

# BALTECH - VP-3460

BALANCER-  
THERMOMETER

VIBROMETER-  
TACHOMETER



Simple and easy to use



The best portable balancer  
in its class



Conformance to ISO 10816



Universal balancing procedure



Inexpensive multifunctional  
portable kit



Extended warranty



**BALTECH**

**RELIABILITY TECHNOLOGIES**

+49 (0) 451-370-87-700  [www.baltech.biz](http://www.baltech.biz)

# Vibrometer-Tachometer-Balancer-Thermometer BALTECH VP-3460



The new inexpensive BALTECH VP-3460 is the upgrade version of the BALTECH previous balancing instruments.

## Application

Unbalance is a main reason of increased vibration of rotating machinery, which results in heating of bearing assemblies. This leads to rapid wear of bearings, shafts and other parts, increased vibration and noise level as well as to loss of efficiency of the machinery. Unbalance elimination is a difficult task and requires complex measurement equipment and experienced personnel. The new multifunctional kit BALTECH-VP 3460 makes the field balancing (balancing of rotors in their own bearings) easy and simple. BALTECH-VP 3460 was specially developed to facilitate work of mechanics and power engineers. The modified electronic circuit and BALTECH-Expert software make it possible to store the vibration and temperature data in the  $-55^{\circ}\text{C} \dots +130^{\circ}\text{C}$  range, connect tachometers (or stroboscope) or use two vibration channels. The vibration standards are included into the regulatory requirements on assurance of reliability of rotating equipment (fans, exhaust fans, electrical machinery, pumps, compressors, mixers, centrifuges, cages, gearboxes).



## Features

- 01** Vibration measurement as per 10816 (vibration displacement, vibration velocity).
- 02** Temperature control (contact thermometer).
- 03** Filed balancing (in own bearings).
- 04** Route measurement (storage of 250 measurement results).
- 05** Built-in vector calculator, trial weight calculation, Dynamic Influence Coefficient (DIC).
- 06** Optional solutions (up to 2 vibration channels, extension of the vibration measurement and rotation frequency ranges up to  $30 \dots 120000$  RPM).

## OPERATION MODES

### 01 Measurements

- Vibrometer
- Tachometer
- Thermometer
- Phase meter
- Analyser

### 02 BALANCER

### 03 SERVICE

### 04 ROUTE

.....Baltech VP-3460  
>Measurements  
Balancer  
Service

.....Measurements  
>Vibrometer  
Tachometer  
Thermometer

.....Measurements  
>Thermometer  
Phase meter  
Analyser

### Vibrometer

- Measurement of RMS vibration velocity in the 10-1000 Hz range.
- Measurement of Peak- Peak vibration displacement.
- Averaging time from 1 to 30 seconds.
- Storage of up to 250 values, transfer to PC database.
- Storage of the vibration waveform for further analysis.

## Vibrometer mode

.....Baltech VP-3460  
>Measurements  
Balancer  
Service

.....Vibrometer ><  
V=39,9 mm/s  
100 0\_

.....Vibrometer ><  
S=99 um  
1000 0\_

# Universal kit for field balancing



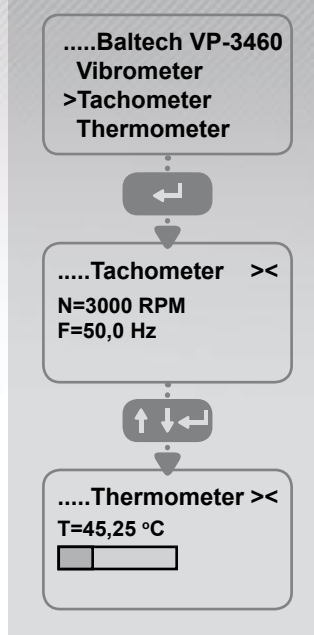
## Operation modes TACHOMETER and THERMOMETER

### Tachometer

- Speed measurement.
- Frequency measurement.
- Check of photosensor.

### Thermometer

- Temperature measurement of solid surfaces and temperature measurement of liquids in the -55°C to +130°C range.



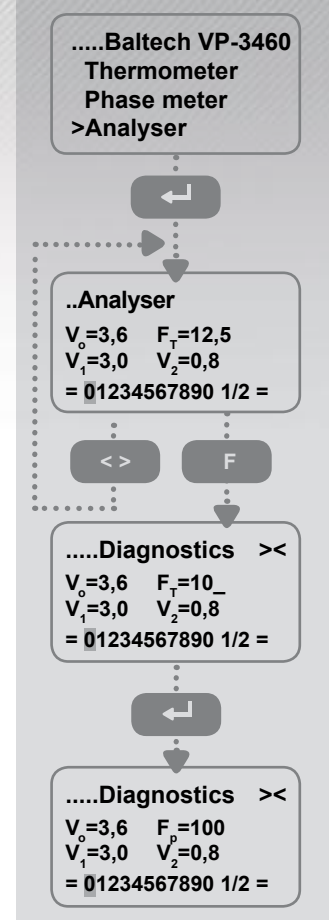
## Operation modes VIBRATION ANALYSIS and PHASE METER

### Analyser

- Automatic frequency detection.
- Manual input of frequency.
- Continuous display of the overall vibration level and first harmonic level.

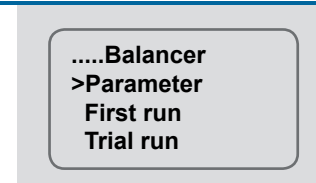
### Phasemeter

- Check of measurement quality of phase angle without using the Balancer mode - similar to the First run mode.



## Balancer mode

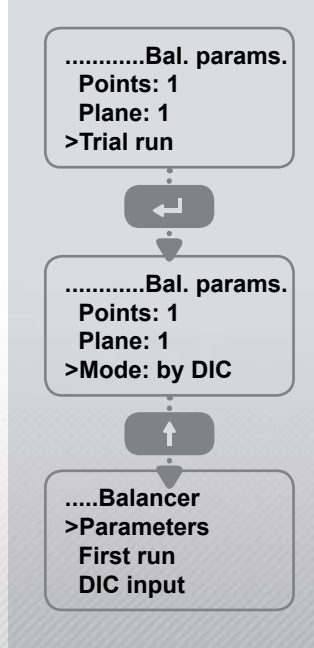
- Dynamic balancing.
- Set of number of control points and correction planes.



## Balancing method setting

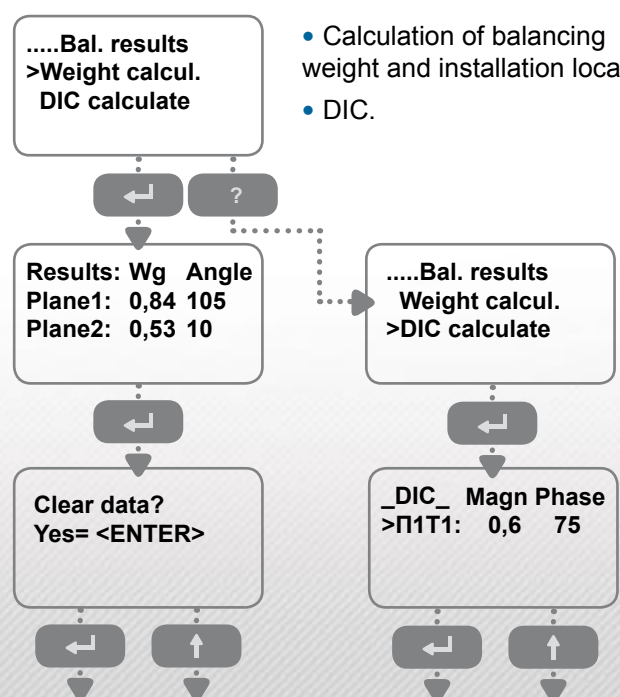
- Dynamic Coefficient Method.
- Trial run.

**What is DIC?**  
 Linear dependence between the vibration and unbalance is used in the balancing calculations.  
 The Dynamic Coefficient Method is a proportionality coefficient between the vibration and unbalance.



## Results for balancing

- Calculation of balancing weight and installation location.
- DIC.



# Vibrometer-Tachometer-Balancer-Thermometer BALTECH VP-3460

## Additional calculations

- Calculation of the trial weight based on the existing statistic and dynamic parameters of the rotor.
- Weight division if there no way to install the weight on the calculated location (e.g. between fan blades).
- Vector calculations.

.....Calculations  
>trial weight  
weight division  
vector sum

## Vectors addition and subtraction

When there is now way to install the balancing weight on a particular location we recommend that you use the vector calculator to sum or subtract the weights (vectors).

The tool is useful for specialists using vector mathematics for mechanical machinery tuning.

The calculations are realized in polar coordinates.

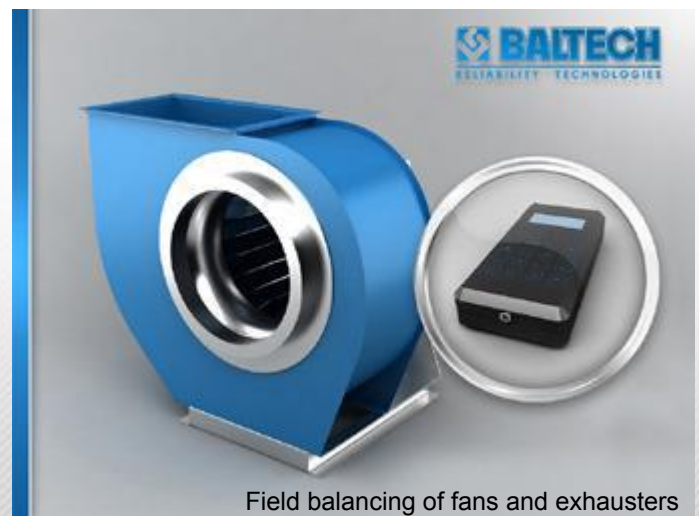
You can add of to 10 vectors with calculating of sum, sum/2 and averaging value of vector sum.

## Route measurement using the BALTECH-Expert software

- Measurement route creation.
- Load of the routes into the measuring instrument.
- Transfer of the measuring results to PC.
- Manual input of the measurement results.
- View of the measurement data.
- Machinery condition evaluation (incl. for all the hierarchy levels).
- View and analysis of the vibration and temperature parameter trends.
- Storage of the measurement results.
- Upload of the reports on vibration, balancing, alignment and thermography.

## BALTECH VP-3460 capability

- Measurement of the RMS vibration velocity in the 10-1000 Hz range.
- Measurement of the RMS vibration velocity and Peak-Peak vibration displacement at the rotational or random frequency.
- Temperature control of the machinery and bearing assemblies in the -55°C...+130°C range. Extended range is an option.
- Measurement of the rotation speed from 120 to 30000 RPM (option up to 120000 RPM) with the optical sensor or stroboscope.
- Indication of the phase shift between the vibration oscillation at the rotational frequency and tachometer signal.
- Storage of up to 250 measurement results for further view in the BALTECH-Expert software.
- Measurement at the rotation frequency harmonics (0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9) F.
- Vibration analysis in the ¼ octave frequency bands in the 10÷500 Hz range.
- Calculation of the trial weight.
- Vector calculator for the vector addition and subtraction.
- Measurements and calculations for dynamic balancing on site (3 planes, 4 points).
- Dynamic Influence Coefficient (DIC).
- Quality control of the alignment of built-up shafts on the basis of the analysis of their vibration parameters during operation.
- The BALTECH-Expert software for PC- allows keeping the database and evaluating the machinery life time based on the vibration and temperature parameter trends.



Field balancing of fans and exhausters

# Universal kit for field balancing



Upper connectors are designed for cable with the vibration sensor, temperature sensor and speed sensor(the sensors and cables are included into the delivery set) and PC. The power connector is located on the lower panel.

The instrument has a metrological certification and is registered in the State register of measuring equipment The

warranty is 24 months. The use of the instrument requires no special skills.

The detailed operation manual and methodological materials as well as initial training at the BALTECH training centre (is included into the cost of the instrument) allow using the instrument efficiently.

## BALTECH-Expert software

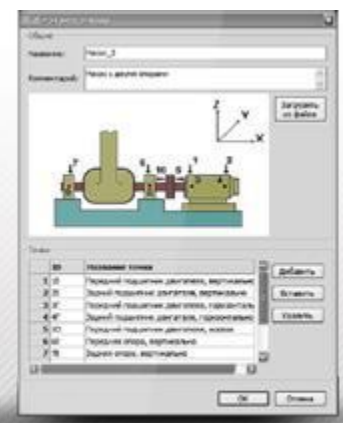
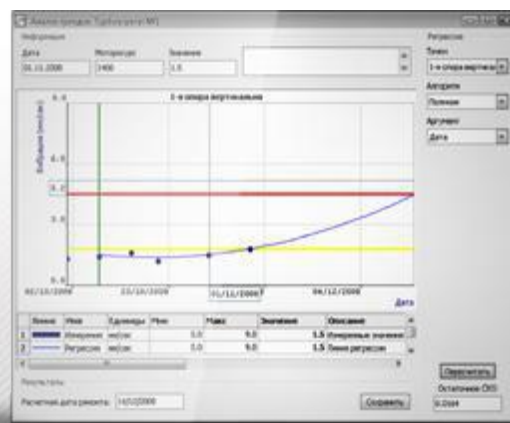
(is delivered as comprehensive)



The software is compatible with all the Baltech instruments.



The universal software BALTECH-Expert is designed for work with many BATECH instruments, incl. BALTECH VP-3460. It also can be integrated with other measuring equipment (e.g. the alignment systems SA Series, infrared cameras BALTECH TR Series, vibration analyzer BALTECH VP-3470).



## TECHNICAL SPECIFICATION:

Frequency range, Hz	10-1000
Range of RMS value of velocity, mm/s	0,1-99,9
Range of peak-to-peak displacement, $\mu\text{m}$	5-999
Temperature measurement range, $^{\circ}\text{C}$	-55...+130
Speed frequency range, RPM	120...30000
Speed frequency accuracy, %	$\pm 0.5$
Measuring range of vibration vector phase, degrees	0÷359
Electric power supply	Autonomous From batteries
Time of autonomous work, hours	Not less than 8
Complete weight, kg	5,8 $\pm$ 0,1
Weight of the instrument, kg	208x100x40



## DELIVERY SET:

### BALTECH VP-3460 – vibrometer- balancer- thermometer (basic and comprehensive)

N <sup>o</sup> n/n	Name	Basic Art.No. 34-06	Comprehensive Art. No. 34-07
<b>1</b>	<b>Measuring instrument</b>	1	1
1.1	Ni-MH battery, AA type	4	4
1.2	Battery charger	1	1
1.3	Ac adapter	1	1
1.4	Interface cable	-	1
<b>2</b>	<b>Vibration transducer with cable and magnet</b>	1	1
2.1	Accessories for the vibration transducer	1	1
<b>3</b>	<b>Frequency transducer with cable (L = 3 m)</b>	1	1
3.1	Magnetic stand	1	1
3.2	Light-reflecting self-adhesive film	1	1
<b>4</b>	<b>Led stroboscope</b>	-	1
<b>5</b>	<b>Temperature converter with cable</b>	1	1
<b>6</b>	<b>Angle gauge</b>	-	1
<b>7</b>	<b>Electronic scales</b>	1	1
<b>8</b>	<b>Small clamp</b>	1	1
<b>9</b>	<b>Large clamp</b>	1	1
<b>10</b>	<b>Scissors</b>	1	1
<b>11</b>	<b>White marker</b>	1	1
<b>12</b>	<b>Operation manual</b>	1	1
<b>13</b>	<b>BALTECH Expert software on CD</b>	-	1
<b>14</b>	<b>BALTECH Expert software user manual</b>	-	1
<b>15</b>	<b>BALTECH Expert software installation manual</b>	-	1
<b>16</b>	<b>Carrying case</b>	1	1
<b>17</b>	<b>Package</b>	1	1

## OPTIONAL APPLICATION:

The BALTECH VP-3460 can be used as the measurement unit for all the outdated balancing machines that do not have updated measuring units for calculation of the balancing weights.