

## ELECTRONIC MONITORING SYSTEM

Monitoring the acoustic emission generated in a grinding machine during grinding or dressing can be used to adapt the cycle for maximum productivity. The P7SE system can detect tiny variations in the acoustic signature of the machine during a cycle, allowing precise control of the machine.

The use of super-abrasives in grindings demands the use of acoustic sensing. To get maximum return on this investment the wheel dressing must be automatic and accurate. Preventing damage to and removing the minimal amount of this expensive abrasive during the dressing and truing cycles is mandatory. The P7SE system achieves the highest sensitivity through acoustic sensing for reliable and efficient performance.

The P7SE has fieldbus and serial communication connection available to allow machine OEMs to integrate the product into their machine control network.

### Benefits

- Reduction in unproductive cycle times, particularly the time the grinding wheel needs to move from the home position to the operating position (end of air gap)
- Monitoring of grinding wheel position and condition by detecting the precise moment of contact with the dresser and continuity of this signal on the entire surface of the grinding wheel (process supervision)
- Continuous checking of excessive noise levels which could be generated by collisions caused by incorrect grinding wheel movements
- Continuous checking of background noise which may be generated by deterioration of the rolling parts (preventive maintenance)

### Applications

- Check of grinding wheel - part and/or grinding wheel - dresser air gap
- Prevention of collisions
- Check of dressing operations with increments lower than a few tenths of a micron performed by the dresser on the surface of the grinding wheel
- Check of dressing operation on shaped grinding wheels which have areas with small dimensions, e.g.: radii or profiles

## Panel types



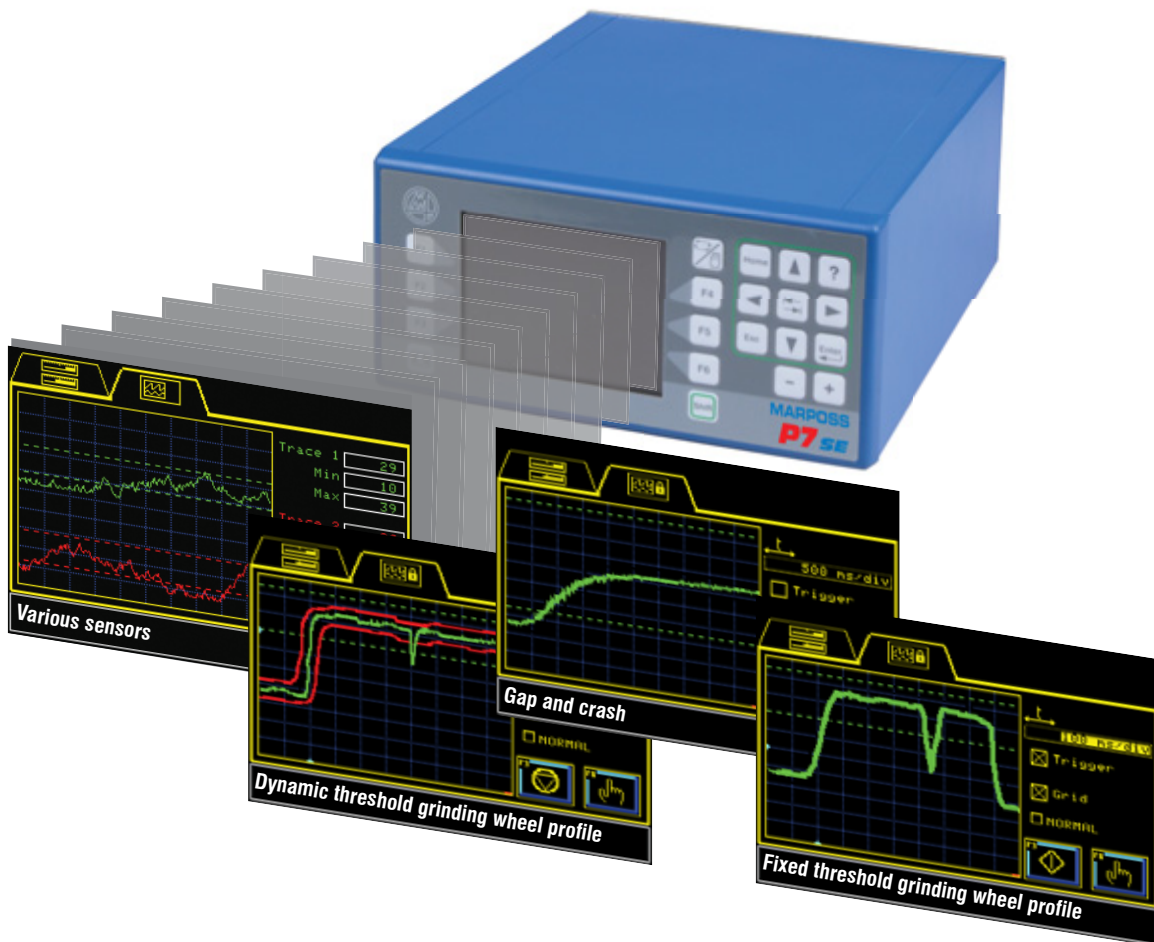
Solution with local panel



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 air gap control, grinding wheel-part or grinding wheel-dresser collision, check of grinding wheel dressing cycle with fixed or variable (dynamic) thresholds.

### **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 enters a correct and logical order.

### **Flexible and modular**

Through the use of easily installed modules, the P7SE can be configured to use various type of 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.

### **Versatile**

The P7SE can be connected fixed or rotary acoustic emission sensors, with contact-less transmission and ring sensors, satisfying specific application requirements for checks on internal and external type grinding machines and on fixed or rotating dressers.

# Hardware



Stand-alone gauge



Remote gauge



**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)

**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 (Profibus 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**  
**Sensors CPU card**

The card which acquires and conditions the signal has connectors for connecting the acoustic sensors (up to 4 channels), analog output and analog input for auxiliary sensors (up to 2 channels).

**Two-sensor card.**

**Four-sensor card.**

Measuring Heads

Electronic Units

Balancing Heads

Software

Sensors

Accessories

# Hardware specifications

Power supply unit		
	Operating voltage	24V dc (-15/+20%) (IEC 1131-2)
	Absorption	50 W
Panel		
	Colour screen	320 x 240 pxls, ¼ VGA (5,5") TFT
	B/w screen	320 x 240 pxls, 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)
Sensors CPU		
	CPU	DSP ADS21065 / clock 30 MHz
	Number of channels	Up to 4 AE sensors / 2 auxiliary analog sensors
	Sensor types	AE fixed or rotary sensors
	Frequency band	50 kHz ÷ 1 MHz
	AE sensors input dynamics	≤ 90 dB
	Auxiliary analog sensors input dynamics	Voltage 0 - 10 V / Current 4 - 20 mA
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/Os 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 channels (AE IN)	2 (1 Gap + 1 Crash)
	Number of sensors (fixed or rotary)	1
	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"	226 (w) - 75 (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



**MARPOSS**  
www.marposs.com

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

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