ELBANDER

Conveyor belt control systems

Continuous acquisition
and control of the belt position

Contents

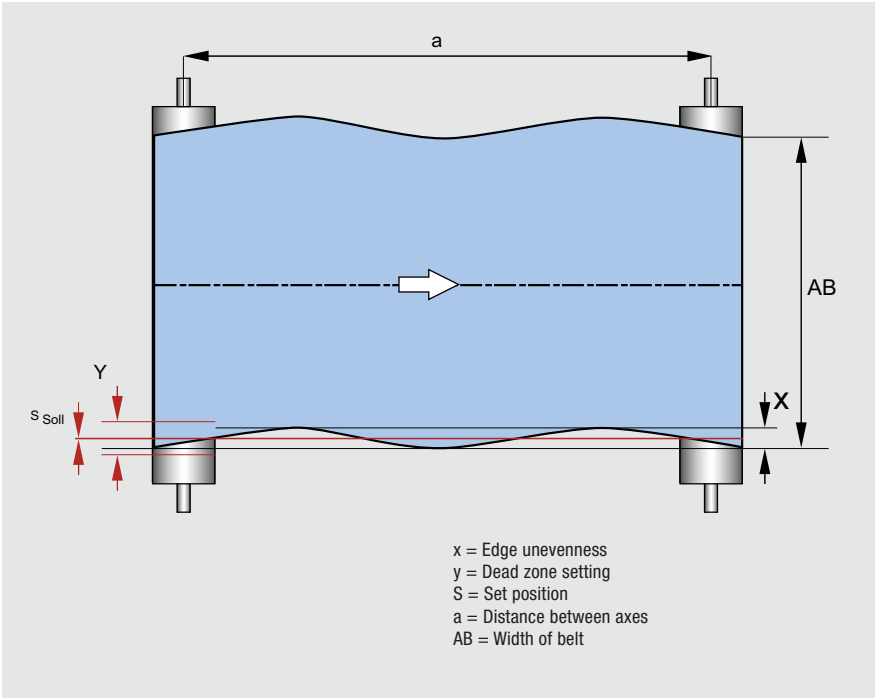
Higher quality due to belt position controllers

These days users of conveyor belts are confronted with ever higher requirements: it must be possible to realize production processes more quickly, but with greater precision. The quality of the result must increase while personnel costs, scrap and machine downtimes are to be reduced to a minimum.

A significant contribution to meeting these requirements is provided by E+L belt guiders. From experience a number of interference effects act on conveyor belts, for instance soiling, varying belt loads, misaligned rollers, temperature fluctuations and high production speeds. E+L belt guiders eliminate these sources of errors and ensure a constant belt position during the production process.

Correct belt position

+ Increases the service life of the conveyor belt
+ Ensures the product transported is transferred with precision
+ Minimizes the downtimes
+ Improves the productivity



x = Edge unevenness
y = Dead zone setting
S = Set position
a = Distance between axes
AB = Width of belt

Selection table

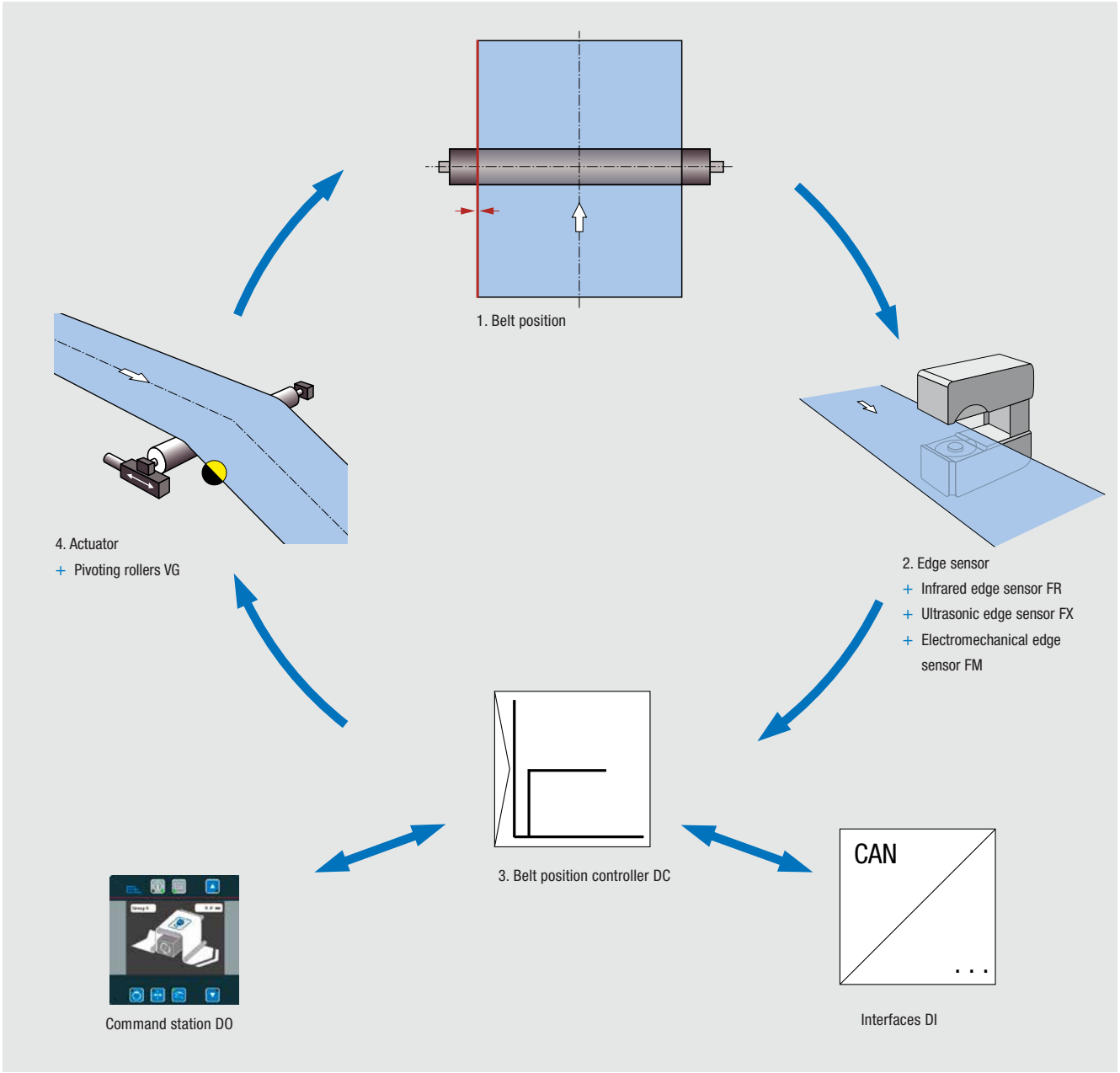
	Continuous controller	Three-point controller
Set position	Absolute	Relative
Edge acquisition	Non-contact	Mechanical
Type of control	Edge/center	Edge
Position controller	Cascaded control structure	With manipulated variable feedback
Dead zone	Can be set on controller	Can be set on sensor
Networking	Yes	No
Interface	Yes	No
Actuator mounting	Parallel to the belt	At 15° to the direction of belt travel
Temperatur	10 bis 50° C	0 bis 60° C

E+L differentiates in principle between two different control principles.
Depending on the application, a continuous controller or a three-point controller is used.

The control loop

All automated control systems are based on the principle of a simple control loop. Even the most complex of tasks may be reduced to this control loop.

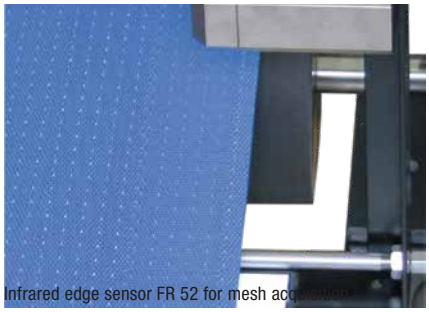
1. The starting point is the actual position of the moving conveyor belt.
2. Edge sensors continuously and precisely measures the edge position.
3. The controller compares the actual position value with the pre-defined set value and sends a corresponding correction signal to the actuator.
4. The actuator adjusts the positioning roller and is this way corrects the position of the belt.



Infrared edge sensor

- Infrared edge sensor FR 52
- Infrared edge sensor based on the principle of retroreflection
- Measuring range ± 10 mm with resolution of 0.02 mm
- Distance-independent edge evaluation based on parallel light beams
- Acquisition of edges and threads
- Scanning with CCD array guarantees a stable operating point independent of the material transparency
- Exposure controller for the compensation of soiling
- Optional integrated clearing device in case of extreme dust conditions
- Bar display for the indication of the actual edge position or diagnostic information

Infrared edge sensor FR 52

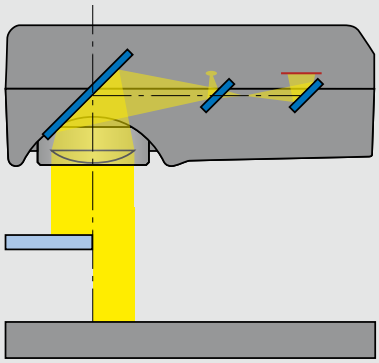


Infrared edge sensor FR 52 for mesh acquisition

FR 52 with reflector bar

Selection table

Reflector bar	
Type	Fork width (mm)
FR_5000-95	30
FR_5000-97	75
FR_5000-98	160



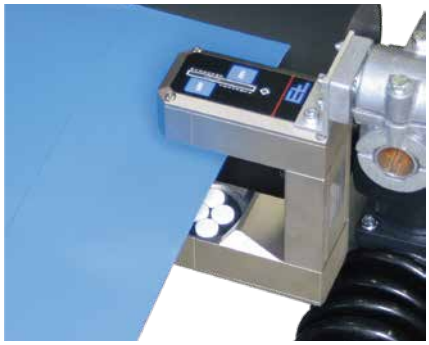
Principle of operation FR 52

Technical data

Infrared edge sensor FR 52	
Operating voltage Nominal value Nominal range (ripple included)	 24 V DC 20 to 30 V DC
Current consumption	80 mA DC
Ambient temperature	10 to 50°C
Measuring range Resolution	±10 mm 0.02 mm
Linearity	±0.1 mm
Wavelength	850 nm
Scan rate	200 Hz
Cable length	Max. 10 m
Protection class	IP 54
Weight	0.3 kg
Clearing device operating pressure	Min. 0.1 bar; max. 0.2 bar
Service unit filter	5 µm
Service unit residual oil content	< 0.01 mg/m³
Fork width	See selection table
Dimensions (L x W x H)	105 x 50 x 40 mm

Ultrasonic edge sensor

- Ultrasonic edge sensor FX 42/FX 52
- Ultrasonic edge sensor with digital evaluation
- Measuring range ±3 mm or ±10 mm
- Fork width 30, 60 or 124 mm
- Insensitive to soiling due to dust
- Scanning of materials opaque to sound such as paper, plastic and metal films independent of the material transparency
- Internal temperature compensation for stable operating point
- Bar display for the indication of the actual edge position or diagnostic information



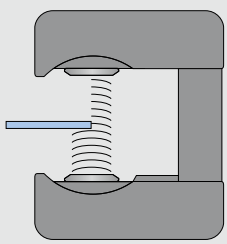
Ultrasonic edge sensor FX 5 in film manufacturing machine

Ultrasonic edge sensor FX 5

Ultrasonic edge sensor FX 4

Selection table

Ultrasonic edge sensors FX 4/5		
Typ	Measuring range ± (mm)	Fork width LW (mm)
FX 4230	3	30
FX 4260	3	60
FX 4200	3	124
FX 5230	10	30
FX 5260	10	60
FX 5200	10	124



Principle of operation FX 42

Technical data

Ultrasonic edge sensor FX 4/5	
Operating voltage Nominal value Nominal range (ripple included)	 24 V DC 20 to 30 V DC
Current consumption	170 mA DC
Ambient temperature	10 to 50°C
Measuring range	See selection table
Linearity deviation (measuring range 10 - 90 %)	± 1 %
Ultrasonic frequency	~ 200 kHz
Resolution	0.02 mm
Scan rate	200 Hz
Cable length	Max. 10 m
Protection class	IP 54
Installation altitude	0 to 3000 m above sea level
Weight	0.7 kg
Fork width	See selection table
Dimensions (L x W x H)	105 x 50 x (LW + 80 mm)

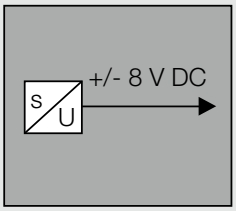
Electromechanical edge sensors

Kantensensor FM 31

+ Electromechanical edge sensor with analog signal output
+ Light barrier principle
+ Adjustable mechanical contact force

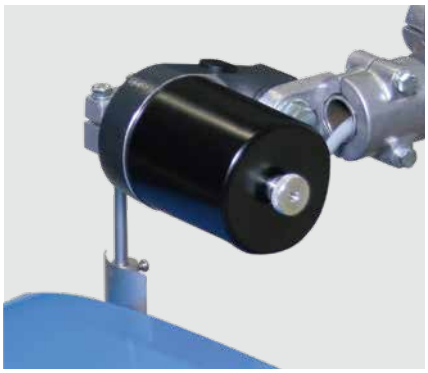
Technical data

Type	FM 31
Operating voltage	+/- 12 V DC
Current consumption	30 mA
Ambient temperature	10 to 50°C
Measuring range	+/- 10 mm
Contact force	0.01 - 3 N
Signal output	+/- 8 V DC
Cable length	4 m
Protection class	IP 65
Weight	1.5 kg



Block diagram FM 31

Edge sensor FM 31



Belt edge acquisition

FA_31-04 Sensor skid, standard

FA_31-05 Sensor skid, angled

FA_31-02 Sensor wire

FA_31-06 Sensor roller

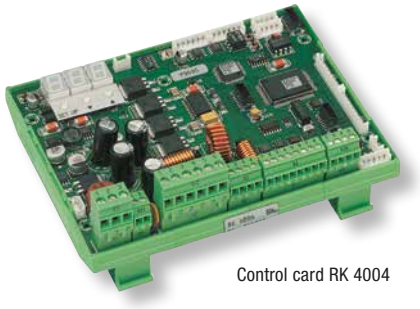
FA_31-07 Sensor roller, angled

Position controller

Position controller DC 33

+ Digital position controller with integrated output stage for the operation of DC gearmotors
+ Color LC display 1/4 VGA with touch control unit
+ Visualization of the application
+ User-friendly commissioning due to configuration wizard
+ Multiple operation possible
+ Cascaded control structure for the precise control of proportional and integral actuators
+ Integrated CAN bus, optional Ethernet interface
+ Expansion possible by means of analog input and output modules
+ Selection of the country-specific language
+ Integrated backup features for saving the device settings
+ Language-neutral error messages

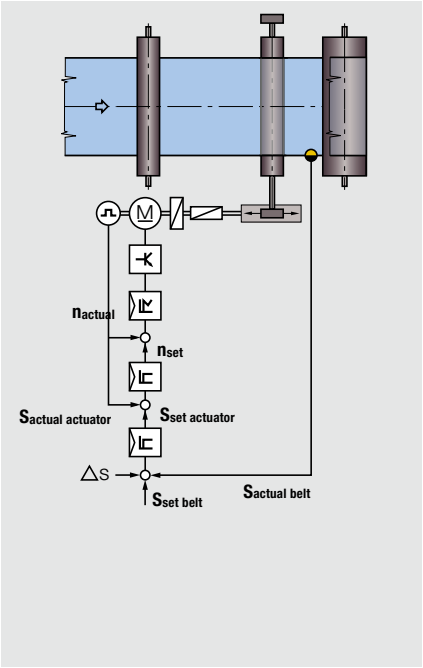
Position controller DC 33



Control card RK 4004

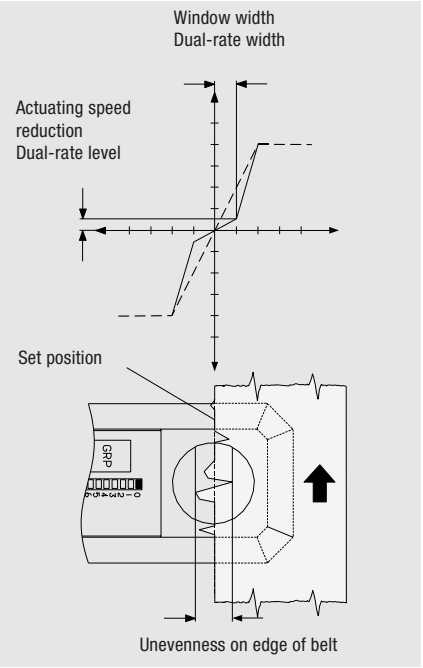
Control structure for integral actuators

Besides a positioning controller for the belt, the cascaded control structure for integral actuators also features a position, speed and current controller for the actuator.



Dual-rate software function

A dead zone can be set using the "Dual-rate" function. In this way adjustment for the unevenness of the edge of the belt is limited.



Input module AK 4002

Input module with 2 analog inputs for +/- 10 V DC including twice +/- 12 V DC supply voltage for sensors. Analog position sensors can therefore be operated on the digital controller.

Input and output module LK 4203

Module with 8 digital inputs and 8 digital outputs. For all binary signals for the operation of the positioning controller.

Technical data

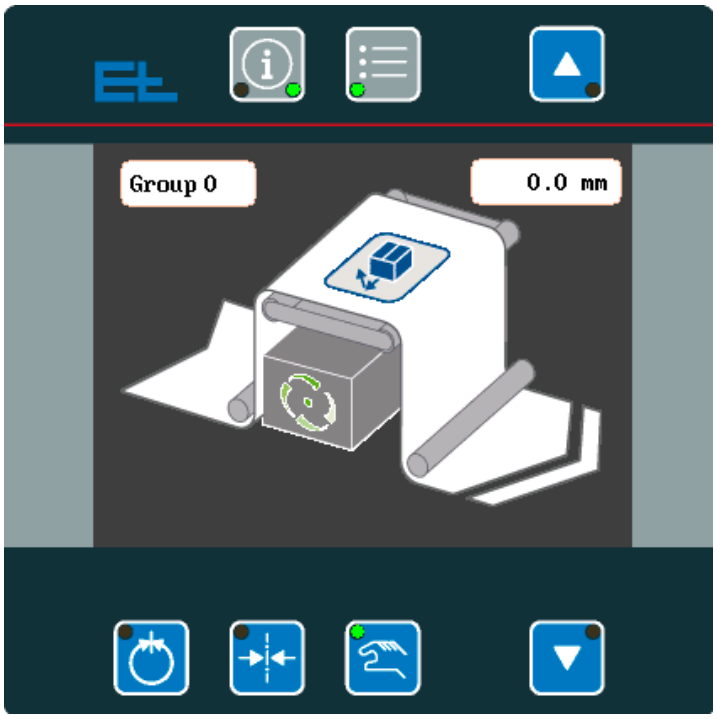
Position controller DC		
Operating voltage Nominal value Nominal range		 24 V DC 20 to 30 V DC
Current consumption without motor with motor (maximum)		 0.2 A DC 7.2 A DC
Output voltage	at motor terminal	+/- 22 V PWM (pulse width modulated)
Output current		Max. 7 A
Cycle time		Belt guiding: 6 ms
Ambient temperature		10 to 50°C
Protection class	Control module With housing	IP 00 IP 54
Dimensions (LxWxH)		300 x 150 x 80 mm
CAN bus		
CAN data rate		250 kbit/s
Ethernet		
Data rate		100 Mbit/s
Connection		M12
Digital inputs on the RK 4004		
Terminal X 4.1/4.4/4.7/20.2/3.2		Low= 0 to 3 V DC, high= 10 to 30 V DC
Digital output on the RK 4004		
Terminal 20.4		Max. 0.1 A (PNP)

Selection table DC 03/23/33

Position controller						
Type	RK 4004	DO 4000	AK 4002	AK 4014	LK 4203	Ethernet
DC 0340	■					
DC 0341	■				■	
DC 0310	■		■			
DC 0311	■		■		■	
DC 0360	■			■		
DC 0361	■			■	■	
DC 2340	■					
DC 2341	■				■	
DC 3340	■	■				
DC 0344	■					■
DC 3341	■	■			■	
DC 3344	■	■				■

Command station

+ Command station DO 40
+ Man-machine interface with intuitive user prompts
+ Visualization and operation of belt guiding systems
+ Multiple operation of up to eight belt guiding control loops
+ Selection of the country-specific language
+ Integrated backup features for saving the device settings
+ Color LC display 1/4 VGA with touch control unit
+ User-friendly commissioning due to configuration wizard
+ Language-neutral error messages
+ Integrated CAN bus, optional Ethernet interface



Command station DO 40

Selection table

Command station DO 4		
Type	Mounting kit	Console housing
DO 4003		■
DO 4002	■	

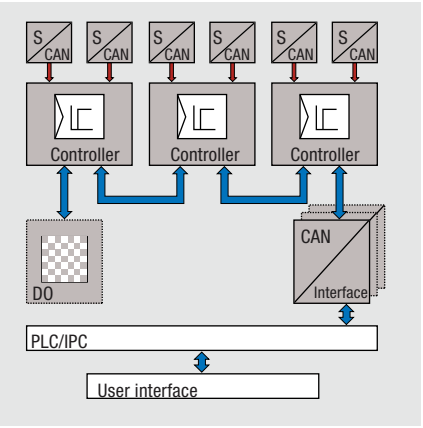
Technical data

Command stations DO 4	DO 4002/3
Operating voltage Nominal value Nominal range	 24 V DC 20 to 30 V DC
Current consumption	200 mA DC
Ambient temperature	10 to 50° C
CAN interface	250 kbit/s
Dimensions Front frame panel mounting Cut-out for panel mounting With housing for field mounting	 100 x 100 x 8 mm 90 x 90 mm 130 x 130 x 105 mm
Protection class panel mounted (at front) Protection class with housing (for field mounting)	 IP 54 IP 54
Weight	1.3 kg
Operation language	German, English, Spanish, French, Italian, Portuguese, Chinese, Taiwanese, Japanese, Korean, Turkish

Networking

CAN bus

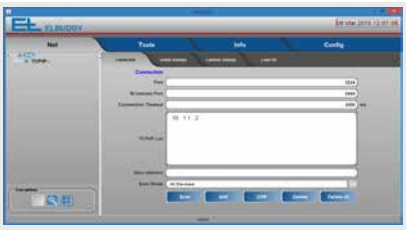
All functional modules in the digital control system feature a CAN bus interface and are also networked with one another. This feature ensures not only flexible adaptation of the E+L control system to new tasks but also guarantees maximum immunity to interference and a minimum wiring outlay.
A controller group may comprise up to 16 devices including e.g. sensors, support beams, controllers, interfaces or command stations. Up to 8 controller groups can be implemented in a common CAN network with a length of up to 160 m. For lengths from 160 m a CAN extension DI 0010 is available; it is simply plugged in between two CAN networks.

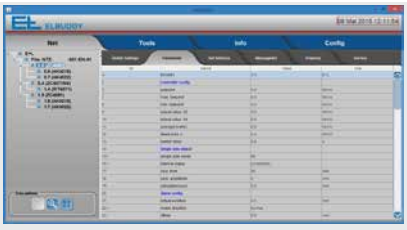


Diagnostic tool ELBUDDY

Convenient diagnostics

Sophisticated systems require a simple, comprehensive representation of the entire network. The ELBUDDY software tool for Windows computers depicts the CAN network in a structured form and, at the same time, comprises a convenient set-up editor for setting all control parameters. Furthermore, ELBUDDY permits both saving and printing out of the entire CAN network.



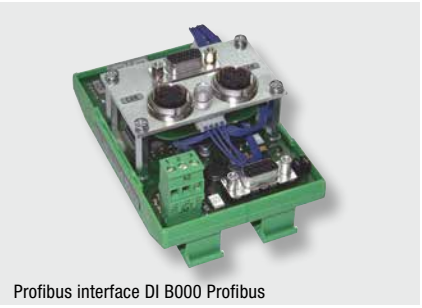


Interfaces

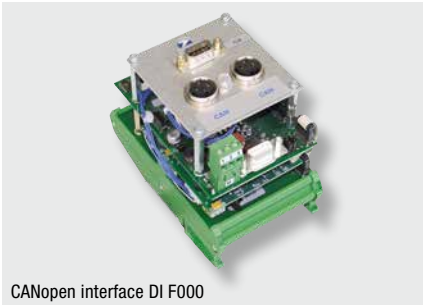
Interfaces DI

Modern production facilities have a central control station or a control room. In this case the belt guiding systems can be connected to different bus systems or to a PLC/IPC.

For this purpose E+L offers a very wide range of interfaces with standard protocols. Each interface contains a CAN connection with a corresponding bus driver module.



Profibus interface DI B000 Profibus

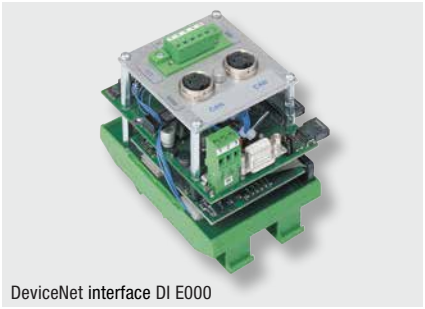


CANopen interface DI F000

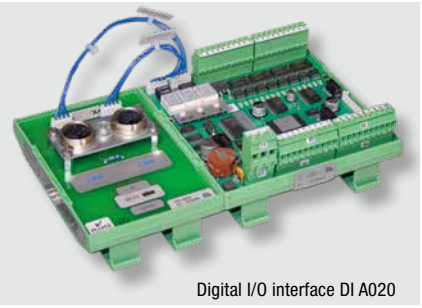
Interface DI A

+ Interface with 16 digital inputs and outputs
+ Floating inputs and outputs
+ Short circuit-proof

ControlNet interface DG 0401



DeviceNet interface DI E000



Digital I/O interface DI A020

EtherNet-IP interface DG 0201

Selection table

Type	Type of interface	PC/IPC	SPS Siemens	SPS Allen Bradley
DI B000	Profibus DP	■	■	
DG 0401	ControlNet	■		■
DI E000	DeviceNet	■		■
DI F000	CANopen	■		
DG 0201	EtherNet-IP	■		■
DI A020	I/O	■	■	■

Technical data

	DI A020	DI B000	DG 0401	DI E000	DI F000	DG 0201
Operating voltage nominal value Operating voltage nominal range	24 V DC 20 to 30 V DC					
Current consumption	200 mA					
Ambient temperature	+10 to +50° C					
Dimensions top hat rail mounting in acc. EN 50022 (L x B x H in mm)	185 x 111 x 70	75 x 111 x 90	76 x 126 x 131	76 x 126 x 131	76 x 126 x 131	76 x 126 x 131
Protection class top hat rail mounting	IP 00					
Weight	0,2 kg					

Pivoting roller system ELBANDER - for continuous controllers

Function

Rollers that are at an angle to the direction of belt travel cause the belt to move laterally. This principle is used by the pivoting roller systems ELBANDER.
The pivot point for the pivoting roller is one of the two bearings at the ends. The positioning roller is positioned at an angle around this point depending on the correction required.

Usage

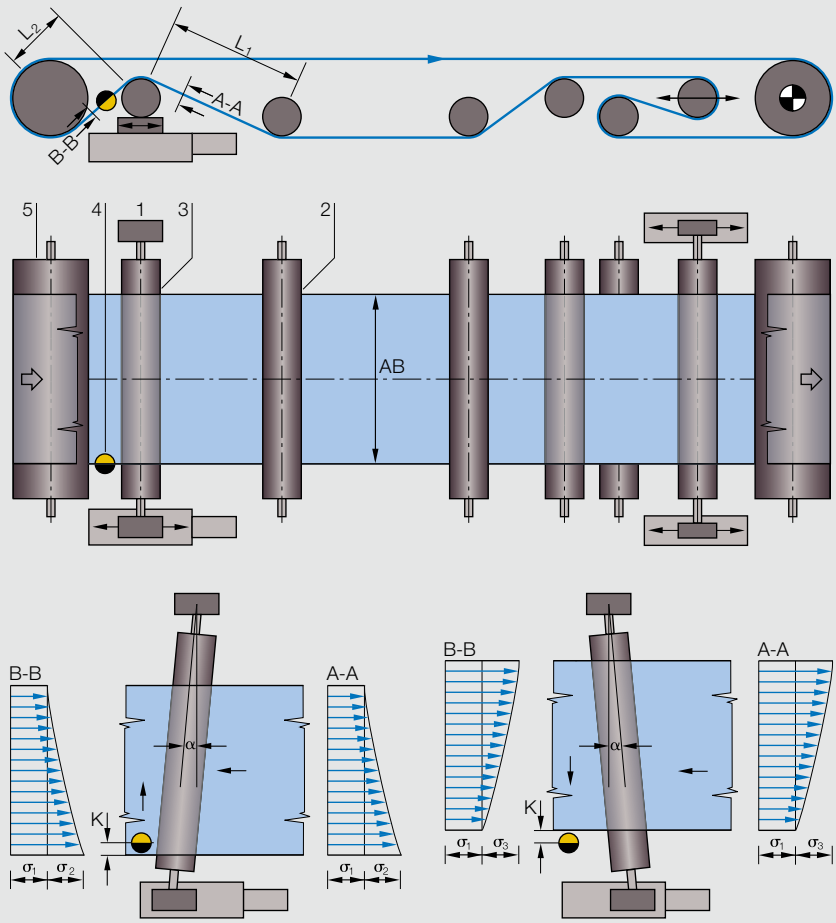
Pivoting roller systems are used to guide conveyor belts.

Application

Actuator
On conveyor belts the pivoting roller is mounted on the bottom run just ahead of the lock roller. The actuator is to be arranged parallel to the direction of travel of the belt. The actuating movement must be at the angle bisector between the infeed and outfeed path.
Infeed path
The infeed path should be at least one belt width.
Outfeed path
The outfeed path is to be kept as short as possible.
Positioning roller wrapping
The wrapping around the positioning roller should be between 40 and 60°.
For production speeds >1000 m/min the wrapping to be reduced to 10 – 20°.
Position sensor
The position is measured using an edge sensor immediately after the positioning roller.

Stretch roller application

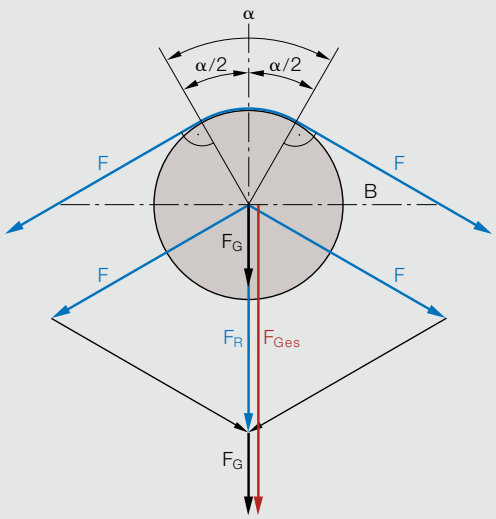
To prevent possible interference from the stretch roller on the control system, this roller is only allowed to be positioned with its axis parallel.



Legend

A-A	Belt tension distribution at the infeed
B-B	Belt tension distribution at the outfeed
K	Correction of the belt position
α	Correction angle
σ_1	Basic belt tension
σ_2	Tension distribution on actuating movement to left
σ_3	Tension distribution on actuating movement to right

1	Pivot point
2	Infeed roller
3	Positioning roller
4	Sensor
5	Locking roller
L_1	Infeed path
L_2	Outfeed path
AB	Operating width



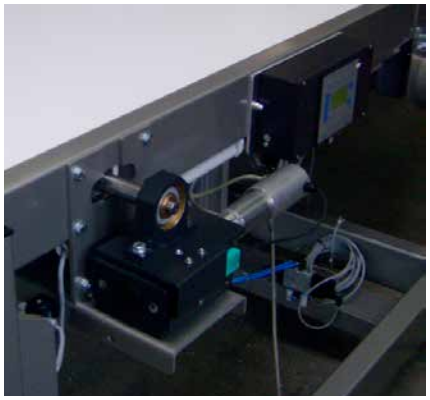
Calculation of bearing force

$F_{Tot/2} = (F_R + F_G)/2$

B	Movement plane of positioning roller
F	Belt tension
α	Wrapping angle
F_R	Resulting belt tension
F_G	Weight of the positioning roller
F_{Tot}	Total force
$F_{Tot/2}$	Force per bearing side

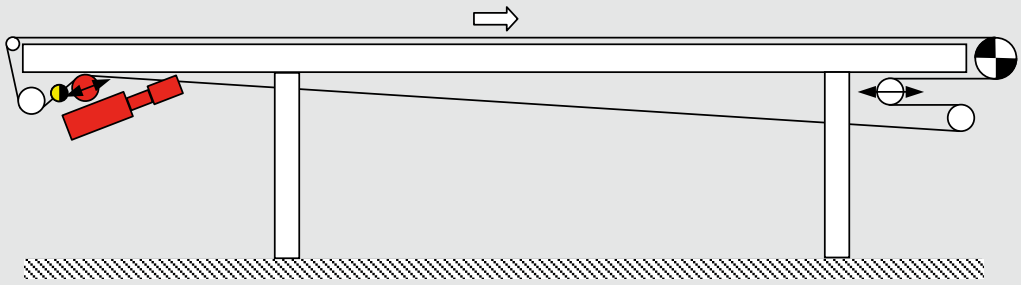
ELBANDER VGS 14

+ Compact pivoting roller system with electrosensitive edge acquisition
+ Infrared edge sensor FR 50 for the electrosensitive acquisition of mesh belts
+ Ultrasonic edge sensor for the electrosensitive acquisition of closed conveyor belts in particular in dusty ambient conditions
+ Digital position controller with control structure for integral actuators ensures a stable control loop
+ Actuator with linear guiding, self-locking trapezoidal spindle and torque arm provides precise correction.



Technical data

VGS 14	
Positional accuracy	+/- 1 mm (depending on the quality of the belt)
Nominal actuating travel	+/- 25 mm
Nominal actuating speed	1-8 mm/s (adjustable)
Nominal actuating force	1 kN
Actuator load Ø 20 mm Fixed bearing Ø 20 mm	Max. 1 kN Max. 1 kN
Ambient temperature	10 to 50°C
Operating voltage Nominal value Nominal range Nominal range with power supply	 24 V DC 20 - 30 V DC 115 to 460 V, 50/60 Hz
Current consumption	3.6 A DC
Protection class	IP 54
Weight without positioning roller	14 kg
Weight fixed bearing	2 kg



ELBANDER VGS 14 on conveyor belt system

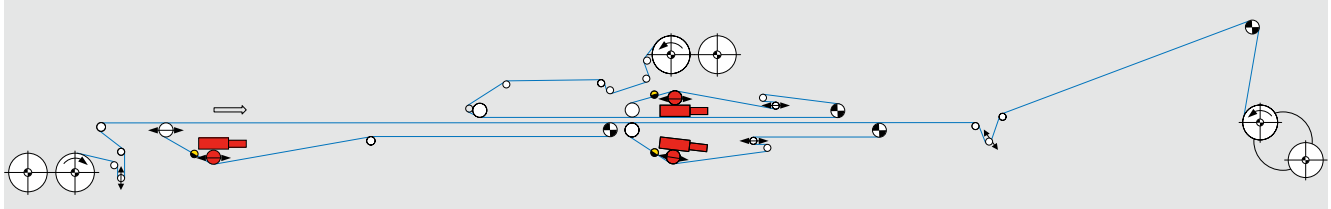
Pivoting roller system VGS18

+ Compact pivoting roller system with electrosensitive edge acquisition
+ Infrared edge sensor FR 50 for the electrosensitive acquisition of mesh belts
+ Ultrasonic edge sensor for the electrosensitive acquisition of closed conveyor belts in particular in dusty ambient conditions
+ Digital position controller with control structure for integral actuators ensures a stable control loop
+ Actuator with linear guiding, self-locking trapezoidal spindle and torque arm provides precise correction.

ELBANDER VGS18

Technical data

VGS 18	
Positional accuracy	< +/- 1 mm (depending on the quality of the belt)
Nominal actuating travel	+/- 55 mm
Nominal actuating speed	1 – 3.5 mm/s (adjustable)
Nominal actuating force	3 kN
Load Actuator Ø 25 mm Fixed bearing Ø 25 mm	 Max. 2.5 kN Max. 2.5 kN
Ambient temperature	10 to 50°C
Operating voltage Nominal value Nominal range Nominal range with power supply	 24 V DC 20 to 30 V DC 115 to 460 V, 50/60 Hz
Current consumption	3.4 A DC
Protection class	IP 54
Weight without positioning roller	16.5 kg
Weight fixed bearing	1.4 kg



ELBANDER VGS 18 on laminating system

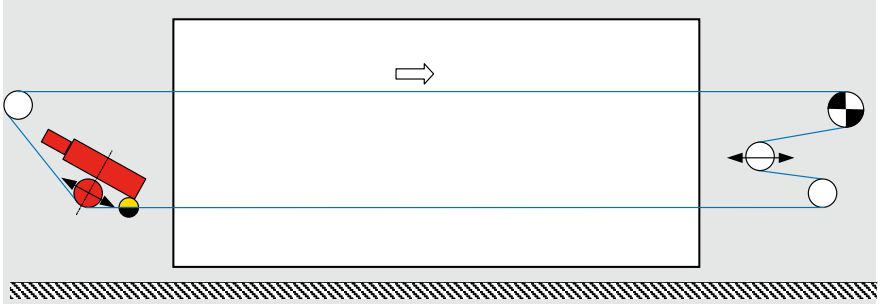
Pivoting roller system VGS24

+ Compact pivoting roller system with contactless edge detection
+ Infrared edge sensor FR 52 for the acquisition of mesh belts
+ Ultrasonic edge sensor for the acquisition of closed conveyor belts in particular in dusty ambient conditions
+ Digital position controller with control structure for integral actuators ensures a stable control loop
+ Actuator with linear guiding, self-locking trapezoidal spindle and torque arm provides precise correction

ELBANDER VGS24

Technical data

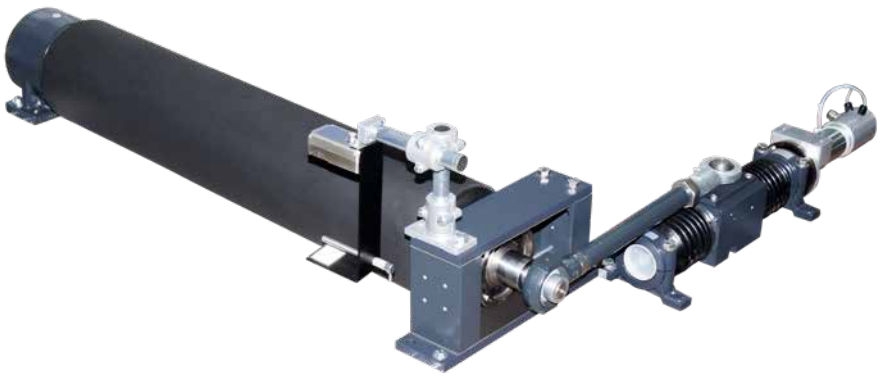
VGS24		
Positional accuracy		< +/- 1 mm (depending on the quality of the belt)
Nominal actuating travel		+/- 60 mm
Nominal actuating speed		1 – 5 mm/s (adjustable)
Nominal actuating force		5 kN
Load	Actuator Ø 35 mm Fixed bearing Ø 35 mm	5 kN 5 kN
Ambient temperature		+10 to +50 °C
Operating voltage Nominal value Nominal range Nominal range with power supply		 24 V DC 20 to 30 V DC 115 to 460 V, 50/60 Hz
Current consumption		3,6 A DC
Protection class		IP 54
Weight without positioning roller		35 kg
Weight fixed bearing		2,8 kg



ELBANDER VGS24 on wood chip dryer

Pivoting roller system VGS36

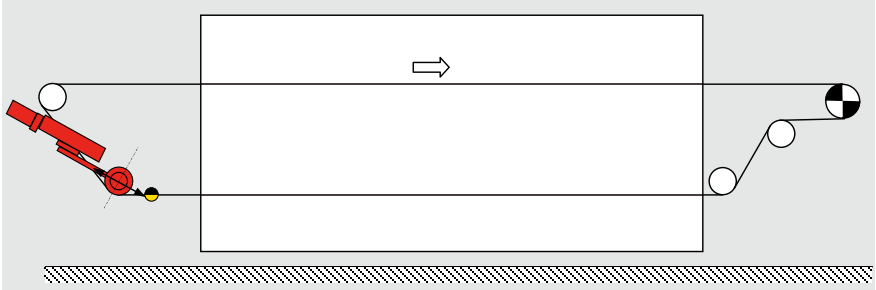
+ Compact pivoting roller system with contactless edge detection
+ Infrared edge sensor FR 52 for the acquisition of mesh belts
+ Ultrasonic edge sensor for the acquisition of closed conveyor belts in particular in dusty ambient conditions
+ Digital position controller with control structure for integral actuators ensures a stable control loop
+ Actuator with linear guiding, self-locking trapezoidal spindle and torque arm provides precise correction
+ Actuator mounted separately in positioning roller for the absorption of high loads



ELBANDER VGS36

Technical data

VGS36		
Positional accuracy		< +/- 1 mm (depending on the quality of the belt)
Nominal actuating travel		+/- 60 mm
Nominal actuating speed		1 – 5 mm/s (adjustable)
Nominal actuating force		5 kN
Load	Actuator Ø 60 mm Fixed bearing Ø 60 mm	39 kN 39 kN
Ambient temperature		+10 bis +50 °C
Operating voltage Nominal value Nominal range Nominal range with power supply		 24 V DC 20 bis 30 V DC 115 bis 460 V, 50/60 Hz
Current consumption		3,6 A DC
Protection class		IP 54
Weight without positioning roller		58 kg
Weight fixed bearing		16,5 kg



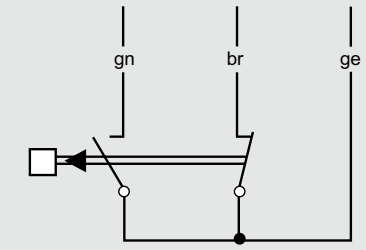
ELBANDER VGS36 an Holzspänetrockner

Electromechanical edge sensors

Edge sensor F 31 E

+ Electromechanical edge sensor for three-point control
+ Adjustable dead zone
+ Alternative design F 31EA with alarm contacts

Sensor lever see page 8



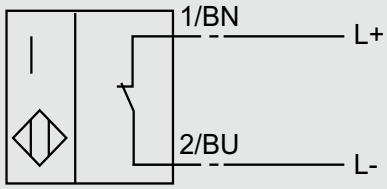
Circuit diagram

gn = green
br = brown
ge = yellow

Edge sensor FM 0401/FM 0402/FM 0403

+ Electromechanical edge sensor for three-point control in the wet area
+ Low friction probe mounting with adjustable dead zone
+ Alternative design FM 0402 with alarm contacts

N / NO



Circuit diagram

Technical data

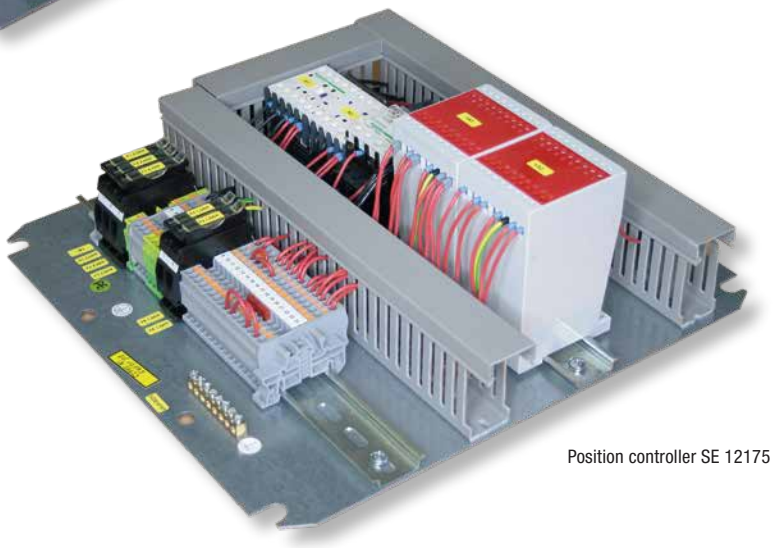
Type	F 31 E	FM 04
Operating voltage		5-25 V DC
Ambient temperature	-25 to + 80°C	-25 to + 100°C
Measuring range	+/- 15 mm	
Contact force	0.01 - 3 N	
Signal output	Switching contact Max. 60 V Max. 0.2 A	NAMUR N/C contact > 3 mA (measuring plate not acquired) < 1 mA (measuring plate acquired)
Cable length	2 m	2m
Protection class	IP 33	IP 67
Weight	1.5 kg	1 kg

Analog position controller

Position controller SE 1217

+ Contact-load reduction relay with reversing contactor and thermal overcurrent trip

Position controller SE 12170

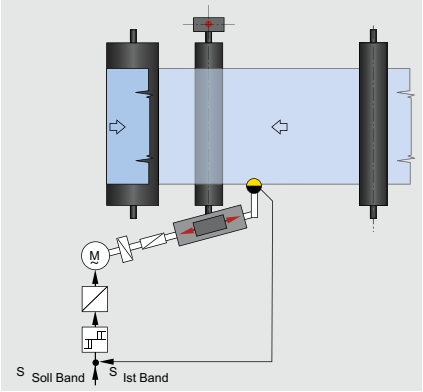


Position controller SE 12175

Selection table

Position controller		
Sensor	F31E/FM0401	F31EA/FM0402
SE12170	■	
SE12175		■

Control structure with three-point controller and manipulated variable feedback



Technical data

Position controller	
Control voltage Operating voltage	120 / 230 V, 50 / 60 Hz 3 x 200 to 575 V, 50 / 60 Hz
Current consumption control voltage Current consumption operating voltage	1 A 3 x 2 A
Ambient temperature	+10 to +50 °C
Dimensions Position controller SE 12170 Position controller SE 12170 with housing Position controller SE 12175 Position controller SE 12175 with housing	 162 x 275 x 116 mm 200 x 300 x 155 mm 340 x 340 x 116 mm 380 x 380 x 210 mm
Protection class without housing Protection class with housing	IP 00 IP 54

Pivoting roller system ELBANDER - for three-point controllers

Function

Rollers that are at an angle to the direction of belt travel cause the belt to move laterally. This principle is used by the pivoting roller systems ELBANDER. The pivot point for the pivoting roller is one of the two bearings at the ends. The positioning roller is positioned at an angle around this point depending on the correction required.

Usage

Pivoting roller systems are used to guide conveyor belts.

Application

Actuator

On conveyor belts the pivoting roller is mounted on the bottom run just ahead of the lock roller. The actuator is to be arranged at an angle of 15° to the direction of travel of the belt. The actuating movement must be at the angle bisector between the infeed and outfeed path.

Infeed path

The infeed path should be at least one belt width.

Outfeed path

The outfeed path is to be kept as short as possible.

Positioning roller wrapping

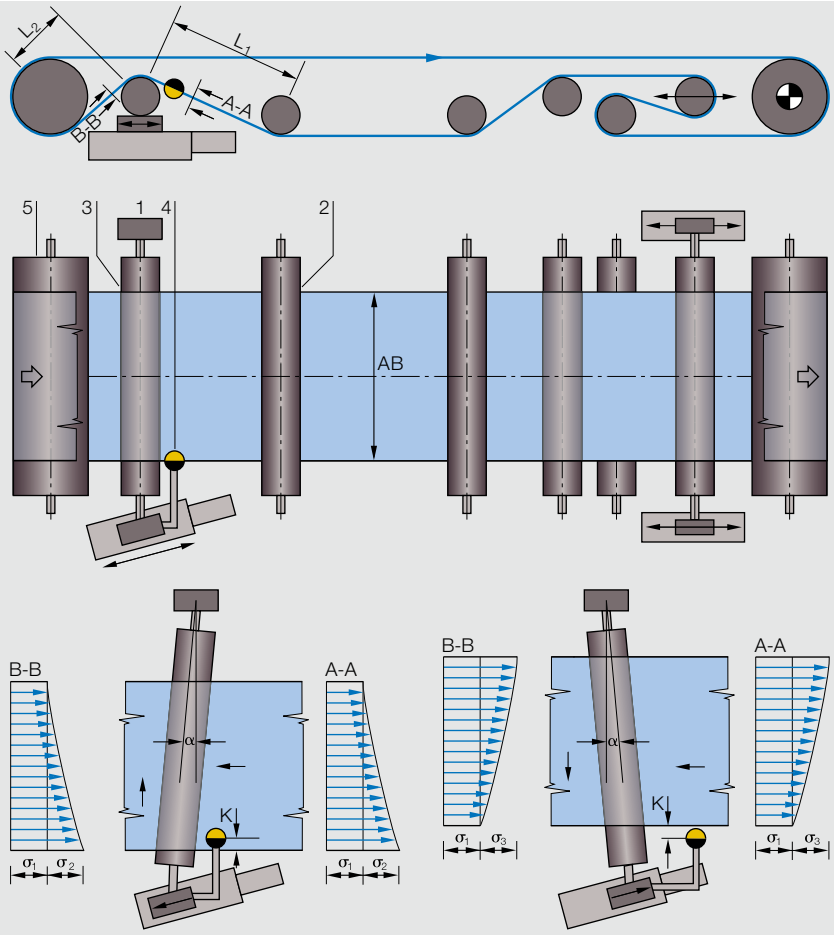
The wrapping around the positioning roller should be between 40 and 60°. For production speeds >1000 m/min the wrapping to be reduced to 10 – 20°.

Position sensor

The position is measured using an edge sensor immediately before the positioning roller.

Stretch roller application

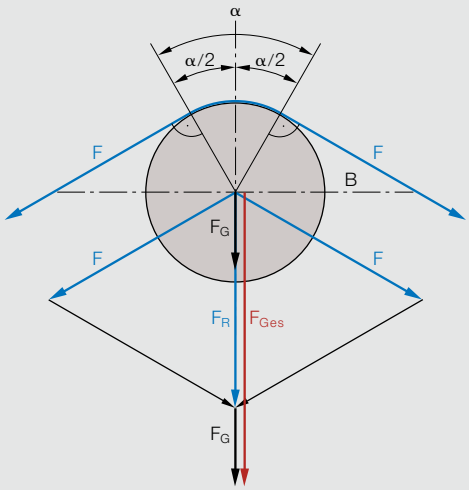
To prevent possible interference from the stretch roller on the control system, this roller is only allowed to be positioned with its axis parallel.



Legend

A-A	Belt tension distribution at the infeed
B-B	Belt tension distribution at the outfeed
K	Correction of the belt position
a	Correction angle
s1	Basic belt tension
s2	Tension distribution on actuating movement to left
s3	Tension distribution on actuating movement to right

1	Pivot point
2	Infeed roller
3	Positioning roller
4	Sensor
5	Locking roller
L1	Infeed path
L2	Outfeed path
AB	Operating width



Calculation of bearing force

FTot/2 = (FR + FG)/2

B	Movement plane of positioning roller
F	Belt tension
a	Wrapping angle
FR	Resulting belt tension
FG	Weight of the positioning roller
FTot	Total force
FTot/2	Force per bearing side

Pivoting roller system VGA19

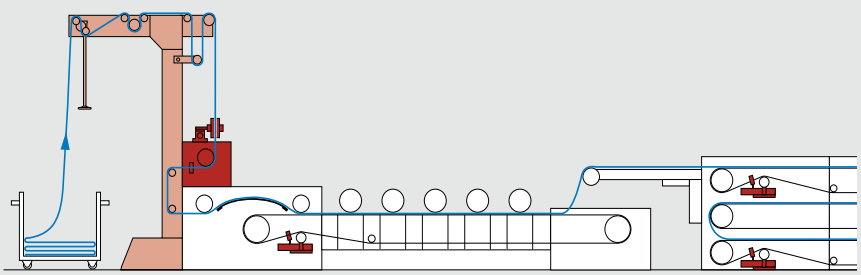
+ Compact pivoting roller system with mechanical edge acquisition
+ Electromechanical sensor F 31 or FM 04 for the acquisition of the edge position
+ Three-point controller with manipulated variable feedback to check the integrated actuator
+ Linear guide with self-locking trapezoidal spindle, torque arm and three-phase drive

ELBANDER VGA19

Technical data

VGA19		
Positional accuracy		< +/- 1 mm (depending on the quality of the belt)
Nominal actuating travel		+/- 60 mm
Nominal actuating speed		3,5 mm/s
Nominal actuating force		3 kN
Load	Actuator Ø 25 mm Fixed bearing Ø 25 mm	Max. 2,5 kN Max. 2,5 kN
Ambient temperature		0 bis +60°C
Operating voltage Control voltage		△3 x 200 to 290 / Y346 bis 500 V, 50 Hz, △3 x 200 bis 330 / Y346 bis 575 V, 60 Hz, 120/230 V, 50/60 Hz
Current consumption		△0,88-1,47 / Y0,51-0,85 A, 50 Hz △0,83-1,38 / Y0,48-0,80 A, 60 Hz
Protection class		IP 54
Weight without positioning roller		22,5 kg
Weight fixed bearing		1,4 kg

ELBANDER VGA 19 on textile dryer



ELBANDER VGA 19 on textile printing machine

Pivoting roller system VGA20

+ Compact pivoting roller system with mechanical edge acquisition
+ Electromechanical sensor F 31 or FM 04 for the acquisition of the edge position
+ Three-point controller with manipulated variable feedback for checking the integral actuator
+ Linear guide with self-locking trapezoidal spindle, torque arm and three-phase drive

ELBANDER VGA20

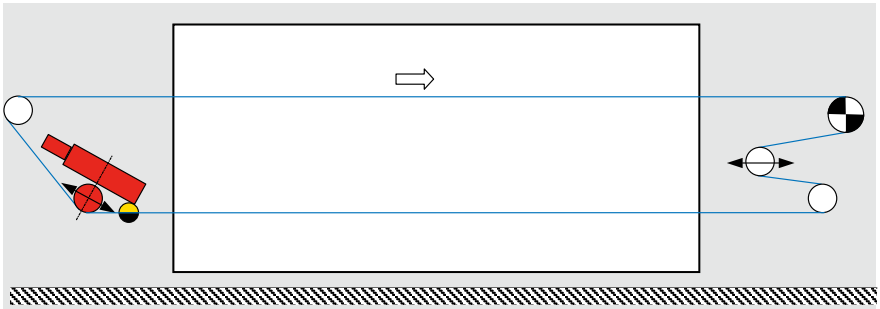
Selection table

Actuator VG 20				
Type	Straight drive	Angled drive	Limit switch	Proximity switches
VG 2001	■		■	
VG 2011	■			■
VG 2005		■	■	
VG 2015		■		■

Technical data

VGA20		
Positional accuracy		< +/- 1 mm (depending on the quality of the belt)
Nominal actuating travel		+/- 60 mm
Nominal actuating speed		5 mm/s
Nominal actuating force		5 kN
Load	Actuator Ø 35 mm Fixed bearing Ø 35 mm	Max. 5 kN Max. 5 kN
Ambient temperature		0 bis +60°C
Operating voltage Control voltage		△3 x 200 to 290 / Y346 to 500 V, 50 Hz, △3 x 200 to 330 / Y346 to 575 V, 60 Hz, 120/230 V, 50/60 Hz
Current consumption		△0,88-1,47 / Y0,51-0,85 A, 50 Hz △0,83-1,38 / Y0,48-0,80 A, 60 Hz
Protection class		IP 54
Weight without positioning roller		35 kg
Weight fixed bearing		2,8 kg

ELBANDER VGA 20 on drying tunnel



ELBANDER VGA 20 on wood chip dryer

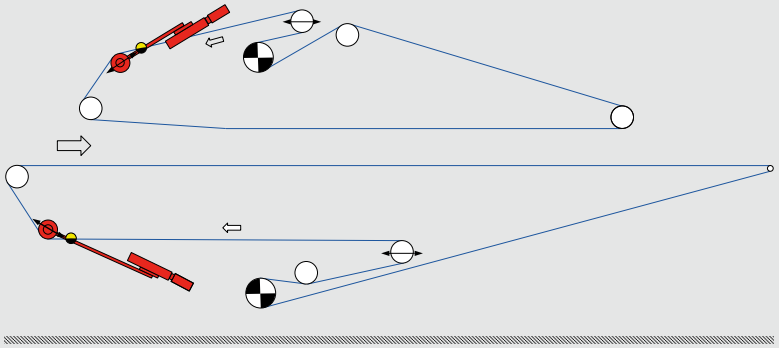
Pivoting roller system VGA36

+ Pivoting roller system for use on conveyor belts with high tensile forces
+ Electromechanical sensor F 31 or FM 04 for the acquisition of the edge position
+ Three-point controller with manipulated variable feedback for reliably checking the integral actuator
+ Linear guide with self-locking trapezoidal spindle, torque arm and three-phase drive
+ Actuator mounted separately in positioning roller for the absorption of high loads

ELBANDER VGA36

Technical data

VGA36		
Positional accuracy		< +/- 1 mm (depending on the quality of the belt)
Nominal actuating travel		+/- 60 mm
Nominal actuating speed		5 mm/s
Nenn-Stellkraft		5 kN
Load	Actuator Ø 60 mm Fixed bearing Ø 60 mm	max. 39 kN max. 39 kN
Ambient temperature		0 to +60°C
Operating voltage Control voltage		△3 x 200 to 290 / Y346 to 500 V, 50 Hz, △3 x 200 to 330 / Y346 to 575 V, 60 Hz, 120/230 V, 50/60 Hz
Current consumption		△0,88-1,47 / Y0,51-0,85 A, 50 Hz △0,83-1,38 / Y0,48-0,80 A, 60 Hz
Protection class		IP 54
Weight without positioning roller		58 kg
Weight fixed bearing		16,5 kg



ELBANDER VGA 36 on prepress for a chipboard plant

Questionnaire

General data

Customer			
Street			
Zip code		**City/town**	
Country		**Internet**	
Telephone		**Fax**	
Contact person			
Telephone		**E-Mail**	
Project			

Technical data

Type of machine				
Make				
Position on the machine				
Belt type	Belt manufacturer		Belt supplier	
Belt edge	❑ straight	❑ wavy	❑ frayed	❑
Belt width	_____ mm			
Belt speed	Min _____ m/min		Max _____ m/min	
Belt tension	Min _____ N		Max _____ N	
Ambient temperature	°C			
Ambient conditions	❑ Dry	❑ Dusty	Wet	❑
Belt position error	+/- _____ mm			
Control voltage	❑ 24 V DC	❑ 120 V 50/60 Hz	❑ 230 V 50/60 Hz	❑
Operating voltage	❑ 3x _____ V	_____ Hz		

Mechanical design, stretch roll

Stretch roll adjustment	❑ manually, left and right separately
	❑ automatically, left and right separately
	❑ automatically, with its axis parallel

Application

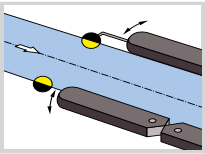
Technical specifications

Three-point controller with three-phase current drive	Type of control	By belt edge			
	Sensor	❑ Electro-mechanical for dry area	❑ Electro-mechanical for wet area		
		❑ Electro-mechanical for dry area with alarm contact	❑ Electro-mechanical for wet area with alarm contact		
	Controller	❑ With housing	❑ Without housing		
	Pivoting roller	Nominal width NB	_____ mm		
		Roller diameter D	_____ mm		
		Wrap angle	_____ °		
		Roller material	❑ Steel	❑ Stainless steel	❑
		Roller surface	❑ Bare	❑ Rubberized	❑
		Positioning roller	❑ Steel	❑ Provided by customer	❑ Provided by E+L
	Operation	❑ Without operation	❑ With operation		

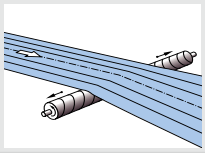
Continuous controller with direct current drive	Type of control	By belt edge				
	Sensor	❑ Elektro-mechanic	❑ Ultrasnic	❑ Infrared		
	Digitaler ontroller	❑ With housing	❑ Without housing			
	Pivoting roller	Roller diameter	_____ mm			
		Walzendurchdurchmesser	_____ mm			
		Wrap angle α	_____ °			
		Roller material	❑ Steel	❑ Stainless steel	❑	
	Operation	Roller surface	❑ Bare	❑ Rubberized	❑	
	Networking	Positioning roller	❑ Provided by customer	❑ Provided by E+L		
	Operation	Command station	❑ Integrated in the controller			
			❑ Assembly kit, offset	❑ With housing, offset		
		Cable length command station - controller	❑ 5 m	❑ 10 m	❑ 15 m	❑ 20 m
	Networking	CAN bus	❑ Yes	❑ No		
	Interface	❑ Parallel I/O	❑ Profibus DP	❑ Ethernet IP	❑ ControlNet	❑ DeviceNet
	Cable length command station - interface	❑ 5 m	❑ 10 m	❑ 15 m	❑ 20 m	

Date	**Issuer**

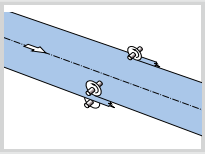
Other products for the textil industry



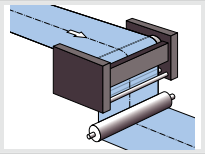
ELFEED – Tenter infeed systems



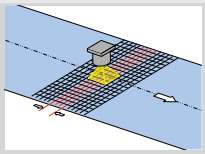
ELSPREADER – Web spreading systems



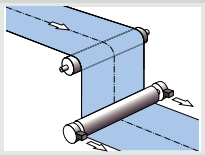
ELCUT – Web cutting systems



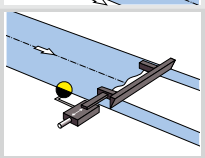
ELSMART – Web guiding systems



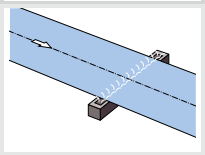
ELCOUNT – Thread counting systems



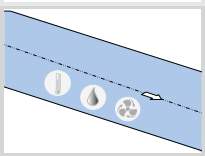
ELTENS – Web tension control systems



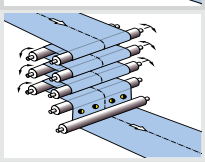
ELPOSER – Positioning and follow-up control systems



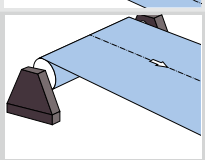
ELMETA – Metal detection systems



ELMAT – Process control systems for tenters



ELSTRAIGHT – Textile straightening systems



ELWEBTEX – Infeed and exit system for textile production processes

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