



Electric Detonators

Electric

All electric detonators are specially designed to provide the precise control necessary to produce accurate and consistent blasting results.

ADVANTAGES

Initiating strength exceeds the standard detonator No. 8 strength rating and reliably initiates all cap sensitive products.

Detonator shell design reduces the possibility of any mechanical damages as well as water hammer effect.

High level safety features due to an antistatic sleeve surrounding the fusehead with safeguarding spark gap. Priming charge is protected by steel delay element.

Superior fusehead design is unmatched for reliability.

Multi-step quality control system tests components and finished products to ensure reliable performance.

High level accuracy and delay intervals permit greater flexibility in blast design to control vibration, frequencies and fragmentation, with no overlap.

Excellent water resistance is provided by triple crimping.

Reliable over wide temperature range.

High compatibility with all blasting machine types.

Marking by means of a plastic tag fastened on the leg wire.

High quality packaging in a strict conformity with the International Agreement of Road, Train, Sea and Air Transport.

Easy to handle and **excellent storage characteristics.**



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SPECIFICATIONS AND APPLICATIONS

Standard Delay Ranges

Delay Range	Delay Numbers	Delay Interval	Insulation Color	Shell Material
Instantaneous	0	0 ms	Red	Aluminium
Millisecond	1-30	25 and 50 ms	Red	Aluminium
Millisecond Permissible	0-16	30 ms	Yellow	Copper
Quarter Second	1-16, 18, 20, 22, 24	250 ms	Green	Aluminium
Half Second	1-12	500 ms	Blue	Aluminium

Typicals Uses

The accuracy of millisecond detonators eliminates overlaps and contributes significantly to better breakage and vibration control when properly used. Permissible detonators are designed for use in environments where the risk of ignition of the explosive air-methan and air-coal dust mixtures exists. Long delay detonators provide sufficient time for successful blasting of trenches and sewers, tunnels, shafts, drifts, raises and other underground and surface work.

Standard Sensitivity Groups

	Group I	Group II	Group III	Group IV
No Fire Current	0,18 A/5 min	0,45 A/5 min	1,2 A/5 min	4,0 A/5 min
No Fire Impulse	0,8 mJ/Ω	8 mJ/Ω	80 mJ/Ω	1,1/Ω
Firing Current	≥ 1 A/4 ms	≥ 2,12 A/4 ms	≥ 3,5 A	≥ 30 A/4 ms
Firing Impulse	≥ 3,0 mJ/Ω/4 ms	≥ 18 mJ/Ω/4 ms	≥ 140 mJ/Ω/4 ms	≥ 3,0 mJ/Ω/4 ms
Standard Wire Insulation Color	White	Yellow	Pink	Brown

Typicals Uses

One of the special features of **Group III and IV** detonators is **higher resistance** against unintentional initiation by foreign sources of electric energy (**stray currents, electrostatic discharge, radio or radar waves, atmospheric discharges**). Group III detonators are especially suitable for blasting in residential areas. Group IV detonators are used in blasting operations with highest risk of unintentional initiation (high voltage lines, railway corridors, etc.) Detonators of all groups are suitable for standard blasting operations.

Special Detonators

Group IIa - Sicca	This detonator type is specified with No Fire Current 1,0 Amp, All Fire Impulse 50 mJ/Ohm, and it is possible to use it with instant, millisecond, quarter-second and half-second delay. These detonators are suitable for most standard blasting operations.
Seismic	Seismic electric detonator is specially designed to produce accurate seismic records in pattern shooting. There is no time lag between breaking of the fusehead bridgewire and firing of the detonator. Reaction time less than 1 ms when fired with current of 5 Amps.
Oil Star	Special high temperature (to 180°C) and high-pressure resistant (to 100 MPa) detonators developed specially for use in Oil and Gas market. Some of its versions are resistorized (to 58 Ohms) and/or fluid disabled.

STORING

Detonators must be stored in an approved magazine located to conform to state and local laws and regulations. The storage place should be well built, well air conditioned, clean, dry, fire resistant and securely locked when not in use. Detonators should never be stored in the same magazine with other explosives.

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