Z54 & Z56 Series

Programmable Position Indicators

Series 54: For use with Encoders
Series 56: For use with MX magnetic scale
ESSENTIAL FEATURES
MX MAGNETIC SCALE
OPERATION
USER ADJUSTMENTS
Edit Datum and Datum Offset
Edit Datum programmed value
Setting display to any value
Edit datum Offset
Edit Datum +/- 1 bit
Edit Flexible Multiplier
Changing Display Value
Counter Configuration
Configuration Register
Direction of Count
Decimal Places
Inch / Metric Switching
GENERAL TECHNICAL INFORMATION
ENCODERS
SENSOR - MS17.60.03,0M
MAGNETIC TAPE – MB20.50.XX,X
TYPE DESIGNATION OF 54/56 SERIES
LIABILITY EXCLUSION / GUARANTEE
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

Pressing the above 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

OR
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
* 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

* Only available in 3v version
◉ Only with LED display

Ignore 6th digit if present
**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**

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

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

**ST4 - 003 version**
- Pin 1 - (-) Battery
- Pin 2 - (+)

**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

**Option EE**
- Pull up to 24v to activate

Series 56 AG

**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

**Option EE**
- Pull up to 24v to activate

**BU1 - MX magnetic scale**
See MX Scale manual.
Dimensions

**Panel Mounting  Series 54 and 56**

**Cut Out dimensions**

![Cut Out dimensions diagram]

**Outline Dimensions**

![Outline Dimensions diagram]

**Side View**

![Side View diagram]

**AG Enclosure Mounting  Series 54 and 56**

![AG Enclosure Mounting diagram]

**NG20.0 Power Supply**

![NG20.0 Power Supply diagram]
<table>
<thead>
<tr>
<th>Series</th>
<th>Display</th>
<th>Power Supply</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
<td>500 100</td>
<td>003 024 110 230 AG EE</td>
</tr>
<tr>
<td>54</td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td></td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td></td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td>56</td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td></td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td></td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td></td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td>74</td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td>76</td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td>75</td>
<td>■</td>
<td>■</td>
<td>■ ■ ■ ■ ■</td>
</tr>
</tbody>
</table>

- 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**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>Display with A / B encoder input</td>
</tr>
<tr>
<td>56</td>
<td>Display with converter integrated</td>
</tr>
</tbody>
</table>

**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 = 1st 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 (in 54 only)

**Power supply**
100mA 18Vdc din rail mounting version

**Accessories 56**

**Magnetic tape :** MB 20.50.25.0

**Incremental Magnetic tape**

**Pole distance** 5.0 mm

**Length of tape**

**Magnetic sensor :** 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.

ELGO Electric does not assume any liability for possible errors or mistakes.

The guarantee period is one calendar year from the date of delivery and includes the delivered unit with all components. ELGO Electric GmbH will at its option replace or repair without charge defects at the unit or the included parts, verifiable caused by faulty manufacturing and/or material in spite of proper handling and compliance to the instruction manual.

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.

---

**ELGO - Electric - GmbH**

**Measure - Control - Position**

Carl - Benz - Straße 1, D-78239 Riedingen

Phone: 0049-7731/93 39 - 0, Fax: 2 88 03

Internet: www.elgo.de, Mail: info@elgo.de