

# HEBS II

## User Quick Guide

**Hanwha Electronic Blasting System**

User Quick Guide



# Quick Guide

## *HEBS-II – Electronic Blasting System*

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# Quick Guide

## *HEBS-II – Electronic Blasting System*

### ■ General Precautions

- Always read this manual carefully, before using this product.
- Never make anyone touch this product except authorized person, otherwise, it may injure you or others.
- Never use this product and contact us if you have any doubt about its purpose, use and performance.
- Always handle and use this product according to statutory regulations and procedures.

### **"The misuse of this product may kill or injure you or others"**

- Products described in this bulletin are sold by Hanwha without warranty; expressed, implied, statutory, or merchantable except expressly stated in Hanwha's straight bill of landing. Under no circumstances shall seller be liable for damages or loss of anticipated profits, consequential damages or incidental damages.

# Quick Guide

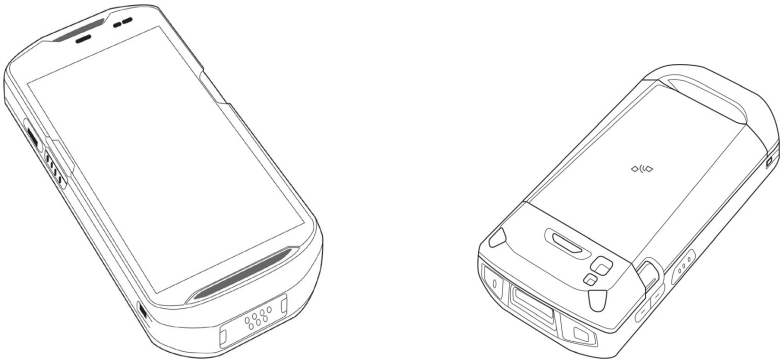
## ***HEBS-II – Electronic Blasting System***

### ■ HEBS-II components

1. Electronic Detonator (HiTRONIC-II™)



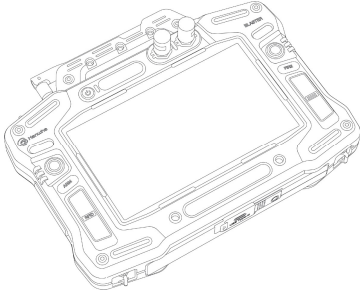
2. Planner (ZEBRA TC56 PDA)



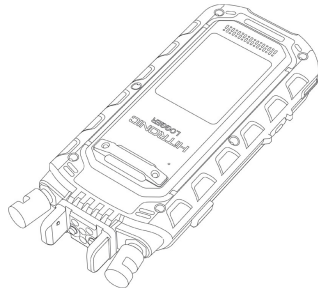
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## **HEBS-II – Electronic Blasting System**

### 3. Blaster (HEBS-B-2A)



### 4. Logger (HEBS-L-2A)



### 5. Harness wire



# Quick Guide

## *HEBS-II – Electronic Blasting System*

### ■ Features

1. *HiTRONIC-II™* electronic detonators have **antistatic electricity** (min. 30kV at 2500 pF).
2. *HiTRONIC-II™* electronic detonators are **programmable and reprogrammable** from 0ms to 50,000ms in 1ms intervals.
3. *HiTRONIC-II™* electronic detonators are designed as **detonator of No.8** which completely can initiate for slurry and emulsion explosives.
4. Blaster can blast **maximum 3,000 detonators** in Stand-alone mode. In Multiple blast mode it can blast **maximum 63,000 detonators**.
5. Blaster can **remote firing up to 5km** (Line of Sight).
6. Harness wires are **duplex type and easy to connect**.
7. Planner can program **maximum 1,000 detonators**.
8. Planner has three types (**Tagging, Scanning, Logging**) to read detonator ID.
9. Planner is compatible with **BlastPlan-Pro and O-Pitblast**
10. Logger can communicate with **maximum 500 detonators**.
11. Logger has **connection and circuit testing function**.
12. Inherently safe with **multiple inbuilt redundancies and safety mechanisms**.

# Quick Guide

## *HEBS-II – Electronic Blasting System*

### ■ Instructions for Storage

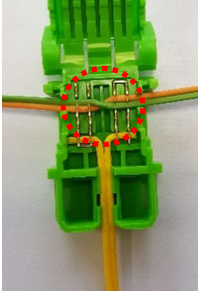
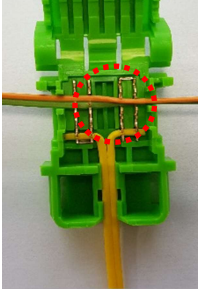
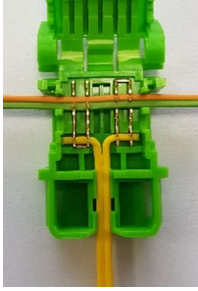
1. Never store **detonators with other explosive materials** in the same magazine.
2. Never allow any **lighters, matches, open flame or other sources of ignition** or volatile Materials within 50 feet of the magazine.
3. Always **lock up** explosive materials and **keep from children and unauthorized persons**.
4. Always keep the inside of the magazine **clean, dry, cool and well ventilated**.
5. Delay detonators should be **used in order of manufacturing date** as they deteriorate with age. Use oldest stored product first.
6. Proper storage temperature is from **-30°C to 60°C** (room temperature storage recommended).
7. The term of use is **5 years** from the date of manufacture. **For products that have passed for more than 3 years, the legal stability test shall be conducted through the Hanwha Corporation.**
8. HEBS-II devices (Blaster, Logger, Planner) **should be stored at 30% to 50% battery charge** for long-term storage for 1month or longer.
9. Never **completely discharge** equipment battery.
10. Charge the battery between **0 and 40°C**
11. Be aware that when used **below 0°C**, HEBS-II device's battery service time may be significantly reduced.

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## HEBS-II – Electronic Blasting System

### ■ Instructions for Usage

1. Be careful **not to peel off the sheath** of leg wire during the explosive charging.
2. Harness wire must use **Hanwha's own product**.
3. When connecting the connector to the harness wires, make sure that the **wires are not twisted, bent**.

 Twisted	 Bent	
( X )	( X )	( O )

4. **Do not step on the connector or submerge it** as much as possible.
5. **Use "Line test" function of planner** to check condition of circuit during connecting the detonators.
6. Blaster is only use **outside safety distance**. Do not use blaster near the site for communication test.
7. **Be sure to wait more than 10 minutes** before entering the site after cancelling or blasting after detonating charge.



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## **HEBS-II – Electronic Blasting System**

8. In case of defective product, follow the directions of the authorized and trained personnel.
9. Electronic detonators must be used within 12 months after opening the package.
10. During the approach and progress of storm, loading shall be suspended in surface and underground blasting operations and personnel withdrawn to a safe location.
11. Never use electronic detonators near radio transmitters, thunderstorm, lightning, snow storm.
12. Never do harm to HEBS-II equipment by any action including dropping, throwing, striking, frictionizing.
13. Always use exclusive carrying vessel, not to expose to the leg wire of detonator.
14. Never fight fires involving explosives. Remove yourself and all other persons to a safe location and guard the area.
15. Never investigate, disassemble and modify the contents of HEBS-II equipment. There is No responsibility to any modification of the product such as disassemble and remodel. In this regard, legal responsibility can be held.
16. Never modify system settings because of malfunction of the product or application working.
17. Never install an app that is not provided by Hanwha.
18. Never pull leg wires out of any detonator.
19. Always fire electronic detonators with firing currents in the range recommended.
20. Always keep electronic detonator disconnected from the blaster until ready to test or fire.

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## **HEBS-II – Electronic Blasting System**

21. Never mix electronic detonators made by different manufacturers or different types in the same circuit, unless detonators may misfire partially.
22. Never handle or use electronic detonators when stray currents or static electricity are present.
23. Never have electric power wires or cables near electronic detonators or other explosives except at the time and for the purpose of firing the blast.
24. Never make final hookup to power source until all personnel are clear of the blast area.
25. All of the HEBS-II equipment, including Blaster, Logger, Planner and Harness Wire, must only be used with *HiTRONIC-II™* electronic detonators.
26. HEBS-II equipment must be kept safe from submersion in water and excessive impact.
27. HEBS-II equipment may be radio-interference during operation.
28. Proper protection measures should be taken when placing the blaster where there is a possibility of a flyrock.
29. Do not short the output terminals of the blaster.
30. In remote blast mode, you should cautionary note to keep the antenna from touching the ground or metal, and place it as far as possible from metal.
31. In remote blast mode, you should blast in line of sight.

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## ***HEBS-II – Electronic Blasting System***

32. The following table is the proper temperature range of HEBS-II equipment.

Operating Temperature	
<b>Blaster</b>	-20 to +60 °C
<b>Planner</b>	-20 to +50 °C
<b>Logger</b>	-20 to +60 °C
<b>HiTRONIC II™</b>	-30 to +70 °C

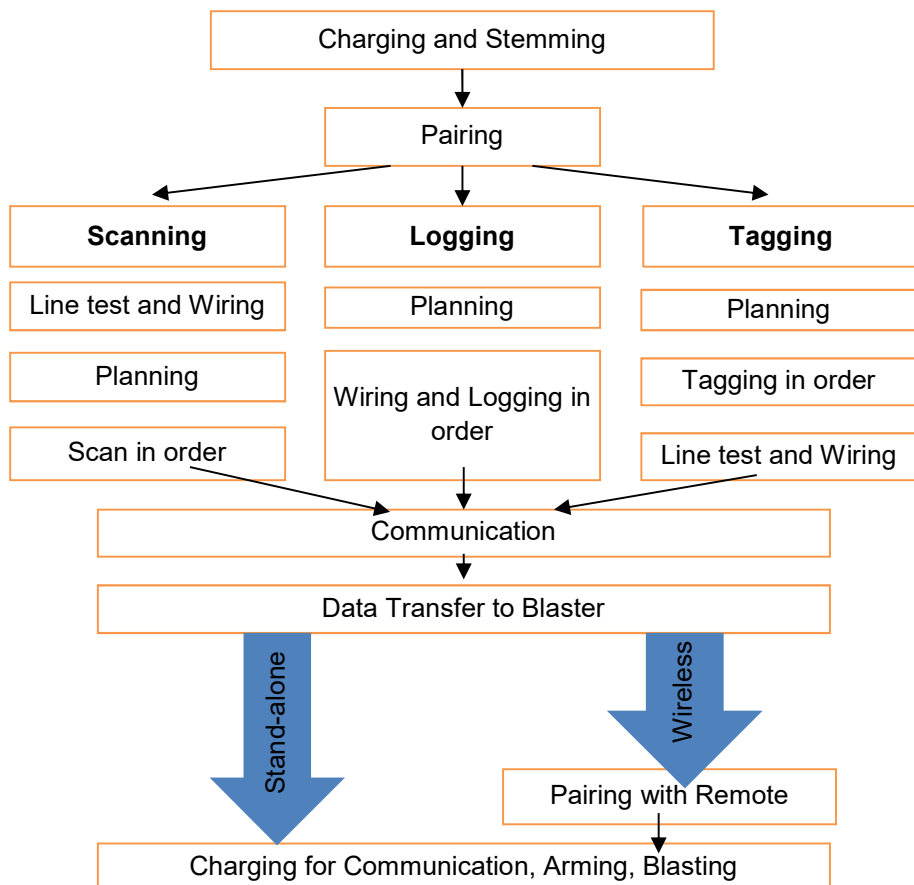
33. For disposal of explosive materials, **please dispose of in accordance with relevant local and federal regulations** or contact Hanwha regional technical manager for safe disposal.

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## HEBS-II – Electronic Blasting System

### ■ How to Use

※ Follow the normal blasting procedure until the charging and stemming process. This guide covers the process of wiring, detonator ID collection, communication, and blasting after charging.

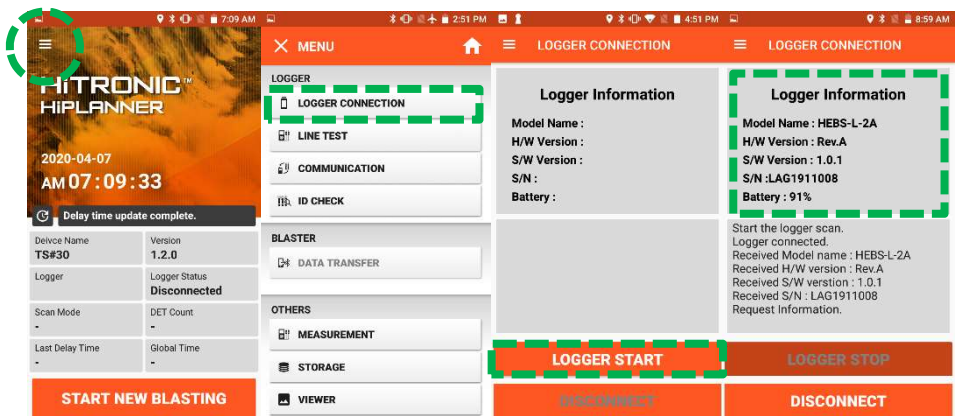


# Quick Guide

## HEBS-II – Electronic Blasting System

### 1. Pairing Procedure

- ① Put logger and planner within 20cm.
- ② Press power button of logger and planner.
- ③ Connecting harness wire to logger.
- ④ Press 'HiPLANNER' App on planner.
- ⑤ Press MENU > LOGGER CONNECTION > LOGGER START.
- ⑥ If logger and planner connected well, logger displays "REMOTE" and blue LED and planner displays logger Information (refer to below picture).

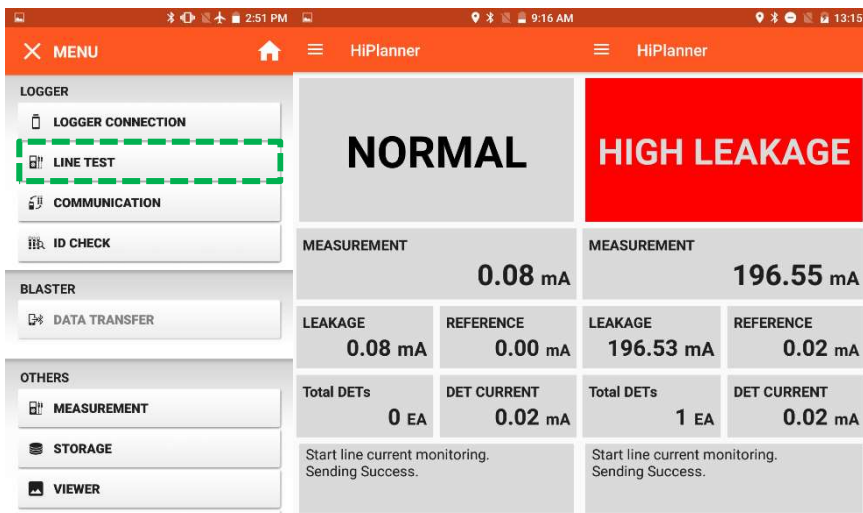


# Quick Guide

## HEBS-II – Electronic Blasting System

### 2. Test Procedure

- ① LINETEST must be performed before the wiring.
- ② Click the Menu icon and click LINE TEST under the LOGGER
  - \* Planner should not be more than 10 meters away from the logger.
- ③ Wiring the electronic detonator's connector to harness wire.
  - 1) Make sure that the wires are not bent or twisted.
  - 2) Do not step on the connector or submerge it as much as possible.
- ④ If the connector is not properly wired or there is a problem such as leakage current, an audible alarm and a message will be occurred during the line test.



# Quick Guide

## ***HEBS-II – Electronic Blasting System***

### 3. Planning Procedure

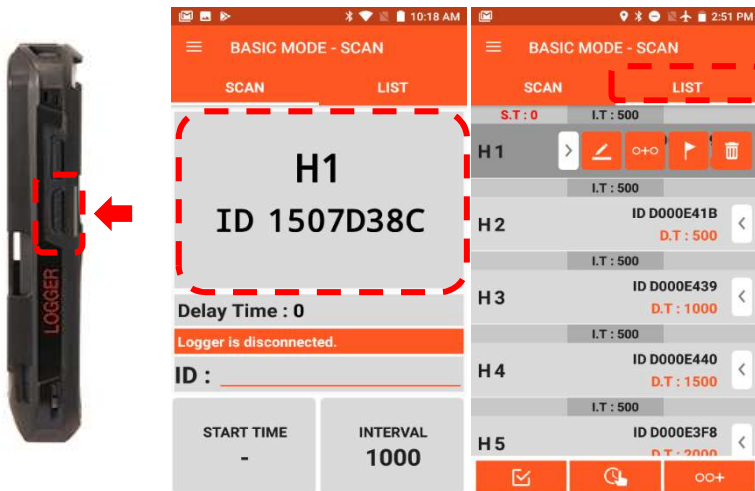
- ① Press 'START NEW BLASTING' at the 'HiPLANNER' app.
- ② Select the blasting mode. (BASIC/OPENPIT/TUNNEL/SOFTWARE)
  - A. BASIC : Insert the 'START TIME' and 'INTERVAL'.
  - B. OPENPIT : Insert the information about 'GROUP' and 'TIME'.
  - C. TUNNEL : Insert the information about  
Cut/Stoping/Contour/Floor Group.
  - D. SOFTWARE : Open the CSV file in the save folder.

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## HEBS-II – Electronic Blasting System

### 4. A. Scanning procedure

- ① Follow the Pairing and Test Procedure.
- ② Follow the Planning Procedure.
- ③ Press menu icon and press 'SCAN' under the BASIC MODE.
- ④ Press second side button at the planner to scan the QR code of detonator's connector.
- ⑤ After each scanning, planner screen displays present hole number, detonator's ID, and delay time.
- ⑥ Press 'LIST' tap at the top of planner screen to check and edit all scanned detonators.



- ⑦ If you need to edit the detonator and pattern information, see 5. Editing detonator.

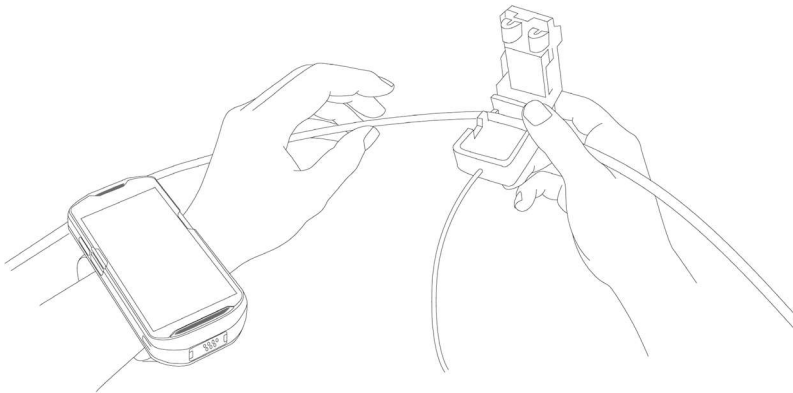


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## **HEBS-II – Electronic Blasting System**

### 4. B. Logging Procedure

- ① Follow the Pairing Procedure.
- ② Follow the Planning Procedure.
- ③ Press menu icon and press 'SCAN' under the BASIC MODE.
- ④ Connect the electronic detonators to harness wires in order of detonation.
- ⑤ After each connecting, planner screen displays present hole number, detonator's ID, and delay time.
- ⑥ Press 'LIST' tap at the top of planner screen to check and edit all connected detonators.
- ⑦ If you need to edit the detonator and pattern information, see 5. Editing detonator.

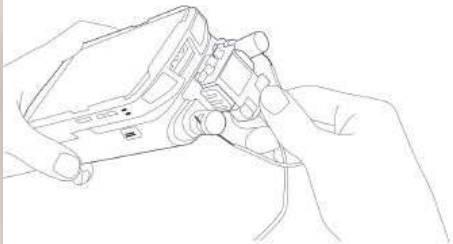


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## **HEBS-II – Electronic Blasting System**

### 4. C. Tagging Procedure

- \* Tagging is used in the open-pit to collect detonator information before connecting, or as an aid when scanning is difficult due to damage to the QR code.
- ① Follow the Pairing Procedure.
- ② Put the dedicated case in planner, and then combine the planner with logger.
- ③ Follow the Planning Procedure.
- ④ Tag the connector to the tagging terminal of the logger in order of detonation.
- ⑤ After each tag, planner screen displays present hole number, detonator's ID, and delay time.
- ⑥ Press 'LIST' tap at the top of planner screen to check and edit all tagged detonators.
- ⑦ If you need to edit the detonator and pattern information, see 5. Editing detonator.






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## **HEBS-II – Electronic Blasting System**

### 5. Edit detonators


#### ① Individual Edit

- 1) Touch the detonator want to edit.
- 2) Press  and  buttons then edit detonator's Information.
- 3) Press  button then delete the detonator.

#### ② Multiple Edit

- 1) Press  button, set start time and interval with long press   buttons.
- 2) Touch the all detonators to edit and press  button again.

#### ③ Add Detonator

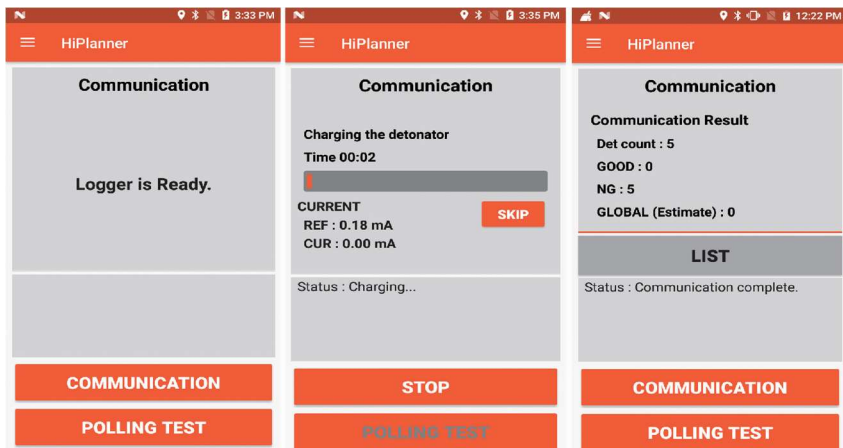
- 1) Press  button, add new detonator when find a detonator without scanned in a hole.

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## HEBS-II – Electronic Blasting System

### 6. Communication Procedure

- ① After entering the detonator's ID, click Menu icon and COMMUNICATION under the LOGGER.
- ② If logger is not connected, repeat pairing procedure.
- ③ After logger is ready, press 'COMMUNICATION'.
- ④ Confirm connection result of detonators as below  
GOOD : The number of well-connected detonators.  
NG : The number of unconnected but scanned detonators.  
GLOBAL : The number of connected but unscanned detonators.



### 7. Settings

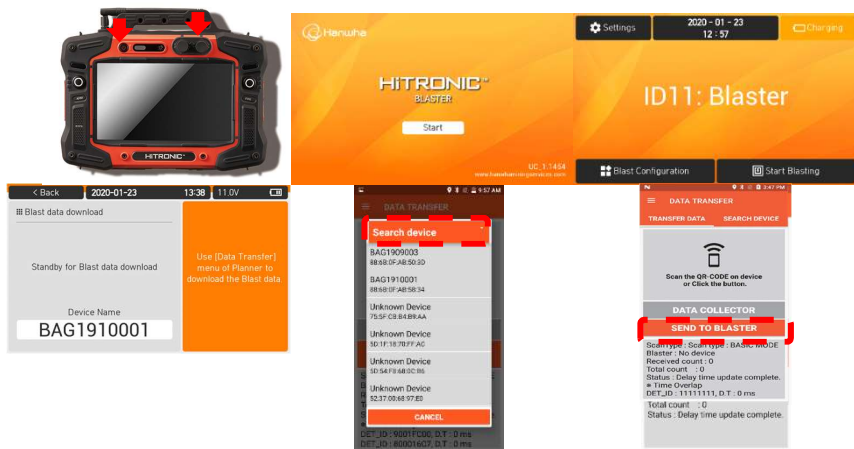
- \* If you want new blasting, press main menu button, scroll down and press 'SETTINGS' and press 'Delete all'.

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## HEBS-II – Electronic Blasting System

### 8. Blasting Procedure

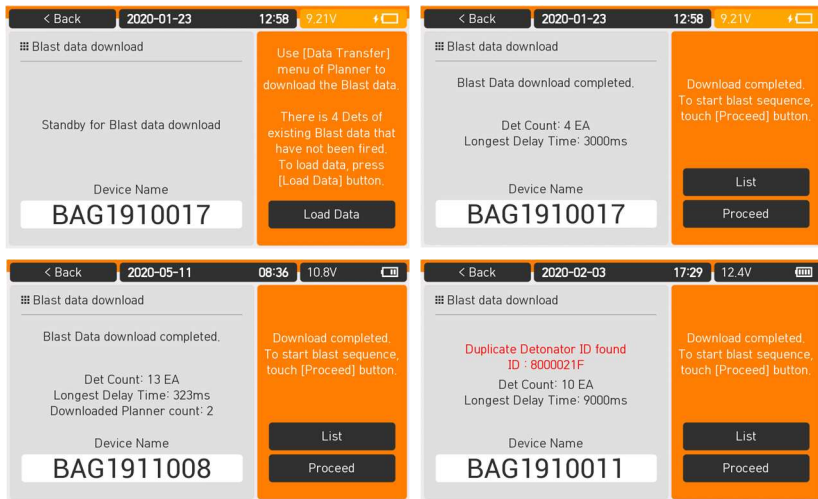
- ① Put planner and blaster within 20cm.
- ② Press power button of blaster and touch start button.
- ③ Connect the harness wire to blaster.
- ④ Press 'Start Blast' button of the blaster screen.
- ⑤ Press 'DATA TRANSFER' under BLASTER menu of planner.
- ⑥ Press 'SEARCH DEVICE' and press the blaster's ID. And press 'TRANSFER DATA'.
- ⑦ Press SEND TO BLASTER button of planner.



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## HEBS-II – Electronic Blasting System

- ⑧ Confirm the information of planner and blaster screen.
- ⑨ Download available up to 3,000 detonators and check the number of planner used in download.
- ⑩ Tap the green buttons according to manual on the screen of blaster until select blast mode.

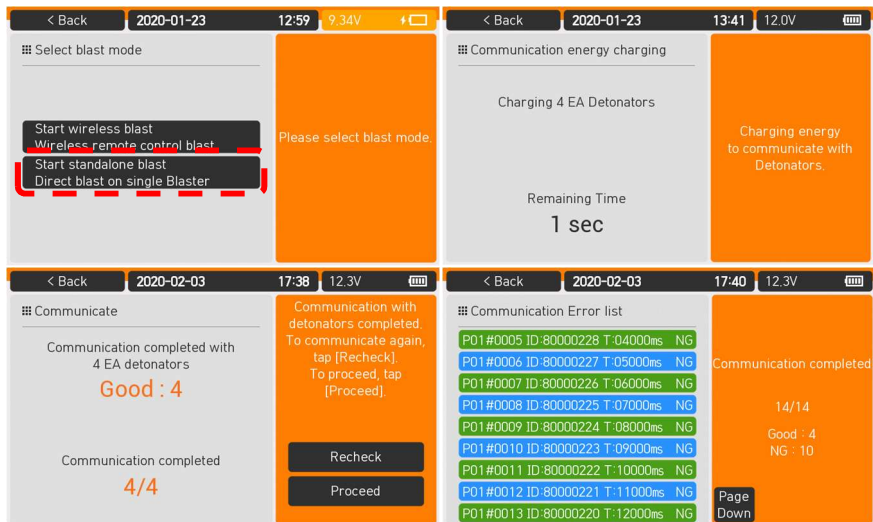


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## HEBS-II – Electronic Blasting System

### ⑪ Stand-alone blast mode

- 1) Press standalone blast button on the screen of blaster.
- 2) Wait until finish communicating between blaster and detonators.
- 3) If error detonators occur, confirm an error list.
- 4) After dealing the errors, repeat blasting procedure 1 to 10.

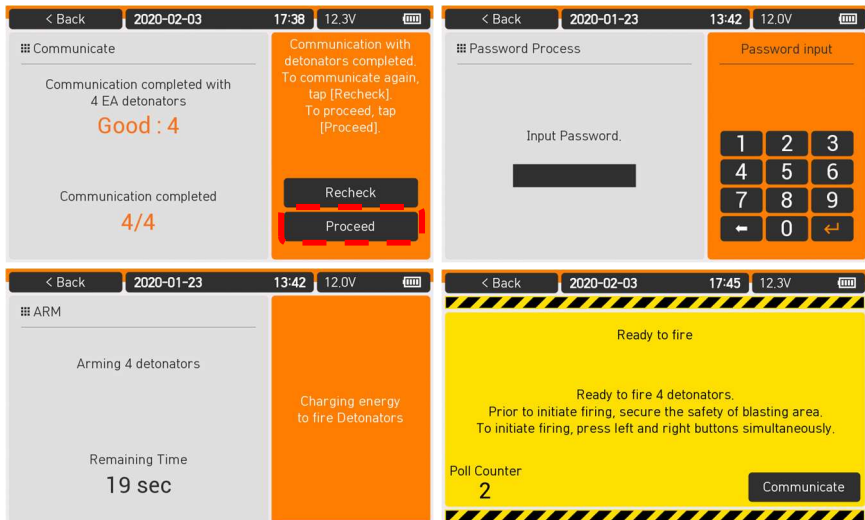


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## HEBS-II – Electronic Blasting System

This procedure is real charging detonators for firing.

- 5) Touch proceed on the screen of blaster.
- 6) Input password key and wait until finish arming.
- 7) After charging, ready to fire.



- 8) Press ARM and FIRE button at the same time.
- 9) After firing, blaster screen changes to waiting time countdown.



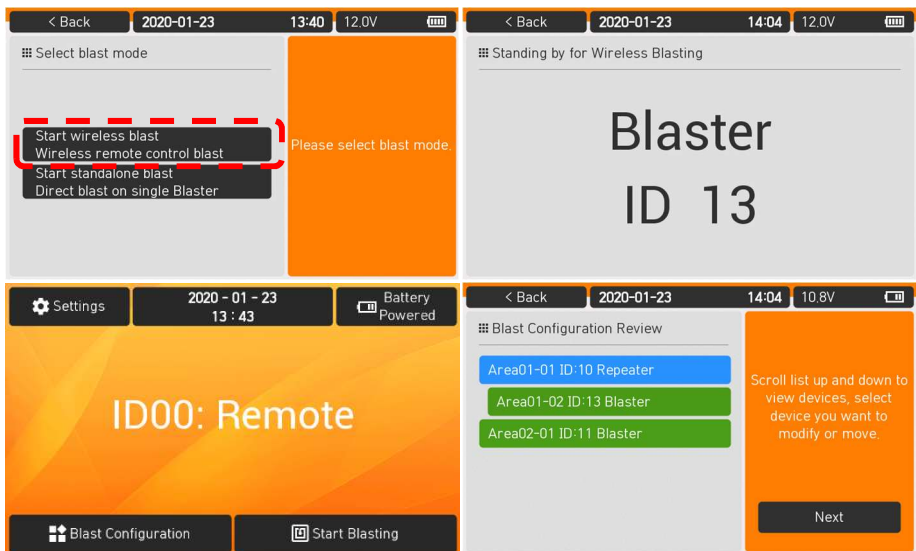


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## HEBS-II – Electronic Blasting System

### Wireless blast mode

- 1) Press wireless blast mode button on the screen of blaster.
- 2) Blaster screen changes to standby mode.
- 3) Press power button of remote and touch start button.
- 4) Press start blast button of the remote screen.
- 5) Confirm the connection with blaster and remote along the manual of remote screen until change to ARM screen.

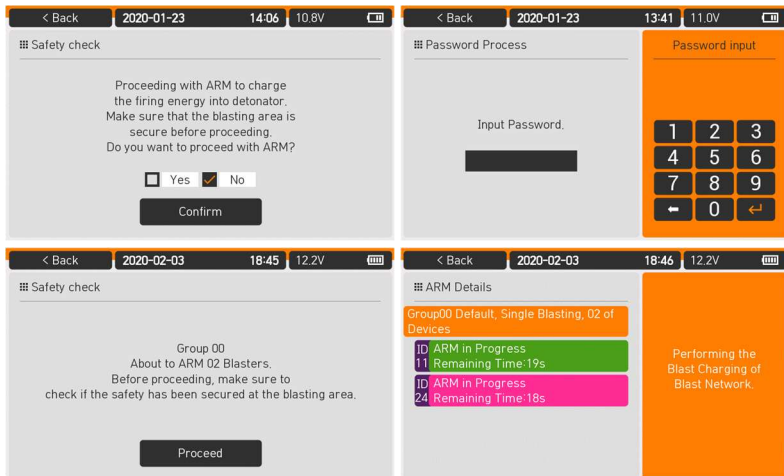


# Quick Guide

## HEBS-II – Electronic Blasting System

This procedure is real charging detonators for firing.

- 6) Touch confirm on the screen of remote.
- 7) Input password key and touch proceed button.
- 8) After ARM, ready to fire.



- 9) Press ARM and FIRE button of remote at the same time.
- 10) After firing, remote screen changes to confirm message screen.



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## *HEBS-II – Electronic Blasting System*

### ■ Technical Data

<i>HiTRONIC II™</i>		
Type	Folded	Spool
Base Charge	PETN, #8 (730mg)	
Primary Charge	DDNP	
Shell	Material	Copper
	Dimension	ø7.5mm × 90mm
Barcode Type	QR code	
Programmability	1 ms	
Maximum Delay Time	50,000 ms	
Accuracy	0.02 CV%	
Length of Wire	6, 9, 12, 15, 18 m	15, 20, 25, 30, 35, 40, 50 m
	(Custom made length possible)	
Spool size	Small – H: 42mm, D: 90mm Large – H: 42mm, D: 110mm	
Tensile strength	Normal : 23 kgf, Heavy duty : 50 kgf	
Wire Color	Yellow	
Operating Temperature	-30 to +70 °C	
Storage Temperature	-30 to +50 °C	
Transport Temperature	-40 to +70 °C	
Water resistance	7 bar, 4weeks	
Drop weight impact	EN13763-11	
Electrostatic Discharge Resistance	Wire to wire : 2,500pF at 30kV Wire to shell : 2,500pF at 30kV	


# Quick Guide

## *HEBS-II – Electronic Blasting System*

Planner	
Appearance	
Dimension	155 x 75.5 x 18.6 mm
Maximum Detonator Capacity	1,000 per Planner
Weight	249 g
Operating Temperature	-20 to +50 °C
Storage/Transport Temperature	-40 to +70 °C
Charge Temperature	0 to +40 °C
Battery	4,300mAh@3.6V DC Rechargeable Li-Ion
Electrostatic Discharge Resistance	+/-15kV Air, +/-8kV Contact, +/-8kV Charge body
Drop	Multiple 1.2m to tile over concrete over -10 to +50°C
Sealing	IP67 and IP65 per applicable IEC sealing specification


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## **HEBS-II** – *Electronic Blasting System*

Logger	
Appearance	
Dimension	186 x 78.7 x 38.5 mm
Maximum Detonator Capacity	500 per Logger
Maximum Lead in Wire	2,000 m
Weight	330 g
Operating Temperature	-20 to +60 °C
Storage/Transport Temperature	-30 to +70 °C
Charge Temperature	0 to +40 °C
Battery	3,500mAh@8.4V, Rechargeable
Electrostatic Discharge Resistance	+/-15kV Air, +/-8kV Contact
Splash proof	IP65


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## *HEBS-II – Electronic Blasting System*

Blaster	
Appearance	
Dimension	242 x 189 x 52 mm
Maximum Detonator Capacity	Stand-alone mode : 3,000 detonators per blast Multiple blast mode : 21 blasters, 63,000 detonators
Maximum Wireless Range without Repeater	5km, Line of Sight
Maximum Lead in Wire	2,000 m
Weight	1.45 kg
Operating Temperature	-20 to +60 °C
Storage/Transport Temperature	-30 to +70 °C
Charge Temperature	0 to +40 °C
Battery	7,000mAh@12.6V, Rechargeable
Splash proof	IP65

# Quick Guide

## *HEBS-II – Electronic Blasting System*

Harness Wire	
Appearance	
Length	250 m per roll
Properties	Wire - Cu $\Phi 0.6\text{mm}$ , $0.075\ \Omega/\text{m}$ Wire insulation - PE, Outer diameter 1.2mm Tensile strength - 23kgf

# Quick Guide

## HEBS-II – Electronic Blasting System

### ■ Packaging

Grade		UN 0030 / 1.1B (470 X 295 X 120 mm)		
Type (Folded / Spool)	Length (m)	Pcs / box	Net Weight (kg)	Gross Weight (kg)
Folded	6.0	50	3.5	4.5
	9.0	40	4.0	5.0
	12.0	30	3.5	4.5
	15.0	20	3.0	4.0
	18.0	20	3.5	4.5
Spool (small)	15.0	30	5.0	6.0
	20.0	30	6.0	7.0
	25.0	30	7.5	8.5
	30.0	30	8.5	9.5
	35.0	30	10.0	11.0
Spool (Large)	40.0	16	6.0	7.0
	50.0	16	7.0	8.0

Grade		UN 0255 / 1.4B    UN 0456 / 1.4S (470 X 295 X 160 mm)		
Type (Folded / Spool)	Length (m)	Pcs / box	Net Weight (kg)	Gross Weight (kg)
Folded	6.0	60	4.5	7.4
	9.0	50	5.0	7.7
	12.0	40	4.5	6.8
	15.0	30	4.2	6.1
	18.0	30	4.4	6.4
Spool (small)	15.0	30	5.0	6.5
	20.0	30	6.0	7.5
	25.0	30	7.5	9.0
	30.0	30	8.5	10.0
	35.0	30	10.0	11.5
Spool (Large)	40.0	16	6.0	7.5
	50.0	16	7.0	8.5



# Quick Guide

## ***HEBS-II – Electronic Blasting System***

Please contact the following offices for any emergency or enquiry.

### **Contact Point**

#### **Head Office (Korea)**

##### **Hanwha Corporation**

Hanwha Building 17th floor

86 Cheonggyecheon-ro, Jung-gu, Seoul, Korea 04541

**TEL.** +82 2 729 3714

**E-mail** [commercial@hanwha.com](mailto:commercial@hanwha.com)