Sommario

DEVICE HEAD2

1. Introduction

The HEAD2 device manages the control of heads for sanders, grinders and milling machines working material flowing along a conveyor belt. You can simultaneously handle up to 8 heads, individually configurable working, using various setup parameters. An important feature is the ability to set of fixes related to the operation of the heads, in order to compensate for any delays to answer machine. These corrections are calculated taking into account the speed of the belt.

1.1 Installation

1.1.1 Device declaration in the configuration file (.CNF)

In the configuration unit, the INTDEVICE section must be declared so that you have the hardware resources necessary for the use of the HEAD2 device. Must be add the following definition:

```
;---------------------------------
; Internal device declaration
;---------------------------------
INTDEVICE
<device_name> HEAD2 TCamp ICont inp01 inp02 inp03 out1 out2 out3 out4 out5 out6 out7 out8
```

1.1.1.1 Description of fields:

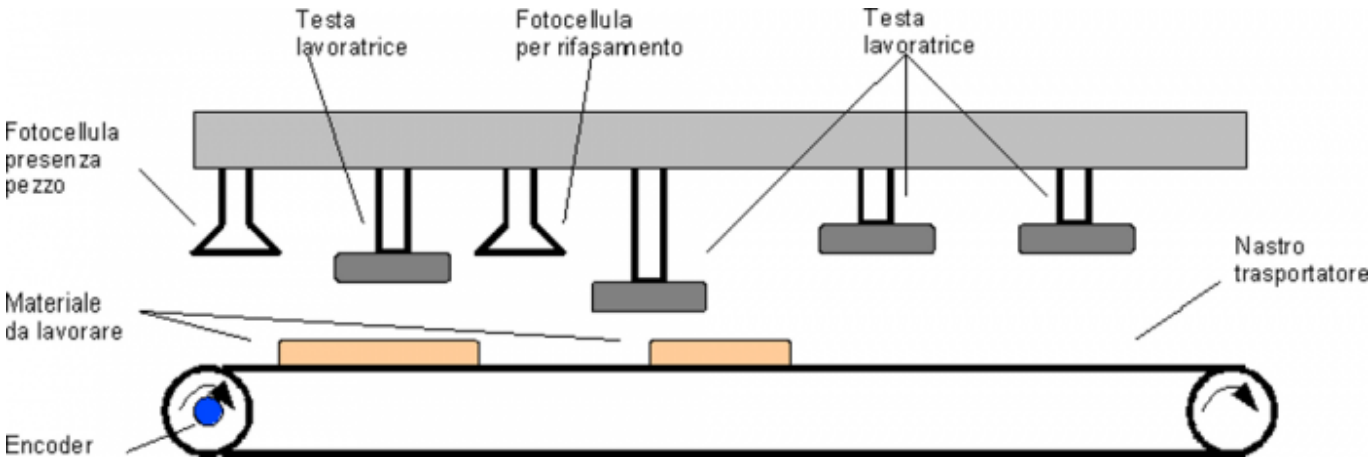
where:

<device_name>:	the name assigned to the device
HEAD2:	keyword that identifies the heads device controller
TCamp:	sample time device (1÷125 ms)
ICont:	address bi-directional counter input
inp01:	address piece presence input
inp02:	address of the first phase correction input
inp03:	address of the second phase correction input
out1÷8:	address of the digital outputs of the head command

ATTENTION: It is necessary that each definition are present on the same line. In case you do not want to assign a resource, for example inp02, you must enter in the appropriate field the string X.X.

1.2 Operation

The HEAD2 device allows you to simultaneously handle up to 8 working heads, that can be individually configured, using the setup parameters, how planing, milling or grinding machines. The device allows you to make, during processing, corrections of workloads to compensate for delays in response of the machine. These corrections will be made taking into account the tape drive speed so you can automatically compensate for workloads according to variations of the speed.
The system consists of a bi-directional transducer (typically an encoder) bound to the material on the conveyor belt and a maximum of three fixed presence sensors piece that allow acquisition and correction, for the entire length of the conveyor belt, for the image of the pieces introduced.
In the case of use of heads as edging, in the program you can set after how many meters you will have to activate the lowering of the head for wear compensation. In the case of use of heads as sanders, in the correction data you can set the delay quota descent heads early slab and the proportion of early ascent of relative to the end plate. When using milling heads, in data processing, you can set the delay to the start of the quota from the beginning milling and length of the slab milling.
The card allows maximum 30 working contemporary pieces.

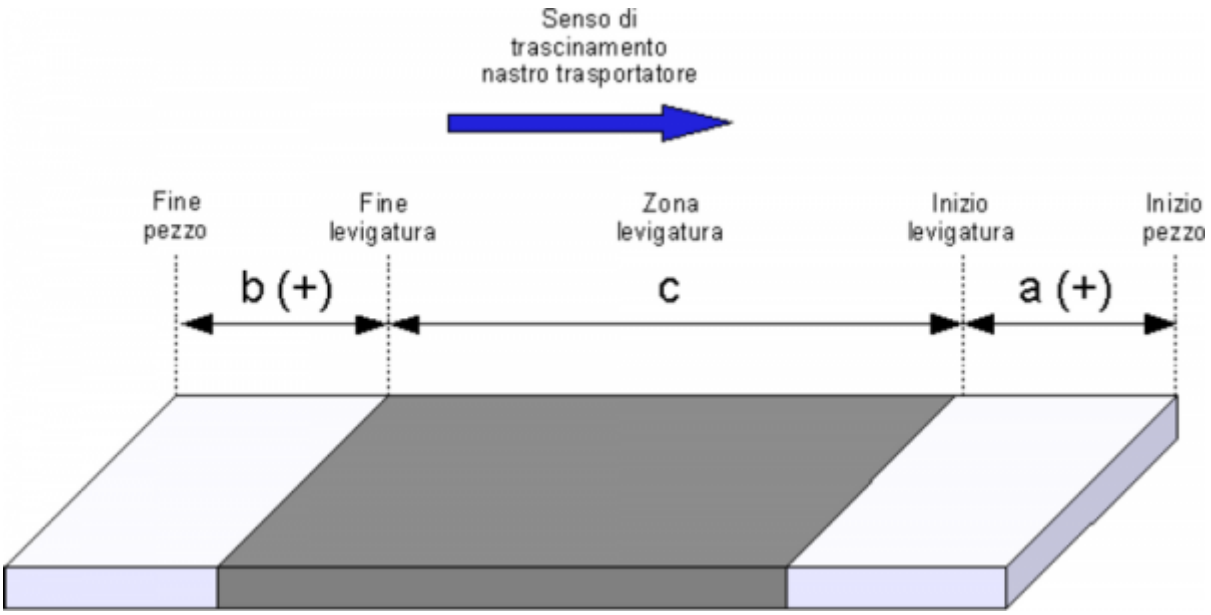


1.2.1 Calculation of belt speed

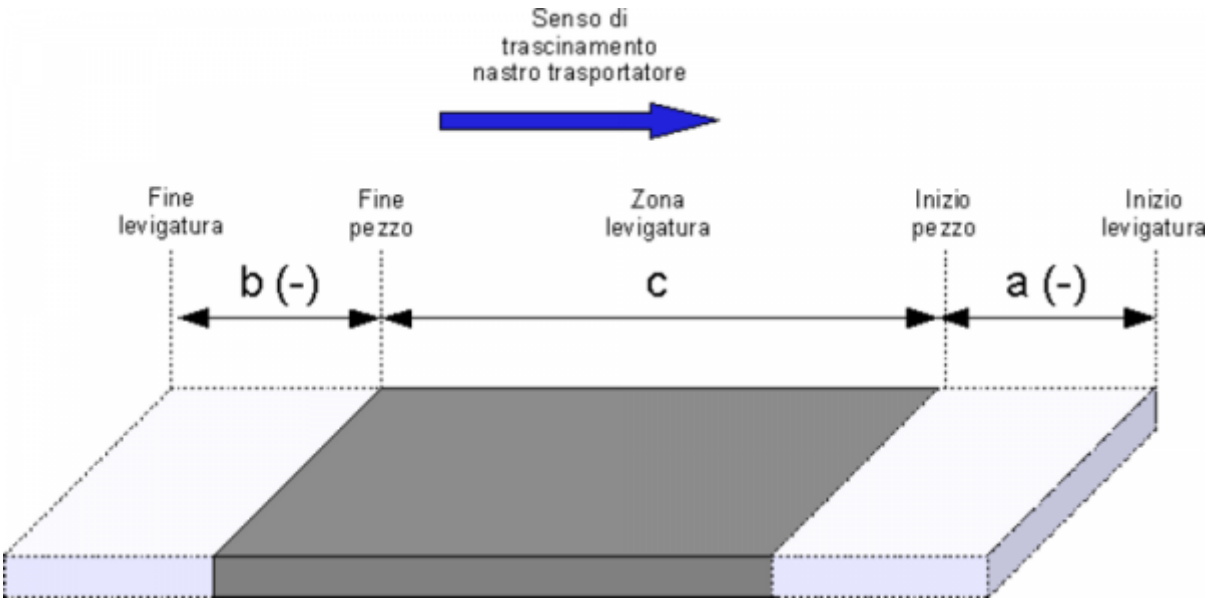
By receiving impulses from a bi-directional transducer (typically an encoder mounted on the motor shaft that moves the conveyor belt) the device can calculate the speed of movement in the desired unit (properly setting *measure*, *pulse*, *unitvel* and *decpt*).
The device counts the number of pulses received over a period of time defined by the *tbf* parameter and then calculates the speed in that time interval. The possibility of programming this parameter allows you to have greater accuracy depending on the speed of the tape. For example, at very low speeds we can't set a sampling time too high, in this case, the device would have a hard time calculating the speed.

1.2.2 Sanding

Configuring a head as sander, it's possible that works the material only “in the center”, by this we mean that you can delay your descent or anticipate the ascent of each individual head using the *downhone* and *risehone* parameters.
The data entered in these parameters can take positive or negative values.
In case you set positive values the piece will be work as per drawing below; the quota is equal to the value set in the *downhone* parameter, the **b** quota is equal to the value set in the *risehone* parameter while the **c** quota is the space in which the head works effectively.

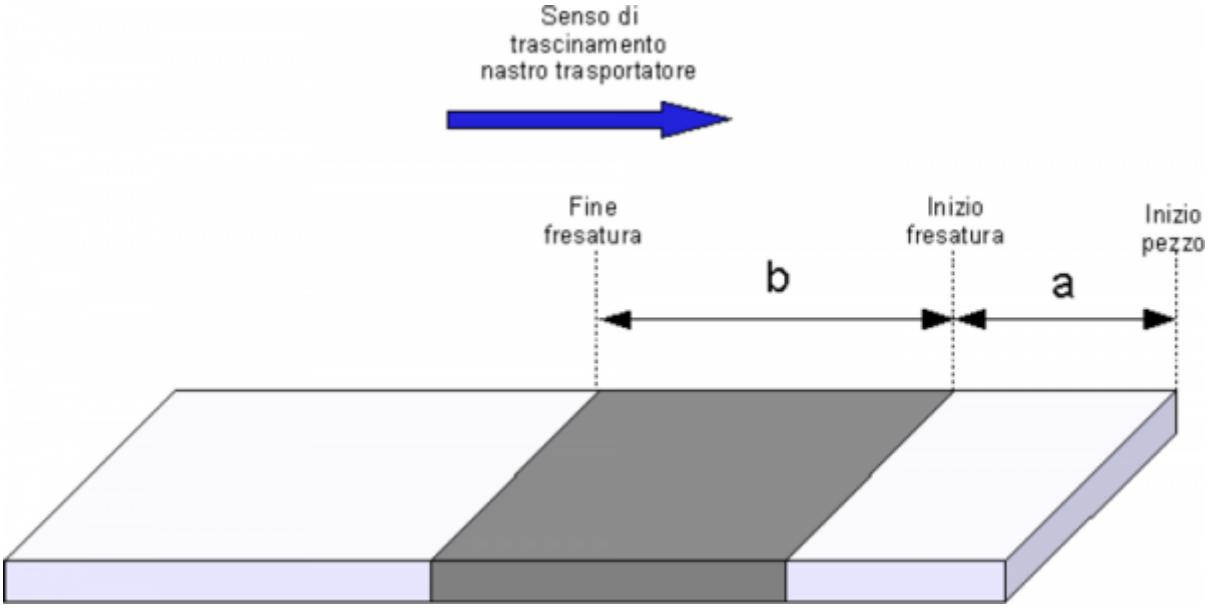


In case you set negative values the piece will be work as per drawing below; the **a** quota is equal to the value set in the *downhone* parameter, the **b** quota is equal to the value set in the *risehone* parameter.

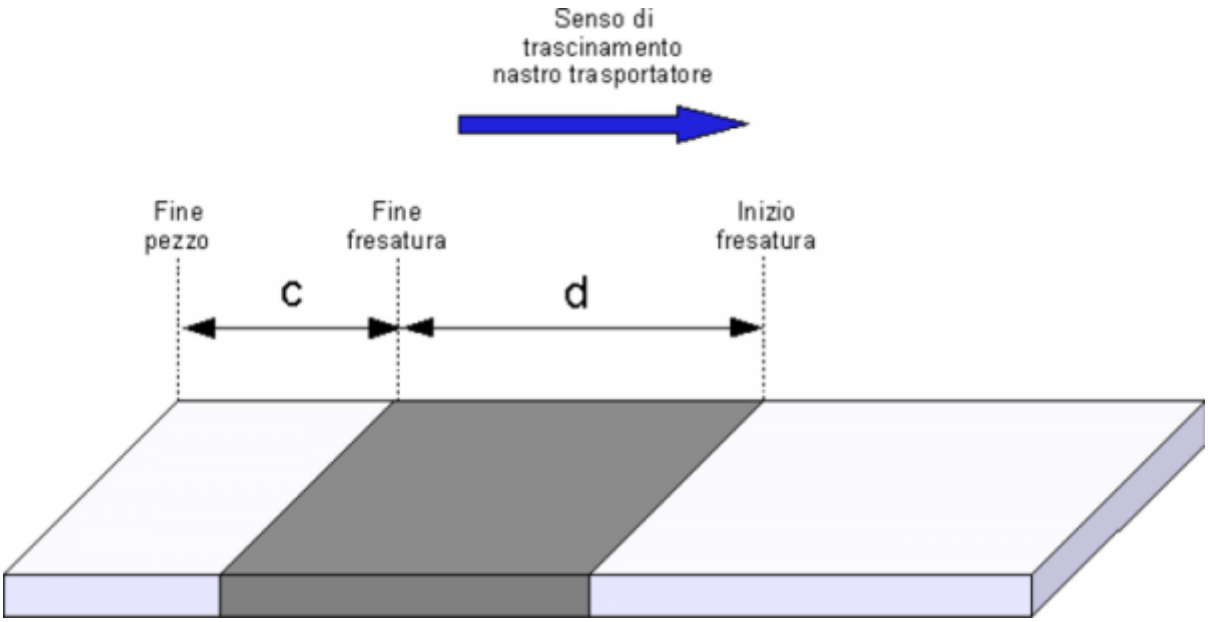


1.2.3 Milling

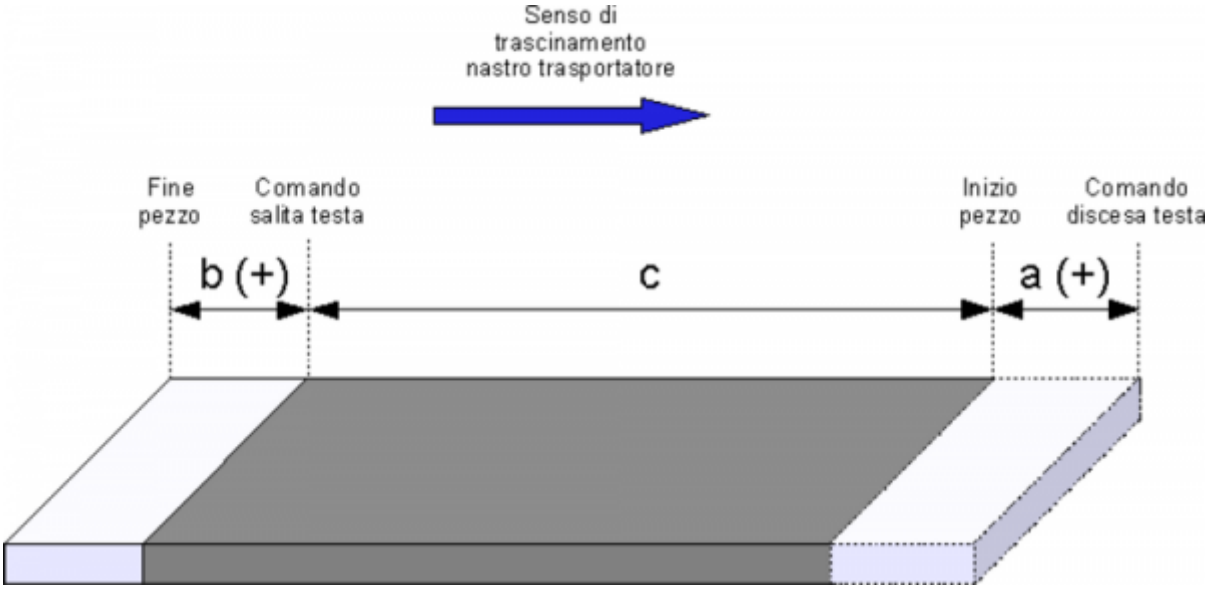
When using a head as miller you may decide to work for a given length (*lengthmill*) at some distance from the beginning or the end of the piece.
To run the cable working with respect to the beginning of the piece, you should set the parameter *risemill* = -1 and the piece will be worked as per drawing below; the **a** quota is equal to the value set in the *downmill* parameter, while the **b** quota is equal to the value set in the *lengthmill* parameter.



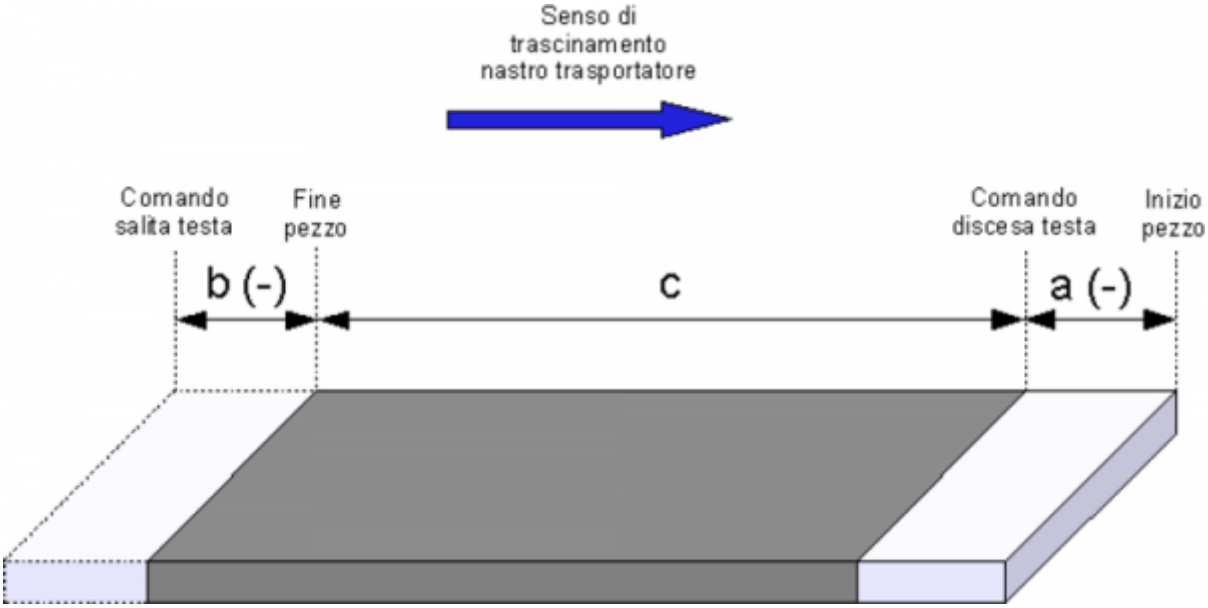
To run the cable working with respect to the end of the workpiece, you must set the parameter *downmill* = -1 and the piece will be worked as per drawing below; the **c** quota is equal to the value set in the *risemill* parameter, while the **d** quota is equal to the value set in the *lengthmill* parameter.



In the case of use of heads as sander or milling machine, You can anticipate the descent or ascent of each individual head depending on the speed of the conveyor belt using the *downlag1,2,3* and *riseadv1,2,3* parameters. The data entered in these parameters can take positive or negative values. In case you set positive values and the ribbon is advancing at the speed set, in *corrvel1,2,3* the piece will be worked as per drawing below; the **a** quota is equal to the value set in the *downlag1,2,3* parameter while the **b** quota is equal to the value set in the *riseadv1,2,3* parameter.



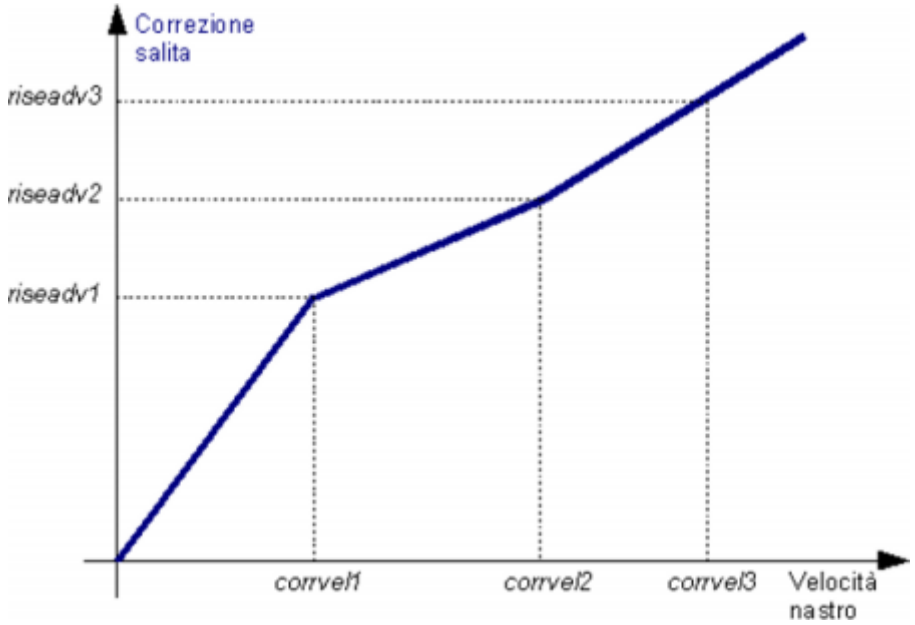
In the case where negative values are set the piece will be worked as per drawing below; the **a** quota is equal to the value set in the *downlag1,2,3,* parameter while the **b** quota is equal to the value set in the *riseadv1,2,3* parameter.



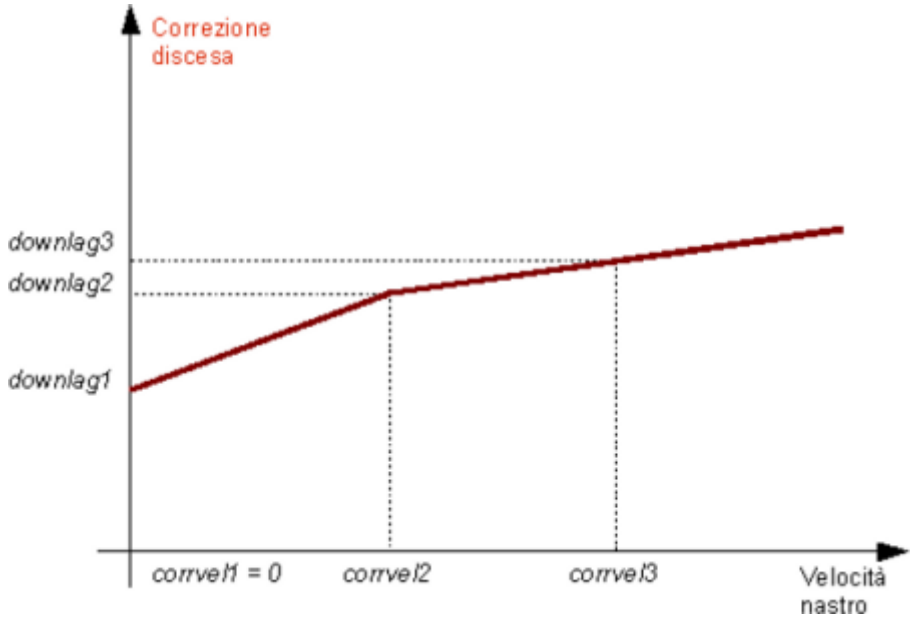
There are also two parameters (*actriseadv* and *actdownlag*) that lets you know the current correction value applied to a given head.

1.2.3.1 Added value of fixes

It is made so you can create a feature lead and lag correction depending on the speed of the tape. Were determined three linearization points (*corrvel1*, *corrvel2* and *corrvel3*), each of these corresponds a clear lead and lag correction (*riseadv1,2,3* and *downlag1,2,3*). For the speed of the tape contained within the linearization points, is treated as correction value, the straight line joining the two end points of linearization. An example is shown in the following figure.



The feature will go always to the origin except in cases where *corrvel1* is set equal to 0: in this case, the *downlag1* value (or *riseadv1*) will be to consider how to fix at zero speed (that is an offset). An example is shown in picture.



1.2.4 Cancellation

Suppose that while working a piece broke, you must lock the machine to remove the piece from tape.
To restart the machine, the heads about that piece will continue to fall, creating serious problems to the functionality of the machine.
To work around this problem, You can delete a single item from the chain of working, using the *CLPIECE* command.

1.2.5 Using multiple devices in series or in parallel

In case the machine to be programmed to have a particular configuration, you can use more than one device. Declaring two devices, with the same address for input piece detection and with distance sensor-heads properly configured, you can manage a machine which has more than eight heads.
If you declare two devices with different sensors for detecting piece, they can manage a machine with two parallel production lines.

1.2.6 Notes on operation of the device

Lists some notes on operation of the device:

- the correction value for offsetI01 is calculated every 250 ms, correction values for heads are calculated every 2 s,
- the device does not support the operation with a “infinity piece”: the *REGOFF* command leave the control outputs to QCL, which can develop these and other features,
- because of the different ways to reset (see the *resettype* parameter), the list of parameters that are saved with the *SaveData* command is much greater than just the retentive device parameters.

1.3 Parameters table

Name	D	R	A	Conditions	Description
measure	L	R	RW	pwork=0	**Reference measure for calculating the conversion factor between primary impulses and units of measure** Indicates the space, in units of measurement, the conveyor path to get primary impulses set in pulse parameter. This parameter is used to calculate the conversion factor between primary impulses and units of measure. posit = encoder * measure / pulse The relationship measure/pulse must be a value between 0.00935 and 1. Valid range: 1÷999999 Unit of measure: Um

Name	D	R	A	Conditions	Description
pulse	L	R	RW	pwork=0	**Number of impulses for calculating the conversion factor between primary impulses and units of measure** Indicates the number of impulses that produces the bi-directional transducer integral with the conveyor belt, to get a measure of movement. This parameter is used to calculate the conversion factor between primary impulses and units of measure. posit = encoder * measure / pulse The relationship measure/pulse must be a value between 0.00935 and 1. Valid range: 1÷999999
unitvel	B	R	RW	pwork=0	**The time unit for the speed calculation** Defines the unit of measurement of the speed of the conveyor belt: **0** = Um/min **1** = Um/sec Valid range: 0÷1
decpt	B	R	RW	pwork=0	**Selecting the speed unit** The unit of measurement of conveyor belt speed depends on the unitvel e decpt parameters. Through decpt you determine whether to set the speed in multiples of the fundamental units of measure Um. For example, if the fundamental unit of measure Um = mm, and unitvel = 1, you get the speed indicator in the vel variable in: - mm/s (con decpt = 0) - cm/s (con decpt = 1) - dm/s (con decpt = 2) - m/s (con decpt = 3) Valid range: 0÷3
disti02	L	R	RW	pwork=0	**Distance between the sensor and the first piece rephasing sensor** Defines the distance (expressed in Um) between the sensor of piece presence INP01 and the correction sensor piece INP02. If that parameter is set to 0, the signal from correction sensor piece INP02 it is not considered. Valid range: 0÷999999 Unit of measure: Um
disti03	L	R	RW	pwork=0	**Distance between the sensor and the first piece rephasing sensor** Defines the distance (expressed in Um) between the sensor of piece presence INP01 and the correction sensor piece INP03. If that parameter is set to 0, the signal from correction sensor piece INP03 it is not considered. Valid range: 0÷999999 Unit of measure: Um
zvelen	B	R	RW	pwork=0	**Operation heads with tape below the threshold of zero speed** Determines the operation of the heads in case the belt speed from dropping below the threshold of zero speed (settable with zvel parameter): **0** = When the machine falls below a threshold of zero velocity heads remain in position **1** = When the machine falls below a threshold of zero speed all heads are raised and fall again when the machine restarts and the speed exceeds the threshold set Valid range: 0÷1 Unit of measure: Um
zvel	L	R	RW	pwork=0	**Zero speed threshold** Indicates the speed in Uv below which the device considers the machine at standstill. Valid range: 0÷999999 Unit of measure: Uv
dvelf	L	R	RW	pwork=0	**Filter activation threshold** Indicates the threshold speed variations (in a sample time expressed by the tbf parameter), expressed in Uv, within which is placed the filter for speed reading. Valid range: 0÷999999 Unit of measure: Uv
tfilter	W	R	RW	pwork=0	**The filter time constant** Indicates the time constant of the filter applied to the speed. Valid range: 0÷9999 Unit of measure: ms
tbf	B	R	RW	-	**Sample time of the frequency counter** **0** = 240 ms **1** = 480 ms **2** = 24 ms **3** = 120 ms **4** = 960 ms **5** = 1200 ms The device, to calculate the frequency of the input signals to the bi-directional meter (frq parameter), count the number of pulses received over a period of time defined by the tbf parameter and calculates an average value. The smaller is the sampling time, more faster the update of the frq parameter, but you have to be careful at low frequencies, because the sample time may not be long enough to collect samples. Valid range: 0÷5
testinp	B	R	RW	pwork=0	**Minimum time of acquiring the piece presence variation inputs** The card check the state of the status and fix piece inputs (INP01, INP02 and INP03) each sampling time of the device. This parameter indicates the number of seconds of sampling should be logical state, so that the device will aquires the change. With the value 0 is done one test. Valid range: 0÷127

Name	D	R	A	Conditions	Description
resettype	B	R	RW	pwork=0	**Powering down hardware operation** This parameter is used to choose the behavior of the device when you turn off the hardware: **0** = workpiece dimensions are stored and retained in memory even after switch off **1** = the device at the time of restart will reset all information related to the pieces in progress. Valid range: 0÷1
beltlength	L	R	RW	pwork=0	**Conveyor belt length** Defines the distance (expressed in Um) between the piece presence sensor 1 and the end of the machine. When a piece is located inside this length the blower stays on (st_blower = 1). Valid range: 0÷999999 Unit of measure: Um
offseti01	L	R	RW	pwork=0	**Advance/delay end piece** This parameter defines the difference (expressed in Um) the switching point between the rising and lowering of the input of presence piece. In practice the input value allows you to anticipate (positive value) or delay (negative value) the end of the piece than the falling edge of the input piece presence. Valid range: -999÷999 Unit of measure: Um
grtime	L	R	RW	pwork=0	**Tape length** Defines the time, expressed in hundredths of a second, to enable heads configured as grinder, when reaching the preset set in program data. Valid range: 0÷6000 Unit of measure: 1/100 sec
zvelp	B	R	RW	pwork=0	**Enabling acquisition piece at zero speed** This parameter is used to select whether the machine captures the incoming pieces although the belt speed is below the threshold of zero speed: **0** = even when the conveyor belt speed is less than the value entered for the zvel parameter, captures all state changes (activations/deactivations) of the input of presence piece INP01 **1** = when the conveyor belt speed is less than the value entered in the zvel parameter, input is not captured the disable of the input presence piece INP01 Valid range: 0÷1
distp	L	R	RW	pwork=0	**Minimum distance pieces** When two pieces are closer than that programmed in this parameter, are considered a single piece for the purposes of processing. The number of workpieces (*pworked* parameter) instead always counts 2 separate pieces. This parameter is used only by heads configured as sanders. Valid range: 0÷9999 Unit of measure: Um
corrvel1	L	R	RW	pwork=0	**Speed corresponding to the point P1 of the linearization straight** Defines the speed of the tape to the point P1 of the linearization straight. Valid range: 0÷999999 Unit of measure: Uv In the case that corrvel1 is set to 0 the riseadv1 and downlag1 values will be considered as a correction to zero speed (that is an offset)
corrvel2	L	R	RW	pwork=0	**Speed corresponding to point P2 of linearization straight** Defines the speed of the tape to the point P2 of the linearization straight. Valid range: 0÷999999 Unit of measure: Uv
corrvel3	L	R	RW	pwork=0	**Speed corresponding to point P3 of linearization straight** Defines the speed of the tape to the point P3 of the linearization straight. Valid range: 0÷999999 Unit of measure: Uv
mworked	L	R	RW	-	**Um worked by machine** Indicates the number of Um of material processed by the machine. The value is calculated by adding the length of pieces recorded by the sensor. Valid range: 0÷999999 Unit of measure: Um
pworked	L	R	RW	-	**Pieces worked by the machine** Indicates the number of pieces worked by machine. Valid range: 0÷999999 Unit of measure: Um
pwork	B	R	R	-	**Pieces of work in progress** Indicates the number of pieces of work in progress in the machine. Valid range: 0÷30
heads	B	R	R	-	**Heads state** Indicates the state of the heads, is the decimal number conversion to bit fields where the 0 indicates the head lifted and 1 the lowered head. Valid range: -32767÷32768
frq	L	0	R	-	**Input signal frequency** Is the frequency value of the input signals to the bidirectional counter. The update is done with sampling time selected using *tbf* parameter. Unit of measure: Hz
lengthp	L	0	R	-	**Length last piece acquired** Indicates the length in Um the last piece acquired by the sensor piece present. Unit of measure: Um

Name	D	R	A	Conditions	Description
posit	L	R	RW	-	**Current position in units of measurement** Is the value of the instantaneous position of the conveyor belt. The value is automatically reset to zero when the piece presence sensor (INP01) detects a piece. To the deactivation of the input, the position changes according to the value of the *offsetI01* parameter. Valid range: -999999÷999999 Unit of measure: Um
encoder	L	R	RW	-	**Current position in primary pulses** Is the value of the instantaneous position of the conveyor expressed in primary pulses. The value is automatically reset to zero when the piece presence sensor (INP01) detect a piece. To disable the input itself the position changes according to the value of the *offsetI01* parameter. Valid range: -999999÷999999 Unit of measure: Um
vel	L	0	R	-	**Conveyor belt speed** Is the value of the instantaneous speed of the conveyor belt. The update is performed with sampling time set by *tbf*. The speed unit depends on the *unitvel* and *decpt* parameters. Unit of measure: Uv
headin	B	-	RW	-	**Number head on which to store data** Indicates the number of the head on which to store the data entered when is given a WRITESET/WRITEPRG command or read with the *READSET/READPRG* command. Valid range: 1÷8
headout	B	-	RW	-	**Number head on which have been read or written data** Indicates that the data written head were stored or the data from the read head are available. To verify that the command sent (*WRITESET/WRITEPR*G or *READSET/READPRG*) has been executed, you should check that *headin = headout*. Valid range: 1÷8
piecein	B	-	RW	-	**Indicates the number of the part to be deleted** Indicates the number of the part to be deleted using the *CLPIECE* command. Valid range: 1÷31
pieceout	B	-	RW	-	**Indicates the number of the part that was deleted** Indicates, when equals to piecein, the piece selected was deleted by the *CLPIECE* command. Valid range: 1÷31
errcode	B	0	R	-	**Error identification code** Indicates the type of error intervened in the system. When *st_error* is equal to 1, are present on the *errcode* variable what kind of error occurred (see the table) and in the *errvalue* variable an indication as to the cause of error. To clear the *st_error* status you have to send the *RSERR* command. Valid range: 0÷100
errvalue	B	0	R	-	**Identifying code off error cause** Indicates the cause of the error in the system. The code is valid only if st_error = 1. Valid range: 0÷100
wrncode	B	0	R	-	**Identification code warning** Indicates the last warning occurred in the device management commands: Code 1 = Attempt to write access on a parameter when the conditions weren't met Code 2 = Attempt to execute a command when the conditions weren't met Valid range: 0÷3
wrnvalue	B	0	R	-	**Identification code of the cause of the warning** Indicates the cause of the warning in the system. Valid range: 0÷100
seti01	L	R	RW	pwork=0	**Generic parameter** Parameter available for future implementations.
seti02	L	R	RW	pwork=0	**Generic parameter** Parameter available for future implementations.
seti03	L	R	RW	pwork=0	**Generic parameter** Parameter available for future implementations.

1.3.1 Parameters managed with READSET and WRITESET

Name	D	R	A	Conditions	Description
dist	L	R	RW	-	**Sensor distance beginning piece - head** This parameter indicates the distance between the sensor and the head piece indicated in the *headin* parameter. Valid range: 1÷999999 Unit of measure: Um

Name	D	R	A	Conditions	Description
mode	B	R	RW	-	**Way of working of the head** Way of working of the head indicated in the *headin* parameter: **0** = head nor present **1** = sander head **2** = milling head **3** = grinding head **4** = head sander disabled **5** = milling head disabled **6** = grinder head disabled Valid range: 0÷6 **N.B.**: You can disable the single head with pieces in the car using the WRITESET command and change only the **mode** parameter. To disable it you must switch from current to the corresponding mode disabled. Different writings are not accepted by this.
riseadv1	L	R	RW	-	**Advance of hill head - point 1** Defines the advance of the head (expressed in unit of measure) indicates in *headin* compared to the end of the piece in case the conveyor blet is moving at *corrvel1* speed. This correction is related to the point P1 of linearization. It is used only if the read head in *headin* is configured as milling or sander. Valid range: -9999÷9999 Unit of measure: Um
riseadv2	L	R	RW	-	**Advance of Hill head - point 2** Defines the advance of the head (expressed in unit of measure) indicates in *headin* compared to the end of the piece in case the conveyor blet is moving at *corrvel2* speed. This correction is related to the point P2 of linearization. It is used only if the read head in *headin* is configured as milling or sander. Valid range: -9999÷9999 Unit of measure: Um
riseadv3	L	R	RW	-	**Advance of Hill head - point 3** Defines the advance of the head (expressed in unit of measure) indicates in *headin* compared to the end of the piece in case the conveyor blet is moving at *corrvel3* speed. This correction is related to the point P3 of linearization. It is used only if the read head in *headin* is configured as milling or sander. Valid range: -9999÷9999 Unit of measure: Um
downlag1	L	R	RW	-	**Head-down delay - point 1** Defines the delay in lowering of the head (expressed in unit of measure) indicates in *headin* compared to the beginning of the piece in case the conveyor blet is moving at *corrvel1* speed. This correction is related to the point P1 of linearization. It is used only if the read head in *headin* is configured as milling or sander. Valid range: -9999÷9999 Unit of measure: Um
downlag2	L	R	RW	-	**Head-down delay - point 2** Defines the delay in lowering of the head (expressed in unit of measure) indicates in *headin* compared to the beginning of the piece in case the conveyor blet is moving at *corrvel2* speed. This correction is related to the point P2 of linearization. It is used only if the read head in *headin* is configured as milling or sander. Valid range: -9999÷9999 Unit of measure: Um
downlag3	L	R	RW	-	**Head-down delay - point 3** Defines the delay in lowering of the head (expressed in unit of measure) indicates in *headin* compared to the beginning of the piece in case the conveyor blet is moving at *corrvel3* speed. This correction is related to the point P3 of linearization. It is used only if the read head in *headin* is configured as milling or sander. Valid range: -9999÷9999 Unit of measure: Um

1.3.2 Parameters managed with READPRG and WRITEPRG

Name	D	R	A	Conditions	Description
downhone	L	R	RW	-	**Head-down delay for sander machine** Defines the delay descent head indicated in *headin* (expressed in unit of measure) compared to the beginning of the piece in case the read head in *headin* is programmed as a sander. Valid range: -999999÷999999 Unit of measure: Um
risehone	L	R	RW	-	**Advance rise head for sander machine** Defines the early rise head indicated in *headin* (expressed in unit of measure) compared to the end of the piece in case the read head in *headin* is programmed as a sander. Valid range: -999999÷999999 Unit of measure: Um
downmill	L	R	RW	-	**Distance beginning piece - start milling** Defines the distance (expressed in Um) between the beginning of the piece and the beginning of the milling head in case the read head in *headin* be programmed as milling machine. If you want to program the length of milling with the read head in *headin* compared to the end of the piece you have to set this parameter to -1. Valid range: -1÷999999 Unit of measure: Um

Name	D	R	A	Conditions	Description
risemill	L	R	RW	-	**Distance end piece - end milling** Defines the distance (expressed in Um) between the end of the piece and the end of the milling head in case the read head in *headin* be programmed as milling machine. If you want to program the length of milling with the read head in *headin* compared to the beginning of the piece you have to set this parameter to -1. Valid range: -1÷999999 Unit of measure: Um
lengthmill	L	R	RW	-	**Milling length** Defines the length (expressed in Um) of the milling performed with head indicated in *headin* in case the read head in *headin* be programmed as milling machine. Valid range: 0÷999999 Unit of measure: Um
grlength	L	R	RW	-	**Edging wear compensation limit** Defines after how many Um activates the solenoid valve of head on, to compensate for the wear of the grinding wheel in case the read head in *headin* has been configured as grinder machine. Valid range: 0÷999999 Unit of measure: Um

1.3.3 Parameters managed with READVAR and WRITEVAR

Name	D	R	A	Conditions	Description
hworked	L	R	RW	-	**Um workin from the head** Indicates the number of Um of material worked from head. This information is updated only for the actual space that the head works. Valid range: 0÷999999 Unit of measure: Um
actriseadv	L	R	RW	-	**Current correction made to the ascent of the head** Indicates, in Um, the present value of the correction made to the ascent of the head. Unit of measure: Um
actdownlag	L	R	R	-	**Current correction made to the descent of the head** Indicates, in Um, the present value of the correction made to the descent of the head. Unit of measure: Um
actpiece	B	R	R	-	**Workpiece number** Indicates the number of workpiece.

1.3.4 Parameters managed with READPIECE

Name	D	R	A	Conditions	Description
pcstart	L	-	R	-	**Distance beginning piece from the sensor 1** Indicates the distance to the beginning of the piece from the sensor I01. Unit of measure: Um
pcend	L	-	R	-	**Distance end piece from the sensor 1** Indicates the distance of the end of the piece from the sensor I01. Unit of measure: Um
pcstate	L	-	R	-	**Piece state** Indicates the status of workpiece machining: **0** = normal **1** = the piece has been cleared with the *CLPIECE* command Valid range: 0÷1

1.4 States list

Name	Default value	Descrizione
st_init	0	**Initialization state** Reporting of device initialized: **0** = device is not initialized **1** = initialized device
st_inp0X	0	**State of the INP0X input** Reports the status of the INP0X input (where X=1÷3): **0** = input off **1** = input on
st_out0X	0	**State of the OUT0X output** Reports the status of the OUT0X output (where X=1÷8): **0** = output off **1** = output on
st_reset	0	**State of the conveyor belt** Report of the conveyor belt in reset: **0** = conveyor belt not in reset **1** = conveyor belt in reset This signal is activated following a reset command processing (with dedicated command or with *INIT* command if *resettype* = 1) and remains active until the tape has covered space equal space between all the heads that are enabled.

Name	Default value	Descrizione
st_blower	0	**Blower status** Reporting of active blower. Is activated only if there is at least one piece in machine length: **0** = blower not active **1** = blower active
st_ovrmxp	0	**Achieving maximum machine pieces** Report of maximum limit pieces in the machine: **0** = normal operation, **1** = reached the maximum number pieces. This message always remains active for at least 500ms.
st_cntlock	R	**Update status location disabled** Report of blocked upgrade position: **0** = Update position enabled **1** = Update position disabled
st_cntrev	R	**State of inversion position update** Report inverted position update: **0** = update position not reversed **1** = inverted position update
st_regoff	0	**Disabling update outputs** State that report if the output update is disable **0** = the adjustment is enable **1** = the adjustment is disable
st_error	0	**Error presence** Indicates the error status of the device. To recognize the type of error you must refer to the *errcode* and *errvalue* variables: **0** = error not present **1** = error present
st_warning	0	**The presence of a warning** Indicates the warning state of the device, to recognize the type of warning you must refer to *wrncode* and *wrnalue* variables: **0** = warning not present **1** = warning present

1.5 Commands table

All commands (generic, memory and tape programs) are in order of priority, independently of the table on which were placed.

1.5.1 Generic commands

Name	Condition	Descriptions
INIT	-	**Initializing the device** Device initialization command. Before the *INIT* command you can write all the parameters in the device without requiring internal recalculations, so the writing will be very fast. Activates the *st_init* state.
RSERR	st_error=1	**Reset of the error state** Reset the *st_error* state.
RSWRN	st_warning=1	**Reset of the warning state** Reset the *st_warning* state.
SETINP0X	INP0X dichiarato come X.X	**Actiovation INP0X** Command that simulates an enabling front of INP0X input (where X = 1÷3).
CLRINP0X	INP0X dichiarato come X.X	**Disabling INP0X** Command that simulates a disabling front of INP0X input (where X = 1÷3).
CNTLOCK	-	**Disable the update of the current position of the conveyor belt** Disables the updating of the current position. In this situation the possible displacement of the conveyor belt is not detected.
CNTUNLOCK	-	**Enables the current conveyor belt position update** Enables the current conveyor belt position update. Conveyor bel displacement detection is activated.
CNTDIR	-	**Not inverted conveyor belt update position** Disable a reversal of position update; the *st_cntrev* state is set to zero.
CNTREV	-	**Reversing the tape position update** Reverses the sign of the update position.
CLPIECE	-	**Delete piece** Delete the selected piece by *piecein* variable. If *piecein* = -1, Resets the image of the pieces.
REGOFF	-	**Disable of the device intervention** Disable the adjustment and the update of the outputs.
REGON	-	**Enabling the device intervention** Enable the adjustment and the update of the outputs.

1.5.2 Program memory management commands

Name	Condition	Description
READSET	st_init=1 headin>=1 headin<=8	**Reading setup parameters** Allows reading parameters to setup of the head *headin*. On command concluded *headout* = *headin*.
WRITESET	pwork=0 headin>=1 headin<=8	**Writing setup parameters** Writes setup parameters of the head headin. On command concluded *headout* = *headin*. in writing phase of working parameters is resets any active blower status (*st_blower* = 1). If this action may lead to problems the command must be issued only if: NOT <device_name>:st_blower AND <device_name>:pwork EQ 0
READPRG	st_init=1 headin>=1 headin<=8	**Reading program** Allows reading of the work programs selected by *headin*. On command concluded *headout* = *headin*.
WRITEPRG	st_init=1 headin>=1 headin<=8	**Writing program** Allows writing of the work programs selected by *headin*. On command concluded *headout* = *headin*. in writing phase of setup parameters is resets any active blower status (*st_blower* = 1). If this action may lead to problems the command must be issued only if: NOT <device_name>:st_blower AND <device_name>:pwork EQ 0
READVAR	st_init=1 headin>=1 headin<=8	**Reading variable** Allows reading of selected variables from *headin*. On command concluded *headout* = *headin*.
WRITEVAR	st_init=1 headin>=1 headin<=8	**Writing variable**\ Allows writing of selected variables from *headin*. On command concluded *headout* = *headin*.