OPERATING INSTRUCTIONS

Electronic digital position indicators

DD52R-E-RF

GN 9153

*(Produktcode gültig für Deutschland -
Product series valid only for Germany)

elesa®

These operating instructions are valid for the following products:

CE.99203-W2 DD52R-E-RF-W2-SST-F.20-IP65-C1	CE.999203-W2 DD52R-E-RF-W2-SST-F.3/4-IP65-C1
CE.99202-W2 DD52R-E-RF-W2-SST-F.20-IP65-C2	CE.999202-W2 DD52R-E-RF-W2-SST-F.3/4-IP65-C2
CE.99201-W2 DD52R-E-RF-W2-SST-F.20-IP65-C3	CE.999201-W2 DD52R-E-RF-W2-SST-F.3/4-IP65-C3
CE.99205-W2 DD52R-E-RF-W2-SST-F.20-IP65-C55	CE.999205-W2 DD52R-E-RF-W2-SST-F.3/4-IP65-C55
CE.99213-W2 DD52R-E-RF-W2-SST-F.20-IP67-C1	CE.999213-W2 DD52R-E-RF-W2-SST-F.3/4-IP67-C1
CE.99212-W2 DD52R-E-RF-W2-SST-F.20-IP67-C2	CE.999212-W2 DD52R-E-RF-W2-SST-F.3/4-IP67-C2
CE.99211-W2 DD52R-E-RF-W2-SST-F.20-IP67-C3	CE.999211-W2 DD52R-E-RF-W2-SST-F.3/4-IP67-C3
CE.99215-W2 DD52R-E-RF-W2-SST-F.20-IP67-C55	CE.999215-W2 DD52R-E-RF-W2-SST-F.3/4-IP67-C55

Contents

1. Safety Instructions

This device has been designed and manufactured in accordance with current legislation. To keep the product in this state, it must be assembled and used correctly, in strict compliance with the instructions contained in this instruction manual and with the following specific safety precautions.
This manual is intended as an indispensable supplement to the existing documentation (catalogues, data sheets and assembly instructions). Make sure that the user has read and understood the instruction manual and in particular this chapter "Safety instructions". In addition to the instruction manual, all legal regulations regarding accident prevention and environmental protection must be observed.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.'
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates,uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter not be co-located or operating in conjunction with any other antenna or transmitter.

Use without respecting the specific descriptions/ parameters, in combination with systems/machines/ processes to be controlled, can lead to product malfunction, which causes:

- health hazards,
- environmental hazards,
- damage to the product and to its proper functionality.

The device must not be used:
- in explosion hazard areas;
- in medical / life support areas and equipment.

Do not open the equipment and do not make any modifications! Modification of the equipment could adversely affect the reliability

of the device and could lead to hazards! Do not attempt any repairs.
Always return any defective equipment to the manufacturer! Any breach of the integrity of the device as delivered will invalidate the warranty.

Configuration/Commissioning
In the event of abnormal behaviour (including change of operating conditions), the device must be shut down immediately. Installation and commissioning must only be carried out by adequately trained and authorised personnel. After correct assembly and commissioning, the device is ready for operation.

Maintenance/repair

Switch off the power supply to the equipment before carrying out any operation. Maintenance must be performed only by trained and authorised persons.
Do not open or modify the indicator case. Tampering with this product can compromise the correctness and accuracy of its function.
In the event of a malfunction, do not attempt to repair the unit and contact the Elesa sales office.

2. Version and functionality

This manual was written for version 1.0 of the device (see firmware 10.6.3).

Some menu items may not be described as they relate to functionalities that are additional, experimental or reserved for special use. In case of specific need, it is recommended to ask the Elesa service staff for assistance.

Elesa reserves the right, without further communication, to make improvements, additions, corrections to the menu items, that do not modify or affect the described functionality of the product but are necessary for the continuous improvement to which these products are subjected.

3. Description

The DD52R-E position indicators, with battery power supply, can be used, mounted on pass-through shafts, to provide the reading of the absolute or relative positioning of a machine component.

Mechanical and electrical characteristics	
Power supply	Lithium battery CR2477 3.0 V
Battery life	Up to 2.5 years
Display	6-digit LCD of 12 mm height and special characters
Reading scale	-199999; 999999
Number of decimal digits	programmable
Unit of measure	mm, inches, degrees programmable
Rotation max. speed [1]	300/600/1000 r.p.m. [2] programmable
Resolution	10.000 impulses/revolution
Protection level	IP65 or IP67
Working temperature	0 °C ÷ +50 °C
Storage temperature	-20 °C ÷ +60 °C
Relative humidity	max. 95% a 25 °C without condensation
Environment	indoor use
Conditions of use	For use in closed and sheltered places only
Altitude	up to 2000 m
RF frequencies	2400-2416MHz

[2] Default: 600 r.p.m.

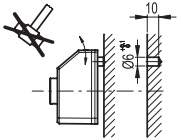
WARNING: A rotation speed higher than 600 rpm can only be maintained for short periods of time.
The value of the maximum speed, the frequency of transmissions and the number of operations in general, affect battery life. Moreover, depends on the conditions of use (setup, temperature, ...). The indicated value is an estimate made in temperature conditions > 20 ° C and <30°C and default setup. Furthermore, this value refers to the condition of the device when it leaves the Elesa factory. Long storage times must always be considered for the estimation of the battery life when the device becomes operational.

4. Installation

1.Drill a Ø 6x10 mm hole in the machine body with a 30 mm centre distance from the shaft for mounting the rear reference pin.

2. Mount the device on the shaft and make sure the reference pin fits into the hole.

3. Lock the bushing on the shaft by tightening the grub screw with a 2.5 mm hexagon socket (as per UNI 5929-85).



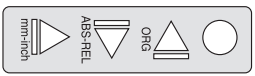
5. Display

1. Relative mode indicator
2. Low battery level indicator
3. RF Connection Indicator
4. Unit of measure: mm, inch ou degrees
5. Target position indications

6. Key functions

Using these 4 keys is possible to move between the menus and set the working parameters. Furthermore is possible to configure some additional function using

one or a couple of keys.



Key Or Key Combination	Operating Mode	Programming Mode
	Keep pressed for 3 sec to enter the Programming Mode: during the pressing, the word "Fooo" appears on the display to indicate the activation progress.	Select the item menu or confirm selection or insertion of the parameter value
	Keep key pressed for 3 seconds to set the origin of the measurement. Programmable with one of the following options (see the ___0__ voice of the menu – chap.10.3): d_toGO[DEFAULT]: when a target is loaded, the display flashes the distance from the current position to the target position to be reached. By pressing the key, the current absolute position will appear on the display. d_tArG: When a target is loaded, the display shows the current absolute position. By pressing the key, the position of the destination to be reached appears on the display. OFF: the function is disabled.	While entering the numerical value of a parameter: Short press: Increment the selected digit by one with each press. Press and hold: after one second increments the selected digit until released. While scrolling through menu items: Short press: scrolls upwards through the list of possible selections or menu items. Press and Hold down: upwards the list of possible selections or menu items.

Key Or Key Combination	Operating Mode	Programming Mode
	Switch between measure mode: It is possible to choose one of the following options (see item __0___ of the menu - chap.10.3): **ArCLr** [DEFAULT]: Switching from **ABS** to **REL** the counter is reset **Ar**: Switching from **ABS** to **REL** the counter is not reset to zero. **OFF**: the function is disabled.	While entering the numerical value of a parameter: Short press: decreases the selected digit by one with each press. Press and hold: after one second decrements the selected digit until released. While scrolling through menu items: Short press: scrolls down the list of possible selections or menu items. possible selections or menu items. Press and Hold: scrolls downwards through the list of possible selections or menu items.
	Unit of measure selection. The available options are: millimetres, inches and degrees. It is possible to choose one of the following options (see item 0___ of the menu – chap. 10.3): **ALL** [DEFAULT]: selectable units of between: mm, inch, degree **noDEG**: selectable units of measure: mm, inch **OFF**: the function is disabled.	While scrolling through menu items: exit When entering the numerical value of a parameter: Short press: select the digit on the right . Press and hold: cancel entry

Key Or Key Combination	Operating Mode	Programming Mode
○ +	Programmable for one of the following functions (see menu item `0_____0` – chap.10.3): `P_0rG` [DEFAULT]: shows and allows you to set the `0riGin` parameter. `P_StP`: shows and allows you to set the `StEP` parameter. `P_0FS`: shows and allows you to set the `0 0FFSEt` parameters. `0FF`: the combination is disabled.	None
○ + 	In relative measure mode, resets the measure. In absolute measure mode it is programmable for one of the following functions (see menu item `__0__0` – chap.10.3): `L_0FFS` [DEFAULT]: select one of the offsets (see chap.8.6 and 8.7). `SEt0rG:` Reset the origin in the current position (see chap. 8.5). `0FF`: the combination is disabled.	None

Key Or Key Combination	Operating Mode	Programming Mode
○ + △	Programmable for one of the following functions (see menu item `___0_0` – chap.10.3): `tArGEt`: the key combination allows to load / program one of the 32 target positions (see chap.10.4) `OFF` [DEFAULT]: the combination is disabled.	N/A

Note: the words: increase, decrease, up and down, refer to the direction of the arrow in the default configuration as shown in the figure. By changing the orientation of the display, the meaning of the keys is reversed accordingly.

7. Switching on/off the device

7.1 Switching on the device

After reading and understanding the "Safety Instructions" section, proceed by switching on the device.

Hold down ▷ while pressing the key ○. The display will switch on and the device will be ready for use.

WARNING: When the device is turned on, especially after a long period of storage, it is possible that some segments of the display remain abnormally lit during the startup phase. The phenomenon is transitory and does not affect correct operation and use of the device as it will disappear in a short time.

7.2 Switching off the device (for storage only)

To switch the system off:

- select the `rESEt` item from the main menu (see chap.10.3)

- using the key △ or ▽, scroll through the items to select `OFF`.

- press the key ○ to confirm. The display will switch off and the device will go into sleep mode.

8. Operational mode

8.1 Reference points, origin and offset

When the device is turned on or reset, the position of the shaft at that moment is set as the origin of the measure.

The value attributed to this position is given by the parameters, Origin and Offset, which can be set by the user. Origin is an arbitrary number that can be set in the range -199999÷999999 depending on the resolution set and is to be considered as the machine's limit switch value in its default conditions.The offset is added to Origin which is always an arbitrary value that can be set in the range -199999÷999999 depending on the resolution and which allows you to move the actual origin of the measure based on any changes in the machine configuration.

For example, a certain set point can operate different tools with relative displacements of the point of origin. For example, in the case of a tube cutting machine the device indicates the position of the stop that determines the length of the tube. The limit switch point is fixed but it does not necessarily correspond to a zero length of the tube and therefore Origin will be different from zero but always the same.

However, the machine makes it possible to mount different blades depending on the type of tube and these can have different positions and/or thicknesses.Therefore the actual length will have to be corrected with a determined value which will be memorised as an offset.

For greater flexibility of use, the DD52R-E permits storage of up to 10 different offset values. To program the offset values see the *OFFSEt* parameter in chap. 10.2.

However, during installation and for other specific applications, it is useful to be able to reset the internal reference value in another position. For this purpose, see chap. 8.5.1.

WARNING: The value of the Origin parameters and the offsets are the same for the mm and inch units of measure and are displayed, depending on the unit of measure in use (see chap. 7.4), with the appropriate conversion coefficient. In the case of degrees, these parameters are totally different and independent from the previous ones.

8.2 Resolution

The device manages different measure display resolution values for each of the three units of measure managed (mm, inch and degrees). The same display resolution set is used to set different parameters such as Origin, offsets and targets.

WARNING: If the resolution of one of the units of measure is changed, to avoid setting errors, all the parameters that are affected are reset: Origin, offset, etc.: It is therefore advisable to decide and set the display resolution of all units of measure as a first step in installing the device.To make the most of the device's measure capacity, the resolution is automatically reduced if the measure to be displayed exceeds the capacity of the display. The measure on the display will flash.
In this case, the resolution variation is temporary (it is restored if the display is able to display the measurement with the set resolution) and has no effect on the set parameters.

8.3 Absolute or relative measure selection

Press the key  to select the absolute or relative measure mode. The selected measure mode is indicated on the display by the symbols:

ABS: *absolute measure mode*

REL: *relative measure mode*

It is possible to change the function of the key by choosing one of the options available in the menu item **__0___** (see chap. 10.3)

The available options are:

- ***ArCLr*** (DEFAULT): when changing from ***ABS*** to ***REL*** the counter is reset.

- ***Ar***: when changing from ***ABS*** to ***REL*** the counter is not reset. Only in relative measure mode, the counter is set to zero by pressing  .

- ***OFF***: the key is disabled and it is not permitted to change the measure mode.

8.4 Unit of measure selection

Press the key  to select the required unit of measure.
The available options are millimetres, inches and degrees.

The selected measure mode is indicated on the display by the symbols:

- *mm*: millimeters - *INCH*: inches - *D*: degrees

It is possible to change the function of the key by choosing one of the options available in the menu item *0_____* (see chap. 10.3)

The available options are:

- *ALL* (default): selectable units of measure: mm, inches and degrees.
- *nodEG*: selectable units of measure: mm, inch
- *OFF*: the key is disabled and it is not permitted to change the selected measure mode.

8.5 Internal reference point reset

It is possible to reset the internal reference of the measure device in the two ways described below:

By keeping the key pressed for more than 3s, the *SEt0rG* message is displayed. Pressing the button to confirm the choice ant to reset the origin point to the current position.

It is also possible to enable the pair of keys + to reset the internal reference, see chap. 8.6. In this case when the two keys are pressed at the same time, the message *SEt0rG* is diplayed.

Press the key to confirm the choise and to reset the origin point to the current position.
Alternatively, it is possible to use the Reset command as described in chap. 10.6.1

8.6 Reference point or offset settings

Using this key combination + it is possible either to set an offset value choosing from those stored or to reset the device measurement references.

It is possible to change the function of the key combination by choosing one of the options available in the menu item *__0__0* (see chap. 10.3)

The available options are:

- `L_OFFS` (DEFAULT): the key combination allows you to select an offset .
- `SEtOrG`: the key combination allows to reset the origin (see chap. 7.5).
- `OFF`: the key combination + is disabled.

WARNING: This function is available only in absolute measure mode.

If the `L_OFFS` option has been selected, pressing the key combination + will display the last used offset value (e.g. `OFFS0`). It is possible to choose the desired compensation value among the 10 memorized by pressing the keys and . Then, by pressing the key , the selected offset value will be loaded and used in the measurement. By pressing the key , the operation will be cancelled. If the `SEtOrg` option has been selected, pressing the key combination + the screen will show `SEtOrg.` By pressing the ke the origin of the measurement will be moved to the current position and the display will show the value of the origin point given by the value of Origin + Offset.

8.7 Direct programming of Origin, Offset and Step parameters

The keys combination + allows direct access to the programming of one of the following parameter: Origin, Offset or Step.

`0____0`

It is possible to change the function of the key combination by choosing one of the options available in the menu item `0____0` (see chap. 10.3)

The available options are:

- `P_0rG` (DEFAULT): direct programming of the absolute reference value (`Origin` parameter)
- `P_StP`: direct programming of the reading after one revolution (`Step` parameter)
- `P_OFS`: direct programming of the offset value (OFFSEt parameter).

- *OFF*: the keys combination  is disabled.

WARNING: The Origin, Step and Offset values are different and independent for length measurements (mm and inch) and for degrees measurements.

8.8 Targets

The DD52R-E-RF permits you to set up to 32 target positions allowing you to store any relevant and frequently used settings.

8.8.1 Programming the targets

To program the targets:

- activate the Programming Mode
- select *tArGEt* in the main menu (see chap. 10.3)
- select *PrOG_t* (see chap. 10.4)
- select the desired memory location (from *PtG00* to *PtG31*) using the keys  and  .
- press the key  to select.
- follow the instructions in chap. 10.1 to set the desired value.

WARNING: while a target is active, it will not be possible to change the unit of measurement, set the origin and other functions accessible from the keyboard.
The absolute or relative measurement function remains available but remember that the target values both stored on the device and sent via RF always refer to the absolute value.

8.8.2 Load a target:

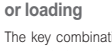
To load a target:

- activate the Programming Mode
- select *tArGEt* in the main menu (see chap. 10.3)
- select *LOAd_t* (see chap. 10.4)
- select the desired target value (from *LtG00* to *LtG31*) using the keys  and  .
- Press the key  to select.
- The selected target value is displayed.
- Press  again to confirm or press  to return to the

target selection list.

8.8.3 Direct access to target programming and/or loading

The key combination ○ and ESC △ allows, if enabled, direct access to target programming or loading.



It is possible to change the function of the key by choosing one of the options available in the menu item ___0_0 (see chap.10.4)

The available options are:

- **tArGEt:** enables direct access to the target loading or programming menu.

- **OFF** (DEFAULT): the key combination ○ + ESC △ is disabled.

8.8.4 Indications for reaching the target position

When a target is selected it is sent by the PLC, the device will suggest the direction of rotation of the shaft to reach the target through the symbols ◄◄/►► of the target direction indicators.

It is possible to set an acceptable tolerance value for the targets through the **P_t0LL** parameter so that the target position is considered to have been reached when the difference between the set target and the current position is less than **P_t0LL** in absolute value.

The target direction ◄◄/►► indicators work, depending on the, **dir** and **P_t0LL** parameters, as in the following table:

T = target value set
M = actual measure
Toll = tolerance (see **P_t0LL**)

	dir -o	**dir o--**
M < T - Toll	◄◄ (blinking)	►► (blinking)
T - Toll ≤ M < T	◄‖	‖►
M = T		
T < M ≤ T + Toll	‖►	◄‖
M > T + Toll	►► (blinking)	◄◄ (blinking)

8.8.5 Disabling the target

If a Target mode is active, it can be cancelled pressing the key ○ will appear the ***StoPt*** option. Press the key ○ to confirm the return to Operational mode, otherwise press the key ESC ▽ to cancel.

Alternatively, the target can be canceled by pressing, if activated, the keys combination ○ + SET △ and the function `StOP_t` is confirmed by pressing the key ○. To keep the selection of the target press the horizontal arrow key ENTER ▷.

8.8.6 Display in target mode

By pressing the key SET △ when a target is active, you can view the current position or the target position depending on the device settings.

It is possible to modify the function of the key and the target mode by selecting one of the options available in the menu item `___0__` (see chap. 10.3)

The available options are:

- `OFF`: the key SET △ is disabled. This setting is related to the target mode. Other functions are not involved.

- ***d_tArG*** : when a target is activated, the display shows the actual absolute position and the direction to reach the target (see chap. 8.8.4).

Pressing the key SET △ shows the set target position.

- ***d_toGo*** (DEFAULT): when a Target Mode is activated, the display flashes showing the distance from the set target and the direction to reach it target (see chap. 8.8.4). When the target is reached, less than the set tolerance, the display shows the current position and stops blinking.

Pressing the key SET △,the display shows the current absolute position.

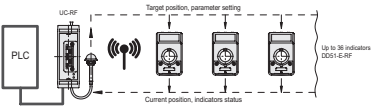
9. RF functionalities

The DD52R-E-RF is compatible with Elesa wireless network which allows meters and electronic indicators to communicate via radio with a PLC.

Elesa wireless network is made by the following components:

- One control unit UC-RF
- Max 36 device as DD51-E-RF, DD52R-E-RF o MPI-R10-RF.

Fig.2



The UC-RF exchanges information with the DD51-E-RF via radio frequency and makes it possible to:

- read the current position of each device
- set the target position
- set the configuration parameters.

Through an interface, available for the most common industrial buses (ProfiNet, Ethernet/IP, Modbus/TCP, and others), the UC-RF control unit allows the exchange of this information with a PLC and/or a generic controller of the machine.

WARNING: The new generation network (W2) is not compatible with the previous one.

9.1 Device ID

Each RF device of the W2 series is distinguished by a 4-byte identifier uniquely assigned at the factory.

This number, called device ID, can be viewed by selecting the ***dd_Id*** item in the ***Radio*** menu.

What will be displayed is the least significant part of a decimal number from which it is possible to trace the Device ID according to the following rule:

byte 3	byte 2	byte 1	byte 0
Device type	Device ID		

Device type (HEX)	Associated device
00	Reserved
01	UC-RF – Profinet
02	UC-RF – ETH/IP
03	UC-RF – MODBUS
04	UC-RF - EtherCAT
20	DD52R-E
40	DD51-E
60	MPI-R10

9.2 Binding

The Device Id allows to recognize the online device and create a stable communication link with a UC-RF. The operation that allows this association is called Binding.
A device is born not associated with any UC-RF (unbound). When in operation, it transmits its data and these can be read by any reachable UC-RF.
The user can, by acting on UC-RF, through a specific command, request the remote device to associate. If the operation is successful, the remote device will communicate only with the associated UC-RF.
Check the ID of the associated UC-RF by choosing the ***UC_Id*** item in the ***Radio*** menu. If the device is not paired, 00000 will be displayed.
If you want to associate the remote device to another UC-RF, you need to perform the so-called un-binding operation. This is done simply by selecting and then confirming the Unbin item in the ***Radio*** menu. For the Binding procedure refer to UC-RF manual.
WARNING: Once no longer bound, the remote device will automatically re-associate with the first UC-RF that requests it. If the previously associated UC-RF is reachable from the RF signal, the remote device must also be removed from the table of associated devices of the latter. Otherwise, as soon as the two devices were to get back in contact, they would re-associate.

9.3 Heartbeat

Remote devices broadcast their position and status at a fixed rate. By analogy, this transmission is called heartbeat (HB) and its frequency the heartbeat rate.
The parameters of this transmission can be configured by selecting the following items from the Radio menu:
- ***HbrAtE*** (HB Fast Rate): is the default transmission frequency of the device. It can be configured with a value from 0 to 7 which represents the time between one communication and another according to the following table:

Hbrte	THB (ms)
0	507.8
1	1015.6
2	2031.2
3	4062.4
4	8124.8
5	16249.6
6	32499.2
7	64998.4

- *HbFrAt* (HB Fast Rate): is the transmission frequency in fast rate mode. It can be configured with a value from 0 to 7 which represents the time between one communication and another according to the following table:
-*HbAUPd* (HB Auto Update): when activated, this function ensures that, if the position of the device has varied more than the allowed target tolerance (see the *P_tol* parameter), this will be immediately transmitted as if it is in HB Fast Rate mode.

HbFte	THB
(ms)	507.8
0	127.0
1	253.9
2	380.9
3	507.8
4	634.8
5	761.7
6	888.7
7	1015.6

WARNING: RF communications are quite energy-consuming. As a result, battery life is strongly influenced by the set HB frequencies.

9.4 Targets

Using the DD52R-E-RF, the target positions can be sent from the PLC to the device via the UC-RF control unit. When a target is transmitted, it behaves in the same way described in chap. 8.7.

WARNING: If the target transmission on UC-RF is enabled, it will be refreshed on the Device every time a communication occurs. Consequently, before disabling the target on the device (see chap. 8.7.4), disable the target transmission on UC-RF.

9.5. RF communication quality

If difficulties in transmitting/receiving data are experienced, it is possible to monitor the value shown in the *RSSI* menu. The values shown have a mainly qualitative value but it can be said that values lower than -80 dB are symptom of serious communication issues. In this case it is advisable to intervene on the position of the UC-RF antenna. The higher the signal quality, the higher the *RSSI* values will be.

WARNING: *RSSI* values are expressed in -dB so the higher the value, the lower will be the number displayed in absolute value. If the target transmission on UC-RF is enabled, it will be refreshed on the Device every time a communication occurs. Consequently, before disabling the target on the device (see chap. 8.7.4), disable the target transmission on UC-RF.

10. Programming mode

In Operational Mod press the key p for 3 seconds to access Programming mode. Depending on the setting of the *PASS* parameter (see chap. 8.5.4), the system may ask for a password to be entered. Press the key and to scroll through the list of menu items or parameters and select the desired one by pressing the key . Press the key to return to the previous menu level (when allowed) or exit programming mode. Programming mode is automatically exited after 30 seconds of inactivity.

WARNING: When programming the parameters, the bushing must be locked in the current position, otherwise there is the possibility of obtaining a false measurement once you exit the programming mode. If this is not possible, it is recommended to check the device setting once back in measurement mode.

10.1 Input of numeric parameters

Press the key and to increase or decrease the value of the displayed parameter.
Each time these keys are pressed, the value is increased or decreased by one unit, ten, hundred,... depending on the position of the flashing digit.

It is possible to select the digit to be changed by pressing the key . With each press, the digit to the right of the current one will be selected. If the selected digit is already at the far right of the display, the selection will jump to the first digit on the left.

If the parameter value decreases below zero and is permitted, the parameter will assume a negative value. Please note that further decrementing a negative value, selected digit will increment.

WARNING: The increasing or decreasing effect of the and keys and depends on the orientation of the display (see parameter displ in Chap. 8.2)

Press the key to confirm the value entered. If the

confirmed parameter is different from the one currently stored, the display will show the message *CHAnGd*.

WARNING: To cancel the entry, keep the key  pressed until the writing *CAnCEL* appears and you exit the value entry mode. If you do not want to modify the value already memorized, it is obviously possible to set it to the same value as before and check that the wording *CHAnG* does not appear. Or, by waiting 30 s the device will exit the programming mode without saving the modifications.
The value of any modified parameters is stored only when exiting the programming mode. If the operation was successful, the display will show the message StorE.

10.2 Programmable parameters (in alphabetical order)

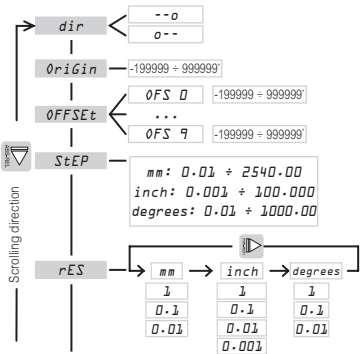
Parameter	Description	Available options	Default
dir	Direction of measure. Sets the positive rotation direction of the shaft	*--o* clockwise *o--* anticlockwise	*--o*
diSPL	Display orientation	*0°* *180°*	*180°*
HbrAte	Heart beat rate	*Update frequency of radio readings: 0÷7* 0 — 507.8 ms 1 — 1015.6 ms 2 — 2031,2 ms 3 — 4062.4 ms … — …. 7 — 64.3 s	*3*

Parameter	Description	Available options	Default
HbFrAt	Heart beat rate	*Update frequency of radio readings:0÷7* 0 – 126.95ms 1 – 253.9 ms 2 – 380.85 ms … – …. 7 – 1015.6 ms	2
HBAUp	Heart beat auto update	*ON – OFF*	OFF
OFFSEt	Offset values	It is possible to store up to 10 offset value: OFS 0 … OFS 9 The settable values depend on the resolution set as follows: **Res = 1 : -199999 ÷ 999999** **Res = 0.1 : -19999.9 ÷ 99999.9** **Res = 0.01 : -1999.99 ÷ 9999.99** **Res =0.001 : -199.999 ÷ 999.999**	0
OriGin	Reference value	The settable values depend on the resolution set as follows: **Res = 1 : -199999 ÷ 999999** **Res = 0.1 : -19999.9 ÷ 99999.9** **Res = 0.01 : -1999.99 ÷ 9999.99** **Res = 0.001 : -199.999 ÷ 999.999**	0.0
P_toLL	Tolerance of target position	The settable values depend on the unit of measure in use: ***mm: 0.01÷9999.99*** ***inches: 0.001÷393.700*** ***degrees: 0.01÷9999.99***	mm: 0.10 inches: 0.004 Degrees: 0.10

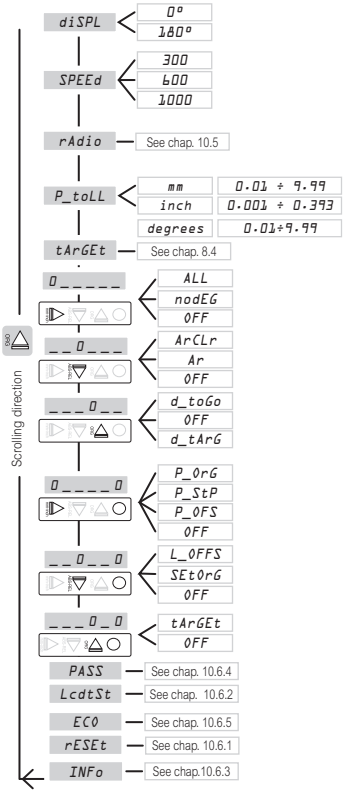
Parameter	Description	Available options	Default
rES	Resolution of the displayed measure	Depending on the unit of measurement, the permitted values are: **mm:** *1; 0.1; 0.01* **inches:** *1; 0.1; 0.01; 0.001* **degrees:** *1; 0.1; 0.01* *An independent resolution is stored for each unit of measure.*	mm: 0.01 inches: 0.001 degrees: 0.01°
SPEEd	Maximum permitted shaft rotation speed	300; 600; 1000 rpm	600
StEP	Conversion coefficient between the number of shaft rotations and the selected unit of measure	*The programmable values depend on the selected unit of measure:* ***mm: 0.01 ÷ 999.99*** ***inch : 0.001 ÷ 99.999*** **degrees:** ***0.01 ÷ 999.99*** *The step value for mm and inch is the same except for the appropriate conversion when viewing the measure. The Step value for degrees is, on the other hand, independent.*	mm: 1.00 inches: 0.039 degrees: 0.01
----°	Display mode when the target is active. In the menu appears as the setting for the key	d_toGO or d_tArG: See chap. 8.8.6.	d_toGO

Parameter	Description	Available options	Default
tArGEt	Target positions	It is possible to store up to 32 Target positions. The settable values depend on the resolution set as follows: **Res = 1 : -199999 ÷ 999999** **Res = 0.1 : -19999.9 ÷ 99999.9** **Res = 0.01 : -1999.99 ÷ 9999.99** **Res =0.001 : -199.999 ÷ 999.999**	0.0

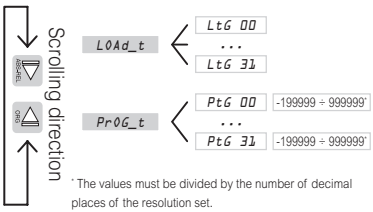
10.3 Main menu tree



* *The values must be divided by the number of decimal places of the resolution set.*

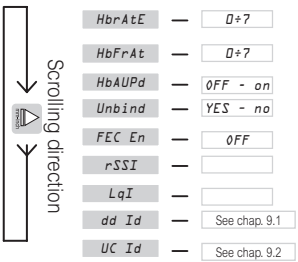


10.4 Target menu tree



* The values must be divided by the number of decimal places of the resolution set.

10.5. Radio menu tree



10.6. Additional functions

10.6.1 Reset

To reset the only internal reference measure:

- select the voice *rESEt* from the main menu (see chap. 10.3)
- using the key SET and RESET select *0rG*.
- press the key ○ to confirm.

To restore the factory settings on the device:

- select the voice *rESEt* from the main menu (see chap. 10.3)

- using the key  and  selezionare ***ALL*** .

- press the key  to confirm, the device will restart as after the swicth-on.

To reset the device to factory settings and switch it off:

- select the ***rESEt*** item from the main menu (see chap. 10.3)

- using the key  and  select ***ALL OFF***.

- press the key  to confirm, the display will switch off and the Device will go into sleep mode.

To cancel the reset command, press the key  or:

- using the keys  and  select ***No***.

- press the key  to confirm.

10.6.2 LCD test

The ***LcdtSt*** item in the main menu allows you to turn on all the segments and symbols of the display to check that it is working correctly.

10.6.3 Device Info

The INFO menu contains some information relating to the device.

- ***rEL:*** firmware release of the device

WARNING: A variation of the last two digits in the revision code has no impact on the device's features and performance.

- ***dAtE***: production date (months-years)

- ***SEr***: serial number of the device. In the RF version it equals the three least significant bytes of the device Id (see chap. 9.1)

- ***r bYtE***; root of the serial number. In the RF version it is equivalent to the most significant byte of the device Id.

In case of need for support, the data in the ***Info*** menu must be noted and provided to Elesa  .

10.6.4 Password

You can avoid unwanted access to the device menu by choosing "*on*" in the *PASS* menu item. By default the password is set to: 22011. It is possible to change the password by selecting the *Set* option from the Password menu.

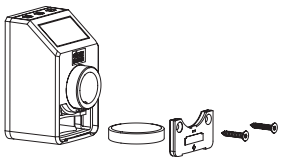
10.6.5 Eco (experimental)

The *Eco* menu contains some settings relating to energy saving and therefore battery consumption:
-dtout: allows you to set the time value in seconds of device inactivity after which the display turns off.
-rSSi: sets an acceptable RF reception quality level and adjusts the transmit power based on this.

11. Battery replacement

The symbol appears on the display when the battery needs replacing. To replace the battery, simply remove the battery cover without removing the device from the drive shaft, keeping all the configuration parameters unchanged. The cover is screwed with two TORX T6 screws. To facilitate the removal of the battery from the battery compartment, the use of a magnet is recommended.

WARINING: you have a few seconds to replace the battery without memory loss. If the display goes out and the start-up sequence of the device starts when the new battery is inserted, the settings and the zero point must be checked.



12. Common problems and solutions

Message on the display	Description	Action
o----- *or* -----o	The value cannot be displayed because it exceeds the capacity of the display (-199999;999999)	In Operational mode, the device continues to correctly measure the position of the shaft. If the measured value is within the capacity of the display, it will be shown correctly. If you are viewing a parameter, the problem may be due to the difference in units of measure between when it was set and when it is displayed. Change the current unit of measure and try again to view the parameter. Attempting to change a parameter when the display shows -----, automatically returns the parameter to the first value that can be displayed, losing the initial setting.
S_Err	The shaft has exceeded the maximum permitted rotation speed.	Press the key ○ to go back to reading the measured value. The device will almost certainly have to be correctly reset to its original position. Also to be considered is whether the value of the Speed parameter can be increased.
Flashing battery symbol	Low Battery	Replace the battery as soon as possible (see chap. 11).

EU DECLARATION OF CONFORMITY (DoC)

COMPANY NAME:	Elesa S.p.a.
POSTAL ADDRESS:	Via Pompei 29
POSTCODE AND CITY:	20900 Monza
TELEPHONE NUMBER:	+39 039 28111
E-MAIL ADDRESS:	info@elesa.com

Declare that the DoC is issued under our sole responsibility and belongs to the following product:

PRODUCT:	Electronic Position Indicators
APPARATUS MODEL:	DD52R-E-RF-W2
TRADE MARK:	Elesa

The object of the Declaration described above is in conformity with the relevant Union Harmonization Legislation:

2014/53/EU (RED) Radio Equipment Directive
2011/65/UE (RoHS) Restriction of the use of certain Hazardous Substances in electrical and electronic equipment

The following harmonized standards and technical specifications have been applied:

EN 62311:2008
EN 61010-1:2010
ETSI EN 301 489-1 V2.1.1
ETSI EN 301 489-1 V2.2.3
ETSI EN 301 489-17 V3.1.1
Draft ETSI EN 301 489-17 v3.2.2
EN 61326-1:2013
ETSI EN 300 328 V2.2.2

Notified Body:

Not Involved (Annex II - Conformity Assessment Module A)

PLACE, DATE OF ISSUE:	CARLO BERTANI
Monza – Italy	MANAGING DIRECTOR
19/11/2024	GENERAL MANAGER

Elesa S.p.A., Monza, November 2024

The texts and examples have been written with great care, nonetheless, mistakes can always happen.

The Company Elesa S.p.A. can neither be held legally responsible nor liable for lacking or incorrect information and the ensuing consequences.

The Company Elesa S.p.A. reserves the right to alter or improve the electronic position indicators or parts of them and/or the enclosed brochures without prior notice.

ELESA S.p.A.
Via Pompei, 29
20900 Monza (MB) Italy
phone +39 039 28111
info@elesa.com
www.elesa.com

Art. Nr. EPAX186-P00
DDEMAN-004-041T