



**AUSTIN POWDER**

AUSTIN DETONATOR

# Product catalogue

VERSION 07-2023





**AUSTIN POWDER**

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**E★STAR**  
Electronic Detonators

The E★STAR system is a fit for purpose electronic initiation system suitable for all blasting applications. It provides the highest level of quality, security, control, and precise timing to ensure compliant and consistent blasting results. The E★STAR system can bring significant benefits in areas that often require enhanced control and improvement, including reducing air-blast impact, minimizing vibration, mitigating back break damage, and enhancing fragmentation. E★STAR detonators are part of the E★STAR ELECTRONIC INITIATION SYSTEM, and the use of this system requires specific training in all components.

The E★STAR system includes the following components:

**Detonators**

- ◆ E★STAR GO
- ◆ E★STAR Tunnel
- ◆ E★STAR Gold / Gold HD
- ◆ E★STAR Diamond
- ◆ E★STAR Starter

**Equipment**

- ◆ E★STAR Tester
- ◆ E★STAR Logger 2
- ◆ E★STAR Blaster & Remote Blaster
- ◆ E★STAR Mini Blaster
- ◆ E★STAR Remote 2.5i
- ◆ E★STAR Cube Portable Box

**Software solution for E★STAR**

- ◆ E★STAR Programmer
- ◆ Paradigm

# E★STAR

**E**lectronic Initiation System

**S**afe

**T**estable, Tunable, Total Solution

**A**ccurate, Affordable, Autonomous

**R**ugged, Reliable, RoHS





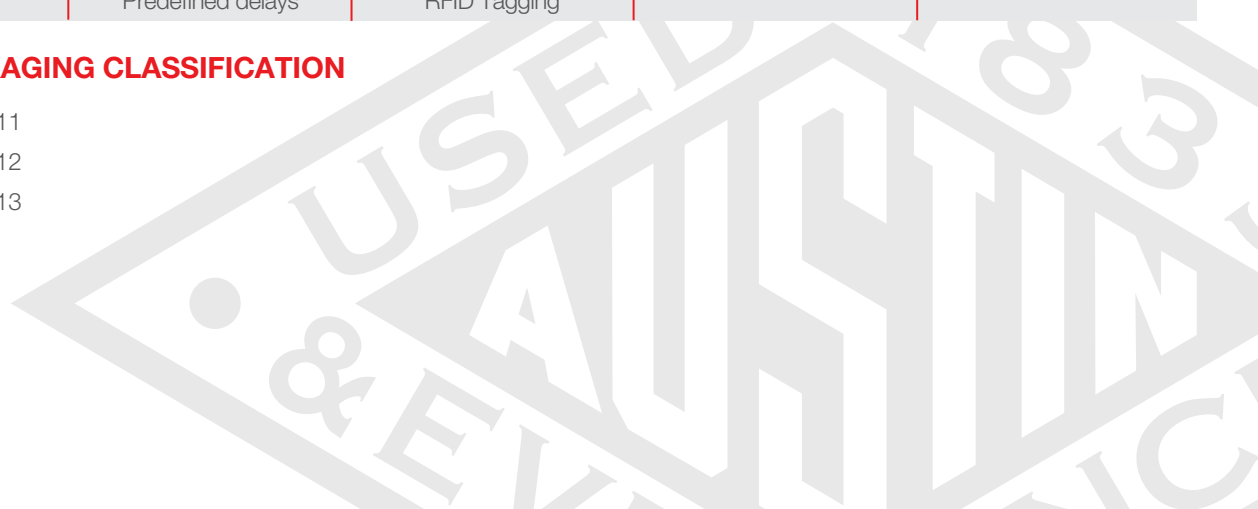
### STANDARD TECHNICAL DESCRIPTION

Detonator shell material	Copper
Base charge	720 mg (E★STAR Starter 180 mg)
Crimping	Triple crimp
Temperature range of application	-30 °C < T < +60 °C
Shelf life (storage conditions)	5 years (-30 °C to +40 °C)
Label marking	Data matrix code (traceability), Product name, Wire length, Detonator serial number (for RFID labels)

	E★STAR GO	E★STAR Tunnel	E★STAR Gold / Gold HD	E★STAR Diamond
Water pressure resistance	0,3 MPa / 48 hours	0,3 MPa / 48 hours	1 MPa / 28 days	1 MPa / 28 days
Wires material	Steel	Steel	Steel	Steel
Wire color	Yellow	Yellow	Red / Orange	Neon Pink
Conector color	Neon Pink	Neon Pink	Yellow / Red	Yellow / Red
Max. number of detonators per blast	400	400	1,600 (3,200 dual blasting mode); 12,800 with Remote 2.5i	1,600 (3,200 dual blasting mode); 12,800 with Remote 2.5i
Max Delay Time (ms)	3,000	20,000	20,000	40,000
Special features	Log by Walking Programming, Predefined delays	Sections & Intervals Programming, RFID Tagging	RFID Tagging, Glove Friendly Connector	Built-in Temperature Sensor

### STANDARD PACKAGING CLASSIFICATION

- ◆ 1.1B UN 0511
- ◆ 1.4B UN 0512
- ◆ 1.4S UN 0513



# E★STAR GO

# E★STAR GO →→→



## AUSTIN POWDER

The **E★STAR GO** system was developed as an easy-to-learn, entry-level product for users to experience and understand the advantages of working with E★STAR electronic detonators. The **E★STAR GO** system is most beneficial in smaller scale blasting of up to 400 detonators, such as quarries, trenches, road cuts, and foundations of buildings. Using robust Bus-line and leg wire guarantee significant reduction of leakage issues.

### Designed for quick and easy use

- ◆ **Preset delays** which correspond to Shock★Star nonelectric or Rock★Star electric system
- ◆ **Log-By-Walking** programming method – the delays are set automatically upon connecting the detonator to the Bus-line
- ◆ **Easy-to-use**, tailor made, compact **light-weight** equipment to program and fire
- ◆ Special on-bench **carrying bag** with Logger and Bus-line inside





# E★STAR TUNNEL

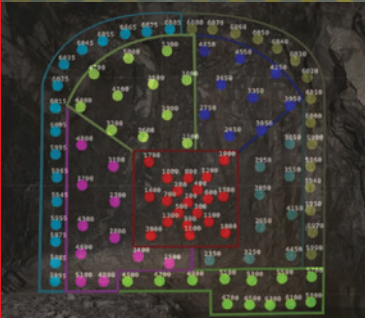
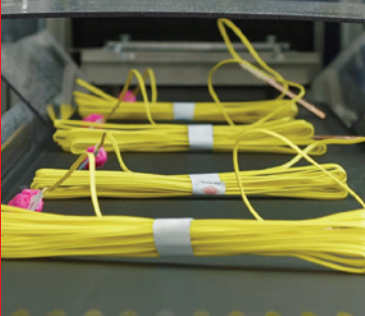
## E★STAR Tunnel

### Economical, Easy-to-Use, & Environmentally Responsible.

E★STAR Tunnel was developed for rapid tunnel blasting deployment with the aim of reducing post-blast plastic residue in the muck pile. The yellow color wires and neon color connectors allow for quick detection of the E★STAR Tunnel detonators, even in a low-light underground environment. E★STAR Tunnel retains all the features and benefits of the E★STAR detonator, including the control equipment required for operating the system. E★STAR Tunnel is also suitable for underground mine, development headings.

### Designed to Improve Cycle Times

- ◆ Specialized programming method **Sections & Intervals** for fast programming in a tunnel
- ◆ Proven reliable in demanding and extreme tunnel conditions
- ◆ **Reduces** post-blast **plastic residue** in muck pile
- ◆ Bus-line or Daisy-chaining connections
- ◆ Lowers scale, roof-bolt, and spray times
- ◆ Increases production and safety, 100% verification of the blast due to precise timing
- ◆ Touchless Programming (RFID technology)



# E★STAR Gold E★STAR Gold HD

## E★STAR GOLD

## E★STAR GOLD HD



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E★STAR Gold detonator is the **golden standard** among E★STAR detonator products. It is most suitable for quarry and construction blasting applications.

E★STAR Gold HD is special detonator with more robust insulation suitable for open-pits and mining with the occurrence of highly abrasive rocks.

### Designed to perform in most conditions

- ♦ Copper shell for high dynamic pressure resistance and corrosion resistance
- ♦ Extra-long molded crimp plug for additional mechanical protection
- ♦ Steel leg-wires with a high tensile strength
- ♦ Two different connector colors for easier distinction between the top and the bottom primer
- ♦ Daisy-Chaining / Bus-line connections
- ♦ RFID Technology for touchless logging
- ♦ Delays programmable in 1 millisecond increments offer solutions for vibration, fragmentation or back break
- ♦ The most reliable and easy-to-use connector in the industry
- ♦ Remote firing available for additional safety and security



# E★STAR DIAMOND

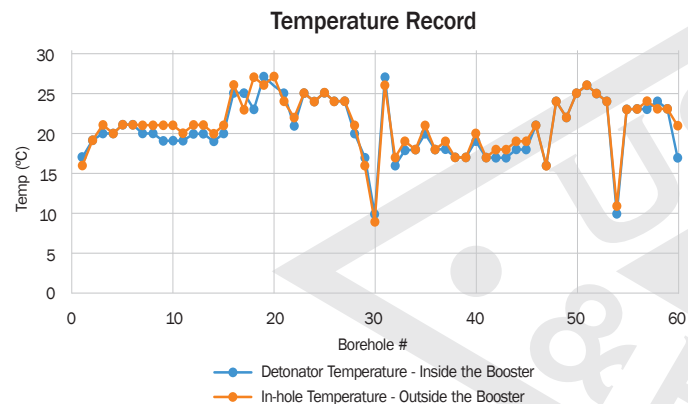
## E★STAR Diamond

### Top-tier product for most demanding & technically challenging applications

E★STAR Diamond detonator is a flag-ship edition of E★STAR detonator designed for harsh environment and the most demanding blasting operations. A built-in temperature sensor can measure in-hole temperature, a special safety feature for blasting in reactive ground.

### Designed to endure and perform

- ◆ Built-in temperature sensor to register temperature by Logger with an automatic warning when the temperature limit is exceeded
- ◆ Delay range options 1- 40,000 milliseconds programmable in 1 millisecond increments
- ◆ Super Heavy Duty leg wires
- ◆ Superb abrasion resistance and leakage immunity
- ◆ Robust copper shell for high dynamic pressure resistance and corrosion resistance
- ◆ Extra-long molded crimp plug for additional mechanical protection
- ◆ Two different connector colors for easier distinction between the top and the bottom primer
- ◆ RFID Technology for touchless logging
- ◆ The most easy-to-use and reliable connector in the industry
- ◆ Remote firing using latest Remote 2.5i equipment with the option of firing up to 12,800 detonators



# E★STAR Starter

# E★STAR STARTER



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E★STAR Starter is designed for Shock Tube or detonating cord initiation. It comes with a field programmability function for preferred delay timing in a wide variety of starter applications, specifically multiple bench blasts or separate underground headings.

**Designed to be cost effective and the safest way to initiate a Shock★Star blast**

- ◆ **Cost reduction, magazine space reduction** – elimination of long-length firing line using Shock Tube / electric firing line
- ◆ **Safety** – options to choose the safest firing point when used in combination with the E★STAR Remote initiation system
- ◆ **Plastic waste reduction**



# E★STAR

## Logger 2

E★STAR  
Equipment

E★STAR Logger 2 is a multifunctional electronic device, with improved ergonomics and improved programming and verification features.

**Designed to program, verify & diagnose prior to clearing the site to arm and fire**

- ◆ Capacity to program **1,600 detonators**
- ◆ **Multiple Programming methods** – manual, auto-delay, data from PC
- ◆ RFID tagging with **automatic switching** between **RFID and connect** programming in case a physical connection of the detonator is detected
- ◆ **Auto-leakage check** during the programming
- ◆ **Leakage measurement** for a single detonator or for the whole branch
- ◆ **Continuous presence check** – to check the integrity of network connections when covered by heavy mats
- ◆ **Presence check** – one time “high level” verification of whether all detonators are connected
- ◆ **Check all** – “high level” check of up to 400 detonators in multiple branches



Short cycle  
time



RFID

tagging



Automatic  
monitoring



User  
friendly



E★STAR Blaster & E★STAR Remote Blaster are multipurpose electronic devices.

Their main functions are:

- ◆ Verify all detonators
- ◆ Charge detonators capacitors
- ◆ Fire detonators
- ◆ E★STAR Remote Blaster is additionally able to connect to E★STAR Remote system for remote firing up to 3.2 km.

E★STAR Remote, Control and Bridge Units



E★STAR Remote Blaster



E★STAR Blaster

E★STAR Remote system allows the blaster to control the blasting procedure from a safe distance without using a long firing line connected to the Blasting Machine. E★STAR Remote system controls one Blasting Machine at a time.



## E★STAR Mini Blaster

E★STAR Mini Blaster can verify, charge and fire up to 4 detonators.



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# E★STAR

## Remote 2.5i

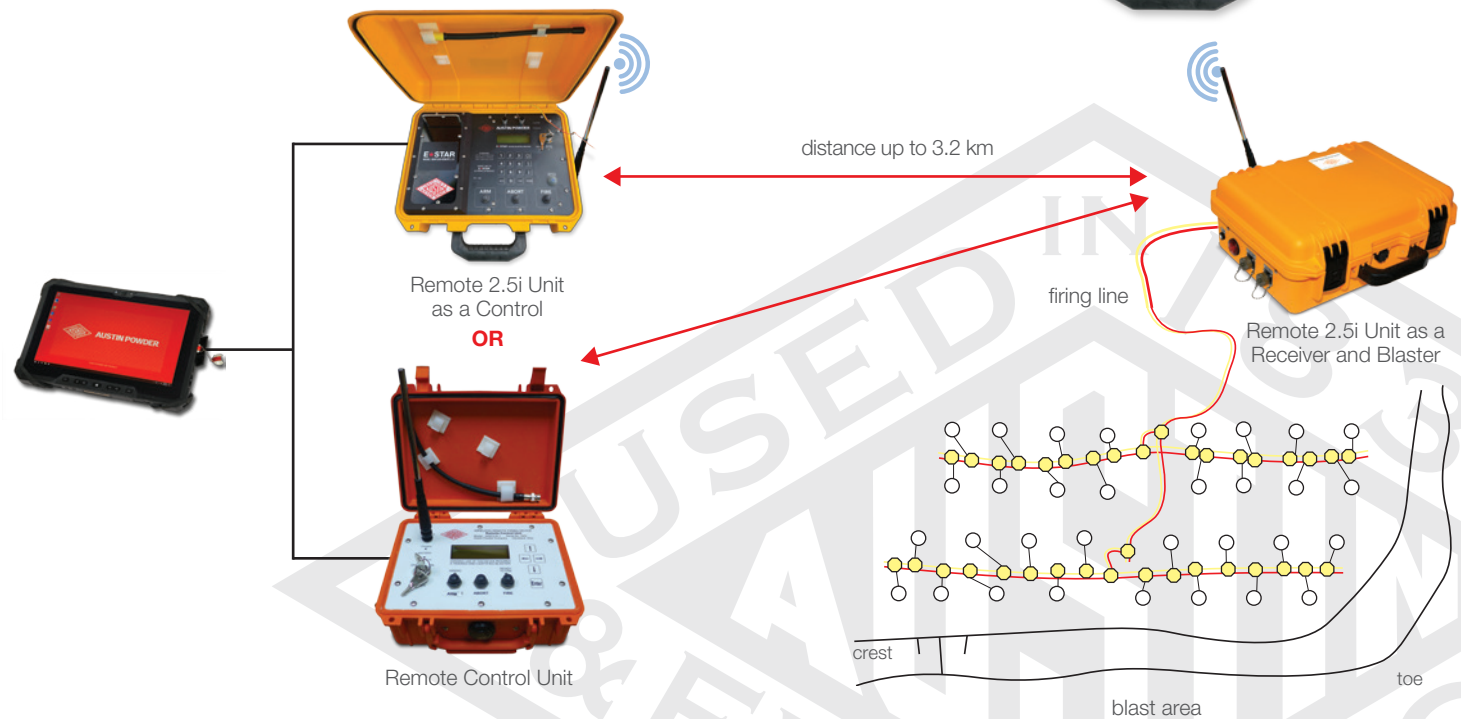
E★STAR  
Equipment

E★STAR Remote 2.5i represents the most advanced method for remote blast initiation.

The set has a capacity of 12,800 detonators, which can be reached by controlling of up to 8 Remote 2.5i units by one Remote Control Unit, or one Remote 2.5i.

The system allows a choice of blasting mode: One by One Firing, Simultaneous Firing or Offset Firing. The system is operated by the Austin Powder proprietary software installed in a tablet.

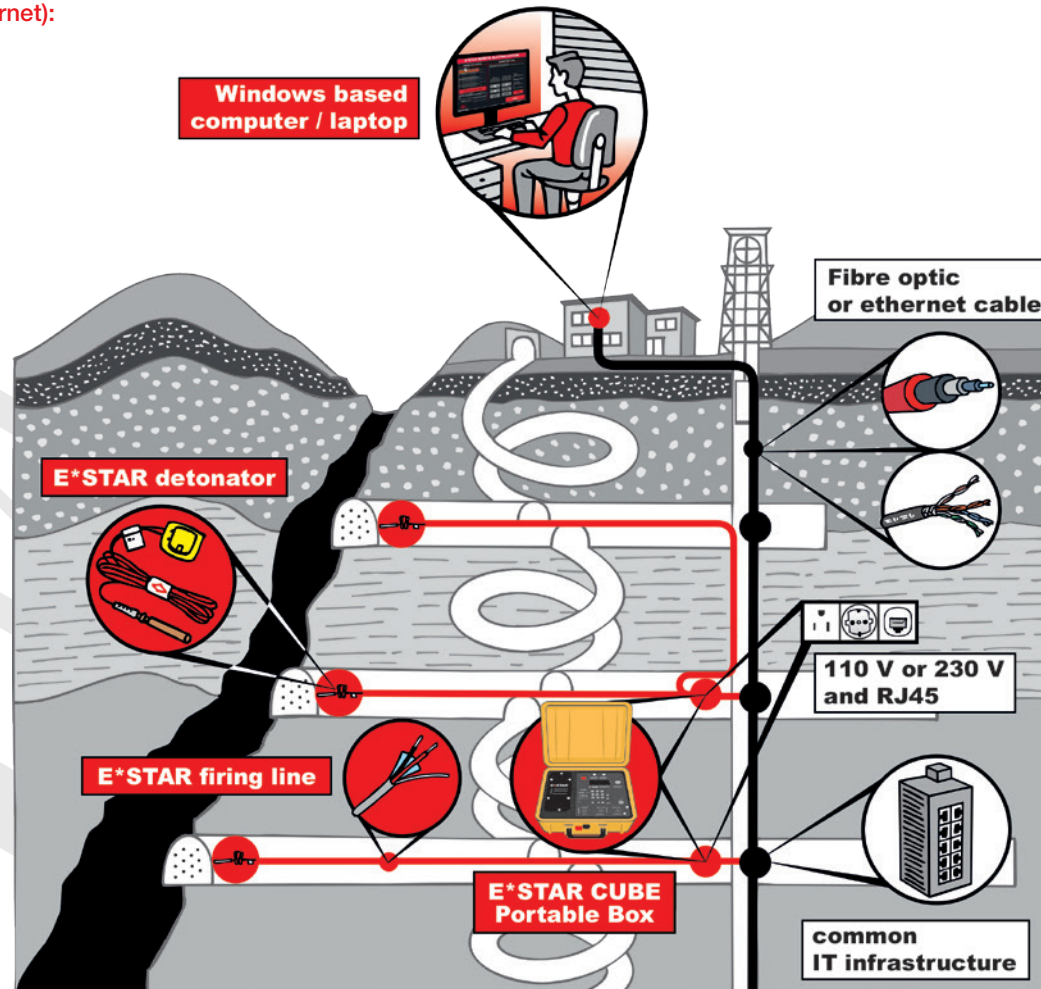
The maximum distance is 3.2 km line of sight.



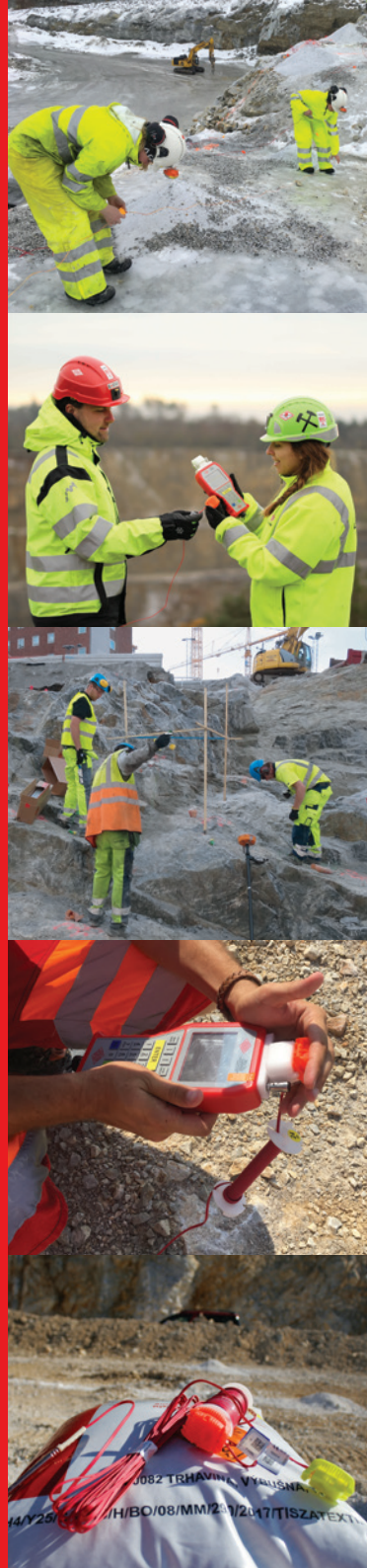
## E★STAR CUBE - CENTRALIZED UNDERGROUND BLASTING EQUIPMENT

E★STAR CUBE system is designed to verify and initiate blast rounds in an underground mine from the safety and comfort of an office at the surface. The system consists of the following functional blocks: Austin Powder proprietary control software to control the blasting operation from a distance via PC and E★STAR CUBE Portable Box with all-in-one-box solution for the connectivity to a local mine **Ethernet (Fibre Optic)**, **Wi-Fi**, or **4GLTE** communication infrastructure, whichever is present. Up to 8 Portable Box units can be operated using the control software and each unit has a capacity to verify and initiate 1,600 detonators.

Example of CUBE instalation (Ethernet):







E★STAR  
GOLD

# THE BEST

## ELECTRONIC DETONATOR CONNECTOR IN THE INDUSTRY

**TWICE AS EASY • TWICE AS RELIABLE**

- ◆ Industry-leading double connections on both the leg wires and duplex bus line wires ◆
- ◆ Innovative through-connector testing saves time as testing can occur without needing to open the connector ◆
  - ◆ Color-coded connectors for easy wire length identification ◆
  - ◆ Anti-slip friction grip is easy to use in all harsh conditions ◆
- ◆ Robust hinge not susceptible to breakage in cold conditions or multiple uses ◆
  - ◆ Enhanced sealant inside the connector ensures an environmental seal ◆
  - ◆ Advanced design allows for a one-finger opening of the connector ◆
- ◆ The useful flat back was designed for writing delays or other information ◆
  - ◆ Superior design is easy to use with winter gloves ◆





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**Shock★Star**  
Nonelectric Detonators

Austin Detonator nonelectric detonators are designed to provide the precise control and accuracy for blasting in quarries, surface or underground metal or non-metal mines, and construction sites where the risk of ignition of the explosive air-methane or air-coal dust mixtures does not exist.

The complete Shock★Star nonelectric initiation system includes:

- ♦ Instantaneous, millisecond and long period in-hole detonators
- ♦ Shock★Star Surface detonator with connector able to start up to 8 Shock Tubes
- ♦ Instantaneous and delay detonator with Shock★Star Bunch
- ♦ Austin StarTube and Shock★Star StartLine

### BENEFITS

**High Initiation Strength** of the in-hole detonators is ensured by base charge of 720 mg of PETN.

**Protected primary charge** enclosed inside heavy duty steel delay element.

**Excellent Water Resistance** is provided by antistatic sealing plug and triple crimp.

**Shock Tube** provides high tensile strength and is unaffected by static electricity, stray currents or radio frequency transmission. It is highly resistant to abrasion, impact, friction and ultraviolet radiation.

**Initiating signal** is transmitted at a constant velocity of 2,000 m/s and noiselessly passes through kinks, knots and sharp bends of Shock Tube without disrupting the explosive column.

**"T" connector ("J" hook)** can be provided on all in-hole detonators for quick and easy connection to detonating cord.

**Wide range of delay time variability** can reduce blasting vibration, improve fragmentation, and cut the cost of blasting.

**Reliability and accuracy** of timing is ensured by strict quality control in the production process together with vacuum sealed inner packages.

**Possible packaging** 1.1B, 1.4S and 1.4B depending on the customer's request. Strict 1.4S packaging makes possible the transportation of nonelectric detonators together with explosives in the same compartment.

Shock★Star MS, TS or LP are **equipped with** stopper and the possibility to equip with T-connector on special request.



### STANDARD TECHNICAL DESCRIPTION

Detonator shell material	Aluminum
Producer's standard mark (shell bottom)	V
Crimping	triple crimp
Plug	semi-conductive rubber
Mechanical strength of detonator assembly	>40 N
Water pressure resistance	0.3 MPa/7 days
Electrical non-conductivity of Shock Tube	insulation resistance > 0.1 GOhm
	flash-over distance < 20 mm
Temperature range for application	-30 °C < T < +60 °C
Shelf life (storage conditions)	2 years (-30 °C to +40 °C, R.H. max. 65 %) in original sealed package
Traceability label marking	delay # detonator type delay ms Shock Tube length data matrix code
<b>Shock Tube</b>	
Material	Surlyn/PE
Velocity of detonation	2,000 m/s
Standard colors	Yellow ●   Red ●   Light blue ●



# Shock★Star MS



**AUSTIN POWDER**

## DESCRIPTION

**Shock★Star MS** detonators are available in a sequence of 31 number periods from instantaneous (0 ms) to 1,000 ms. They are designed to be used as detonators for the initiation of cast boosters, high explosives or cap sensitive emulsions. In-hole delays can be equipped with a T-connector for compatibility with detonating cord initiation or can be initiated by another electric, electronic or nonelectric detonator.



## DELAY SEQUENCE

Delay #	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nominal delay (ms)	0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375
Delay #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Nominal delay (ms)	400	425	450	475	500	550	600	650	700	750	800	850	900	950	1,000	

## PROPERTIES & PACKAGING

Base charge	720 mg PETN		
Shock Tube color	Yellow ●   Light blue ●		
Transport classification	1.1B	1.4S	1.4B (at special request)
UN No.	0360	0500	0361 (at special request)



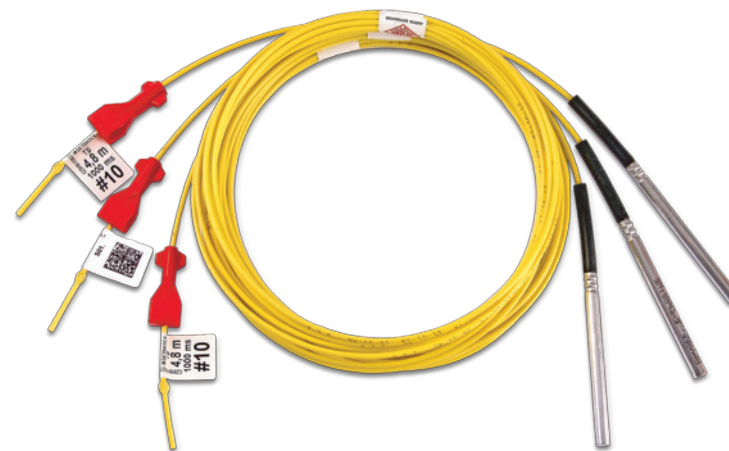
# Shock★Star TS

## DESCRIPTION

**Shock★Star TS** detonators are available in a sequence of 40 number periods from 25 ms to 9,000 ms.

Delay sequence is appropriate for applications such as tunneling and shaft or raise mining where long delays are required between holes to allow for movement of blasted rock.

They are designed to be used as down hole detonators for the initiation of cast boosters, high explosives or cap sensitive emulsions. In-hole delays may be equipped with a T-connector for connecting to detonating cord.



## DELAY SEQUENCE

Delay #	0	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7
Nominal delay (ms)	25	100	150	200	250	300	350	400	450	500	550	600	650	700
Delay #	7 1/2	8	8 1/2	9	9 1/2	10	11	12	14	16	18	20	25	30
Nominal delay (ms)	750	800	850	900	950	1,000	1,100	1,200	1,400	1,600	1,800	2,000	2,500	3,000
Delay #	35	40	45	50	55	60	65	70	75	80	85	90		
Nominal delay (ms)	3,500	4,000	4,500	5,000	5,500	6,000	6,500	7,000	7,500	8,000	8,500	9,000		

## PROPERTIES & PACKAGING

Base charge	720 mg PETN		
Shock Tube color	Yellow ●		
Transport classification	1.1B	1.4S	1.4B (at special request)
UN No.	0360	0500	0361 (at special request)



# Shock★Star LP



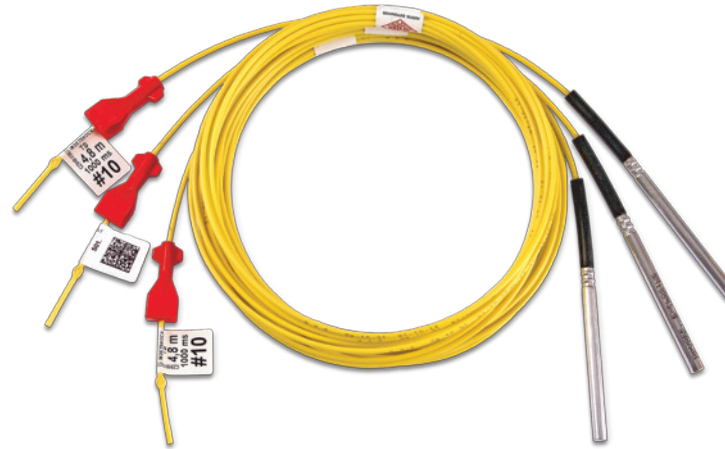
**AUSTIN POWDER**

## DESCRIPTION

**Shock★Star LP** detonators are available in a sequence of 16 delays from 25 ms to 9,600 ms.

Delay sequence is appropriate for underground mining applications, raising and shaft sinking operations.

Shock★Star LP is designed as in-hole detonators for the initiation of cast boosters and high explosives. In-hole delays may be equipped with a T-connector for compatibility with detonating cord initiation.



## DELAY SEQUENCE

Delay #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Nominal delay (ms)	25	200	400	600	1,000	1,400	2,000	2,500	3,000	3,500	4,500	5,500	6,500	7,500	8,500	9,600

## PROPERTIES & PACKAGING

Base charge	720 mg PETN		
Shock Tube color	Yellow ●		
Transport classification	1.1B	1.4S	1.4B (at special request)
UN No.	0360	0500	0361 (at special request)





# Shock★Star Bunch

## DESCRIPTION

**Shock★Star Bunch** detonators are designed to initiate a bundle of Shock Tubes. The attached detonating cord loop can initiate up to 20 Shock Tubes. Shock★Star Bunch is supplied with a detonating cord loop attached to it. In case of transportation issues, the Shock★Star Bunch and the detonating cord loop (5 g/m) can be supplied separately to be completed by the customer on site.

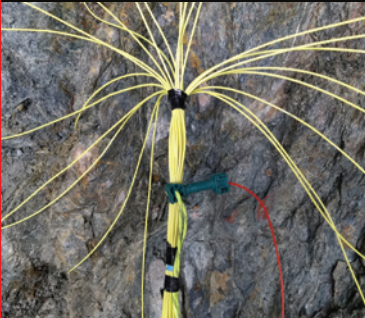


## DELAY SEQUENCE



## PROPERTIES & PACKAGING

Base charge	160 mg PETN	
Shock Tube color	Red ●	
Transport classification	1.1B	1.4S (without detonating cord)
UN No.	0360	0500



# Shock★Star Surface



AUSTIN POWDER

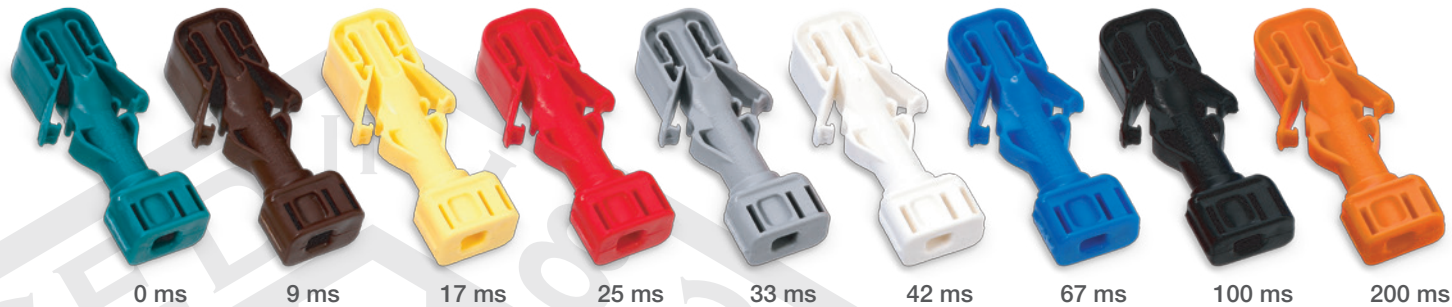
## DESCRIPTION

**Shock★Star Surface** detonators are designed for the initiation of other Shock Tube detonators to provide a delay between holes. The connector block is designed to work reliably in two positions: **unlocked** position for normal working conditions and **locked** position for the most demanding working conditions with a risk of disconnection (e.g. under heavy mats). Shock★Star Surface detonators are equipped with connector blocks able to contain 8 outgoing Shock Tubes. Connectors have a reduced base charge to reduce noise levels and eliminate shrapnel cut-off concerns. These detonators are available in 9 delays from instantaneous (0 ms) to 200 ms.

Shock★Star Surface detonators cannot be used for initiation of detonating cord.



## DELAY SEQUENCE

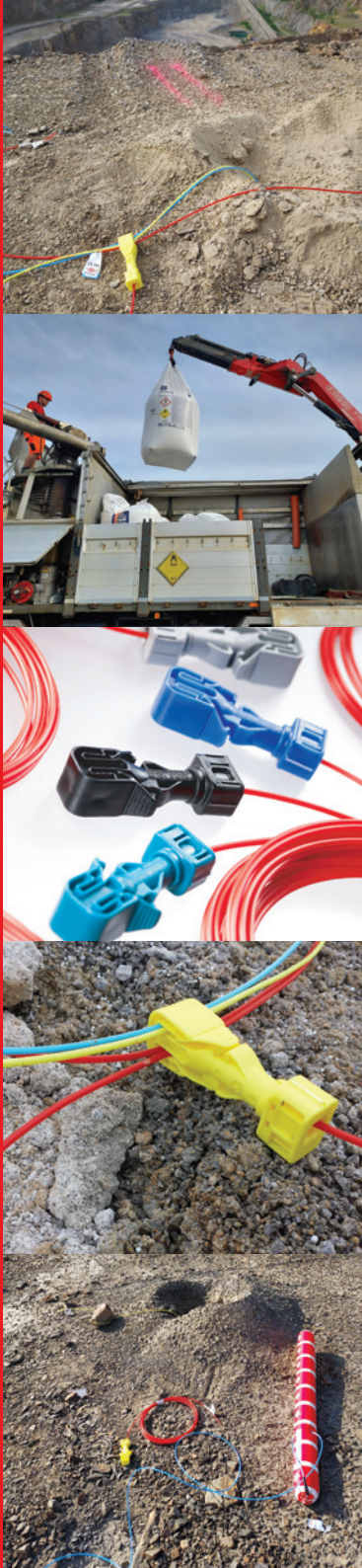


## PROPERTIES & PACKAGING

Base charge	120 mg PETN
Shock Tube color	Red ●
Transport classification	1.4S
UN No.	0500

# Shock★Star Surface

- ★ The most ergonomic
  - ★ The most user-friendly
  - ★ The most reliable
  - ★ No shrapnel effect
  - ★ The ability to connect and split the signal up to 8 Shock Tubes
- } on the market



# Shock★Star Dual Delay

## Surface & Tunnel Version

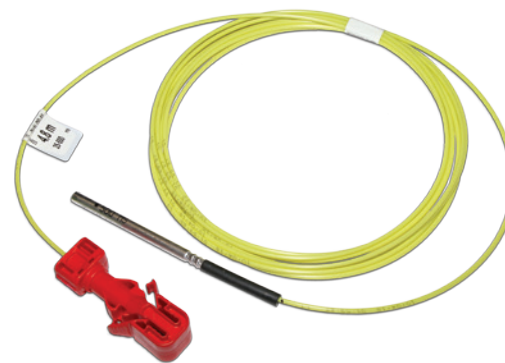


**AUSTIN POWDER**

### DESCRIPTION

#### Surface Version & Tunnel Version

**Shock★Star Dual Delay** detonator combine the in-hole delay detonator and the surface connector in one product. Special delay sequence combination is appropriate either for surface or underground applications. This combination offers convenience for storage and inventory in one product instead of two and often reduces space requirements for transportation. Connecting blast patterns is generally faster with Shock★Star Dual Delays as less connections are required in total. Additionally, the lower number of individual products used in the blast pattern reduces disorder at connection points and makes visual inspections easier.



### DELAY SEQUENCE

Nominal delay (ms)	Shock★Star Dual Delay - Surface version	
	Surface Connector	Shock★Star MS
	25	475, 500 (other delays at special request)
	Shock★Star Dual Delay - Tunnel version	
Surface Connector	Shock★Star TS	
100, 200	9,000	

### PROPERTIES & PACKAGING

Base charge	120 mg PETN (Surface Connector) + 720 mg PETN (MS, TS)		
Shock Tube color	Yellow ●		
Transport classification	1.1B	1.4S	1.4B (at special request)
UN No.	0360	0500	0361 (at special request)

# Fuse Cap

### DESCRIPTION

**Shock★Star Fuse Cap** is instantaneous plain detonator ready to be crimped with Safety Fuse of max. diameter 6 mm and burning speed of 1 m per 125 ± 15 s.



# Blasting Machines

**Blasting Machines** are designed to initiate detonators in surface and underground applications in the environments without the hazard of ignition or explosive air-methane and air-coaldust mixture.

## HR-22

HR-22 blasting machine is fully mechanical blasting machine designed for Shock Tube initiation.

## Mushroom Stomper Starter

Mushroom/Stomper Starter is a mechanical blasting machine designed for Shock Tube initiation.

## MICKO 1 DUAL

MICKO 1 DUAL is designed to initiate:

- Shock Tube of nonelectric detonators
- electric detonators



# Shock★Star StartLine StarTube

## Shock★Star StartLine

is designed for blasting initiation. Factory-spoiled tubing with lengths 50-800 m is equipped with the Shock★Star Bunch or Shock★Star Surface.

## StarTube

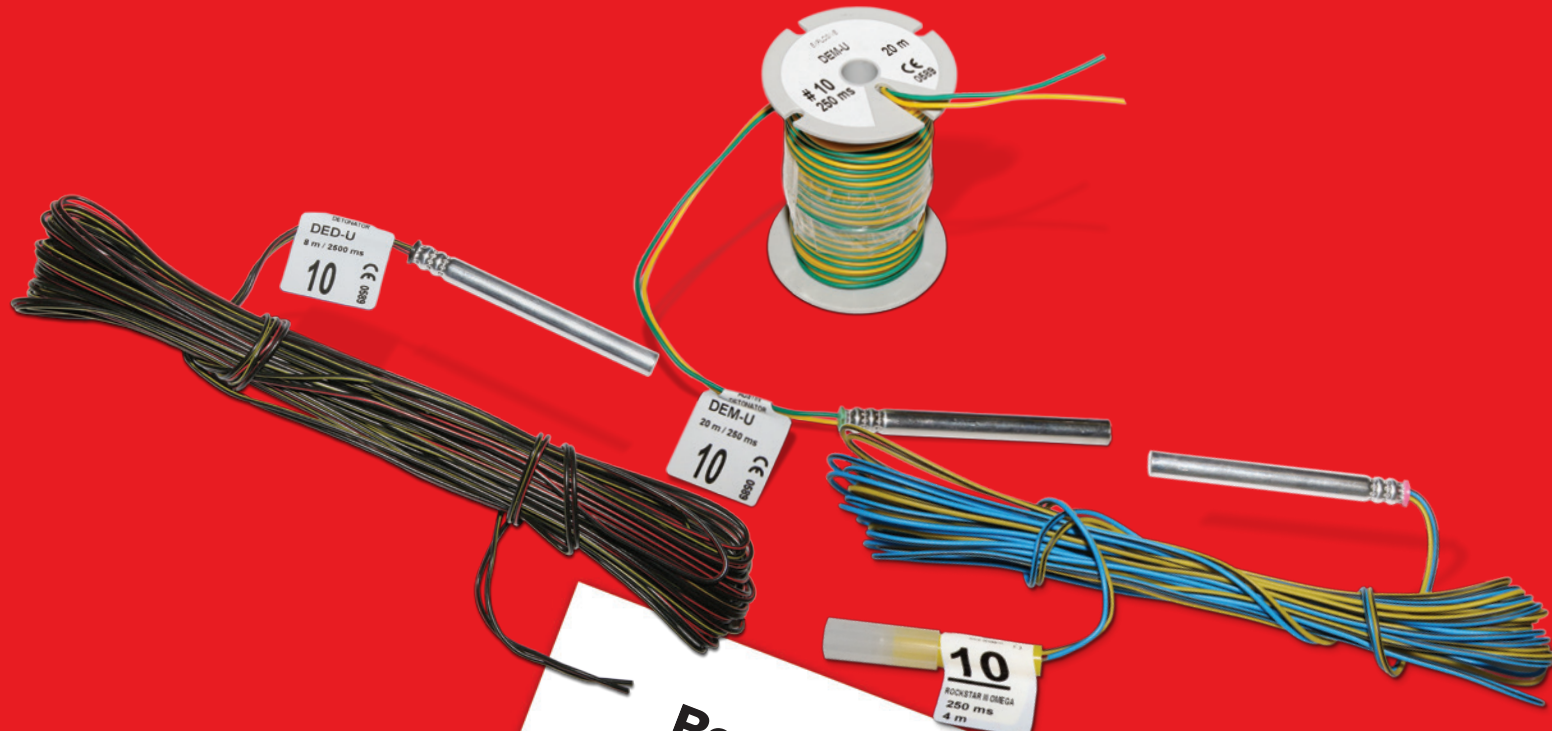
Factory-spoiled tubing can be used for starting of an initiation network. Shock Tube is available in 400, 600, 800 and 3,000 m on the spool.





AUSTIN POWDER





**Rock★Star  
Oil★Star  
Time★Star  
Electric Detonators**

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

## BENEFITS

**High initiation strength** 720 mg PETN base charge ensures reliable initiation of all cap sensitive explosives.

**Detonator shell and delay element** 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.

**Protected primary charge** enclosed inside heavy duty steel delay element.

**Superior fusehead design** 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.

**Reliability over wide temperature range.**

**High compatibility** with all blasting machine types.

**Marking** by means of traceability label.

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

**Strict 1.4S packaging** makes transportation of electric detonators together with explosives in the same compartment possible.

**Excellent storage characteristics** and easy handling.







### STANDARD TECHNICAL DESCRIPTION

Detonator shell material	Aluminum, Copper	
Base charge	720 mg PETN (600 mg PETN in permissible detonators)	
Primary charge	Lead azide	
Producer's mark (shell bottom)	V (M with permissible detonators) and delay number	
Crimping	triple crimp	
Plug	antistatic PVC (moulded antistatic rubber for seismic detonators)	
Water pressure resistance	0.3 MPa / 24 hours or 1 MPa / 6 months (Seismic)	
Leg wires insulation material	PVC (PE for longer wire lengths and for special detonators)	
Shelf life (storage conditions)	2 years (-30 °C to +40 °C)	
Standard leg wires	Cu ø 0.5, 0.6 or 0.8 mm; Fe ø 0.65 mm <sup>1)</sup>	
Traceability label marking	delay # detonator type delay ms wire length data matrix code	
Transport Classification	1.4B	1.4S
UN No.	0255	0456

<sup>1)</sup>Appropriate type of leg wire must be chosen depending on given application.

### STANDARD FIRING PARAMETERS

	Class I	Class II	Class III	Class IV
Fusehead resistance	1.50 - 1.90 Ω	0.40-0.80 Ω	0.16 - 0.20 Ω	0.032 - 0.040 Ω
No fire current	0.18 A	0.45 A	1.2 A	4 A
No fire energy	0.8 mJ/Ω	8 mJ/Ω	80 mJ/Ω	1,100 mJ/Ω
All fire current	1 A	1.5 A	3.5 A	25 A
All fire energy in series	2.5 mJ/Ω	16 mJ/Ω	140 mJ/Ω	2,500 mJ/Ω

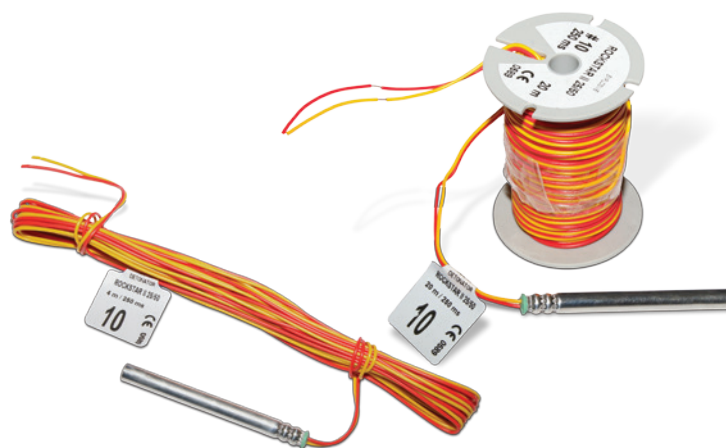
In case of use of electric detonators in residential areas or in special applications with a risk of initiation from foreign sources of energy, the appropriate detonator sensitivity must be chosen.

# Rock★Star 25/50

## DESCRIPTION

Rock★Star 25/50 are electric millisecond detonators designed to provide the precise control necessary to produce accurate and consistent blasting results in a variety of blasting applications in the mining, quarrying and construction industries.

Available Firing parameters - Rock★Star 25/50:  
Class "I" Class "II" Class "III" Class "IV"



## DELAY SEQUENCE

Delay #	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nominal Delay (ms)	0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375
Delay #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Nominal Delay (ms)	400	425	450	475	500	550	600	650	700	750	800	850	900	950	1,000	



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# Rock★Star III Omega

## DESCRIPTION

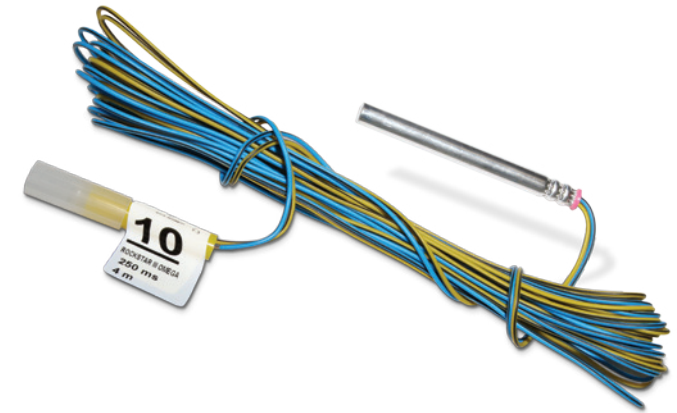
**Rock★Star III Omega** are electric millisecond detonators designed to provide the precise control necessary to produce accurate and consistent blasting results in a variety of blasting applications in the mining, quarrying and construction industries. The detonator is equipped with a VA connector for easy wire connection even in gloves. Extra strong wires insulation provides protection in the most demanding working conditions (e.g. under heavy mats).

Total detonator resistance is  $3.6 \pm 0.3 \Omega$  regardless of the lead wires length, which is the biggest advantage of Rock★Star III Omega.

Available Firing parameters - Rock★Star III Omega:  
Class "III"

## DELAY SEQUENCE

Delay #	0	1	2	3	4	5	6	7	8	9	10
Nominal Delay (ms)	0	25	50	75	100	125	150	175	200	225	250
Delay #	11	12	13	14	15	16	17	18	19	20	21
Nominal Delay (ms)	275	300	325	350	375	400	425	450	475	500	550
Delay #	22	23	24	25	26	27	28	29	30		
Nominal Delay (ms)	600	650	700	750	800	850	900	950	1,000		



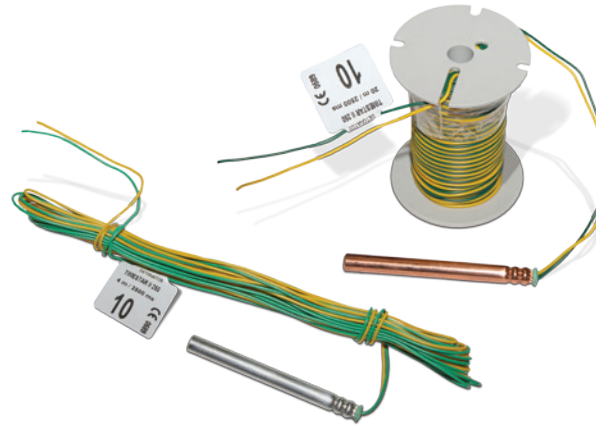
# Time★Star 250

## DESCRIPTION

**Time★Star 250** long period electric delay detonators provide sufficient time for rock movement necessary for successful blasting of trenches, sewers, tunnels, shafts, drifts and raises.

Offered in 36 delays, they are consistently accurate to prevent overlap, assure better fragmentation and reduce vibration.

Available firing parameters - Time★Star 250:  
Class "I" Class "II" Class "IV"



## DELAY SEQUENCE

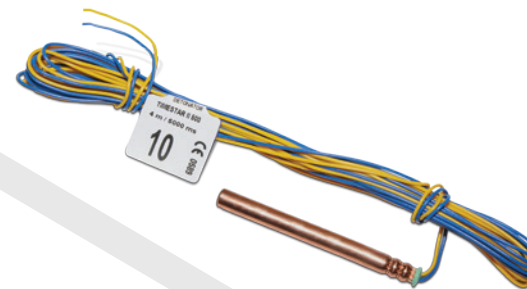
Delay #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nominal Delay (ms)	250	500	750	1,000	1,250	1,500	1,750	2,000	2,250	2,500	2,750	3,000	3,250	3,500
Delay #	15	16	17	18	20	22	24	26	28	30	32	34	36	
Nominal Delay (ms)	3,750	4,000	4,250	4,500	5,000	5,500	6,000	6,500	7,000	7,500	8,000	8,500	9,000	

# Time★Star 500

## DESCRIPTION

**Time★Star 500** long period electric delay detonators provide sufficient time for rock movement necessary for successful blasting of trenches, sewers, tunnels, shafts, drifts and raises. Offered in 12 delays, they are consistently accurate to prevent overlap, assure better fragmentation and reduce vibration.

Available firing parameters - Time★Star 500:  
Class "I" Class "II" Class "IV"



## DELAY SEQUENCE

Delay #	1	2	3	4	5	6	7	8	9	10	11	12
Nominal Delay (ms)	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	5,500	6,000



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## Blasting Machine

### BART-2AS

Blasting machine is designed for initiation of all electric detonators in series and in series-parallel connection at all blasting operations as well as in the underground coal mines where the risk of explosion of coal dust or methane-air mixture exists. The high-voltage source with an alternator serves for charging a capacitor.

Capacitor energy 70 J

Capacitor voltage 1,250 V



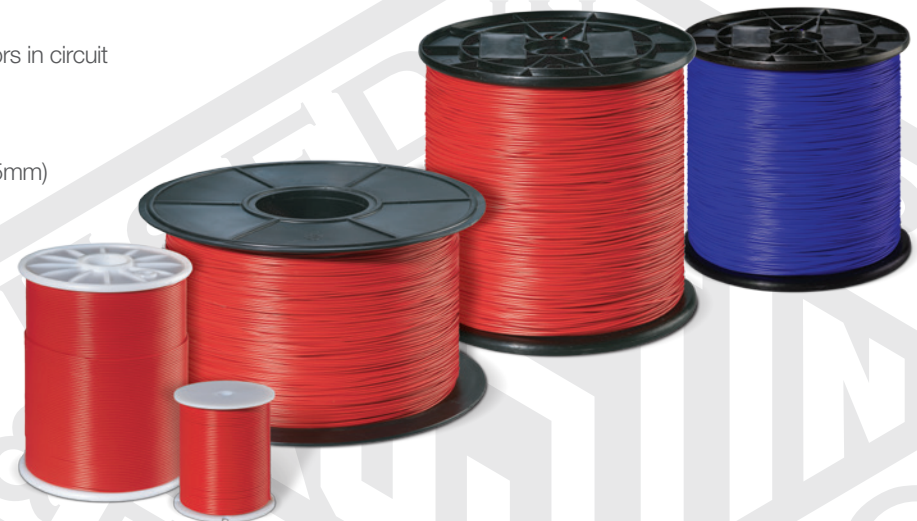
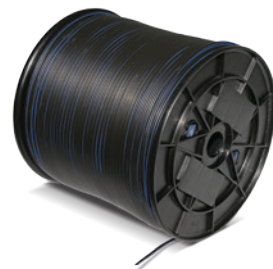
## Connecting Wires

### CONNECTING WIRES

- providing connection between firing line and detonators in circuit

#### parameters:

- ◆ PVC, PVC magnetic, PE insulation
- ◆ Wire core dia: Cu (0.60mm) or Cu coated steel (0.65mm)
- ◆ Resistance (ohm/100m): 3.60-40
- ◆ Packaging on spools: 100-1,500m



# Seismic-S Seismic★Star II



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## DESCRIPTION

**Seismic** detonators are specially designed to provide the precise control that is necessary to achieve accurate seismic records from individual shots or pattern shooting. Austin Detonator guarantees reaction time shorter than 1 ms between application of current (minimum 6 A for detonators connected in series) and firing of the detonator. A high level of protection from electrostatic discharge and water pressure is provided.

Available firing parameters - Seismic Detonators:  
Class "II"

### Seismic-S

- ♦ basic type of a seismic detonator for less demanding applications
- ♦ typically with copper shell (aluminium shell on special request)
- ♦ antistatic rubber sealing plug
- ♦ PVC-coated separate leg wires

### Seismic★Star II

- ♦ advanced type of a seismic detonator designed for use in applications with extended sleep time in aggressive environments, e.g. salt water
- ♦ high level of abrasion resistance of leg wires
- ♦ copper shell
- ♦ moulded antistatic rubber sealing plug
- ♦ polyethylene-coated duplex wire

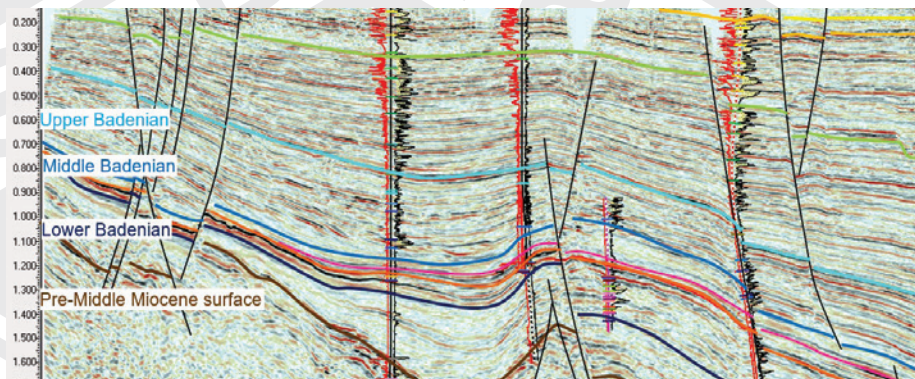
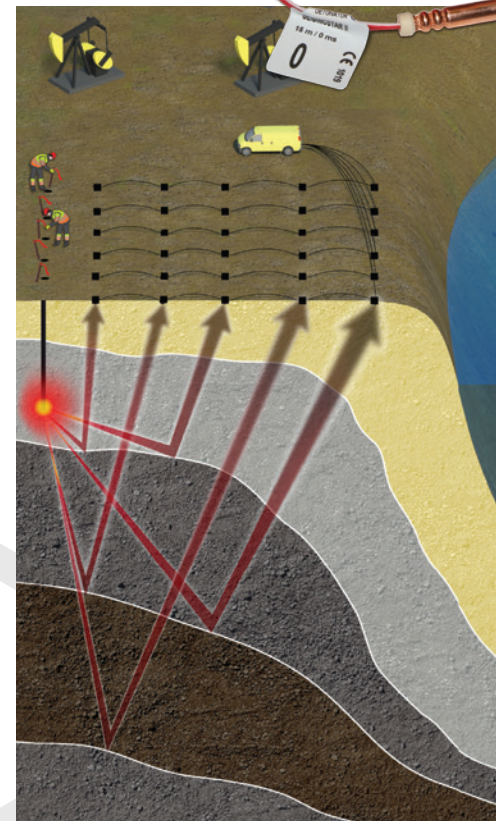
## BENEFITS

**No fire energy** of 8 mJ/Ω provides additional protection from stray electric currents.

**Copper shell** resists corrosive environments such as salt and brackish water.

**Water pressure resistance** 1 MPa/6 months (Seismic★Star II).

**Resistant to temperature** extremes from -30 to +80 °C (Seismic★Star II).



## DESCRIPTION

**Oil★Star Detonators** are specially designed electric detonators used in the Oil and Gas industry for wireline performed blasting operations (perforations, plug setting etc.). For that purpose, they exhibit high temperature and, for some types, also high water pressure resistance. Most of them are resistorised to increase their electric energy immunity, and all are provided with antistatic sleeve and spark gap for low electrostatic discharge sensitivity. Some versions are equipped with adapters to easily connect detonating cord and some exhibit fluid disabled feature.

## BENEFITS

### Temperature resistance:

up to 177 °C or 246 °C (A-161) for 1 hour

### Water pressure resistance:

up to 100 MPa (A-96L and A-105) for 4 hours

### High immunity against electrostatic energy:

25 kV/2500 pF (resistorised: resistance 52-59 Ω)

### Detonating cord adapter:

A-140F/Block, A-85, A-105  
optional add-on (A-140F, A-161)

**Packaging 1.4B:** 500 pcs/box (A-140F/Block 220 pcs)

**Packaging 1.4S:** A-150T

High reliability and easy handling

Broad range available:

- ◆ Temperature resistant detonators: A-140, A-140H, A-161
- ◆ Pressure resistant detonators: A-96L, A-105
- ◆ Temperature resistant and fluid disabled detonators: A-85, A-140F/Block, A-140S, A-161



### A-150T

instantaneous fluid dissabled temperature resistant detonator (up to 150 °C)



### Fluid disabled:

A-85

A-140F/block

A-140S

A-161



### No fluid disabled:

A-96L

A-105

A-140

A-140H

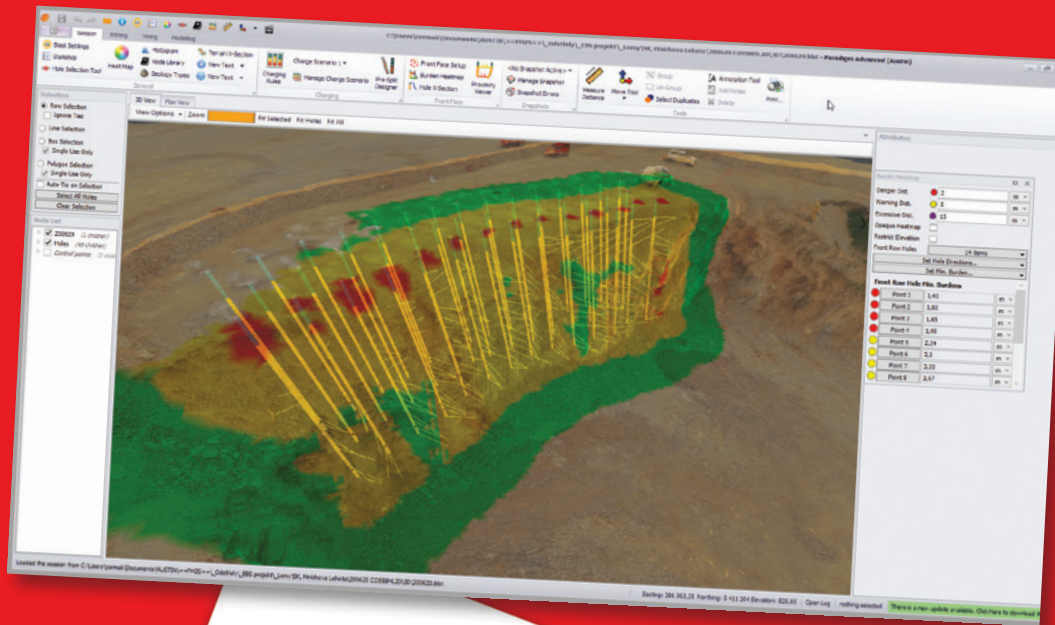




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# Blast Optimization



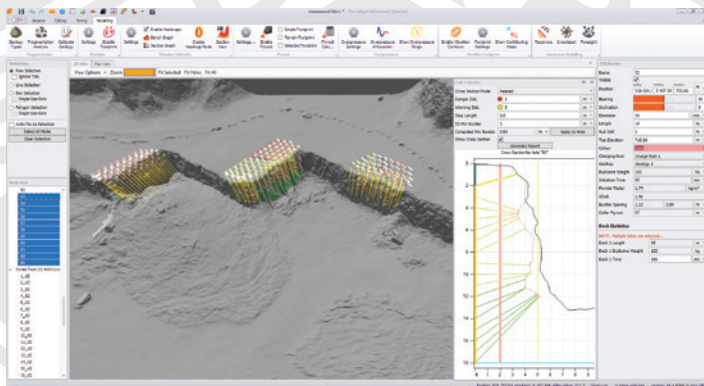
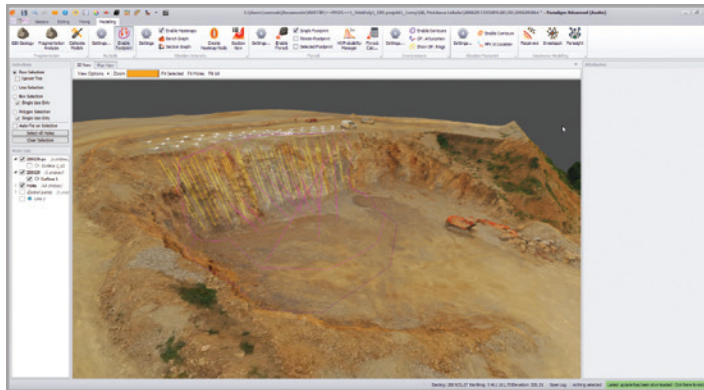
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**Austin E★BLAST Consulting offers comprehensive consulting service in all blasting applications.**

We use state-of-the-art software and hardware solutions for our blast optimizations.

Examples of possible solutions:

- ◆ Blast Efficiency
- ◆ Reduction of Blast Vibration
- ◆ Fragmentation Optimization
- ◆ Wall Stability
- ◆ Muck Pile Control (Height, Reach, Uniformity, Throw)
- ◆ Effective Loading Operations
- ◆ Flyrock
- ◆ Crusher Throughput



# Tools

Technology is changing the world! We, at Austin Powder, are doing our best to keep up with the newest technology trends in order to improve efficiency and have satisfied customers.

## DRONES

- ◆ Cost-effective and Efficient Surveying Solutions
- ◆ Time-saving Measurement Process
- ◆ High-Resolution Photos
- ◆ Operator Safety
- ◆ Modeling 3D - Before and After the Blast
- ◆ Muck Pile Fragmentation Analysis



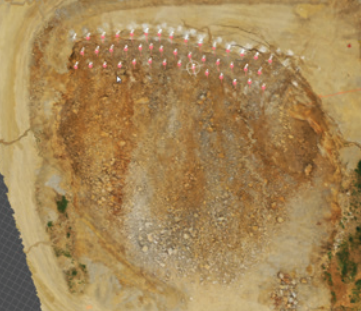
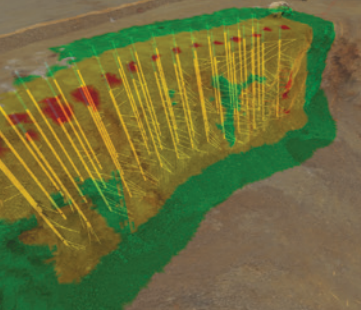
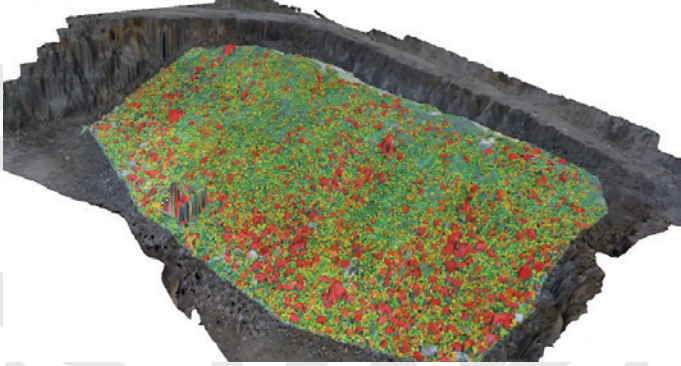
## GPS

- ◆ High Level of Accuracy
- ◆ Portability
- ◆ Time, Cost and Labor-saving Technique



## FRAGMENTATION ANALYSIS SOFTWARE

- ◆ Combined 2D and 3D analysis
- ◆ Fully automated
- ◆ Scales automatically
- ◆ Statistic evaluation





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Environmentally  
responsibly



### AUSTIN POWDER

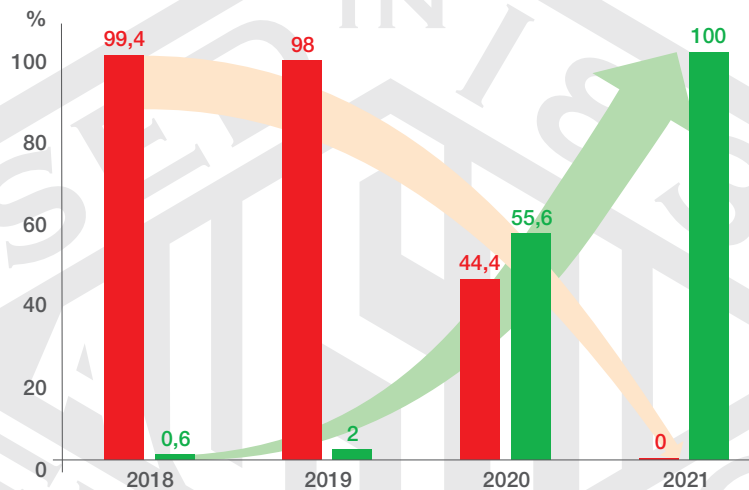
We are living our values by ensuring we are safe, compliant and environmentally responsible in everything we do.

#### Environmentally responsible manufacturing and company initiatives:

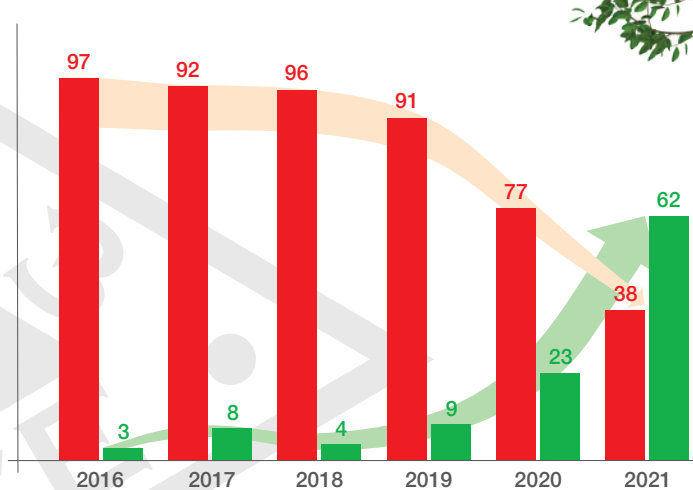
- ◆ Environmentally responsible product development
- ◆ Engineering lead-free products
- ◆ E\*STAR ignition system development
- ◆ Cutting-edge automation and safety measures
- ◆ Investing in state-of-the-art Plant & Equipment upgrades
- ◆ Employee protection
- ◆ Implementing recycling/reusing/reducing programs
- ◆ Reducing and reusing waste and circular economy strategies
- ◆ Using sophisticated, clean water exchange systems
- ◆ Monitoring and reducing energy consumption
- ◆ Environment protection by minimizing resource consumption
- ◆ Practicing good stewardship of water resources



Transition charge substitution RSV-ECO / RSV



Delay charge ECO / non ECO substitution





### Radical but Invisible Redesigns

Historically, lead has been an integral part of manufacturing charges and detonators. Austin Detonator has invested time and resources in the R&D of lead substitutions. Our teams have developed new lead-free and reduced lead products and components and are proud to share that we have developed and are now manufacturing new, more environmentally responsible detonators.

#### Eco Advancements for Shock\*Star Nonelectric Detonators:

- ◆ DELAY and TRANSITION CHARGES up to 1 000 ms are now lead-free
- ◆ Production processes are now utilizing lead-free components

#### Eco Advancements for Rock\*Star Electric Detonators:

- ◆ DELAY CHARGES delays up to 1 000 ms are now lead-free
- ◆ Lead-free fuse heads in all Rock\*Star detonators

#### Eco Advancements for E\*STAR Electronic Detonators:

- ◆ No heavy metals in DELAY CHARGES as the delay is created by an electronic module
- ◆ Superior lead-free fuse head design
- ◆ Lead-free soldering on electronic modules
- ◆ Steel wires for efficient post-blast material separation
- ◆ E\*STAR Tunnel detonator with reduced plastic content in the connector and wire insulation



For Austin Powder, environmental and social responsibility will be at the forefront as we strive to be the best explosives manufacturer, as defined by our customers, our family, and our communities for generations to come.



# Notes

NOTES



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For more detailed information see our webpage or do not hesitate to contact us on above mentioned contacts.

[www.austin.cz](http://www.austin.cz)



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