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**BARTEC SYSCOM**

# MR3000BLA

## Blasting Monitoring



The MR3000BLA is a new instrument dedicated to the monitoring of explosion-induced vibrations. The MR3000BLA is an all-in-one autonomous device integrated in a rugged casing for field measurements. The three channels for vibration and the channel for air overpressure make it perfect for a complete blasting monitoring.

The MR3000BLA linked with the SCS (Syscom Cloud Software) offers a near real-time reporting solution with graphical norm comparison.

In its standard configuration, the MR3000BLA is equipped with a 3G module for wireless data transfer.

### Market Applications

- Blasting monitoring
- Mining
- Quarrying



## MR3000BLA Blasting Monitoring

The MR3000BLA is a new device developed specifically for the monitoring of vibrations induced by explosions. The MR3000BLA offers 4 acquisition channels: 3 dedicated to vibrations and one to air overpressure. The IP66 housing integrates an high capacity battery and makes the MR3000BLA easily transportable on mining or quarrying sites for quick setup close to the blasts. The trigger-based recording automatically acquires the blast event and the LCD screen displays the most useful related information, such as peak amplitudes and dominant frequencies. For proper blast documentation, an automatic reporting with norm comparison is immediately generated and sent to user defined e-mails by the Syscom Cloud Software (SCS).

In the standard kit, the MR3000BLA motion recorder is delivered with an external MS2003BLA triaxial velocity sensor and a high pressure microphone. Accessories such as mounting plate and sensor spikes are available for installation in different types of soil.

### Major features

- Vibration and air pressure acquisition
- Calibration of the velocity sensor according to ISEE Specification for Blasting Seismographs (USA) or to DIN 45669-1 (Germany)
- External triaxial velocity sensor with measuring range  $\pm 254$  mm/s ( $\pm 10$  in/s)
- High pressure microphone with range up to 150 dB(L)
- Rugged IP66 Peli Box
- AC or DC power
- Wi-fi connectivity
- Embedded 3G module
- Long-life internal battery
- Compatibility with Syscom Cloud Software (SCS) for data visualization and automatic blast event reporting



MR3000BLA complete kit for blasting monitoring



Side view of the MR3000BLA

### Technical specifications

#### Data recording

<b>Resolution</b>	18 bits
<b>Sampling-rate</b>	1'000, 2'000 sps
<b>Number of channels</b>	4
<b>Recording principle</b>	Event recording (time history), continuous time recording, manual trigger
<b>Data memory</b>	Removable Industrial Grade SD Card
<b>Minimum trigger level</b>	0.1 mm/s (0.004 in/s)
<b>Trigger voting logic</b>	Predefined AND or OR combinations, individual channel votes
<b>Pre-event recording</b>	1 - 30 seconds (in 1 sec steps)
<b>Post-event recording</b>	1 - 100 seconds (in 1 sec steps)
<b>Alarm principle</b>	Multiple level triggers with many notification options (settable for each axis)
<b>File event format</b>	XMR/ASCII (if no microphone), ASCII (if microphone is present)

#### Physical characteristics

<b>Housing</b>	IP66 Peli Box, 420 x 331 x 170 mm (16.5 x 13.0 x 6.7 in)
<b>Weight</b>	6.4 kg
<b>Temperature</b>	-20° up to 60°C
<b>Humidity</b>	Up to 100% RH

#### External MS2003BLA triaxial velocity sensor

<b>Sensor type</b>	Triaxial velocity sensor with linearized frequency response
<b>Principle</b>	Geophone
<b>Calibration</b>	To be specified at the time of purchase between: <ul style="list-style-type: none"> <li>• ISEE: calibration according to ISEE Performance Specification for Blasting Seismographs</li> <li>• DIN: calibration according to DIN 45669-1</li> </ul>
<b>Measuring range full scale</b>	ISEE: $\pm 254$ mm/s ( $\pm 10$ in/s); DIN: $\pm 100$ mm/s ( $\pm 3.93$ in/s)
<b>Frequency range</b>	ISEE: 2-250 Hz; DIN: 1-315 Hz
<b>Dynamic range</b>	> 104 dB
<b>Linearity/Phase</b>	Class 1 (according to DIN 45669)
<b>Cross axis sensitivity</b>	<5% (according to DIN 45669)
<b>Dimensions</b>	100 x 100 x 81 mm (3.9 x 3.9 x 3.2 in)
<b>Weight</b>	1.0 kg
<b>Connector</b>	Cable gland with 1.5 m cable and LEMO 2K push-pull connector (with positioning key)
<b>Accessories</b>	Mounting platform with spikes screws - weight: 0.3 kg, soft-soil spike

#### External high pressure microphone

<b>Sensor type</b>	Air pressure microphone
<b>Principle</b>	Array microphone
<b>Measuring range</b>	150 dB (L)
<b>Frequency range</b>	2-2000 Hz
<b>Dimensions</b>	60 mm length, 7 mm diameter
<b>Weight</b>	5.5 g
<b>Connection</b>	LEMO coaxial push-pull connector with SMB socket 1.5 m

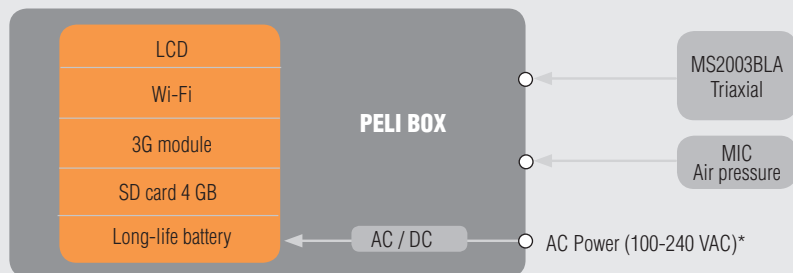
#### Connectivity

<b>Mobile Network</b>	Multi-Band UMTS / HSDPA / WCDMA / GSM / GPRS / EDGE
<b>Wi-fi access</b>	IEEE 802.11 b/g compliant

#### Power supply

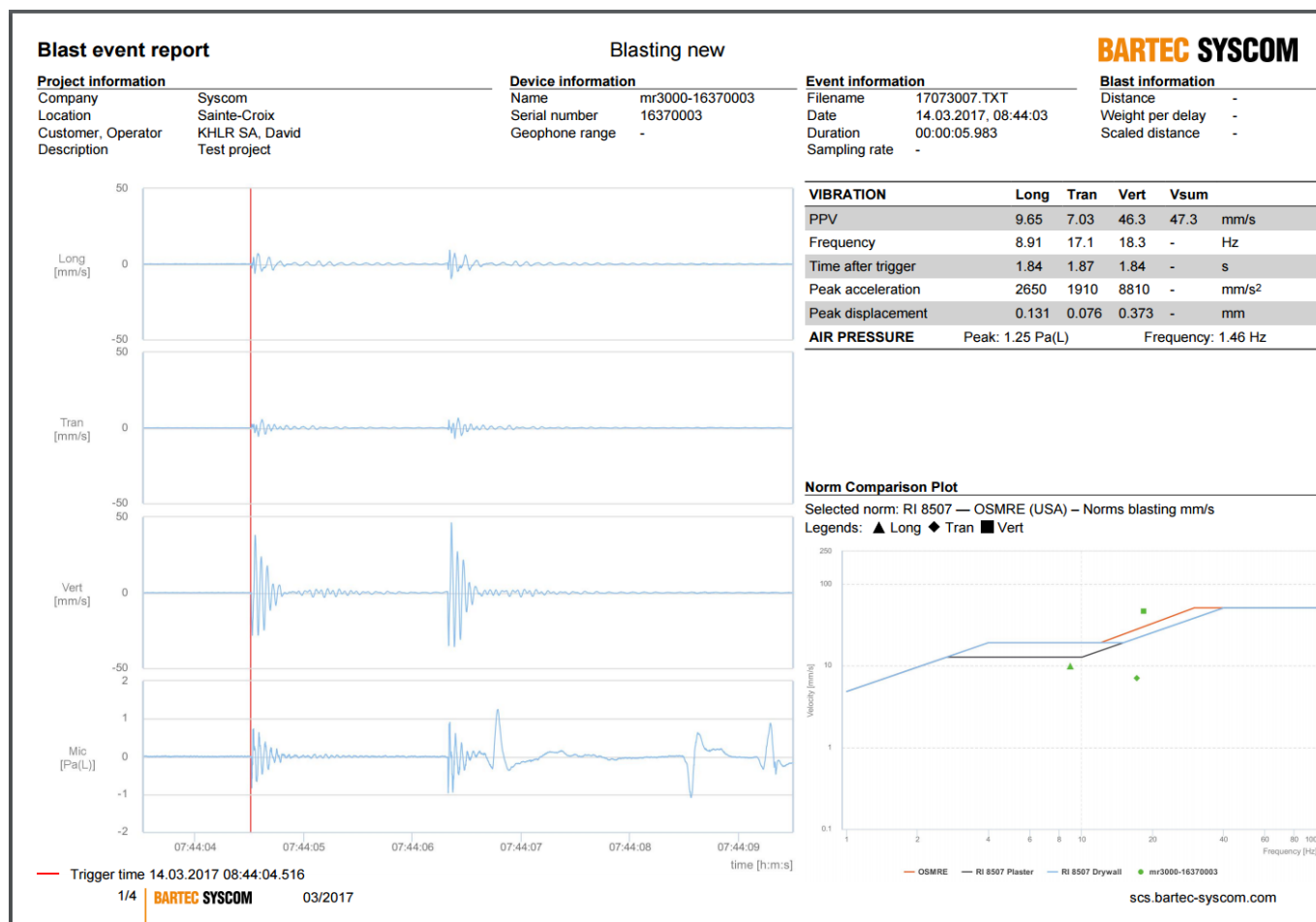
<b>Internal battery</b>	High capacity long life battery (> 3000 charge cycles), 5.3 Ah, 12 VDC
<b>AC power</b>	Internal AC/DC converter, 100-240 VAC, 50-60 Hz, with power LED indicator
<b>DC power</b>	10-36 VDC, with external AC/DC converter and cable to power grid

## Block diagram MR3000BLA



\* or DC power (10-36 VDC), with external AC/DC converter

## Blast event report generated by the Syscom Cloud Software



### Blast report on SCS cloud software

The blast report is automatically created and sent to the user-defined contacts by the SCS Cloud Software. For more information, please refer to the SCS datasheet or to the Bartec Syscom website.

**SCS**  
scs.bartec-syscom.com

### Measurement information

All the details about the project and the measurement are shown on the top left part. If the user adds a comment in the SCS, this is automatically shown in the blast event report.

### Time histories

Visualization of 4 components:

- 3 for vibration
- 1 for air overpressure

### Summary table

Table with peaks and frequencies related to vibration and airpressure measurements. Additional information like vector sum and user comments is shown.

### Comparison with the standard curve

The velocity peaks calculated on the 3 axes are compared with the curve selected by the user (OSMRE, RI 8507, DIN 4150-3 and others).

## Ordering information

MR3000BLA - Internal battery - Integrated carrying case - 4GB Memory - 4 channels - WiFi - Embedded web server for configuration and control

Description	Part number	Triaxial velocity meter	Overpressure microphone	3G module EU-compatible	3G module US-compatible
		MS-2003BLA-H-TRIA-X	87000568	--	--

### MR3000BLA main kits\* with triaxial velocity meter\*\* and high-pressure microphone

MR3000BLA main kit with 3G module Europe-compatible, Swiss socket	93106036-CH	x	x	x	
MR3000BLA main kit with 3G module Europe-compatible, European socket	93106036-EU	x	x	x	
MR3000BLA main kit with 3G module US-compatible	93106036-US	x	x		x

### MR3000BLA basic kits\* with triaxial velocity meter\*\*, without high-pressure microphone

MR3000BLA basic kit with 3G module Europe-compatible, Swiss socket	93106038-CH	x		x	
MR3000BLA basic kit with 3G module Europe-compatible, European socket	93106038-EU	x		x	
MR3000BLA basic kit with 3G module US-compatible	93106038-US	x			x

### MR3000BLA units\*\*

MR3000BLA with 3G module Europe-compatible, AC power	MR3000BLA-2003E-EX-EU-AC			x	
MR3000BLA with 3G module US-compatible, AC power	MR3000BLA-2003E-EX-US-AC				x
MR3000BLA with 3G module Europe-compatible, DC power	MR3000BLA-2003E-EX-EU-DC			x	
MR3000BLA with 3G module US-compatible, DC power	MR3000BLA-2003E-EX-US-DC				x

### Accessories

Triaxial velocity sensor, full range $\pm 250$ mm/s (10 in/s)**	MS2003BLA-H-TRIA-X	x			
Microphone for air pressure 2-2000Hz, 150dB (L)	87000568		x		
Kit with mounting plate and set of spikes for velocity sensor	13100010				
Set of 3 mounting rods for microphone	90000945				

\* AC powered or DC powered version to be specified at the time of purchase

\*\* Calibration according to DIN 45669-1 or ISEE Performance Specification for Blasting Seismographs, to be specified at the time of purchase.



Complete kit of the MR3000BLA

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