

SERIES P8511-000-R

Single Axis Position Controller for switched positioning

- Integrated relay outputs
- Integrated power pack (115/230 VAC)
- Single set operation
- Up to three different speeds
- Manual (inching) operation
- Extensive functions and parameters



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1. Short Description

The P8511-000-R is a modern and compact solution for single axis tasks.
An extensive function pool allows to modulate the controller for individual applications:

- Three speed rates
- Absolute and incremental positioning modes
- Single set operation
- Manual operation
- Batch counter with completed output
- Pulse factor
- Datum setting routines
- Tool offset compensation in incremental mode
- Incremental error compensation
- Backlash compensation
- Tolerance window blanking
- Encoder monitoring
- Input frequency max.20 kHz

The unit is suitable for operation with any type of 2 or 3 speed bi-directional drive or any variable speed drive with 1, 2 or 4 quadrant of control.

The performance and accuracy obtained is dependent on the type of drive chosen.

The outputs for stepped speed drives are relays.

These outputs can be configured in a number of ways to suit all types of control circuits.

The actual position is monitored by an incremental encoder.

The power supply unit is integrated.

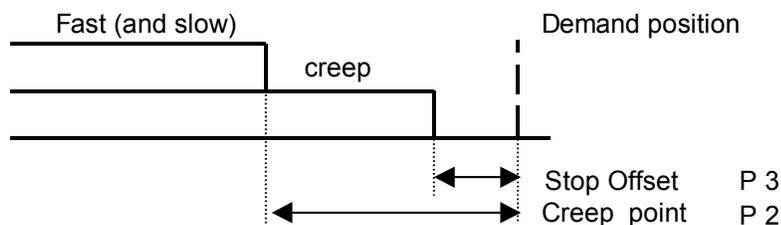
The controller can be used to position machinery to any desired absolute position.

Alternatively, the controller can be used to feed material through a process.

2. Functions

2.1 Two speed operation

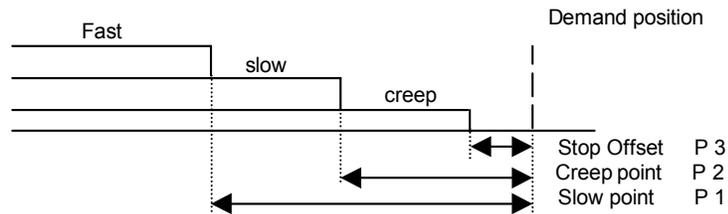
NB: $R1 = R2 > R3$ The value in Register 1 must be the same value as Register 2



2.2 Three speed operation

NB: $R1 > R2 > R3$

The value in Register 1 must be larger than Register 2



NB: The stop offset is only effective when $R8 = 1xxxx$.

2.3 Setting Datum

Datum can be set in a variety of ways. The method is selected in Register R8/3

$R8 = xx0xxx$	Datum to R7 Closing input St 3 / 4 transfers the value set in R7 into Actual Value Display
$R8 = xx1xxx$	Setting to Preset Closing input St 3 / 4 transfers the Demand display value into Actual Value Display
$R8 = xx2xxx$	Automatic Datum setting - direction positive
$R8 = xx3xxx$	Automatic Datum setting - direction negative
$R8 = xx4xxx$	Datum with keypad alone The value of R7 is transferred to Actual Display by accessing R7, typing in value and then pressing E.

2.4 Encoder Monitoring

If, after positioning is activated, no Encoder pulses are received after a time set in R19 (0.1 to 9.9 sec), positioning will be aborted and fault 01 will be displayed. Setting R19 to 0.0 sec, disables this feature.

2.5 Batch Counter

Register R18/6 sets the method of counting whether adding or subtracting

R18 = xxxxx1	Automatic subtracting
R18 = xxxxx2	Automatic adding
R18 = xxxxx3	Manual subtracting (external input signal)
R18 = xxxxx4	Manual adding (external input signal)
R18 = xxxxx5	Automatic add/subtract (Single only)
R18 = xxxxx6	Manual add/subtract (Single only)

With adding function, the counter starts from zero. When the set quantity is reached, the quantity complete output will be pulsed. With subtracting function, counting from preset to zero takes place. When zero is reached, the quantity complete output will be pulsed.

With add/subtract function, subtracting will take place if a preset value is entered. On reaching zero, adding will ensue. When the quantity counter goes from 1 to 0, a pulse output is given.

The length of this pulse is set in P11. Setting 0.0 gives a maintained output.

2.6 Error messages

When a fault occurs, it's number flashes in Actual Value Display

Fault number	01 = Encoder
	02 = End Limit minimum
	03 = End Limit maximum
	04 = Actual Position < min software limit (R13) Hand Demand Position < min software limit (R13) Single
	05 = Actual Position > max software limit (R14) Hand Demand Position > max software limit (R14) Single

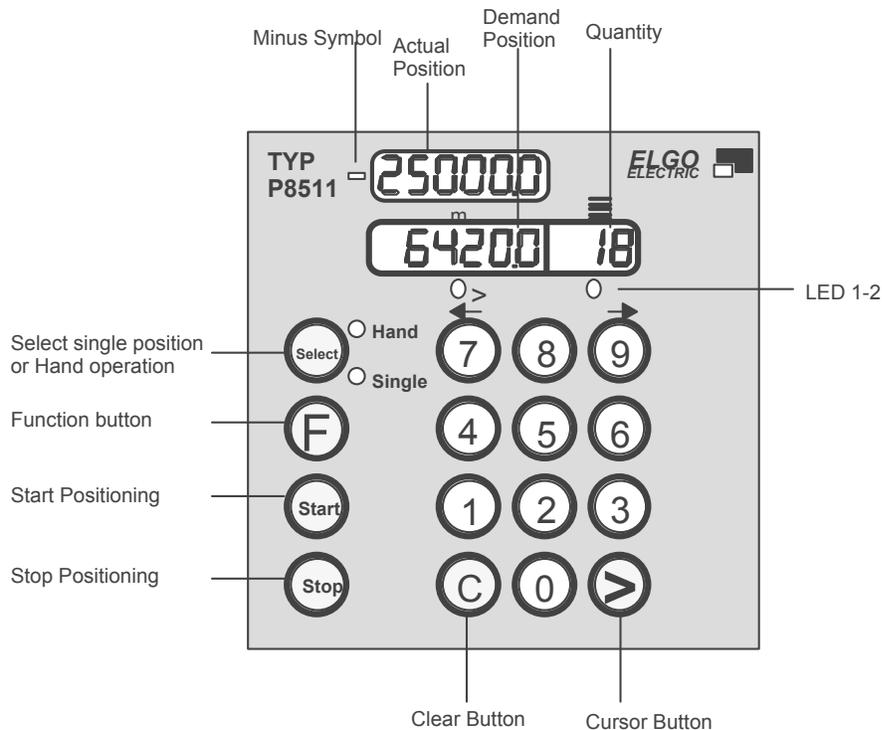
* 07 = External stop activated or wire break

The fault message is cleared by pressing any button.

"07" also flashes if Stop on front panel is activated in middle of any move.

***NB:** External stop input must be linked before system can operate. Therefore, if external n/c pushbutton is not fitted, then insert a permanent wire link.

3. Front Panel



3.1 Functions of Display

Actual Position Shows the Actual Position of the axis

Demand Position Here you can enter the required position (or Register value)

Quantity Window Shows how many pieces are left to be cut (or have been cut) or How many incremental moves yet to be completed.

LED "Hand" Illuminates when button "Select" is pressed

LED "Single" Illuminates when button "Select" is pressed

LED 1 - 2 Indicate which input window is being used selected by button >

3.2. Function of the Keypad

Select Selecting Single enables operator to enter a position Demand value. Pressing > enables quantity value to be entered. Pressing "**Select**" again enables Hand operation. Using Buttons **7 & 9** the Operator can move the axis manually

F Selects the Register setting mode (only active in Single)

Start Start positioning action. Start is inactive in Register setting mode and Hand mode

Stop Stops positioning action. Also clears error code. Stop is inactive in Register mode and Hand mode.

> Sequentially selects Dimension or Quantity window. In Register setting mode selects alternatively:- Register number and Register value.

C Clears the selected window to zero

0-9 Numerical Keypad for entry of values at all times

4. Controller in Operation

Switch on conditions is programmable in register R33:

R33 = xxxxx0	same conditions as at time of switch off
R33 = xxxxx1	Single mode
R33 = xxxxx3	Hand mode

The Actual position is memorised. In "Hand" the demand window line is switched off. In "Single" the Demand value is memorised

4.1 Position to new value

Press C	:	Clear demand position value
Press 0-9	:	To enter desired position
Press >	:	Select quantity demand
Press C	:	Clear quantity value
Press 0-9	:	To enter desired quantity
Press >	:	To ensure correct window selected
Press start	:	The axis moves to desired position

4.2 Manual operation

Use the button **Select** to select Hand (LED illuminates).
Use button **7** (forwards) & **9** (backwards) to move axis
The direction of rotation can be selected in P64
The buttons **7** & **9** have twin functions :-

Initially the axis moves at slow speed. When the time set in P32 has elapsed, the axis changes into high speed. This condition continues till button is released.

In high speed, when the Actual position reaches preset software limits (P13 + P1) or (P14 - P1), the speed automatically drops to creep.

5. Setting of Registers

5.1 Register Input

Press **F** for **2 sec** The digits in Actual value display flash.
98 is displayed when Registers are protected by security code.

To unlock Registers :-

Press **>** Select Demand window

Enter 250565 The security code

Thereafter, the required Register is displayed. To alter value of Register proceed as follows:-

Press **>** The Actual value display reads 01 for Register 1

Use keypad **0... 9** To enter desired Register number

Press **>** The value of that Register is displayed in Demand Window

Press **C** To clear old value

Use keypad **0... 9** To enter desired Register value

Press **>** The Register value is stored in memory. The Actual Value display indicates next Register number

A number of Registers may be set sequentially.

Press **F** for **2 sec** The Register entry is ended. Actual position is again displayed

Registers without function cannot be accessed.

Once Registers have been unlocked, you may alternate between operation and Register entry mode without the need for further security code entry.

The Registers can be locked away, by either

Powering down, or

Selecting Register 98; press **>** ; press **F** for 2 sec.

6. Register table

Register	Function	Resolution	Default	Customer
01	Slow speed distance	0.1 mm	200*	
02	Creep speed distance	0.1 mm	100*	
03	Stop offset	0.1 mm	0	
04	Backlash compensation	0.1 mm	50	
05	Retract distance	0.1 mm	500	
06	Tool Width	0.1 mm	0	
07	Datum value	0.1 m	1000	
08	System Register 1	See Page 11	100000	
09	Position reached pulse	0.1 s	10(0=held)	
10	Backlash dwell time	0.1 s	10	
11	Quantity reached pulse	0.1 s	10(0=held)	
12	Tolerance window	0.1 mm	0	
13	Min software limit	0.1 mm	0	
14	Max software limit	0.1 mm	500000	
15	Software limit selection	0,1,2,3	0	
17	Display brightness	0-15	10	
18	System Register 2	See Page 16	000000	
19	Encoder pulse monitor time	0.1 s	0	
20	Decimal point	3,0,2,1	1	
21	Slow speed distance negative direction	0.1 mm	200	
22	Creep speed distance negative direction	0.1 mm	100	
23	Stop offset	0.1 mm	0	
24	Backlash window	0.1 mm	0	
25	Home position	0,1mm	1000	
28	System Register 3	See Page 17	000002	
29	Time delay for Drive inhibit	0.1 sec	10	
32	High speed delay time	0,1 sec	10	
33	Power on mode	0,1 sec	0	
34	Start delay time	0,1 sec	0	
56	Encoder edge multiplier	1,2,4	1	
64	Direction of manual buttons	0-1	0	
69	Speed of automatic Datum setting	0-2	0	
88	System Register 4	See Page 19	000000	
90	Button enable in service mode	0,1,2	2	
94	Inch / factor multiplier	0.0 to 9.99999	100000	
96	Encoder pulse multiplication	0.0 to 9.99999	100000	
97	Inch / mm conversion mode	0,1,2,3	0	
98	Security code	250565	0	
99	Service	--	0	

* Logical sequence values such as these must always be present, regardless whether 3 speed, 2 speed or 1 speed drive is used.

P1 > P2 > P3 for 3 speed drive P1 = P2 > P3 for 2 speed or 1 speed drive.

Registers R06 and R07 can be accessed and changed without need for the Security Code.
The Registers R50 to 55, 57 to 63 and 65 to 68 are for analogue output only.

7. Description of Registers

R01 Slow speed distance forward/reverse or forward only (see R28/2)

Distance at which the controller switches from high speed to slow speed. The output high speed will be switched off.

R02 Creep speed distance forward/reverse or forward only (see R28/2)

Distance to demand position at which the controller switches from slow to creep speed

R03 Stop offset distance forward/reverse or forward only (see R28/2)

The overrun distance can be programmed to compensate for distance from the switch-off point of the motor to standstill. For exact positioning, the overrun distance should be very small (0.0 to 0.5 mm). Therefore the mechanical friction should be steady and the creep speed should be very slow.

During commissioning, first set R12 to zero (to eliminate Tolerance window blanking), then set the value of R03 to 0.0 and execute a number of moves in both directions. Note the average overrun distance and then set R03 to that value. Then set R12 to suit.

R04 Backlash overrun

To correct for screw or pinion backlash, the Demand position should be approached from one direction only. In positive direction therefore, the Demand position will be overrun by the value of R4 and driven back at creep speed after a time delay of R10, to the Demand position.

R05 Retract distance

There are different modes available in the P8511, selectable by Register R18/2.

If R18/2 = 0 Retract Position = Actual + R5

If R18/2 = 1 Retract Position = Value of R5

Whilst the input St3/6 is held on, the slide will move to the "Retract" position. On release of input, slide will return to the original position. (Value 0)

When input St3/6 is activated, the slide moves to position as set in R5 but will not return to original position on release of input. (Value 1)

R06 Tool offset compensation

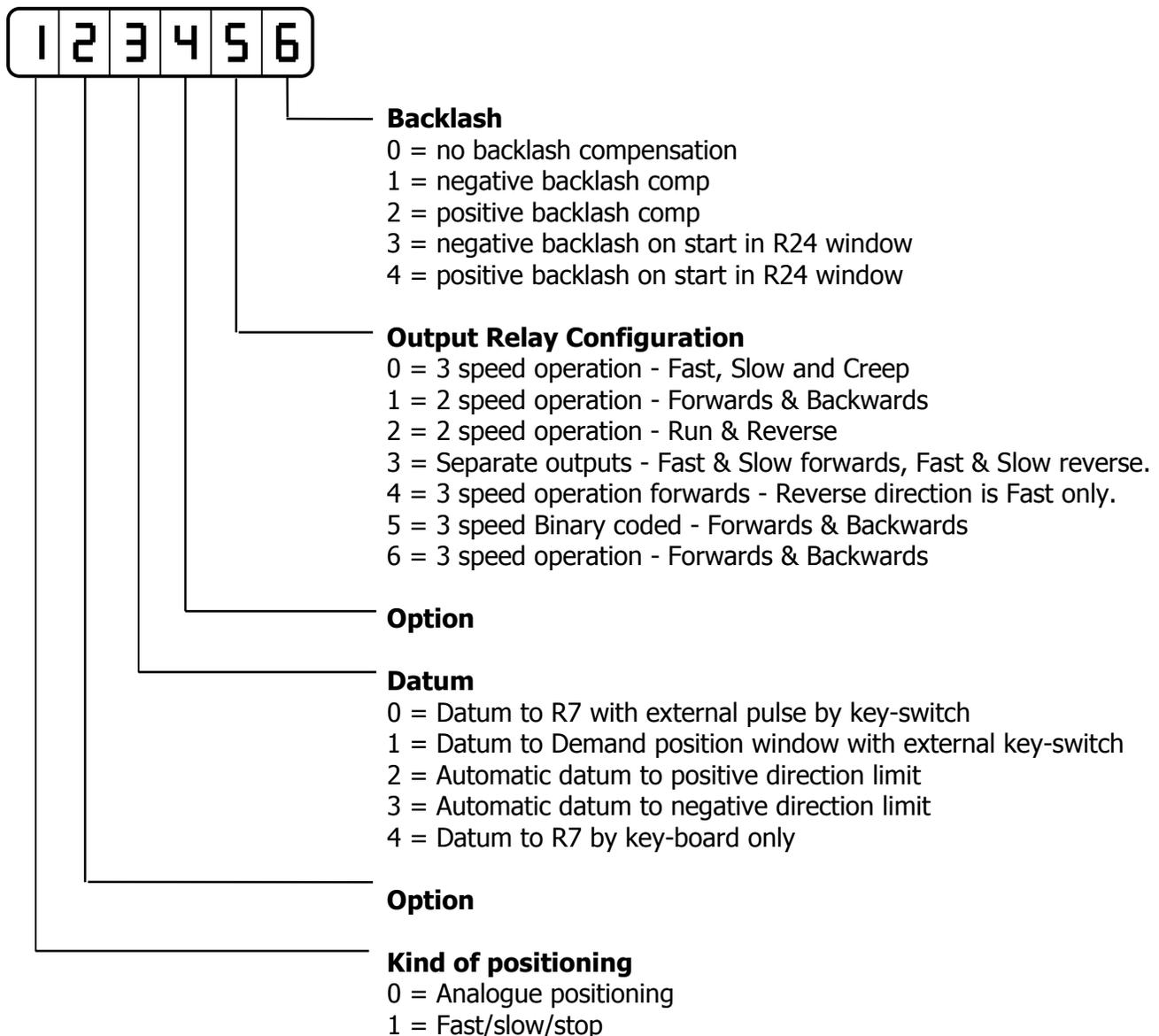
This Register can be accessed without Security Code. When moving in incremental, it is often the case that the subsequent function is a cut that removes part of the material. Thus to cut the correct preset lengths, it is necessary to move the demanded distance plus the "Tool Offset". This feature is active in incremental mode.

R07 Datum

The Datum value is stored in this Register. The value is used in different ways, in accordance with setting of P8/3. Input St3/4 initiates loading. This Register can be accessed without Security Code.

R08 System Register 1

This Register sets the basic operating functions of the unit.



Relay Configurations

These depend on the setting of Register R8/5

Value 0 2 speed operation (P1=P2)
2 speeds selected by relays 2,3, & 4 Relay 5 sets direction reverse

RELAY	2	3	4	5
Slow forwards	X			
Fast forwards	X	X	X	
Slow reverse	X			X
Fast reverse	X	X	X	X

R2 = Run, R3 = R4 = Fast combined with Run. R5 = reverse

3 speed operation (Elgo standard default)
3 speeds selected by relays 2,3, & 4 Relay 5 sets direction reverse

RELAY	2	3	4	5
Creep forwards	X			
Slow forwards	X	X		
Fast forwards	X	X	X	
Creep reverse	X			X
Slow reverse	X	X		X
Fast reverse	X	X	X	X

R2 = Run, R3 = Slow, R4 = Fast combined with Run. R5 = reverse

Value 1 2 speed operation (P1=P2) - Independent outputs forward and reverse
Independent outputs fast and slow

RELAY	2	3	4	5
Slow forwards	X	X		
Fast forwards	X		X	
Slow reverse		X		X
Fast reverse			X	X

R2 = Run forwards, R5 = Run reverse R3 = Slow, R4 = Fast, combined with forward / reverse (but independent)

Value 2 2 speed operation Speed set by Relays 2 & 3. Direction set by Relay 4

RELAY	2	3	4	5
Slow forwards	X	X		
Fast forwards	X		X	
Slow reverse		X		X
Fast reverse	X		X	X

R2 = Positioning (drive inhibit or brake)

R3 = Slow, R4 = Fast (both independent) R5 = reverse

Value = 3 2 speed operation (P1=P2) - Independent outputs for direction and speed

RELAY	2	3	4	5
Slow forwards	X			
Fast forwards		X		
Slow reverse			X	
Fast reverse				X

Value = 4 2 speed operation (P1=P2)

RELAY	2	3	4	5
Slow forwards	X			
Fast forwards	X	X	X	
Slow reverse	X	X	X	X
Fast reverse	X	X	X	X

R2 = Run, R3 = R4 = Fast forwards or Fast Reverse,
R5 = Reverse – always fast,

3 speed operation Forwards – 3 relays set speeds

RELAY	2	3	4	5
Creep forwards	X			
Slow forwards	X	X		
Fast forwards	X	X	X	
Creep reverse	X	X	X	X
Slow reverse	X	X	X	X
Fast reverse	X	X	X	X

R2 = Run, R3 = Slow forwards or Fast Reverse, R4 = Fast,
R5 = Reverse – always fast,

Value = 5 2 speed operation (P1=P2) - Binary coded Relays

RELAY	2	3	4	5
Slow forwards	X	X		
Fast forwards	X	X	X	
Slow reverse		X		X
Fast reverse		X	X	X

R2 = Run forwards, R3 = Slow, R4 = Fast, R5 = Run reverse

3 speed operation Binary coded Relays

RELAY	2	3	4	5
Creep forwards	X	X		
Slow forwards	X		X	
Fast forwards	X	X	X	
Creep reverse		X		X
Slow reverse			X	X
Fast reverse		X	X	X

Relays 2 & 3 for speed

R2 = Run forwards, R5 = Run reverse

Value 6 2 speed operation (P1=P2) - Forwards and Backwards

RELAY	2	3	4	5
Slow forwards	X			
Fast forwards	X	X	X	
Slow reverse				X
Fast reverse		X	X	X

R2 = Run forwards, R3 = R4 = Fast forwards & Fast reverse, R5 = Run reverse.

3 speed operation - Forwards and Backwards

RELAY	2	3	4	5
Creep forwards	X			
Slow forwards	X	X		
Fast forwards	X	X	X	
Creep reverse				X
Slow reverse		X		X
Fast reverse		X	X	X

R2 = Run forwards. R5 = Run reverse

R09 Time position reached

During each move the controller gives an output to signal "positioning". When 'in position' the output is deactivated for the length of this pulse set in R9. Setting 0.0 gives a maintained output. This output St5/1-2 is inactive when Actual position = Demand position +/- Tolerance window R12

R10 Backlash dwell time

When the machine stops at the end of the overrun, it is usually desirable to have a short delay. The time is set in this Register.

R11 Pulse "Quantity complete"

When the quantity counter goes from 1 to 0, a pulse output at St6/3-4 is given. The length of this pulse is set in R11. Setting 0.0 gives a maintained output.

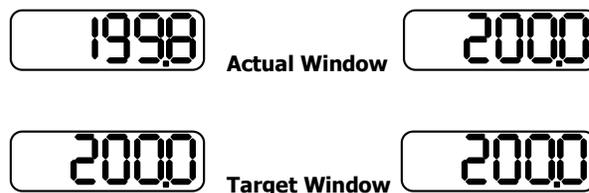
R12 Tolerance window

It is possible to enter a value in register R12 that represents an acceptable tolerance e.g. 0.1 mm. When the actual position is within the Tolerance window, the actual position displayed is made equal to the target position. The actual error is not lost, as the controller knows the true position.

Example: R12 = 0.2 Therefore tolerance window is +/- 0.2mm

Display without Tolerance set

Display with tolerance set



R13/R14 Min/Max software limits

		Fault Message
Target < Limit R13	=	04
Target > Limit R14	=	05

Single set operation

Immediately after start signal, the controller checks the software limits. If the Demand position is greater or smaller than the corresponding limit, the controller will stop and show the error message on the display. The backlash distance in R4 is considered at the check of the Max software limit, if the backlash is activated in R8/6.

Manual operation (inching)

The movement will stop when software limits are reached. If moving at high speed, the drive will drop to creep speed at a distance set in R1 from this limit. This prevents running into the ends of the machine. The end limit values are modified by backlash value as set in R4, if R8/6 is selected.

R15 Software limit / end-switch limits adjustment

Software limits (R13 & R14) are active in accordance with the setting of R15/6

xxxx0	Both software limits active
xxxx1	Min software limit (R13) inhibited
xxxx2	Max software limit (R14) inhibited
xxxx3	Both software limits (R13&R14) inhibited

External end-switches can be connected to the St4/3 negative direction and at St4/4 for positive direction.

xxxx0x	Both limits inputs active
xxxx1x	Min limit input (St4/3) inhibited
xxxx2x	Max limit input (St4/4) inhibited
xxxx3x	Both software limit inputs (St4/3 St4/4) inhibited

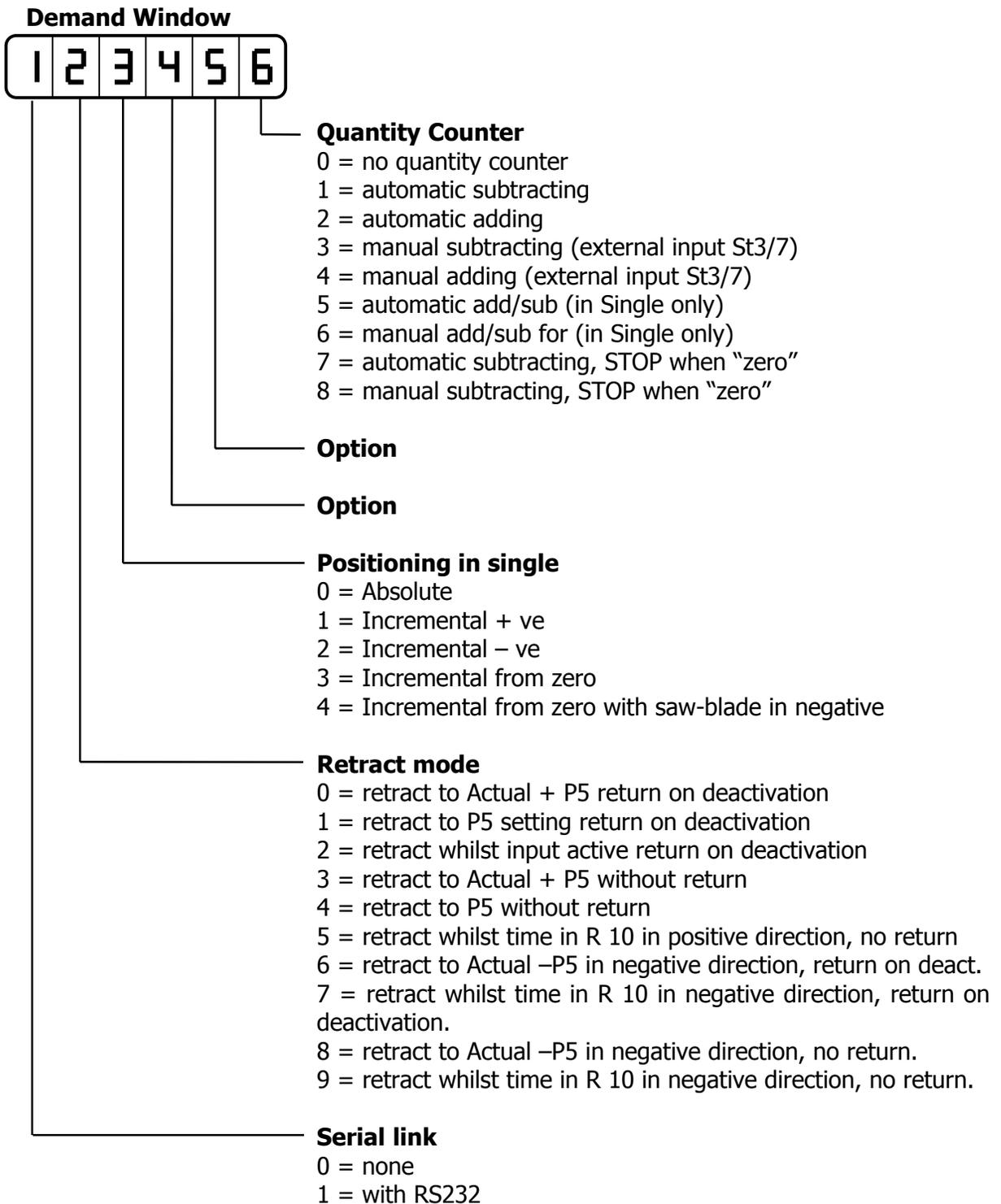
N.B If these are not connected to limit switches they need to be connected "normally closed" (i.e. linked out).

R17 Display Brightness

Setting this parameter changes the brightness of the display.
0 = dark, and 15 = maximum brightness.

R18 System Register 2

This Register also sets the functions of the controller.



R19 Encoder monitoring

If after positioning is initiated, no Encoder pulses are sensed after a time set in R19, positioning will be aborted and Fault 01 will be displayed. Setting R19 to 0.0, disables Encoder pulse monitoring.

R20 Decimal Point

The decimal point is placed in a fixed position and is optional only. It does not change the resolution of the system. The position is dependent on setting of Register R97.

With R97 = xxxxx0 = mm mode

R20 = xxxxx0 = without
 R20 = xxxxx1 = 1/10
 R20 = xxxxx2 = 1/100
 R20 = xxxxx3 = 1/1000

With R97 = xxxxx1 = Inch mode 1/100

Decimal point is fixed at 1/100

With R97 = xxxxx2 = Inch mode 1/1000

Decimal point is fixed at 1/1000

With R97 = xxxxx3 = "Inch" factor freely programmable in R94

R20 =xxxx0x = without R20 =xxxx1x = 1/10
 R20 =xxxx2x = 1/100 R20 =xxxx3x = 1/1000

R21 Slow speed distance in negative direction

This parameter is important for application with different load conditions on forward or backward if no use of automatic backlash compensation is desired. The Parameter R28/2 has to be set to 1 for activation.

Distance at which the controller switches from high speed to slow speed in negative direction (the output high speed will be switched off).

R22 Creep speed distance in negative direction

Distance to demand position in negative direction can be set in this parameter at which the controller switches from slow to creep speed

R23 Stop offset distance in negative direction

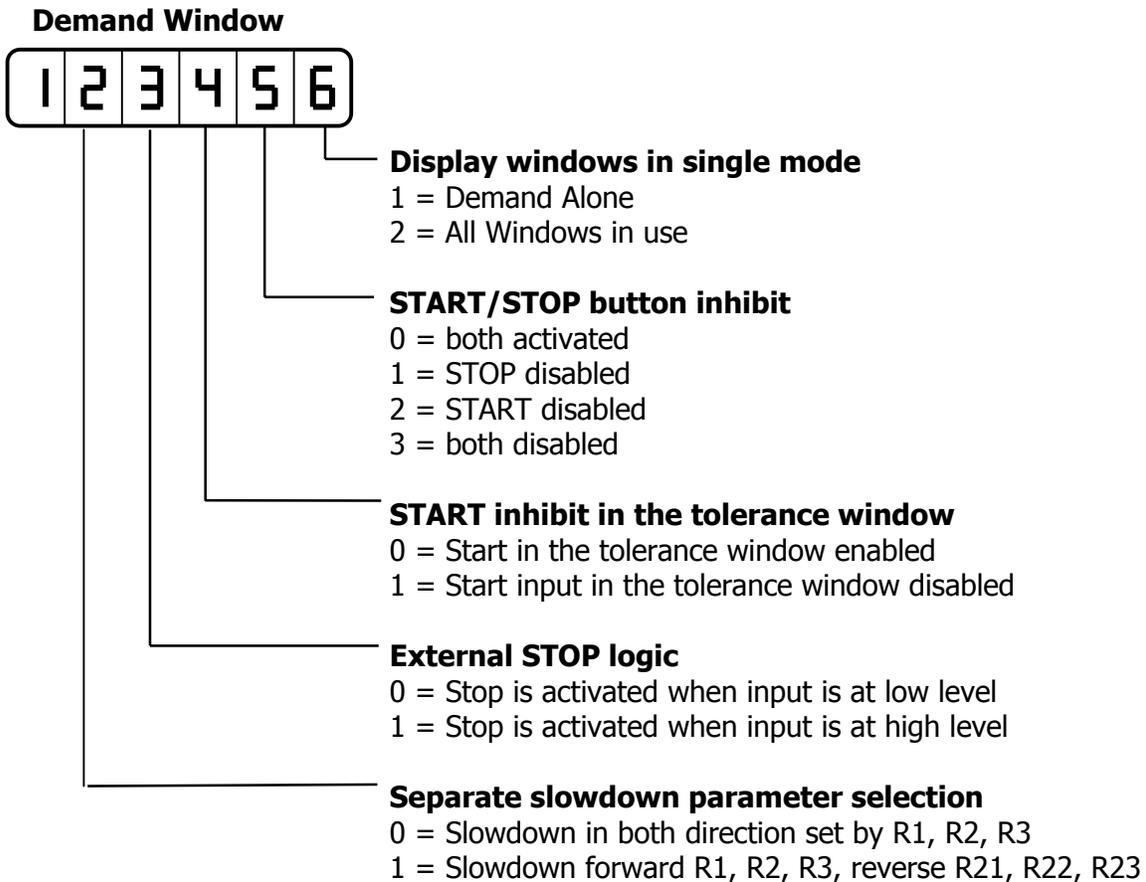
The overrun distance in negative direction can be programmed in this parameter to compensate for distance from the switch-off point of the motor to standstill.

R25 Home Position

Activating the input St3/5 will send the Axis to a prefixed position as set in R25.

R28 System Register 3

This Register also sets the functions of the controller.



R29 Time Delay for Drive inhibit (Positioning)

On activating start, output St6/1-2 is activated. On arriving in position, after a time delay of R29 this output deactivates.

R32 Start delay time

When in Hand mode and the delay time set in this parameter has elapsed, the controller will move from slow speed to fast speed operation.

R33 Power on mode

This parameter sets the switch on conditions of the unit.

R33 = xxxxx0 same conditions as at time of switch off

R33 = xxxxx1 Single mode

R33 = xxxxx3 Hand mode

The Actual position is memorised. In "Hand" the demand window line is switched off. In "Single" the Demand value is memorised

R56 Multi edge triggering

1 = x 1 2 = x 2 4 = x 4

Entry of any other value will automatically select 1

R64 Direction of Manual Buttons

	Setting 0	Setting 1
Button 7	Backwards	Forwards
Button 9	Forwards	Backwards

R69 Speed of going to Datum in First phase, in switched speed control mode

Value xxxxx0 = creep speed to limit switch

Value xxxxx1 = slow speed to limit switch

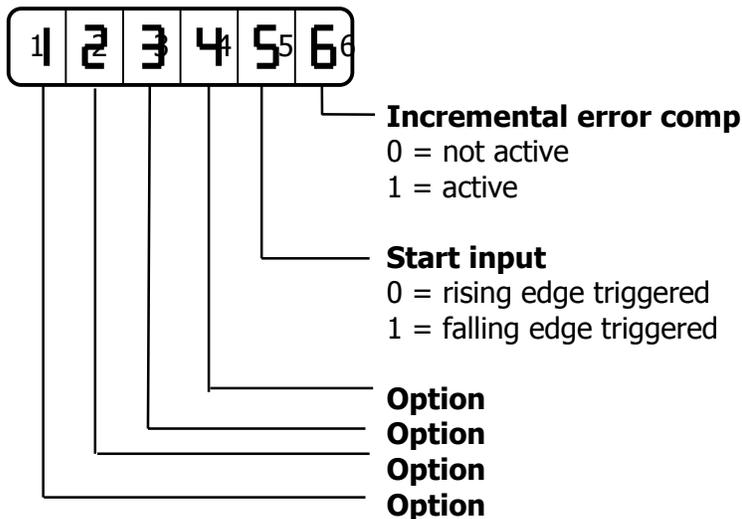
Value xxxxx2 = Fast speed to limit switch

Approach to the maker pulse always in creep-speed.

R88 System Register 3

This Register sets further basic functions of the controller.

Demand Window



R94 "Free" Factor

Any factor value can be entered here between 0.00001 and 9.99999 and selected by R97 = xxxxx3. When the display is switched between mm's / inch, this factor will be used to change the display to secondary units.

R96 Encoder Pulse Multiplier

A factor (0.00001 to 9.9999) can be entered in this Register. The input pulses will be multiplied by this factor, to modulate the display to desired values. If no multiplication is required, this Register must be set to 1.00000

R97 Inch/mm conversion mode

The setting in this register activates the in inch mode, the free factor and the resolution in the inch mode can be selected. R97/6 =00000x

0 = mm operation

1 = inch operation. Resolution 1/100

2 = inch operation. Resolution 1/1000

3 = factor operation. As set in R94

R98 Security Code

Enter 250565 to unlock and change Parameters

R99 Service register

For testing at factory set-up only.

8. Functions of Inputs (Terminals ST3)

- St3/1** **Terminal for pulling down signals to OV**
(Pull up to +24v is an option – Factory fitted only)
- St3/2** **External start input**
The start is edge triggered. Rising or falling edge can be selected in R88/5
- St3/3** **External stop input**
The input logic for the STOP input can be selected in the system parameter R 28/3
Value 0 = Input open = no positioning
Value 1 = Input closed = no positioning.
- St3/4** **Set Datum**
When Register R8/3 is set to 0 or 1, Datum can be set by this input
R8 = xx0xxx datum to Register 7
R8 = xx1xxx datum to Demand value
R8 = xx2xxx Start of datum sequence in positive direction
R8 = xx3xxx Start of datum sequence in negative direction
- St3/5** **Incremental Negative**
Activating this input causes axis to move incrementally in direction –ve.
This input has priority over setting of R18/3 and R18/4.
- St3/6** **Retract**
Activating this input causes the axis to move in accordance with setting of R18/2
- St3/7** **Quantity adding/subtracting**
Each pulse on this input will increment or decrement the counter depending on setting of R18/6 = value 1 - 6.
- St3/8** **Incremental Positive**
Activating this input causes axis to move incrementally in direction +ve.
This input has priority over setting of R18/3.

9. Functions of Inputs (Terminals ST4)

St4/1 Terminal for pulling down signals to 0 V
(Pull up to +24v is an option – Factory fitted only)

St4/2 System Reset
Activating this input will hold the controller in a reset condition, i.e. all outputs & displays are switched off and all other inputs are ignored (For test purpose only).

St4 / 3 & 4 End Limits
External limit switches can be connected Input at this terminal.

ST 4 Pin 3	=	end limit -
ST 4 Pin 4	=	end limit +

Error messages : End limit – “active” = **02**
End limit + “active” = **03**

N.B If these are not connected to limit switches they need to be connected Normally closed (i.e. linked out).

St4/5 Fixed Position
Activating this input starts the Axis to move to fixed position set in R25.

10. Functions of Outputs Terminals ST5 & 6

St5 pin 1-2 Position reached / in Position
The signal is a pulse of time set in R9. When R9 is set to zero, the output is latched till next start is given. The output is set when:-
Actual value = Demand value +/-Tolerance window R12

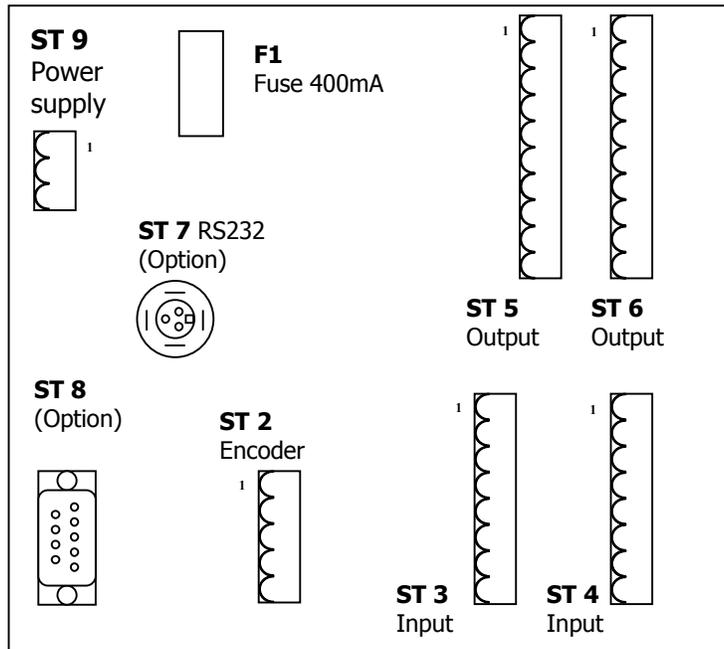
St5 pin 3-10 Run signals
In the parameter R8/5 the logical combination of the output relays 2-5 for the motion of the inverter ore the external relay logic can be selected. See pages 12/13 for the available combinations

St6 pin 1-2 Drive inhibit
At Start this output is activated. When position is reached, output is reset after a time of R29.

St6 pin 3-4 Quantity reached
The output is a pulse of time set in R11, when quantity is reached.
For quantity subtracting – when quantity = 0
For quantity adding – when input value is reached.
For quantity add/sub – when 0 is reached on subtracting

10. Terminal Layout

Rear of the unit:



ST 5 Relays 1-5

PIN	Function	
1 - 2	Pos reached/In Pos	R1
3 - 4	Creep	R2
5 - 6	Slow	R3
7 - 8	Fast	R4
9 -10	Reverse	R5

ST 6 Relays 6-10

PIN	Function	
1 - 2	Drive enable	R6
3 - 4	Quantity reached	R7
5 - 6	NC	R8
7 - 8	NC	R9
9 -10	NC	R10

ST 2 Encoder

PIN	Function
1	0 Volt
2	+ 24 VDC
3	A Channel
4	B Channel
5	Earth & Screens

ST 3 Input

PIN	Function
1	Common 0 or 24VDC
2	Start
3	Stop
4	Datum
5	Incremental negative
6	Retract
7	Quantity
8	Incremental positive

ST 4 Input

PIN	Function
1	Common 0 or 24 VDC
2	System Reset
3	Limit switch negative
4	Limit switch positive
5	Start Home position
6	NC
7	NC
8	NC

ST 9 DC Power supply D-Type (male)

PIN	Function
1	0 V
2	24 VDC 250 mA
3	PE Earth & Screens

ST 9 AC Power supply

PIN	Function
1	230/115V AC 14VA
2	230/115V AC
3	PE Earth & Screens

ST 7 Serial link RS232

PIN	Function
1	RX
2	TX
3	0 Volt

ST 8 Analogue output

PIN	Function
7	+/- 10 V analogue signal
8	0 Volt
9	PE Earth & Screens

11. Technical Data

Power supply	24 VDC/ 230/115 VAC 50/60 Hz
Consumption	14 VA
Encoder supply	24v dc max load 130 mA
Encoder circuit required	PNP (NPN option)
Input signals	PNP standard, (NPN option) Minimum signal time 0.3 sec Input current 10 mA max
Outputs	normally open relay contact 250v 0.3A – suppress external coils
Memory	EEPROM minimum 10 years
Connectors	RIA
Display	Low power LED 7 segment 10 mm high
Hardware	Micro controller with 128 K E-Prom
System accuracy	+/- 1 digit
Counting frequency	20 KHz, higher on request
Enclosure	Black metal, for fitting into control panels W x h x d 144 x 144 x 114 mm's (incl. connectors)
Cut-out	138 x 138 mm's
Ambient temp	0... + 45 °C

12. Installation Hints

Elgo Electric controllers are constructed to the latest standards of technology and protected against noise.

To enable the controller to operate successfully, the following instructions must be carried out.

Location The unit must not be mounted in vicinity of high inductive or capacitive powers or static electricity.

Power Supply: For 230 VAC single phase supply, avoid using the same feed as to motors or contactors. Otherwise fit a Filter.

Cable: All low voltage cables must be run separately from power cables.

Screening: All external signal cables must be screened
1. Encoder cable
2. Input signal cable

All screens must be connected to a common earth point.

NB: Do not connect zero line to earth

Suppression: To avoid electronic noise. Suppress all coils in the cabinet and on Machine.

1. RC network for ac coils (e.g. 0.1 μ F+ 100 Ω)
2. Freewheel diode for dc coils
3. RC or similar suppressor for motor power lines and Brakes.

13. Only for Service

R99 Service Register

When R99 is selected, the following functions can be called up:-

Security Register R98 must be opened and service Register R90 set.

R90 = 000001 Button 0,1 and 4 active

R90 = 000002 All buttons active

NB: Select R90 before R99

Button 0 = Input test ST3

Button 1 = Input test ST4

Button 2 = Input/output test St3 to St5

Button 4 = Displays the software details
Demand window = SV number and version
Quantity = SN number

Button 5 = Selects relays 1-8 output test on St5 and St6

Button 7 = Keyboard test

Button 8 = Clear memory

Button 9 = Load test programme

Button "Select" = Load default Register set

14. Type designation

P 85 1 1 – 000- 230 – 0 – R-XXXXXX

P = Position Controller

Series

P8511 no Programme memory

Programme Memory

1 = none

Number of Axes

Construction

000 = standard

001 = 1st special version

etc.

Supply voltage

024 = 24 V DC

115 = 115 V AC

230 = 230 V AC

Encoder input

0 = A/B 24V/24V 20KHz PNP

1 = A/B/0 24V/24V 20KHz PNP

* 2 = 5 V line receiver

* 3 = 5V line receiver with index input

8 = A/B 24V /24 neg. logic NPN

Special Features

P = Analogue closed loop

R = Relay output

EN = input NPN (including marker)

S= Serial communication link RS232

*under construction

Liability exclusion / Guarantee

We have checked the contents of this instruction manual carefully, to the best of our knowledge and belief for conformity with the described hardware and software. Nevertheless errors, mistakes or deviations can not be excluded, therefore we do not guarantee complete conformity. Necessary corrections will be included in the subsequent editions. We appreciate your ideas and improvement suggestions very much. Reprint, duplication and translation, even in extracts, are only allowed with a written authorization by the company ELGO Electric GmbH. We constantly strive for improving our products, therefore we keep all rights reserved for any technical modifications without any notice.

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

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

Damages verifiably not caused by ELGO Electric GmbH and due to improper handling are excluded from any guarantee e.g. by applying faulty voltage, diffusion of liquid into the interior of the engine, using force, scratching the surface, chemical influences etc.!

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The logo for ELGO, consisting of a black square with a smaller yellow square inside it, partially overlapping the black square.