User Manual

SDE
Visualisation

Ramscheider Str. 5
D-57413 Finnentrop
Tel.: +49 (0) 2724 / 682 Fax: +49 (0) 2724 / 8232
Email: sde-elektronik@t-online.de
Internet: www.sde-elektronik.de

1   Introduction

1.1   Preamble

We thank you for choosing this SDE application. During the development phase of the entire system SDE was paying particular attention to an easy operability of the computer program. Also the expandability with respect to future developments was considered.

Primary, this system was engineered in order to produce timber. The basic configuration consists of the measuring unit, the optimisation Personal computer including a VGA-Monitor and a printer. In case of maximum configuration a second personal computer for process visualization will be included in the system. All computers can be implemented in a network structure. This enables the user to access topical data without affecting the production process.

Installation
The installation of the SDE optimization system is carried out by the SDE GmbH itself. During the installation and ramp up phase of the saw line we require a electrician and a mechanist (provided by customer) in order to carry out all installation activities, in particular the fixation of measuring frame and pulse encoder. Further information will be provided in the project engineering phase.

Maintenance
In the general our PC's are maintenance-free. From time to time keyboard, monitor and printer should be cleaned from dust with a soft and dry tissue. Occasionally the cooling unit (fan must rotate) should be checked. A failure of the cooling unit results in a overheating of the PC. Normally the Power supply unit will be destroyed in such cases.
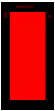
Update of the Computer programs
Customization of our programs is an enormous strength of all SDE computer programs. Modification according to customer's wishes can be carried out easily after issuing a quotation. It is part of our philosophy to improve our programs continuously. Clues and Proposals that are coming from field experience are welcome anytime and will be evaluated accurately.

Important Information
SDE GmbH disclaims liability for damages which originate from the use of the described device or the described programs or from instructions given in writing or orally. The contents of this user manual as well as the function of the described programs can be changed any time without previous announcement. The buyer will get updated program versions on request from SDE. These updates are free of charge unless other agreements have been made before. There is no obligation of SDE to notify the customer if a new program version is being released. All rights on this edition are reserved to the publishers. Without written approval of the company SDE it is not allowed to copy this manual or parts of this manual or making hard copies (on microfilm or any other form).
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1.2   Abbreviations and symbols

Symbol	Bedeutung	Symbol	Bedeutung
	Chipper blade		Mechanical switch
	Block conveyor (Frame red: Conv. Not running) (Frame green: Conv. is moving)		Centring Roller
	Light barrier		Measuring device
	Cross conveyor		Prick roller

Abbreviation	Meaning
BS	Board Separator
CC	Cross Conveyor
ifo	In front of

2 Main menu

2.1 Overview

By using the <ESC> bottom the user can terminate any part of the program at any time. With <F1> you can switch from user language German to English. The key combination <Strg> + <F3> generates test logs in order to test the functionality of the program. The following submenus can be chosen:

Area behind saw
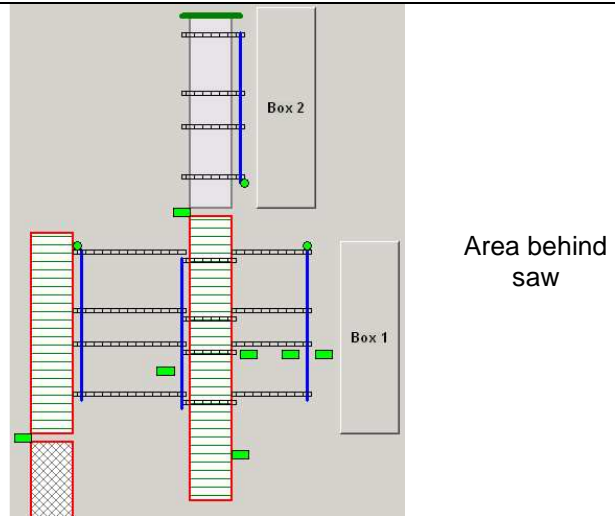
Field for error messages

Buffer Memory

Image: Main Menu

2.2 Button functions right side

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
Function	Automatic Input Log/Cant ON/OFF	BS: Upper Roller 1-8 open/close	BS: Side Roller 1-8 up/down	Release Saw Transport ON/OFF	Entire Line slow	Roller behind Chipper up/down	CC ifo Chipper interval	CC behind saw interval	Cant Conveyor 1 forward

R11	R12	R13	R14	R15	R16	R17	R18	R19	R20
Chipper open	get log			Release Centring Transport ON/OFF	Conveyor behind BS Forward/backward		Meas. Area Transport Forward/backward	Cant separator behind saw	Cant Transport Belt 1 forward

R21	R22	R23	R24	R25	R26	R27	R28	R29	R30
Line START / STOP	Cant/ Log	Chipper Centring Unit open	Chipper Centring Unit close	Release Infeed Transport ON/OFF				CC ifo chipper Impulse Tip	Cant Transport Belt 2 forward

R31	R32	R33	R34	R35	R36	R37	R38	R39	R40
Accept Log	Input Cant	Centring in front of chipper up/down	Centring in front of chipper open/close	Infeed Tip line forward	Entire Line back	Centre arms Infeed close	Prick Roller open/close	Cant separator ifo Chipper	Cant Conveyor 2 forward

2.3 Button functions left side

L1	L2	L3	L4	L5	L6	L7	L8
Chipper ON/OFF	Saw is running	Main Hydraulic ON/OFF	Hydraulic Infeed ON/OFF	Servo-Hydraulic ON/OFF	Automatic Cant ON/OFF	Automatic Logs ON/OFF	Horn light test

| L9	L10	L11	L12	L13	L14	L15	L16
Automatic Start Up ON	Automatic Start Up OFF					Control Voltage partition ON	Delete Error

3 Operate the system

In order to have a quick access to all sections of the system there are several hardware buttons ready to be used.

3.1 General functions

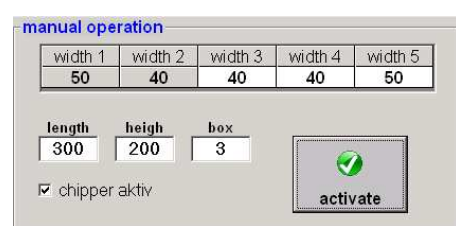|	No.	Button	Image: Complete saw line
Activation of the 2nd function (double assignment)	R1	Function	
The entire line from the Infeed to the end (area behind saw) runs with speed "slow"	R6	Entire Line slow	
Entire saw line starts and stops	R21	Line START / STOP	
Interaction with computer program "Optimization"	R22	Cant/ Log	
Entire saw line back	R36	Entire Line back	
Control of main hydraulic pump	L3	Main Hydraulic ON/OFF	
Control of hydraulic pump for the Infeed area	L4	Hydraulic Infeed ON/OFF	
Control of hydraulic pump for servo plunger of the band saw (horizontal movement)	L5	Servo-Hydraulic ON/OFF	
Cant return brings cants back into main line automatically.	L6	Automatic Cant ON/OFF	
Logs will be fed into main line automatically.	L7	Automatic Logs ON/OFF	
Activation of the horn (2nd function light test)	L8	Horn light test	
Ramp up of all drives, computer program will start all components successively.	L9	Automatic Start Up ON	
Immediate Stop of all drives within the saw line	L10	Automatic Start Up OFF	
Activation of the Control Voltage of one part of the saw line	L15	Control Voltage partition ON	
Reset after the occurrence of an error	L16	Delete Error	
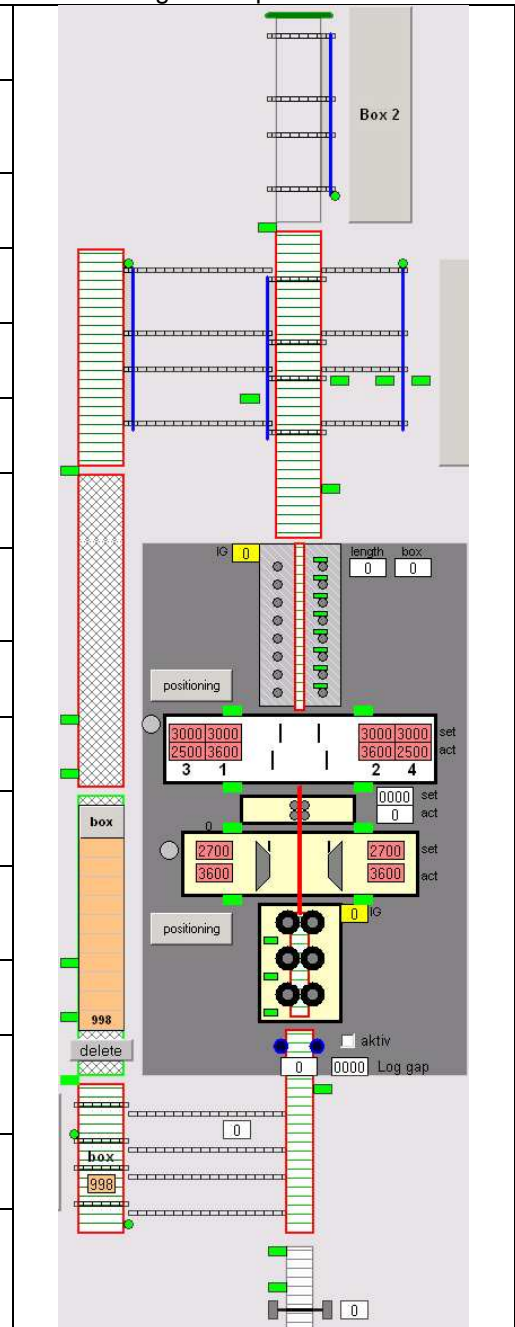
3.2   Manual operation

Image: Manual Operation

Normally the log data that is coming from the program "Pattern Optimization". The operator has the option to key in particular data manually. The data of one log will be transmitted by pressing the "active" button to the buffer memory.

No tick on box "Chipper active": Chipper is not active and will ignore the incoming logs.

manual operation				
width 1	width 2	width 3	width 4	width 5
50	40	40	40	50

length	heigh	box
300	200	3

☑ chipper aktiv   ✔ activate

3.3   Buffer Memory

Image: Buffer Memory

The buffer memory field is separated into two sections. Every time when the operator presses the button "active" (for manual operation) or log data will be sent from the program "Pattern Optimization" this buffer is filled with relevant log data. This buffer is working according to first in – first out principal.

After passing the chipper the current log position will disappear from the lower section. After passing the band saw the position will also disappear from the upper section.

	cur.no.	cant / log	width 1	width 2	width 3	width 4	width 5
1	8	log	50,0	50,0	60,0	50,0	50,0
2	9	cant	50,0	50,0	60,0	50,0	50,0
3	10	cant	50,0	40,0	40,0	40,0	50,0
4							
1	8	log	50,0	50,0	60,0	50,0	50,0
2	9	cant	50,0	50,0	60,0	50,0	50,0
3	10	cant	50,0	40,0	40,0	40,0	50,0
4							

3.4   Data / Service

Image: Data / Service

With the help of the menu to check resp. impact particular functions of the system.

Test active
Simulation of saw line operation, the computer program will assume that saw and chipper run.

Cutting height saw

Cutting height canter

Service position
Components of the saw line like band saw and chipper go into a parking position.

Get log from scanner
Dimension of last log will be put in the optimization again.
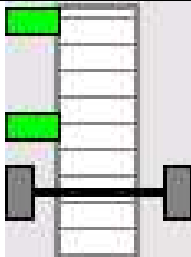
Accept log – Compare Chapter 3.6, R31
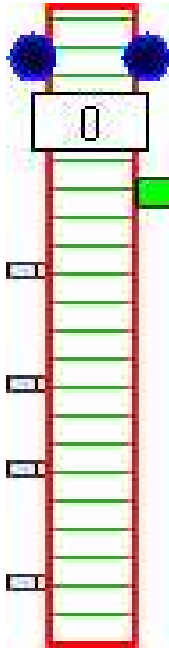Input canter – Compare Chapter 3.6, R32
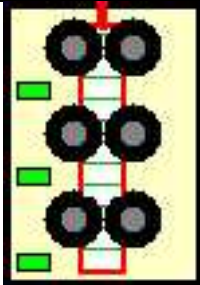Cant / Log - Compare Chapter 3.1, R22

data / service

☐ test aktiv

250 Cutting height saw

250 Cutting height canter

serviceposition

get log from scanner

Accept log

input cant

cant / log

3.5 Measuring area

	No.	Button	Image: Measuring area
This function controls the conveyor of the Measuring area. By using the key "function" (R1) the conveyor will go backwards (key combination for 2nd function)	R18	Meas. Area Transport Forward/ Backward	

3.6 Infeed

	No.	Button	Image: Infeed
This function sets an automatic Input of Cants and logs. There is no need for a manual intervention.	R2	Automatic Input Log/Cant ON/OFF	
Activation of the conveyor of the Infeed	R25	Release Infeed Transport ON/OFF	
The Infeed conveyor is moving as long as the operator is tipping this button.	R35	Infeed Tip line forward	
Exactly one log will be fed into the main line.	R12	get log	
Acceptation of one of the cutting pattern proposal (compare program "Pattern Optimization")	R31	Accept Log	
Input of Cant (manual intervention)	R32	Input Cant	
The Centre arms go in position "close" as long as the button is pressed. The cant resp. logs will be centred.	R37	Centre arms Infeed close	
Activation of Prick Rollers (log an be turned)	R38	Prick Roller open/close	

3.7 Centring in front of Chipper

	No.	Button	Image: Centring of front of Chipper
This unit has a conveyer that can be switched on/off separately with this button	R15	Release Centring Transport ON/OFF	
Lifting / Lowering the pressure rollers of the centring.	R33	Centring in front of chipper up/down	
Open / Close of the pressure rollers unit	R34	Centring in front of chipper open/close	

3.8 Chipper

Image: Chipper and Chipper Centring Unit

	No.	Button
Conveyor that is going through Chipper and Intermediate Control Unit can be switched ON/OFF.	R5	Release Saw Transport ON/OFF
Lifting / Lowering of Roller direct at the exit of the Chipper.	R7	Roller behind Chipper up/down
Chipper and all rollers open completely.	R11	Chipper Open
Opening of Chipper Centring Unit	R23	Chipper Centring Unit Open
Closing of Chipper Centring Unit Close	R24	Chipper Centring Unit close
Turn ON/OFF of Chipper unit	L1	Chipper ON/OFF

3.9 Band saw

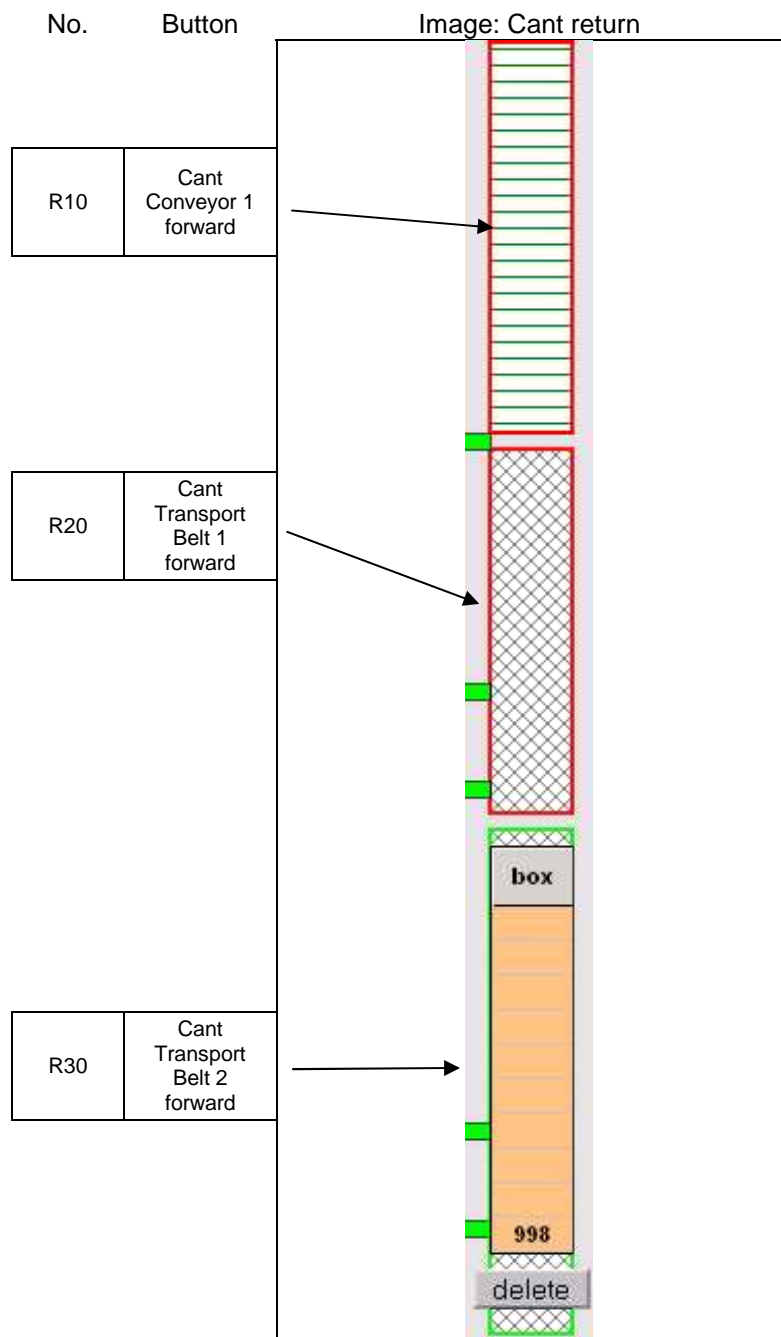|	No.	Button	Image: Band saw
This image shows the main band saw with all blades. The position of the blades is given in the red box (upper box: set point, lower box: actual value).	L2	Saw is running	

3.10 Board Separator (BS)

Image: Board Separator (BS)

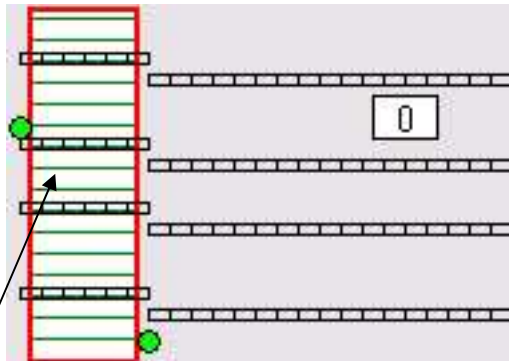|	No.	Button
Upper rollers of board separator will be opened resp. close (2nd function).	R3	BS: Upper roller 1-8 open/close
Side rollers of this board separator are located on the left side of the conveyor. This function opens (resp. closes) the side roller.	R4	BS: Side roller 1-8 up/down

3.11 Area behind band saw

Image. Cross conveyor behind saw.

	No.	Button
Cross conveyor behind band saw is put in mode "interval" . The CC is moving only in particular time frames.	R9	CC behind saw interval
Conveyor behind BS (left side) can be switched ON/OFF.	R16	Conveyor behind BS Forward/ Backwards
Cant separator behind saw is moving.	R19	Cant separator behind saw

3.12 Cant return

No.	Button	Image: Cant return
R10	Cant Conveyor 1 forward	
R20	Cant Transport Belt 1 forward	
R30	Cant Transport Belt 2 forward	

3.13 Cross Conveyor in front of Chipper

	No.	Button	Image: Cross Conveyor in front of Chipper
Cross Conveyor is moving only in particular time frames.	R8	CC ifo Chipper interval	
Cross Conveyor is moving to the next stop position.	R29	CC ifo chipper Impulse Tip	
Normally one cant / Log is taken for the Cant conveyor 2	R39	Cant separator ifo Chipper	
Cant conveyor 2 is moving forward	R40	Cant Conveyor 2 forward	

4   Parameters

4.1   PLC Parameter

These Parameters are defined during the start- and introduction phase by SDE and should not be changed later on.

Image:

4.2   PC Parameter

Mechanic
Kerf width – Enter width of Kerf

Chipper overrun dimension / Saw overrun
When a cant runs through the saw line chipper and saw blades kept this distance to the cant. It should be save that the blades do not thought the cant.

Offset hand
See Offset

Log gap
Definition of gap between each log

Image: PC-Parameter

Miscellaneous
Printer connected? – If there is a tick in this box the program will send all printer jobs to the printer interface. Otherwise the print information will be shown on the screen.

Check password – If the submenu "Parameter" is called the system will ask for a password. Without activation this option the operator can only read the parameter (recommended).
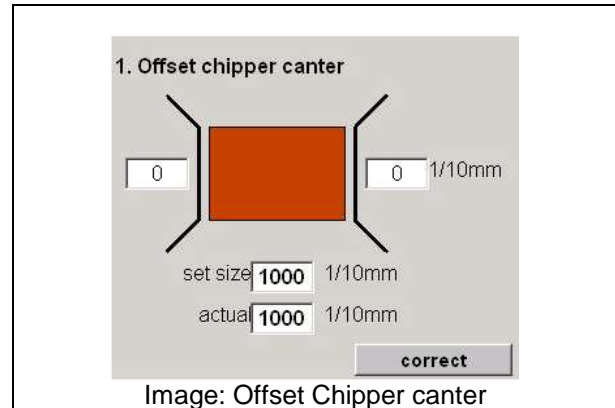
4.3   Offset

This step is necessary to calibrate the saw line. This values are defined during the start phase of the saw line by SDE and should not be changed later.

4.3.1   Offset Chipper Canter

Enter the set point (width) of the cant for the first run. Than measure the with of the cant and fill it in box "actual".

Press "correct", the computer system calculates the correction value. This value appears at pc-parameter > offset hand. If necessary this value can be defined manually.

Image: Offset Chipper canter

4.3.2   Offset Saw 1

After the second run please measure the with of both cants (left and right) and fill in at "actual".

Image: Offset saw 1
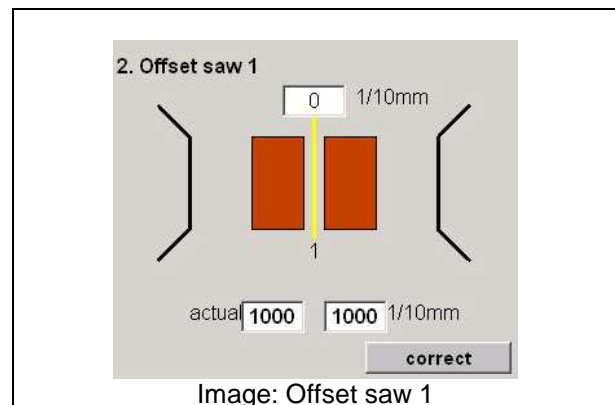
4.3.3   Offset Saw 2 – 4

Enter a realistic dimension (width) for tree cants you want to get after a third run.

Run the cant through the saw and measure the real dimension. Enter the real dimension at "actual" and press "correct".

Image: Offset saw 2 - 4

5   IO-Test

5.1   Submenu I / O Test

This I/O Test offers the opportunity to valances of all bytes of the PLC.

- Input und Output bytes
- Input and Output words
- Marker words
- Counter
- timer

The valances can be shown in Dual, Decimal and Hexadecimal code. The data blocks 120, 121 and 122 are also displayed in this submenu. They are important fort he internal data exchange.

This submenu is a useful support during the ramp up phase of the saw line. It can also be used for the troubleshooting purpose.

5.2   Interbus

This Submenu is needed for troubleshooting if the field bus system is not working anymore. It is not relevant fort he operator and his work.

5.3   Topology Interbus

This submenu shows the Interbus Topology of the system. This system is responsible fort he data communication between the PC and all final control elements (e. g. Input sensors, relays, valves etc.)

Image: I / O Test

Image: Interbus

Image: Topologie Interbus

6   Measuring Module

6.1   Main menu of the measuring module

This measuring module starts automatically when the computer system is ramped up. It is working in the background during the entire working process of the saw line.

The operator can use this menu in order to monitor momentary values during the measuring process of a log. This can be helpful in case of troubleshooting.
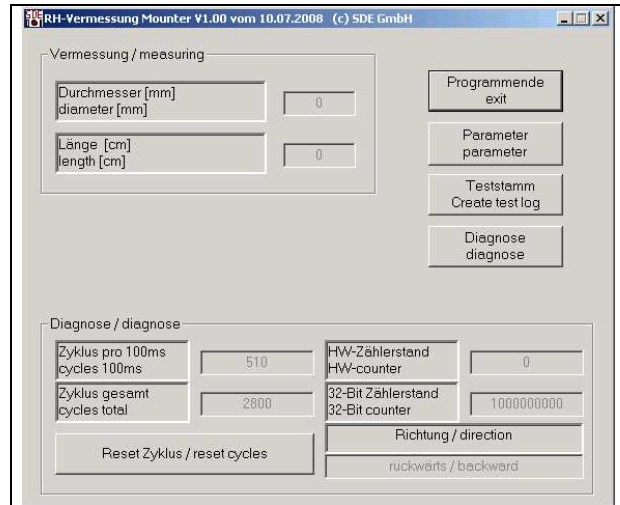
Image: Measuring module

6.2   Parameter

This submenu contains the parameter of the measuring module. Theses parameters have to be set in a way that the saw line is working properly.

These parameters are defined during the installation phase and should only be changed by skilled persons.
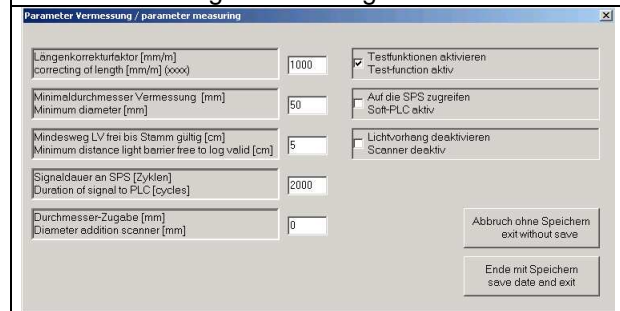
Image: Parameter of Measuring module

6.3   Diagnostic

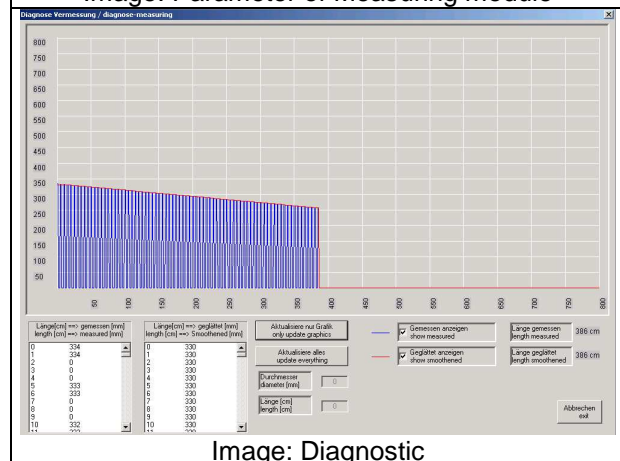The program shows the length- und diameter profile of the current log.

Image: Diagnostic