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ANPOS2 Device

1. Introduction

The internal device ANPOS2 allows the movement of an axis with position control and incremental encoder feedback. The main features of the device are:

- programmable measurement resolution
- software limit management
- trajectory generation with trapezoidal and S-curve velocity profiles
- programmable acceleration and deceleration
- homing procedure
- PID + FF regulator
- position capture by interrupt
- Calibration of analog output
- work with open or closed position loop
- JOGS movement
- Management of a digital output to indicate one of the states of the positioning (still, tolerance, etc.).

2. Declaration

To use the device you should declare it in the INTDEVICE section of configuration unit.

```
;--------------------------------
; Declaration internal devices
;--------------------------------
INTDEVICE
...
<nome>  ANPOS2  TCamp  ICont IdxA  HSwA IOutD IOutA
```

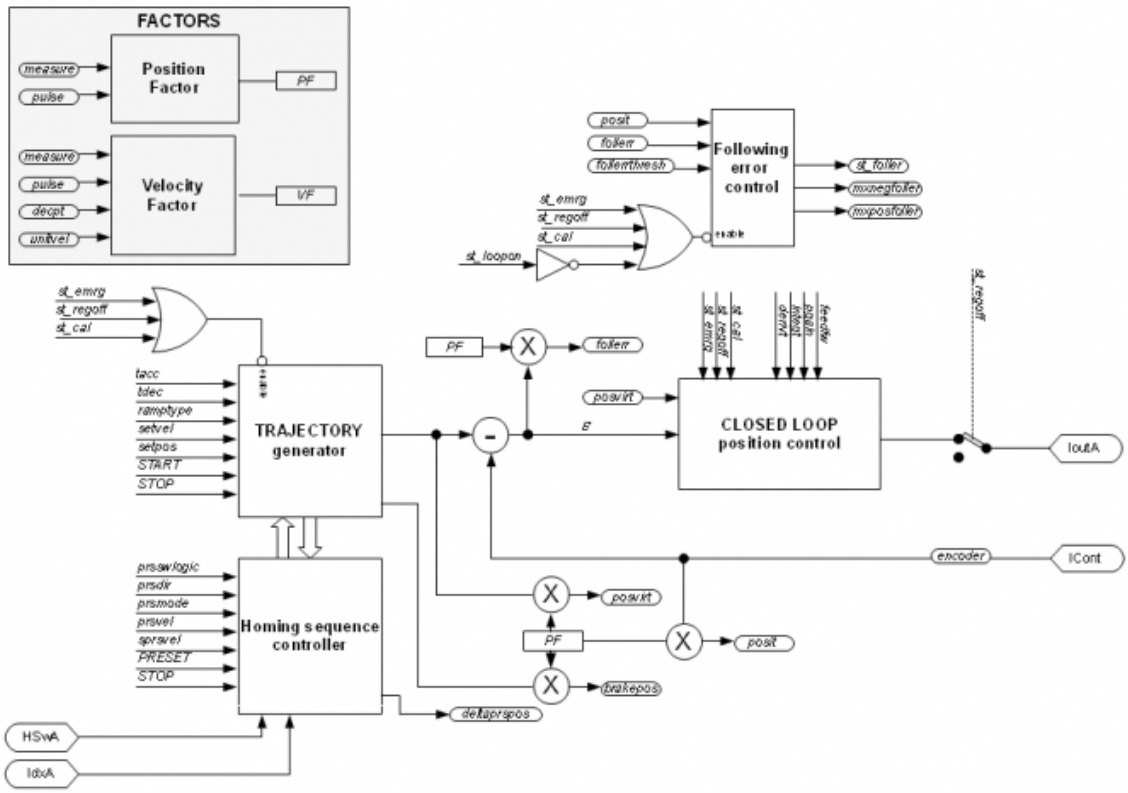
Where:

Field Name	Description	Example	Notes
<name>	Name assigned to the device	Axe	-
ANPOS2	Keyword that identifies the device ANPOS2	-	-
TCamp	Time sampling device in milliseconds	4	-
ICont	Address of bidirectional incremental counter (check product hardware documentation to determine the right value).	2.CNT01	X.X Enter the value you will get a virtual count: the value of *posit* will coincide with that of *posvirt* . [1]
IDXA	Address of interrupt used as index (zero) pulse in the homing procedure.	1	Enter the value X the field is ignored
HSwA	Address of the digital input used as a home switch in homing procedure.	3.INP09	Enter the value X.X field is ignored
IOutD	Coil address whose operation is determined by the parameter *funout* .	3.OUT01	Enter the value X.X the field is ignored
IOutA	Address of analog output or pulse output for driving the actuator (check the product hardware documentation to set the right value).	3.AN01 or 3.PULSE01	Enter the value X.X field is ignored

All fields of the declaration are mandatory and must be present on the same line. Set “X.X” or “X” if a resource is not available or is not used. Disabling a resource means disable all the functionality of the devices that use it.

3. Operation

The operation of the device is illustrated by the following block diagram:



3.1 Factors

The block “Factors” calculates the conversion factors of position and velocity. The “position factor” (PF) is a coefficient for converting the position expressed by the unit of measurement of the transducer unit of measurement of the position (Um), and vice versa. Typically the unit of measurement of the position may be for example meters rather than millimeters rather than cents, while the unit of measurement of the transducer, the encoder is always pulses. The parameters that contribute to the calculation of the position factor are *pulse* and *measure* and is calculated as the ratio between these two.
The “velocity factor” (VF) is a coefficient for converting the speed expressed in the unit of measurement of the transducer unit of measurement of speed (Uv), and vice versa. Typically the unit of measurement of speed can be for example mt / min (meters per minute) rather than RPM (revolutions per minute), rather than mm / s (millimeters per second). Obviously, compared to the position factor, in the calculation of the VF also the unit of time and the position of the decimal point.

3.2 Trajectory generator

The block “Trajectory generator” generates the trajectory of positioning in respect of speed and acceleration set.

3.3 Closed loop position control

The block “closed loop position control” is composed mainly of the PID controller with the function of the integral windup and action antireset Feed forward. Also updates with the output value of the device IOutA implementation.

3.4 Following error control

The block “Following error control” set or clear the *st_foller* status depending on whether the difference between the commanded position (*posvirt*) and the current position (*posit*) in absolute value exceeds the programmed threshold (*follerrthresh*). It also update the values of *mxnegfoller* and *mxposfoller* which are the maximum values, positive and negative, achieved by the error tracking.

3.5 Homing sequence controller

The block “Homing sequence controller” manages the search mode of the “home position” as defined by the *prsmode* . These search modes provide the loading of the home position via the input home switch or via the input index (zero). The block “Homing sequence controller” interacts with the “Trajectory generator” to execute the sequence of movements of the axis provided for each search mode.

3.5.1 Description of the input data

It is possibleto specify the speed and manner of research. Also it is possible to establish an offset to make the zero coincides with the coordinate system desired. There are two speeds; On a typical sequence of a rapid speed search (*prsvel*) is used to search for the activation of the home switch, while a slow (*sprsvel*) is used to search the 'input index (zero).

It is possible to indicate whether the home switch input must be held active with logic level zero (*prsswlogic = 0*) or with logic level one (*prsswlogic = 1*).

It is possible to instruct if the search mode must be carried forward (*prsdir = 0*) or back (*prsdir = 1*).

The search mode is defined by the parameter *prsmode* described below.

In the following images, the speed of movement is represented as follows:

3.5.2 Description of the output data

The state *st_prson* Indicates that the search procedure is active. The state *st_prsok* indicates that the search procedure has been completed successfully. The *deltaprspos* is updated at each end of the search and indicates to what has been corrected the position of the axis.

==== - Homing mode 0 ==== In this mode, the procedure does not use the input index (zero), but only the home switch input. The direction of movement depends on the parameter // prsdir // and the status of the home switch at the start of the procedure. {{en:software:devices:anpos2:rpreset_mode0.png?1000&direct}}

3.5.3 Homing mode 1

In this mode, the procedure uses both the input index (zero) that the home switch input. The direction of movement depends on the parameter *prsdir* and the status of the home switch at the start of the procedure.

3.5.4 Homing mode 2

In this mode, activation of the home switch loads directly the proportion of homing on the count without activating the process with the command *PRESET*

4. Parameters list

measure

Short description	Measurement of reference for the calculation of the position factor
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	um
Valid range	1 to 999999
Parameter ID	01
Write conditions	st_still = 1, st_grouped = 0

Description:

Indicates space, in units of measurement, distance from the axis to get the primary impulses set in the parameter pulse. This parameter is used for calculating the conversion factor between the primary pulse and measurement units.

posit = (encoder · measure) / pulse

The ratio measure / pulse must have a value between 0.00935 and 1.

pulse

Short description	Number of primary impulses to calculate the position factor
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	1 to 999999
Parameter ID	02
Write conditions	st_still = 1, st_grouped = 0

Description:

Indicates the number of primary impulses (1 pulse encoder = 4 primary impulses) that will generate the transducer to obtain a bi-directional movement of *measure* . This parameter is used for calculating the conversion factor between the primary pulse and measurement units.

posit = (encoder · measure) / pulse

The ratio measure / pulse must have a value between 0.00935 and 1.

maxpos

Short description	positive software limit switch
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	um
Valid range	-999999 to 999999
Parameter ID	03
Write conditions	st_grouped = 0

Description:

Defines the maximum limit for the commanded position (*setpos*). In addition, the upper limit for the movement JOG forward (*MANFW*).

minpos

Short description	Negative software limit
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	um
Valid range	-999999 to 999999
Parameter ID	04
Write conditions	st_grouped = 0

Description:

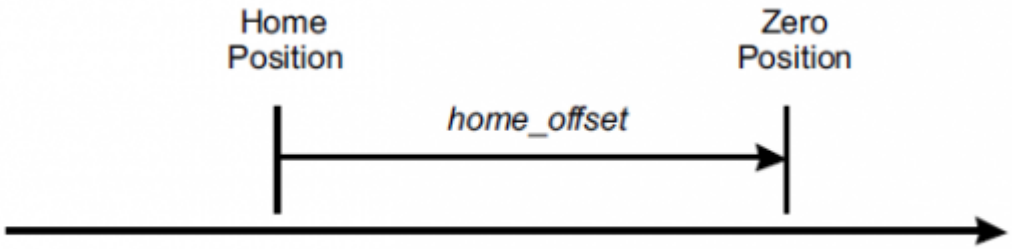
Defines the minimum limit for the commanded position (*setpos*). In addition, the minimum limit for the movement JOG reverse (*MANBW*).

prspos

Short description	Home offset
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	um
Valid range	-
Parameter ID	05
Write conditions	-

Description:

represents the difference between the zero position of the application and the home position sought during the homing procedure. When the homing procedure ends the zero position is shifted relative to the home position by adding a value of the parameter *prspos* . During the homing search the position of the axis distance between the home position and the position where loading takes place homing offset



deltaprspos

Short description	Difference between the home positions
Dimension	Long
Default value	0
Access type	Read
Unit measure	Um/10
Valid range	0 to 999999
Parameter ID	06
Write conditions	-

Description:

E 'the difference between the home position before and the home position after homing. This value can be used to verify the correct operation of the transducer.

maxvel

Short description	Maximum speed
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	Uv
Valid range	0 to 999999
Parameter ID	07
Write conditions	st_still = 1, st_grouped = 0

Description:

is the setting of the speed limit. For a correct operation of the PID it must coincide with the speed that the axis reaches when the output value of implementation is maximum.

prsvel

Short description	Speed for home switch search .
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	Uv
Valid range	0 to maxvel
Parameter ID	08
Write conditions	-

Description:

is the speed of the axis used during the homing procedure for the search of the home switch.

sprsvel

Short description	speed used to search for index (zero) pulse.
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	Uv
Valid range	0 to maxvel
Parameter ID	09
Write conditions	-

Description:

is the speed used during the homing procedure for the search for index (zero) pulse.

toll

Short description	Tolerance.
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	Um/10
Valid range	-999999 to 999999
Parameter ID	10
Write conditions	-

Description:

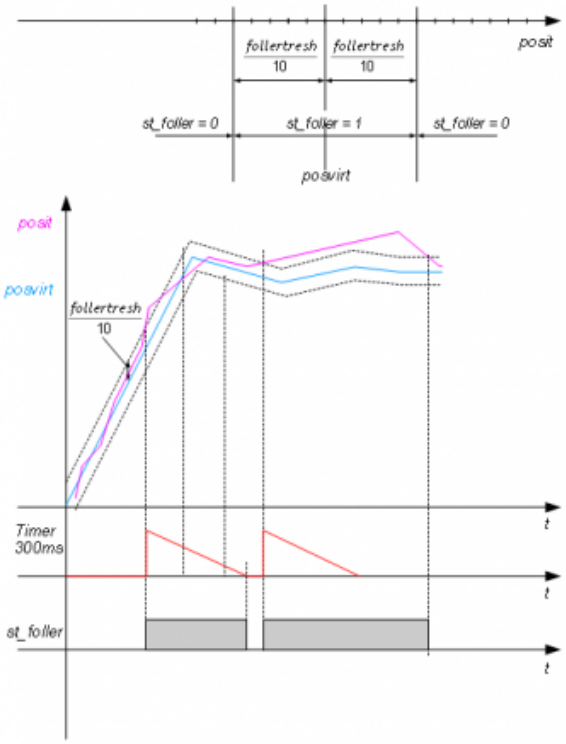
Defines a window, expressed in tenths of a unit of measurement, symmetrical around the positioning height (*setpos*).If the actual position (*posit*) is located within this window, you enter a state of tolerance axis (*st_toll*). The activation of *st_toll* does not occur as soon as the axis enters in this window, but after the delay time defined by parameter *toldly* and only if the condition of the actual position within the window remains during this time.

follerrthresh

Short description	alarm threshold tracking error.
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	Um/10
Valid range	0 to 2147483648
Parameter ID	11
Write conditions	st_intenbl = 0

Description:

Defines a window, expressed in tenths of a unit of measure, around the virtual position (*posvirt*). If the actual position (*posit*) is outside of this window is activated the status of tracking error (*st_foller*) for a minimum of 300ms can not be set. If the actual position is inside, *st_foller* off (after the minimum time). This threshold is controlled only if the conditions are valid : *st_error* = 0, *st_regoff* = 0, *st_calon* = 0 and *st_loopon* = 1.



funint

Short description	Operation entering the interrupt.
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 2
Parameter ID	12
Write conditions	-

Description:

Select the input operation in interrupt. The values have the following meanings:

0 = used for homing.
1 = capture the count and stores it in the *delta* .
2 = capture the count, reverses the sign, and stores it in the *delta* .

To use the operation modes 1 and 2 must be set *st_intenbl* = 1 through the command *INTENBL* .

funout

Short description	digital output operation.
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 4
Parameter ID	13
Write conditions	-

Description:

Selects the operation of the digital output.

0 = output is not used. (The condition is never updated by the device)
1 = output state is equal to *st_toll* .
2 = output state is equal to *st_still* .
3 = output state is equal to *st_foller* .
4 = output state is equal to *st_vconst* .

ramptype

Short description	
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 1
Parameter ID	14
Write conditions	st_still = 1

Description:

Select the ramp type.

0 = linear ramp.
1 = ramp to S.

tacc

Short description	Acceleration time.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	hundredths of a second
Valid range	0 to 32767
Parameter ID	15
Write conditions	st_grouped = 0

Description:

is used to define the acceleration and the time it takes to go from the axis speed 0 (zero speed) at maximum speed (*maxvel*). E 'can change the time *tacc* if a motion is in progress, in which case the value will be accepted provided that the positioning can be concluded properly to the command position.

tdec

Short description	Deceleration time.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	hundredths of a second
Valid range	0 to 32767
Parameter ID	16
Write conditions	st_grouped = 0

Description:

is used to define the deceleration and the time it takes to go from the axis maximum speed (*maxvel*) at speed 0 (zero speed). E 'can change the time *tacc* if a motion is in progress, in which case the value will be accepted provided that the positioning can be concluded properly to the command position.

tinv

Short description	Delay for reversing the direction.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	hundredths of a second
Valid range	0 to 32767
Parameter ID	17
Write conditions	-

Description:

E 'the minimum waiting time between the end of a positioning and starting the next if the two directions are opposite. A motion command (*START* , *MANBW* , ...) performed during this minimum time is tracked and the status *st_still* immediately goes to 0.

mxnegfoller

Short description	Maximum negative tracking error.
Dimension	Long
Default value	0
Access type	Read - Write
Unit measure	Um/10
Valid range	0 to 2147483648
Parameter ID	18
Write conditions	-

Description:

is the maximum value of the tracking error detected negative expressed in tenths of units.

mxposfoller

Short description	Maximum positive value tracking error.
Dimension	Long
Default value	0
Access type	Read - Write
Unit measure	Um/10
Valid range	0 to 2147483648
Parameter ID	19
Write conditions	-

Description:

is the maximum value of the tracking error detected positive expressed in tenths of units.

toldly

Short description	signal delay tolerance.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	hundredths of a second
Valid range	0 to 32767
Parameter ID	20
Write conditions	-

Description:

Defines the time between the arrival of the axis in the tolerance band and the corresponding status message (*st_toll*).

pgain

Short description	proportional gain.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 32767
Parameter ID	21
Write conditions	-

Description:

is the value of the proportional gain in the PID controller. Is entered in milliseconds (thus entering 1000, the coefficient will be equal to 1).

feedfw

Short description	coefficient of feed forward.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	‰
Valid range	0 to 2000
Parameter ID	22
Write conditions	-

Description:

is the coefficient percentage which, multiplied by the theoretical speed, generates the feed forward part of the control output. The value is entered in tenths (thus entering the 1000 share will be 100.0%)

integt

Short description	Integration time of the 'tracking error.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	milliseconds
Valid range	0 to 32767
Parameter ID	23
Write conditions	-

Description:

is the integration time of the error for the integral action of the PID controller.

derivt

Short description	Derivation time lag error.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	milliseconds
Valid range	0 to 32767
Parameter ID	24
Write conditions	-

Description:

is the derivation time of the PID controller of the derivative.

prsmode

Short description	home position search mode
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 2
Parameter ID	25
Write conditions	st_prson = 0

Description:

Select the mode of operation of the positioning of home

0 = homing with home switch input loading.
1 = Homing with input loading index (pulse).
2 = loading position homing home switch input without performing movements.

prsdir

Short description	Direction of movement for the initial homing.
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 1
Parameter ID	26
Write conditions	st_prson = 0

Description:

Select the initial direction of motion in procesura homing.

0 = forward.
1 = reverse.

prsswlogic

Short description	
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 1
Parameter ID	27
Write conditions	st_prson = 0

Description:

Select the logic of the state of the home switch.

0 = input switch home normally zero (off).
1 = input switch home normally one (active).

unitvel

Short description	Unit of time for the speed calculation.
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 1
Parameter ID	28
Write conditions	st_still = 1, st_grouped = 0

Description:

Select the unit of time for the parameters of speed.

0 = Um / min.
1 = Um / sec.

decpt

Short description	Conversion factor for the unit of measurement of speed.
Dimension	Byte
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	0 to 3
Parameter ID	29
Write conditions	st_still = 1, st_grouped = 0

Description:

E 'the exponent of the scale factor of the unit of measurement for the speed of the position calculated as 10 <sup> decpt </ sup>. For example, if the unit of measurement of the position is millimeters, and unitvel = 1, the unit of measurement of the speed will be:

- Mm / s (with *decpt* = 0),
- Cm / s (with *decpt* = 1),
- Dm / s (with *decpt* = 2),
- M / s (with *decpt* = 3).

Therefore, both the *speed* that the settings of veloocità (*setvel* , *prsvel* , ...) will be expressed with this unit.

offset

Short description	Offset analog output.
Dimension	Word
Default value	Retentive
Access type	Read - Write
Unit measure	bits
Valid range	-32768 to 32767
Parameter ID	30
Write conditions	-

Description:

Defines the bit values of the correction relating to the analog output to compensate for any offset of the analog input stage of the drive.
If the analog output is ± 10 volts then the value 32767 corresponds to +10 V and-10V to -32768.

setpos

Short description	Position controlled.
Dimension	Long
Default value	0
Access type	Read - Write
Unit measure	um
Valid range	MINPOS to maxpos
Parameter ID	31
Write conditions	See Description

Description:

E 'commanded position and expressed in units of measurement (um). E 'can change the commanded position even if a movement is in progress, in which case the axis will move to the new commanded position provided that this can be done without having to reverse the direction of movement. For example, if during a forward movement, is controlled to a lower position than the current axis of the new value *setpos* is not accepted and will trigger the warning status (*st_warning*).

setvel

Short description	Speed controlled.
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	Uv
Valid range	0 to maxvel
Parameter ID	32
Write conditions	See Description

Description:

is the speed with which placements are controlled by the *START* , *MANBW* and *MANFW* .

And 'possible to change the commanded speed even if a movement is under way to condition the trajectory generator is not in the deceleration phase.

vout

Short description	output voltage.
Dimension	Byte
Default value	0
Access type	Read - Write
Unit measure	tenths of Volts
Valid range	-100 to 100
Parameter ID	33
Write conditions	st_error = 0, st_cal = 1, st_grouped = 0, st_emrg = 0

Description:

During the calibration procedure (*st_cal = 1*) is the value of the analog output voltage can be set. If *st_cal = 0* the parameter is read-only and indicates the voltage on the analog output generated PID controller.

vel

Short description	Current speed
Dimension	Long
Default value	0
Access type	Read
Unit measure	Uv
Valid range	-
Parameter ID	34
Write conditions	-

Description:

is the value of the actual velocity of the axis expressed as a unit of measurement of speed. The update is performed every 250 ms. The unit of measurement depends on the parameters *unitvel* and *decpt* .

frq

Short description	frequency of the input signals.
Dimension	Long
Default value	0
Access type	Read
Unit measure	Hz
Valid range	-
Parameter ID	35
Write conditions	-

Description:

is the frequency value of the input signals to the bidirectional counter. The update is executed every 250 ms.

posit

Short description	actual position.
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	um
Valid range	-
Parameter ID	36
Write conditions	See Description

Description:

is the value of the current axis position.

posit = encoder · measure / pulse

E 'can change this parameter even if a movement is in progress, provided that the new current location allows to conclude the positioning without having to reverse the direction of movement.

encoder

Short description	Current position in encoder pulses.
Dimension	Long
Default value	Retentive
Access type	Read - Write
Unit measure	-
Valid range	-
Parameter ID	37
Write conditions	See Description

Description:

The value of the current position of the encoder pulses.

E 'can change this parameter even if a movement is in progress, provided that the new current location allows to conclude the positioning without having to reverse the direction of movement.

follerr

Short description	Following error.
Dimension	Long
Default value	0
Access type	Read
Unit measure	Um/10
Valid range	-
Parameter ID	38
Write conditions	-

Description:

is the instantaneous value of the following error expressed in tenths of units.

outreg

Short description	Value of 'PID output + FF.
Dimension	Long
Default value	0
Access type	Read
Unit measure	bits
Valid range	-32768 to 32767
Parameter ID	39
Write conditions	-

Description:

the instantaneous value is expressed in bits of the output of the PID controller.

If the output of implementation is an analog output value corresponds to 32767 -32768 corresponds to 10V and-10V.

ffwdreg

Short description	Value of feed forward.
Dimension	Long
Default value	0
Access type	Read
Unit measure	bits
Valid range	-32768 to 32767
Parameter ID	40
Write conditions	-

Description:

the instantaneous value is expressed in bits of the feed forward.

propreg

Short description	output value proportional.
Dimension	Long
Default value	0
Access type	Read
Unit measure	bits
Valid range	-32768 to 32767
Parameter ID	41
Write conditions	-

Description:

is proportional to the instantaneous value of the output in the PID controller.

intreg

Short description	Value of output drive.
Dimension	Long
Default value	0
Access type	Read
Unit measure	bits
Valid range	-32768 to 32767
Parameter ID	42
Write conditions	-

Description:

is the instantaneous value of the output in the integral PID controller.

derreg

Short description	Value of 'output derivative.
Dimension	Long
Default value	0
Access type	Read
Unit measure	bits
Valid range	-32768 to 32767
Parameter ID	43
Write conditions	-

Description:

is the instantaneous value of the derivative in the PID controller output.

delta

Short description	sum value for the command DELCNT.
Dimension	Long
Default value	0
Access type	Read - Write
Unit measure	um
Valid range	-999999 to 999999
Parameter ID	44
Write conditions	st_intenbl = 0

Description:

This is the value that is used by the *DELCNT* to be added to the current position. Moreover, this parameter is also used to store the current position when the capture occurs from input interrupt.

posvirt

Short description	virtual position.
Dimension	Long
Default value	0
Access type	Read
Unit measure	um
Valid range	-
Parameter ID	45
Write conditions	-

Description:

The value of the instantaneous position commanded.

brakepos

Short description	Starting position for braking.
Dimension	Long
Default value	0
Access type	Read
Unit measure	um
Valid range	-
Parameter ID	46
Write conditions	-

Description:

is the value of the position in which will start the deceleration ramp.

wrncode

Short description	Identification code warning
Dimension	Byte
Default value	0
Access type	Read
Unit measure	-
Valid range	
Parameter ID	47
Write conditions	-

Description:

Indicates the type of warning detected by the device. For more information, refer to the chapter.

wrnpar

Short description	id parameter that caused the warning.
Dimension	Byte
Default value	0
Access type	Read
Unit measure	-
Valid range	
Parameter ID	48
Write conditions	-

Description:

Indicates which parameter caused the warning detected by the device. For more information, refer to the chapter.

wrnvalue

Short description	Code identifying the cause of the warning
Dimension	Byte
Default value	0
Access type	Read
Unit measure	-
Valid range	-
Parameter ID	49
Write conditions	-

Description:

Indicates the cause of the warning detected by the device. For more information, refer to the chapter.

errcode

Short description	Identification code of the error.
Dimension	Byte
Default value	0
Access type	Read
Unit measure	-
Valid range	-
Parameter ID	50
Write conditions	-

Description:

Indicates the type of error detected by the device. For more information, refer to the chapter.

errpar

Short description	id parameter that caused the error.
Dimension	Byte
Default value	0
Access type	Read
Unit measure	-
Valid range	-
Parameter ID	51
Write conditions	-

Description:

Indicates the parameter that caused the error detected by the device. For more information, refer to the chapter.

errvalue

Short description	Code identifying the cause of the error
Dimension	Byte
Default value	0
Access type	Read
Unit measure	-
Valid range	-
Parameter ID	52
Write conditions	-

Description:

Indicates the type of cause of the error detected by the device. For more information, refer to the chapter.

5. States list

st_capture

Short description	**Status counting captured.**
Default value	0
Status ID	53

Description

Indicates that the capture count has occurred.

0 = capture count void.
1 = capture count occurred.

st_emrg

Short description	**state of emergency.**
Default value	0
Status ID	54

Description

Indicates the state of emergency axis.

0 = axis is not in an emergency.
1 = axis in an emergency.

st_toll

Short description	**Status of tolerance.**
Default value	0
Status ID	55

Description

Indicates the status of axis tolerance.

0 = axis is not within tolerance.
1 = axis tolerance.

st_prsok

Short description	**Result of homing sequence.**
Default value	0
Status ID	56

Description

Indicates whether the homing sequence was successful

0 = homing procedure is not carried out or not completed correctly.
1 = Homing carried out and completed successfully.

The state is deactivated with the command *RSPRSOK* .

st_still

Short description	**Status of movement.**
Default value	1
Status ID	57

Description

Indicates the status of the axis.

0 = moving axis.
1 = axis is stationary.

st_prson

Short description	**Status of the homing procedure.**
Default value	0
Status ID	58

Description

Indicates whether homing procedure is running.

0 = Homing is not running.
1 = Homing running.

st_movdir

Short description	**Direction of movement.**
Default value	0
Status ID	59

Description

Indicates the direction of movement.

0 = forward.
1 = reverse.

When the axis has stopped the status indicates the direction of the last movement you make.

st_loopon

Short description	**Activation of the position loop.**
Default value	0
Status ID	60

Description

It indicates the position loop.

0 = position loop off.
1 = position loop active.

st_foller

Short description	**Error status tracking.**
Default value	0
Status ID	61

Description

Indicates that the value of following error (*follerr*) exceeded the alarm threshold (*follerrthresh*). When you activate this remains for a minimum period of 300 ms.

0 = tracking error below the alarm threshold.
1 = tracking error exceeds the threshold alarm.

st_regoff

Short description	**Disable output of the positioner and implementation.**
Default value	0
Status ID	62

Description

Indicates whether the device allows placements and updates the output implementation.

0 = placements enabled.
1 = placements disabled.

st_cal

Short description	**Calibration status.**
Default value	0
Status ID	63

Description

Indicates that the calibration status is active.

0 = not active calibration status.
1 = active calibration status.

st_acc

Short description	**State of acceleration.**
Default value	0
Status ID	64

Description

Indicates that the trjectory generator is in the acceleration phase.

0 = not during acceleration.
1 = acceleration phase.

st_dec

Short description	**State of deceleration.**
Default value	0
Status ID	65

Description

Indicates that the trjectory generator is in the deceleration phase.

0 = not decelerating.
1 = deceleration phase.

st_vconst

Short description	**Status of constant speed.**
Default value	0
Status ID	66

Description

Indicates that the trjectory generator is in the phase of constant velocity.

0 = not at a constant speed.
1 = constant velocity phase.

st_warning

Short description	**Presence of a warning.**
Default value	0
Status ID	67

Description

Indicates the status of the warning device to recognize the type of warning you should refer to the variables *wrncode* , *wrnvalue* and *wrnpar* .

0 = not present warning.
1 = this warning.

—

st_error

Short description	**Presence of an error.**
Default value	0
Status ID	68

Description

Indicates the error status of the device, to recognize the type of error should refer to the variables *errcode* and *errvalue* .

0 = no error present.
1 = error present.

st_intenbl

Short description	**Counter capture by interrupt enabled.**
Default value	0
Status ID	69

Description

Indicates whether the capture of the count by input interrupt is enabled.

0 = Interrupt not enabled by capturing count.
1 = interrupt enabled by capturing count.

st_cntlock

Short description	**Indicates whether or not the count is updated by reading the encoder pulses.**
Default value	Retentive
Status ID	70

Description

Indicates the enable status of the update of the count.

0 = the count is updated.
1 = the count is not updated and remains frozen at the last value acquired.

st_cntrev

Short description	**State of the counterclockwise direction for the increase in the count.**
Default value	Retentive
Status ID	71

Description

Indicates the direction of rotation that causes the increase of the count.

0 = clockwise.
1 = counterclockwise.

st_grouped

Short description	**Indicates whether the device belongs to a device or not.**
Default value	0
Status ID	72

Description

During some operations such as interpolation ANPOS2 a device can belong to a device group. If the *st_grouped* = 1 you can not edit the count values will use positioning commands.

0 = Device does not belong to a group.
1 = Device in a group.

6. Commands list

INTENBL

Short description	**Enable the capture of the count.**
Condition	st_error = 0, funint> 0
Default value	
Command ID	73

Description

Enable the capture of the count

INTDSBL

Short description	**Disable the capture of the count.**
Condition	st_error = 0, funint> 0
Default value	0
Command ID	73

Description

Disable the capture of the count

EMRG

Short description	**Emergency.**
Condition	st_error = 0
Default value	
Command ID	74

Description

Puts the axis in emergency stopping, without deceleration ramp, the possible positioning and puts *st_emrg* 1. Also inhibits the execution of all the movement controls and disables the position loop.

RESUME

Short description	**Recovering from an emergency condition.**
Condition	st_error = 0, st_emrg = 1
Default value	
Command ID	74

Description

Reset the emergency condition of the axis, are rehabilitated the position loop and positioning commands.

STOP

Short description	**Stops the current positioning.**
Condition	st_error = 0, st_regoff = 0, st_emrg = 0, st_still = 0, st_cal = 0, st_grouped = 0
Default value	
Command ID	75

Description

Kills the current positioning of the axis by backing the arrest with the programmed deceleration ramp.

START

Short description	**Start of placement.**
Condition	st_error = 0, st_regoff = 0, st_emrg = 0, st_still = 1, st_cal = 0, st_grouped = 0
Default value	
Command ID	76

Description

Controls the positioning at the level *setpos* speed *setvel* .

PRESET

Short description	**Start search the home position.**
Condition	st_error = 0, st_regoff = 0, st_emrg = 0, st_still = 1, st_cal = 0, prsvel> 0, sprevel> 0
Default value	
Command ID	77

Description

Starts the search of the home position, active state *st_prson* turns off state *st_prsok* . If the search is already active, the command performs the inversion of the direction of movement.

LOOPON

Short description	**Enable the position loop.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	78

Description

Enable the position loop by activating the PID controller and puts *st_loopon* .

LOOPOFF

Short description	**Disable the position loop.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	78

Description

Disables the disabling the PID position loop and sets *st_loopon* 0; E 'can still perform movements but the output of the implementation is calculated by the value of virtual speed and K OpenLoop (see description block CLOSED LOOP POSITION CONTROL).

MANFW

Short description	**command JOG forward.**
Condition	st_error = 0, st_regoff = 0, st_emrg = 0, st_still = 1, st_cal = 0, st_prson = 0, st_grouped = 0
Default value	
Command ID	79

Description

Command positioning *maxpos* with the speed *setvel* . If the current position is greater than or equal to *maxpos* , the command has no effect.

MANBW

Short description	**JOG command back.**
Condition	st_error = 0, st_regoff = 0, st_emrg = 0, st_still = 1, st_cal = 0, st_prson = 0, st_grouped = 0
Default value	
Command ID	80

Description

Command positioning *MINPOS* with the speed *setvel* . If the current position is less than or equal to *MINPOS* , the command has no effect.

CALON

Short description	**Enable calibration status.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	81

Description

Enable the calibration status of implementation in which the output is no longer updated by the PID controller but you can set the value using the *vout* .

CALOFF

Short description	**Disable calibration status.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	81

Description

Exit the calibration state of the output so that the implementation goes back to being controlled by the PID controller.

RSCAPTURE

Short description	**Reset status st_capture.**
Condition	st_error = 0
Default value	
Command ID	82

Description

Clears the capture status of the count *st_capture* .

CNTLOCK

Short description	**Disable the update count.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	83

Description

Disable the update of the count.

CNTUNLOCK

Short description	**Enable the update count.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	83

Description

Enable the update count if it is locked (*st_cntlock* = 1).

CNTREV

Short description	**Direction increase counting counterclockwise.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	84

Description

Sets the direction of increase of the count to CCW.

CNTDIR

Short description	**Direction increase in counting time.**
Condition	st_error = 0, st_grouped = 0
Default value	
Command ID	84

Description

Sets the direction of increase of the count-time.

REGOFF

Short description	**Disable positioner output and implementation.**
Condition	st_still = 1, st_error = 0, st_grouped = 0
Default value	
Command ID	85

Description

Disable the positioner and the output of implementation.

REGON

Short description	**Enable output of the positioner and implementation.**
Condition	st_regoff = 1, st_error = 0, st_grouped = 0
Default value	
Command ID	85

Description

Enable the positioner and the output of implementation.

DELCNT

Short description	**Command to modify *posit* the value of *delta* .**
Condition	st_psron = 0, = 0 st_cal, st_error = 0, st_grouped = 0, see description
Default value	
Command ID	86

Description

Total current position (*posit*) the value specified by the *delta* . E 'can run this command even if a movement is under way on condition that the new current position for concluding the placement without having to reverse the direction of movement.

RSPRSOK

Short description	**Reset state homing OK.**
Condition	-
Default value	
Command ID	87

Description

Reset state *st_prsok* .

RSERR

Short description	**Reset error state.**
Condition	-
Default value	
Command ID	88

Description

Clears the error status (*st_error*) in the case is no longer on the error condition.

RSWRN

Short description	**Reset state warning.**
Condition	-
Default value	
Command ID	89

Description

Reset state *st_warning* .

7. Errori e Warnings

7.1 Errors

When the device is not able to perform the operations resulting from an incorrect user programming signals this condition through the activation status *st_error* . The device also makes available, through the values of the parameters *errcode* , *errvalue* and *errpar* some information to better understand the type of error condition and which generated it. Such information and error status *st_error* , there remain until you run the appropriate command *RSERR* that deletes them.
The following table specifies the values of *errcode* :

errcode	**Description**
0	No mistake.
1	Data error: There are values out of range in the parameters.
2	Configuration error.

Use the parameters *errvalue* and *errpar* you can get more detailed information about the error.
The *errpar* always indicates the ID of the parameter that caused the error.
Instead currently the *errvalue* is not used and is always 0.

7.2 Warnings

When a parameter setting of the device is not accepted or a command cannot be executed, the device signals this condition by activating the *st_warning* status. The device also makes available, through the values of the parameters *wrncode* , *wrnvalue* and *wrnpar* information to better understand the type of warning and what condition generated it. Such information and the status of warning *st_warning* , there remain until you run the appropriate command *RSWRN* that deletes them.
The following table specifies the values of *wrncode* :

wrncode	**Description**
0	No warning.
1	Setting data out of range.
2	Change parameter is not accepted.
3	Command not accepted: the execution conditions are not met.

Use the *wrnvalue* and *wrnpar* parameters to get more details about the warning.
The *wrnpar* always indicates the ID of the parameter that caused the warning.
The *wrnvalue* is currently not used and is always 0.

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[1] The value X.X can be used for testing the application without physically having the transducer (encoder) connected