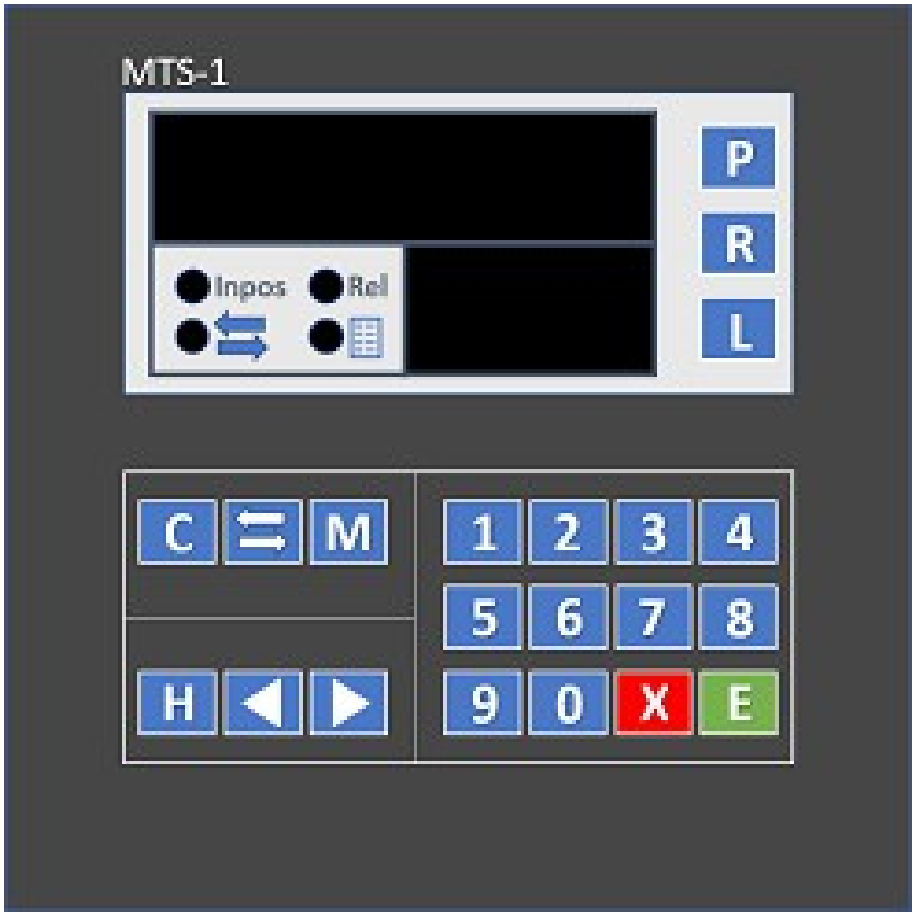
MTS-1 SINGLE AXIS POSITIONER

- Program memory 10 steps
- 24Vdc reverse voltage protected
- Isolated 6 inputs
- Isolated 6 mosfet outputs
- Encoder supply 24Vdc
- Indexing working



1. General
   MTS-1 Single axis position controller. Thanks to mosfet outputs, high performance positioning without analog outputs is possible.

1.1 Keypad and display

P	Access to the parameters page. First, password screen is seen. Password is 333'
R	Used to access to the recipe page.
L	Used to change the second line 7-segment display value.
E	Used to confirm the entered value or to start the axis movement
X	Used to cancel the entered value or to stop the axis movement
◀	Used to move the axis back manually
▶	Used to move the axis forward manually
H	Used to move the axis manually at high speed
C	Used to calibrate the axis value.
⇄	Used to turn on or off the retract feature.
M	Used to run the recipe steps sequentially

	Inpos: Indicates whether the axis is in position. Rel: Relative mod selected :Indicates whether retract mode is enabled.Retract mode cannot be enabled if the retract value is 0. :Indicates whether recipe mode is active or not.

	Line1 : 6 digits. Shows the actual value. gösterir. If X key is pressed when there is no movement it shows the set value. Line 2 : 3 digits. Shows the counter value. If X key is pressed when there is no movement it shows the set value.

2 Technical features

2.1 Specifications

- Supply:24Vdc +-%15 reverse voltage protection
- Digital inputs: 6 isolated
- Digital outputs: 6 isolated 0.7A mosfet
- Encoder supply
- Encoder inputs: A, B
- Panel dimensions: 144x144mm
- 7-Segment display height: 14mm

2.2 Inputs-Outputs

Power		Supply
Earth		
Gnd		
Not Connected		Outputs
Not Connected		
In Position		
High Speed		
Reverse		
Forward		
Encoder Power 24Vdc		Encoder Supply
Encoder Power Gnd		
Encoder B Phase		Inputs
Encoder A Phase		
Index	Normally Open	
Retract	Normally Open	
Quantity	Normally Open	
External Stop	Normally Open	
External Start	Normally Open	
Enabled	Normally Closed	

3 Running

3.1 Modes

Each rising trigger of external start signal or pushing E button starts axis positioning.

3.2 Manual Movements

Using H ▶ ◀ buttons the axis can be moved manually. Buttons ▶ and ◀ moves the axis at slow speed. By pressing H button with ▶ or ◀ button, axis moves at high speed in desired direction.

3.3 Assigning value to current position (Calibration)

First, access to parameters page. To do that push the P button. 'PASS' message appears in the first line. Using keypad enter 333 and push the E button to access parameters page. The first parameter is CAL meaning calibration. Enter the required value and push the E button. So the axis position is updated.

The second way is to use C button. Thus, accessing the full of parameters list is restricted. This time password is 444. So the rest of the procedure is the same as already explained above.

If indexing enabled, index position should be changed and restart the device.

4 Recipe

4.1 Create a recipe

Push the R button to access recipe page. STEP01 is seen in the first line. To move the next step R button is pressed. To access to content, press E the button. To load selected step to main screen as it is push the E button again. Then LOAD? Message is seen. To confirm press E button. If necessary, step's values can be edited using numeric buttons. To save edited position value press E button. Then, second line starts to blink. If needed second line can be edited. To save the counter value press E again. This time LOAD? Message is seen. To confirm loading the single step press E button. To return to main screen without loading the current step push X button.
To load all the steps push the M button when the main screen is on. Steps which counter value's are zero are inactive.

5 Parameters

5.1 Accessing to parameters

Press the P button to access the parameters page. In the first line, PASS(password) message is seen. Enter 333 and push the E button. If an incorrect value is entered, FAULt message is displayed for a while and then returns to main screen.
Press the E button to access the next parameter. Use keypad to edit any parameter. Then press the E button to

save it or press X the button to cancel. Pressing X the button again or waiting 10seconds causes to return to main screen.

5.2 Parameters List

5.2.1 Axis calibration:

Description: Assigns to axis position.
Valid range: 0-999999
Default value: None.
Parameter resolution: Parameter display resolution's value

5.2.2 Selecting unit:

Description: Selects the unit mm or inch.
Valid range: 0:mm 1:inch
Default value:0
Parameter resolution:0

5.2.3 Encoder counter direction:

Description: Defines the counting direction.
Valid range: 0: positive 1:negative
Default value: 0
Parameter resolution:0

5.2.4 Encoder resolution:

Description: Defines the pulses per mm or inch.
Valid range: 0.000-999.999
Default value: 80.000
Parameter resolution:3

5.2.5 Display resolution:

Description: Defines positioning resolution.
Let's say 500mm
500 for resolution 0
500.0 for resolution 1
500.00 for resolution 2
500.000 for resolution 3
Valid range: 0-3
Default value: 1
Parameter resolution:0

5.2.6 Axis minimum position:

Description: Defines the minimum limit of the axis.
Valid range: 0-999999
Default value: 5.0
Parameter resolution: Parameter display resolution's value

5.2.7 Axis maximum position:

Description: Defines the maximum limit of the axis.
Valid range: 0-999999
Default value: 1000.0
Parameter resolution: Parameter display resolution's value

5.2.8 Axis positioning tolerance:

Description: Defines the axis positinoning tolerance. As long as the difference between set and actual position is less then tolerance, axis is accepted in position.
Valid range: 0-9999.99
Default value: 0
Parameter resolution: 2 for mm / 3 for inch

5.2.9 Axis set value offset:

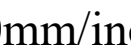
Description: Put an offset value to set position.

Example 1
actual pos: 100.0mm
set pos: 200.0mm
offset: 0.1mm
positioning stops at 199.9mm

Example 2
actual pos: 200.0mm
set pos: 100.0mm
offset: 0.1mm
positioning stops at 100.1mm

Valid range: 0-9999.99
Default value: 0.0
Parameter resolution: 2 for mm / 3 for inch

5.2.10 Retract distance:

Description: Defines the retract distance of the axis. If the value is higher than 0mm/inch, using the  button retract function can be enabled or disabled. If the value is zero retract feature is always disabled.
Valid range: 0-9999.99
Default value: 0.00
Parameter resolution: 2 for mm / 3 for inch

5.2.11 Retract delay time:
Description: Delay for retract movement.
Valid range: 0.0-99999.9
Default value: 0.0
Parameter resolution: 1

5.2.12 Switching to slow speed Distance:
Description: Defines the transition point from high speed to low speed. It is defined as the distance from the set point.
Valid range: 0-9999.99
Default value: 10.00
Parameter resolution: 2 for mm / 3 for inch

5.2.13 Direction of exceeding the set point:
Description: “Direction of exceeding the set point”, “Distance to exceed set point” parameters are related. Defines the direction in which the axis approaches the set position.
0: positive
1: negative
Valid range: 0-1
Default value: 0
Parameter resolution: 0

5.2.14 Distance value to exceed set point
Description: Defines how far the axis exceeds the set point before reaching the setpoint.
Valid range: 0-999.999
Default value: 0.000
Parameter resolution: 3

5.2.15 Number of attemps to find the set value:
Description: Defines the number attemps to find the set value. If it is 0, device searches until it finds the set position.
Valid range: 0-999999
Default value: 0
Parameter resolution: 0

5.2.16 Index position:
Description: Defines the indexing point. Index mode enable parameter should be 1.
Valid range: 0-999999
Default value: 800.0
Parameter resolution: Parameter display resolution's value

5.2.17 Index mode enable:
Description: Enables or disables the index mode.
1: index mode on
0: index mode off(permanent position memory)

Valid range: 0-1
Default value: 0
Parameter resolution: 0

5.2.18 Direction switching delay
Description: Delay between forward and reverse movement. Unit is second.
Valid range: 0-99999.9
Default value: 0.0
Parameter resolution: 1

5.2.19 Complement to set value:
Description: Set the displayed value to set value if the parameter is 1(It does not change the current value).
Valid range: 0-1
Default value: 0
Parameter resolution: 0

5.2.20 Absolute or Releative Selection:
Description: Select the positioning as absolute or relative.
0: Absolute
1: Relative
Valid range: 0-1
Default value: 0
Parameter resolution: 0

5.2.21 7-segment scanning calibration:
Description: None
Valid range: 0-999999
Default value: None
Parameter resolution: 0

5.2.22 Reserved
Description: None
Valid range: 0-1
Default value: 0
Parameter resolution: 0

5.2.23 Device working time:

Description: Displays the operating time in hours. It is not a changeable value. It does not change with the loading of default parameters.
Valid range: 0-999999
Default value: None
Parameter resolution: 0

5.2.24 Load the default parameters:

Description: Restores the default values to parameter list after 1. At the end of the installation, it automatically becomes 0.
Valid range: 0-1
Default value: 0
Parameter resolution: 0

6 Error Codes

Err 1: Axis position is higher than maximum limit.
Err 2: Axis position is lower than minimum limit.
Err 3: Set position is higher than maximum limit.
Err 4: Set position is lower than minimum limit.
Err 5: Limit values error
Err 6: Encoder resolution is zero fault
Err 7: Encoder direction error
Err 8: Unit selection error
Err 9: Display resolution error
Err 10: Reserved
Err 11: Reserved
Err 12: Enable signal error