LD-RS
Special Version
Large Digit Remote Display
XT4-WT Load Cell Interface
Operation and Instruction Manual

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Table of Contents

1 Introduction

This manual contains information for the installation and operation of the special version model LD-RS display used in conjunction with the XT4-WT load cell interface. This manual covers the electrical connections and software functions seen when connecting the display to the XT4-WT. For use of the XT4-WT with a computer consult the XT4-WT manual.

The LD display provides an alternative to a computer for the setup, calibration and display of input 1 connection to the XT4. Load cell input 1 is the only XT4-WT input which can be viewed by this LD display.

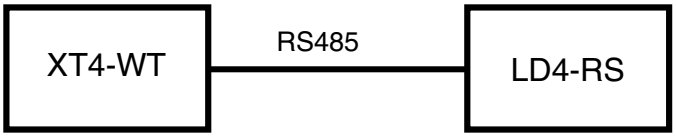
Communication between the LD and the XT4 is via RS485 serial communications. The “Unit Address” function in the XT4-WT must match address set at the **Addr** function in the LD. Changes to the “Unit Address” function will require connecting the XT4-WT to a computer since changing the **Addr** function in the LD does not change the “Unit Address” function. In multiple XT4-WT systems. Changing the **Addr** address allows the LD to choose which XT4-WT it communicates with.

Two standard inbuilt relays are provided for alarm/control functions, a supply of 24VDC is also provided to power the XT4-WT if required.

Unless otherwise specified at the time of order, your LD has been factory set to a standard configuration, see the “Function Table” chapter for a list of default settings. Like all other LD series instruments the configuration and calibration is easily changed by the user.

The LD series of Large Digit Display Monitors are designed for high reliability in industrial applications. The high brightness LED display provides good visibility, even in areas with high ambient light levels.

XT4-WT to large digit display

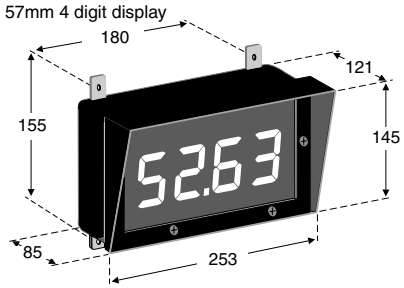


XT4-WT to large digit master display to large digit slave display

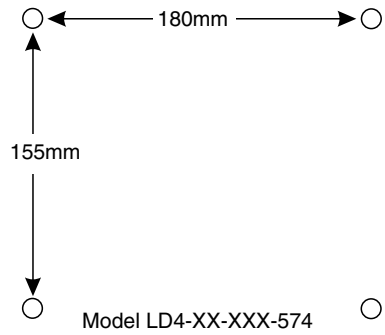
(optional communications port on master required)

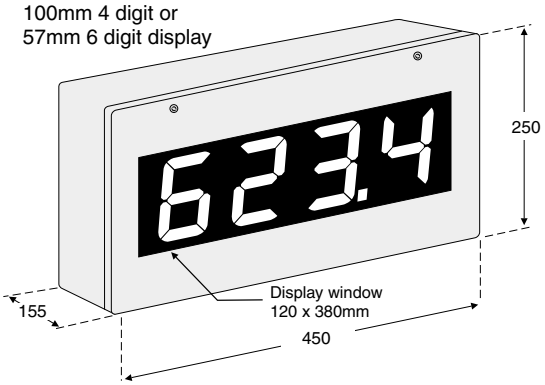
2 Mechanical Installation

The instrument is designed be wall mounted. Note which model is to be installed then carefully measure and drill holes, as shown below. All sizes are in mm.

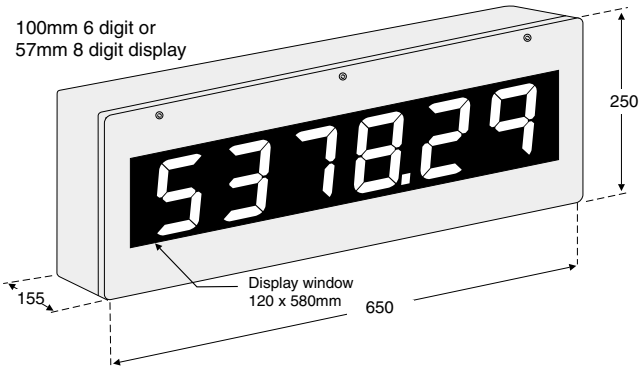


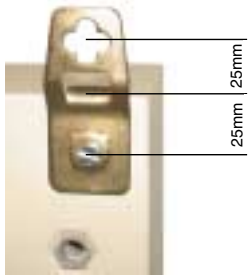
An optional panel mount kit is available for the 57mm 4 digit display. Panel cut out size is 240 x 130mm (-0.0mm/+0.5mm)



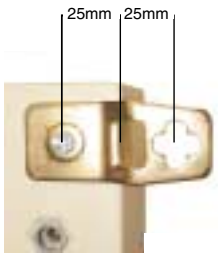


Four mounting kit brackets are supplied for use with all models except the 57mm 4 digit and 178mm displays. Diagrams below illustrate vertical and horizontal installation. If mounting without the brackets is preferred then the 10mm dia. case holes provided for the brackets can be used as alternative mounting holes. If the brackets are not used in mounting these holes should be sealed against dust and water.

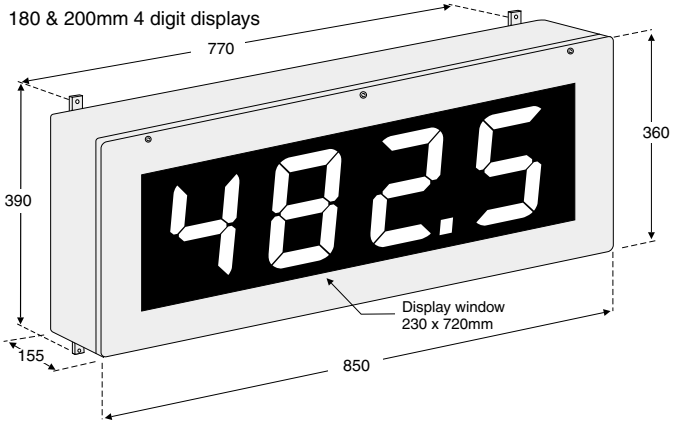


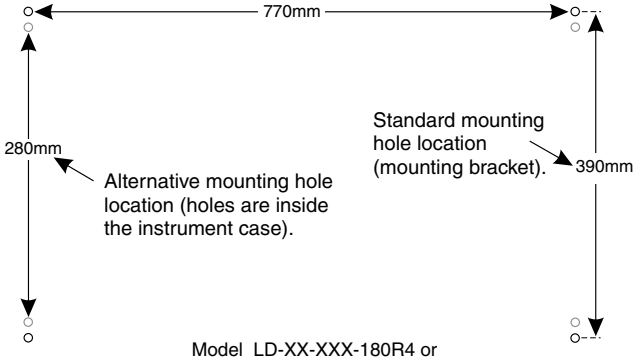


Vertical Orientation



Horizontal Orientation





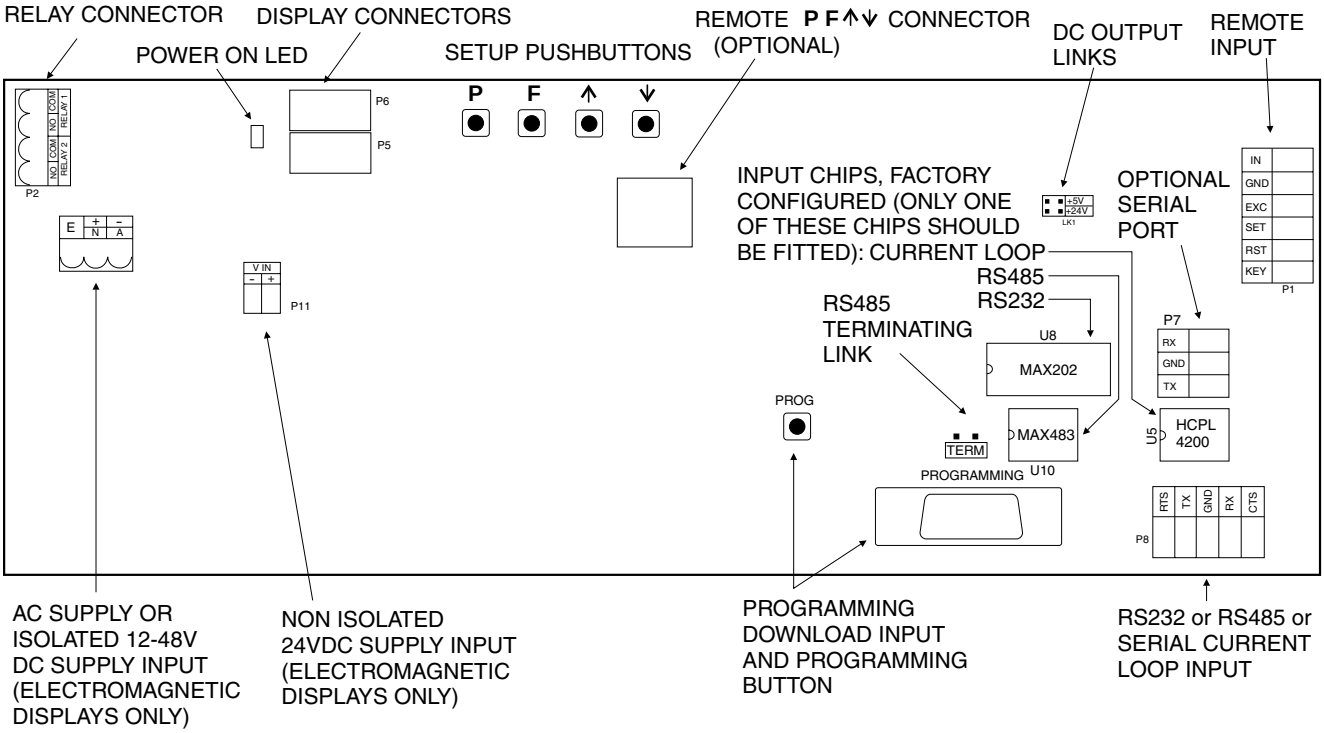
Model LD-XX-XXX-180R4 or
Model LD-XX-XXX-200R4

3 Electrical Installation

The LD instrument is designed for continuous operation and no power switch is fitted to the unit. It is recommended that an external switch and fuse be provided to allow the unit to be removed for servicing.

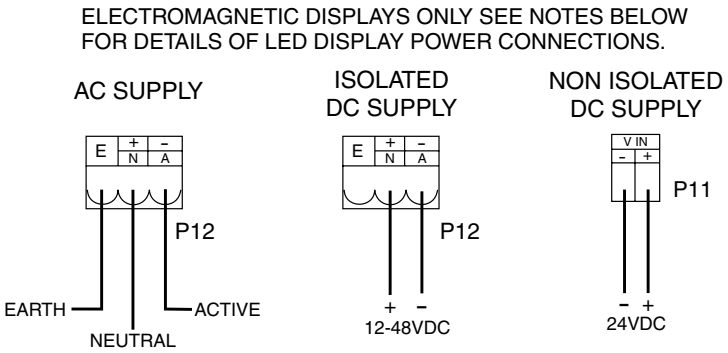
The terminal blocks are plug in screw type for ease of installation and allow for wires of up to 1.5mm^2 (2.5mm^2 for relay, AC or isolated DC supply connections) to be fitted. Connect the wires to the appropriate terminals as indicated below. Refer to other details provided in this manual to confirm proper selection of voltage, polarity and input type before applying power to the instrument. When power is applied the instrument will cycle through a display sequence, indicating the software version and other status information.

MAIN CIRCUIT BOARD LAYOUT



3 .1 Power supply connections

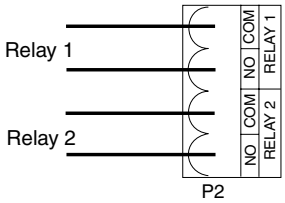
AC power connections for electromagnetic displays use a plug in connector with screw terminals at P12 (2.5mm^2 max. wire diameter). Isolated DC supplies (12-48VDC) use the same terminals. Non isolated DC supplies (regulated 24VDC only) for electromagnetic displays may be connected directly to the main circuit board power supply connector via the plug in connector terminals at P11 (1.5mm^2 max wire diameter).



LED displays receive power directly to the displays from either the mains transformer or isolated DC supply board. Use the connectors for the transformer (terminal block near transformer on AC powered versions) or the input terminals on the DC supply board (DC powered versions) when LED displays are used.

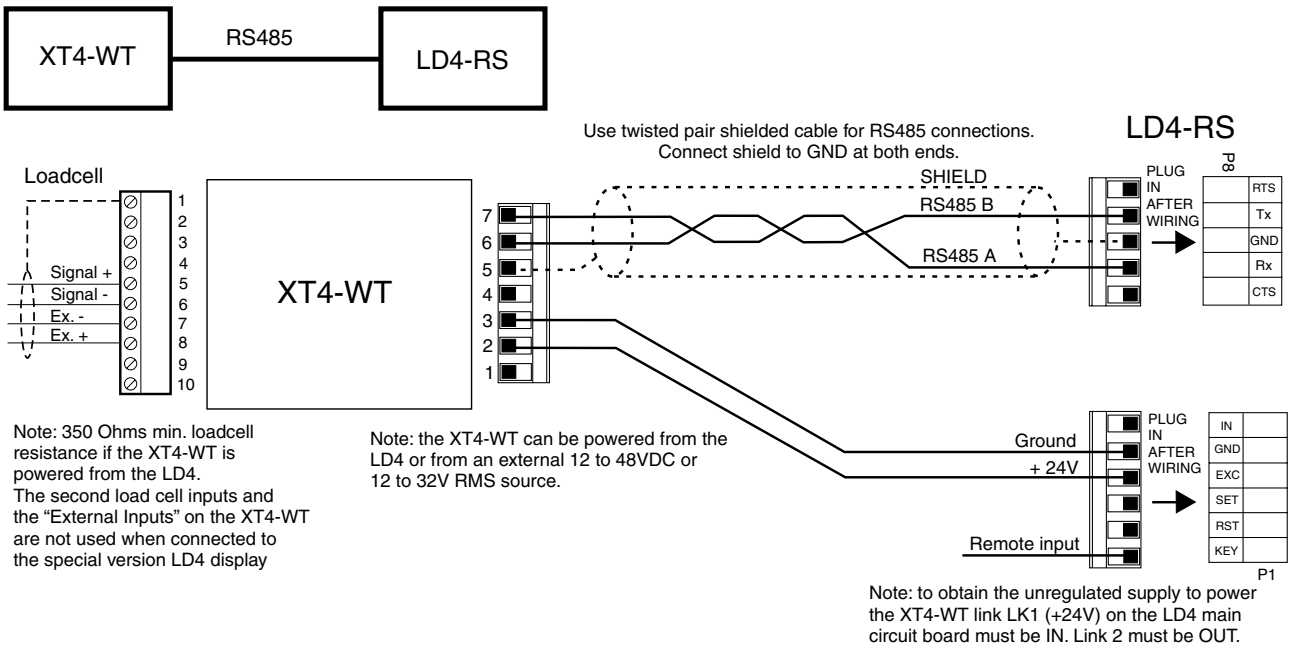
3 .2 Relay connections

The LD is supplied with two alarm relays as standard with connections on terminals P2. The relays are single pole, single throw types and are rated at 5A, 240VAC into a resistive load. The relay contact is voltage free and may be programmed for normally open or normally closed operation.



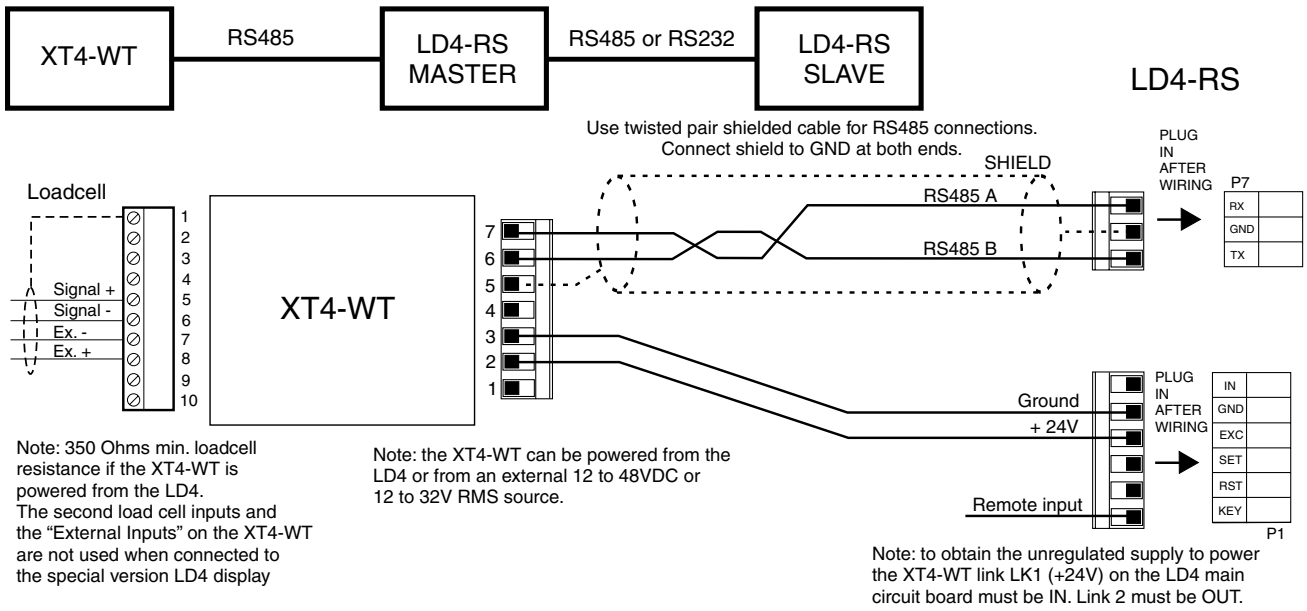
3 .3 Input connections

XT4 to LD4-RS electrical connections

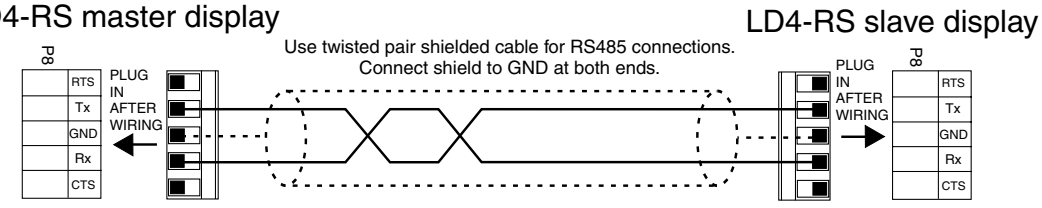


XT4-WT to LD4-RS and LD4-RS to slave display electrical connections

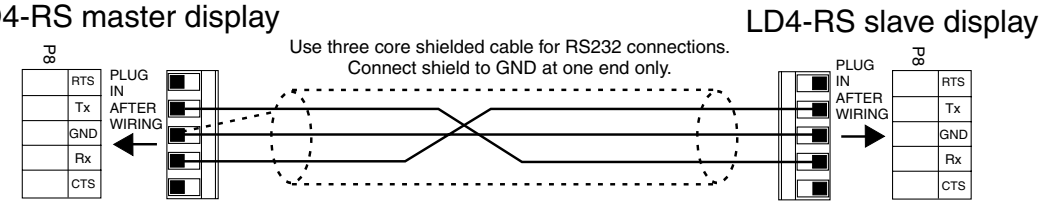
Note; this wiring requires that the optional serial retransmission is fitted.



RS485 master to slave communications



RS232 master to slave communications



4 Explanation of Functions

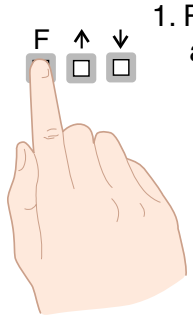
The LD setup and calibration functions are configured through a push button sequence. Two levels of access are provided for setting up and calibrating:-

FUNC mode (simple push button sequence) allows access to commonly used set up functions such as alarm setpoints.

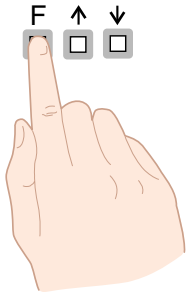
CAL mode (power up sequence plus push button sequence) allows access to all functions including calibration parameters.

The three push buttons located on the main circuit board are used to alter settings. Once CAL or FUNC mode has been entered you can step through the functions, by pressing and releasing the F push button, until the required function is reached. Changes to functions are made by pressing the ▲ or ▼ push button (in some cases both simultaneously) when the required function is reached.

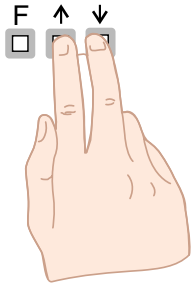
Entering CAL Mode



1. Remove power from the instrument and wait 5 seconds . Hold in the F button and reapply power. The display will indicate CAL as part of the "wake up messages" when the CAL message is seen you can release the button. Move to step 2 below.



2. When the "wake up" messages have finished and the display has settled down to its normal reading press, then release the F button. Move to step 3 below.

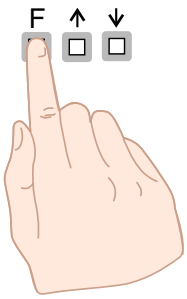


3. Within 2 seconds of releasing the F button press, then release the ▲ and ▼ buttons together. The display will now indicate FUNC followed by the first function.

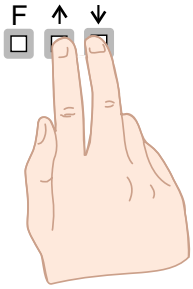
Notes: If step 1 above has been completed then the instrument will remain in this CAL mode state until power is removed. i.e. there is no need to repeat step 1 when accessing function unless power has been removed. The instrument should show all 8's on power up e.g. 8.8.8.8. if the instrument does not reset then these numbers will not be seen. Switch off the instrument and allow a longer time delay before powering up again.

Entering FUNC Mode

No special power up procedure is required to enter FUNC mode.



1. When the "wake up" messages have finished and the display has settled down to its normal reading press, then release the F button. Move to step 2 below.



2. Within 2 seconds of releasing the F button press, then release the ▲ and ▼ buttons together. The display will now indicate FUNC followed by the first function.

The alarm and brightness functions below are accessible via FUNC mode.

The LD has an easy alarm access facility which allows access to the alarm setpoints simply by pressing the F button. The first setpoint will then appear and changes to this setpoint may be made to this setpoint via the ▲ or ▼ buttons. Press the F button to accept any changes or to move on to the next setpoint.

The instrument must be set in the manner described below to allow the easy access facility to work:

1. The r.I nP function must be set to SP.Ac or the ACCS function must be set to EASY.
2. At least one alarm must have a setpoint, nothing will happen if all the alarm setpoints are set to OFF.
3. The SP.Ac function must be set to allow access to the relays required e.g. if set to A 1-2 then the easy access will work only with alarm relays 1 and 2 even if more relays are fitted.
4. The instrument must be in normal measure mode i.e. if the instrument is powered up so that it is in CAL mode then the easy access will not function. If in doubt then remove power from the instrument, wait for a few seconds then apply power again.
5. If the easy access facility is used then the only way to view or alter any other function settings is to power up via CAL mode i.e. there is not entry to FUNC mode unless the instrument is powered up in CAL mode.

A 1Lo (alarm 1 low setpoint)

Displays and sets the low setpoint value for alarm 1 relay. The low alarm setpoint may be disabled by pressing the ▲ and ▼ pushbuttons simultaneously. When the alarm is disabled the display will indicate OFF. Use ▲ or ▼ to adjust the setpoint value if required. The alarm will activate when the displayed value is lower than the A 1Lo setpoint value. Each relay may be configured with both a low and high setpoint if required, if so the relay will be activated when the display reading moves outside the band set between low and high setpoints.

A 1H, (alarm 1 high setpoint)

Displays and sets the high setpoint value alarm 1 relay. The high alarm setpoint may be disabled by pressing the ▲ and ▼ pushbuttons simultaneously. When the alarm is disabled the display will indicate OFF. Use ▲ or ▼ to adjust the setpoint value if required. The alarm will activate when the displayed value is higher than the A 1H, setpoint value. Each relay may be configured with both a low and high setpoint if required, if so the relay will be activated when the display reading moves outside the band set between low and high setpoints.

A2Lo (alarm 2 low setpoint)

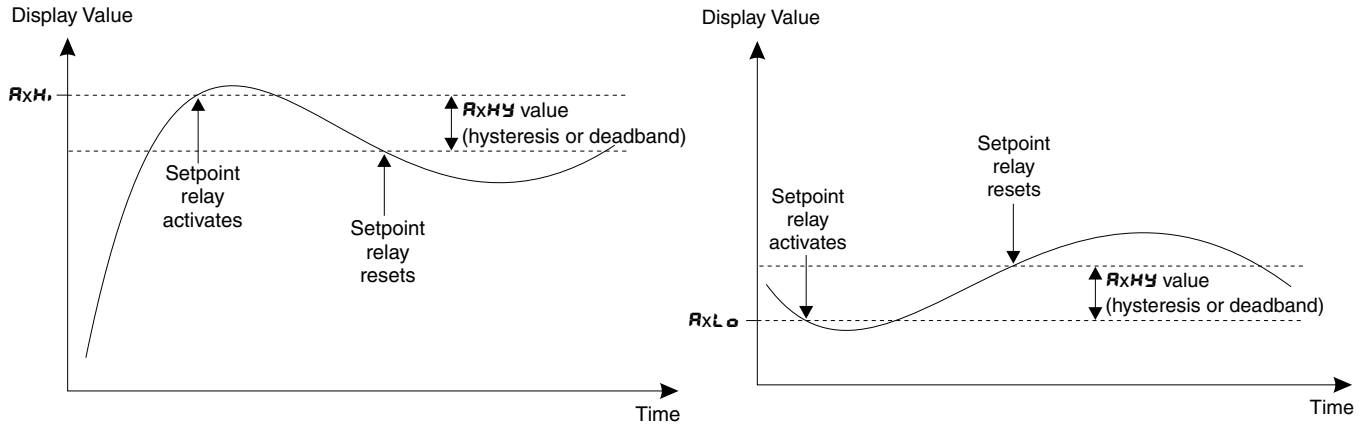
Displays and sets alarm 2 low setpoint, see A 1Lo for further description.

A2H, (alarm 2 high setpoint)

Displays and sets alarm 2 high setpoints, see A 1H, for further description.

A 1HY (alarm 1 hysteresis [deadband])

Displays and sets the alarm hysteresis limit and is common for both high and low setpoint values. The hysteresis value may be used to prevent too frequent operation of the setpoint relay when the measured value stays close to the setpoint. Without a hysteresis setting (A 1HY set to zero) the alarm will activate when the display value goes above the alarm setpoint (for high alarm) and will reset when the display value falls below the setpoint, this can result in repeated on/off switching of the relay at around the setpoint value. The hysteresis setting operates as follows:



In the high alarm mode, once the alarm is activated the input must fall below the setpoint value minus the hysteresis value to reset the alarm.

e.g. if **A1H** is set to **50.0** and **A1HY** is set to **3.0** then the setpoint output relay will activate once the display value goes above **50.0** and will reset when the display value goes below **47.0** (50.0 minus 3.0).

In the low alarm mode, once the alarm is activated the input must rise above the setpoint value plus the hysteresis value to reset the alarm.

e.g. if **A1Lo** is set to **20.0** and **A1HY** is set to **10.0** then the alarm output relay will activate when the display value falls below **20.0** and will reset when the display value goes above **30.0** (20.0 plus 10.0).

The hysteresis units are expressed in displayed engineering units.

A2HY (alarm 2 hysteresis [deadband])

Displays and sets the alarm hysteresis limit for alarm 2 see **A1HY** for further description.

A1tt (**alarm 1 trip time)**

Displays and sets the alarm trip time and is common for both alarm high and low setpoint values. The trip time is the delay time before the alarm relay will activate, or trip, when an alarm condition is present. The alarm condition must be present continuously for the trip time period before the alarm will trip. This function is useful for preventing an alarm trip due to short non critical deviations from setpoint. The trip time is selectable over **0** to **9999** seconds.

A2tt (alarm 2 trip time)

Displays and sets the alarm trip time for alarm 2 see **A1tt** for further description.

A1rt (alarm 1 reset time)

Displays and sets the alarm relay reset time. With the alarm condition is removed the alarm relay will stay in its alarm condition for the time selected as the reset time. The reset time is selectable over **0** to **9999** seconds.

A2rt (alarm 2 reset time)

Displays and sets the alarm relay reset time for alarm 2, see **A1rt** for further description.

A1no or **A1nc (alarm 1 normally open or normally closed)**

Displays and sets the setpoint alarm relay action to normally open (de-energised) or normally closed (energised), when no alarm condition is present. A normally closed alarm is often used to provide a power failure alarm indication.

A2no / A2nc (alarm normally open or normally closed)

Displays and sets the setpoint alarm relay action for alarm 2 see **A1no**/**A1nc** for further description.

A2.SP,**A2.t 1 (relay operation independent setpoint or trailing)** - this function will not be seen if both the high and low setpoints are set to **OFF**.

Each alarm may be programmed to operate with an independent setpoint setting or may be linked (or trailing) to operate at a fixed difference to another relay setpoint. The operation is as follows: Alarm 1 (**A1**) is always independent. Alarm 2 (**A2**) may be independent or may be linked to Alarm 1. The operation of each alarm is selectable within the Function Setup Mode by selecting, for example, (Alarm 2) **A2.SP** = Alarm 2 normal setpoint or **A2.t 1** = Alarm 2 trailing Alarm 1. For trailing set points the setpoint value is entered as the difference from the setpoint being trailed. If the trailing setpoint is to operate ahead of the prime setpoint then the value is entered as a positive number and if operating behind the prime setpoint then the value is entered as a negative number. For example, with Alarm 2 set to trail alarm 1, if **A1H** is set to 1000 and **A2H** is set to 50 then Alarm 1 will trip at 1000 and alarm 2 will trip at 1050 (i.e. 1000 + 50). If Alarm 2 had been set at -50 then alarm 2 would trip at 950 (i.e. 1000 - 50).

brgt (display brightness)

Displays and sets the digital display brightness. The display brightness is selectable from **1** to **15**. where **1** = lowest intensity and **15** = highest intensity. This function is useful for improving the display readability in dark areas or to reduce the power consumption of the instrument.

brgt Auto (automatic display brightness)

Automatic display brightness adjustment. Not applicable unless the optional light sensor is fitted. The automatic brightness adjustment uses the optional light sensor to gauge the required brightness level for the environment. The high and low brightness limits are set at the **brgt HI gH** and **brgt Lo** functions described below. If the optional light sensor is not fitted this function should be set to **OFF**.

brgt HI gH (automatic brightness high level)

Seen only when **brgt AUto** is set to **on**. The high brightness level sets the maximum brightness which the automatic brightness control can achieve with **63** being the highest intensity and **1** being the lowest.

brgt Lo (automatic brightness low level)

Seen only when **brgt AUto** is set to **on**. The high brightness level sets the minimum brightness which the automatic brightness control can achieve with **63** being the highest intensity and **1** being the lowest.

dULL (remote input controlled display brightness)

Displays and sets the level for remote input brightness switching, see **r.i nP** function. When the remote input function is set to **dULL** the remote input can be used to switch between the display brightness level set by the **brgt** function and the display brightness set by the **dULL** function. The display brightness is selectable from **0** to **15**, where **0** = lowest intensity and **15** = highest intensity. This function is useful in reducing glare when the display needs to be viewed in both light and dark ambient light levels.

A1FrEE (free fall alarm value for relay 1)

The alarm free fall value is used to provide an offset to the alarm operation. This value can be set anywhere within the measuring range of the instrument and will operate in engineering units e.g. kilograms, tonnes etc. In most applications this function will be used to force the alarm to operate at a given measured quantity prior to the actual alarm setting.

In most applications the **A1FrEE** function will be used in conjunction with a “high” alarm setting such as **A1H,** to force the alarm relay to operate at a given measured quantity prior to the actual alarm setting. This function can be used to prevent any overfilling due to product which was in “free fall” when the alarm relay operated.

Applications include filling containers via a chute, auger or conveyor belt in which shutting off the filling process once the desired weight is reached will result in some overfilling due to the free fall product. The free fall value can be found by comparing the required product weight to the final weight.

For example a series of containers is to be filled with 40.0kg of product, **A1H,** is set to **40.0** and this relay activation is used to stop the filling process. It is found that due to free fall product the average weight of the filled containers is actually 41.7kg. i.e. 1.7kg of product continues to fill the container after the alarm relay used to stop the filling process is activated. As an alternative to subtracting 1.7kg from the **A1H,** setting we can use the free fall setting **A1FF** of 1.7 to ensure that alarm 1 relay operates 1.7kg prior to the desired weight.

The table below illustrates the action of the free fall alarm with both high and low alarm relay settings.

		Alarm relay activates at display reading of:	With a hysteresis of 5 (**A**x**HY**) alarm resets at:
A1FF = 10	**A1H,** = 100	90 or above	85 or below
A1FF = 10	**A1Lo** = 50	40 or below	45 or above
A1FF = -10	**A1H,** = 100	110 or above	105 or below
A1FF = -10	**A1Lo** = 50	60 or below	65 or above

A2FrEE (free fall alarm value for relay 2)

See **A1FrEE** above.

The functions which follow are accessible via **CAL** mode only or if the **ACCS** function is set to **ALL**.

P.SEt (preset value)

Displays and sets the preset value to be used with the remote inputs or P button function. When the P.SEt function is used the preset value will be set as the display value when the appropriate remote input or P button is activated. This setting will cause an offset in the calibration scaling. Once activated the preset value will be retained even if power is removed. Example: The LD is calibrated to read from 0 to 1000 for a 0 to 1000kg load. If a P.SEt value of 50 is entered via remote input when the display reads 0 then the LD will read from 50 to 1050 for the same 0 to 1000kg load.

CL.no (cell or channel number selection)

Selects one of the two possible calibration settings (CAL. 1 or CAL.2). This function allows the instrument to be calibrated to two different load cells and hold the calibration values in memory. Alternatively two different calibration scaling values may be entered for a single cell. The user may select the load cell to be used via this function, via the P button (if fitted) or via a remote input (see CAL.S function under the r.i nP function). To scale any of these independent calibration memories you may use any of the methods described in the "Calibration" chapter. Simply select the required cell number then scale using whichever calibration method best suits the application. If a remote input or P button is used to select the channel then do not use the CL.no function to select the channel i.e. only use one method of selecting the channel.

In addition to different scaling the two channels can be set to operate from different decimal point (dCPt), sample rate (rAtE), mV/V range (rnGE), lineariser point (L. nPtS), low & high overrange (Lo di SP & HI 9Hdi SP) and display warning type (di SP) settings. If using this function in conjunction with the remote inputs or P button functions then the peak hold, display hold, peak and valley memory, zero, remote input calibrate, and serial print output functions will operate individually for each channel, the tare command will tare both channels simultaneously. Other remote input and P button functions are not intended for use with the channel selection function.

drnd (display rounding)

Displays and sets the display rounding value. This value may be set to 0 - 5000 displayed units. Display rounding is useful for reducing the instrument resolution without loss of accuracy, in applications where it is undesirable to display to a fine tolerance. (example if set to 10 the display indication will change in multiples of 10 only).

dCPt (decimal point selection)

Displays and sets the decimal point. By pressing the ▲ or ▼ pushbuttons the decimal point position may be set. The display will indicate as follows: 0 (no decimal point), 0.1 (1 decimal place), 0.02 (2 decimal places) or 0.003 (3 decimal places).

FLtr (digital filter)

Displays and sets the digital filter value. Digital filtering is used for reducing susceptibility to short term interference. The digital filter range is selectable from 0 to 8, where 0 = none and 8 = most filtering. A typical value for the digital filter would be 3. Use ▲ or ▼ to alter if required. Note that at higher filter values the display update time will be increased.

rAtE (sample rate for ADC)

Displays and sets the ADC sample from 1 to 5 samples per second and is selected in steps as follows:

1.2 or 5

rnGE (full scale mV per V output of transducer)

Displays and sets the full scale mV/V range to suit the transducer useable range and is selected in steps as follows:

2.0, 4.0 .8.0 or 16.0

Choose the value equal to or the next higher value to the mV/V output of the transducer. This selection sets the input range for the A/D converter, if too low a range is selected a "----" error message will be seen on the display. Note the mV/V range setting is a nominal figure only.

r.i nP (remote input function)

See "Electrical Installation" the location of the remote input connector. When these pins are short circuited, via a pushbutton or keyswitch the instrument will perform the selected remote input function. A message will flash to indicate which function has been selected when the remote input pins are short circuited. The remote input functions are as follows:

NONE (None) - this function is selected when none of the special functions are required.

PHLd (Peak Hold) - this function displays and holds the peak reading, when the contact input is closed i.e. the maximum value from the time of contact closure. When the contact is open the display indicates the live reading.

dHLd (Display Hold) - the display hold function is similar to peak hold, except that the held reading is the value displayed when the switch contact is closed.

Hi (Peak Memory) - the peak memory (max) is displayed when the pushbutton contact is closed momentarily i.e. the maximum display value since the last reset. The display is returned to the normal display after 20 seconds. To reset the peak memory the button must be held closed for approx. 2 seconds. Note: the **Hi** function will be reset 5 seconds after instrument switch on i.e. the **Hi** readings will only start to be stored once 5 seconds have elapsed.

Lo (Valley Memory) - the valley memory (min) operates in a similar way to the peak memory but shows the lowest display value since last reset. To reset the valley memory the button must be held closed for approx. 2 seconds. Note: the **Lo** function will be reset 5 seconds after instrument switch on i.e. the **Lo** readings will only start to be stored once 5 seconds have elapsed.

Hi Lo (Peak Memory/Valley Memory) - the display may be toggled between peak and valley memory indications. To reset the peak or valley memory the button must be held closed for approx. 2 seconds whilst the value to be reset is being viewed.

tARE (Pushbutton Tare) - when the remote pushbutton is closed for 2 to 3 seconds the current input value is tared off. The switch input for this function is usually a momentary action pushbutton switch. Once the display has been tared the "live" display will be interrupted every few seconds by the message **NEtt** to indicate that the reading has been tared and the nett reading is being displayed. Further operation of the pushbutton will cause the display to toggle between gross reading (the display will indicate this by flashing **grOS** periodically) and nett reading (indicated by **NEtt**). Removing power from the instrument will cause the value tared to be lost so another tare operation may be needed.

ZERO (Pushbutton Zero) - allows the load cell system display to be set to zero via momentary operation of the pushbutton. This zero value will be retained even if the power is removed. If the zero operation were to cause the zero to shift beyond the **ZERO rnGE** function limits the preset will be aborted and a **ZERO rnGE Err** message will be seen.

SP.AC (Setpoint Access Only) - allows access to alarm set points only, no other functions, when key switch is open. Allows full access with the key switch/remote input closed. The switch input for this function is usually a key switch. Note: If more than one remote input is set to **SP.AC** then all of those inputs must be closed to allow full access.

no.AC (No Program Access) - inhibits access to functions via pushbuttons and front panel keypads. The remote input requires a contact closure to allow access to functions. The switch input for this function is usually a key switch. If more than one remote input is set to **no.AC** then all of those inputs must be closed to allow access.

CAL.S (Select calibration - not fitted on all software versions) - when the external input is open the calibration selected in function mode will be used. When the external input is closed the next calibration set will be used. e.g. if **CAL. 1** is selected under the **CL.no** function then closing the switch will cause the next calibration (**CAL.2**) to be used. This function may be used to select different load cells, different rigging arrangements etc. This may also be used to change measuring units. e.g. the unit may be calibrated in kg on **CAL. 1** and pounds on **CAL.2**. The **CAL.S** function also allows different decimal points, display rounding, mV/V range and sample rate settings between **CAL. 1** and **CAL.2**

P.SEt (Preset value) - the display value will start at the value selected in the preset value function **P.SEt** (this function appears after the alarm functions, see Function Table). This works in a similar manner to the Zero function except that a preset weight/pressure value can be input. If the preset operation were to cause the zero to shift beyond the **ZERO rnGE** function limits the preset will be aborted and a **ZERO rnGE Err** message will be seen.

btch (Batch) - the batch function does not affect the display value when operated. It does, however affect the retransmission and alarm functions, see the "Batch Operation" chapter for a full description.

CAL (Calibration) - when set to **CAL** the remote input can be used to perform a calibration. See "Calibration" chapter for details.

dULL - display brightness control. The remote input can be used to change the display brightness. When this mode is selected the display brightness can be switched, via the remote input, between the brightness level set at the **brGt** function and the brightness level set at the **dULL** function.

r.i n2 (remote input 2)

Not applicable to this instrument.

r.i n3 (remote input 3)

Not applicable to this instrument.

P.but (P button function)

If the instrument has a front panel P button the function of this button is programmable in the same manner as the remote input. The P button selection will override the selection made under the r.i nP function if both have the same functions selected. Upon reaching the P.but function the choices in the table below are available. Note: To prevent accidental operation of the P button in the tArE,2Er0 or P.SEt functions it is necessary to hold the button in for 2 seconds to perform the selected operation.

Function	Description
nonE	No function
Hi	Peak memory
Lo	Valley memory
Hi Lo	Toggles between peak and valley memory
tArE	Push button tare or nett or gross display function (toggles)
2Er0	Push button zero
CAL.S	Select calibration scaling (operates only whilst button pressed)
P.SEt	Preset value
btch	Batch

When in Lo, Hi or Hi Lo the high/low values held in memory can be reset (i.e. the memory is cleared) by holding the P button pressed for 2 seconds. When the preset (PSEt) is selected and the 2Er0 rnGE function is used the preset will not operate if it would take the display outside the zero range limits. In this case the error message 2Er0 rnGE Err will be seen.

ACCS (alarm relay access mode)

The access mode function ACCS has one of four possible settings namely OFF, EASY, nonE and ALL. If set to OFF the mode function has no effect or alarm relay operation. If set to EASY the "easy alarm access" mode will be activated, see the explanation near the beginning of this chapter. If set to nonE there will be no access to any functions via FUnC mode, entry via CAL mode must be made to gain access to functions. If set to ALL then access to all functions can be made via FUnC mode i.e. there is no need for the CAL mode power up sequence. This function provides an alternative to using the r.i nP function for easy access or no access mode thereby allowing the remote input to be programmed for an alternative use.

SPAC (setpoint access)

Sets the access to the alarm relay set points. The following choices are available:

A 1 - Allows setpoint access to alarm 1 only.
A 1-2 - Allows access to alarms 1 and 2 only.

The remote input function (r.i nP) must be set to SP.Ac for this function to operate . **Note:** Only the setpoints which have been given a value will be accessible e.g. if A 1Hi is set to OFF then there will be no access to the A 1Hi function when SPAC is used.

FrEE SPAC (easy access to free fall alarm values)

When set to on allows the free fall alarm values to be access via "Easy access" mode (see ACCS function). Only the relays selected at the SPAC function above will have easy access. If set to OFF the free fall values are not available in "Easy access" and any changes to the values must be done at the appropriate function e.g. the A 1 FrEE function.

Li n PtS (lineariser points) - see also “Calibration” chapter

Displays and sets the number of calibration scaling points to be used. Choices are 2, 3, 4 or 5 points.

CAL 1, CAL2, CAL3, CAL4 & CAL5 (calibration scaling points) - see “Calibration” chapter.

Displays and sets the independent calibration/scaling points of the input to the display. See “Calibration” chapter for full details of setting up.

ECAL (mV/V calibration) - see “Calibration” chapter

This alternative calibration method allows the known mV/V value of the load cell to be entered as the calibration value.

CAL OFSt (offset calibration) - see “Calibration” chapter

Allows the instrument calibration to be offset by a single point value. This value is added or subtracted across equally the range of the instrument. Press, then release ▲ and ▼ simultaneously to enter the CAL OFSt function.

SEt ZERO (set zero)

Used to set the load cell system to display reading of zero. The set zero point is entered when the load cell is installed and in a no weight condition. To operate the set zero function press, then release, ▲ and ▼ simultaneously. The zero point will be retained even if power is removed.

ZERO rnGE (zero range)

The zero range function allows a limit value to be set above which the display will not zero i.e. if a zero operation is attempted via the P button, remote input or set zero function when the display value is greater than the zero range setting the display will refuse to zero and give a ZERO rnGE Err message. For example if the zero range setting is 10 the instrument will only respond to a zero operation if the display reading at the time is between -10 and 10. If the zero range function is not required it can be set to OFF by pressing the ▲ and ▼ buttons simultaneously at this function. When switched off the instrument can be zeroed no matter what the display value.

Note that the instrument keeps track of the value being zeroed at each operation, when the total amount zeroed from repeated operations becomes greater than the zero range value the instrument will reject the zero operation and a ZERO rnGE Err message will be seen. If repeated zero operations are required the ZERO rnGE function should be set to OFF or alternatively the tARE operation could be considered.

CAL ZERO (calibration zero)

The calibration zero can be used to select a zero point other than the display zero as the reference for the ZERO rnGE function. The calibration zero function is used only with the ZERO rnGE function. For example if the CAL ZERO operation is carried out with a display reading of 500 and a ZERO rnGE reading of 10 the zero range function will allow the display to zero only if the current display reading is between 490 and 510.

AUtO ZERO (auto zero)

The LD can be set to automatically re-zero its reading if the display is within the range set by the AUtO ZERO function (for the set number of samples, see A.2. Cnt). For example if the auto zero is set to 10 then the instrument will re-zero itself whenever the display is within 10 units of zero for the set number of samples i.e. between -10 and 10. The auto zero can be set within the range 0 to 100 display units. Setting auto zero to 0 will disable the function and the instrument will not re-zero automatically.

The time taken to auto zero depends upon the sample rate and the sample count (A.2. Cnt) setting.

A.2. Cnt (auto zero sample count)

Displays and sets the number of samples to be taken for the auto zero function. For example if set to 50 then if the display is within the auto zero setting (e.g. 10) for 50 samples then the instrument will re-zero. The sample count may be set within the range of 10 to 1000.

A 1 (alarm 1 operation mode)

The alarm mode function allows the selected alarm relay to follow either the live input value (Li uE), the tare function (tARE), the peak hold function (P.HLd), the display hold (d.HLd), the peak memory (Hi) or valley memory (Lo) or the display value (di SP). For settings other than di SP operation a remote input or P button must also be set to the function required. See “Batch operation” chapter for description of batch mode operation.

Example 1- A1 is set to Li uE

With the alarm function set to Li uE the alarm relay operation will follow the live input based on the electrical inputs and scaling values used when the instrument is calibrated. If the value on the display has been altered from the calibration scaling values e.g. via a tare operation then the alarm operation will ignore the display changes caused by the tare operation. For example if A 1Hi is set to 100 then

alarm relay 1 will activate if the display reading goes to 100 or above. If a tare operation is now carried out when the display value is 20 then the tare will cause the display value for that input to fall to zero. The alarm relay will now activate at display value of 80 or above since the live electrical input for a tared display of 80 is the same as it was for a value of 100 prior to the tare operation.

Example 2 - A 1 is set to tArE and r.I nP (remote input special function) is set to tArE.

Assume that A 1H, is set to 100 and that the instrument is given a remote tare when the display reads 40. Once the instrument is tared the display will read 0. Alarm relay 1 is set to follow the tare value and will therefore operate when the (nett) display becomes greater than 100.

Example 3 - A 1 is set to P.HLd and r.I nP is set to P.HLd

If A 1H, is set to 100 then it will operate whenever the display shows a value over 100. If the peak value exceeds 100 when the remote input is closed then alarm 1 will activate and will not reset until the remote input opens **and** the display value falls below 100.

Example 4 - A 1 is set to d.HLd and r.I nP is set to d.HLd

If A 1Lo is set to 5 then it will operate whenever the display shows a value below 5. If the display hold remote input is operated at a value above 5 then the alarm will not activate whilst the remote input remains closed, no matter what the electrical input. Likewise if the remote input is operated at a value below 5 then alarm will not de activate until the remote input is opened and the display value goes above 5.

Example 5 - A 1 is set to H, and r.I nP is set to H,

If A 1H, is set to 50 and the peak memory value becomes greater than 50 then alarm relay 1 will be constantly activated at this point and will only become de activated when the memory is reset at a value below 50. The memory can be reset by holding the remote input closed for 2-3 seconds. Note that in this case the alarm can be activated even if the display value is less than the alarm setting, this is because the alarm is activated by the value in peak memory rather than the display value.

Example 6 - A 1 is set to Lo and r.I nP is set to Lo

If A 1Lo is set to 280 and the valley memory value becomes less than 280 then alarm 1 will be constantly activated at this point and will only become de activated when the memory is reset at a value above 280. The memory can be reset by holding the remote input closed for 2-3 seconds. Note that in this case the alarm can be activated even if the display value is greater than the alarm setting, this is because the alarm is activated by the value in valley memory rather than the display value.

Example 7- A1 is set to di SP

With the alarm function set to follow the display value the alarm relay will activate whenever the display shows an alarm condition, irrespective of any alteration to the original scaling values due to a tare, zero, peak memory etc. operation. Thus if A 1Lo is set to 50 and A 1H, is set to 100 then alarm relay 1 will activate whenever the value shown on the display falls below 50 or goes above 100. If the r.I nP function is now set to H, (peak memory) and the peak memory value is 100 or greater then the alarm relay will be activated whenever the remote input is used to display the H, value, irrespective of the live input at the time.

A2 (alarm relay 2 operation mode)

As per A 1 function but operates relay 2.

Lo di SP (low overrange limit value)

The display can be set to show an overrange message if the display value falls below the Lo di SP setting. For example if Lo di SP is set to 50 then once the display reading falls below 50 the message -or- or the display value (see di SP function) will flash instead of the normal display units. This message can be used to alert operators to the presence of an input which is below the low limit. If this function is not required it should be set to OFF by pressing the ▲and ▼ buttons simultaneously at this function.

HI 9H di SP (high overrange limit value)

The display can be set to show an overrange message if the display value rises above the HI 9H di SP setting. For example if HI 9H di SP is set to 1000 then once the display reading rises above 1000 the message -or- or the display value (see di SP function) will flash instead of the normal display units. This message can be used to alert operators to the presence of an input which is above the high limit. If this function is not required it should be set to OFF.

di SP (display overrange warning flashing mode)

This function is used in conjunction with the Lo and HI 9H di SP functions. The di SP function can

be set to FLSH or -or-. If the value set at the Lo or HI 9H dI SP function is exceeded and the dI SP function is set to FLSH then the display value will flash on for approximately one second and off for approximately one second as a warning. If the value set at the Lo or HI 9H dI SP function is exceeded and the dI SP function is set to -or- then the -or- message will flash on for approximately one second and off for approximately one second as a warning. The warning flashes will cease and the normal display value will be seen when the value displayed is higher than the low limit and lower than the high limit.

bAud (set baud rate)

Select from 9600. 4800. 2400. 1200. 600. 300. 19.2 or 38.4.

PrtY (set parity)

Select parity check to either NONE, EUEN or Odd.

Addr (set unit address for polled (POLL) mode (0 to 31))

Allows several units to operate on the same RS485 interface reporting on different areas etc. The LD Addr function must match the XT4-WT "Unit Address" function value for communication between the two units.

The unit address ranges from 0 to 31 (DEC) but is offset by 32 (DEC) to avoid clashing with ASCII special function characters (such as <STX> and <CR>). Therefore 32 (DEC) or 20 (HEX) is address 0, 42 (DEC) or 2A (HEX) addresses unit 10.

SEr.1 tYPE (serial output)

Options are: NONE (no output), r232 (RS232), r485 (RS485) or 1 20 (serial current loop). For communication with the XT4-WT this function must be set to r485.

SEr.2tYPE (optional serial output)

This function is applicable only when the optional second serial communications port is fitted. Options are: NONE (no output), r232 (RS232), r485 (RS485) or 1 20 (serial current loop). For communication with the XT4-WT this function must be set to r485.

4 .1 Error Messages

CAL ERR - This indicates that one of the calibration points has caused an overrange error in the analog to digital converter. Change the mV/V (**RNGE** function) setting to a higher value and try calibration again.

SPAN ERR - This indicates that the calibration points entered were too close together. Either calibrate again with the points further apart or change the mV/V setting to make the instrument more sensitive. The calibration points need to be at least 10% of full scale apart.

AdC GAIN Err - This indicates that when an **ECAL**/**ESCL** method of calibration has been used the mV/V figure entered at the **ECAL** function is greater than or too close to the mV/V range entered at the **RNGE** function. The **RNGE** function should be set to be equal the **ECAL** value or to the next available value higher than the **ECAL** value. Note that the **AdC GAIN Err** message may be seen if the **ECAL** value is equal to or slightly less than the **RNGE** setting, if this is the case use a higher **RNGE** setting.

ZERO RNGE Err - This indicates that an attempt to zero or preset a value on the display has failed due to the **ZERO RNGE** function value being exceeded. Check the **ZERO RNGE** function setting, if this is set at the required figure and the display value seems to be within the zero range limits then it could be that previous preset or zero operations has caused the limit to be exceeded.

"**----**" - This display indicates that the actual mV input is higher than the value set at the **RNGE** function. Check the **RNGE** function setting and if this is OK then check the actual mV input from the cell. Note that the **RNGE** setting is nominal and so the "**----**" message may occur just before or just after the limit is reached. This message could also indicate an open circuit in the wiring or incorrect wiring from the XT4 to the load cell.

"**-or-**" - This display indicates an overrange reading. This could be due to the instrument not being able to display the number because it is too large e.g. above **9999** on a 4 digit display. Alternatively it could mean that the **Lo** or **HI GH dI SP** limit value has been exceeded and the instrument is showing a warning message.

Display value flashes on and off - This means that the **Lo** or **HI GH dI SP** limit value has been exceeded and the instrument is showing a warning message.

NO ACCS - This display mean that function access has been denied. This will be due to either one of the remote input functions (**F.I NP** ,**F.I N2** or **F.I N3**) being set to **No.Ac** or that the **ACCS** function being set to **NONE**. To override the remote input functions and gain access you can either place a short circuit between the appropriate remote input and ground or power up the instrument in **CAL** mode (see "Explanation of functions" chapter). To override the **ACCS** function you must power up in **CAL** mode.

NO SPAC - This display mean that function access has been denied. This will be due to either one of the remote input functions (**F.I NP** ,**F.I N2** or **F.I N3**) being set to **SP.Ac** or the **ACCS** function has being set to **EASY** and all alarm setpoints have been set to **OFF**. To override the remote input functions and gain access you can either place a short circuit between the appropriate remote input and ground or power up the instrument in **CAL** mode (see "Explanation of functions" chapter). To override the **ACCS** function you must power up in **CAL** mode.

Returning to normal measure mode

When the calibration has been completed it is advisable to return the instrument to the normal mode (where calibration functions cannot be tampered with).To return to normal mode, turn off power to the instrument, wait a few seconds and then restore power.

5 Function Table

Initial display	Meaning of display	Next display	Default Setting	Record Your Settings
A 1Lo	Alarm relay 1 low setpoint value	Setpoint value or OFF	OFF	
A 1H,	Alarm relay 1 high setpoint value	Setpoint value or OFF	OFF	
A2Lo	Alarm relay 2 low setpoint value	Setpoint value or OFF	OFF	
A2H,	Alarm relay 2 high setpoint value	Setpoint value or OFF	OFF	
A 1HY	Alarm relay 1 hysteresis	Hysteresis value in measured units	1	
A2HY	Alarm relay 2 hysteresis	Hysteresis value in measured units	1	
A 1tt	Alarm relay 1 trip time	No of seconds before relay trips	0	
A2tt	Alarm relay 2 trip time	No of seconds before relay trips	0	
A 1rt	Alarm relay 1 reset time	Reset time in seconds	0	
A2rt	Alarm relay 2 reset time	Reset time in seconds	0	
A 1n.o or A 1n.c	Alarm relay 1 action N/O or N/C	A 1n.o or A 1n.c	A 1n.o	
A2n.o or A2n.c	Alarm relay 2 action N/O or N/C	A2n.o or A2n.c	A2n.o	
A2.SP or A2.t1	Setpoint or trailing alarm operation for relay 2	A2.SP or A2.t1	A2.SP	
brgt	Display brightness	1 to 15	15	
dull	Remote display brightness switching	0 to 15	1	
A 1FFEE	Alarm 1 free fall value	Value in memory	0	See following table
A2 FFEE	Alarm 2 free fall value	Value in memory	0	See following table
P.SEt	Preset value	Value in memory	0	
CL.no	Cell calibration number selection	CAL. 1 or CAL.2	CAL 1	
Function below are accessible only via CAL mode				
brgt AutO	Automatic brightness control	on or OFF	on	
brgt HI gH	Automatic high brightness level	1 to 63	63	
brgt Lo	Automatic low brightness level	1 to 63	10	
drnd	Display rounding selects resolution	Value in memory	1	
dCPt	Display decimal point	Decimal point position (e.g. 0 .0. 10.02 or 0.003)	0	
FLtr	Digital filter range 0 to 8	0 to 8 (8=most filtering)	3	
rAtE	Sample rate (samples per second)	1. 2 or 5	1	
rnGE	Full scale mV/V range	2.0 . 4.0 . 8.0 or 16.0	2.0	
r.1 nP	Remote input 1	nonE . P.HLd . d.HLd . H, . Lo . H, Lo . tArE . 2Er0 . SP.Ac . no.Ac . CAL.S . P.SEt . btch . CAL or dull	nonE	
r.1 n2	Not applicable to this instrument			

Initial display	Meaning of display	Next display	Default Setting	Record Your Settings
r.1 n3	Not applicable to this instrument			
P.but	P Button function	none, Hi, Lo, Hi Lo, tArE, 2Er0, CAL.S, P.SEt or btch	none	
ACCS	Access mode	OFF, EASY, none or ALL	OFF	
SPAC	Setpoint access	A 1 or A 1-2	A 1	
FrEE SPAC	Easy access to free fall alarm value	on or OFF	OFF	
Li n PtS	Linearisier points	2, 3, 4 or 5	2	
CAL 1	First scaling point	Live reading	n/a	
CAL2	Second scaling point	Live reading	n/a	
ECAL	Calibration by entering mV/V & scale values	See calibration chapter	n/a	
CAL OFSt	Offset to calibration	Live reading	n/a	
SEt 2Er0	Set zero	See calibration chapter	n/a	
2Er0 rn9E	Zero range limit	Limit value or OFF	1000	
CAL 2Er0	Zero point calibration	0	n/a	
AUtO 2Er0	Auto zero range	0 to 100	0	
A.2. Cnt	Auto zero samples	10 to 1000	10	
A 1	Alarm mode for relay 1	Li uE, tArE, btch, P.HLd, d.HLd, Hi, Lo or di SP	Li uE	
A2	Alarm mode for relay 2	Li uE, tArE, btch, P.HLd, d.HLd, Hi, Lo or di SP	Li uE	
Lo di SP	Display low overrange	Limit value or OFF	OFF	
HI 9H di SP	Display high overrange	Limit value or OFF	OFF	
di SP	Overrange display warning flashing mode	FLSH or -or-	FLSH	
bAUd rAtE	Baud rate	300, 600, 1200, 2400, 4800, 9600, 19.2 or 38.4	9600	
PrtY	Parity select	none, EUEn or Odd	none	
Addr	Set unit address for poll mode	0 to 31	0	
SEr. 1tYPE	Serial output type	none, r232, r485 or i 20	r485	
SEr.2tYPE	Optional serial output type	none, r232, r485 or i 20	r485	

6 Batch operation

The remote input **r.1 inP** or the **P** button function **P.but** may be programmed to operate in batch (**batch**) mode. Operation of any of these inputs in batch mode will have no effect on the displayed value (i.e. the total load or weight is always visible) but can be made to affect the method in which the setpoint alarm relays and retransmission options operate.

Alarm operation in batch mode

In addition to setting the required remote input or **P** button function to **batch** the alarm mode function for the required alarm operation mode must also be set to **batch**. The alarm operation mode functions are **A 1** for alarm 1, **A2** for alarm 2 etc.

When in batch mode the selected alarm may be set to operate at a given batch figure i.e. **A 1Lo** or **A 1H,** can be allocated batch values.

Example

Assume that the panel meter is scaled to read in kilograms up to a maximum of 1000kg. **r.1 inP** is set to **batch** and **A 1** is also set to **batch**. **A 1H,** is set to **100**, **A 1Lo** is set to **OFF** and **A 1HY** is set to **0**. If the display reading is **300** when the remote input is operated then the display will not alter but alarm 1 relay will now activate when the display reading increases by the batch value of **100** i.e. at a value of **400** or above.

The effect on alarm settings for the same example is shown in the table below.

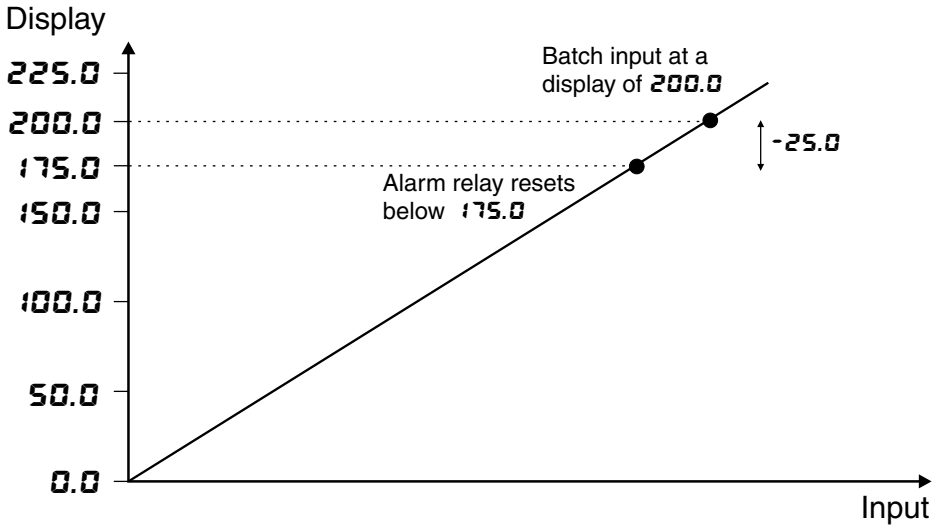
Alarm Settings with **A 1HY=0**	Alarm deactivates	Alarm activates
A 1Lo = **OFF**, **A 1H,** = **100**	At values below **400**	At values above **400** i.e. **300** + the batch value
A 1Lo = **OFF**, **A 1H,** = **-100**	At values below **200**	At values above **200**
A 1Lo = **100**, **A 1H,** = **OFF**	At values above **400**	At values below **400**
A 1Lo = **-100**, **A 1H,** = **OFF**	At values above **200**	At values below **200**
A 1Lo = **50**, **A 1H,** = **100**	At values between **350** &**400**	At values below **300** or above **400**

The effect of a hysteresis setting (setting **A 1HY** to **10** in this example) is shown in the table below.

Alarm Settings with **A 1HY= 10**	Alarm deactivates	Alarm activates
A 1Lo = **OFF**, **A 1H,** = **100**	At values below **390**	At values above **400**
A 1Lo = **OFF**, **A 1H,** = **-100**	At values below **190**	At values above **200**
A 1Lo = **100**, **A 1H,** = **OFF**	At values above **410**	At values below **400**
A 1Lo = **-100**, **A 1H,** = **OFF**	At values above **210**	At values below **200**

Example

Assume that **A 1H** is set to **-25.0** and that the instrument is given a remote batch input when the display reads **200.0** i.e. the alarm relay is activated at this stage. The display does not alter when a batch input is applied but alarm 1 will not reset until the display goes below **175.0** (200 minus 25.0). i.e. once the batch input is applied the display value must decrease by the alarm value before the alarm will reset.



A practical application for this example would be in filling containers from a hopper. The display would continue to show the weight remaining in the hopper and the alarm relay could be set to open 25.0 units (e.g. kilograms) after the batch input is operated. In this example the alarm relay is wired in series with a pump relay, the alarm relay is used to control the pump relay and halt the flow of product once the batch weight of 25kg has been removed from the hopper. If other alarm relays are fitted they could be set for non batch operation and used to give an alarm to warn of the hopper emptying and/or over filling.

7 Calibration

To enter the CAL (calibration) mode a follow the method described on page 8.

The calibration procedures allow four different methods of calibration scaling to suit various applications.

Method 1- two, three, four or five calibration points are independently set from “live” inputs. The ability to set each point individually is useful where the calibration is being carried out on site and delays are experienced during the calibration procedure (e.g. filling tanks etc.).

If two points are used the display will be linear. If more than two points are used the display can be made to follow a linearisation curve. The number of points to be used is set at the L in PtS function.

Method 2 - allows entry of the mV/V figure of the load cell being used together with a scaling value i.e. no live input is required to obtain the scaling points. Note that this method is only applicable if two linearisation points are set.

Method 3 - allows a single point offset to be introduced.

Method 4 - allows a simple pushbutton calibration from a live input. This method is particularly suited to item counting applications. Note that this method is only applicable if two linearisation points are set.

Calibration - method 1, calibration by entering in known values

Method 1 uses two, three, four or five different live input values to calibrate the instrument.

1. Step through the functions until the display indicates L in PtS and use the ▲ or ▼ pushbutton to select the number of calibration scaling points required.

2. Step through the functions until the display indicates CAL 1. Now press, then release, the ▲ and ▼ buttons simultaneously to enter the calibration functions. The display will now indicate CAL 1 (1st calibration point) followed by a “live” reading. Apply a known input to the instrument of nominally 0% (this value is not critical and may be anywhere within the measuring range of the instrument). For example you could arrange that the load or pressure is zero at this time. When the live reading has stabilised press the F button.

3. The display will indicate SCL 1 (scale 1) followed by the scale value in memory. Now use the ▲ or ▼ button to obtain the required scale value.

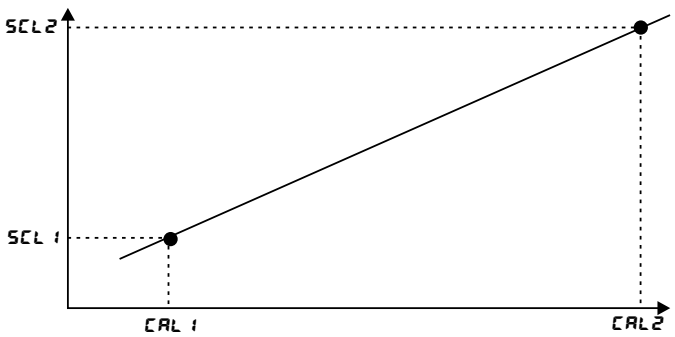
4. Press the F button, the display will now indicate CAL End (indicating that calibration of the first point is complete).

5. The display will now indicate CAL 2 (2nd calibration point). If you do not wish to enter the second point at this stage then press and release the F button until the FUNC End message is seen. If you wish to enter the second point at this stage press the ▲ and ▼ buttons simultaneously.

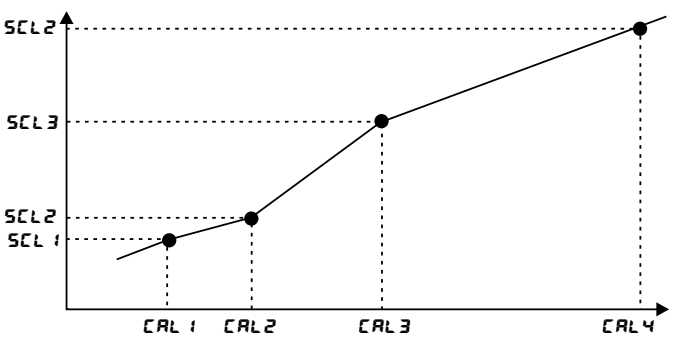
6. The display will now indicate CAL 2 (2nd calibration point) followed by a “live” reading. Apply an input greater than that used for CAL 1 (again this value is not critical, but there needs to be a change of at least 10% of the capacity of the load cell between points).

7. When the reading has stabilised, press the F button, the display will now read SCL 2 (scale 2) followed by the second scale value in memory. Use the ▲ or ▼ button to obtain the required scale value. Press the F button, the display will now read CAL End (indicating that calibration of the second point is complete).

8. Repeat the process for the remaining calibration points.

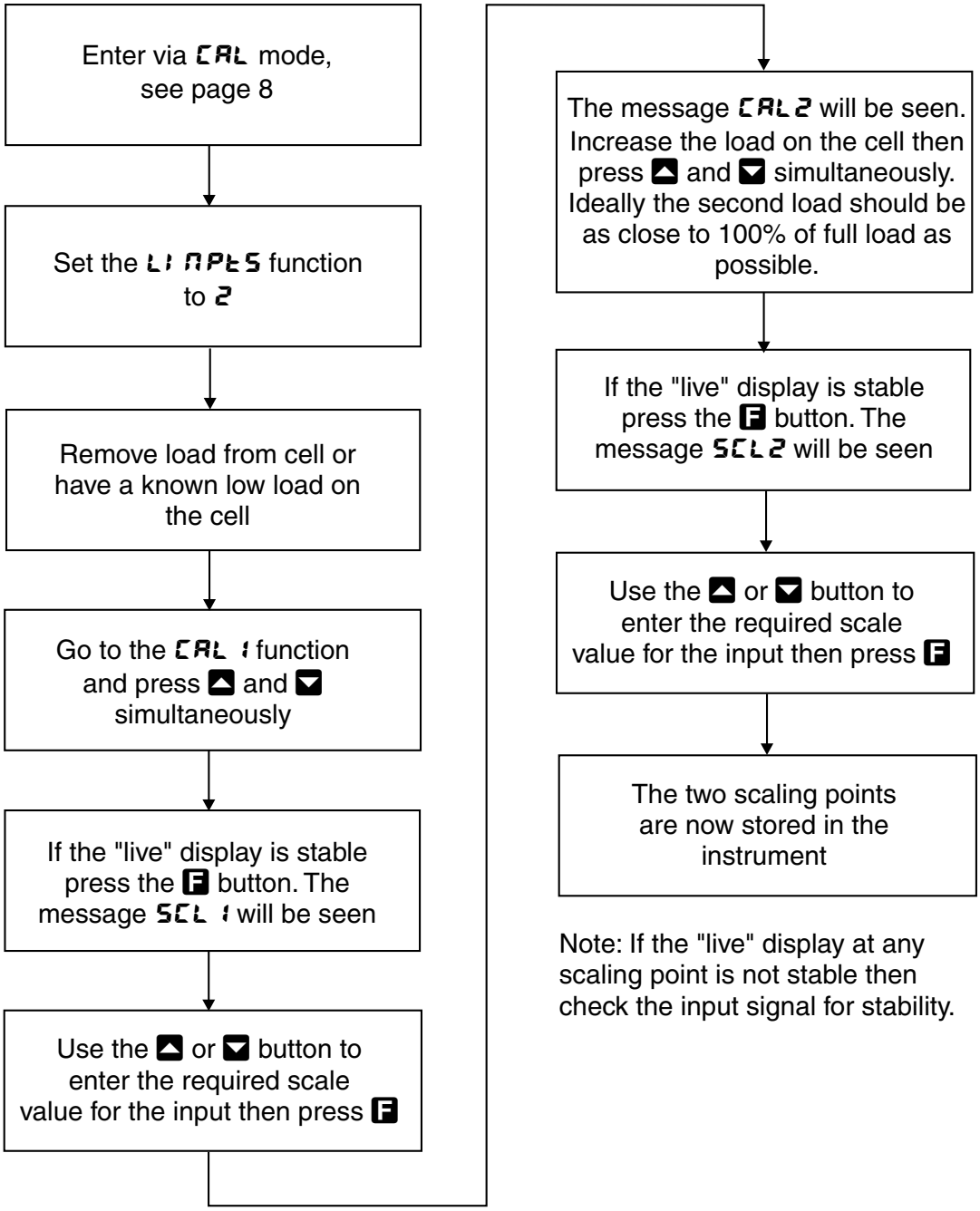


Two scaling points - display is linear



More than two scaing points - linearised display

Example - Scaling using two points



Calibration - method 2, calibration by entering the mV/V value

Note: this method can only be used if the LIN PTS function is set to 2.

This alternative calibration method allows the known mV/V value of the load cell to be entered as the calibration value. The value is entered to 3 decimal places, any number from 9.999 to -1.999 mV/V can be input. If the required value is outside this range then use a convenient available value and alter the ESCL value to compensate.

1. In calibration mode step through the functions until the ECAL display is seen.

2. Press the ▲ and ▼ buttons simultaneously to get a display of the current mV/V setting. Use ▲ or ▼ to alter this value to the mV/V output of the cell being used.

3. Press and release the F button, the display will now show ESCL followed by the current scale value.

4. Use ▲ or ▼ to alter this value if required (this value is the reading required at the maximum rated

load for the cell e.g. for a 100kg load cell required to display directly in kg set the ESCL value to 100 (or 100.0 etc.) depending on the decimal point setting).

5. Press then release the F button the display will show ECAL End and the instrument moves on to the next function (CAL OFSt).

6. Once the ECAL value has been entered you must operate the SEt ZERO function described below or use the P button or remote input ZERO function to zero the display at no load/pressure. This zeroing process will remove the effects of any no load offset outputs present at the sensor.

If using the two point calibration method (method 1), as previously described, the mV/V value is automatically calculated and may be viewed at the ECAL function. The ECAL and ESCL values may be recorded and re-entered to re-scale the instrument to the same load cell at a later date.

See "Error messages" section if any error message is seen when performing the ECAL/ESCL calibration.

SEt ZERO (set zero)

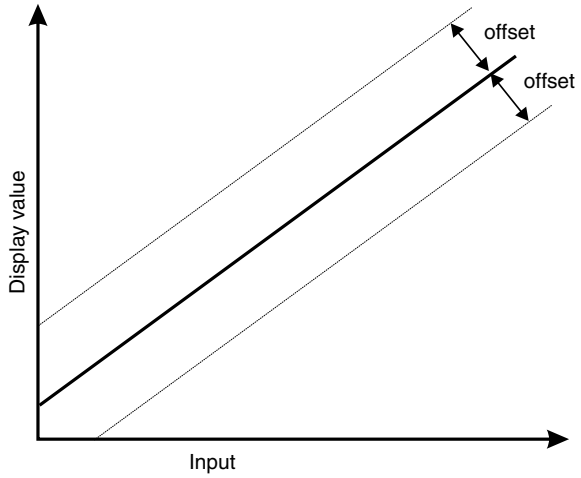
Used to set the load cell system to display reading zero. The set zero point is entered when the load cell is installed and in a no weight condition.

In calibration mode step through the functions until the SEt ZERO display is seen. Press the ▲ and ▼ buttons simultaneously to get a “live” display. Pressing and releasing the F button gives a ZERO End display.

Calibration - method 3, Offset Calibration

It is sometimes necessary to make a single point adjustment to the calibration, it may be done using this function. Note the value set in this function will add or subtract the value equally across the measurement range of the instrument.

Enter the calibration mode as described above, but do not enter CAL 1 or CAL2 setup functions. Step through the functions until the display indicates OFSt, Now press the ▲ and ▼ buttons simultaneously to enter the offset mode. The display will now indicate OFSt (offset) followed by the “live” reading. *Apply a known input to the instrument. When the reading has stabilised press the F button. The display will indicate



SCLE (scale) followed by the value set in memory. Now press the ▲ or ▼ button to obtain the required display value for this input. Press the F button the display will now indicate OFSt End (indicating that the offset calibration is complete).

Calibration - method 4, Remote Input Calibration

Note: this method can only be used if the Lin PtS function is set to 2.

The remote input calibration method allows simple, live input, calibration suitable for situations requiring frequent calibration such as in item counting by weight applications. In this method of calibration a remote input function (e.g. F.I nP) is assigned to CAL, closure of the remote input then initiates the calibration process. The procedure is as follows:

1. Assign a remote input (e.g. via F.I nP function) to CAL.

2. Assign a different remote input or the P button to ZERO and zero the display when it is in a no load condition.

3. Place a weight (or known number of items) on the weighing platform then operate the CAL remote

input i.e. close the switch.

4. The message SCLE will appear on the display followed by the previous scale value in memory. Use the ▲ or ▼ button to alter this reading to the value required for this load.

5. Press, then release, the F button, the message CAL End will be seen and the instrument will return to normal measure mode.

Note that the P button may be used to abort the calibration process once beyond step 3.

Returning to the normal measure mode

When the calibration procedure has been completed it is advisable to return the instrument to the normal mode (where calibration functions cannot be tampered with). To return to the normal mode, turn off power to the instrument, wait a few seconds and then restore power.

Note:

* “Apply a known input” refers to either a simulated or real input. Since the LD is intended for use with various 4 or 6 arm strain gauge transducers, this input may take the form of a weight (load cell applications), applied force (torque transducers), an air or hydraulic pressure input (pressure transducers), or a suitable electronic simulator etc.

8 Specifications

8 .1 Technical Specifications

See XT4-WT manual for further specifications.

Input types:	RS485 serial comms. from XT4-WT
Baud rate:	300, 600, 1200, 2400, 4800, 9600, or 19.2 programmable
Microprocessor:	MC68HC11 CMOS
Ambient Temperature:	-10 to 60°C
Humidity:	5 to 95% non condensing
Power Supply:	AC 240V,110V 50/60Hz or 15 to 24VDC non isolated DC 12 to 48VDC isolated Supply type is factory configured
Outputs:	2 x Setpoint relays, form A, rated 5A at 240VAC 5V regulated or 24V unregulated sensor supply 25mA max.
Power Consumption:	AC supply 4 VA max, DC supply, consult supplier (depends on display type & options)

8 .2 Physical characteristics

Models LD-RS-X-100E4 100mm 4 digit electromagnetic	Case size (mm) = 450 x 250 x 155 Weight: = 8.5 kgs Mounting hole locations - see “Mechanical Installation” chapter
Models LD-RS-X-100E5 100mm 5 digit electromagnetic	Case size (mm) = 520 x 250 x 155 Weight: = 9.5 kgs Mounting hole locations - see “Mechanical Installation” chapter
Models LD-RS-X-100E6 100mm 6 digit electromagnetic	Case size (mm) = 650 x 250 x 155 Weight: = 10.5 kgs Mounting hole locations - see “Mechanical Installation” chapter
Model LD-X-X-100R4 100mm 4 digit LED	Case size (mm) = 450 x 250 x 155 Weight: = 8.5 kg Mounting hole locations (mm) - see “Mechanical Installation” chapter
Model LD-X-X-100R6 100mm 6 digit LED	Case size (mm) = 650 x 250 x 155 Weight: = 10.5 kg Mounting hole locations - see “Mechanical Installation” chapter
Model LD-X-X-180R4 178mm 4 digit LED	Case size (mm) = 850 x 360 x 130 Weight: = 12 kg Mounting hole locations - see “Mechanical Installation” chapter

9 Guarantee and Service

The product supplied with this manual is guaranteed against faulty workmanship for a period of 2 years from the date of dispatch.

Our obligation assumed under this guarantee is limited to the replacement of parts which, by our examination, are proved to be defective and have not been misused, carelessly handled, defaced or damaged due to incorrect installation. This guarantee is VOID where the unit has been opened, tampered with or if repairs have been made or attempted by anyone except an authorised representative of t he manufacturing company.

Products for attention under guarantee (unless otherwise agreed) **must be returned to the manufacturer freight paid** and, if accepted for free repair, will be returned to the customers address in Australia free of charge.

When returning the product for service or repair a full description of the fault and the mode of operation used when the product failed must be given.

In any event the manufacturer has no other obligation or liability beyond replacement or repair of this product.

Modifications may be made to any existing or future models of the unit as it may deem necessary without incurring any obligation to incorporate such modifications in units previously sold or to which this guarantee may relate.

This product is designed and manufactured in Australia.