SERIES 54-76

Programmable Position Indicators

Series 54 For use with Encoders
Series 56 For use with MX magnetic scale
Series 74 2 off Series 54 in one enclosure
Series 75 1 off Series 54 an 1 off 56 in one enclosure
Series 76 2 off Series 56 in one enclosure
Essential Features

The Series 54, 56, 74, 75 and 76 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
- Battery low indication
- 5 or 6 Digit display with +/- symbol, LED or LCD.
- Inch/metric selection.
- Display extinguished after 10 sec to save battery.
- Datum offset available.
- One or two axis formats are available
- External inputs on 54 series only.

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.
- **Series 74** two axis indicator available in LED display format. Suitable for two encoders.
- **Series 76** two axis indicator available in LED display format. Suitable for two MX magnetic scale feedbacks.
- **Series 75** two axis indicator available in LED display format. Suitable for one MX magnetic scale and one encoder.

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.
- MC18.50 - Signal translator which generates a rectangular feedback signal identical to an encoder.

In the case of the above indicators, the MC18 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 preprogrammed 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. (XXXX0X)

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.

**Setting of the Two axis indicators**

To operate and to set the two axis indicators it is simply the case of pressing this button. This toggles the setting functions from axis one to axis two. Once any setting routine is selected, it is not possible to toggle between axes. The single LED below each of the axis display signifies which axis is being edited.

- Digit scroll 1 to 9
- Digit scroll left to right

**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

Press the F button for three seconds gives access to the configuration 5 digit register.

Datum Mode
0 - Set datum to stored value
1 - Set as required
2 - Edit datum + or - 1 bit.

Datum / Datum Offset Edit 0 - Unlocked
1 - locked

Multiplier edit
0 - Unlocked
1 - Locked

Datum offset recalled on power up
0 - No
1 - Yes

Series 54 / Encoder feedback only
0 - Differential counting.
1 - Encoder X 1
2 - Encoder X 2
3 - Encoder X 4

Series 56 / Scale feedback only
Display extinguish
0 - No auto extinguish and no clamp extinguish
* 1 - Total power off / on with F button.
* 2 - Total power off after 5 minutes of inactivity.
* 3 - Extinguish display only, with clamp input
O 4 - Extinguish display only, after 10 seconds of inactivity
* 5 - Extinguish display only, after 30 seconds of inactivity
* 6 - Extinguish display only, after 1 minute of inactivity
* 7 - Extinguish display only, after 2 minutes of inactivity

Ignore 6th digit if present

* Only available in 3v version
O Only with LED display
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 F 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.
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

**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 - 24 volts dc
- Pin 4 - Datum
- Pin 5 - Offset
- Pin 6 - +24v output

**BU1 - Scale feedback connector**
See MX Scale manual.

Series 54 AG (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

**ST2 - Encoder**
- Pin 1 - 0 Volts
- Pin 2 - +24 Volts dc
- Pin 3 - Channel A
- Pin 4 - Channel B
- Pin 5 - Screen

**ST3 - AC input**
- Pin 1 - L
- Pin 2 - N
- Pin 3 - E

Series 56 AG

**BU1 - MX magnetic scale**
See MX Scale manual
Series 74 AG

Dimensions

ST1 - Encoder
Pin 1 - 0 volts
Pin 2 - +24 volts dc
Pin 3 - Channel A
Pin 4 - Channel B
Pin 5 - Screen

BU1 - MX magnetic scale
See MX Scale manual

ST2 - Encoder
Pin 1 - 0 volts
Pin 2 - +24 volts dc
Pin 3 - Channel A
Pin 4 - Channel B
Pin 5 - Screen

BU2 - MX magnetic scale
See MX Scale manual

Series 76 AG

ST3 - AC input
Pin 1 - L
Pin 2 - N
Pin 3 - E

BU1 - MX magnetic scale
See MX Scale manual

BU2 - MX magnetic scale
See MX Scale manual

Series 75 AG

ST3 - AC input
Pin 1 - L
Pin 2 - N
Pin 3 - E

See MX Scale manual

BU1 - MX magnetic scale

ST2 - Encoder
Pin 1 - 0 volts
Pin 2 - +24 volts dc
Pin 3 - Channel A
Pin 4 - Channel B
Pin 5 - Screen

Earth (E) on power connector
The E is connected to the metal housing and must be taken to earth. Screen Terminals are internally connected to housing.

ST4 - (all types) (Option)
Pin 1 - E
Pin 2 - 0 volts
Pin 3 - +24 volts
Pin 4 - Datum Ax1
Pin 5 - Zero Ax1
Pin 6 - Datum Ax2
Pin 7 - Zero Ax2
Pin 8 - 24v out

Supply on low voltage
Option EE
Panel Mounting. Series 54 and 56

**Cut Out dimensions**

- 92mm x 66mm

**Outline Dimensions**

- 72mm x 96mm

**Side View**

- 62mm x 68mm

AG Enclosure Mounting. Series 54 and 56

- M6
- 60mm x 30mm
- 76mm x 107mm
- 95mm x 90mm

Depth 160mm with connector

NG20.0 Power Supply

- 45mm x 80mm
- 55mm
**Panel Mounting Series 74, 75 and 76**

**Cut Out dimensions**

- Width: 186mm
- Height: 66mm

**Outline Dimensions**

- Width: 190mm
- Height: 72mm

**Side View**

- Depth: 62mm
- Height: 68mm

**AG Enclosure Mounting Series 74, 75 and 76**

**Depth 160mm with connector**

- Width: 95mm
- Height: 90mm

- M6
- Depth: 60mm
- Width: 30mm

- Width: 76mm
- Height: 191mm
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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.
Order code description

XX . XXX . XXX .XX

**Extra Features**
- TG - Metal bench top enclosure
- EE - External inputs

**Power supply options**
- 003 - 2.4 to 3.1 volts dc battery
- 024 - 24vdc
- 110 - 110 +/- 10% 50/60 Hz
- 230 - 230 +/- 10% 50/60 Hz

**Display Options**
- 100 - 5 digit LCD 13mm
- 500 - 5 digit red LED 14mm
- 600 - 6 digit red LED 10mm

**Type of unit**
- 54 - Single axis for use with encoders.
- 56 - Single axis for use with MX magnetic scale.
- 74 - Two axis for use with encoders.
- 76 - Two axis for use with MX magnetic scales.
- 75 - Two axis, one for encoder and one for scale.

Since all features are not available on all indicators, the following table should be used to make a selection.