

## Z54 & Z56 Series

### Programmable Position Indicators



- Series 54:** For use with Encoders  
**Series 56:** For use with MX magnetic scale



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## Essential Features

The Series 54 / 56 programmable position indicators are available with either a 5 digit 13mm high LCD display, a 5 digit 14mm red LED display, or 6 digit 10mm red LED display. The indicators incorporate the following features :

- Input of required datum value by means of the front buttons
- Robust foil covered buttons and compact plastic enclosure
- Can be operated from the batteries or from external power supply
- Memory on power down
- Designed to operate from encoder or magnetic scale feedback
- Setting of multiplication factor for display
- Incremental and absolute measurement
- Programming of features using front buttons
- 5 or 6 Digit display with +/- symbol, LED or LCD.
- Inch/metric selection.
- Display extinguished after 10 sec to save battery.
- Datum offset available.
- External inputs.

**The Range available is as follows :-**

**Series 54** single axis indicator available in LED or LCD display formats. Suitable for encoder feedback.

**Series 56** single axis indicator available in LED or LCD display formats. Suitable for MX magnetic scale feedback.

## MX Magnetic Scale

The MX Scale is a non-contact magnetic linear measuring device used extensively with the ELGO simple positioning and display product range. The MX scale usually consists of three components :-

- MB20.50.xx,xm - Magnetic tape, available to lengths of 25m.
- MS17.60.03,0m - Sensing head incorporating feedback cable.
- MC - Signal translator which generates a quadrature feedback signal identical to an encoder.

In the case of the above indicators, the MC has been incorporated (where appropriate) into the indicators. The addition of this extra circuit board accounts for the additional cost of the MX scale option and the reason why, due to physical restrictions, the 56 series requires an external NG20 power supply.

## Operation

These indicators may be fully controlled from four simple push buttons:-



### Function select

- Must be pressed with another button to select required function. Pressed on its own, returns from selected function to operation, and stores edited value to RAM.

### Twin Datum

- When pressed on its own, adds the Datum Offset to the actual position. Press again to subtract.

Certain machines, such as panel saws with turnover stops, require two datums with a fixed offset that can be readily toggled.

### Incremental / Absolute operation

- When pressed on its own, switches between absolute and incremental operation.

In many applications dimensions are given on drawings, which are relative dimensions. Most position indicators display only the absolute position and it is necessary to calculate the new absolute position

e.g.  $1928.7 + 325.9 = 2254.6$

This is laborious and can lead to errors.

This can be avoided by the use of this range of indicators. The operator can select

- = "Incremental". This sets the display to zero. Operator can now move 325.9 and re-select
- = "Absolute" ( the display now reads 2254.6 )

## Setting Datum



When pressed together, immediately sets the pre-programmed datum position to the display.

This is only possible if the configuration register is set to ( **XXXX0** )  
(See user adjustments, for random setting of Datum).

## **Display Extinguish - 56 series (for battery life saving)**

The counter and/or display may be extinguished in a number of ways.  
The method required must be chosen in the config register.

## User Adjustments

### **Edit Datum and Datum Offset**

It is only possible for the operator to edit the Datum and Datum Offset, if the editing feature is unlocked in the configuration register. ( **XXX0X** )

NB The Datum and Offset values incorporate any decimal places set in the configuration ( See later )

### **Edit Datum programmed value**

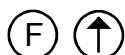
Press both buttons for three seconds, allows the editing of the datum value. Range ( 00000 to + 99999)

### **Setting display to any value**

Instead of having a fixed datum, the display can be set to any value desired and count from there. This is made possible by setting the Config register to XXX01.

Press both buttons for three seconds, any value may now be set in the normal way.

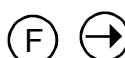
### Edit datum Offset



Press both buttons for three seconds, allows the editing of the Datum Offset . Range ( 00000 to + 99999 )

### Edit Datum +/- 1 bit

The indicator provides the facility for the operator to make small adjustments to the actual value of display to take care of minor machine variations. This is only possible when the configuration register is set to ( **XXXX2** ) NB: Setting of datum as above is not possible, when this feature is selected.



Press both buttons for three seconds, any value may now be set in the normal way.

subtracts one bit/press,



adds one bit/press, to the displayed value.



### Edit Flexible Multiplier

It is only possible to edit the Flexible Multiplier if the editing feature is unlocked in the configuration register. ( **XX0XX** )






for three seconds, allows the editing of the flexible multiplier  
Range X 0.0001 to X 9.9999 (Decimal point is automatically displayed)



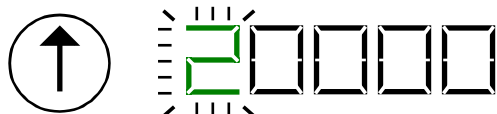
Press the above button on completion of any edit, to store value to RAM and return to operating mode.

## Changing Display Value

Display manipulation of both the **User Adjustment** and **Configuration** is done using the following method, once the desired function to edit has been accessed.

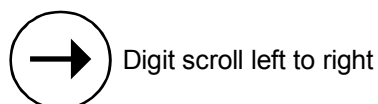
-  to select the digit to be changed ( this flashes )
-  to increment the digit between 0 and 9.
-  stores the value to the internal RAM and returns the indicator to operating mode.

Digit scroll  
1 to 9



### **N.B.**

Where present, the 6th LHS digit should be set to zero. This digit is only used for a +/- symbol.



## Counter Configuration

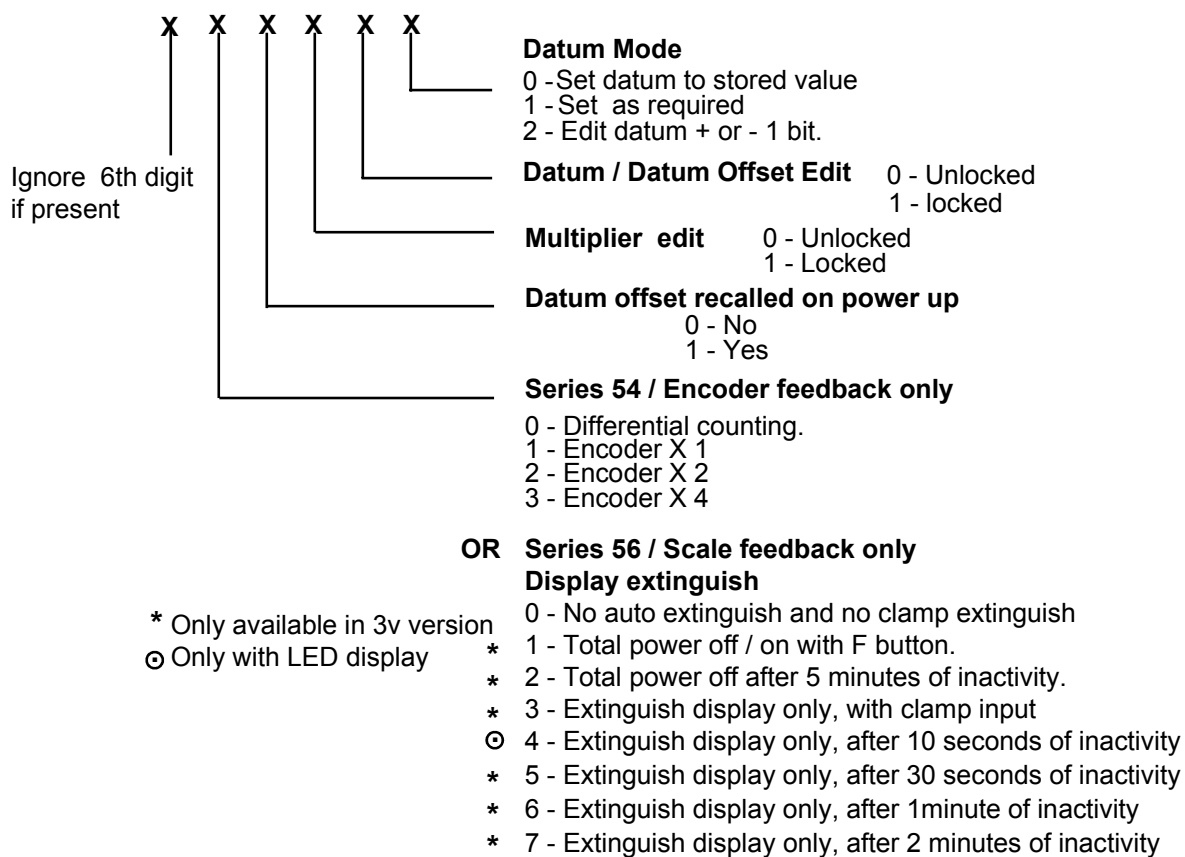


Press buttons for three seconds, the Configuration mode is entered.

Conf will be displayed. The configuration file determines the operation of the indicator.



## Configuration Register

(F) Pressing the above button for three seconds gives access to the configuration 5 digit register.









### Direction of Count

-  Press for three seconds gives access to the count direction
-  to toggle between Up and Down.

### Decimal Places

-  Press for three seconds gives access to the number of decimal places.
-  to toggle between 1,2 or 3 decimal places.

### Inch / Metric Switching

-  Press for three seconds gives access to either counting in inches or millimetres. ( Inch or mm ).
-  Press to toggle between these settings

On completion of editing of any section, Press  to store value to RAM and return to "Config".

Press all four buttons again for three seconds to return indicator to operating mode.

## **General Technical Information**

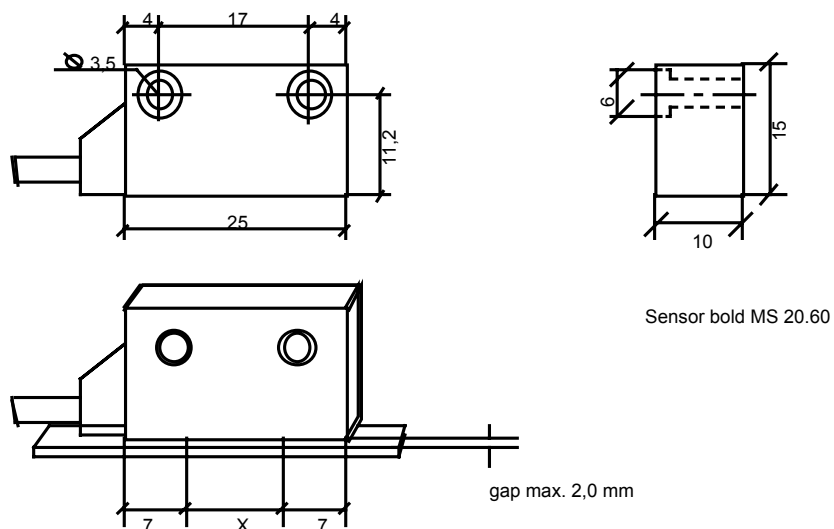
### Indicators

Maximum counting frequency	- 10 kHz standard. - 50 kHz option (specify at order stage) - Series 56, 50 kHz standard.
Operating temperature	- 0 to 50 deg.C
Memory against supply failure	- 3 years
Current Consumption of Indicator excluding Encoder	- LCD : 100mA operating : 1mA standby
- LED	: 40mA
EE inputs	- PNP only. These provide external contact control of datum and zero reset. (Must be specified at order stage)

### **Encoders**

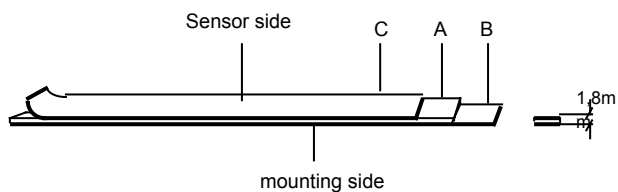
Encoder specification	- 24 volt PNP or push pull.
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### Sensor - MS17.60.03,0m



Maximum speed of travel	- 5m/sec
Cable length	- 3m standard ( up to 25m available)
Operating temperature	- ( -5 ) to ( + 45 ) deg.C
Sealing	- IP66

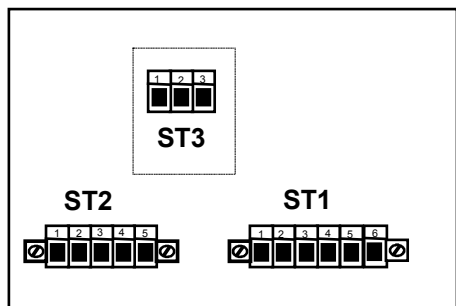
### Magnetic Tape – MB20.50.xx,x



Resolution	- +/- 0.1mm
Operating temperature	- ( -5 ) to ( + 45 ) deg.C
Scale expansion	- 0.000016mm / deg.C X m

## Connections

### Series 54 (EE Option)



#### ST1 - Inputs

Pin 1 - Screen  
 Pin 2 - 0 volts  
 Pin 3 - +24 volts  
 Pin 4 - Offset  
 Pin 5 - Datum  
 Pin 6 - Reset to zero

dc input for 024 versions  
 Option EE  
 Pull up to 24v to activate

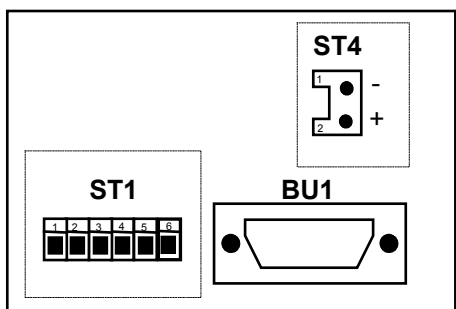
#### ST2 - Encoder

Pin 1 - 0 Volts  
 Pin 2 - +24 Volts dc  
 Pin 3 - Channel A  
 Pin 4 - Channel B  
 Pin 5 - Screen

#### ST3 - Power supply ( Only for 110/ 230 Volt ac Versions )

Pin 1 - L  
 Pin 2 - N  
 Pin 3 - E

### Series 56



#### Power Supply

#### ST1 - 024 version. or ST4 - 003 version

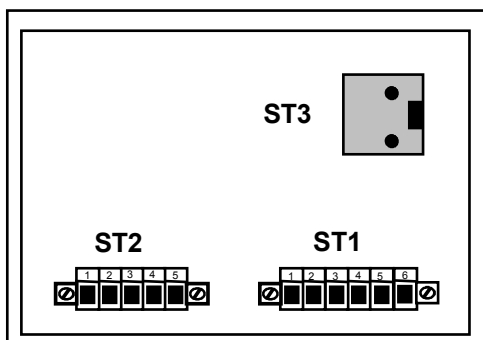
Pin 1 - (-)  
 Pin 2 - (+)  
 Pin 3 - E  
 Pin 4 - Datum  
 Pin 5 - Offset  
 Pin 6 - +24v output

24 volts dc  
 Battery  
 Option EE

#### BU1 - Scale feedback connector

See MX Scale manual.

### Series 54 AG (EE Option)



#### ST3 - AC input

Pin 1 - L  
 Pin 2 - N  
 Pin 3 - E

#### ST2 - Encoder

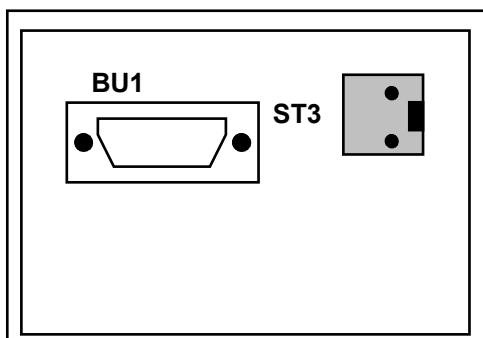
Pin 1 - 0 volts  
 Pin 2 - +24 volts dc  
 Pin 3 - Channel A  
 Pin 4 - Channel B  
 Pin 5 - Screen

#### ST1 - Inputs

Pin 1 - Screen  
 Pin 2 - 0 volts  
 Pin 3 - +24 volts output  
 Pin 4 - Offset  
 Pin 5 - Datum  
 Pin 6 - Reset to zero

Option EE  
 Pull up to 24v to activate

### Series 56 AG



#### ST3 - AC input

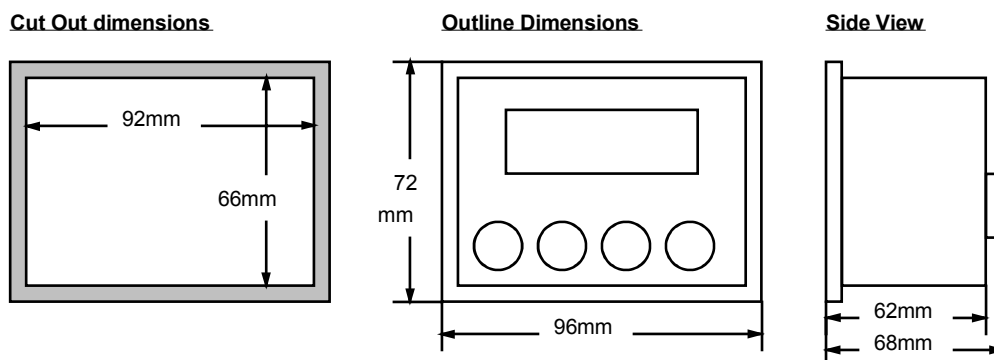
Pin 1 - L  
 Pin 2 - N  
 Pin 3 - E

#### BU1 - MX magnetic scale

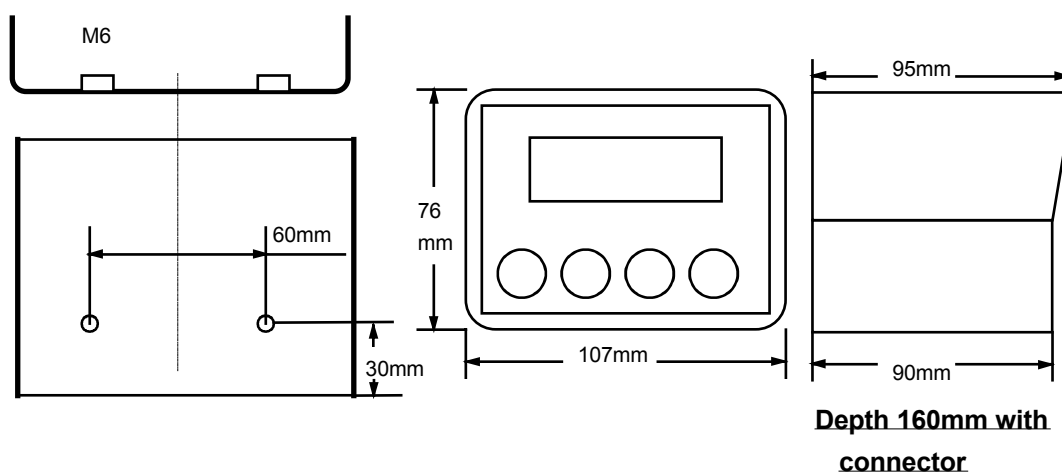
See MX Scale manual

**Dimensions**

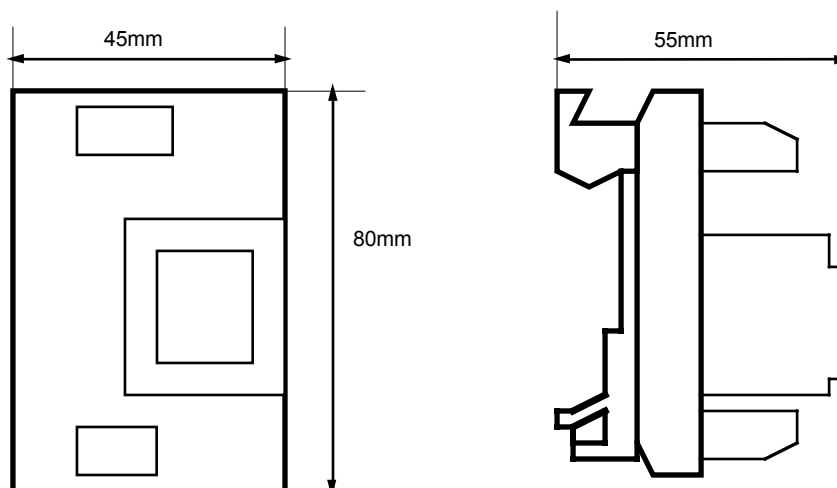
**Panel Mounting Series 54 and 56**



**AG Enclosure Mounting Series 54 and 56**



**NG20.0 Power Supply**



Series	Display			Power Supply				Options	
	600	500	100	003	024	110	230	AG	EE
54	■ ■	■ ■	■ ■		■ ■	■ ■	■ ■	■ ■	■ ■
56	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■	○ ■ ○ ■	○ ■ ○ ■	■ ■	▲ ▲ ▲ ▲
74	■				■	■	■	■	▲
76	■				■	■	■	■	▲
75	■				■	■	■	■	▲

○ For 56 series indicators to operate on 110/230 v ac, use the 024 version and order a separate NG20.0 power supply. **AG** versions always include NG20.0 mounted inside the enclosure.

▲ 2 external inputs only available.

For **AG** Version 230 or 110 v operation must be specified at order stage.

**Type designation of 54/56 series**

5X . 500 . 024 . SN000.XXXXXXX

- 54 Display with A / B encoder input
- 56 Display with converter integrated

Number of decade of the readout  
 500 = 5 digit LED 14mm high  
 600 = 6 digit LED 10mm high  
 100 = 6 digit LCD

Supply voltage  
 024 = 24 V DC  
 115 = 115VAC (in 54 only)  
 230 = 230VAC(in 54 only)

Construction  
 000 = standard  
 001 = 1<sup>st</sup> special version  
 etc

Special Features  
 EE = External input  
 AG = Free standing Housing  
 RS232 = Serial port (in 54 only)  
 M = high speed counting for MX system (in54 only)

Power supply 100mA 18Vdc din rail mounting version

NG20.0

**Accessories 56**

**Magnetic tape :MB 20.50.25.0**

MB 20.50.XX.X

Incremental Magnetic tape

Pole distance 5,0 mm

Length of tape

**Magnetic SensorMS 17.60.xx.x**

MS 17.60.XX.X

Incremental Magnetic Sensor 0,1mm

Length of sensor cable

## Liability exclusion / Guarantee

We have checked the contents of this instruction manual carefully, to the best of our knowledge and belief for conformity with the described hardware and software. Nevertheless errors, mistakes or deviations can not be excluded, therefore we do not guarantee complete conformity. Necessary corrections will be included in the subsequent editions. We appreciate your ideas and improvement suggestions very much. Reprint, duplication and translation, even in extracts, are only allowed with a written authorization by the company ELGO Electric GmbH. We constantly strive for improving our products, therefore we keep all rights reserved for any technical modifications without any notice.

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Damages verifiably not caused by ELGO Electric GmbH and due to improper handling are excluded from any guarantee e.g. by applying faulty voltage, diffusion of liquid into the interior of the engine, using force, scratching

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