ELECTRONIC GRINDING WHEEL BALANCING SYSTEM

A properly balanced grinding wheel can improve the form and finish of the workpiece, while extending spindle life. The P7WB automatic grinding wheel balancer control in conjunction with Marposs wheel balancers offer the best solution for continuous monitoring of the wheel vibration and automatically correcting an imbalance during production. The use of automatic balancers can quickly and efficiently balance your grinding wheel, improving the process capability.

A Marposs P7WB automatic grinding wheel balancer is a low-cost system which results in fast return on investment through improved product quality without negative impact on production time.

The P7WB has fieldbus and serial communication connection available to allow machine OEMs to integrate the product into their machine control network.

Benefits
- Improved surface finish quality
- Real-time check of grinding wheel vibrations and automatic imbalance correction. The system prevents the production of parts with shape defects
- Increased machine efficiency (automatic balancing time shorter than time required for manual balancing)
- Fully automated balancing cycle without the presence of trained personnel to add or remove balancing weights
- Constant check of vibrations during the entire life of the grinding wheel, to prevent the breakage of rotary parts (preventive maintenance and machine safety)

Applications
- Automatic balancing for grinding wheels with one or more spindles
- Automatic balancing algorithms in one or more planes
- Balancing check limits programmable according to grinding wheel type and dimensions
- Check of vibrations and operator guide for balancing small grinding wheels
- Monitoring of vibrations and alarms triggered by excessive imbalance
- Spectrum analysis of vibration frequencies for machine maintenance, to find cause and origin of faults
Panel types

Solution with local panel
Solution with remote panel
Solution with display integrated in CNC

Economical
A single platform using personalized hardware and software modules, can perform many functions such as manual and automatic balancing of the grinding wheel, two planes balancing, FFT vibration analysis, air gap control and grinding wheel-part or grinding wheel-dresser collision.

Flexible and modular
Through the use of easily installed modules, the P7WB can be configured to use various type of electromechanical grinding wheel balancers and acoustic emission sensors. Modules for discreet I/O and fieldbus allows for the most efficient machine interface. On board memory allows multiple function to be called up by machine control for agile production.

User-friendly
The graphic display and simple keypad allows easy operator use through the icon based (ISO 7000 standard) and interactive software. Hotkeys can be programmed to jump to the most frequently used functions. Hardware system and diagnostic program insures the operator entries a correct and logical order.

Versatile
The P7WB can be connected heads with retractable contacts or contact-less transmission, accelerometers, speed sensors and acoustic emission sensors.
Hardware

SLOT 1
Master CPU card
(always present)
All master CPUs have two RS232 serial ports, a system software check LED and a card power check LED. Possible configurations:

- Master CPU card
- Master CPU card with 32 optoisolated I/Os for communication with machine PLC
- Master CPU card with fieldbus (ProFieldbus or Interbus-S) card

SLOT 2
Card for I/Os, acoustic sensors and touch sensors
Measurement values are supplied in BCD or binary format through the I/Os. Cards which can be inserted in slot 2:

- Card with 32 optoisolated I/Os for communication with machine PLC.
- Card with 64 optoisolated I/Os for communication with machine PLC.
- Card with 32 optoisolated I/Os for communication with machine PLC with interface for acoustic sensor (Gap/Crash function) and a Mida touch probe.
- Interface card for acoustic sensor (Gap/Crash function) and a Mida touch probe.

SLOT 3
Balancer CPU card
The card which acquires and conditions the signal has connectors for connecting the balancing heads, vibration sensors (accelerometers) and speed of rotation sensors, with a maximum of 2 channels.

- Manual balancing card.
- 1-channel automatic/manual balancing card.
- 2-channel automatic/manual balancing card.

Electronic Units
Accessories
Sensors
Software
Measuring Heads
Hardware

Power
power ON/OFF switch (24V dc)

Power ON LED
indicates that power is ON

RPOUT1, RPOUT2
for connection to the remote panel

Power
power ON/OFF switch (24V dc)
## Hardware specifications

### Power supply unit
- **Operating voltage**: 24V dc (-15/+20%) (IEC 1131-2)
- **Absorption**: 50 W

### Panel
- **Colour screen**: 320 x 240 pxd, ¼ VGA (5,5”) TFT
- **B/w screen**: 320 x 240 pxd, ¼ VGA (5,5”) STN
- **Remote panel**: Max. distance 30 m

### Master CPU
- **Serial interface**: COM1, COM2 (RS232E)
- **Serial printer output protocols**: E9066 data transfer protocols, protocols created in response to specific requirements
- **Serial transmission speed**: Programmable from 9600 to 115000 baud
- **Maximum serial connection distance**: 15 m (50 feet)

### Balancing CPU
- **Number of channels**: Up to 2 balancers, 2 accelerometer, 2 rpm sensors
- **Grinding wheel speed of rotation**: 300 ÷ 20000 rpm
- **Imbalance unit of measurement**: µm - inch - mm/s
- **Imbalance measuring range**: 50 µm / 5 µm / 0,5 µm
- **Imbalance measurement resolution**: 1 µm / 0,1 µm / 0,01 µm

### Fieldbus (AUX I/O)
- **Protocols**: ProfiBus or InterBus-S

### Optoisolated inputs and outputs (I/O1 - I/O2 - AUX I/O)
- **Number of signals**: 96 I/O programmable
- **Operating voltage**: 24V dc (-15/+20%) (IEC 1131-2)
- **Circuit types**: Sink/Source programmable
- **Input current**: 5 mA/24V dc (IEC 1131-2, type 1)
- **Output current**: 100 mA/24V dc

### Gap/Crash card
- **Number of signals**: 2 (1 Gap + 1 Crash)
- **Operating voltage**: 24V dc
- **Logic I/Os (AE I/O): Input operating voltage**: 24V dc
- **Logic I/Os (AE I/O): types**: Sink/Source
- **Logic I/Os (AE I/O): outputs**: Relays 24V dc/ac and optoisolated 24V dc 10 mA
- **Analog output (AE OUT)**: 1 Vpp

### Touch probe card (positioning)
- **Outputs (AUX)**: Solid state relays ±50 V/40 mA
- **Response time to touch**: 30 µs (opening), 50 µs (closing)

### Dimensions
- **Stand alone structure (including panel)**: 279 (w) - 320 (d) - 132.5 (h) (14 mm supporting feet)
- **Remote unit structure (without panel)**: 320 (w) - 317 (d) - 132.5 (h)
- **Remote panel ½ 19”**: 482 (w) - 57 (d) - 132.5 (h)
- **Remote panel 19”**: 482 (w) - 57 (d) - 132.5 (h)

### Electrical safety
- **EN 61010-1**: Safety requirements for electrical equipment for measurement, control and laboratory use

### EMC immunity
- **EN 61326**: Radiated magnetic fields
  - Electrostatic discharge
  - Magnetic fields induced on cables
  - Radio frequency electromagnetic fields
  - Power frequency magnetic fields
  - High frequency and conducted electromagnetic emissions
  - Electrical fast transient/burst
  - Surge
- **CFR 47 part 15 (FCC class A equipment)**: High frequency and conducted electromagnetic emissions

### Protection degree
- **IP 54**

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For a full list of address locations, please consult the Marposs official website.

Marposs has an integrated system to manage the Company quality, the environment and safety, attested by ISO 9001, ISO 14001 and OHSAS 18001 certifications. Marposs has further been qualified EAQF 94 and has obtained the Q1-Award.