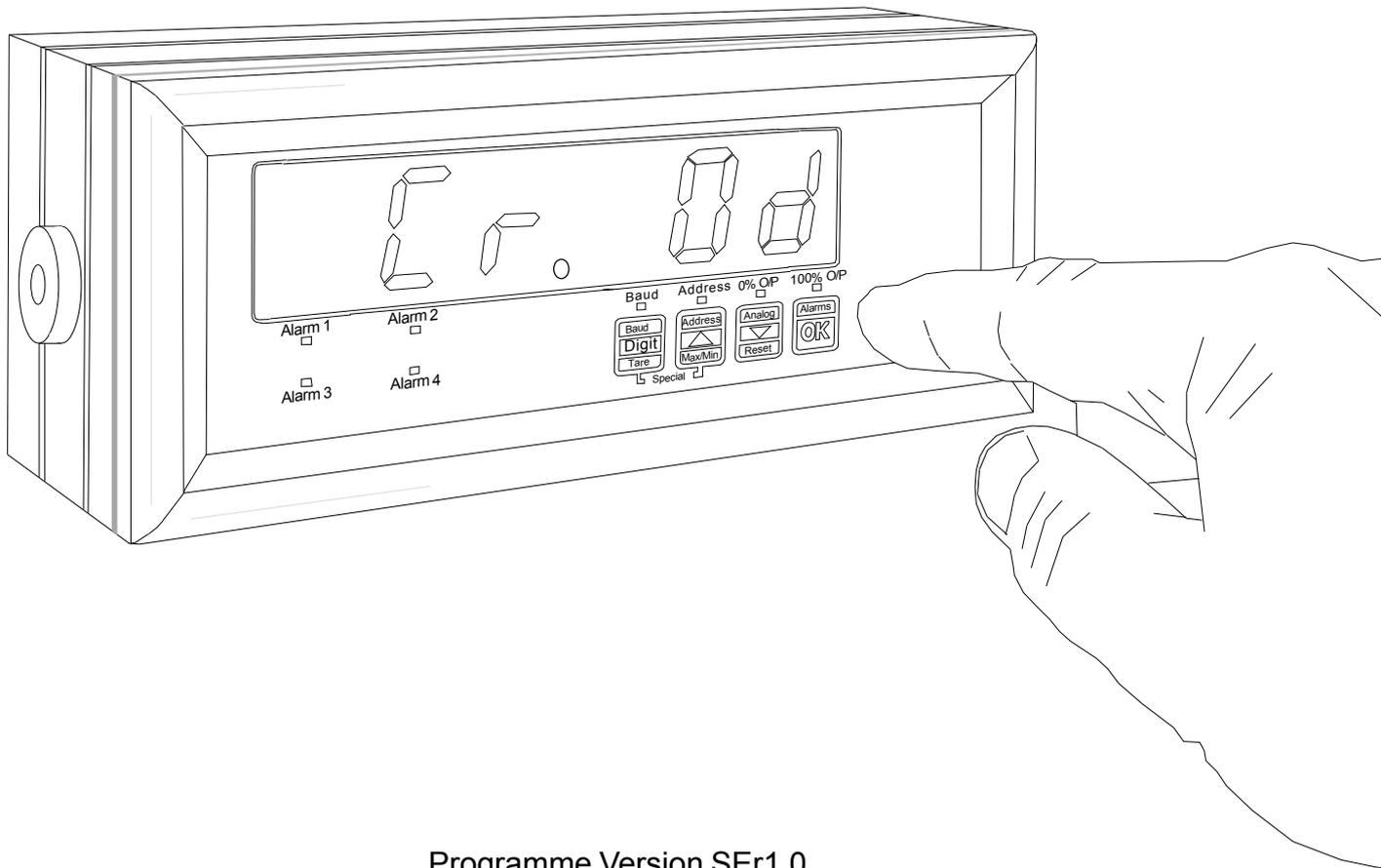


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Model S1861

Display accepting ASCII RS232, RS422, RS485 & 20mA TTY
IP65 All-round Sealed Enclosure
Dual alarm relays optional



Programme Version SEr1.0



Document Ref:Anfield\manuals\english\S1861

Date : 29/09/2003

Rev. 0

Notes

Notes

Alphabetic Index

Warning - read first please	2
Addresses and configuration	8
Alarms -failsafe action	16
Alarms : configuration and adjustment	16
ASCII Characters	5
Baud rate	7
Before you start...	4
Characters	5
Configuration of the termination character	13
Configuration of the displayed characters	12
Configuration of the rejected characters	11
Connection examples	6
Connections	6
Declaration of Conformity	25
Description	3
Fault finding	19
Flashing command	5
Hysteresis and adjustment	16
Idling mode	10
Introduction	1
Inverting the data logic	18
Language	18
List of modifications and revisions	20
Parity	9
Peak and Valley detection	15
Position of Decimal point	14
Programme version	4 & 20
Rejection of unwanted characters	11
Resetting the display	15
Specifications	17
String termination characters	13
Tare command	15

Introduction

Please contact us if you need help, if you have a complaint, or if you have suggestions to help us improve our products or services for you.

If you contact us about a product you already have, please tell us the full model number and serial number, so that we can give you accurate and fast help.

This product has a 2 year warranty. We will put right or replace any meter which is faulty because of bad workmanship or materials. This warranty does not cover damage caused by misuse or accident.

IMPORTANT

If this equipment is important to your process, you may want to buy a spare to cover possible failure or accidental damage in the future.

This is because at some times, for example during our factory shutdown periods, you may have to wait several weeks for an equivalent replacement. Or, we may have no stock at the time you urgently need it.

You may also need to pay extra carriage charges if you want a fast, guaranteed courier service. Warranty repairs or replacements are normally returned with a standard courier service.

We do not offer any compensation for losses caused by failure of this instrument.

If you do not agree with these conditions, please return this item now, in unused, clean condition, in its original packaging and we will refund the purchase price, excluding any carriage paid.

We thought you'd prefer to know about possible delays and extra charges now, rather than during a panic.

We always try to improve our products and services, so these may change over time. You should keep this manual safely, because future manuals, for new designs, may not describe this product accurately.

We believe these instructions are accurate, and that we have competently designed and manufactured the product, but please let us know if you find any errors.

Warnings



Please carefully read all warnings and ONLY install the meter when you are sure that you've covered all aspects.

- * Connect the meter according to current IEE regulations and separate all wiring according to IEC1010.
- * Power supplies to this equipment must have anti-surge (T) fuses at 125mA for 230V supply, 250mA for 110V supply or 1A for DC supplies in the range 11-30VDC.
- * Check that the model number and supply voltage suit your application before you install the meter.
- * Don't touch any circuitry after you have connected the meter, because there may be lethal voltages on the circuit board.
- * Only adjust on-board switches or connections with the power turned off.
- * Make sure all screw terminals are tight before you switch the meter on.
- * Only clean the meter with a soft damp cloth. Only lightly dampen with water. Do not use any other solvents.

***Safety FirstDon't assume anything..... Always double check.
If in doubt, ask someone who is QUALIFIED to assist you in the subject.***

Description

The S1861 accepts numeric serial ASCII data and displays it on a 6 digit LED readout. The digits are 25mm high.

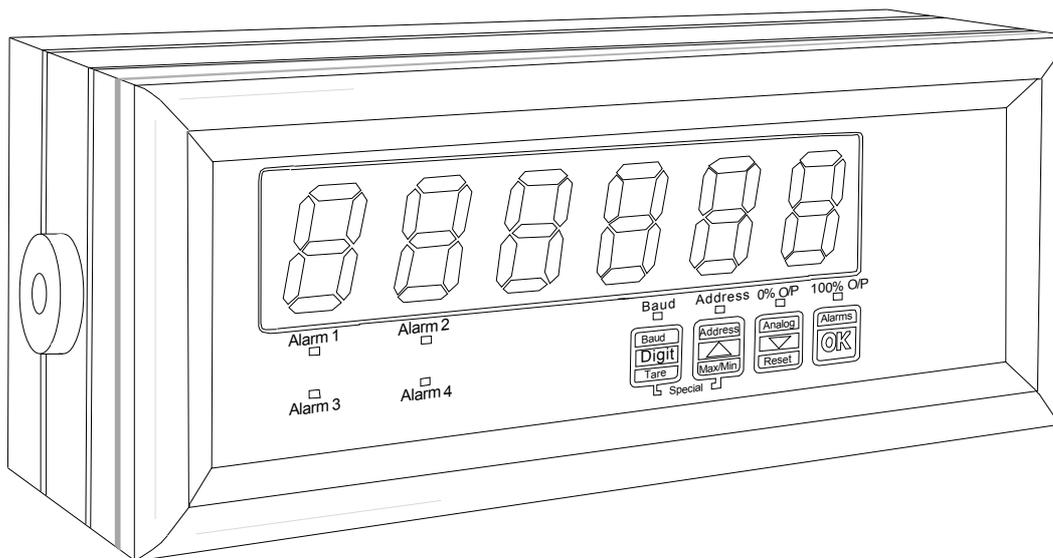
It can give optional alarm relay outputs, which can be generated by comparing the numeric incoming data to adjustable high or low limits.

It can also accept a limited range of alphabetic characters - limited by their ability to be represented accurately on a 7 segment type display.

Its string extraction ability allows the display to select defined parts of a datastring for display, whilst rejecting surrounding data.

The front panel comprises of a 6 digit LED display, including decimal points and minus sign.

The alarms each have a red LED annunciator - at present only 2 alarms are active when the alarm option is installed.



All adjustments are made with front panel pushbuttons.

A lockout connector allows you to disable the front panel programming buttons, to prevent loss of calibration. If the lockout connector is connected to the Common connector (unlocked), the display won't perform parity checking or addressing. Every character which arrives will be displayed as it arrives - a useful feature for diagnostic tests.

The characters may be made to flash if you include CtrlF in the datastring.

Before you start ...

First, please check that the display will suit all the requirements of your application. Page 4 has some important warnings - please check that all warnings are covered.

Next, set the jumpers on the back of the display to suit the data type you'll be using. See page 6.

Remove the rear screws and slide the case apart. Connect the signal and power cables to the appropriate screw terminal connectors. See page 6 to check that you are using the correct terminals.

Apply power, and confirm that the meter illuminates all segments for a few seconds and then shows the software version "SEr. 1.X" briefly (The X numeral depends on version).

Unlock the display so you can change the meter's settings - see connections page.

Set baud rate, address, parity etc. to suit your system. Now, if you send an ASCII character of the correct baud rate, the meter should respond.

With the lockout OFF, the meter will respond immediately to each valid character received, useful for initial diagnostics. However, to operate properly, and to safeguard your settings you must set the lockout to ON - see connections page.

Useful free accessory

The free TERMINAL accessory in Windows is a simple and useful application you can use to generate serial data.

It can be used to check most features of the S1861

Here's how to connect your display to a PC's RS232 port...

For guidance on how to set up TERMINAL, see our dedicated website help pages
<http://www.london-electronics.com/terminal.htm>



Interior view of a 9 pin D connector, which can be connected to a COM port connector on your PC.

Recognised ASCII Characters

This display is intended mainly to show numeric ASCII characters...

0 to 9 , hex codes 30 to 39
 decimal point, hex code 2E (or 2C)
 and the minus sign, hex code 2D

You can FLASH the display on and off repeatedly, if you include CTRL F (ASCII 06) in the data string.

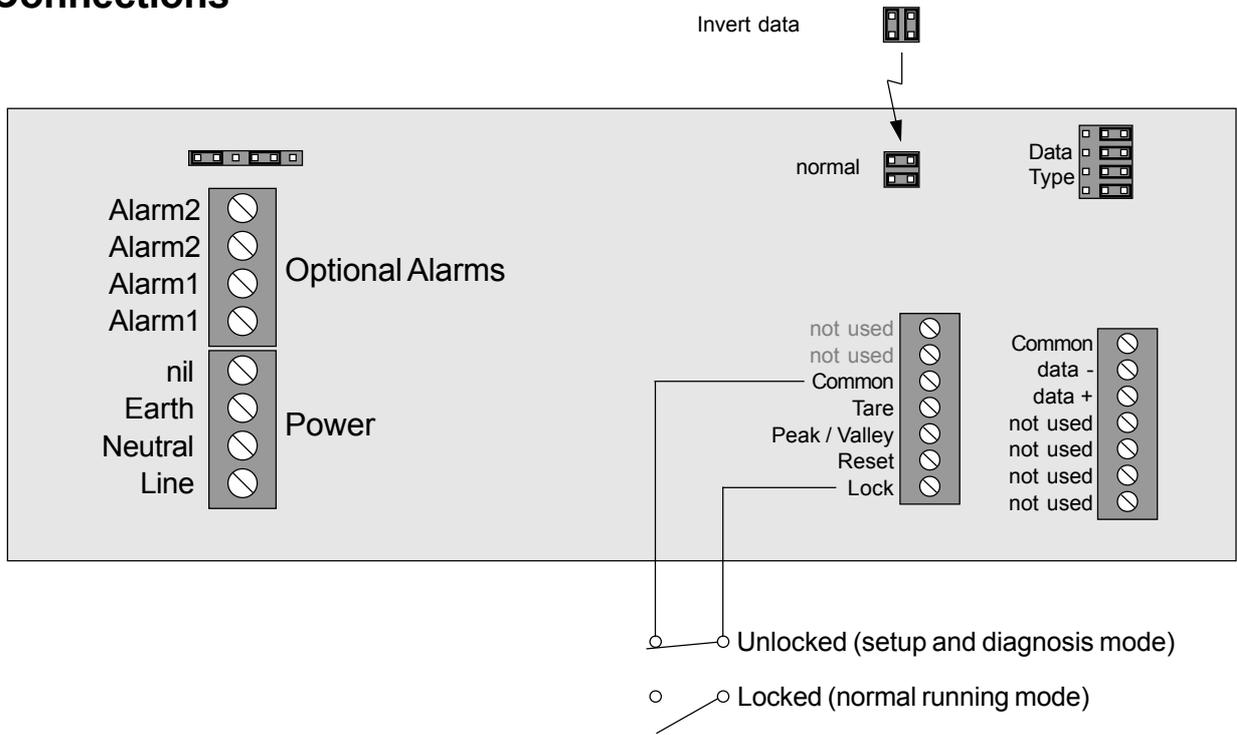
Some alphabetic characters can also be shown. Because 7 segment LEDs are limited in what they can display, capital and lower case alphabetic characters will appear the same, and some letters such as K,W and X are unrecognisable.

0		cC		oO	
1		dD		pP	
2		eE		qQ	
3		fF		rR	
4		gG		sS	
5		hH		tT	
6		il		uU	
7		jJ		wW	
8		kK		wW	
9		lL		xx	
aA		mM		yY	
bB		nN		zZ	

ASCII hex code 20 to 2F (excluding 2C, 2D and 2E) inserts a space.

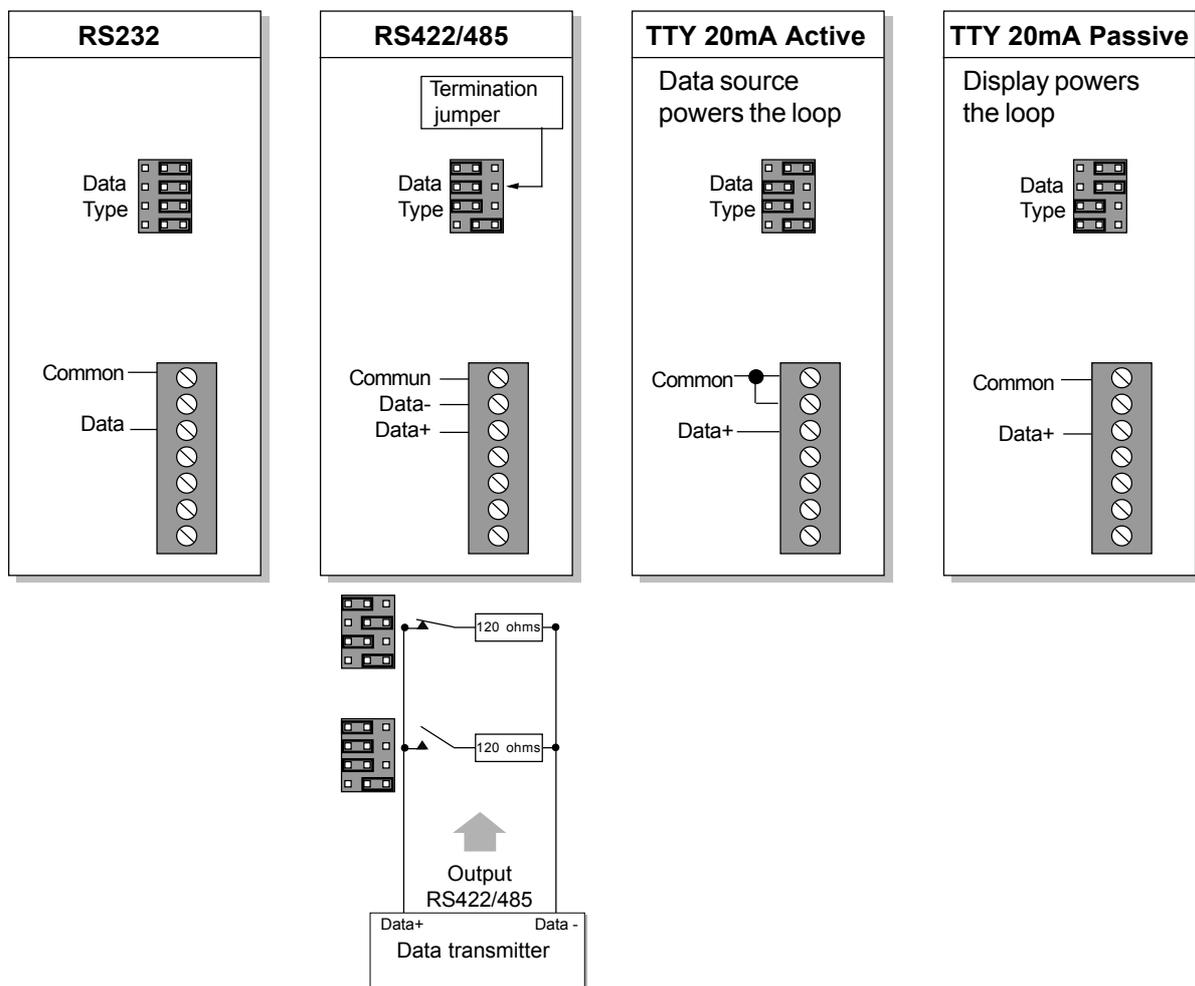
Two ESCAPE characters, (hex code 1B) will reset the display to its initial power-up condition.

Connections



Use screened cables for input signal and contact closure logic functions. Install these cables well away from noise-carrying cables and devices, to minimise the chances of interference.

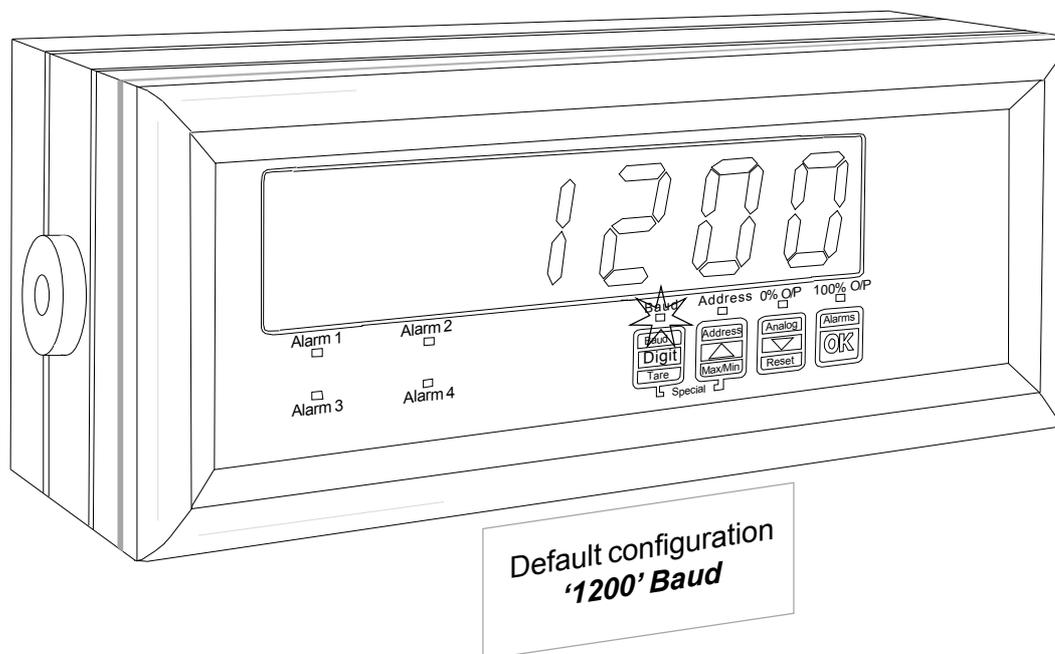
Examples of Input Signal connection for different data types ...



Baud Rate adjustment

Unlock the display - (see connections page)

Don't forget to lock the display after you have completed your settings.



Press the BAUD button for a few seconds. The present baud rate will appear and the LED 'BAUD' will flash. If you want to change the baud rate, press the up or down arrow button. Press the OK button to save your new choice. you can choose from 300, 600, 1200, 2400, 4800 & 9600 baud.

Notes:

Lower baud rates allow longer transmission distances. Approximate limits you can expect for RS232 are shown below...

Baud	Distance max.
300	800 metres
600	400 metres
1200	200 metres
2400	100 metres
4800	50 metres
9600	25 metres

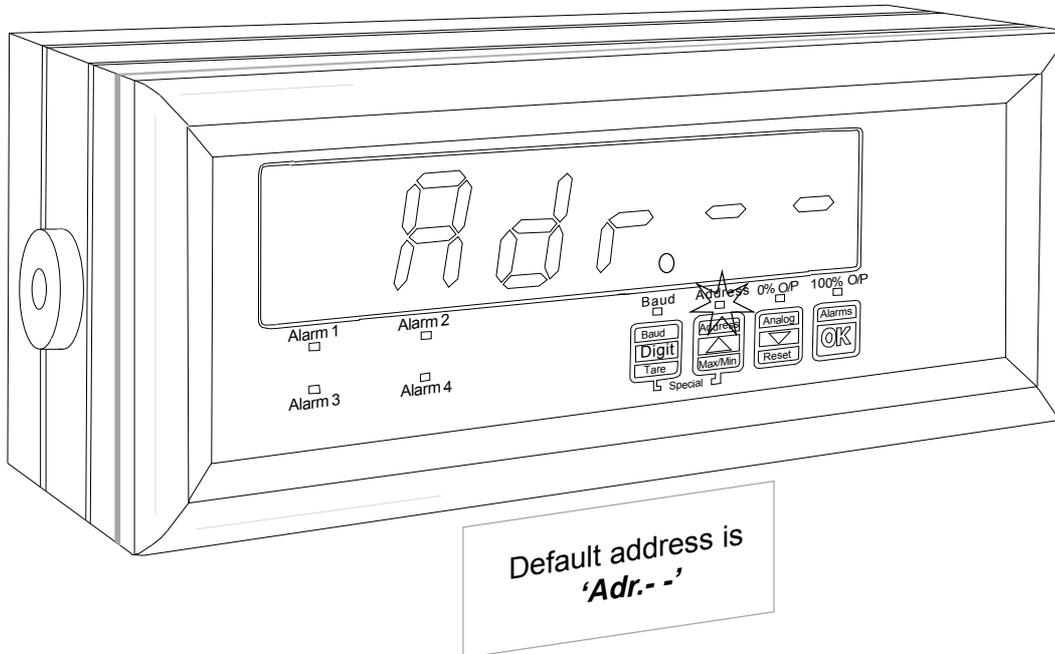
Differential data transmission modes such as RS422 or RS485 allow longer distances and better noise rejection. We recommend RS422 or RS485 instead of RS232, if you have that choice.

ADDRESS CONFIGURATION

Unlock the display - (see connections page)

Don't forget to lock the display after you have completed your settings.

Press the ADDRESS button for a few seconds. The LED 'ADDRESS' will flash and the existing address will appear on the display.



To change the address, press the up or down buttons.
Press OK to save your choice.

*** If you don't need addressing, please choose *Adr.- -* (*Adr.00* less one)**

If you want to address your display, the data should be in this format:- :

<ETX><STX><ADDRESS><DATA><ETX>

<ETX> is ASCII code 03hex or 13hex (XOFF)

<STX> is ASCII code 02hex or 11hex (XON)

<ADDRESS> may be a single character or 2 characters

<DATA> is the numeric ASCII data to be displayed.

Set the termination character to 03 if the <DATA> doesn't include <CR>. The termination character page tells you how to do this.

Adr.-1* to *Adr-E for 1 character addressing in the range 1-E

eg. <ETX><STX><5><123456><ETX> displays **123456** on an indicator with ***Adr.-5***. An indicator with ***Adr.-0*** responds to **all** single character addresses, and conversely, any indicator with any single character address will display any datastring sent with **address 0**.

Adr.01* to *Adr.EF for 2 character addressing in the range 01-EF

eg <ETX><STX><48><24680><ETX> displays **24680** on an indicator with ***Adr.48***.

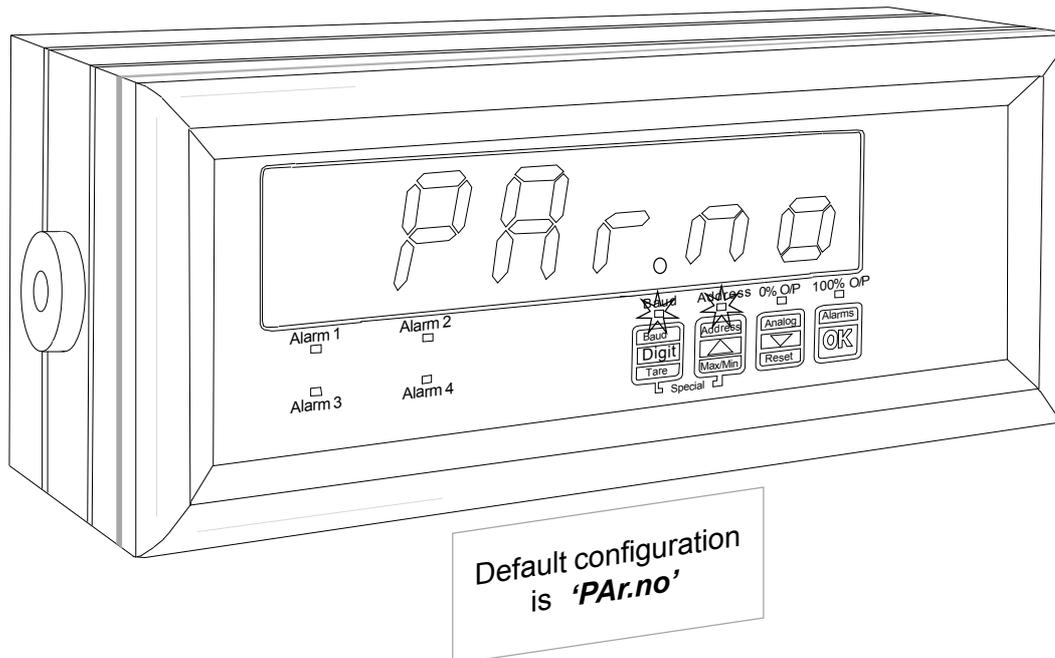
An indicator with ***Adr.-00*** responds to **all** dual character addresses, and conversely, any indicator with any dual character address will display any datastring sent with **address 00**.

PS: Character addresses A to F are the ASCII codes 3A to 3F as follows--> : ; < = > ?

PARITY SETTINGS

Unlock the display - (see connections page)

Don't forget to lock the display after you have completed your settings.



Press the two buttons marked "Special" until you see '**Par.no**' or '**Par.Ev**' or '**PAR.od**'. The LEDs BAUD and ADDRESS will flash.

'**Par.no**' signifies NO PARITY

'**Par.Ev**' signifies EVEN PARITY

'**PAR.od**' signifies ODD PARITY

Use the UP or DOWN buttons to change the parity setting, to suit your needs. Press OK to save your choice.

If a parity error occurs 'Err P' will be displayed, until a datastring with correct parity arrives, or until the Idle timeout occurs

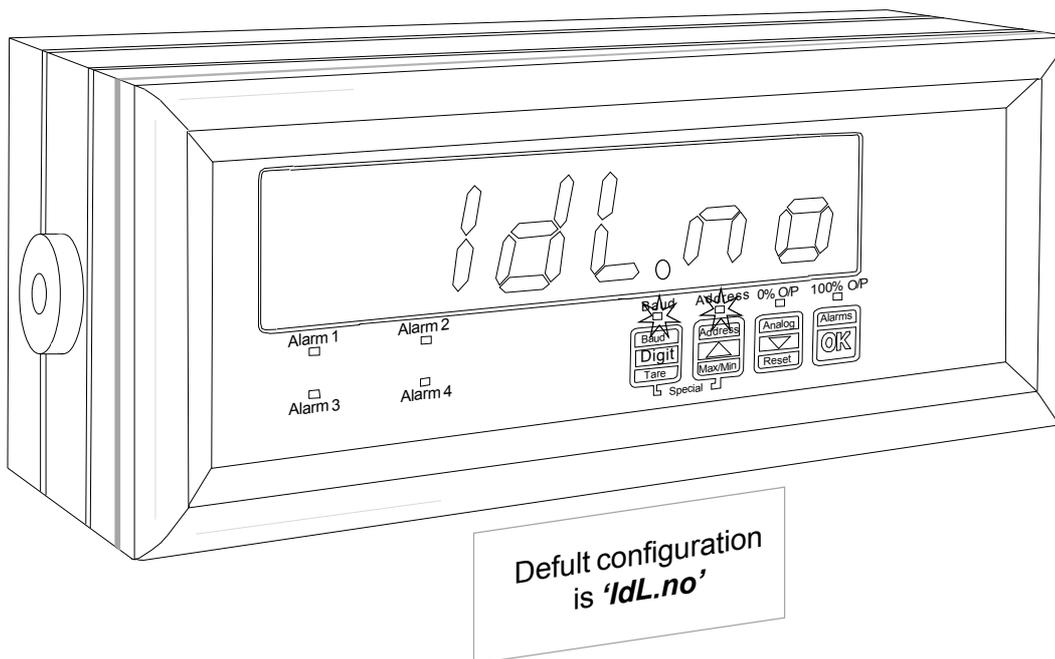
Data with parity errors will not be compared to the alarm setpoints.

Note that the parity setting affects incoming data only. Some displays may have a serial output port fitted. These outputs are always 1 start bit, 8 data bits, no parity and the output will be at 1200 baud

Configuration of IDLE MODE

You can use the Idle function to create a warning message if data disappears (the data line is idle) for more than a preset time. You can also disable this function if data will arrive occasionally, for example from an operator's keyboard.

After you set the Parity, and press OK, you will see **'IdL.no'** or **'IdL. 3'** or **'IdL.10'** or **'IdL.30'** or **'IdL.60'**



- 'IdL.no'** signifies no Idle testing - the display will always show the last valid data string.
- 'IdL. 3'** signifies that the display will show ----- if no valid data arrives within 3 seconds
- 'IdL.10'** signifies that the display will show ----- if no valid data arrives within 10 seconds
- 'IdL.30'** signifies that the display will show ----- if no valid data arrives within 30 seconds
- 'IdL.60'** signifies that the display will show ----- if no valid data arrives within 60 seconds

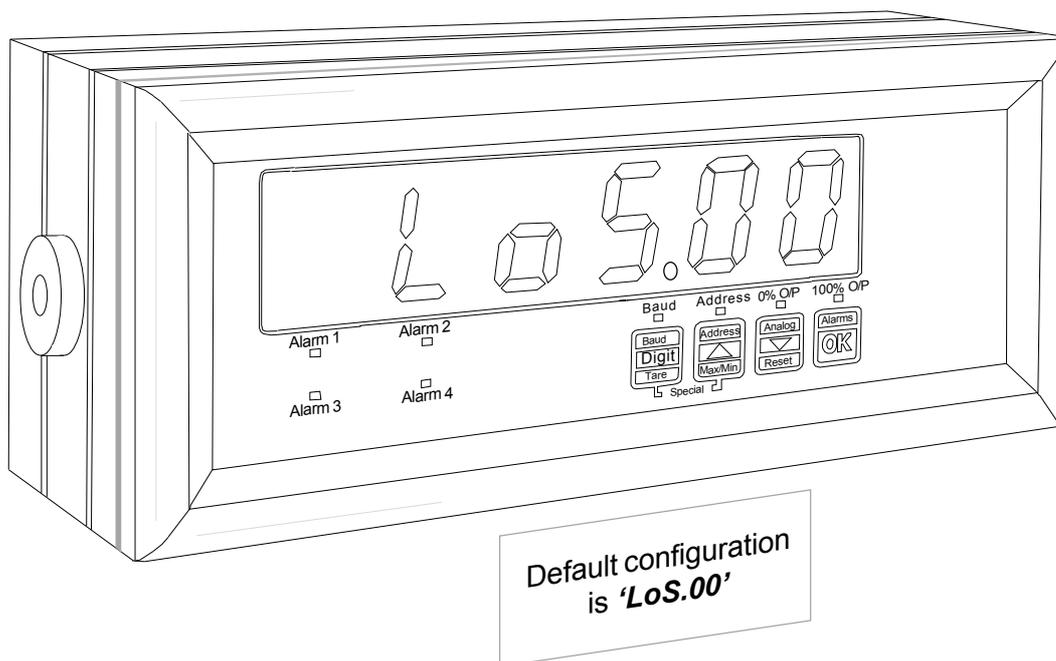
Choose from one of these options with the UP or DOWN button. Press OK to save your choice.

Note: After a timeout, when the display shows -----, all alarms will be inactive and the analogue output (if fitted) will be at 0% until a valid data string arrives.

The TARE and PEAK/VALLEY inputs will also be inactive.

LOSE (or reject) data configuration

If you have a complex data string and want to display a certain part of it, you can use the 'Lose' function to define how many characters to Lose or reject. The characters which will be lost will be between the string terminator, for example <CR>, and the data you want to display.



After the Idle setting on the previous page, the display will show '**LoS.XX**' XX corresponds to the number of characters to lose.

Use the UP or Down buttons to select the number of characters to lose, in the range 00 to 24. Press OK to save your choice.

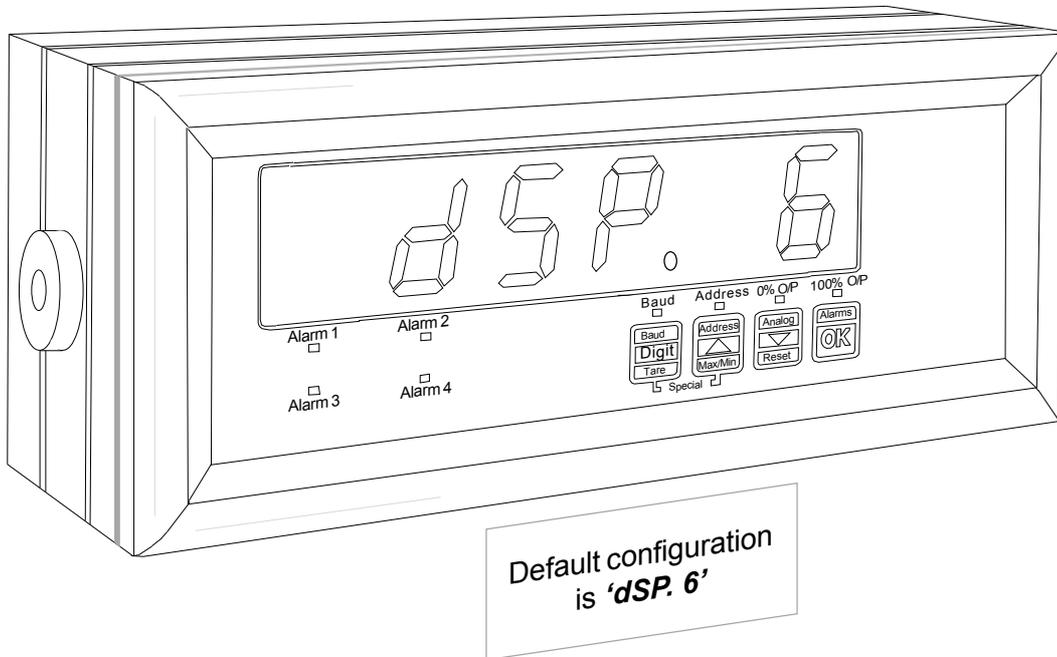
For example if your string is <STX>7768*2505_TY456<CR><ETX> and you want to display the characters 2505, you'll want to lose the characters _TY456 (6 characters).

So for this application you would set '**LoS.06**'

DISPLAY configuration

In the previous example, we wanted to display the value 2505.

If the characters on the left (7768* in the example) are to be ignored, we can do this by telling the display to show only 4 characters. Here's how we specify the number of characters to display...



After you set the Lose function, on the previous page, the display will show '**dSP.3**' or '**dSP.4**' or '**dSP.5**' or '**dSP.6**' (**dSP** signifies '**display**')

You can select either 3, 4, 5 or 6 digits, if you press the up or down button. In our previous example, we'd choose '**dSP.4**'

Press OK to save your choice.

The decimal point, if it appears in your data string, is not considered as a character, but the minus or negative sign - is considered as a character.

Termination Character configuration

This function is useful if the data string is complex and includes clearly identifiable characters which you can use as a reference point for identifying wanted data characters. Perhaps the best known termination character is the Carriage Return (identified by the code ASCII HEX 0d)

Consider the following string :

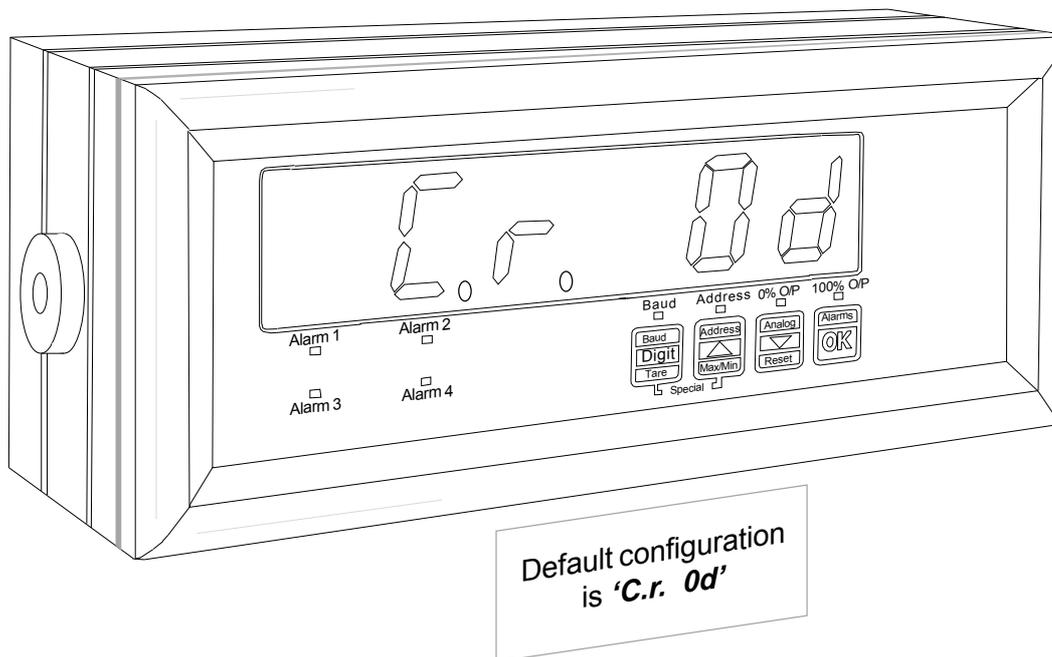
```
:<STX>55555_ABTOL_NETT_386.9Kg_SER02345<CR><ETX>
```

Let's say you want to display 386.9 Let's also assume that the part SER02345 can vary in length,.

You could specify the letter K as your termination character, provided it always appears in this position relative to the data of interest.

K is represented by 4B in ASCII hex. Here's how we would set the display to use K as the termination character....

After the 'Display' setting on the previous page, you will see '**C.r. XX**' where XX corresponds to the HEX code of the character you want to use as the termination character.



Use the UP and Down buttons to set the character's HEX value.
(In our example of using a letter K, which is HEX 4B, this would be '**C.r. 4b**').

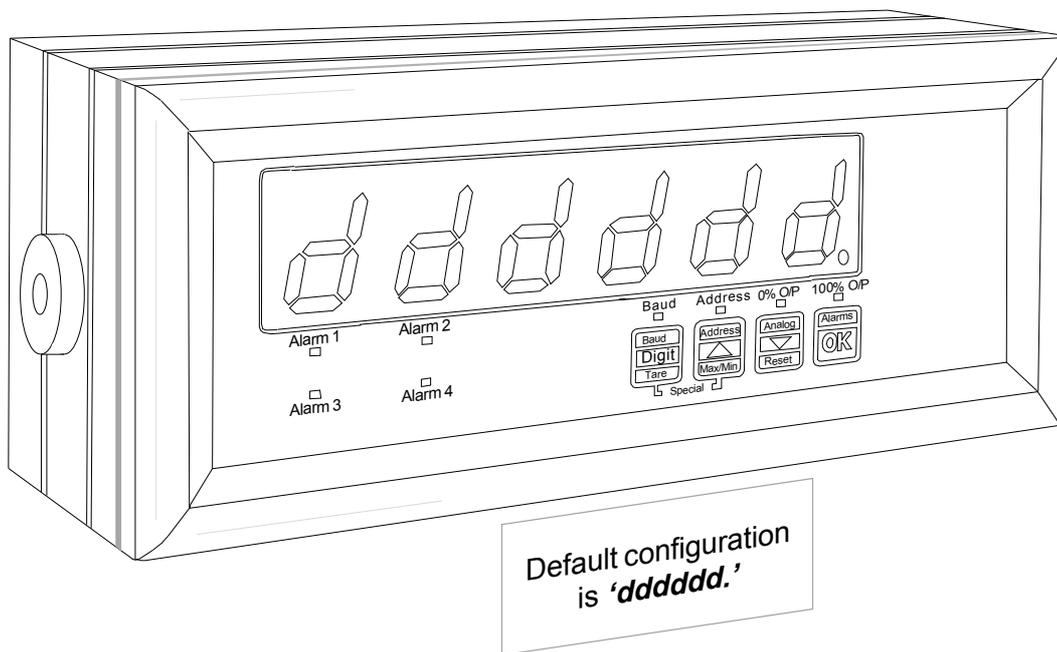
When your setting is correct, press OK to save your choice.

Decimal Point position

You only need adjust this variable if you have alarm relay output options.

If your data includes a decimal point in the numeric part, it must be fixed in position - a floating point value will not be correctly compared to the alarm setpoints.

After you complete the termination character configuration on the previous page, the display will show dddddd with a decimal point somewhere amongst the d's



If you want to change the position of the decimal point, press the UP or Down buttons until it suits your needs. Press OK to save your choice.

Let's assume your data has 2 decimal places (XXXX.XX).

You would set **dddd.dd**

If you go to the Alarms section, you'll see that all alarm level values now have 2 decimal places in them, to match your data format.

Peak and Valley memory

The S1861 continuously compares new incoming data with previous data and stores the minimum and maximum values in Peak and Valley memories.. You can view these values either by making a remote contact closure, or by pressing a button on the front panel of the display.

Front panel button viewing of peak and valley.

- 1) Connect the Peak/Valley terminal to the Common terminal - see connection page
- 2) The display should be locked -see connection page
- 3) Press the UP arrow to sequentially view peak, valley and actual input values.

How to view peak and valley with a remote contact

- 1) The display should be locked - see connection page
- 2) Make a momentary contact closure between the Peak/Valley terminal and Common to sequentially view peak, valley and actual input values.

Tare Command

If you want to force the display to 0, regardless of the actual incoming data value, you can do so with the tare function. This is most often used in weighing applications.

Front panel Tare command

- 1) Connect the Tare terminal to the Common terminal - see connection page.
- 2) The display should be locked -see connection page.
- 3) Press the front panel Tare button to tare the display to 0.

Tare command by remote contact closure

- 1) The display should be locked -see connection page.
- 2) Make a momentary contact closure between the Tare terminal and Common to reset the display to 0.

Reset Command

The reset command clears the Peak, Valley, Tare and latched alarm registers.

Front panel Reset command

- 1) Connect the Reset terminal to the Common terminal - see connection page.
- 2) The display should be locked -see connection page.
- 3) Press the front panel Reset button to reset the peak/valley, the tare and any latched alarms.

Contact Closure RESET

- 1) The display should be locked -see connection page.
- 2) Make a momentary contact closure between the Reset terminal and Common to reset the peak/valley, the tare and any latched alarms.

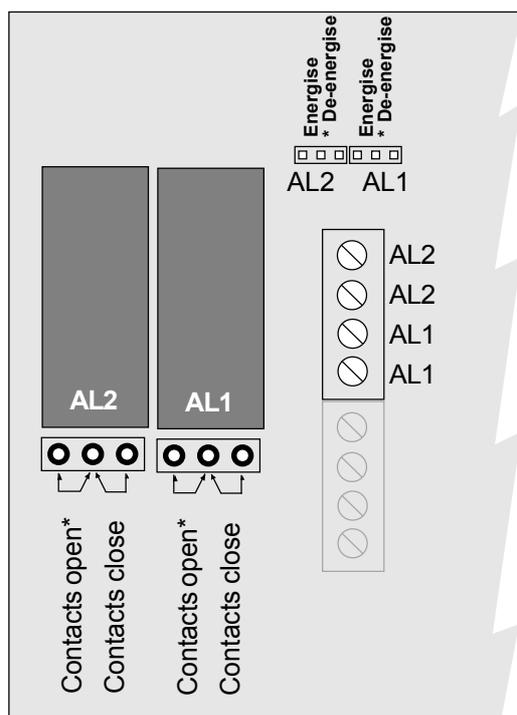
Alarm configuration and adjustment

We configure the alarm relays to be failsafe by default. This means on alarm, the relay de-energises and the contact opens.

You can change this action if you want, by way of push-on jumpers, whose positions and functions are shown below...

Choose the relay action to suit your application, and place the jumpers to suit.

Default = De-energise on alarm, contacts open on alarm (failsafe)



Energise = Relay coils are powered in alarm (non-failsafe)
De-energise = Relays are not powered in alarm (failsafe)

* = Default condition

Setting alarm levels

Each time you momentarily press the alarm button, you can see the alarm level for each channel. The LED "Alarm 1" or "Alarm2" will illuminate to show you which channel's value you are viewing.

You can alter the alarm level and action if you press the alarm button for more than 3 seconds.. Alarm action is set with the left-hand character, which is 'H' for HIGH, 'L' for LOW or 'o' for OFF, which means inactive.

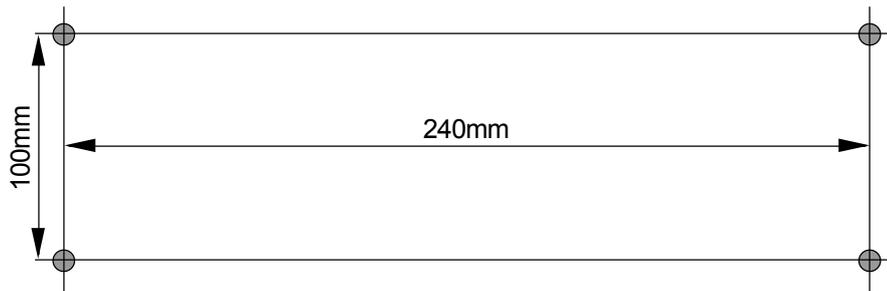
You can change the values, to suit your application, using the DIGIT and UP / DOWN buttons. The DIGIT button selects each digit in turn (you'll see the selected digit is brighter than the others) and the UP or DOWN buttons increase and decrease the digit's values.

The hysteresis value is identified after the alarm level and action has been set, by 'Hy'. The hysteresis value can be set in the same manner, using DIGIT, UP and DOWN buttons.

The hysteresis value is a direct offset from the alarm value. For example, let's assume your alarm level is set to High at 100 and the Hysteresis is set to 20. The alarm will occur when the input rises to 100 and will reset when it drops to 80.

Specifications

ASCII data input	Choice of RS422, RS485, RS232 or 20mA TTY passive and active. Must be numeric in the range -99999 to 999999 if you want the alarm or analogue output options to operate correctly.
Baud rates	Choice of 300, 600, 1200, 2400, 4800, or 9600
Data makeup	7 data bits with parity or 8 bits without parity 1 start bit, 1 or more stop bits.
Parity	Selectable - none, even or odd
Addresses	Selectable non-addressed, single address character 0 to F or 2 address characters 00 to FF
Display update rate	1 update per data string received
Idle timeout	Can be set not to timeout, or to show ----- after 3, 10 ,30 or 60 seconds without valid data arriving.
Termination character	Normally set for <CR> (Hex 0D) but can be set for any HEXASCII value
Bezel dimensions	95mm high by 240 mm wide
Cutout dimensions	87mm high by 232 mm wide (for panel mounting only)
Case depth	130mm behind the panel , including connectors/glands/cables
Weight	1300 gramms typically
Wall Mounting	4 holes, each 5mm diameter, spaced as shown ...



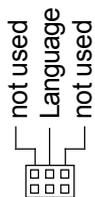
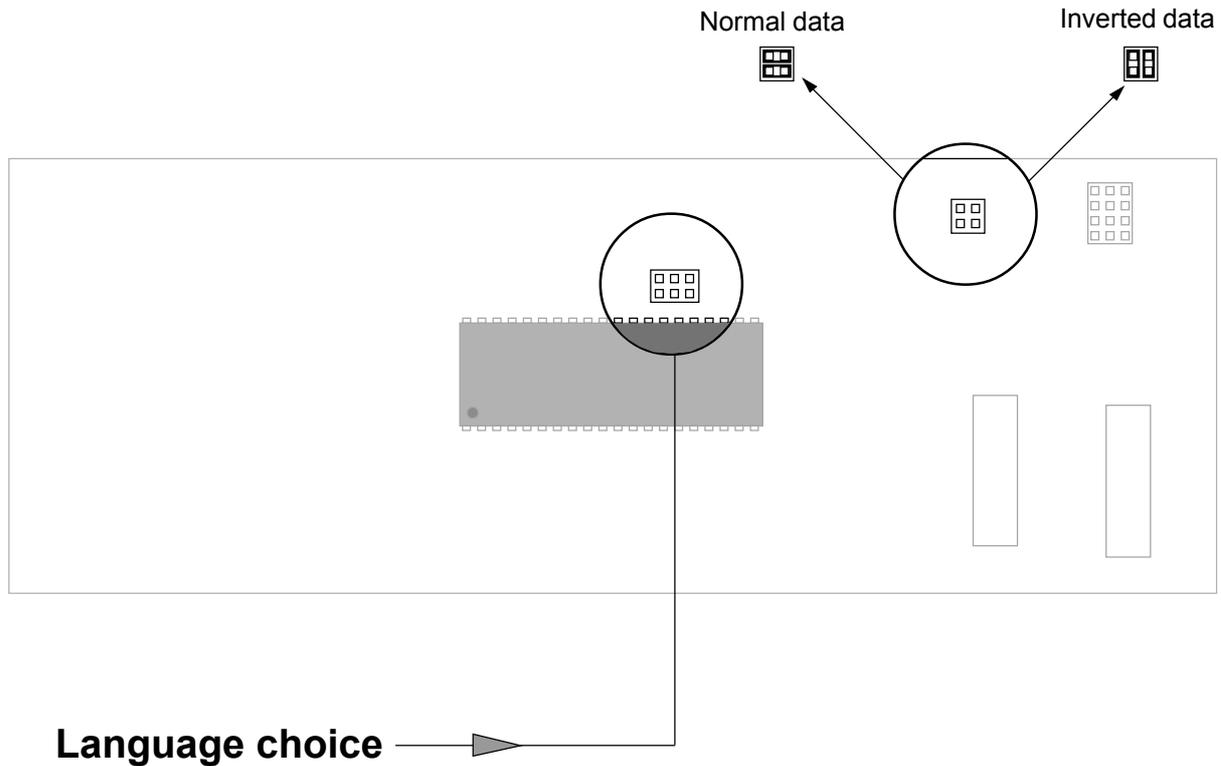
Case material	PVCu black housing, neoprene gaskets, polycarbonate window Stainless steel closure screws
Connectors	Detachable screw terminal types, within the sealed enclosure Access via compression glands on rear of case.
Temperature	Storage -10 to +70, operating 0 to +50 °C
Power	95-265 VAC or 11-30 VDC to special order.
Consumption	8 Watts maximum
ALARM outputs	2 optional alarms, SPST rated 5A, 250 VAC, resistive

Data inversion function

We have found that some TTY systems, (20mA ASCII) are inverted, compared to others. To allow for both schemes, a data inversion function is available.

Change the jumper positions as shown.

To access the jumpers, first remove all power from the display, remove the rear screws, loosen the cable clands and carefully slide the case apart.



It is possible to choose the language of prompts displayed in the menu....

 French

 English

Fault finding

Problem	Possible cause and solution
<p>The indicator accepts data and updates each time data arrives, but the data has an offset.</p> <p>For example, you know the data value is 100, but the display shows 82</p>	<p>1. A tare offset may be present.</p> <p>Solution : Disconnect the unit. Make a contact closure between Reset and common.</p> <p>Send data, and press the front panel Reset button.</p> <p>The displayed data value should now match the transmitted value.</p> <p>2. Check that the data Lose and Display values are correct.</p>
<p>The display shows odd illegible characters</p>	<p>1. The baud rate may be wrong. Check the sending device's baud rate and adjust the display's baud rate to match.</p> <p>2. Connections may be transposed. If data is RS422 or RS485, transpose your connections on Data + and Data - terminals</p> <p>You may need to invert your data using the data-invert jumpers.</p>

Modifications and revisions

Revisions and modifications may be made from time to time, for several reasons

- 1) If users ask for new options to be included in the functions.
- 2) If users ask for functions to be modified in some way
- 3) Whenever errors in the manual are corrected
- 4) Whenever errors in the programme software are corrected
- 5) When the product is otherwise improved or developed

29 Sept 2003 Product released with SEr1.0 software

Notes

Notes

Notes

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Declaration of Conformity

Declaration Reference : INTUITIVE
Issue Date : 9 October 1998 revised 31 July 2003
Products Covered : INTUITIVE series
Title : DOC-INTUITIVE

This is to confirm that the Product covered by this declaration has been designed and manufactured to meet the limits of the following EMC Standard :

EN61326-1:1997

and has been designed to meet the applicable sections of the following safety standards

EN61010-1:2001

Conditions

The meters are permitted a worst case error of 1% of A/D range during electro-magnetic disturbance, and must recover automatically when disturbance ceases without the need for human intervention, such as resetting, power-down etc.

The meters covered by this certificate must be installed in adherence to the following conditions :-

Signal cabling shall be routed separately to power carrying cabling (includes relay output wiring)
All signal cabling shall be screened. The screen shall only be terminated to the power earth terminal.

Declared as true and correct, for and on behalf of London Electronics Ltd.

Warren Court, Beds.

J.R.Lees Director