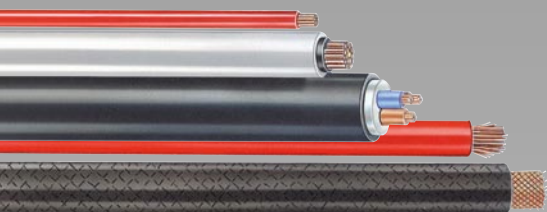
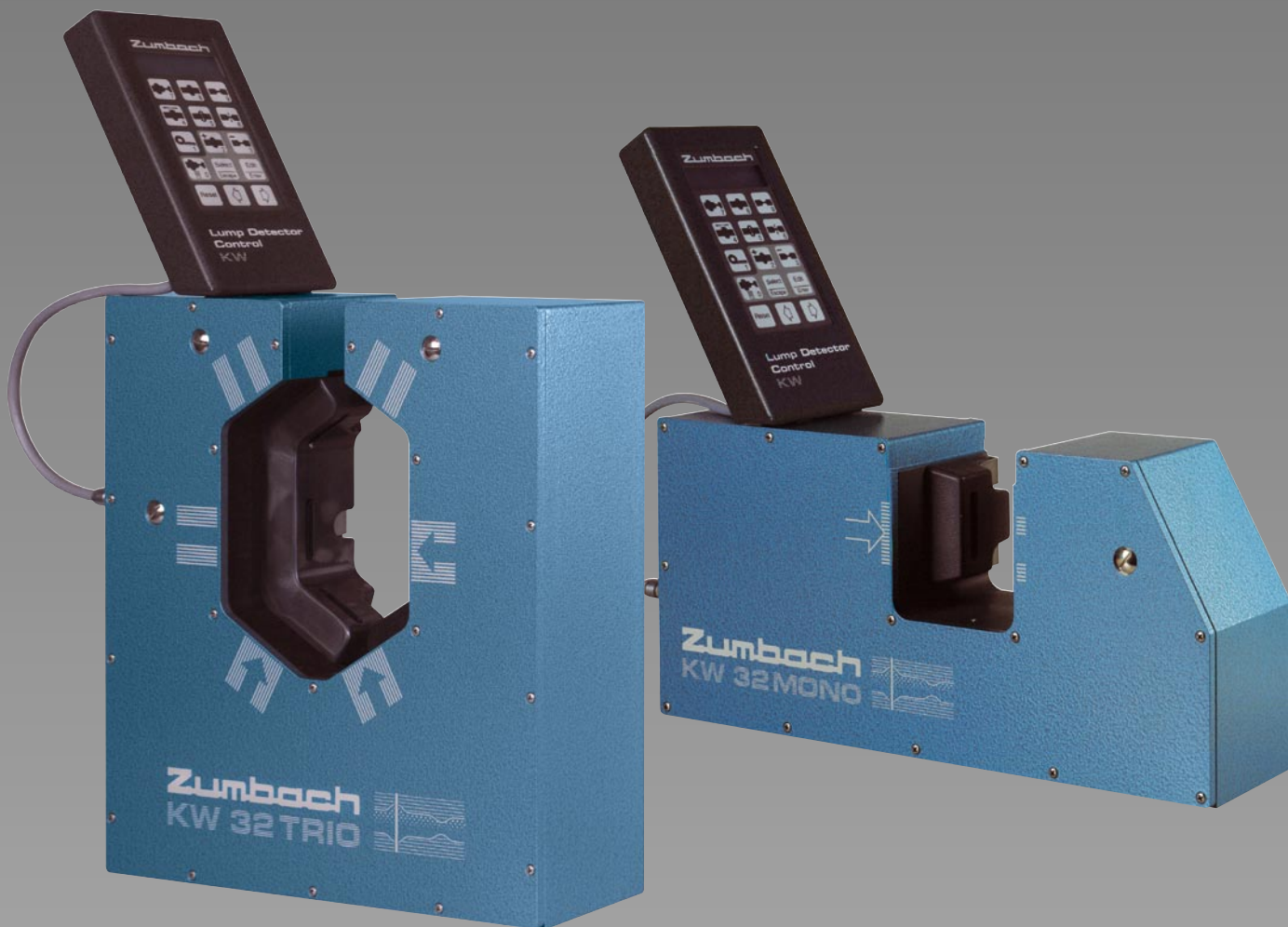
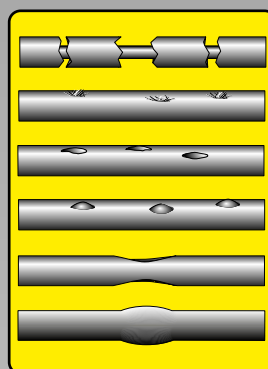


# KW 32 TRIO & MONO

**3-axis and 1-axis on-line lump and neckdown detectors.  
The new solution for even better reliability  
in fault detection.**



- Extruded wire and jackets
- Tubing, hoses
- Braidings
- Taping
- Enamelling



- Lumps
- Neckdowns
- Burls
- Breaks
- Projecting wires or fibres
- Splices

## New concept in optics and electronics

The new lump detectors **KW 32TRIO** and **MONO** are based on ZUMBACH's many years of experience in development and production of optical diameter, measurement and fault detection. They offer numerous new advantages, such as:

- 3 times higher certainty of detection
- flexible mounting concept
- operation and display concept in a "mobile telephone" design
- micro-processor for intelligent fault analysis and classification
- theoretically unlimited lifetime
- detailed fault log
- interface for computer connection
- insensitive to stray light
- integrated air purging

2 versions are available: model KW 32TRIO for demanding applications and model KW 32MONO for standard cases.

## Increasing requirements for fault detection

In extrusion, the sheathing, enamelling, drawing and in other processes, the requirements for a safe and flawless detection of surface faults are increasing. That is why the use of optical fault and neckdown detectors has been common in the industry for quite some time.

Very often, in wire and cable products, the fault covers only a limited angle on the product circumference, e.g. small bumps or blisters. Two-axis (X/Y)-detectors are often used, however even 2 axis systems have a limited probability to detect such faults.

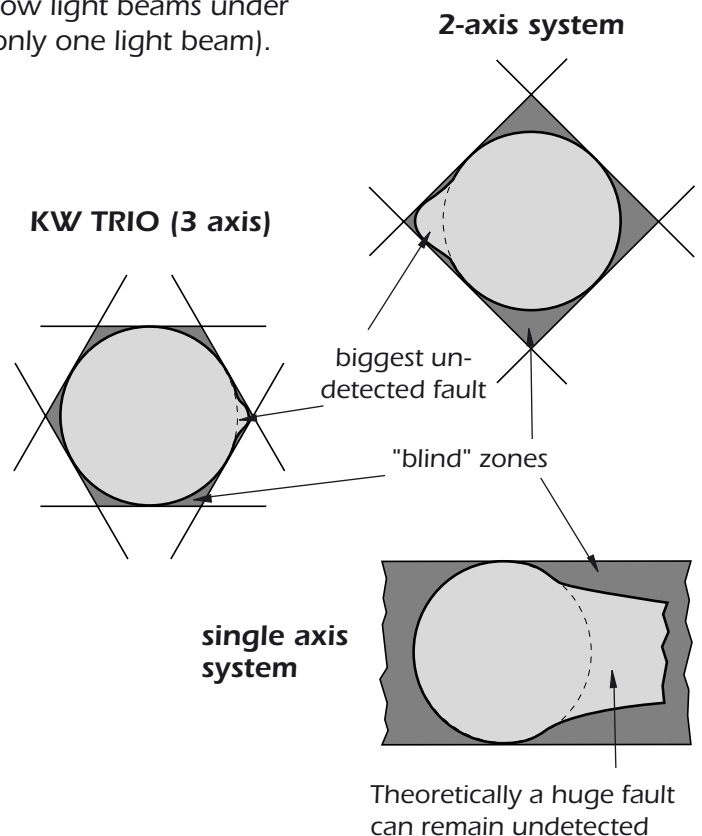
**The three axis system model KW 32TRIO was developed to improve the detection probability. It yields a detection safety level which is almost 3 times higher than for two-axis systems.**

## Optical principle

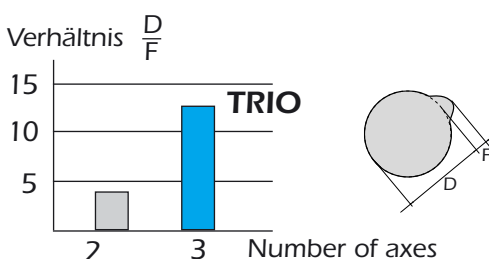
A highly developed optical system generates 3 narrow light beams under 60° in the same plane (for KW 32 MONO, there is only one light beam).

3 individual detectors simultaneously register any minor variation of the light received due to product faults. The faults are detected even if they are very short and pass by at high speeds.

With the **TRIO** concept, the "blind" zones have been reduced drastically, in comparison with 2-axis and single axis systems. The result is a much higher detection safety and higher sensitivity. The two graphics illustrate the principle and the proportions.



## Detection level with respect to height of fault



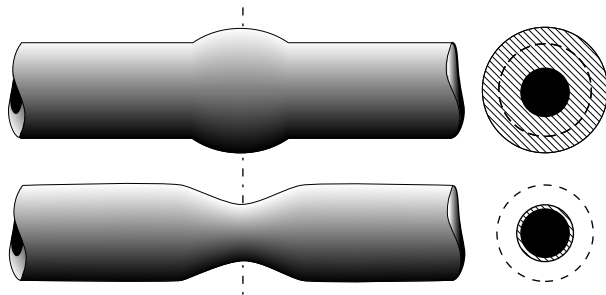
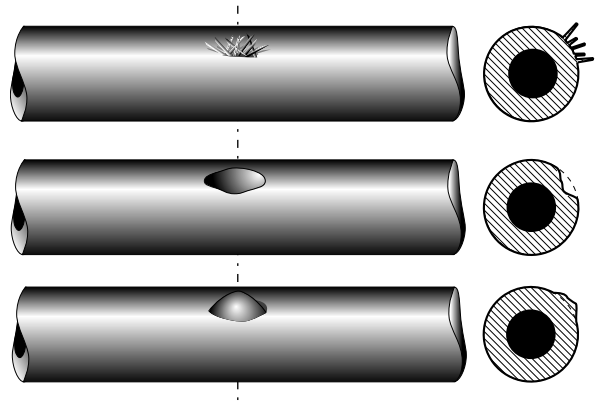
## Application of 3-axis and 1-axis detectors

### KW 32TRIO

Basically always use when "zero faults" is a must.

In particular, when the fault is not necessarily apparent all around the product.

Slightly higher in price, but much more certain.



### KW 32MONO

Always use when the fault can be seen all around the product.

Or when many faults in various orientations follow each other.

Economical solution for the above cases.

## Display and functions

Data input, processing and display are made easy by the clear back-lit LCD display and powerful processor. The operating prompts are in clear text. Languages English, French and German are selectable.

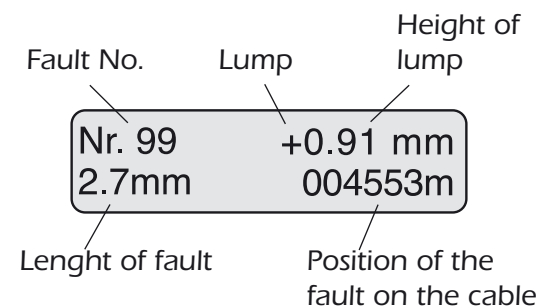
### Data entry

- Configuration
- Tolerance limit for lumps
- Tolerance limit for neckdowns
- Max. number of faults

### Available on the display or at the computer interface

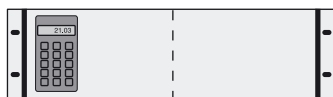
- Fault table (last 100)
- Total length
- Largest lump
- Largest neckdown
- Longest fault
- Total number of lumps
- Total number of neckdowns
- velocity
- etc.

### Typical display



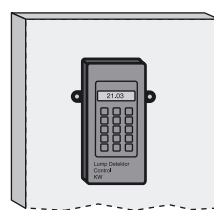
## Flexible mounting

The measuring head can be mounted in any orientation depending on the need, e.g. upside down or horizontal. The mobile and compact control unit can be mounted anywhere accessible and visible, up to 100 m from the measuring head.



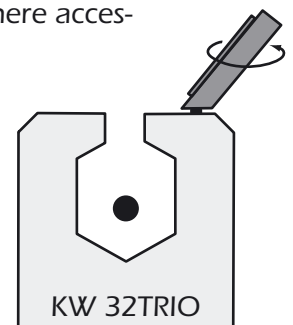
### In 19" module

As full 19" chassis or as partial 19" cassette, in combination with other ZUMBACH units



### Wall mounting

Anywhere against a wall panel, table, etc.



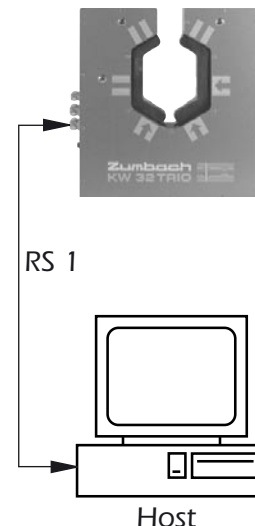
### On the measuring head

Directly mounted on the measuring head, and orientable.

Technical Data		KW 32TRIO	KW 32MONO
Temperature	Operation	0...45° C (32...113° F)	
	Storage	-20...50° C (-4...122° F)	
Humidity	Operation	max. 80% (non condensing)	
	Storage	max. 95% (non condensing)	
<b>Measuring head</b>			
Light source		Infrared LED	
Measuring field		32 mm (1.26 in.)	
Number of measuring axes		3	1
Min. length of fault		0.5 mm (.02 in.)	
Tolerance setting:	range	0.02 - 6.50 mm (.0008 - .2559 in.)	
	resolution	0.01 mm (.0001 in.)	
Smallest detectable fault (High)		approx. 0.02 mm* (.0008 in.)*	
Recovery time		85 µs**	
Max. speed		2500 m/min (8200 ft./min.)	
Interface	Host connection RS1	RS-232/-422/-485	
	Control unit RS2	RS-485, PROFIBUS DP***	
Analog output		± 12 V	
Protection class		Meas. field: IP 65, Supply zone: IP 51	
Weight (incl. control unit)		8 kg (17.6 lbs.)	5 kg (11 lbs.)
Dimensions (LxHxD)		see below	see below
Power supply		85...264 V / 47...63 Hz	
<b>Control unit and display</b>			
Interface		RS-485	
Protection class		Keyboard: IP 65, Rear panel: IP 51	
Weight		0.2 kg (0.44 lbs)	

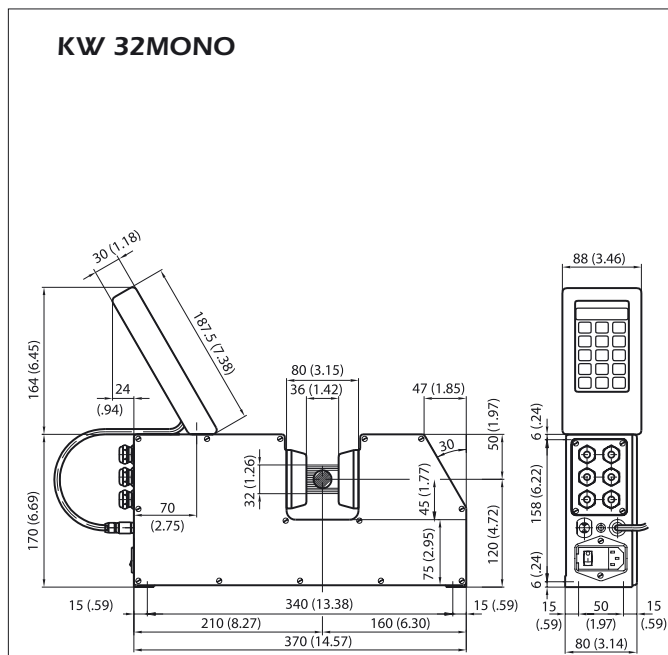
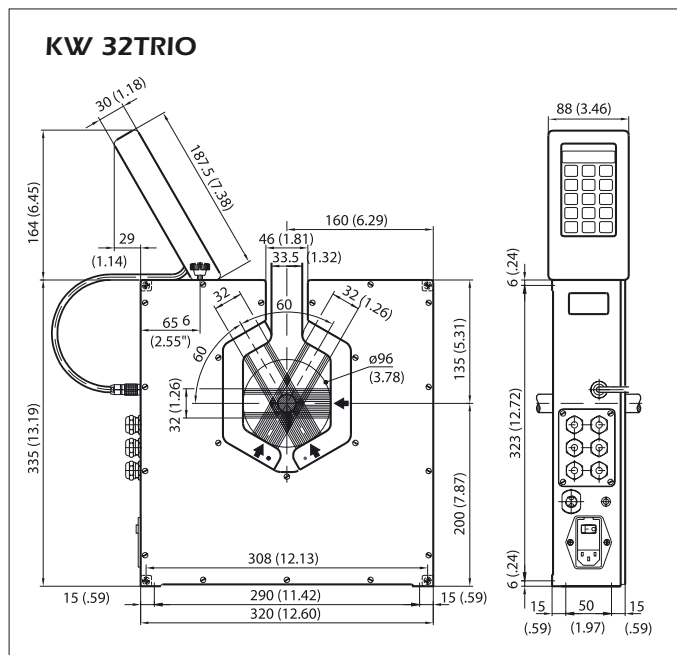
## Communication

Over the serial interface KW 32 units can exchange all data with a computer or PLC, without the need of the manual control unit. Standard ZUMBACH up/download protocols are used.



- \* In practice limited by the product surface condition, e.g. dirt, waterfilm etc.
- \*\* This means that after 85 µs after the end of the fault the KW 32 is again ready.  
Example: At 1000 m/min the shortest distance between 2 faults will be approx. 1.5 mm only.
- \*\*\* With PROFIBUS DP option one service port with RS 232/485 is supported.

## Dimensions



Dimensions in mm (in.)

- Technical specifications are subject to change without notice

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