

## KAPA 4G

### NON CONTACT THICKNESS MEASURING DEVICE

This non-contact thickness measuring device is for films up to 2 mm thickness, a maximum width of 4,5 m and with an accuracy of  $\leq 0,1 \mu\text{m}$ . It is equipped with dual sensor, capacitive and eddy current.

#### Composed of:

- Measuring frame with integrated control cabinet
- Traversing unit with electrical drive
- Measuring sensor mounted on a pneumatic lift-off-device on the traversing unit
- Control cabinet with industrial PC, 17" Monitor, keyboard drawer with trackball
- Connection cable PC-measuring frame, 10m length

#### Visualisation

- Cross profile diagram as bolt and line chart
- Trend and SPC analysis
- Roll protocol
- Recipe storage
- Alarm and history



Technical Data:	KAPA 4G
Measuring system	capacitive/eddy current
Max. measuring thickness	2000 $\mu\text{m}$
Measuring gap	4,5 mm
Diameter of the sensor	30 mm
Measuring spot diameter	12 mm
Sensor resolution	0,05 $\mu\text{m}$
Accuracy	$\leq 0,1 \mu\text{m}$
Measuring speed	10 – 300 mm/s adjustable
Calibration	necessary for each material
Diameter of the reference roller	200 mm
Dimension of control cabinet	600x600x1960 mm
Colour:	RAL 7035/7022

# Thickness gauges



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Electrical Supply:	KAPA 4G
Supply voltage:	115/230 VAC $\pm$ 10 %
Supply frequency:	50/60 Hz $\pm$ 1 %
Max. power consumption:	700 W
Max. current consumption:	5 A
Electrical equipment to EN 60204	

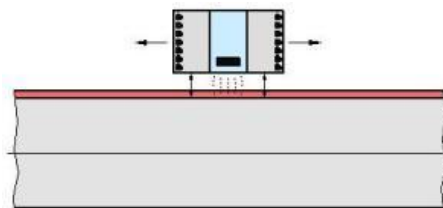
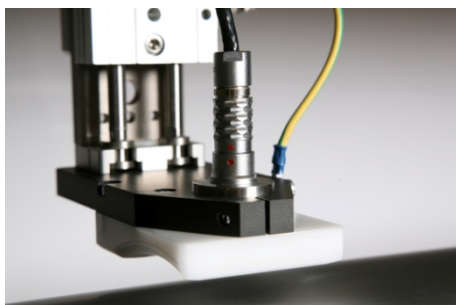
Supply compressed air:	
Operating pressure:	6 bar

Ambience:	
Max. ambient temperature:	40°C
Max. air humidity:	95%, without condensation
Max. film temperature:	90°C
Documentation:	Every EU Language

### Measuring principle:

Non-contact indirect thickness measurement.

The capacity between sensor and roll is measured and the thickness calculated (according calibration). The capacity depends also on the distance sensor to roller, therefore this distance is measured constantly with an eddy current sensor (located together with capacitive sensor in same casing). According to the result of the eddy current measurement the capacitive is corrected.



### Calibration:

The sensor is placed on a fixed position (no traversing) during production, a piece of sheet needs to be cut out at the sensors position and measured manually for calibration. Calibration is only required once per material or formulation and can be stored in the recipe.

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### Features/Screen frames:

Description of most important screen shots

#### Line chart:

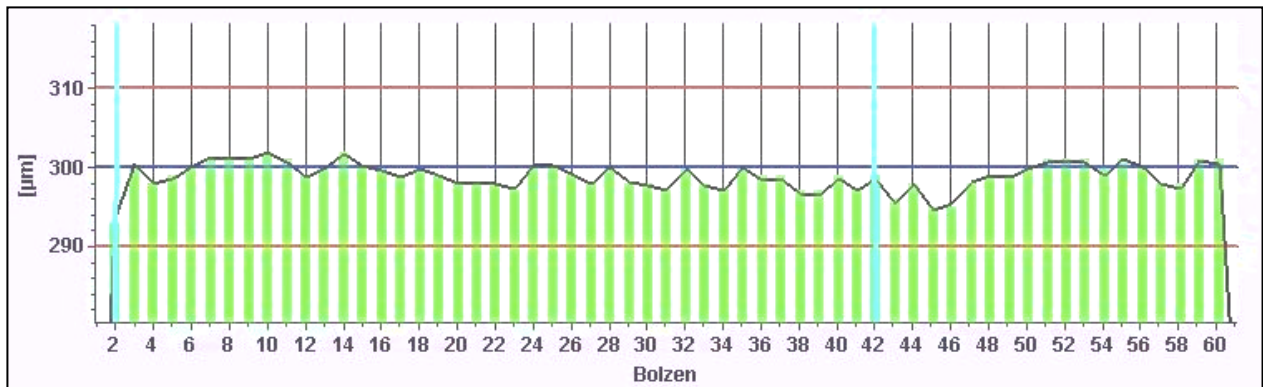
- Actual thickness profile displayed over measuring width
- Average profile of last 3 scans
- Reference curve: freeze actual profile for comparing with future profiles – reference curve can be stored and reloaded.
- Net width

#### Bolt diagram:

- Actual thickness profile displayed over bolt numbers
- Average profile of last 3 scans
- Reference curve: freeze actual profile for comparing with future profiles – reference curve can be stored and reloaded.
- Net width

#### Numeric displays:

- Actual thickness ( $\mu\text{m}$ ) according displayed sensor position
- Average thickness according cross profile, 2 Sigma value, min. and max. thickness
- Tolerance set values
- Thickness set value
- Net width set value



Bolt diagram

#### Inspect mode:

Zoom in graphics (thickness profile and bolt diagram) for close inspection

#### Trend diagram:

- Trend diagram shows process over 24 hours
- Most important values like set value, actual/average thickness according cross profile, min. and max. 2 Sigma, tolerances and line speed will be displayed in a line diagram.

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### Buttons:

- Production parameter (opens frame: production parameter)
- Calibration (opens frame: calibration)
- Analysis (opens frame: analysis)
- Password (enables setting of passwords for different protected frames)
- Alarms (displays alarm in readable text)
- Print
- Roll changing (reset parameters of frame production parameters, running meter e.g.)
- Roll protocol (report of every roll can be displayed, stored and printed)

### Production parameter

Frame for setting production parameter

- Data of order: order nr., customers name, article nr., ....
- Production parameter: thickness set value, + and – tolerances, resolution of displays, net width, etc.

### Analysis:

This frame displays production data and trends

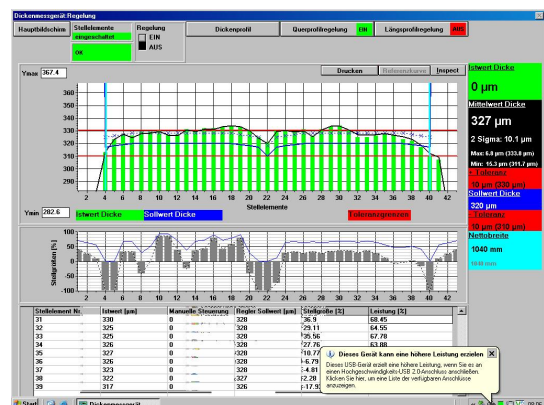
- Production data: time of start, time since start or roll changing, running meter since roll changing, weight, speed, etc.
- Trend: Displays trend graphics of last 24 hours, older trends are stored and can be loaded for viewing and printing. Trend graphics shows thickness average, set value and tolerances.

### Thickness Control

Optional frames for control of thickness with automatically adjusted extrusion dies (offered by SBI)



Main screen: thickness- and bolts diagram



Thickness control (option)