

Z60-014

Quasi-absolute Magnetic Measuring & Display System
for manual adjustments of 1, 2 or 3 axes



- Up to 3 axes at a glance during manual axis adjustment: Switchable display of actual position, target position and delta
- Due to the internal rechargeable battery, the actual position is detected permanently (even in de-energized condition)
- Well legible graphical LCD display with units & symbols, e. g. directional arrows and sign for indicated positions
- Specific parameters for each axis separately programmable, e. g. offset, tolerance window and measurement unit
- With serial RS485 interface for PLC communication
- Power supply 14 ... 30 VDC

Z60-014 - Quasi-absolute, magnetic Measuring and Display System

General

The compact position indicator **Z60-014** has a graphical LCD display which allows a comfortable and accurate reading of the actual position, target position and the difference (delta) of axes X, Y and Z on manual axis resp. format adjustments. Specific parameters such as offset, tolerance window and measurement unit (mm/inch) can be set individually for each axis.

The operating mode of the three axis display can be switched separately for each axis: **Actual** position, **target** position and **delta** (difference between actual and target position).

The menu language can be switched between English, German and Italian. Other languages can be realized on request.



The quasi-absolute Measuring Principle

A rechargeable battery line integrated in the housing of the position indicator transforms the incremental measurement into a quasi-absolute measurement, as the current positions are permanently detected even in the de-energized state and further processed internally.

Under optimal charging and ambient conditions, the operating time of the batteries up to **6 weeks** after disconnection of the supply voltage. By using the "energy safe mode" the operating time can be extended up to **12 weeks** after power-off. With this setting, the maximum operating speed is reduced from 2.0 m/s to 0.5 m/s.

Possible applications

Format adjustments and manual axis infeeds on

- Wood working machines (e. g. throughfeed drilling machines)
- Plastics processing machines (e. g. extrusion systems)
- Packaging machines and sorting facilities
- Food processing machines

Advantages

- Battery-backed position sensing even de-energized condition
- All 3 axes at one glance
- Wear free measuring principle
- Contactless scanning
- IP67 protected sensors

RS485 communication with a PLC

An external PLC can transfer the desired target positions to the **Z60-014**. For this purpose the system is equipped with a serial RS485 interface. The desired baud rate, device address and response time can be set in the parameter level.

Magnetic Tape and MS2060 Sensors

To determine the position of the (maximum three) axes, a coded magnetic tape of type **MB20-50-10-1-R** is glued along the distance to be measured. This magnetic tape contains the information required for measurement (actual position), which is scanned by the **MS2060** magnet sensors and transmitted to the position indicator.

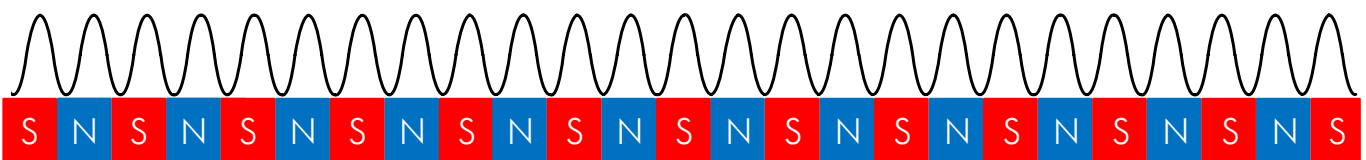
The magnet sensors are guided contactless and absolutely wear-free over the magnetic tape. The maximum permissible mounting distance between sensor and tape is 2.0 mm.



Principle of scanning

The incremental **MS2060** magnet sensors consists of a scanning technology, which scans the north and south poles on the magnetic tape and produces a single sine/cosine wave for each pole. The complete sine/cosine signal process is interpolated electronically. Depending on refinement of the interpolation, together with the pole pitch of the magnetic tape, the resolution of the measuring system is determined. The magnetic tape **MB20-50-10-1-R** has a pole pitch of 5 mm.

Magneti Tape Coding



Z60-014 - Quasi-absolute, magnetic Measuring and Display System

Technical Data Z60-014 System

Mechanical Data Indicator	
Housing	panel housing, aluminium
Housing dimensions	W x H = 72 x 96 mm
Installation depth	100 mm (with connectors) resp. 37 mm (without connectors)
Panel cut out	W x H = 67 x 93 mm
Keyboard	foil with short stroke keys
Electrical Data Indicator	
Display	graphical LCD (80 x 120 pixels)
Measurement units	mm or inch
Accuracy	± 1 digit
Power supply voltage	14 ... max. 30 VDC
Reverse polarity protection	integrated
Current consumption	max. 600 mA (incl. sensor load)
Interface	RS485 for communication with PLC
External inputs	3 control inputs 24 V, PNP
External outputs	3 control outputs 24 V, PNP
Connections	1 x 5-pin & 1 x 9-pin Phoenix connector 3 x 7-pin M9 round connectors (sensors)
Power down memory	FRAM for parameters
Battery operating time	sensor supply up to 6 or 12 weeks after power-off (depending on selected mode)
Battery standby current	approx. 160 µA

Mechanical Data Sensor MS2060

Housing material	zinc die cast
Dimensions (L x W x H)	30 x 10 x 15 mm
Measuring principle	magnetic, quasi-absolute
Required magnetic tape	MB20-50-10-1-R
Magnetic tape pole pitch	5.0 mm
Distance sensor / tape	max. 2.0 mm
Max. measuring length	theoretically unlimited
Operating speed	max. 2.0 m/s resp. 0.5 m/s in energy safe mode
Connections	3 screwable 7-pin M9 round connectors
Sensor cable	drag-chain suitable, 6-wire, twisted pairs and double-shielded
Sensor cable length	2.5 m (standard) others on request
Cable bending radius	min. 60 mm
Weight (without cable)	approx. 30 g (cable: approx. 60 g/m)

Electrical Data Sensor MS2060

Resolution	0.01 mm
Repeat accuracy	± 0.05 mm
System accuracy in µm at 20 °C	± (25 + 20 x L) L = measuring length in meters

Environmental conditions (entire system):

Operating temperature	0 ... +50 °C
Storage temperature	-20 ... +70 °C
Humidity	max. 80 %, non-condensing
Protection class (indicator)	front: IP43 (installed); rear: IP20
Protection class (sensors)	IP67
Influence of external magnetic fields on the Magnet Sensors	External magnetic fields > 1 mT, which directly impinge upon the sensor, can affect the system accuracy

Type Designation of Z60-014 Indicator

Z60 - $\underline{\quad} \underline{\quad} \underline{\quad} - \underline{\quad} \underline{\quad} \underline{\quad} - \underline{\quad} \underline{\quad} \underline{\quad}$

A A A - B B B - CCC

A SN number

014 = Version for manual axis infeeds and format adjustments

B

Power supply voltage

024 = 14 ... 30 VDC power supply

C

Signal inputs

MX = 1 sensor connection for single axis tasks

MM = 2 sensor connection for dual axis tasks

MMM = 3 sensor connection for triple axis tasks (standard)

Type Designation of MS2060 Magnet Sensors

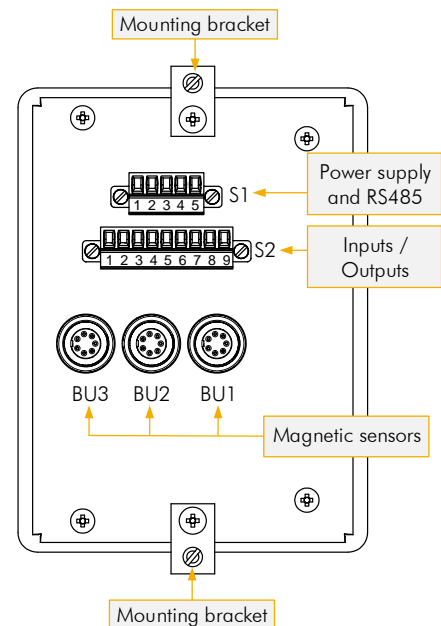
MS2060 - $\underline{\quad} \underline{\quad} \underline{\quad} \underline{\quad}$

A A . A

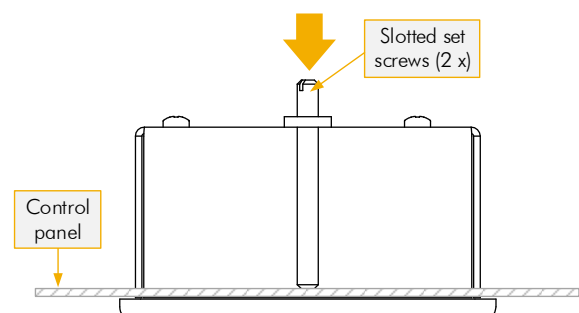
A Cable length

02.5 = standard cable length of 2.5 m
others on request (max. 20 m available)

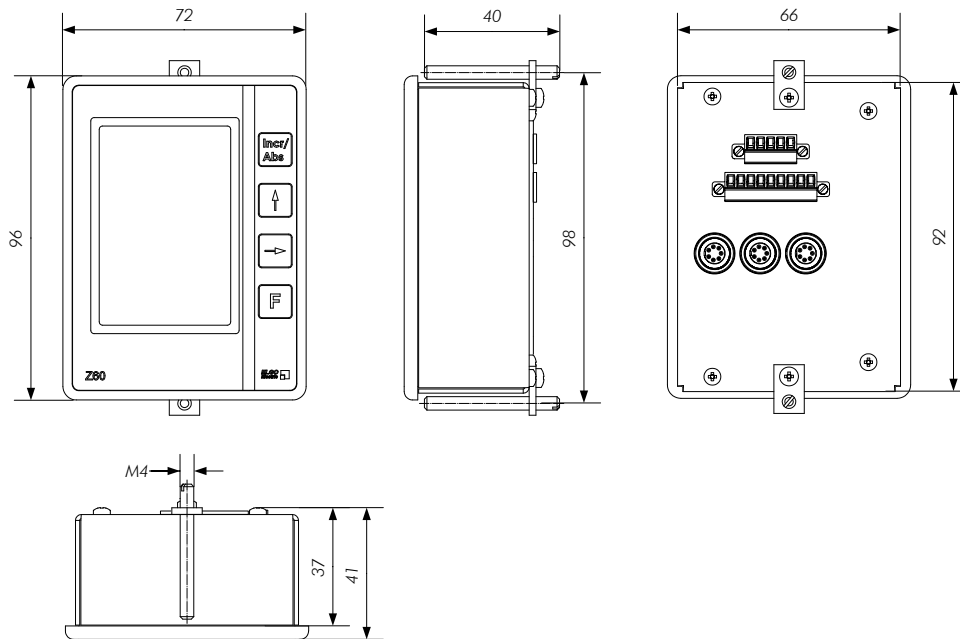
Indicator: Back panel with Connectors



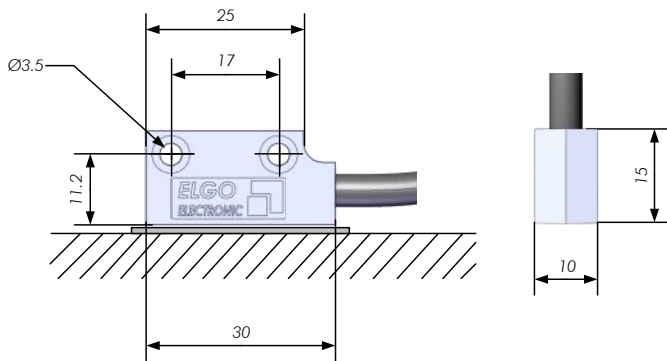
Indicator: Control Panel Installation



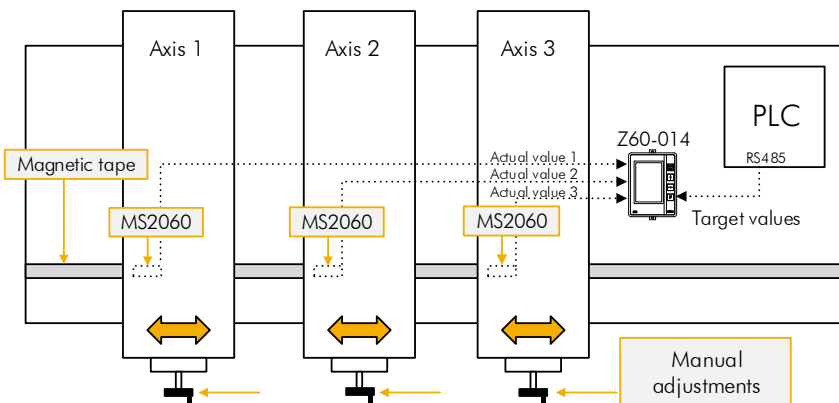
Dimensions of Position Indicator:



Dimensions of Magnetic Sensors



Application Example: Manual Axis Adjustment



Accessories

Order Designation	Description
MB20-50-10-1-R	Magnetic tape for MS 20.60 sensors (pole pitch 5 mm)
End cap set 10 mm	Consists of 2 end caps for fixing and protecting the magnetic tape
FS-XXXX	Profile guide rail for the magnetic tape (XXXX = length in m)
NG24.0	24 VDC power supply unit with primary 115/230 VAC input

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