IC600 Reference and operators manual

The IC600+ is a Position display unit's that can be retro-fitted to almost any machine as long as a Quadrature encoder can be fitted. They are fully programmable and can display Millimetre's, Centimetres, inches or fractal inches or a combination of units i.e. millimetre's and inches at the same time, the display is a high brightness Organic LED display giving an easy to read display from virtually any angle.

IC600 in mm mode   IC600 in Dual mode

Screens shown are above are not actual size

Contents

A quick tour of the IC600

The IC600 Display

The IC600 display is a 2 line by 20 character LCD Display, this enables us to display both numbers and text, which makes installation and operation of the IC600 both quick and easy.

The IC600 Keypad

The IC600 keypad has been kept to a minimum to ease learning, this enables the operator to feel at ease with the unit very quickly. The keypad consists of just 3 buttons;

This button allows the operator to change the measuring unit in use i.e. MM, CM, IN

This button is used ENTER values during installation and when correcting or setting the datum.

This button allows a change in the number of decimal places displayed it also allows the operator to re calibrate the IC600 if required.

OPERATION

After power up the IC600 will self test to confirm that all the parameters are correct and display "OK"

The display will now show the version of firmware,

This is followed by the Suppliers logo screen,

The "IC600 *PLUS*" will display the current position, this is the position that was stored at power off and will be correct assuming the gauge has not moved whilst the unit was switched off.

CONFIGURATION

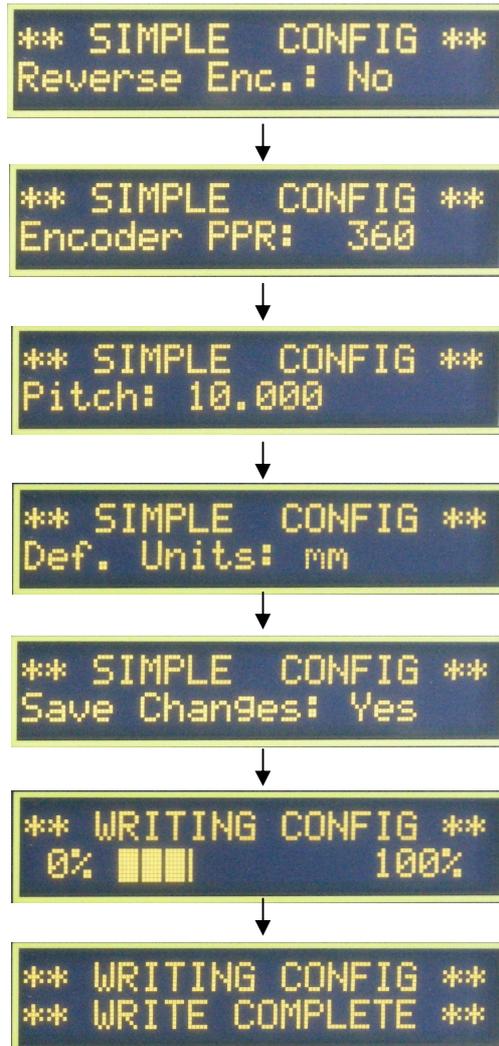There are 2-configuration menu's used to setup the IC600, Simple and Advanced

1) SIMPLE CONFIGURATION

The "SIMPLE CONFIGURATION" mode is accessed by pressing and holding the "SET" button from the Firmware screen until "SIMPLE CONFIG" is displayed.

SIMPLE CONFIGURATION		
Parameter	Options	Default
Reverse encoder	Yes / No	No
Encoder PPR	1 - 1000	100
Pitch	1 - 100	10 mm
Default units	mm/cm/in	mm
Save changes	Yes / No	Yes

SIMPLE CONFIGURATION SCREENS

```
** SIMPLE  CONFIG **
Reverse Enc.: No
```

↓

```
** SIMPLE  CONFIG **
Encoder PPR:   360
```

↓

```
** SIMPLE  CONFIG **
Pitch: 10.000
```

↓

```
** SIMPLE  CONFIG **
Def. Units:  mm
```

↓

```
** SIMPLE  CONFIG **
Save Changes: Yes
```

↓

```
** WRITING CONFIG **
 0% ███|        100%
```

↓

```
** WRITING CONFIG **
** WRITE COMPLETE **
```

This page shows all the screen's used within the Simple configuration from entry into Simple configuration to saving and exiting the routines, to change any value simply turn the encoder until the required value is displayed OR using the "UNIT" & "MODE" buttons to increment or decrement until the required value is displayed then press "SET" to store the value and step onto the next parameter

2) ADVANCED CONFIGURATION

The "**ADVANCED CONFIGURATION** " is be accessed by pressing and holding the "UNIT" and "MODE" buttons from the Firmware screen

ADVANCED CONFIGURATION		
Parameter	Options	Default
Reverse encoder	Yes / No	NO
Encoder PPR	1 to 1000	100
Pitch	1 to 100	10
Default units	mm	mm
Enable mm	Yes / No	Yes
Precision mm(decimal places)	0,1,2	2
Enable cm	Yes / No	Yes
Precision cm	0,1,2,3	3
Enable inches	Yes / No	Yes
Precision IN	0,1,2,3	3
Enable Fractal inches	Yes / No	Yes
Precision fractal	1/4 to 1/64^{ths}	1/64^{ths}
Enable dual display	Yes / No	Yes
Enable pulses	Yes / No	No
Dual unit (top line)	mm/cm/in	mm
Dual unit (bottom line)	mm/cm/in	in
Metric start position	1 to 500	100
Imperial start position	1 to 36	4 in
Show speed bar	Yes / No	Yes
Show max speed	Yes / No	No
Pulse divide	Yes / No	No
Save changes	Yes / No	Yes

MODIFYING PARAMETERS

To change the value of any parameter within "SIMPLE" or "ADVANCED" configuration modes the "UNIT" or "MODE" buttons can be pressed to increment or decrement the displayed value

OR

The encoder can be turned either clockwise or Anti-clockwise, turning the encoder will either increment or decrement the selected parameter.

To accept and enter a value the "SET" button is used, each time the "SET" button is pressed the current (on screen) value is accepted and the IC600 moves onto the next parameter.

How to SET or Correct Datum

Once the IC600 has been installed the datum should be set, the easiest way is to move the backgauge to 100mm as displayed on the IC600, make a cut and measure the piece, if it is measured at 100mm no action is required, however if it is for example 103mm you have an error of 3mm, simply move the backgauge to 97mm displayed and press "MODE" twice followed by pressing "SET" twice.

Summary   Move to 100mm on display

            Cut a piece of material & measure it

            If it's NOT 100mm calculate error

            Move the backgauge by error using current position display

            Press "MODE" twice

            Press "SET" twice

Add or Subtract ?

If your material measured is larger than the displayed position move forward by error, if the material measured is smaller than the position displayed move backwards by error,

Material cut and measured at 107.5, current position displayed 100, move to 92.5 and press "MODE" twice followed by "SET" twice

Material cut and measured at 92 , current position displayed 100, move to 108 and press "MODE" twice followed by "SET" twice

PARAMETER EXPLANATION'S

Reverse encoder

If you find that the display counts the in the wrong direction, up instead of down this parameter may be used.

Encoder PPR

This is the number of Pulses Per Revolution of the encoder.

Pitch

This refers to the pitch of the leadscrew on the machine this can be manipulated if any gearing is used during the installation.

Default units

When the IC600 powers up the units specified in this parameter will be used if Default units are set to inches the IC600 will power up in inches regardless of the units at switch off.

Enable mm - cm - in - $1/64^{ths}$

This option allows the user to enable the units that can be selected with the mode button any units that are NOT enabled will not be seen when mode is used

Precision

This parameter allows you to select the number of decimal places for the individual units (mm, cm, in, $1/64^{ths}$) the maximum value is 3 decimal places the minimum is 0 decimal places

Enable Dual display

This parameter allows the IC600 to display two units of measurement the units as selected by Dual unit (top line) and Dual unit (bottom line)

<u>Enable pulses</u>

This parameter is only used for installation purposes, pulses can't be easily used as a unit of measurement, you can however use this function to tell you how many pulses per revolution your encoder is if for any reason it is not known.

<u>Start position</u>

The start position can be anywhere throughout the travel of the backgauge. If you want to start towards the rear of the machine simply change the start position to a convenient number i.e. 500mm. this dimension is used for re-datum and is generally left at 100mm

<u>Show speed</u>

This parameter can be useful for providing a visual indication that the backgauge is moving it appears as a bar display on the right-hand side of the display.

<u>Show Max speed</u>

The max speed is a permanent bar on the left-hand side of the display; it should only be used at the time of installation to show the maximum speed achieved by the backgauge. If for any reason the bar reaches the top of the display it is recommended that Pulse divide is set to "yes"
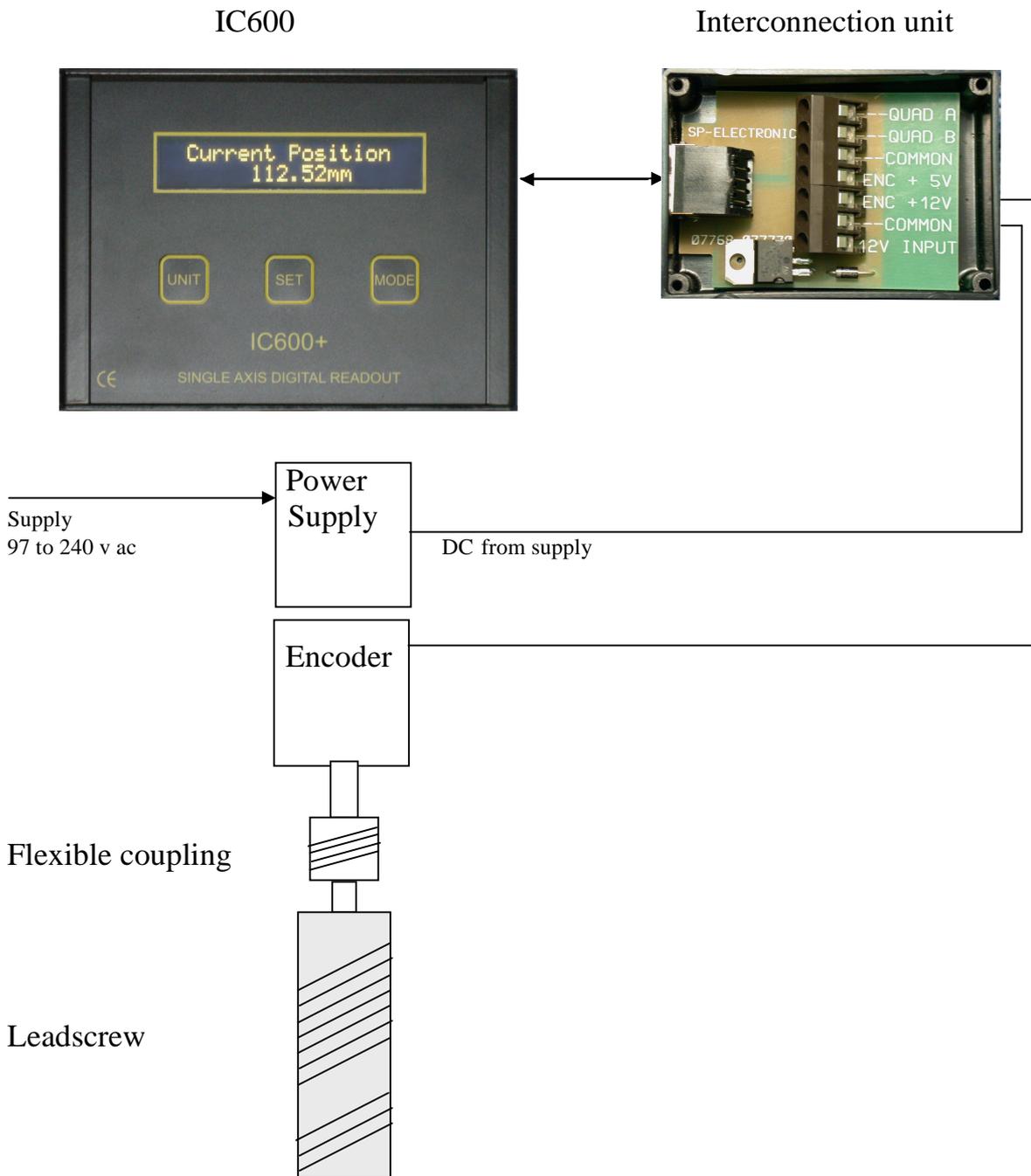
<u>Pulse divide</u>

Pulse divide can be used if the encoder speed to too high and a * is appearing on the display, when pulse divide is set to "yes" the max input count speed of the IC600 is increased by a factor of 4

<u>Save changes</u>

If you have edited or changed any parameter and wish to keep the changes you should select "YES" if you select "NO" all the changes will be lost.

INSTALLATION

Installation of the IC600 is very easy and straight forward, we do however recommend that you use a reputable company as this will ensure your safety as the end user and also give trouble free operation.

IC600   Interconnection unit

Power Supply

Supply
97 to 240 v ac   DC from supply

Encoder

Flexible coupling

Leadscrew

IC600 WIRING

The IC600 wiring is simple and can be accomplished in a matter of minutes.

The lead from the IC600 is terminated with an RJ45 connector this plug's into the interconnection unit, the DC output from the power supply is then connected to the +12v input and Common terminals respectively.
The encoder, if you are using a British encoder the connections are as follows.

Enc + 12v…………..White
Common……………Black
Quad A……………..Brown
Quad B……………..Red

The screen should NOT be connected to the Common terminal within the interconnection unit.

DC SUPPLY

If the power supply was supplied as part of the IC600 kit the terminations will have been made and tested at the factory.

Common………….BLACK
12v Input………….RED TIP

Once the IC600 is installed and configured it will require an initial datum, the default is 100mm (set in Advanced Config) simply move the backgauge forward to 100mm and press SET the display should now agree with the actual position of the backgauge.

SPECIFICATION

IC600

DC input	10 - 18 V
Current consumption	90 mA (with Encoder)
Max Quadrature speed	> 65 kHz *
Max size displayed	> +/- 14800 mm
	> +/- 8450 Inches
2 X 20 OLED display	5 mm characters
Display resolution	0.01 mm **

Firmware

IC600 'plus, keyb increment'	Ver 3.01

Power supply (if supplied in kit)

AC input voltage	97 - 230 V
Overload protection	Pulsing mode auto recovery
DC output	12 Volts +/- 5%
Max current	1.2 A

Encoder (if supplied in kit)

Voltage	5 - 24 V DC
PPR	360
Shaft	10 mm Dia
Body	58mm standard
Output	Push pull

NOTE

  * Max speed equates to 5 m/s with a 10mm pitch leadscrew
  ** Display resolution may vary depending upon pitch and gearing

SETUP INFORMATION

The setup information given should only be used in the unlikely event that the setup held within the IC600 becomes corrupt. This sheet should be completed at the time of installation by the Engineer or installer.

ADVANCED CONFIG	
Parameter	Your Settings
Reverse encoder	
Encoder PPR	
Pitch	
Default units	
Enable mm	
Precision mm (decimal places)	
Enable cm	
Precision cm	
Enable inches	
Precision IN	
Enable Fractal inches	
Precision fractal	
Enable dual display	
Enable pulses	
Dual unit (top line)	
Dual unit (bottom line)	
Metric start position	
Imperial start position	
Show speed bar	
Show max speed	
Pulse divide	

TROUBLE SHOOTING

IC600 dead	Check that you have 12 volts at the interconnection unit (+V and Common)
	Check all leads for damage
	Check that the supply to PSU is present And stable between 97v and 230v AC
IC600 beeps and resets for no reason	Check the PSU it could be shutting down on over current or under voltage on the mains side or due to excessive noise on the supply
	Look at the routing of cables, are they running parallel with noisy power cables
	Check any suppression on contactors and solenoids as they may have failed
	Check that the machine is actually earthed.
IC600 displays keystuck 100 or 010 or 001	The 100 indicates that the first switch is stuck the 010 for the second switch and 001 for third switch (first switch being units)
IC600 Inaccurate	If the error is consistent check the PPR and Pitch in setup and adjust to correct.
	If the error is not consistent check for loose or slipping couplings also check for loose wires in the interconnection unit, a poor supply can also cause this problem

IC600 won't display Required "UNITS"	Check the advanced setup to see if the units are enabled
IC600 has a * on the right Hand side of display	This advises the user that the count rate is almost at it's maximum rate and may require gearing down of the encoder or the use of Pulse divide in the advanced menu.
IC600 won't go into prog mode (Advanced or simple)	To access Advanced or simple Config. the correct buttons must be pressed + held while the display shows "FIRMWARE" screen See Page 5 and Page 6.
IC600 Random resets	Check if the braid on the encoder has been Connected to common if so remove it, the IC600 PSU is floating by connecting the braid it will Earth reference the IC600

This product has been designed and manufactured to the highest standards by SP Electronics (Tarleton) for information on other products and services please contact the sales and support office on :-

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