
AXXIS
Digital Initiation System
PRODUCT CATALOGUE
bme
BLASTING SOLUTIONS

The AXXIS™ Digital Initiation System

currently holds the world record for the largest blast using electronic detonators, firing 6,690 detonators on FQM's Kansanshi operation in North-Western Zambia.

bme
BLASTING SOLUTIONS

CONTENTS

WELCOME TO THE WORLD OF AXXIS™

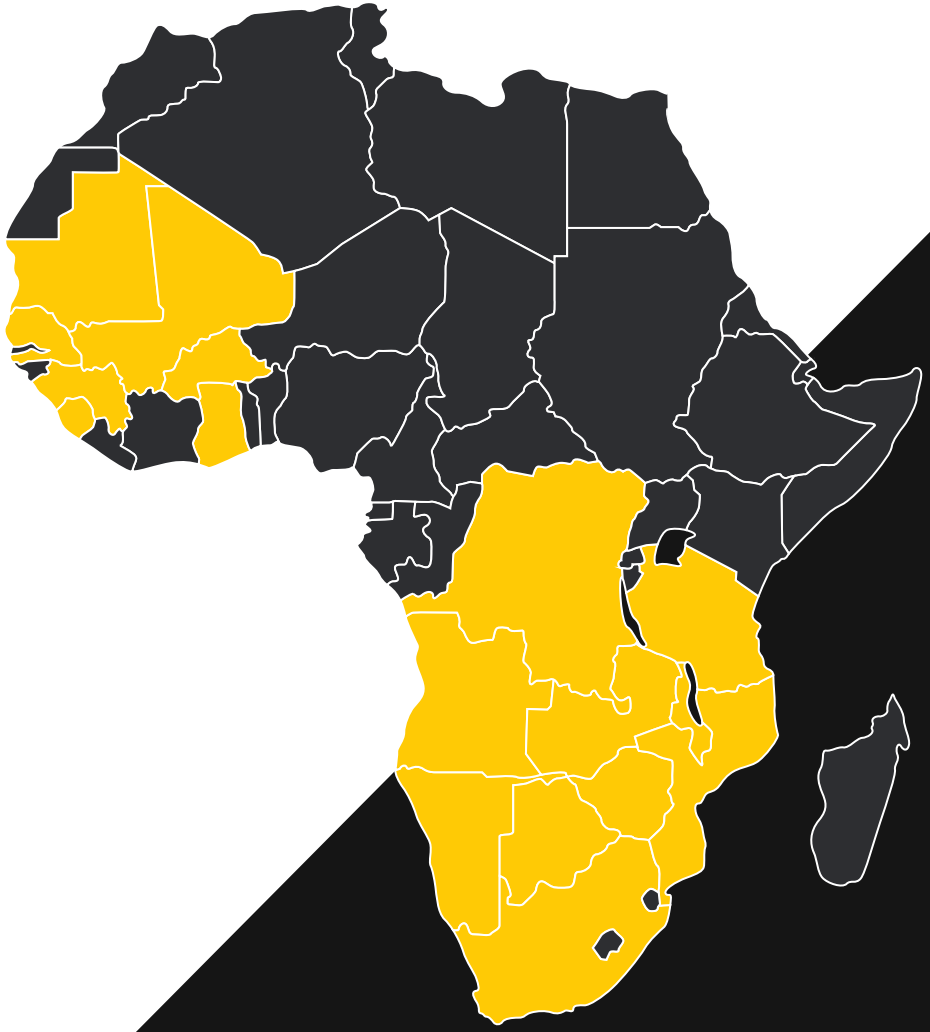
bme BLASTING SOLUTIONS

AXXIS™ is a fully programmable, accurate, easy, and safe to use electronic blasting system. The AXXIS™ system ticks the boxes on simplicity & functionality, making it the ideal tool for civil & mining projects.

The AXXIS™ system was designed and developed in-house at BME, one of the largest explosives companies in Africa. BME has been operating on the continent for over 30 years and is listed on the Johannesburg stock exchange through its holding company, Omnia Holdings Limited. BME currently has a presence in 24 countries on 4 continents.

In Australia, AXXIS™ is distributed by Advanced Initiating Systems Pty Ltd. Advanced Initiating Systems Pty Ltd is an Australian company that focuses on optimising blasting solutions in Australian mines. BME's holding company, the Omnia Group, is the majority shareholder in Advanced Initiating Systems Pty Ltd and together, we are able to give Australian customers peace of mind both in terms of product supply, technical support and performance.

FOOTPRINT



Africa

- South Africa
- Lesotho
- Swaziland
- Botswana
- Zimbabwe
- Namibia
- Zambia
- Mozambique
- Malawi
- Tanzania
- DRC
- Sierra Leone
- Guinea
- Senegal
- Mauritania
- Mali

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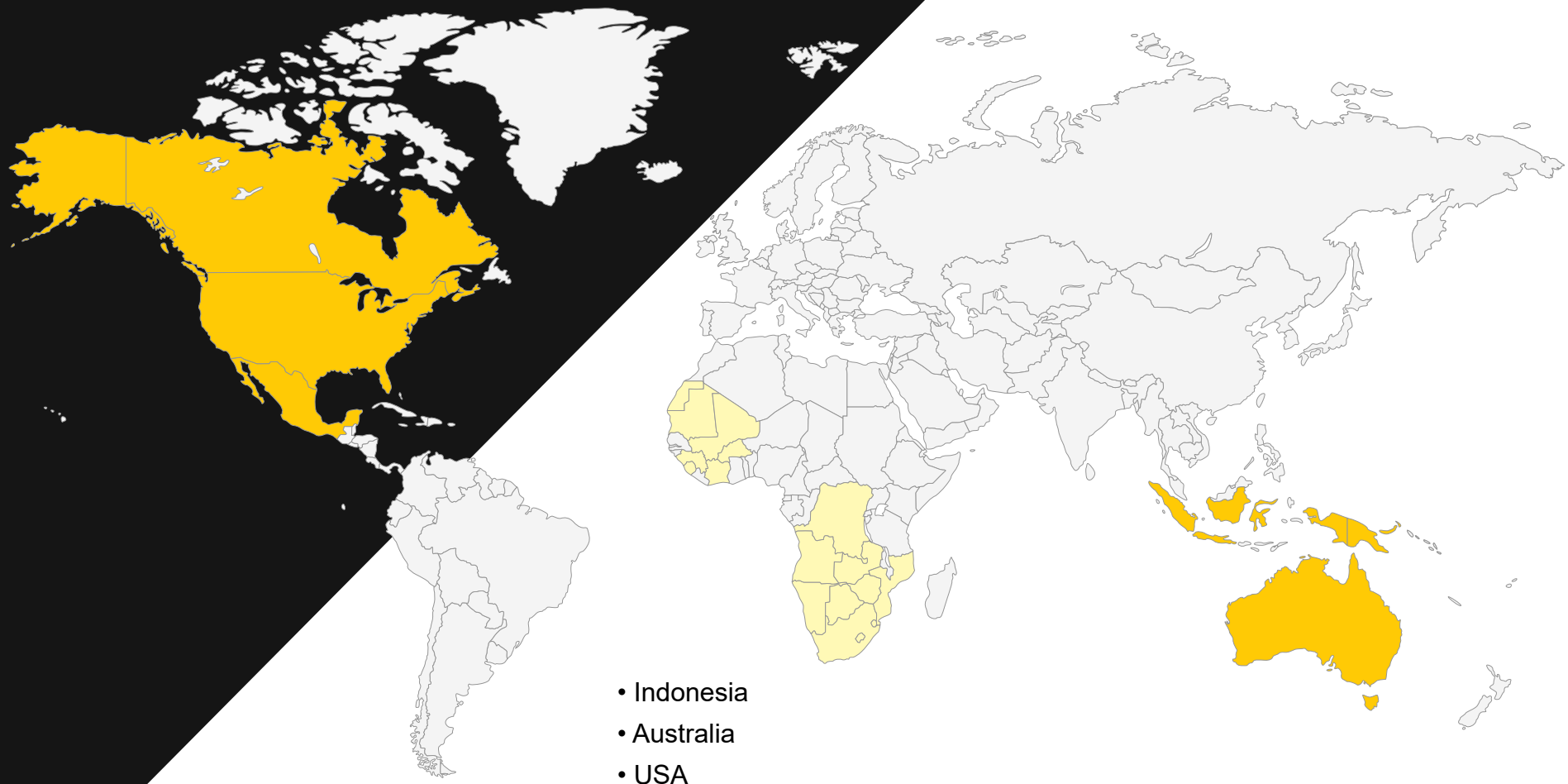
Outside of Africa



- Indonesia
- Australia
- USA
- Canada

THE SYSTEM

bme BLASTING SOLUTIONS

System features:

State-of-the-art blast and design software allowing for complex timing designs for vibration control, improved fragmentation, heave, and better final walls.

AXXIS™ is one of the safest initiation systems available.

For safety, AXXIS™ offers a full two-way communication between the blasting box and detonators.

Logging is done with direct communication to the detonator at low volatage

The high-strength downlines, quality connectors and strength of the detonator shells ensure fewer blast delays caused by leakage and fewer lost holes resulting from cable damage.

Using the AXXIS™ system, you can program AXXIS™ detonators to fire accurately at any time between 0 and 35 000ms.

You can fire up to 1 000 detonators from one AXXIS™ Blasting Box.

How will the AXXIS™ system provide value?

- Faster loading
- Lower costs
- Higher productivity
- Faster ore exposure
- More space to mine
- Faster crusher throughput
- Higher productivity
- More processed value
- Lower carbon footprint
- Larger multiple blocks reducing mine downtime for blasting
- Same results are possible with a slightly expanded pattern, thus neutralising the higher detonator costs

Benefits of the system:

- Accurate
- Safe
- Flexibility in timing designs
- Vibration and airblast control
- Finer, more consistent fragmentation
- Better control of muckpile shape
- High wall damage control
- Stock controls

PRODUCTS

AXXIS™ Titanium

Electronic Delay Detonator

PRODUCT DESCRIPTION

The AXXIS Titanium electronic initiation system is the newest generation of AXXIS technology. The AXXIS Titanium electronic initiation system incorporates numerous handling, performance, and safety improvements upon the highly successful AXXIS GII system.

The AXXIS Titanium electronic initiation system is comprised of four components:

- AXXIS TITANIUM Electronic Delay Detonator (EDD)
- AXXIS TITANIUM Logger
- AXXIS TITANIUM Blasting Box
- BLASTMAP blast design software

PRODUCT FEATURES

Application

The AXXIS Titanium electronic initiation system is designed for use in most general and specialised mining, quarrying, and construction blasting applications on the surface or underground. The AXXIS Titanium electronic initiation system passes ARP 1717-1: The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

Primary Benefits

AXXIS Titanium EDDs safety includes dual capacitors that split the system into two. The logic capacitor is used to communicate and test the detonator and does not have enough storing energy to fire the fuse head. The firing capacitor is only used for firing. The logic capacitor has an internal shunt that when commanded switches gates from logic mode to firing mode. Only in firing mode is the firing capacitor then calibrated and charged for blasting.

The AXXIS Titanium system utilises dual voltage for detonator logging and testing at low voltage. Error testing is reported by exemption thus considerably speeding up the testing and blasting process at the firing point. It takes less than three minutes to finalise a blast for firing regardless of the number of detonators.

AXXIS Titanium Electronic Delay Detonator performance features include a non-volatile detonator memory. Detonators are programmed and tested during logging by writing the desired firing times and log sequence number into each detonator's memory. Once detonators are programmed during logging there is no need to re-programme on powering up again. The detonator history is recorded permanently to the detonator memory making it ideal for track and trace.

AXXIS Titanium EDDs have engineered cables that are highly resistant to damage and cut offs due to a balanced combination of tensile, elongation, and abrasion resistance. This results in a very low rate of misfire occurrence even under the most challenging hole loading conditions. AXXIS EDD technology has a proven track record of delivering mega blasts with thousands of detonators.

Detonator Specifications

Delay Time Range	0 to 35 seconds (35 000ms) in 1ms increments
Delay Accuracy (COV)	At ambient temperature: Up to 8 seconds < 1ms Above 8 seconds, better that 0.02%
Maximum Detonators per Logger	500 detonators per file 5 000 detonators per shared Logger
Maximum Detonators per Blasting Box	1 000 detonators
Maximum Detonators per Blast Controller	20 000 detonators
Detonator Shell	Copper
Detonator Dimensions	• Nominal outer diameter = 7.5mm • Nominal length = 88.9mm • Fits standard boosters
Detonator Charge	• 1.0g • South Africa #8 stength
Cable	HDPE outer insulation and PVC inner insulatio over copper cladded steel cores
Operating Temperature	-40°C and +80°C
Hydrostatic Resistance	14 bars for 7 days
Dynamic Shock Resistance	80MPa copper alloy shell

Guidelines for Use

AXXIS Titanium electronic delay detonators may only be programmed, tested, and fired with AXXIS Titanium Loggers and AXXIS Titanium Blasting Boxes. Do not attempt to program, test, or fire AXXIS Titanium EDDs with other blasting equipment. Never mix electronic delay detonators and/or components from different manufacturers.

AXXIS Titanium Loggers and Blasting Boxes need to be serviced by BME qualified personnel or providers every 2 years.

Always use AXXIS harness wire to tie-in blasts. Do not substitute similar looking harness wire as the performance specifications may not be the same.

Although BME AXXIS Titanium cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Ground Temperature

This product may be used in ground temperatures from -40°C to a maximum of +80°C. If the application requires use outside of this temperature range please contact a BME Technical Representative for additional guidance.

Reactive Ground

Reactive ground is typically characterised by the presence of sulphide mineralisation. If the application requires use in known reactive ground, or in untested sulphide bearing ground, please contact a BME Technical Representative for additional guidance.

Sleep Time

The recommended maximum sleep time is 45 days. Sleep time is dependent on factors such as hole depth, explosive column type, and ground water conditions. If the application requires longer in-hole sleep time, please consult with a BME Technical Representative for guidance.

Storage

The storage life for AXXIS Titanium EDDs is 60 months under good storage conditions. Please consult with a BME Technical Representative for site specific storage life guidance.

Safe Use

Never fight explosive fires.
Refer to Safety Data Sheet (SDS) for first aid.
All explosives must be transported and stored in accordance to relevant regulations.

UN Classification for Transport and Storage

Product Classification

Authorised Name: AXXIS Titanium
Correct Shipping Name: DETONATORS, ELECTRONIC programmable for blasting
Classification: 1.1B manufactured in South Africa
UN Number: 0511
Classification: 1.4B manufactured in South Africa
UN Number: 0512
Classification: 1.4S manufactured in South Africa
UN Number: 0513

Packaging

AXXIS Titanium Electronic Delay Detonator cables are coiled in 150mm diameter shrink-wrapped coils with the detonator feed from the center of spool for safety.
Custom lengths on request.

Detonator Cable Length (m)	1.1B Packaging		1.4B Packaging		1.4S Packaging	
	Units per case	Max Weight per Case (kg)	Units per case	Max Weight per Case (kg)	Units per case	Max Weight per Case (kg)
10	88	20.80	54	10.93	54	15.95
15	56	18.86	39	13.31	39	15.65
20	42	18.61	30	14.14	30	15.40
25	36	19.40	25	14.53	25	15.20
30	30	19.47	21	14.25	21	15.55
35	30	22.01	22	16.83	22	18.15
40	25	21.09	20	16.70	20	18.60
45	24	22.49	18	17.36	18	18.80
50	20	23.20	16	17.48	16	18.90
60	18	24.97	14	18.30	14	19.10

AXXIS™ Titanium

Blasting Box

PRODUCT DESCRIPTION

The AXXIS Titanium electronic initiation system is the newest generation of AXXIS technology. The AXXIS Titanium electronic initiation system incorporates numerous handling, performance, and safety improvements upon the highly successful AXXISGII system.

The AXXIS Titanium electronic initiation system is comprised of four components:

- AXXIS Titanium Electronic Delay Detonator (EDD)
- AXXIS Titanium Logger
- AXXIS Titanium Blasting Box
- BLASTMAP blast design software

PRODUCT FEATURES

Application

The AXXIS Titanium electronic initiation system is designed for use in most general and specialised mining, quarrying, and construction blasting applications on the surface or underground. The AXXIS Titanium electronic initiation system passes ARP 1717-1: The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

System Usage

Blasting Boxes

All AXXIS Titanium Blasting Boxes are the same. Each AXXIS Titanium Blasting Box is configurable to a Blaster Box or a Controller Box to accomplish its required function. Blasting Box operation is simple, with double rotary switches for switching a box on, placing it in standby mode, and opening communications channels to fire the blast. Wireless communications are achieved through three selectable open-band frequency channels. Other frequency channels can be configured based on the country requirements.

Blaster Box

AXXIS Titanium Blasting Boxes configured as Blaster Boxes are placed at each blast site and connected to the surface wire harness. No power is supplied to the detonators until system arming from the Controller Box at blasting time.

Each Blaster Box can fire up to 1 000 detonators. In large single blasts where more than one Blaster Box is needed, the Blaster Boxes are hard-wired together using AXXIS link sets. Up to 20 Blasting Boxes may be linked together for a total combined firing capability of 20 000 detonators in a single blast.

Final testing of the AXXIS Titanium Electronic Delay Detonators and the harness lines is performed using the AXXIS Titanium Logger before the harness line is connected to the Blaster Box. After the AXXIS Titanium detonators and the harness lines have cleared testing by the AXXIS Titanium Logger, the harness line is connected to the AXXIS Titanium Blaster Box. The AXXIS Titanium Blaster Box is switched on and the unit performs a self-test. Once the self-test is completed the AXXIS Titanium Blasting Box is switched into stand-by mode to open the communications channel – the detonators remain unpowered in stand-by mode.

Controller Box

Only one Blasting Box may be configured as a Controller Box per blast. The Controller Box requires the presence of a Key Logger to authorise arming and firing of the system. On arming of the system with the Controller Box, each Blaster Box then powers up its detonators, and testing routines automatically start and continue until firing time. Detonators respond by exception, allowing a quick testing time and immediate warnings to the operator through the color screen on the Controller Box and the Key Logger.

Combiner Box
A Blasting Box may be configured as a Combiner Box. The Combiner Box configuration is useful in quarry and construction blasting where the harness from the blast can be directly connected (hard-wired) into the Combiner Box at the safe firing point.

The Blasting-Controller Combiner Box requires the presence of a Key Logger to authorise arming and firing of the system. On arming of the system with the Blaster-Controller Box, the detonators are powered up, and testing routines automatically start and continue until firing time. Detonators respond by exception, allowing a quick testing time and immediate warnings to the operator through the color screen on the Blaser-Controller Combiner Box and the Key Logger.

Antennas
Two types of AXXIS Titanium system specific antennas are available. The short-range antenna can be used for line-of-sight distances up to 1 200 m. Depending on frequency allocation, the long-range ET Plate antenna can be used for line-of-sight distances between 1 500 m and 5 000 m.

Guidelines for Use

AXXIS Titanium electronic delay detonators may only be programmed, tested, and fired with AXXIS Titanium Loggers and AXXIS Titanium Blasting Boxes. Do not attempt to program, test, or fire AXXIS Titanium EDDs with other blasting equipment. Never mix electronic delay detonators and/or components from different manufacturers.

AXXIS Titanium Loggers and Blasting Boxes need to be serviced by BME qualified personnel or providers every 2 years.

Always use AXXIS harness wire to tie-in blasts. Do not substitute similar looking harness wire as the performance specifications may not be the same.

Although BME AXXIS Titanium cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Operating Temperature
The AXXIS Titanium Logger may be operated in temperatures from -30°C to a maximum of +60°C. If the application requires use outside of this temperature range please contact a BME Technical Representative for additional guidance.

Water, Dust, and Drop Shock Resistance
AXXIS Titanium EDDs Loggers are robust electronic instruments that are engineered to be water and dust resistant (IEC 60529 IP65 and IP68) and drop shock resistant (IEC 60069-2-32: 1975). AXXIS Titanium Loggers are not waterproof – do not submerge AXXIS Titanium Loggers in water.

Storage
AXXIS Titanium Loggers are robust electronic instruments that need to be used, charged, and stored with care. The AXXIS Titanium Logger may be stored in temperatures from -40°C to a maximum of +70°C. Please consult with a BME Technical Representative for site specific guidance.

Safe Use
Never fight explosive fires.
Refer to Safety Data Sheet (SDS) for first aid.
All explosive control equipment must be transported and stored in accordance to relevant regulations.

Blasting Box Specifications

Blasting Box Housing	Hard Yellow Plastic
User Interface	Colour LCD with variable intensity and contrast setting
Battery	24-volt rechargeable lithium-ion
Battery Capacity	12 000mAh Battery life dependent on the number of detonators in each blast Batteries are not user replaceable
Blasting Box Mass	3.9kg
Maximum Detonators per Logger	500 detonators per file; 5 000 detonators per shared Logger
Maximum Detonators per Blasting Box in Blaster Box Mode	1 000 detonators
Controls	Two rotary switches Spring loading on the full-right position to fire a blast in Control Box mode
Communication Ports	Ports for antenna, charging, USB, harness wire and link cables Authentication
Wireless Communication	Wireless communication range between Blasting Boxes = 1 000m to 5 000m line of sight
Modem Frequency	158.325MHz or 433 MHz or 915MHz
Resistance to Electrostatic Discharge	Electrostatic Discharge Immunity Test (±8kV contact, ±15kV air) Electrical Fast Transient/Burst Immunity (±2kV)
Operating Temperature	-30°C and +60°C
Storage Temperature	-40°C and +70°C

AXXIS™ Titanium
Logger

PRODUCT DESCRIPTION

The AXXIS Titanium electronic initiation system is the newest generation of AXXIS technology The AXXIS Titanium electronic initiation system incorporates numerous handling, performance, and safety improvements upon the highly successful AXXIS GII system

The AXXIS Titanium electronic initiation system is comprised of four components:

- AXXIS Titanium Electronic Delay Detonator (EDD)
- AXXIS Titanium Logger
- AXXIS Titanium Blasting Box
- BLASTMAP blast design software

PRODUCT FEATURES

Application

The AXXIS Titanium electronic initiation system is designed for use in most general and specialised mining, quarrying, and construction blasting applications on the surface or underground The AXXIS Titanium electronic initiation system passes ARP 1717 1 The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

System Usage

AXXIS Titanium Loggers are robust, hand held devices for the logging and testing of AXXIS Titanium Electronic Detonators These mobile devices are manufactured by Trimble and have an AXXIS developed CAP that docks onto the device The CAP contains the detonator communication circuit and this enables the logging and programming of AXXIS Titanium Electronic Detonators The AXXIS Titanium Logger can read and write to the detonator's non volatile memory, test a single detonator, test multiple detonators and transfer the logged blast files to the AXXIS Titanium Electronic Detonators Blasting Box.

AXXIS Titanium Loggers are easy and convenient to handle They operate on the Android™ operating system which facilitates the upload of history files, current logging activity, reporting applications and web pages.

In order to operate AXXIS Titanium Blasting Boxes (in Blaster Box mode) at blast firing time, one AXXIS Titanium Logger is configured and designated as the Key Logger The Key Logger generates a one time pin to configure the AXXIS Titanium Blasting Boxes (in Blaster Box mode) As a security measure, any AXXIS Titanium Blasting Boxes (in Blaster Box mode) that has not been configured for a blast and bound through the one time pin on the Key Logger will not function for that blast At the safe firing point, the Key Logger and the one time pin is also required to arm the AXXIS Titanium Blasting Box (in Controller Box mode) Upon blast completion, all AXXIS Titanium Loggers and Blasting Boxes return to a neutral un configured state.

AXXIS EDD technology has a proven track record of delivering mega blasts with thousands of detonators.

Logger Specifications

Logging Device	Logger with AXXIS CAP
Operating System	Android 8.1
Screen Size and Resolution	635mm (5-inches); 1280x720 pixels
User Interface	Colour Touch Screen Funtion Buttons Stylus Enabled
Battery	Lithium-ion
Battery Capacity	10.8V 3 200 mAh 32 Whr
Logger Mass	0.845kg
Maximum Detonators per Logger	500 detonators per file; 5 000 detonators per shared Logger
Maximum Detonators per Blasting Box in Blaster Box Mode	1 000 detonators
Logger Functions	Log Detonator UIDs Program Detonator Firing Times Test 1 to 500 Detonators
Detonator Communication	Via Attached CAP Read Functionality Program Functionality Test Functionality
Blasting Box Communication	Bluetooth or Wired Authentication
Testing Functions	Line Current Consumption Programmed/Not Programmed Detonator Voltage harness Line Test for Missing Detonators harness Line Test for Intruder Detonators
Resistance to Electrostatic Discharge	Electrostatic Discharge Immunity Test (±8kV contact, ±15kV air) Electrical Fast Transient/Burst Immunity (±2kV)
Operating Temperature	-30°C and +60°C
Storage Temperature	-40°C and +70°C

Guidelines for Use

AXXIS Titanium electronic delay detonators may only be programmed, tested, and fired with AXXIS Titanium Loggers and AXXIS Titanium Blasting Boxes Do not attempt to program, test, or fire AXXIS Titanium EDDs with other blasting equipment Never mix electronic delay detonators and/or components from different manufacturers.

AXXIS Titanium Loggers and Blasting Boxes need to be serviced by BME qualified personnel or providers every 2 years.

Always use AXXIS harness wire to tie in blasts Do not substitute similar looking harness wire as the performance specifications may not be the same.

Although BME AXXIS Titanium cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Operating Temperature

The AXXIS Titanium Logger may be operated in temperatures from -30 C to a maximum of 60 C If the application requires use outside of this temperature range please contact a BME Technical Representative for additional guidance.

Water, Dust, and Drop Shock Resistance

AXXIS Titanium EDDs Loggers are robust electronic instruments that are engineered to be water and dust resistant (IEC 60529 IP 65 and IP 68 and drop shock resistant (IEC 60069 2 32 1975 AXXIS Titanium EDDs Loggers are not waterproof Do not submerge AXXIS Titanium EDDs Loggers in water.

Storage

AXXIS Titanium Loggers are robust electronic instruments that need to be used, charged, and stored with care The AXXIS Titanium Logger may be stored in temperatures from -40°C to a maximum of +70°C. Please consult with a BME Technical Representative for site specific guidance.

Safe Use

Never fight explosive fires.
Refer to Safety Data Sheet (SSD) for first aid.
All explosive control equipment must be transported and stored in accordance to relevant regulations.

AXXIS™
EX Electronic Delay Detonator

PRODUCT DESCRIPTION
The AXXIS EX electronic initiation system is the newest generation of AXXIS technology. Offering an extreme strength downline cable. The AXXIS EX electronic initiation system incorporates numerous handling, performance, and safety improvements.

The AXXIS EX electronic initiation system is comprised of four components:
- AXXIS EX Electronic Delay Detonator (EDD)
- AXXIS Titanium Logger
- AXXIS Titanium Blasting Box
- BLASTMAP blast design software

PRODUCT FEATURES
Application
The AXXIS EX electronic initiation system is designed for most general and specialised mining blasting applications on the surface or underground. The AXXIS EX electronic initiation system passes ARP 1717-1: The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

Primary Benefits
AXXIS EX EDDs safety includes dual capacitors that split the system into two. The logic capacitor is used to communicate and test the detonator and does not have enough stored energy to fire the fuse head. The firing capacitor is only used for firing. The EDD has an internal safety state machine that switches gates from logic mode to firing mode when commanded. Only in firing mode is the EDD calibrated and the firing capacitor charged for blasting.

The AXXIS EX system includes dual voltage for operating modes for safety. Detonator logging and testing are done at low voltage. Error testing is reported by exemption thus, considerably speeding up the testing and blasting process at the firing point. It takes less than three minutes to finalise a blast (without exceptions) for firing regardless of the number of detonators.

AXXIS EX Electronic Delay Detonator performance features include a non-volatile detonator memory. Detonators are programmed and tested during logging by writing the desired firing times into each detonator's memory. Once detonators are programmed during logging, there is no need to re-program them again on powering up. The detonator history is recorded permanently to the detonator memory making it ideal for track and trace.

AXXIS EX EDDs have engineered cables that are highly resistant to damage and cut-offs due to a balanced combination of tensile, elongation, and abrasion resistance. This results in exceptional performance even under the most challenging hole-loading conditions.

AXXIS EDD technology has a proven track record of delivering mega blasts with thousands of detonators.

Guidelines for Use
AXXIS EX electronic delay detonators may only be programmed, tested, and fired with AXXIS Titanium Loggers and AXXIS Titanium Blasting Boxes. Do not attempt to program, test, or fire AXXIS EX EDDs with other blasting equipment. Never mix electronic delay detonators or components from different manufacturers.

AXXIS Loggers and Blasting Boxes must be serviced every two years by BME-qualified personnel or providers.

Always use AXXIS harness wire to tie-in blasts. Do not substitute similar-looking harness wire as the performance specifications may differ.

Although BME AXXIS EX cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Ground Temperature
This product may be used in ground temperatures from -40°C to a maximum of +80°C. Please contact a BME Technical Representative for additional guidance if the application requires use outside of this temperature range.

Reactive Ground
Reactive ground is typically characterised by the presence of sulphide mineralisation. If the application requires use in known reactive ground, or untested sulphide-bearing ground. Please contact a BME Technical Representative for additional guidance.

Sleep-Time
The recommended maximum sleep time is 45 days. Sleep time depends on factors such as hole depth, explosive column type, and ground water conditions. Please contact a BME Technical Representative for additional guidance.

Storage Life
The storage life for AXXIS EX EDDs is 60 months under good storage conditions. Please consult with a BME Technical Representative for site-specific storage life guidance.

Safe Use
Never fight explosive fires.
Refer to the Safety Data Sheet (SDS) for first aid.
All explosives must be transported and stored in accordance with relevant regulations.

Detonator Specifications

Delay time range	0 to 35 seconds (35 000ms) in 1ms increments
Delay Accuracy	Up to 8 seconds < 1ms Above 8 seconds < 0.02%
Maximum Detonator per Logger	500 detonators per line
Maximum Detonators per Blast	20 000 detonators
Detonator Shell	Copper alloy
Detonator Dimensions	Nominal outer diameter = 7.5mm Nominal length = 88.9mm Fits standard boosters
Detonator Charge	1.0g South African #8 strength
Cable	TPU outer insulation and PP inner insulation Copper-cladded steel cores
Operating Temperature	-40°C to +80°C
Hydrostatic Resistance	14 bar for 7 days
Dynamic Shock Resistance	80 MPa copper alloy shell

Packaging
Custom lengths on request.

Detonator Cable Length (m)	1.1B Packaging		1.4B Packaging		1.4S Packaging	
	Units per case	Max Weight per Case (kg)	Units per case	Max Weight per Case (kg)	Units per case	Max Weight per Case (kg)
10	88	20.80	54	10.93	54	15.95
15	56	18.86	39	13.31	39	15.65
20	42	18.61	30	14.14	30	15.40
25	36	19.40	24	14.53	24	15.20
30	30	19.47	21	14.25	21	15.55
35	30	22.01	22	16.83	22	18.15
40	25	21.09	20	16.70	20	18.60
45	24	22.49	18	17.36	18	18.80
50	20	23.20	16	17.48	16	18.90
60	18	24.97	14	18.30	14	19.10

UN Classification for Transport and Storage
Product Classification
Authorised Name: AXXIS EX
Correct Shipping Name: DETONATORS, ELECTRONIC programmable for blasting
Classification: 1.1B manufactured in South Africa
UN Number: 0511
Classification: 1.4B manufactured in South Africa
UN Number: 0512
Classification: 1.4S manufactured in South Africa
UN Number: 0513

AXXIS™ Silver

Electronic Delay Detonator

PRODUCT DESCRIPTION

The AXXIS Silver electronic initiation system is the latest expansion of AXXIS technology The AXXIS Silver electronic initiation system incorporates numerous handling, performance, and safety improvements built upon the highly successful AXXIS GII system AXXIS Silver is a cost effective solution for users wanting to upgrade from the limitations and results of non electric initiation to the flexibility and added blast performance realised by electronic initiation

The AXXIS Silver electronic initiation system is comprised of four components

- AXXIS Silver Electronic Delay Detonator (EDD)
- AXXIS Silver Logger
- AXXIS Silver Blasting Box
- BLASTMAP blast design software

PRODUCT FEATURES

Application

The AXXIS Silver electronic initiation system is designed for use in most general and specialised mining, quarrying, and construction blasting applications on the surface or underground. The AXXIS Silver electronic initiation system passes ARP 1717-1: The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

Primary Benefits

The AXXIS Silver system is designed for high safety and security levels yet remains uncomplicated. The system is designed for blast crew ease of use as there is minimal menu driven activity to set up a blast..

EDDs safety includes dual capacitors that split the system into two. The logic capacitor is used to communicate and test the detonator and does not have enough storing energy to fire the fuse head. The firing capacitor is only used for firing. The logic capacitor has an internal shunt that when commanded switches gates from logic mode to firing mode. Only in firing mode is the firing capacitor then calibrated and charged for blasting.

The AXXIS Silver system utilises dual voltage for detonator logging and testing at low voltage. Error testing is reported by exemption thus considerably speeding up the testing and blasting process at the firing point. It takes less then three minutes to finalise a blast for firing regardless of the number of detonators.

AXXIS Silver Electronic Delay Detonator performance features include a non-volatile detonator memory. Detonators are programmed and tested during logging by writing the desired firing times and log sequence number into each detonators memory. Once detonators are programmed during logging there is no need to re-programme on powering up again. The detonator history is recorded permanently to the detonator memory making it ideal for track and trace.

AXXIS Silver EDDs have engineered copper cladded steel cables that have excellent resistant to damage and cut offs due to a balanced combination of tensile, elongation, and abrasion resistance. This results in a very low rate of misfire occurrence even under demanding hole loading conditions.

Detonator Specifications

Delay Time Range	0 to 15 seconds (15 000ms) in 1ms increments
Delay Accuracy (COV)	0.02%
Maximum Detonators per Logger	500 detonators per file
Maximum Detonators per Blasting Box	800 detonators
Maximum Detonators per Blast Controller	1 600 detonators
Detonator Shell	Aluminum magnesium alloy Copper Alloy
Detonator Dimensions	Nominal outer diameter = 7.5mm Nominal length = 88mm Fits standard boosters
Detonator Charge	1.0g South Africa #8 stength
Cable	HDPE outer insulation and PVC inner insulatio over copper cladded steel cores
Operating Temperature	-40°C and +80°C
Hydrostatic Resistance	7 bars for 7 days
Dynamic Shock Resistance	50MPa

Guidelines for Use

AXXIS Silver electronic delay detonators may only be programmed, tested, and fired with AXXIS Silver Loggers and AXXIS Silver Blasting Boxes. Do not attempt to program, test, or fire AXXIS Silver EDDs with other blasting equipment. Never mix electronic delay detonators and/or components from different manufacturers.

AXXIS Silver Loggers and Blasting Boxes need to be serviced by BME qualified personnel or providers every 2 years.

Always use AXXIS harness wire to tie-in blasts. Do not substitute similar looking harness wire as the performance specifications may not be the same.

Although BME AXXIS Silver cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Ground Temperature

This product may be used in ground temperatures from -40°C to a maximum of +80°C. If the application requires use outside of this temperature range please contact a BME Technical Representative for additional guidance.

Reactive Ground

Reactive ground is typically characterised by the presence of sulphide mineralisation. If the application requires use in known reactive ground, or in untested sulphide bearing ground, please contact a BME Technical Representative for additional guidance.

Sleep-Time

The recommended maximum sleep time is 21 days. Sleep time is dependent on factors such as hole depth, explosive column type, and ground water conditions.

If the application requires longer in-hole sleep time, please consult with a BME Technical Representative for guidance.

Storage Life

The storage life for AXXIS Silver EDDs is 60 months under good storage conditions. Please consult with a BME Technical Representative for site specific storage life guidance.

Safe Use

Never fight explosive fires.
Refer to Safety Data Sheet (SDS) for first aid.
All explosives must be transported and stored in accordance to relevant regulations.

UN Classification for Transport and Storage

Product Classification

Authorised Name: AXXIS Silver
Correct Shipping Name: DETONATORS, ELECTRONIC
programmable for blasting
Classification: 1.1B manufactured in South Africa
UN Number: 0511
Classification: 1.4B manufactured in South Africa
UN Number: 0512
Classification: 1.4S manufactured in South Africa
UN Number: 0513

Packaging

AXXIS Silver Electronic Delay Detonator cables are coiled in 150mm diameter shrink-wrapped coils with the detonator feed from the center of spool for safety.

Custom lengths on request.

Detonator Cable Length (m)	1.1B Packaging		1.4B Packaging		1.4S Packaging	
	Units per case	Max Weight per Case (kg)	Units per case	Max Weight per Case (kg)	Units per case	Max Weight per Case (kg)
5	144	15.25	80	11.30	80	11.30
6	126	14.95	80	11.92	80	11.92
8	120	17.80	56	13.75	56	13.75
10	104	18.20	56	14.35	56	14.35
12	88	17.85	52	14.61	52	14.61
15	80	20.20	56	18.52	56	18.52
20	64	20.50	40	16.35	40	16.35
25	48	18.50	32	15.51	32	15.51
30	40	18.40	28	15.70	28	15.70

AXXIS™ Silver
Blasting Box

PRODUCT DESCRIPTION
The AXXIS Silver electronic initiation system is an expansion of AXXIS technology. The AXXIS Silver electronic initiation system incorporates numerous handling, performance, and safety improvements built upon the highly successful AXXIS GII system. AXXIS Silver is a cost-effective solution for users wanting to upgrade from the limitations and results of non-electric initiation to the flexibility and added blast performance realised by electronic initiation.

The AXXIS Silver electronic initiation system is comprised of four components:
- AXXIS Silver Electronic Delay Detonator (EDD)
- AXXIS Silver Logger
- AXXIS Silver Blasting Box
- BLASTMAP blast design software

PRODUCT FEATURES
Application
The AXXIS Silver electronic initiation system is designed for use in most general and specialised mining, quarrying, and construction blasting applications on the surface or underground. The AXXIS Silver electronic initiation system passes ARP 1717-1: The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

System Usage
Blasting Boxes
All AXXIS Silver Blasting Boxes are the same. Each AXXIS Silver Blasting Box is configurable to a Blaster Box or a Controller Box to accomplish its required function. Blasting Box operation is simple, with double rotary switches for switching a box on, placing it in standby mode, and opening communications channels to fire the blast. Wireless communications are achieved through three selectable open-band frequency channels. Other frequency channels can be configured based on the country requirements.

Blaster Box
AXXIS Silver Blasting Boxes configured as Blaster Boxes are placed at each blast site and connected to the surface wire harness. No power is supplied to the detonators until system arming from the Controller Box at blasting time.

Each Blaster Box can fire up to 800 detonators. In large bench blasts where more than one Blaster Box is needed, the Blaster Boxes are hard-wired together using AXXIS link sets. Up to 2 Blaster Boxes may be linked together on a single bench for a total combined firing capability of 1 600 detonators per bench. When more than one separated bench is fired together it is possible to blast up to a total of 20 Blaster boxes with 16 000 detonators in total.

Final testing of the AXXIS Silver Electronic Delay Detonators and the harness lines is performed using the AXXIS Silver Logger before the harness line is connected to the Blaster Box. After the AXXIS Silver detonators and the harness lines have cleared testing by the AXXIS Silver Logger, the harness line is connected to the AXXIS Silver Blaster Box. The AXXIS Silver Blaster Box is switched on and the unit performs a self-test. Once the self-test is completed the AXXIS Silver Blasting Box is switched into stand-by mode to open the communications channel – the detonators remain unpowered in stand-by mode.

Controller Box
Only one Blasting Box may be configured as a Controller Box per blast. The Controller Box requires the presence of a Key Logger to authorise arming and firing of the system. On arming of the system with the Controller Box, each Blaster Box then powers up its detonators, and testing routines automatically start and continue until firing time. Detonators respond by exception, allowing a quick testing time and immediate warnings to the operator through the color screen on the Controller Box and the Key Logger.

Combiner Box
A Blasting Box may be configured as a Combiner Box. The Combiner Box configuration is useful in quarry and construction blasting where the harness line-in line from the blast can be directly connected (hard-wired) into the Combiner Box at the safe firing point. The Blasting-Controller Combiner Box requires the presence of a Key Logger to authorise arming and firing of the system. On arming of the system with the Blaster-Controller Combiner Box, the detonators are powered up, and testing routines automatically start and continue until firing time. Detonators respond by exception, allowing a quick testing time and immediate warnings to the operator through the color screen on the Blaser-Controller Combiner Box and the Key Logger.

Antennas
Two types of AXXIS Silver system specific antennas are available. The short-range antenna can be used for line-of-sight distances up to 1 200 m. Depending on frequency allocation, the long-range ET Plate antenna can be used for line-of-sight distances between 1 500 m and 5 000 m.

Short-range Antenna

Long-range ET Plate Antenna

Blasting Box Specification

Blasting Box Housing	Hard silver plastic
User Interface	Color LCD with variable intensity and contrast setting.
Screen Resolution	2 000 x 1 500 pixels
Battery	24-volt rechargable Lithum-ion
Battery Capacity	6 000 mAh Battery life dependent on the number of detonators in each blast. Batteries are not user replaceable.
Blasting Box Mass	2.1kg
Maximum Detonators per Logger	500 detonators per file
Maximum Detonators per Blasting Boxin Blaster Box mode	800 detonators
Maximum Blaster Boxes per Controller Box	2 Blaster Boxes linked per bench 20 Blaster Boxes total
Maximum Detonators per Blast	1 600 detonators linked per bench 16 000 detonators total
Controls	Two rotary switches. Spring loading on the full-right position to fire a blast in Controller Box mode.
Communication Ports	Ports for antenna, charging, USB, harness wire and link cables. Authentication
Wireless Communication	Wireless communication range between Blasting Boxes= 1 000 m to 5 000 m line of sight
Modem Frequency	158 MHz or 433 MHz or 915 MHz
Resistance to Electrostatic Discharge	Electrostatic Discharge Immunity Test (±8kV contact, ±15 kV air) Electrical Fast Transient / Burst Immunity (±2 kV)
Operating Temperature	-30°C and +60°C
Storage Temperature	-40 C and +70°C

Guidelines for Use

AXXIS Silver electronic delay detonators may only be programmed, tested, and fired with AXXIS Silver Loggers and AXXIS Silver Blasting Boxes. Do not attempt to program, test, or fire AXXIS Silver EDDs with other blasting equipment. Never mix electronic delay detonators and/or components from different manufacturers.
AXXIS Silver Loggers and Blasting Boxes need to be calibrated and serviced by BME qualified personnel or providers every 2 years.

Always use AXXIS harness wire to tie-in blasts. Do not substitute similar looking harness wire as the performance specifications may not be the same.

Although BME AXXIS Silver cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Operating Temperature
The AXXIS Silver Logger may be operated in temperatures from -30°C to a maximum of +60°C. If the application requires use outside of this temperature range please contact a BME Technical Representative for additional guidance.

Water, Dust, and Drop Shock Resistance
AXXIS Silver EDDs Loggers are robust electronic instruments that are engineered to be water and dust resistant (IEC 60529 IP65 and IP68) and drop shock resistant (IEC 60069-2-32: 1975). AXXIS Silver EDD Loggers are not waterproof – do not submerge AXXIS Silver EDD Loggers in water.

Storage
AXXIS Silver Loggers are robust electronic instruments that need to be used, charged, and stored with care. The AXXIS Silver Logger may be stored in temperatures from -40°C to a maximum of +70°C. Please consult with a BME Technical Representative for site specific guidance.

Safe Use
Never fight explosive fires.
Refer to the Safety Data Sheet (SDS) for first aid.
All explosives must be transported and stored in accordance with relevant regulations.

AXXIS™ Silver
Logger

PRODUCT DESCRIPTION

The AXXIS Silver electronic initiation system is the latest expansion of technology. The AXXIS Silver electronic initiation system incorporates numerous handling, performance, and safety improvements built upon the highly successful AXXIS GII system. AXXIS Silver is a cost-effective solution for users wanting to upgrade from the limitations and results of non-electric initiation to the flexibility and added blast performance realised by electronic initiation.

The AXXIS Silver electronic initiation system is comprised of four components:

- AXXIS Silver Electronic Delay Detonator (EDD)
- AXXIS Silver Logger
- AXXIS Silver Blasting Box
- BLASTMAP blast design software

PRODUCT FEATURES

Application

The electronic initiation system is designed for use in most general and specialised mining, quarrying, and construction blasting applications on the surface or underground. The AXXIS Silver electronic initiation system passes ARP 1717-1: The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

System Usage

AXXIS Silver Loggers are robust, hand-held devices for the logging and testing of AXXIS Silver Electronic Detonators. These mobile devices are manufactured by Trimble and have an AXXIS developed CAP that docks onto the device. The CAP contains the detonator communication circuit and this enables the logging and programming of AXXIS Silver Electronic Detonators. The AXXIS Silver Logger can read and write to the detonator's non-volatile memory, test a single detonator, test multiple detonators and transfer the logged blast files to the AXXIS Silver Electronic Detonators Blasting Box.

AXXIS Silver Loggers are easy and convenient to handle. They operate on the Android operating system which facilitates the upload of history files, current logging activity, reporting applications and web pages.
In order to operate AXXIS Silver Blasting Boxes (in Blaster Box mode) at blast firing time, one AXXIS Silver Logger is configured and designated as the Key Logger. The Key Logger generates a one-time pin to configure the AXXIS Silver Blasting Boxes (in Blaster Box mode). As a security measure, any AXXIS Silver Blasting Boxes (in Blaster Box mode) that has not been configured for a blast and bound through the one-time pin on the Key Logger will not function for that blast. At the safe firing point, the Key Logger and the one-time pin is also required to arm the AXXIS Silver Blasting Box (in Controller Box mode). Upon blast completion, all AXXIS Silver Loggers and Blasting Boxes return to a neutral un-configured state.

Logger Specification

Logging Device	Robust hand held device
Operating system	Android 6
Screen Size and Resolution	13.4cm (5.25 inches); 1280 x 720 pixels
User Interface	Color Touch Screen Graphic Interface Buttons for use in cold climates
Battery	Lithium-ion
Battery Capacity	10.8V 6 600mAh 35Whr
CAP Maximum Output	9 volts, 50 mA
Logger Mass	0.48kg
Maximum Detonators per Logger	500 detonators per file
Maximum Detonators per Blasting Box in Blaster Box mode	800 detonators
Maximum Blaster Boxes per Controller Box	2 Blaster Boxes
Maximum Detonators per Blast	1 600 detonators
Logger Functions	Log Detonator UID's Programming Detonator Firing Times Test 1-500 Detonators
Detonator Communication	Via attached CAP Read Functionality Program Functionality Test Functionality
Blasting Box Communication	Bluetooth or Wired
Testing Functions	Line Current Consumption Programmed/Not Programmed Detonator Voltage Harness Line test for Missing Detonator Harness Line test for Intruder Detonator
Resistance to Electrostatic Discharge	Electrostatic Discharge Immunity test (±8kV contact, ±15 kV air) Electrical Fast Transient / Burst Immunity (±2 kV)

Guidelines for Use

AXXIS Silver electronic delay detonators may only be programmed, tested, and fired with AXXIS Silver Loggers and AXXIS Silver Blasting Boxes. Do not attempt to program, test, or fire AXXIS Silver EDDs with other blasting equipment. Never mix electronic delay detonators and/or components from different manufacturers.

AXXIS Silver Loggers and Blasting Boxes need to be serviced by BME qualified personnel or providers every 2 years.

Always use AXXIS harness wire to tie-in blasts. Do not substitute similar looking harness wire as the performance specifications may not be the same.

Although BME AXXIS Silver cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Operating Temperature

The AXXIS Silver Logger may be operated in temperatures from -30°C to a maximum of +60°C. If the application requires use outside of this temperature range please contact a BME Technical Representative for additional guidance.

Water, Dust, and Drop Shock Resistance

AXXIS Silver EDDs Loggers are robust electronic instruments that are engineered to be water and dust resistant (IEC 60529 IP65 and IP68) and drop shock resistant (IEC 60069-2-32: 1975). AXXIS Silver EDDs Loggers are not waterproof – do not submerge AXXIS Silver EDDs Loggers in water.

Storage

AXXIS Silver Loggers are robust electronic instruments that need to be used, charged, and stored with care. The AXXIS Silver Logger may be stored in temperatures from -40°C to a maximum of +70°C. Please consult with a BME Technical Representative for site specific guidance.

Safe Use

Never fight explosive fires.
Refer to Safety Data Sheet (SDS) for first aid.
All explosive control equipment must be transported and stored in accordance to relevant regulations.

Underground Centralized Blasting System

System overview

The AXXIS™ Underground Centralized Blasting System initiates blasts from a safe and convenient place on surface. The system allows real time local monitoring with remote access monitoring capabilities. The AXXIS™ Underground Centralized Blasting System is modular in design.

It consists of the following:

- AXXIS™ Centralized Blasting Boxes located at blasting points throughout the mine.
-
- AXXIS™ Centralized Control Box which is installed on surface,
- AXXIS™ logger to read UIDs of the AXXIS™ GII™ electronic detonators
- AXXIS™ Portable Control Unit

AXXIS™
CEBS Blasting Box

PRODUCT DESCRIPTION

The AXXIS CEBS (central electronic blasting system) is the newest generation of AXXIS technology. The AXXIS CEBS electronic initiation system incorporates numerous handling, performance, and safety improvements.

The AXXIS CEBS electronic initiation system is comprised of the following components:

- AXXIS UG Logger
- AXXIS CEBS Key Logger
- AXXIS CEBS Blasting Box
- BLASTMAP UNDERGROUND blast design software
- Supported Electronic Delay Detonators (EDDs):
- AXXIS Silver

PRODUCT FEATURES

Application

The AXXIS CEBS is designed for use in most general and specialised mining and underground blasting operations. The AXXIS CEBS complies with ARP 1717-1 and SANS1717-3: The South African National Standard for the design and approval of EDD initiation systems for mining and civil applications.

System Usage

CEBS Boxes

All AXXIS CEBS Blasting Boxes are the same. Each AXXIS CEBS Box is configurable as either a Blasting Box with the UG Logger or a Controller Box with the CEBS Key Logger. Blasting Box operation is simple, with double rotary switches for switching a box on, placing it in standby mode, and opening communications channels to fire the blast. Communication is achieved by means of Ethernet cable, Fiber and/or Copper backbone.

Blaster Box

AXXIS CEBS Boxes configured as Blaster Boxes are placed at each blast location and connected to the bus wire harness. No power is supplied to the detonators until system status check is launched with the key logger via the Controller Box at blasting time. Backbone communication can be verified from the Key Logger without powering the EDDs.

Each Blaster Box can fire up to 800 detonators. Up to 20 Blaster boxes can be interconnected on the backbone and controlled from a central point.

The total combined number of EDDs that can be fired in a single blast is 16 000.

Testing of the AXXIS Silver EDDs and the harness lines is performed using the AXXIS UG Logger before the harness line is connected to the Blaster Box. After the AXXIS CEBS detonators and the harness lines have passed testing by the AXXIS UG Logger, the harness line is connected to the AXXIS CEBS Blaster Box. The AXXIS CEBS Blaster Box is switched on and the unit performs a self-test. Once the self-test is completed the AXXIS CEBS Blasting Box is initialised using the AXXIS UG Logger and then switched into stand-by mode to open the communications channel. There is no energy supplied to the EDDs in stand-by mode.

Controller Box

An AXXIS CEBS Box in a central location is configured as a Controller Box. The Controller Box requires the presence of a AXXIS CEBS Key Logger to authorise the start of the blasting process. On status check of the system with the Controller Box, each Blaster Box then powers up its detonators, and testing routines automatically start and continue until firing time. Detonators respond by exception, allowing a quick testing time and immediate warnings to the operator through the color screen on the Controller Box and the Key Logger.

Blasting Box Specifications

Blasting Box Housing	Pelican case
User Interface	Colour LCD with variable intensity and contrast setting
Screen Resolution	2 000 x 1 500 pixels
Battery	15-volt rechargeable lithium-ion
Battery Capacity	14 000mAh Battery life dependent on the number of detonators in each blast Batteries are not user replaceable
Blasting Box Mass	3.9kg
Maximum Detonators per Blasting Box in Blaster Box Mode	800 detonators
Maximum Blast Boxes per Controller Box	20 Blaster Boxes
Controls	Two rotary switches
Communication Ports	Ports for antenna, chargin, USB, harness wire, RS484 and Ethernet QR Code Authentication
Resistance to Electrostatic Discharge	Electrostatic Discharge Immunity Test (±8kV contact, ±15kV air) Electrical Fast Transient/Burst Immunity (±2kV)
Operating Temperature	-30°C and +60°C
Storage Temperature	-40°C and +70°C

Guidelines for Use

Supported EDDs may only be programmed, tested, and fired with AXXIS UG Loggers and AXXIS CEBS Boxes. Do not attempt to program, test, or fire supported EDDs with any other blasting equipment. Never mix electronic delay detonators and/or components from different manufacturers.

AXXIS CEBS Loggers and Blasting Boxes need to be serviced by BME qualified personnel or providers every 2 years.

Always use AXXIS harness wire to tie-in blasts. Do not substitute similar looking harness wire as the performance specifications may not be the same.

Although BME supported EDD cables are engineered and constructed for challenging work environments, care should still be exercised when loading and stemming to avoid cutting or damaging downlines.

Operating Temperature

The AXXIS UG Logger may be operated in temperatures from -30°C to a maximum of +60°C. If the application requires use outside of this temperature range please contact a BME Technical Representative for additional guidance.

Water, Dust, and Drop Shock Resistance

AXXIS UG Loggers are robust electronic instruments that are engineered to be water and dust resistant (IEC 60529 IP65 and IP67) and drop shock resistant (IEC 60069-2-32: 1975). AXXIS UG Loggers are not waterproof – do not submerge AXXIS UG Loggers in water.

Storage

AXXIS UG Loggers are robust electronic instruments that need to be used, charged, and stored with care. The AXXIS UG Logger may be stored in temperatures from -40°C to a maximum of +70°C. Please consult with a BME Technical Representative for site specific guidance.

Safe Use

Never fight explosive fires.
Refer to Safety Data Sheet (SDS) for first aid.
All explosive control equipment must be transported and stored in accordance to relevant regulations.

AXXIS™
CEBS UG Logger

Product Description

The AXXIS Loggers are Robust, Hand-held devices that allow Logging and testing of Detonators. The Mobile device are Manufactured by Handheld and has an AXXIS developed CAP which docks onto the device. The CAP contains the Detonator Communication Circuit, and this makes possible the Logging and Programming of Detonators. It can Read/Write to the Detonators Non-volatile memory, test a single Detonator, test multiple Detonators and transfer the Logged blast files to the Blaster.

The AXXIS Loggers are easy and convenient to use. They operate on the Android operating system, which facilitates the upload of history files, logging activity, reporting applications and web pages.

In order to configure the Blaster at Fire time, a Key Logger is required. This operates with a one-time pin, the pin is generated and managed by the Software. As a security measure, any Blaster that has not been configured for the Blast and bound through the one-time pin on the Key Logger will not function for that Blast. The Key Logger and the one-time pin are required at the Blast Controller for the system to be Armed.

Upon Blast completion, all Loggers and Blasters return to a neutral un-configured state. Files are stored in memory and can be archived by the User.

Technical data

Type	Robust Handheld Device
Operating system	Android 11 Enterprise
Colour	Grey & Black
Detonator Communication	Via Attached CAP Communication 1-500 Detonators Connected Read Functionality Program Functionality Test Functionality
Blaster Communication	Bluetooth, Wired, QR Scan NFC Authentication
User Interface	Color Touch Screen Function Buttons Rain Mode
Screen Size	6 Inch, 1080x1920
Battery	Li-ion
Battery Capacity	3.8V 8 000mAh 30.4Whr
CAP Maximum Output	9 volts, 70 mA
Logger Mass	610g
Logger Function	Scanning UID's Programming Firing Times Programming to Detonator NVM Centralise Programming 1-500 Detonators Connected Testing 1-500 Detonators Connected
Testing Functions	Detonator Program Status Detonator Program Details Detonator Temperature Line Current Consumption Leakage Test Line Test for Connected Line Test for Missing Line Test for Intruders
Detonators Per Log Line	500
Detonators Per Log File	16 000
Intruder Detection	500 connected

Environmental

Conform to Specification	SANS 1717-1: The South African National Standard for: Design and Approval of EDD Initiation Systems: Mining and Civil Blasting
Resistance to ESD	Electrostatic Discharge Immunity Test (±8kV contact, ±15kV air) Electrical Fast Transient / Burst Immunity (±2kV)
Calibration Intervals	2 years
Water/Dust Ingress	Water/Dust Ingress
Drop Shock Protection	IEC 60068-2-32:1975: 122cm
Temperature	Operation: -20 °C to +55 °C, Storage: -40 °C to +70 °C

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BLASTING SOLUTIONS