

Operating Manual

SERIES Z58-600

Universal Position Indicator for incremental and absolute Measuring Systems



- Indicator for evaluation of incremental or absolute measuring systems
- Proven standard functions, e. g. multiplication factor, reference value, tool-offset, four-edge evaluation and inch/mm switching
- 6 digit LED display (14 mm high) with brightness control
- 3 external +24 V control inputs (reset, reference, tool-offset)
- Switching function via two normally open relay outputs
- Optional analog output 0 ... 10 V or 0 (4) ... 20 mA
- Power supply 24 VDC (optionally 115 or 230 VAC)
- Serial RS232 interface

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4 General, Safety, Transport and Storage

4.1 Information Operating Manual




This manual contains important information regarding the handling of the device. For your own safety and operational safety, please observe all safety warnings and instructions. Precondition for safe operation is the compliance with the specified safety and handling instructions. Moreover, the existing local accident prevention regulations and the general safety rules at the site of operation have to be observed.

Please read the operating manual carefully before starting to work with the device! It is part of the product and should be kept close to the device and accessible for the staff at any time. The illustrations in the manual are for better demonstration of the facts. They are not necessarily to scale and can slightly differ from the actual design.


4.2 Explanation of Symbols

Special notes in this manual are characterized by symbols. The notes are introduced by signal words which express the magnitude of danger. Please follow this advice and act carefully in order to avoid accidents, damage, and injuries.


Warning notes:

	DANGER! This symbol in connection with the signal word "Danger" indicates an immediate danger for the life and health of persons. Failure to heed these instructions can result in serious damage to health and even fatal injury.
	WARNING! This symbol in connection with the word „Warning“ means a possibly impending danger for the life and health of persons. Failure to heed these instructions can result in serious damage to health and even fatal injury.
	CAUTION! This symbol in connection with the signal word "Caution" indicates a possibly dangerous situation. Failure to heed these instructions can lead to minor injuries or damage of property.



Special safety instructions:

	DANGER! This symbol in connection with the signal word "Danger" indicates an immediate danger for the life and health of persons due to voltage. Failure to heed these instructions can result in serious damage to health and even fatal injury. The operations may only be carried out by a professional electrician.
---	---

Tips and recommendations:

	NOTE! ...points out useful tips and recommendations as well as information for an efficient and trouble-free operation.
---	---

Reference marks:

-  Marks a reference to another chapter of this manual.
-  Marks a reference to another chapter of another document.

4.3 Statement of Warranties

The producer guarantees the functional capability of the process engineering and the selected parameters.

4.1 Demounting and Disposal

Unless acceptance and disposal of returned goods are agreed upon, demount the device considering the safety instructions of this manual and dispose it with respect to the environment.

Before demounting:

Disconnect the power supply and secure against re-start. Then disconnect the supply lines physically and discharge remaining energy. Remove operational supplies and other material.

Disposal:

Recycle the decomposed elements: Metal components in scrap metal, Electronic components in electronic scrap, Recycle plastic components, dispose the remaining components according to their material consistence.



CAUTION!

Wrong disposal causes environmental damages!
Electronic scrap, electronic components, lubricants and other auxiliary materials are subject to special refuse and can only be disposed by authorized specialists!

Local authorities and waste management facilities provide information about environmentally sound disposal.

Safety



CAUTION!

Please read the operating manual carefully, before using the device! Observe the installation instructions!
Only start up the device if you have understood the operating manual.
The operating company is obliged to take appropriate safety measure.
The initial operation may only be performed by qualified and trained staff.
Selection and installation of the devices as well as their embedding into the controlling system require qualified knowledge of the applicable laws and normative requirements on the part of the machine manufacturer.

4.2 General Causes of Risk

This chapter gives an overview of all important safety aspects to guarantee an optimal protection of employees and a safe and trouble-free operation. Non-observance of the instructions mentioned in this operating manual can result in hazardous situations.

4.3 Personal Protective Equipment

Employees have to wear protective clothing during the installation of the device to minimize danger of health.

Therefore:

Change into protective clothing before performing the works and wear them throughout the process.
Additionally observe the labels regarding protective clothing in the operating area.

Protective clothing:

	<p>PROTECTIVE CLOTHING ... is close-fitting working clothing with light tear strength, tight sleeves and without distant parts. It serves preliminarily for protection against being gripped by flexible machine parts. Do not wear rings, necklaces or other jewelry.</p>
	<p>PROTECTIVE GLOVES ...for protecting the hands against abrasion, wear and other injury of the skin.</p>
	<p>PROTECTIVE HELMET ...for protection against injuries of the head.</p>

4.4 Conventional Use

The ELGO-device is only conceived for the conventional use described in this manual.
The ELGO device type Z58-600 only serves to visualize positions, lengths and distances.



CAUTION!

Danger through non-conventional use!

Non-intended use and non-observance of this operating manual can lead to dangerous situations.

Therefore:

- Only use the device as described
- Strictly follow the instructions of this manual

Avoid in particular:

- Remodeling, refitting or changing of the construction or single components with the intention to alter the functionality or scope of the device.

Claims resulting from damages due to non-conventional use are not possible.
Only the operator is liable for damages caused by non-conventional use.

4.5 Safety Instructions for Transport, Unpacking and Loading



CAUTION!

Transport the package (box, palette etc.) professionally.

Do not throw, hit or fold it.

4.6 Handling of Packaging Material

Notes for proper disposal: ☞ 4.1

4.7 Inspection of Transport

Check the delivery immediately after the receipt for completeness and transport damage.
In case of externally recognizable transport damages:

- Do not accept the delivery or only accept under reserve.
- Note the extent of damages on the transportation documents or delivery note.
- File complaint immediately.



NOTE!

Claim any damage immediately after recognizing it.

The claims for damage must be filed in the lawful reclaim periods.

4.8 Storage

Store the device only under the following conditions:

- Do not store outside
- Keep dry and dust-free
- Do not expose to aggressive media
- Protect from direct sun light
- Avoid mechanical shocks
- Storage temperature (☞0) needs to be observed
- Relative humidity (☞0) must not be exceeded
- Inspect packages regularly if stored for an extensive period of time (>3 months)

5 Product Features

The universal ELGO position indicator Z58-600 is suitable for detecting lengths and positions. The device has 2 programmable pre-selections in order to control 2 internal normally open relays.

Both conventional incremental encoders and incremental or absolute ELGO measuring systems can be connected as input signals. It is therefore a universal device which can visualize the information of numerous ELGO standard measuring systems.

With the Z58-600, ELGO is able to offer a complete solution concerning signal detection and visualization.

The predecessor type Z54 can be replaced by Z58 (except for a few special devices). Please consider the pin assignment during Z54 replacement, because with Z58 additional plugs for new encoder types are available.

Essential Features:

- Power supply:
 - 24 VDC (standard)
 - 115/230 VAC with external ELGO power pack NG24.0 possible
 - 115 VAC-supply alternatively available when order type **Z58-654-115-X** (restrictions ↗ 7.2)
 - 230 VAC-supply alternatively available when order type **Z58-654-230-X** (restrictions ↗ 7.2)
- Standardly with panel mounting housing (cut-out = 93 x 67 mm)
- Optionally with built-on housing for surface mounting available
- Installation depth = 73 mm (110 mm inclusive D-SUB connector)
- RS232 interface for transmission of the actual value
- All connections are pluggable



Figure 1: Panel housing (standard)



Figure 2: Built-on housing (option)

5.1 Compatible Measuring Systems

Table 1: Compatible Measuring Systems

Measuring principle	Compatible Measuring Systems
Incremental	Conventional HTL- and TTL rotary encoders as well as the unguided ELGO linear encoders LMIX, EMIX, DMIX, GMIX, RMIX or guided FMIX and PMIX systems
Absolute	ELGO EMAX (unguided) and FMAX (guided). FMAX calibration see chapter ↗ 11

5.2 Digital Inputs

The unit has 3 external inputs for triggering the setting functions (reset, reference and tool-offset). These inputs are available at the 6-pin Phoenix connector S2 and have the following properties:

- Characteristic: PNP, active high
- Switching voltage: +24 VDC
- Input current: max. 10 mA

6 Technical Data

6.1 Identification

The type label serves for the identification of the unit. It is located on the housing of the device and indicates the exact type designation (= order reference ☞ 14) with the corresponding part number. Furthermore, the type label contains a unique, traceable device number. When corresponding with ELGO please always indicate this data.

6.2 Dimensions Panel Housing (standard)

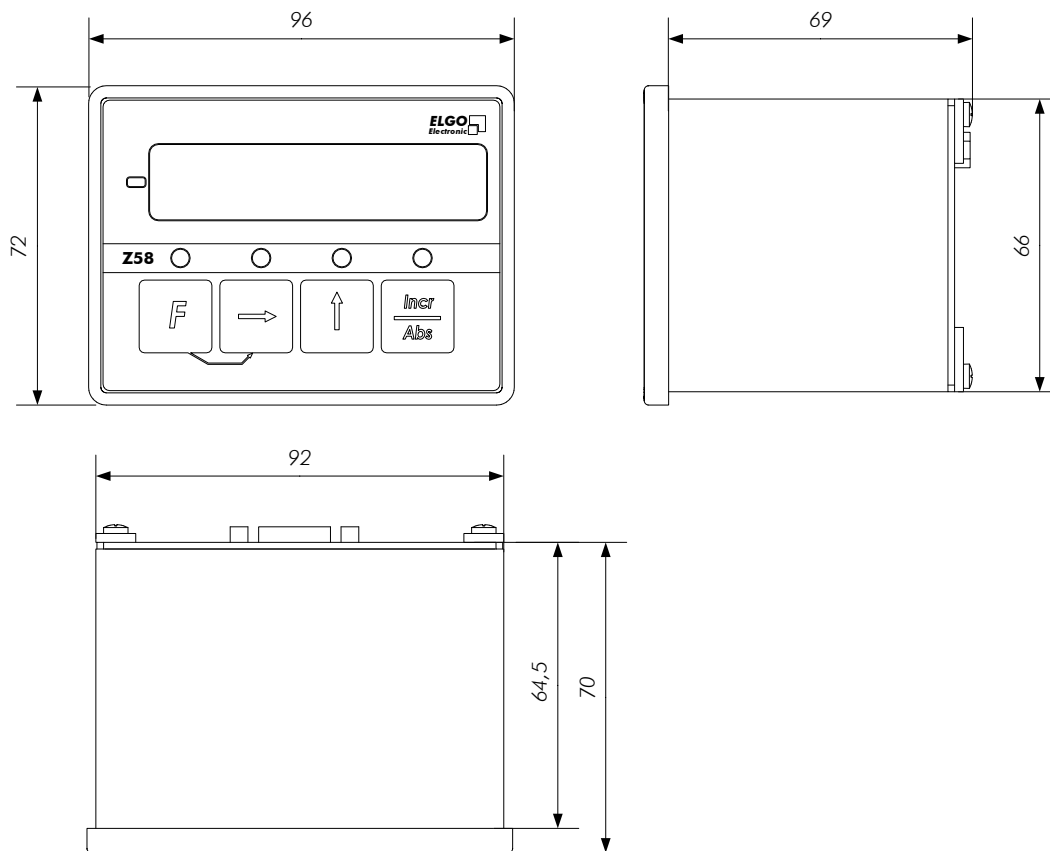


Figure 3: Dimensions panel housing (standard)

6.3 Dimensions Built-on Housing (Option AG)

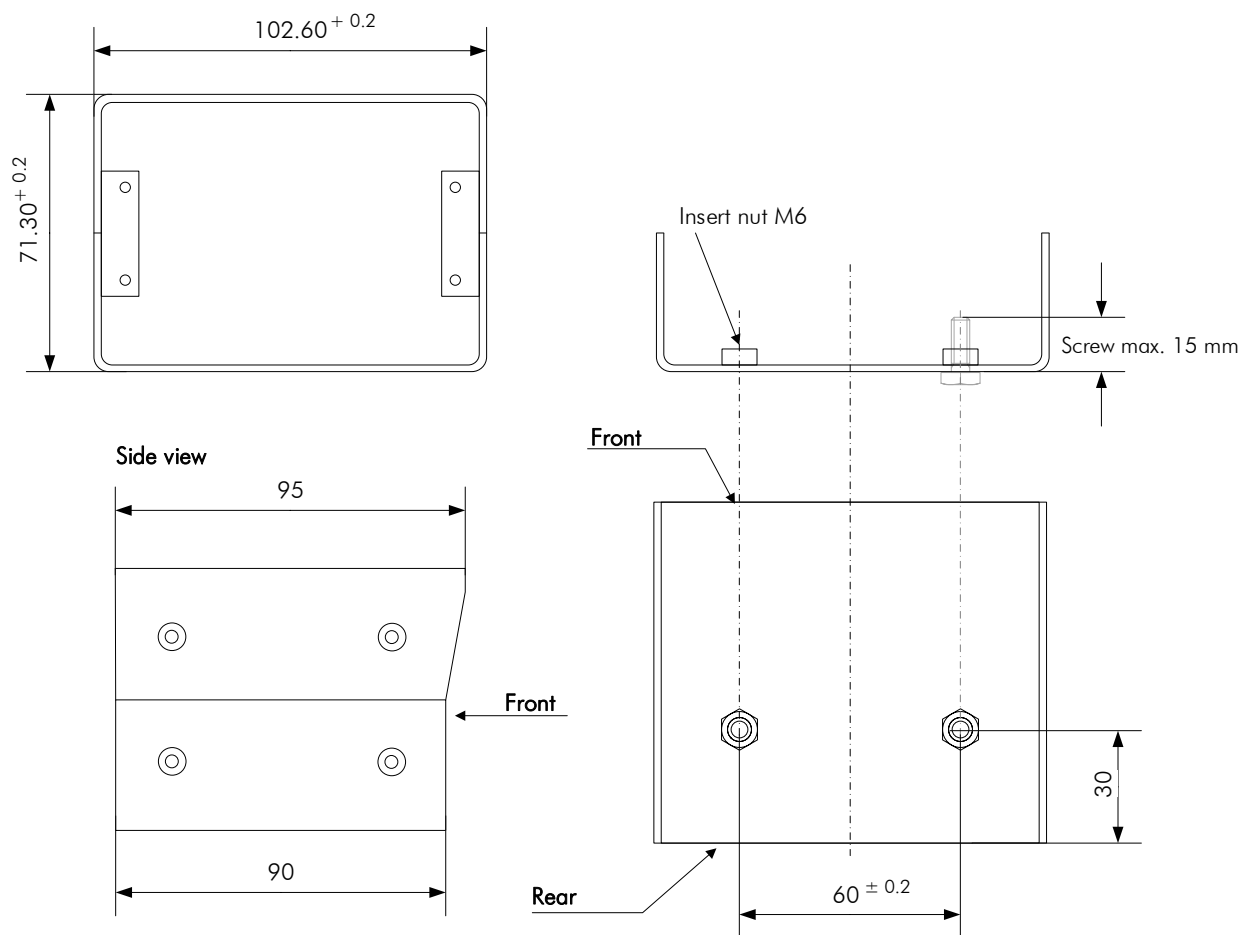


Figure 4: Dimensions built-on housing (Option AG)

6.4 Technical Data Z58-600
Z58-600 (standard version)
Mechanical Data

Housing	panel housing (standard) or built-on housing (option A)
Housing material	aluminium, black
Housing dimensions (W x H)	panel housing (standard): W x H x D = 96 x 72 x 70 mm built-on housing (option A): W x H x D = 71.3 x 102.6 x 95 mm
Panel cut out (W x H)	W x H = 93 x 67 mm
Keyboard	foil with short stroke keys
Installation depth	78 mm (including screw terminals) 115 mm (including D-SUB connector)

Electrical Data

Display	6-digits LED (red, digit height: 14 mm)
Accuracy	± 1 Digit
Power supply voltage	Standard: 24 VDC ± 20 % Version Z58-654-115-X-A: 115 VAC Version Z58-654-230-X-A: 230 VAC
Current consumption	70 mA (without measuring system)
Signal inputs	HTL / TTL / RS422 (depends on order)
Input channels (incremental)	A, B resp. A, A', B, B', Z, Z'
Channels for absolute encoders	RX, RX', TX, TX'
Input frequency	max. 100 KHz (optionally 500 KHz)
External inputs	3 digital inputs (set functions) characteristics: PNP, active high switching voltage: +24 VDC input current: max. 10 mA
Relay outputs	2 potential-free shutters (24 VDC / max. 1 A)
Analog outputs (option)	12 Bit, 0... 10 VDC (max. = 5mA) or 0 (4)... 20mA ($R_{max} = 200 \Omega$)
Interfaces	RS232 (transmission of actual value)
Connections	pluggable screw terminals and 9 pin (female) D-SUB connectors
Data memory	EEPROM
Optional accessories	external power pack NG24.0 for 115/230 VAC supply

Environmental conditions

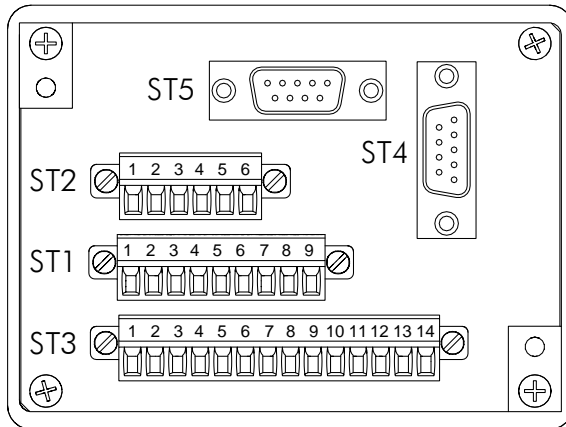
Operating temperature	0 ... +50 °C
Storage temperature	-20 ... +80 °C
Humidity	max. 80 %, non-condensing
Protection class (front)	IP43 (installed state)
Protection class (rear)	IP40

7 Pin Assignments

7.1 Connection of Z58-600 (Standard 24 VDC)

Table 2: Pin Assignment of Z58-600

Rear (example full assembly)¹



Pin ST2 - (power supply and external inputs)

1	Screen / shield
2	0 V / GND
3	+24 VDC (power supply voltage)
4	Tool-offset (active high)
5	Reference (active high)
6	Reset (active high)

Pin ST4 - (differential encoders)

1	0 V / GND
2	+5 V / +24 V out (encoder supply)
3	Channel A
4	Channel B
5	0 V / GND (encoder supply)
6	Channel A'
7	Channel B'
8	Channel Z
9	Channel Z'

Inverted signals are marked with ' '

Pin ST1 - (standard encoders)

1	0 V / GND (encoder supply)
2	+5 V or +24 V out (encoder supply)
3	Channel A
4	Channel B
5	Screen / shield
6	Channel A' (only with 5 V encoders)
7	Channel B' (only with 5 V encoders)
8	Channel Z' (only with 5 V encoders)
9	Channel Z

Pin ST3 - (FMAX / EMAX, relays, analog outputs)

1	Screen / shield
2	0 V / GND (encoder supply)
3	+5 V / +24 V out (encoder supply)
4	RS422_RX'
5	RS422_RX
6	RS422_TX'
7	RS422_TX
8	n. c.
9	Analog output (0 ... 10 VDC)
10	Analog output (0/4 ... 20 mA)
11	Relay_1_A
12	Relay_1_B
13	Relay_2_A
14	Relay_2_B

Pin ST5 - (RS232 interface)

2	TxD
3	RxD
5	0 V / GND



REMARK!

When using encoders with 24 V resp. 10 ... 30 V signals, the inverted signals must not be connected.

¹ Depending on version and selected options, only the relevant connectors are fitted resp. terminals are occupied

7.2 Connection of Z58-654 (VAC Versions)

Additional description for connecting devices with 115 or 230 VAC power supply

ATTENTION!

The following functions, encoders and options (☞ 14) are not available with VAC-versions (654):

1. Unavailable Standard Functions:

For technical reasons, no relay outputs can be equipped.

2. Unavailable Measuring Systems:

- 1 = A/B/Z with 24 VDC encoder supply, HTL (PNP), 100 KHz
- 2 = A/A' B/B' Z/Z' with 24 VDC encoder supply, TTL (PNP), 100 KHz
- 3 = A/A' B/B' Z/Z' with 5 VDC encoder supply, TTL (PNP), 100 KHz
- 4 = compatible to ELGO FMAX absolute encoders
- 5 = compatible to ELGO EMAX absolute encoders
- 8 = A/A' B/B' Z/Z' with 24 VDC encoder supply, TTL (PNP), 500 KHz
- 9 = A/A' B/B' Z/Z' with 5 VDC encoder supply, TTL (PNP), 500 KHz

3. Unavailable Options:

- F = analog output 0 ... 10 V
- G = analog output 0 ... 20 mA
- H = analog output 4 ... 20 mA



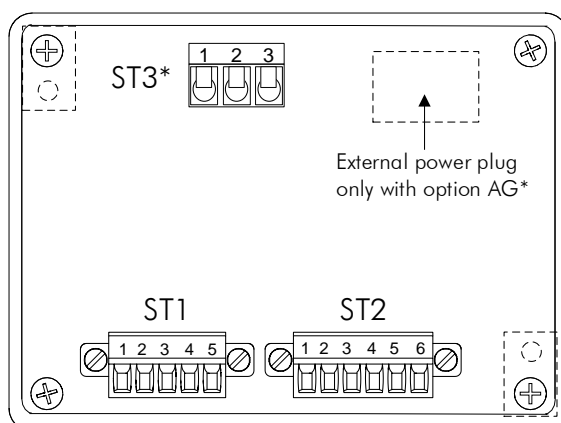
REMARK!

The 115/230 VAC versions are mainly offered to replace the predecessor type Z54 standard. For technical reasons the above encoders and options cannot be realized here. However, if you need any of the above encoders/options and do not have a 24 VDC power supply, please use the Z58-600 standard device in combination with the external ELGO power pack NG24.0, which is available as an accessory component (☞ 14.1).

7.2.1 Pin Assignment of Z58-654

Table 3: Pin Assignment of Z58-654

Rear



Pin ST2 - (external inputs)

1	Screen / shield
2	0 V / GND
3	+24 VDC out (HIGH level)
4	Tool-offset (active high)
5	Reference (active high)
6	Reset (active high)

Pin ST1 - (rotary encoder)


1	0 V / GND (encoder supply)
2	+24 V out (encoder supply)
3	Channel A
4	Channel B
5	Screen / shield

Pin ST3 - (AC supply)*

1	L1
2	N
3	PE






*) ST3 is not required for option AG (built-on housing). A separate connector for AC supply is included.

8 Installation and First Start-Up

	<p>CAUTION Please read the operating manual carefully before using the device! Strictly observe the Installation instructions! In case of damage caused by failure to observe this operating manual, the warranty expires.</p> <p>ELGO is not liable for any secondary damage and for damage to persons, property or assets.</p> <p>The operator is obliged to take appropriate safety measures.</p> <p>The first start-up may only be performed by qualified staff that has been trained and authorized by the operator.</p>
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8.1 Operating Area

	<p>WARNING! Do not use the device in explosive or corrosive environments! The device must not be installed close to sources of strong inductive or capacitive interference or strong electrostatic fields!</p>
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	<p>CAUTION! The electrical connections must be made by suitably qualified personnel in accordance with local regulations.</p>
	<p>The device may be designed for switchboard mounting. During work on the switchboard, all components must be de-energized if there is a danger of touching the energized parts! (protection against contacts)</p>
	<p>Wiring works may only be performed in the de-energized state!</p>
	<p>Thin cable strands have to be equipped with end sleeves! Before switching on the device, connections and plug connectors have to be checked!</p>
	<p>The device must be mounted in a way that it is protected against harmful environmental influences such as splashing water, solvents, vibration, shock and severe pollution and the operating temperature must not be exceeded.</p>

8.2 Installation of the indicator

8.2.1 Panel Housing (standard)

The position indicator is intended for installation in a panel cut-out with the dimensions $W \times H = 93 \times 67$ mm. For mounting a 1 slotted screwdriver and 1 Phillips screwdriver is required. Then proceed as follows:

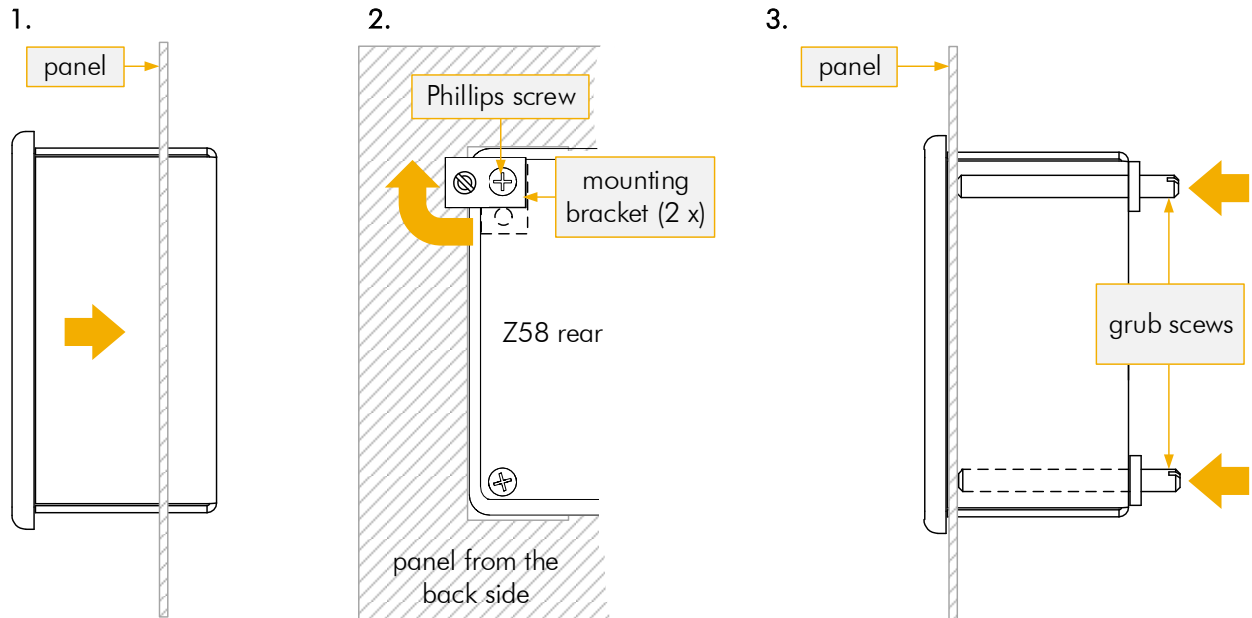


Figure 5: Installation into panel

1. First slide the position indicator into a suitable panel cut-out.
2. Then loosen the two Phillips screws of the diagonally mounted mounting brackets on the rear. Turn the two mounting brackets so that the threaded holes point outwards and then tighten the Phillips screws.
3. Now insert the provided grub screws into the threaded holes of the mounting brackets and turn clockwise until the device is firmly seated in the cut-out.

8.2.2 Built-on Housing (Option „A“)

In order to fasten the device by using two M6 screws, the built-on housing has two insert nuts on the underside (see figure below). The hole distance is $60^{\pm 0.2}$ mm (see 6.3).

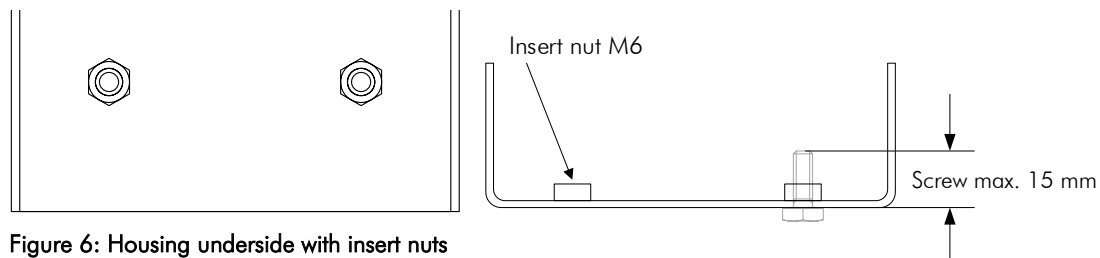


Figure 6: Housing underside with insert nuts



ATTENTION!

The length of the screws used must not exceed 15 mm! Otherwise the electronics will be damaged and the device may be destroyed.

9 Design and Functions

9.1 Key Assignment and LED Overview

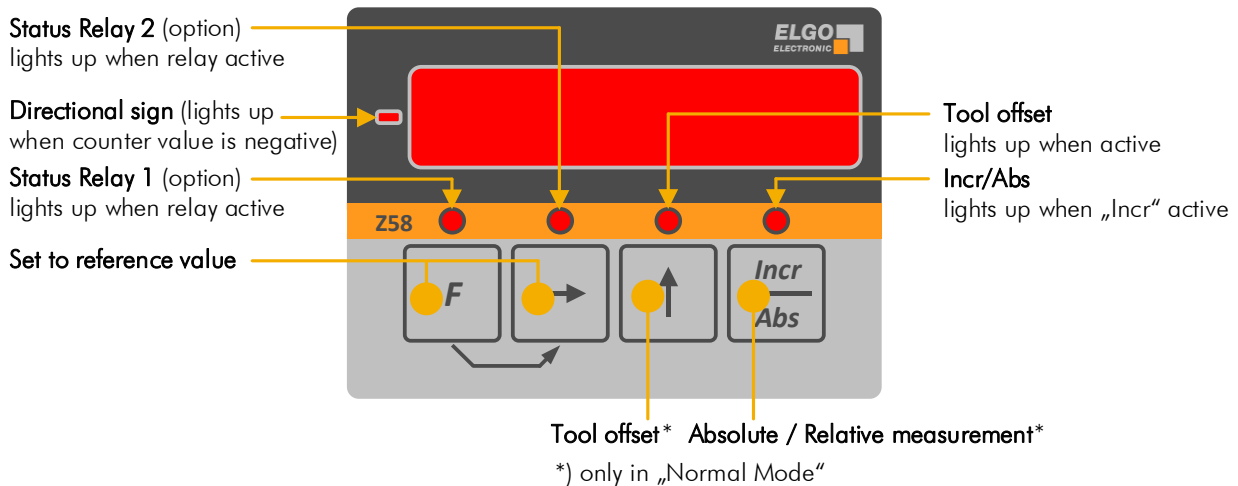


Figure 7: Key assignment and LED overview

9.2 Key Functions

9.2.1 Key Functions in Normal Mode:

	+		Short keystroke → set to reference value Press for 3 seconds → edit reference value (Parameter P09)
	+		Press for 3 seconds → enter parameter level
			Short keystroke → activate tool-offset Repeated keystroke → undo
	+		Short keystroke → absolute/relative measurement switchover

9.2.2 Key Functions in Parameter Level:

		Short keystroke → confirm & save parameter / step to next parameter
		Short keystroke → select decade
		Short keystroke → increase decade
		Sign changeover (only relevant parameters)
	+	Press for 3 seconds → switch back to normal mode

9.3 Parameter Level

9.3.1 Enter Parameter Level

Press **F** + **Incr/Abs** for 3 seconds at the same time:

→ **P 01** appears in the display („0“ is flashing) → the parameter level is active

The corresponding key functions for programming are described in the previous section ☞ 9.2.2.

9.3.2 Parameter Description

All available parameters are described in detail here:

P00 = Reserved for test purposes

P01 = The **counting direction** can be reversed here (setting 0 or 1).

P02 = No function / reserved

P03 = **Selection of the decimal place**

P04 = **Actual value memory** can be activated/deactivated here.

P05 = **Keypad lock/ keypad enable** (the parameter level always remains active)

P06 = Select the **edge evaluation** (x 1, x 2 x or x 4)

P07 = **Measuring system selection:**

The connected measuring system must be selected here:

Setting 0 = Inkrementelle Messsystemsignale A/B/Z (z. B. EMIX/LMIX/PMIX/FMIX oder Drehgeber)

Setting 1 = Incremental encoder signals A/A', B/B', Z/Z' (for differential encoder types)

Setting 2 = Absolute signals of ELGO - EMAX (via RS422 interface)

Setting 3 = Absolute signals of ELGO - FMAX (via RS422 interface)

P08 = **Multiplication factor:**

For details of the pulse scaling refer to section ☞ 9.6.

P09 = **Reference value:**

A reference value can be entered here which is taken over into the display when keys **F** + **▶** are pressed or the external reference input is activated.

P10 = **Tool-offset:**

An offset dimension can be defined here. By pressing the **▶** or activating the external tool-offset input the display will add this value to the actual value.

P11 = **Saw blade thickness** (Incr-Mode only):

In order to compensate the thickness of a saw blade of a saw machine, the value can be stored here.

P12 = **Preset limit for relay 1** (min) activates when underrun

P13 = **Preset limit for relay 2** (max) activates when overrun

P14 = **Display brightness:**

To adjust the brightness of the LED display digitally from 0 (darkest) to 9 (brightest).

P15 = No function / reserved

P16 = **Default parameters:**

Details about resetting the Z58 to the default parameters can be found in section ☞ 9.5.

P17 = **Measurement unit mm or inch:**

Defines whether the position display is to be operated in millimeters or inches.

P20 = **Analog (minimum value):**

Enter the value at which the analog output controls 0 V resp. 0 / 4 mA.

P21 = **Analog (maximum value):**

Enter the value at which the analog output controls 10 V resp. 20 mA.

P22 ... P98 are without function or reserved

P99 = Indicates the **software version** of the device (useful for service calls).

Note: A tabular overview of all parameters can be found in the parameter list ☞ 9.4.

9.4 Parameter List

Table 4: Parameter list

Parameter	Function	Range	Default Setting
P 00	<i>reserved for test purposes</i>		-----
P 01	Counting direction (0 = up / 1 = down)	0, 1	0
P 02	<i>no function / reserved</i>		-----
P 03	Decimal place	0, 1, 2, 3	1
P 04	Actual value memory (0 = enabled / 1 = disabled)	0, 1	0
P 05	Front keys (0 = enabled / 1 = disabled)	0, 1	0000
P 06	Edge evaluation (0 = x 1, 1 = x 2, 2 = x 4)	0, 1, 2	0
P 07	Measuring system selection: (0 = A/B Encoder, 1 = RS422 Encoder, 2 = EMAX/FEMAX, 3 = FMAX,)	0, 1, 2, 3	0
P 08	Multiplication factor	00.0001 ... 99.9999	01.0000
P 09	Reference value	-99999.9 ... +99999.9	00000.0
P 10	Tool-offset	-99999.9 ... +99999.9	00000.0
P 11	Saw blade thickness	0 ... +99999.9	00000.0
P 12	Preset limit relay 1 (min)	-99999.9 ... +99999.9	00000.0
P 13	Preset limit relay 2 (max)	-99999.9 ... +99999.9	00000.0
P 14	Display brightness	0 ... 9	5
P 15	<i>no function / reserved</i>		-----
P 16	Load default parameters (0 = no / 1 = yes)	0, 1	0
P 17	Measurements unit (0 = mm / 1 = inch)	0, 1	0
P 18	<i>no function / reserved</i>		-----
P 19	<i>no function / reserved</i>		-----
P 20	Analog output (minimum value)	-99999.9 ... +99999.9	00000.0
P 21	Analog output (maximum value)	-99999.9 ... +99999.9	00000.0
P 22 ... 98	<i>no function / reserved</i>		-----
P99	Software-Version		XX.XX

9.5 Load Default Parameters

Parameter **P16** can be used to reset all parameters to their default settings. For this purpose set **P16** to „1“, press **F + Incr/Abs** for 3 s at the same time and switch the power of the Z58 indicator 1 x OFF and ON again.

9.6 Multiplication Factor

The possible setting range of the multiplication factor for the pulse scaling is between 0.0001 and 9.9999. This applies equally to the millimeter mode and the inch mode. The resolution decreases with factors > 1.

Calculating the multiplication factor:


$$\text{Factor: } \frac{\text{Nominal (defined value)}}{\text{Actual (displayed value)}}$$

Example:

$$\text{Factor: } \frac{100.0}{100.5} = 0.9950$$

10 Normal Mode: Keys & external Inputs

10.1 Reset

The display value can be reset by briefly connecting the external reset input **ST2/Pin 6** (see  7) to HIGH resp. + 24 V. A push-button without latch is best suited for this purpose.



ATTENTION!

The static input must not remain closed, otherwise a "permanent reset" is pending and the indicator is not able to count.

10.2 Absolute/Incremental Measurement

By pressing the **Incr/Abs** key in the normal mode, the measurement can be switched from the (total) absolute to the (relative) incremental mode. In incremental mode, the display is set to "0" at the current position and the device counter starts from this point.

By pressing the **Incr/Abs** key again, the device switches back to the absolute (total) measurement.

10.3 Saw Blade Thickness

This register is normally set to "0". If a value is deposited in parameter **P11**, this value is active as saw blade thickness and will be compensated in the display.

Please note: The saw blade thickness is only active in the incremental measurement mode (see previous section).

10.4 Switchable Tool-Offset

By pressing **▲** in normal mode or alternatively activating the external input **ST2/Pin 4**, the indicator adds the value stored in register **P10** to the actual display value. The operation can be undone by pressing the **▲** key again.

10.5 Set to Reference Value

By pressing **F + ►** at the same time in the normal mode or alternatively activating the external input **ST2/Pin 5**, the value stored in register **P09** is overtaken into the display.

11 Calibration of Absolute Measuring Systems

11.1 Guided FMAX Absolute Linear Encoder

When using an FMAX (☞ 14 „Signal inputs = 4“), a one-time calibration of the measuring system is required.

The calibration is done as follows:

1. Press the keys ► + ▲ in the normal mode for 3 seconds at the same time:

L 2 appears in the display

2. Move the FMAX sensor back and forth by approx. 2 cm and press the ► key:

L 1 appears in the display

3. Now move the FMAX sensor to the desired zero point and press the ► key:

L 0 appears in the display

4. When the button is released, the system is calibrated and the display shows

0.00



REMARK!

In case of replacing the FMAX, a new calibration procedure must be performed.

11.2 Unguided EMAX Absolute Linear Encoder

When using an EMAX (☞ 14 „Signal inputs = 5“), no calibration must be performed.

12 Serial Interface

When connecting the serial interface, the current actual value of the Z58 unit can be transmitted to a PC or to a higher-level system.

12.1 Key Data

- Interface: RS232 (standard)
- Baud rate: 9600 baud
- Data format: 8 data bit, 1 stop bit, no parity
- Communication: Z58 responds only to PC request

12.2 Commands

Read out the actual value:

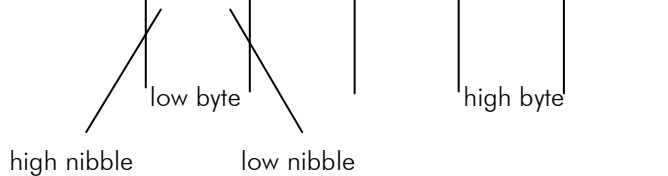
Command: STX 'i' ETX

Example: 02h 69h 03h

Response: e.g. B. 9712.3 (decimal) bzw. 0001 7B63 (hexadecimal)

STX <8 byte data> CRC ETX

02h|36h 33h|37h 42h|30h 31h|30h 30h|A3h 03h



Remarks:

- The data is transmitted in hexadecimal ASCII code, starting with the LOW byte.
- In case of an invalid command, a "Q" is sent
- The CRC is an addition of the 8 data bytes (a possible carry is omitted)

13 Disturbances, Maintenance, Cleaning

This chapter describes possible causes for disturbances and measures for their removal. In case of increased disturbances, please follow the measures for fault clearance in chapter 13.1. In case of disturbances that cannot be eliminated by following the advice and the fault clearance measures given here, please contact the manufacturer (see second page).

13.1 Fault Clearance



CAUTION!

The device, the connection line and the signal cable must not be installed next to sources of interference that emit strong inductive or capacitive interference or strong electrostatic fields.

External perturbations can be avoided through suitable cable routing.



The screen of the signal output cable should only be connected to the following circuit on one side. The screens should not be grounded on both sides. Signal cables always have to be routed separately from the load power line. A safety distance of at least 0.5 m has to be kept from inductive and capacitive sources of interference such as contactors, relays, motors, switching power supplies, clocked controllers etc.!

If interferences occur in spite of all the items stated above being observed, please proceed as follows:

1. Installation of RC-circuits via contactor coils of AC-contactors (e.g. 0.1 μ F / 100 Ω)
2. Installation of recovery diodes via DC-inductors
3. Installation of RC-circuits via the different motor phases (in the terminal box of the motor)
4. Do not connect protective earth and ground
5. Connect a mains filter ahead of the external power pack

13.2 Possible Errors and their Clearance

The following table shows possible interferences and their clearance.

Table 5: General interference clearance

Error No..	Meaning	Required Measure
190	EEPOM damaged	Send the device back for repair

13.3 Re-start after Fault Clearance

After the fault clearance:

1. Reset the emergency stop mechanism if necessary
2. Reset the error report at the super-ordinate system if necessary.
3. Ensure that there are no persons in the danger area.
4. Follow the instructions from chapter 7.



WARNING! Danger of injury through non-conventional fault clearance!

Non-conventional fault clearance can lead to severe injuries and damage of property. Therefore:

- Any work to clear the faults may only be performed by sufficiently qualified staff
- Arrange enough space before starting the works
- Make sure that the mounting area is clean and tidy. Loose components and tools are sources of accidents.

If components need to be replaced:

- Pay attention to a correct installation of the spare parts.
- Reinstall all the fixing elements properly
- Before turning on the device, ensure that all covers and safety equipment is installed correctly and functions properly

13.4 Maintenance

The device is maintenance-free.



WARNING!

Danger through non-conventional maintenance!

Non-conventional maintenance can lead to severe injuries and damage of property.

Therefore:

Maintenance works may only be completed by staff that has been authorized and trained by the operator.

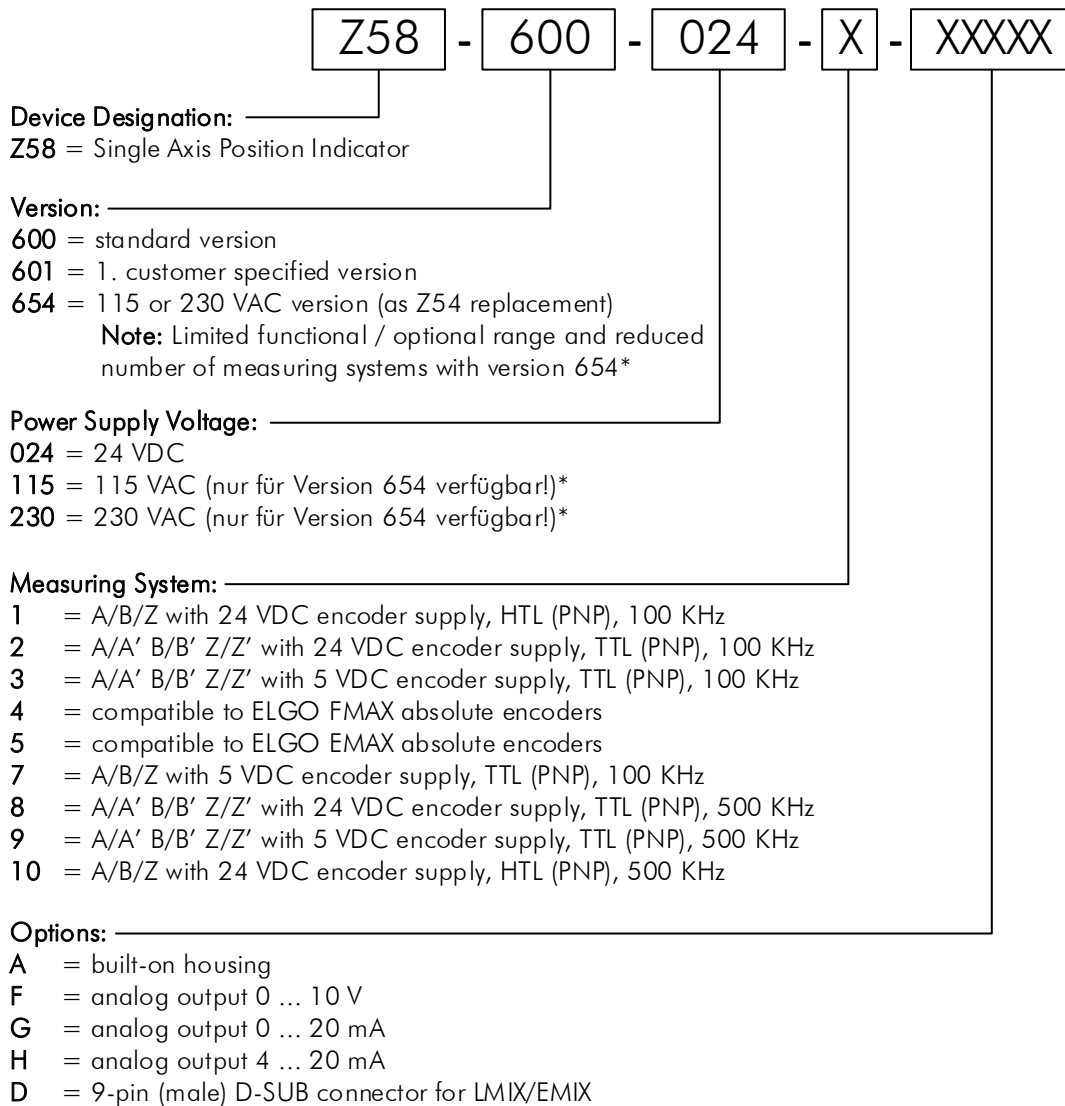
13.5 Cleaning



WARNING!

The device can only be cleaned with a damp cloth, do not use aggressive cleanser!

14 Type Designation



*) Restrictions for version 654 see section 7.2 Connection of Z58-654 (VAC Versions)



NOTE

When ordering, please use the here described ordering code (Type Designation).
Options that are not required are filled in with „-“.

14.1 Accessories

Table 1: Accessories

Order Designation	Description
NG24.0	External 24 VDC power pack (primary 115/230 VAC) for supply with AC voltage. With two mounting holes as well as a snap-on device for top hat rail mounting.

Notes:

Notes:

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