



Technical & safety manual

◆ **DaveyTronic® 5**

◆ **Davey Bickford**

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|-----------|----------------|---------------|----|
| System | DaveyTronic® 5 | | |
| Language | ENG | | |
| Pack | MVP1.3.1 | | |
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| Revision | 1 | | |
| Equipment | Remote Blaster | Bench Monitor | PU |



Read this manual

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 **WARNING:** This user manual is for information only. The DaveyTronic® 5 system should only be used by personnel who have been trained and authorized to use this system.

I. System Safety

A. Radio interferences

The functionality of DEDDs is not affected by electric fields with an intensity of up to 30 Volts per meter. Fields at this level are rarely encountered, as they are considerably higher than the fields emitted by standard transmission devices (telephones, cellular phones, CB, radio, etc.), or even by HV power lines.

Higher intensity electromagnetic fields may affect communication between detonators and the PUs, Remote Blaster or Bench Monitor, and may even damage the electronic circuit, but in no way can electromagnetic fields initiate the detonators.

B. Electrostatic discharge

DEDDs can resist a potential of 30 kV / 3500 pF pin to pin and pin to case charge. A discharge of this strength may destroy the electronic circuit, but it will not initiate the detonators. Discharges of this type are very unlikely in the conditions in which the detonators are used.

C. Lightning

Even though the DEDDs has high resistance to initiation from extraneous currents, all types of explosives and detonators are susceptible to detonate when hit by lightning. Follow all applicable regional and mine specific laws and regulations regarding the approach and progress of electrical storms.

 **WARNING:** As a precaution, it is recommended that all loading operations should be suspended if a thunderstorm is approaching, in accordance with local laws, regulations, acts.

D. Misfires

The DEDDs normally discharges its firing energy in less than one second. However, in the event of any malfunction in the circuit, a safety circuit discharges the energy in 5 minutes. This means that the maximum time after which the energy will be completely discharged is 5 minutes.

 **WARNING:** If a misfire is suspected, it should be handled always adhering and following all applicable local laws, regulations, acts and procedures.

E. Impact

The DEDD has the same impact resistance as conventional detonators, both electric and non-electric. The same precautions must be taken when handling DEDDs.

F. General precautions

⚠ WARNING:

Always use approved devices and hardware when using DEDDs.

Never connect DEDDs to any energy supply other than the Remote Blaster, Bench Monitor or PU. Batteries and 110/220V circuits are strictly forbidden.

Never connect conventional electric detonators and DEDDs to the same circuit.

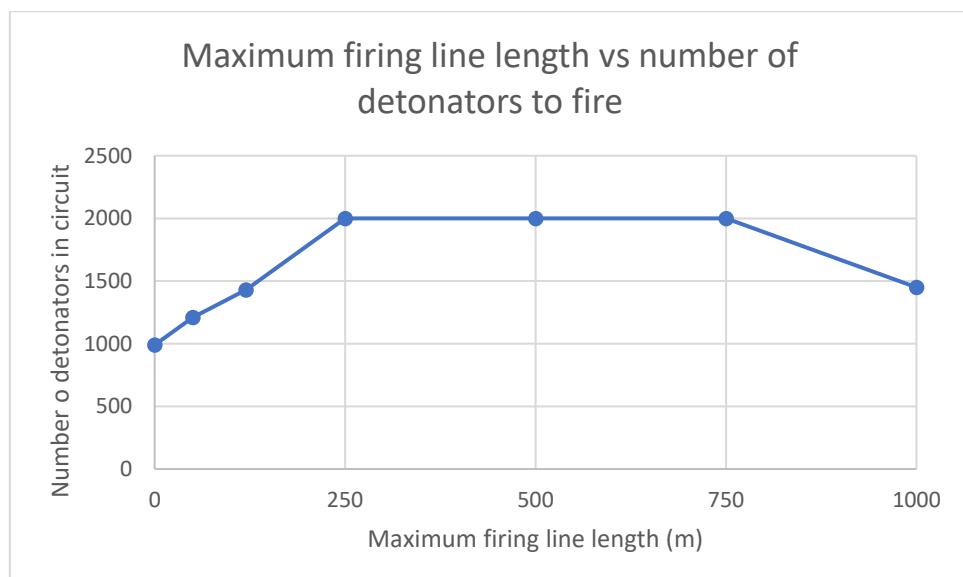
Never connect conventional electric detonators to the Remote Blaster, Bench Monitor or PU.

Never connect electronic detonators from different manufacturers to the Remote Blaster, Bench Monitor or PU.

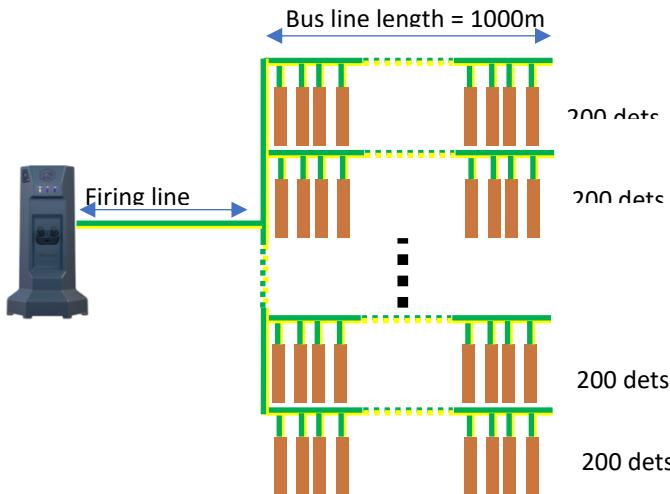
Never use the DaveyTronic® 5 system unless you have been properly trained, certificated and approved for its use as per the required regional laws and regulations.

G. Maximum length of lines

The following diagram relates the number of detonators to fire against the maximum firing line length.



Each group of 200 DT5 detonators is spread over 1 000 m of bus line (detonator lead wire length of 15 m with HD2 wire type)



This is a typical connection diagram use case which could vary according to customer's deployment practices and operational setups.

II. Equipment

A. Temperature range

| | Operating T° | Storage T° | Charge T° |
|------------------|---------------|---------------|---------------|
| Remote Blaster | -20°C / +50°C | -40°C / +70°C | +10°C / +30°C |
| Bench Monitor | -20°C / +50°C | -40°C / +70°C | 0°C / +45°C |
| Programming Unit | -10°C / +50°C | -40°C / +70°C | 0°C / +40°C |

B. Electronic label

The electronic version of the label is accessible without any codes other than those related to normal protection to unlock the screen, login, or the overall access to the product. This label can only be edited by the product administrator. Of course, a matching physical version of the label is always available on the units as well.

1. PU

To access the electronic label:

1. Go to **Settings** 
2. Tap **Certificates**.

2. Remote Blaster

To access the electronic label:

3. Go to **Settings** 
4. Tap **Certificates**.

C. Battery management

Only use the appropriate charger to charge the batteries of the equipment (Remote Blaster, Bench Monitor and PU). Recharge all equipment at least once a month. The user must not remove the batteries.

When the equipment is under charge, the mains plug of the device acts as a circuit breaker and must therefore remain easily accessible.

1. Remote Blaster

a) Battery information

Type: Lithium-ion rechargeable battery pack – Cell: 2S2P / 7.40v / 4200mAh (32 Wh)

Reference: BP2S2P2100S

Manufacturer: GETAC Technology (KUNSHAN) CO. LTD

Nominal voltage: 7.40 Volts

Nominal capacity: 4200 mAh

Nominal energy: 32 Wh

b) Charger information



For indoor use only



Do not throw away



Reference: FSP065-RBBN3

Manufacturer: FSP

2. Bench Monitor

a) Battery information

Type: Lithium-ion rechargeable battery pack – Cell: 2S2P - 7.27v / 7000mAh (50.88 Wh)

Reference: PA-INB162L-C17UL.4.2.R001

Manufacturer: FEY ELEKTRONIK

Nominal voltage: 7.27 Volts

Nominal capacity: 7000 mAh

Nominal energy: 50.88 Wh

b) Charger information



For indoor use only



Do not throw away

Reference: VEC50US12

Manufacturer: XP POWER

3. Programming Unit

a) Battery Information

Type: Lithium-ion rechargeable battery pack – 3.60v / 6600mAh (23.76 Wh)

Reference: NX81-1004

Manufacturer: Handheld

Nominal voltage: 3.60 Volts

Nominal capacity: 6600 mAh

Nominal energy: 23.76 Wh

b) Charger Information



For indoor use only



Double insulation



Do not throw away

Reference: TYPE-C45IC

Manufacturer: FULLPOWER



Notes:

Do not store the battery fully charged at high temperature (over 25/30°C) this will reduce the battery life.

Ideal storage temperature is between 5 and 15°C

Unutilized equipment should not be stored fully charged for more than one month, but between 20 and 60% of charge.

Avoid charging at high temperature (room temperature over 30/35°C) as this is shortening battery life, and may stop the charge cycle before fully charging, resulting in reduced capacity.

Charging below 0°C is not possible (the hardware does not allow the charging, but the software will show the animation)

Charge should be checked every 6 months, for unutilized equipment.

Capacity is reduced when operated below 0°C.

⚠ WARNING:

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

The level of safety of this equipment is only guaranteed for usage that conforms to the intended use, as described in the manual.

Equipment must be connected to electrical installations respecting the regulations of the country in which they are used. They must include protections against voltage and current surge, and earth defects.

Risk of explosion is high if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Do not install the equipment close to a heat source or close to a humidity source.

For your own safety, it is imperative that before any maintenance operation, the equipment is switched off.

Do not replace a battery with an incorrect type which may remove protection (for example, in the case of certain types of lithium battery).

Do not disposal of a battery in a fire or hot oven, or mechanical crushing or cutting of a battery, which could cause an explosion.

Do not keep a battery in a very high-temperature environment, which could cause an explosion or leakage of flammable liquid or gas.

Do not subject a Battery to extremely low air pressure, which could cause an explosion or leakage of flammable liquid or gas.

Maintenance of the equipment can only be performed by trained and authorized personnel.

The user of the equipment must not access the inside of the units. Contact your Enaex representative in case of issues or suspected malfunctions.

III. Regulations

A. For users in the USA

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,
2. This device must accept any interference received, including interference that may cause undesired operation.

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For Bench Monitor:

This equipment complies with FCC's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter

For Remote Blaster:

This portable equipment with its antenna complies with FCC's radiation exposure limits set forth for an uncontrolled environment. To maintain compliance, follow the instructions below:

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. A minimum separation distance of 12cm must be maintained between the radiator (antenna) and user's/nearby person's body at all times.
3. Avoid direct contact to the antenna, or keep contact to a minimum while using this equipment.

B. For users in the CANADA

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

For Bench Monitor:

This equipment complies with RSS102's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'expositions de la CNR102 applicables pour un environnement non contrôlé aux conditions suivantes :

1. Cet équipement devra être installé et fonctionné de telle manière qu'une distance minimale de séparation de 20 cm soit maintenue entre la partie rayonnante (l'antenne) et l'utilisateur / les personnes à proximité à tout moment.
2. Cet émetteur ne doit pas être co-localisé ou opéré en conjonction avec toute autre antenne ou émetteur.

WI-FI 5GHz

Operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

La bande 5 150-5 250 MHz est réservée uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

For Remote Blaster :

This portable equipment with it's antenna complies with RSS102's radiation exposure limits set forth for an uncontrolled environment. To maintain compliance, follow the instructions below:

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. A minimum separation distance of 12cm must be maintained between the radiator (antenna) and user's/nearby person's body at all times.
3. Avoid direct contact to the antenna, or keep contact to a minimum while using this equipment.

Cet équipement portable avec ses antennes est conforme aux limites d'expositions de la CNR102 applicables pour un environnement non contrôlé. Pour maintenir la conformité, suivez les instructions ci-dessous :

1. Cet émetteur ne doit pas être co-localisé ou opéré en conjonction avec toute autre antenne ou émetteur.
2. Une distance minimale de séparation de 12 cm doit être maintenue entre la partie rayonnante (l'antenne) et l'utilisateur / les personnes à proximité à tout moment.
3. Evitez tout contact direct avec l'antenne ou gardez le contact au minimum pendant l'utilisation de cet équipement.

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