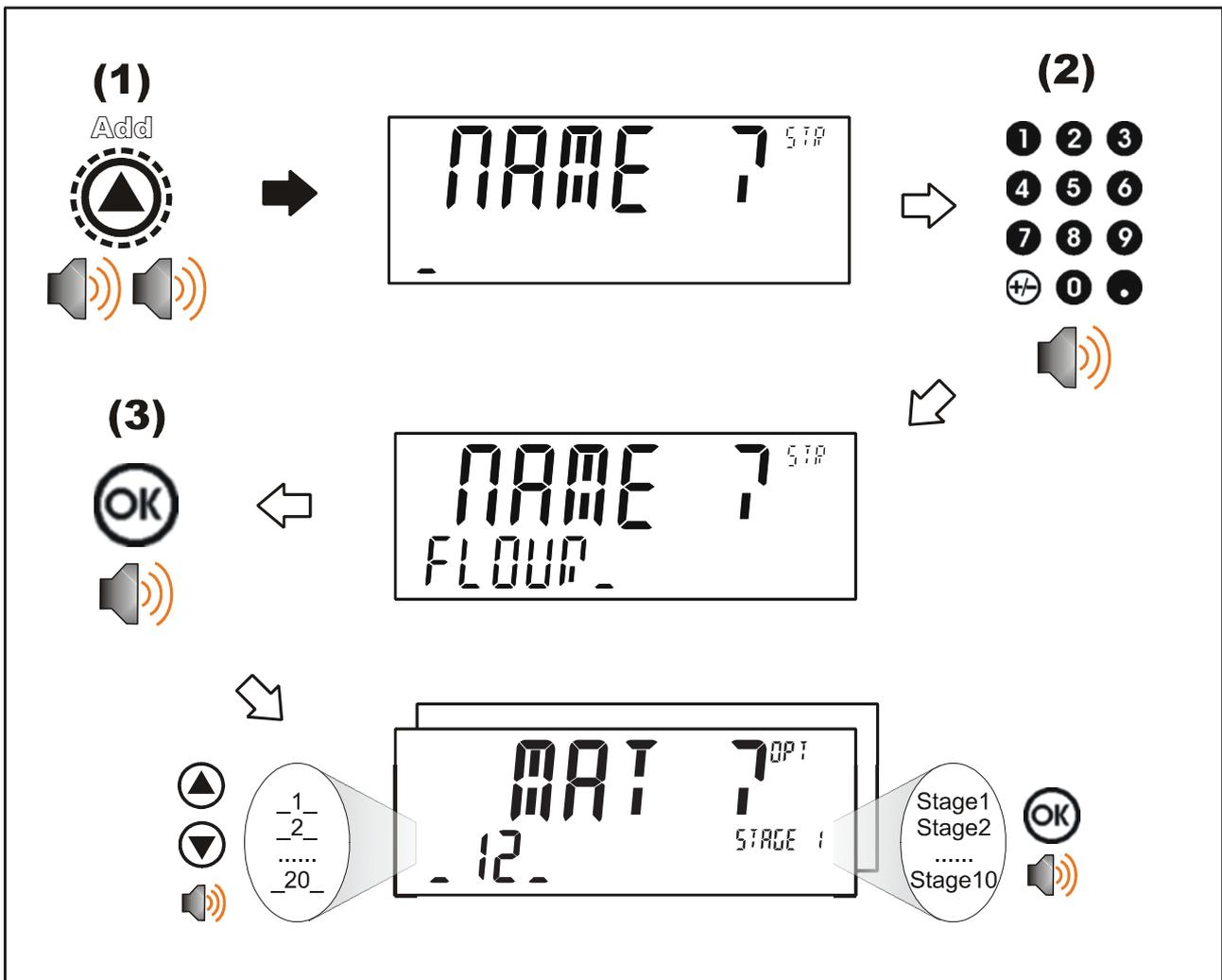
4.13. Product Selection



4.14. Add Product (K410 and K411)



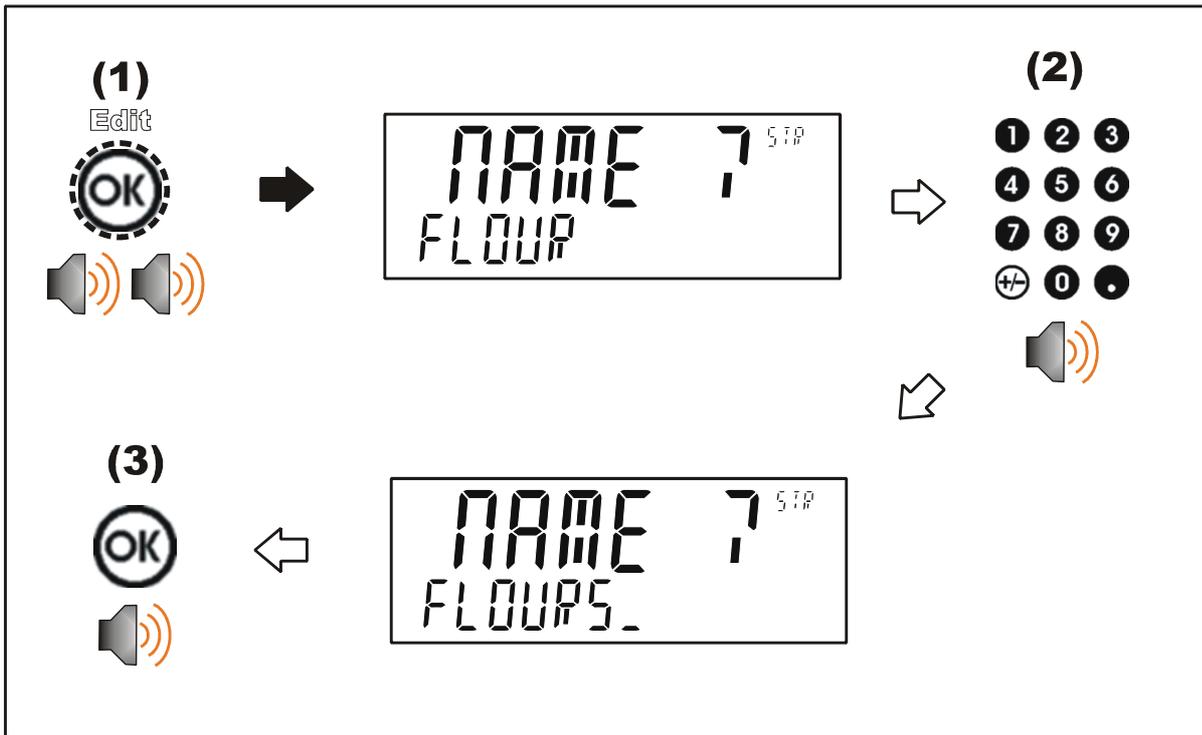
4.15. Add Product (K412)



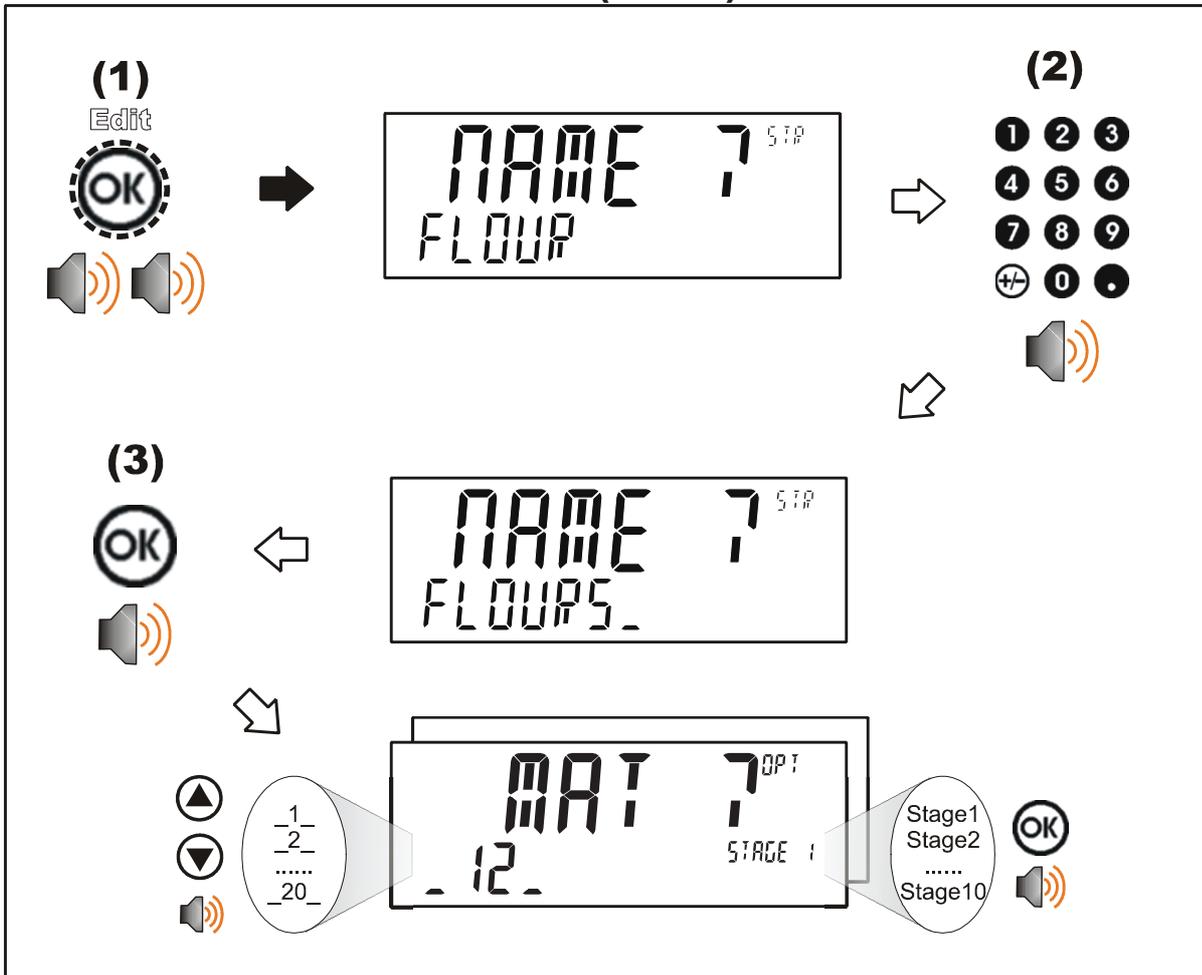
4.16. Delete Product



4.17. Rename Product (K410 and K411)



4.18. Rename Product (K412)



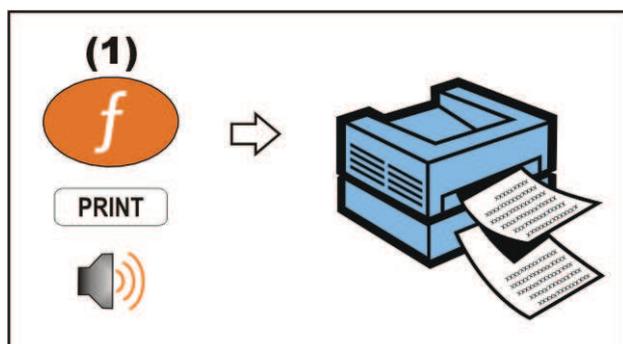
5. Function Keys

Overview

The instrument supports up to eight (8) special functions. They can be configured for: print, single, test, blank, start, pause, abort, pse.abt, suspend and report.

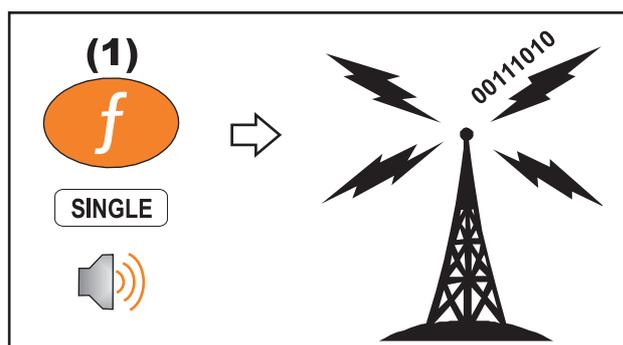
Print, Report Key

A Print key will initiate a RECORD printout. A report key will initiate a REPORT printout.



Single Key

A Single key is used to initiate a single transmission on the serial port.



Blanking Input

When a blanking input is active the instrument screen is either blanked or dashed out and all keys are blocked.

Start

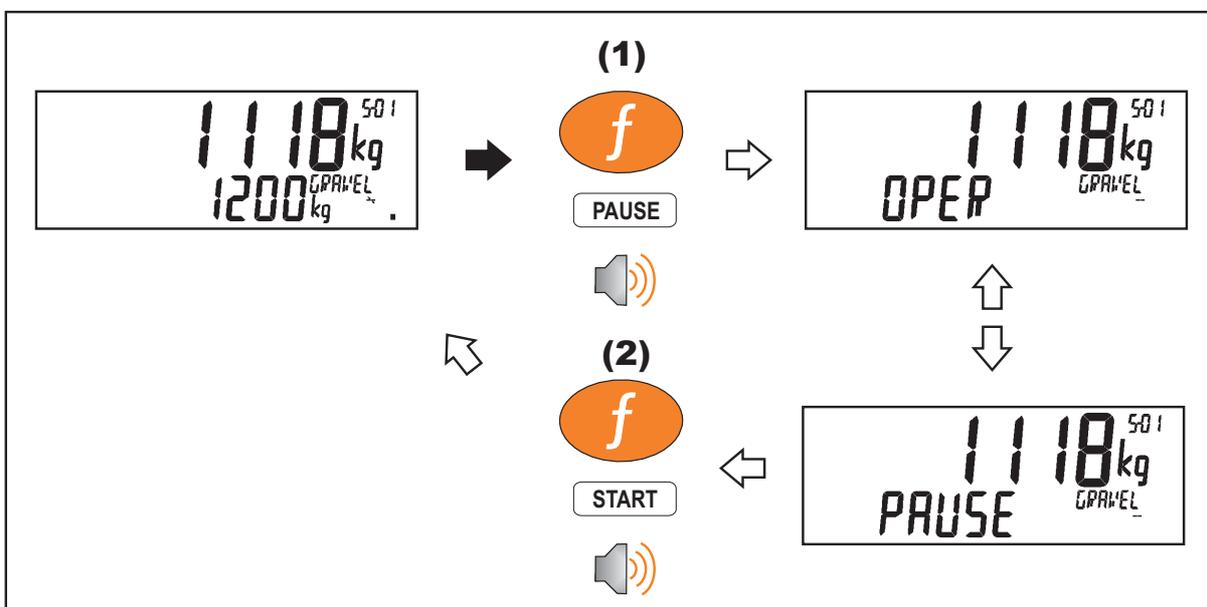
The START key will start a batch or resume a batch if it has been paused.

Pause, Abort, PSE.ABT, SUSPND

A PAUSE key is used to pause batching and the START key to resume batching. An ABORT key is used to halt the batch.

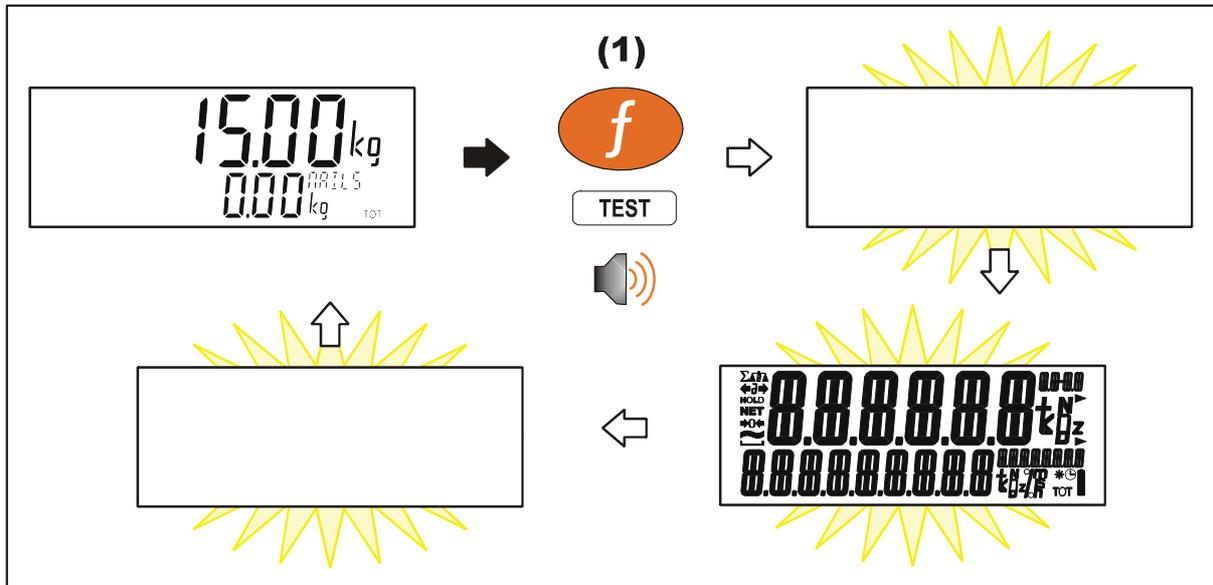
A pause/abort (PSE.ABT) key combines the two functions using a short and long press of the key: short key press to pause and a long key press to abort the batch. To resume batching from pause press the START key.

A suspend (SUSPND) key is used to pause the batch and adjust the tare weight (if in NET mode) when resuming the batch (with the START key). This is useful if the material needs to be topped up during the batch without affecting the batched amount.



Test

A Test key performs an all segment instrument display test.



6. Error Messages

6.1. Weighing Errors

These messages show status messages or errors that may occur during normal weighing operation.

Error	Description	Resolution
U.LOAD	The weight is below the minimum allowable weight reading.	Increase the weight or decrease the minimum allowable weight reading.
O.LOAD	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.
ERROR RANGE	The weight reading is beyond the limit set for Zero operation. The operation of the <ZERO> key is limited in the setup during installation. The indicator cannot be Zeroed at this weight.	Increase the Zero Range (Z.RANGE) or use the <TARE> key instead.
ERROR MOTION	Scale motion has prevented a <ZERO> or <TARE> operation from occurring on command.	Try the operation again once the scale is stable.
ERROR ADC	An error with the ADC has prevented a <ZERO> or <TARE> operation from occurring.	Ensure load cell cabling is correct.

6.2. Pause Conditions

The following table lists the possible pause messages that may be displayed due to the condition noted.

Error	Description	Resolution
"OPER"	Operator pause via function key	Press Start when ready to restart batching.
"OLOAD", "ULOAD"	Paused due to an overload or underload error having occurred.	Take action as required for error. Press Start to restart batching.
"ERROR"	System error present or ADC operation failed for some reason	Take action as required to resolve the error. Press Start to restart batching.
"TOL"	Paused because out of tolerance on Fill stage. This only occurs if the option (Pause on out of tolerance) is enabled.	Take action as required. Press Start to restart batching.
"ILOCK"	Paused because interlock condition not met (start, fill, dump interlocks)	Activate interlock condition. Press Start to restart batching.
"INFLIGHT"	Pause if fast, medium and slow fills are not set to switch in the correct order, or the in-flight is greater than the fill target.	Using the inflight key, check F.PRE (if used), M.PRE (if used) and FLIGHT. Compare in-flight to fill target. Press Start to restart batching.
"SUSPEND"	Operator suspend via function key	Press start when ready to restart batching

6.3. Diagnostic Errors

The instrument 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.

Error	Description	Resolution
(E0001)	The power supply voltage is too low.	Check supply
(E0002)	The power supply voltage is too high.	Check supply
(E0004)	Positive sense voltage out of range.	Check scale connections. Check SCALE:BUILD:CABLE setting.
(E0008)	Negative sense voltage out of range.	Check scale connections. Check SCALE:BUILD:CABLE setting.
(E0010)	Temperature is outside of allowable limits	Check location
(E0020)	Module Error	Replace Module
(E0080)	Zero Interlock failed	Check scale/settings, restart batch
(E0200)	The calibration information has been lost.	Re-calibrate
(E0400)	The factory information has been lost.	Return for Service
(E0800)	Application settings have been set to defaults.	Check and re-enter application settings
(E1000)	ADC error (ADC step failed)	Check scale/settings, restart batch
(E2000)	ADC Out of Range Error. This may be caused from a broken load cell cable.	Check SCALE:BUILD:CABLE setting. Check load cell cable, wiring, etc.
(E4000)	The runtime information has been lost.	Check Zero and Tare settings.

Notes

Notes

SMART WEIGHING SOLUTIONS



rinstrum