BMM System Manual

BMM Activator
Version 6

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1 ACTIVATOR MODES

Blast Movement Monitors (BMMs) are delivered to your site in a low power hibernation state. Each BMM must be **switched on using the Activator before installation** into a blast.

The BMM Activator provides the signal to turn a BMM on and to assign a delayed start-up time. It is also determines if a BMM is transmitting.

The BMM Activator is a low power device, limiting its range to approximately 100 mm (3 in).

> **WARNING** *All BMMs that are within range of the Activator will switch on when the **BMM On** button is pressed. Ensure other BMMs are well out of range (2-3 metres (6-10 ft)). Do not operate the Activator anywhere near BMMs in storage.*
>
> *Store BMMs in a separate location to the Activator.*

The Activator works with **Blast Anytime (BAT)** or **Normal** BMMs.

The mode, BAT or Normal, is set at the BMT factory to match the BMM type in your BMT package.
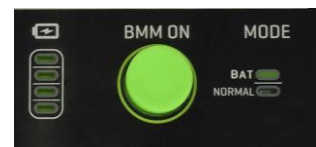
The green BAT LED indicates the Activator is in BAT BMM mode

1.1 Blast Anytime

- **BAT BMMs** start transmitting upon sensing a blast. They also transmit for 15 minutes during installation in a shot (when initially turned ON using the Activator) so you can take measurements. BAT BMMs enter standby mode (stop transmitting) until sensing a blast. A transmission delay can be set.

1.2 Normal

- **Normal BMMs** start transmitting once they are turned ON using the Activator until the internal batteries run out of power. They also transmit for 15 minutes during installation in a shot (when initially turned ON using the Activator) so you can take measurements. A transmission delay can be set.

How does the delay work?
- For **BAT BMMs**, the delay counter starts upon sensing a blast. E.g. if a 4-hour delay is set, the BMM will start transmitting 4 hours after blast detonation. Calculate the delay from blast detonation.
- For **Normal BMMs**, the delay counter starts when the BMM is turned ON during installation. Calculate the delay from installation time.

2 USING THE BMM ACTIVATOR

2.1 Turn On the Activator

- Turn on the Activator by pressing and holding the **red** button ⏻ ❶ for **2 seconds**. The digital display ❹ will simply show "00".

- Note: the Activator will vibrate in response to any button press. It works as a feedback mechanism to verify that the button was pressed.

- The Activator has two modes of operation; **BAT** (Blast Anytime) ❽ and **Normal** ❾ mode.

- The mode is set in BMT's factory or through BMM Explorer's Licence Manager.

- To save the battery, the Activator automatically turns off after **10 minutes** if no button is pressed.
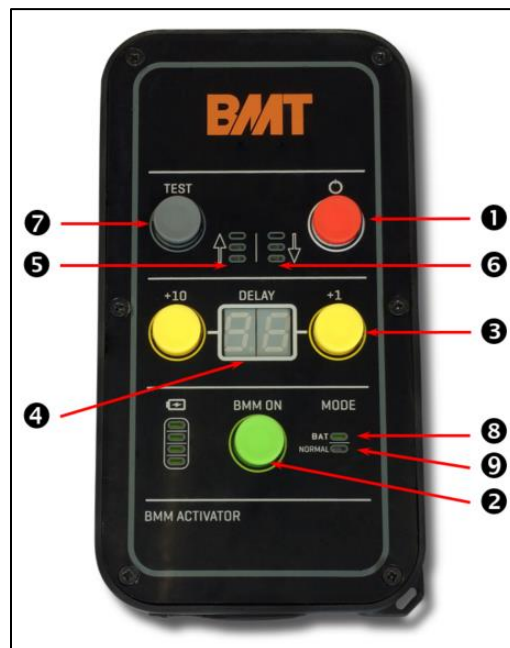
2.2 Turn On a BMM

- Position the Activator close to the BMM to be switched on (within 100mm or 3in), and press the green *BMM ON* button ❷ briefly – the green (transmit) LEDs ❺ will illuminate. Activation is more reliable if the Activator is positioned above the BMM as shown in the photo.

- The BMM is turned on when the red (receive) LEDs ❻ illuminate and you hear an audible tone at regular intervals (beep, beep, beep, beep…).

- Keep the Activator within range of the BMM for at least ten seconds to make sure the red LEDs remain on.

  As a final check to make sure the BMM has been turned on, move the Activator out of range of the BMM and then back within range. The red LEDs ❻ should illuminate again.

Hold the Activator to the BMM and press BMM On.

- If the Activator does not beep and the red LEDs do not illuminate, move the Activator around the BMM at various angles and try again.

> **WARNING** *A BMM cannot be switched off once activated*

2.3   Test A BMM

The Test button confirms a BMM works.

- Position the Activator within 100 mm (or 3") and press the grey *TEST* button ❼ (the display ❹ can be any number). The most effective way is to position the Activator as demonstrated in the photo (by resting the activator on the BMM). The Activator LEDs illuminate for about 5 seconds and then turn off.

Place the Activator on the BMM; press TEST to check if a BMM works.

- It is not necessary to Test each BMM.

2.4   Set a Transmit Delay

- **In BAT mode**, (BAT LED is green) press the yellow *+1* or *+10* buttons ❸ to select the desired start-up delay. The +1 button sets the delay in increments of 1 hour, up to a maximum of 99 hours. The +10 button sets the delay in multiples of 10 hours, up to a maximum of 90 hours. The display ❹ shows the delay in hours.

- **In Normal mode**, (Normal LED is green) press the yellow *+1* button ❸ to select the desired start-up delay time in multiples of 4 hours, up to a maximum of 36 hours. The display ❹ shows the actual delay in hours.

2.5   About the Transmit Delay

- A BMM transmits at constant power for 10 – 12 hours.
- To accurately calculate the depth of a BMM after the blast, it should be located within 12 hours since activation. A BMM transmits for about 24 hours but the signal slowly decrease and eventually it switches off. If BMM is located after the initial 10-hr period, its horizontal location is accurate but not its depth.
- The delay feature was specifically designed for mines that could not access the muckpile immediately after blasting due to light and/or safety reasons.

2.5.1   Delay in Normal Mode

- When a transmit delay is set in Normal mode, the BMM will transmit for approximately 15 minutes before switching off and *sleeping* for the requested delay period. At the end of the delay period, it will transmit normally until the battery runs out of power.

- Calculate the delay, in hours, from the time the BMMs are installed in a blast to the BMMs transmitting. Refer to the "Monitoring Procedure Manual" for more information about how the transmit delay may be used.

2.5.2 Delay in BAT Mode

- When a transmit delay is set in BAT mode, the BMM transmits for approximately 15 minutes.
- It then enters a dormant-state for 30 minutes (this reduces the likelihood of heavy machinery triggering the BMM), after which it enters standby mode—ready to sense a blast. Upon sensing a blast, the BMM switches to sleeping for the set delay hours. Once the delay hours are over, the BMM transmits until the battery runs out of power.
- Calculate the delay, in hours, from blast detonation to the BMMs transmitting.

> **WARNING** *Once set, a BMM delay cannot be changed. That is, the BMM cannot be switched off or made to switch on earlier or later.*

2.6 Charging the Battery

The Activator comes with an internal Lithium battery that is rechargeable via the micro USB port behind the silicone enclosure.

- The battery level indicator on the screen is shown as 4 bars, where each bar represents 25% battery capacity.
- The battery can only be charged via the micro USB port, and cannot be accessed nor removed.
- We recommend using a micro USB charger that is connected to mains power. It can also be charged using a computer USB port and USB to micro USB cable.

Charge the Activator using the micro USB port.

> **WARNING** *If the battery is fully discharged, use a mains power micro USB charger to recharge the Activator battery.*

2.7 Transporting the Activator and BMMs

- We recommend not to carry a BMM Activator in the same bucket/bag as BMMs.

> **Carry the activator separately to BMMs at all times.**

3   ACTIVATOR LICENCE REGISTRATION

The Activator needs a valid licence, which is set at the BMT factory to match your Package type

- Standard, Blast Anytime, or Integrated Survey
  - **Blast Anytime** BMMs
  - **Normal** BMMs

☞ At Package renewal or upgrade, the Activator will need the licence renewed.

3.1 How to register your Activator

What you need:
- A computer running BMM Explorer with an active licence
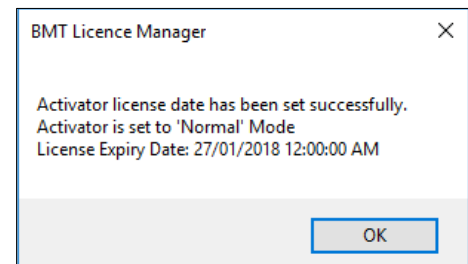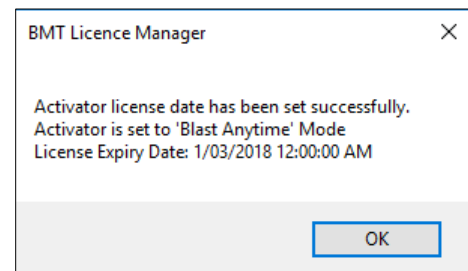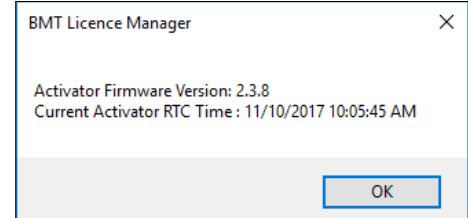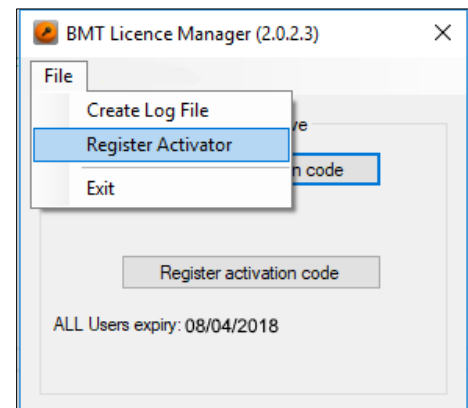- Your Activator (powered off)
- A Micro USB cable

Steps

1. Using the micro USB cable, connect the Activator to the computer running BMM Explorer

2. Ensure the Activator is turned off (Delay LEDs and Mode lights are blank (off), but battery charge LEDs are on).

3. Startup BMM Explorer

4. Open *Support | BMT Licence Manager | File | Register Activator*

5. Once you click *<Register Activator>*, you receive this message

6. Click **OK**

For successful registration of the **Activator Blast Anytime (BAT)** licence, you will receive this message

For successful registration of the **Activator Normal licence**, you will receive this message

4   TROUBLESHOOTING

Fault	Solution
The Activator won't turn on	• Press and hold the red button ⏻ for at least 3 seconds. • If you press and hold the red button ⏻ and the battery LEDs are blank (not green), the battery has discharged. Recharge the Activator using the micro USB cable.
The Activator display turns off during operation	• Low battery – recharge with the micro USB cable. • The Activator automatically turns off after 5 minutes if no button is pressed – Press and hold the red button ⏻.

The Activator LEDs flash when turned on	• The transmit, receive, Normal and BAT LEDs flash at Activator power on when the Activator does not detect a valid Licence code. The Activator will revert to Normal mode. You can activate BMMs in Normal Mode only.
	• Check if your BMM Explorer licence has expired.
	   o Open *Support | BMT Licence Manager*
	   o If the BMM Explorer licence is still current, connect your Activator to a PC running BMM Explorer and update the Licence registration. See Section *3 Activator Licence Registration*
	   o If the BMM Explorer licence has expired, contact office@BMT.com.au for a new licence. Once you receive a new licence, connect your Activator to a PC running BMM Explorer and update the Licence registration. See Section *3 Activator Licence Registration*

BMMs won't turn on	• Change proximity of Activator and BMM. • Confirm that the green button *BMM ON* is depressed until the transmit LEDs flash. • Recharge the Activator battery. If the battery LEDs show 25%, the transmit power may be below the required threshold. • The BMM may be faulty. Set it aside, mark it appropriately and contact BMT.
Error message "Failed to set activator licence date"	 1. Ensure the Activator is powered off. The Activator Delay LEDs and Mode lights should be blank (off), but battery charge LEDs are on. 2. Check the BMM Explorer Licence expiry date is valid. 3. Retry the licence registration procedure .

If you still receive the error message, please contact your BMT consultant or BMT Support at support@bmt.com.au	
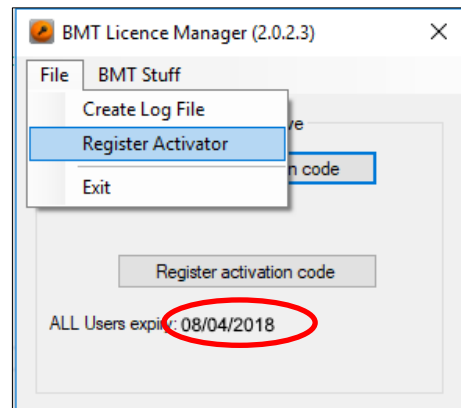
5   SPECIFICATIONS

Battery Type: Rechargeable Lithium battery
Transmission frequency: 111.1 KHz
Equivalent Isotropically Radiated Power (EIRP):   2.5 µW

6   EMC COMPLIANCE

This device has been tested in accordance with requirements contained in the appropriate Industry Canada regulations (RSS-210, RSS-Gen). This device meets the applicable Industry Canada technical specifications.

This device complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radioexempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil nedoit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillageradioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

DISCLAIMER

While every effort has been made to ensure the BMM Activator functions as specified in this manual, Blast Movement Technologies makes no guarantee to its continued function, except that should it cease to function as specified, a replacement unit will be provided.

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