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# Blasting machine MICKO 1 DUAL

*Electronic blasting machine to ignite  
4 high intensity electric detonators  
(HU - class 4) or 1 shock tube detonator*

## Description

**Micko 1 Dual** is a new dual blasting machine managed by a last generation multi-core controller.

Each time the blasting machine is powered on, a test is performed to check functions.

In case of malfunctioning or battery low, a warning led turns on.

Its use is friendly and intuitive.

The clamp for shock tube detonators is robust and resistant also in harsh or marine environment.

Manufacture is robust and ergonomic. Pocket size, despite delivering a discharge voltage of 450 V and an energy of 40 Joules.

The blasting machine uses 4 AA alkaline or rechargeable batteries. An automatic sleep function minimizes electricity consumption.

The innovative ST clamp and settings of the discharge circuitry grant a reliable and long life. Laboratory tests have proven a proper functioning for more than 3000 discharge, in sequence of 40 seconds one from then other. Micko 1 Dual uses several protection circuits to increase its reliability and safety:

- An independent watchdog timer, in case of failure, discharge and inhibit the charge of the internal blast capacitor.
- The charge of the internal capacitor is continuously monitored by means of an ADC and no overcharge is allowed.
- The fire pulse (EL and ST) can occurs ONLY after the complete charge of the internal blast capacitor and can be obtained only with the contemporary pressure of the CHARGE and FIRE buttons. The release of the CHARGE push button, activate a specific circuit for fast discharge on an internal capacitor, driving the blasting machine in a safe status.
- After a fire pulse (both EL and ST) an acoustic tone (of about 2 seconds) is generated indicating the completion of the discharge in the circuit relative.
- The status of the batteries is continuously monitored: BATTERY LOW led indicates that the battery is almost empty (to be recharged with a charger supplied or replace the batteries). Even with low charge (about 20% of the total) **MICKO 1 Dual** is able to make the shot if it detects the sufficient voltage in the firing capacitor (this may take a longer time to charge).
- **MICKO 1 Dual** powers off automatically when the charge of the battery is insufficient to guarantee a safe shot.
- **MICKO 1 Dual** has a connector to recharge the batteries. It is placed in the back, inside battery compartment. During battery recharge, charge and discharge functions are inhibited.



- 1 LED INDICATORS: Show if EL electric detonator or TC shock tube detonator circuit are selected
- 2 CHARGE BUTTON: Press and hold to charge capacitor.
- 3 CHECK UP: 3 LEDs monitor machine status.
- 4 CLAMP: for shock tube detonators.
- 5 CLAMP: for electric detonators.
- 6 safety FIRE Button: to be pushed holding CHARGE Button when capacitor is full.
- 7 ON/SELECT: powers ON the blasting machine and toggle between EL and TC circuit mode.



Ministero dello Sviluppo Economico Italia 3eA 2006



B.A.M. Bundesanstalt für Materialforschung und -prüfung Deutschland CE BAM -ZM -458



Arbetsmiljöverket (Sweden), Authority for the security RE 2011/101D42



MASC, Mining And Surface Certification (South Africa)



**\*Technical Characteristics**

Detonators firing capability	Single detonator Total resistance firing line* and detonator (safety coefficient=2)	Series of detonators Total resistance of firing line* and detonators (safety coefficient = 3)**
High Intensity (Class 4)	≤8 Ω	≤5,4 Ω Series of 4 detonators***
VA (Class 3)	<100 Ω	<68 Ω Series of 63 detonators*****
Medium Intensity (Class 2)	≤225 Ω	≤150 Ω Series of 84 detonators****
Low Intensity (Class 1)	≤375 Ω	≤250 Ω Series of 107 detonators*****
Firing capacitor voltage	450 V	
EL blast energy	40 Joules (Ws)	
TC blast energy	Up to 0.6 Joule (Ws)	
Internal safety resistance	1 Ω	
Weight	Approx 850 g (with batteries)	
Dimensions	175 x 100 x 50 mm	
Power supply	4 AA type 1.5 V alkaline batteries or 4 AA type 1.2 V rechargeable NiMH batteries (recommended capacity >2000 mAh)	
Power supply voltage	4.5 to 8 V	
Batteries recharge voltage	9 to 10 V	
Self switch off time	After 3 minutes	
Operating temperature	-10°C to +55°C: EN 60068-2-1:2007-04; EN 60068-2-2:2007-09; Humidity 90% no-condense	
Storage temperature	-25°C to +70°C (batteries excluded)	
Conformity	CE-EMC: EN61000-6-2, EN61000-6-3	
Authorization and classification	Italian M.S.E. 3Ea 2006; Deutsche BAM-ZM-458	

\* Firing line: copper, 100 meters, 2 mm<sup>2</sup> section

\*\* For class 4 detonators, safety coefficient is calculated on firing impulse, for class 1,2,3 detonators safety coefficient is calculated on firing current

\*\*\* Detonators with 6 meters copper rheophores, 3 J/Ω firing impulse and 0.84 Ohms total circuit resistance (10% increasead for resistance connection)

\*\*\*\* Detonators with 6 meters copper rheophores, 16 mJ/Ω firing pulse and di 1.78 Ohms total circuit resistance (10% increasead for resistance connection)

\*\*\*\*\* Detonators with 6 meters copper rheophores, 5.5 mJ/Ω firing pulse and 2.33 Ohms total circuit resistance (10% increasead for resistance connection)

\*\*\*\*\* Detonators with 1.07 Ω of resistance and 140 mJ/Ω firing pulse

