

# Zumbach

SWISS PRIME MEASURING SINCE 1957

## KW 13/33TRIO

Lump and Neckdown Detector Series

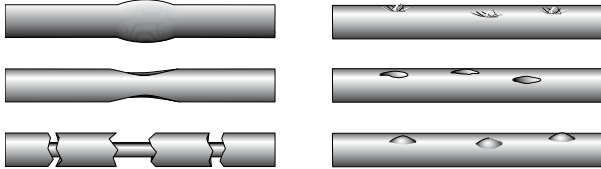


Lump & Neckdown Detection of the Highest Level

## KW TRIO – WHENEVER HIGHEST QUALITY IS REQUIRED

For continuous quality control, lump & neckdown detectors are as important as diameter gauges and spark testers. The new line of KW TRIO detectors capture with the highest accuracy, reliability and velocity, even the smallest lumps and neck downs in wires, conductors, optical fibres, cables, tubes and hoses.

3-axis detectors provide more precise detection of short-term faults, because very often, in wire and cable products, the fault covers only a limited angle on the product circumference, e.g. small bumps or blisters.



### The experience of a pioneer for on-line measurement

Our lump and neckdown detectors are based on ZUMBACH's experience of almost 60 years in development and production of optical diameter measurement and fault detection solutions. In order to detect product defects quickly and reliably, ZUMBACH offers fault detectors based on the latest technologies to ensure that high quality products can be produced reliably and with the utmost efficiency.

### Advantages

- 3 times higher certainty of detection as with models with less axes
- Flexible mounting concept
- Remote operation and display unit
- Micro-processor for intelligent fault analysis and classification
- Integrated air purging of the measuring windows
- Theoretically unlimited lifetime
- Detailed fault log
- Insensitive to stray light

Thanks to the very compact design, the lump & neckdown detector can easily be integrated in any extrusion line or rewinding process. The measuring field is dimensioned in such a way that during the start-up, even extremely big lumps pass smoothly through. Its open design enables quick and easy threading of the product without stopping production.

### Interfaces for easy integration

Versatile use of the KW TRIO is guaranteed thanks to multiple interfaces. Via the serial RS port, connection can be made to one of the well known USYS data acquisition, processing and display systems. The Profibus DP and Ethernet versions allow the connection to a higher-level host, such as a PLC or data acquisition system.

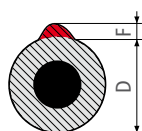
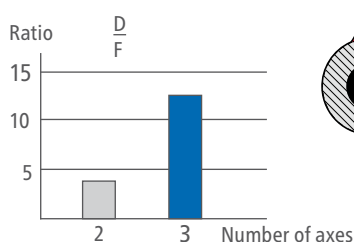
### 6-axis measurement for highest reliability

An ingenious mechanical design to accommodate two detectors, provides maximum coverage and detection of smallest deviations on the product circumference.

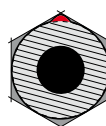


## NEW CONCEPT IN OPTICS AND ELECTRONICS

A highly developed optical system generates 3 narrow light beams under 60° in the same plane. Three 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 reliability and higher sensitivity.

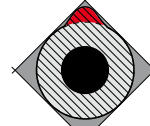


3-axis system

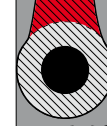


Biggest undetected fault

2-axis system



1-axis system



Theoretically a huge fault can remain undetected.

"Blind" zones

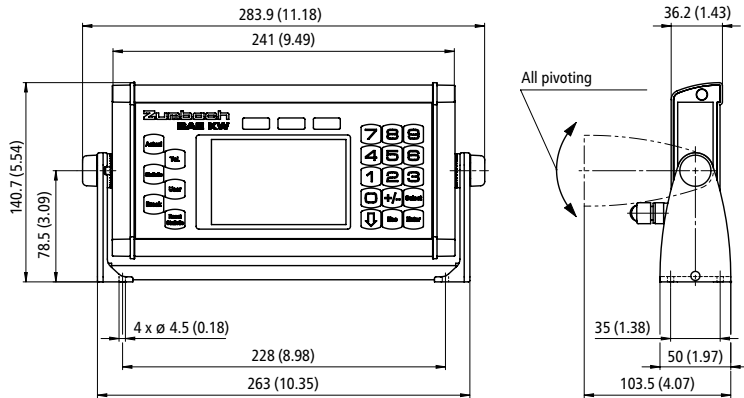
A powerful micro processor as well as full digital signal processing, make the lump & neckdown detectors essential tools for faultless quality control. A unique measuring principle and complex optics solution, ensure immunity to stray and intense light whilst providing the highest detection accuracy and identification of lumps and neckdowns in the micrometer range. An internal database allows to store the last 100 detected faults, including fault characteristics such as fault number, type, height, position and length of fault. This database can be either accessed via the local operating and display unit or via the inbuilt interfaces.

## OPERATING AND DISPLAY UNIT BAE 2-KW

The KW detectors are also available as stand alone devices. Thanks to a local operating and display unit, these versions can be fully operated and configured at the device.



- Illuminated graphic module to display values and messages
- Red, yellow and green tolerance indicators for signalling operating states
- Keyboard with function keys and numeric keypad for manual instrument setting
- Connection cables between BAE 2-KW and KW TRIO; available lengths 1, 3, 5, 10, 20m (3.3, 9.8, 16.4, 33.8, 65.6ft.)

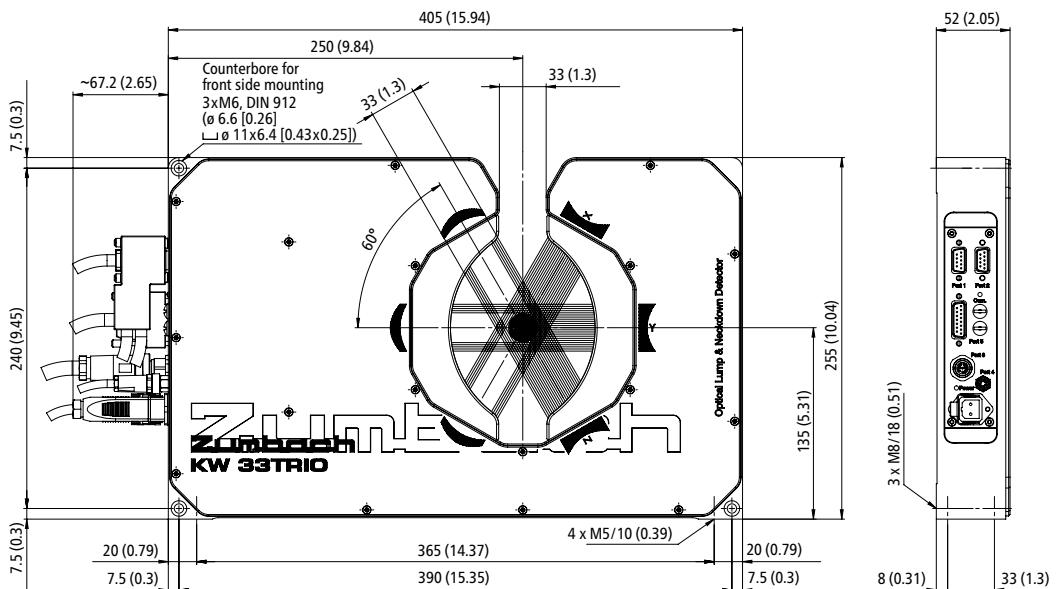
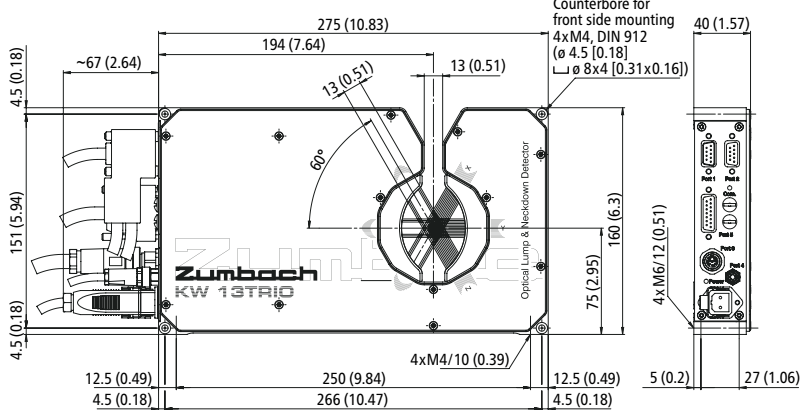


### Flexible Installation

A pivoting fixation device allows a flexible installation of the BAE 2-KW on a table or a wall.



## LUMP DETECTORS DIMENSIONS



Dimensions in mm (inch)

## TECHNICAL DATA

| Sensor                                     | KW 13TRIO  | KW 33TRIO   |
|--|--|---|
| Number of measuring axes                   | 3  | 3   |
| Measuring field M <sup>1)</sup>            | 13 mm (.5 in.)   | 33 mm (1.3 in.)   |
| Tolerance limit setting <sup>2)</sup>      | 0.01...10 mm (.0004...4 in.)   | 0.025...30 mm (.001...1.18 in.)   |
| Tolerance limit resolution                 | 0.001 mm (.00004 in.)  | 0.001 mm (.00004 in.)   |
| Minimum fault length                       | 0.2 mm (.008 in.)  | 0.3 mm (.012 in.)   |
| Smallest detectable fault (high)           | 0.01 mm <sup>2)</sup> (.0004 in.)  | 0.025 mm <sup>2)</sup> (.001 in.)   |
| Accuracy                                   | +/- 0.008 mm (.0003 in.) +/- 1% (of the error level)                         | +/- 0.02 mm (.0008 in.) +/- 1% (of the error level)   |
| Weight                                     | 2.1 kg (4.6 lbs)   | 6.3 kg (13.9 lbs)   |
| Recovery time <sup>3)</sup>                | 4 µs   |   |
| Max. line speed                            | 3000 m/min. (9850 ft./min.)  |   |
| Power supply                               | 85...265 VAC (47...63 Hz) / 20 VA  |   |
| Port 1:                                    | RS-233/-422/-485   | Service Port (only for versions KW ..TRIO-RS/-DP/-EN)   |
| Port 2:                                    | - RS-233/-422/-485<br>- Profibus DP<br>- Ethernet TCP/IP                     | Host Port (only for version KW ..TRIO-RS)<br>Host Port (only for version KW ..TRIO-DP)<br>Host Port (only for version KW ..TRIO-EN) |
| Port 3:                                    | RS-422/+24 VDC   | Local operating & display unit BAE 2-KW   |
| Port 4:                                    | Length detector input  | Digital input, also for proximity switch e.g. NAMUR 0.25 Hz...5 kHz,<br>Incremental encoder input (A, B) 0.25 Hz...200 kHz          |
| Port 5: Remote tolerance setting           | 0...10 V (adjustable resolution: 0.1...10 V/mm)                              |   |
| Analogue output                            | +/- 10 V (adjustable resolution: 0.1...10 V/mm)                              |   |
| Digital / relay alarm outputs              | General alarm, lump, neckdown  |   |
| Digital inputs                             | Start, stop, pause   |   |
| Ambient temperature                        | Operating: 0...45°C (33...113°F), Transport/Storage: -20...50°C (-4...122°F) |   |
| Max. atmospheric humidity                  | 95% (non condensing)   |   |
| Altitude                                   | 0...2500 m (0...8200 ft.) over sea level                                     |   |
| Protection class                           | Measuring field: IP65, supply zone IP40                                      |   |
| <b>Control &amp; display unit BAE 2-KW</b> |  |   |
| Weight                                     | 1 kg (2.2 lbs)   |   |
| Protection class                           | Keyboard: IP 65, rear panel IP51   |   |

<sup>1)</sup> M stands for measuring field height. In practice, the largest object diameter corresponds to measuring field height minus instability of position.

<sup>2)</sup> The smallest fault tolerance may only be selected under ideal operating conditions, i.e. dust-free, dry environment as well as a stable product guiding.

<sup>3)</sup> Shortest possible time between failures so that they are recognized as a single point of failure.

• All technical data are subject to change without notice

## OPTIONS / ACCESSORIES

### Guides

#### KW 13TRIO

For ø up to 4 mm (.16 in.)  
# KW.131.400



For ø from 3...13 mm (.12 to .51 in.)  
# KW.131.410



For ø from 3...8 mm (.12 to .31 in.)  
# KW.131.420



For ø < 1 mm (.04 in.)  
# KW.131.430



#### KW 33TRIO

With ceramic V rollers.  
Infinitely adjustable to product diameter  
# KW.331.400



With steel V rollers.  
Infinitely adjustable to product diameter  
# KW.331.410



With ceramic V rollers.  
For ø 8...20 mm (.31... .79 in.)  
# KW.331.420



With steel V rollers.  
For ø 8...20 mm (.31... .79 in.)  
# KW.331.430



### Calibration

Small kit  
- KW 13TRIO:  
# KW.131.920  
- KW 33TRIO:  
# KW.331.920



Big kit  
- KW 13TRIO:  
# KW.131.900  
- KW 33TRIO:  
# KW.331.900



### Floor stands

Height-adjustable floor stands

**KW 13TRIO**  
# ST02.300.10750



**KW 33TRIO**  
# ST02.333.30750



**KW 33TRIO**  
For 2 KW detectors and 6-axis measurement:  
# ST01.333.33100



Fine height adjustment FHV 1 for floor stand ST 1  
# ST01.040.10000



### Miscellaneous

Maintenance kit for air curtains  
# A34 200 0050



Hose fittings for air curtains  
- KW 13TRIO:  
# KW.131.140



- KW 33TRIO:  
# KW.331.140

Acoustic alarm for RS models  
# KW.331.09150

Modul analog output  
# M 1094.A

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KNOW.002.0002.EN FEB.16