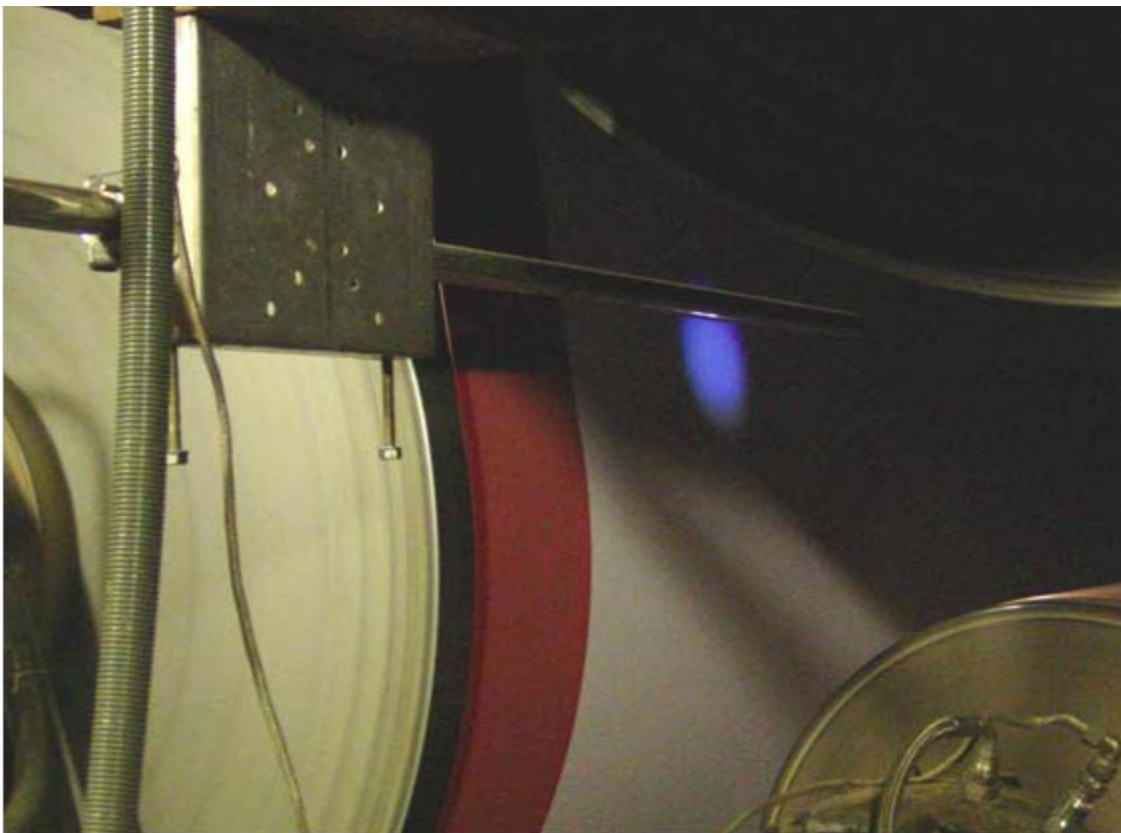


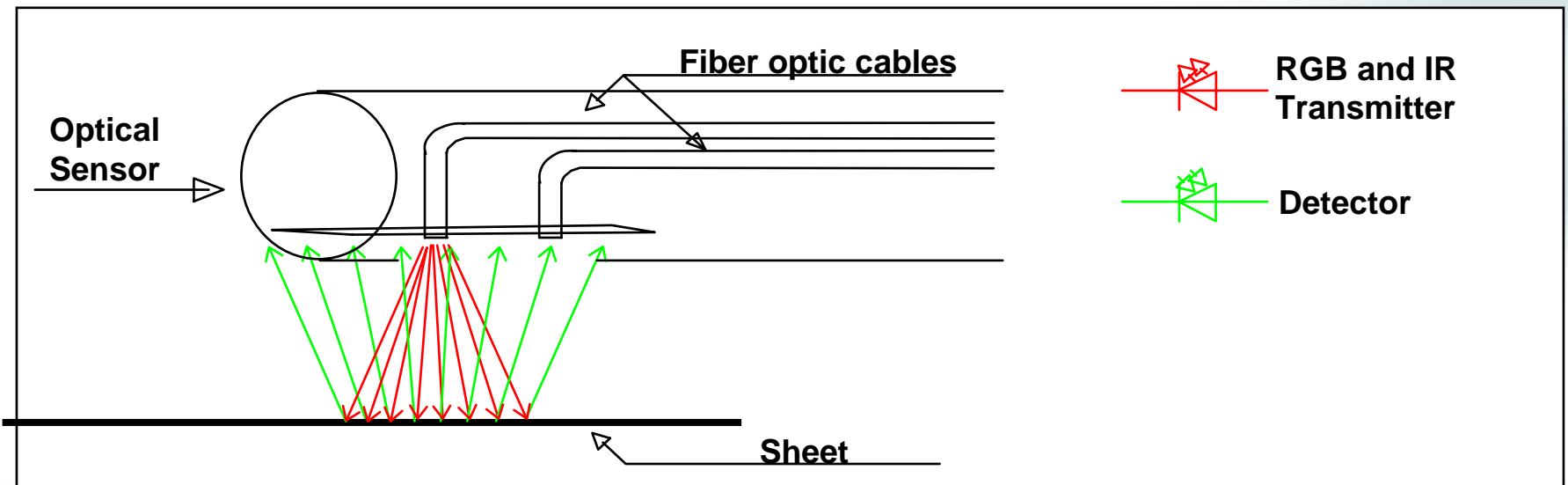


KB Fiber Optic Sheet Break Detector



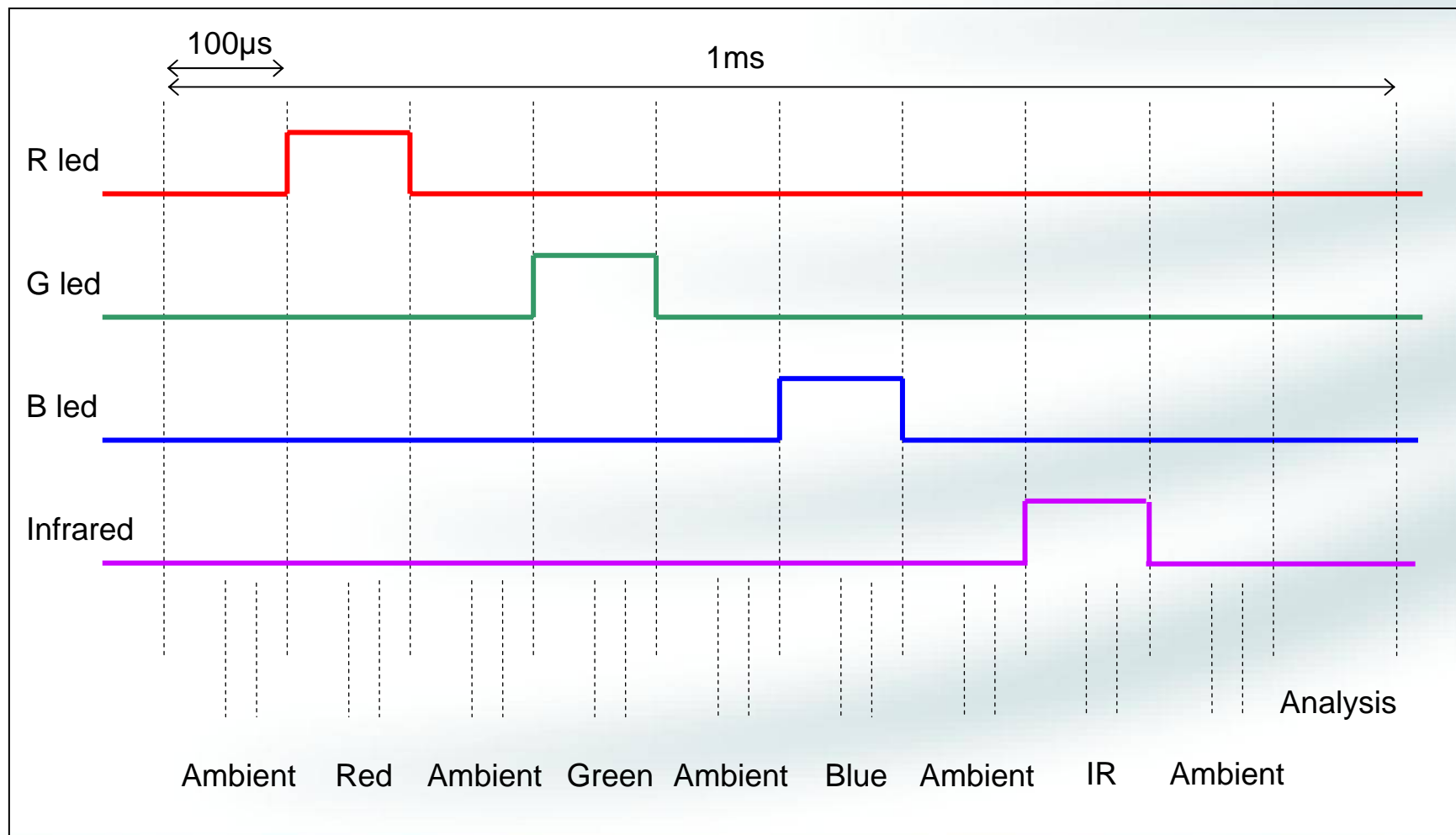
KB Measurement Principle

- Dual light source to cover any application
 - RGB light source for color measurement
 - Infra-Red source (880 nm)
- Fiber-Optic transfers light from transmitter to sensor head
- Non-Contacting sensor head, 10 – 30 cm (4-12”) from sheet



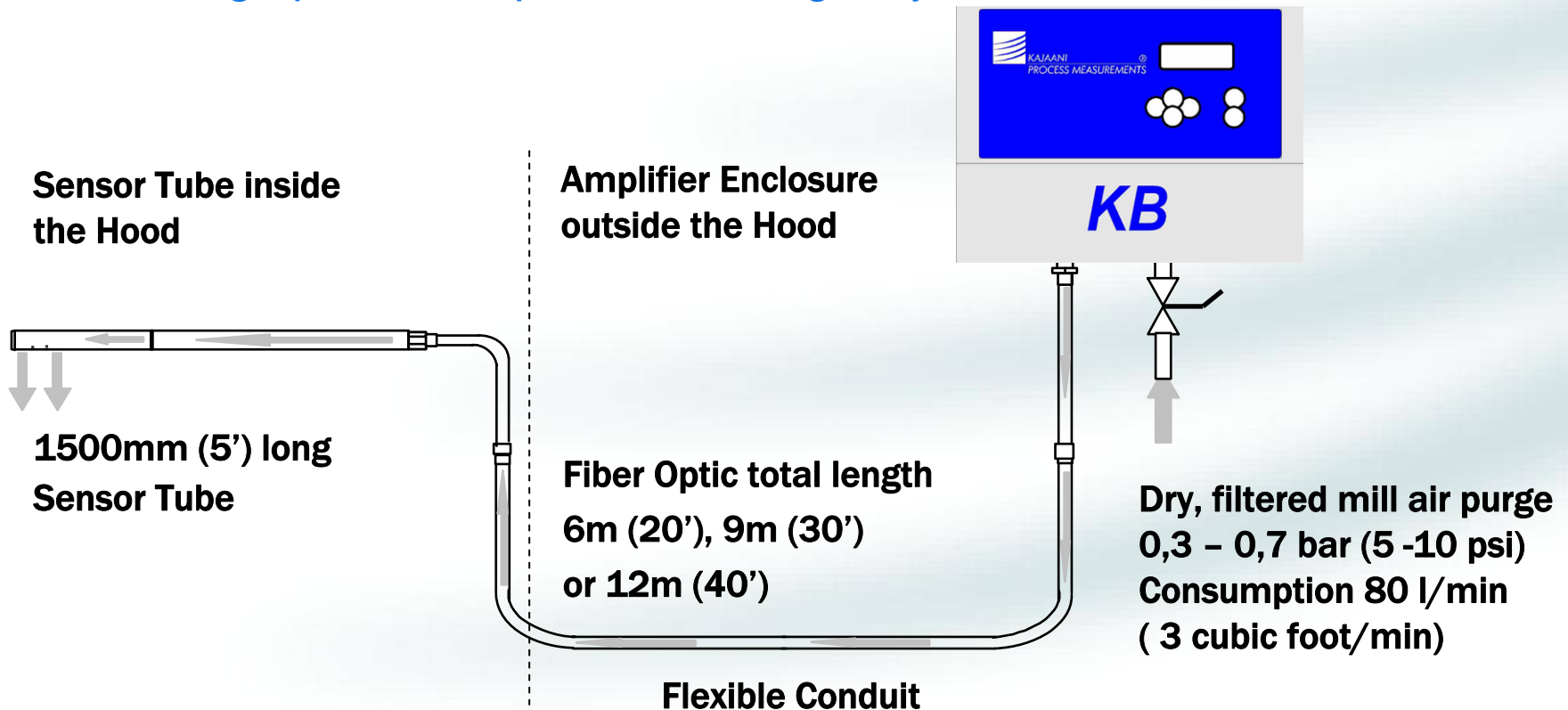


KB Measurement sequence



KB System Components

- Sensor Tube and Conduit Housing protect Fiber Optic Cable
 - Air Purge prevents optics becoming dirty
- Display Unit**
- 2 Relay Outputs
 - RS485
 - 4-20mA Output optional



KB Superior reliability with color measurement

- RGB signals used to separate the sheet from the fabric
- Measurement colors with biggest difference selected for break detection
- Automatic level adjustment to avoid long term drifting
- PC program to visualize and set up the sheet break signal

KB PC terminal v1.1 (Log File:07070946.csv)

CONTROL

Start

Stop

COM PORT

- COM1
- COM2
- COM3
- COM4
- COM5
- COM6
- COM7
- COM8

LOG FILE OPTIONS

Save to file

Add date/time

New file at 00:00

Snap(Sec)(0=All)

Filename: 07070946.csv

RGB/CMY Color Wheel

Show Break Log

R	G	B	IR	Ambient %
298	298	298	0	21
299	298	298	0	22
298	298	298	0	22
298	298	298	0	22
300	298	298	0	22
300	299	298	0	22
299	298	298	0	22
298	298	297	0	22
299	299	298	0	22
299	299	298	0	22
299	299	298	0	22
299	298	297	0	23
299	299	298	0	23
300	299	298	0	23
298	299	298	0	23

Break Detection Output state

Normal Operation ■

Alarm Output state

No Alarm ■

Chrominances Lum IR

298 299 298 895 0

Surface color

R gain

G gain

B gain

Luminance gain

IR gain

Local Zero

R

G

B

IR

Take Local Zero

Clear Local Zero

Default Gain Save Local adj.

Break detection

■ Sheet On, white detection

■ Break, red wire

KB PC terminal v1.1 (Log File:07070946.csv)

CONTROL

Start

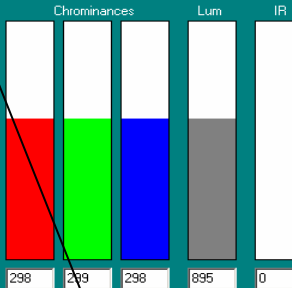
Stop

COM PORT

- COM1
- COM2
- COM3
- COM4
- COM5
- COM6
- COM7
- COM8

R	G	B	IR	Ambient %
298	298	298	0	21
299	298	298	0	22
298	298	298	0	22
298	298	298	0	22
300	298	298	0	22
300	299	298	0	22
299	298	298	0	22
298	298	297	0	22
299	299	298	0	22
299	299	298	0	22
299	298	297	0	23
299	299	298	0	23
300	299	298	0	23
298	299	298	0	23

Chrominances



298 299 298 895 0

Lum

IR

LOG FILE OPTIONS

- Save to file
- Add date/time
- New file at 00:00

Snap(Sec)[0-All] 1

Filename: 07070946.csv

Break Detection Output state

Normal Operation

Alarm Output state

No Alarm

Local Zero

R 0

G 0

B 0

IR 0

Take Local Zero

Clear Local Zero

R gain

G gain

B gain

Luminance gain

IR gain

Default Gain

Save Local adj.

KB PC terminal v1.1 (Log File:07070946.csv)

CONTROL

Start

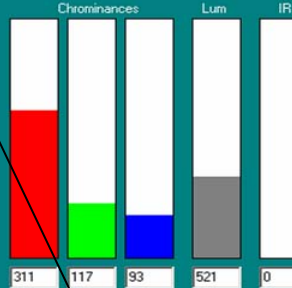
Stop

COM PORT

- COM1
- COM2
- COM3
- COM4
- COM5
- COM6
- COM7
- COM8

R	G	B	IR	Ambient %
305	116	97	0	28
311	121	99	0	26
309	119	98	0	26
310	118	98	0	26
306	117	96	0	26
304	115	94	0	26
302	114	95	0	26
305	115	95	0	26
304	115	92	0	26
311	118	95	0	26
310	119	95	0	26
308	115	93	0	26
310	117	94	0	26
309	116	93	0	26
311	117	93	0	25

Chrominances



311 117 93 521 0

Lum

IR

LOG FILE OPTIONS

- Save to file
- Add date/time
- New file at 00:00

Snap(Sec)[0-All] 1

Filename: 07070946.csv

Break Detection Output state

Break Detected

Alarm Output state

No Alarm

Local Zero

R 0

G 0

B 0

IR 0

Take Local Zero

Clear Local Zero

R gain

G gain

B gain

Luminance gain

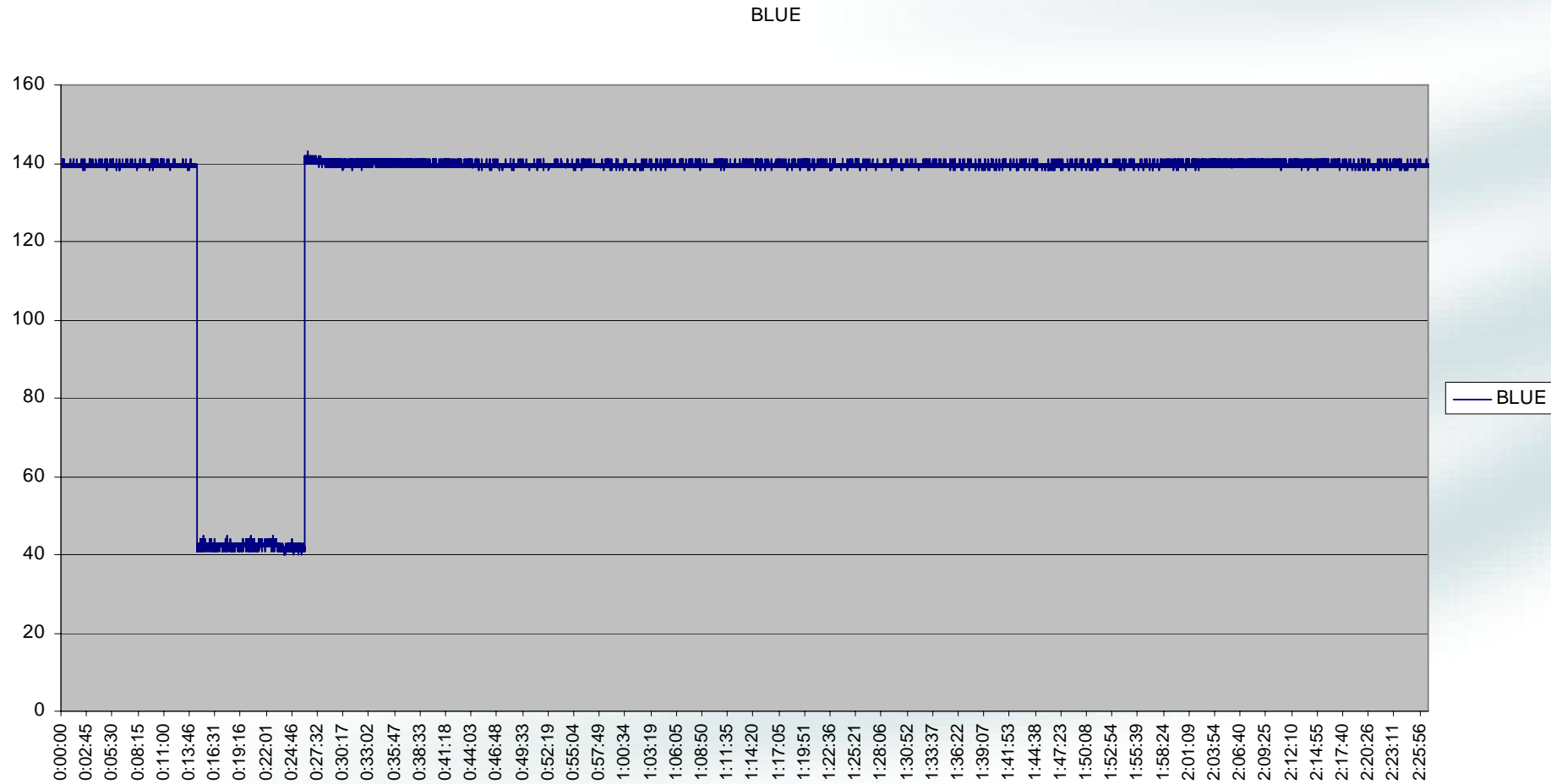
IR gain

Default Gain

Save Local adj.



White paper on Red Wire, Blue signal

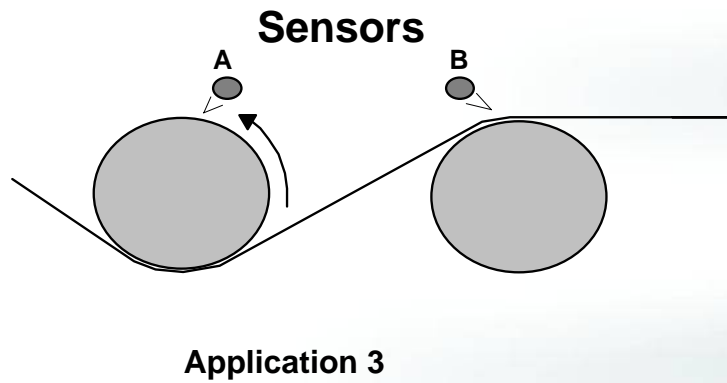
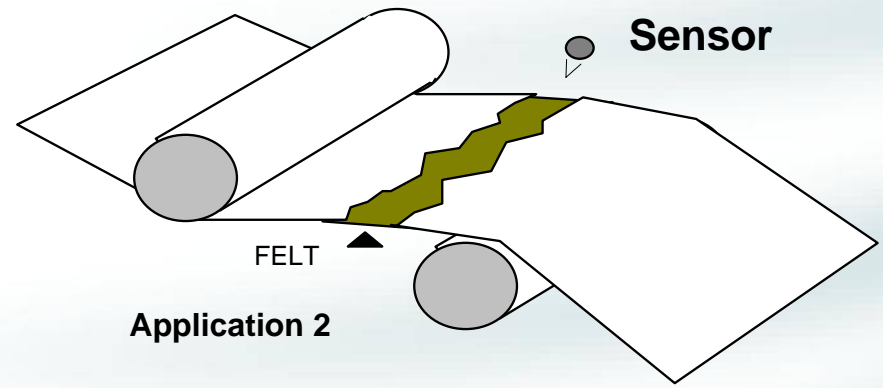
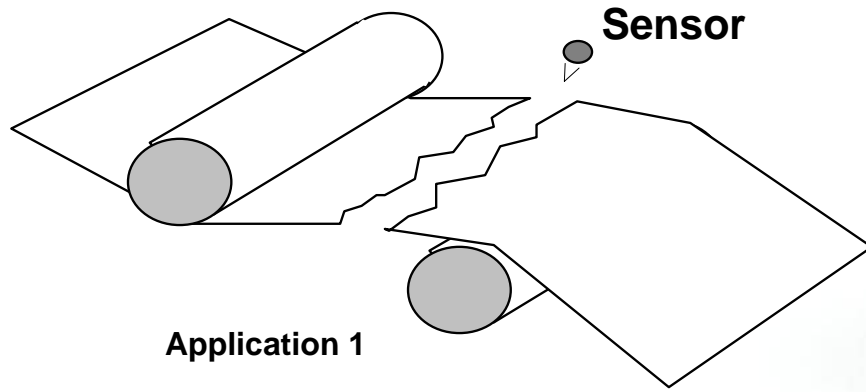


KB Display Unit and the Sensor Head



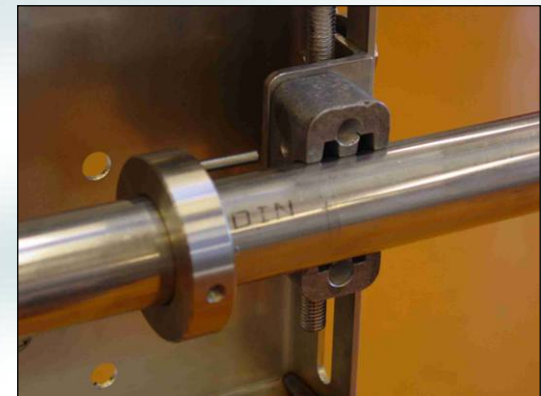
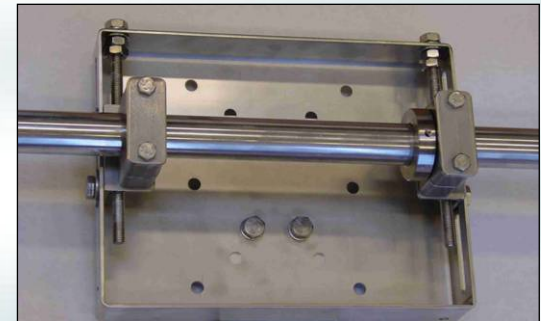


KB Applications



KB Installation

- Easy installation to PM frame
- Sensor approximately 10-30 cm (4"-12") away from the sheet
- Adjustable mounting rack available for easy set up
- All needed installation hardware can be included in the delivery
- Installation position and orientation of the sensor memorized with the new mounting rack



KB Specifications

- Ambient Temperature Sensor head and fiber optic cable: -10 to 180 °C (15 °F to 356 °F)
Electronics unit: -10 to 60 °C (15 °F to 140 °F)
- Fiber Optic Cable KB/6: 6 m (20'), KB/9: 9 m (30') or KB/12: 12m (40')
- Fiber Optic Flexible airtight conduit, 20 mm (3/4") ID min, available as an option.
- Conduit Connection 19 mm (3/4 ") BSP
- Installation Sensor can be located a distance of 5...30 cm (2...10") from the web.
- LED Pulse Frequency 1 kHz
- Power Supply 90 - 264 VAC, 50/60 Hz, 15 W
- Enclosure Class IP 66 (Nema 4X)
- Purge Air Connection Dry instrument air, 6/4 mm (1/8") connector, normal consumption 80l/min (3 cubic foot/min)

KB Specifications cont.

- Digital Outputs 2 x Closing or opening contact max. 250 VAC, 2A; 220VDC, 2 A for Break signal and Maintenance alarm
- Alarm Output Delay Min. 15 ms from the actual break, selectable
- Analog Outputs Optional 3 pcs 4 - 20 mA max 600 ohm
- PC Connection KB PC terminal for set up and monitoring as an option
RS 485 connection to PC.
Optional RS-485 / RS-232 converter for PC
- Dimensions (LxHxD) and Weight Electronics Unit 323 x 237 x 70 mm (12,7 x 9,3 x 2,8”), 2,5 kg (5lbs)
Sensor head Ø 33 mm (1 1/4 ") SS316L pipe 1500 mm (59”) long, 4 kg (9lbs)

KB Summary

- Detects Sheet Breaks on paper, board and pulp machine on press and drying section
- Detects sheet against “Air”, Felt, Roll
 - Reliable felt detection with RGB color measurement
- Extremely reliable, no false alarms
- Designed for difficult environment (dirt, steam, high temperature)
- Can be installed in limited space