

MR3003BLA

Blasting Monitoring



The MR3003BLA is an instrument dedicated to the monitoring of explosion-induced vibrations. The three channels for vibration and the channel for air overpressure make them perfect for a complete blasting monitoring.

The MR3003BLA device is equipped with an embedded 4G module for wireless data transfer, and they can be linked to the SCS (Syscom Cloud Software) to offer a near real-time reporting solution with graphical norm comparison and alarming in case of norm exceedance.

Market Applications

- Blasting monitoring
- Mining
- Quarrying

MR3003BLA Blasting Monitoring

The MR3003BLA is a device developed specifically for the monitoring of vibrations induced by explosions. The MR3003BLA offers 4 acquisition channels: 3 dedicated to vibrations and one to air overpressure. The MR3003BLA, suitable for temporary and permanent monitoring, is built-in with the following key features: 4G embedded modem, Ethernet connection, GPS compatibility, external sensor and air pressure microphone.

The trigger-based recording automatically acquires the blast event and the LCD screen displays the most useful related information (peak amplitudes, frequencies). For proper blast documentation, an automatic reporting with norm comparison is immediately generated and sent via e-mail by the Syscom Cloud Software (SCS).

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 ± 250 mm/s (± 10 in/s) or ± 100 mm/s (± 4 in/s)
- High pressure microphone with range up to 148 dB(L)
- Wi-Fi connectivity
- Embedded 4G module
- Compatibility with Syscom Cloud Software (SCS) for data visualization and automatic blast event reporting

Technical specifications

Data recording

Resolution	24 bits
Sampling-rate	1'000, 2'000, 4'000 sps
Number of channels	4
Recording principle	Event recording (time history), continuous time recording, manual trigger
Data memory	Removable SD card (4Gb)
Minimum trigger level	0.01 mm/s (0.0004 in/s)
Trigger voting logic	Predefined AND or OR combinations, individual channel votes
Pre-event recording	1-99 seconds (@250Hz), others depending on sampling rate
Post-event recording	1-100 seconds
Alarm principle	Multiple level triggers with many notification options (settable for each axis)
File event format	XMR/ASCII (if no microphone), ASCII (if microphone is present)

Connectivity

Mobile Network	Internal 4G modem, fallback 3G/2G
Wi-Fi access	IEEE 802.11 b/g/n compliant
LAN connectivity	On MR3003BLA housing

Physical characteristics

Housing	Aluminium IP65, 120 x 180 x 100 mm (4.7 x 7.1 x 3.9 in), 1.5 kg
Temperature/humidity	-20° up to 70°C / Up to 100% RH

External MS2003BLA triaxial velocity sensor

Sensor type	Triaxial geophone with linearized frequency response
Calibration	To be specified at the time of purchase between: <ul style="list-style-type: none"> • ISEE: calibration according to ISEE Performance Specification for Blasting Seismographs • DIN: calibration according to DIN 45669-1
Measuring range full scale	ISEE: ± 250 mm/s (± 10 in/s); DIN: ± 100 mm/s (± 4 in/s)
Frequency range	ISEE: 2-250 Hz; DIN: 1-315 Hz
Dynamic range	> 110 dB
Linearity/Phase	Class 1 (according to DIN 45669)
Cross axis sensitivity	<5% (according to DIN 45669)
Dimensions/weight	100 x 100 x 81 mm (3.9 x 3.9 x 3.2 in) / 1.0 kg
Connector	Cable gland with 1.5 m cable and LEMO 2K push-pull connector
Accessories	Mounting platform for short- or long-term monitoring, soft-soil spike

External high pressure microphone

Sensor type	Air pressure microphone - Array microphone
Measuring range	148 dB (L) ± 3 dB
Frequency range	2-250 Hz
Dimensions/weight	60 mm length, 7 mm diameter / 5.5 g
Connection	LEMO coaxial push-pull connector with SMB socket 1.5 m

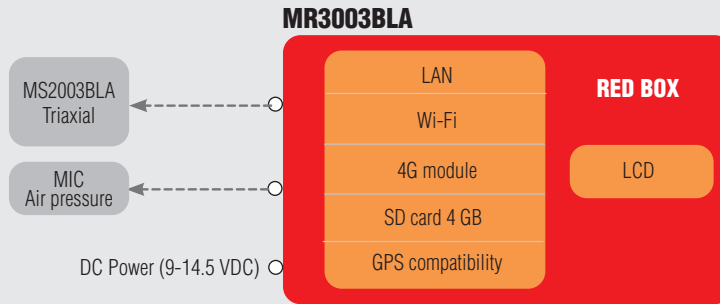
Power supply

Supply voltage	9 to 14.5 VDC or 48 V PoE
Battery pack	MA3P, 100-240 V AC input, Lithium battery 93Wh
Power consumption	From 1.2 W to 1.6 W depending on the accessories and configuration

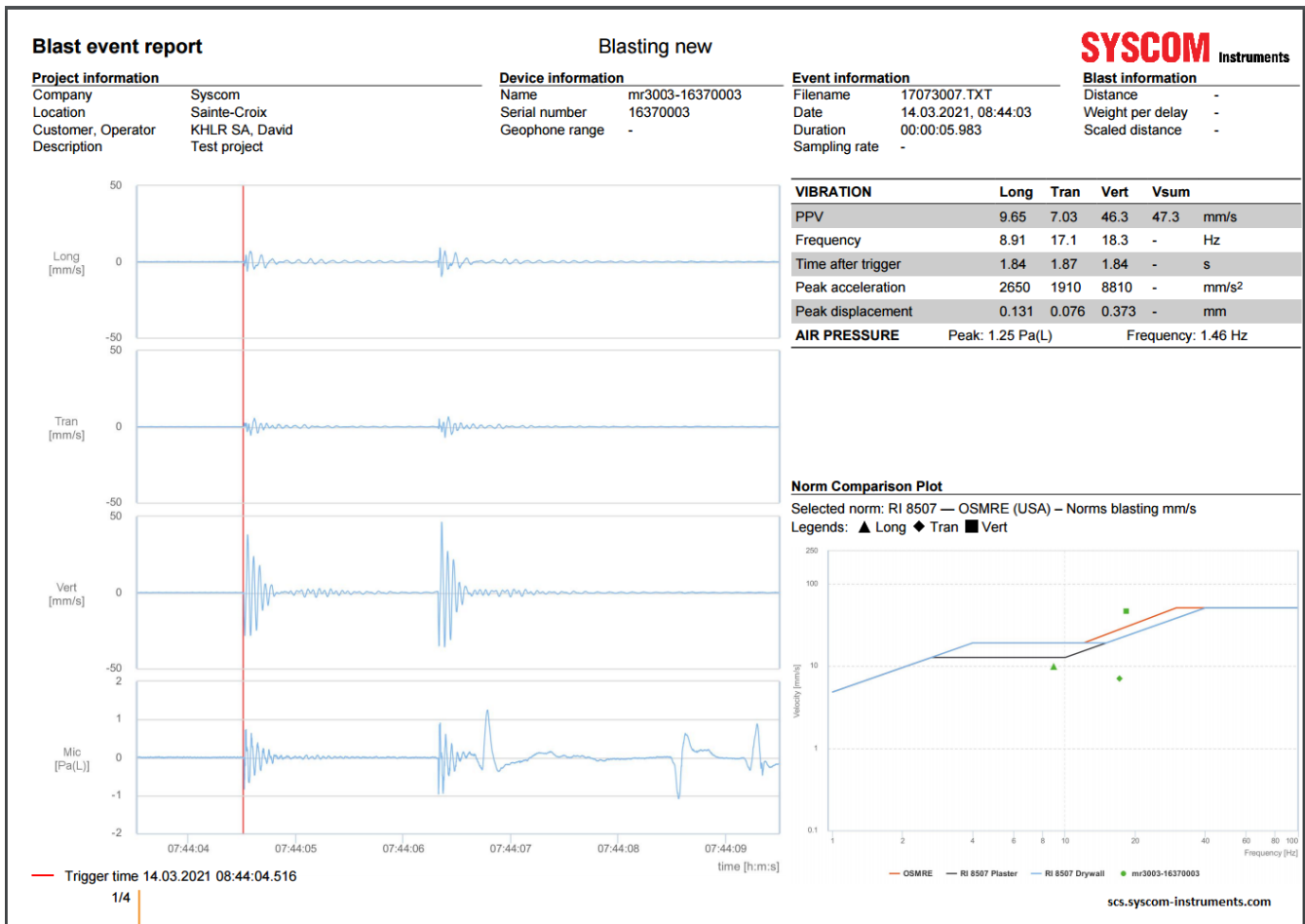


MR3003BLA with external sensor and air pressure microphone

Block diagram MR3003BLA



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 Syscom website.

SCS

scs.syscom-instruments.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

	Part number	Triaxial velocity meter	Overpressure microphone	Battery pack	Carrying case
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MR3003BLA

Example: **93106350-A-EU-DIN**



Kits MR3003BLA for permanent monitoring with: MR3003BLA recorder - 4GB Memory - WiFi - Internal 4G module - Compatibility with external kit GPS - Embedded web server for configuration and control - 3m Ethernet cable - DC input - AC/DC converter - Mounting plate for MR3003BLA - Triaxial velocity sensor MS2003BLA horizontal mounting - Mounting plate for MS2003BLA for fixed installation - Overpressure microphone and accessories

Without battery pack	93106348	x	x		
With battery pack MA3P and related cables	93106349	x	x	x	
Full kit with carrying case	93106350	x	x	x	x
Without microphone, without battery pack and without carrying case	93106353	x			
Full kit without microphone with carrying case	93106351	x		x	x
4G module for Europe, Middle East, Africa and Asia	A				
4G module for North America	B				
4G module for Australia, New Zealand and South America	C				
Cables to Swiss power grid	CH				
Cables to European power grid	EU				
Cables to US power grid	US				
Full range ± 100 mm/s (± 4 in/s)- DIN 45669-1 compliant	DIN				
Full range ± 250 mm/s (± 10 in/s)- ISEE Guidelines compliant	ISEE				

Accessories

Triaxial velocity sensor, full range ± 100 mm/s	MS2003BLA-H-TRIA-100
Triaxial velocity sensor, full range ± 250 mm/s (10 in/s) Horizontal floor mount	MS2003BLA-H-TRIA-250
Triaxial velocity sensor, full range ± 250 mm/s (10 in/s) Vertical wall mount	MS2003BLA-V-TRIA-250
Microphone for air pressure 2-2000 Hz, 148 dB (L)	87000568
1.5m cable from MR to microphone	81000608
Windshield for microphone	87000569
Kit with mounting plate and set of spikes for velocity sensor	13100010
Power and other accessories	Refer to MR3003C

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